

FM User's Guide

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1 CFS File Manager (FM) Documentation	1
1.1 CFS File Manager Introduction	2
1.2 CFS File Manager Overview	3
1.3 CFS File Manager Operations	4
1.4 CFS File Manager Commands	5
1.5 CFS File Manager Telemetry	5
1.6 CFS File Manager Events	5
1.7 CFS File Manager Deployment Guide	5
1.8 CFS File Manager Configuration	5
1.9 CFS File Manager Table Definitions	5
1.10 CFS File Manager Operational Constraints	5
1.11 CFS File Manager Frequently Asked Questions	6
2 Core Flight Executive Documentation	6
2.1 Background	8
2.1.1 Core Flight Executive (cFE) Goals	8
2.2 Applicable Documents	9
2.3 Version Numbers	9
2.3.1 Version Number Semantics	9
2.3.2 How and Where Defined	10
2.3.3 Identifying Development Builds	10
2.3.4 Templates for the short and long version string	10
2.4 Dependencies	11
2.5 Acronyms	11
2.6 cFE Executive Services Overview	12
2.6.1 Terminology	13
2.6.2 Software Reset	15
2.6.3 Reset Types and Subtypes	15
2.6.4 Exception and Reset (ER) Log	15
2.6.5 Application and Child Task Management	16
2.6.6 Starting an Application	16
2.6.7 Stopping an Application	16
2.6.8 Restarting an Application	17
2.6.9 Reloading an Application	17
2.6.10 Listing Current Applications	17
2.6.11 Listing Current Tasks	18
2.6.12 Loading Common Libraries	18
2.6.13 Basic File System	18
2.6.14 Performance Data Collection	19

2.6.15 Critical Data Store	20
2.6.16 Memory Pool	20
2.6.17 System Log	23
2.6.18 Version Identification	23
2.6.19 Frequently Asked Questions about Executive Services	23
2.7 cFE Executive Services Commands	23
2.8 cFE Executive Services Telemetry	25
2.9 cFE Executive Services Configuration Parameters	25
2.10 cFE Event Services Overview	30
2.10.1 Event Message Format	31
2.10.2 Local Event Log	32
2.10.3 Event Message Control	32
2.10.4 Event Message Filtering	33
2.10.5 EVS Registry	34
2.10.6 EVS Counters	34
2.10.7 Resetting EVS Counters	35
2.10.8 Effects of a Processor Reset on EVS	35
2.10.9 EVS squelching of misbehaving apps	36
2.10.10 Frequently Asked Questions about Event Services	36
2.11 cFE Event Services Commands	37
2.12 cFE Event Services Telemetry	39
2.13 cFE Event Services Configuration Parameters	39
2.14 cFE Software Bus Overview	40
2.14.1 Software Bus Terminology	40
2.14.2 Autonomous Actions	42
2.14.3 Operation of the SB Software	43
2.14.4 Frequently Asked Questions about Software Bus	46
2.15 cFE Software Bus Commands	47
2.16 cFE Software Bus Telemetry	48
2.17 cFE Software Bus Configuration Parameters	48
2.18 cFE Table Services Overview	49
2.18.1 Managing Tables	50
2.18.2 cFE Table Types and Table Options	51
2.18.3 Table Registry	53
2.18.4 Table Services Telemetry	54
2.18.5 Effects of Processor Reset on Tables	54
2.18.6 Frequently Asked Questions about Table Services	54
2.19 cFE Table Services Commands	56
2.20 cFE Table Services Telemetry	56

2.21 cFE Table Services Configuration Parameters	57
2.22 cFE Time Services Overview	58
2.22.1 Time Components	60
2.22.2 Time Structure	60
2.22.3 Time Formats	61
2.22.4 Time Configuration	61
2.22.5 Time Format Selection	66
2.22.6 Enabling Fake Tone Signal	66
2.22.7 Selecting Tone and Data Ordering	66
2.22.8 Specifying Tone and Data Window	67
2.22.9 Specifying Time Server/Client	67
2.22.10 Specifying Time Tone Byte Order	67
2.22.11 Virtual MET	68
2.22.12 Specifying Time Source	68
2.22.13 Specifying Time Signal	69
2.22.14 Time Services Paradigm(s)	69
2.22.15 Flywheeling	70
2.22.16 Time State	70
2.22.17 Initialization	70
2.22.18 Power-On Reset	71
2.22.19 Processor Reset	71
2.22.20 Normal Operation	72
2.22.21 Client	73
2.22.22 Server	73
2.22.23 Setting Time	75
2.22.24 Adjusting Time	75
2.22.25 Setting MET	75
2.22.26 Frequently Asked Questions about Time Services	76
2.23 cFE Time Services Commands	76
2.24 cFE Time Services Telemetry	77
2.25 cFE Time Services Configuration Parameters	77
2.26 cFE Event Message Cross Reference	78
2.27 cFE Command Mnemonic Cross Reference	79
2.28 cFE Telemetry Mnemonic Cross Reference	83
3 Glossary of Terms	94
4 cFE Application Programmer's Interface (API) Reference	95
4.1 Executive Services API	95
4.2 Events Services API	97

4.3 File Services API	97
4.4 Message API	97
4.5 Resource ID API	98
4.6 Software Bus Services API	99
4.7 Table Services API	100
4.8 Time Services API	100
5 Osal API Documentation	101
5.1 OSAL Introduction	103
5.2 File System Overview	103
5.3 File Descriptors In Osal	104
5.4 Timer Overview	104
6 cFE Mission Configuration Parameters	104
7 Module Index	105
7.1 Modules	105
8 Data Structure Index	108
8.1 Data Structures	108
9 File Index	120
9.1 File List	120
10 Module Documentation	126
10.1 CFS File Manager Event IDs	126
10.1.1 Detailed Description	136
10.1.2 Macro Definition Documentation	136
10.2 CFS File Manager Command Structures	205
10.2.1 Detailed Description	207
10.3 CFS File Manager Telemetry	207
10.3.1 Detailed Description	207
10.4 CFS File Manager Command Codes	207
10.4.1 Detailed Description	208
10.4.2 Macro Definition Documentation	208
10.5 CFS File Manager Command Message IDs	228
10.5.1 Detailed Description	228
10.5.2 Macro Definition Documentation	228
10.6 CFS File Manager Telemetry Message IDs	228
10.6.1 Detailed Description	228
10.6.2 Macro Definition Documentation	228

10.7 CFS File Manager Mission Configuration	229
10.7.1 Detailed Description	229
10.7.2 Macro Definition Documentation	229
10.8 CFS File Manager Platform Configuration	229
10.8.1 Detailed Description	230
10.8.2 Macro Definition Documentation	230
10.9 CFS File Manager Version	237
10.9.1 Detailed Description	237
10.9.2 Macro Definition Documentation	237
10.10 cFE Return Code Defines	237
10.10.1 Detailed Description	243
10.10.2 Macro Definition Documentation	243
10.11 cFE Resource ID APIs	260
10.11.1 Detailed Description	260
10.11.2 Function Documentation	260
10.12 cFE Entry/Exit APIs	262
10.12.1 Detailed Description	262
10.12.2 Function Documentation	262
10.13 cFE Application Control APIs	264
10.13.1 Detailed Description	264
10.13.2 Function Documentation	264
10.14 cFE Application Behavior APIs	266
10.14.1 Detailed Description	267
10.14.2 Function Documentation	267
10.15 cFE Information APIs	270
10.15.1 Detailed Description	270
10.15.2 Function Documentation	270
10.16 cFE Child Task APIs	278
10.16.1 Detailed Description	278
10.16.2 Function Documentation	278
10.17 cFE Miscellaneous APIs	282
10.17.1 Detailed Description	282
10.17.2 Function Documentation	282
10.18 cFE Critical Data Store APIs	284
10.18.1 Detailed Description	284
10.18.2 Function Documentation	284
10.19 cFE Memory Manager APIs	288
10.19.1 Detailed Description	288
10.19.2 Function Documentation	288

10.20 cFE Performance Monitor APIs	295
10.20.1 Detailed Description	295
10.20.2 Macro Definition Documentation	295
10.20.3 Function Documentation	296
10.21 cFE Generic Counter APIs	297
10.21.1 Detailed Description	297
10.21.2 Function Documentation	297
10.22 cFE Registration APIs	302
10.22.1 Detailed Description	302
10.22.2 Function Documentation	302
10.23 cFE Send Event APIs	303
10.23.1 Detailed Description	303
10.23.2 Function Documentation	303
10.24 cFE Reset Event Filter APIs	307
10.24.1 Detailed Description	307
10.24.2 Function Documentation	307
10.25 cFE File Header Management APIs	309
10.25.1 Detailed Description	309
10.25.2 Function Documentation	309
10.26 cFE File Utility APIs	312
10.26.1 Detailed Description	313
10.26.2 Function Documentation	313
10.27 cFE Generic Message APIs	318
10.27.1 Detailed Description	318
10.27.2 Function Documentation	318
10.28 cFE Message Primary Header APIs	319
10.28.1 Detailed Description	319
10.28.2 Function Documentation	319
10.29 cFE Message Extended Header APIs	327
10.29.1 Detailed Description	327
10.29.2 Function Documentation	327
10.30 cFE Message Secondary Header APIs	333
10.30.1 Detailed Description	333
10.30.2 Function Documentation	333
10.31 cFE Message Id APIs	337
10.31.1 Detailed Description	337
10.31.2 Function Documentation	337
10.32 cFE Message Integrity APIs	339
10.32.1 Detailed Description	339

10.32.2 Function Documentation	339
10.33 cFE Pipe Management APIs	341
10.33.1 Detailed Description	341
10.33.2 Function Documentation	341
10.34 cFE Message Subscription Control APIs	346
10.34.1 Detailed Description	346
10.34.2 Function Documentation	346
10.35 cFE Send/Receive Message APIs	350
10.35.1 Detailed Description	350
10.35.2 Function Documentation	350
10.36 cFE Zero Copy APIs	352
10.36.1 Detailed Description	353
10.36.2 Function Documentation	353
10.37 cFE Message Characteristics APIs	355
10.37.1 Detailed Description	355
10.37.2 Function Documentation	355
10.38 cFE Message ID APIs	359
10.38.1 Detailed Description	359
10.38.2 Function Documentation	359
10.39 cFE SB Pipe options	364
10.39.1 Detailed Description	364
10.39.2 Macro Definition Documentation	364
10.40 cFE Registration APIs	364
10.40.1 Detailed Description	365
10.40.2 Function Documentation	365
10.41 cFE Manage Table Content APIs	369
10.41.1 Detailed Description	369
10.41.2 Function Documentation	369
10.42 cFE Access Table Content APIs	375
10.42.1 Detailed Description	375
10.42.2 Function Documentation	375
10.43 cFE Get Table Information APIs	379
10.43.1 Detailed Description	379
10.43.2 Function Documentation	379
10.44 cFE Table Type Defines	382
10.44.1 Detailed Description	382
10.44.2 Macro Definition Documentation	382
10.45 cFE Get Current Time APIs	384
10.45.1 Detailed Description	384

10.45.2 Function Documentation	384
10.46 cFE Get Time Information APIs	387
10.46.1 Detailed Description	387
10.46.2 Function Documentation	387
10.47 cFE Time Arithmetic APIs	389
10.47.1 Detailed Description	389
10.47.2 Function Documentation	389
10.48 cFE Time Conversion APIs	391
10.48.1 Detailed Description	391
10.48.2 Function Documentation	391
10.49 cFE External Time Source APIs	393
10.49.1 Detailed Description	393
10.49.2 Function Documentation	393
10.50 cFE Miscellaneous Time APIs	397
10.50.1 Detailed Description	397
10.50.2 Function Documentation	397
10.51 cFE Resource ID base values	399
10.51.1 Detailed Description	399
10.51.2 Enumeration Type Documentation	399
10.52 cFE Clock State Flag Defines	400
10.52.1 Detailed Description	400
10.52.2 Macro Definition Documentation	400
10.53 OSAL Semaphore State Defines	402
10.53.1 Detailed Description	402
10.53.2 Macro Definition Documentation	402
10.54 OSAL Binary Semaphore APIs	402
10.54.1 Detailed Description	403
10.54.2 Function Documentation	403
10.55 OSAL BSP low level access APIs	407
10.55.1 Detailed Description	407
10.55.2 Function Documentation	407
10.56 OSAL Real Time Clock APIs	408
10.56.1 Detailed Description	409
10.56.2 Function Documentation	409
10.57 OSAL Core Operation APIs	421
10.57.1 Detailed Description	421
10.57.2 Function Documentation	422
10.58 OSAL Condition Variable APIs	424
10.58.1 Detailed Description	425

10.58.2 Function Documentation	425
10.59 OSAL Counting Semaphore APIs	430
10.59.1 Detailed Description	430
10.59.2 Function Documentation	430
10.60 OSAL Directory APIs	434
10.60.1 Detailed Description	435
10.60.2 Function Documentation	435
10.61 OSAL Return Code Defines	438
10.61.1 Detailed Description	440
10.61.2 Macro Definition Documentation	440
10.62 OSAL Error Info APIs	444
10.62.1 Detailed Description	444
10.62.2 Function Documentation	444
10.63 OSAL File Access Option Defines	446
10.63.1 Detailed Description	446
10.63.2 Macro Definition Documentation	446
10.64 OSAL Reference Point For Seek Offset Defines	446
10.64.1 Detailed Description	446
10.64.2 Macro Definition Documentation	446
10.65 OSAL Standard File APIs	447
10.65.1 Detailed Description	448
10.65.2 Function Documentation	448
10.66 OSAL File System Level APIs	459
10.66.1 Detailed Description	460
10.66.2 Function Documentation	460
10.67 OSAL Heap APIs	466
10.67.1 Detailed Description	466
10.67.2 Function Documentation	466
10.68 OSAL Object Type Defines	467
10.68.1 Detailed Description	468
10.68.2 Macro Definition Documentation	468
10.69 OSAL Object ID Utility APIs	469
10.69.1 Detailed Description	470
10.69.2 Function Documentation	470
10.70 OSAL Dynamic Loader and Symbol APIs	474
10.70.1 Detailed Description	475
10.70.2 Function Documentation	475
10.71 OSAL Mutex APIs	478
10.71.1 Detailed Description	478

10.71.2 Function Documentation	478
10.72 OSAL Network ID APIs	481
10.72.1 Detailed Description	482
10.72.2 Function Documentation	482
10.73 OSAL Printf APIs	482
10.73.1 Detailed Description	483
10.73.2 Function Documentation	483
10.74 OSAL Message Queue APIs	483
10.74.1 Detailed Description	484
10.74.2 Function Documentation	484
10.75 OSAL Select APIs	487
10.75.1 Detailed Description	488
10.75.2 Function Documentation	488
10.76 OSAL Shell APIs	493
10.76.1 Detailed Description	493
10.76.2 Function Documentation	493
10.77 OSAL Socket Address APIs	494
10.77.1 Detailed Description	494
10.77.2 Function Documentation	494
10.78 OSAL Socket Management APIs	497
10.78.1 Detailed Description	498
10.78.2 Function Documentation	498
10.79 OSAL Task APIs	507
10.79.1 Detailed Description	507
10.79.2 Function Documentation	507
10.80 OSAL Time Base APIs	512
10.80.1 Detailed Description	512
10.80.2 Function Documentation	512
10.81 OSAL Timer APIs	517
10.81.1 Detailed Description	517
10.81.2 Function Documentation	517
11 Data Structure Documentation	522
11.1 CCSDS_ExtendedHeader Struct Reference	522
11.1.1 Detailed Description	522
11.1.2 Field Documentation	522
11.2 CCSDS_PrimaryHeader Struct Reference	523
11.2.1 Detailed Description	523
11.2.2 Field Documentation	523

11.3 CFE_Config_ArrayValue Struct Reference	523
11.3.1 Detailed Description	524
11.3.2 Field Documentation	524
11.4 CFE_Config_IdNameEntry Struct Reference	524
11.4.1 Detailed Description	524
11.4.2 Field Documentation	524
11.5 CFE_Config_ValueBuffer Union Reference	524
11.5.1 Detailed Description	525
11.5.2 Field Documentation	525
11.6 CFE_Config_ValueEntry Struct Reference	525
11.6.1 Detailed Description	525
11.6.2 Field Documentation	525
11.7 CFE_ES_AppInfo Struct Reference	525
11.7.1 Detailed Description	526
11.7.2 Field Documentation	527
11.8 CFE_ES_AppNameCmd_Payload Struct Reference	529
11.8.1 Detailed Description	530
11.8.2 Field Documentation	530
11.9 CFE_ES_AppReloadCmd_Payload Struct Reference	530
11.9.1 Detailed Description	530
11.9.2 Field Documentation	530
11.10 CFE_ES_BlockStats Struct Reference	531
11.10.1 Detailed Description	531
11.10.2 Field Documentation	531
11.11 CFE_ES_CDSRegDumpRec Struct Reference	531
11.11.1 Detailed Description	532
11.11.2 Field Documentation	532
11.12 CFE_ES_ClearERLogCmd Struct Reference	532
11.12.1 Detailed Description	533
11.12.2 Field Documentation	533
11.13 CFE_ES_ClearSysLogCmd Struct Reference	533
11.13.1 Detailed Description	533
11.13.2 Field Documentation	533
11.14 CFE_ES_DeleteCDSCmd Struct Reference	533
11.14.1 Detailed Description	534
11.14.2 Field Documentation	534
11.15 CFE_ES_DeleteCDSCmd_Payload Struct Reference	534
11.15.1 Detailed Description	534
11.15.2 Field Documentation	534

11.16 CFE_ES_DumpCDSRegistryCmd Struct Reference	534
11.16.1 Detailed Description	535
11.16.2 Field Documentation	535
11.17 CFE_ES_DumpCDSRegistryCmd_Payload Struct Reference	535
11.17.1 Detailed Description	535
11.17.2 Field Documentation	535
11.18 CFE_ES_FileNameCmd Struct Reference	536
11.18.1 Detailed Description	536
11.18.2 Field Documentation	536
11.19 CFE_ES_FileNameCmd_Payload Struct Reference	536
11.19.1 Detailed Description	536
11.19.2 Field Documentation	536
11.20 CFE_ES_HousekeepingTlm Struct Reference	537
11.20.1 Detailed Description	537
11.20.2 Field Documentation	537
11.21 CFE_ES_HousekeepingTlm_Payload Struct Reference	537
11.21.1 Detailed Description	539
11.21.2 Field Documentation	539
11.22 CFE_ES_MemPoolStats Struct Reference	545
11.22.1 Detailed Description	546
11.22.2 Field Documentation	546
11.23 CFE_ES_MemStatsTlm Struct Reference	547
11.23.1 Detailed Description	547
11.23.2 Field Documentation	547
11.24 CFE_ES_NoopCmd Struct Reference	547
11.24.1 Detailed Description	548
11.24.2 Field Documentation	548
11.25 CFE_ES_OneAppTlm Struct Reference	548
11.25.1 Detailed Description	548
11.25.2 Field Documentation	548
11.26 CFE_ES_OneAppTlm_Payload Struct Reference	549
11.26.1 Detailed Description	549
11.26.2 Field Documentation	549
11.27 CFE_ES_OverWriteSysLogCmd Struct Reference	549
11.27.1 Detailed Description	549
11.27.2 Field Documentation	549
11.28 CFE_ES_OverWriteSysLogCmd_Payload Struct Reference	550
11.28.1 Detailed Description	550
11.28.2 Field Documentation	550

11.29 CFE_ES_PoolAlign Union Reference	550
11.29.1 Detailed Description	551
11.29.2 Field Documentation	551
11.30 CFE_ES_PoolStatsTlm_Payload Struct Reference	551
11.30.1 Detailed Description	551
11.30.2 Field Documentation	551
11.31 CFE_ES_QueryAllCmd Struct Reference	552
11.31.1 Detailed Description	552
11.31.2 Field Documentation	552
11.32 CFE_ES_QueryAllTasksCmd Struct Reference	552
11.32.1 Detailed Description	552
11.32.2 Field Documentation	553
11.33 CFE_ES_QueryOneCmd Struct Reference	553
11.33.1 Detailed Description	553
11.33.2 Field Documentation	553
11.34 CFE_ES_ReloadAppCmd Struct Reference	553
11.34.1 Detailed Description	554
11.34.2 Field Documentation	554
11.35 CFE_ES_ResetCountersCmd Struct Reference	554
11.35.1 Detailed Description	554
11.35.2 Field Documentation	554
11.36 CFE_ES_ResetPRCountCmd Struct Reference	554
11.36.1 Detailed Description	555
11.36.2 Field Documentation	555
11.37 CFE_ES_RestartAppCmd Struct Reference	555
11.37.1 Detailed Description	555
11.37.2 Field Documentation	555
11.38 CFE_ES_RestartCmd Struct Reference	555
11.38.1 Detailed Description	556
11.38.2 Field Documentation	556
11.39 CFE_ES_RestartCmd_Payload Struct Reference	556
11.39.1 Detailed Description	556
11.39.2 Field Documentation	556
11.40 CFE_ES_SendHkCmd Struct Reference	557
11.40.1 Detailed Description	557
11.40.2 Field Documentation	557
11.41 CFE_ES_SendMemPoolStatsCmd Struct Reference	557
11.41.1 Detailed Description	557
11.41.2 Field Documentation	557

11.42 CFE_ES_SendMemPoolStatsCmd_Payload Struct Reference	558
11.42.1 Detailed Description	558
11.42.2 Field Documentation	558
11.43 CFE_ES_SetMaxPRCountCmd Struct Reference	558
11.43.1 Detailed Description	558
11.43.2 Field Documentation	559
11.44 CFE_ES_SetMaxPRCountCmd_Payload Struct Reference	559
11.44.1 Detailed Description	559
11.44.2 Field Documentation	559
11.45 CFE_ES_SetPerfFilterMaskCmd Struct Reference	559
11.45.1 Detailed Description	560
11.45.2 Field Documentation	560
11.46 CFE_ES_SetPerfFilterMaskCmd_Payload Struct Reference	560
11.46.1 Detailed Description	560
11.46.2 Field Documentation	560
11.47 CFE_ES_SetPerfTriggerMaskCmd Struct Reference	561
11.47.1 Detailed Description	561
11.47.2 Field Documentation	561
11.48 CFE_ES_SetPerfTrigMaskCmd_Payload Struct Reference	561
11.48.1 Detailed Description	561
11.48.2 Field Documentation	561
11.49 CFE_ES_StartApp Struct Reference	562
11.49.1 Detailed Description	562
11.49.2 Field Documentation	562
11.50 CFE_ES_StartAppCmd_Payload Struct Reference	562
11.50.1 Detailed Description	563
11.50.2 Field Documentation	563
11.51 CFE_ES_StartPerfCmd_Payload Struct Reference	564
11.51.1 Detailed Description	564
11.51.2 Field Documentation	564
11.52 CFE_ES_StartPerfDataCmd Struct Reference	564
11.52.1 Detailed Description	564
11.52.2 Field Documentation	564
11.53 CFE_ES_StopAppCmd Struct Reference	565
11.53.1 Detailed Description	565
11.53.2 Field Documentation	565
11.54 CFE_ES_StopPerfCmd_Payload Struct Reference	565
11.54.1 Detailed Description	566
11.54.2 Field Documentation	566

11.55 CFE_ES_StopPerfDataCmd Struct Reference	566
11.55.1 Detailed Description	566
11.55.2 Field Documentation	566
11.56 CFE_ES_TaskInfo Struct Reference	566
11.56.1 Detailed Description	567
11.56.2 Field Documentation	567
11.57 CFE_ES_WriteERLogCmd Struct Reference	568
11.57.1 Detailed Description	568
11.57.2 Field Documentation	568
11.58 CFE_ES_WriteSysLogCmd Struct Reference	569
11.58.1 Detailed Description	569
11.58.2 Field Documentation	569
11.59 CFE_EVS_AddEventFilterCmd Struct Reference	569
11.59.1 Detailed Description	569
11.59.2 Field Documentation	569
11.60 CFE_EVS_AppDataCmd_Payload Struct Reference	570
11.60.1 Detailed Description	570
11.60.2 Field Documentation	570
11.61 CFE_EVS_AppNameBitMaskCmd_Payload Struct Reference	570
11.61.1 Detailed Description	570
11.61.2 Field Documentation	571
11.62 CFE_EVS_AppNameCmd_Payload Struct Reference	571
11.62.1 Detailed Description	571
11.62.2 Field Documentation	571
11.63 CFE_EVS_AppNameEventIDCmd_Payload Struct Reference	571
11.63.1 Detailed Description	572
11.63.2 Field Documentation	572
11.64 CFE_EVS_AppNameEventIDMaskCmd_Payload Struct Reference	572
11.64.1 Detailed Description	572
11.64.2 Field Documentation	572
11.65 CFE_EVS_AppTlmData Struct Reference	573
11.65.1 Detailed Description	573
11.65.2 Field Documentation	573
11.66 CFE_EVS_BinFilter Struct Reference	574
11.66.1 Detailed Description	574
11.66.2 Field Documentation	574
11.67 CFE_EVS_BitMaskCmd_Payload Struct Reference	574
11.67.1 Detailed Description	575
11.67.2 Field Documentation	575

11.68 CFE_EVS_ClearLogCmd Struct Reference	575
11.68.1 Detailed Description	575
11.68.2 Field Documentation	575
11.69 CFE_EVS_DeleteEventFilterCmd Struct Reference	576
11.69.1 Detailed Description	576
11.69.2 Field Documentation	576
11.70 CFE_EVS_DisableAppEventsCmd Struct Reference	576
11.70.1 Detailed Description	576
11.70.2 Field Documentation	576
11.71 CFE_EVS_DisableAppEventTypeCmd Struct Reference	577
11.71.1 Detailed Description	577
11.71.2 Field Documentation	577
11.72 CFE_EVS_DisableEventTypeCmd Struct Reference	577
11.72.1 Detailed Description	577
11.72.2 Field Documentation	578
11.73 CFE_EVS_DisablePortsCmd Struct Reference	578
11.73.1 Detailed Description	578
11.73.2 Field Documentation	578
11.74 CFE_EVS_EnableAppEventsCmd Struct Reference	578
11.74.1 Detailed Description	579
11.74.2 Field Documentation	579
11.75 CFE_EVS_EnableAppEventTypeCmd Struct Reference	579
11.75.1 Detailed Description	579
11.75.2 Field Documentation	579
11.76 CFE_EVS_EnableEventTypeCmd Struct Reference	580
11.76.1 Detailed Description	580
11.76.2 Field Documentation	580
11.77 CFE_EVS_EnablePortsCmd Struct Reference	580
11.77.1 Detailed Description	580
11.77.2 Field Documentation	581
11.78 CFE_EVS_HousekeepingTlm Struct Reference	581
11.78.1 Detailed Description	581
11.78.2 Field Documentation	581
11.79 CFE_EVS_HousekeepingTlm_Payload Struct Reference	581
11.79.1 Detailed Description	582
11.79.2 Field Documentation	582
11.80 CFE_EVS_LogFileCmd_Payload Struct Reference	585
11.80.1 Detailed Description	585
11.80.2 Field Documentation	585

11.81 CFE_EVS_LongEventTlm Struct Reference	585
11.81.1 Detailed Description	585
11.81.2 Field Documentation	585
11.82 CFE_EVS_LongEventTlm_Payload Struct Reference	586
11.82.1 Detailed Description	586
11.82.2 Field Documentation	586
11.83 CFE_EVS_NoopCmd Struct Reference	587
11.83.1 Detailed Description	587
11.83.2 Field Documentation	587
11.84 CFE_EVS_PacketID Struct Reference	587
11.84.1 Detailed Description	587
11.84.2 Field Documentation	588
11.85 CFE_EVS_ResetAllFiltersCmd Struct Reference	588
11.85.1 Detailed Description	589
11.85.2 Field Documentation	589
11.86 CFE_EVS_ResetAppCounterCmd Struct Reference	589
11.86.1 Detailed Description	589
11.86.2 Field Documentation	589
11.87 CFE_EVS_ResetCountersCmd Struct Reference	589
11.87.1 Detailed Description	590
11.87.2 Field Documentation	590
11.88 CFE_EVS_ResetFilterCmd Struct Reference	590
11.88.1 Detailed Description	590
11.88.2 Field Documentation	590
11.89 CFE_EVS_SendHkCmd Struct Reference	590
11.89.1 Detailed Description	591
11.89.2 Field Documentation	591
11.90 CFE_EVS_SetEventFormatCode_Payload Struct Reference	591
11.90.1 Detailed Description	591
11.90.2 Field Documentation	591
11.91 CFE_EVS_SetEventFormatModeCmd Struct Reference	592
11.91.1 Detailed Description	592
11.91.2 Field Documentation	592
11.92 CFE_EVS_SetFilterCmd Struct Reference	592
11.92.1 Detailed Description	592
11.92.2 Field Documentation	592
11.93 CFE_EVS_SetLogMode_Payload Struct Reference	593
11.93.1 Detailed Description	593
11.93.2 Field Documentation	593

11.94 CFE_EVS_SetLogModeCmd Struct Reference	593
11.94.1 Detailed Description	594
11.94.2 Field Documentation	594
11.95 CFE_EVS_ShortEventTlm Struct Reference	594
11.95.1 Detailed Description	594
11.95.2 Field Documentation	594
11.96 CFE_EVS_ShortEventTlm_Payload Struct Reference	595
11.96.1 Detailed Description	595
11.96.2 Field Documentation	595
11.97 CFE_EVS_WriteAppDataFileCmd Struct Reference	595
11.97.1 Detailed Description	595
11.97.2 Field Documentation	595
11.98 CFE_EVS_WriteLogDataFileCmd Struct Reference	596
11.98.1 Detailed Description	596
11.98.2 Field Documentation	596
11.99 CFE_FS_FileWriteMetaData Struct Reference	596
11.99.1 Detailed Description	597
11.99.2 Field Documentation	597
11.100 CFE_FS_Header Struct Reference	598
11.100.1 Detailed Description	598
11.100.2 Field Documentation	598
11.101 CFE_SB_AllSubscriptionsTlm Struct Reference	599
11.101.1 Detailed Description	599
11.101.2 Field Documentation	599
11.102 CFE_SB_AllSubscriptionsTlm_Payload Struct Reference	600
11.102.1 Detailed Description	600
11.102.2 Field Documentation	600
11.103 CFE_SB_DisableRouteCmd Struct Reference	601
11.103.1 Detailed Description	601
11.103.2 Field Documentation	601
11.104 CFE_SB_DisableSubReportingCmd Struct Reference	601
11.104.1 Detailed Description	601
11.104.2 Field Documentation	602
11.105 CFE_SB_EnableRouteCmd Struct Reference	602
11.105.1 Detailed Description	602
11.105.2 Field Documentation	602
11.106 CFE_SB_EnableSubReportingCmd Struct Reference	602
11.106.1 Detailed Description	602
11.106.2 Field Documentation	603

11.107 CFE_SB_HousekeepingTlm Struct Reference	603
11.107.1 Detailed Description	603
11.107.2 Field Documentation	603
11.108 CFE_SB_HousekeepingTlm_Payload Struct Reference	603
11.108.1 Detailed Description	604
11.108.2 Field Documentation	604
11.109 CFE_SB_Msg Union Reference	607
11.109.1 Detailed Description	607
11.109.2 Field Documentation	607
11.110 CFE_SB_MsgId_t Struct Reference	608
11.110.1 Detailed Description	608
11.110.2 Field Documentation	608
11.111 CFE_SB_MsgMapFileEntry Struct Reference	608
11.111.1 Detailed Description	608
11.111.2 Field Documentation	608
11.112 CFE_SB_NoopCmd Struct Reference	609
11.112.1 Detailed Description	609
11.112.2 Field Documentation	609
11.113 CFE_SB_PipeDepthStats Struct Reference	609
11.113.1 Detailed Description	610
11.113.2 Field Documentation	610
11.114 CFE_SB_PipeInfoEntry Struct Reference	610
11.114.1 Detailed Description	611
11.114.2 Field Documentation	611
11.115 CFE_SB_Qos_t Struct Reference	612
11.115.1 Detailed Description	612
11.115.2 Field Documentation	612
11.116 CFE_SB_ResetCountersCmd Struct Reference	613
11.116.1 Detailed Description	613
11.116.2 Field Documentation	613
11.117 CFE_SB_RouteCmd_Payload Struct Reference	613
11.117.1 Detailed Description	613
11.117.2 Field Documentation	613
11.118 CFE_SB_RoutingFileEntry Struct Reference	614
11.118.1 Detailed Description	614
11.118.2 Field Documentation	614
11.119 CFE_SB_SendHkCmd Struct Reference	615
11.119.1 Detailed Description	615
11.119.2 Field Documentation	615

11.120 CFE_SB_SendPrevSubsCmd Struct Reference	615
11.120.1 Detailed Description	616
11.120.2 Field Documentation	616
11.121 CFE_SB_SendSbStatsCmd Struct Reference	616
11.121.1 Detailed Description	616
11.121.2 Field Documentation	616
11.122 CFE_SB_SingleSubscriptionTlm Struct Reference	616
11.122.1 Detailed Description	616
11.122.2 Field Documentation	617
11.123 CFE_SB_SingleSubscriptionTlm_Payload Struct Reference	617
11.123.1 Detailed Description	617
11.123.2 Field Documentation	617
11.124 CFE_SB_StatsTlm Struct Reference	618
11.124.1 Detailed Description	618
11.124.2 Field Documentation	618
11.125 CFE_SB_StatsTlm_Payload Struct Reference	618
11.125.1 Detailed Description	619
11.125.2 Field Documentation	619
11.126 CFE_SB_SubEntries Struct Reference	622
11.126.1 Detailed Description	622
11.126.2 Field Documentation	622
11.127 CFE_SB_WriteFileInfoCmd_Payload Struct Reference	623
11.127.1 Detailed Description	623
11.127.2 Field Documentation	623
11.128 CFE_SB_WriteMapInfoCmd Struct Reference	623
11.128.1 Detailed Description	623
11.128.2 Field Documentation	623
11.129 CFE_SB_WritePipeInfoCmd Struct Reference	624
11.129.1 Detailed Description	624
11.129.2 Field Documentation	624
11.130 CFE_SB_WriteRoutingInfoCmd Struct Reference	624
11.130.1 Detailed Description	624
11.130.2 Field Documentation	625
11.131 CFE_TBL_AbortLoadCmd Struct Reference	625
11.131.1 Detailed Description	625
11.131.2 Field Documentation	625
11.132 CFE_TBL_AbortLoadCmd_Payload Struct Reference	625
11.132.1 Detailed Description	626
11.132.2 Field Documentation	626

11.133 CFE_TBL_ActivateCmd Struct Reference	626
11.133.1 Detailed Description	626
11.133.2 Field Documentation	626
11.134 CFE_TBL_ActivateCmd_Payload Struct Reference	627
11.134.1 Detailed Description	627
11.134.2 Field Documentation	627
11.135 CFE_TBL_DelCDSCmd_Payload Struct Reference	627
11.135.1 Detailed Description	627
11.135.2 Field Documentation	627
11.136 CFE_TBL_DeleteCDSCmd Struct Reference	628
11.136.1 Detailed Description	628
11.136.2 Field Documentation	628
11.137 CFE_TBL_DumpCmd Struct Reference	628
11.137.1 Detailed Description	628
11.137.2 Field Documentation	628
11.138 CFE_TBL_DumpCmd_Payload Struct Reference	629
11.138.1 Detailed Description	629
11.138.2 Field Documentation	629
11.139 CFE_TBL_DumpRegistryCmd Struct Reference	630
11.139.1 Detailed Description	630
11.139.2 Field Documentation	630
11.140 CFE_TBL_DumpRegistryCmd_Payload Struct Reference	630
11.140.1 Detailed Description	630
11.140.2 Field Documentation	631
11.141 CFE_TBL_File_Hdr Struct Reference	631
11.141.1 Detailed Description	631
11.141.2 Field Documentation	631
11.142 CFE_TBL_FileDef Struct Reference	632
11.142.1 Detailed Description	632
11.142.2 Field Documentation	632
11.143 CFE_TBL_HousekeepingTlm Struct Reference	633
11.143.1 Detailed Description	633
11.143.2 Field Documentation	633
11.144 CFE_TBL_HousekeepingTlm_Payload Struct Reference	634
11.144.1 Detailed Description	635
11.144.2 Field Documentation	635
11.145 CFE_TBL_Info Struct Reference	638
11.145.1 Detailed Description	638
11.145.2 Field Documentation	638

11.146 CFE_TBL_LoadCmd Struct Reference	640
11.146.1 Detailed Description	640
11.146.2 Field Documentation	640
11.147 CFE_TBL_LoadCmd_Payload Struct Reference	640
11.147.1 Detailed Description	640
11.147.2 Field Documentation	640
11.148 CFE_TBL_NoopCmd Struct Reference	641
11.148.1 Detailed Description	641
11.148.2 Field Documentation	641
11.149 CFE_TBL_NotifyCmd Struct Reference	641
11.149.1 Detailed Description	641
11.149.2 Field Documentation	641
11.150 CFE_TBL_NotifyCmd_Payload Struct Reference	642
11.150.1 Detailed Description	642
11.150.2 Field Documentation	642
11.151 CFE_TBL_ResetCountersCmd Struct Reference	642
11.151.1 Detailed Description	642
11.151.2 Field Documentation	642
11.152 CFE_TBL_SendHkCmd Struct Reference	643
11.152.1 Detailed Description	643
11.152.2 Field Documentation	643
11.153 CFE_TBL_SendRegistryCmd Struct Reference	643
11.153.1 Detailed Description	643
11.153.2 Field Documentation	643
11.154 CFE_TBL_SendRegistryCmd_Payload Struct Reference	644
11.154.1 Detailed Description	644
11.154.2 Field Documentation	644
11.155 CFE_TBL_TableRegistryTlm Struct Reference	644
11.155.1 Detailed Description	644
11.155.2 Field Documentation	645
11.156 CFE_TBL_TblRegPacket_Payload Struct Reference	645
11.156.1 Detailed Description	646
11.156.2 Field Documentation	646
11.157 CFE_TBL_ValidateCmd Struct Reference	648
11.157.1 Detailed Description	648
11.157.2 Field Documentation	648
11.158 CFE_TBL_ValidateCmd_Payload Struct Reference	649
11.158.1 Detailed Description	649
11.158.2 Field Documentation	649

11.159 CFE_TIME_AddAdjustCmd Struct Reference	649
11.159.1 Detailed Description	650
11.159.2 Field Documentation	650
11.160 CFE_TIME_AddDelayCmd Struct Reference	650
11.160.1 Detailed Description	650
11.160.2 Field Documentation	650
11.161 CFE_TIME_AddOneHzAdjustmentCmd Struct Reference	651
11.161.1 Detailed Description	651
11.161.2 Field Documentation	651
11.162 CFE_TIME_DiagnosticTlm Struct Reference	651
11.162.1 Detailed Description	651
11.162.2 Field Documentation	652
11.163 CFE_TIME_DiagnosticTlm_Payload Struct Reference	652
11.163.1 Detailed Description	654
11.163.2 Field Documentation	654
11.164 CFE_TIME_FakeToneCmd Struct Reference	660
11.164.1 Detailed Description	660
11.164.2 Field Documentation	660
11.165 CFE_TIME_HousekeepingTlm Struct Reference	660
11.165.1 Detailed Description	661
11.165.2 Field Documentation	661
11.166 CFE_TIME_HousekeepingTlm_Payload Struct Reference	661
11.166.1 Detailed Description	662
11.166.2 Field Documentation	662
11.167 CFE_TIME_LeapsCmd_Payload Struct Reference	664
11.167.1 Detailed Description	664
11.167.2 Field Documentation	664
11.168 CFE_TIME_NoopCmd Struct Reference	664
11.168.1 Detailed Description	664
11.168.2 Field Documentation	665
11.169 CFE_TIME_OneHzAdjustmentCmd_Payload Struct Reference	665
11.169.1 Detailed Description	665
11.169.2 Field Documentation	665
11.170 CFE_TIME_OneHzCmd Struct Reference	665
11.170.1 Detailed Description	665
11.170.2 Field Documentation	665
11.171 CFE_TIME_ResetCountersCmd Struct Reference	666
11.171.1 Detailed Description	666
11.171.2 Field Documentation	666

11.172 CFE_TIME_SendDiagnosticCmd Struct Reference	666
11.172.1 Detailed Description	666
11.172.2 Field Documentation	666
11.173 CFE_TIME_SendHkCmd Struct Reference	667
11.173.1 Detailed Description	667
11.173.2 Field Documentation	667
11.174 CFE_TIME_SetLeapSecondsCmd Struct Reference	667
11.174.1 Detailed Description	667
11.174.2 Field Documentation	667
11.175 CFE_TIME_SetMETCmd Struct Reference	668
11.175.1 Detailed Description	668
11.175.2 Field Documentation	668
11.176 CFE_TIME_SetSignalCmd Struct Reference	668
11.176.1 Detailed Description	668
11.176.2 Field Documentation	668
11.177 CFE_TIME_SetSourceCmd Struct Reference	669
11.177.1 Detailed Description	669
11.177.2 Field Documentation	669
11.178 CFE_TIME_SetStateCmd Struct Reference	669
11.178.1 Detailed Description	670
11.178.2 Field Documentation	670
11.179 CFE_TIME_SetSTCFCmd Struct Reference	670
11.179.1 Detailed Description	670
11.179.2 Field Documentation	670
11.180 CFE_TIME_SetTimeCmd Struct Reference	671
11.180.1 Detailed Description	671
11.180.2 Field Documentation	671
11.181 CFE_TIME_SignalCmd_Payload Struct Reference	671
11.181.1 Detailed Description	671
11.181.2 Field Documentation	672
11.182 CFE_TIME_SourceCmd_Payload Struct Reference	672
11.182.1 Detailed Description	672
11.182.2 Field Documentation	672
11.183 CFE_TIME_StateCmd_Payload Struct Reference	672
11.183.1 Detailed Description	673
11.183.2 Field Documentation	673
11.184 CFE_TIME_SubAdjustCmd Struct Reference	673
11.184.1 Detailed Description	673
11.184.2 Field Documentation	673

11.185 CFE_TIME_SubDelayCmd Struct Reference	673
11.185.1 Detailed Description	674
11.185.2 Field Documentation	674
11.186 CFE_TIME_SubOneHzAdjustmentCmd Struct Reference	674
11.186.1 Detailed Description	674
11.186.2 Field Documentation	674
11.187 CFE_TIME_SysTime Struct Reference	675
11.187.1 Detailed Description	675
11.187.2 Field Documentation	675
11.188 CFE_TIME_TimeCmd_Payload Struct Reference	675
11.188.1 Detailed Description	676
11.188.2 Field Documentation	676
11.189 CFE_TIME_ToneDataCmd Struct Reference	676
11.189.1 Detailed Description	676
11.189.2 Field Documentation	676
11.190 CFE_TIME_ToneDataCmd_Payload Struct Reference	677
11.190.1 Detailed Description	677
11.190.2 Field Documentation	677
11.191 CFE_TIME_ToneSignalCmd Struct Reference	677
11.191.1 Detailed Description	678
11.191.2 Field Documentation	678
11.192 FM_ChildQueueEntry_t Struct Reference	678
11.192.1 Detailed Description	679
11.192.2 Field Documentation	679
11.193 FM_ConcatFilesCmd_t Struct Reference	681
11.193.1 Detailed Description	681
11.193.2 Field Documentation	681
11.194 FM_CopyFileCmd_t Struct Reference	681
11.194.1 Detailed Description	681
11.194.2 Field Documentation	681
11.195 FM_CreateDirectoryCmd_t Struct Reference	682
11.195.1 Detailed Description	682
11.195.2 Field Documentation	682
11.196 FM_DecompressFileCmd_t Struct Reference	682
11.196.1 Detailed Description	683
11.196.2 Field Documentation	683
11.197 FM_Decompressor_State Struct Reference	683
11.197.1 Detailed Description	683
11.197.2 Field Documentation	683

11.198 FM_DeleteAllFilesCmd_t Struct Reference	684
11.198.1 Detailed Description	684
11.198.2 Field Documentation	684
11.199 FM_DeleteDirectoryCmd_t Struct Reference	684
11.199.1 Detailed Description	684
11.199.2 Field Documentation	684
11.200 FM_DeleteFileCmd_t Struct Reference	685
11.200.1 Detailed Description	685
11.200.2 Field Documentation	685
11.201 FM_DirectoryName_Payload_t Struct Reference	685
11.201.1 Detailed Description	686
11.201.2 Field Documentation	686
11.202 FM_DirListEntry_t Struct Reference	686
11.202.1 Detailed Description	686
11.202.2 Field Documentation	686
11.203 FM_DirListFileStats_t Struct Reference	687
11.203.1 Detailed Description	687
11.203.2 Field Documentation	687
11.204 FM_DirListPkt_Payload_t Struct Reference	688
11.204.1 Detailed Description	688
11.204.2 Field Documentation	688
11.205 FM_DirListPkt_t Struct Reference	689
11.205.1 Detailed Description	689
11.205.2 Field Documentation	689
11.206 FM_FileInfoPkt_Payload_t Struct Reference	689
11.206.1 Detailed Description	690
11.206.2 Field Documentation	690
11.207 FM_FileInfoPkt_t Struct Reference	691
11.207.1 Detailed Description	691
11.207.2 Field Documentation	691
11.208 FM_FilenameAndCRC_Payload_t Struct Reference	692
11.208.1 Detailed Description	692
11.208.2 Field Documentation	692
11.209 FM_FilenameAndMode_Payload_t Struct Reference	692
11.209.1 Detailed Description	693
11.209.2 Field Documentation	693
11.210 FM_GetDirectoryToFile_Payload_t Struct Reference	693
11.210.1 Detailed Description	693
11.210.2 Field Documentation	693

11.211 FM_GetDirectoryToPkt_Payload_t Struct Reference	694
11.211.1 Detailed Description	694
11.211.2 Field Documentation	694
11.212 FM_GetDirListFileCmd_t Struct Reference	695
11.212.1 Detailed Description	695
11.212.2 Field Documentation	695
11.213 FM_GetDirListPktCmd_t Struct Reference	696
11.213.1 Detailed Description	696
11.213.2 Field Documentation	696
11.214 FM_GetFileInfoCmd_t Struct Reference	696
11.214.1 Detailed Description	696
11.214.2 Field Documentation	696
11.215 FM_GetOpenFilesCmd_t Struct Reference	697
11.215.1 Detailed Description	697
11.215.2 Field Documentation	697
11.216 FM_GlobalData_t Struct Reference	697
11.216.1 Detailed Description	699
11.216.2 Field Documentation	699
11.217 FM_HousekeepingPkt_Payload_t Struct Reference	703
11.217.1 Detailed Description	704
11.217.2 Field Documentation	704
11.218 FM_HousekeepingPkt_t Struct Reference	705
11.218.1 Detailed Description	705
11.218.2 Field Documentation	705
11.219 FM_MonitorFilesystemSpaceCmd_t Struct Reference	706
11.219.1 Detailed Description	706
11.219.2 Field Documentation	706
11.220 FM_MonitorReportEntry_t Struct Reference	706
11.220.1 Detailed Description	706
11.220.2 Field Documentation	706
11.221 FM_MonitorReportPkt_Payload_t Struct Reference	707
11.221.1 Detailed Description	707
11.221.2 Field Documentation	707
11.222 FM_MonitorReportPkt_t Struct Reference	708
11.222.1 Detailed Description	708
11.222.2 Field Documentation	708
11.223 FM_MonitorTable_t Struct Reference	708
11.223.1 Detailed Description	708
11.223.2 Field Documentation	708

11.224 FM_MonitorTableEntry_t Struct Reference	709
11.224.1 Detailed Description	709
11.224.2 Field Documentation	709
11.225 FM_MoveFileCmd_t Struct Reference	709
11.225.1 Detailed Description	710
11.225.2 Field Documentation	710
11.226 FM_NoopCmd_t Struct Reference	710
11.226.1 Detailed Description	710
11.226.2 Field Documentation	710
11.227 FM_OpenFilesEntry_t Struct Reference	711
11.227.1 Detailed Description	711
11.227.2 Field Documentation	711
11.228 FM_OpenFilesPkt_Payload_t Struct Reference	711
11.228.1 Detailed Description	711
11.228.2 Field Documentation	711
11.229 FM_OpenFilesPkt_t Struct Reference	712
11.229.1 Detailed Description	712
11.229.2 Field Documentation	712
11.230 FM_OvvSourceTargetFilename_Payload_t Struct Reference	712
11.230.1 Detailed Description	713
11.230.2 Field Documentation	713
11.231 FM_RenameFileCmd_t Struct Reference	713
11.231.1 Detailed Description	714
11.231.2 Field Documentation	714
11.232 FM_ResetCountersCmd_t Struct Reference	714
11.232.1 Detailed Description	714
11.232.2 Field Documentation	714
11.233 FM_SendHkCmd_t Struct Reference	714
11.233.1 Detailed Description	715
11.233.2 Field Documentation	715
11.234 FM_SetPermissionsCmd_t Struct Reference	715
11.234.1 Detailed Description	715
11.234.2 Field Documentation	715
11.235 FM_SetTableStateCmd_t Struct Reference	716
11.235.1 Detailed Description	716
11.235.2 Field Documentation	716
11.236 FM_SingleFilename_Payload_t Struct Reference	716
11.236.1 Detailed Description	716
11.236.2 Field Documentation	716

11.237 FM_SourceTargetFileName_Payload_t Struct Reference	717
11.237.1 Detailed Description	717
11.237.2 Field Documentation	717
11.238 FM_TableIndexAndState_Payload_t Struct Reference	717
11.238.1 Detailed Description	718
11.238.2 Field Documentation	718
11.239 FM_TwoSourceOneTarget_Payload_t Struct Reference	718
11.239.1 Detailed Description	718
11.239.2 Field Documentation	718
11.240 OS_bin_sem_prop_t Struct Reference	719
11.240.1 Detailed Description	719
11.240.2 Field Documentation	719
11.241 OS_condvar_prop_t Struct Reference	719
11.241.1 Detailed Description	720
11.241.2 Field Documentation	720
11.242 OS_count_sem_prop_t Struct Reference	720
11.242.1 Detailed Description	720
11.242.2 Field Documentation	720
11.243 os_dirent_t Struct Reference	721
11.243.1 Detailed Description	721
11.243.2 Field Documentation	721
11.244 OS_FdSet Struct Reference	721
11.244.1 Detailed Description	721
11.244.2 Field Documentation	721
11.245 OS_file_prop_t Struct Reference	722
11.245.1 Detailed Description	722
11.245.2 Field Documentation	722
11.246 os_fsinfo_t Struct Reference	722
11.246.1 Detailed Description	723
11.246.2 Field Documentation	723
11.247 os_fstat_t Struct Reference	723
11.247.1 Detailed Description	723
11.247.2 Field Documentation	724
11.248 OS_heap_prop_t Struct Reference	724
11.248.1 Detailed Description	724
11.248.2 Field Documentation	724
11.249 OS_module_address_t Struct Reference	725
11.249.1 Detailed Description	725
11.249.2 Field Documentation	725

11.250 OS_module_prop_t Struct Reference	726
11.250.1 Detailed Description	726
11.250.2 Field Documentation	726
11.251 OS_mut_sem_prop_t Struct Reference	726
11.251.1 Detailed Description	727
11.251.2 Field Documentation	727
11.252 OS_queue_prop_t Struct Reference	727
11.252.1 Detailed Description	727
11.252.2 Field Documentation	727
11.253 OS_SockAddr_t Struct Reference	728
11.253.1 Detailed Description	728
11.253.2 Field Documentation	728
11.254 OS_SockAddrData_t Union Reference	728
11.254.1 Detailed Description	728
11.254.2 Field Documentation	729
11.255 OS_socket_prop_t Struct Reference	729
11.255.1 Detailed Description	729
11.255.2 Field Documentation	729
11.256 OS_static_symbol_record_t Struct Reference	730
11.256.1 Detailed Description	730
11.256.2 Field Documentation	730
11.257 OS_statvfs_t Struct Reference	730
11.257.1 Detailed Description	730
11.257.2 Field Documentation	731
11.258 OS_task_prop_t Struct Reference	731
11.258.1 Detailed Description	731
11.258.2 Field Documentation	731
11.259 OS_time_t Struct Reference	732
11.259.1 Detailed Description	732
11.259.2 Field Documentation	732
11.260 OS_timebase_prop_t Struct Reference	732
11.260.1 Detailed Description	733
11.260.2 Field Documentation	733
11.261 OS_timer_prop_t Struct Reference	733
11.261.1 Detailed Description	733
11.261.2 Field Documentation	734
12 File Documentation	734
12.1 apps/fm/docs/dox_src/cfs_fm.dox File Reference	734

12.2 apps/fm/fsw/inc/fm_events.h File Reference	734
12.2.1 Detailed Description	744
12.3 apps/fm/fsw/inc/fm_extern_typedefs.h File Reference	744
12.3.1 Detailed Description	745
12.3.2 Macro Definition Documentation	745
12.4 apps/fm/fsw/inc/fm_msg.h File Reference	745
12.4.1 Detailed Description	748
12.4.2 Enumeration Type Documentation	748
12.5 apps/fm/fsw/inc/fm_msgdefs.h File Reference	748
12.5.1 Detailed Description	749
12.6 apps/fm/fsw/inc/fm_msgids.h File Reference	749
12.6.1 Detailed Description	749
12.7 apps/fm/fsw/inc/fm_perfids.h File Reference	749
12.7.1 Detailed Description	750
12.8 apps/fm/fsw/inc/fm_platform_cfg.h File Reference	750
12.8.1 Detailed Description	751
12.9 apps/fm/fsw/src/fm_app.c File Reference	751
12.9.1 Detailed Description	751
12.9.2 Function Documentation	751
12.9.3 Variable Documentation	755
12.10 apps/fm/fsw/src/fm_app.h File Reference	756
12.10.1 Detailed Description	756
12.10.2 Macro Definition Documentation	756
12.10.3 Function Documentation	757
12.10.4 Variable Documentation	761
12.11 apps/fm/fsw/src/fm_child.c File Reference	761
12.11.1 Detailed Description	762
12.11.2 Macro Definition Documentation	762
12.11.3 Function Documentation	763
12.12 apps/fm/fsw/src/fm_child.h File Reference	787
12.12.1 Detailed Description	788
12.12.2 Function Documentation	789
12.13 apps/fm/fsw/src/fm_cmd_utils.c File Reference	813
12.13.1 Detailed Description	814
12.13.2 Function Documentation	815
12.13.3 Variable Documentation	832
12.14 apps/fm/fsw/src/fm_cmd_utils.h File Reference	833
12.14.1 Detailed Description	834
12.14.2 Enumeration Type Documentation	834

12.14.3 Function Documentation	834
12.15 apps/fm/fsw/src/fm_cmds.c File Reference	850
12.15.1 Detailed Description	851
12.15.2 Macro Definition Documentation	851
12.15.3 Function Documentation	852
12.16 apps/fm/fsw/src/fm_cmds.h File Reference	871
12.16.1 Detailed Description	872
12.16.2 Function Documentation	872
12.17 apps/fm/fsw/src/fm_compression.h File Reference	892
12.17.1 Detailed Description	892
12.17.2 Typedef Documentation	892
12.17.3 Function Documentation	893
12.18 apps/fm/fsw/src/fm_compression_fplib.c File Reference	894
12.18.1 Detailed Description	895
12.18.2 Function Documentation	895
12.18.3 Variable Documentation	896
12.19 apps/fm/fsw/src/fm_compression_none.c File Reference	896
12.19.1 Detailed Description	897
12.19.2 Function Documentation	897
12.20 apps/fm/fsw/src/fm_compression_zlib.c File Reference	898
12.20.1 Detailed Description	899
12.20.2 Function Documentation	899
12.21 apps/fm/fsw/src/fm_dispatch.c File Reference	900
12.21.1 Detailed Description	901
12.21.2 Function Documentation	901
12.22 apps/fm/fsw/src/fm_dispatch.h File Reference	913
12.22.1 Detailed Description	913
12.22.2 Function Documentation	914
12.23 apps/fm/fsw/src/fm_tbl.c File Reference	926
12.23.1 Detailed Description	926
12.23.2 Function Documentation	926
12.24 apps/fm/fsw/src/fm_tbl.h File Reference	930
12.24.1 Detailed Description	930
12.24.2 Function Documentation	930
12.25 apps/fm/fsw/src/fm_verify.h File Reference	934
12.25.1 Detailed Description	934
12.26 apps/fm/fsw/src/fm_version.h File Reference	934
12.26.1 Detailed Description	934
12.27 apps/fm/fsw/tables/fm_monitor.c File Reference	934

12.27.1 Detailed Description	935
12.27.2 Variable Documentation	935
12.28 buildosal_public_apiincosconfig.h File Reference	935
12.28.1 Macro Definition Documentation	936
12.29 cfe/cmake/sample_defs/example_mission_cfg.h File Reference	941
12.29.1 Detailed Description	942
12.29.2 Macro Definition Documentation	942
12.30 cfe/cmake/sample_defs/example_platform_cfg.h File Reference	952
12.30.1 Detailed Description	956
12.30.2 Macro Definition Documentation	956
12.31 cfe/cmake/sample_defs/sample_perfids.h File Reference	995
12.31.1 Detailed Description	996
12.31.2 Macro Definition Documentation	996
12.32 cfe/docs/src/cfe_api.dox File Reference	998
12.33 cfe/docs/src/cfe_es.dox File Reference	998
12.34 cfe/docs/src/cfe_evs.dox File Reference	998
12.35 cfe/docs/src/cfe_frontpage.dox File Reference	998
12.36 cfe/docs/src/cfe_glossary.dox File Reference	998
12.37 cfe/docs/src/cfe_sb.dox File Reference	998
12.38 cfe/docs/src/cfe_tbl.dox File Reference	998
12.39 cfe/docs/src/cfe_time.dox File Reference	998
12.40 cfe/docs/src/cfe_xref.dox File Reference	998
12.41 cfe/docs/src/cfs_versions.dox File Reference	998
12.42 cfe/modules/config/fsw/inc/cfe_config_external.h File Reference	998
12.42.1 Detailed Description	998
12.42.2 Function Documentation	998
12.43 cfe/modules/config/fsw/inc/cfe_config_init.h File Reference	998
12.43.1 Detailed Description	998
12.43.2 Function Documentation	999
12.44 cfe/modules/config/fsw/inc/cfe_config_lookup.h File Reference	999
12.44.1 Detailed Description	999
12.44.2 Function Documentation	999
12.45 cfe/modules/config/fsw/inc/cfe_config_nametable.h File Reference	999
12.45.1 Detailed Description	999
12.45.2 Typedef Documentation	1000
12.45.3 Variable Documentation	1000
12.46 cfe/modules/config/fsw/inc/cfe_config_set.h File Reference	1000
12.46.1 Detailed Description	1000
12.46.2 Function Documentation	1000

12.47 cfe/modules/config/fsw/inc/cfe_config_table.h File Reference	1001
12.47.1 Detailed Description	1001
12.47.2 Typedef Documentation	1001
12.47.3 Enumeration Type Documentation	1001
12.48 cfe/modules/core_api/config/default_cfe_core_api_base_msgids.h File Reference	1002
12.48.1 Detailed Description	1002
12.48.2 Macro Definition Documentation	1002
12.49 cfe/modules/core_api/config/default_cfe_core_api_interface_cfg.h File Reference	1004
12.49.1 Detailed Description	1004
12.49.2 Macro Definition Documentation	1004
12.50 cfe/modules/core_api/config/default_cfe_mission_cfg.h File Reference	1006
12.50.1 Detailed Description	1006
12.51 cfe/modules/core_api/config/default_cfe_msgids.h File Reference	1006
12.51.1 Detailed Description	1006
12.52 cfe/modules/core_api/fsw/inc/cfe.h File Reference	1006
12.52.1 Detailed Description	1007
12.53 cfe/modules/core_api/fsw/inc/cfe_config.h File Reference	1007
12.53.1 Detailed Description	1007
12.53.2 Function Documentation	1007
12.54 cfe/modules/core_api/fsw/inc/cfe_config_api_typedefs.h File Reference	1011
12.54.1 Detailed Description	1011
12.54.2 Macro Definition Documentation	1011
12.54.3 Typedef Documentation	1011
12.55 cfe/modules/core_api/fsw/inc/cfe_endian.h File Reference	1012
12.55.1 Detailed Description	1012
12.55.2 Macro Definition Documentation	1012
12.56 cfe/modules/core_api/fsw/inc/cfe_error.h File Reference	1012
12.56.1 Detailed Description	1019
12.56.2 Macro Definition Documentation	1019
12.56.3 Typedef Documentation	1020
12.56.4 Function Documentation	1020
12.57 cfe/modules/core_api/fsw/inc/cfe_es.h File Reference	1021
12.57.1 Detailed Description	1024
12.57.2 Macro Definition Documentation	1024
12.58 cfe/modules/core_api/fsw/inc/cfe_es_api_typedefs.h File Reference	1024
12.58.1 Detailed Description	1026
12.58.2 Macro Definition Documentation	1026
12.58.3 Typedef Documentation	1028
12.58.4 Enumeration Type Documentation	1029

12.59 cfe/modules/core_api/fsw/inc/cfe_evs.h File Reference	1029
12.59.1 Detailed Description	1030
12.59.2 Macro Definition Documentation	1030
12.60 cfe/modules/core_api/fsw/inc/cfe_evs_api_typedefs.h File Reference	1031
12.60.1 Detailed Description	1032
12.60.2 Macro Definition Documentation	1032
12.60.3 Typedef Documentation	1033
12.61 cfe/modules/core_api/fsw/inc/cfe_fs.h File Reference	1033
12.61.1 Detailed Description	1034
12.62 cfe/modules/core_api/fsw/inc/cfe_fs_api_typedefs.h File Reference	1034
12.62.1 Detailed Description	1035
12.62.2 Typedef Documentation	1035
12.62.3 Enumeration Type Documentation	1037
12.63 cfe/modules/core_api/fsw/inc/cfe_msg.h File Reference	1037
12.63.1 Detailed Description	1040
12.64 cfe/modules/core_api/fsw/inc/cfe_msg_api_typedefs.h File Reference	1040
12.64.1 Detailed Description	1041
12.64.2 Macro Definition Documentation	1041
12.64.3 Typedef Documentation	1041
12.64.4 Enumeration Type Documentation	1043
12.65 cfe/modules/core_api/fsw/inc/cfe_resourceid.h File Reference	1044
12.65.1 Detailed Description	1045
12.65.2 Macro Definition Documentation	1045
12.65.3 Function Documentation	1046
12.66 cfe/modules/core_api/fsw/inc/cfe_resourceid_api_typedefs.h File Reference	1049
12.66.1 Detailed Description	1050
12.66.2 Macro Definition Documentation	1050
12.67 cfe/modules/core_api/fsw/inc/cfe_sb.h File Reference	1050
12.67.1 Detailed Description	1052
12.67.2 Macro Definition Documentation	1052
12.68 cfe/modules/core_api/fsw/inc/cfe_sb_api_typedefs.h File Reference	1053
12.68.1 Detailed Description	1054
12.68.2 Macro Definition Documentation	1054
12.68.3 Typedef Documentation	1056
12.69 cfe/modules/core_api/fsw/inc/cfe_tbl.h File Reference	1056
12.69.1 Detailed Description	1057
12.70 cfe/modules/core_api/fsw/inc/cfe_tbl_api_typedefs.h File Reference	1057
12.70.1 Detailed Description	1058
12.70.2 Macro Definition Documentation	1058

12.70.3 Typedef Documentation	1059
12.70.4 Enumeration Type Documentation	1059
12.71 cfe/modules/core_api/fsw/inc/cfe_tbl_filedef.h File Reference	1059
12.71.1 Detailed Description	1060
12.71.2 Macro Definition Documentation	1060
12.71.3 Typedef Documentation	1061
12.72 cfe/modules/core_api/fsw/inc/cfe_time.h File Reference	1061
12.72.1 Detailed Description	1062
12.72.2 Macro Definition Documentation	1062
12.73 cfe/modules/core_api/fsw/inc/cfe_time_api_typedefs.h File Reference	1063
12.73.1 Detailed Description	1063
12.73.2 Macro Definition Documentation	1063
12.73.3 Typedef Documentation	1063
12.73.4 Enumeration Type Documentation	1064
12.74 cfe/modules/core_api/fsw/inc/cfe_version.h File Reference	1064
12.74.1 Detailed Description	1065
12.74.2 Macro Definition Documentation	1065
12.75 cfe/modules/es/config/default_cfe_es_extern_typedefs.h File Reference	1066
12.75.1 Detailed Description	1069
12.75.2 Macro Definition Documentation	1069
12.75.3 Typedef Documentation	1069
12.75.4 Enumeration Type Documentation	1073
12.76 cfe/modules/es/config/default_cfe_es_fcncodes.h File Reference	1075
12.76.1 Detailed Description	1076
12.76.2 Macro Definition Documentation	1076
12.77 cfe/modules/es/config/default_cfe_es_interface_cfg.h File Reference	1096
12.77.1 Detailed Description	1097
12.77.2 Macro Definition Documentation	1097
12.78 cfe/modules/es/config/default_cfe_es_internal_cfg.h File Reference	1099
12.78.1 Detailed Description	1101
12.78.2 Macro Definition Documentation	1101
12.79 cfe/modules/es/config/default_cfe_es_mission_cfg.h File Reference	1119
12.79.1 Detailed Description	1119
12.80 cfe/modules/es/config/default_cfe_es_msg.h File Reference	1119
12.80.1 Detailed Description	1119
12.81 cfe/modules/es/config/default_cfe_es_msgdefs.h File Reference	1119
12.81.1 Detailed Description	1121
12.81.2 Typedef Documentation	1121
12.81.3 Enumeration Type Documentation	1123

12.82 cfe/modules/es/config/default_cfe_es_msgids.h File Reference	1123
12.82.1 Detailed Description	1124
12.82.2 Macro Definition Documentation	1124
12.83 cfe/modules/es/config/default_cfe_es_msgstruct.h File Reference	1124
12.83.1 Detailed Description	1126
12.83.2 Typedef Documentation	1126
12.84 cfe/modules/es/config/default_cfe_es_platform_cfg.h File Reference	1128
12.84.1 Detailed Description	1129
12.85 cfe/modules/es/config/default_cfe_es_topicids.h File Reference	1129
12.85.1 Detailed Description	1129
12.85.2 Macro Definition Documentation	1129
12.86 cfe/modules/es/fsw/inc/cfe_es_eventids.h File Reference	1130
12.86.1 Detailed Description	1133
12.86.2 Macro Definition Documentation	1133
12.87 cfe/modules/evs/config/default_cfe_evs_extern_typedefs.h File Reference	1155
12.87.1 Detailed Description	1155
12.87.2 Typedef Documentation	1155
12.87.3 Enumeration Type Documentation	1156
12.88 cfe/modules/evs/config/default_cfe_evs_fcncodes.h File Reference	1158
12.88.1 Detailed Description	1158
12.88.2 Macro Definition Documentation	1158
12.89 cfe/modules/evs/config/default_cfe_evs_interface_cfg.h File Reference	1176
12.89.1 Detailed Description	1176
12.89.2 Macro Definition Documentation	1176
12.90 cfe/modules/evs/config/default_cfe_evs_internal_cfg.h File Reference	1177
12.90.1 Detailed Description	1177
12.90.2 Macro Definition Documentation	1177
12.91 cfe/modules/evs/config/default_cfe_evs_mission_cfg.h File Reference	1181
12.91.1 Detailed Description	1181
12.92 cfe/modules/evs/config/default_cfe_evs_msg.h File Reference	1181
12.92.1 Detailed Description	1181
12.93 cfe/modules/evs/config/default_cfe_evs_msgdefs.h File Reference	1181
12.93.1 Detailed Description	1183
12.93.2 Macro Definition Documentation	1183
12.93.3 Typedef Documentation	1183
12.94 cfe/modules/evs/config/default_cfe_evs_msgids.h File Reference	1185
12.94.1 Detailed Description	1185
12.94.2 Macro Definition Documentation	1185
12.95 cfe/modules/evs/config/default_cfe_evs_msgstruct.h File Reference	1186

12.95.1 Detailed Description	1187
12.95.2 Typedef Documentation	1187
12.96 cfe/modules/evs/config/default_cfe_evs_platform_cfg.h File Reference	1189
12.96.1 Detailed Description	1189
12.97 cfe/modules/evs/config/default_cfe_evs_topicids.h File Reference	1189
12.97.1 Detailed Description	1189
12.97.2 Macro Definition Documentation	1189
12.98 cfe/modules/evs/fsw/inc/cfe_evs_eventids.h File Reference	1190
12.98.1 Detailed Description	1192
12.98.2 Macro Definition Documentation	1192
12.99 cfe/modules/fs/config/default_cfe_fs_extern_typedefs.h File Reference	1202
12.99.1 Detailed Description	1202
12.100 cfe/modules/fs/config/default_cfe_fs_filedef.h File Reference	1202
12.100.1 Detailed Description	1203
12.100.2 Typedef Documentation	1203
12.100.3 Enumeration Type Documentation	1203
12.101 cfe/modules/fs/config/default_cfe_fs_interface_cfg.h File Reference	1204
12.101.1 Detailed Description	1204
12.101.2 Macro Definition Documentation	1204
12.102 cfe/modules/fs/config/default_cfe_fs_mission_cfg.h File Reference	1205
12.102.1 Detailed Description	1205
12.103 cfe/modules/msg/fsw/inc/ccsds_hdr.h File Reference	1205
12.103.1 Detailed Description	1205
12.103.2 Typedef Documentation	1205
12.104 cfe/modules/resourceid/fsw/inc/cfe_core_resourceid_basevalues.h File Reference	1206
12.104.1 Detailed Description	1206
12.105 cfe/modules/resourceid/fsw/inc/cfe_resourceid_basevalue.h File Reference	1206
12.105.1 Detailed Description	1207
12.105.2 Macro Definition Documentation	1207
12.106 cfe/modules/sb/config/default_cfe_sb_extern_typedefs.h File Reference	1207
12.106.1 Detailed Description	1208
12.106.2 Macro Definition Documentation	1208
12.106.3 Typedef Documentation	1208
12.106.4 Enumeration Type Documentation	1209
12.107 cfe/modules/sb/config/default_cfe_sb_fcncodes.h File Reference	1209
12.107.1 Detailed Description	1210
12.107.2 Macro Definition Documentation	1210
12.108 cfe/modules/sb/config/default_cfe_sb_interface_cfg.h File Reference	1219
12.108.1 Detailed Description	1219

12.108.2 Macro Definition Documentation	1219
12.109 cfe/modules/sb/config/default_cfe_sb_internal_cfg.h File Reference	1220
12.109.1 Detailed Description	1221
12.109.2 Macro Definition Documentation	1221
12.110 cfe/modules/sb/config/default_cfe_sb_mission_cfg.h File Reference	1228
12.110.1 Detailed Description	1228
12.111 cfe/modules/sb/config/default_cfe_sb_msg.h File Reference	1228
12.111.1 Detailed Description	1229
12.112 cfe/modules/sb/config/default_cfe_sb_msgdefs.h File Reference	1229
12.112.1 Detailed Description	1230
12.112.2 Typedef Documentation	1230
12.113 cfe/modules/sb/config/default_cfe_sb_msgids.h File Reference	1231
12.113.1 Detailed Description	1232
12.113.2 Macro Definition Documentation	1232
12.114 cfe/modules/sb/config/default_cfe_sb_msgstruct.h File Reference	1233
12.114.1 Detailed Description	1233
12.114.2 Typedef Documentation	1233
12.115 cfe/modules/sb/config/default_cfe_sb_platform_cfg.h File Reference	1235
12.115.1 Detailed Description	1235
12.116 cfe/modules/sb/config/default_cfe_sb_topicids.h File Reference	1235
12.116.1 Detailed Description	1235
12.116.2 Macro Definition Documentation	1235
12.117 cfe/modules/sb/fsw/inc/cfe_sb_eventids.h File Reference	1236
12.117.1 Detailed Description	1239
12.117.2 Macro Definition Documentation	1239
12.118 cfe/modules/tbl/config/default_cfe_tbl_extern_typedefs.h File Reference	1256
12.118.1 Detailed Description	1256
12.118.2 Typedef Documentation	1256
12.118.3 Enumeration Type Documentation	1256
12.119 cfe/modules/tbl/config/default_cfe_tbl_fcncodes.h File Reference	1257
12.119.1 Detailed Description	1257
12.119.2 Macro Definition Documentation	1257
12.120 cfe/modules/tbl/config/default_cfe_tbl_interface_cfg.h File Reference	1266
12.120.1 Detailed Description	1266
12.120.2 Macro Definition Documentation	1266
12.121 cfe/modules/tbl/config/default_cfe_tbl_internal_cfg.h File Reference	1267
12.121.1 Detailed Description	1268
12.121.2 Macro Definition Documentation	1268
12.122 cfe/modules/tbl/config/default_cfe_tbl_mission_cfg.h File Reference	1273

12.122.1 Detailed Description	1273
12.123 cfe/modules/tbl/config/default_cfe_tbl_msg.h File Reference	1273
12.123.1 Detailed Description	1273
12.124 cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h File Reference	1274
12.124.1 Detailed Description	1275
12.124.2 Typedef Documentation	1275
12.125 cfe/modules/tbl/config/default_cfe_tbl_msgids.h File Reference	1276
12.125.1 Detailed Description	1276
12.125.2 Macro Definition Documentation	1276
12.126 cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h File Reference	1277
12.126.1 Detailed Description	1278
12.126.2 Typedef Documentation	1278
12.127 cfe/modules/tbl/config/default_cfe_tbl_platform_cfg.h File Reference	1279
12.127.1 Detailed Description	1279
12.128 cfe/modules/tbl/config/default_cfe_tbl_topicids.h File Reference	1279
12.128.1 Detailed Description	1280
12.128.2 Macro Definition Documentation	1280
12.129 cfe/modules/tbl/fsw/inc/cfe_tbl_eventids.h File Reference	1280
12.129.1 Detailed Description	1283
12.129.2 Macro Definition Documentation	1283
12.130 cfe/modules/time/config/default_cfe_time_extern_typedefs.h File Reference	1300
12.130.1 Detailed Description	1301
12.130.2 Typedef Documentation	1302
12.130.3 Enumeration Type Documentation	1303
12.131 cfe/modules/time/config/default_cfe_time_fcncodes.h File Reference	1305
12.131.1 Detailed Description	1306
12.131.2 Macro Definition Documentation	1306
12.132 cfe/modules/time/config/default_cfe_time_interface_cfg.h File Reference	1321
12.132.1 Detailed Description	1321
12.132.2 Macro Definition Documentation	1321
12.133 cfe/modules/time/config/default_cfe_time_internal_cfg.h File Reference	1325
12.133.1 Detailed Description	1325
12.133.2 Macro Definition Documentation	1326
12.134 cfe/modules/time/config/default_cfe_time_mission_cfg.h File Reference	1330
12.134.1 Detailed Description	1331
12.135 cfe/modules/time/config/default_cfe_time_msg.h File Reference	1331
12.135.1 Detailed Description	1331
12.136 cfe/modules/time/config/default_cfe_time_msgdefs.h File Reference	1331
12.136.1 Detailed Description	1333

12.136.2 Typedef Documentation	1333
12.137 cfe/modules/time/config/default_cfe_time_msgids.h File Reference	1333
12.137.1 Detailed Description	1334
12.137.2 Macro Definition Documentation	1334
12.138 cfe/modules/time/config/default_cfe_time_msgstruct.h File Reference	1335
12.138.1 Detailed Description	1336
12.138.2 Typedef Documentation	1336
12.139 cfe/modules/time/config/default_cfe_time_platform_cfg.h File Reference	1338
12.139.1 Detailed Description	1338
12.140 cfe/modules/time/config/default_cfe_time_topicids.h File Reference	1338
12.140.1 Detailed Description	1338
12.140.2 Macro Definition Documentation	1339
12.141 cfe/modules/time/fsw/inc/cfe_time_eventids.h File Reference	1340
12.141.1 Detailed Description	1341
12.141.2 Macro Definition Documentation	1341
12.142 osal/docs/srcosal_frontpage.dox File Reference	1350
12.143 osal/docs/srcosal_fs.dox File Reference	1350
12.144 osal/docs/srcosal_timer.dox File Reference	1350
12.145 osal/src/os/inc/common_types.h File Reference	1350
12.145.1 Detailed Description	1351
12.145.2 Macro Definition Documentation	1352
12.145.3 Typedef Documentation	1352
12.145.4 Function Documentation	1354
12.146 osal/src/os/inc/osapi-binsem.h File Reference	1355
12.146.1 Detailed Description	1356
12.147 osal/src/os/inc/osapi-bsp.h File Reference	1356
12.147.1 Detailed Description	1356
12.148 osal/src/os/inc/osapi-clock.h File Reference	1356
12.148.1 Detailed Description	1358
12.148.2 Macro Definition Documentation	1358
12.148.3 Enumeration Type Documentation	1358
12.149 osal/src/os/inc/osapi-common.h File Reference	1359
12.149.1 Detailed Description	1360
12.149.2 Typedef Documentation	1360
12.149.3 Enumeration Type Documentation	1360
12.150 osal/src/os/inc/osapi-condvar.h File Reference	1361
12.150.1 Detailed Description	1362
12.151 osal/src/os/inc/osapi-constants.h File Reference	1362
12.151.1 Detailed Description	1362

12.151.2 Macro Definition Documentation	1362
12.152 osal/src/os/inc/osapi-countsem.h File Reference	1363
12.152.1 Detailed Description	1363
12.153 osal/src/os/inc/osapi-dir.h File Reference	1363
12.153.1 Detailed Description	1364
12.153.2 Macro Definition Documentation	1364
12.154 osal/src/os/inc/osapi-error.h File Reference	1364
12.154.1 Detailed Description	1366
12.154.2 Macro Definition Documentation	1366
12.154.3 Typedef Documentation	1367
12.155 osal/src/os/inc/osapi-file.h File Reference	1367
12.155.1 Detailed Description	1369
12.155.2 Macro Definition Documentation	1369
12.155.3 Enumeration Type Documentation	1370
12.156 osal/src/os/inc/osapi-fs.h File Reference	1370
12.156.1 Detailed Description	1371
12.156.2 Macro Definition Documentation	1371
12.157 osal/src/os/inc/osapi-heap.h File Reference	1372
12.157.1 Detailed Description	1372
12.158 osal/src/os/inc/osapi-idmap.h File Reference	1372
12.158.1 Detailed Description	1373
12.158.2 Macro Definition Documentation	1373
12.159 osal/src/os/inc/osapi-macros.h File Reference	1374
12.159.1 Detailed Description	1374
12.159.2 Macro Definition Documentation	1374
12.160 osal/src/os/inc/osapi-module.h File Reference	1375
12.160.1 Detailed Description	1376
12.160.2 Macro Definition Documentation	1376
12.161 osal/src/os/inc/osapi-mutex.h File Reference	1377
12.161.1 Detailed Description	1377
12.162 osal/src/os/inc/osapi-network.h File Reference	1377
12.162.1 Detailed Description	1378
12.163 osal/src/os/inc/osapi-printf.h File Reference	1378
12.163.1 Detailed Description	1378
12.164 osal/src/os/inc/osapi-queue.h File Reference	1378
12.164.1 Detailed Description	1379
12.165 osal/src/os/inc/osapi-select.h File Reference	1379
12.165.1 Detailed Description	1379
12.165.2 Enumeration Type Documentation	1380

12.166 osal/src/os/inc/osapi-shell.h File Reference	1380
12.166.1 Detailed Description	1380
12.167 osal/src/os/inc/osapi-sockets.h File Reference	1380
12.167.1 Detailed Description	1382
12.167.2 Macro Definition Documentation	1382
12.167.3 Enumeration Type Documentation	1382
12.168 osal/src/os/inc/osapi-task.h File Reference	1383
12.168.1 Detailed Description	1384
12.168.2 Macro Definition Documentation	1384
12.168.3 Typedef Documentation	1385
12.168.4 Function Documentation	1385
12.169 osal/src/os/inc/osapi-timebase.h File Reference	1385
12.169.1 Detailed Description	1386
12.169.2 Typedef Documentation	1386
12.170 osal/src/os/inc/osapi-timer.h File Reference	1386
12.170.1 Detailed Description	1387
12.170.2 Typedef Documentation	1387
12.171 osal/src/os/inc/osapi-version.h File Reference	1387
12.171.1 Detailed Description	1388
12.171.2 Macro Definition Documentation	1388
12.171.3 Function Documentation	1389
12.172 osal/src/os/inc/osapi.h File Reference	1390
12.172.1 Detailed Description	1391
12.173 psp/fsw/inc/cfe_psp.h File Reference	1391
12.173.1 Function Documentation	1392
12.174 psp/fsw/inc/cfe_psp_cache_api.h File Reference	1392
12.174.1 Function Documentation	1392
12.175 psp/fsw/inc/cfe_psp_cds_api.h File Reference	1392
12.175.1 Function Documentation	1393
12.176 psp/fsw/inc/cfe_psp_eepromaccess_api.h File Reference	1394
12.176.1 Function Documentation	1394
12.177 psp/fsw/inc/cfe_psp_error.h File Reference	1397
12.177.1 Detailed Description	1397
12.177.2 Macro Definition Documentation	1398
12.177.3 Typedef Documentation	1399
12.177.4 Function Documentation	1399
12.178 psp/fsw/inc/cfe_psp_exception_api.h File Reference	1400
12.178.1 Function Documentation	1400
12.179 psp/fsw/inc/cfe_psp_id_api.h File Reference	1402

12.179.1 Function Documentation	1402
12.180 psp/fsw/inc/cfe_psp_memaccess_api.h File Reference	1402
12.180.1 Function Documentation	1403
12.181 psp/fsw/inc/cfe_psp_memrange_api.h File Reference	1406
12.181.1 Macro Definition Documentation	1407
12.181.2 Function Documentation	1408
12.182 psp/fsw/inc/cfe_psp_port_api.h File Reference	1412
12.182.1 Function Documentation	1412
12.183 psp/fsw/inc/cfe_psp_ssr_api.h File Reference	1414
12.183.1 Function Documentation	1415
12.184 psp/fsw/inc/cfe_psp_timertick_api.h File Reference	1415
12.184.1 Macro Definition Documentation	1416
12.184.2 Function Documentation	1416
12.185 psp/fsw/inc/cfe_psp_version_api.h File Reference	1417
12.185.1 Function Documentation	1418
12.186 psp/fsw/inc/cfe_psp_watchdog_api.h File Reference	1418
12.186.1 Macro Definition Documentation	1420
12.186.2 Function Documentation	1422
Index	1425

1 CFS File Manager (FM) Documentation

- [CFS File Manager Introduction](#)
- [CFS File Manager Overview](#)
- [CFS File Manager Operations](#)
- [CFS File Manager Commands](#)
- [CFS File Manager Telemetry](#)
- [CFS File Manager Events](#)
- [CFS File Manager Deployment Guide](#)
- [CFS File Manager Configuration](#)
- [CFS File Manager Table Definitions](#)
- [CFS File Manager Operational Constraints](#)
- [CFS File Manager Frequently Asked Questions](#)

1.1 CFS File Manager Introduction

Scope

This Doxygen-based User's Guide provides a complete reference for the cFS File Manager (FM) application. The Guide is intended primarily for users of the software (operations personnel, test engineers, and maintenance personnel) who prefer a developer-focused document and direct references to the source code. The "deployment guide" section is intended for mission developers when deploying and configuring the FM application software for a mission flight software build environment.

[CFS File Manager Version](#)

Acronyms

Acronym	Description
API	Application Programming Interface
ATP	Absolute Time Processor
ATS	Absolute Time tagged command Sequence
CCSDS	Consultative Committee for Space Data Systems
C&DH	Command and Data Handling
CFE	Core Flight Executive
CFS	Core Flight System
CI	Command Ingest
Cmd	Command
CPU	Central Processing Unit
EDAC	Error Detection and Correction
FDS	Flight Data System
FM	File Manager
FSW	Flight Software
GN&C	Guidance Navigation & Control
GSFC	Goddard Space Flight Center
HK	Housekeeping
HW, H/W	Hardware
ICD	Interface Control Document
ISR	Interrupt Service Routine
OS	Operating System
OSAL	Operating System Abstraction Layer
Pkts	Packets
RAM	Random-Access Memory
RTOS	Real Time Operating System
RTP	Relative Time Processor
RTS	Relative Time tagged command Sequence
SB	Software Bus Service
SBC	Single Board Computer
SC	Stored Commands task
SW, S/W	Software

TBD	To Be Determined
TBL	Table
TLM	Telemetry
UTC	Coordinated Universal Time

1.2 CFS File Manager Overview

The CFS FM application provides onboard file system management services by processing ground commands for copying, moving, and renaming files, decompressing files, creating directories, deleting files and directories, providing file and directory informational telemetry messages, and providing open file and directory listings. The FM software context diagram is shown in Figure FM-1.

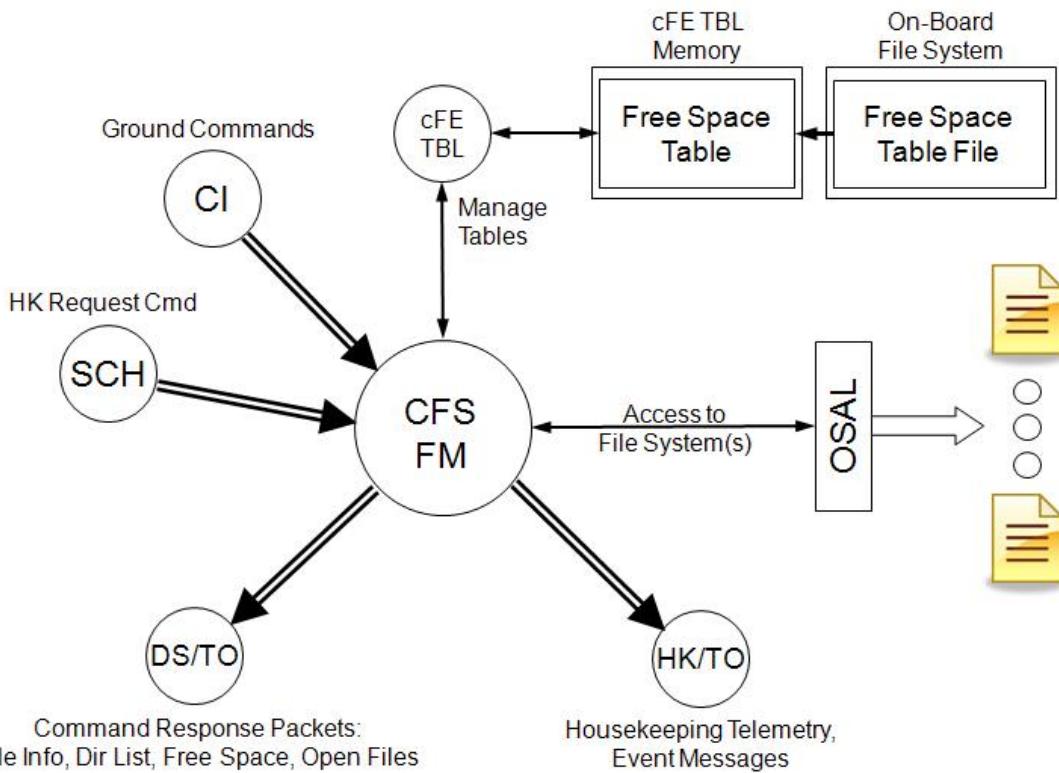


Figure 1 Figure FM-1

The FM application interfaces with the Command Ingest (CI) application to receive ground commands. See page [CFS File Manager Commands](#) for a detailed description of the FM ground commands. FM utilizes the Operating System Abstraction Layer (OSAL) API library functions for interfacing with the onboard file systems when processing ground commands. The FM application receives messages from the Scheduler (SCH) Application for periodic housekeeping requests. Upon receipt of a housekeeping request, FM will send its housekeeping telemetry packets on the Software Bus. Housekeeping telemetry packets are typically subscribed to by the Housekeeping (HK), Telemetry Output (TO), and Data Storage applications. See page [CFS File Manager Telemetry](#) for a detailed description of the contents of the FM housekeeping telemetry packet.

1.3 CFS File Manager Operations

Initialization

Power-On and Processor Resets

Upon a Power-On or Processor reset the FM application initializes all telemetry within its housekeeping telemetry packet. The Command and Command Error counters are set to zero, as well as, all other numerical data within the packet. In addition to initializing telemetry, FM registers for cFE event services, creates its software bus message pipe, and subscribes to FM SB housekeeping requests and commands.

Normal Operation

The CFS FM application is a command and telemetry driven application. FM waits in a command loop infinitely until the software receives a scheduled housekeeping request, ground command, or stored command. Command packets (including housekeeping requests) are processed as they are received. The application sends an FM housekeeping telemetry message on the cFE Software Bus upon receipt of a scheduled housekeeping request produced by the SCH application. This request is typically performed every 4-5 seconds and these housekeeping messages are usually sent to the ground (though this depends on the configuration of the rest of the system).

Various FM ground commands produce telemetry messages as a result of processing the command. These telemetry messages include a directory listing telemetry message, file information telemetry message, and an open file listing telemetry message. See page [CFS File Manager Commands](#) for a detailed description of the FM directory listing, file information, and open file listing ground commands. See page [CFS File Manager Telemetry](#) for a detailed description of the contents of the FM directory listing, file information, and open file listing telemetry messages.

Other FM ground commands produce files as a result of processing the command. These files include a decompression file, concatenation file, and a directory listing file. See page [CFS File Manager Commands](#) for a detailed description of the FM decompress file, concatenate files, and directory listing file ground commands. Note decompression capability is optionally supported via the FM_INCLUDE_COMPRESSION platform configuration option.

The decompression file is produced using the cFE API function CFE_FS_Decompress which uses code ported from the GNU zip sources. The cFE API function CFE_FS_Decompress produces the decompressed output file. The output file is comparable to that of a file that has been unzipped using the system utility gunzip. A compressed file reduces the size of the file by encoding the file. Compressed files may be used to reduce uplink time to the spacecraft. Decompressing the file will restore the file from its encoded state to the original state of the file.

The concatenation file is a direct copy of the contents of the two command specified source files, with the contents of the first source file specified proceeding the contents of the second source file specified. The contents of the second source file are written with no delineation characters such as spaces or returns following the contents of the first source file.

The directory listing file is written as a binary file and contains a cFE file header at the top of the file contiguously followed by a directory listing status data structure containing an echo of the command specified directory name ([OS_MAX_PATH_LEN](#)), directory size in bytes (uint32), total number of file contained in the directory (uint32), and the number of file names written in the directory listing file (uint32). The directory listing is then written contiguously one entry at a time. Each entry in the directory listing includes for each file in the directory, the name of the file([OS_MAX_PATH_LEN](#)), file size in bytes (uint32), and last modification time of the file (uint32). File systems use specific time epochs for their time tagging of files. Since spacecraft systems rarely use an epoch that matches a particular file system, a function is used to convert the file system time (in seconds) to spacecraft time (in seconds). The conversion is controlled by a cFE configuration parameter which is set equal to the number of seconds between the spacecraft's epoch and the file system's epoch. See [CFE_FS_Header_t](#) for the cFE file header format. See [/FM_←DirListFileStat_t](#) for the format of the directory listing status structure. See [/FM_DirListFileData_t](#) for the format of a directory listing entry.

1.4 CFS File Manager Commands

[CFS File Manager Command Message IDs](#)

[CFS File Manager Command Structures](#)

[CFS File Manager Command Codes](#)

1.5 CFS File Manager Telemetry

[CFS File Manager Telemetry Message IDs](#)

[CFS File Manager Telemetry](#)

1.6 CFS File Manager Events

[CFS File Manager Event IDs](#)

1.7 CFS File Manager Deployment Guide

To integrate the FM application, follow the CFS App Integration Guide. Also, be sure to set up the configuration parameters and message IDs for the platform

1.8 CFS File Manager Configuration

[CFS File Manager Mission Configuration](#)

[CFS File Manager Platform Configuration](#)

1.9 CFS File Manager Table Definitions

The File Manager Application defines one table that specifies the file systems contained in your system.

The table contains `FM_TABLE_ENTRY_COUNT` entries defined by `FM_MonitorTableEntry_t`.

1.10 CFS File Manager Operational Constraints

1. All FM commands that input a file or directory name must use a full path specification.
2. The Decompress File Command should only be used on files that have been compressed.
3. The contents of a directory must be deleted before the directory itself can be deleted.

1.11 CFS File Manager Frequently Asked Questions

(Q) What is the basic flow of the FM application?

The FM application uses the typical CFS application format. At startup, FM performs an initialization sequence and then enters an infinite loop waiting for commands received via the cFE Software Bus. A not so typical feature is the FM child task which is used to process FM commands that might take a very long time to execute.

(Q) In general, what is done during FM initialization?

During initialization, FM performs the common cFE initialization (register for cFE services, create command pipe, subscribe to commands, etc) and then loads the File System Free Space table and creates the FM child task. Errors encountered during the initialization sequence will generally result in the termination of the FM application.

(Q) Why does FM have a child task?

FM commands that process files which may be very large and commands that process directories which may have a very large number of entries can take several seconds to execute. This creates two potential issues: the length of time that FM would be unresponsive to new commands and the length of time that other lower priority tasks would be held off from execution.

Thus, creating a lower priority child task to process "slow" commands allows FM to immediately be ready to receive the next command. And inserting task delays into the child task command process loops provides other lower priority tasks with execution opportunities. Note that inserting delays into the main FM task would have lengthened the time that FM was unavailable for new commands.

(Q) What happens if FM is unable to load the default File System Free Space table during startup initialization?

During initialization, FM must succeed in registering the File System Free Space table with cFE Table Services or the application will terminate. However, it is OK if FM is unable to load the default table data file, although the /FM_GetFreeSpace command will fail until a valid table data file is loaded.

(Q) Is there a limit to the number of files that can be open at one time?

There are two levels of limit to the number of open files. The first limit is defined by the CFE-OSAL configuration element [OS_MAX_NUM_OPEN_FILES](#) and must be less than or equal to the second limit which is a value defined in a manner specific to the selected operating system. Note also that certain directory access functions (reading directory entries, etc) require opening the directory and may affect the count of available open files.

2 Core Flight Executive Documentation

- General Information and Concepts
 - [Background](#)
 - [Applicable Documents](#)
 - [Version Numbers](#)
 - [Dependencies](#)
 - [Acronyms](#)
 - [Glossary of Terms](#)

- Executive Services (ES)
 - cFE Executive Services Overview
 - cFE Executive Services Commands
 - cFE Executive Services Telemetry
 - ES Event Message Reference
 - cFE Executive Services Configuration Parameters
- Events Services (EVS)
 - cFE Event Services Overview
 - cFE Event Services Commands
 - cFE Event Services Telemetry
 - EVS Event Message Reference
 - cFE Event Services Configuration Parameters
- Software Bus Services (SB)
 - cFE Software Bus Overview
 - cFE Software Bus Commands
 - cFE Software Bus Telemetry
 - SB Event Message Reference
 - cFE Software Bus Configuration Parameters
- Table Services (TBL)
 - cFE Table Services Overview
 - cFE Table Services Commands
 - cFE Table Services Telemetry
 - TBL Event Message Reference
 - cFE Table Services Configuration Parameters
- Time Services (TIME)
 - cFE Time Services Overview
 - cFE Time Services Commands
 - cFE Time Services Telemetry
 - TIME Event Message Reference
 - cFE Time Services Configuration Parameters
- cFE Event Message Cross Reference
- cFE Command Mnemonic Cross Reference
- cFE Telemetry Mnemonic Cross Reference
- cFE Application Programmer's Interface (API) Reference

2.1 Background

The Core Flight Executive (cFE) is an application development and run-time environment. The cFE provides a set of core services including Software Bus (messaging), Time, Event (Alerts), Executive (startup and runtime), and Table services. The cFE defines an application programming interface (API) for each service which serves as the basis for application development.

The cFE Software Bus service provides a publish and subscribe messaging system that allows applications to easily plug and play into the system. Applications subscribe to cFE services at runtime, making system modifications easy. Facilitating rapid prototyping, new applications can be compiled, linked, loaded, and started without requiring the entire system to be rebuilt.

Each service comes complete with a built in application that allows users to interface with each service. To support reuse and project independence, the cFE contains a configurable set of requirements and code. The configurable parameters allow the cFE to be tailored for each environment including desk-top and closed loop simulation environments. This provides the ability to run and test software applications on a developer's desktop and then deploy that same software without changes to the embedded system. In addition the cFE includes the following software development tools:

- Unit Test Framework (UTF) for unit testing applications developed via the cFE
- Software Timing Analyzer that provides visibility into the real-time performance of embedded systems software
- Table Builder
- Command and Telemetry utilities

The cFE is one of the components of the Core Flight System (cFS), a platform and project independent reusable software framework and set of reusable software applications. There are three key aspects to the cFS architecture: a dynamic run-time environment, layered software, and a component based design. The combination of these key aspects along with an implementation targeted to the embedded software domain makes it suitable for reuse on any number of NASA flight projects and/or embedded software systems.

The pivotal design feature, abstracting the software architecture from the hardware and forming the basis of reuse, is component layering. Each layer of the architecture "hides" its implementation and technology details from the other layers by defining and using standard Application Programming Interfaces (APIs). The internals of a layer can be changed without affecting other layers' internals and components.

The layers include an OS Abstraction Layer (OSAL), Platform Support Package (PSP) layer, core Flight Executive (cFE) layer, and an Application layer. The cFE layer runs on top of the PSP and OSAL layers. The cFE comes complete with a build environment, deployment guide, API reference guide, and provides a sample PSP. The OSAL is available open source and once integrated into the cFE build environment, developers will be ready to build and run the system and start developing their mission/project specific applications that easily plug and play into the system.

2.1.1 Core Flight Executive (cFE) Goals

The main long term goal of the cFE is to form the basis for a platform and project independent reusable software framework. The cFE with the OSAL allow the development of portable embedded system software that is independent of a particular Real Time Operating System and hardware platform. A secondary long term goal is to create a standardized, product-line approach for development of embedded aerospace flight software.

2.1.1.1 Functional and Community Goals The cFE allows embedded system software to be developed and tested on desktop workstations and ported to the target platform without changing a single line of code, providing a shorter development and debug time. The cFE is an enabler of software collaboration amongst all users promoting the growth of the application and library layers where new applications, libraries, tools, and lessons learned can be contributed and shared.

It is important for application developers to realize the long term and functional goals of the cFE. With a standard set of services providing a standard API, all applications developed with the cFE have an opportunity to become useful on future missions through code reuse. In order to achieve this goal, applications must be written with care to ensure that their code does not have dependencies on specific hardware, software or compilers. The cFE and the underlying generic operating system API (OS API) have been designed to insulate the cFE Application developer from hardware and software dependencies. The developer, however, must make the effort to identify the proper methods through the cFE and OS API to satisfy their software requirements and not be tempted to take a "short-cut" and accomplish their goal with a direct hardware or operating system software interface.

2.2 Applicable Documents

Document Title	Link
cFE System (L4) Requirements Document	cfe/docs/'cfe requirements.docx'
cFE Functional (L5) Requirements Document	cfe/docs/cFE_FunctionalRequirements.csv
cFE Application Developers Guide	cfe/docs/cFE Application Developers Guide.md'
cFE User's Guide (includes API)	Autogenerated from code, provided with releases in cFE repository
OS Abstraction Layer (OSAL) API	Autogenerated from code, provided with releases in OSAL repository

2.3 Version Numbers

2.3.1 Version Number Semantics

The version number is a sequence of four numbers, generally separated by dots when written. These are, in order, the Major number, the Minor number, the Revision number, and the Mission Revision number.

It is important to note that version numbers are only updated upon official releases of tagged versions, **NOT** on development builds. We aim to follow the Semantic Versioning v2.0 specification with our versioning.

The MAJOR number is incremented on release to indicate when there is a change to an API that may cause existing, correctly-written cFS components to stop working. It may also be incremented for a release that contains changes deemed to be of similar impact, even if there are no actual changes to the API.

The MINOR number is incremented on release to indicate the addition of features to the API which do not break the existing code. It may also be incremented for a release that contains changes deemed to be of similar impact, even if there are no actual updates to the API.

The REVISION number shall be incremented on changes that benefit from unique identification such as bug fixes or major documentation updates. The Revision number may also be updated if there are other changes contained within a release that make it desirable for applications to distinguish one release from another. **WARNING:** The revision number is set to the number 99 in development builds. To distinguish between development builds refer to the BUILD_NUMBER and BUILD_BASELINE detailed in the section "Identifying Development Builds".

The Mission Rev Version number is set to zero in all official releases, and is reserved for the mission use.

2.3.2 How and Where Defined

The version numbers are provided as simple macros defined in the [cfe_version.h](#) header file as part of the API definition; these macros must expand to simple integer values, so that they can be used in simple if directives by the macro preprocessor.

Note the Mission Rev number is provided for missions to be able to identify unique changes they have made to the released software (via clone and own). Specifically, the values 1-254 are reserved for mission use to denote patches/customizations while 0 and 0xFF are reserved for cFS open-source development use (pending resolution of nasa/cFS#440).

2.3.3 Identifying Development Builds

In order to distinguish between development versions, we also provide a BUILD_NUMBER.

The BUILD_NUMBER reflects the number of commits since the BUILD_BASELINE, a baseline git tag, for each particular component. The BUILD_NUMBER integer monotonically increases for a given baseline. The BUILD_BASELINE identifies the current development cycle and is a git tag with format vMAJOR.MINOR.REVISION. The Codename used in the version string also refers to the current development cycle. When a new baseline tag and codename are created, the BUILD_NUMBER resets to zero and begins increasing from a new baseline.

2.3.4 Templates for the short and long version string

See [cfe_version.h](#) for the standard layout and definition of version information. The apps and repositories follow the same pattern by replacing the CFE_ prefix with the appropriate name; for example, osal uses OS_, psp uses CFE_↔ PSP_IMPL, and so on.

Suggested pattern for development:

- CFSCOMPONENT_SRC_VERSION: REFERENCE_GIT_TAG"+dev"BUILD_NUMBER
 - Example: "v6.8.0-rc1+dev123"
- CFSCOMPONENT_VERSION_STRING: "CFSCOMPONENT DEVELOPMENT BUILD "CFSCOMPONENT_↔ SRC_VERSION" (Codename: CFSCONSTELLATION), Last Official Release: MAJOR.MINOR.REVISION"
 - Example: "cFE DEVELOPMENT BUILD v6.8.0-rc1+dev123 (Codename: Bootes), Last Official Release: cfe v6.7.0"

Suggested pattern for official releases:

- CFSCOMPONENT_SRC_VERSION: OFFICIAL_GIT_TAG
 - Example: "v7.0.0"
- COMPONENT_VERSION_STRING: "CFSCOMPONENT OFFICIAL RELEASE "CFSCOMPONENT_SRC_↔ VERSION" (Codename: CFSCONSTELLATION)"
 - Example: "cFE OFFICIAL RELEASE v7.0.0 (Codename: Caelum)"

2.4 Dependencies

The Core Flight Executive (cFE) is required to be built with the Operating System Abstraction Layer (OSAL) and Platform Support Package (PSP) components of the Core Flight System (cFS). It is always recommended to build with the latest versions of each of the components as backward compatibility may not be supported.

Several internal data structures within the cFE use the "char" data type. This data type is typically 1 byte in storage size with a value range -128 to 127 or 0 to 255. The size of the "char" data type and whether or not the type is signed or unsigned can change across platforms. The cFE assumes use of the "char" data type as an **8-bit type**.

2.5 Acronyms

Acronym	Description
AC	Attitude Control
ACE	Attitude Control Electronics
ACS	Attitude Control System
API	Application Programming Interface
APID	CCSDS Application ID
App	Application
CCSDS	Consultative Committee for Space Data Systems
CDH, C&DH	Command and Data Handling
cFE	core Flight Executive
cFS	core Flight System
CM	Configuration Management
CMD	Command
CPU	Central Processing Unit
EDAC	Error Detection and Correction
EEPROM	Electrically Erasable Programmable Read-Only Memory
ES	Executive Services
EVS	Event Services
FC	Function Code
FDC	Failure Detection and Correction
FSW	Flight Software
HW, H/W	Hardware
ICD	Interface Control Document
MET	Mission Elapsed Time
MID	Message ID
OS	Operating System
OSAL	Operating System Abstraction Layer
PID	Pipeline ID
PKT	Packet
PSP	Platform Support Package
RAM	Random-Access Memory
SB	Software Bus
SDO	Solar Dynamics Observatory
ST5	Space Technology Five

Acronym	Description
STCF	Spacecraft Time Correlation Factor
SW, S/W	Software
TAI	International Atomic Time
TBD	To Be Determined
TBL	Table Services
TID	Task ID
TIME	Time Services
TLM	Telemetry
UTC	Coordinated Universal Time

2.6 cFE Executive Services Overview

Executive Services (ES) is one of the five core Flight Executive components. ES is the primary interface to the underlying Operating System, providing a high level interface to system control facilities. The ES component is responsible for starting up and restarting the cFE, starting up, shutting down, and restarting cFE Applications, logging errors and performance data, and providing a persistent memory store for cFE Applications.

The interfaces to the ES task include the Ground Interface (commands and telemetry) and the Application Programmer Interfaces (APIs). The ES task interfaces to the OS through the OS Abstraction Layer (OSAL) and platform through the Platform Support Package (PSP).

The functionality provided by the ES task include Software Reset, Application and Child Task Management, Basic File System, Performance Data Collection, Critical Data Store, Memory Pool, System Log, Shell Command.

For additional detail on Executive Services, see the following sections:

- [Terminology](#)
- [Software Reset](#)
 - [Reset Types and Subtypes](#)
 - [Exception and Reset \(ER\) Log](#)
- [Application and Child Task Management](#)
 - [Starting an Application](#)
 - [Stopping an Application](#)
 - [Restarting an Application](#)
 - [Reloading an Application](#)

- Listing Current Applications
- Listing Current Tasks
- Loading Common Libraries
- Basic File System
- Performance Data Collection
- Critical Data Store
- Memory Pool
- System Log
- Version Identification
- Frequently Asked Questions about Executive Services

2.6.1 Terminology

The following sections describe terminology that is very relevant to understanding the Executive Services:

- "Application" and "cFE Application"
- "Task"
- "Startup Script"

2.6.1.1 "Application" and "cFE Application"

Application

The term 'Application' as defined in the [Glossary of Terms](#) is a set of data and functions that is treated as a single entity by the cFE. cFE resources are allocated on a per-Application basis. Applications are made up of a Main Task and zero or more Child Tasks.

cFE Application

A 'cFE Application' is an application that is external to the cFE and designed to interface to the cFE through the APIs. It is created through an entry in the ["Startup Script"](#) (with the 'Object Type' field set to CFE_APP) or by way of the [CFE_ES_START_APP_CC](#) ground command.

When referring to one of the five applications internal to the cFE (ES, EVS, SB, TIME or TBL), the term 'Service' or 'Core Application' is typically used.

A listing of cFE applications can be acquired by using the [CFE_ES_QUERY_ALL_CC](#) ground command. This listing will include the cFE internal applications as well as cFE applications that are loaded and running.

2.6.1.2 "Task" A Task is a thread of execution in the operating system, often associated with a cFE Application. Each cFE Application has a Main task providing its CPU context, stack and other OS resources. In addition, each cFE Application can create multiple Child Tasks which are closely associated with the Parent Task and cFE Application.

In a traditional Real Time Operating System such as vxWorks, the cFE Application Main task and child tasks end up being mapped to these OS tasks in the same shared memory space. For example, a Stored Command cFE Application that consists of a cFE Main Task and 10 Relative Time Sequence Child Tasks would have 11 tasks on a vxWorks system. The only association between these tasks exists in the cFE.

In a memory protected process oriented Operating System, the intention is to have a cFE Application implemented as a memory protected process with its own virtual address space. In this Process Model, each cFE Child Task would be a thread in the parent Process, much like a Unix process with multiple threads. In this model, the Stored Command example with a cFE Main Task and 10 Relative Time Sequence Child Tasks would consist of a Unix Process and 10 pthreads, all under the same virtual address space.

2.6.1.3 "Startup Script" The startup script is a text file, written by the user that contains a list of entries (one entry for each application) and is used by the ES application for automating the startup of applications. For a processor reset, ES checks for the CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE first, and if it doesn't exist or for a power on reset ES uses the file passed in to [CFE_ES_Main](#) (typically CFE_PLATFORM_ES_NONVOL_STARTUP_FILE but dependent on the PSP).

The fields in a single entry include:

Object Type	CFE_APP for an Application, or CFE_LIB for a library.
Path/Filename	This is a cFE Virtual filename, not a vxWorks device pathname
Entry Point	This is the name of the "main" function for App.
CFE Name	The cFE name for the APP or Library
Priority	This is the Priority of the App, not used for a Library
Stack Size	This is the Stack size for the App, not used for a Library
Load Address	This is the Optional Load Address for the App or Library. It is currently not implemented so it should always be 0x0.
Exception Action	<p>This is the Action the cFE should take if the Application has an exception.</p> <ul style="list-style-type: none">• 0 = Do a cFE Processor Reset• Non-Zero = Just restart the Application

Immediately after the cFE completes its initialization, the ES Application first looks for the volatile startup script. The location in the file system is defined by the cFE platform configuration parameter named [CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE](#). This configuration parameter contains a path as well as a filename. If the file is found, ES begins to startup the applications that are listed in the file. If ES does not find the file, it attempts to open the [CFE_PLATFORM_ES_NONVOL_STARTUP_FILE](#).

If ES finds the volatile startup script, the attempt to open the nonvolatile startup script is bypassed.

Any errors encountered in the startup script processing are written to the [System Log](#). The [System Log](#) may also contain positive acknowledge messages regarding the startup script processing.

The startup script delivered with the cFE (`cfe_es_startup.scr`) also has some detailed information about the fields and the settings.

2.6.2 Software Reset

The ES Software Reset provides a command to [reset the cFE](#) as well as [resetting individual applications](#). Because applications are dependent on the cFE services, it is not possible to reset the cFE without affecting the applications. Therefore, a command to reset the cFE will also reset every application that is running at the time the command is received.

Also included is the Exception and Reset (ER) Log, which has a command for [dumping](#) or [clearing](#) the log and telemetry to show the number of entries in the log. In addition to the ER log, the user may find information about the most recent reset in the ES task housekeeping telemetry.

The ES Software Reset also provides a command to [set the maximum number of processor resets](#) before ES issues a power-on reset. There is a corresponding 'processor resets' counter in ES housekeeping telemetry that may be [reset through another ES command](#).

2.6.3 Reset Types and Subtypes

The Reset Type is sent to the ground in the ES housekeeping packet and tells how the current running version of the cFE was invoked. The possible Reset Types expected in the telemetry field are [CFE_PSP_RST_TYPE_POWERON](#) and [CFE_PSP_RST_TYPE_PROCESSOR](#). There is a third Reset Type defined in the ES code as [CFE_ES_APP_RESTART](#) which applies only to restarting an individual application and is covered in more detail in the section titled Application and Child Task.

The Reset Subtype is also sent in the ES housekeeping packet and gives more detail about the type of reset that started the execution of the current running version of the cFE. The possible Reset Subtypes are [CFE_PSP_RST_SUBTYPE_POWER_CYCLE](#), [CFE_PSP_RST_SUBTYPE_PUSH_BUTTON](#), [CFE_PSP_RST_SUBTYPE_HW_SPECIAL](#), [CFE_PSP_RST_SUBTYPE_HW_WATCHDOG](#), [CFE_PSP_RST_SUBTYPE_RESET_COMMAND](#), [CFE_PSP_RST_SUBTYPE_EXCEPTION](#), [CFE_PSP_RST_SUBTYPE_UNDEFINED_RESET](#), [CFE_PSP_RST_SUBTYPE_HWDBUG_RESET](#), [CFE_PSP_RST_SUBTYPE_BAN](#).

2.6.4 Exception and Reset (ER) Log

The Exception and Reset Log contains detailed information about past resets and exceptions. To view the information the [CFE_ES_WRITE_ER_LOG_CC](#) command must be sent. This command will write the log to a binary file. The path and filename may be specified in the command. If the filename command field contains an empty string, the configuration parameter [CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE](#) is used to specify the path and filename. Use the ground system to get the file and display the contents. There is also a command to clear the ER log, [CFE_ES_CLEAR_ER_LOG_CC](#).

The size of the ER log is defined by the platform configuration parameter [CFE_PLATFORM_ES_ER_LOG_ENTRIES](#). This log is preserved after a processor reset and held in the ES reset area.

A count of the number of entries in the log is present in the ES housekeeping telemetry. This count can be used with the configuration parameter [CFE_PLATFORM_ES_ER_LOG_ENTRIES](#) to calculate the fullness of the log.

The information contained in a single log entry is defined by the structure [CFE_ES_ERLog_t](#).

2.6.5 Application and Child Task Management

The ES Application and Child Task Management provides the user with full control over starting and stopping applications as well as querying information regarding applications, tasks and library routines.

There is no command to start or stop a child task. Child tasks can be controlled (started, stopped or deleted) only by the parent application through an API call.

This provides a way for the user to load a set of library routines, (via the startup script) without starting a corresponding task. See the section related to library routines for more detail.

The ES task maintains a counter for the number of registered applications, number of registered child tasks and the number of registered libraries in the ES housekeeping data.

2.6.6 Starting an Application

There are two ways to start an application, through the ground command [CFE_ES_START_APP_CC](#) or through the startup script. In either case, the object file must be loaded on board before the command is sent or before the startup script is executed. The startup script contains a list of applications and library routines to load and start immediately after the cFE finishes its startup sequence. The parameters in the command, match the elements of an entry in the startup script.

The format of the Start Application command, is defined in the structure [CFE_ES_StartAppCmd_t](#). The members of the structure include, application name, entry point, filename, stack size, load address, exception action and priority.

If the command fails for any reason, an error event will be sent stating the reason for the failure. There may be additional information in the system log that can be viewed by sending the ES command to dump the system log.

After starting an application, the ES task sends an informational event message displaying the application name, file-name of the object and the application ID. The new application will then show up in the query list downloaded in response to the [CFE_ES_QUERY_ALL_CC](#) command.

2.6.7 Stopping an Application

Stopping an application can be done through the ground command [CFE_ES_STOP_APP_CC](#). This command will terminate the application execution and all child tasks created by the application, free the system resources that it allocated and delete the corresponding object file.

The process of stopping an application is done in a controlled manner when the application is properly using the return code from the call to the [CFE_ES_RunLoop](#). When the application properly uses this function, the ES task starts a timer and (via the return code) tells the application to exit at its own convenience. This gives the application time to free its own resources and do any cleanup that may be required before terminating itself by calling [CFE_ES_ExitApp](#). If the timer expires and the application still exists, then ES must 'kill' the application. When the application is killed, ES attempts to cleanup the applications resources as best it could. In this case there is no guarantee that all the system resources are properly released.

The format of the Stop Application command, is defined in the structure [CFE_ES_StopAppCmd_t](#). The only parameter in the command is an application name.

If the command fails for any reason, an error event will be sent stating the reason for the failure. There may be additional information in the system log that can be viewed by sending the ES command to dump the system log.

After stopping an application, the ES task sends a debug message stating the name of the application. After executing the command, the application (or any resources it allocated) should no longer be listed in any cFE tables or files.

2.6.8 Restarting an Application

The [CFE_ES_RESTART_APP_CC](#) command is used to restart an application using the same file name as the last start.

This command checks for file existence, the application is running, and the application is not a core app. If valid, the application restart is requested.

When requested, ES stops the application, unloads the object file, loads the object file using the previous file name, and restarts an application using the parameters defined when the application was previously started, either through the startup script or by way of the [CFE_ES_START_APP_CC](#) command.

2.6.9 Reloading an Application

The [CFE_ES_RELOAD_APP_CC](#) command is used to reload an application using a new file name.

This command performs the same actions as [CFE_ES_RESTART_APP_CC](#) only using the new file.

2.6.10 Listing Current Applications

There are two options for receiving information about applications, the [CFE_ES_QUERY_ONE_CC](#) command can be used to get details about a single application. This command takes an application name as its only parameter and the application information is sent as a software bus packet that can be telemetered to the ground.

Or the [CFE_ES_QUERY_ALL_CC](#) command can be used to get information about all the applications that are currently registered with ES. This command writes the application data to a file and has a one parameter which specifies the path and filename of the output file.

For either command, the following Application information is made available:

- **Application ID** - The Application ID assigned by the cFE to the Application
- **Type Identifier** - Identifies whether the Application is a CORE App or an EXTERNAL App
- **Name** - The Application Name
- **Entry Point** - The symbolic name for the entry point into the Application
- **Filename** - The name of the file the Application was loaded from
- **Stack Size** - The number of bytes allocated for the Application's stack
- **Load Address** - The starting address of memory where the Application was loaded
- **Load Size** - The size, in bytes, of the Application when loaded into memory

- **Start Address** - The physical address that maps to the Entry Point
- **Exception Action** - A flag that identifies whether the Processor should undergo a Restart or whether just the Application should restart upon an exception condition within the Application
- **Priority** - The assigned priority for the Application
- **Main Task ID** - The Task ID assigned to the main task associated with the Application
- **Main Task Name** - The name of the main task associated with the Application
- **Number of Child Tasks** - The number of child tasks spawned by the main task

For a description of the format in which this data is dumped, see [CFE_ES_AppInfo_t](#).

2.6.11 Listing Current Tasks

The [CFE_ES_QUERY_ALL_TASKS_CC](#) command is used to get a list of child tasks that are currently registered with ES. The following information is provided for each registered task:

- **Task ID** - The Task ID associated with the specified task
- **Task Name** - The name of the Task
- **Application ID** - The ID for the Application the Task is associated with
- **Application Name** - The name of the Application the Task is associated with

2.6.12 Loading Common Libraries

Library routines may be loaded only through the startup script. There is an option that allows a library routine initialization function to be executed after the library is loaded. Refer to the cFE Application Developers Guide for more information regarding Library Routines and startup scripts. The startup script delivered with the cFE (`cfe_es_startup.scr`) also has some detailed information about library routines.

2.6.13 Basic File System

ES provides minimal functionality to initialize, read, and write cfe File headers.

2.6.14 Performance Data Collection

The Performance Data Collection provides precise timing information for each software application similar to how a logic analyzer can trigger and filter data.

API calls are inserted by the development team at key points in the code. The basic operation is to start the data collection, wait some amount of time, then send the command to stop the data collection. When the stop command is received, the ES task writes all the data from the buffer to a file. The file can then be imported to analysis tools for viewing. The size of the buffer is configurable through the [CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE](#) platform configuration parameter.

Additional information follows:

- [Performance Data Collection Trigger Masks](#)
- [Starting to Collect Performance Data](#)
- [Stopping the Collection of Performance Data](#)
- [Viewing the Collection of Performance Data](#)

2.6.14.1 Performance Data Collection Trigger Masks The trigger mask is used to control precisely when to start collecting the data. There is a bit in the trigger mask for every marker used in the code. After a start command is received, the trigger mask is read and dictates when to begin storing data in the buffer.

If the trigger mask is set to all zeros, then the collection will begin immediately after the start command and continue until a stop command is received. In this case the buffer behaves in a 'circular' manner.

2.6.14.2 Starting to Collect Performance Data The [CFE_ES_START_PERF_DATA_CC](#) command is used to start the data collection process. The ES task sends a debug event when the command is received. It is not possible to start a collection if the buffer-to-file write is in process from an earlier collection. There is an ES telemetry point that can be used to ensure there is not a buffer-to-file write in progress. This ES telemetry point is called 'Perf Data to Write' and begins counting down from 'Data Count' to zero. If this counter is zero, it is ok to send the start command. If any errors are encountered when the start command is received, the details will be displayed in an error event message.

2.6.14.3 Stopping the Collection of Performance Data The [CFE_ES_STOP_PERF_DATA_CC](#) command is used to stop the data collection process and write the buffer data to a file. The path and filename may be specified in the command. If the filename command field contains an empty string, the configuration parameter [CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME](#) is used to specify the path and filename. The number of entries written to the file is determined by the 'data count' variable, which is sent in the ES housekeeping telemetry packet. To ensure cpu hogging does not occur during the write process, ES creates a low priority child task to perform the file write operation. This child task will write a number of entries, then sleep for a short time to give tasks of lower priority a chance to run. The number of entries between delays, and the delay time is displayed in the debug event at the time the stop command is received.

2.6.14.4 Viewing the Collection of Performance Data To view the performance data, the file created as a result of the stop command must be transferred to the ground and imported into a viewing tool. See <https://github.com/nasa/perfutils-java> as an example.

2.6.15 Critical Data Store

Some missions are required, for health, safety and mission success criteria, to survive Processor Resets. These mission requirements frequently flow down to Attitude Control and/or Command and Data Handling requirements that force an Application developer to design a mechanism for retaining software state information through a Processor Reset. The cFE provides the Critical Data Store to assist the developer in meeting these requirements.

The Critical Data Store is an area of memory that is not cleared during a Processor Reset. In addition, the contents of memory are validated when accessed with a Data Integrity Value that helps to ensure the contents have not been corrupted. Each processor platform, through the design of its Board Support Package, can implement this area of memory in a number of ways to ensure the contents survive a Processor Reset. Applications can allocate a section of this memory for their use in a way similar to the [cFE Table Services Overview](#).

When an Application registers a Critical Data Store (CDS), the Executive Services allocates a section of the Critical Data Store memory for the application's use and assigns the Application specified name to the memory area. The operator can find and learn the characteristics of these Critical Data Stores by using the [Dump CDS Registry Command](#). This command will dump the contents of the CDS Registry maintained by the Executive Services into a file that can be downlinked and examined by the operator.

The CDS Registry dump will identify the following information for each registered CDS:

- **Handle** - the numeric identifier used by an Application to access the contents of the CDS
- **Size** - the number of bytes allocated to the specified CDS
- **Table Flag** - a flag that indicates whether the CDS is associated with a [Critical Tables](#) (when non-zero) or not (when equal to zero).
- **Name** - a processor specific name that uniquely identifies the CDS. The name comes in two parts, "AppName . ← CDSName". AppName identifies which Application registered the CDS. CDSName is the name the Application assigned to the CDS.

The format of the CDS Registry Dump File is a cFE Standard File header (see [CFE_FS_Header_t](#)) followed by one or more CDS Registry Dump File Records (see [CFE_ES_CDSRegDumpRec_t](#)).

2.6.16 Memory Pool

Refer to the cFE Application Developers Guide for additional information.

Applications that are designed for generic missions, frequently have to wait until run-time before allocating memory for buffers, data records, etc.

The cFE provides a memory allocation algorithm that may be used by an application to manage its block of memory. The user provides a pointer to its memory block and a list of block sizes and the cFE provides 'get' and 'put' API's to the user for managing its memory pool.

Run-time memory allocation in an embedded system can be risky because of the potential problem of memory fragmentation. Memory fragmentation is also referred to as External Fragmentation and is defined in the wikipedia as:

External fragmentation is the phenomenon in which free storage becomes divided into many small pieces over time. It is a weakness of certain storage allocation algorithms, occurring when an application allocates and deallocates ("frees") regions of storage of varying sizes, and the allocation algorithm responds by leaving the allocated and deallocated regions interspersed. The result is that, although free storage is available, it is effectively unusable because it is divided into pieces that are too small to satisfy the demands of the application. The term "external" refers to the fact that the unusable storage is outside the allocated regions.

To help prevent this from happening, the cFE has integrated a memory allocation algorithm that is designed to create blocks at run-time, based on the size of the blocks requested. After a reset, there are no blocks created, the memory pool is said to be unconfigured. As requests for memory blocks are made, the memory pool first tries to use blocks that have been created but are no longer in use. If it cannot find an available block, it will create a new one. The created blocks remain until a reset occurs.

This algorithm is recommended when the size of the requests and the peak rate of requests can be pre-determined. It is highly recommended that adequate margin is designed into the pool size. The memory pool should never get close to being fully configured (i.e. not enough memory to create a new block). If the memory does become fully configured, requests for new size blocks will fail, regardless of whether the created blocks are in-use or not. The margin on the memory pool can be monitored by viewing the 'free bytes' member of the memory pool statistics. The memory pool statistics are dumped only when commanded by way of the ES command [CFE_ES_SEND_MEM_POOL_STATS_CC](#).

A user of the ES memory pool begins by tailoring the memory pool for the particular use, by defining a list of block sizes and allocating a block of memory. These block size definitions simply give the memory pool a set of sizes to choose from. They do not configure the memory pool in any way and they do not affect the size of the pool. The cFE defines a default set of block sizes in the `cfe_platform_cfg.h` file.

If the default block sizes are used, the application will create the pool using the simpler [CFE_ES_PoolCreate](#) API. This API takes a pointer to the first byte of the memory pool (allocated by the application) and a size parameter. The API returns a handle to be used for the get and put requests.

If the defaults are not sufficient, the user must define the block sizes and use the [CFE_ES_PoolCreateEx](#) API.

After receiving a positive response from the PoolCreate API, the memory pool is ready to accept requests, but at this point it is completely unconfigured (meaning there are no blocks created). The first valid request (via [CFE_ES_GetPoolBuf](#) API) after creating the pool will always cause the memory pool to create a block and return a pointer to the new block. The size of the block depends on the size definitions mentioned earlier. If there is not an exact match between the requested and defined sizes, then the memory pool will create and return the smallest block that meets the following criteria: is a defined size and large enough to hold the request.

If another request for that size comes in before the first block was released through the [CFE_ES_PutPoolBuf](#) API, then the memory pool will create a second block of that size and return a pointer to the second block. If both blocks were then released through the [CFE_ES_PutPoolBuf](#) API and the memory pool statistics were dumped via the [CFE_ES_SEND_MEM_POOL_STATS_CC](#) command, the number of blocks created would be two. The number of 'free bytes' in the pool would be the size of the pool minus the sum of the following items:

- the size of the two blocks created (even though they are not 'in-use').
- a buffer descriptor for each of the two blocks created ($2 * 12$ bytes)
- a 168 byte pool descriptor Refer to the cFE Applications Developers Guide for more details.

This allocation algorithm does have its limits. There are certain conditions that can place the memory pool in an undesired state. For instance, if a burst of get requests were received for the same block size, the memory pool may create a large number of blocks of that size. If this is a one-time burst, the memory pool would be configured with this large number of blocks that may no longer be needed. This scenario would use up the 'free bytes' margin in an undesired way. It should be noted that once the blocks are created, they cannot be deleted by any means other than a processor or power-on reset. It is highly recommended that the memory pool statistics be carefully monitored to ensure that the 'free-bytes' margin is sufficient (which is typically dictated by mission requirements).

An operator can obtain information about an Application's Memory Pool by using the [Telemeter Memory Pool Statistics Command](#).

This command will cause Executive Services to extract pertinent statistics from the data used to manage the Memory Pool and telemeter them to the ground in the [Memory Pool Statistics Telemetry Packet](#).

In order to obtain the statistics associated with a memory pool, the operator **MUST** have the correct Memory Handle as reported by the Application who owns the Memory Pool. **It should be noted that an inappropriate Memory Pool Handle can (and likely will) cause the system software to crash!** Within the cFE itself, there are three cFE Core Applications that make use of the Executive Services Memory Pool API. These are Software Bus (SB), Event Services (EVS) and Table Services (TBL). Each of these cFE Core Applications report their memory pool handles in telemetry.

The [Memory Pool Statistics Telemetry Packet](#) contains the following information:

- **Memory Pool Handle** - the handle, as provided by the operator in the [Telemeter Memory Pool Statistics Command](#). This repeating of the handle in telemetry ensures the operator knows which Memory Pool Statistics are being viewed
- **Pool Size** - The total size of the memory pool (in bytes)
- **Number Blocks Requested** - The total number of memory blocks requested for allocation
- **Number of Errors** - The total number of errors encountered when a block was released
- **Number of Free Bytes** - The total number of bytes in the Memory Pool that have never been allocated to a Memory Block
- **Block Statistics** - For each specified size of memory block (of which there are [CFE_MISSION_ES_POOL_MAX_BUCKETS](#)), the following statistics are kept
 - **Block Size** - The size, in bytes, of all blocks of this type
 - **Number of Blocks Allocated** - The number of this sized block which are currently allocated and in use
 - **Number of Blocks Free** - The number of this size block which have been in use previously but are no longer being used

2.6.17 System Log

The System Log is an array of bytes that contains back-to-back printf type messages from applications. The cFE internal applications use this log when errors are encountered during initialization before the Event Manager is fully initialized. To view the information the [CFE_ES_WRITE_SYS_LOG_CC](#) command must be sent. This command will write the log to a binary file. The path and filename may be specified in the command. If the filename command field contains an empty string, the configuration parameter [CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE](#) is used to specify the path and filename. Use the ground system to get the file and display the contents. The [CFE_ES_CLEAR_SYS_LOG_CC](#) is used to clear the System log.

The size of the System log is defined by the platform configuration parameter [CFE_PLATFORM_ES_SYSTEM_LOG_SIZE](#). This log is preserved after a processor reset and held in the ES reset area.

A count of the number of entries in the log is present in the ES housekeeping telemetry.

2.6.18 Version Identification

Version information is reported at startup, and upon receipt of a No-op command

2.6.19 Frequently Asked Questions about Executive Services

None submitted

2.7 cFE Executive Services Commands

Upon receipt of any command, the Executive Services application will confirm that the message length embedded within the header (from [CFE_MSG_GetSize\(\)](#)) matches the expected length of that message, based on the size of the C structure defining that command. If there is any discrepancy between the expected and actual message size, ES will generate the [CFE_ES_LEN_ERR_EID](#) event, increment the command error counter ($\$sc_\cpu_ES_CMDEC), and the command will *not* be accepted for processing.

The following is a list of commands that are processed by the cFE Executive Services Task.

Global [CFE_ES_CLEAR_ER_LOG_CC](#)

Clears the contents of the Exception and Reset Log

Global [CFE_ES_CLEAR_SYS_LOG_CC](#)

Clear Executive Services System Log

Global [CFE_ES_DELETE_CDS_CC](#)

Delete Critical Data Store

Global [CFE_ES_DUMP_CDS_REGISTRY_CC](#)

Dump Critical Data Store Registry to a File

Global [CFE_ES_NOOP_CC](#)

Executive Services No-Op

Global CFE_ES_OVER_WRITE_SYS_LOG_CC

Set Executive Services System Log Mode to Discard/Overwrite

Global CFE_ES_QUERY_ALL_CC

Writes all Executive Services Information on all loaded modules to a File

Global CFE_ES_QUERY_ALL_TASKS_CC

Writes a list of All Executive Services Tasks to a File

Global CFE_ES_QUERY_ONE_CC

Request Executive Services Information on a specified module

Global CFE_ES_RELOAD_APP_CC

Stops, Unloads, Loads from the command specified File and Restarts an Application

Global CFE_ES_RESET_COUNTERS_CC

Executive Services Reset Counters

Global CFE_ES_RESET_PR_COUNT_CC

Resets the Processor Reset Counter to Zero

Global CFE_ES_RESTART_APP_CC

Stops, Unloads, Loads using the previous File name, and Restarts an Application

Global CFE_ES_RESTART_CC

Executive Services Processor / Power-On Reset

Global CFE_ES_SEND_MEM_POOL_STATS_CC

Telemeter Memory Pool Statistics

Global CFE_ES_SET_MAX_PR_COUNT_CC

Configure the Maximum Number of Processor Resets before a Power-On Reset

Global CFE_ES_SET_PERF_FILTER_MASK_CC

Set Performance Analyzer's Filter Masks

Global CFE_ES_SET_PERF_TRIGGER_MASK_CC

Set Performance Analyzer's Trigger Masks

Global CFE_ES_START_APP_CC

Load and Start an Application

Global CFE_ES_START_PERF_DATA_CC

Start Performance Analyzer

Global CFE_ES_STOP_APP_CC

Stop and Unload Application

Global CFE_ES_STOP_PERF_DATA_CC

Stop Performance Analyzer and write data file

Global CFE_ES_WRITE_ER_LOG_CC

Writes Exception and Reset Log to a File

Global CFE_ES_WRITE_SYS_LOG_CC

Writes contents of Executive Services System Log to a File

2.8 cFE Executive Services Telemetry

The following are telemetry packets generated by the cFE Executive Services Task.

Global `CFE_ES_HousekeepingTlm_Payload_t`

Executive Services Housekeeping Packet

Global `CFE_ES_HousekeepingTlm_t`

Executive Services Housekeeping Packet

Global `CFE_ES_MemStatsTlm_t`

Memory Pool Statistics Packet

Global `CFE_ES_OneAppTlm_Payload_t`

Single Application Information Packet

Global `CFE_ES_OneAppTlm_t`

Single Application Information Packet

Global `CFE_ES_PoolStatsTlm_Payload_t`

Memory Pool Statistics Packet

2.9 cFE Executive Services Configuration Parameters

The following are configuration parameters used to configure the cFE Executive Services either for each platform or for a mission as a whole.

Global `CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN`

Maximum Length of Full CDS Name in messages

Maximum Length of Full CDS Name in messages

Global `CFE_MISSION_ES_CDS_MAX_NAME_LENGTH`

Maximum Length of CDS Name

Maximum Length of CDS Name

Global `CFE_MISSION_ES_DEFAULT_CRC`

Mission Default CRC algorithm

Mission Default CRC algorithm

Global `CFE_MISSION_ES_MAX_APPLICATIONS`

Mission Max Apps in a message

Mission Max Apps in a message

Global `CFE_MISSION_ES_PERF_MAX_IDS`

Define Max Number of Performance IDs for messages

Define Max Number of Performance IDs for messages

Global `CFE_MISSION_ES_POOL_MAX_BUCKETS`

Maximum number of block sizes in pool structures

Maximum number of block sizes in pool structures

Global CFE_PLATFORM_CORE_MAX_STARTUP_MSEC

CFE core application startup timeout

Global CFE_PLATFORM_ES_APP_KILL_TIMEOUT

Define ES Application Kill Timeout

Define ES Application Kill Timeout

Global CFE_PLATFORM_ES_APP_SCAN_RATE

Define ES Application Control Scan Rate

Define ES Application Control Scan Rate

Global CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES

Define Maximum Number of Registered CDS Blocks

Define Maximum Number of Registered CDS Blocks

Global CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01

Define ES Critical Data Store Memory Pool Block Sizes

Define ES Critical Data Store Memory Pool Block Sizes

Global CFE_PLATFORM_ES_CDS_SIZE

Define Critical Data Store Size

Define Critical Data Store Size

Global CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE

Default Application Information Filename

Default Application Information Filename

Global CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMP_FILE

Default Critical Data Store Registry Filename

Default Critical Data Store Registry Filename

Global CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE

Default Exception and Reset (ER) Log Filename

Default Exception and Reset (ER) Log Filename

Global CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME

Default Performance Data Filename

Default Performance Data Filename

Global CFE_PLATFORM_ES_DEFAULT_POR_SYSLOG_MODE

Define Default System Log Mode following Power On Reset

Define Default System Log Mode following Power On Reset

Global CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE

Define Default System Log Mode following Processor Reset

Define Default System Log Mode following Processor Reset

Global CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

Define Default Stack Size for an Application

Define Default Stack Size for an Application

Global CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE

Default System Log Filename

Default System Log Filename

Global CFE_PLATFORM_ES_DEFAULT_TASK_LOG_FILE

Default Application Information Filename

Default Application Information Filename

Global CFE_PLATFORM_ES_ER_LOG_ENTRIES

Define Max Number of ER (Exception and Reset) log entries

Define Max Number of ER (Exception and Reset) log entries

Global CFE_PLATFORM_ES_ER_LOG_MAX_CONTEXT_SIZE

Maximum size of CPU Context in ES Error Log

Maximum size of CPU Context in ES Error Log

Global CFE_PLATFORM_ES_MAX_APPLICATIONS

Define Max Number of Applications

Define Max Number of Applications

Global CFE_PLATFORM_ES_MAX_GEN_COUNTERS

Define Max Number of Generic Counters

Define Max Number of Generic Counters

Global CFE_PLATFORM_ES_MAX_LIBRARIES

Define Max Number of Shared libraries

Define Max Number of Shared libraries

Global CFE_PLATFORM_ES_MAX_MEMORY_POOLS

Maximum number of memory pools

Maximum number of memory pools

Global CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS

Define Number of Processor Resets Before a Power On Reset

Define Number of Processor Resets Before a Power On Reset

Global CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01

Define Default ES Memory Pool Block Sizes

Define Default ES Memory Pool Block Sizes

Global CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN

Define Memory Pool Alignment Size

Define Memory Pool Alignment Size

Global CFE_PLATFORM_ES_NONVOL_DISK_MOUNT_STRING

Default virtual path for persistent storage

Default virtual path for persistent storage

Global CFE_PLATFORM_ES_NONVOL_STARTUP_FILE

ES Nonvolatile Startup Filename

ES Nonvolatile Startup Filename

Global CFE_PLATFORM_ES_OBJECT_TABLE_SIZE

Define Number of entries in the ES Object table

Define Number of entries in the ES Object table

Global CFE_PLATFORM_ES_PERF_CHILD_MS_DELAY

Define Performance Analyzer Child Task Delay

Define Performance Analyzer Child Task Delay

Global CFE_PLATFORM_ES_PERF_CHILD_PRIORITY

Define Performance Analyzer Child Task Priority

Define Performance Analyzer Child Task Priority

Global CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE

Define Performance Analyzer Child Task Stack Size

Define Performance Analyzer Child Task Stack Size

Global CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE

Define Max Size of Performance Data Buffer

Define Max Size of Performance Data Buffer

Global CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS

Define Performance Analyzer Child Task Number of Entries Between Delay

Define Performance Analyzer Child Task Number of Entries Between Delay

Global CFE_PLATFORM_ES_PERF_FILTMASK_ALL

Define Filter Mask Setting for Enabling All Performance Entries

Define Filter Mask Setting for Enabling All Performance Entries

Global CFE_PLATFORM_ES_PERF_FILTMASK_INIT

Define Default Filter Mask Setting for Performance Data Buffer

Define Default Filter Mask Setting for Performance Data Buffer

Global CFE_PLATFORM_ES_PERF_FILTMASK_NONE

Define Filter Mask Setting for Disabling All Performance Entries

Define Filter Mask Setting for Disabling All Performance Entries

Global CFE_PLATFORM_ES_PERF_TRIGMASK_ALL

Define Filter Trigger Setting for Enabling All Performance Entries

Define Filter Trigger Setting for Enabling All Performance Entries

Global CFE_PLATFORM_ES_PERF_TRIGMASK_INIT

Define Default Filter Trigger Setting for Performance Data Buffer

Define Default Filter Trigger Setting for Performance Data Buffer

Global CFE_PLATFORM_ES_PERF_TRIGMASK_NONE

Define Default Filter Trigger Setting for Disabling All Performance Entries

Define Default Filter Trigger Setting for Disabling All Performance Entries

Global CFE_PLATFORM_ES_POOL_MAX_BUCKETS

Maximum number of block sizes in pool structures

Maximum number of block sizes in pool structures

Global CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING

Default virtual path for volatile storage

Default virtual path for volatile storage

Global CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS

ES Ram Disk Number of Sectors

ES Ram Disk Number of Sectors

Global CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED

Percentage of Ram Disk Reserved for Decompressing Apps

Percentage of Ram Disk Reserved for Decompressing Apps

Global CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE

ES Ram Disk Sector Size

ES Ram Disk Sector Size

Global CFE_PLATFORM_ES_START_TASK_PRIORITY

Define ES Task Priority

Define ES Task Priority

Global CFE_PLATFORM_ES_START_TASK_STACK_SIZE

Define ES Task Stack Size

Define ES Task Stack Size

Global CFE_PLATFORM_ES_STARTUP_SCRIPT_TIMEOUT_MSEC

Startup script timeout

Startup script timeout

Global CFE_PLATFORM_ES_STARTUP_SYNC_POLL_MSEC

Poll timer for startup sync delay

Poll timer for startup sync delay

Global CFE_PLATFORM_ES_SYSTEM_LOG_SIZE

Define Size of the cFE System Log.

Define Size of the cFE System Log.

Global CFE_PLATFORM_ES_USER_RESERVED_SIZE

Define User Reserved Memory Size

Define User Reserved Memory Size

Global CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE

ES Volatile Startup Filename

ES Volatile Startup Filename

Global CFE_PLATFORM_EVS_START_TASK_PRIORITY

Define EVS Task Priority

Define EVS Task Priority

Global CFE_PLATFORM_EVS_START_TASK_STACK_SIZE

Define EVS Task Stack Size

Define EVS Task Stack Size

Global CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01

Define SB Memory Pool Block Sizes

Define SB Memory Pool Block Sizes

Global CFE_PLATFORM_SB_START_TASK_PRIORITY

Define SB Task Priority

Define SB Task Priority

Global CFE_PLATFORM_SB_START_TASK_STACK_SIZE

Define SB Task Stack Size

Define SB Task Stack Size

Global CFE_PLATFORM_TBL_START_TASK_PRIORITY

Define TBL Task Priority

Define TBL Task Priority

Global CFE_PLATFORM_TBL_START_TASK_STACK_SIZE

Define TBL Task Stack Size

Define TBL Task Stack Size

2.10 cFE Event Services Overview

Event Services (EVS) provides centralized control for the processing of event messages originating from the EVS task itself, other cFE core applications (ES, SB, TIME, and TBL), and from cFE applications. Event messages are asynchronous messages that are used to inform the operator of a significant event from within the context of a registered application or core service. EVS provides various ways to filter event messages in order to manage event message generation.

Note for messages outside the context of a registered application (for example early in app initialization or if registration fails) [CFE_ES_WriteToSysLog](#) can be used for reporting.

For more information on cFE Event Services, see the following sections:

- [Event Message Format](#)
- [Local Event Log](#)
- [Event Message Control](#)
- [Event Message Filtering](#)
- [EVS Registry](#)
- [EVS Counters](#)
- [Resetting EVS Counters](#)
- [Effects of a Processor Reset on EVS](#)
- [EVS squelching of misbehaving apps](#)
- [Frequently Asked Questions about Event Services](#)

2.10.1 Event Message Format

Event messages are software bus messages that contain the following fields:

- Timestamp
- Event Type
- Spacecraft ID
- Processor ID
- Application Name
- Event ID
- Message

The *Timestamp* corresponds to when the event was generated, in spacecraft time. The *Event Type* is one of the following: DEBUG, INFO, ERROR or CRITICAL. The *Spacecraft ID* and *Processor ID* identify the spacecraft and processor from which the event was generated. Note that the *Spacecraft ID* is defined in the `cfe_mission_cfg.h` file; The *Processor ID* is defined in the appropriate `cfe_platform_cfg.h` file. The *Application Name* refers to the Application that issued the event message as specified on application startup (either startup script or app start command). The *Event ID* is an Application unique number that identifies the event. The *Message* is an ASCII text string describing the event. Event messages may have parameters associated with the event message. EVS formats the parameters such that they are part of the ASCII text string that make up the event message.

In order to accommodate missions that have limited telemetry bandwidth, EVS can be configured such that the ASCII text string part of the event message is omitted, thus reducing the size of each event message. This is referred to as *Short Format*; Event messages including the ASCII text string are referred to as *Long Format*. The default setting is specified in the `cfe_platform_cfg.h` file. EVS also provides commands in order to set the mode (short or long).

Since the design of the cFE's Software Bus is based on run-time registration, no predetermined message routing is defined, hence it is not truly correct to say that events are generated as telemetry. Technically, EVS generates events in the form of software bus messages. Applications such as Telemetry Output and Data Storage can then subscribe to these messages making them telemetry. For the purposes of this document, any references to telemetry assumes that a telemetry application subscribes to the EVS event software bus message and routes it to the ground as telemetry. Note that short format event messages on the Software Bus have different message lengths than long form messages and do not include any part of the long format message string.

The EVS can be configured via ground command to send event messages out one or more message ports. These message ports may include ports such as debug, console, and UART. Messages sent out of the message ports will be in ASCII text format. This is generally used for lab purposes. Note that the event mode (short or long) does affect the event message content sent out these message ports.

2.10.2 Local Event Log

In addition to generating a software bus message, EVS logs the event message to a Local Event Log. Note that this is an optional feature that must be enabled via the `cfe_platform_cfg.h` file. The Local Event Log resides on the same processor as the EVS which is used to store events without relying on an external bus. In multi-processor cFE configurations the Local Event Buffer preserves event messages during non-deterministic processor initialization sequences and during failure scenarios. In order to obtain the contents of the Local Event Log, a command must be sent to write the contents of the buffer to a file which can then be sent to the ground via a file transfer mechanism. Note that event messages stored in the EVS Local Event Log are always long format messages and are not affected by the event mode (short or long).

EVS provides a command in order to [clear the Local Event Log](#).

2.10.2.1 Local Event Log Mode EVS can be configured to control the Local Event Log to either discard or overwrite the contents of the log when it becomes full. If the mode is set to overwrite, the log is treated like a circular buffer, overwriting the oldest event message contained in the log first. This control is configured by default in the `cfe_platform_cfg.h` file but can be modified by [a command](#).

2.10.3 Event Message Control

In order for an application to be serviced by EVS, it must be registered with EVS. EVS provides various commands in order to control the event messages that are generated as software bus messages.

2.10.3.1 Event Message Control - By Type The highest level of event message control that EVS provides is the ability to enable and disable event message types. As mentioned above, there are four event types. They are:

1. DEBUG
2. INFORMATION
3. ERROR
4. CRITICAL

When commands are sent to [enable](#) or [disable](#) a particular type of event message, ALL event messages of the specified type are affected. Typically, event messages of type DEBUG are disabled on-orbit. Note that EVS provides the capability to affect multiple types within one command using a bit mask. Note also that the configuration parameter `CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG` in the `cfe_platform_cfg.h` file specifies which event message types are enabled/disabled by default.

2.10.3.2 Event Message Control - By Application Commands are available to [enable](#) and [disable](#) the generation of event messages for a particular application. The result is that ALL event messages for the specified Application are affected (i.e. enabled or disabled).

2.10.3.3 Event Message Control - By Event Type for an Application EVS also provides the capability to [enable](#) / [disable](#) an event type for a particular application. Note that EVS provides the capability to affect multiple event types within one command using a bit mask.

2.10.3.4 Event Message Control - Individual Events There are two ways to control the generation of individual events depending on whether the application's event message has been registered with EVS or not.

2.10.3.4.1 Modifying a registered event message filter When an application registers with EVS, the application has the option of specifying the events that it wants to register for filtering along with the [Event Message Filtering](#) (only the Binary Filtering Scheme exists currently). Note that applications are limited in the number of events that they can register for filtering (see [CFE_PLATFORM_EVS_MAX_EVENT_FILTERS](#) in `cfe_platform_cfg.h` for the mission defined limit). The filtering method uses a mask to determine if the message is forwarded to the software bus, making it available in telemetry (see [Event Message Filtering](#) for a description on filtering). Commands are available to [modify the filter mask](#) for any registered event.

An on-orbit mission, for example, might be experiencing a problem resulting in an application's event message being repeatedly issued, flooding the downlink. If the event message for the application is registered with EVS, then a command can be issued to set the event message filter to the specified value in order to prevent flooding of the downlink.

2.10.3.4.2 Adding/Removing an event message for filtering Commands are also available to add filtering for those events that are not registered for filtering. Once an event is [registered for filtering](#), the filter can be modified (see above) or [removed](#).

An on-orbit mission, for example, might be experiencing a problem resulting in an event message being repeatedly issued, flooding the downlink. If the event message was not registered with EVS for filtering then the ground can add (i.e. register) the offending application's event for filtering (much like an application registers the event during initialization).

EVS also supports the ability to [remove](#) (i.e. unregister) an application's event message. Once it is removed, the event will no longer be filtered. Note that commands issued to disable events by event type, by application or by event type for an application are still valid and could affect this particular event.

2.10.4 Event Message Filtering

EVS uses a hexadecimal bit mask that controls how often a message is filtered. An event's filter mask is bit-wise ANDed with the event's event counter. There is one event counter for each event ID. If the result of the ANDing is zero then the message is sent.

Filter masks can be set so that one out of 1, 2, 4, 8 events are sent. Some examples of masks that use this pattern are: (0x0000, Every one), (0x0001, One of every 2), (0x0003, One of every 4), and (0x0007, One of every 8).

Filter masks can also be set so that only the first n events are sent. For example, the mask 0xFFFF generates one event message and then stops. Note that when the filter counter is reset to zero by command, this will restart the counting and enable n more events to be sent.

Event messages will be filtered until [CFE_EVS_MAX_FILTER_COUNT](#) events of the filtered event ID from the application have been received. After this, the filtering will become locked (no more of that event will be received by the ground) until the filter is either reset or deleted by ground command. This is to prevent the counter from rolling over, which would cause some filters to behave improperly. An event message will be sent when this maximum count is reached.

The following shows an example of how filtering works using a filter mask of 'x'0001', resulting in sending every other event:

	packet X	packet X+1	packet X+2	packet X+3	packet X+4	...
Event ID counter	x'0000'	x'0001'	x'0002'	x'0003'	x'0004'	
Event Filter mask	x'0001'	x'0001'	x'0001'	x'0001'	x'0001'	
Bitwise AND results	x'0000'	x'0001'	x'0000'	x'0001'	x'0000'	
Send event?	Yes	No	Yes	No	Yes	

In this example, the ground uses a filter mask of x'FFFE' resulting in the first two events being sent and then no more.

	packet X	packet X+1	packet X+2	packet X+3	packet X+4	...
Event ID counter	x'0000'	x'0001'	x'0002'	x'0003'	x'0004'	
Event Filter mask	x'FFFE'	x'FFFE'	x'FFFE'	x'FFFE'	x'FFFE'	
Bitwise AND results	x'0000'	x'0000'	x'0002'	x'0002'	x'0004'	
Send event?	Yes	Yes	No	No	No	

See [cfe_evs.h](#) for predefined macro values which can be used for masks.

2.10.5 EVS Registry

EVS maintains information on each registered application and all events registered for an application.

The registry contains the following information for each Registered Application:

- Active Flag - If equal to FALSE (0), all events from this Application are Filtered
- Event Count - Total number of events issued by this Application. Note that this value stop incrementing at 65535.

The following information for each Filtered Event (up to [CFE_PLATFORM_EVS_MAX_EVENT_FILTERS](#)) :

- Event ID - Event ID for event whose filter has been defined
- Mask - Binary Filter mask value (see [Event Message Filtering](#) for an explanation)
- Count - Current number of times this Event ID has been issued by this Application

2.10.6 EVS Counters

There are 2 types of counters in EVS housekeeping telemetry:

- Total events sent counter

- Number of events sent for each Application

The difference is that the first one is the sum of all of the event messages sent. Both of these represent events that are actually sent (by EVS to the software bus). If an event message is filtered or disabled, neither counter is incremented.

There are other counters available that show how many event messages were generated by an App, however, these are only available for those events that are registered for filtering hence if you have a message that is not registered for filtering and the message type (e.g. DEBUG) is disabled then you won't know if the event was ever issued by an application. These counters are available by sending a command to [write the EVS Application Data](#) and transferring the file to the ground.

2.10.7 Resetting EVS Counters

As far as reset commands, there are 4 commands available:

1. [Reset the total events sent counter](#)
2. [Reset the events sent counter for a particular Application](#) - e.g. reset the LC application events counter
3. [Reset all of the event counters for a particular registered event for a particular Application](#) - e.g. Reset event counter for Event ID 5 for the LC Application.
4. [Reset all of the event counters for ALL registered events for a particular App](#) - e.g. Reset all registered event counters for LC.

Note that there is currently no way to reset ALL of the events sent counters for all of the Apps with one command.

2.10.8 Effects of a Processor Reset on EVS

On a processor reset, the EVS Registry is cleared such that applications must re-register with EVS in order to use EVS services. All counters are also cleared with the exceptions of those listed below.

On a processor reset, the following EVS data is preserved (if the cFE is configured to include an [Local Event Log](#)):

- Local Event Log if the Local Event Log Mode is configured to Discard (1). If the Local Event Log Mode is configured to Overwrite (0), the contents of the log may be overwritten depending on the size and contents of the log prior to the reset.
- Local Event Log Full Flag
- Local Event Log overflow counter

The Local Event Log Mode (overwrite/discard) is set to the configured value specified in the `cfe_platform_cfg.h` file. The default value is Discard (1). Discard mode will guarantee the contents of the event log are preserved over a processor restart.

This provides the ground with the capability to write the Local Event Log to a file and transfer it to the ground in order to help debug a reset.

2.10.9 EVS squelching of misbehaving apps

Event squelching is an optional feature for suppressing excessive events from misbehaving apps. It is enabled by setting `CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST` to a nonzero positive value, and `CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC` equal to or less than that value.

`CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST` controls the maximum events that can be sent at a given moment, and `CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC` is the sustained event throughput per second.

The suppression mechanism initializes with `CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST * 1000` credits. Each event costs 1000 credits. Credits are restored at a rate of `CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC * 1000` up to a maximum balance of `CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST * 1000`, and the maximum "debt" is `-CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST * 1000`. When the credit count crosses from positive to negative, a squelched event message is emitted and events are suppressed, until the credit count becomes positive again.

Figure EVS-1 is a notional state diagram of the event squelching mechanism.

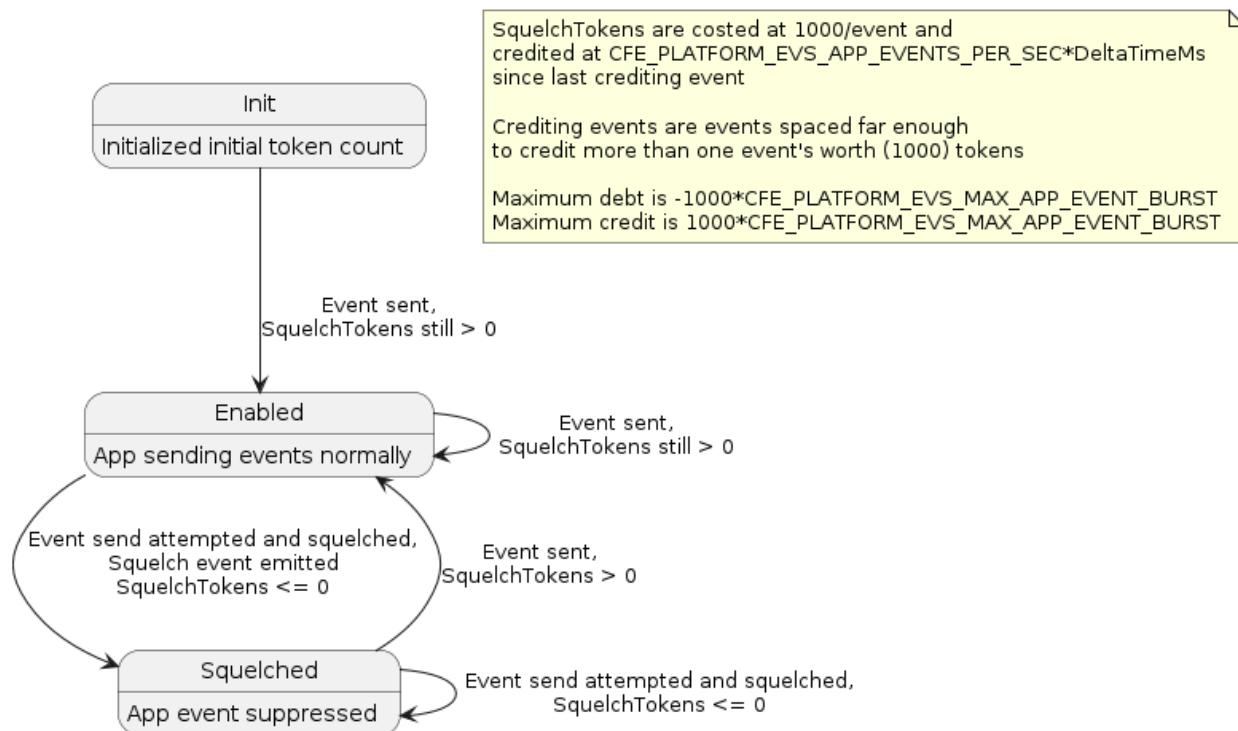


Figure 2 Figure EVS-1: EVS Squelching State Diagram

2.10.10 Frequently Asked Questions about Event Services

(Q) My telemetry stream is being flooded with the same event message. How do I make it stop?

The most direct way to stop an event message from flooding your downlink stream is to send a command to EVS to filter the offending event (see [Event Message Control](#) or [\\$sc_\\$cpu_EVS_SetBinFltrMask](#)). In order to stop the event message from being sent, a bit mask of '`0xFFFF`' should be used. If the event is not currently registered for filtering, the event message must be added using the command [\\$sc_\\$cpu_EVS_AddEvtFltr](#).

(Q) I filtered an event message and would now like to see it again. What do I do in order to see those events again?

If the event message that you are interested is registered with EVS for filtering, then you have 2 options:

1. You can use the [`\$sc_\$cpu_EVS_SetBinFltrMask`](#) command using a bit mask of '0x0000' which will result in getting all of the events for that Event Id
2. You can remove the registration of that event with EVS (see [`\$sc_\$cpu_EVS_DelEvtFltr`](#)).

Note that option (1) is the preferred method.

(Q) What is the purpose of DEBUG event messages?

Event message of type "DEBUG" are primarily used during flight software development in order to provide information that is most likely not needed on orbit. Some commands send debug event messages as verification that a command request was received. When writing the EVS local event log to a file, for example, an event message of type DEBUG is issued. On orbit, this event message is probably not needed. Instead, the command counter is used for command verification.

(Q) How do I find out which events are registered for filtering?

EVS provides a command ([`\$sc_\$cpu_EVS_WriteAppData2File`](#)) which generates a file containing all of the applications that have registered with EVS and all of the filters that are registered for each application. Note that EVS merely generates the file. The file must be transferred to the ground in order to view it.

(Q) Why do I see event messages in my console window?

By default, the events are configured to transmit out a "port" that shows event messages in the console

(Q) What is the difference between event services and the ES System Log

Events are within the context of an App or cFE Service (requires registration with ES). The system log can be written to outside of the Application or cFE Service context, for example during application startup to report errors before registration.

2.11 cFE Event Services Commands

Upon receipt of any command, the Event Services application will confirm that the message length embedded within the header (from [`CFE_MSG_GetSize\(\)`](#)) matches the expected length of that message, based on the size of the C structure defining that command. If there is any discrepancy between the expected and actual message size, EVS will generate the [`CFE_EVS_LEN_ERR_EID`](#) event, increment the command error counter ([`\$sc_\$cpu_EVS_CMDEC`](#)), and the command will *not* be accepted for processing.

The following is a list of commands that are processed by the cFE Event Services Task.

Global [`CFE_EVS_ADD_EVENT_FILTER_CC`](#)

Add Application Event Filter

Global [`CFE_EVS_CLEAR_LOG_CC`](#)

Clear Event Log

Global CFE_EVS_DELETE_EVENT_FILTER_CC

Delete Application Event Filter

Global CFE_EVS_DISABLE_APP_EVENT_TYPE_CC

Disable Application Event Type

Global CFE_EVS_DISABLE_APP_EVENTS_CC

Disable Event Services for an Application

Global CFE_EVS_DISABLE_EVENT_TYPE_CC

Disable Event Type

Global CFE_EVS_DISABLE_PORTS_CC

Disable Event Services Output Ports

Global CFE_EVS_ENABLE_APP_EVENT_TYPE_CC

Enable Application Event Type

Global CFE_EVS_ENABLE_APP_EVENTS_CC

Enable Event Services for an Application

Global CFE_EVS_ENABLE_EVENT_TYPE_CC

Enable Event Type

Global CFE_EVS_ENABLE_PORTS_CC

Enable Event Services Output Ports

Global CFE_EVS_NOOP_CC

Event Services No-Op

Global CFE_EVS_RESET_ALL_FILTERS_CC

Reset All Event Filters for an Application

Global CFE_EVS_RESET_APP_COUNTER_CC

Reset Application Event Counters

Global CFE_EVS_RESET_COUNTERS_CC

Event Services Reset Counters

Global CFE_EVS_RESET_FILTER_CC

Reset an Event Filter for an Application

Global CFE_EVS_SET_EVENT_FORMAT_MODE_CC

Set Event Format Mode

Global CFE_EVS_SET_FILTER_CC

Set Application Event Filter

Global CFE_EVS_SET_LOG_MODE_CC

Set Logging Mode

Global CFE_EVS_WRITE_APP_DATA_FILE_CC

Write Event Services Application Information to File

Global CFE_EVS_WRITE_LOG_DATA_FILE_CC

Write Event Log to File

2.12 cFE Event Services Telemetry

The following are telemetry packets generated by the cFE Event Services Task.

Global `CFE_EVS_HousekeepingTlm_Payload_t`

Event Services Housekeeping Telemetry Packet

Global `CFE_EVS_LongEventTlm_Payload_t`

Event Message Telemetry Packet (Long format)

Global `CFE_EVS_ShortEventTlm_Payload_t`

Event Message Telemetry Packet (Short format)

2.13 cFE Event Services Configuration Parameters

The following are configuration parameters used to configure the cFE Event Services either for each platform or for a mission as a whole.

Global `CFE_MISSION_EVS_MAX_MESSAGE_LENGTH`

Maximum Event Message Length

Maximum Event Message Length

Global `CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC`

Sustained number of event messages per second per app before squelching

Sustained number of event messages per second per app before squelching

Global `CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE`

Default EVS Application Data Filename

Default EVS Application Data Filename

Global `CFE_PLATFORM_EVS_DEFAULT_LOG_FILE`

Default Event Log Filename

Default Event Log Filename

Global `CFE_PLATFORM_EVS_DEFAULT_LOG_MODE`

Default EVS Local Event Log Mode

Default EVS Local Event Log Mode

Global `CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE`

Default EVS Message Format Mode

Default EVS Message Format Mode

Global `CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG`

Default EVS Event Type Filter Mask

Default EVS Event Type Filter Mask

Global `CFE_PLATFORM_EVS_LOG_MAX`

Maximum Number of Events in EVS Local Event Log

Maximum Number of Events in EVS Local Event Log

Global CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST

Maximum number of event before squelching

Maximum number of event before squelching

Global CFE_PLATFORM_EVS_MAX_EVENT_FILTERS

Define Maximum Number of Event Filters per Application

Define Maximum Number of Event Filters per Application

Global CFE_PLATFORM_EVS_PORT_DEFAULT

Default EVS Output Port State

Default EVS Output Port State

2.14 cFE Software Bus Overview

The Software Bus (SB) handles communication between software tasks on a processor. All tasks communicate with each other, with hardware devices, and with the ground by sending command and telemetry messages. The software bus provides an application programming interface (API) to other tasks for sending and receiving messages. This API is independent of the underlying operating system so that tasks can use the same interface regardless of which processor they reside on. Refer to the [cFE Application Programmer's Interface \(API\) Reference](#) for detailed information about the API functions.

The software bus is used internally by the flight software, and normally does not require attention from the ground. However, because of the scalability and the dynamic nature of the software bus, it is strongly recommended that each project carefully review the SB statistics and SB memory pool to be sure adequate margin is met on the configurable items.

The cFE software bus uses a dynamic protocol and builds its routing table at run-time through the SB subscribe API's. Also the cFE software bus pipes are created at run-time through the [CFE_SB_CreatePipe](#) API. Because the routing is established, and pipes are created at run-time, it is necessary to have a clear view of the routing details on command. The cFE software bus allows the user to dump the routing table, the pipe table, the message map and the statistics packet. Each of these items are described in detail in the corresponding section of this document.

- [Software Bus Terminology](#)
- [Autonomous Actions](#)
- [Operation of the SB Software](#)
- [Frequently Asked Questions about Software Bus](#)

2.14.1 Software Bus Terminology

In order to fully understand the Software Bus, it is imperative that the basic terms used to describe its features are also understood. Below are the critical terms that help identify what the Software Bus accomplishes for each Application:

- [Messages](#)

- [Pipes](#)
- [Subscriptions](#)
- [Memory](#)

2.14.1.1 Messages The sole purpose of the software bus is to provide applications a way to send messages to each other. The term message and the term packet are used interchangeably throughout this document. A message is a combined set of bytes with a predefined format that is used as the basis of communication on a spacecraft. All commands, telemetry, and other data that are passed between the ground and the spacecraft, and between subsystems of the spacecraft, are considered to be messages. The most common message format is CCSDS (Consultative Committee for Space Data Systems) in [CCSDS Space Packet Protocol](#), but can be customized by replacing the message module.

There are two general types of messages - commands (or command packets) and telemetry (or telemetry packets). Command packets are sent to a particular software task from the ground (or another task). Telemetry packets are sent from a particular software task to the ground (or other tasks).

The concept of a message identifier is utilized to provide abstraction from header implementation, often abbreviated as message ID, MsgId, or MID. Header and message identifier values should not be accessed directly to avoid implementation specific dependencies.

Telemetry packets typically contain a timestamp that indicates when the packet was produced. Command packets typically contain a command code that identifies the particular type of command.

The message module provides APIs for 'setting' and 'getting' the fields in the header of the message. The message module was separated from software bus to enable users to customize message headers without requiring clone and own of the entire cfe repository. To customize, remove the built in msg module from the build and replace with custom implementation. See sample target definitions folder for examples.

Following the header is the user defined message data.

2.14.1.2 Pipes The destinations to which messages are sent are called pipes. These are queues that can hold messages until they are read out and processed by a task. Each pipe is created at run-time through the [CFE_SB_CreatePipe](#) API. The pipe name and the pipe depth are given as arguments in the API. The pipe identifier (or PipelD) is given back to the caller after the API is executed. Each pipe can be read by only one task, but a task may read more than one pipe. Only the pipe owner is allowed to subscribe to messages on the pipe.

The Pipe IDs are specific to a particular processor (that is, the same ID number may refer to a different pipe on each processor). The pipe information for all pipes that have been created, may be requested at anytime by sending the ['Write Pipe Info' SB command](#). The software bus also provides a set of figures regarding capacity, current utilization and high water marks relevant to pipes. This information may be requested by sending the command to [dump the SB statistics packet](#).

2.14.1.3 Subscriptions A subscription is a run-time request for a particular message to be sent to a particular pipe. If the caller of the subscribe API is not the owner of the pipe, the request is rejected and an error event is sent. The application that creates the pipe is considered the owner of the pipe. The pipe specified in the subscription is sometimes referred to as the destination of the message. There are a maximum number of destinations for a particular message. This value is specified by the platform configuration parameter [CFE_PLATFORM_SB_MAX_DEST_PER_PKT](#).

As subscriptions are received, the destinations are added to the head of a linked list. During the sending of a message, the list is traversed beginning at the head of the list. Therefore the message will first be sent to the last subscriber. If an application has timing constraints and needs to receive a message in the shortest possible time, the developer may consider holding off its subscription until other applications have subscribed to the message.

The message limit specifies the maximum number of messages (with the specified Message ID) that are allowed on the specified pipe at any time. This limit is specified by the application at the time of the subscription. If the application uses the [CFE_SB_Subscribe](#) API, a message limit default value of four is used. If this default value is not sufficient, the caller would use the [CFE_SB_SubscribeEx](#) API that allows the message limit to be specified.

The software bus also provides the user with an option to unsubscribe to a message. The [unsubscribe API](#) takes two parameters, Message ID and Pipe ID. Only the owner of a pipe may unsubscribe to messages on that pipe.

2.14.1.4 Memory The software bus statically allocates a block of memory for message buffers and subscription blocks. The size of this memory block is defined by the platform configuration parameter [CFE_PLATFORM_SB_BUF_MEMORY_BYTES](#). The memory is managed by the cFE ES memory pool and is used only by the software bus. The ES memory pool allows an application to define the block sizes for the pool at compile time. These sizes are defined by the platform configuration parameters prefixed with CFE_SB_MEM_BLOCK_SIZE (for example, [CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01](#)). It is recommended that a project tailor these values for the mission, based on the software bus packet sizes.

At the time a message is sent, two buffers are allocated from the pool. One for a buffer descriptor (CFE_SB_BufferD_t) and one for the size of the packet. Both buffers are returned to the pool when the message has been received by all recipients. More precisely, if there is one recipient for a message, the message buffers will be released on the following call to CFE_SB_ReceiveBuffer for the pipe that received the buffer.

Also when subscriptions are received through the subscribe API's, the software bus allocates a subscription block (CFE_SB_DestinationD_t) from the pool. The subscription blocks are returned to the pool if and when the subscription is nullified through a [CFE_SB_Unsubscribe](#) call.

The software bus provides a set of figures regarding memory capacity, current memory utilization and high water marks relevant to the SB memory pool. This information may be requested by sending the command to dump the SB statistics packet. In addition, the current memory utilization value and the 'unmarked memory' value ([CFE_PLATFORM_SB_BUF_MEMORY_BYTES](#) minus peak memory in use) are sent in software bus housekeeping telemetry. The unmarked memory value should be monitored regularly to ensure that the value (in bytes) does not continue to decline or approach zero. If this value were to approach zero, there is a possibility that memory requests would fail which may inhibit the sending of a message. The current memory utilization value should also be monitored to ensure the system contains no memory leaks. The value (in bytes) should remain stable under nominal conditions. Refer to the ES users guide for more information regarding the ES Memory Pool.

2.14.2 Autonomous Actions

The software bus is primarily a set of library routines that are called by other software tasks to send and receive packets. The software bus does not perform any operations autonomously, except for sending event messages if errors are detected during the transfer of packets.

As do other tasks, the SB task sends out housekeeping telemetry when requested through the 'Send Housekeeping Data' command.

2.14.3 Operation of the SB Software

- Initialization
- All Resets
- Message Routing
- Packet Sequence Values
- Message Limit Error
- Pipe Overflow Error
- SB Event Filtering
- Diagnostic Data
- Control of Packet Routing
- Quality of Service
- Known Problem

2.14.3.1 Initialization No action is required by the ground to initialize the software bus. The software bus initializes internal data structures and tables the same way regardless of the type of reset.

2.14.3.2 All Resets The software bus does not preserve any information across a reset of any kind. The software bus initializes internal data structures and tables the same way regardless of the type of reset. The routing is reestablished as the system initializes. It is normal procedure for each task of the system to create the pipe or pipes it needs and do all of its subscriptions during task initialization.

After any reset the following statements are true:

- The routing table is cleared and does not contain any routes.
- All subscriptions are lost and must be regenerated.
- The pipe table contains no data, all pipes must be recreated.
- Any packets in transit at the time of the reset are lost.
- The sequence counters for telemetry packets will begin again with a value of one.

2.14.3.3 Message Routing In the software bus, all messages are processed in a similar way. The software bus uses the Message ID and the packet length fields (contained in the header) for routing the message to the destination pipe. If either of these two fields do not pass validation, the software bus generates an error event and aborts the delivery process. The software bus performs some validation checks by simply checking message header values against mission or platform configuration parameters. Messages originating from various tasks or instruments are routed to one or more pipes, where they wait until read by a task. The routing configuration for each message is established when applications call one of the SB subscribe APIs. The subscribe APIs take a Message ID and a Pipe ID as parameters. The routing for each packet is stored in SB memory and may be requested at any time by sending the 'Send Routing Info' command. The software bus also provides a set of figures regarding capacity, current utilization and high water marks relevant to the routing. This information may be requested by sending the command to dump the SB statistics packet.

2.14.3.4 Packet Sequence Values The sequence count behavior depends on if the message is a command type or telemetry type.

The sequence counter for command messages is not altered by the software bus.

For a telemetry message, the behavior is controlled via API input parameters when sending. When enabled, the software bus will populate the packet sequence counter using an internal counter that gets initialized upon the first subscription to the message (first message will have a packet sequence counter value of 1). From that point on each send request will increment the counter by one, regardless of the number of destinations or if there is an active subscription.

After a rollover condition the sequence counter will be a value of zero for one instance. The sequence counter is incremented after all the checks have passed prior to the actual sending of the message. This includes the parameter checks and the memory allocation check.

When disabled, the original message will not be altered. This method of message delivery is recommended for situations where the sender did not generate the packet, such as a network interface application passing a packet from a remote system to the local software bus.

2.14.3.5 Message Limit Error Before placing a message on a pipe, the software bus checks the message limit to ensure the maximum number of packets in transit to the destination is not exceeded. If placing the message on the pipe would exceed the message limit, then the action of sending to that pipe is aborted and the 'Message Limit Error' event is sent. This condition will typically occur when an application that receives the packets does not respond quickly enough, or if the sender of the packets produces them too quickly.

This condition occurs often during development and during integration, for example when a remote processor gets reset or a 1553 cable becomes disconnected. Because of the common occurrences, the event may have filtering associated with it. Any filtering for this event would be performed by the cFE Event Services (EVS). Filtering for SB events may be specified in the cFE platform configuration file or may be commanded after the system initializes.

If this error occurs during nominal conditions, it could be an indication that the 'message limit' is not set correctly. The message limit is given at the time of the subscription and given as a parameter in the subscribe API. With the [CFE_SB_Subscribe](#) API, the SB uses a default message limit value specified by [CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT](#). This constant is currently set to a value of four. If the default value is insufficient, the message limit value can be specified in the [CFE_SB_SubscribeEx](#) API.

A related failure is the pipe overflow condition, which can occur if the total number of packets (of all kinds) sent to a particular pipe is too large.

2.14.3.6 Pipe Overflow Error Another common error that occurs during the send process is the pipe overflow error. This condition occurs if the total number of packets (of all kinds) sent to a particular pipe is too large. If this error occurs too frequently, it may be an indication that the pipe depth is not set correctly. The pipe depth is given at the time the pipe is created as a parameter in the [CFE_SB_CreatePipe](#) API.

2.14.3.7 SB Event Filtering Most filtering for SB events is performed by the cFE Event Services (EVS). Filtering for SB events may be specified in the cFE platform configuration file or may be commanded after the system initializes. There is no SB event log that limits the number of events based on the capacity of the log, as in the heritage software bus.

There is one case in which events are filtered by the software bus instead of event services. This occurs when the software bus needs to suppress events so that a fatal recursive event condition does not transpire. Because error cases encountered when sending a message generate an event, and events cause a message to be sent a calling sequence could cause a stack overflow if the recursion is not properly terminated. The cFE software bus detects this condition and properly terminates the recursion. This is done by using a set of flags (one flag per event in the Send API) which determine whether an API has relinquished its stack. If the software bus needs to send an event that may cause recursion, the flag is set and the event is sent. If sending the event would cause the same event again, the event call will be bypassed, terminating the recursion. The result is that the user will see only one event instead of the many events that would normally occur without the protection. The heritage software bus did not have this condition because it stored events in the software bus event log and another thread would read them out at a later time.

2.14.3.8 Diagnostic Data The cFE software bus provides a set of commands to dump SB diagnostic data to help troubleshoot problems or check configuration settings. These commands allow the user to view the routing table, the pipe table or the message map. The message map is a lookup table used during a send operation to give fast access to the routing table index that corresponds to the message being sent.

The software bus also provides a statistics packet that can be used to tune the configuration parameters. This information is sent to the ground in the form of an SB packet when the corresponding command is received. The cFE limits the number of system pipes, unique Message IDs, buffer memory, messages on a pipe and subscriptions per Message ID. These limits are configurable through cFE platform and mission configuration parameters. The statistics packet was designed to let the project verify that these user settings provide the necessary margin to meet requirements.

The SB statistics information shows 'Currently In Use' figures, 'High Water Mark' figures and 'Max Allowed' figures for the following: buffer memory, messages on each pipe (pipe depth stats), System Pipes, Unique Message IDs and total subscriptions.

Depending on the task-scheduling implementation details of the operating system, it is possible to see the peak messages on a pipe occasionally exceed the depth of the pipe. The "Peak Messages In Use" parameter is included in the SB statistics packet under the pipe depth stats.

2.14.3.9 Control of Packet Routing The software bus allows the ground to disable and enable the sending of packets of a specified Message ID to a specified pipe. All destinations that are needed for normal operation are enabled by default. Modifying the routing of packets may be required for the following reasons:

- In flight, one can enable diagnostic packets to see them on the ground.
- During testing, one can disable a destination to simulate an anomaly.

2.14.3.10 Quality of Service The software bus has a parameter in the [CFE_SB_SubscribeEx](#) API named Quality, which means Quality of Service (QOS) for off-board routing and is of the type [CFE_SB_Qos_t](#). This structure has two members named priority and reliability. The Quality parameter is currently unused by the software bus. It is a placeholder to be used with the future software bus capability of inter-processor communication. Although currently the software bus does not implement quality of service.

A default quality of services is provided via the [CFE_SB_DEFAULT_QOS](#) macro.

2.14.3.11 Known Problem The software bus may perform unexpectedly under an unlikely corner-case scenario. This scenario was revealed in a stress test. The stress test was designed to deplete the Software Bus memory pool by having a high priority application continuously send 1000 byte packets to a lower priority application until the memory pool code returned an error code and sent the following event. "CFE_ES:getPoolBuf err:Request won't fit in remaining memory" At this point the higher priority sending application would stop executing. This would allow the lower priority receiving application to begin receiving the 1000 byte packets. After the receiving app processed all of the packets, the memory was restored to the memory pool as expected. The SB memory-in-use telemetry was zero because there were no software bus packets in transit. At this point any attempt to send a new-sized packet on the software bus was be rejected. The ES memory pool stated that the "...Request won't fit in remaining memory" even though there was currently no memory in use.

The simplest way to prevent this behavior is to ensure that there is margin when sizing the SB memory pool. To check the margin, monitor the "Peak Memory in Use" vs. the configuration parameter [CFE_PLATFORM_SB_BUF_MEMORY_BYTES](#) which indicates the amount allocated.

2.14.4 Frequently Asked Questions about Software Bus

(Q) How is the memory pool handle (sent in SB housekeeping telemetry) intended to be used?

The memory pool handle is used to analyze the SB memory pool statistics. The cFE ES command ([CFE_ES_SEND_MEM_POOL_STATS_CC](#)) to dump the memory pool statistics takes the pool handle as a parameter. These statistics tell how the SB memory pool is configured and gives details on margin. An improperly configured SB memory pool may inhibit communication. This may occur if there is not enough margin to create a block of the size needed for a transfer. Refer to the ES memory pool users guide for more details. [Memory Pool](#)

(Q) When sending a message, what message header fields are critical for routing the message?

To route the message properly, the software bus uses only the Message ID and packet length fields from the header of the message. If the packet length field is incorrect, then the buffer allocation for the message will also be incorrect. This may appear to the receiver as a truncated message or a message with unknown data added to the end of the message.

(Q) How many copies of the message are performed in a typical message delivery?

There is a single copy of the message performed when sending a message (from the callers memory space) using [CFE_SB_TransmitMsg](#). When transmitting the message, the software bus copies the message from the callers memory space into a buffer in the software bus memory space. There is also the option to request a buffer from SB, write directly to the buffer and send via [CFE_SB_TransmitBuffer](#). This is equivalent to the previous zero copy implementation. The [CFE_SB_ReceiveBuffer](#) API gives the user back a pointer to the buffer. When working with the buffers, the additional complexity to be aware of is the buffer is only available to the app from the request to send (on the sending side), or from the receive until the next receive on the same pipe on the receiving side. If the data is required outside that scope, the app needs a local copy.

(Q) When does the software bus free the buffer during a typical message delivery process? Or how long is the message, and the pointer to the buffer in the [CFE_SB_ReceiveBuffer](#) valid?

After receiving a buffer by calling [CFE_SB_ReceiveBuffer](#), the buffer received is valid until the next call to [CFE_SB_ReceiveBuffer](#) with the same Pipe Id. If the caller needs the message longer than the next call to [CFE_SB_ReceiveBuffer](#), the caller must copy the message to its memory space.

(Q) The first parameter in the [CFE_SB_ReceiveBuffer](#) API is a pointer to a pointer which can get confusing. How can I be sure that the correct address is given for this parameter.

Typically a caller declares a ptr of type `CFE_SB_Buffer_t` (i.e. `CFE_SB_Buffer_t *Ptr`) then gives the address of that pointer (`&Ptr`) as this parameter. After a successful call to `CFE_SB_ReceiveBuffer`, `Ptr` will point to the first byte of the software bus buffer. This should be used as a read-only pointer. In systems with an MMU, writes to this pointer may cause a memory protection fault.

(Q) Why am I not seeing expected Message Limit error events or Pipe Overflow events?

It is possible the events are being filtered by cFE Event Services. The filtering for this event may be specified in the platform configuration file or it may have been commanded after the system initializes.

There is a corresponding counter for each of these conditions. First verify that the condition is happening by viewing the counter in SB HK telemetry. If the condition is happening, you can view the SB filter information through the EVS App Data Main page by clicking the 'go to' button for SB. The event Id for these events can be learned through a previous event or from the `cfe_sb_eventids.h` file.

(Q) Why does the SB provide event filtering through the platform configuration file?

To give the user the ability to filter events before an EVS command can be sent. During system initialization, there are many conditions occurring that can cause a flood of SB events such as No Subscribers, Pipe Overflow and MsgId to Pipe errors. This gives the user a way to limit these events.

(Q) Why does SB have so many debug event messages?

The SB debug messages are positive acknowledgments that an action (like receiving a cmd, creating a pipe or subscribing to a message) has occurred. They are intended to help isolate system problems. For instance, if an expected response to a command is not happening, it may be possible to repeat the scenario with the debug event turned on to verify that the command was successfully received.

(Q) How is the QOS parameter in the `CFE_SB_SubscribeEx` used by the software bus?

The QOS parameter is currently unused by the software bus. It is a placeholder to be used with the future software bus capability of inter-processor communication. Setting the QOS as `CFE_SB_DEFAULT_QOS` will ensure seamless integration when the software bus is expanded to support inter-processor communication.

(Q) Can I confirm my software bus buffer was delivered?

There is no built in mechanism for confirming delivery (it could span systems). This could be accomplished by generating a response message from the receiver.

2.15 cFE Software Bus Commands

Upon receipt of any command, the Software Bus application will confirm that the message length embedded within the header (from `CFE_MSG_GetSize()`) matches the expected length of that message, based on the size of the C structure defining that command. If there is any discrepancy between the expected and actual message size, SB will generate the `CFE_SB_LEN_ERR_EID` event, increment the command error counter (\$sc_\$cpu_SB_CMDEC), and the command will *not* be accepted for processing.

The following is a list of commands that are processed by the cFE Software Bus Task.

Global `CFE_SB_DISABLE_ROUTE_CC`

Disable Software Bus Route

Global CFE_SB_DISABLE_SUB_REPORTING_CC

Disable Subscription Reporting Command

Global CFE_SB_ENABLE_ROUTE_CC

Enable Software Bus Route

Global CFE_SB_ENABLE_SUB_REPORTING_CC

Enable Subscription Reporting Command

Global CFE_SB_NOOP_CC

Software Bus No-Op

Global CFE_SB_RESET_COUNTERS_CC

Software Bus Reset Counters

Global CFE_SB_SEND_PREV_SUBS_CC

Send Previous Subscriptions Command

Global CFE_SB_SEND_SB_STATS_CC

Send Software Bus Statistics

Global CFE_SB_WRITE_MAP_INFO_CC

Write Map Info to a File

Global CFE_SB_WRITE_PIPE_INFO_CC

Write Pipe Info to a File

Global CFE_SB_WRITE_ROUTING_INFO_CC

Write Software Bus Routing Info to a File

2.16 cFE Software Bus Telemetry

The following are telemetry packets generated by the cFE Software Bus Task.

Global CFE_SB_AllSubscriptionsTlm_Payload_t

SB Previous Subscriptions Packet

Global CFE_SB_HousekeepingTlm_Payload_t

Software Bus task housekeeping Packet

Global CFE_SB_SingleSubscriptionTlm_Payload_t

SB Subscription Report Packet

Global CFE_SB_StatsTlm_Payload_t

SB Statistics Telemetry Packet

2.17 cFE Software Bus Configuration Parameters

The following are configuration parameters used to configure the cFE Software Bus either for each platform or for a mission as a whole.

Global CFE_MISSION_SB_MAX_PIPES

Maximum Number of pipes that SB command/telemetry messages may hold

Maximum Number of pipes that SB command/telemetry messages may hold

Global CFE_MISSION_SB_MAX_SB_MSG_SIZE

Maximum SB Message Size

Maximum SB Message Size

Global CFE_PLATFORM_ENDIAN

Platform Endian Indicator

Global CFE_PLATFORM_SB_BUF_MEMORY_BYTES

Size of the SB buffer memory pool

Size of the SB buffer memory pool

Global CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME

Default Message Map Filename

Default Message Map Filename

Global CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT

Default Subscription Message Limit

Default Subscription Message Limit

Global CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME

Default Pipe Information Filename

Default Pipe Information Filename

Global CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME

Default Routing Information Filename

Default Routing Information Filename

Global CFE_PLATFORM_SB_FILTERED_EVENT1

SB Event Filtering

SB Event Filtering

Global CFE_PLATFORM_SB_HIGHEST_VALID_MSGID

Highest Valid Message Id

Highest Valid Message Id

Global CFE_PLATFORM_SB_MAX_DEST_PER_PKT

Maximum Number of unique local destinations a single MsgId can have

Maximum Number of unique local destinations a single MsgId can have

Global CFE_PLATFORM_SB_MAX_MSG_IDS

Maximum Number of Unique Message IDs SB Routing Table can hold

Maximum Number of Unique Message IDs SB Routing Table can hold

Global CFE_PLATFORM_SB_MAX_PIPES

Maximum Number of Unique Pipes SB Routing Table can hold

Maximum Number of Unique Pipes SB Routing Table can hold

2.18 cFE Table Services Overview

Applications often organize sets of their parameters into logical units called tables. These are typically constant parameters that can change the behavior of a flight software algorithm and are only intended to be modified by operations personnel. Examples of this would be attitude control gains, sensor scalefactors, telemetry filter settings, etc.

Table Services (TBL) provides a centralized control of flight software tables. Operations personnel would interact with TBL in order to dump the contents of current tables, load new table images, verify the contents of a table image and manage Critical tables.

None of the cFE core applications (EVS, SB, ES, TIME, or TBL) use tables, and it is possible to build cFE without Table Services if not needed or an alternative parameter management mechanism is to be utilized.

For additional detail on Tables and how to manage them, see the following sections:

- [Managing Tables](#)
- [cFE Table Types and Table Options](#)
- [Table Registry](#)
- [Table Services Telemetry](#)
- [Effects of Processor Reset on Tables](#)
- [Frequently Asked Questions about Table Services](#)

2.18.1 Managing Tables

In order to effectively manage tables, an operator needs to understand how cFE Applications manage tables from their end. There are a number of methods that cFE Applications typically use to manage their tables. Each method is appropriate based upon the nature of the contents of the table.

cFE Applications are required to periodically check to see if their table is to be validated, updated (or in the case of dump-only tables, dumped). Most Applications perform this periodic management at the same time as housekeeping requests are processed. This table management is performed by the cFE Application that "owns" a table (ie - the cFE Application that registered the table with cFE Table Services). It is possible for cFE Applications to "share" a table with other cFE Applications. An Application that shares a table does not typically perform any of the management duties associated with that table.

A table can have one of two different types and a number of different options. These are discussed further in later sections. An operator should understand the chosen type and selected options for a particular table before attempting to modify a table's contents.

To understand the methods of maintaining a table, it is important that the terminology be clear. A table has two images: "Active" and "Inactive". The Active table is the one that a cFE Application is currently accessing when it executes. The Inactive table is a copy of the Active table that an operator (or on-board process such as a stored command processor) can manipulate and change to have a newly desired set of data.

To create an Inactive table image on board, the operator would be required to perform a "Load" to the table. Loads are table images stored in on-board files. The Load can contain either a complete table image or just a part of a table image. If the Load contains just a portion, the Inactive image is first initialized with the contents of the Active image and then the portion identified in the Load file is written on top of the Active image. After the initial Load, an operator can continue

to manipulate the Inactive table image with additional partial table load images. This allows the operator to reconfigure the contents of multiple portions of the table before deciding to "Validate" and/or "Activate" it.

Some cFE Applications provide special functions that will examine a table image to determine if the contents are logically sound. This function is referred to as the "Validation Function." When a cFE Application assigns a Validation Function to a table during the table registration process, it is then requiring that a Validation be performed before the table can be Activated. When an operator requests a Validation of a table image, they are sending a request to the owning Application to execute the associated Validation Function on that image. The results of this function are then reported in telemetry. If the Validation is successful, the operator is free to perform a table Activation. If the Validation fails, the operator would be required to make additional changes to the Inactive table image and attempt another Validation before commanding an Activation.

To change an Inactive table image into the Active table image, an operator must Activate a table. When an operator sends the table Activation command, they are notifying the table's owning Application that a new table image is available. It is then up to the Application to determine when is the best time to perform the "Update" of the table. When an Application performs an Update, the contents of the Inactive table image become the Active table image.

2.18.2 cFE Table Types and Table Options

A cFE Application Developer has several choices when creating a cFE Application. There are two basic types of tables: single buffered and double buffered. In addition to these two basic types there are a small variety of options possible with each table. These options control special characteristics of the table such as whether it is dump-only, critical or whether it has an application defined location in memory.

Each choice has its advantages and disadvantages. The developer chooses the appropriate type based upon the requirements of the application. Anyone operating a particular cFE Application must understand the nature of the type and options selected for a particular table before they can successfully understand how to perform updates, validations, etc.

For more information on the different types of tables available, see the following sections:

- Table Types
 - [Single Buffered Tables](#)
 - [Double Buffered Tables](#)
- Table Options
 - [Tables with Validation Functions](#)
 - [Critical Tables](#)
 - [User Defined Address Tables](#)
 - [Dump Only Tables](#)

2.18.2.1 Single Buffered Tables The default table type for a cFE Application to use is a single buffered table. The principle advantage of a single buffered table is that it can share one of several shared table buffers for uploaded and pending table images. Since many cFE Applications have relatively small tables that are not changed at time critical moments or are not changed very often during a mission, single buffered tables represent the most memory resource efficient method of being managed.

The number of single buffered tables that can have inactive table images being manipulated at one time is specified by a TBL Services configuration parameter ([CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS](#)) found in the `cfe_platform_cfg.h` file associated with the processor in question. This parameter identifies the number of shared table buffers that are available.

Since inactive single buffered table images share a common resource, it may not be prudent for an operator to load an image and then delay on the image's activation for an extended period of time.

Single buffered tables are allowed to be critical (see [Critical Tables](#)), dump-only (see [Dump Only Tables](#)) and/or have a user-defined address (see [User Defined Address Tables](#)).

2.18.2.2 Double Buffered Tables Under certain conditions, a cFE Application Developer may choose to use a double buffered table type within their application. Double buffered tables retain a dedicated inactive image of the table data. With a dedicated inactive table image available, double buffered tables are then capable of efficiently swapping table contents and/or delaying the activation of a table's contents for an indeterminate amount of time.

Some cFE Applications prefer to delay the Activation of a table until a specified time (e.g. - a Spacecraft Ephemeris). These tables are typically defined as double buffered tables so that the Inactive image can be left sitting untouched for an extended period of time without interfering with shared resources for other tables. Then the Application can perform the Update when the time is right.

Applications which have unusually large tables may decide to conserve memory resources by making them double buffered. This is because the shared buffers used by single buffered tables must be sized to match the largest table. If there is one table that is unusually large, there is little reason to allocate up to [CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS](#) number of buffers that size. A double buffered table will only allocate ONE extra buffer of that size.

Performance minded Applications that are required to perform processing with tight timing deadlines may choose to use double buffered tables because the Update for a double buffered table is deterministic and quick.

2.18.2.3 Tables with Validation Functions Applications that associate Validation Functions with their tables when the tables are registered are effectively requiring that the contents of a table be logically Validated before it is Activated. The cFE will refuse to let a table with an associated Validation Function be Activated until a successful Validation on the Inactive table image has occurred.

Tables that are NOT assigned a Validation Function are assumed to be valid regardless of the contents of the table image. These tables do not require a Validation Command prior to Activation.

2.18.2.4 Critical Tables Applications that must be able to recover quickly from a Processor Reset may select the "Critical" table option when registering their table. Table Services automatically creates a Critical Data Store for the table and ensures that the contents of the Critical Data Store are updated whenever a Table Activation occurs.

If a Processor Reset happens, when the Application attempts to Register the table again, Table Services automatically locates the associated Critical Data Store and initializes the Table with the saved contents.

2.18.2.5 User Defined Address Tables In order to provide a mechanism for Flight Software Maintenance teams to quickly create a table image for dumping contents of memory that isn't normally loaded by the ground, there is an option to create User-Defined Address tables. These tables, when they are first registered, provide a memory address where the Active image of the table is to be maintained. Normally, the address is specified by Table Services from its memory pool.

By specifying the address, the Flight Software Maintenance team can create a Dump-Only table that contains the contents of a data structure that is not normally accessible via telemetry or table dumps. Then, on command, the Flight Software Maintenance team can periodically dump the data structure's contents to an on-board file(s) that can then be transferred to the ground for later analysis.

2.18.2.6 Dump Only Tables On occasion, cFE Applications require a segment of memory in which the Application writes data. The typical cFE Table is not normally modified directly by an Application but only via Load and Activate commands from either the Ground or Stored Command Processor. However, for those situations where an Application wishes to modify the contents of a data structure and the Application is limited in its telemetry bandwidth so that the modified data cannot be telemetered, the Application can create a Dump-Only table.

Dump-Only tables are not allowed to be modified via the Load/Validate/Activate process most other tables are. They are only supposed to be modified by onboard Applications. The Operator can still command a Dump which will be processed by the table's owning Application when it manages its tables. By letting the Application perform the dump, the Operator can feel confident that the table contents are a complete snapshot in time and not corrupted by taking a snapshot while the Application was in the process of modifying its contents.

2.18.3 Table Registry

When Applications register tables, Table Services retains pertinent information on the table in the Table Registry. The following information (along with other information that is less important for an operator) is kept for each table:

- The Application ID of the Application that Registered the table
- The full name of the table
- The size, in bytes, of the table
- Pointers to the start addresses of the Table's image buffers, Active and Inactive (if appropriate)
- A pointer to the start address of a Validation Function
- A flag indicating whether a table image has been loaded into an Inactive buffer
- A flag indicating whether the table is Critical and its associated CDS Handle if it is
- A flag indicating whether the table has ever been loaded (initialized)
- A flag indicating whether the table is Dump Only
- A flag indicating whether the table has an Update Pending
- A flag indicating whether the table is double buffered or not
- The System Time when the Table was last Updated
- The filename of the last file loaded into the table
- The File Creation Time for the last file used to load the contents of the table

This information can be obtained by either sending the Dump Registry command which will put all of the information from the Table Registry into an onboard file for later downlink or the operator can send a command to Telemeter the Registry Entry for a single table. This will cause the pertinent registry entry for a single table to be sent via a telemetry packet.

The API function [CFE_TBL_Register\(\)](#) returns either CFE_SUCCESS or CFE_TBL_INFO_RECOVERED_TBL to indicate that the table was successfully registered. The difference is whether the table data was recovered from CDS as part of the registration. There are several error return values that describe why the function failed to register the table but nothing related to why the restoration from CDS might have failed. There is, however, a message written to the System Error Log by Table Services that can be dumped by the ground to get this information. Note that failure to restore a table from CDS is not an expected error and requires some sort of data corruption to occur.

2.18.4 Table Services Telemetry

Table Services produces two different telemetry packets. The first packet, referred to as the Table Services Housekeeping Packet, is routinely produced by Table Services upon receipt of the Housekeeping Request message that is typically sent to all Applications by an on board scheduler. The contents and format of this packet are described in detail at [CFE_TBL_HousekeepingTlm_t](#).

2.18.5 Effects of Processor Reset on Tables

When a processor resets, the Table Registry is re-initialized. All Applications must, therefore, re-register and re-initialize their tables. The one exception, however, is if the Application has previously tagged a table as "Critical" during Table Registration, then Table Services will attempt to locate a table image for that table stored in the Critical Data Store. Table Services also attempts to locate the Critical Table Registry which is also maintained in the Critical Data Store.

If Table Services is able to find a valid table image for a Critical table in the Critical Data Store, the contents of the table are automatically loaded into the table and the Application is notified that the table does not require additional initialization.

2.18.6 Frequently Asked Questions about Table Services

(Q) Is it an error to load a table image that is smaller than the registered size?

Table images that are smaller than the declared size of a table fall into one of two categories.

If the starting offset of the table image (as specified in the Table Image secondary file header) is not equal to zero, then the table image is considered to be a "partial" table load. Partial loads are valid as long as a table has been previously loaded with a non-"partial" table image.

If the starting offset of the table image is zero and the size is less than the declared size of the table, the image is considered "short" but valid. This feature allows application developers to use variable length tables.

(Q) I tried to validate a table and received the following event message that said the event failed:

MyApp validation failed for Inactive 'MyApp.MyTable', Status=0x####

What happened?

The event message indicates the application who owns the table has discovered a problem with the contents of the image. The code number following the 'Status' keyword is defined by the Application. The documentation for the specified Application should be referred to in order to identify the exact nature of the problem.

(Q) What commands do I use to load a table with a new image?

There are a number of steps required to load a table.

1. The operator needs to create a cFE Table Services compatible table image file with the desired data contained in it. This can be accomplished by creating a 'C' source file, compiling it with the appropriate cross compiler for the onboard platform and then running the `elf2cfetbl` utility on the resultant object file.
2. The file needs to be loaded into the onboard processor's filesystem using whichever file transfer protocol is used for that mission.
3. The **Load Command** is sent next to tell Table Services to load the table image file into the Inactive Table Image Buffer for the table identified in the file.
4. The **Validate Command** is then sent to validate the contents of the inactive table image. This will ensure the file was not corrupted or improperly defined. The results of the validation are reported in Table Services Housekeeping Telemetry. If a table does not have a validation function associated with it, the operator may wish to compare the computed CRC to verify the table contents match what was intended.
5. Upon successful validation, the operator then sends the **Activate Command**. The application owning the table should, within a reasonable amount of time, perform a table update and send an event message.

(Q) What causes cFE Table Services to generate the following sys log message:

```
CFE_TBL:GetAddressInternal-App(%d) attempt to access unowned Tbl Handle=%d
```

When an application sharing its table(s) with one or more applications is reloaded, the reloaded application's table handle(s) are released. cFE Table Services sees that the table(s) are shared and keeps a 'shadow' version of the table in the Table Services registry. The registry will show the released, shared tables with no name. When the applications sharing the table attempt to access the table via the 'old', released handle, Table Services will return an error code to the applications and generate the sys log message. The applications may then unregister the 'old' handle(s) in order to remove the released, shared table(s) from the Table Services registry and share the newly loaded application table(s).

(Q) When does the Table Services Abort Table Load command need to be issued?

The Abort command should be used whenever a table image has been loaded but the application has not yet activated it and the operator no longer wants the table to be loaded.

The purpose of the Abort command is to free a previously allocated table buffer. It should be noted, however, that multiple table loads to the SAME table without an intervening activation or abort, will simply OVERWRITE the previous table load using the SAME buffer.

Therefore, the most likely scenarios that would lead to a needed abort are as follows:

1. Operator loads a table and realizes immediately that the load is not wanted.
 2. Operator loads a table and performs a validation on it. Regardless of whether the table passes or fails the validation, if the operator no longer wants to activate the table, the abort command should be issued.
- It should be noted that a table image that fails activation is retained in the inactive buffer for diagnosis, if necessary. It is NOT released until it is aborted or overwritten and successfully validated and activated.*
3. A table image was loaded; the image was successfully validated; the command for activation was sent; but the application fails to perform the activation.

The Abort command will free the table buffer and clear the activation request.

This situation can occur when either the application is improperly designed and fails to adequately manage its tables (sometimes seen in the lab during development) or the application is "hung" and not performing as it should.

2.19 cFE Table Services Commands

Upon receipt of any command, the Table Services application will confirm that the message length embedded within the header (from `CFE_MSG_GetSize()`) matches the expected length of that message, based on the size of the C structure defining that command. If there is any discrepancy between the expected and actual message size, TBL will generate the `CFE_TBL_LEN_ERR_EID` event, increment the command error counter (`$sc_$cpu_TBL_CMDEC`), and the command will *not* be accepted for processing.

The following is a list of commands that are processed by the cFE Table Services Task.

Global `CFE_TBL_ABORT_LOAD_CC`

Abort Table Load

Global `CFE_TBL_ACTIVATE_CC`

Activate Table

Global `CFE_TBL_DELETE_CDS_CC`

Delete Critical Table from Critical Data Store

Global `CFE_TBL_DUMP_CC`

Dump Table

Global `CFE_TBL_DUMP_REGISTRY_CC`

Dump Table Registry

Global `CFE_TBL_LOAD_CC`

Load Table

Global `CFE_TBL_NOOP_CC`

Table No-Op

Global `CFE_TBL_RESET_COUNTERS_CC`

Table Reset Counters

Global `CFE_TBL_SEND_REGISTRY_CC`

Telemeter One Table Registry Entry

Global `CFE_TBL_VALIDATE_CC`

Validate Table

2.20 cFE Table Services Telemetry

The following are telemetry packets generated by the cFE Table Services Task.

Global `CFE_TBL_HousekeepingTlm_Payload_t`

Table Services Housekeeping Packet

Global `CFE_TBL_TblRegPacket_Payload_t`

Table Registry Info Packet

2.21 cFE Table Services Configuration Parameters

The following are configuration parameters used to configure the cFE Table Services either for each platform or for a mission as a whole.

Global CFE_MISSION_TBL_MAX_FULL_NAME_LEN

Maximum Length of Full Table Name in messages

Maximum Length of Full Table Name in messages

Global CFE_MISSION_TBL_MAX_NAME_LENGTH

Maximum Table Name Length

Maximum Table Name Length

Global CFE_PLATFORM_TBL_BUF_MEMORY_BYTES

Size of Table Services Table Memory Pool

Size of Table Services Table Memory Pool

Global CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE

Default Filename for a Table Registry Dump

Default Filename for a Table Registry Dump

Global CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES

Maximum Number of Critical Tables that can be Registered

Maximum Number of Critical Tables that can be Registered

Global CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE

Maximum Size Allowed for a Double Buffered Table

Maximum Size Allowed for a Double Buffered Table

Global CFE_PLATFORM_TBL_MAX_NUM_HANDLES

Maximum Number of Table Handles

Maximum Number of Table Handles

Global CFE_PLATFORM_TBL_MAX_NUM_TABLES

Maximum Number of Tables Allowed to be Registered

Maximum Number of Tables Allowed to be Registered

Global CFE_PLATFORM_TBL_MAX_NUM_VALIDATIONS

Maximum Number of Simultaneous Table Validations

Maximum Number of Simultaneous Table Validations

Global CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS

Maximum Number of Simultaneous Loads to Support

Maximum Number of Simultaneous Loads to Support

Global CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE

Maximum Size Allowed for a Single Buffered Table

Maximum Size Allowed for a Single Buffered Table

Global CFE_PLATFORM_TBL_VALID_PRID_1

Processor ID values used for table load validation

Processor ID values used for table load validation

Global CFE_PLATFORM_TBL_VALID_PRID_COUNT

Number of Processor ID's specified for validation

Number of Processor ID's specified for validation

Global CFE_PLATFORM_TBL_VALID_SCID_1

Spacecraft ID values used for table load validation

Spacecraft ID values used for table load validation

Global CFE_PLATFORM_TBL_VALID_SCID_COUNT

Number of Spacecraft ID's specified for validation

Number of Spacecraft ID's specified for validation

2.22 cFE Time Services Overview

The cFE Time Service (TIME) is one of the cFE core services. TIME provides time correlation, distribution and synchronization services. TIME exists in two varieties: a Time Server responsible for maintaining the master time reference for all remote systems, and a Time Client responsible for synchronizing to that master time reference.

Since TIME is a generic implementation aimed to meet the needs of a variety of mission configurations, there are numerous configuration parameters, which dictate the behavior of TIME (see `cfe_mission_cfg.h` and `cfe_platform_cfg.h` for the specific mission configuration).

With the exception of those sections specific to Time Clients and Servers, this document assumes the most common physical environment - one instantiation of cFE installed on a single processor. Therefore, TIME represents cFE Time Services configured as a Time Server.

For additional detail on Time Services and how to manage it, see the following sections:

- [Time Components](#)
- [Time Structure](#)
- [Time Formats](#)
- [Time Configuration](#)
 - [Time Format Selection](#)
 - [Enabling Fake Tone Signal](#)
 - [Selecting Tone and Data Ordering](#)
 - [Specifying Tone and Data Window](#)
 - [Specifying Time Server/Client](#)

- Specifying Time Tone Byte Order
- Virtual MET
- Specifying Time Source
- Specifying Time Signal
- Time Services Paradigm(s)
- Flywheeling
- Time State
- Initialization
 - Power-On Reset
 - Processor Reset
- Initialization
 - Power-On Reset
 - Processor Reset
- Normal Operation
 - Client
 - Server
 - * Setting Time
 - * Adjusting Time
 - * Setting MET
- Frequently Asked Questions about Time Services

2.22.1 Time Components

Time knowledge is stored in several pieces, so that the time information can more easily be manipulated and utilized. These components include:

The **Ground Epoch** is an arbitrary date and time that establishes the zero point for spacecraft time calculations. The selection of the epoch is mission specific, although in the past, it was common to select the same epoch as defined for the Operating System used by the computers hosting the ground system software. Recent mission epoch selections have also included using zero seconds after midnight, Jan 1, 2001.

Spacecraft Time is the number of seconds (and fraction of a second) since the ground epoch. Spacecraft time is the sum of **Mission Elapsed Time** (MET) and the **Spacecraft Time Correlation Factor** (STCF). By definition, MET is a measure of time since launch or separation. However, for most missions the MET actually represents the amount of time since powering on the hardware containing the MET timer. The STCF correlates the MET to the ground epoch.

The **Tone** is the signal that MET seconds have incremented. In most hardware configurations, the tone is synonymous with the **1 PPS** signal. The tone signal may be generated by a local hardware timer, or by an external event (GPS receiver, spacewire time tick, 1553 bus signal, etc). TIME may also be configured to simulate the tone for lab environments that do not have the necessary hardware to provide a tone signal. Note that MET sub-seconds will be zero at the instant of the tone.

Time at the Tone is the spacecraft time at the most recent "valid" tone.

Time since the Tone is the amount of time since the tone (usually less than one second). This value is often measured using the local processor clock. Upon detecting the tone signal, TIME stores the contents of the local processor clock to facilitate this measurement.

Thus, **Current Spacecraft Time** is the sum of "time at the tone" and "time since the tone".

Leap Seconds occur to keep clocks correlated to astronomical observations. The modern definition of a second (9,192,631,770 oscillations of a cesium-133 atom) is constant while the earth's rotation has been slow by a small fraction of a second per day. The **International Earth Rotation and Reference System Service** (IERS) maintains the count of leap seconds as a signed whole number that is subject to update twice a year. Although it is possible to have a negative leap second count if the earth rotates too fast, it is highly unlikely. The initial count of leap seconds (10) was established in January of 1972 and the first leap second was added to the initial count in June of 1972. The most recent leap seconds are announced by the International Earth Rotation Service (IERS): <https://www.iers.org> in IERS Bulletin C (leap second announcements). Search the IERS site for "Bulletin C" to obtain the latest issue/announcement.

2.22.2 Time Structure

The cFE implementation of the **System Time Structure** is a modified version of the CCSDS Unsegmented Time Code (CUC) which includes 4 bytes of seconds, and 4 bytes of subseconds, where a subsecond is equivalent to $1/(2^{32})$ seconds. The system time structure is used by TIME to store current time, time at the tone, time since the tone, the MET, the STCF and command arguments for time adjustments. Note that typically the 32 bits of seconds and the upper 16 bits of subseconds are used for time stamping Software bus messages, but this is dependent on the underlying definition.

The system time structure is defined as follows:

```
typedef struct {
    uint32    Seconds;      /* Number of seconds */
    uint32    Subseconds;   /* Number of 2^(-32) subseconds */
} CFE_TIME_SysTime_t;
```

2.22.3 Time Formats

International Atomic Time (TAI) is one of two time formats supported by cFE TIME. TAI is the number of seconds and sub-seconds elapsed since the ground epoch as measured with the atomic clock previously described. TAI has no reference to leap seconds and is calculated using the following equation:

$$\text{TAI} = \text{MET} + \text{STCF}$$

It should be noted that TAI is only "true" TAI when the selected ground epoch is the same as the TAI epoch (zero seconds after midnight, January 1, 1958). However, nothing precludes configuring cFE TIME to calculate time in the TAI format and setting the STCF to correlate to any other epoch definition.

Coordinated Universal Time (UTC) is the other time format supported by cFE TIME. UTC differs from TAI in the fact that UTC includes a leap seconds adjustment. TIME computes UTC using the following equation:

$$\text{UTC} = \text{TAI} - \text{Leap Seconds}.$$

The preceding UTC equation might seem to imply that TAI includes leap seconds and UTC does not - which is not the case. In fact, the UTC calculation includes a leap seconds adjustment that subtracts leap seconds from the same time components used to create TAI. Alternatively, it might be less confusing to express the UTC equation as follows:

$$\text{UTC} = \text{MET} + \text{STCF} - \text{Leap Seconds}$$

2.22.4 Time Configuration

All configurations of TIME require a local processor source for a 1Hz interrupt and access to a local clock with a resolution fine enough that it can be used to measure short periods of elapsed time. The local interrupt is used to wake-up TIME at a regular interval for the purpose of verifying that the tone is being received. The local clock is used to measure time since the tone and to provide coarse verification that the tone is occurring at approximately one second intervals. The presumption is that the tone is the most accurate timer in the system and, within reason, is to be trusted. Note that nothing precludes the use of the MET as the local clock, assuming the MET is both local and provides sub-second data. However, the tone must not be used as the source for the local 1Hz interrupt.

Consider the following brief description of three hypothetical hardware configurations. These sample systems may be used as reference examples to help clarify the descriptions of the various TIME configuration selections.

In the first system, there is no MET timer and therefore no tone signal. The MET is a count of the number of "fake" tones generated by TIME software. There is no validation performed regarding the quality of time data. This hardware configuration is a common lab environment using COTS equipment.

In the second system, the MET timer is a hardware register that is directly accessible by TIME. When MET seconds increment, a processor interrupt signals the tone. Upon detecting the tone, TIME can read the MET to establish the time at the tone. To verify that the tone is valid, TIME need only validate that this tone signal occurred approximately one second after the previous tone signal (as measured with the local clock).

In the third system, the MET is located on hardware connected via spacewire. When MET seconds increment, a spacewire time tick triggers a local processor interrupt to signal the tone. Shortly after announcing the tone, the hardware containing the MET also generates a spacewire data packet containing the MET value corresponding to the tone. TIME must wait until both the tone and data packet have been received before validating the tone. The tone must have occurred approximately one second after the previous tone signal and the data packet must have been received within a specified window in time following the tone.

The hardware design choice for how the tone signal is distributed is not material to TIME configuration. The software detecting the tone need only call the cFE API function announcing the arrival of the tone. This function is designed to be called from interrupt handlers.

For detail on each of the individual configuration settings for cFE Time Services, see the following sections:

- [Time Format Selection](#)
- [Enabling Fake Tone Signal](#)
- [Selecting Tone and Data Ordering](#)
- [Specifying Tone and Data Window](#)
- [Specifying Time Server/Client](#)
- [Specifying Time Tone Byte Order](#)
- [Virtual MET](#)
- [Specifying Time Source](#)
- [Specifying Time Signal](#)

2.22.4.1 Time Format Selection

Time format is defined in the mission configuration header file.

This selection defines the default time format as TAI or UTC. The API functions to get time in either specific format are still enabled, but the API function to get time in the default format will follow this selection. Enable one, and **only one**, of the following time format definitions:

```
#define CFE_MISSION_TIME_CFG_DEFAULT_TAI  TRUE  
#define CFE_MISSION_TIME_CFG_DEFAULT_UTC  FALSE
```

or

```
#define CFE_MISSION_TIME_CFG_DEFAULT_TAI  FALSE  
#define CFE_MISSION_TIME_CFG_DEFAULT_UTC  TRUE
```

The choice of time format is a mission specific decision and is not directly affected by the hardware configuration.

See also

[CFE_MISSION_TIME_CFG_DEFAULT_TAI](#), [CFE_MISSION_TIME_CFG_DEFAULT_UTC](#)

2.22.4.2 Enabling Fake Tone Signal

The fake tone is defined in the mission configuration header file.

If this selection is set to TRUE, TIME will generate a "fake" tone signal by calling the same API function as would be called upon detection of the "real" tone signal. Enable the fake tone only for hardware configurations that do not provide a tone signal.

```
#define CFE_MISSION_TIME_CFG_FAKE_TONE TRUE
```

Hypothetical hardware configuration number one (described above) would enable the fake tone signal.

See also

[CFE_MISSION_TIME_CFG_FAKE_TONE](#)

2.22.4.3 Selecting Tone and Data Ordering

Tone and data order is defined in the mission configuration header file.

This selection defines which comes first - the tone or the time at the tone data. Does the time data describe the tone that already occurred, or the tone that has not yet occurred? This decision may be driven by the hardware design but can also be arbitrary. Enable one, and only one, of the following:

```
#define CFE_MISSION_TIME_AT_TONE_WAS  
#define CFE_MISSION_TIME_AT_TONE_WILL_BE
```

Hypothetical hardware configuration number three (described [Time Configuration](#) above) would enable "time at the tone was".

See also

[CFE_MISSION_TIME_AT_TONE_WAS](#), [CFE_MISSION_TIME_AT_TONE_WILL_BE](#)

2.22.4.4 Specifying Tone and Data Window

The tone and data window is defined in the mission configuration header file.

In concert with the definition of tone and data order, this selection defines the valid window in time for the second of the pair to follow the first. Both must be defined, units are micro-seconds.

```
#define CFE_MISSION_TIME_MIN_ELAPSED 0  
#define CFE_MISSION_TIME_MAX_ELAPSED 100000
```

Hypothetical hardware configuration number three (described above) might use these values which describe a window that begins immediately after the tone and lasts for one tenth of a second.

See also

[CFE_MISSION_TIME_MIN_ELAPSED](#), [CFE_MISSION_TIME_MAX_ELAPSED](#)

2.22.4.5 Specifying Time Server/Client Configure TIME as a client only when the target system has multiple processors running separate instantiations of the cFE. One instantiation must be configured as the server and the remainder configured as clients. If the target system has only one processor running the cFE, then TIME must be configured as a server.

Enable one, and only one, of the following definitions in the platform configuration header file:

```
#define CFE_PLATFORM_TIME_CFG_SERVER    TRUE  
#define CFE_PLATFORM_TIME_CFG_CLIENT   FALSE
```

or

```
#define CFE_PLATFORM_TIME_CFG_SERVER    FALSE  
#define CFE_PLATFORM_TIME_CFG_CLIENT   TRUE
```

See also

[CFE_PLATFORM_TIME_CFG_SERVER](#), [CFE_PLATFORM_TIME_CFG_CLIENT](#)

2.22.4.6 Specifying Time Tone Byte Order By default, the CFE time tone message is a payload of integers in platform-endian order (containing the tone's timestamp, the leap seconds, and state information.) In some configurations, it may be better to have the payload produced in big-endian order—particularly in mixed-endian environments.

In order to force the tone message to be in big-endian order, you must define the following:

```
#define CFE_PLATFORM_TIME_CFG_BIGENDIAN
```

2.22.4.7 Virtual MET This configuration option refers to whether the MET is local to this instantiation of TIME. If the MET is not local then TIME must be configured as using a virtual MET.

Therefore, all TIME clients must be configured as using a virtual MET. If the MET was local to any TIME client, then that instantiation of TIME would have to be the server.

TIME servers must be configured as using a virtual MET

2.22.4.8 Specifying Time Source TIME configuration provides the ability to specify where the source for time data is originating - either internal or external. In hypothetical system one, the MET is internal. In system two, TIME cannot directly read the MET, therefore time data must be received from an external source.

This selection also enables a command interface to switch between internal and external input. When commanded to use internal time data, TIME will ignore the external data. However, TIME will continue to use the API function as the trigger to generate a "time at the tone" command packet regardless of the internal/external command selection.

Set the following definition to TRUE only for TIME servers using an external time data source.

```
#define CFE_PLATFORM_TIME_CFG_SOURCE   TRUE
```

The remainder of this section pertains only to TIME servers configured to accept external time data.

When configured to accept external time data, TIME requires an additional definition for the type of external data (GPS, MET, spacecraft time, etc.). This selection will enable an API function specific to the selected data type. Regardless of how the time data is received, the receiver need only pass the data to the appropriate API function.

TIME servers using an external time data source must set one, and only one, of the following to TRUE, for example:

```
#define CFE_PLATFORM_TIME_CFG_SRC_MET    TRUE  
#define CFE_PLATFORM_TIME_CFG_SRC_GPS   FALSE  
#define CFE_PLATFORM_TIME_CFG_SRC_TIME  FALSE
```

configuration definitions for the particular source.

If the cfe_platform_cfg.h file contains "#define CFE_PLATFORM_TIME_CFG_SOURCE TRUE" then time is configured to allow switching between internal and external time sources (see [CFE_TIME_SET_SOURCE_CC](#)). If this configuration parameter is set to FALSE then the command to set the source will be rejected.

If this configuration parameter is set to TRUE then ONE and ONLY ONE of the following configuration parameters must also be set TRUE in order to specify the external time source, for example:

```
#define CFE_PLATFORM_TIME_CFG_SRC_MET    TRUE  
#define CFE_PLATFORM_TIME_CFG_SRC_GPS   FALSE  
#define CFE_PLATFORM_TIME_CFG_SRC_TIME  FALSE
```

Note that Internal MET source depends on available hardware. It may be the local count of tone signals, the contents of a hardware register or an OS specific time function.

Note also that when configured to use an external time source, commands to set the time will be overwritten.

See also

[CFE_PLATFORM_TIME_CFG_SRC_MET](#), [CFE_PLATFORM_TIME_CFG_SRC_GPS](#), [CFE_PLATFORM_TIME_CFG_SRC_TIME](#)

2.22.4.9 Specifying Time Signal Some hardware configurations support a primary and redundant tone signal selection. Setting the following configuration definition to TRUE will result in enabling a TIME command to select the active tone signal.

```
#define CFE_PLATFORM_TIME_CFG_SIGNAL  TRUE
```

Note: this feature requires additional custom software to make the physical signal switch.

See also

[CFE_PLATFORM_TIME_CFG_SIGNAL](#)

2.22.5 Time Format Selection

Time format is defined in the mission configuration header file.

This selection defines the default time format as TAI or UTC. The API functions to get time in either specific format are still enabled, but the API function to get time in the default format will follow this selection. Enable one, and **only one**, of the following time format definitions:

```
#define CFE_MISSION_TIME_CFG_DEFAULT_TAI TRUE  
#define CFE_MISSION_TIME_CFG_DEFAULT_UTC FALSE
```

or

```
#define CFE_MISSION_TIME_CFG_DEFAULT_TAI FALSE  
#define CFE_MISSION_TIME_CFG_DEFAULT_UTC TRUE
```

The choice of time format is a mission specific decision and is not directly affected by the hardware configuration.

See also

[CFE_MISSION_TIME_CFG_DEFAULT_TAI](#), [CFE_MISSION_TIME_CFG_DEFAULT_UTC](#)

2.22.6 Enabling Fake Tone Signal

The fake tone is defined in the mission configuration header file.

If this selection is set to TRUE, TIME will generate a "fake" tone signal by calling the same API function as would be called upon detection of the "real" tone signal. Enable the fake tone only for hardware configurations that do not provide a tone signal.

```
#define CFE_MISSION_TIME_CFG_FAKE_TONE TRUE
```

Hypothetical hardware configuration number one (described above) would enable the fake tone signal.

See also

[CFE_MISSION_TIME_CFG_FAKE_TONE](#)

2.22.7 Selecting Tone and Data Ordering

Tone and data order is defined in the mission configuration header file.

This selection defines which comes first - the tone or the time at the tone data. Does the time data describe the tone that already occurred, or the tone that has not yet occurred? This decision may be driven by the hardware design but can also be arbitrary. Enable one, and only one, of the following:

```
#define CFE_MISSION_TIME_AT_TONE_WAS  
#define CFE_MISSION_TIME_AT_TONE_WILL_BE
```

Hypothetical hardware configuration number three (described [Time Configuration](#) above) would enable "time at the tone was".

See also

[CFE_MISSION_TIME_AT_TONE_WAS](#), [CFE_MISSION_TIME_AT_TONE_WILL_BE](#)

2.22.8 Specifying Tone and Data Window

The tone and data window is defined in the mission configuration header file.

In concert with the definition of tone and data order, this selection defines the valid window in time for the second of the pair to follow the first. Both must be defined, units are micro-seconds.

```
#define CFE_MISSION_TIME_MIN_ELAPSED 0  
#define CFE_MISSION_TIME_MAX_ELAPSED 100000
```

Hypothetical hardware configuration number three (described above) might use these values which describe a window that begins immediately after the tone and lasts for one tenth of a second.

See also

[CFE_MISSION_TIME_MIN_ELAPSED](#), [CFE_MISSION_TIME_MAX_ELAPSED](#)

2.22.9 Specifying Time Server/Client

Configure TIME as a client only when the target system has multiple processors running separate instantiations of the cFE. One instantiation must be configured as the server and the remainder configured as clients. If the target system has only one processor running the cFE, then TIME must be configured as a server.

Enable one, and only one, of the following definitions in the platform configuration header file:

```
#define CFE_PLATFORM_TIME_CFG_SERVER TRUE  
#define CFE_PLATFORM_TIME_CFG_CLIENT FALSE
```

or

```
#define CFE_PLATFORM_TIME_CFG_SERVER FALSE  
#define CFE_PLATFORM_TIME_CFG_CLIENT TRUE
```

See also

[CFE_PLATFORM_TIME_CFG_SERVER](#), [CFE_PLATFORM_TIME_CFG_CLIENT](#)

2.22.10 Specifying Time Tone Byte Order

By default, the CFE time tone message is a payload of integers in platform-endian order (containing the tone's timestamp, the leap seconds, and state information.) In some configurations, it may be better to have the payload produced in big-endian order—particularly in mixed-endian environments.

In order to force the tone message to be in big-endian order, you must define the following:

```
#define CFE_PLATFORM_TIME_CFG_BIGENDIAN
```

2.22.11 Virtual MET

This configuration option refers to whether the MET is local to this instantiation of TIME. If the MET is not local then TIME must be configured as using a virtual MET.

Therefore, all TIME clients must be configured as using a virtual MET. If the MET was local to any TIME client, then that instantiation of TIME would have to be the server.

TIME servers must be configured as using a virtual MET

2.22.12 Specifying Time Source

TIME configuration provides the ability to specify where the source for time data is originating - either internal or external. In hypothetical system one, the MET is internal. In system two, TIME cannot directly read the MET, therefore time data must be received from an external source.

This selection also enables a command interface to switch between internal and external input. When commanded to use internal time data, TIME will ignore the external data. However, TIME will continue to use the API function as the trigger to generate a "time at the tone" command packet regardless of the internal/external command selection.

Set the following definition to TRUE only for TIME servers using an external time data source.

```
#define CFE_PLATFORM_TIME_CFG_SOURCE TRUE
```

The remainder of this section pertains only to TIME servers configured to accept external time data.

When configured to accept external time data, TIME requires an additional definition for the type of external data (GPS, MET, spacecraft time, etc.). This selection will enable an API function specific to the selected data type. Regardless of how the time data is received, the receiver need only pass the data to the appropriate API function.

TIME servers using an external time data source must set one, and only one, of the following to TRUE, for example:

```
#define CFE_PLATFORM_TIME_CFG_SRC_MET TRUE
#define CFE_PLATFORM_TIME_CFG_SRC_GPS FALSE
#define CFE_PLATFORM_TIME_CFG_SRC_TIME FALSE
```

configuration definitions for the particular source.

If the cfe_platform_cfg.h file contains "#define CFE_PLATFORM_TIME_CFG_SOURCE TRUE" then time is configured to allow switching between internal and external time sources (see [CFE_TIME_SET_SOURCE_CC](#)). If this configuration parameter is set to FALSE then the command to set the source will be rejected.

If this configuration parameter is set to TRUE then ONE and ONLY ONE of the following configuration parameters must also be set TRUE in order to specify the external time source, for example:

```
#define CFE_PLATFORM_TIME_CFG_SRC_MET TRUE
#define CFE_PLATFORM_TIME_CFG_SRC_GPS FALSE
#define CFE_PLATFORM_TIME_CFG_SRC_TIME FALSE
```

Note that Internal MET source depends on available hardware. It may be the local count of tone signals, the contents of a hardware register or an OS specific time function.

Note also that when configured to use an external time source, commands to set the time will be overwritten.

See also

[CFE_PLATFORM_TIME_CFG_SRC_MET](#), [CFE_PLATFORM_TIME_CFG_SRC_GPS](#), [CFE_PLATFORM_TIME_CFG_SRC_TIME](#)

2.22.13 Specifying Time Signal

Some hardware configurations support a primary and redundant tone signal selection. Setting the following configuration definition to TRUE will result in enabling a TIME command to select the active tone signal.

```
#define CFE_PLATFORM_TIME_CFG_SIGNAL TRUE
```

Note: this feature requires additional custom software to make the physical signal switch.

See also

[CFE_PLATFORM_TIME_CFG_SIGNAL](#)

2.22.14 Time Services Paradigm(s)

In order for the cFE Time Services to work for a particular mission, the methods of obtaining time, distributing time and translating time must follow some standard paradigms used in previous missions. The following describes this expected context:

Mission dependent hardware provides the Tone. When this Tone message is received, TIME latches the local time based on the local clock. Note that in lab environments, a simulated Tone capability exists which uses an SB message. Mission dependent hardware also provides the "time at the tone" message based on the hardware latched time and the reference times stored by TIME Server. The TIME Client then updates its local reference time based on the local hardware latched time at the Tone and the provided Time-at-Tone message packet when certain checks (such as the Validity bit being set) pass.

When used in an environment that includes multiple processors, each running a separate instantiation of cFE software, the presumption is that TIME will be distributed in a client/server relationship. In this model, one processor will have TIME configured as the server and the other processors as clients. The TIME server will maintain the various time components and publish a "time at the tone" message to provide synchronized time to the TIME clients. Environments that have only a single instance of TIME must be configured as a TIME server.

In all configurations, the final step in calculating the time "right now" for any instantiation of TIME is to use a local processor clock to measure the "time since the tone".

The specific MET hardware properties will determine whether the MET value can be modified. However, the cFE design is such that there should never be a need to purposefully change or reset the MET.

Regardless of the physical hardware implementation for the MET (elapsed seconds, elapsed ticks, etc.), cFE TIME will convert the hardware MET value into a System Time Format structure for time calculations and will report the converted value in telemetry. cFE TIME will also maintain and report the STCF in a System Time Format structure.

cFE TIME has no knowledge of the current epoch; it is up to the user to keep time on the spacecraft correlated to an epoch. An exception might appear to be the epoch definition required in the cFE mission configuration definition file. However, this definition is for use only by the API functions that convert spacecraft time and file system time, and the API function that prints spacecraft time as a date and time text string. The cFE "get time" functions are independent of the ground epoch.

The mission configuration parameters, [CFE_MISSION_TIME_CFG_DEFAULT_TAI](#) and [CFE_MISSION_TIME_CFG_DEFAULT_UTC](#) specify the default time format. Applications are encouraged to use the [CFE_TIME_GetTime](#) API, which returns time in the format specified by this configuration parameter.

2.22.15 Flywheeling

Flywheeling occurs when TIME is not getting a valid tone signal or external "time at the tone" message. While this has minimal impact on internal operations, it can result in the drifting apart of times being stored by different spacecraft systems.

Flywheeling occurs when at least one of the following conditions is true:

- loss of tone signal
- loss of "time at the tone" data packet
- signal and packet not within valid window
- commanded into fly-wheel mode

If the TIME server is in Flywheel mode then the TIME client is also in flywheel mode.

2.22.16 Time State

Clock state is a combination of factors, most significantly whether the spacecraft time has been accurately set and whether Time Service is operating in FLYWHEEL mode. A ground command is provided to set the state to reflect when the ground has determined the spacecraft time is now correct, or that time is no longer correct. This information will be distributed to Time Clients, and in turn, to any interested sub-systems. If time has not been set then TIME services reports the state of time as invalid, regardless of whether time is flywheeling or not. Also, this command may be used to force a Time Server or Time Client into FLYWHEEL mode. Use of FLYWHEEL mode is mainly for debug purposes although, in extreme circumstances, it may be of value to force Time Service not to rely on normal time updates. Note that when commanded into FLYWHEEL mode, the Time Service will remain so until receipt of another "set state" command setting the state into a mode other than FLYWHEEL. Note also that setting the clock state to VALID or INVALID on a Time Client that is currently getting time updates from the Time Server will have very limited effect. As soon as the Time Client receives the next time update, the VALID/INVALID selection will be set to that of the Time Server. However, setting a Time Client to FLYWHEEL cannot be overridden by the Time Server since the Time Client will ignore time updates from the Time Server while in FLYWHEEL mode.

2.22.17 Initialization

No action is required by the ground to initialize the TIME software; however, time variables in the TIME Server must be set by command to allow correct time to propagate.

For a description of what happens during each type of reset, see below:

- [Power-On Reset](#)
- [Processor Reset](#)

2.22.17.1 Power-On Reset TIME initializes all counters in housekeeping telemetry, sets the Validity state to Invalid, and initializes the STCF, Leap Seconds, and 1 Hz Adjustment to zero.

2.22.17.2 Processor Reset In the event of a processor reset, the following time values are preserved:

- MET
- STCF
- Leap Seconds
- Clock Signal Selection
- Current Time Client Delay (if applicable)

Note that since it is virtually impossible for TIME services to validate the actual data that is saved across a processor reset, a signature pattern is written to the preserved area. On a processor reset, TIME queries that signature to make sure that it matches what is expected. If the signature does not match, then TIME is initialized as if a cFE power-on reset occurred.

2.22.18 Power-On Reset

TIME initializes all counters in housekeeping telemetry, sets the Validity state to Invalid, and initializes the STCF, Leap Seconds, and 1 Hz Adjustment to zero.

2.22.19 Processor Reset

In the event of a processor reset, the following time values are preserved:

- MET
- STCF
- Leap Seconds
- Clock Signal Selection
- Current Time Client Delay (if applicable)

Note that since it is virtually impossible for TIME services to validate the actual data that is saved across a processor reset, a signature pattern is written to the preserved area. On a processor reset, TIME queries that signature to make sure that it matches what is expected. If the signature does not match, then TIME is initialized as if a cFE power-on reset occurred.

2.22.20 Normal Operation

The following sections describe the operator's responsibilities for maintaining time under nominal conditions:

- [Client](#)
- [Server](#)

2.22.20.1 Client Under normal operation, TIME Client systems do not require any attention from the ground, however TIME clients do provide commands to set the persistent latency between the server and client. Latency can be either added or subtracted to the current TIME client time calculation to account for the latency.

2.22.20.2 Server TIME Servers require maintenance by the operations team to ensure the spacecraft is maintaining a time that can be successfully correlated to other entities. The following sections describe the commands that the operations team can use to help maintain a proper time reference:

- [Setting Time](#)
- [Adjusting Time](#)
- [Setting MET](#)

2.22.20.2.1 Setting Time The Time Server provides commands to set time. The new time value represents the desired offset from mission-defined time epoch and takes effect immediately upon execution of this command. Time Service will calculate a new STCF value based on the current MET and the desired new time using one of the following:

If Time Service is configured to compute current time as TAI:

```
STCF = new time - current MET  
current time = current MET + STCF
```

If Time Service is configured to compute current time as UTC:

```
STCF = ((new time) - (current MET)) + Leap Seconds  
current time = ((current MET) + STCF) - Leap Seconds
```

See also

[CFE_TIME_SET_TIME_CC](#)

2.22.20.2.2 Adjusting Time The TIME Server includes commands to set the STCF, Leap Seconds, and Validity state. The STCF should be set implicitly using the [CFE_TIME_SET_TIME_CC](#) or explicitly using [CFE_TIME_SET_STCF_CC](#). TIME provides the ability to command a one time adjustment ([CFE_TIME_ADD_ADJUST_CC](#) and [CFE_TIME_SUB_ADJUST_CC](#)) to the current STCF. In addition there is a 1Hz adjustment ([CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC](#) and [CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC](#)) that can be made to the STCF to compensate for oscillator drift. Mission specific ground correlation should be used to assist in determining the proper values to use. The Leap Seconds should be set to the current TAI-UTC. Note that the International Earth Rotation and Reference Systems Service Bulletin C, which defines the current difference, reports it as UTC-TAI, and thus that value must be negated. **The Leap Seconds value will always be a positive number.** The Validity state does not have to be set to invalid to change the STCF or Leap Seconds, and should be set to valid at any time that the TIME Server time reference should be synchronized to by the other systems.

See also

[CFE_TIME_ADD_ADJUST_CC](#), [CFE_TIME_SUB_ADJUST_CC](#), [CFE_TIME_SET_STCF_CC](#), [CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC](#), [CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC](#), [CFE_TIME_SET_LEAP_SECONDS_CC](#)

2.22.20.2.3 Setting MET The TIME Server provides the capability to set the MET. Note that the MET (as implemented for cFE Time Service) is a logical representation and not a physical timer. Thus, setting the MET is not dependent on whether the hardware supports a MET register that can be written to. Note also that Time Service "assumes" that during normal operation, the MET is synchronized to the tone signal. Therefore, unless operating in FLYWHEEL mode, the sub-seconds portion of the MET will be set to zero at the next tone signal interrupt. The new MET takes effect immediately upon execution of this command.

See also

[CFE_TIME_SET_MET_CC](#)

2.22.21 Client

Under normal operation, TIME Client systems do not require any attention from the ground, however TIME clients do provide commands to set the persistent latency between the server and client. Latency can be either added or subtracted to the current TIME client time calculation to account for the latency.

2.22.22 Server

TIME Servers require maintenance by the operations team to ensure the spacecraft is maintaining a time that can be successfully correlated to other entities. The following sections describe the commands that the operations team can use to help maintain a proper time reference:

- [Setting Time](#)
- [Adjusting Time](#)
- [Setting MET](#)

2.22.22.0.1 Setting Time The Time Server provides commands to set time. The new time value represents the desired offset from mission-defined time epoch and takes effect immediately upon execution of this command. Time Service will calculate a new STCF value based on the current MET and the desired new time using one of the following:

If Time Service is configured to compute current time as TAI:

```
STCF = new time - current MET  
current time = current MET + STCF
```

If Time Service is configured to compute current time as UTC:

```
STCF = ((new time) - (current MET)) + Leap Seconds  
current time = ((current MET) + STCF) - Leap Seconds
```

See also

[CFE_TIME_SET_TIME_CC](#)

2.22.22.0.2 Adjusting Time The TIME Server includes commands to set the STCF, Leap Seconds, and Validity state. The STCF should be set implicitly using the [CFE_TIME_SET_TIME_CC](#) or explicitly using [CFE_TIME_SET_STCF_CC](#). TIME provides the ability to command a one time adjustment ([CFE_TIME_ADD_ADJUST_CC](#) and [CFE_TIME_SUB_ADJUST_CC](#)) to the current STCF. In addition there is a 1Hz adjustment ([CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC](#) and [CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC](#)) that can be made to the STCF to compensate for oscillator drift. Mission specific ground correlation should be used to assist in determining the proper values to use. The Leap Seconds should be set to the current TAI-UTC. Note that the International Earth Rotation and Reference Systems Service Bulletin C, which defines the current difference, reports it as UTC-TAI, and thus that value must be negated. **The Leap Seconds value will always be a positive number.** The Validity state does not have to be set to invalid to change the STCF or Leap Seconds, and should be set to valid at any time that the TIME Server time reference should be synchronized to by the other systems.

See also

[CFE_TIME_ADD_ADJUST_CC](#), [CFE_TIME_SUB_ADJUST_CC](#), [CFE_TIME_SET_STCF_CC](#), [CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC](#), [CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC](#), [CFE_TIME_SET_LEAP_SECONDS_CC](#)

2.22.22.0.3 Setting MET The TIME Server provides the capability to set the MET. Note that the MET (as implemented for cFE Time Service) is a logical representation and not a physical timer. Thus, setting the MET is not dependent on whether the hardware supports a MET register that can be written to. Note also that Time Service "assumes" that during normal operation, the MET is synchronized to the tone signal. Therefore, unless operating in FLYWHEEL mode, the sub-seconds portion of the MET will be set to zero at the next tone signal interrupt. The new MET takes effect immediately upon execution of this command.

See also

[CFE_TIME_SET_MET_CC](#)

2.22.23 Setting Time

The Time Server provides commands to set time. The new time value represents the desired offset from mission-defined time epoch and takes effect immediately upon execution of this command. Time Service will calculate a new STCF value based on the current MET and the desired new time using one of the following:

If Time Service is configured to compute current time as TAI:

```
STCF = new time - current MET  
current time = current MET + STCF
```

If Time Service is configured to compute current time as UTC:

```
STCF = ((new time) - (current MET)) + Leap Seconds  
current time = ((current MET) + STCF) - Leap Seconds
```

See also

[CFE_TIME_SET_TIME_CC](#)

2.22.24 Adjusting Time

The TIME Server includes commands to set the STCF, Leap Seconds, and Validity state. The STCF should be set implicitly using the [CFE_TIME_SET_TIME_CC](#) or explicitly using [CFE_TIME_SET_STCF_CC](#). TIME provides the ability to command a one time adjustment ([CFE_TIME_ADD_ADJUST_CC](#) and [CFE_TIME_SUB_ADJUST_CC](#)) to the current STCF. In addition there is a 1Hz adjustment ([CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC](#) and [CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC](#)) that can be made to the STCF to compensate for oscillator drift. Mission specific ground correlation should be used to assist in determining the proper values to use. The Leap Seconds should be set to the current TAI-UTC. Note that the International Earth Rotation and Reference Systems Service Bulletin C, which defines the current difference, reports it as UTC-TAI, and thus that value must be negated. **The Leap Seconds value will always be a positive number.** The Validity state does not have to be set to invalid to change the STCF or Leap Seconds, and should be set to valid at any time that the TIME Server time reference should be synchronized to by the other systems.

See also

[CFE_TIME_ADD_ADJUST_CC](#), [CFE_TIME_SUB_ADJUST_CC](#), [CFE_TIME_SET_STCF_CC](#), [CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC](#), [CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC](#), [CFE_TIME_SET_LEAP_SECONDS_CC](#)

2.22.25 Setting MET

The TIME Server provides the capability to set the MET. Note that the MET (as implemented for cFE Time Service) is a logical representation and not a physical timer. Thus, setting the MET is not dependent on whether the hardware supports a MET register that can be written to. Note also that Time Service "assumes" that during normal operation, the MET is synchronized to the tone signal. Therefore, unless operating in FLYWHEEL mode, the sub-seconds portion of the MET will be set to zero at the next tone signal interrupt. The new MET takes effect immediately upon execution of this command.

See also

[CFE_TIME_SET_MET_CC](#)

2.22.26 Frequently Asked Questions about Time Services

None submitted

2.23 cFE Time Services Commands

Upon receipt of any command, the Time Services application will confirm that the message length embedded within the header (from `CFE_MSG_GetSize()`) matches the expected length of that message, based on the size of the C structure defining that command. If there is any discrepancy between the expected and actual message size, TIME will generate the `CFE_TIME_LEN_ERR_EID` event, increment the command error counter (`$sc_$cpu_TIME_CMDEC`), and the command will *not* be accepted for processing.

The following is a list of commands that are processed by the cFE Time Services Task.

Global `CFE_TIME_ADD_ADJUST_CC`

Add Delta to Spacecraft Time Correlation Factor

Global `CFE_TIME_ADD_DELAY_CC`

Add Time to Tone Time Delay

Global `CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC`

Add Delta to Spacecraft Time Correlation Factor each 1Hz

Global `CFE_TIME_NOOP_CC`

Time No-Op

Global `CFE_TIME_RESET_COUNTERS_CC`

Time Reset Counters

Global `CFE_TIME_SEND_DIAGNOSTIC_CC`

Request TIME Diagnostic Telemetry

Global `CFE_TIME_SET_LEAP_SECONDS_CC`

Set Leap Seconds

Global `CFE_TIME_SET_MET_CC`

Set Mission Elapsed Time

Global `CFE_TIME_SET_SIGNAL_CC`

Set Tone Signal Source

Global `CFE_TIME_SET_SOURCE_CC`

Set Time Source

Global `CFE_TIME_SET_STATE_CC`

Set Time State

Global `CFE_TIME_SET_STCF_CC`

Set Spacecraft Time Correlation Factor

Global `CFE_TIME_SET_TIME_CC`

Set Spacecraft Time

Global `CFE_TIME_SUB_ADJUST_CC`

Subtract Delta from Spacecraft Time Correlation Factor

Global `CFE_TIME_SUB_DELAY_CC`

Subtract Time from Tone Time Delay

Global `CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC`

Subtract Delta from Spacecraft Time Correlation Factor each 1Hz

2.24 cFE Time Services Telemetry

The following are telemetry packets generated by the cFE Time Services Task.

Global CFE_TIME_DiagnosticTlm_Payload_t

Time Services Diagnostics Packet

Global CFE_TIME_HousekeepingTlm_Payload_t

Time Services Housekeeping Packet

2.25 cFE Time Services Configuration Parameters

The following are configuration parameters used to configure the cFE Time Services either for each platform or for a mission as a whole.

Global CFE_MISSION_TIME_AT_TONE_WAS

Default Time and Tone Order

Default Time and Tone Order

Global CFE_MISSION_TIME_CFG_DEFAULT_TAI

Default Time Format

Default Time Format

Global CFE_MISSION_TIME_CFG_FAKE_TONE

Default Time Format

Default Time Format

Global CFE_MISSION_TIME_DEF_MET_SECS

Default Time Values

Default Time Values

Global CFE_MISSION_TIME_EPOCH_YEAR

Default EPOCH Values

Default EPOCH Values

Global CFE_MISSION_TIME_FS_FACTOR

Time File System Factor

Time File System Factor

Global CFE_MISSION_TIME_MIN_ELAPSED

Min and Max Time Elapsed

Min and Max Time Elapsed

Global CFE_PLATFORM_TIME_CFG_LATCH_FLY

Define Periodic Time to Update Local Clock Tone Latch

Define Periodic Time to Update Local Clock Tone Latch

Global CFE_PLATFORM_TIME_CFG_SERVER

Time Server or Time Client Selection

Time Server or Time Client Selection

Global CFE_PLATFORM_TIME_CFG_SIGNAL

Include or Exclude the Primary/Redundant Tone Selection Cmd

Include or Exclude the Primary/Redundant Tone Selection Cmd

Global CFE_PLATFORM_TIME_CFG_SOURCE

Include or Exclude the Internal/External Time Source Selection Cmd

Include or Exclude the Internal/External Time Source Selection Cmd

Global CFE_PLATFORM_TIME_CFG_SRC_MET

Choose the External Time Source for Server only

Choose the External Time Source for Server only

Global CFE_PLATFORM_TIME_CFG_START_FLY

Define Time to Start Flywheel Since Last Tone

Define Time to Start Flywheel Since Last Tone

Global CFE_PLATFORM_TIME_CFG_TONE_LIMIT

Define Timing Limits From One Tone To The Next

Define Timing Limits From One Tone To The Next

Global CFE_PLATFORM_TIME_CFG_VIRTUAL

Local MET or Virtual MET Selection for Time Servers

Local MET or Virtual MET Selection for Time Servers

Time Tone In Big-Endian Order

Time Tone In Big-Endian Order

Global CFE_PLATFORM_TIME_MAX_DELTA_SECS

Define the Max Delta Limits for Time Servers using an Ext Time Source

Define the Max Delta Limits for Time Servers using an Ext Time Source

Global CFE_PLATFORM_TIME_MAX_LOCAL_SECS

Define the Local Clock Rollover Value in seconds and subseconds

Define the Local Clock Rollover Value in seconds and subseconds

Global CFE_PLATFORM_TIME_START_TASK_PRIORITY

Define TIME Task Priorities

Define TIME Task Priorities

Global CFE_PLATFORM_TIME_START_TASK_STACK_SIZE

Define TIME Task Stack Sizes

Define TIME Task Stack Sizes

2.26 cFE Event Message Cross Reference

The following cross reference maps the text associated with each cFE Event Message to its Event Message Identifier. A user can search this page for the text of the message they wish to learn more about and then click on the associated Event Message Identifier to obtain more information.

2.27 cFE Command Mnemonic Cross Reference

The following cross reference maps the cFE command codes to Command Mnemonics. To learn about the details of a particular command, click on its associated command code.

Global CFE_ES_CLEAR_ER_LOG_CC

\$sc_\$cpu_ES_ClearERLog

Global CFE_ES_CLEAR_SYS_LOG_CC

\$sc_\$cpu_ES_ClearSysLog

Global CFE_ES_DELETE_CDS_CC

\$sc_\$cpu_ES_DeleteCDS

Global CFE_ES_DUMP_CDS_REGISTRY_CC

\$sc_\$cpu_ES_WriteCDS2File

Global CFE_ES_NOOP_CC

\$sc_\$cpu_ES_NOOP

Global CFE_ES_OVER_WRITE_SYS_LOG_CC

\$sc_\$cpu_ES_OverwriteSysLogMode

Global CFE_ES_QUERY_ALL_CC

\$sc_\$cpu_ES_WriteApplInfo2File

Global CFE_ES_QUERY_ALL_TASKS_CC

\$sc_\$cpu_ES_WriteTaskInfo2File

Global CFE_ES_QUERY_ONE_CC

\$sc_\$cpu_ES_QueryApp

Global CFE_ES_RELOAD_APP_CC

\$sc_\$cpu_ES_ReloadApp

Global CFE_ES_RESET_COUNTERS_CC

\$sc_\$cpu_ES_ResetCtrs

Global CFE_ES_RESET_PR_COUNT_CC

\$sc_\$cpu_ES_ResetPRCnt

Global CFE_ES_RESTART_APP_CC

\$sc_\$cpu_ES_ResetApp

Global CFE_ES_RESTART_CC

\$sc_\$cpu_ES_ProcessorReset, \$sc_\$cpu_ES_PowerOnReset

Global CFE_ES_SEND_MEM_POOL_STATS_CC

\$sc_\$cpu_ES_PoolStats

Global CFE_ES_SET_MAX_PR_COUNT_CC

\$sc_\$cpu_ES_SetMaxPRCnt

Global CFE_ES_SET_PERF_FILTER_MASK_CC

\$sc_\$cpu_ES_LAFilterMask

Global CFE_ES_SET_PERF_TRIGGER_MASK_CC

\$sc_\$cpu_ES_LATriggerMask

Global CFE_ES_START_APP_CC

\$sc_\$cpu_ES_StartApp

```
Global CFE_ES_START_PERF_DATA_CC
$sc_$cpu_ES_StartLAData

Global CFE_ES_STOP_APP_CC
$sc_$cpu_ES_StopApp

Global CFE_ES_STOP_PERF_DATA_CC
$sc_$cpu_ES_StopLAData

Global CFE_ES_WRITE_ER_LOG_CC
$sc_$cpu_ES_WriteERLog2File

Global CFE_ES_WRITE_SYS_LOG_CC
$sc_$cpu_ES_WriteSysLog2File

Global CFE_EVS_ADD_EVENT_FILTER_CC
$sc_$cpu_EVS_AddEvtFltr

Global CFE_EVS_CLEAR_LOG_CC
$sc_$cpu_EVS_ClrLog

Global CFE_EVS_DELETE_EVENT_FILTER_CC
$sc_$cpu_EVS_DelEvtFltr

Global CFE_EVS_DISABLE_APP_EVENT_TYPE_CC
$sc_$cpu_EVS_DisAppEvtType, $sc_$cpu_EVS_DisAppEvtTypeMask

Global CFE_EVS_DISABLE_APP_EVENTS_CC
$sc_$cpu_EVS_DisAppEvGen

Global CFE_EVS_DISABLE_EVENT_TYPE_CC
$sc_$cpu_EVS_DisEventType, $sc_$cpu_EVS_DisEventTypeMask

Global CFE_EVS_DISABLE_PORTS_CC
$sc_$cpu_EVS_DisPort, $sc_$cpu_EVS_DisPortMask

Global CFE_EVS_ENABLE_APP_EVENT_TYPE_CC
$sc_$cpu_EVS_EnaAppEvtType, $sc_$cpu_EVS_EnaAppEvtTypeMask

Global CFE_EVS_ENABLE_APP_EVENTS_CC
$sc_$cpu_EVS_EnaAppEvGen

Global CFE_EVS_ENABLE_EVENT_TYPE_CC
$sc_$cpu_EVS_EnaEventType, $sc_$cpu_EVS_EnaEventTypeMask

Global CFE_EVS_ENABLE_PORTS_CC
$sc_$cpu_EVS_EnaPort, $sc_$cpu_EVS_EnaPortMask

Global CFE_EVS_NOOP_CC
$sc_$cpu_EVS_NOOP

Global CFE_EVS_RESET_ALL_FILTERS_CC
$sc_$cpu_EVS_RstAllFltrs

Global CFE_EVS_RESET_APP_COUNTER_CC
$sc_$cpu_EVS_RstAppCtrs

Global CFE_EVS_RESET_COUNTERS_CC
$sc_$cpu_EVS_ResetCtrs

Global CFE_EVS_RESET_FILTER_CC
$sc_$cpu_EVS_RstBinFltrCtr
```

Global CFE_EVS_SET_EVENT_FORMAT_MODE_CC
\$sc_\$cpu_EVS_SetEvtFmt

Global CFE_EVS_SET_FILTER_CC
\$sc_\$cpu_EVS_SetBinFltrMask

Global CFE_EVS_SET_LOG_MODE_CC
\$sc_\$cpu_EVS_SetLogMode

Global CFE_EVS_WRITE_APP_DATA_FILE_CC
\$sc_\$cpu_EVS_WriteAppData2File

Global CFE_EVS_WRITE_LOG_DATA_FILE_CC
\$sc_\$cpu_EVS_WriteLog2File

Global CFE_SB_DISABLE_ROUTE_CC
\$sc_\$cpu_SB_DisRoute

Global CFE_SB_DISABLE_SUB_REPORTING_CC
\$sc_\$cpu_SB_DisSubRptg

Global CFE_SB_ENABLE_ROUTE_CC
\$sc_\$cpu_SB_EnaRoute

Global CFE_SB_ENABLE_SUB_REPORTING_CC
\$sc_\$cpu_SB_EnaSubRptg

Global CFE_SB_NOOP_CC
\$sc_\$cpu_SB_NOOP

Global CFE_SB_RESET_COUNTERS_CC
\$sc_\$cpu_SB_ResetCtrs

Global CFE_SB_SEND_PREV_SUBS_CC
\$sc_\$cpu_SB_SendPrevSubs

Global CFE_SB_SEND_SB_STATS_CC
\$sc_\$cpu_SB_DumpStats

Global CFE_SB_WRITE_MAP_INFO_CC
\$sc_\$cpu_SB_WriteMap2File

Global CFE_SB_WRITE_PIPE_INFO_CC
\$sc_\$cpu_SB_WritePipe2File

Global CFE_SB_WRITE_ROUTING_INFO_CC
\$sc_\$cpu_SB_WriteRouting2File

Global CFE_TBL_ABORT_LOAD_CC
\$sc_\$cpu_TBL_LOADABORT

Global CFE_TBL_ACTIVATE_CC
\$sc_\$cpu_TBL_ACTIVATE

Global CFE_TBL_DELETE_CDS_CC
\$sc_\$cpu_TBL_DeleteCDS

Global CFE_TBL_DUMP_CC
\$sc_\$cpu_TBL_DUMP

Global CFE_TBL_DUMP_REGISTRY_CC
\$sc_\$cpu_TBL_WriteReg2File

Global CFE_TBL_LOAD_CC
\$sc_\$cpu_TBL_Load

Global CFE_TBL_NOOP_CC
\$sc_\$cpu_TBL_NOOP

Global CFE_TBL_RESET_COUNTERS_CC
\$sc_\$cpu_TBL_ResetCtrs

Global CFE_TBL_SEND_REGISTRY_CC
\$sc_\$cpu_TBL_TLMReg

Global CFE_TBL_VALIDATE_CC
\$sc_\$cpu_TBL_VALIDATE

Global CFE_TIME_ADD_ADJUST_CC
\$sc_\$cpu_TIME_AddSTCFAdj

Global CFE_TIME_ADD_DELAY_CC
\$sc_\$cpu_TIME_AddClockLat

Global CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC
\$sc_\$cpu_TIME_Add1HzSTCF

Global CFE_TIME_NOOP_CC
\$sc_\$cpu_TIME_NOOP

Global CFE_TIME_RESET_COUNTERS_CC
\$sc_\$cpu_TIME_ResetCtrs

Global CFE_TIME_SEND_DIAGNOSTIC_CC
\$sc_\$cpu_TIME_RequestDiag

Global CFE_TIME_SET_LEAP_SECONDS_CC
\$sc_\$cpu_TIME_SetClockLeap

Global CFE_TIME_SET_MET_CC
\$sc_\$cpu_TIME_SetClockMET

Global CFE_TIME_SET_SIGNAL_CC
\$sc_\$cpu_TIME_SetSignal

Global CFE_TIME_SET_SOURCE_CC
\$sc_\$cpu_TIME_SetSource

Global CFE_TIME_SET_STATE_CC
\$sc_\$cpu_TIME_SetState

Global CFE_TIME_SET_STCF_CC
\$sc_\$cpu_TIME_SetClockSTCF

Global CFE_TIME_SET_TIME_CC
\$sc_\$cpu_TIME_SetClock

Global CFE_TIME_SUB_ADJUST_CC
\$sc_\$cpu_TIME_SubSTCFAdj

Global CFE_TIME_SUB_DELAY_CC
\$sc_\$cpu_TIME_SubClockLat

Global CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC
\$sc_\$cpu_TIME_Sub1HzSTCF

2.28 cFE Telemetry Mnemonic Cross Reference

The following cross reference maps the cFE telemetry packet members to their associated ground system telemetry mnemonics.

Global `CFE_ES_AppInfo::AddressesAreValid`

`$sc_$cpu_ES_AddrsValid`

Global `CFE_ES_AppInfo::BSSAddress`

`$sc_$cpu_ES_BSSAddress`

Global `CFE_ES_AppInfo::BSSSize`

`$sc_$cpu_ES_BSSSize`

Global `CFE_ES_AppInfo::CodeAddress`

`$sc_$cpu_ES_CodeAddress`

Global `CFE_ES_AppInfo::CodeSize`

`$sc_$cpu_ES_CodeSize`

Global `CFE_ES_AppInfo::DataAddress`

`$sc_$cpu_ES_DataAddress`

Global `CFE_ES_AppInfo::DataSize`

`$sc_$cpu_ES_DataSize`

Global `CFE_ES_AppInfo::EntryPoint` [CFE_MISSION_MAX_API_LEN]

`$sc_$cpu_ES_AppEntryPt[OS_MAX_API_NAME]`

Global `CFE_ES_AppInfo::ExceptionAction`

`$sc_$cpu_ES_ExceptnActn`

Global `CFE_ES_AppInfo::ExecutionCounter`

`$sc_$cpu_ES_ExecutionCtr`

Global `CFE_ES_AppInfo::FileName` [CFE_MISSION_MAX_PATH_LEN]

`$sc_$cpu_ES_AppFilename[OS_MAX_PATH_LEN]`

Global `CFE_ES_AppInfo::MainTaskId`

`$sc_$cpu_ES_MainTaskId`

Global `CFE_ES_AppInfo::MainTaskName` [CFE_MISSION_MAX_API_LEN]

`$sc_$cpu_ES_MainTaskName[OS_MAX_API_NAME]`

Global `CFE_ES_AppInfo::Name` [CFE_MISSION_MAX_API_LEN]

`$sc_$cpu_ES_AppName[OS_MAX_API_NAME]`

Global `CFE_ES_AppInfo::NumOfChildTasks`

`$sc_$cpu_ES_ChildTasks`

Global `CFE_ES_AppInfo::Priority`

`$sc_$cpu_ES_Priority`

Global `CFE_ES_AppInfo::ResourceID`

`$sc_$cpu_ES_AppID`

Global `CFE_ES_AppInfo::StackSize`

`$sc_$cpu_ES_StackSize`

Global `CFE_ES_AppInfo::StartAddress`

`$sc_$cpu_ES_StartAddr`

```
Global CFE_ES_AppInfo::Type
$sc_$cpu_ES_AppType

Global CFE_ES_HousekeepingTlm_Payload::BootSource
$sc_$cpu_ES_BootSource

Global CFE_ES_HousekeepingTlm_Payload::CFECoreChecksum
$sc_$cpu_ES_CKSUM

Global CFE_ES_HousekeepingTlm_Payload::CFEMajorVersion
$sc_$cpu_ES_CFEMAJORVER

Global CFE_ES_HousekeepingTlm_Payload::CFEMinorVersion
$sc_$cpu_ES_CFE_MINORVER

Global CFE_ES_HousekeepingTlm_Payload::CFEMissionRevision
$sc_$cpu_ES_CFEMISSIONREV

Global CFE_ES_HousekeepingTlm_Payload::CFERevision
$sc_$cpu_ES_CFEREVISION

Global CFE_ES_HousekeepingTlm_Payload::CommandCounter
$sc_$cpu_ES_CMDPC

Global CFE_ES_HousekeepingTlm_Payload::CommandErrorCounter
$sc_$cpu_ES_CMDEC

Global CFE_ES_HousekeepingTlm_Payload::ERLogEntries
$sc_$cpu_ES_ERLOGENTRIES

Global CFE_ES_HousekeepingTlm_Payload::ERLogIndex
$sc_$cpu_ES_ERLOGINDEX

Global CFE_ES_HousekeepingTlm_Payload::HeapBlocksFree
$sc_$cpu_ES_HeapBlocksFree

Global CFE_ES_HousekeepingTlm_Payload::HeapBytesFree
$sc_$cpu_ES_HeapBytesFree

Global CFE_ES_HousekeepingTlm_Payload::HeapMaxBlockSize
$sc_$cpu_ES_HeapMaxBlkSize

Global CFE_ES_HousekeepingTlm_Payload::MaxProcessorResets
$sc_$cpu_ES_MaxProcResets

Global CFE_ES_HousekeepingTlm_Payload::OSALMajorVersion
$sc_$cpu_ES_OSMAJORVER

Global CFE_ES_HousekeepingTlm_Payload::OSALMinorVersion
$sc_$cpu_ES_OSMINORVER

Global CFE_ES_HousekeepingTlm_Payload::OSALMissionRevision
$sc_$cpu_ES_OSMISSIONREV

Global CFE_ES_HousekeepingTlm_Payload::OSALRevision
$sc_$cpu_ES_OSREVISION

Global CFE_ES_HousekeepingTlm_Payload::PerfDataCount
$sc_$cpu_ES_PerfDataCnt

Global CFE_ES_HousekeepingTlm_Payload::PerfDataEnd
$sc_$cpu_ES_PerfDataEnd
```

Global CFE_ES_HousekeepingTlm_Payload::PerfDataStart
\$sc_\$cpu_ES_PerfDataStart

Global CFE_ES_HousekeepingTlm_Payload::PerfData2Write
\$sc_\$cpu_ES_PerfData2Write

Global CFE_ES_HousekeepingTlm_Payload::PerfFilterMask [CFE_MISSION_ES_PERF_MAX_IDS/32]
\$sc_\$cpu_ES_PerfFltrMask[MaskCnt]

Global CFE_ES_HousekeepingTlm_Payload::PerfMode
\$sc_\$cpu_ES_PerfMode

Global CFE_ES_HousekeepingTlm_Payload::PerfState
\$sc_\$cpu_ES_PerfState

Global CFE_ES_HousekeepingTlm_Payload::PerfTriggerCount
\$sc_\$cpu_ES_PerfTrigCnt

Global CFE_ES_HousekeepingTlm_Payload::PerfTriggerMask [CFE_MISSION_ES_PERF_MAX_IDS/32]
\$sc_\$cpu_ES_PerfTrigMask[MaskCnt]

Global CFE_ES_HousekeepingTlm_Payload::ProcessorResets
\$sc_\$cpu_ES_ProcResetCnt

Global CFE_ES_HousekeepingTlm_Payload::PSPMajorVersion
\$sc_\$cpu_ES_PSPMAJORVER

Global CFE_ES_HousekeepingTlm_Payload::PSPMinorVersion
\$sc_\$cpu_ES_PSPMINORVER

Global CFE_ES_HousekeepingTlm_Payload::PSPMissionRevision
\$sc_\$cpu_ES_PSPMISSIONREV

Global CFE_ES_HousekeepingTlm_Payload::PSPRevision
\$sc_\$cpu_ES_PSPREVISION

Global CFE_ES_HousekeepingTlm_Payload::RegisteredCoreApps
\$sc_\$cpu_ES_RegCoreApps

Global CFE_ES_HousekeepingTlm_Payload::RegisteredExternalApps
\$sc_\$cpu_ES_RegExtApps

Global CFE_ES_HousekeepingTlm_Payload::RegisteredLibs
\$sc_\$cpu_ES_RegLibs

Global CFE_ES_HousekeepingTlm_Payload::RegisteredTasks
\$sc_\$cpu_ES_RegTasks

Global CFE_ES_HousekeepingTlm_Payload::ResetSubtype
\$sc_\$cpu_ES_ResetSubtype

Global CFE_ES_HousekeepingTlm_Payload::ResetType
\$sc_\$cpu_ES_ResetType

Global CFE_ES_HousekeepingTlm_Payload::SysLogBytesUsed
\$sc_\$cpu_ES_SYSLOGBYTEUSED

Global CFE_ES_HousekeepingTlm_Payload::SysLogEntries
\$sc_\$cpu_ES_SYSLOGENTRIES

Global CFE_ES_HousekeepingTlm_Payload::SysLogMode
\$sc_\$cpu_ES_SYSLOGMODE

```
Global CFE_ES_HousekeepingTlm_Payload::SysLogSize
$sc_$cpu_ES_SYSLOGSIZE

Global CFE_ES_MemPoolStats::BlockStats [CFE_MISSION_ES_POOL_MAX_BUCKETS]
$sc_$cpu_ES_BlkStats[BLK_SIZES]

Global CFE_ES_MemPoolStats::CheckErrCtr
$sc_$cpu_ES_BlkErrCTR

Global CFE_ES_MemPoolStats::NumBlocksRequested
$sc_$cpu_ES_BlkREQ

Global CFE_ES_MemPoolStats::NumFreeBytes
$sc_$cpu_ES_FreeBytes

Global CFE_ES_MemPoolStats::PoolSize
$sc_$cpu_ES_PoolSize

Global CFE_ES_PoolStatsTlm_Payload::PoolHandle
$sc_$cpu_ES_PoolHandle

Global CFE_EVS_AppTlmData::AppEnableStatus
$sc_$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS].APPENASTAT

Global CFE_EVS_AppTlmData::AppID
$sc_$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS].APPID

Global CFE_EVS_AppTlmData::AppMessageSentCounter
$sc_$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS].APPMSGSENTC

Global CFE_EVS_AppTlmData::AppMessageSquelchedCounter
$sc_$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS].SQUELCHEDC

Global CFE_EVS_HousekeepingTlm_Payload::AppData [CFE_MISSION_ES_MAX_APPLICATIONS]
$sc_$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS]

Global CFE_EVS_HousekeepingTlm_Payload::CommandCounter
$sc_$cpu_EVS_CMDPC

Global CFE_EVS_HousekeepingTlm_Payload::CommandErrorCounter
$sc_$cpu_EVS_CMDEC

Global CFE_EVS_HousekeepingTlm_Payload::LogEnabled
$sc_$cpu_EVS_LOGENABLED

Global CFE_EVS_HousekeepingTlm_Payload::LogFullFlag
$sc_$cpu_EVS_LOGFULL

Global CFE_EVS_HousekeepingTlm_Payload::LogMode
$sc_$cpu_EVS_LOGMODE

Global CFE_EVS_HousekeepingTlm_Payload::LogOverflowCounter
$sc_$cpu_EVS_LOGOVERFLOWC

Global CFE_EVS_HousekeepingTlm_Payload::MessageFormatMode
$sc_$cpu_EVS_MSGFMTMODE

Global CFE_EVS_HousekeepingTlm_Payload::MessageSendCounter
$sc_$cpu_EVS_MSGSENTC

Global CFE_EVS_HousekeepingTlm_Payload::MessageTruncCounter
$sc_$cpu_EVS_MSGTRUNC
```

Global CFE_EVS_HousekeepingTlm_Payload::OutputPort
\$sc_\$cpu_EVS_OUTPUTPORT

Global CFE_EVS_HousekeepingTlm_Payload::Spare1
\$sc_\$cpu_EVS_HK_SPARE1

Global CFE_EVS_HousekeepingTlm_Payload::Spare2
\$sc_\$cpu_EVS_HK_SPARE2

Global CFE_EVS_HousekeepingTlm_Payload::Spare3
\$sc_\$cpu_EVS_HK_SPARE3

Global CFE_EVS_HousekeepingTlm_Payload::UnregisteredAppCounter
\$sc_\$cpu_EVS_UNREGAPPC

Global CFE_EVS_LongEventTlm_Payload::Message [CFE_MISSION_EVS_MAX_MESSAGE_LENGTH]
\$sc_\$cpu_EVS_EVENT[CFE_MISSION_EVS_MAX_MESSAGE_LENGTH]

Global CFE_EVS_LongEventTlm_Payload::Spare1
\$sc_\$cpu_EVS_SPARE1

Global CFE_EVS_LongEventTlm_Payload::Spare2
\$sc_\$cpu_EVS_SPARE2

Global CFE_EVS_PacketID::AppName [CFE_MISSION_MAX_API_LEN]
\$sc_\$cpu_EVS_APPNAME[OS_MAX_API_NAME]

Global CFE_EVS_PacketID::EventID
\$sc_\$cpu_EVS_EVENTID

Global CFE_EVS_PacketID::EventType
\$sc_\$cpu_EVS_EVENTTYPE

Global CFE_EVS_PacketID::ProcessorID
\$sc_\$cpu_EVS_PROCESSORID

Global CFE_EVS_PacketID::SpacecraftID
\$sc_\$cpu_EVS_SCID

Global CFE_SB_HousekeepingTlm_Payload::CommandCounter
\$sc_\$cpu_SB_CMDPC

Global CFE_SB_HousekeepingTlm_Payload::CommandErrorCounter
\$sc_\$cpu_SB_CMDEC

Global CFE_SB_HousekeepingTlm_Payload::CreatePipeErrorCounter
\$sc_\$cpu_SB_NewPipeEC

Global CFE_SB_HousekeepingTlm_Payload::DuplicateSubscriptionsCounter
\$sc_\$cpu_SB_DupSubCnt

Global CFE_SB_HousekeepingTlm_Payload::GetPipeIDByNameErrorCounter
\$sc_\$cpu_SB_GetPipeIDByNameEC

Global CFE_SB_HousekeepingTlm_Payload::InternalErrorCounter
\$sc_\$cpu_SB_InternalEC

Global CFE_SB_HousekeepingTlm_Payload::MemInUse
\$sc_\$cpu_SB_MemInUse

Global CFE_SB_HousekeepingTlm_Payload::MemPoolHandle
\$sc_\$cpu_SB_MemPoolHdl

```
Global CFE_SB_HousekeepingTlm_Payload::MsgLimitErrorCounter
$sc_$cpu_SB_MsgLimEC

Global CFE_SB_HousekeepingTlm_Payload::MsgReceiveErrorCounter
$sc_$cpu_SB_MsgRecEC

Global CFE_SB_HousekeepingTlm_Payload::MsgSendErrorCounter
$sc_$cpu_SB_MsgSndEC

Global CFE_SB_HousekeepingTlm_Payload::NoSubscribersCounter
$sc_$cpu_SB_NoSubEC

Global CFE_SB_HousekeepingTlm_Payload::PipeOptsErrorCounter
$sc_$cpu_SB_PipeOptsEC

Global CFE_SB_HousekeepingTlm_Payload::PipeOverflowErrorCounter
$sc_$cpu_SB_PipeOvrEC

Global CFE_SB_HousekeepingTlm_Payload::Spare2Align [1]
$sc_$cpu_SB_Spare2Align[2]

Global CFE_SB_HousekeepingTlm_Payload::SubscribeErrorCounter
$sc_$cpu_SB_SubscrEC

Global CFE_SB_HousekeepingTlm_Payload::UnmarkedMem
$sc_$cpu_SB_UnMarkedMem

Global CFE_SB_PipeDepthStats::CurrentQueueDepth
$sc_$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDINUSE

Global CFE_SB_PipeDepthStats::MaxQueueDepth
$sc_$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDDEPTH

Global CFE_SB_PipeDepthStats::PeakQueueDepth
$sc_$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDPKINUSE

Global CFE_SB_PipeDepthStats::PipId
$sc_$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDPipeID

Global CFE_SB_PipeDepthStats::Spare
$sc_$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDSpare

Global CFE_SB_StatsTlm_Payload::MaxMemAllowed
$sc_$cpu_SB_Stat.SB_SMMBMALW

Global CFE_SB_StatsTlm_Payload::MaxMsgIdsAllowed
$sc_$cpu_SB_Stat.SB_SMMMDALW

Global CFE_SB_StatsTlm_Payload::MaxPipeDepthAllowed
$sc_$cpu_SB_Stat.SB_SMMPDALW

Global CFE_SB_StatsTlm_Payload::MaxPipesAllowed
$sc_$cpu_SB_Stat.SB_SMMPALW

Global CFE_SB_StatsTlm_Payload::MaxSubscriptionsAllowed
$sc_$cpu_SB_Stat.SB_SMMSALW

Global CFE_SB_StatsTlm_Payload::MemInUse
$sc_$cpu_SB_Stat.SB_SMBMIU

Global CFE_SB_StatsTlm_Payload::MsgIdsInUse
$sc_$cpu_SB_Stat.SB_SMMIDIU
```

Global CFE_SB_StatsTlm_Payload::PeakMemInUse
\$sc_\$cpu_SB_Stat.SB_SMPBMIU

Global CFE_SB_StatsTlm_Payload::PeakMsgIdsInUse
\$sc_\$cpu_SB_Stat.SB_SMPMIDIU

Global CFE_SB_StatsTlm_Payload::PeakPipesInUse
\$sc_\$cpu_SB_Stat.SB_SMPIIU

Global CFE_SB_StatsTlm_Payload::PeakSBBuffersInUse
\$sc_\$cpu_SB_Stat.SB_SMPSSBIU

Global CFE_SB_StatsTlm_Payload::PeakSubscriptionsInUse
\$sc_\$cpu_SB_Stat.SB_SMPSIU

Global CFE_SB_StatsTlm_Payload::PipeDepthStats [CFE_MISSION_SB_MAX_PIPES]
\$sc_\$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES]

Global CFE_SB_StatsTlm_Payload::PipesInUse
\$sc_\$cpu_SB_Stat.SB_SMPIU

Global CFE_SB_StatsTlm_Payload::SBBuffersInUse
\$sc_\$cpu_SB_Stat.SB_SMSBBIU

Global CFE_SB_StatsTlm_Payload::SubscriptionsInUse
\$sc_\$cpu_SB_Stat.SB_SMSIU

Global CFE_TBL_HousekeepingTlm_Payload::ActiveBuffer
\$sc_\$cpu_TBL_LastValBuf

Global CFE_TBL_HousekeepingTlm_Payload::ByteAlignPad1
\$sc_\$cpu_TBL_BytAlignPad1

Global CFE_TBL_HousekeepingTlm_Payload::CommandCounter
\$sc_\$cpu_TBL_CMDPC

Global CFE_TBL_HousekeepingTlm_Payload::CommandErrorCounter
\$sc_\$cpu_TBL_CMDEC

Global CFE_TBL_HousekeepingTlm_Payload::FailedValCounter
\$sc_\$cpu_TBL_ValFailedCtr

Global CFE_TBL_HousekeepingTlm_Payload::LastFileDumped [CFE_MISSION_MAX_PATH_LEN]
\$sc_\$cpu_TBL_LastFileDumped[OS_MAX_PATH_LEN]

Global CFE_TBL_HousekeepingTlm_Payload::LastFileLoaded [CFE_MISSION_MAX_PATH_LEN]
\$sc_\$cpu_TBL_LastFileLoaded[OS_MAX_PATH_LEN]

Global CFE_TBL_HousekeepingTlm_Payload::LastTableLoaded [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]
\$sc_\$cpu_TBL_LastTableLoaded[CFE_TBL_MAX_FULL_NAME_LEN]

Global CFE_TBL_HousekeepingTlm_Payload::LastUpdatedTable [CFE_MISSION_TBL_MAX_FULL_NAME_← LEN]
\$sc_\$cpu_TBL_LastUpdTblName[CFE_TB_MAX_FULL_NAME_LEN]

Global CFE_TBL_HousekeepingTlm_Payload::LastUpdateTime
\$sc_\$cpu_TBL_LastUpdTIme, \$sc_\$cpu_TBL_SECONDS, \$sc_\$cpu_TBL_SUBSECONDS

Global CFE_TBL_HousekeepingTlm_Payload::LastValCrc
\$sc_\$cpu_TBL_LastValCRC

```
Global CFE_TBL_HousekeepingTlm_Payload::LastValStatus
$sc_$cpu_TBL_LastValS

Global CFE_TBL_HousekeepingTlm_Payload::LastValTableName [CFE_MISSION_TBL_MAX_FULL_NAME_←
LEN]
$sc_$cpu_TBL_LastValTblName[CFE_TB_MAX_FULL_NAME_LEN]

Global CFE_TBL_HousekeepingTlm_Payload::MemPoolHandle
$sc_$cpu_TBL_MemPoolHandle

Global CFE_TBL_HousekeepingTlm_Payload::NumFreeSharedBufs
$sc_$cpu_TBL_NumFreeShrBuf

Global CFE_TBL_HousekeepingTlm_Payload::NumLoadPending
$sc_$cpu_TBL_NumUpdatesPend

Global CFE_TBL_HousekeepingTlm_Payload::NumTables
$sc_$cpu_TBL_NumTables

Global CFE_TBL_HousekeepingTlm_Payload::NumValRequests
$sc_$cpu_TBL_ValReqCtr

Global CFE_TBL_HousekeepingTlm_Payload::SuccessValCounter
$sc_$cpu_TBL_ValSuccessCtr

Global CFE_TBL_HousekeepingTlm_Payload::ValidationCounter
$sc_$cpu_TBL_ValCompltdCtr

Global CFE_TBL_TblRegPacket_Payload::ActiveBufferAddr
$sc_$cpu_TBL_ActBufAdd

Global CFE_TBL_TblRegPacket_Payload::ByteAlign4
$sc_$cpu_TBL_Spare4

Global CFE_TBL_TblRegPacket_Payload::Crc
$sc_$cpu_TBL_CRC

Global CFE_TBL_TblRegPacket_Payload::Critical
$sc_$cpu_TBL_Spare3

Global CFE_TBL_TblRegPacket_Payload::DoubleBuffered
$sc_$cpu_TBL_DblBuffered

Global CFE_TBL_TblRegPacket_Payload::DumpOnly
$sc_$cpu_TBL_DumpOnly

Global CFE_TBL_TblRegPacket_Payload::FileTime
$sc_$cpu_TBL_FILECTIME

Global CFE_TBL_TblRegPacket_Payload::InactiveBufferAddr
$sc_$cpu_TBL_IActBufAdd

Global CFE_TBL_TblRegPacket_Payload::LastFileLoaded [CFE_MISSION_MAX_PATH_LEN]
$sc_$cpu_TBL_LastFileUpd[OS_MAX_PATH_LEN]

Global CFE_TBL_TblRegPacket_Payload::LoadPending
$sc_$cpu_TBL_UpdatePndng

Global CFE_TBL_TblRegPacket_Payload::Name [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]
$sc_$cpu_TBL_Name[CFE_TB_MAX_FULL_NAME_LEN]
```

Global CFE_TBL_TblRegPacket_Payload::OwnerAppName [CFE_MISSION_MAX_API_LEN]
\$sc_\$cpu_TBL_OwnerApp[OS_MAX_API_NAME]

Global CFE_TBL_TblRegPacket_Payload::Size
\$sc_\$cpu_TBL_SIZE

Global CFE_TBL_TblRegPacket_Payload::TableLoadedOnce
\$sc_\$cpu_TBL_LoadedOnce

Global CFE_TBL_TblRegPacket_Payload::TimeOfLastUpdate
\$sc_\$cpu_TBL_TimeLastUpd, \$sc_\$cpu_TBL_TLUSECONDS, \$sc_\$cpu_TBL_TLUSUBSECONDS

Global CFE_TBL_TblRegPacket_Payload::ValidationFuncPtr
\$sc_\$cpu_TBL_ValFuncPtr

Global CFE_TIME_DiagnosticTlm_Payload::AtToneDelay
\$sc_\$cpu_TIME_DLlatentS, \$sc_\$cpu_TIME_DLlatentSs

Global CFE_TIME_DiagnosticTlm_Payload::AtToneLatch
\$sc_\$cpu_TIME_DTVvalidS, \$sc_\$cpu_TIME_DTVvalidSs

Global CFE_TIME_DiagnosticTlm_Payload::AtToneLeapSeconds
\$sc_\$cpu_TIME_DLepS

Global CFE_TIME_DiagnosticTlm_Payload::AtToneMET
\$sc_\$cpu_TIME_DTMETS, \$sc_\$cpu_TIME_DTMETSS

Global CFE_TIME_DiagnosticTlm_Payload::AtToneSTCF
\$sc_\$cpu_TIME_DSTCFS, \$sc_\$cpu_TIME_DSTCFSS

Global CFE_TIME_DiagnosticTlm_Payload::ClockFlyState
\$sc_\$cpu_TIME_DFlywheel

Global CFE_TIME_DiagnosticTlm_Payload::ClockSetState
\$sc_\$cpu_TIME_DValid

Global CFE_TIME_DiagnosticTlm_Payload::ClockSignal
\$sc_\$cpu_TIME_DSignal

Global CFE_TIME_DiagnosticTlm_Payload::ClockSource
\$sc_\$cpu_TIME_DSource

Global CFE_TIME_DiagnosticTlm_Payload::ClockStateAPI
\$sc_\$cpu_TIME_DAPISate

Global CFE_TIME_DiagnosticTlm_Payload::ClockStateFlags
\$sc_\$cpu_TIME_DStateFlags, \$sc_\$cpu_TIME_DFlagSet, \$sc_\$cpu_TIME_DFlagFly, \$sc_\$cpu_TIME_DFlagSrc,
\$sc_\$cpu_TIME_DFlagPri, \$sc_\$cpu_TIME_DFlagSfly, \$sc_\$cpu_TIME_DFlagCfly, \$sc_\$cpu_TIME_DFlagAdj,
\$sc_\$cpu_TIME_DFlag1Hzd, \$sc_\$cpu_TIME_DFlagClat, \$sc_\$cpu_TIME_DFlagSorC, \$sc_\$cpu_TIME_DFlag←
NIU

Global CFE_TIME_DiagnosticTlm_Payload::CurrentLatch
\$sc_\$cpu_TIME_DLocalS, \$sc_\$cpu_TIME_DLocalSs

Global CFE_TIME_DiagnosticTlm_Payload::CurrentMET
\$sc_\$cpu_TIME_DMETS, \$sc_\$cpu_TIME_DMETSS

Global CFE_TIME_DiagnosticTlm_Payload::CurrentTAI
\$sc_\$cpu_TIME_DTAIS, \$sc_\$cpu_TIME_DTAISS

Global CFE_TIME_DiagnosticTlm_Payload::CurrentUTC
\$sc_\$cpu_TIME_DUTCS, \$sc_\$cpu_TIME_DUTCSS

Global CFE_TIME_DiagnosticTlm_Payload::DataStoreStatus
\$sc_\$cpu_TIME_DataStStat

Global CFE_TIME_DiagnosticTlm_Payload::DelayDirection
\$sc_\$cpu_TIME_DLlatentDir

Global CFE_TIME_DiagnosticTlm_Payload::Forced2Fly
\$sc_\$cpu_TIME_DCMD2FLY

Global CFE_TIME_DiagnosticTlm_Payload::LocalIntCounter
\$sc_\$cpu_TIME_D1HzISRCNT

Global CFE_TIME_DiagnosticTlm_Payload::LocalTaskCounter
\$sc_\$cpu_TIME_D1HzTaskCNT

Global CFE_TIME_DiagnosticTlm_Payload::MaxElapsed
\$sc_\$cpu_TIME_DMaxWindow

Global CFE_TIME_DiagnosticTlm_Payload::MaxLocalClock
\$sc_\$cpu_TIME_DWrapS, \$sc_\$cpu_TIME_DWrapSS

Global CFE_TIME_DiagnosticTlm_Payload::MinElapsed
\$sc_\$cpu_TIME_DMinWindow

Global CFE_TIME_DiagnosticTlm_Payload::OneHzAdjust
\$sc_\$cpu_TIME_D1HzAdjS, \$sc_\$cpu_TIME_D1HzAdjSS

Global CFE_TIME_DiagnosticTlm_Payload::OneHzDirection
\$sc_\$cpu_TIME_D1HzAdjDir

Global CFE_TIME_DiagnosticTlm_Payload::OneTimeAdjust
\$sc_\$cpu_TIME_DAdjustS, \$sc_\$cpu_TIME_DAdjustSS

Global CFE_TIME_DiagnosticTlm_Payload::OneTimeDirection
\$sc_\$cpu_TIME_DAdjustDir

Global CFE_TIME_DiagnosticTlm_Payload::ServerFlyState
\$sc_\$cpu_TIME_DSrvFly

Global CFE_TIME_DiagnosticTlm_Payload::TimeSinceTone
\$sc_\$cpu_TIME_DElapsedS, \$sc_\$cpu_TIME_DElapsedSS

Global CFE_TIME_DiagnosticTlm_Payload::ToneDataCounter
\$sc_\$cpu_TIME_DTatTCNT

Global CFE_TIME_DiagnosticTlm_Payload::ToneDataLatch
\$sc_\$cpu_TIME_DTDs, \$sc_\$cpu_TIME_DTDSS

Global CFE_TIME_DiagnosticTlm_Payload::ToneIntCounter
\$sc_\$cpu_TIME_DTslSRCNT

Global CFE_TIME_DiagnosticTlm_Payload::ToneIntErrorCounter
\$sc_\$cpu_TIME_DTslSRERR

Global CFE_TIME_DiagnosticTlm_Payload::ToneMatchCounter
\$sc_\$cpu_TIME_DVerifyCNT

Global CFE_TIME_DiagnosticTlm_Payload::ToneMatchErrorCounter
\$sc_\$cpu_TIME_DVerifyER

Global CFE_TIME_DiagnosticTlm_Payload::ToneOverLimit
\$sc_\$cpu_TIME_DMMaxSs

Global CFE_TIME_DiagnosticTlm_Payload::ToneSignalCounter
\$sc_\$cpu_TIME_DTSDetCNT

Global CFE_TIME_DiagnosticTlm_Payload::ToneSignalLatch
\$sc_\$cpu_TIME_DTTS, \$sc_\$cpu_TIME_DTTSS

Global CFE_TIME_DiagnosticTlm_Payload::ToneTaskCounter
\$sc_\$cpu_TIME_DTsTaskCNT

Global CFE_TIME_DiagnosticTlm_Payload::ToneUnderLimit
\$sc_\$cpu_TIME_DMinSs

Global CFE_TIME_DiagnosticTlm_Payload::VersionCounter
\$sc_\$cpu_TIME_DVersionCNT

Global CFE_TIME_DiagnosticTlm_Payload::VirtualMET
\$sc_\$cpu_TIME_DLLogicalMET

Global CFE_TIME_HousekeepingTlm_Payload::ClockStateAPI
\$sc_\$cpu_TIME_DAPISate

Global CFE_TIME_HousekeepingTlm_Payload::ClockStateFlags
\$sc_\$cpu_TIME_StateFlg, \$sc_\$cpu_TIME_FlagSet, \$sc_\$cpu_TIME_FlagFly, \$sc_\$cpu_TIME_FlagSrc, \$sc_\$cpu_TIME_FlagPri, \$sc_\$cpu_TIME_FlagSfly, \$sc_\$cpu_TIME_FlagCfly, \$sc_\$cpu_TIME_FlagAdjd, \$sc_\$cpu_TIME_Flag1Hzd, \$sc_\$cpu_TIME_FlagClat, \$sc_\$cpu_TIME_FlagSorC, \$sc_\$cpu_TIME_FlagNIU

Global CFE_TIME_HousekeepingTlm_Payload::CommandCounter
\$sc_\$cpu_TIME_CMDPC

Global CFE_TIME_HousekeepingTlm_Payload::CommandErrorCounter
\$sc_\$cpu_TIME_CMDEC

Global CFE_TIME_HousekeepingTlm_Payload::LeapSeconds
\$sc_\$cpu_TIME_LeapSecs

Global CFE_TIME_HousekeepingTlm_Payload::Seconds1HzAdj
\$sc_\$cpu_TIME_1HzAdjSecs

Global CFE_TIME_HousekeepingTlm_Payload::SecondsDelay
\$sc_\$cpu_TIME_1HzAdjSecs

Global CFE_TIME_HousekeepingTlm_Payload::SecondsMET
\$sc_\$cpu_TIME_METSecs

Global CFE_TIME_HousekeepingTlm_Payload::SecondsSTCF
\$sc_\$cpu_TIME_STCFSecs

Global CFE_TIME_HousekeepingTlm_Payload::Subsecs1HzAdj
\$sc_\$cpu_TIME_1HzAdjSSecs

Global CFE_TIME_HousekeepingTlm_Payload::SubsecsDelay
\$sc_\$cpu_TIME_1HzAdjSSecs

Global CFE_TIME_HousekeepingTlm_Payload::SubsecsMET
\$sc_\$cpu_TIME_METSubsecs

Global CFE_TIME_HousekeepingTlm_Payload::SubsecsSTCF
\$sc_\$cpu_TIME_STCFSubsecs

3 Glossary of Terms

Term	Definition
Application (or App)	A set of data and functions that is treated as a single entity by the cFE. cFE resources are allocated on a per-Application basis. Applications are made up of a Main Task and zero or more Child Tasks.
Application ID	A processor unique reference to an Application. NOTE: This is different from a CCSDS Application ID which is referred to as an "APID."
Application Programmer's Interface (API)	A set of routines, protocols, and tools for building software applications
Platform Support Package (PSP)	A collection of user-provided facilities that interface an OS and the cFE with a specific hardware platform. The PSP is responsible for hardware initialization.
Child Task	A separate thread of execution that is spawned by an Application's Main Task.
Command	A Software Bus Message defined by the receiving Application. Commands can originate from other onboard Applications or from the ground.
Core Flight Executive (cFE)	A runtime environment and a set of services for hosting FSW Applications
Critical Data Store (CDS)	A collection of data that is not modified by the OS or cFE following a Processor Reset.
Cyclic Redundancy Check	A polynomial based method for checking that a data set has remained unchanged from one time period to another.
Developer	Anyone who is coding a cFE Application.
Event Data	Data describing an Event that is supplied to the cFE Event Service. The cFE includes this data in an Event Message .
Event Filter	A numeric value (bit mask) used to determine how frequently to output an application Event Message defined by its Event ID .
Event Format Mode	Defines the Event Message Format downlink option: short or long. The short format is used when there is limited telemetry bandwidth and is binary. The long format is in ASCII and is used for logging to a Local Event Log and to an Event Message Port.
Event ID	A numeric literal used to uniquely name an Application event.
Event Type	A numeric literal used to identify the type of an Application event. An event type may be CFE_EVS_EventType_DEBUG , CFE_EVS_EventType_INFORMATION , CFE_EVS_EventType_ERROR , or CFE_EVS_EventType_CRITICAL .
Event Message	A data item used to notify the user and/or an external Application of a significant event. Event Messages include a time-stamp of when the message was generated, a processor unique identifier, an Application ID , the Event Type (DEBUG,INFO,ERROR or CRITICAL), and Event Data . An Event Message can either be real-time or playback from a Local Event Log.

4 cFE Application Programmer's Interface (API) Reference

4.1 Executive Services API

- [cFE Entry/Exit APIs](#)
 - [CFE_ES_Main](#) - cFE Main Entry Point used by Board Support Package to start cFE
 - [CFE_ES_ResetCFE](#) - Reset the cFE Core and all cFE Applications.
- [cFE Application Control APIs](#)
 - [CFE_ES_RestartApp](#) - Restart a single cFE Application.
 - [CFE_ES_ReloadApp](#) - Reload a single cFE Application.
 - [CFE_ES_DeleteApp](#) - Delete a cFE Application.
- [cFE Application Behavior APIs](#)
 - [CFE_ES_RunLoop](#) - Check for Exit, Restart, or Reload commands.
 - [CFE_ES_WaitForStartupSync](#) - Allow an Application to Wait for the "OPERATIONAL" global system state.
 - [CFE_ES_WaitForSystemState](#) - Allow an Application to Wait for a minimum global system state.
 - [CFE_ES_IncrementTaskCounter](#) - Increments the execution counter for the calling task.
 - [CFE_ES_ExitApp](#) - Exit a cFE Application.
- [cFE Information APIs](#)
 - [CFE_ES_GetResetType](#) - Return the most recent Reset Type.
 - [CFE_ES_GetAppID](#) - Get an Application ID for the calling Application.
 - [CFE_ES_GetTaskID](#) - Get the task ID of the calling context.
 - [CFE_ES_GetAppIDByName](#) - Get an Application ID associated with a specified Application name.
 - [CFE_ES_GetLibIDByName](#) - Get a Library ID associated with a specified Library name.
 - [CFE_ES_GetAppName](#) - Get an Application name for a specified Application ID.
 - [CFE_ES_GetLibName](#) - Get a Library name for a specified Library ID.
 - [CFE_ES_GetAppInfo](#) - Get Application Information given a specified App ID.
 - [CFE_ES_GetTaskInfo](#) - Get Task Information given a specified Task ID.
 - [CFE_ES_GetLibInfo](#) - Get Library Information given a specified Resource ID.
 - [CFE_ES_GetModuleInfo](#) - Get Information given a specified Resource ID.
- [cFE Child Task APIs](#)
 - [CFE_ES_CreateChildTask](#) - Creates a new task under an existing Application.
 - [CFE_ES_GetTaskIDByName](#) - Get a Task ID associated with a specified Task name.
 - [CFE_ES_GetTaskName](#) - Get a Task name for a specified Task ID.
 - [CFE_ES_DeleteChildTask](#) - Deletes a task under an existing Application.
 - [CFE_ES_ExitChildTask](#) - Exits a child task.
- [cFE Critical Data Store APIs](#)
 - [CFE_ES_RegisterCDS](#) - Reserve space (or re-obtain previously reserved space) in the Critical Data Store (CDS)
 - [CFE_ES_GetCDSBlockIDByName](#) - Get a CDS Block ID associated with a specified CDS Block name.
 - [CFE_ES_GetCDSBlockName](#) - Get a Block name for a specified Block ID.

- [CFE_ES_CopyToCDS](#) - Save a block of data in the Critical Data Store (CDS)
- [CFE_ES_RestoreFromCDS](#) - Recover a block of data from the Critical Data Store (CDS)
- [cFE Memory Manager APIs](#)
 - [CFE_ES_PoolCreate](#) - Initializes a memory pool created by an application while using a semaphore during processing.
 - [CFE_ES_PoolCreateEx](#) - Initializes a memory pool created by an application with application specified block sizes.
 - [CFE_ES_PoolCreateNoSem](#) - Initializes a memory pool created by an application without using a semaphore during processing.
 - [CFE_ES_PoolDelete](#) - Deletes a memory pool that was previously created.
 - [CFE_ES_GetPoolBuf](#) - Gets a buffer from the memory pool created by [CFE_ES_PoolCreate](#) or [CFE_ES_PoolCreateNoSem](#).
 - [CFE_ES_PutPoolBuf](#) - Releases a buffer from the memory pool that was previously allocated via [CFE_ES_GetPoolBuf](#).
 - [CFE_ES_GetMemPoolStats](#) - Extracts the statistics maintained by the memory pool software.
 - [CFE_ES_GetPoolBufInfo](#) - Gets info on a buffer previously allocated via [CFE_ES_GetPoolBuf](#).
- [cFE Performance Monitor APIs](#)
 - [CFE_ES_PerfLogEntry](#) - Entry marker for use with Software Performance Analysis Tool.
 - [CFE_ES_PerfLogExit](#) - Exit marker for use with Software Performance Analysis Tool.
 - [CFE_ES_PerfLogAdd](#) - Adds a new entry to the data buffer.
- [cFE Generic Counter APIs](#)
 - [CFE_ES_RegisterGenCounter](#) - Register a generic counter.
 - [CFE_ES_DeleteGenCounter](#) - Delete a generic counter.
 - [CFE_ES_IncrementGenCounter](#) - Increments the specified generic counter.
 - [CFE_ES_SetGenCount](#) - Set the specified generic counter.
 - [CFE_ES_GetGenCount](#) - Get the specified generic counter count.
 - [CFE_ES_GetGenCounterIDByName](#) - Get the Id associated with a generic counter name.
 - [CFE_ES_GetGenCounterName](#) - Get a Counter name for a specified Counter ID.
- [cFE Miscellaneous APIs](#)
 - [CFE_ES_BackgroundWakeup](#) - Wakes up the CFE background task.
 - [CFE_ES_CalculateCRC](#) - Calculate a CRC on a block of memory.
 - [CFE_ES_WriteToSysLog](#) - Write a string to the cFE System Log.
 - [CFE_ES_ProcessAsyncEvent](#) - Notification that an asynchronous event was detected by the underlying OS/PSP.
 - [CFE_ES_StatusToString](#) - Convert status to a string.
- [cFE Resource ID APIs](#)
 - [CFE_ES_AppID_ToIndex](#) - Obtain an index value correlating to an ES Application ID.
 - [CFE_ES_LibID_ToIndex](#) - Obtain an index value correlating to an ES Library ID.
 - [CFE_ES_TaskID_ToIndex](#) - Obtain an index value correlating to an ES Task ID.
 - [CFE_ES_CounterID_ToIndex](#) - Obtain an index value correlating to an ES Counter ID.

4.2 Events Services API

- cFE Registration APIs
 - [CFE_EVS_Register](#) - Register an application for receiving event services.
- cFE Send Event APIs
 - [CFE_EVS_SendEvent](#) - Generate a software event.
 - [CFE_EVS_SendEventWithAppID](#) - Generate a software event given the specified Application ID.
 - [CFE_EVS_SendTimedEvent](#) - Generate a software event with a specific time tag.
- cFE Reset Event Filter APIs
 - [CFE_EVS_ResetFilter](#) - Resets the calling application's event filter for a single event ID.
 - [CFE_EVS_ResetAllFilters](#) - Resets all of the calling application's event filters.

4.3 File Services API

- cFE File Header Management APIs
 - [CFE_FS_ReadHeader](#) - Read the contents of the Standard cFE File Header.
 - [CFE_FS_InitHeader](#) - Initializes the contents of the Standard cFE File Header.
 - [CFE_FS_WriteHeader](#) - Write the specified Standard cFE File Header to the specified file.
 - [CFE_FS_SetTimestamp](#) - Modifies the Time Stamp field in the Standard cFE File Header for the specified file.
- cFE File Utility APIs
 - [CFE_FS_GetDefaultMountPoint](#) - Get the default virtual mount point for a file category.
 - [CFE_FS_GetDefaultExtension](#) - Get the default filename extension for a file category.
 - [CFE_FS_ParseInputFileNameEx](#) - Parse a filename input from an input buffer into a local buffer.
 - [CFE_FS_ParseInputFileName](#) - Parse a filename string from the user into a local buffer.
 - [CFE_FS_ExtractFilenameFromPath](#) - Extracts the filename from a unix style path and filename string.
 - [CFE_FS_BackgroundFileDumpRequest](#) - Register a background file dump request.
 - [CFE_FS_BackgroundFileDumpsPending](#) - Query if a background file write request is currently pending.

4.4 Message API

- cFE Generic Message APIs
 - [CFE_MSG_Init](#) - Initialize a message.
- cFE Message Primary Header APIs
 - [CFE_MSG.GetSize](#) - Gets the total size of a message.
 - [CFE_MSG_SetSize](#) - Sets the total size of a message.
 - [CFE_MSG.GetType](#) - Gets the message type.
 - [CFE_MSG_SetType](#) - Sets the message type.
 - [CFE_MSG_GetHeaderVersion](#) - Gets the message header version.
 - [CFE_MSG_SetHeaderVersion](#) - Sets the message header version.
 - [CFE_MSG_GetHasSecondaryHeader](#) - Gets the message secondary header boolean.
 - [CFE_MSG_SetHasSecondaryHeader](#) - Sets the message secondary header boolean.

- [CFE_MSG_GetApId](#) - Gets the message application ID.
- [CFE_MSG_SetApId](#) - Sets the message application ID.
- [CFE_MSG_GetSegmentationFlag](#) - Gets the message segmentation flag.
- [CFE_MSG_SetSegmentationFlag](#) - Sets the message segmentation flag.
- [CFE_MSG_GetSequenceCount](#) - Gets the message sequence count.
- [CFE_MSG_SetSequenceCount](#) - Sets the message sequence count.
- [CFE_MSG_GetNextSequenceCount](#) - Gets the next sequence count value (rolls over if appropriate)
- cFE Message Extended Header APIs
 - [CFE_MSG_GetEDSVersion](#) - Gets the message EDS version.
 - [CFE_MSG_SetEDSVersion](#) - Sets the message EDS version.
 - [CFE_MSG_GetEndian](#) - Gets the message endian.
 - [CFE_MSG_SetEndian](#) - Sets the message endian.
 - [CFE_MSG_GetPlaybackFlag](#) - Gets the message playback flag.
 - [CFE_MSG_SetPlaybackFlag](#) - Sets the message playback flag.
 - [CFE_MSG_GetSubsystem](#) - Gets the message subsystem.
 - [CFE_MSG_SetSubsystem](#) - Sets the message subsystem.
 - [CFE_MSG_GetSystem](#) - Gets the message system.
 - [CFE_MSG_SetSystem](#) - Sets the message system.
- cFE Message Secondary Header APIs
 - [CFE_MSG_GenerateChecksum](#) - Calculates and sets the checksum of a message.
 - [CFE_MSG_ValidateChecksum](#) - Validates the checksum of a message.
 - [CFE_MSG_SetFcnCode](#) - Sets the function code field in a message.
 - [CFE_MSG_GetFcnCode](#) - Gets the function code field from a message.
 - [CFE_MSG_GetMsgTime](#) - Gets the time field from a message.
 - [CFE_MSG_SetMsgTime](#) - Sets the time field in a message.
- cFE Message Id APIs
 - [CFE_MSG_GetMsgId](#) - Gets the message id from a message.
 - [CFE_MSG_SetMsgId](#) - Sets the message id bits in a message.
 - [CFE_MSG_GetTypeFromMsgId](#) - Gets message type using message ID.

4.5 Resource ID API

- cFE Resource Misc APIs
 - [CFE_Resourceld_ToInteger](#) - Convert a resource ID to an integer.
 - [CFE_Resourceld_FromInteger](#) - Convert an integer to a resource ID.
 - [CFE_Resourceld_Equal](#) - Compare two Resource ID values for equality.
 - [CFE_Resourceld_IsDefined](#) - Check if a resource ID value is defined.
 - [CFE_Resourceld_GetBase](#) - Get the Base value (type/category) from a resource ID value.
 - [CFE_Resourceld_GetSerial](#) - Get the Serial Number (sequential ID) from a resource ID value.
 - [CFE_Resourceld_FindNext](#) - Locate the next resource ID which does not map to an in-use table entry.
 - [CFE_Resourceld_ToIndex](#) - Internal routine to aid in converting an ES resource ID to an array index.

4.6 Software Bus Services API

- cFE Pipe Management APIs
 - [CFE_SB_CreatePipe](#) - Creates a new software bus pipe.
 - [CFE_SB_DeletePipe](#) - Delete a software bus pipe.
 - [CFE_SB_Pipeld_ToIndex](#) - Obtain an index value correlating to an SB Pipe ID.
 - [CFE_SB_SetPipeOpts](#) - Set options on a pipe.
 - [CFE_SB_GetPipeOpts](#) - Get options on a pipe.
 - [CFE_SB_GetPipeName](#) - Get the pipe name for a given id.
 - [CFE_SB_GetPipeldByName](#) - Get pipe id by pipe name.
- cFE Message Subscription Control APIs
 - [CFE_SB_Subscribe](#) - Subscribe to a message on the software bus with default parameters.
 - [CFE_SB_SubscribeEx](#) - Subscribe to a message on the software bus.
 - [CFE_SB_SubscribeLocal](#) - Subscribe to a message while keeping the request local to a cpu.
 - [CFE_SB_Unsubscribe](#) - Remove a subscription to a message on the software bus.
 - [CFE_SB_UnsubscribeLocal](#) - Remove a subscription to a message on the software bus on the current CPU.
- cFE Send/Receive Message APIs
 - [CFE_SB_TransmitMsg](#) - Transmit a message.
 - [CFE_SB_ReceiveBuffer](#) - Receive a message from a software bus pipe.
- cFE Zero Copy APIs
 - [CFE_SB_AllocateMessageBuffer](#) - Get a buffer pointer to use for "zero copy" SB sends.
 - [CFE_SB_ReleaseMessageBuffer](#) - Release an unused "zero copy" buffer pointer.
 - [CFE_SB_TransmitBuffer](#) - Transmit a buffer.
- cFE Message Characteristics APIs
 - [CFE_SB_SetUserDataLength](#) - Sets the length of user data in a software bus message.
 - [CFE_SB_TimeStampMsg](#) - Sets the time field in a software bus message with the current spacecraft time.
 - [CFE_SB_MessageStringSet](#) - Copies a string into a software bus message.
 - [CFE_SB_GetUserData](#) - Get a pointer to the user data portion of a software bus message.
 - [CFE_SB_GetUserDataLength](#) - Gets the length of user data in a software bus message.
 - [CFE_SB_MessageStringGet](#) - Copies a string out of a software bus message.
- cFE Message ID APIs
 - [CFE_SB_IsValidMsgId](#) - Identifies whether a given [CFE_SB_MsgId_t](#) is valid.
 - [CFE_SB_MsgId_Equal](#) - Identifies whether two [CFE_SB_MsgId_t](#) values are equal.
 - [CFE_SB_MsgIdToValue](#) - Converts a [CFE_SB_MsgId_t](#) to a normal integer.
 - [CFE_SB_ValueToMsgId](#) - Converts a normal integer into a [CFE_SB_MsgId_t](#).

4.7 Table Services API

- cFE Registration APIs
 - [CFE_TBL_Register](#) - Register a table with cFE to obtain Table Management Services.
 - [CFE_TBL_Share](#) - Obtain handle of table registered by another application.
 - [CFE_TBL_Unregister](#) - Unregister a table.
- cFE Manage Table Content APIs
 - [CFE_TBL_Load](#) - Load a specified table with data from specified source.
 - [CFE_TBL_Update](#) - Update contents of a specified table, if an update is pending.
 - [CFE_TBL_Validate](#) - Perform steps to validate the contents of a table image.
 - [CFE_TBL_Manage](#) - Perform standard operations to maintain a table.
 - [CFE_TBL_DumpToBuffer](#) - Copies the contents of a Dump Only Table to a shared buffer.
 - [CFE_TBL_Modified](#) - Notify cFE Table Services that table contents have been modified by the Application.
- cFE Access Table Content APIs
 - [CFE_TBL_GetAddress](#) - Obtain the current address of the contents of the specified table.
 - [CFE_TBL_GetAddresses](#) - Obtain the current addresses of an array of specified tables.
 - [CFE_TBL_ReleaseAddress](#) - Release previously obtained pointer to the contents of the specified table.
 - [CFE_TBL_ReleaseAddresses](#) - Release the addresses of an array of specified tables.
- cFE Get Table Information APIs
 - [CFE_TBL_GetStatus](#) - Obtain current status of pending actions for a table.
 - [CFE_TBL_GetInfo](#) - Obtain characteristics/information of/about a specified table.
 - [CFE_TBL_NotifyByMessage](#) - Instruct cFE Table Services to notify Application via message when table requires management.

4.8 Time Services API

- cFE Get Current Time APIs
 - [CFE_TIME_GetTime](#) - Get the current spacecraft time.
 - [CFE_TIME_GetTAI](#) - Get the current TAI (MET + SCTF) time.
 - [CFE_TIME_GetUTC](#) - Get the current UTC (MET + SCTF - Leap Seconds) time.
 - [CFE_TIME_GetMET](#) - Get the current value of the Mission Elapsed Time (MET).
 - [CFE_TIME_GetMETseconds](#) - Get the current seconds count of the mission-elapsed time.
 - [CFE_TIME_GetMETsubsecs](#) - Get the current sub-seconds count of the mission-elapsed time.
- cFE Get Time Information APIs
 - [CFE_TIME_GetSTCF](#) - Get the current value of the spacecraft time correction factor (STCF).
 - [CFE_TIME_GetLeapSeconds](#) - Get the current value of the leap seconds counter.
 - [CFE_TIME_GetClockState](#) - Get the current state of the spacecraft clock.
 - [CFE_TIME_GetClockInfo](#) - Provides information about the spacecraft clock.
- cFE Time Arithmetic APIs
 - [CFE_TIME_Add](#) - Adds two time values.

- [CFE_TIME_Subtract](#) - Subtracts two time values.
- [CFE_TIME_Compare](#) - Compares two time values.
- cFE Time Conversion APIs
 - [CFE_TIME_MET2SCTime](#) - Convert specified MET into Spacecraft Time.
 - [CFE_TIME_Sub2MicroSecs](#) - Converts a sub-seconds count to an equivalent number of microseconds.
 - [CFE_TIME_Micro2SubSecs](#) - Converts a number of microseconds to an equivalent sub-seconds count.
- cFE External Time Source APIs
 - [CFE_TIME_ExternalTone](#) - Provides the 1 Hz signal from an external source.
 - [CFE_TIME_ExternalMET](#) - Provides the Mission Elapsed Time from an external source.
 - [CFE_TIME_ExternalGPS](#) - Provide the time from an external source that has data common to GPS receivers.
 - [CFE_TIME_ExternalTime](#) - Provide the time from an external source that measures time relative to a known epoch.
 - [CFE_TIME_RegisterSynchCallback](#) - Registers a callback function that is called whenever time synchronization occurs.
 - [CFE_TIME_UnregisterSynchCallback](#) - Unregisters a callback function that is called whenever time synchronization occurs.
- cFE Miscellaneous Time APIs
 - [CFE_TIME_Print](#) - Print a time value as a string.
 - [CFE_TIME_Local1HzISR](#) - This function is called via a timer callback set up at initialization of the TIME service.

5 Osal API Documentation

- General Information and Concepts
 - [OSAL Introduction](#)
- Core
 - [OSAL Return Code Defines](#)
 - [OSAL Object Type Defines](#)
 - APIs
 - * [OSAL Core Operation APIs](#)
 - * [OSAL Object ID Utility APIs](#)
 - * [OSAL Task APIs](#)
 - * [OSAL Message Queue APIs](#)
 - * [OSAL Heap APIs](#)
 - * [OSAL Error Info APIs](#)
 - * [OSAL Select APIs](#)
 - * [OSAL Printf APIs](#)
 - * [OSAL BSP low level access APIs](#)
 - * [OSAL Real Time Clock APIs](#)
 - * [OSAL Shell APIs](#)
 - [Common Reference](#)

- [Return Code Reference](#)
- [Id Map Reference](#)
- [Clock Reference](#)
- [Task Reference](#)
- [Message Queue Reference](#)
- [Heap Reference](#)
- [Select Reference](#)
- [Printf Reference](#)
- [BSP Reference](#)
- [Shell Reference](#)
- File System
 - [File System Overview](#)
 - [File Descriptors In Osal](#)
 - [OSAL File Access Option Defines](#)
 - [OSAL Reference Point For Seek Offset Defines](#)
 - APIs
 - * [OSAL Standard File APIs](#)
 - * [OSAL Directory APIs](#)
 - * [OSAL File System Level APIs](#)
 - [File System Reference](#)
 - [File Reference](#)
 - [Directory Reference](#)
- Object File Loader
 - APIs
 - * [OSAL Dynamic Loader and Symbol APIs](#)
 - [File Loader Reference](#)
- Network
 - APIs
 - * [OSAL Network ID APIs](#)
 - * [OSAL Socket Address APIs](#)
 - * [OSAL Socket Management APIs](#)
 - [Network Reference](#)
 - [Socket Reference](#)
- Timer
 - [Timer Overview](#)
 - APIs
 - * [OSAL Time Base APIs](#)
 - * [OSAL Timer APIs](#)
 - [Timer Reference](#)
 - [Time Base Reference](#)

- Semaphore and Mutex
 - [OSAL Semaphore State Defines](#)
 - APIs
 - * [OSAL Binary Semaphore APIs](#)
 - * [OSAL Counting Semaphore APIs](#)
 - * [OSAL Mutex APIs](#)
 - [Binary Semaphore Reference](#)
 - [Counting Semaphore Reference](#)
 - [Mutex Reference](#)

5.1 OSAL Introduction

The goal of this library is to promote the creation of portable and reusable real time embedded system software. Given the necessary OS abstraction layer implementations, the same embedded software should compile and run on a number of platforms ranging from spacecraft computer systems to desktop PCs.

The OS Application Program Interfaces (APIs) are broken up into core, file system, loader, network, and timer APIs. See the related document sections for full descriptions.

Note

The majority of these APIs should be called from a task running in the context of an OSAL application and in general should not be called from an ISR. There are a few exceptions, such as the ability to give a binary semaphore from an ISR.

5.2 File System Overview

The File System API is a thin wrapper around a selection of POSIX file APIs. In addition the File System API presents a common directory structure and volume view regardless of the underlying system type. For example, vxWorks uses MS-DOS style volume names and directories where a vxWorks RAM disk might have the volume “RAM:0”. With this File System API, volumes are represented as Unix-style paths where each volume is mounted on the root file system:

- RAM:0/file1.dat becomes /mnt/ram/file1.dat
- FL:0/file2.dat becomes /mnt/fl/file2.dat

This abstraction allows the applications to use the same paths regardless of the implementation and it also allows file systems to be simulated on a desktop system for testing. On a desktop Linux system, the file system abstraction can be set up to map virtual devices to a regular directory. This is accomplished through the OS_mkfs call, OS_mount call, and a BSP specific volume table that maps the virtual devices to real devices or underlying file systems.

In order to make this file system volume abstraction work, a “Volume Table” needs to be provided in the Board Support Package of the application. The table has the following fields:

- Device Name: This is the name of the virtual device that the Application uses. Common names are “ramdisk1”, “flash1”, or “volatile1” etc. But the name can be any unique string.
- Physical Device Name: This is an implementation specific field. For vxWorks it is not needed and can be left blank. For a File system based implementation, it is the “mount point” on the root file system where all of the volume will be mounted. A common place for this on Linux could be a user’s home directory, “/tmp”, or even the current working directory “.”. In the example of “/tmp” all of the directories created for the volumes would be under “/tmp” on the Linux file system. For a real disk device in Linux, such as a RAM disk, this field is the device name “/dev/ram0”.
- Volume Type: This field defines the type of volume. The types are: FS_BASED which uses the existing file system, RAM_DISK which uses a RAM_DISK device in vxWorks, RTEMS, or Linux, FLASH_DISK_FORMAT which uses a flash disk that is to be formatted before use, FLASH_DISK_INIT which uses a flash disk with an existing format that is just to be initialized before its use, EEPROM which is for an EEPROM or PROM based system.

- Volatile Flag: This flag indicates that the volume or disk is a volatile disk (RAM disk) or a non-volatile disk, that retains its contents when the system is rebooted. This should be set to TRUE or FALSE.
- Free Flag: This is an internal flag that should be set to FALSE or zero.
- Is Mounted Flag: This is an internal flag that should be set to FALSE or zero. Note that a “pre-mounted” FS_↔ BASED path can be set up by setting this flag to one.
- Volume Name: This is an internal field and should be set to a space character “ ”.
- Mount Point Field: This is an internal field and should be set to a space character “ ”.
- Block Size Field: This is used to record the block size of the device and does not need to be set by the user.

5.3 File Descriptors In Osal

The OSAL uses abstracted file descriptors. This means that the file descriptors passed back from the OS_open and OS_creat calls will only work with other OSAL OS_* calls. The reasoning for this is as follows:

Because the OSAL now keeps track of all file descriptors, OSAL specific information can be associated with a specific file descriptor in an OS independent way. For instance, the path of the file that the file descriptor points to can be easily retrieved. Also, the OSAL task ID of the task that opened the file can also be retrieved easily. Both of these pieces of information are very useful when trying to determine statistics for a task, or the entire system. This information can all be retrieved with a single API, OS_FDGetInfo.

All of the possible file system calls are not implemented. "Special" files requiring OS specific control/operations are by nature not portable. Abstraction in this case is not possible, so the raw OS calls should be used (including open/close/etc). Mixing with OSAL calls is not supported for such cases. [OS_TranslatePath](#) is available to support using open directly by an app and maintain abstraction on the file system.

There are some small drawbacks with the OSAL file descriptors. Because the related information is kept in a table, there is a define called OS_MAX_NUM_OPEN_FILES that defines the maximum number of file descriptors available. This is a configuration parameter, and can be changed to fit your needs.

Also, if you open or create a file not using the OSAL calls (OS_open or OS_creat) then none of the other OS_* calls that accept a file descriptor as a parameter will work (the results of doing so are undefined). Therefore, if you open a file with the underlying OS's open call, you must continue to use the OS's calls until you close the file descriptor. Be aware that by doing this your software may no longer be OS agnostic.

5.4 Timer Overview

The timer API is a generic interface to the OS timer facilities. It is implemented using the POSIX timers on Linux and vxWorks and the native timer API on RTEMS. The number of timers supported is controlled by the configuration parameter OS_MAX_TIMERS.

6 cFE Mission Configuration Parameters

Global [CFE_MISSION_ES_CMD_TOPICID](#)

cFE Portable Message Numbers for Commands

Global [CFE_MISSION_ES_HK_TLM_TOPICID](#)

cFE Portable Message Numbers for Telemetry

Global [CFE_MISSION_EVS_CMD_TOPICID](#)

cFE Portable Message Numbers for Commands

Global [CFE_MISSION_EVS_HK_TLM_TOPICID](#)

cFE Portable Message Numbers for Telemetry

Global CFE_MISSION_MAX_API_LEN

cFE Maximum length for API names within data exchange structures

cFE Maximum length for API names within data exchange structures

Global CFE_MISSION_MAX_FILE_LEN

cFE Maximum length for filenames within data exchange structures

cFE Maximum length for filenames within data exchange structures

Global CFE_MISSION_MAX_NUM_FILES

cFE Maximum number of files in a message/data exchange

cFE Maximum number of files in a message/data exchange

Global CFE_MISSION_MAX_PATH_LEN

cFE Maximum length for pathnames within data exchange structures

cFE Maximum length for pathnames within data exchange structures

Global CFE_MISSION_SB_CMD_TOPICID

cFE Portable Message Numbers for Commands

Global CFE_MISSION_SB_HK_TLM_TOPICID

cFE Portable Message Numbers for Telemetry

Global CFE_MISSION_TBL_CMD_TOPICID

cFE Portable Message Numbers for Commands

Global CFE_MISSION_TBL_HK_TLM_TOPICID

cFE Portable Message Numbers for Telemetry

Global CFE_MISSION_TIME_CMD_TOPICID

cFE Portable Message Numbers for Commands

Global CFE_MISSION_TIME_DATA_CMD_TOPICID

cFE Portable Message Numbers for Global Messages

Global CFE_MISSION_TIME_HK_TLM_TOPICID

cFE Portable Message Numbers for Telemetry

7 Module Index

7.1 Modules

Here is a list of all modules:

CFS File Manager Event IDs	126
CFS File Manager Command Structures	205
CFS File Manager Telemetry	207
CFS File Manager Command Codes	207
CFS File Manager Command Message IDs	228
CFS File Manager Telemetry Message IDs	228
CFS File Manager Mission Configuration	229

CFS File Manager Platform Configuration	229
CFS File Manager Version	237
cFE Return Code Defines	237
cFE Resource ID APIs	260
cFE Entry/Exit APIs	262
cFE Application Control APIs	264
cFE Application Behavior APIs	266
cFE Information APIs	270
cFE Child Task APIs	278
cFE Miscellaneous APIs	282
cFE Critical Data Store APIs	284
cFE Memory Manager APIs	288
cFE Performance Monitor APIs	295
cFE Generic Counter APIs	297
cFE Registration APIs	302
cFE Send Event APIs	303
cFE Reset Event Filter APIs	307
cFE File Header Management APIs	309
cFE File Utility APIs	312
cFE Generic Message APIs	318
cFE Message Primary Header APIs	319
cFE Message Extended Header APIs	327
cFE Message Secondary Header APIs	333
cFE Message Id APIs	337
cFE Message Integrity APIs	339
cFE Pipe Management APIs	341
cFE Message Subscription Control APIs	346
cFE Send/Receive Message APIs	350
cFE Zero Copy APIs	352
cFE Message Characteristics APIs	355

cFE Message ID APIs	359
cFE SB Pipe options	364
cFE Registration APIs	364
cFE Manage Table Content APIs	369
cFE Access Table Content APIs	375
cFE Get Table Information APIs	379
cFE Table Type Defines	382
cFE Get Current Time APIs	384
cFE Get Time Information APIs	387
cFE Time Arithmetic APIs	389
cFE Time Conversion APIs	391
cFE External Time Source APIs	393
cFE Miscellaneous Time APIs	397
cFE Resource ID base values	399
cFE Clock State Flag Defines	400
OSAL Semaphore State Defines	402
OSAL Binary Semaphore APIs	402
OSAL BSP low level access APIs	407
OSAL Real Time Clock APIs	408
OSAL Core Operation APIs	421
OSAL Condition Variable APIs	424
OSAL Counting Semaphore APIs	430
OSAL Directory APIs	434
OSAL Return Code Defines	438
OSAL Error Info APIs	444
OSAL File Access Option Defines	446
OSAL Reference Point For Seek Offset Defines	446
OSAL Standard File APIs	447
OSAL File System Level APIs	459
OSAL Heap APIs	466

OSAL Object Type Defines	467
OSAL Object ID Utility APIs	469
OSAL Dynamic Loader and Symbol APIs	474
OSAL Mutex APIs	478
OSAL Network ID APIs	481
OSAL Printf APIs	482
OSAL Message Queue APIs	483
OSAL Select APIs	487
OSAL Shell APIs	493
OSAL Socket Address APIs	494
OSAL Socket Management APIs	497
OSAL Task APIs	507
OSAL Time Base APIs	512
OSAL Timer APIs	517

8 Data Structure Index

8.1 Data Structures

Here are the data structures with brief descriptions:

CCSDS_ExtendedHeader CCSDS packet extended header	522
CCSDS_PrimaryHeader CCSDS packet primary header	523
CFE_Config_ArrayValue Wrapper type for array configuration	523
CFE_Config_IdNameEntry	524
CFE_Config_ValueBuffer	524
CFE_Config_ValueEntry	525
CFE_ES_AppInfo Application Information	525
CFE_ES_AppNameCmd_Payload Generic application name command payload	529
CFE_ES_AppReloadCmd_Payload Reload Application Command Payload	530

CFE_ES_BlockStats	
Block statistics	531
CFE_ES_CDSRegDumpRec	
CDS Register Dump Record	531
CFE_ES_ClearERLogCmd	
	532
CFE_ES_ClearSysLogCmd	
	533
CFE_ES_DeleteCDSCmd	
Delete Critical Data Store Command	533
CFE_ES_DeleteCDSCmd_Payload	
Delete Critical Data Store Command Payload	534
CFE_ES_DumpCDSRegistryCmd	
Dump CDS Registry Command	534
CFE_ES_DumpCDSRegistryCmd_Payload	
Dump CDS Registry Command Payload	535
CFE_ES_FileNameCmd	
Generic file name command	536
CFE_ES_FileNameCmd_Payload	
Generic file name command payload	536
CFE_ES_HousekeepingTlm	
	537
CFE_ES_HousekeepingTlm_Payload	
	537
CFE_ES_MemPoolStats	
Memory Pool Statistics	545
CFE_ES_MemStatsTlm	
	547
CFE_ES_NoopCmd	
	547
CFE_ES_OneAppTlm	
	548
CFE_ES_OneAppTlm_Payload	
	549
CFE_ES_OverWriteSysLogCmd	
Overwrite/Discard System Log Configuration Command Payload	549
CFE_ES_OverWriteSysLogCmd_Payload	
Overwrite/Discard System Log Configuration Command Payload	550
CFE_ES_PoolAlign	
Pool Alignment	550
CFE_ES_PoolStatsTlm_Payload	
	551
CFE_ES_QueryAllCmd	
	552
CFE_ES_QueryAllTasksCmd	
	552

CFE_ES_QueryOneCmd	553
CFE_ES_ReloadAppCmd	
Reload Application Command	553
CFE_ES_ResetCountersCmd	554
CFE_ES_ResetPRCountCmd	554
CFE_ES_RestartAppCmd	555
CFE_ES_RestartCmd	
Restart cFE Command	555
CFE_ES_RestartCmd_Payload	
Restart cFE Command Payload	556
CFE_ES_SendHkCmd	557
CFE_ES_SendMemPoolStatsCmd	
Send Memory Pool Statistics Command	557
CFE_ES_SendMemPoolStatsCmd_Payload	
Send Memory Pool Statistics Command Payload	558
CFE_ES_SetMaxPRCountCmd	
Set Maximum Processor Reset Count Command	558
CFE_ES_SetMaxPRCountCmd_Payload	
Set Maximum Processor Reset Count Command Payload	559
CFE_ES_SetPerfFilterMaskCmd	
Set Performance Analyzer Filter Mask Command	559
CFE_ES_SetPerfFilterMaskCmd_Payload	
Set Performance Analyzer Filter Mask Command Payload	560
CFE_ES_SetPerfTriggerMaskCmd	
Set Performance Analyzer Trigger Mask Command	561
CFE_ES_SetPerfTrigMaskCmd_Payload	
Set Performance Analyzer Trigger Mask Command Payload	561
CFE_ES_StartApp	
Start Application Command	562
CFE_ES_StartAppCmd_Payload	
Start Application Command Payload	562
CFE_ES_StartPerfCmd_Payload	
Start Performance Analyzer Command Payload	564
CFE_ES_StartPerfDataCmd	
Start Performance Analyzer Command	564
CFE_ES_StopAppCmd	565

CFE_ES_StopPerfCmd_Payload		
Stop Performance Analyzer Command Payload		565
CFE_ES_StopPerfDataCmd		
Stop Performance Analyzer Command		566
CFE_ES_TaskInfo		
Task Information		566
CFE_ES_WriteERLogCmd		568
CFE_ES_WriteSysLogCmd		569
CFE_EVS_AddEventFilterCmd		569
CFE_EVS_AppDataCmd_Payload		
Write Event Services Application Information to File Command Payload		570
CFE_EVS_AppNameBitMaskCmd_Payload		
Generic App Name and Bitmask Command Payload		570
CFE_EVS_AppNameCmd_Payload		
Generic App Name Command Payload		571
CFE_EVS_AppNameEventIDCmd_Payload		
Generic App Name and Event ID Command Payload		571
CFE_EVS_AppNameEventIDMaskCmd_Payload		
Generic App Name, Event ID, Mask Command Payload		572
CFE_EVS_AppTimData		573
CFE_EVS_BinFilter		
Event message filter definition structure		574
CFE_EVS_BitMaskCmd_Payload		
Generic Bitmask Command Payload		574
CFE_EVS_ClearLogCmd		575
CFE_EVS_DeleteEventFilterCmd		576
CFE_EVS_DisableAppEventsCmd		576
CFE_EVS_DisableAppEventTypeCmd		577
CFE_EVS_DisableEventTypeCmd		577
CFE_EVS_DisablePortsCmd		578
CFE_EVS_EnableAppEventsCmd		578
CFE_EVS_EnableAppEventTypeCmd		579
CFE_EVS_EnableEventTypeCmd		580
CFE_EVS_EnablePortsCmd		580

CFE_EVS_HousekeepingTlm	581
CFE_EVS_HousekeepingTlm_Payload	581
CFE_EVS_LogFileCmd_Payload Write Event Log to File Command Payload	585
CFE_EVS_LongEventTlm	585
CFE_EVS_LongEventTlm_Payload	586
CFE_EVS_NoopCmd	587
CFE_EVS_PacketID	587
CFE_EVS_ResetAllFiltersCmd	588
CFE_EVS_ResetAppCounterCmd	589
CFE_EVS_ResetCountersCmd	589
CFE_EVS_ResetFilterCmd	590
CFE_EVS_SendHkCmd	590
CFE_EVS_SetEventFormatCode_Payload Set Event Format Mode Command Payload	591
CFE_EVS_SetEventFormatModeCmd Set Event Format Mode Command	592
CFE_EVS_SetFilterCmd	592
CFE_EVS_SetLogMode_Payload Set Log Mode Command Payload	593
CFE_EVS_SetLogModeCmd Set Log Mode Command	593
CFE_EVS_ShortEventTlm	594
CFE_EVS_ShortEventTlm_Payload	595
CFE_EVS_WriteAppDataFileCmd Write Event Services Application Information to File Command	595
CFE_EVS_WriteLogFileCmd Write Event Log to File Command	596
CFE_FS_FileWriteMetaData External Metadata/State object associated with background file writes	596
CFE_FS_Header Standard cFE File header structure definition	598
CFE_SB_AllSubscriptionsTlm	599
CFE_SB_AllSubscriptionsTlm_Payload	600

CFE_SB_DisableRouteCmd	601
CFE_SB_DisableSubReportingCmd	601
CFE_SB_EnableRouteCmd	602
CFE_SB_EnableSubReportingCmd	602
CFE_SB_HousekeepingTIm	603
CFE_SB_HousekeepingTIm_Payload	603
CFE_SB_Msg	607
Software Bus generic message	
CFE_SB_MsgId_t	608
CFE_SB_MsgId_t type definition	
CFE_SB_MsgMapFileEntry	608
SB Map File Entry	
CFE_SB_NoopCmd	609
CFE_SB_PipeDepthStats	609
SB Pipe Depth Statistics	
CFE_SB_PipeInfoEntry	610
SB Pipe Information File Entry	
CFE_SB_Qos_t	612
Quality Of Service Type Definition	
CFE_SB_ResetCountersCmd	613
CFE_SB_RouteCmd_Payload	613
Enable/Disable Route Command Payload	
CFE_SB_RoutingFileEntry	614
SB Routing File Entry	
CFE_SB_SendHkCmd	615
CFE_SB_SendPrevSubsCmd	615
CFE_SB_SendSbStatsCmd	616
CFE_SB_SingleSubscriptionTIm	616
CFE_SB_SingleSubscriptionTIm_Payload	617
CFE_SB_StatsTIm	618
CFE_SB_StatsTIm_Payload	618
CFE_SB_SubEntries	622
SB Previous Subscriptions Entry	

CFE_SB_WriteFileInfoCmd_Payload Write File Info Command Payload	623
CFE_SB_WriteMapInfoCmd	623
CFE_SB_WritePipeInfoCmd	624
CFE_SB_WriteRoutingInfoCmd	624
CFE_TBL_AbortLoadCmd Abort Load Command	625
CFE_TBL_AbortLoadCmd_Payload Abort Load Command Payload	625
CFE_TBL_ActivateCmd Activate Table Command	626
CFE_TBL_ActivateCmd_Payload Activate Table Command Payload	627
CFE_TBL_DeleteCDSCmd_Payload Delete Critical Table CDS Command Payload	627
CFE_TBL_DeleteCDSCmd Delete Critical Table CDS Command	628
CFE_TBL_DumpCmd	628
CFE_TBL_DumpCmd_Payload Dump Table Command Payload	629
CFE_TBL_DumpRegistryCmd Dump Registry Command	630
CFE_TBL_DumpRegistryCmd_Payload Dump Registry Command Payload	630
CFE_TBL_File_Hdr The definition of the header fields that are included in CFE Table Data files	631
CFE_TBL_FileDef Table File summary object	632
CFE_TBL_HousekeepingTIm	633
CFE_TBL_HousekeepingTIm_Payload	634
CFE_TBL_Info Table Info	638
CFE_TBL_LoadCmd Load Table Command	640
CFE_TBL_LoadCmd_Payload Load Table Command Payload	640

CFE_TBL_NoopCmd	641
CFE_TBL_NotifyCmd	641
CFE_TBL_NotifyCmd_Payload Table Management Notification Command Payload	642
CFE_TBL_ResetCountersCmd	642
CFE_TBL_SendHkCmd	643
CFE_TBL_SendRegistryCmd Send Table Registry Command	643
CFE_TBL_SendRegistryCmd_Payload Send Table Registry Command Payload	644
CFE_TBL_TableRegistryTlm	644
CFE_TBL_TblRegPacket_Payload	645
CFE_TBL_ValidateCmd Validate Table Command	648
CFE_TBL_ValidateCmd_Payload Validate Table Command Payload	649
CFE_TIME_AddAdjustCmd	649
CFE_TIME_AddDelayCmd	650
CFE_TIME_AddOneHzAdjustmentCmd	651
CFE_TIME_DiagnosticTlm	651
CFE_TIME_DiagnosticTlm_Payload	652
CFE_TIME_FakeToneCmd	660
CFE_TIME_HousekeepingTlm	660
CFE_TIME_HousekeepingTlm_Payload	661
CFE_TIME_LeapsCmd_Payload Set leap seconds command payload	664
CFE_TIME_NoopCmd	664
CFE_TIME_OneHzAdjustmentCmd_Payload Generic seconds, subseconds command payload	665
CFE_TIME_OneHzCmd	665
CFE_TIME_ResetCountersCmd	666
CFE_TIME_SendDiagnosticCmd	666
CFE_TIME_SendHkCmd	667

CFE_TIME_SetLeapSecondsCmd Set leap seconds command	667
CFE_TIME_SetMETCmd	668
CFE_TIME_SetSignalCmd Set tone signal source command	668
CFE_TIME_SetSourceCmd Set time data source command	669
CFE_TIME_SetStateCmd Set clock state command	669
CFE_TIME_SetSTCFCmd	670
CFE_TIME_SetTimeCmd	671
CFE_TIME_SignalCmd_Payload Set tone signal source command payload	671
CFE_TIME_SourceCmd_Payload Set time data source command payload	672
CFE_TIME_StateCmd_Payload Set clock state command payload	672
CFE_TIME_SubAdjustCmd	673
CFE_TIME_SubDelayCmd	673
CFE_TIME_SubOneHzAdjustmentCmd	674
CFE_TIME_SysTime Data structure used to hold system time values	675
CFE_TIME_TimeCmd_Payload Generic seconds, microseconds command payload	675
CFE_TIME_ToneDataCmd Time at tone data command	676
CFE_TIME_ToneDataCmd_Payload Time at tone data command payload	677
CFE_TIME_ToneSignalCmd	677
FM_ChildQueueEntry_t Child Task Interface command queue entry structure	678
FM_ConcatFilesCmd_t Concatenate Files command packet structure	681
FM_CopyFileCmd_t Copy File command packet structure	681
FM_CreateDirectoryCmd_t Create Directory command packet structure	682

FM_DecompressFileCmd_t Decompress File command packet structure	682
FM_Decompressor_State The state object for a compressor	683
FM_DeleteAllFilesCmd_t Delete All command packet structure	684
FM_DeleteDirectoryCmd_t Delete Directory command packet structure	684
FM_DeleteFileCmd_t Delete File command packet structure	685
FM_DirectoryName_Payload_t Single directory command payload structure	685
FM_DirListEntry_t Get Directory Listing entry structure	686
FM_DirListFileStats_t Get Directory Listing file statistics structure	687
FM_DirListPkt_Payload_t Get Directory Listing telemetry payload	688
FM_DirListPkt_t Get Directory Listing telemetry packet	689
FM_FileInfoPkt_Payload_t Get File Info telemetry payload	689
FM_FileInfoPkt_t Get File Info telemetry packet	691
FM_FilenameAndCRC_Payload_t Filename and CRC command payload structure	692
FM_FilenameAndMode_Payload_t File name and mode command payload structure	692
FM_GetDirectoryToFile_Payload_t Get Directory and output to file command payload	693
FM_GetDirectoryToPkt_Payload_t Get Directory and output to message command payload	694
FM_GetDirListFileCmd_t Get DIR List to File command packet structure	695
FM_GetDirListPktCmd_t Get DIR List to Packet command packet structure	696
FM_GetFileInfoCmd_t Get File Info command packet structure	696

FM_GetOpenFilesCmd_t Get Open Files command packet structure	697
FM_GlobalData_t Application global data structure	697
FM_HousekeepingPkt_Payload_t Housekeeping telemetry payload	703
FM_HousekeepingPkt_t Housekeeping telemetry packet	705
FM_MonitorFilesystemSpaceCmd_t Get Free Space command packet structure	706
FM_MonitorReportEntry_t Monitor filesystem list entry structure	706
FM_MonitorReportPkt_Payload_t Monitor filesystem telemetry payload	707
FM_MonitorReportPkt_t Monitor filesystem telemetry packet	708
FM_MonitorTable_t Get Free Space table definition	708
FM_MonitorTableEntry_t Monitor table entry	709
FM_MoveFileCmd_t Move File command packet structure	709
FM_NoopCmd_t No-Operation command packet structure	710
FM_OpenFilesEntry_t Get Open Files list entry structure	711
FM_OpenFilesPkt_Payload_t Get Open Files telemetry payload	711
FM_OpenFilesPkt_t Get Open Files telemetry packet	712
FM_OvwSourceTargetFilename_Payload_t Copy/Move File command payload structure	712
FM_RenameFileCmd_t Rename File command packet structure	713
FM_ResetCountersCmd_t Reset Counters command packet structure	714
FM_SendHkCmd_t Housekeeping Request command packet structure	714

FM_SetPermissionsCmd_t Set Permissions for a file	715
FM_SetTableStateCmd_t Set Table State command packet structure	716
FM_SingleFilename_Payload_t Single filename command payload structure	716
FM_SourceTargetFileName_Payload_t Source and Target filename command payload structure	717
FM_TableIndexAndState_Payload_t Table Index and State command payload structure	717
FM_TwoSourceOneTarget_Payload_t Two source, one target filename command payload structure	718
OS_bin_sem_prop_t OSAL binary semaphore properties	719
OS_condvar_prop_t OSAL condition variable properties	719
OS_count_sem_prop_t OSAL counting semaphore properties	720
os_dirent_t Directory entry	721
OS_FdSet An abstract structure capable of holding several OSAL IDs	721
OS_file_prop_t OSAL file properties	722
os_fsinfo_t OSAL file system info	722
os_fstat_t File system status	723
OS_heap_prop_t OSAL heap properties	724
OS_module_address_t OSAL module address properties	725
OS_module_prop_t OSAL module properties	726
OS_mut_sem_prop_t OSAL mutex properties	726
OS_queue_prop_t OSAL queue properties	727

OS_SockAddr_t Encapsulates a generic network address	728
OS_SockAddrData_t Storage buffer for generic network address	728
OS_socket_prop_t Encapsulates socket properties	729
OS_static_symbol_record_t Associates a single symbol name with a memory address	730
OS_statvfs_t	730
OS_task_prop_t OSAL task properties	731
OS_time_t OSAL time interval structure	732
OS_timebase_prop_t Time base properties	732
OS_timer_prop_t Timer properties	733

9 File Index

9.1 File List

Here is a list of all files with brief descriptions:

apps/fm/fsw/inc/fm_events.h	734
apps/fm/fsw/inc/fm_extern_typedefs.h	744
apps/fm/fsw/inc/fm_msg.h	745
apps/fm/fsw/inc/fm_msgdefs.h	748
apps/fm/fsw/inc/fm_msgids.h	749
apps/fm/fsw/inc/fm_perfids.h	749
apps/fm/fsw/inc/fm_platform_cfg.h	750
apps/fm/fsw/src/fm_app.c	751
apps/fm/fsw/src/fm_app.h	756
apps/fm/fsw/src/fm_child.c	761
apps/fm/fsw/src/fm_child.h	787
apps/fm/fsw/src/fm_cmd_utils.c	813
apps/fm/fsw/src/fm_cmd_utils.h	833

apps/fm/fsw/src/ fm_cmds.c	850
apps/fm/fsw/src/ fm_cmds.h	871
apps/fm/fsw/src/ fm_compression.h	892
apps/fm/fsw/src/ fm_compression_fslib.c	894
apps/fm/fsw/src/ fm_compression_none.c	896
apps/fm/fsw/src/ fm_compression_zlib.c	898
apps/fm/fsw/src/ fm_dispatch.c	900
apps/fm/fsw/src/ fm_dispatch.h	913
apps/fm/fsw/src/ fm_tbl.c	926
apps/fm/fsw/src/ fm_tbl.h	930
apps/fm/fsw/src/ fm_verify.h	934
apps/fm/fsw/src/ fm_version.h	934
apps/fm/fsw/tables/ fm_monitor.c	934
build/osal_public_api/inc/ osconfig.h	935
cfe/cmake/sample_defs/ example_mission_cfg.h	941
cfe/cmake/sample_defs/ example_platform_cfg.h	952
cfe/cmake/sample_defs/ sample_perfids.h	995
cfe/modules/config/fsw/inc/ cfe_config_external.h	998
cfe/modules/config/fsw/inc/ cfe_config_init.h	998
cfe/modules/config/fsw/inc/ cfe_config_lookup.h	999
cfe/modules/config/fsw/inc/ cfe_config_nametable.h	999
cfe/modules/config/fsw/inc/ cfe_config_set.h	1000
cfe/modules/config/fsw/inc/ cfe_config_table.h	1001
cfe/modules/core_api/config/ default_cfe_core_api_base_msgids.h	1002
cfe/modules/core_api/config/ default_cfe_core_api_interface_cfg.h	1004
cfe/modules/core_api/config/ default_cfe_mission_cfg.h	1006
cfe/modules/core_api/config/ default_cfe_msgids.h	1006
cfe/modules/core_api/fsw/inc/ cfe.h	1006
cfe/modules/core_api/fsw/inc/ cfe_config.h	1007
cfe/modules/core_api/fsw/inc/ cfe_config_api_typedefs.h	1011

cfe/modules/core_api/fsw/inc/cfe_endian.h	1012
cfe/modules/core_api/fsw/inc/cfe_error.h	1012
cfe/modules/core_api/fsw/inc/cfe_es.h	1021
cfe/modules/core_api/fsw/inc/cfe_es_api_typedefs.h	1024
cfe/modules/core_api/fsw/inc/cfe_evs.h	1029
cfe/modules/core_api/fsw/inc/cfe_evs_api_typedefs.h	1031
cfe/modules/core_api/fsw/inc/cfe_fs.h	1033
cfe/modules/core_api/fsw/inc/cfe_fs_api_typedefs.h	1034
cfe/modules/core_api/fsw/inc/cfe_msg.h	1037
cfe/modules/core_api/fsw/inc/cfe_msg_api_typedefs.h	1040
cfe/modules/core_api/fsw/inc/cfe_resourceid.h	1044
cfe/modules/core_api/fsw/inc/cfe_resourceid_api_typedefs.h	1049
cfe/modules/core_api/fsw/inc/cfe_sb.h	1050
cfe/modules/core_api/fsw/inc/cfe_sb_api_typedefs.h	1053
cfe/modules/core_api/fsw/inc/cfe_tbl.h	1056
cfe/modules/core_api/fsw/inc/cfe_tbl_api_typedefs.h	1057
cfe/modules/core_api/fsw/inc/cfe_tbl_filedef.h	1059
cfe/modules/core_api/fsw/inc/cfe_time.h	1061
cfe/modules/core_api/fsw/inc/cfe_time_api_typedefs.h	1063
cfe/modules/core_api/fsw/inc/cfe_version.h	1064
cfe/modules/es/config/default_cfe_es_extern_typedefs.h	1066
cfe/modules/es/config/default_cfe_es_fcncodes.h	1075
cfe/modules/es/config/default_cfe_es_interface_cfg.h	1096
cfe/modules/es/config/default_cfe_es_internal_cfg.h	1099
cfe/modules/es/config/default_cfe_es_mission_cfg.h	1119
cfe/modules/es/config/default_cfe_es_msg.h	1119
cfe/modules/es/config/default_cfe_es_msgdefs.h	1119
cfe/modules/es/config/default_cfe_es_msgids.h	1123
cfe/modules/es/config/default_cfe_es_msgstruct.h	1124
cfe/modules/es/config/default_cfe_es_platform_cfg.h	1128

cfe/modules/es/config/default_cfe_es_topicids.h	1129
cfe/modules/es/fsw/inc/cfe_es_eventids.h	1130
cfe/modules/evs/config/default_cfe_evs_extern_typedefs.h	1155
cfe/modules/evs/config/default_cfe_evs_fcncodes.h	1158
cfe/modules/evs/config/default_cfe_evs_interface_cfg.h	1176
cfe/modules/evs/config/default_cfe_evs_internal_cfg.h	1177
cfe/modules/evs/config/default_cfe_evs_mission_cfg.h	1181
cfe/modules/evs/config/default_cfe_evs_msg.h	1181
cfe/modules/evs/config/default_cfe_evs_msgdefs.h	1181
cfe/modules/evs/config/default_cfe_evs_msgids.h	1185
cfe/modules/evs/config/default_cfe_evs_msgstruct.h	1186
cfe/modules/evs/config/default_cfe_evs_platform_cfg.h	1189
cfe/modules/evs/config/default_cfe_evs_topicids.h	1189
cfe/modules/evs/fsw/inc/cfe_evs_eventids.h	1190
cfe/modules/fs/config/default_cfe_fs_extern_typedefs.h	1202
cfe/modules/fs/config/default_cfe_fs_filedef.h	1202
cfe/modules/fs/config/default_cfe_fs_interface_cfg.h	1204
cfe/modules/fs/config/default_cfe_fs_mission_cfg.h	1205
cfe/modules/msg/fsw/inc/ccsds_hdr.h	1205
cfe/modules/resourceid/fsw/inc/cfe_core_resourceid_basevalues.h	1206
cfe/modules/resourceid/fsw/inc/cfe_resourceid_basevalue.h	1206
cfe/modules/sb/config/default_cfe_sb_extern_typedefs.h	1207
cfe/modules/sb/config/default_cfe_sb_fcncodes.h	1209
cfe/modules/sb/config/default_cfe_sb_interface_cfg.h	1219
cfe/modules/sb/config/default_cfe_sb_internal_cfg.h	1220
cfe/modules/sb/config/default_cfe_sb_mission_cfg.h	1228
cfe/modules/sb/config/default_cfe_sb_msg.h	1228
cfe/modules/sb/config/default_cfe_sb_msgdefs.h	1229
cfe/modules/sb/config/default_cfe_sb_msgids.h	1231
cfe/modules/sb/config/default_cfe_sb_msgstruct.h	1233

cfe/modules/sb/config/default_cfe_sb_platform_cfg.h	1235
cfe/modules/sb/config/default_cfe_sb_topicids.h	1235
cfe/modules/sb/fsw/inc/cfe_sb_eventids.h	1236
cfe/modules/tbl/config/default_cfe_tbl_extern_typedefs.h	1256
cfe/modules/tbl/config/default_cfe_tbl_fcncodes.h	1257
cfe/modules/tbl/config/default_cfe_tbl_interface_cfg.h	1266
cfe/modules/tbl/config/default_cfe_tbl_internal_cfg.h	1267
cfe/modules/tbl/config/default_cfe_tbl_mission_cfg.h	1273
cfe/modules/tbl/config/default_cfe_tbl_msg.h	1273
cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h	1274
cfe/modules/tbl/config/default_cfe_tbl_msgids.h	1276
cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h	1277
cfe/modules/tbl/config/default_cfe_tbl_platform_cfg.h	1279
cfe/modules/tbl/config/default_cfe_tbl_topicids.h	1279
cfe/modules/tbl/fsw/inc/cfe_tbl_eventids.h	1280
cfe/modules/time/config/default_cfe_time_extern_typedefs.h	1300
cfe/modules/time/config/default_cfe_time_fcncodes.h	1305
cfe/modules/time/config/default_cfe_time_interface_cfg.h	1321
cfe/modules/time/config/default_cfe_time_internal_cfg.h	1325
cfe/modules/time/config/default_cfe_time_mission_cfg.h	1330
cfe/modules/time/config/default_cfe_time_msg.h	1331
cfe/modules/time/config/default_cfe_time_msgdefs.h	1331
cfe/modules/time/config/default_cfe_time_msgids.h	1333
cfe/modules/time/config/default_cfe_time_msgstruct.h	1335
cfe/modules/time/config/default_cfe_time_platform_cfg.h	1338
cfe/modules/time/config/default_cfe_time_topicids.h	1338
cfe/modules/time/fsw/inc/cfe_time_eventids.h	1340
osal/src/os/inc/common_types.h	1350
osal/src/os/inc/osapi-binsem.h	1355
osal/src/os/inc/osapi-bsp.h	1356

osal/src/os/inc/osapi-clock.h	1356
osal/src/os/inc/osapi-common.h	1359
osal/src/os/inc/osapi-condvar.h	1361
osal/src/os/inc/osapi-constants.h	1362
osal/src/os/inc/osapi-countsem.h	1363
osal/src/os/inc/osapi-dir.h	1363
osal/src/os/inc/osapi-error.h	1364
osal/src/os/inc/osapi-file.h	1367
osal/src/os/inc/osapi-fs.h	1370
osal/src/os/inc/osapi-heap.h	1372
osal/src/os/inc/osapi-idmap.h	1372
osal/src/os/inc/osapi-macros.h	1374
osal/src/os/inc/osapi-module.h	1375
osal/src/os/inc/osapi-mutex.h	1377
osal/src/os/inc/osapi-network.h	1377
osal/src/os/inc/osapi-printf.h	1378
osal/src/os/inc/osapi-queue.h	1378
osal/src/os/inc/osapi-select.h	1379
osal/src/os/inc/osapi-shell.h	1380
osal/src/os/inc/osapi-sockets.h	1380
osal/src/os/inc/osapi-task.h	1383
osal/src/os/inc/osapi-timebase.h	1385
osal/src/os/inc/osapi-timer.h	1386
osal/src/os/inc/osapi-version.h	1387
osal/src/os/inc/osapi.h	1390
psp/fsw/inc/cfe_psp.h	1391
psp/fsw/inc/cfe_psp_cache_api.h	1392
psp/fsw/inc/cfe_psp_cds_api.h	1392
psp/fsw/inc/cfe_psp_eepromaccess_api.h	1394

psp/fsw/inc/cfe_psp_error.h	
CFE PSP Error header	1397
psp/fsw/inc/cfe_psp_exception_api.h	1400
psp/fsw/inc/cfe_psp_id_api.h	1402
psp/fsw/inc/cfe_psp_memaccess_api.h	1402
psp/fsw/inc/cfe_psp_memrange_api.h	1406
psp/fsw/inc/cfe_psp_port_api.h	1412
psp/fsw/inc/cfe_psp_ssr_api.h	1414
psp/fsw/inc/cfe_psp_timertick_api.h	1415
psp/fsw/inc/cfe_psp_version_api.h	1417
psp/fsw/inc/cfe_psp_watchdog_api.h	1418

10 Module Documentation

10.1 CFS File Manager Event IDs

Macros

- `#define FM_INIT_INF_EID 1`
FM Initialization Event ID.
- `#define FM_STARTUP_EVENTS_ERR_EID 2`
FM Initialization Register For Event Services Failed Event ID.
- `#define FM_CR_PIPE_ERR_EID 3`
FM Initialization Create SB Input Pipe Failed Event ID.
- `#define FM_STARTUP_SUBSCRIB_HK_ERR_EID 4`
FM Initialization Subscribe to HK Request Failed Event ID.
- `#define FM_STARTUP_SUBSCRIB_GCMD_ERR_EID 5`
FM Initialization Subscribe to FM Commands Failed Event ID.
- `#define FM_STARTUP_TABLE_INIT_ERR_EID 6`
FM Initialization Register Free Space Table Failed Event ID.
- `#define FM_SB_RECEIVE_ERR_EID 7`
FM Main Loop Receive from Software Bus Failed Event ID.
- `#define FM_EXIT_ERR_EID 8`
FM Application Termination Event ID.
- `#define FM_MID_ERR_EID 9`
FM Main Loop Message ID Invalid Event ID.
- `#define FM_CC_ERR_EID 10`
FM Main Loop Command Code Invalid Event ID.
- `#define FM_HKREQ_LEN_ERR_EID 11`
FM Command Packet Length Invalid Event ID.
- `#define FM_NOOP_INF_EID 12`
FM No-op Command Event ID.
- `#define FM_NOOP_PKT_ERR_EID 13`

- #define **FM_RESET_INF_EID** 14
FM No-op Command Length Invalid Event ID.
- #define **FM_RESET_PKT_ERR_EID** 15
FM Reset Counters Command Event ID.
- #define **FM_COPY_CMD_INF_EID** 16
FM Reset Counters Command Length Invalid Event ID.
- #define **FM_COPY_PKT_ERR_EID** 17
FM Copy File Command Event ID.
- #define **FM_COPY_OVR_ERR_EID** 18
FM Copy File Command Length Invalid Event ID.
- #define **FM_COPY_OS_ERR_EID** 19
FM Copy File Command Overwrite Invalid Event ID.
- #define **FM_MOVE_CMD_INF_EID** 20
FM Move File Command Event ID.
- #define **FM_MOVE_PKT_ERR_EID** 21
FM Move File Command Length Invalid Event ID.
- #define **FM_MOVE_OVR_ERR_EID** 22
FM Move File Command Overwrite Invalid Event ID.
- #define **FM_MOVE_OS_ERR_EID** 23
FM Move File Command OS Error Event ID.
- #define **FM_RENAME_CMD_INF_EID** 24
FM Rename File Command Event ID.
- #define **FM_RENAME_PKT_ERR_EID** 25
FM Rename File Command Length Invalid Event ID.
- #define **FM_RENAME_OVR_ERR_EID** 26
FM Rename File Command Overwrite Invalid Event ID.
- #define **FM_RENAME_OS_ERR_EID** 27
FM Rename File Command OS Error Event ID.
- #define **FM_DELETE_CMD_INF_EID** 28
FM Delete File Command Event ID.
- #define **FM_DELETE_PKT_ERR_EID** 29
FM Delete File Command Length Invalid Event ID.
- #define **FM_DELETE_OS_ERR_EID** 30
FM Delete File Command OS Error Event ID.
- #define **FM_DELETE_ALL_CMD_INF_EID** 31
FM Delete All Files Command Event ID.
- #define **FM_DELETE_ALL_FILES_ND_WARNING_EID** 32
FM Delete All Files Unable To Delete All Event ID.
- #define **FM_DELETE_ALL_SKIP_WARNING_EID** 33
FM Delete All Files Directories Skipped Event ID.
- #define **FM_DELETE_ALL_PKT_ERR_EID** 34
FM Delete All Files Command Length Invalid Event ID.
- #define **FM_DELETE_ALL_OS_ERR_EID** 35
FM Delete All Files Command OS Error Event ID.
- #define **FM_DECOM_CMD_INF_EID** 36
FM Decompress File Command Event ID.

- #define FM_DECOM_PKT_ERR_EID 37
FM Decompress File Command Length Invalid Event ID.
- #define FM_DECOM_CFE_ERR_EID 38
FM Decompress File Decompression Failed Event ID.
- #define FM_CONCAT_CMD_INF_EID 39
FM Concat Files Command Event ID.
- #define FM_CONCAT_PKT_ERR_EID 40
FM Concat Files Command Length Invalid Event ID.
- #define FM_CONCAT_OSCPY_ERR_EID 41
FM Concat Files Copy Failed Event ID.
- #define FM_CONCAT_OPEN_SRC2_ERR_EID 42
FM Concat Files Command Open Second Source File Failed Event ID.
- #define FM_CONCAT_OPEN_TGT_ERR_EID 43
FM Concat Files Command Open Target File Failed Event ID.
- #define FM_CONCAT_OSRD_ERR_EID 44
FM Concat Files Command Read Second Source File Failed Event ID.
- #define FM_CONCAT_OSWR_ERR_EID 45
FM Concat Files Command Write Target File Failed Event ID.
- #define FM_GET_FILE_INFO_CMD_INF_EID 46
FM Get File Info Command Event ID.
- #define FM_GET_FILE_INFO_STATE_WARNING_EID 47
FM Get File Info Unable To Compute CRC File State Invalid Event ID.
- #define FM_GET_FILE_INFO_TYPE_WARNING_EID 48
FM Get File Info Unable To Compute CRC, CRC Type Invalid Event ID.
- #define FM_GET_FILE_INFO_OPEN_ERR_EID 49
FM Get File Info Unable To Compute CRC File Open Failed Event ID.
- #define FM_GET_FILE_INFO_READ_WARNING_EID 50
FM Get File Info Unable To Compute CRC File Read Failed Event ID.
- #define FM_GET_FILE_INFO_PKT_ERR_EID 51
FM Get File Info Command Length Invalid Event ID.
- #define FM_GET_FILE_INFO_SRC_ERR_EID 52
FM Get File Info Command Filename Invalid Event ID.
- #define FM_GET_OPEN_FILES_CMD_INF_EID 53
FM Get Open Files Command Event ID.
- #define FM_GET_OPEN_FILES_PKT_ERR_EID 54
FM Get Open Files Command Length Invalid Event ID.
- #define FM_CREATE_DIR_CMD_INF_EID 55
FM Create Directory Command Event ID.
- #define FM_CREATE_DIR_PKT_ERR_EID 56
FM Create Directory Command Length Invalid Event ID.
- #define FM_CREATE_DIR_OS_ERR_EID 57
FM Create Directory Command OS Error Event ID.
- #define FM_DELETE_DIR_CMD_INF_EID 58
FM Delete Directory Command Event ID.
- #define FM_DELETE_DIR_PKT_ERR_EID 59
FM Delete Directory Command Length Invalid Event ID.
- #define FM_DELETE_DIR_EMPTY_ERR_EID 60
FM Delete Directory Command Empty Event ID.

- #define FM_DELETE_OPENDIR_OS_ERR_EID 61
 - FM Delete Directory Command Failed Directory Not Empty Event ID.*
- #define FM_DELETE_RMDIR_OS_ERR_EID 62
 - FM Delete Directory, Direcotry Open Failed Event ID.*
- #define FM_GET_DIR_FILE_CMD_INF_EID 63
 - FM Delete Directory Remove Directory Failed Event ID.*
- #define FM_GET_DIR_FILE_PKT_ERR_EID 64
 - FM Directory List To File Command Event ID.*
- #define FM_GET_DIR_FILE_WARNING_EID 65
 - FM Directory List To File Command Length Invalid Event ID.*
- #define FM_GET_DIR_FILE_OSOPENDIR_ERR_EID 66
 - FM Directory List To File Command Combined Path and Name Too Long Event ID.*
- #define FM_GET_DIR_FILE_WRBLANK_ERR_EID 67
 - FM Directory List To File Directory Open Failed Event ID.*
- #define FM_GET_DIR_FILE_WRHDR_ERR_EID 68
 - FM Directory List To File Write Blank Stats Failed Event ID.*
- #define FM_GET_DIR_FILE_OSCREAT_ERR_EID 69
 - FM Directory List To File Write Header Failed Event ID.*
- #define FM_GET_DIR_FILE_WRENTRY_ERR_EID 70
 - FM Directory List To File Create File Failed Event ID.*
- #define FM_GET_DIR_FILE_UPSTATS_ERR_EID 71
 - FM Directory List To File Write Entry Failed Event ID.*
- #define FM_GET_DIR_PKT_CMD_INF_EID 72
 - FM Directory List To File Write Update Stats Failed Event ID.*
- #define FM_GET_DIR_PKT_WARNING_EID 73
 - FM Directory List To Packet Command Event ID.*
- #define FM_GET_DIR_PKT_PKT_ERR_EID 74
 - FM Directory List To Packet Command Directory and Entry Too Long Event ID.*
- #define FM_GET_DIR_PKT_OS_ERR_EID 75
 - FM Directory List To Packet Command Length Invalid Event ID.*
- #define FM_MONITOR_FILESYSTEM_SPACE_CMD_INF_EID 76
 - FM Monitor Filesystem Command Event ID.*
- #define FM_GET_FREE_SPACE_PKT_ERR_EID 77
 - FM Get Free Space Command Length Invalid Event ID.*
- #define FM_GET_FREE_SPACE_TBL_ERR_EID 78
 - FM Get Free Space Table Not Loaded Event ID.*
- #define FM_SET_TABLE_STATE_CMD_EID 79
 - FM Set Table State Command Event ID.*
- #define FM_SET_TABLE_STATE_PKT_ERR_EID 80
 - FM Set Table State Command Length Invalid Event ID.*
- #define FM_SET_TABLE_STATE_TBL_ERR_EID 81
 - FM Set Table State Command Table Not Loaded Event ID.*
- #define FM_SET_TABLE_STATE_ARG_IDX_ERR_EID 82
 - FM Set Table State Command Index Invalid Event ID.*
- #define FM_SET_TABLE_STATE_ARG_STATE_ERR_EID 83
 - FM Set Table State Command State Invalid Event ID.*

- #define FM_SET_TABLE_STATE_UNUSED_ERR_EID 84
FM Set Table State Command Unused Entry Event ID.
- #define FM_TABLE_VERIFY_EMPTY_ERR_EID 85
FM Free Space Table Verification Failed Empty Name Event ID.
- #define FM_TABLE_VERIFY_TOOLONG_ERR_EID 86
FM Free Space Table Verification Failed Name Too Long Event ID.
- #define FM_TABLE_VERIFY_BAD_STATE_ERR_EID 88
FM Free Space Table Verification Failed State Invalid Event ID.
- #define FM_CHILD_INIT_EID 89
FM Child Task Initialization Complete Event ID.
- #define FM_CHILD_INIT_SEM_ERR_EID 90
FM Child Task Initialization Create Semaphore Failed Event ID.
- #define FM_CHILD_INIT_QSEM_ERR_EID 91
FM Child Task Initialization Create Queue Count Semaphore Failed Event ID.
- #define FM_CHILD_INIT_CREATE_ERR_EID 92
FM Child Task Initialization Create Task Failed Event ID.
- #define FM_CHILD_TERM_EMPTYQ_ERR_EID 93
FM Child Task Termination Error Empty Queue Event ID.
- #define FM_CHILD_TERM_QIDX_ERR_EID 94
FM Child Task Termination Error Invalid Queue Index Event ID.
- #define FM_CHILD_TERM_SEM_ERR_EID 95
FM Child Task Termination Error Semaphore Take Failed Event ID.
- #define FM_CHILD_EXE_ERR_EID 96
FM Child Task Command Code Invalid Event ID.
- #define FM_TABLE_VERIFY_EID 97
FM Free Space Table Validation Results Event ID.
- #define FM_SET_PERM_ERR_EID 98
FM Set Permissions Command Length Invalid Event ID.
- #define FM_SET_PERM_CMD_INF_EID 99
FM Set Permissions Command Event ID.
- #define FM_SET_PERM_OS_ERR_EID 100
FM Set Permissions Command Chmod Error Event ID.
- #define FM_TABLE_VERIFY_NULL_PTR_ERR_EID 101
FM Free Space Table Verification Failed Null Pointer Detected.
- #define FM_SB_RECEIVE_NULL_PTR_ERR_EID 102
FM Main Loop Software Bus Returned NULL On Success Event ID.
- #define FM_OS_SYS_STAT_ERR_EID 103
FM Get Free Space Get File System Stats Failed Event ID.
- #define FM_DIRECTORY_ESTIMATE_ERR_EID 104
FM Directory Size Estimate Failed Event ID.
- #define FM_FNAME_INVALID_EID_OFFSET 0
- #define FM_FNAME_DNE_EID_OFFSET 1
- #define FM_FNAME_EXIST_EID_OFFSET 1 /* mutually exclusive with DNE */
- #define FM_FNAME_ISDIR_EID_OFFSET 2
- #define FM_FNAME_ISFILE_EID_OFFSET 2 /* mutually exclusive with ISDIR */
- #define FM_FNAME_ISOPEN_EID_OFFSET 3
- #define FM_FNAME_ISCLOSED_EID_OFFSET 4

- #define FM_FNAME_NUM_OFFSETS 6
- #define FM_CHILD_DISABLED_EID_OFFSET 0
- #define FM_CHILD_Q_FULL_EID_OFFSET 1
- #define FM_CHILD_BROKEN_EID_OFFSET 2
- #define FM_CHILD_NUM_OFFSETS 3
- #define FM_COPY_SRC_BASE_EID 151
 - FM Child Task Copy File Source Filename Error Base ID.
- #define FM_COPY_SRC_INVALID_ERR_EID (FM_COPY_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 - FM Child Task Copy File Source Name Invalid Event ID.
- #define FM_COPY_SRC_DNE_ERR_EID (FM_COPY_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 - FM Child Task Copy File Source File Does Not Exist Event ID.
- #define FM_COPY_SRC_ISDIR_ERR_EID (FM_COPY_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 - FM Child Task Copy File Source File Name Is Directory Event ID.
- #define FM_COPY_TGT_BASE_EID (FM_COPY_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 - FM Child Task Copy File Target Filename Error Base ID.
- #define FM_COPY_TGT_INVALID_ERR_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 - FM Child Task Copy File Target Filename Invalid Event ID.
- #define FM_COPY_TGT_EXIST_ERR_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
 - FM Child Task Copy File Target File Already Exists Event ID.
- #define FM_COPY_TGT_ISDIR_ERR_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 - FM Child Task Copy File Target Filename Is A Directory Event ID.
- #define FM_COPY_TGT_ISOPEN_ERR_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
 - FM Child Task Copy File Target Filename Exists As Open File Event ID.
- #define FM_COPY_CHILD_BASE_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
 - FM Child Task Copy File Child Task Error Base ID.
- #define FM_COPY_CHILD_DISABLED_ERR_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 - FM Child Task Copy File Child Task Disabled Event ID.
- #define FM_COPY_CHILD_FULL_ERR_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 - FM Child Task Copy File Child Task Queue Full Event ID.
- #define FM_COPY_CHILD_BROKEN_ERR_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 - FM Child Task Copy File Child Task Interface Broken Event ID.
- #define FM_MOVE_SRC_BASE_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 - FM Child Task Move File Source Filename Error Base ID.
- #define FM_MOVE_SRC_INVALID_ERR_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 - FM Child Task Move File Source Filename Invalid Event ID.
- #define FM_MOVE_SRC_DNE_ERR_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 - FM Child Task Move File Source File Does Not Exist Event ID.
- #define FM_MOVE_SRC_ISDIR_ERR_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 - FM Child Task Move File Source Filename Is A Directory Event ID.
- #define FM_MOVE_TGT_BASE_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 - FM Child Task Move File Target Filename Error Base ID.
- #define FM_MOVE_TGT_INVALID_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 - FM Child Task Move File Target Filename Invalid Event ID.
- #define FM_MOVE_TGT_EXIST_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
 - FM Child Task Move File Target File Already Exists Event ID.
- #define FM_MOVE_TGT_ISDIR_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 - FM Child Task Move File Target Filename Is A Directory Event ID.

- #define FM_MOVE_TGT_ISOPEN_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
FM Child Task Move File Target File Exists As An Open File Event ID.
- #define FM_MOVE_CHILD_BASE_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Move File Child Task Error Base ID.
- #define FM_MOVE_CHILD_DISABLED_ERR_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Move File Child Task Disabled Event ID.
- #define FM_MOVE_CHILD_FULL_ERR_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Move File Child Task Queue Full Event ID.
- #define FM_MOVE_CHILD_BROKEN_ERR_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Move File Child Task Interface Broken Event ID.
- #define FM_RENAME_SRC_BASE_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
FM Child Task Rename File Source Filename Error Base ID.
- #define FM_RENAME_SRC_INVALID_ERR_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Rename File Source Filename Invalid Event ID.
- #define FM_RENAME_SRC_DNE_ERR_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
FM Child Task Rename File Source File Does Not Exist Event ID.
- #define FM_RENAME_SRC_ISDIR_ERR_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
FM Child Task Rename File Source Filename Is Directory Event ID.
- #define FM_RENAME_TGT_BASE_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Rename File Target Filename Error Base ID.
- #define FM_RENAME_TGT_INVALID_ERR_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Rename File Target Filename Invalid Event ID.
- #define FM_RENAME_TGT_EXIST_ERR_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
FM Child Task Rename File Target File Already Exists Event ID.
- #define FM_RENAME_TGT_ISDIR_ERR_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
FM Child Task Rename File Target Filename Is Directory Event ID.
- #define FM_RENAME_TGT_ISOPEN_ERR_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
FM Child Task Rename File Target Filename Exists As Open File Event ID.
- #define FM_RENAME_CHILD_BASE_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Rename File Child Task Error Base ID.
- #define FM_RENAME_CHILD_DISABLED_ERR_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Rename File Child Task Disabled Event ID.
- #define FM_RENAME_CHILD_FULL_ERR_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Rename File Child Task Queue Full Event ID.
- #define FM_RENAME_CHILD_BROKEN_ERR_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Rename File Child Task Interface Broken Event ID.
- #define FM_DELETE_SRC_BASE_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
FM Child Task Delete File Source Filename Error Base ID.
- #define FM_DELETE_SRC_INVALID_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Delete File Source Filename Invalid Event ID.
- #define FM_DELETE_SRC_DNE_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
FM Child Task Delete File Source File Does Not Exist Event ID.
- #define FM_DELETE_SRC_ISDIR_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
FM Child Task Delete File Source Filename Is Directory Event ID.
- #define FM_DELETE_SRC_OPEN_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
FM Child Task Delete File File Is Open Event ID.
- #define FM_DELETE_CHILD_BASE_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)

- #define FM_DELETE_CHILD_DISABLED_ERR_EID (FM_DELETE_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Delete File Child Task Disabled Event ID.
- #define FM_DELETE_CHILD_FULL_ERR_EID (FM_DELETE_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Delete File Child Task Queue Full Event ID.
- #define FM_DELETE_CHILD_BROKEN_ERR_EID (FM_DELETE_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Delete File Child Task Interface Broken Event ID.
- #define FM_DELETE_ALL_SRC_BASE_EID (FM_DELETE_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Delete All Files Directory Error Base ID.
- #define FM_DELETE_ALL_SRC_INVALID_ERR_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Delete All Files Directory Name Invalid Event ID.
- #define FM_DELETE_ALL_SRC_DNE_ERR_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Delete All Files Directory Does Not Exist Event ID.
- #define FM_DELETE_ALL_SRC_FILE_ERR_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_ISFILE_EID_OFFSET)
 FM Child Task Delete All Files Directory Name Is A File Event ID.
- #define FM_DELETE_ALL_CHILD_BASE_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Delete All Files Child Task Error Base ID.
- #define FM_DELETE_ALL_CHILD_DISABLED_ERR_EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Delete All Files Child Task Disabled Event ID.
- #define FM_DELETE_ALL_CHILD_FULL_ERR_EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Delete All Files Child Task Queue Full Event ID.
- #define FM_DELETE_ALL_CHILD_BROKEN_ERR_EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Delete All Files Child Task Interface Broken Event ID.
- #define FM_DECOM_SRC_BASE_EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Decompress File Source Filename Error Base ID.
- #define FM_DECOM_SRC_INVALID_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Decompress File Source Filename Invalid Event ID.
- #define FM_DECOM_SRC_DNE_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Decompress File Source Filename Does Not Exist Event ID.
- #define FM_DECOM_SRC_ISDIR_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Decompress File Source Filename Is A Directory Event ID.
- #define FM_DECOM_SRC_OPEN_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
 FM Child Task Decompress File Source File Is Open Event ID.
- #define FM_DECOM_TGT_BASE_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Decompress File Target Filename Error Base ID.
- #define FM_DECOM_TGT_INVALID_ERR_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Decompress File Target Filename Invalid Event ID.
- #define FM_DECOM_TGT_EXIST_ERR_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
 FM Child Task Decompress File Target File Already Exists Event ID.
- #define FM_DECOM_TGT_ISDIR_ERR_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Decompress File Target Filename Is Directory Event ID.
- #define FM_DECOM_CHILD_BASE_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Decompress File Child Task Error Base ID.
- #define FM_DECOM_CHILD_DISABLED_ERR_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Decompress File Child Task Disabled Event ID.
- #define FM_DECOM_CHILD_FULL_ERR_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Decompress File Child Task Queue Full Event ID.

- #define FM_DECOM_CHILD_BROKEN_ERR_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Decompress File Child Task Interface Broken Event ID.
- #define FM_CONCAT_SRC1_BASE_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
FM Child Task Concat Files Source 1 Filename Error Base ID.
- #define FM_CONCAT_SRC1_INVALID_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Concat Files Source 1 Filename Invalid Event ID.
- #define FM_CONCAT_SRC1_DNE_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
FM Child Task Concat Files Source 1 File Does Not Exist Event ID.
- #define FM_CONCAT_SRC1_ISDIR_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
FM Child Task Concat Files Source 1 Filename Is Directory Event ID.
- #define FM_CONCAT_SRC1_OPEN_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
FM Child Task Concat Files Source 1 File Already Open Event ID.
- #define FM_CONCAT_SRC2_BASE_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Concat Files Source 2 Filename Error Base ID.
- #define FM_CONCAT_SRC2_INVALID_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Concat Files Source 2 Filename Invalid Event ID.
- #define FM_CONCAT_SRC2_DNE_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
FM Child Task Concat Files Source 2 File Does Not Exist Event ID.
- #define FM_CONCAT_SRC2_ISDIR_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
FM Child Task Concat Files Source 2 Filename Is Directory Event ID.
- #define FM_CONCAT_SRC2_OPEN_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
FM Child Task Concat Files Source 2 File Already Open Event ID.
- #define FM_CONCAT_TGT_BASE_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Concat Files Target Filename Error Base ID.
- #define FM_CONCAT_TGT_INVALID_ERR_EID (FM_CONCAT_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Concat Files Target Filename Invalid Event ID.
- #define FM_CONCAT_TGT_EXIST_ERR_EID (FM_CONCAT_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
FM Child Task Concat Files Target Filename Already Exists Event ID.
- #define FM_CONCAT_TGT_ISDIR_ERR_EID (FM_CONCAT_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
FM Child Task Concat Files Target Filename Is Directory Event ID.
- #define FM_CONCAT_CHILD_BASE_EID (FM_CONCAT_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Concat Files Child Task Error Base ID.
- #define FM_CONCAT_CHILD_DISABLED_ERR_EID (FM_CONCAT_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Concat Files Child Task Disabled Event ID.
- #define FM_CONCAT_CHILD_FULL_ERR_EID (FM_CONCAT_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Concat Files Child Task Queue Full Event ID.
- #define FM_CONCAT_CHILD_BROKEN_ERR_EID (FM_CONCAT_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Concat Files Child Task Interface Broken Event ID.
- #define FM_FILE_INFO_CHILD_BASE_EID (FM_CONCAT_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
FM Child Task Get File Info Child Task Error Base ID.
- #define FM_FILE_INFO_CHILD_DISABLED_ERR_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Get File Info Child Task Disabled Event ID.
- #define FM_FILE_INFO_CHILD_FULL_ERR_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Get File Info Child Task Queue Full Event ID.
- #define FM_FILE_INFO_CHILD_BROKEN_ERR_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Get File Info Child Task Interface Broken Event ID.
- #define FM_CREATE_DIR_SRC_BASE_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)

- #define FM_CREATE_DIR_SRC_INVALID_ERR_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Create Directory, Directory Error Base ID.
- #define FM_CREATE_DIR_SRC_DNE_ERR_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Create Directory Name Invalid Event ID.
- #define FM_CREATE_DIR_SRC_ISDIR_ERR_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Create Directory Name Exists As File Event ID.
- #define FM_CREATE_DIR_CHILD_BASE_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Create Directory Child Task Error Base ID.
- #define FM_CREATE_DIR_CHILD_DISABLED_ERR_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Create Directory Child Task Disabled Event ID.
- #define FM_CREATE_DIR_CHILD_FULL_ERR_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Create Directory Child Task Queue Full Event ID.
- #define FM_CREATE_DIR_CHILD_BROKEN_ERR_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Create Directory Child Task Interface Broken Event ID.
- #define FM_DELETE_DIR_SRC_BASE_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Delete Directory, Directory Error Base ID.
- #define FM_DELETE_DIR_SRC_INVALID_ERR_EID (FM_DELETE_DIR_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Delete Directory Name Invalid Event ID.
- #define FM_DELETE_DIR_SRC_DNE_ERR_EID (FM_DELETE_DIR_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Delete Directory Name Exists As File Event ID.
- #define FM_DELETE_DIR_CHILD_BASE_EID (FM_DELETE_DIR_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Delete Directory Child Task Error Base ID.
- #define FM_DELETE_DIR_CHILD_DISABLED_ERR_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Delete Directory Child Task Disabled Event ID.
- #define FM_DELETE_DIR_CHILD_FULL_ERR_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Delete Directory Child Task Queue Full Event ID.
- #define FM_DELETE_DIR_CHILD_BROKEN_ERR_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Delete Directory Child Task Interface Broken Event ID.
- #define FM_GET_DIR_FILE_SRC_BASE_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Directory List to File Source Filename Error Base ID.
- #define FM_GET_DIR_FILE_SRC_INVALID_ERR_EID (FM_GET_DIR_FILE_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Directory List to File Directory Name Invalid Event ID.
- #define FM_GET_DIR_FILE_SRC_DNE_ERR_EID (FM_GET_DIR_FILE_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Directory List to File Directory Does Not Exist Event ID.
- #define FM_GET_DIR_FILE_SRC_ISDIR_ERR_EID (FM_GET_DIR_FILE_SRC_BASE_EID + FM_FNAME_ISFILE_EID_OFFSET)
 FM Child Task Directory List to File Directory Name Is File Event ID.
- #define FM_GET_DIR_FILE_TGT_BASE_EID (FM_GET_DIR_FILE_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Directory List to File Target Error Base ID.
- #define FM_GET_DIR_FILE_TGT_INVALID_ERR_EID (FM_GET_DIR_FILE_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Directory List to File Target Filename Invalid Event ID.
- #define FM_GET_DIR_FILE_TGT_ISDIR_ERR_EID (FM_GET_DIR_FILE_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Directory List to File Target Filename Is Directory Event ID.
- #define FM_GET_DIR_FILE_CHILD_BASE_EID (FM_GET_DIR_FILE_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Directory List to File Child Task Error Base ID.
- #define FM_GET_DIR_FILE_CHILD_DISABLED_ERR_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Directory List to File Child Task Disabled Event ID.

FM Child Task Directory List to File Child Task Disabled Event ID.

- #define FM_GET_DIR_FILE_CHILD_FULL_ERR_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Directory List to File Child Task Queue Full Event ID.
- #define FM_GET_DIR_FILE_CHILD_BROKEN_ERR_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Directory List to File Child Task Interface Broken Event ID.
- #define FM_GET_DIR_PKT_SRC_BASE_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
FM Child Task Directory List to Packet Directory Error Base ID.
- #define FM_GET_DIR_PKT_SRC_INVALID_ERR_EID (FM_GET_DIR_PKT_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Directory List to Packet Directory Name Invalid Event ID.
- #define FM_GET_DIR_PKT_SRC_DNE_ERR_EID (FM_GET_DIR_PKT_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
FM Child Task Directory List to Packet Directory Does Not Exist Event ID.
- #define FM_GET_DIR_PKT_SRC_ISDIR_ERR_EID (FM_GET_DIR_PKT_SRC_BASE_EID + FM_FNAME_ISFILE_EID_OFFSET)
FM Child Task Directory List to Packet Directory Is File Event ID.
- #define FM_GET_DIR_PKT_CHILD_BASE_EID (FM_GET_DIR_PKT_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Directory List to Packet Child Task Error Base ID.
- #define FM_GET_DIR_PKT_CHILD_DISABLED_ERR_EID (FM_GET_DIR_PKT_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Directory List to Packet Child Task Disabled Event ID.
- #define FM_GET_DIR_PKT_CHILD_FULL_ERR_EID (FM_GET_DIR_PKT_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Directory List to Packet Child Task Queue Full Event ID.
- #define FM_GET_DIR_PKT_CHILD_BROKEN_ERR_EID (FM_GET_DIR_PKT_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Directory List to Packet Child Task Interface Broken Event ID.

10.1.1 Detailed Description

10.1.2 Macro Definition Documentation

10.1.2.1 FM_CC_ERR_EID #define FM_CC_ERR_EID 10

FM Main Loop Command Code Invalid Event ID.

Type: ERROR

Cause

This event message is issued when the File Manager application has received a command packet with an unexpected command code value.

Mal-formed command packets are generally prevented by the ground system. Therefore, the source for the problem command is likely to be one of the on-board tables that contain commands.

Definition at line 179 of file fm_events.h.

10.1.2.2 FM_CHILD_BROKEN_EID_OFFSET #define FM_CHILD_BROKEN_EID_OFFSET 2

Definition at line 1528 of file fm_events.h.

10.1.2.3 FM_CHILD_DISABLED_EID_OFFSET #define FM_CHILD_DISABLED_EID_OFFSET 0
Definition at line 1526 of file fm_events.h.

10.1.2.4 FM_CHILD_EXE_ERR_EID #define FM_CHILD_EXE_ERR_EID 96
FM Child Task Command Code Invalid Event ID.

Type: ERROR

Cause

This event message indicates that the FM child task is unable to process the current handshake request. Either the handshake queue index or the handshake command code is invalid. This error suggests that either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface data. It may be necessary to restart the FM application to resync the handshake interface.

Definition at line 1410 of file fm_events.h.

10.1.2.5 FM_CHILD_INIT_CREATE_ERR_EID #define FM_CHILD_INIT_CREATE_ERR_EID 92
FM Child Task Initialization Create Task Failed Event ID.

Type: ERROR

Cause

This event message indicates an unsuccessful attempt to create the low priority FM child task. Commands which would have otherwise been handed off to the child task for execution, will now be processed by the main FM application.

Definition at line 1355 of file fm_events.h.

10.1.2.6 FM_CHILD_INIT_EID #define FM_CHILD_INIT_EID 89
FM Child Task Initialization Complete Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of the initialization process for the FM child task.
Definition at line 1315 of file fm_events.h.

10.1.2.7 FM_CHILD_INIT_QSEM_ERR_EID #define FM_CHILD_INIT_QSEM_ERR_EID 91
FM Child Task Initialization Create Queue Count Semaphore Failed Event ID.

Type: ERROR

Cause

This event message indicates an unsuccessful attempt to create the queue count semaphore for the FM child task. Commands which would have otherwise been handed off to the child task for execution, will now be processed by the main FM application.

Definition at line 1342 of file fm_events.h.

10.1.2.8 FM_CHILD_INIT_SEM_ERR_EID #define FM_CHILD_INIT_SEM_ERR_EID 90
FM Child Task Initialization Create Semaphore Failed Event ID.

Type: ERROR

Cause

This event message indicates an unsuccessful attempt to create the sempahore for the low priority FM child task. Commands which would have otherwise been handed off to the child task for execution, will now be processed by the main FM application.

Definition at line 1329 of file fm_events.h.

10.1.2.9 FM_CHILD_NUM_OFFSETS #define FM_CHILD_NUM_OFFSETS 3

Definition at line 1529 of file fm_events.h.

10.1.2.10 FM_CHILD_Q_FULL_EID_OFFSET #define FM_CHILD_Q_FULL_EID_OFFSET 1

Definition at line 1527 of file fm_events.h.

10.1.2.11 FM_CHILD_TERM_EMPTYQ_ERR_EID #define FM_CHILD_TERM_EMPTYQ_ERR_EID 93

FM Child Task Termination Error Empty Queue Event ID.

Type: ERROR

Cause

This event message indicates that the FM child task has suffered a fatal error and has terminated. The error occurred because the child queue was empty, indicating that the handshake between the main task and child task was broken.

Definition at line 1369 of file fm_events.h.

10.1.2.12 FM_CHILD_TERM_QIDX_ERR_EID #define FM_CHILD_TERM_QIDX_ERR_EID 94
FM Child Task Termination Error Invalid Queue Index Event ID.

Type: ERROR

Cause

This event message indicates that the FM child task has suffered a fatal error and has terminated. The error occurred because the child read index was invalid (larger than the child queue depth).

Definition at line 1382 of file fm_events.h.

10.1.2.13 FM_CHILD_TERM_SEM_ERR_EID #define FM_CHILD_TERM_SEM_ERR_EID 95
FM Child Task Termination Error Semaphore Take Failed Event ID.

Type: ERROR

Cause

This event message indicates that the FM child task has suffered a fatal error and has terminated. The error occurred when trying to take the child handshake semaphore.

Definition at line 1395 of file fm_events.h.

10.1.2.14 FM_CONCAT_CHILD_BASE_EID #define FM_CONCAT_CHILD_BASE_EID (FM_CONCAT_TGT_BASE_EID +
FM_FNAME_NUM_OFFSETS)

FM Child Task Concat Files Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 247

Definition at line 2798 of file fm_events.h.

10.1.2.15 FM_CONCAT_CHILD_BROKEN_ERR_EID #define FM_CONCAT_CHILD_BROKEN_ERR_EID (FM_CONCAT_CHILD_BASE_EID +
FM_CHILD_BROKEN_EID_OFFSET)

FM Child Task Concat Files Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 249

Definition at line 2854 of file fm_events.h.

10.1.2.16 FM_CONCAT_CHILD_DISABLED_ERR_EID #define FM_CONCAT_CHILD_DISABLED_ERR_EID (FM_CONCAT_CHILD_BASE_EID
+ FM_CHILD_DISABLED_EID_OFFSET)

FM Child Task Concat Files Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 247

Definition at line 2812 of file fm_events.h.

10.1.2.17 FM_CONCAT_CHILD_FULL_ERR_EID #define FM_CONCAT_CHILD_FULL_ERR_EID (FM_CONCAT_CHILD_BASE_EID
+ FM_CHILD_Q_FULL_EID_OFFSET)

FM Child Task Concat Files Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 248

Definition at line 2833 of file fm_events.h.

10.1.2.18 FM_CONCAT_CMD_INF_EID #define FM_CONCAT_CMD_INF_EID 39

FM Concat Files Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_Concat command.

Note that the execution of this command generally occurs within the context of the FM low priority child task. Thus this event may not occur until some time after the command was invoked. However, this event message does signal the actual completion of the command.

Definition at line 574 of file fm_events.h.

10.1.2.19 FM_CONCAT_OPEN_SRC2_ERR_EID #define FM_CONCAT_OPEN_SRC2_ERR_EID 42
FM Concat Files Command Open Second Source File Failed Event ID.

Type: ERROR

Cause

This event message is generated when the second source file cannot be opened.

This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source files exist. Refer to the function specific return value for an indication of what might have caused this particular error.

Definition at line 622 of file fm_events.h.

10.1.2.20 FM_CONCAT_OPEN_TGT_ERR_EID #define FM_CONCAT_OPEN_TGT_ERR_EID 43
FM Concat Files Command Open Target File Failed Event ID.

Type: ERROR

Cause

This event message is generated when the target file cannot be opened.

This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source files exist. Refer to the function specific return value for an indication of what might have caused this particular error.

Definition at line 640 of file fm_events.h.

10.1.2.21 FM_CONCAT_OSCPY_ERR_EID #define FM_CONCAT_OSCPY_ERR_EID 41
FM Concat Files Copy Failed Event ID.

Type: ERROR

Cause

This event message is generated when the first source file cannot be copied.

This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source files exist. Refer to the function specific return value for an indication of what might have caused this particular error.

Definition at line 604 of file fm_events.h.

10.1.2.22 FM_CONCAT_OSRD_ERR_EID #define FM_CONCAT_OSRD_ERR_EID 44

FM Concat Files Command Read Second Source File Failed Event ID.

Type: ERROR

Cause

This event message is generated when the second source file cannot be read.

This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source files exist. Refer to the function specific return value for an indication of what might have caused this particular error.

Definition at line 657 of file fm_events.h.

10.1.2.23 FM_CONCAT_OSWR_ERR_EID #define FM_CONCAT_OSWR_ERR_EID 45

FM Concat Files Command Write Target File Failed Event ID.

Type: ERROR

Cause

This event message is generated when the target file cannot be written.

This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source files exist. Refer to the function specific return value for an indication of what might have caused this particular error.

Definition at line 674 of file fm_events.h.

10.1.2.24 FM_CONCAT_PKT_ERR_EID #define FM_CONCAT_PKT_ERR_EID 40

FM Concat Files Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with an invalid length.

Definition at line 586 of file fm_events.h.

10.1.2.25 FM_CONCAT_SRC1_BASE_EID #define FM_CONCAT_SRC1_BASE_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)

FM Child Task Concat Files Source 1 Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a source 1 filename that is unusable for one of several reasons.

Value: 229

Definition at line 2600 of file fm_events.h.

10.1.2.26 FM_CONCAT_SRC1_DNE_ERR_EID #define FM_CONCAT_SRC1_DNE_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_DNE_EID_OFFSET)

FM Child Task Concat Files Source 1 File Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a source 1 filename that does not exist.

Value: 230

Definition at line 2628 of file fm_events.h.

10.1.2.27 FM_CONCAT_SRC1_INVALID_ERR_EID #define FM_CONCAT_SRC1_INVALID_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Concat Files Source 1 Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with an invalid source 1 filename.

Value: 229

Definition at line 2614 of file fm_events.h.

10.1.2.28 FM_CONCAT_SRC1_ISDIR_ERR_EID #define FM_CONCAT_SRC1_ISDIR_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Concat Files Source 1 Filename Is Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a source filename that is a directory.

Value: 231

Definition at line 2642 of file fm_events.h.

10.1.2.29 FM_CONCAT_SRC1_OPEN_ERR_EID #define FM_CONCAT_SRC1_OPEN_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
FM Child Task Concat Files Source 1 File Already Open Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a source filename that is already open.

Value: 232

Definition at line 2656 of file fm_events.h.

10.1.2.30 FM_CONCAT_SRC2_BASE_EID #define FM_CONCAT_SRC2_BASE_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Concat Files Source 2 Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a source 2 filename that is unusable for one of several reasons.

Value: 235

Definition at line 2671 of file fm_events.h.

10.1.2.31 FM_CONCAT_SRC2_DNE_ERR_EID #define FM_CONCAT_SRC2_DNE_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
FM Child Task Concat Files Source 2 File Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a source 2 filename that does not exist.

Value: 236

Definition at line 2699 of file fm_events.h.

10.1.2.32 FM_CONCAT_SRC2_INVALID_ERR_EID #define FM_CONCAT_SRC2_INVALID_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Concat Files Source 2 Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with an invalid source 2 filename.

Value: 235

Definition at line 2685 of file fm_events.h.

10.1.2.33 FM_CONCAT_SRC2_ISDIR_ERR_EID #define FM_CONCAT_SRC2_ISDIR_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Concat Files Source 2 Filename Is Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a source filename that is a directory.

Value: 237

Definition at line 2713 of file fm_events.h.

10.1.2.34 FM_CONCAT_SRC2_OPEN_ERR_EID #define FM_CONCAT_SRC2_OPEN_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)

FM Child Task Concat Files Source 2 File Already Open Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a source filename that is already open.

Value: 238

Definition at line 2727 of file fm_events.h.

10.1.2.35 FM_CONCAT_TGT_BASE_EID #define FM_CONCAT_TGT_BASE_EID (FM_CONCAT_SRC2_BASE_EID +
FM_FNAME_NUM_OFFSETS)

FM Child Task Concat Files Target Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a target filename that is unusable for one of several reasons.

Value: 241

Definition at line 2742 of file fm_events.h.

10.1.2.36 FM_CONCAT_TGT_EXIST_ERR_EID #define FM_CONCAT_TGT_EXIST_ERR_EID (FM_CONCAT_TGT_BASE_EID
+ FM_FNAME_EXIST_EID_OFFSET)

FM Child Task Concat Files Target Filename Already Exists Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a target filename that already exists.

Value: 242

Definition at line 2770 of file fm_events.h.

10.1.2.37 FM_CONCAT_TGT_INVALID_ERR_EID #define FM_CONCAT_TGT_INVALID_ERR_EID (FM_CONCAT_TGT_BASE_EID
+ FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Concat Files Target Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with an invalid target filename.

Value: 241

Definition at line 2756 of file fm_events.h.

10.1.2.38 FM_CONCAT_TGT_ISDIR_ERR_EID #define FM_CONCAT_TGT_ISDIR_ERR_EID (FM_CONCAT_TGT_BASE_EID
+ FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Concat Files Target Filename Is Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Concat command packet with a target filename that is a directory.

Value: 243

Definition at line 2784 of file fm_events.h.

10.1.2.39 FM_COPY_CHILD_BASE_EID #define FM_COPY_CHILD_BASE_EID ([FM_COPY_TGT_BASE_EID](#) + [FM_FNAME_NUM_OFFSETS](#))
FM Child Task Copy File Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 163

Definition at line 1667 of file fm_events.h.

10.1.2.40 FM_COPY_CHILD_BROKEN_ERR_EID #define FM_COPY_CHILD_BROKEN_ERR_EID ([FM_COPY_CHILD_BASE_EID](#) + [FM_CHILD_BROKEN_EID_OFFSET](#))

FM Child Task Copy File Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 165

Definition at line 1723 of file fm_events.h.

10.1.2.41 FM_COPY_CHILD_DISABLED_ERR_EID #define FM_COPY_CHILD_DISABLED_ERR_EID ([FM_COPY_CHILD_BASE_EID](#) + [FM_CHILD_DISABLED_EID_OFFSET](#))

FM Child Task Copy File Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 163

Definition at line 1681 of file fm_events.h.

10.1.2.42 FM_COPY_CHILD_FULL_ERR_EID #define FM_COPY_CHILD_FULL_ERR_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Copy File Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 164

Definition at line 1702 of file fm_events.h.

10.1.2.43 FM_COPY_CMD_INF_EID #define FM_COPY_CMD_INF_EID 16
FM Copy File Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_Copy command.

Note that the execution of this command generally occurs within the context of the FM low priority child task. Thus this event may not occur until some time after the command was invoked. However, this event message does signal the actual completion of the command.

Definition at line 256 of file fm_events.h.

10.1.2.44 FM_COPY_OS_ERR_EID #define FM_COPY_OS_ERR_EID 19
FM Copy File Command OS Error Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that occurred after preliminary command argument verification tests indicated that the source file exists and the target name is unused and appears to be valid. Verify that the target filename is reasonable. Also, verify that the file system has sufficient free space for this operation. Then refer to the OS specific return value.

Definition at line 298 of file fm_events.h.

10.1.2.45 FM_COPY_OVR_ERR_EID #define FM_COPY_OVR_ERR_EID 18
FM Copy File Command Overwrite Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Copy command packet with an invalid overwrite argument. Overwrite must be set to TRUE (one) or FALSE (zero).

Definition at line 281 of file fm_events.h.

10.1.2.46 FM_COPY_PKT_ERR_EID #define FM_COPY_PKT_ERR_EID 17
FM Copy File Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Copy command packet with an invalid length.

Definition at line 268 of file fm_events.h.

10.1.2.47 FM_COPY_SRC_BASE_EID #define FM_COPY_SRC_BASE_EID 151
FM Child Task Copy File Source Filename Error Base ID.

Type: ERROR

Cause

This is the base for a number of error events generated when the /FM_Copy is received with an unusable source filename.

Definition at line 1541 of file fm_events.h.

10.1.2.48 FM_COPY_SRC_DNE_ERR_EID #define FM_COPY_SRC_DNE_ERR_EID (FM_COPY_SRC_BASE_EID +
+ FM_FNAME_DNE_EID_OFFSET)

FM Child Task Copy File Source File Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Copy command packet with a source filename that does not exist.

Value: 152

Definition at line 1569 of file fm_events.h.

10.1.2.49 FM_COPY_SRC_INVALID_ERR_EID #define FM_COPY_SRC_INVALID_ERR_EID (FM_COPY_SRC_BASE_EID +
+ FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Copy File Source Name Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Copy command packet with an invalid source filename.

Value: 151

Definition at line 1555 of file fm_events.h.

10.1.2.50 FM_COPY_SRC_ISDIR_ERR_EID #define FM_COPY_SRC_ISDIR_ERR_EID (FM_COPY_SRC_BASE_EID +
+ FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Copy File Source File Name Is Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Copy command packet with a source filename that is a directory.

Value: 153

Definition at line 1583 of file fm_events.h.

10.1.2.51 FM_COPY_TGT_BASE_EID #define FM_COPY_TGT_BASE_EID (FM_COPY_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)

FM Child Task Copy File Target Filenname Error Base ID.

Type: ERROR

Cause

This is the base EID for a number of error events related to the target file in an /FM_COPY command.

Value: 157

Definition at line 1597 of file fm_events.h.

10.1.2.52 FM_COPY_TGT_EXIST_ERR_EID #define FM_COPY_TGT_EXIST_ERR_EID (FM_COPY_TGT_BASE_EID +
FM_FNAME_EXIST_EID_OFFSET)

FM Child Task Copy File Target File Already Exists Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Copy command packet with a target filename that already exists.

Value: 158

Definition at line 1625 of file fm_events.h.

10.1.2.53 FM_COPY_TGT_INVALID_ERR_EID #define FM_COPY_TGT_INVALID_ERR_EID (FM_COPY_TGT_BASE_EID +
FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Copy File Target Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Copy command packet with an invalid target filename.

Value: 157

Definition at line 1611 of file fm_events.h.

10.1.2.54 FM_COPY_TGT_ISDIR_ERR_EID #define FM_COPY_TGT_ISDIR_ERR_EID (FM_COPY_TGT_BASE_EID +
FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Copy File Target Filename Is A Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Copy command packet with a target filename that is a directory.

Value: 159

Definition at line 1639 of file fm_events.h.

10.1.2.55 FM_COPY_TGT_ISOPEN_ERR_EID #define FM_COPY_TGT_ISOPEN_ERR_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)

FM Child Task Copy File Target Filenname Exists As Open File Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Copy command packet with a target filename that is open.

Value: 160

Definition at line 1653 of file fm_events.h.

10.1.2.56 FM_CR_PIPE_ERR_EID #define FM_CR_PIPE_ERR_EID 3

FM Initialization Create SB Input Pipe Failed Event ID.

Type: Error

Cause

This event message is issued when the File Manager application has failed in its attempt to create a Software Bus input pipe during startup initialization.

This is a fatal error that will cause the File Manager application to terminate.

Definition at line 74 of file fm_events.h.

10.1.2.57 FM_CREATE_DIR_CHILD_BASE_EID #define FM_CREATE_DIR_CHILD_BASE_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)

FM Child Task Create Directory Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 259

Definition at line 2995 of file fm_events.h.

10.1.2.58 FM_CREATE_DIR_CHILD_BROKEN_ERR_EID #define FM_CREATE_DIR_CHILD_BROKEN_ERR_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)

FM Child Task Create Directory Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 261

Definition at line 3051 of file fm_events.h.

10.1.2.59 FM_CREATE_DIR_CHILD_DISABLED_ERR_EID #define FM_CREATE_DIR_CHILD_DISABLED_ERR_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Create Directory Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 259

Definition at line 3009 of file fm_events.h.

10.1.2.60 FM_CREATE_DIR_CHILD_FULL_ERR_EID #define FM_CREATE_DIR_CHILD_FULL_ERR_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Create Directory Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 260

Definition at line 3030 of file fm_events.h.

10.1.2.61 FM_CREATE_DIR_CMD_INF_EID #define FM_CREATE_DIR_CMD_INF_EID 55
FM Create Directory Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_CreateDir command.
Definition at line 823 of file fm_events.h.

10.1.2.62 FM_CREATE_DIR_OS_ERR_EID #define FM_CREATE_DIR_OS_ERR_EID 57
FM Create Directory Command OS Error Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that occurred after preliminary command argument verification tests indicated that the directory name is unused and appears to be valid. Refer to the OS specific return value.

Definition at line 849 of file fm_events.h.

10.1.2.63 FM_CREATE_DIR_PKT_ERR_EID #define FM_CREATE_DIR_PKT_ERR_EID 56
FM Create Directory Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_CreateDir command packet with an invalid length.
Definition at line 835 of file fm_events.h.

10.1.2.64 FM_CREATE_DIR_SRC_BASE_EID #define FM_CREATE_DIR_SRC_BASE_EID ([FM_FILE_INFO_CHILD_BASE_EID](#)
+ [FM_CHILD_NUM_OFFSETS](#))

FM Child Task Create Directory, Directory Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Create command packet with a directory name that is unusable for one of several reasons.

Value: 253

Definition at line 2939 of file fm_events.h.

10.1.2.65 FM_CREATE_DIR_SRC_DNE_ERR_EID #define FM_CREATE_DIR_SRC_DNE_ERR_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)

FM Child Task Create Directory Name Exists As File Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Create command packet with a directory name that exists as a file.

Value: 254

Definition at line 2967 of file fm_events.h.

10.1.2.66 FM_CREATE_DIR_SRC_INVALID_ERR_EID #define FM_CREATE_DIR_SRC_INVALID_ERR_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Create Directory Name Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Create command packet with an invalid directory name.

Value: 253

Definition at line 2953 of file fm_events.h.

10.1.2.67 FM_CREATE_DIR_SRC_ISDIR_ERR_EID #define FM_CREATE_DIR_SRC_ISDIR_ERR_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Create Directory Already Exists Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Create command pasket with a directory that already exists.

Value: 255

Definition at line 2981 of file fm_events.h.

10.1.2.68 FM_DECOM_CFE_ERR_EID #define FM_DECOM_CFE_ERR_EID 38

FM Decompress File Decompression Failed Event ID.

Type: ERROR

Cause

This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source file exists. Refer to the function specific return value for an indication of what might have caused this particular error.

Definition at line 557 of file fm_events.h.

10.1.2.69 FM_DECOM_CHILD_BASE_EID #define FM_DECOM_CHILD_BASE_EID (FM_DECOM_TGT_BASE_EID +
+ FM_FNAME_NUM_OFFSETS)

FM Child Task Decompress File Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 226

Definition at line 2529 of file fm_events.h.

10.1.2.70 FM_DECOM_CHILD_BROKEN_ERR_EID #define FM_DECOM_CHILD_BROKEN_ERR_EID (FM_DECOM_CHILD_BASE_EID
+ FM_CHILD_BROKEN_EID_OFFSET)

FM Child Task Decompress File Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 228

Definition at line 2585 of file fm_events.h.

10.1.2.71 FM_DECOM_CHILD_DISABLED_ERR_EID #define FM_DECOM_CHILD_DISABLED_ERR_EID (FM_DECOM_CHILD_BASE_EID
+ FM_CHILD_DISABLED_EID_OFFSET)

FM Child Task Decompress File Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 226

Definition at line 2543 of file fm_events.h.

10.1.2.72 FM_DECOM_CHILD_FULL_ERR_EID #define FM_DECOM_CHILD_FULL_ERR_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)

FM Child Task Decompress File Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 227

Definition at line 2564 of file fm_events.h.

10.1.2.73 FM_DECOM_CMD_INF_EID #define FM_DECOM_CMD_INF_EID 36

FM Decompress File Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_Decompress command.

Note that the execution of this command generally occurs within the context of the FM low priority child task. Thus this event may not occur until some time after the command was invoked. However, this event message does signal the actual completion of the command.

Definition at line 530 of file fm_events.h.

10.1.2.74 FM_DECOM_PKT_ERR_EID #define FM_DECOM_PKT_ERR_EID 37

FM Decompress File Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with an invalid length.
Definition at line 542 of file fm_events.h.

10.1.2.75 FM_DECOM_SRC_BASE_EID #define FM_DECOM_SRC_BASE_EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)

FM Child Task Decompress File Source Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with a source filename that is unusable for one of several reasons.

Value: 214

Definition at line 2402 of file fm_events.h.

10.1.2.76 FM_DECOM_SRC_DNE_ERR_EID #define FM_DECOM_SRC_DNE_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)

FM Child Task Decompress File Source Filename Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with a source filename that does not exist.

Value: 215

Definition at line 2430 of file fm_events.h.

10.1.2.77 FM_DECOM_SRC_INVALID_ERR_EID #define FM_DECOM_SRC_INVALID_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Decompress File Source Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with an invalid source filename.

Value: 214

Definition at line 2416 of file fm_events.h.

10.1.2.78 FM_DECOM_SRC_ISDIR_ERR_EID #define FM_DECOM_SRC_ISDIR_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Decompress File Source Filename Is A Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with a source filename that is a directory.

Value: 216

Definition at line 2444 of file fm_events.h.

10.1.2.79 FM_DECOM_SRC_OPEN_ERR_EID #define FM_DECOM_SRC_OPEN_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)

FM Child Task Decompress File Source File Is Open Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with a source filename that is already open.

Value: 217

Definition at line 2458 of file fm_events.h.

10.1.2.80 FM_DECOM_TGT_BASE_EID #define FM_DECOM_TGT_BASE_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)

FM Child Task Decompress File Target Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with a target filename that is unusable for one of several reasons.

Value: 220

Definition at line 2473 of file fm_events.h.

10.1.2.81 FM_DECOM_TGT_EXIST_ERR_EID #define FM_DECOM_TGT_EXIST_ERR_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)

FM Child Task Decompress File Target File Already Exists Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with a target filename that already exists.

Value: 221

Definition at line 2501 of file fm_events.h.

10.1.2.82 FM_DECOM_TGT_INVALID_ERR_EID #define FM_DECOM_TGT_INVALID_ERR_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Decompress File Target Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with an invalid target filename.

Value: 220

Definition at line 2487 of file fm_events.h.

10.1.2.83 FM_DECOM_TGT_ISDIR_ERR_EID #define FM_DECOM_TGT_ISDIR_ERR_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
FM Child Task Decompress File Target Filename Is Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Decompress command packet with a target filename that is a directory.

Value: 222

Definition at line 2515 of file fm_events.h.

10.1.2.84 FM_DELETE_ALL_CHILD_BASE_EID #define FM_DELETE_ALL_CHILD_BASE_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Delete All Files Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 211

Definition at line 2331 of file fm_events.h.

10.1.2.85 FM_DELETE_ALL_CHILD_BROKEN_ERR_EID #define FM_DELETE_ALL_CHILD_BROKEN_ERR_←
EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)

FM Child Task Delete All Files Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 213

Definition at line 2387 of file fm_events.h.

10.1.2.86 FM_DELETE_ALL_CHILD_DISABLED_ERR_EID #define FM_DELETE_ALL_CHILD_DISABLED_ERR_←
EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)

FM Child Task Delete All Files Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 211

Definition at line 2345 of file fm_events.h.

10.1.2.87 FM_DELETE_ALL_CHILD_FULL_ERR_EID #define FM_DELETE_ALL_CHILD_FULL_ERR_EID (FM_DELETE_ALL_CHILD_BASE_EID
+ FM_CHILD_Q_FULL_EID_OFFSET)

FM Child Task Delete All Files Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 212

Definition at line 2366 of file fm_events.h.

10.1.2.88 FM_DELETE_ALL_CMD_INF_EID #define FM_DELETE_ALL_CMD_INF_EID 31

FM Delete All Files Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_DeleteAll command.

Note that the execution of this command generally occurs within the context of the FM low priority child task. Thus this event may not occur until some time after the command was invoked. However, this event message does signal the actual completion of the command.

Definition at line 462 of file fm_events.h.

10.1.2.89 FM_DELETE_ALL_FILES_ND_WARNING_EID #define FM_DELETE_ALL_FILES_ND_WARNING_EID 32

FM Delete All Files Unable To Delete All Event ID.

Type: INFORMATION

Cause

This general event message is issued if for any reason some files could not be deleted.

Definition at line 474 of file fm_events.h.

10.1.2.90 FM_DELETE_ALL_OS_ERR_EID #define FM_DELETE_ALL_OS_ERR_EID 35

FM Delete All Files Command OS Error Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that occurred after preliminary command argument verification tests indicated that the directory exists. Refer to the OS-specific return value for an indication of what might have caused this error.

Definition at line 513 of file fm_events.h.

10.1.2.91 FM_DELETE_ALL_PKT_ERR_EID #define FM_DELETE_ALL_PKT_ERR_EID 34
FM Delete All Files Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_DeleteAll command packet with an invalid length.
Definition at line 498 of file fm_events.h.

10.1.2.92 FM_DELETE_ALL_SKIP_WARNING_EID #define FM_DELETE_ALL_SKIP_WARNING_EID 33
FM Delete All Files Directories Skipped Event ID.

Type: INFORMATION

Cause

This general event message is issued if for any reason a directory skipped when processing a /FM_DeleteAll command.
Definition at line 486 of file fm_events.h.

10.1.2.93 FM_DELETE_ALL_SRC_BASE_EID #define FM_DELETE_ALL_SRC_BASE_EID (FM_DELETE_CHILD_BASE_EID
+ FM_CHILD_NUM_OFFSETS)
FM Child Task Delete All Files Directory Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_DeleteAll command packet with a directory name that is unusable for one of several reasons.

Value: 205

Definition at line 2275 of file fm_events.h.

10.1.2.94 FM_DELETE_ALL_SRC_DNE_ERR_EID #define FM_DELETE_ALL_SRC_DNE_ERR_EID (FM_DELETE_ALL_SRC_BASE_EID
+ FM_FNAME_DNE_EID_OFFSET)
FM Child Task Delete All Files Directory Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_DeleteAll command packet with a directory name that does not exist.

Value: 206

Definition at line 2303 of file fm_events.h.

10.1.2.95 FM_DELETE_ALL_SRC_FILE_ERR_EID #define FM_DELETE_ALL_SRC_FILE_ERR_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_ISFILE_EID_OFFSET)

FM Child Task Delete All Files Directory Name Is A File Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Delete command packet with a directory name that is a file.

Value: 207

Definition at line 2317 of file fm_events.h.

10.1.2.96 FM_DELETE_ALL_SRC_INVALID_ERR_EID #define FM_DELETE_ALL_SRC_INVALID_ERR_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Delete All Files Directory Name Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Delete command packet with an invalid source filename.

Value: 205

Definition at line 2289 of file fm_events.h.

10.1.2.97 FM_DELETE_CHILD_BASE_EID #define FM_DELETE_CHILD_BASE_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)

FM Child Task Delete File Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 202

Definition at line 2204 of file fm_events.h.

10.1.2.98 FM_DELETE_CHILD_BROKEN_ERR_EID

```
#define FM_DELETE_CHILD_BROKEN_ERR_EID (FM_DELETE_CHILD_BASE_EID
```

```
+ FM_CHILD_BROKEN_EID_OFFSET)
```

FM Child Task Delete File Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 204

Definition at line 2260 of file fm_events.h.

10.1.2.99 FM_DELETE_CHILD_DISABLED_ERR_EID

```
#define FM_DELETE_CHILD_DISABLED_ERR_EID (FM_DELETE_CHILD_BASE_EID
```

```
+ FM_CHILD_DISABLED_EID_OFFSET)
```

FM Child Task Delete File Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 202

Definition at line 2218 of file fm_events.h.

10.1.2.100 FM_DELETE_CHILD_FULL_ERR_EID

```
#define FM_DELETE_CHILD_FULL_ERR_EID (FM_DELETE_CHILD_BASE_EID
```

```
+ FM_CHILD_Q_FULL_EID_OFFSET)
```

FM Child Task Delete File Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 203

Definition at line 2239 of file fm_events.h.

10.1.2.101 FM_DELETE_CMD_INF_EID #define FM_DELETE_CMD_INF_EID 28
FM Delete File Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_Delete command.
Definition at line 418 of file fm_events.h.

10.1.2.102 FM_DELETE_DIR_CHILD_BASE_EID #define FM_DELETE_DIR_CHILD_BASE_EID (FM_DELETE_DIR_SRC_BASE_EID
+ FM_FNAME_NUM_OFFSETS)
FM Child Task Delete Directory Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 268

Definition at line 3108 of file fm_events.h.

10.1.2.103 FM_DELETE_DIR_CHILD_BROKEN_ERR_EID #define FM_DELETE_DIR_CHILD_BROKEN_ERR_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Delete Directory Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 270

Definition at line 3164 of file fm_events.h.

10.1.2.104 FM_DELETE_DIR_CHILD_DISABLED_ERR_EID #define FM_DELETE_DIR_CHILD_DISABLED_ERR_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Delete Directory Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 268

Definition at line 3122 of file fm_events.h.

10.1.2.105 FM_DELETE_DIR_CHILD_FULL_ERR_EID #define FM_DELETE_DIR_CHILD_FULL_ERR_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Delete Directory Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 269

Definition at line 3143 of file fm_events.h.

10.1.2.106 FM_DELETE_DIR_CMD_INF_EID #define FM_DELETE_DIR_CMD_INF_EID 58
FM Delete Directory Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_DeleteDir command.

Definition at line 861 of file fm_events.h.

10.1.2.107 FM_DELETE_DIR_EMPTY_ERR_EID #define FM_DELETE_DIR_EMPTY_ERR_EID 60
FM Delete Directory Command Failed Directory Not Empty Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_DeleteDir command packet that references a directory that is not empty.

Definition at line 885 of file fm_events.h.

10.1.2.108 FM_DELETE_DIR_PKT_ERR_EID #define FM_DELETE_DIR_PKT_ERR_EID 59
FM Delete Directory Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_DeleteDir command packet with an invalid length.

Definition at line 873 of file fm_events.h.

10.1.2.109 FM_DELETE_DIR_SRC_BASE_EID #define FM_DELETE_DIR_SRC_BASE_EID ([FM_CREATE_DIR_CHILD_BASE_EID](#)
+ [FM_CHILD_NUM_OFFSETS](#))

FM Child Task Delete Directory, Directory Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_DeleteDir command packet with a directory name that is unusable for one of several reasons.

Value: 262

Definition at line 3066 of file fm_events.h.

10.1.2.110 FM_DELETE_DIR_SRC_DNE_ERR_EID #define FM_DELETE_DIR_SRC_DNE_ERR_EID ([FM_DELETE_DIR_SRC_BASE_EID](#)
+ [FM_FNAME_DNE_EID_OFFSET](#))

FM Child Task Delete Directory Name Exists As File Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_DeleteDir command packet with a directory name that exists as a file.

Value: 263

Definition at line 3094 of file fm_events.h.

10.1.2.111 FM_DELETE_DIR_SRC_INVALID_ERR_EID #define FM_DELETE_DIR_SRC_INVALID_ERR_EID (FM_DELETE_DIR_SRC_BA
+ FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Delete Directory Name Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_DeleteDir command packet with an invalid directory name.

Value: 262

Definition at line 3080 of file fm_events.h.

10.1.2.112 FM_DELETE_OPENDIR_OS_ERR_EID #define FM_DELETE_OPENDIR_OS_ERR_EID 61

FM Delete Directory, Directoty Open Failed Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that occurred after preliminary command argument verification tests indicated that the directory exists and appears to be valid. Refer to the OS specific return values.

Definition at line 899 of file fm_events.h.

10.1.2.113 FM_DELETE_OS_ERR_EID #define FM_DELETE_OS_ERR_EID 30

FM Delete File Command OS Error Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that occurred after preliminary command argument verification tests indicated that the filename exists and is not open. Refer to the OS-specific return value for an indication of what might have caused this error.

Definition at line 445 of file fm_events.h.

10.1.2.114 FM_DELETE_PKT_ERR_EID #define FM_DELETE_PKT_ERR_EID 29
FM Delete File Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Delete command packet with an invalid length.
Definition at line 430 of file fm_events.h.

10.1.2.115 FM_DELETE_RMDIR_OS_ERR_EID #define FM_DELETE_RMDIR_OS_ERR_EID 62
FM Delete Directory Remove Directory Failed Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that occurred after preliminary command argument verification tests indicated that the directory exists and appears to be valid. Refer to the OS specific return values.
Definition at line 913 of file fm_events.h.

10.1.2.116 FM_DELETE_SRC_BASE_EID #define FM_DELETE_SRC_BASE_EID ([FM_RENAME_CHILD_BASE_EID](#) +
[FM_CHILD_NUM_OFFSETS](#))

FM Child Task Delete File Source Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Delete command packet with a source filename that is unusable for one of several reasons.

Value: 196

Definition at line 2134 of file fm_events.h.

10.1.2.117 FM_DELETE_SRC_DNE_ERR_EID #define FM_DELETE_SRC_DNE_ERR_EID ([FM_DELETE_SRC_BASE_EID](#) +
[FM_FNAME_DNE_EID_OFFSET](#))

FM Child Task Delete File Source File Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Delete command packet with a source filename that does not exist.

Value: 197

Definition at line 2162 of file fm_events.h.

10.1.2.118 FM_DELETE_SRC_INVALID_ERR_EID #define FM_DELETE_SRC_INVALID_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Delete File Source Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Delete command packet with an invalid source filename.

Value: 196

Definition at line 2148 of file fm_events.h.

10.1.2.119 FM_DELETE_SRC_ISDIR_ERR_EID #define FM_DELETE_SRC_ISDIR_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Delete File Source Filename Is Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Delete command packet with a source filename that is a directory.

Value: 198

Definition at line 2176 of file fm_events.h.

10.1.2.120 FM_DELETE_SRC_OPEN_ERR_EID #define FM_DELETE_SRC_OPEN_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)

FM Child Task Delete File File Is Open Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Delete command packet with a source filename that is already open.

Value: 199

Definition at line 2190 of file fm_events.h.

10.1.2.121 FM_DIRECTORY_ESTIMATE_ERR_EID #define FM_DIRECTORY_ESTIMATE_ERR_EID 104
FM Directory Size Estimate Failed Event ID.

Type: ERROR

Cause:

This event message occurs if the system encounters an error during calculation of a directory size estimate
Definition at line 1508 of file fm_events.h.

10.1.2.122 FM_EXIT_ERR_EID #define FM_EXIT_ERR_EID 8
FM Application Termination Event ID.

Type: ERROR

Cause

This event message is issued when the File Manager application is about to terminate.
Definition at line 150 of file fm_events.h.

10.1.2.123 FM_FILE_INFO_CHILD_BASE_EID #define FM_FILE_INFO_CHILD_BASE_EID (FM_CONCAT_CHILD_BASE_EID
+ FM_CHILD_NUM_OFFSETS)
FM Child Task Get File Info Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 250

Definition at line 2868 of file fm_events.h.

10.1.2.124 FM_FILE_INFO_CHILD_BROKEN_ERR_EID #define FM_FILE_INFO_CHILD_BROKEN_ERR_EID (FM_FILE_INFO_CHILD_EID
+ FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Get File Info Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 252

Definition at line 2924 of file fm_events.h.

10.1.2.125 FM_FILE_INFO_CHILD_DISABLED_ERR_EID #define FM_FILE_INFO_CHILD_DISABLED_ERR_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)

FM Child Task Get File Info Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 250

Definition at line 2882 of file fm_events.h.

10.1.2.126 FM_FILE_INFO_CHILD_FULL_ERR_EID #define FM_FILE_INFO_CHILD_FULL_ERR_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)

FM Child Task Get File Info Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 251

Definition at line 2903 of file fm_events.h.

10.1.2.127 FM_FNAME_DNE_EID_OFFSET #define FM_FNAME_DNE_EID_OFFSET 1

Definition at line 1517 of file fm_events.h.

10.1.2.128 FM_FNAME_EXIST_EID_OFFSET #define FM_FNAME_EXIST_EID_OFFSET 1 /* mutually exclusive with DNE */
Definition at line 1518 of file fm_events.h.

10.1.2.129 FM_FNAME_INVALID_EID_OFFSET #define FM_FNAME_INVALID_EID_OFFSET 0
NOTE: From here on, the event IDs will take the form of a "base" EID + an offset. This is done to allow unique event

10.1.2.130 IDs to be sent from utility functions. Definition at line 1516 of file fm_events.h.

10.1.2.131 FM_FNAME_ISCLOSED_EID_OFFSET #define FM_FNAME_ISCLOSED_EID_OFFSET 4
Definition at line 1522 of file fm_events.h.

10.1.2.132 FM_FNAME_ISDIR_EID_OFFSET #define FM_FNAME_ISDIR_EID_OFFSET 2
Definition at line 1519 of file fm_events.h.

10.1.2.133 FM_FNAME_ISFILE_EID_OFFSET #define FM_FNAME_ISFILE_EID_OFFSET 2 /* mutually exclusive with ISDIR */
Definition at line 1520 of file fm_events.h.

10.1.2.134 FM_FNAME_ISOPEN_EID_OFFSET #define FM_FNAME_ISOPEN_EID_OFFSET 3
Definition at line 1521 of file fm_events.h.

10.1.2.135 FM_FNAME_NUM_OFFSETS #define FM_FNAME_NUM_OFFSETS 6
Definition at line 1524 of file fm_events.h.

10.1.2.136 FM_GET_DIR_FILE_CHILD_BASE_EID #define FM_GET_DIR_FILE_CHILD_BASE_EID ([FM_GET_DIR_FILE_TGT_BASE_EID](#) + [FM_FNAME_NUM_OFFSETS](#))
FM Child Task Directory List to File Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 283

Definition at line 3278 of file fm_events.h.

10.1.2.137 FM_GET_DIR_FILE_CHILD_BROKEN_ERR_EID #define FM_GET_DIR_FILE_CHILD_BROKEN_ERR_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Directory List to File Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 285

Definition at line 3334 of file fm_events.h.

10.1.2.138 FM_GET_DIR_FILE_CHILD_DISABLED_ERR_EID #define FM_GET_DIR_FILE_CHILD_DISABLED_ERR_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Directory List to File Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 283

Definition at line 3292 of file fm_events.h.

10.1.2.139 FM_GET_DIR_FILE_CHILD_FULL_ERR_EID #define FM_GET_DIR_FILE_CHILD_FULL_ERR_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Directory List to File Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 284

Definition at line 3313 of file fm_events.h.

10.1.2.140 FM_GET_DIR_FILE_CMD_INF_EID #define FM_GET_DIR_FILE_CMD_INF_EID 63
FM Directory List To File Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_GetDirFile command.

Note that the execution of this command generally occurs within the context of the FM low priority child task. Thus this event may not occur until some time after the command was invoked. However, this event message does signal the actual completion of the command.

Definition at line 930 of file fm_events.h.

10.1.2.141 FM_GET_DIR_FILE_OSCREAT_ERR_EID #define FM_GET_DIR_FILE_OSCREAT_ERR_EID 69
FM Directory List To File Create File Failed Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that prevents the output file from being created. This error occurred after preliminary command argument verification tests indicated that the directory exists and the output filename is unused and appears to be valid. Verify that the output filename is reasonable. Also, verify that the file system has sufficient free space for this operation. Then refer to the OS specific return values.

Definition at line 1031 of file fm_events.h.

10.1.2.142 FM_GET_DIR_FILE_OSOPENDIR_ERR_EID #define FM_GET_DIR_FILE_OSOPENDIR_ERR_EID 66
FM Directory List To File Directory Open Failed Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that occurred after preliminary command argument verification tests indicated that the directory exists and the output filename is unused and appears to be valid. Verify that the output filename is reasonable. Also, verify that the file system has sufficient free space for this operation. Then refer to the OS specific return values.

Definition at line 977 of file fm_events.h.

10.1.2.143 FM_GET_DIR_FILE_PKT_ERR_EID #define FM_GET_DIR_FILE_PKT_ERR_EID 64
FM Directory List To File Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirFile command packet with an invalid length.
Definition at line 942 of file fm_events.h.

10.1.2.144 FM_GET_DIR_FILE_SRC_BASE_EID #define FM_GET_DIR_FILE_SRC_BASE_EID (FM_DELETE_DIR_CHILD_BASE_EID
+ FM_CHILD_NUM_OFFSETS)
FM Child Task Directory List to File Source Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirFile command packet with a source directory name that is unusable for one of several reasons.

Value: 271

Definition at line 3179 of file fm_events.h.

10.1.2.145 FM_GET_DIR_FILE_SRC_DNE_ERR_EID #define FM_GET_DIR_FILE_SRC_DNE_ERR_EID (FM_GET_DIR_FILE_SRC_BASE_EID
+ FM_FNAME_DNE_EID_OFFSET)
FM Child Task Directory List to File Directory Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirFile command packet with a source directory name that does not exist.

Value: 272

Definition at line 3207 of file fm_events.h.

10.1.2.146 FM_GET_DIR_FILE_SRC_INVALID_ERR_EID #define FM_GET_DIR_FILE_SRC_INVALID_ERR_EID (FM_GET_DIR_FILE_SRC_BASE_EID
+ FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Directory List to File Directory Name Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirFile command packet with an invalid source directory name.

Value: 271

Definition at line 3193 of file fm_events.h.

10.1.2.147 FM_GET_DIR_FILE_SRC_ISDIR_ERR_EID #define FM_GET_DIR_FILE_SRC_ISDIR_ERR_EID (FM_GET_DIR_FILE_SRC_EID + FM_FNAME_ISFILE_EID_OFFSET)

FM Child Task Directory List to File Directory Name Is File Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirFile command packet with a source directory name that is a file.

Value: 273

Definition at line 3221 of file fm_events.h.

10.1.2.148 FM_GET_DIR_FILE_TGT_BASE_EID #define FM_GET_DIR_FILE_TGT_BASE_EID (FM_GET_DIR_FILE_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)

FM Child Task Directory List to File Target Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirFile command packet with a target filename that is unusable for one of several reasons.

Value: 277

Definition at line 3236 of file fm_events.h.

10.1.2.149 FM_GET_DIR_FILE_TGT_INVALID_ERR_EID #define FM_GET_DIR_FILE_TGT_INVALID_ERR_EID (FM_GET_DIR_FILE_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Directory List to File Target Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirFile command packet with an invalid target file name.

Value: 277

Definition at line 3250 of file fm_events.h.

10.1.2.150 FM_GET_DIR_FILE_TGT_ISDIR_ERR_EID #define FM_GET_DIR_FILE_TGT_ISDIR_ERR_EID (FM_GET_DIR_FILE_TGT_P
+ FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Directory List to File Target Filename Is Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirFile command packet with a target filename that is a directory.

Value: 279

Definition at line 3264 of file fm_events.h.

10.1.2.151 FM_GET_DIR_FILE_UPSTATS_ERR_EID #define FM_GET_DIR_FILE_UPSTATS_ERR_EID 71

FM Directory List To File Write Update Stats Failed Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that prevents updated statistics from being written to a file. This occurred after preliminary command argument verification tests indicated that the directory exists and the output filename is unused and appears to be valid. Verify that the output filename is reasonable. Also, verify that the file system has sufficient free space for this operation. Then refer to the OS specific return values.

Definition at line 1067 of file fm_events.h.

10.1.2.152 FM_GET_DIR_FILE_WARNING_EID #define FM_GET_DIR_FILE_WARNING_EID 65

FM Directory List To File Command Combined Path and Name Too Long Event ID.

Type: INFORMATION

Cause

This event message is generated when the combined length of the directory name plus the directory entry name exceeds the maximum qualified filename length. It is unclear how this condition might arise, but since we are copying both strings into a fixed length buffer, we must first verify the length.

The /FM_GetDirFile command handler will not write information regarding this directory entry to the output file.

Definition at line 960 of file fm_events.h.

10.1.2.153 FM_GET_DIR_FILE_WRBLANK_ERR_EID #define FM_GET_DIR_FILE_WRBLANK_ERR_EID 67
FM Directory List To File Write Blank Stats Failed Event ID.

Type: ERROR

Cause

This event message is generated due to an error when writing a blank stats structure using the OS_write function. This occurred after preliminary command argument verification tests indicated that the directory exists and the output filename is unused and appears to be valid. Verify that the output filename is reasonable. Also, verify that the file system has sufficient free space for this operation. Then refer to the OS specific return values.

Definition at line 995 of file fm_events.h.

10.1.2.154 FM_GET_DIR_FILE_WRENTRY_ERR_EID #define FM_GET_DIR_FILE_WRENTRY_ERR_EID 70
FM Directory List To File Write Entry Failed Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that prevents an entry from being written. This error occurred after preliminary command argument verification tests indicated that the directory exists and the output filename is unused and appears to be valid. Verify that the output filename is reasonable. Also, verify that the file system has sufficient free space for this operation. Then refer to the OS specific return values.

Definition at line 1049 of file fm_events.h.

10.1.2.155 FM_GET_DIR_FILE_WRHDR_ERR_EID #define FM_GET_DIR_FILE_WRHDR_ERR_EID 68
FM Directory List To File Write Header Failed Event ID.

Type: ERROR

Cause

This event message is generated when the header cannot be written to the file using [CFE_FS_WriteHeader](#). This error occurred after preliminary command argument verification tests indicated that the directory exists and the output filename is unused and appears to be valid. Verify that the output filename is reasonable. Also, verify that the file system has sufficient free space for this operation. Then refer to the OS specific return values.

Definition at line 1013 of file fm_events.h.

10.1.2.156 FM_GET_DIR_PKT_CHILD_BASE_EID #define FM_GET_DIR_PKT_CHILD_BASE_EID (FM_GET_DIR_PKT_SRC_BASE_EID
+ FM_FNAME_NUM_OFFSETS)

FM Child Task Directory List to Packet Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 292

Definition at line 3405 of file fm_events.h.

10.1.2.157 FM_GET_DIR_PKT_CHILD_BROKEN_ERR_EID #define FM_GET_DIR_PKT_CHILD_BROKEN_ERR_←
EID (FM_GET_DIR_PKT_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)

FM Child Task Directory List to Packet Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 294

Definition at line 3461 of file fm_events.h.

10.1.2.158 FM_GET_DIR_PKT_CHILD_DISABLED_ERR_EID #define FM_GET_DIR_PKT_CHILD_DISABLED_←
ERR_EID (FM_GET_DIR_PKT_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)

FM Child Task Directory List to Packet Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 292

Definition at line 3419 of file fm_events.h.

10.1.2.159 FM_GET_DIR_PKT_CHILD_FULL_ERR_EID #define FM_GET_DIR_PKT_CHILD_FULL_ERR_EID (FM_GET_DIR_PKT_CHILD_Q_FULL_EID_OFFSET)

FM Child Task Directory List to Packet Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 293

Definition at line 3440 of file fm_events.h.

10.1.2.160 FM_GET_DIR_PKT_CMD_INF_EID #define FM_GET_DIR_PKT_CMD_INF_EID 72

FM Directory List To Packet Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_GetDirPkt command.

Note that the execution of this command generally occurs within the context of the FM low priority child task. Thus this event may not occur until some time after the command was invoked. However, this event message does signal the actual completion of the command.

Definition at line 1084 of file fm_events.h.

10.1.2.161 FM_GET_DIR_PKT_OS_ERR_EID #define FM_GET_DIR_PKT_OS_ERR_EID 75

FM Directory List To Packet Directory Open Failed Event ID.

Type: ERROR

Cause

The numeric data in the event is the return value from the OS function call. The string data identifies the name of the directory or the directory entry.

Definition at line 1124 of file fm_events.h.

10.1.2.162 FM_GET_DIR_PKT_PKT_ERR_EID #define FM_GET_DIR_PKT_PKT_ERR_EID 74
FM Directory List To Packet Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirPkt command packet with an invalid length.
Definition at line 1111 of file fm_events.h.

10.1.2.163 FM_GET_DIR_PKT_SRC_BASE_EID #define FM_GET_DIR_PKT_SRC_BASE_EID (FM_GET_DIR_FILE_CHILD_BASE_EID
+ FM_CHILD_NUM_OFFSETS)
FM Child Task Directory List to Packet Directory Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirPkt command packet with a source directory name that is unusable for one of several reasons.

Value: 286

Definition at line 3349 of file fm_events.h.

10.1.2.164 FM_GET_DIR_PKT_SRC_DNE_ERR_EID #define FM_GET_DIR_PKT_SRC_DNE_ERR_EID (FM_GET_DIR_PKT_SRC_BASE_EID
+ FM_FNAME_DNE_EID_OFFSET)
FM Child Task Directory List to Packet Directory Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirPkt command packet with a source directory name that does not exist.

Value: 287

Definition at line 3377 of file fm_events.h.

10.1.2.165 FM_GET_DIR_PKT_SRC_INVALID_ERR_EID #define FM_GET_DIR_PKT_SRC_INVALID_ERR_EID
(FM_GET_DIR_PKT_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Directory List to Packet Directory Name Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirPkt command packet with an invalid source directory name.

Value: 286

Definition at line 3363 of file fm_events.h.

10.1.2.166 FM_GET_DIR_PKT_SRC_ISDIR_ERR_EID #define FM_GET_DIR_PKT_SRC_ISDIR_ERR_EID (FM_GET_DIR_PKT_SRC_BAS
+ FM_FNAME_ISFILE_EID_OFFSET)

FM Child Task Directory List to Packet Directory Is File Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetDirPkt command packet with a source directory name that is a file.

Value: 288

Definition at line 3391 of file fm_events.h.

10.1.2.167 FM_GET_DIR_PKT_WARNING_EID #define FM_GET_DIR_PKT_WARNING_EID 73

FM Directory List To Packet Command Directory and Entry Too Long Event ID.

Type: INFORMATION

Cause

This event message is generated when the combined length of the directory name plus the directory entry name exceeds the maximum qualified filename length. It is unclear how this condition might arise, but since we are copying both strings into a fixed length buffer, we must first verify the length.

Definition at line 1099 of file fm_events.h.

10.1.2.168 FM_GET_FILE_INFO_CMD_INF_EID #define FM_GET_FILE_INFO_CMD_INF_EID 46

FM Get File Info Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_GetFileInfo command.

Note that the execution of this command generally occurs within the context of the FM low priority child task. Thus this event may not occur until some time after the command was invoked. However, this event message does signal the actual completion of the command.

Definition at line 691 of file fm_events.h.

10.1.2.169 FM_GET_FILE_INFO_OPEN_ERR_EID #define FM_GET_FILE_INFO_OPEN_ERR_EID 49
FM Get File Info Unable To Compute CRC File Open Failed Event ID.

Type: ERROR

Cause

This event message is generated when the CRC of a file cannot be computed because the file cannot be opened.
This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source files exist. Refer to the function specific return value for an indication of what might have caused this particular error.

Definition at line 745 of file fm_events.h.

10.1.2.170 FM_GET_FILE_INFO_PKT_ERR_EID #define FM_GET_FILE_INFO_PKT_ERR_EID 51
FM Get File Info Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetFileInfo command packet with an invalid length.
Definition at line 775 of file fm_events.h.

10.1.2.171 FM_GET_FILE_INFO_READ_WARNING_EID #define FM_GET_FILE_INFO_READ_WARNING_EID 50
FM Get File Info Unable To Compute CRC File Read Failed Event ID.

Type: INFORMATION

Cause

This event message is generated when the CRC of a file cannot be computed because the file cannot be read.
This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source files exist. Refer to the function specific return value for an indication of what might have caused this particular error.

Definition at line 763 of file fm_events.h.

10.1.2.172 FM_GET_FILE_INFO_SRC_ERR_EID #define FM_GET_FILE_INFO_SRC_ERR_EID 52
FM Get File Info Command Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetFileInfo command packet with an invalid filename.
Definition at line 787 of file fm_events.h.

10.1.2.173 FM_GET_FILE_INFO_STATE_WARNING_EID #define FM_GET_FILE_INFO_STATE_WARNING_EID 47
FM Get File Info Unable To Compute CRC File State Invalid Event ID.

Type: INFORMATION

Cause

This event message is generated when the CRC of a file cannot be computed because the file has an invalid state.
This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source files exist. Refer to the function specific return value for an indication of what might have caused this particular error.
Definition at line 709 of file fm_events.h.

10.1.2.174 FM_GET_FILE_INFO_TYPE_WARNING_EID #define FM_GET_FILE_INFO_TYPE_WARNING_EID 48
FM Get File Info Unable To Compute CRC, CRC Type Invalid Event ID.

Type: INFORMATION

Cause

This event message is generated when the CRC of a file cannot be computed because the CRC type is invalid.
This event message is generated due to an API function error that occurred after preliminary command argument verification tests indicated that the source files exist. Refer to the function specific return value for an indication of what might have caused this particular error.
Definition at line 727 of file fm_events.h.

10.1.2.175 FM_GET_FREE_SPACE_PKT_ERR_EID #define FM_GET_FREE_SPACE_PKT_ERR_EID 77
FM Get Free Space Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetFreeSpace command packet with an invalid length.
Definition at line 1148 of file fm_events.h.

10.1.2.176 FM_GET_FREE_SPACE_TBL_ERR_EID #define FM_GET_FREE_SPACE_TBL_ERR_EID 78
FM Get Free Space Table Not Loaded Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetFreeSpace command packet when the FM file system free space table has not yet been loaded.

Definition at line 1161 of file fm_events.h.

10.1.2.177 FM_GET_OPEN_FILES_CMD_INF_EID #define FM_GET_OPEN_FILES_CMD_INF_EID 53
FM Get Open Files Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_GetOpenFiles command.

Definition at line 799 of file fm_events.h.

10.1.2.178 FM_GET_OPEN_FILES_PKT_ERR_EID #define FM_GET_OPEN_FILES_PKT_ERR_EID 54
FM Get Open Files Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_GetOpenFiles command packet with an invalid length.

Definition at line 811 of file fm_events.h.

10.1.2.179 FM_HKREQ_LEN_ERR_EID #define FM_HKREQ_LEN_ERR_EID 11
FM Command Packet Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a housekeeping request command packet with an invalid length.

Definition at line 191 of file fm_events.h.

10.1.2.180 FM_INIT_INF_EID #define FM_INIT_INF_EID 1
FM Initialization Event ID.

Type: INFORMATION

Cause

This event message is issued after the File Manager application has successfully completed startup initialization.
Definition at line 42 of file fm_events.h.

10.1.2.181 FM_MID_ERR_EID #define FM_MID_ERR_EID 9
FM Main Loop Message ID Invalid Event ID.

Type: ERROR

Cause

This event message is issued when the File Manager application has received an unexpected Software Bus packet.
There is no obvious explanation of why or how FM could receive such a packet.
Definition at line 163 of file fm_events.h.

10.1.2.182 FM_MONITOR_FILESYSTEM_SPACE_CMD_INF_EID #define FM_MONITOR_FILESYSTEM_SPACE_←
CMD_INF_EID 76
FM Monitor Filesystem Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_MonitorFilesystemSpace command.
Definition at line 1136 of file fm_events.h.

10.1.2.183 FM_MOVE_CHILD_BASE_EID #define FM_MOVE_CHILD_BASE_EID (FM_MOVE_TGT_BASE_EID +
FM_FNAME_NUM_OFFSETS)
FM Child Task Move File Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 178

Definition at line 1865 of file fm_events.h.

10.1.2.184 FM_MOVE_CHILD_BROKEN_ERR_EID #define FM_MOVE_CHILD_BROKEN_ERR_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)

FM Child Task Move File Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 180

Definition at line 1921 of file fm_events.h.

10.1.2.185 FM_MOVE_CHILD_DISABLED_ERR_EID #define FM_MOVE_CHILD_DISABLED_ERR_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)

FM Child Task Move File Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 178

Definition at line 1879 of file fm_events.h.

10.1.2.186 FM_MOVE_CHILD_FULL_ERR_EID #define FM_MOVE_CHILD_FULL_ERR_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)

FM Child Task Move File Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 179

Definition at line 1900 of file fm_events.h.

10.1.2.187 FM_MOVE_CMD_INF_EID #define FM_MOVE_CMD_INF_EID 20
FM Move File Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_Move command.
Definition at line 310 of file fm_events.h.

10.1.2.188 FM_MOVE_OS_ERR_EID #define FM_MOVE_OS_ERR_EID 23
FM Move File Command OS Error Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that occurred after preliminary command argument verification tests indicated that the source file exists and the target name is unused and appears to be valid. Verify that the target filename is reasonable. Also, verify that the file system has sufficient free space for this operation. Then refer to the OS specific return value.

Definition at line 352 of file fm_events.h.

10.1.2.189 FM_MOVE_OVR_ERR_EID #define FM_MOVE_OVR_ERR_EID 22
FM Move File Command Overwrite Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with an invalid overwrite argument.
Overwrite must be set to TRUE (one) or FALSE (zero).

Definition at line 335 of file fm_events.h.

10.1.2.190 FM_MOVE_PKT_ERR_EID #define FM_MOVE_PKT_ERR_EID 21
FM Move File Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with an invalid length.
Definition at line 322 of file fm_events.h.

10.1.2.191 FM_MOVE_SRC_BASE_EID #define FM_MOVE_SRC_BASE_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
FM Child Task Move File Source Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with a source filename that is unusable for one of several reasons.

Value: 166

Definition at line 1738 of file fm_events.h.

10.1.2.192 FM_MOVE_SRC_DNE_ERR_EID #define FM_MOVE_SRC_DNE_ERR_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)

FM Child Task Move File Source File Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with a source filename that does not exist.

Value: 167

Definition at line 1766 of file fm_events.h.

10.1.2.193 FM_MOVE_SRC_INVALID_ERR_EID #define FM_MOVE_SRC_INVALID_ERR_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Move File Source Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with an invalid source filename.

Value: 168

Definition at line 1752 of file fm_events.h.

10.1.2.194 FM_MOVE_SRC_ISDIR_ERR_EID #define FM_MOVE_SRC_ISDIR_ERR_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Move File Source Filename Is A Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with a source filename that is a directory.

Value: 168

Definition at line 1780 of file fm_events.h.

10.1.2.195 FM_MOVE_TGT_BASE_EID #define FM_MOVE_TGT_BASE_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Move File Target Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with a target filename that is unusable for one of several reasons.

Value: 172

Definition at line 1795 of file fm_events.h.

10.1.2.196 FM_MOVE_TGT_EXIST_ERR_EID #define FM_MOVE_TGT_EXIST_ERR_EID (FM_MOVE_TGT_BASE_EID
+ FM_FNAME_EXIST_EID_OFFSET)

FM Child Task Move File Target File Already Exists Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with a target filename that already exists

Value: 173

Definition at line 1823 of file fm_events.h.

10.1.2.197 FM_MOVE_TGT_INVALID_ERR_EID #define FM_MOVE_TGT_INVALID_ERR_EID (FM_MOVE_TGT_BASE_EID
+ FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Move File Target Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with an invalid target filename.

Value: 172

Definition at line 1809 of file fm_events.h.

10.1.2.198 FM_MOVE_TGT_ISDIR_ERR_EID #define FM_MOVE_TGT_ISDIR_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Move File Target Filename Is A Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with a target filename that is a directory.

Value: 174

Definition at line 1837 of file fm_events.h.

10.1.2.199 FM_MOVE_TGT_ISOPEN_ERR_EID #define FM_MOVE_TGT_ISOPEN_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)

FM Child Task Move File Target File Exists As An Open File Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Move command packet with a target filename that is open.

Value: 175

Definition at line 1851 of file fm_events.h.

10.1.2.200 FM_NOOP_INF_EID #define FM_NOOP_INF_EID 12

FM No-op Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_Noop command.

Definition at line 203 of file fm_events.h.

10.1.2.201 FM_NOOP_PKT_ERR_EID #define FM_NOOP_PKT_ERR_EID 13

FM No-op Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Noop command packet with an invalid length.

Definition at line 215 of file fm_events.h.

10.1.2.202 FM_OS_SYS_STAT_ERR_EID #define FM_OS_SYS_STAT_ERR_EID 103
FM Get Free Space Get File System Stats Failed Event ID.

Type: ERROR

Cause:

This event message occurs if the free space for a file system cannot be read when processing the [FM_MonitorFilesystemSpaceCmd](#) command.

Definition at line 1496 of file fm_events.h.

10.1.2.203 FM_RENAME_CHILD_BASE_EID #define FM_RENAME_CHILD_BASE_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Rename File Child Task Error Base ID.

Type: ERROR

Cause

This is the base for any of several messages that are generated when the FM child task command queue interface cannot be used.

Value: 193

Definition at line 2063 of file fm_events.h.

10.1.2.204 FM_RENAME_CHILD_BROKEN_ERR_EID #define FM_RENAME_CHILD_BROKEN_ERR_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Rename File Child Task Interface Broken Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the interface between the main task and child task is broken.

If the child task queue is broken then either the handshake interface logic is flawed, or there has been some sort of data corruption that affected the interface control variables. In either case, it may be necessary to restart the FM application to resync the interface.

Value: 195

Definition at line 2119 of file fm_events.h.

10.1.2.205 FM_RENAME_CHILD_DISABLED_ERR_EID #define FM_RENAME_CHILD_DISABLED_ERR_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)

FM Child Task Rename File Child Task Disabled Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task is disabled.

Value: 193

Definition at line 2077 of file fm_events.h.

10.1.2.206 FM_RENAME_CHILD_FULL_ERR_EID #define FM_RENAME_CHILD_FULL_ERR_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)

FM Child Task Rename File Child Task Queue Full Event ID.

Type: ERROR

Cause

This event message is generated when the FM child task command queue interface cannot be used because the child task command queue is full.

If the child task command queue is full, the problem may be temporary, caused by sending too many FM commands too quickly. If the command queue does not empty itself within a reasonable amount of time then the child task may be hung. It may be possible to use CFE commands to terminate the child task, which should then cause FM to process all commands in the main task.

Value: 194

Definition at line 2098 of file fm_events.h.

10.1.2.207 FM_RENAME_CMD_INF_EID #define FM_RENAME_CMD_INF_EID 24

FM Rename File Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_Rename command.

Definition at line 364 of file fm_events.h.

10.1.2.208 FM_RENAME_OS_ERR_EID #define FM_RENAME_OS_ERR_EID 27
FM Rename File Command OS Error Event ID.

Type: ERROR

Cause

This event message is generated due to an OS function error that occurred after preliminary command argument verification tests indicated that the source file exists and the target name is unused and appears to be valid. Verify that the target filename is reasonable. Also, verify that the file system has sufficient free space for this operation. Then refer to the OS specific return value.

Definition at line 406 of file fm_events.h.

10.1.2.209 FM_RENAME_OVR_ERR_EID #define FM_RENAME_OVR_ERR_EID 26
FM Rename File Command Overwrite Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with an invalid overwrite argument. Overwrite must be set to TRUE (one) or FALSE (zero).

Definition at line 389 of file fm_events.h.

10.1.2.210 FM_RENAME_PKT_ERR_EID #define FM_RENAME_PKT_ERR_EID 25
FM Rename File Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with an invalid length.

Definition at line 376 of file fm_events.h.

10.1.2.211 FM_RENAME_SRC_BASE_EID #define FM_RENAME_SRC_BASE_EID (FM_MOVE_CHILD_BASE_EID +
FM_CHILD_NUM_OFFSETS)

FM Child Task Rename File Source Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with a source filename that is unusable for one of several reasons.

Value: 181

Definition at line 1936 of file fm_events.h.

10.1.2.212 FM_RENAME_SRC_DNE_ERR_EID #define FM_RENAME_SRC_DNE_ERR_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)

FM Child Task Rename File Source File Does Not Exist Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with a source filename that does not exist.

Value: 182

Definition at line 1964 of file fm_events.h.

10.1.2.213 FM_RENAME_SRC_INVALID_ERR_EID #define FM_RENAME_SRC_INVALID_ERR_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Rename File Source Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with an invalid source filename.

Value: 181

Definition at line 1950 of file fm_events.h.

10.1.2.214 FM_RENAME_SRC_ISDIR_ERR_EID #define FM_RENAME_SRC_ISDIR_ERR_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Rename File Source Filename Is Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with a source filename that is a directory.

Value: 183

Definition at line 1978 of file fm_events.h.

10.1.2.215 FM_RENAME_TGT_BASE_EID #define FM_RENAME_TGT_BASE_EID (FM_RENAME_SRC_BASE_EID +
FM_FNAME_NUM_OFFSETS)

FM Child Task Rename File Target Filename Error Base ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with a target filename that is unusable for one of several reasons.

Value: 187

Definition at line 1993 of file fm_events.h.

10.1.2.216 FM_RENAME_TGT_EXIST_ERR_EID #define FM_RENAME_TGT_EXIST_ERR_EID (FM_RENAME_TGT_BASE_EID
+ FM_FNAME_EXIST_EID_OFFSET)

FM Child Task Rename File Target File Already Exists Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with a target filename that already exists.

Value: 188

Definition at line 2021 of file fm_events.h.

10.1.2.217 FM_RENAME_TGT_INVALID_ERR_EID #define FM_RENAME_TGT_INVALID_ERR_EID (FM_RENAME_TGT_BASE_EID
+ FM_FNAME_INVALID_EID_OFFSET)

FM Child Task Rename File Target Filename Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with an invalid target filename.

Value: 187

Definition at line 2007 of file fm_events.h.

10.1.2.218 FM_RENAME_TGT_ISDIR_ERR_EID #define FM_RENAME_TGT_ISDIR_ERR_EID (FM_RENAME_TGT_BASE_EID
+ FM_FNAME_ISDIR_EID_OFFSET)

FM Child Task Rename File Target Filename Is Directory Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with a target filename that is a directory.

Value: 189

Definition at line 2035 of file fm_events.h.

10.1.2.219 FM_RENAME_TGT_ISOPEN_ERR_EID #define FM_RENAME_TGT_ISOPEN_ERR_EID (FM_RENAME_TGT_BASE_EID

+ FM_FNAME_ISOPEN_EID_OFFSET)

FM Child Task Rename File Target Filename Exists As Open File Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_Rename command packet with a target filename that is open.

Value: 190

Definition at line 2049 of file fm_events.h.

10.1.2.220 FM_RESET_INF_EID #define FM_RESET_INF_EID 14

FM Reset Counters Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_ResetCtrs command.

Definition at line 227 of file fm_events.h.

10.1.2.221 FM_RESET_PKT_ERR_EID #define FM_RESET_PKT_ERR_EID 15

FM Reset Counters Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_ResetCtrs command packet with an invalid length.

Definition at line 239 of file fm_events.h.

10.1.2.222 FM_SB_RECEIVE_ERR_EID #define FM_SB_RECEIVE_ERR_EID 7
FM Main Loop Receive from Software Bus Failed Event ID.

Type: ERROR

Cause

This event message is issued when the File Manager application has failed in its attempt to read from its Software Bus input pipe while processing the software main loop sequence.

This is a fatal error that will cause the File Manager application to terminate.

Definition at line 138 of file fm_events.h.

10.1.2.223 FM_SB_RECEIVE_NULL_PTR_ERR_EID #define FM_SB_RECEIVE_NULL_PTR_ERR_EID 102
FM Main Loop Software Bus Returned NULL On Success Event ID.

Type: ERROR

Cause

This event message occurs if the Software Bus returns a success status in the main loop but provided a NULL pointer as the return argument.

Definition at line 1484 of file fm_events.h.

10.1.2.224 FM_SET_PERM_CMD_INF_EID #define FM_SET_PERM_CMD_INF_EID 99
FM Set Permissions Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_SetPerm command.

Definition at line 1448 of file fm_events.h.

10.1.2.225 FM_SET_PERM_ERR_EID #define FM_SET_PERM_ERR_EID 98
FM Set Permissions Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_SetPermissions command packet with an invalid length.

Definition at line 1436 of file fm_events.h.

10.1.2.226 FM_SET_PERM_OS_ERR_EID #define FM_SET_PERM_OS_ERR_EID 100
FM Set Permissions Command Chmod Error Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_SetPerm command packet with an invalid length.
Definition at line 1460 of file fm_events.h.

10.1.2.227 FM_SET_TABLE_STATE_ARG_IDX_ERR_EID #define FM_SET_TABLE_STATE_ARG_IDX_ERR_EID 82
FM Set Table State Command Index Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a FM_SetTableState command packet with an invalid table index argument.
Definition at line 1210 of file fm_events.h.

10.1.2.228 FM_SET_TABLE_STATE_ARG_STATE_ERR_EID #define FM_SET_TABLE_STATE_ARG_STATE_ERR_EID 83
FM Set Table State Command State Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a FM_SetTableState command packet with an invalid entry state argument.

Definition at line 1222 of file fm_events.h.

10.1.2.229 FM_SET_TABLE_STATE_CMD_EID #define FM_SET_TABLE_STATE_CMD_EID 79
FM Set Table State Command Event ID.

Type: INFORMATION

Cause

This event message signals the successful completion of a /FM_SetTableState command.
Definition at line 1173 of file fm_events.h.

10.1.2.230 FM_SET_TABLE_STATE_PKT_ERR_EID #define FM_SET_TABLE_STATE_PKT_ERR_EID 80
FM Set Table State Command Length Invalid Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_SetTableState command packet with an invalid length.
Definition at line 1185 of file fm_events.h.

10.1.2.231 FM_SET_TABLE_STATE_TBL_ERR_EID #define FM_SET_TABLE_STATE_TBL_ERR_EID 81
FM Set Table State Command Table Not Loaded Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_SetTableState command packet when the FM file system free space table has not yet been loaded.
Definition at line 1198 of file fm_events.h.

10.1.2.232 FM_SET_TABLE_STATE_UNUSED_ERR_EID #define FM_SET_TABLE_STATE_UNUSED_ERR_EID 84
FM Set Table State Command Unused Entry Event ID.

Type: ERROR

Cause

This event message is generated upon receipt of a /FM_SetTableState command packet that references an unused free space table entry.
Definition at line 1234 of file fm_events.h.

10.1.2.233 FM_STARTUP_EVENTS_ERR_EID #define FM_STARTUP_EVENTS_ERR_EID 2
FM Initialization Register For Event Services Failed Event ID.

Type: Error

Cause

This event message is issued when the File Manager application has failed in its attempt to register for event services during startup initialization.

This is a fatal error that will cause the File Manager application to terminate.

Definition at line 58 of file fm_events.h.

10.1.2.234 FM_STARTUP_SUBSCRIB_GCMD_ERR_EID #define FM_STARTUP_SUBSCRIB_GCMD_ERR_EID 5
FM Initialization Subscribe to FM Commands Failed Event ID.

Type: Error

Cause

This event message is issued when the File Manager application has failed in its attempt to subscribe to the FM ground command packet during startup initialization.

This is a fatal error that will cause the File Manager application to terminate.

Definition at line 106 of file fm_events.h.

10.1.2.235 FM_STARTUP_SUBSCRIB_HK_ERR_EID #define FM_STARTUP_SUBSCRIB_HK_ERR_EID 4
FM Initialization Subscribe to HK Request Failed Event ID.

Type: Error

Cause

This event message is issued when the File Manager application has failed in its attempt to subscribe to the HK telemetry request command during startup initialization.

This is a fatal error that will cause the File Manager application to terminate.

Definition at line 90 of file fm_events.h.

10.1.2.236 FM_STARTUP_TABLE_INIT_ERR_EID #define FM_STARTUP_TABLE_INIT_ERR_EID 6
FM Initialization Register Free Space Table Failed Event ID.

Type: Error

Cause

This event message is issued when the File Manager application has failed in its attempt to register its file system free space table during startup initialization.

This is a fatal error that will cause the File Manager application to terminate.

Definition at line 122 of file fm_events.h.

10.1.2.237 FM_TABLE_VERIFY_BAD_STATE_ERR_EID #define FM_TABLE_VERIFY_BAD_STATE_ERR_EID 88
FM Free Space Table Verification Failed State Invalid Event ID.

Type: ERROR

Cause

This event message is generated when a file system free space table fails the table verification process because a table entry has an invalid state. Each file system table entry has only 2 fields: table entry state and file system name. The table entry state field must be either enabled or disabled. The file system name string must have a non-zero length, include a string terminator and not contain characters considered invalid for filenames.

If the file system free space table loaded at startup fails verification, the FM application will not terminate. However, the FM application will not process commands that request the file system free space telemetry packet if a file system free space table has not been successfully loaded. Thereafter, if an attempt to load a new table fails verification, the FM application will continue to use the previous table.

Definition at line 1303 of file fm_events.h.

10.1.2.238 FM_TABLE_VERIFY_EID #define FM_TABLE_VERIFY_EID 97
FM Free Space Table Validation Results Event ID.

Type: INFORMATION

Cause:

This event describes the results of the Free Space Table validation function. The cFE Table Services Manager will call this function autonomously when the default table is loaded at startup and also whenever a table validate command (that targets this table) is processed.

Definition at line 1424 of file fm_events.h.

10.1.2.239 FM_TABLE_VERIFY_EMPTY_ERR_EID #define FM_TABLE_VERIFY_EMPTY_ERR_EID 85
FM Free Space Table Verification Failed Empty Name Event ID.

Type: ERROR

Cause

This event message is generated when a file system free space table fails the table verification process because the file system name is an empty string. Each file system table entry has only 2 fields: table entry state and file system name. The table entry state field must be either enabled or disabled. The file system name string must have a non-zero length, include a string terminator and not contain characters considered invalid for filenames.

If the file system free space table loaded at startup fails verification, the FM application will not terminate. However, the FM application will not process commands that request the file system free space telemetry packet if a file system free space table has not been successfully loaded. Thereafter, if an attempt to load a new table fails verification, the FM application will continue to use the previous table.

Definition at line 1257 of file fm_events.h.

10.1.2.240 FM_TABLE_VERIFY_NULL_PTR_ERR_EID #define FM_TABLE_VERIFY_NULL_PTR_ERR_EID 101
FM Free Space Table Verification Failed Null Pointer Detected.

Type: ERROR

Cause

This event message occurs when the FM validate table callback function receives a NULL pointer as the input argument. Definition at line 1472 of file fm_events.h.

10.1.2.241 FM_TABLE_VERIFY_TOOLONG_ERR_EID #define FM_TABLE_VERIFY_TOOLONG_ERR_EID 86
FM Free Space Table Verification Failed Name Too Long Event ID.

Type: ERROR

Cause

This event message is generated when a file system free space table fails the table verification process because the file system name is too long. Each file system table entry has only 2 fields: table entry state and file system name. The table entry state field must be either enabled or disabled. The file system name string must have a non-zero length, include a string terminator and not contain characters considered invalid for filenames.

If the file system free space table loaded at startup fails verification, the FM application will not terminate. However, the FM application will not process commands that request the file system free space telemetry packet if a file system free space table has not been successfully loaded. Thereafter, if an attempt to load a new table fails verification, the FM application will continue to use the previous table.

Definition at line 1280 of file fm_events.h.

10.2 CFS File Manager Command Structures

Data Structures

- struct [FM_SendHkCmd_t](#)
Housekeeping Request command packet structure.
- struct [FM_NoopCmd_t](#)
No-Operation command packet structure.
- struct [FM_ResetCountersCmd_t](#)
Reset Counters command packet structure.
- struct [FM_OvwSourceTargetFilename_Payload_t](#)
Copy/Move File command payload structure.
- struct [FM_CopyFileCmd_t](#)
Copy File command packet structure.
- struct [FM_MoveFileCmd_t](#)
Move File command packet structure.
- struct [FM_SourceTargetFileName_Payload_t](#)
Source and Target filename command payload structure.
- struct [FM_RenameFileCmd_t](#)
Rename File command packet structure.
- struct [FM_SingleFilename_Payload_t](#)

- struct [FM_DeleteFileCmd_t](#)
Single filename command payload structure.
- struct [FM_DirectoryName_Payload_t](#)
Single directory command payload structure.
- struct [FM_DeleteAllFilesCmd_t](#)
Delete All command packet structure.
- struct [FM_DecompressFileCmd_t](#)
Decompress File command packet structure.
- struct [FM_TwoSourceOneTarget_Payload_t](#)
Two source, one target filename command payload structure.
- struct [FM_ConcatFilesCmd_t](#)
Concatenate Files command packet structure.
- struct [FM_FilenameAndCRC_Payload_t](#)
Filename and CRC command payload structure.
- struct [FM_GetFileInfoCmd_t](#)
Get File Info command packet structure.
- struct [FM_GetOpenFilesCmd_t](#)
Get Open Files command packet structure.
- struct [FM_CreateDirectoryCmd_t](#)
Create Directory command packet structure.
- struct [FM_DeleteDirectoryCmd_t](#)
Delete Directory command packet structure.
- struct [FM_GetDirectoryToFile_Payload_t](#)
Get Directory and output to file command payload.
- struct [FM_GetDirListFileCmd_t](#)
Get DIR List to File command packet structure.
- struct [FM_GetDirectoryToPkt_Payload_t](#)
Get Directory and output to message command payload.
- struct [FM_GetDirListPktCmd_t](#)
Get DIR List to Packet command packet structure.
- struct [FM_MonitorFilesystemSpaceCmd_t](#)
Get Free Space command packet structure.
- struct [FM_TableIndexAndState_Payload_t](#)
Table Index and State command payload structure.
- struct [FM_SetTableStateCmd_t](#)
Set Table State command packet structure.
- struct [FM_FilenameAndMode_Payload_t](#)
File name and mode command payload structure.
- struct [FM_SetPermissionsCmd_t](#)
Set Permissions for a file.

10.2.1 Detailed Description

10.3 CFS File Manager Telemetry

Data Structures

- struct [FM_DirListEntry_t](#)
Get Directory Listing entry structure.
- struct [FM_DirListPkt_Payload_t](#)
Get Directory Listing telemetry payload.
- struct [FM_DirListPkt_t](#)
Get Directory Listing telemetry packet.
- struct [FM_DirListFileStats_t](#)
Get Directory Listing file statistics structure.
- struct [FM_FileInfoPkt_Payload_t](#)
Get File Info telemetry payload.
- struct [FM_FileInfoPkt_t](#)
Get File Info telemetry packet.
- struct [FM_OpenFilesEntry_t](#)
Get Open Files list entry structure.
- struct [FM_OpenFilesPkt_Payload_t](#)
Get Open Files telemetry payload.
- struct [FM_OpenFilesPkt_t](#)
Get Open Files telemetry packet.
- struct [FM_MonitorReportEntry_t](#)
Monitor filesystem list entry structure.
- struct [FM_MonitorReportPkt_Payload_t](#)
Monitor filesystem telemetry payload.
- struct [FM_MonitorReportPkt_t](#)
Monitor filesystem telemetry packet.
- struct [FM_HousekeepingPkt_Payload_t](#)
Housekeeping telemetry payload.
- struct [FM_HousekeepingPkt_t](#)
Housekeeping telemetry packet.

10.3.1 Detailed Description

10.4 CFS File Manager Command Codes

Macros

- #define [FM_NOOP_CC](#) 0
No Operation.
- #define [FM_RESET_COUNTERS_CC](#) 1
Reset Counters.
- #define [FM_COPY_FILE_CC](#) 2
Copy File.
- #define [FM_MOVE_FILE_CC](#) 3
Move File.
- #define [FM_RENAME_FILE_CC](#) 4

- `#define FM_DELETE_FILE_CC 5`
Delete File.
- `#define FM_DELETE_ALL_FILES_CC 7`
Delete All Files.
- `#define FM_DECOMPRESS_FILE_CC 8`
Decompress File.
- `#define FM_CONCAT_FILES_CC 9`
Concatenate Files.
- `#define FM_GET_FILE_INFO_CC 10`
Get File Information.
- `#define FM_GET_OPEN_FILES_CC 11`
Get Open Files Listing.
- `#define FM_CREATE_DIRECTORY_CC 12`
Create Directory.
- `#define FM_DELETE_DIRECTORY_CC 13`
Remove Directory.
- `#define FM_GET_DIR_LIST_FILE_CC 14`
Get Directory Listing to a File.
- `#define FM_GET_DIR_LIST_PKT_CC 15`
Get Directory Listing to a Packet.
- `#define FM_MONITOR_FILESYSTEM_SPACE_CC 16`
Monitor Filesystem Space.
- `#define FM_SET_TABLE_STATE_CC 17`
Set Free Space Table Entry State.
- `#define FM_SET_PERMISSIONS_CC 19`
Set Permissions of a file.

10.4.1 Detailed Description

10.4.2 Macro Definition Documentation

10.4.2.1 `FM_CONCAT_FILES_CC` `#define FM_CONCAT_FILES_CC 9`

Concatenate Files.

Description

This command concatenates two source files into the target file. Sources must both be existing files and target must not exist. Sources and target may be on different file systems.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but copying the first source file to the target file and then appending the second source file to the target file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

`FM_ConcatFilesCmd_t`

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_CONCAT_CMD_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length
- Invalid source filename
- Source file does not exist
- Invalid target filename
- Target file does exist
- Failure of OS function (copy, open, read, write, etc.)

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) may increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_CONCAT_PKT_ERR_EID](#) may be sent
- Error event [FM_CONCAT_OSCPY_ERR_EID](#) may be sent
- Error event [FM_CONCAT_OPEN_SRC2_ERR_EID](#) may be sent
- Error event [FM_CONCAT_OPEN_TGT_ERR_EID](#) may be sent
- Error event [FM_CONCAT_OSRD_ERR_EID](#) may be sent
- Error event [FM_CONCAT_OSWR_ERR_EID](#) may be sent
- Error event [FM_CONCAT_SRC1_INVALID_ERR_EID](#) may be sent
- Error event [FM_CONCAT_SRC1_DNE_ERR_EID](#) may be sent
- Error event [FM_CONCAT_SRC1_ISDIR_ERR_EID](#) may be sent
- Error event [FM_CONCAT_SRC1_OPEN_ERR_EID](#)
- Error event [FM_CONCAT_SRC2_INVALID_ERR_EID](#) may be sent
- Error event [FM_CONCAT_SRC2_DNE_ERR_EID](#) may be sent
- Error event [FM_CONCAT_SRC2_ISDIR_ERR_EID](#) may be sent
- Error event [FM_CONCAT_SRC2_OPEN_ERR_EID](#) may be sent
- Error event [FM_CONCAT_TGT_INVALID_ERR_EID](#) may be sent
- Error event [FM_CONCAT_TGT_EXIST_ERR_EID](#) may be sent
- Error event [FM_CONCAT_TGT_ISDIR_ERR_EID](#) may be sent
- Error event [FM_CONCAT_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_CONCAT_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_CONCAT_CHILD_BROKEN_ERR_EID](#) may be sent

Criticality

Concatenating very large files may consume more CPU resource than anticipated.

See also

[FM_COPY_FILE_CC](#)

Definition at line 522 of file fm_msgdefs.h.

10.4.2.2 FM_COPY_FILE_CC #define FM_COPY_FILE_CC 2

Copy File.

Description

This command copies the source file to the target file. The source must be an existing file and the target must not be a directory name. If the Overwrite command argument is TRUE, then the target may be an existing file, provided that the file is closed. If the Overwrite command argument is FALSE, then the target must not exist. The source and target may be on different file systems.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but copying the file will be performed by a lower priority child task. As such, the command result for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_CopyFileCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_COPY_CMD_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length
- Overwrite is not TRUE (one) or FALSE (zero)
- Source filename is invalid
- Source file does not exist
- Source filename is a directory
- Target filename is invalid
- Target file already exists
- Target filename is a directory
- Child task interface queue is full
- Child task interface logic is broken
- Failure of OS copy function

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) may increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_COPY_PKT_ERR_EID](#) may be sent
- Error event [FM_COPY_OVR_ERR_EID](#) may be sent
- Error event [FM_COPY_SRC_INVALID_ERR_EID](#) may be sent
- Error event [FM_COPY_SRC_DNE_ERR_EID](#) may be sent
- Error event [FM_COPY_SRC_ISDIR_ERR_EID](#) may be sent
- Error event [FM_COPY_TGT_INVALID_ERR_EID](#) may be sent
- Error event [FM_COPY_TGT_EXIST_ERR_EID](#) may be sent

- Error event [FM_COPY_TGT_ISDIR_ERR_EID](#) may be sent
- Error event [FM_COPY_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_COPY_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_COPY_CHILD_BROKEN_ERR_EID](#) may be sent
- Error event [FM_COPY_OS_ERR_EID](#) may be sent

Criticality

Copying files may consume file space needed by other critical tasks. Also, copying very large files may consume more CPU resource than anticipated.

See also

[FM_MOVE_FILE_CC](#), [FM_RENAME_FILE_CC](#)

Definition at line 156 of file fm_msgdefs.h.

10.4.2.3 FM_CREATE_DIRECTORY_CC #define FM_CREATE_DIRECTORY_CC 12

Create Directory.

Description

This command creates the source directory. Source must be a valid directory name that does not exist.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but creation of the directory will be performed by a lower priority child task. As such, the command result for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_CreateDirectoryCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_CREATE_DIR_CMD_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length
- Invalid directory name
- Directory name already exists
- Failure of OS_mkdir function

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) will increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_CREATE_DIR_PKT_ERR_EID](#) may be sent
- Error event [FM_CREATE_DIR_SRC_INVALID_ERR_EID](#) may be sent
- Error event [FM_CREATE_DIR_SRC_DNE_ERR_EID](#) may be sent
- Error event [FM_CREATE_DIR_SRC_ISDIR_ERR_EID](#) may be sent
- Error event [FM_CREATE_DIR_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_CREATE_DIR_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_CREATE_DIR_CHILD_BROKEN_ERR_EID](#) may be sent
- Error event [FM_CREATE_DIR_OS_ERR_EID](#) may be sent

Criticality

- There are no critical issues related to this command.

See also

[FM_DELETE_DIRECTORY_CC](#)

Definition at line 661 of file fm_msgdefs.h.

10.4.2.4 FM_DECOMPRESS_FILE_CC #define FM_DECOMPRESS_FILE_CC 8

Decompress File.

Description

This command invokes a CFE function to decompress the source file into the target file. Source must be an existing file and target must not exist. Source and target may be on different file systems.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but decompressing the source file into the target file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

This command will only have an effect if FM is compiled with a decompression algorithm enabled. If compression is not enabled, issuing this command will generate an error event.

Command Packet Structure

[FM_DecompressFileCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_DECOM_CMD_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length
- Invalid source filename
- Source file does not exist
- Invalid target filename
- Target file does exist
- Failure of CFE_FS_Decompress function

Command Failure Verification

- `FM_HousekeepingPkt_Payload_t.CommandErrCounter` may increment
- `FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter` may increment
- Error event `FM_DECOM_PKT_ERR_EID` may be sent
- Error event `FM_DECOM_SRC_INVALID_ERR_EID` may be sent
- Error event `FM_DECOM_SRC_DNE_ERR_EID` may be sent
- Error event `FM_DECOM_SRC_ISDIR_ERR_EID` may be sent
- Error event `FM_DECOM_SRC_OPEN_ERR_EID` may be sent
- Error event `FM_DECOM_TGT_INVALID_ERR_EID` may be sent
- Error event `FM_DECOM_TGT_EXIST_ERR_EID` may be sent
- Error event `FM_DECOM_TGT_ISDIR_ERR_EID` may be sent
- Error event `FM_DECOM_CHILD_DISABLED_ERR_EID` may be sent
- Error event `FM_DECOM_CHILD_FULL_ERR_EID` may be sent
- Error event `FM_DECOM_CHILD_BROKEN_ERR_EID` may be sent
- Error event `FM_DECOM_CFE_ERR_EID` may be sent

Criticality

Decompressing a very large file may consume more CPU resource than anticipated.

Definition at line 456 of file fm_msgdefs.h.

10.4.2.5 FM_DELETE_ALL_FILES_CC #define FM_DELETE_ALL_FILES_CC 7

Delete All Files.

Description

This command deletes all files in the source directory. Source must be an existing directory. Open files and sub-directories are not deleted.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but reading the directory and deleting each file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

`FM_DeleteAllFilesCmd_t`

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_DELETE_ALL_CMD_INF_EID](#) will be sent

Command Warning Conditions

- Directory entry is not a file (sub-directory)
- Directory entry is an open file

Command Warning Verification

- [FM_HousekeepingPkt_Payload_t.ChildCmdWarnCounter](#) will increment
- Informational event [FM_DELETE_ALL_FILES_ND_WARNING_EID](#) may be sent
- Informational event [FM_DELETE_ALL_SKIP_WARNING_EID](#) may be sent

Command Error Conditions

- Invalid command packet length
- Invalid directory name
- Directory does not exist
- Directory name + separator + filename is too long
- Failure of OS delete function

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) may increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_DELETE_ALL_PKT_ERR_EID](#) may be sent
- Error event [FM_DELETE_ALL_SRC_INVALID_ERR_EID](#) may be sent
- Error event [FM_DELETE_ALL_SRC_DNE_ERR_EID](#) may be sent
- Error event [FM_DELETE_ALL_SRC_FILE_ERR_EID](#) may be sent
- Error event [FM_DELETE_ALL_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_DELETE_ALL_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_DELETE_ALL_CHILD_BROKEN_ERR_EID](#) may be sent
- Error event [FM_DELETE_ALL_OS_ERR_EID](#) may be sent

Criticality

The FM application does not provide a method to restore deleted files. Critical data may be lost when deleting files. Also, deleting a very large number of files may consume more CPU resource than anticipated.

See also

[FM_DELETE_FILE_CC](#), [FM_DELETE_DIRECTORY_CC](#)

Definition at line 397 of file fm_msgdefs.h.

10.4.2.6 FM_DELETE_DIRECTORY_CC #define FM_DELETE_DIRECTORY_CC 13

Remove Directory.

Description

This command deletes the source directory, it does not delete the contents of the directory. Source must be a valid directory name that exists.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but removal of the directory will be performed by a lower priority child task. As such, the command result for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_DeleteDirectoryCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_DELETE_DIR_CMD_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length
- Invalid directory name
- Directory does not exist
- Directory is not empty
- Failure of OS function (OS_opendir, OS_rmdir)

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) will increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_DELETE_DIR_PKT_ERR_EID](#) may be sent
- Error event [FM_DELETE_DIR_EMPTY_ERR_EID](#) may be sent
- Error event [FM_DELETE_OPENDIR_OS_ERR_EID](#) may be sent
- Error event [FM_DELETE_RMDIR_OS_ERR_EID](#) may be sent
- Error event [FM_DELETE_DIR_SRC_INVALID_ERR_EID](#) may be sent
- Error event [FM_DELETE_DIR_SRC_DNE_ERR_EID](#) may be sent
- Error event [FM_DELETE_DIR_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_DELETE_DIR_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_DELETE_DIR_CHILD_BROKEN_ERR_EID](#) may be sent
- Error event [FM_DELETE_RMDIR_OS_ERR_EID](#) may be sent

Criticality

The unexpected loss of a directory may affect a critical tasks ability to store data.

See also

[FM_CREATE_DIRECTORY_CC](#)

Definition at line 713 of file fm_msgdefs.h.

10.4.2.7 FM_DELETE_FILE_CC #define FM_DELETE_FILE_CC 5

Delete File.

Description

This command deletes the source file. Source must be an existing file that is not open.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but deleting the file will be performed by a lower priority child task. As such, the command result for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_DeleteFileCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_DELETE_CMD_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length
- Filename is invalid
- File does not exist
- File is open
- Filename is a directory
- Failure of OS delete function

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) will increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_DELETE_PKT_ERR_EID](#) may be sent
- Error event [FM_DELETE_SRC_INVALID_ERR_EID](#) may be sent
- Error event [FM_DELETE_SRC_DNE_ERR_EID](#) may be sent
- Error event [FM_DELETE_SRC_ISDIR_ERR_EID](#) may be sent
- Error event [FM_DELETE_SRC_OPEN_ERR_EID](#) may be sent
- Error event [FM_DELETE_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_DELETE_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_DELETE_CHILD_BROKEN_ERR_EID](#) may be sent
- Error event [FM_DELETE_OS_ERR_EID](#) may be sent

Criticality

The FM application does not provide a method to restore deleted files. Critical data may be lost when deleting files.

See also

[FM_DELETE_ALL_FILES_CC](#), [FM_DELETE_DIRECTORY_CC](#)

Definition at line 335 of file fm_msgdefs.h.

10.4.2.8 FM_GET_DIR_LIST_FILE_CC #define FM_GET_DIR_LIST_FILE_CC 14

Get Directory Listing to a File.

Description

This command writes a listing of the contents of the source directory to the target file. If the target filename buffer is empty, then the default target filename [FM_DIR_LIST_FILE_DEFNAME](#) is used. The command will overwrite a previous copy of the target file, if one exists.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but reading the directory will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_GetDirListFileCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_GET_DIR_FILE_CMD_INF_EID](#) will be sent

Command Warning Conditions

- Combined directory and entry name is too long

Command Warning Verification

- [FM_HousekeepingPkt_Payload_t.ChildCmdWarnCounter](#) will increment
- Informational event [FM_GET_DIR_FILE_WARNING_EID](#) may be sent

Command Error Conditions

- Invalid command packet length
- Invalid source directory name
- Source directory does not exist
- Directory name + separator is too long
- Directory name + directory entry is too long
- Invalid target filename
- Target file is already open
- Failure of OS function (OS_opendir, OS_creat, OS_write)

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) may increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_GET_DIR_FILE_PKT_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_OSOPENDIR_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_WRBLANK_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_WRHDR_ERR_EID](#) may be sent

- Error event [FM_GET_DIR_FILE_OSCREAT_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_WRENTRY_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_UPSTATS_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_SRC_INVALID_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_SRC_DNE_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_SRC_ISDIR_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_TGT_INVALID_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_TGT_ISDIR_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_FILE_CHILD_BROKEN_ERR_EID](#) may be sent

Criticality

Reading a directory that contains thousands of files may consume more CPU resource than anticipated.

See also

[FM_GET_DIR_LIST_PKT_CC](#)

Definition at line 783 of file fm_msgdefs.h.

10.4.2.9 FM_GET_DIR_LIST_PKT_CC #define FM_GET_DIR_LIST_PKT_CC 15

Get Directory Listing to a Packet.

Description

This command creates a telemetry packet [FM_DirListPkt_t](#) that contains a listing of the entries in the specified directory. Since the packet will likely hold fewer entries than will be possible in a directory, the command also provides an index argument to define which entry in the directory is the first entry reported in the telemetry packet. After reading the directory list and skipping entries until reaching the index of the first entry reported, the remaining entries in the packet are filled sequentially until either the packet is full or until there are no more entries in the directory. The first entry index is zero based - thus, when the first entry index is zero the first directory entry will be the first packet entry. The number of entries per packet [FM_DIR_LIST_PKT_ENTRIES](#) is a platform configuration definition.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but reading the directory will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_GetDirListPktCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- The [FM_DirListPkt_t](#) telemetry packet will be sent
- The [FM_GET_DIR_PKT_CMD_INF_EID](#) informational event will be sent

Command Warning Conditions

- Combined directory and entry name is too long

Command Warning Verification

- [FM_HousekeepingPkt_Payload_t.ChildCmdWarnCounter](#) will increment
- Informational event [FM_GET_DIR_PKT_WARNING_EID](#) may be sent

Error Conditions

This command may fail for the following reason(s):

- OS error received opening directory
- OS error received requesting directory size
- OS error received closing directory
- Invalid directory pathname received
- Command packet length not as expected

Evidence of failure may be found in the following telemetry:

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) may increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_GET_DIR_PKT_PKT_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_PKT_OS_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_PKT_SRC_INVALID_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_PKT_SRC_DNE_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_PKT_SRC_ISDIR_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_PKT_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_PKT_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_GET_DIR_PKT_CHILD_BROKEN_ERR_EID](#) may be sent

Criticality

Reading a directory that contains thousands of files may consume more CPU resource than anticipated.

See also

[FM_GET_DIR_LIST_FILE_CC](#)

Definition at line 857 of file fm_msgdefs.h.

10.4.2.10 FM_GET_FILE_INFO_CC #define FM_GET_FILE_INFO_CC 10

Get File Information.

Description

This command creates an FM file information telemetry packet for the source file. The file information packet includes status that indicates whether source is a file that is open or closed, a directory, or does not exist. The file information data also includes a CRC, file size, last modify time and the source name.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but collecting the status data and calculating the CRC will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_GetFileInfoCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_GET_FILE_INFO_CMD_INF_EID](#) will be sent

Command Warning Conditions

- File is open and CRC cannot be calculated
- Specified CRC type is not valid
- CRC cannot be calculated because file cannot be read

Command Warning Verification

- [FM_HousekeepingPkt_Payload_t.ChildCmdWarnCounter](#) will increment
- Informational event [FM_GET_FILE_INFO_STATE_WARNING_EID](#) may be sent
- Informational event [FM_GET_FILE_INFO_TYPE_WARNING_EID](#) may be sent
- Informational event [FM_GET_FILE_INFO_READ_WARNING_EID](#) may be sent

Command Error Conditions

- Invalid command packet length
- Invalid source filename
- Failure of OS_stat function

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) may increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_GET_FILE_INFO_OPEN_ERR_EID](#) may be sent
- Error event [FM_GET_FILE_INFO_PKT_ERR_EID](#) may be sent
- Error event [FM_GET_FILE_INFO_SRC_ERR_EID](#) may be sent
- Error event [FM_FILE_INFO_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_FILE_INFO_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_FILE_INFO_CHILD_BROKEN_ERR_EID](#) may be sent

Criticality

Calculating the CRC for a very large file may consume more CPU resource than anticipated.

See also

[FM_GET_OPEN_FILES_CC](#), [FM_GET_DIR_LIST_FILE_CC](#), [FM_GET_DIR_LIST_PKT_CC](#)

Definition at line 584 of file fm_msgdefs.h.

10.4.2.11 FM_GET_OPEN_FILES_CC #define FM_GET_OPEN_FILES_CC 11

Get Open Files Listing.

Description

This command creates an FM open files telemetry packet. The open files packet includes the number of open files and for each open file, the name of the file and the name of the application that has the file opened.

Command Packet Structure

[FM_GetOpenFilesCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment
- Informational event [FM_GET_OPEN_FILES_CMD_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) will increment
- Error event [FM_GET_OPEN_FILES_PKT_ERR_EID](#) will be sent

Criticality

- There are no critical issues related to this command.

See also

[FM_GET_FILE_INFO_CC](#), [FM_GET_DIR_LIST_FILE_CC](#), [FM_GET_DIR_LIST_PKT_CC](#)

Definition at line 614 of file fm_msgdefs.h.

10.4.2.12 FM_MONITOR_FILESYSTEM_SPACE_CC #define FM_MONITOR_FILESYSTEM_SPACE_CC 16

Monitor Filesystem Space.

Description

This command queries the specified location for each of the enabled entries in the file system monitor table. The data is then placed in a telemetry packet and sent to ground.

Command Packet Structure

[FM_MonitorFilesystemSpaceCmd_t](#)

Evidence of success may be found in the following telemetry:

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment
- Informational event [FM_MONITOR_FILESYSTEM_SPACE_CMD_INF_EID](#) will be sent
- Telemetry packet [FM_MonitorReportPkt_t](#) will be sent

Error Conditions

- Invalid command packet length
- Free space table is not loaded

Evidence of failure may be found in the following telemetry:

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) will increment
- Error event [FM_GET_FREE_SPACE_PKT_ERR_EID](#) may be sent
- Error event [FM_GET_FREE_SPACE_TBL_ERR_EID](#) may be sent

Criticality

- There are no critical issues related to this command.

Definition at line 887 of file fm_msgdefs.h.

10.4.2.13 FM_MOVE_FILE_CC #define FM_MOVE_FILE_CC 3

Move File.

Description

This command moves the source file to the target file. The source must be an existing file and the target must not be a directory name. If the Overwrite command argument is TRUE, then the target may be an existing file, provided that the file is closed. If the Overwrite command argument is FALSE, then the target must not exist. Source and target must both be on the same file system. The move command does not actually move any file data. The command modifies the file system directory structure to create a different file entry for the same file data. If the user wishes to move a file across file systems, he must first copy the file and then delete the original.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but moving the file will be performed by a lower priority child task. As such, the command result for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_MoveFileCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_MOVE_CMD_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length
- Overwrite is not TRUE (one) or FALSE (zero)
- Source filename is invalid
- Source file does not exist
- Source filename is a directory
- Target filename is invalid
- Target file already exists
- Target filename is a directory
- Failure of OS move function

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) may increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_MOVE_PKT_ERR_EID](#) may be sent
- Error event [FM_MOVE_OVR_ERR_EID](#) may be sent
- Error event [FM_MOVE_SRC_INVALID_ERR_EID](#) may be sent
- Error event [FM_MOVE_SRC_DNE_ERR_EID](#) may be sent
- Error event [FM_MOVE_SRC_ISDIR_ERR_EID](#) may be sent
- Error event [FM_MOVE_TGT_INVALID_ERR_EID](#) may be sent
- Error event [FM_MOVE_TGT_EXIST_ERR_EID](#) may be sent
- Error event [FM_MOVE_TGT_ISDIR_ERR_EID](#) may be sent
- Error event [FM_MOVE_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_MOVE_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_MOVE_CHILD_BROKEN_ERR_EID](#) may be sent
- Error event [FM_MOVE_OS_ERR_EID](#) may be sent

Criticality

- There are no critical issues related to this command.

See also

[FM_COPY_FILE_CC](#), [FM_RENAME_FILE_CC](#)

Definition at line 224 of file fm_msgdefs.h.

10.4.2.14 FM_NOOP_CC #define FM_NOOP_CC 0
No Operation.

Description

This command performs no operation other than to generate an informational event that also contains software version data. The command is most often used as a general aliveness test by demonstrating that the application can receive commands and generate telemetry.

Command Packet Structure

[FM_NoopCmd_t](#)

Command Success Verification

- Informational event [FM_NOOP_INF_EID](#) will be sent
- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment

Command Error Conditions

- Invalid command packet length

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) will increment
- Error event [FM_NOOP_PKT_ERR_EID](#) will be sent

Criticality

- There are no critical issues related to this command.

Definition at line 60 of file fm_msgdefs.h.

10.4.2.15 FM_RENAME_FILE_CC #define FM_RENAME_FILE_CC 4
Rename File.

Description

This command renames the source file to the target file. Source must be an existing file and target must not exist. Source and target must both be on the same file system. The rename command does not actually move any file data. The command modifies the file system directory structure to create a different file entry for the same file data. If the user wishes to rename a file across file systems, he must first copy the file and then delete the original.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but renaming the file will be performed by a lower priority child task. As such, the command result for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_RenameFileCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_RENAME_CMD_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length
- Source filename is invalid
- Source file does not exist
- Source filename is a directory
- Target filename is invalid
- Target file already exists
- Target filename is a directory
- Failure of OS rename function

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) may increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_RENAME_PKT_ERR_EID](#) may be sent
- Error event [FM_RENAME_SRC_INVALID_ERR_EID](#) may be sent
- Error event [FM_RENAME_SRC_DNE_ERR_EID](#) may be sent
- Error event [FM_RENAME_SRC_ISDIR_ERR_EID](#) may be sent
- Error event [FM_RENAME_TGT_INVALID_ERR_EID](#) may be sent
- Error event [FM_RENAME_TGT_EXIST_ERR_EID](#) may be sent
- Error event [FM_RENAME_TGT_ISDIR_ERR_EID](#) may be sent
- Error event [FM_RENAME_CHILD_DISABLED_ERR_EID](#) may be sent
- Error event [FM_RENAME_CHILD_FULL_ERR_EID](#) may be sent
- Error event [FM_RENAME_CHILD_BROKEN_ERR_EID](#) may be sent
- Error event [FM_RENAME_OS_ERR_EID](#) may be sent

Criticality

- There are no critical issues related to this command.

See also

[FM_COPY_FILE_CC](#), [FM_MOVE_FILE_CC](#)

Definition at line 284 of file fm_msgdefs.h.

10.4.2.16 FM_RESET_COUNTERS_CC `#define FM_RESET_COUNTERS_CC 1`

Reset Counters.

Description

This command resets the following housekeeping telemetry:

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#)
- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#)
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#)
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#)
- [FM_HousekeepingPkt_Payload_t.ChildCmdWarnCounter](#)

Command Packet Structure

[FM_ResetCountersCmd_t](#)

Command Success Verification

- Command counters will be set to zero (see description)
- Informational event [FM_RESET_INF_EID](#) will be sent

Command Error Conditions

- Invalid command packet length

Command Failure Verification

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) will increment
- Error event [FM_RESET_PKT_ERR_EID](#) will be sent

Criticality

- There are no critical issues related to this command.

Definition at line 91 of file fm_msgdefs.h.

10.4.2.17 FM_SET_PERMISSIONS_CC #define FM_SET_PERMISSIONS_CC 19

Set Permissions of a file.

Description

This command sets the permissions for a file. This is a direct interface to OS_chmod in the OSAL. OS_chmod accepts a uint32 to set the file's mode.

Examples for a regular file:

OS_READ_ONLY - Read only file access
OS_WRITE_ONLY - Write only file access
OS_READ_WRITE - Read write file access

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but setting permissions will be performed by a lower priority child task. As such, the command result for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Command Packet Structure

[FM_SetPermissionsCmd_t](#)

Command Success Verification

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment after validation
- [FM_HousekeepingPkt_Payload_t.ChildCmdCounter](#) will increment after completion
- Informational event [FM_SET_PERM_CMD_INF_EID](#) will be sent

Error Conditions

- Invalid command packet length
- Error from call to OS_chmod

Evidence of failure may be found in the following telemetry:

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) may increment
- [FM_HousekeepingPkt_Payload_t.ChildCmdErrCounter](#) may increment
- Error event [FM_SET_PERM_ERR_EID](#) may be sent
- Error event [FM_SET_PERM_OS_ERR_EID](#) may be sent

Criticality

- There are no critical issues related to this command.

Definition at line 966 of file fm_msgdefs.h.

10.4.2.18 FM_SET_TABLE_STATE_CC `#define FM_SET_TABLE_STATE_CC 17`
Set Free Space Table Entry State.

Description

This command enables or disables a single entry in the FM file system free space table. Only table entries that are currently enabled or disabled may be modified by command. Unused table entries cannot be modified.

Command Packet Structure

[FM_SetTableStateCmd_t](#)

Evidence of success may be found in the following telemetry:

- [FM_HousekeepingPkt_Payload_t.CommandCounter](#) will increment
- Informational event [FM_SET_TABLE_STATE_CMD_EID](#) will be sent

Error Conditions

- Invalid command packet length
- FM file system free space table has not yet been loaded
- Invalid command argument, table entry index arg is out of range
- Invalid command argument, entry state arg is not enable/disable
- Invalid current table entry state, entry is unused

Evidence of failure may be found in the following telemetry:

- [FM_HousekeepingPkt_Payload_t.CommandErrCounter](#) will increment
- Error event [FM_SET_TABLE_STATE_PKT_ERR_EID](#) may be sent
- Error event [FM_SET_TABLE_STATE_TBL_ERR_EID](#) may be sent
- Error event [FM_SET_TABLE_STATE_ARG_IDX_ERR_EID](#) may be sent
- Error event [FM_SET_TABLE_STATE_ARG_STATE_ERR_EID](#) may be sent
- Error event [FM_SET_TABLE_STATE_UNUSED_ERR_EID](#) may be sent

Criticality

- There are no critical issues related to this command.

Definition at line 923 of file fm_msgdefs.h.

10.5 CFS File Manager Command Message IDs

Macros

- #define FM_CMD_MID 0x188C /** < \brief FM ground commands */
- #define FM_SEND_HK_MID 0x188D /** < \brief FM send housekeeping */

10.5.1 Detailed Description

10.5.2 Macro Definition Documentation

10.5.2.1 FM_CMD_MID #define FM_CMD_MID 0x188C /** < \brief FM ground commands */
Definition at line 33 of file fm_msgids.h.

10.5.2.2 FM_SEND_HK_MID #define FM_SEND_HK_MID 0x188D /** < \brief FM send housekeeping */
Definition at line 34 of file fm_msgids.h.

10.6 CFS File Manager Telemetry Message IDs

Macros

- #define FM_HK_TLM_MID 0x088A /** < \brief FM housekeeping */
- #define FM_FILE_INFO_TLM_MID 0x088B /** < \brief FM get file info */
- #define FM_DIR_LIST_TLM_MID 0x088C /** < \brief FM get dir list */
- #define FM_OPEN_FILES_TLM_MID 0x088D /** < \brief FM get open files */
- #define FM_FREE_SPACE_TLM_MID 0x088E /** < \brief FM get free space */

10.6.1 Detailed Description

10.6.2 Macro Definition Documentation

10.6.2.1 FM_DIR_LIST_TLM_MID #define FM_DIR_LIST_TLM_MID 0x088C /** < \brief FM get dir list */
Definition at line 45 of file fm_msgids.h.

10.6.2.2 FM_FILE_INFO_TLM_MID #define FM_FILE_INFO_TLM_MID 0x088B /** < \brief FM get file info */
Definition at line 44 of file fm_msgids.h.

10.6.2.3 FM_FREE_SPACE_TLM_MID #define FM_FREE_SPACE_TLM_MID 0x088E /** < \brief FM get free space */
Definition at line 47 of file fm_msgids.h.

10.6.2.4 FM_HK_TLM_MID #define FM_HK_TLM_MID 0x088A /** < \brief FM housekeeping */
Definition at line 43 of file fm_msgids.h.

10.6.2.5 FM_OPEN_FILES_TLM_MID #define FM_OPEN_FILES_TLM_MID 0x088D /** < \brief FM get open files */
Definition at line 46 of file fm_msgids.h.

10.7 CFS File Manager Mission Configuration

Macros

- #define **FM_APPMAIN_PERF_ID** 39
Main application performance ID.
- #define **FM_CHILD_TASK_PERF_ID** 44
Child task performance ID.

10.7.1 Detailed Description

10.7.2 Macro Definition Documentation

10.7.2.1 FM_APPMAIN_PERF_ID #define FM_APPMAIN_PERF_ID 39

Main application performance ID.

Definition at line 32 of file fm_perfid.h.

10.7.2.2 FM_CHILD_TASK_PERF_ID #define FM_CHILD_TASK_PERF_ID 44

Child task performance ID.

Definition at line 33 of file fm_perfid.h.

10.8 CFS File Manager Platform Configuration

Macros

- #define **FM_APP_NAME** "FM"
File Manager Application Name.
- #define **FM_APP_PIPE_NAME** "FM_CMD_PIPE"
File Manager Command Pipe Name.
- #define **FM_APP_PIPE_DEPTH** 10
File Manager Command Pipe Depth.
- #define **FM_MISSION_REV** 0
Mission specific version number for FM application.
- #define **FM_DIR_LIST_FILE_DEFNAME** "/ram/fm_dirlist.out"
Default Directory List Output Filename.
- #define **FM_DIR_LIST_FILE_ENTRIES** 3000
Maximum Directory List Output File Entries.
- #define **FM_DIR_LIST_FILE_SUBTYPE** 12345
Directory List Output File Header Sub-Type.
- #define **FM_DIR_LIST_PKT_ENTRIES** 20
Directory List Telemetry Packet Entry Count.
- #define **FM_CHILD_FILE_BLOCK_SIZE** 2048
Child Task File I/O Control Settings.
- #define **FM_CHILD_FILE_LOOP_COUNT** 16
- #define **FM_CHILD_FILE_SLEEP_MS** 20

- #define FM_CHILD_STAT_SLEEP_MS 0
Child file stat sleep.
- #define FM_CHILD_STAT_SLEEP_FILECOUNT 0
- #define FM_CHILD_QUEUE_DEPTH 3
Child Task Command Queue Entry Count.
- #define FM_CHILD_TASK_NAME "FM_CHILD_TASK"
Child Task Name - cFE object name.
- #define FM_CHILD_TASK_STACK_SIZE 20480
Child Task Stack Size.
- #define FM_CHILD_TASK_PRIORITY 205
Child Task Execution Priority.
- #define FM_CHILD_SEM_NAME "FM_CHILD_SEM"
Child Task Semaphore Name - cFE object name.
- #define FM_TABLE_CFE_NAME "FreeSpace"
Free Space Table Name - cFE object name.
- #define FM_TABLE_DEF_NAME "/cf/fm_monitor.tbl"
Monitor Table Name - filename with path.
- #define FM_TABLE_FILENAME "fm_monitor.tbl"
Monitor Table Name - filename without path.
- #define FM_TABLE_DEF_DESC "FM File System Free Space Table"
Free Space Table Description.
- #define FM_TABLE_ENTRY_COUNT 8
Number of Free Space Table Entries.
- #define FM_TABLE_VALIDATION_ERR (-1)
Table Data Validation Error Code.

10.8.1 Detailed Description

10.8.2 Macro Definition Documentation

10.8.2.1 FM_APP_NAME #define FM_APP_NAME "FM"

File Manager Application Name.

Description:

This definition must match the name used at startup by the cFE Executive Services when creating the FM application. Note that application names are also an argument to certain cFE commands. For example, the application name is needed to access tables via cFE Table Services commands.

Limits:

FM requires that this name be defined, but otherwise places no limits on the definition. Refer to CFE Executive Services for specific information on limits related to application names.

Definition at line 54 of file fm_platform_cfg.h.

10.8.2.2 FM_APP_PIPE_DEPTH #define FM_APP_PIPE_DEPTH 10
File Manager Command Pipe Depth.

Description:

This definition sets the total number of packets that may queue in the FM command pipe. The limit for individual message types in the queue is the default cFE Software Bus subscription limit.

Limits:

It is recommended that this value be no less than 4 and no greater than 20 packets, but this is not enforced by FM.

Definition at line 83 of file fm_platform_cfg.h.

10.8.2.3 FM_APP_PIPE_NAME #define FM_APP_PIPE_NAME "FM_CMD_PIPE"
File Manager Command Pipe Name.

Description:

This definition is the name used at startup when creating a cFE Software Bus command pipe for the FM application.

Limits:

FM requires that this name be defined, but otherwise places no limits on the definition. Refer to CFE Software Bus Services for specific information on limits related to pipe names.

Definition at line 68 of file fm_platform_cfg.h.

10.8.2.4 FM_CHILD_FILE_BLOCK_SIZE #define FM_CHILD_FILE_BLOCK_SIZE 2048
Child Task File I/O Control Settings.

Description:

These definitions control the amount of file data that the FM child task will process before giving up the CPU to allow other tasks time to run.

FM_CHILD_FILE_BLOCK_SIZE defines the size of each block of file data that the FM child task will read or write. This value also defines the size of the FM child task I/O buffer that exists in global memory.

FM_CHILD_FILE_LOOP_COUNT defines the number of file data blocks that may be processed before the FM child task sleeps (gives up the CPU).

FM_CHILD_FILE_SLEEP_MS defines the length of time (in milli-secs) before the FM child task wakes (re-acquires the CPU). Note that many platforms will limit the precision of this value.

Thus the combination of the 3 values control CPU use by the FM child task. Using a smaller block size minimizes the amount of RAM used by the file I/O buffer, but at the expense of file efficiency. Adjust each of the values such that the combination is appropriate for the target platform.

For example, if the block size is 2048 and the loop count is 16 and the sleep time is 20, then while processing a 1 Mbyte file there will be 32 sleep cycles of 20ms each, for a total task delay of 0.64 seconds.

Limits:

FM_CHILD_FILE_BLOCK_SIZE: The FM application limits this value to be no less than 256 bytes and no greater than 32KB.

FM_CHILD_FILE_LOOP_COUNT: The FM application limits this value to be non-zero. There is no upper limit - a very large number effectively means that the FM child task will not surrender the CPU to other lower priority tasks.

FM_CHILD_FILE_SLEEP_MS: The FM application limits this value to be no greater than 100 ms. The value zero generally means a very short task delay - refer to the target platform documentation for specifics.

Definition at line 228 of file fm_platform_cfg.h.

10.8.2.5 FM_CHILD_FILE_LOOP_COUNT #define FM_CHILD_FILE_LOOP_COUNT 16
Definition at line 229 of file fm_platform_cfg.h.

10.8.2.6 FM_CHILD_FILE_SLEEP_MS #define FM_CHILD_FILE_SLEEP_MS 20
Definition at line 230 of file fm_platform_cfg.h.

10.8.2.7 FM_CHILD_QUEUE_DEPTH #define FM_CHILD_QUEUE_DEPTH 3
Child Task Command Queue Entry Count.

Description:

This definition sets the array depth for the command arguments queue in the FM main task to FM child task handshake interface. The value sets the upper limit for the number of commands that can be waiting in the queue to be processed by the low priority FM child task. A multi-entry command queue prevents the occasional slow command from being rejected because the child task has not yet completed the previous slow command.

Limits:

The FM application limits this value to be no less than 1 and no greater than 10. There must be at least one because this is the method for passing command arguments from the parent to the child task. The upper limit is arbitrary.

Definition at line 285 of file fm_platform_cfg.h.

10.8.2.8 FM_CHILD_SEM_NAME #define FM_CHILD_SEM_NAME "FM_CHILD_SEM"
Child Task Semaphore Name - cFE object name.

Description:

This definition sets the FM child task semaphore object name. The semaphore object name is required during semaphore creation by cFE Executive Services.

Limits:

FM requires that this name be defined, but otherwise places no limits on the definition. Refer to CFE Executive Services for specific information on limits related to object names.

Definition at line 353 of file fm_platform_cfg.h.

10.8.2.9 FM_CHILD_STAT_SLEEP_FILECOUNT #define FM_CHILD_STAT_SLEEP_FILECOUNT 0
Definition at line 266 of file fm_platform_cfg.h.

10.8.2.10 FM_CHILD_STAT_SLEEP_MS #define FM_CHILD_STAT_SLEEP_MS 0
Child file stat sleep.

Description:

OS_stat is a CPU intensive call. FM uses the OS_stat call to query a file's size, date, and mode when setting up directory listings. Querying a large number of files and/or files large in size when processing directory listing commands can cause FM to hog the CPU. To mitigate this, options to sleep a configurable number of milliseconds between calls to OS_stat for a configurable number of files in a directory listing is provided. A large sleep cycle will not hang the CPU but it may take a long time for directory listing to complete. A shorter sleep cycle will speed up the directory listing commands but may cause FM to hog the CPU.

FM_CHILD_STAT_SLEEP_MS: The number of milliseconds to sleep each cycle. One cycle is FM_CHILD_STAT_SLEEP_FILECOUNT.

FM_CHILD_STAT_SLEEP_FILECOUNT: The number of files to process (OS_stat) before sleeping FM_CHILD_STAT_SLEEP_MS. Works in tandem with FM_CHILD_STAT_SLEEP_MS to reduce CPU hogging while allowing slightly more customization to balance time the operator is waiting to get data back from a directory listing versus FM hogging the CPU with calls to OS_stat

In short: High SLEEP_MS means less CPU hogging by FM but a longer time to process a dir listing command Low SLEEP_MS means more potential CPU hogging by FM but shorter time to process a dir listing command High FILECOUNT means more potential CPU hogging by FM but a shorter time to process a dir listing command Low FILECOUNT means less CPU hogging by FM but longer time to process a dir listing command

Limits:

The default is zero unless the mission needs require them to be changed.

Definition at line 265 of file fm_platform_cfg.h.

10.8.2.11 FM_CHILD_TASK_NAME #define FM_CHILD_TASK_NAME "FM_CHILD_TASK"

Child Task Name - cFE object name.

Description:

This definition sets the FM child task object name. The task object name is required during child task creation by cFE Executive Services.

Limits:

FM requires that this name be defined, but otherwise places no limits on the definition. Refer to CFE Executive Services for specific information on limits related to object names.

Definition at line 299 of file fm_platform_cfg.h.

10.8.2.12 FM_CHILD_TASK_PRIORITY #define FM_CHILD_TASK_PRIORITY 205

Child Task Execution Priority.

Description:

This parameter sets the execution priority for the FM child task. It is highly recommended that this assignment be made by someone familiar with the system requirements for tasks running on the target platform. Note: This parameter is VxWorks® specific. Not all operating systems set task priority this way.

Limits:

Value to be no less than 1 and no greater than 255.

Priority Values:

Note that a small value has higher priority than a large value. Thus, 100 is higher priority than 150. It is also necessary to ensure that a child task has lower priority than its parent. It should be clear that a child task that runs ahead of its parent defeats the purpose of having a child task to run in the background.

Definition at line 338 of file fm_platform_cfg.h.

10.8.2.13 FM_CHILD_TASK_STACK_SIZE #define FM_CHILD_TASK_STACK_SIZE 20480
Child Task Stack Size.**Description:**

This definition sets the size in bytes of the FM child task stack. It is highly recommended that this assignment be made by someone familiar with the system requirements for tasks running on the target platform.

Limits:

The FM application limits this value to be no less than 2048 and no greater than 20480. These limits are purely arbitrary and may need to be modified for specific platforms.

Definition at line 315 of file fm_platform_cfg.h.

10.8.2.14 FM_DIR_LIST_FILE_DEFNAME #define FM_DIR_LIST_FILE_DEFNAME "/ram/fm_dirlist.out"
Default Directory List Output Filename.**Description:**

This definition is the default output filename used by the Get Directory List to File command handler when the output filename is not provided. The default filename is used whenever the commanded output filename is the empty string.

Limits:

The FM application does not place a limit on this configuration parameter, however the symbol must be defined and the name will be subject to the same verification tests as a commanded output filename. Set this parameter to the empty string if no default filename is desired.

Definition at line 123 of file fm_platform_cfg.h.

10.8.2.15 FM_DIR_LIST_FILE_ENTRIES #define FM_DIR_LIST_FILE_ENTRIES 3000
Maximum Directory List Output File Entries.**Description:**

This definition sets the upper limit for the number of directory entries that may be written to a Directory List output file. Directory List files are variable length, based on the number of directory entries actually written to the file. There may zero entries written to the file if the directory is empty. For most environments, this definition will play no role at all, as it will be set to a number much larger than the count of files that will ever exist in any directory at one time.

Limits:

The FM application limits this value to be no less than 100 and no greater than 10000.

Definition at line 142 of file fm_platform_cfg.h.

10.8.2.16 FM_DIR_LIST_FILE_SUBTYPE #define FM_DIR_LIST_FILE_SUBTYPE 12345
Directory List Output File Header Sub-Type.

Description:

This definition sets the cFE File Header sub-type value for FM Directory List data files. The value may be used to differentiate FM Directory List files from other data files.

Limits:

The FM application places no limits on this unsigned 32 bit value.

Definition at line 155 of file fm_platform_cfg.h.

10.8.2.17 FM_DIR_LIST_PKT_ENTRIES #define FM_DIR_LIST_PKT_ENTRIES 20
Directory List Telemetry Packet Entry Count.

Description:

This definition sets the number of directory entries contained in the Directory List telemetry packet. The command handler will read directory entries until reaching the index of the start entry (set via command argument) and then continue to read directory entries and populate the telemetry packet until there are either no more unread directory entries or until the telemetry packet is full.

Limits:

The FM application limits this value to be no less than 10 and no greater than 100. The number of directory entries in the telemetry packet will in large part determine the packet size.

Definition at line 180 of file fm_platform_cfg.h.

10.8.2.18 FM_MISSION_REV #define FM_MISSION_REV 0
Mission specific version number for FM application.

Description:

An application version number consists of four parts: major version number, minor version number, revision number and mission specific revision number. The mission specific revision number is defined here and the other parts are defined in "fm_version.h".

Limits:

Must be defined as a numeric value that is greater than or equal to zero.

Definition at line 99 of file fm_platform_cfg.h.

10.8.2.19 FM_TABLE_CFE_NAME #define FM_TABLE_CFE_NAME "FreeSpace"
Free Space Table Name - cFE object name.

Description:

Table object name is required during table creation.

Limits:

FM requires that this name be defined, but otherwise places no limits on the definition. Refer to CFE Table Services for specific information on limits related to table names.

Definition at line 372 of file fm_platform_cfg.h.

10.8.2.20 FM_TABLE_DEF_DESC #define FM_TABLE_DEF_DESC "FM File System Free Space Table"
Free Space Table Description.

Description:

Table files contain headers that include descriptive text. This text will be put into the file header during the table make process.

Limits:

FM requires that this name be defined, but otherwise places no limits on the definition. Refer to cFE Table Services for limits related to table descriptive text.

Definition at line 415 of file fm_platform_cfg.h.

10.8.2.21 FM_TABLE_DEF_NAME #define FM_TABLE_DEF_NAME "/cf/fm_monitor.tbl"
Monitor Table Name - filename with path.

Description:

Table name with path is required to load table at startup.

Limits:

FM requires that this name be defined, but otherwise places no limits on the definition. If the named table does not exist or fails validation, the table load will fail.

Definition at line 385 of file fm_platform_cfg.h.

10.8.2.22 FM_TABLE_ENTRY_COUNT #define FM_TABLE_ENTRY_COUNT 8
Number of Free Space Table Entries.

Description:

This value defines the number of entries in both the FM file system free space table and the FM file system free space telemetry packet. Note: this value does not define the number of file systems present or supported by the CFE-OSAL, the value only defines the number of file systems for which FM may be enabled to report free space data.

Limits:

FM limits this value to be not less than 1 and not greater than 32.

Definition at line 430 of file fm_platform_cfg.h.

10.8.2.23 FM_TABLE_FILENAME #define FM_TABLE_FILENAME "fm_monitor.tbl"
Monitor Table Name - filename without path.

Description:

Table name without path defines the output name for the table file created during the table make process.

Limits:

FM requires that this name be defined, but otherwise places no limits on the definition. If the table name is not valid then the make process may fail, or the table file may be unloadable to the target hardware.

Definition at line 400 of file fm_platform_cfg.h.

10.8.2.24 FM_TABLE_VALIDATION_ERR #define FM_TABLE_VALIDATION_ERR (-1)
Table Data Validation Error Code.

Description:

Table data is verified during the table load process. Should the validation process fail, this value will be returned by FM to cFE Table Services and displayed in an event message.

Limits:

FM requires that this value be defined, but otherwise places no limits on the definition. Refer to cFE Table Services for limits related to error return values.

Definition at line 445 of file fm_platform_cfg.h.

10.9 CFS File Manager Version

Macros

- #define FM_MAJOR_VERSION 2
Major version number.
- #define FM_MINOR_VERSION 6
Minor version number.
- #define FM_REVISION 99
Revision number.

10.9.1 Detailed Description

Version Numbers

10.9.2 Macro Definition Documentation

10.9.2.1 FM_MAJOR_VERSION #define FM_MAJOR_VERSION 2
Major version number.
Definition at line 35 of file fm_version.h.

10.9.2.2 FM_MINOR_VERSION #define FM_MINOR_VERSION 6
Minor version number.
Definition at line 36 of file fm_version.h.

10.9.2.3 FM_REVISION #define FM_REVISION 99
Revision number.
Definition at line 37 of file fm_version.h.

10.10 cFE Return Code Defines

Macros

- #define CFE_SUCCESS ((CFE_Status_t)0)
Successful execution.
- #define CFE_STATUS_NO_COUNTER_INCREMENT ((CFE_Status_t)0x48000001)

- `#define CFE_STATUS_WRONG_MSG_LENGTH ((CFE_Status_t)0xc8000002)`
Wrong Message Length.
- `#define CFE_STATUS_UNKNOWN_MSG_ID ((CFE_Status_t)0xc8000003)`
Unknown Message ID.
- `#define CFE_STATUS_BAD_COMMAND_CODE ((CFE_Status_t)0xc8000004)`
Bad Command Code.
- `#define CFE_STATUS_EXTERNAL_RESOURCE_FAIL ((CFE_Status_t)0xc8000005)`
External failure.
- `#define CFE_STATUS_REQUEST_ALREADY_PENDING ((int32)0xc8000006)`
Request already pending.
- `#define CFE_STATUS_VALIDATION_FAILURE ((int32)0xc8000007)`
Request or input value failed basic structural validation.
- `#define CFE_STATUS_RANGE_ERROR ((int32)0xc8000008)`
Request or input value is out of range.
- `#define CFE_STATUS_INCORRECT_STATE ((int32)0xc8000009)`
Cannot process request at this time.
- `#define CFE_STATUS_NOT_IMPLEMENTED ((CFE_Status_t)0xc800ffff)`
Not Implemented.
- `#define CFE_EVS_UNKNOWN_FILTER ((CFE_Status_t)0xc2000001)`
Unknown Filter.
- `#define CFE_EVS_APP_NOT_REGISTERED ((CFE_Status_t)0xc2000002)`
Application Not Registered.
- `#define CFE_EVS_APP_ILLEGAL_APP_ID ((CFE_Status_t)0xc2000003)`
Illegal Application ID.
- `#define CFE_EVS_APP_FILTER_OVERLOAD ((CFE_Status_t)0xc2000004)`
Application Filter Overload.
- `#define CFE_EVS_RESET_AREA_POINTER ((CFE_Status_t)0xc2000005)`
Reset Area Pointer Failure.
- `#define CFE_EVS_EVT_NOT_REGISTERED ((CFE_Status_t)0xc2000006)`
Event Not Registered.
- `#define CFE_EVS_FILE_WRITE_ERROR ((CFE_Status_t)0xc2000007)`
File Write Error.
- `#define CFE_EVS_INVALID_PARAMETER ((CFE_Status_t)0xc2000008)`
Invalid Pointer.
- `#define CFE_EVS_APP_SQUELCHED ((CFE_Status_t)0xc2000009)`
Event squelched.
- `#define CFE_EVS_NOT_IMPLEMENTED ((CFE_Status_t)0xc200ffff)`
Not Implemented.
- `#define CFE_ES_ERR_RESOURCEID_NOT_VALID ((CFE_Status_t)0xc4000001)`
Resource ID is not valid.
- `#define CFE_ES_ERR_NAME_NOT_FOUND ((CFE_Status_t)0xc4000002)`
Resource Name Error.
- `#define CFE_ES_ERR_APP_CREATE ((CFE_Status_t)0xc4000004)`
Application Create Error.
- `#define CFE_ES_ERR_CHILD_TASK_CREATE ((CFE_Status_t)0xc4000005)`
Child Task Create Error.

- #define CFE_ES_ERR_SYS_LOG_FULL ((CFE_Status_t)0xc4000006)
System Log Full.
- #define CFE_ES_ERR_MEM_BLOCK_SIZE ((CFE_Status_t)0xc4000008)
Memory Block Size Error.
- #define CFE_ES_ERR_LOAD_LIB ((CFE_Status_t)0xc4000009)
Load Library Error.
- #define CFE_ES_BAD_ARGUMENT ((CFE_Status_t)0xc400000a)
Bad Argument.
- #define CFE_ES_ERR_CHILD_TASK_REGISTER ((CFE_Status_t)0xc400000b)
Child Task Register Error.
- #define CFE_ES_CDS_ALREADY_EXISTS ((CFE_Status_t)0x4400000d)
CDS Already Exists.
- #define CFE_ES_CDS_INSUFFICIENT_MEMORY ((CFE_Status_t)0xc400000e)
CDS Insufficient Memory.
- #define CFE_ES_CDS_INVALID_NAME ((CFE_Status_t)0xc400000f)
CDS Invalid Name.
- #define CFE_ES_CDS_INVALID_SIZE ((CFE_Status_t)0xc4000010)
CDS Invalid Size.
- #define CFE_ES_CDS_INVALID ((CFE_Status_t)0xc4000012)
CDS Invalid.
- #define CFE_ES_CDS_ACCESS_ERROR ((CFE_Status_t)0xc4000013)
CDS Access Error.
- #define CFE_ES_FILE_IO_ERR ((CFE_Status_t)0xc4000014)
File IO Error.
- #define CFE_ES_RST_ACCESS_ERR ((CFE_Status_t)0xc4000015)
Reset Area Access Error.
- #define CFE_ES_ERR_APP_REGISTER ((CFE_Status_t)0xc4000017)
Application Register Error.
- #define CFE_ES_ERR_CHILD_TASK_DELETE ((CFE_Status_t)0xc4000018)
Child Task Delete Error.
- #define CFE_ES_ERR_CHILD_TASK_DELETE_MAIN_TASK ((CFE_Status_t)0xc4000019)
Child Task Delete Passed Main Task.
- #define CFE_ES_CDS_BLOCK_CRC_ERR ((CFE_Status_t)0xc400001A)
CDS Block CRC Error.
- #define CFE_ES_MUT_SEM_DELETE_ERR ((CFE_Status_t)0xc400001B)
Mutex Semaphore Delete Error.
- #define CFE_ES_BIN_SEM_DELETE_ERR ((CFE_Status_t)0xc400001C)
Binary Semaphore Delete Error.
- #define CFE_ES_COUNT_SEM_DELETE_ERR ((CFE_Status_t)0xc400001D)
Counting Semaphore Delete Error.
- #define CFE_ES_QUEUE_DELETE_ERR ((CFE_Status_t)0xc400001E)
Queue Delete Error.
- #define CFE_ES_FILE_CLOSE_ERR ((CFE_Status_t)0xc400001F)
File Close Error.
- #define CFE_ES_CDS_WRONG_TYPE_ERR ((CFE_Status_t)0xc4000020)
CDS Wrong Type Error.
- #define CFE_ES_CDS_OWNER_ACTIVE_ERR ((CFE_Status_t)0xc4000022)

- CDS Owner Active Error.*
- #define CFE_ES_APP_CLEANUP_ERR ((CFE_Status_t)0xc4000023)
Application Cleanup Error.
 - #define CFE_ES_TIMER_DELETE_ERR ((CFE_Status_t)0xc4000024)
Timer Delete Error.
 - #define CFE_ES_BUFFER_NOT_IN_POOL ((CFE_Status_t)0xc4000025)
Buffer Not In Pool.
 - #define CFE_ES_TASK_DELETE_ERR ((CFE_Status_t)0xc4000026)
Task Delete Error.
 - #define CFE_ES_OPERATION_TIMED_OUT ((CFE_Status_t)0xc4000027)
Operation Timed Out.
 - #define CFE_ES_LIB_ALREADY_LOADED ((CFE_Status_t)0x44000028)
Library Already Loaded.
 - #define CFE_ES_ERR_SYS_LOG_TRUNCATED ((CFE_Status_t)0x44000029)
System Log Message Truncated.
 - #define CFE_ES_NO_RESOURCE_IDS_AVAILABLE ((CFE_Status_t)0xc400002B)
Resource ID is not available.
 - #define CFE_ES_POOL_BLOCK_INVALID ((CFE_Status_t)0xc400002C)
Invalid pool block.
 - #define CFE_ES_ERR_DUPLICATE_NAME ((CFE_Status_t)0xc400002E)
Duplicate Name Error.
 - #define CFE_ES_NOT_IMPLEMENTED ((CFE_Status_t)0xc400ffff)
Not Implemented.
 - #define CFE_FS_BAD_ARGUMENT ((CFE_Status_t)0xc6000001)
Bad Argument.
 - #define CFE_FS_INVALID_PATH ((CFE_Status_t)0xc6000002)
Invalid Path.
 - #define CFE_FS_FNAME_TOO_LONG ((CFE_Status_t)0xc6000003)
Filename Too Long.
 - #define CFE_FS_NOT_IMPLEMENTED ((CFE_Status_t)0xc600ffff)
Not Implemented.
 - #define CFE_SB_TIME_OUT ((CFE_Status_t)0xca000001)
Time Out.
 - #define CFE_SB_NO_MESSAGE ((CFE_Status_t)0xca000002)
No Message.
 - #define CFE_SB_BAD_ARGUMENT ((CFE_Status_t)0xca000003)
Bad Argument.
 - #define CFE_SB_MAX_PIPES_MET ((CFE_Status_t)0xca000004)
Max Pipes Met.
 - #define CFE_SB_PIPE_CR_ERR ((CFE_Status_t)0xca000005)
Pipe Create Error.
 - #define CFE_SB_PIPE_RD_ERR ((CFE_Status_t)0xca000006)
Pipe Read Error.
 - #define CFE_SB_MSG_TOO_BIG ((CFE_Status_t)0xca000007)
Message Too Big.
 - #define CFE_SB_BUF_ALOC_ERR ((CFE_Status_t)0xca000008)
Buffer Allocation Error.

- #define CFE_SB_MAX_MSGS_MET ((CFE_Status_t)0xca000009)
Max Messages Met.
- #define CFE_SB_MAX_DESTS_MET ((CFE_Status_t)0xca00000a)
Max Destinations Met.
- #define CFE_SB_INTERNAL_ERR ((CFE_Status_t)0xca00000c)
Internal Error.
- #define CFE_SB_WRONG_MSG_TYPE ((CFE_Status_t)0xca00000d)
Wrong Message Type.
- #define CFE_SB_BUFFER_INVALID ((CFE_Status_t)0xca00000e)
Buffer Invalid.
- #define CFE_SB_NOT_IMPLEMENTED ((CFE_Status_t)0xca00ffff)
Not Implemented.
- #define CFE_TBL_ERR_INVALID_HANDLE ((CFE_Status_t)0xcc000001)
Invalid Handle.
- #define CFE_TBL_ERR_INVALID_NAME ((CFE_Status_t)0xcc000002)
Invalid Name.
- #define CFE_TBL_ERR_INVALID_SIZE ((CFE_Status_t)0xcc000003)
Invalid Size.
- #define CFE_TBL_INFO_UPDATE_PENDING ((CFE_Status_t)0x4c000004)
Update Pending.
- #define CFE_TBL_ERR_NEVER_LOADED ((CFE_Status_t)0xcc000005)
Never Loaded.
- #define CFE_TBL_ERR_REGISTRY_FULL ((CFE_Status_t)0xcc000006)
Registry Full.
- #define CFE_TBL_WARN_DUPLICATE ((CFE_Status_t)0x4c000007)
Duplicate Warning.
- #define CFE_TBL_ERR_NO_ACCESS ((CFE_Status_t)0xcc000008)
No Access.
- #define CFE_TBL_ERR_UNREGISTERED ((CFE_Status_t)0xcc000009)
Unregistered.
- #define CFE_TBL_ERR_HANDLES_FULL ((CFE_Status_t)0xcc00000B)
Handles Full.
- #define CFE_TBL_ERR_DUPLICATE_DIFF_SIZE ((CFE_Status_t)0xcc00000C)
Duplicate Table With Different Size.
- #define CFE_TBL_ERR_DUPLICATE_NOT_OWNED ((CFE_Status_t)0xcc00000D)
Duplicate Table And Not Owned.
- #define CFE_TBL_INFO_UPDATED ((CFE_Status_t)0x4c00000E)
Updated.
- #define CFE_TBL_ERR_NO_BUFFER_AVAIL ((CFE_Status_t)0xcc00000F)
No Buffer Available.
- #define CFE_TBL_ERR_DUMP_ONLY ((CFE_Status_t)0xcc000010)
Dump Only Error.
- #define CFE_TBL_ERR_ILLEGAL_SRC_TYPE ((CFE_Status_t)0xcc000011)
Illegal Source Type.
- #define CFE_TBL_ERR_LOAD_IN_PROGRESS ((CFE_Status_t)0xcc000012)
Load In Progress.
- #define CFE_TBL_ERR_FILE_TOO_LARGE ((CFE_Status_t)0xcc000014)

File Too Large.

- #define CFE_TBL_WARN_SHORT_FILE ((CFE_Status_t)0x4c000015)

Short File Warning.

- #define CFE_TBL_ERR_BAD_CONTENT_ID ((CFE_Status_t)0xcc000016)

Bad Content ID.

- #define CFE_TBL_INFO_NO_UPDATE_PENDING ((CFE_Status_t)0x4c000017)

No Update Pending.

- #define CFE_TBL_INFO_TABLE_LOCKED ((CFE_Status_t)0x4c000018)

Table Locked.

- #define CFE_TBL_INFO_VALIDATION_PENDING ((CFE_Status_t)0x4c000019)

- #define CFE_TBL_INFO_NO_VALIDATION_PENDING ((CFE_Status_t)0x4c00001A)

- #define CFE_TBL_ERR_BAD_SUBTYPE_ID ((CFE_Status_t)0xcc00001B)

Bad Subtype ID.

- #define CFE_TBL_ERR_FILE_SIZE_INCONSISTENT ((CFE_Status_t)0xcc00001C)

File Size Inconsistent.

- #define CFE_TBL_ERR_NO_STD_HEADER ((CFE_Status_t)0xcc00001D)

No Standard Header.

- #define CFE_TBL_ERR_NO_TBL_HEADER ((CFE_Status_t)0xcc00001E)

No Table Header.

- #define CFE_TBL_ERR_FILENAME_TOO_LONG ((CFE_Status_t)0xcc00001F)

Filename Too Long.

- #define CFE_TBL_ERR_FILE_FOR_WRONG_TABLE ((CFE_Status_t)0xcc000020)

File For Wrong Table.

- #define CFE_TBL_ERR_LOAD_INCOMPLETE ((CFE_Status_t)0xcc000021)

Load Incomplete.

- #define CFE_TBL_WARN_PARTIAL_LOAD ((CFE_Status_t)0x4c000022)

Partial Load Warning.

- #define CFE_TBL_ERR_PARTIAL_LOAD ((CFE_Status_t)0xcc000023)

Partial Load Error.

- #define CFE_TBL_INFO_DUMP_PENDING ((CFE_Status_t)0x4c000024)

Dump Pending.

- #define CFE_TBL_ERR_INVALID_OPTIONS ((CFE_Status_t)0xcc000025)

Invalid Options.

- #define CFE_TBL_WARN_NOT_CRITICAL ((CFE_Status_t)0x4c000026)

Not Critical Warning.

- #define CFE_TBL_INFO_RECOVERED_TBL ((CFE_Status_t)0x4c000027)

Recovered Table.

- #define CFE_TBL_ERR_BAD_SPACECRAFT_ID ((CFE_Status_t)0xcc000028)

Bad Spacecraft ID.

- #define CFE_TBL_ERR_BAD_PROCESSOR_ID ((CFE_Status_t)0xcc000029)

Bad Processor ID.

- #define CFE_TBL_MESSAGE_ERROR ((CFE_Status_t)0xcc00002a)

Message Error.

- #define CFE_TBL_ERR_SHORT_FILE ((CFE_Status_t)0xcc00002b)

- #define CFE_TBL_ERR_ACCESS ((CFE_Status_t)0xcc00002c)

- #define CFE_TBL_BAD_ARGUMENT ((CFE_Status_t)0xcc00002d)

Bad Argument.

- #define CFE_TBL_NOT_IMPLEMENTED ((CFE_Status_t)0xcc00ffff)
Not Implemented.
- #define CFE_TIME_NOT_IMPLEMENTED ((CFE_Status_t)0xce00ffff)
Not Implemented.
- #define CFE_TIME_INTERNAL_ONLY ((CFE_Status_t)0xce000001)
Internal Only.
- #define CFE_TIME_OUT_OF_RANGE ((CFE_Status_t)0xce000002)
Out Of Range.
- #define CFE_TIME_TOO_MANY_SYNCH_CALLBACKS ((CFE_Status_t)0xce000003)
Too Many Sync Callbacks.
- #define CFE_TIME_CALLBACK_NOT_REGISTERED ((CFE_Status_t)0xce000004)
Callback Not Registered.
- #define CFE_TIME_BAD_ARGUMENT ((CFE_Status_t)0xce000005)
Bad Argument.

10.10.1 Detailed Description

10.10.2 Macro Definition Documentation

10.10.2.1 CFE_ES_APP_CLEANUP_ERR #define CFE_ES_APP_CLEANUP_ERR ((CFE_Status_t)0xc4000023)
Application Cleanup Error.

Occurs when an attempt was made to Clean Up an application which involves calling Table, EVS, and SB cleanup functions, then deleting all ES resources, child tasks, and unloading the object module. The approach here is to keep going even though one of these steps had an error. There will be syslog messages detailing each problem.

Definition at line 588 of file cfe_error.h.

10.10.2.2 CFE_ES_BAD_ARGUMENT #define CFE_ES_BAD_ARGUMENT ((CFE_Status_t)0xc400000a)
Bad Argument.

Bad parameter passed into an ES API.

Definition at line 399 of file cfe_error.h.

10.10.2.3 CFE_ES_BIN_SEM_DELETE_ERR #define CFE_ES_BIN_SEM_DELETE_ERR ((CFE_Status_t)0xc400001c)
Binary Semaphore Delete Error.

Occurs when trying to delete a Binary Semaphore that belongs to a task that ES is cleaning up.

Definition at line 527 of file cfe_error.h.

10.10.2.4 CFE_ES_BUFFER_NOT_IN_POOL #define CFE_ES_BUFFER_NOT_IN_POOL ((CFE_Status_t)0xc4000025)
Buffer Not In Pool.

The specified address is not in the memory pool.

Definition at line 605 of file cfe_error.h.

10.10.2.5 CFE_ES_CDS_ACCESS_ERROR #define CFE_ES_CDS_ACCESS_ERROR ((CFE_Status_t)0xc4000013)
CDS Access Error.

The CDS was inaccessible

Definition at line 458 of file cfe_error.h.

10.10.2.6 CFE_ES_CDS_ALREADY_EXISTS #define CFE_ES_CDS_ALREADY_EXISTS ((CFE_Status_t)0x4400000d)
CDS Already Exists.

The Application is receiving the pointer to a CDS that was already present.

Definition at line 415 of file cfe_error.h.

10.10.2.7 CFE_ES_CDS_BLOCK_CRC_ERR #define CFE_ES_CDS_BLOCK_CRC_ERR ((CFE_Status_t)0xc400001A)
CDS Block CRC Error.

Occurs when trying to read a CDS Data block and the CRC of the current data does not match the stored CRC for the data. Either the contents of the CDS Data Block are corrupted or the CDS Control Block is corrupted.

Definition at line 509 of file cfe_error.h.

10.10.2.8 CFE_ES_CDS_INSUFFICIENT_MEMORY #define CFE_ES_CDS_INSUFFICIENT_MEMORY ((CFE_Status_t)0xc400000e)
CDS Insufficient Memory.

The Application is requesting a CDS Block that is larger than the remaining CDS memory.

Definition at line 424 of file cfe_error.h.

10.10.2.9 CFE_ES_CDS_INVALID #define CFE_ES_CDS_INVALID ((CFE_Status_t)0xc4000012)
CDS Invalid.

The CDS contents are invalid.

Definition at line 450 of file cfe_error.h.

10.10.2.10 CFE_ES_CDS_INVALID_NAME #define CFE_ES_CDS_INVALID_NAME ((CFE_Status_t)0xc400000f)
CDS Invalid Name.

The Application is requesting a CDS Block with an invalid ASCII string name. Either the name is too long (> CFE_MISSION_ES_CDS_MAX_NAME_LENGTH) or was an empty string.

Definition at line 433 of file cfe_error.h.

10.10.2.11 CFE_ES_CDS_INVALID_SIZE #define CFE_ES_CDS_INVALID_SIZE ((CFE_Status_t)0xc4000010)
CDS Invalid Size.

The Application is requesting a CDS Block or Pool with a size beyond the applicable limits, either too large or too small/zero.

Definition at line 442 of file cfe_error.h.

10.10.2.12 CFE_ES_CDS_OWNER_ACTIVE_ERR #define CFE_ES_CDS_OWNER_ACTIVE_ERR ((CFE_Status_t)0xc4000022)
CDS Owner Active Error.

Occurs when an attempt was made to delete a CDS when an application with the same name associated with the CDS is still present. CDSs can ONLY be deleted when Applications that created them are not present in the system.

Definition at line 575 of file cfe_error.h.

10.10.2.13 CFE_ES_CDS_WRONG_TYPE_ERR #define CFE_ES_CDS_WRONG_TYPE_ERR ((CFE_Status_t)0xc4000020)
CDS Wrong Type Error.

Occurs when Table Services is trying to delete a Critical Data Store that is not a Critical Table Image or when Executive Services is trying to delete a Critical Table Image.

Definition at line 564 of file cfe_error.h.

10.10.2.14 CFE_ES_COUNT_SEM_DELETE_ERR #define CFE_ES_COUNT_SEM_DELETE_ERR ((CFE_Status_t)0xc400001D)
Counting Semaphore Delete Error.
Occurs when trying to delete a Counting Semaphore that belongs to a task that ES is cleaning up.
Definition at line 536 of file cfe_error.h.

10.10.2.15 CFE_ES_ERR_APP_CREATE #define CFE_ES_ERR_APP_CREATE ((CFE_Status_t)0xc4000004)
Application Create Error.
There was an error loading or creating the App.
Definition at line 358 of file cfe_error.h.

10.10.2.16 CFE_ES_ERR_APP_REGISTER #define CFE_ES_ERR_APP_REGISTER ((CFE_Status_t)0xc4000017)
Application Register Error.
Occurs when a task cannot be registered in ES global tables
Definition at line 482 of file cfe_error.h.

10.10.2.17 CFE_ES_ERR_CHILD_TASK_CREATE #define CFE_ES_ERR_CHILD_TASK_CREATE ((CFE_Status_t)0xc4000005)
Child Task Create Error.
There was an error creating a child task.
Definition at line 366 of file cfe_error.h.

10.10.2.18 CFE_ES_ERR_CHILD_TASK_DELETE #define CFE_ES_ERR_CHILD_TASK_DELETE ((CFE_Status_t)0xc4000018)
Child Task Delete Error.
There was an error deleting a child task.
Definition at line 490 of file cfe_error.h.

10.10.2.19 CFE_ES_ERR_CHILD_TASK_DELETE_MAIN_TASK #define CFE_ES_ERR_CHILD_TASK_DELETE_↔
MAIN_TASK ((CFE_Status_t)0xc4000019)
Child Task Delete Passed Main Task.
There was an attempt to delete a cFE App Main Task with the [CFE_ES_DeleteChildTask](#) API.
Definition at line 499 of file cfe_error.h.

10.10.2.20 CFE_ES_ERR_CHILD_TASK_REGISTER #define CFE_ES_ERR_CHILD_TASK_REGISTER ((CFE_Status_t)0xc400000b)
Child Task Register Error.
Errors occurred when trying to register a child task.
Definition at line 407 of file cfe_error.h.

10.10.2.21 CFE_ES_ERR_DUPLICATE_NAME #define CFE_ES_ERR_DUPLICATE_NAME ((CFE_Status_t)0xc400002E)
Duplicate Name Error.
Resource creation failed due to the name already existing in the system.
Definition at line 668 of file cfe_error.h.

10.10.2.22 CFE_ES_ERR_LOAD_LIB #define CFE_ES_ERR_LOAD_LIB ((CFE_Status_t)0xc4000009)
Load Library Error.
Could not load the shared library.

Definition at line 391 of file cfe_error.h.

10.10.2.23 CFE_ES_ERR_MEM_BLOCK_SIZE #define CFE_ES_ERR_MEM_BLOCK_SIZE ((CFE_Status_t)0xc4000008)
Memory Block Size Error.

The block size requested is invalid.

Definition at line 383 of file cfe_error.h.

10.10.2.24 CFE_ES_ERR_NAME_NOT_FOUND #define CFE_ES_ERR_NAME_NOT_FOUND ((CFE_Status_t)0xc4000002)
Resource Name Error.

There is no match in the system for the given name.

Definition at line 350 of file cfe_error.h.

10.10.2.25 CFE_ES_ERR_RESOURCEID_NOT_VALID #define CFE_ES_ERR_RESOURCEID_NOT_VALID ((CFE_Status_t)0xc4000000)
Resource ID is not valid.

This error indicates that the passed in resource identifier (App ID, Lib ID, Counter ID, etc) did not validate.

Definition at line 342 of file cfe_error.h.

10.10.2.26 CFE_ES_ERR_SYS_LOG_FULL #define CFE_ES_ERR_SYS_LOG_FULL ((CFE_Status_t)0xc4000006)
System Log Full.

The cFE system Log is full. This error means the message was not logged at all

Definition at line 375 of file cfe_error.h.

10.10.2.27 CFE_ES_ERR_SYS_LOG_TRUNCATED #define CFE_ES_ERR_SYS_LOG_TRUNCATED ((CFE_Status_t)0x44000029)
System Log Message Truncated.

This information code means the last syslog message was truncated due to insufficient space in the log buffer.

Definition at line 640 of file cfe_error.h.

10.10.2.28 CFE_ES_FILE_CLOSE_ERR #define CFE_ES_FILE_CLOSE_ERR ((CFE_Status_t)0xc400001F)
File Close Error.

Occurs when trying to close a file that belongs to a task that ES is cleaning up.

Definition at line 554 of file cfe_error.h.

10.10.2.29 CFE_ES_FILE_IO_ERR #define CFE_ES_FILE_IO_ERR ((CFE_Status_t)0xc4000014)
File IO Error.

Occurs when a file operation fails

Definition at line 466 of file cfe_error.h.

10.10.2.30 CFE_ES_LIB_ALREADY_LOADED #define CFE_ES_LIB_ALREADY_LOADED ((CFE_Status_t)0x44000028)
Library Already Loaded.

Occurs if CFE_ES_LoadLibrary detects that the requested library name is already loaded.

Definition at line 631 of file cfe_error.h.

10.10.2.31 CFE_ES_MUT_SEM_DELETE_ERR #define CFE_ES_MUT_SEM_DELETE_ERR ((CFE_Status_t)0xc400001B)
Mutex Semaphore Delete Error.

Occurs when trying to delete a Mutex that belongs to a task that ES is cleaning up.

Definition at line 518 of file cfe_error.h.

10.10.2.32 CFE_ES_NO_RESOURCE_IDS_AVAILABLE #define CFE_ES_NO_RESOURCE_IDS_AVAILABLE ((CFE_Status_t)0xc400002A)
Resource ID is not available.

This error indicates that the maximum resource identifiers (App ID, Lib ID, Counter ID, etc) has already been reached and a new ID cannot be allocated.

Definition at line 650 of file cfe_error.h.

10.10.2.33 CFE_ES_NOT_IMPLEMENTED #define CFE_ES_NOT_IMPLEMENTED ((CFE_Status_t)0xc400ffff)
Not Implemented.

Current version of cFE does not have the function or the feature of the function implemented. This could be due to either an early build of the cFE for this platform or the platform does not support the specified feature.

Definition at line 679 of file cfe_error.h.

10.10.2.34 CFE_ES_OPERATION_TIMED_OUT #define CFE_ES_OPERATION_TIMED_OUT ((CFE_Status_t)0xc4000027)
Operation Timed Out.

Occurs if the timeout for a given operation was exceeded

Definition at line 622 of file cfe_error.h.

10.10.2.35 CFE_ES_POOL_BLOCK_INVALID #define CFE_ES_POOL_BLOCK_INVALID ((CFE_Status_t)0xc400002C)
Invalid pool block.

Software attempted to "put" a block back into a pool which does not appear to belong to that pool. This may mean the pool has become unusable due to memory corruption.

Definition at line 660 of file cfe_error.h.

10.10.2.36 CFE_ES_QUEUE_DELETE_ERR #define CFE_ES_QUEUE_DELETE_ERR ((CFE_Status_t)0xc400001E)
Queue Delete Error.

Occurs when trying to delete a Queue that belongs to a task that ES is cleaning up.

Definition at line 545 of file cfe_error.h.

10.10.2.37 CFE_ES_RST_ACCESS_ERR #define CFE_ES_RST_ACCESS_ERR ((CFE_Status_t)0xc4000015)
Reset Area Access Error.

Occurs when the BSP is not successful in returning the reset area address.

Definition at line 474 of file cfe_error.h.

10.10.2.38 CFE_ES_TASK_DELETE_ERR #define CFE_ES_TASK_DELETE_ERR ((CFE_Status_t)0xc4000026)
Task Delete Error.

Occurs when trying to delete a task that ES is cleaning up.

Definition at line 614 of file cfe_error.h.

10.10.2.39 CFE_ES_TIMER_DELETE_ERR #define CFE_ES_TIMER_DELETE_ERR ((CFE_Status_t)0xc4000024)
Timer Delete Error.

Occurs when trying to delete a Timer that belongs to a task that ES is cleaning up.

Definition at line 597 of file cfe_error.h.

10.10.2.40 CFE_EVS_APP_FILTER_OVERLOAD #define CFE_EVS_APP_FILTER_OVERLOAD ((CFE_Status_t)0xc2000004)
Application Filter Overload.

Number of Application event filters input upon registration is greater than CFE_PLATFORM_EVS_MAX_EVENT_FILTERS
Definition at line 276 of file cfe_error.h.

10.10.2.41 CFE_EVS_APP_ILLEGAL_APP_ID #define CFE_EVS_APP_ILLEGAL_APP_ID ((CFE_Status_t)0xc2000003)
Illegal Application ID.

Application ID returned by CFE_ES_GetAppIDByName is greater than CFE_PLATFORM_ES_MAX_APPLICATIONS
Definition at line 267 of file cfe_error.h.

10.10.2.42 CFE_EVS_APP_NOT_REGISTERED #define CFE_EVS_APP_NOT_REGISTERED ((CFE_Status_t)0xc2000002)

Application Not Registered.

Calling application never previously called CFE_EVS_Register

Definition at line 258 of file cfe_error.h.

10.10.2.43 CFE_EVS_APP_SQUELCHED #define CFE_EVS_APP_SQUELCHED ((CFE_Status_t)0xc2000009)

Event squelched.

Event squelched due to being sent at too high a rate

Definition at line 318 of file cfe_error.h.

10.10.2.44 CFE_EVS_EVT_NOT_REGISTERED #define CFE_EVS_EVT_NOT_REGISTERED ((CFE_Status_t)0xc2000006)

Event Not Registered.

CFE_EVS_ResetFilter EventID argument was not found in any event filter registered by the calling application.

Definition at line 294 of file cfe_error.h.

10.10.2.45 CFE_EVS_FILE_WRITE_ERROR #define CFE_EVS_FILE_WRITE_ERROR ((CFE_Status_t)0xc2000007)

File Write Error.

A file write error occurred while processing an EVS command

Definition at line 302 of file cfe_error.h.

10.10.2.46 CFE_EVS_INVALID_PARAMETER #define CFE_EVS_INVALID_PARAMETER ((CFE_Status_t)0xc2000008)

Invalid Pointer.

Invalid parameter supplied to EVS command

Definition at line 310 of file cfe_error.h.

10.10.2.47 CFE_EVS_NOT_IMPLEMENTED #define CFE_EVS_NOT_IMPLEMENTED ((CFE_Status_t)0xc200ffff)

Not Implemented.

Current version of cFE does not have the function or the feature of the function implemented. This could be due to either an early build of the cFE for this platform or the platform does not support the specified feature.

Definition at line 329 of file cfe_error.h.

10.10.2.48 CFE_EVS_RESET_AREA_POINTER #define CFE_EVS_RESET_AREA_POINTER ((CFE_Status_t)0xc2000005)
Reset Area Pointer Failure.

Could not get pointer to the ES Reset area, so we could not get the pointer to the EVS Log.

Definition at line 285 of file cfe_error.h.

10.10.2.49 CFE_EVS_UNKNOWN_FILTER #define CFE_EVS_UNKNOWN_FILTER ((CFE_Status_t)0xc2000001)
Unknown Filter.

CFE_EVS_Register FilterScheme parameter was illegal

Definition at line 250 of file cfe_error.h.

10.10.2.50 CFE_FS_BAD_ARGUMENT #define CFE_FS_BAD_ARGUMENT ((CFE_Status_t)0xc6000001)
Bad Argument.

A parameter given by a caller to a File Services API did not pass validation checks.

Definition at line 692 of file cfe_error.h.

10.10.2.51 CFE_FS_FNAME_TOO_LONG #define CFE_FS_FNAME_TOO_LONG ((CFE_Status_t)0xc6000003)
Filename Too Long.

FS filename string is too long

Definition at line 708 of file cfe_error.h.

10.10.2.52 CFE_FS_INVALID_PATH #define CFE_FS_INVALID_PATH ((CFE_Status_t)0xc6000002)
Invalid Path.

FS was unable to extract a filename from a path string

Definition at line 700 of file cfe_error.h.

10.10.2.53 CFE_FS_NOT_IMPLEMENTED #define CFE_FS_NOT_IMPLEMENTED ((CFE_Status_t)0xc600ffff)
Not Implemented.

Current version of cFE does not have the function or the feature of the function implemented. This could be due to either an early build of the cFE for this platform or the platform does not support the specified feature.

Definition at line 719 of file cfe_error.h.

10.10.2.54 CFE_SB_BAD_ARGUMENT #define CFE_SB_BAD_ARGUMENT ((CFE_Status_t)0xca000003)
Bad Argument.

A parameter given by a caller to a Software Bus API did not pass validation checks.

Definition at line 750 of file cfe_error.h.

10.10.2.55 CFE_SB_BUF_ALOC_ERR #define CFE_SB_BUF_ALOC_ERR ((CFE_Status_t)0xca000008)
Buffer Allocation Error.

Returned when the memory in the SB message buffer pool has been depleted. The amount of memory in the pool is dictated by the configuration parameter **CFE_PLATFORM_SB_BUF_MEMORY_BYTES** specified in the cfe_platform_cfg.h file. Also the memory statistics, including current utilization figures and high water marks for the SB Buffer memory pool can be monitored by sending a Software Bus command to send the SB statistics packet.

Definition at line 808 of file cfe_error.h.

10.10.2.56 CFE_SB_BUFFER_INVALID #define CFE_SB_BUFFER_INVALID ((CFE_Status_t)0xca00000e)

Buffer Invalid.

This error code will be returned when a request to release or send a zero copy buffer is invalid, such as if the handle or buffer is not correct or the buffer was previously released.

Definition at line 859 of file cfe_error.h.

10.10.2.57 CFE_SB_INTERNAL_ERR #define CFE_SB_INTERNAL_ERR ((CFE_Status_t)0xca00000c)

Internal Error.

This error code will be returned by the [CFE_SB_Subscribe](#) API if the code detects an internal index is out of range. The most likely cause would be a Single Event Upset.

Definition at line 840 of file cfe_error.h.

10.10.2.58 CFE_SB_MAX_DESTS_MET #define CFE_SB_MAX_DESTS_MET ((CFE_Status_t)0xca00000a)

Max Destinations Met.

Will be returned when calling one of the SB subscription API's if the SB routing table cannot accommodate another destination for a particular the given message ID. This occurs when the number of destinations in use meets the platform configuration parameter [CFE_PLATFORM_SB_MAX_DEST_PER_PKT](#).

Definition at line 830 of file cfe_error.h.

10.10.2.59 CFE_SB_MAX_MSGS_MET #define CFE_SB_MAX_MSGS_MET ((CFE_Status_t)0xca000009)

Max Messages Met.

Will be returned when calling one of the SB subscription API's if the SB routing table cannot accommodate another unique message ID because the platform configuration parameter [CFE_PLATFORM_SB_MAX_MSG_IDS](#) has been met.

Definition at line 818 of file cfe_error.h.

10.10.2.60 CFE_SB_MAX_PIPES_MET #define CFE_SB_MAX_PIPES_MET ((CFE_Status_t)0xca000004)

Max Pipes Met.

This error code will be returned from [CFE_SB_CreatePipe](#) when the SB cannot accommodate the request to create a pipe because the maximum number of pipes ([CFE_PLATFORM_SB_MAX_PIPES](#)) are in use. This configuration parameter is defined in the cfe_platform_cfg.h file.

Definition at line 761 of file cfe_error.h.

10.10.2.61 CFE_SB_MSG_TOO_BIG #define CFE_SB_MSG_TOO_BIG ((CFE_Status_t)0xca000007)

Message Too Big.

The size field in the message header indicates the message exceeds the max Software Bus message size. The max size is defined by configuration parameter [CFE_MISSION_SB_MAX_SB_MSG_SIZE](#) in cfe_mission_cfg.h

Definition at line 795 of file cfe_error.h.

10.10.2.62 CFE_SB_NO_MESSAGE #define CFE_SB_NO_MESSAGE ((CFE_Status_t)0xca000002)

No Message.

When "Polling" a pipe for a message in [CFE_SB_ReceiveBuffer](#), this return value indicates that there was not a message on the pipe.

Definition at line 741 of file cfe_error.h.

10.10.2.63 CFE_SB_NOT_IMPLEMENTED #define CFE_SB_NOT_IMPLEMENTED ((CFE_Status_t)0xca00ffff)

Not Implemented.

Current version of cFE does not have the function or the feature of the function implemented. This could be due to either an early build of the cFE for this platform or the platform does not support the specified feature.

Definition at line 870 of file cfe_error.h.

10.10.2.64 CFE_SB_PIPE_CR_ERR #define CFE_SB_PIPE_CR_ERR ((CFE_Status_t)0xca000005)

Pipe Create Error.

The maximum number of queues([OS_MAX_QUEUES](#)) are in use. Or possibly a lower level problem with creating the underlying queue has occurred such as a lack of memory. If the latter is the problem, the status code displayed in the event must be tracked.

Definition at line 772 of file cfe_error.h.

10.10.2.65 CFE_SB_PIPE_RD_ERR #define CFE_SB_PIPE_RD_ERR ((CFE_Status_t)0xca000006)

Pipe Read Error.

This return value indicates an error at the Queue read level. This error typically cannot be corrected by the caller. Some possible causes are: queue was not properly initialized or created, the number of bytes read from the queue was not the number of bytes requested in the read. The queue id is invalid. Similar errors regarding the pipe will be caught by higher level code in the Software Bus.

Definition at line 785 of file cfe_error.h.

10.10.2.66 CFE_SB_TIME_OUT #define CFE_SB_TIME_OUT ((CFE_Status_t)0xca000001)

Time Out.

In [CFE_SB_ReceiveBuffer](#), this return value indicates that a packet has not been received in the time given in the "timeout" parameter.

Definition at line 732 of file cfe_error.h.

10.10.2.67 CFE_SB_WRONG_MSG_TYPE #define CFE_SB_WRONG_MSG_TYPE ((CFE_Status_t)0xca00000d)

Wrong Message Type.

This error code will be returned when a request such as [CFE_MSG_SetMsgTime](#) is made on a packet that does not include a field for msg time.

Definition at line 849 of file cfe_error.h.

10.10.2.68 CFE_STATUS_BAD_COMMAND_CODE #define CFE_STATUS_BAD_COMMAND_CODE ((CFE_Status_t)0xc8000004)

Bad Command Code.

This error code will be returned when a message identification process determined that the command code is does not correspond to any known value

Definition at line 182 of file cfe_error.h.

10.10.2.69 CFE_STATUS_EXTERNAL_RESOURCE_FAIL #define CFE_STATUS_EXTERNAL_RESOURCE_FAIL ((CFE_Status_t)0xc8000005)

External failure.

This error indicates that the operation failed for some reason outside the scope of CFE. The real failure may have been in OSAL, PSP, or another dependent library.

Details of the original failure should be written to syslog and/or a system event before returning this error.
Definition at line 194 of file cfe_error.h.

10.10.2.70 CFE_STATUS_INCORRECT_STATE #define CFE_STATUS_INCORRECT_STATE ((int32)0xc8000009)
Cannot process request at this time.

The system is not currently in the correct state to accept the request at this time.
Definition at line 227 of file cfe_error.h.

10.10.2.71 CFE_STATUS_NO_COUNTER_INCREMENT #define CFE_STATUS_NO_COUNTER_INCREMENT ((CFE_Status_t)0x48000000)
No Counter Increment.

Informational code indicating that a command was processed successfully but that the command counter should *not* be incremented.
Definition at line 155 of file cfe_error.h.

10.10.2.72 CFE_STATUS_NOT_IMPLEMENTED #define CFE_STATUS_NOT_IMPLEMENTED ((CFE_Status_t)0xc800ffff)
Not Implemented.

Current version does not have the function or the feature of the function implemented. This could be due to either an early build for this platform or the platform does not support the specified feature.
Definition at line 238 of file cfe_error.h.

10.10.2.73 CFE_STATUS_RANGE_ERROR #define CFE_STATUS_RANGE_ERROR ((int32)0xc8000008)

Request or input value is out of range.
A message, table, or function call input contained a value that was outside the acceptable range, and the request was rejected.
Definition at line 219 of file cfe_error.h.

10.10.2.74 CFE_STATUS_REQUEST_ALREADY_PENDING #define CFE_STATUS_REQUEST_ALREADY_PENDING ((int32)0xc8000000)
Request already pending.

Commands or requests are already pending or the pending request limit has been reached. No more requests can be made until the current request(s) complete.
Definition at line 203 of file cfe_error.h.

10.10.2.75 CFE_STATUS_UNKNOWN_MSG_ID #define CFE_STATUS_UNKNOWN_MSG_ID ((CFE_Status_t)0xc8000003)
Unknown Message ID.

This error code will be returned when a message identification process determined that the message ID does not correspond to a known value
Definition at line 173 of file cfe_error.h.

10.10.2.76 CFE_STATUS_VALIDATION_FAILURE #define CFE_STATUS_VALIDATION_FAILURE ((int32)0xc8000007)
Request or input value failed basic structural validation.

A message or table input was not in the proper format to be understood and processed by an application, and was rejected.
Definition at line 211 of file cfe_error.h.

10.10.2.77 CFE_STATUS_WRONG_MSG_LENGTH #define CFE_STATUS_WRONG_MSG_LENGTH (([CFE_Status_t](#)) 0xc8000002)
Wrong Message Length.

This error code will be returned when a message validation process determined that the message length is incorrect
Definition at line 164 of file `cfe_error.h`.

10.10.2.78 CFE_SUCCESS #define CFE_SUCCESS (([CFE_Status_t](#)) 0)

Successful execution.

Operation was performed successfully
Definition at line 147 of file `cfe_error.h`.

10.10.2.79 CFE_TBL_BAD_ARGUMENT #define CFE_TBL_BAD_ARGUMENT (([CFE_Status_t](#)) 0xcc00002d)

Bad Argument.

A parameter given by a caller to a Table API did not pass validation checks.

Definition at line 1281 of file `cfe_error.h`.

10.10.2.80 CFE_TBL_ERR_ACCESS #define CFE_TBL_ERR_ACCESS (([CFE_Status_t](#)) 0xcc00002c)

Error code indicating that the TBL file could not be opened by the OS.

Definition at line 1272 of file `cfe_error.h`.

10.10.2.81 CFE_TBL_ERR_BAD_CONTENT_ID #define CFE_TBL_ERR_BAD_CONTENT_ID (([CFE_Status_t](#)) 0xcc000016)

Bad Content ID.

The calling Application called `CFE_TBL_Load` with a filename that specified a file whose content ID was not that of a table image.

Definition at line 1064 of file `cfe_error.h`.

10.10.2.82 CFE_TBL_ERR_BAD_PROCESSOR_ID #define CFE_TBL_ERR_BAD_PROCESSOR_ID (([CFE_Status_t](#)) 0xcc000029)

Bad Processor ID.

The selected table file failed validation for Processor ID. The platform configuration file has verification of table files enabled for Processor ID and an attempt was made to load a table with an invalid Processor ID in the table file header.
Definition at line 1252 of file `cfe_error.h`.

10.10.2.83 CFE_TBL_ERR_BAD_SPACECRAFT_ID #define CFE_TBL_ERR_BAD_SPACECRAFT_ID (([CFE_Status_t](#)) 0xcc000028)

Bad Spacecraft ID.

The selected table file failed validation for Spacecraft ID. The platform configuration file has verification of table files enabled for Spacecraft ID and an attempt was made to load a table with an invalid Spacecraft ID in the table file header.
Definition at line 1241 of file `cfe_error.h`.

10.10.2.84 CFE_TBL_ERR_BAD_SUBTYPE_ID #define CFE_TBL_ERR_BAD_SUBTYPE_ID (([CFE_Status_t](#)) 0xcc00001B)

Bad Subtype ID.

The calling Application tried to access a table file whose Subtype identifier indicated it was not a table image file.

Definition at line 1105 of file `cfe_error.h`.

10.10.2.85 CFE_TBL_ERR_DUMP_ONLY #define CFE_TBL_ERR_DUMP_ONLY ((CFE_Status_t)0xcc000010)
Dump Only Error.

The calling Application has attempted to perform a load on a table that was created with "Dump Only" attributes.
Definition at line 1016 of file cfe_error.h.

10.10.2.86 CFE_TBL_ERR_DUPLICATE_DIFF_SIZE #define CFE_TBL_ERR_DUPLICATE_DIFF_SIZE ((CFE_Status_t)0xcc00000C)
Duplicate Table With Different Size.

An application attempted to register a table with the same name as a table that is already in the registry. The size of the new table is different from the size already in the registry.

Definition at line 977 of file cfe_error.h.

10.10.2.87 CFE_TBL_ERR_DUPLICATE_NOT OWNED #define CFE_TBL_ERR_DUPLICATE_NOT OWNED ((CFE_Status_t)0xcc00000B)
Duplicate Table And Not Owned.

An application attempted to register a table with the same name as a table that is already in the registry. The previously registered table is owned by a different application.

Definition at line 987 of file cfe_error.h.

10.10.2.88 CFE_TBL_ERR_FILE_FOR_WRONG_TABLE #define CFE_TBL_ERR_FILE_FOR_WRONG_TABLE ((CFE_Status_t)0xcc00000A)
File For Wrong Table.

The calling Application tried to load a table using a file whose header indicated that it was for a different table.

Definition at line 1149 of file cfe_error.h.

10.10.2.89 CFE_TBL_ERR_FILE_SIZE_INCONSISTENT #define CFE_TBL_ERR_FILE_SIZE_INCONSISTENT ((CFE_Status_t)0xcc000009)
File Size Inconsistent.

The calling Application tried to access a table file whose Subtype identifier indicated it was not a table image file.
Definition at line 1114 of file cfe_error.h.

10.10.2.90 CFE_TBL_ERR_FILE_TOO_LARGE #define CFE_TBL_ERR_FILE_TOO_LARGE ((CFE_Status_t)0xcc000014)
File Too Large.

The calling Application called [CFE_TBL_Load](#) with a filename that specified a file that contained more data than the size of the table OR which contained more data than specified in the table header.

Definition at line 1044 of file cfe_error.h.

10.10.2.91 CFE_TBL_ERR_FILENAME_TOO_LONG #define CFE_TBL_ERR_FILENAME_TOO_LONG ((CFE_Status_t)0xcc00001F)
Filename Too Long.

The calling Application tried to load a table using a filename that was too long.

Definition at line 1140 of file cfe_error.h.

10.10.2.92 CFE_TBL_ERR_HANDLES_FULL #define CFE_TBL_ERR_HANDLES_FULL ((CFE_Status_t)0xcc00000B)
Handles Full.

An application attempted to create a table and the Table Handle Array already used all CFE_PLATFORM_TBL_MAX_NUM_HANDLES in it.

Definition at line 967 of file cfe_error.h.

10.10.2.93 CFE_TBL_ERR_ILLEGAL_SRC_TYPE #define CFE_TBL_ERR_ILLEGAL_SRC_TYPE ((CFE_Status_t)0xcc000011)
Illegal Source Type.

The calling Application called [CFE_TBL_Load](#) with an illegal value for the second parameter.

Definition at line 1025 of file cfe_error.h.

10.10.2.94 CFE_TBL_ERR_INVALID_HANDLE #define CFE_TBL_ERR_INVALID_HANDLE ((CFE_Status_t)0xcc000001)
Invalid Handle.

The calling Application attempted to pass a Table handle that represented too large an index or identified a Table Access Descriptor that was not used.

Definition at line 884 of file cfe_error.h.

10.10.2.95 CFE_TBL_ERR_INVALID_NAME #define CFE_TBL_ERR_INVALID_NAME ((CFE_Status_t)0xcc000002)
Invalid Name.

The calling Application attempted to register a table whose name length exceeded the platform configuration value of [CFE_MISSION_TBL_MAX_NAME_LENGTH](#) or was zero characters long.

Definition at line 894 of file cfe_error.h.

10.10.2.96 CFE_TBL_ERR_INVALID_OPTIONS #define CFE_TBL_ERR_INVALID_OPTIONS ((CFE_Status_t)0xcc000025)
Invalid Options.

The calling Application has used an illegal combination of table options. A summary of the illegal combinations are as follows:

#[CFE_TBL_OPT_USR_DEF_ADDR](#) cannot be combined with any of the following:

1. [CFE_TBL_OPT_DBL_BUFFER](#)
2. [CFE_TBL_OPT_LOAD_DUMP](#)
3. [CFE_TBL_OPT_CRITICAL](#)

#[CFE_TBL_OPT_DBL_BUFFER](#) cannot be combined with the following:

1. [CFE_TBL_OPT_USR_DEF_ADDR](#)
2. [CFE_TBL_OPT_DUMP_ONLY](#)

Definition at line 1206 of file cfe_error.h.

10.10.2.97 CFE_TBL_ERR_INVALID_SIZE #define CFE_TBL_ERR_INVALID_SIZE ((CFE_Status_t)0xcc000003)
Invalid Size.

The calling Application attempted to register a table: a) that was a double buffered table with size greater than [CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE](#) b) that was a single buffered table with size greater than [CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE](#) c) that had a size of zero

Definition at line 905 of file cfe_error.h.

10.10.2.98 CFE_TBL_ERR_LOAD_IN_PROGRESS #define CFE_TBL_ERR_LOAD_IN_PROGRESS ((CFE_Status_t)0xcc000012)
Load In Progress.

The calling Application called [CFE_TBL_Load](#) when another Application was trying to load the table.

Definition at line 1034 of file cfe_error.h.

10.10.2.99 CFE_TBL_ERR_LOAD_INCOMPLETE #define CFE_TBL_ERR_LOAD_INCOMPLETE ((CFE_Status_t)0xcc000021)
Load Incomplete.

The calling Application tried to load a table file whose header claimed the load was larger than what was actually read from the file.

Definition at line 1158 of file cfe_error.h.

10.10.2.100 CFE_TBL_ERR_NEVER_LOADED #define CFE_TBL_ERR_NEVER_LOADED ((CFE_Status_t)0xcc000005)
Never Loaded.

Table has not been loaded with data.

Definition at line 921 of file cfe_error.h.

10.10.2.101 CFE_TBL_ERR_NO_ACCESS #define CFE_TBL_ERR_NO_ACCESS ((CFE_Status_t)0xcc000008)
No Access.

The calling application either failed when calling [CFE_TBL_Register](#), failed when calling [CFE_TBL_Share](#) or forgot to call either one.

Definition at line 949 of file cfe_error.h.

10.10.2.102 CFE_TBL_ERR_NO_BUFFER_AVAIL #define CFE_TBL_ERR_NO_BUFFER_AVAIL ((CFE_Status_t)0xcc00000F)
No Buffer Available.

The calling Application has tried to allocate a working buffer but none were available.

Definition at line 1007 of file cfe_error.h.

10.10.2.103 CFE_TBL_ERR_NO_STD_HEADER #define CFE_TBL_ERR_NO_STD_HEADER ((CFE_Status_t)0xcc00001D)
No Standard Header.

The calling Application tried to access a table file whose standard cFE File Header was the wrong size, etc.

Definition at line 1122 of file cfe_error.h.

10.10.2.104 CFE_TBL_ERR_NO_TBL_HEADER #define CFE_TBL_ERR_NO_TBL_HEADER ((CFE_Status_t)0xcc00001E)
No Table Header.

The calling Application tried to access a table file whose standard cFE Table File Header was the wrong size, etc.

Definition at line 1131 of file cfe_error.h.

10.10.2.105 CFE_TBL_ERR_PARTIAL_LOAD #define CFE_TBL_ERR_PARTIAL_LOAD ((CFE_Status_t)0xcc000023)
Partial Load Error.

The calling Application tried to load a table file whose header claimed the load did not start with the first byte and the table image had NEVER been loaded before. Partial loads are not allowed on uninitialized tables. It should be noted that [CFE_TBL_WARN_SHORT_FILE](#) also indicates a partial load.

Definition at line 1180 of file cfe_error.h.

10.10.2.106 CFE_TBL_ERR_REGISTRY_FULL #define CFE_TBL_ERR_REGISTRY_FULL ((CFE_Status_t)0xcc000006)
Registry Full.

An application attempted to create a table and the Table registry already contained [CFE_PLATFORM_TBL_MAX_NUM_TABLES](#) in it.

Definition at line 930 of file cfe_error.h.

10.10.2.107 CFE_TBL_ERR_SHORT_FILE #define CFE_TBL_ERR_SHORT_FILE ((CFE_Status_t)0xcc00002b)
Error code indicating that the TBL file is shorter than indicated in the file header.
Definition at line 1266 of file cfe_error.h.

10.10.2.108 CFE_TBL_ERR_UNREGISTERED #define CFE_TBL_ERR_UNREGISTERED ((CFE_Status_t)0xcc000009)
Unregistered.
The calling application is trying to access a table that has been unregistered.
Definition at line 958 of file cfe_error.h.

10.10.2.109 CFE_TBL_INFO_DUMP_PENDING #define CFE_TBL_INFO_DUMP_PENDING ((CFE_Status_t)0x4c000024)
Dump Pending.
The calling Application should call [CFE_TBL_Manage](#) for the specified table. The ground has requested a dump of the Dump-Only table and needs to synchronize with the owning application.
Definition at line 1190 of file cfe_error.h.

10.10.2.110 CFE_TBL_INFO_NO_UPDATE_PENDING #define CFE_TBL_INFO_NO_UPDATE_PENDING ((CFE_Status_t)0x4c000017)
No Update Pending.
The calling Application has attempted to update a table without a pending load.
Definition at line 1072 of file cfe_error.h.

10.10.2.111 CFE_TBL_INFO_NO_VALIDATION_PENDING #define CFE_TBL_INFO_NO_VALIDATION_PENDING ((CFE_Status_t)0x4c000016)
No Validation Pending
The calling Application tried to validate a table that did not have a validation request pending.
Definition at line 1096 of file cfe_error.h.

10.10.2.112 CFE_TBL_INFO_RECOVERED_TBL #define CFE_TBL_INFO_RECOVERED_TBL ((CFE_Status_t)0x4c000027)
Recovered Table.
The calling Application registered a critical table whose previous contents were discovered in the Critical Data Store.
The discovered contents were copied back into the newly registered table as the table's initial contents.
NOTE: In this situation, the contents of the table are **NOT** validated using the table's validation function.
Definition at line 1230 of file cfe_error.h.

10.10.2.113 CFE_TBL_INFO_TABLE_LOCKED #define CFE_TBL_INFO_TABLE_LOCKED ((CFE_Status_t)0x4c000018)
Table Locked.
The calling Application tried to update a table that is locked by another user.
Definition at line 1080 of file cfe_error.h.

10.10.2.114 CFE_TBL_INFO_UPDATE_PENDING #define CFE_TBL_INFO_UPDATE_PENDING ((CFE_Status_t)0x4c000004)
Update Pending.
The calling Application has identified a table that has a load pending.
Definition at line 913 of file cfe_error.h.

10.10.2.115 CFE_TBL_INFO_UPDATED #define CFE_TBL_INFO_UPDATED ((CFE_Status_t)0x4c00000E)
Updated.

The calling Application has identified a table that has been updated.

NOTE: This is a nominal return code informing the calling application that the table identified in the call has had its contents updated since the last time the application obtained its address or status.

Definition at line 998 of file cfe_error.h.

10.10.2.116 CFE_TBL_INFO_VALIDATION_PENDING #define CFE_TBL_INFO_VALIDATION_PENDING ((CFE_Status_t)0x4c000010)
Validation Pending

The calling Application should call [CFE_TBL_Validate](#) for the specified table.

Definition at line 1088 of file cfe_error.h.

10.10.2.117 CFE_TBL_MESSAGE_ERROR #define CFE_TBL_MESSAGE_ERROR ((CFE_Status_t)0xcc00002a)
Message Error.

Error code indicating that the TBL command was not processed successfully and that the error counter should be incremented.

Definition at line 1260 of file cfe_error.h.

10.10.2.118 CFE_TBL_NOT_IMPLEMENTED #define CFE_TBL_NOT_IMPLEMENTED ((CFE_Status_t)0xcc00ffff)
Not Implemented.

Current version of cFE does not have the function or the feature of the function implemented. This could be due to either an early build of the cFE for this platform or the platform does not support the specified feature.

Definition at line 1292 of file cfe_error.h.

10.10.2.119 CFE_TBL_WARN_DUPLICATE #define CFE_TBL_WARN_DUPLICATE ((CFE_Status_t)0x4c000007)
Duplicate Warning.

This is an error that the registration is trying to replace an existing table with the same name. The previous table stays in place and the new table is rejected.

Definition at line 940 of file cfe_error.h.

10.10.2.120 CFE_TBL_WARN_NOT_CRITICAL #define CFE_TBL_WARN_NOT_CRITICAL ((CFE_Status_t)0x4c000026)
Not Critical Warning.

The calling Application attempted to register a table as "Critical". Table Services failed to create an appropriate Critical Data Store (See System Log for reason) to save the table contents. The table will be treated as a normal table from now on.

Definition at line 1217 of file cfe_error.h.

10.10.2.121 CFE_TBL_WARN_PARTIAL_LOAD #define CFE_TBL_WARN_PARTIAL_LOAD ((CFE_Status_t)0x4c000022)
Partial Load Warning.

The calling Application tried to load a table file whose header claimed the load did not start with the first byte. It should be noted that [CFE_TBL_WARN_SHORT_FILE](#) also indicates a partial load.

Definition at line 1168 of file cfe_error.h.

10.10.2.122 CFE_TBL_WARN_SHORT_FILE #define CFE_TBL_WARN_SHORT_FILE ((CFE_Status_t)0x4c000015)
Short File Warning.

The calling Application called `CFE_TBL_Load` with a filename that specified a file that started with the first byte of the table but contained less data than the size of the table. It should be noted that `CFE_TBL_WARN_PARTIAL_LOAD` also indicates a partial load (one that starts at a non-zero offset).

Definition at line 1055 of file `cfe_error.h`.

10.10.2.123 CFE_TIME_BAD_ARGUMENT #define CFE_TIME_BAD_ARGUMENT ((`CFE_Status_t`)0xce000005)

Bad Argument.

A parameter given by a caller to a TIME Services API did not pass validation checks.

Definition at line 1364 of file `cfe_error.h`.

10.10.2.124 CFE_TIME_CALLBACK_NOT_REGISTERED #define CFE_TIME_CALLBACK_NOT_REGISTERED ((`CFE_Status_t`)0xce000006)

Callback Not Registered.

An attempt to unregister a cFE Time Services Synchronization callback has failed because the specified callback function was not located in the Synchronization Callback Registry.

Definition at line 1355 of file `cfe_error.h`.

10.10.2.125 CFE_TIME_INTERNAL_ONLY #define CFE_TIME_INTERNAL_ONLY ((`CFE_Status_t`)0xce000001)

Internal Only.

One of the TIME Services API functions to set the time with data from an external time source has been called, but TIME Services has been commanded to not accept external time data. However, the command is still a signal for the Time Server to generate a "time at the tone" command packet using internal data.

Definition at line 1319 of file `cfe_error.h`.

10.10.2.126 CFE_TIME_NOT_IMPLEMENTED #define CFE_TIME_NOT_IMPLEMENTED ((`CFE_Status_t`)0xce00ffff)

Not Implemented.

Current version of cFE does not have the function or the feature of the function implemented. This could be due to either an early build of the cFE for this platform or the platform does not support the specified feature.

Definition at line 1307 of file `cfe_error.h`.

10.10.2.127 CFE_TIME_OUT_OF_RANGE #define CFE_TIME_OUT_OF_RANGE ((`CFE_Status_t`)0xce000002)

Out Of Range.

One of the TIME Services API functions to set the time with data from an external time source has been called, but TIME Services has determined that the new time data is invalid. However, the command is still a signal for the Time Server to generate a "time at the tone" command packet using internal data.

Note that the test for invalid time update data only occurs if TIME Services has previously been commanded to set the clock state to "valid".

Definition at line 1334 of file `cfe_error.h`.

10.10.2.128 CFE_TIME_TOO_MANY_SYNCH_CALLBACKS #define CFE_TIME_TOO_MANY_SYNCH_CALLBACKS ((`CFE_Status_t`)0xce000003)

Too Many Sync Callbacks.

An attempt to register too many cFE Time Services Synchronization callbacks has been made. Only one callback function is allowed per application. It is expected that the application itself will distribute the single callback to child threads as needed.

Definition at line 1345 of file `cfe_error.h`.

10.11 cFE Resource ID APIs

Functions

- `CFE_Status_t CFE_ES_AppID_ToIndex (CFE_ES_AppId_t AppID, uint32 *Idx)`
Obtain an index value correlating to an ES Application ID.
- `int32 CFE_ES_LibID_ToIndex (CFE_ES_LibId_t LibId, uint32 *Idx)`
Obtain an index value correlating to an ES Library ID.
- `CFE_Status_t CFE_ES_TaskID_ToIndex (CFE_ES_TaskId_t TaskID, uint32 *Idx)`
Obtain an index value correlating to an ES Task ID.
- `CFE_Status_t CFE_ES_CounterID_ToIndex (CFE_ES_CounterId_t CounterId, uint32 *Idx)`
Obtain an index value correlating to an ES Counter ID.

10.11.1 Detailed Description

10.11.2 Function Documentation

10.11.2.1 CFE_ES_AppID_ToIndex() `CFE_Status_t CFE_ES_AppID_ToIndex (`
 `CFE_ES_AppId_t AppID,`
 `uint32 * Idx)`

Obtain an index value correlating to an ES Application ID.

This calculates a zero based integer value that may be used for indexing into a local resource table/array.

Index values are only guaranteed to be unique for resources of the same type. For instance, the indices corresponding to two [valid] application IDs will never overlap, but the index of an application and a library ID may be the same. Furthermore, indices may be reused if a resource is deleted and re-created.

Note

There is no inverse of this function - indices cannot be converted back to the original AppID value. The caller should retain the original ID for future use.

Parameters

in	<code>AppID</code>	Application ID to convert
out	<code>Idx</code>	Buffer where the calculated index will be stored (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_ES_ERR_RESOURCEID_NOT_VALID</code>	Resource ID is not valid.

10.11.2.2 CFE_ES_CounterID_ToIndex() `CFE_Status_t CFE_ES_CounterID_ToIndex (`
 `CFE_ES_CounterId_t CounterId,`
 `uint32 * Idx)`

Obtain an index value correlating to an ES Counter ID.

This calculates a zero based integer value that may be used for indexing into a local resource table/array.

Index values are only guaranteed to be unique for resources of the same type. For instance, the indices corresponding to two [valid] Counter IDs will never overlap, but the index of a Counter and a library ID may be the same. Furthermore, indices may be reused if a resource is deleted and re-created.

Note

There is no inverse of this function - indices cannot be converted back to the original CounterID value. The caller should retain the original ID for future use.

Parameters

in	<i>CounterId</i>	Counter ID to convert
out	<i>Idx</i>	Buffer where the calculated index will be stored (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.

10.11.2.3 CFE_ES_LibID_ToIndex()

```
int32 CFE_ES_LibID_ToIndex (
    CFE_ES_LibId_t LibId,
    uint32 * Idx )
```

Obtain an index value correlating to an ES Library ID.

This calculates a zero based integer value that may be used for indexing into a local resource table/array.

Index values are only guaranteed to be unique for resources of the same type. For instance, the indices corresponding to two [valid] Library IDs will never overlap, but the index of an Library and a library ID may be the same. Furthermore, indices may be reused if a resource is deleted and re-created.

Note

There is no inverse of this function - indices cannot be converted back to the original LibID value. The caller should retain the original ID for future use.

Parameters

in	<i>LibId</i>	Library ID to convert
out	<i>Idx</i>	Buffer where the calculated index will be stored (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.

```
10.11.2.4 CFE_ES_TaskID_ToIndex() CFE_Status_t CFE_ES_TaskID_ToIndex (
    CFE_ES_TaskId_t TaskID,
    uint32 * Idx )
```

Obtain an index value correlating to an ES Task ID.

This calculates a zero based integer value that may be used for indexing into a local resource table/array.

Index values are only guaranteed to be unique for resources of the same type. For instance, the indices corresponding to two [valid] Task IDs will never overlap, but the index of a Task and a library ID may be the same. Furthermore, indices may be reused if a resource is deleted and re-created.

Note

There is no inverse of this function - indices cannot be converted back to the original TaskID value. The caller should retain the original ID for future use.

Parameters

in	<i>TaskID</i>	Task ID to convert
out	<i>Idx</i>	Buffer where the calculated index will be stored (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_BAD_ARGUMENT	Bad Argument.

10.12 cFE Entry/Exit APIs

Functions

- void [CFE_ES_Main](#) (uint32 StartType, uint32 StartSubtype, uint32 ModelId, const char *StartFilePath)
cFE Main Entry Point used by Board Support Package to start cFE
- [CFE_Status_t CFE_ES_ResetCFE](#) (uint32 ResetType)
Reset the cFE Core and all cFE Applications.

10.12.1 Detailed Description

10.12.2 Function Documentation

```
10.12.2.1 CFE_ES_Main() void CFE_ES_Main (
    uint32 StartType,
    uint32 StartSubtype,
    uint32 ModeId,
    const char * StartFilePath )
```

cFE Main Entry Point used by Board Support Package to start cFE

Description

cFE main entry point. This is the entry point into the cFE software. It is called only by the Board Support Package software.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>StartType</i>	Identifies whether this was a CFE_PSP_RST_TYPE_POWERON or CFE_PSP_RST_TYPE_PROCESSOR .
in	<i>StartSubtype</i>	Specifies, in more detail, what caused the <i>StartType</i> identified above. See CFE_PSP_RST_SUBTYPE_POWER_CYCLE for possible examples.
in	<i>ModeId</i>	Identifies the source of the Boot as determined by the BSP.
in	<i>StartFilePath</i>	Identifies the startup file to use to initialize the cFE apps.

See also

[CFE_ES_ResetCFE](#)

```
10.12.2.2 CFE_ES_ResetCFE() CFE_Status_t CFE_ES_ResetCFE (
    uint32 ResetType )
```

Reset the cFE Core and all cFE Applications.

Description

This API causes an immediate reset of the cFE Kernel and all cFE Applications. The caller can specify whether the reset should clear all memory ([CFE_PSP_RST_TYPE_POWERON](#)) or try to retain volatile memory areas ([CFE_PSP_RST_TYPE_PROCESSOR](#)).

Assumptions, External Events, and Notes:

None

Parameters

in	<i>ResetType</i>	Identifies the type of reset desired. Allowable settings are: <ul style="list-style-type: none"> • CFE_PSP_RST_TYPE_POWERON - Causes all memory to be cleared • CFE_PSP_RST_TYPE_PROCESSOR - Attempts to retain volatile disk, critical data store and user reserved memory.
----	------------------	--

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_BAD_ARGUMENT	Bad Argument.
CFE_ES_NOT_IMPLEMENTED	Not Implemented.

See also

[CFE_ES_Main](#)

10.13 cFE Application Control APIs

Functions

- [CFE_Status_t CFE_ES_RestartApp \(CFE_ES_AppId_t AppID\)](#)
Restart a single cFE Application.
- [CFE_Status_t CFE_ES_ReloadApp \(CFE_ES_AppId_t AppID, const char *AppFileName\)](#)
Reload a single cFE Application.
- [CFE_Status_t CFE_ES_DeleteApp \(CFE_ES_AppId_t AppID\)](#)
Delete a cFE Application.

10.13.1 Detailed Description

10.13.2 Function Documentation

10.13.2.1 CFE_ES_DeleteApp() [CFE_Status_t CFE_ES_DeleteApp \(CFE_ES_AppId_t AppID \)](#)

Delete a cFE Application.

Description

This API causes a cFE Application to be stopped deleted.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>AppID</i>	Identifies the application to be reset.
----	--------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_SUCCESS</i>	Successful execution.

See also

[CFE_ES_RestartApp](#), [CFE_ES_ReloadApp](#)

10.13.2.2 CFE_ES_ReloadApp() *CFE_Status_t* CFE_ES_ReloadApp (

CFE_ES_AppId_t AppID,

const char * AppFileName)

Reload a single cFE Application.

Description

This API causes a cFE Application to be stopped and restarted from the specified file.

Assumptions, External Events, and Notes:

The filename is checked for existence prior to load. A missing file will be reported and the reload operation will be aborted prior to unloading the app.

Goes through the standard CFE_ES_CleanUpApp which unloads, then attempts a load using the specified file name. In the event that an application cannot be reloaded due to a corrupt file, the application may no longer be reloaded when given a valid load file (it has been deleted and no longer exists). To recover, the application may be started by loading the application via the ES_STARTAPP command ([CFE_ES_START_APP_CC](#)).

Parameters

in	<i>AppID</i>	Identifies the application to be reset.
in	<i>AppFileName</i>	Identifies the new file to start (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_FILE_IO_ERR</i>	File IO Error.

See also

[CFE_ES_RestartApp](#), [CFE_ES_DeleteApp](#), [CFE_ES_START_APP_CC](#)

10.13.2.3 CFE_ES_RestartApp() *CFE_Status_t* CFE_ES_RestartApp (

CFE_ES_AppId_t AppID)

Restart a single cFE Application.

Description

This API causes a cFE Application to be unloaded and restarted from the same file name as the last start.

Assumptions, External Events, and Notes:

The filename is checked for existence prior to load. A missing file will be reported and the reload operation will be aborted prior to unloading the app.

Goes through the standard CFE_ES_CleanUpApp which unloads, then attempts a load using the original file name. In the event that an application cannot be reloaded due to a missing file or any other load issue, the application may no longer be restarted or reloaded when given a valid load file (the app has been deleted and no longer exists). To recover, the application may be started by loading the application via the ES_STARTAPP command ([CFE_ES_START_APP_CC](#)).

Parameters

in	<i>AppID</i>	Identifies the application to be reset.
----	--------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_FILE_IO_ERR	File IO Error.
CFE_SUCCESS	Successful execution.

See also

[CFE_ES_ReloadApp](#), [CFE_ES_DeleteApp](#)

10.14 cFE Application Behavior APIs

Functions

- void [CFE_ES_ExitApp](#) (uint32 ExitStatus)
Exit a cFE Application.
- bool [CFE_ES_RunLoop](#) (uint32 *RunStatus)
Check for Exit, Restart, or Reload commands.
- [CFE_Status_t CFE_ES_WaitForSystemState](#) (uint32 MinSystemState, uint32 TimeOutMilliseconds)
Allow an Application to Wait for a minimum global system state.
- void [CFE_ES_WaitForStartupSync](#) (uint32 TimeOutMilliseconds)
Allow an Application to Wait for the "OPERATIONAL" global system state.
- void [CFE_ES_IncrementTaskCounter](#) (void)
Increments the execution counter for the calling task.

10.14.1 Detailed Description

10.14.2 Function Documentation

10.14.2.1 CFE_ES_ExitApp()

```
void CFE_ES_ExitApp (
```

```
    uint32 ExitStatus )
```

Exit a cFE Application.

Description

This API is the "Exit Point" for the cFE application

Assumptions, External Events, and Notes:

None

Parameters

in	<i>ExitStatus</i>	Acceptable values are: <ul style="list-style-type: none">• CFE_ES_RunStatus_APP_EXIT - Indicates that the Application wants to exit normally.• CFE_ES_RunStatus_APP_ERROR - Indicates that the Application is quitting with an error.• CFE_ES_RunStatus_CORE_APP_INIT_ERROR - Indicates that the Core Application could not Init.• CFE_ES_RunStatus_CORE_APP_RUNTIME_ERROR - Indicates that the Core Application had a runtime failure.
----	-------------------	--

See also

[CFE_ES_RunLoop](#)

Referenced by FM_AppMain().

10.14.2.2 CFE_ES_IncrementTaskCounter()

```
void )
```

Increments the execution counter for the calling task.

Description

This routine increments the execution counter that is stored for the calling task. It can be called from cFE Application main tasks, child tasks, or cFE Core application main tasks. Normally, the call is not necessary from a cFE Application, since the CFE_ES_RunLoop call increments the counter for the Application.

Assumptions, External Events, and Notes:

NOTE: This API is not needed for Applications that call the CFE_ES_RunLoop call.

See also

[CFE_ES_RunLoop](#)

10.14.2.3 CFE_ES_RunLoop() `bool CFE_ES_RunLoop (`
 `uint32 * RunStatus)`

Check for Exit, Restart, or Reload commands.

Description

This is the API that allows an app to check for exit requests from the system, or request shutdown from the system.

Assumptions, External Events, and Notes:

This API updates the internal task counter tracked by ES for the calling task. For ES to report application counters correctly this API should be called from the main app task as part of it's main processing loop.

In the event of a externally initiated app shutdown request (such as the APP_STOP, APP_RELOAD, and APP_RESTART commands) or if a system error occurs requiring the app to be shut down administratively, this function returns "false" and optionally sets the "RunStatus" output to further indicate the specific application state.

If "RunStatus" is passed as non-NULL, it should point to a local status variable containing the requested status to ES. Normally, this should be initialized to [CFE_ES_RunStatus_APP_RUN](#) during application start up, and should remain as this value during normal operation.

If "RunStatus" is set to [CFE_ES_RunStatus_APP_EXIT](#) or [CFE_ES_RunStatus_APP_ERROR](#) on input, this acts as a shutdown request - [CFE_ES_RunLoop\(\)](#) function will return "false", and a shutdown will be initiated similar to if ES had been externally commanded to shut down the app.

If "RunStatus" is not used, it should be passed as NULL. In this mode, only the boolean return value is relevant, which will indicate if an externally-initiated shutdown request is pending.

Parameters

<code>in, out</code>	<code>RunStatus</code>	Optional pointer to a variable containing the desired run status
----------------------	------------------------	--

Returns

Boolean indicating application should continue running

Return values

<code>true</code>	Application should continue running
<code>false</code>	Application should not continue running

See also

[CFE_ES_ExitApp](#)

Referenced by FM_AppMain().

10.14.2.4 CFE_ES_WaitForStartupSync() `void CFE_ES_WaitForStartupSync (`
 `uint32 TimeOutMilliseconds)`

Allow an Application to Wait for the "OPERATIONAL" global system state.

Description

This is the API that allows an app to wait for the rest of the apps to complete their entire initialization before continuing. It is most useful for applications such as Health and Safety or the Scheduler that need to wait until applications exist and are running before sending out packets to them.

This is a specialized wrapper for CFE_ES_WaitForSystemState for compatibility with applications using this API.

Assumptions, External Events, and Notes:

This API should only be called as the last item of an Apps initialization. In addition, this API should only be called by an App that is started from the ES Startup file. It should not be used by an App that is started after the system is running. (Although it will cause no harm)

Parameters

in	<i>TimeOutMilliseconds</i>	The timeout value in Milliseconds. This parameter must be at least 1000. Lower values will be rounded up. There is not an option to wait indefinitely to avoid hanging a critical application because a non-critical app did not start.
----	----------------------------	---

See also

[CFE_ES_RunLoop](#)

10.14.2.5 CFE_ES_WaitForSystemState() [CFE_Status_t](#) CFE_ES_WaitForSystemState (

```
    uint32 MinSystemState,
    uint32 TimeOutMilliseconds )
```

Allow an Application to Wait for a minimum global system state.

Description

This is the API that allows an app to wait for the rest of the apps to complete a given stage of initialization before continuing.

This gives finer grained control than [CFE_ES_WaitForStartupSync](#)

Assumptions, External Events, and Notes:

This API assumes that the caller has also been initialized sufficiently to satisfy the global system state it is waiting for, and the apps own state will be updated accordingly.

Parameters

in	<i>MinSystemState</i>	Determine the state of the App
in	<i>TimeOutMilliseconds</i>	The timeout value in Milliseconds. There is not an option to wait indefinitely to avoid hanging a critical application because a non-critical app did not start.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	State successfully achieved
CFE_ES_OPERATION_TIMED_OUT	(return value only verified in coverage test) Timeout was reached

See also

[CFE_ES_RunLoop](#)

10.15 cFE Information APIs

Functions

- `int32 CFE_ES_GetResetType (uint32 *ResetSubtypePtr)`
Return the most recent Reset Type.
- `CFE_Status_t CFE_ES_GetAppID (CFE_ES_AppId_t *AppIdPtr)`
Get an Application ID for the calling Application.
- `CFE_Status_t CFE_ES_GetTaskID (CFE_ES_TaskId_t *TaskIdPtr)`
Get the task ID of the calling context.
- `CFE_Status_t CFE_ES_GetAppIDByName (CFE_ES_AppId_t *AppIdPtr, const char *AppName)`
Get an Application ID associated with a specified Application name.
- `CFE_Status_t CFE_ES_GetLibIDByName (CFE_ES_LibId_t *LibIdPtr, const char *LibName)`
Get a Library ID associated with a specified Library name.
- `CFE_Status_t CFE_ES_GetAppName (char *AppName, CFE_ES_AppId_t AppId, size_t BufferLength)`
Get an Application name for a specified Application ID.
- `CFE_Status_t CFE_ES_GetLibName (char *LibName, CFE_ES_LibId_t LibId, size_t BufferLength)`
Get a Library name for a specified Library ID.
- `CFE_Status_t CFE_ES_GetAppInfo (CFE_ES_AppInfo_t *AppInfo, CFE_ES_AppId_t AppId)`
Get Application Information given a specified App ID.
- `CFE_Status_t CFE_ES_GetTaskInfo (CFE_ES_TaskInfo_t *TaskInfo, CFE_ES_TaskId_t TaskId)`
Get Task Information given a specified Task ID.
- `int32 CFE_ES_GetLibInfo (CFE_ES_AppInfo_t *LibInfo, CFE_ES_LibId_t LibId)`
Get Library Information given a specified Resource ID.
- `int32 CFE_ES_GetModuleInfo (CFE_ES_AppInfo_t *ModuleInfo, CFE_Resourceld_t Resourceld)`
Get Information given a specified Resource ID.

10.15.1 Detailed Description

10.15.2 Function Documentation

10.15.2.1 CFE_ES_GetAppID() `CFE_Status_t CFE_ES_GetAppID (`
`CFE_ES_AppId_t * AppIdPtr)`

Get an Application ID for the calling Application.

Description

This routine retrieves the cFE Application ID for the calling Application.

Assumptions, External Events, and Notes:

NOTE: **All** tasks associated with the Application would return the same Application ID.

Parameters

out	<i>AppIdPtr</i>	Pointer to variable that is to receive the Application's ID (must not be null). *AppIdPtr will be set to the application ID of the calling Application.
------------	-----------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.

See also

[CFE_ES_GetResetType](#), [CFE_ES_GetAppIDByName](#), [CFE_ES_GetAppName](#), [CFE_ES_GetTaskInfo](#)

10.15.2.2 CFE_ES_GetAppIDByName() *CFE_Status_t* CFE_ES_GetAppIDByName (

```
    CFE_ES_AppId_t * AppIdPtr,
    const char * AppName )
```

Get an Application ID associated with a specified Application name.

Description

This routine retrieves the cFE Application ID associated with a specified Application name.

Assumptions, External Events, and Notes:

None

Parameters

out	<i>AppIdPtr</i>	Pointer to variable that is to receive the Application's ID (must not be null).
in	<i>AppName</i>	Pointer to null terminated character string containing an Application name (must not be null).

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_NAME_NOT_FOUND</i>	Resource Name Error.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.

See also

[CFE_ES_GetAppID](#), [CFE_ES_GetAppName](#), [CFE_ES_GetAppInfo](#)

10.15.2.3 CFE_ES_GetAppInfo() `CFE_Status_t CFE_ES_GetAppInfo (`

```
    CFE_ES_AppInfo_t * AppInfo,
    CFE_ES_AppId_t AppId )
```

Get Application Information given a specified App ID.

Description

This routine retrieves the information about an App associated with a specified App ID. The information includes all of the information ES maintains for an application (documented in the `CFE_ES_AppInfo_t` type)

Assumptions, External Events, and Notes:

None

Parameters

out	<i>AppInfo</i>	Pointer to a structure (must not be null) that will be filled with resource name and memory addresses information.
in	<i>AppId</i>	ID of application to obtain information about

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_ES_ERR_RESOURCEID_NOT_VALID</code>	Resource ID is not valid.
<code>CFE_ES_BAD_ARGUMENT</code>	Bad Argument.

See also

[CFE_ES_GetAppID](#), [CFE_ES_GetAppIDByName](#), [CFE_ES_GetAppName](#)

10.15.2.4 CFE_ES_GetAppName() `CFE_Status_t CFE_ES_GetAppName (`

```
    char * AppName,
    CFE_ES_AppId_t AppId,
    size_t BufferLength )
```

Get an Application name for a specified Application ID.

Description

This routine retrieves the cFE Application name associated with a specified Application ID.

Assumptions, External Events, and Notes:

In the case of a failure (`CFE_ES_ERR_RESOURCEID_NOT_VALID`), an empty string is returned.

Parameters

out	<i>AppName</i>	Pointer to a character array (must not be null) of at least <i>BufferLength</i> in size that will be filled with the appropriate Application name.
in	<i>AppId</i>	Application ID of Application whose name is being requested.
in	<i>BufferLength</i>	The maximum number of characters, including the null terminator, that can be put into the <i>AppName</i> buffer. This routine will truncate the name to this length, if necessary.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.

See also

[CFE_ES_GetAppID](#), [CFE_ES_GetAppIDByName](#), [CFE_ES_GetAppInfo](#)

```
10.15.2.5 CFE_ES_GetLibIDByName() CFE_Status_t CFE_ES_GetLibIDByName (
    CFE_ES_LibId_t * LibIdPtr,
    const char * LibName )
```

Get a Library ID associated with a specified Library name.

Description

This routine retrieves the cFE Library ID associated with a specified Library name.

Assumptions, External Events, and Notes:

None

Parameters

out	<i>LibIdPtr</i>	Pointer to variable that is to receive the Library's ID (must not be null).
in	<i>LibName</i>	Pointer to null terminated character string containing a Library name (must not be null).

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_NAME_NOT_FOUND</i>	Resource Name Error.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.

See also[CFE_ES_GetLibName](#)**10.15.2.6 CFE_ES_GetLibInfo()** `int32 CFE_ES_GetLibInfo (`
 `CFE_ES_AppInfo_t * LibInfo,`
 `CFE_ES_LibId_t LibId)`

Get Library Information given a specified Resource ID.

Description

This routine retrieves the information about a Library associated with a specified ID. The information includes all of the information ES maintains for this resource type (documented in the CFE_ES_AppInfo_t type).

This shares the same output structure as CFE_ES_GetAppInfo, such that informational commands can be executed against either applications or libraries. When applied to a library, the task information in the structure will be omitted, as libraries do not have tasks associated.

Assumptions, External Events, and Notes:

None

Parameters

out	<i>LibInfo</i>	Pointer to a structure (must not be null) that will be filled with resource name and memory addresses information.
in	<i>LibId</i>	ID of application to obtain information about

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.

See also[CFE_ES_GetLibIDByName](#), [CFE_ES_GetLibName](#)**10.15.2.7 CFE_ES_GetLibName()** `CFE_Status_t CFE_ES_GetLibName (`
 `char * LibName,`
 `CFE_ES_LibId_t LibId,`
 `size_t BufferLength)`

Get a Library name for a specified Library ID.

Description

This routine retrieves the cFE Library name associated with a specified Library ID.

Assumptions, External Events, and Notes:

In the case of a failure ([CFE_ES_ERR_RESOURCEID_NOT_VALID](#)), an empty string is returned.

Parameters

<i>out</i>	<i>LibName</i>	Pointer to a character array (must not be null) of at least <i>BufferLength</i> in size that will be filled with the Library name.
<i>in</i>	<i>LibId</i>	Library ID of Library whose name is being requested.
<i>in</i>	<i>BufferLength</i>	The maximum number of characters (must not be zero), including the null terminator, that can be put into the <i>LibName</i> buffer. This routine will truncate the name to this length, if necessary.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_GetLibIDByName](#)

10.15.2.8 CFE_ES_GetModuleInfo() `int32 CFE_ES_GetModuleInfo (CFE_ES_AppInfo_t * ModuleInfo, CFE_ResourceId_t ResourceId)`

Get Information given a specified Resource ID.

Description

This routine retrieves the information about an Application or Library associated with a specified ID.

This is a wrapper API that in turn calls either `CFE_ES_GetAppInfo` or `CFE_ES_GetLibInfo` if passed an `AppId` or `LibId`, respectively.

This allows commands originally targeted to operate on `AppIDs` to be easily ported to operate on either Libraries or Applications, where relevant.

Assumptions, External Events, and Notes:

None

Parameters

<i>out</i>	<i>ModuleInfo</i>	Pointer to a structure (must not be null) that will be filled with resource name and memory addresses information.
<i>in</i>	<i>ResourceId</i>	ID of application or library to obtain information about

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_GetLibInfo](#), [CFE_ES_GetAppInfo](#)

10.15.2.9 CFE_ES_GetResetType() `int32 CFE_ES_GetResetType (`
`uint32 * ResetSubtypePtr)`

Return the most recent Reset Type.

Description

Provides the caller with codes that identifies the type of Reset the processor most recently underwent. The caller can also obtain information on what caused the reset by supplying a pointer to a variable that will be filled with the Reset Sub-Type.

Assumptions, External Events, and Notes:

None

Parameters

<code>in, out</code>	<code>ResetSubtypePtr</code>	Pointer to <code>uint32</code> type variable in which the Reset Sub-Type will be stored. The caller can set this pointer to <code>NULL</code> if the Sub-Type is of no interest. <code>ResetSubtypePtr</code> If the provided pointer was not <code>NULL</code> , the Reset Sub-Type is stored at the given address. For a list of possible Sub-Type values, see " Reset Sub-Types ".
----------------------	------------------------------	--

Returns

Processor reset type

Return values

CFE_PSP_RST_TYPE_POWERON	
CFE_PSP_RST_TYPE_PROCESSOR	

See also

[CFE_ES_GetAppID](#), [CFE_ES_GetAppIDByName](#), [CFE_ES_GetAppName](#), [CFE_ES_GetTaskInfo](#)

10.15.2.10 CFE_ES_GetTaskID() `CFE_Status_t CFE_ES_GetTaskID (CFE_ES_TaskId_t * TaskIdPtr)`

Get the task ID of the calling context.

Description

This retrieves the current task context from OSAL

Assumptions, External Events, and Notes:

Applications which desire to call other CFE ES services such as CFE_ES_TaskGetInfo() should use this API rather than getting the ID from OSAL directly via [OS_TaskGetId\(\)](#).

Parameters

out	<code>TaskIdPtr</code>	Pointer to variable that is to receive the ID (must not be null). Will be set to the ID of the calling task.
-----	------------------------	--

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_ES_ERR_RESOURCEID_NOT_VALID</code>	Resource ID is not valid.
<code>CFE_ES_BAD_ARGUMENT</code>	Bad Argument.

10.15.2.11 CFE_ES_GetTaskInfo() `CFE_Status_t CFE_ES_GetTaskInfo (CFE_ES_TaskInfo_t * TaskInfo, CFE_ES_TaskId_t TaskId)`

Get Task Information given a specified Task ID.

Description

This routine retrieves the information about a Task associated with a specified Task ID. The information includes Task Name, and Parent/Creator Application ID.

Assumptions, External Events, and Notes:

None

Parameters

out	<code>TaskInfo</code>	Pointer to a <code>CFE_ES_TaskInfo_t</code> structure (must not be null) that holds the specific task information. <code>*TaskInfo</code> is the filled out <code>CFE_ES_TaskInfo_t</code> structure containing the Task Name, Parent App Name, Parent App ID among other fields.
in	<code>TaskId</code>	Application ID of Application whose name is being requested.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_GetTaskID](#), [CFE_ES_GetTaskIDByName](#), [CFE_ES_GetTaskName](#)

10.16 cFE Child Task APIs

Functions

- [CFE_Status_t CFE_ES_CreateChildTask \(CFE_ES_TaskId_t *TaskIdPtr, const char *TaskName, CFE_ES_ChildTaskMainFuncPtr FunctionPtr, CFE_ES_StackPointer_t StackPtr, size_t StackSize, CFE_ES_TaskPriority_Atom_t Priority, uint32 Flags\)](#)
Creates a new task under an existing Application.
- [CFE_Status_t CFE_ES_GetTaskIDByName \(CFE_ES_TaskId_t *TaskIdPtr, const char *TaskName\)](#)
Get a Task ID associated with a specified Task name.
- [CFE_Status_t CFE_ES_GetTaskName \(char *TaskName, CFE_ES_TaskId_t TaskId, size_t BufferLength\)](#)
Get a Task name for a specified Task ID.
- [CFE_Status_t CFE_ES_DeleteChildTask \(CFE_ES_TaskId_t TaskId\)](#)
Deletes a task under an existing Application.
- [void CFE_ES_ExitChildTask \(void\)](#)
Exits a child task.

10.16.1 Detailed Description

10.16.2 Function Documentation

10.16.2.1 [CFE_ES_CreateChildTask\(\)](#) `CFE_Status_t CFE_ES_CreateChildTask (`

```
    CFE_ES_TaskId_t * TaskIdPtr,
    const char * TaskName,
    CFE_ES_ChildTaskMainFuncPtr_t FunctionPtr,
    CFE_ES_StackPointer_t StackPtr,
    size_t StackSize,
    CFE_ES_TaskPriority_Atom_t Priority,
    uint32 Flags )
```

Creates a new task under an existing Application.

Description

This routine creates a new task (a separate execution thread) owned by the calling Application.

Assumptions, External Events, and Notes:

None

Parameters

<i>out</i>	<i>TaskIdPtr</i>	A pointer to a variable that will be filled in with the new task's ID (must not be null). TaskIdPtr is the Task ID of the newly created child task.
<i>in</i>	<i>TaskName</i>	A pointer to a string containing the desired name of the new task (must not be null). This can be up to OS_MAX_API_NAME characters, including the trailing null.
<i>in</i>	<i>FunctionPtr</i>	A pointer to the function that will be spawned as a new task (must not be null).
<i>in</i>	<i>StackPtr</i>	A pointer to the location where the child task's stack pointer should start. NOTE: Not all underlying operating systems support this parameter. The CFE_ES_TASK_STACK_ALLOCATE constant may be passed to indicate that the stack should be dynamically allocated.
<i>in</i>	<i>StackSize</i>	The number of bytes to allocate for the new task's stack (must not be zero).
<i>in</i>	<i>Priority</i>	The priority for the new task. Lower numbers are higher priority, with 0 being the highest priority.
<i>in</i>	<i>Flags</i>	Reserved for future expansion.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_CHILD_TASK_CREATE	Child Task Create Error.
CFE_ES_BAD_ARGUMENT	Bad Argument.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.

See also

[CFE_ES_DeleteChildTask](#), [CFE_ES_ExitChildTask](#)

Referenced by [FM_ChildInit\(\)](#).

10.16.2.2 CFE_ES_DeleteChildTask() [CFE_Status_t](#) CFE_ES_DeleteChildTask ([CFE_ES_TaskId_t](#) TaskId)

Deletes a task under an existing Application.

Description

This routine deletes a task under an Application specified by the `TaskId` obtained when the child task was created using the [CFE_ES_CreateChildTask](#) API.

Assumptions, External Events, and Notes:

None

Parameters

<i>in</i>	<i>TaskId</i>	The task ID previously obtained when the Child Task was created with the CFE_ES_CreateChildTask API.
-----------	---------------	--

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_CHILD_TASK_DELETE</i>	(return value only verified in coverage test) Child Task Delete Error.
<i>CFE_ES_ERR_CHILD_TASK_DELETE_MAIN_TASK</i>	Child Task Delete Passed Main Task.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.

See also

[CFE_ES_CreateChildTask](#), [CFE_ES_ExitChildTask](#)

10.16.2.3 CFE_ES_ExitChildTask() `void CFE_ES_ExitChildTask (`
 `void)`

Exits a child task.

Description

This routine allows the current executing child task to exit and be deleted by ES.

Assumptions, External Events, and Notes:

This function cannot be called from an Application's Main Task.

Note

This function does not return a value, but if it does return at all, it is assumed that the Task was either unregistered or this function was called from a cFE Application's main task.

See also

[CFE_ES_CreateChildTask](#), [CFE_ES_DeleteChildTask](#)

Referenced by FM_ChildTask().

10.16.2.4 CFE_ES_GetTaskIDByName() `CFE_Status_t CFE_ES_GetTaskIDByName (`
 `CFE_ES_TaskId_t * TaskIdPtr,`
 `const char * TaskName)`

Get a Task ID associated with a specified Task name.

Description

This routine retrieves the cFE Task ID associated with a specified Task name.

Assumptions, External Events, and Notes:

None

Parameters

out	<i>TaskIdPtr</i>	Pointer to variable that is to receive the Task's ID (must not be null).
in	<i>TaskName</i>	Pointer to null terminated character string containing a Task name (must not be null).

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_NAME_NOT_FOUND	Resource Name Error.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_GetTaskName](#)

10.16.2.5 CFE_ES_GetTaskName() [CFE_Status_t](#) CFE_ES_GetTaskName (

```
    char * TaskName,
    CFE_ES_TaskId_t TaskId,
    size_t BufferLength )
```

Get a Task name for a specified Task ID.

Description

This routine retrieves the cFE Task name associated with a specified Task ID.

Assumptions, External Events, and Notes:

In the case of a failure ([CFE_ES_ERR_RESOURCEID_NOT_VALID](#)), an empty string is returned.

Parameters

out	<i>TaskName</i>	Pointer to a character array (must not be null) of at least <i>BufferLength</i> in size that will be filled with the Task name.
in	<i>TaskId</i>	Task ID of Task whose name is being requested.
in	<i>BufferLength</i>	The maximum number of characters, including the null terminator, that can be put into the <i>TaskName</i> buffer. This routine will truncate the name to this length, if necessary.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_GetTaskIDByName](#)

10.17 cFE Miscellaneous APIs

Functions

- void [CFE_ES_BackgroundWakeup](#) (void)
Wakes up the CFE background task.
- [CFE_Status_t CFE_ES_WriteToSysLog](#) (const char *SpecStringPtr,...) [OS_PRINTF](#)(1
Write a string to the cFE System Log.
- [CFE_Status_t uint32 CFE_ES_CalculateCRC](#) (const void *DataPtr, size_t DataLength, uint32 InputCRC,
[CFE_ES_CrcType_Enum_t](#) TypeCRC)
Calculate a CRC on a block of memory.
- void [CFE_ES_ProcessAsyncEvent](#) (void)
Notification that an asynchronous event was detected by the underlying OS/PSP.

10.17.1 Detailed Description

10.17.2 Function Documentation

10.17.2.1 [CFE_ES_BackgroundWakeup\(\)](#) void CFE_ES_BackgroundWakeup (

 void)

Wakes up the CFE background task.

Description

Normally the ES background task wakes up at a periodic interval. Whenever new background work is added, this can be used to wake the task early, which may reduce the delay between adding the job and the job getting processed.

Assumptions, External Events, and Notes:

Note the amount of work that the background task will perform is pro-rated based on the amount of time elapsed since the last wakeup. Waking the task early will not cause the background task to do more work than it otherwise would - it just reduces the delay before work starts initially.

10.17.2.2 [CFE_ES_CalculateCRC\(\)](#) [CFE_Status_t uint32 CFE_ES_CalculateCRC](#) (

 const void * *DataPtr*,
 size_t *DataLength*,
 uint32 *InputCRC*,
 [CFE_ES_CrcType_Enum_t](#) *TypeCRC*)

Calculate a CRC on a block of memory.

Description

This routine calculates a cyclic redundancy check (CRC) on a block of memory. The CRC algorithm used is determined by the last parameter.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>DataPtr</i>	Pointer to the base of the memory block.
in	<i>DataLength</i>	The number of bytes in the memory block.
in	<i>InputCRC</i>	A starting value for use in the CRC calculation. This parameter allows the user to calculate the CRC of non-contiguous blocks as a single value. Nominally, the user should set this value to zero.
in	<i>TypeCRC</i>	One of the following CRC algorithm selections defined in CFE_ES_CrcType_Enum_t

Returns

The result of the CRC calculation on the specified memory block. If the TypeCRC is unimplemented will return 0. If DataPtr is null or DataLength is 0, will return InputCRC

Referenced by FM_ChildFileInfoCmd().

10.17.2.3 CFE_ES_ProcessAsyncEvent() `void CFE_ES_ProcessAsyncEvent (void)`

Notification that an asynchronous event was detected by the underlying OS/PSP.

Description

This hook routine is called from the PSP when an exception or other asynchronous system event occurs

Assumptions, External Events, and Notes:

The PSP must guarantee that this function is only invoked from a context which may use OSAL primitives. In general this means that it shouldn't be *directly* invoked from an ISR/signal context.

10.17.2.4 CFE_ES_WriteToSysLog() `CFE_Status_t CFE_ES_WriteToSysLog (const char * SpecStringPtr, ...)`

Write a string to the cFE System Log.

Description

This routine writes a formatted string to the cFE system log. This can be used to record very low-level errors that can't be reported using the Event Services. This function is used in place of printf for flight software. It should be used for significant startup events, critical errors, and conditionally compiled debug software.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>SpecStringPtr</i>	The format string for the log message (must not be null). This is similar to the format string for a printf() call.
----	----------------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_SYS_LOG_FULL	System Log Full.
CFE_ES_BAD_ARGUMENT	Bad Argument.

Referenced by FM_AppInit(), and FM_AppMain().

10.18 cFE Critical Data Store APIs

Functions

- [CFE_Status_t CFE_ES_RegisterCDS](#) ([CFE_ES_CDSHandle_t](#) *CDSHandlePtr, [size_t](#) BlockSize, const char *Name)
Reserve space (or re-obtain previously reserved space) in the Critical Data Store (CDS)
- [CFE_Status_t CFE_ES_GetCDSBlockIDByName](#) ([CFE_ES_CDSHandle_t](#) *BlockIdPtr, const char *BlockName)
Get a CDS Block ID associated with a specified CDS Block name.
- [CFE_Status_t CFE_ES_GetCDSBlockName](#) (char *BlockName, [CFE_ES_CDSHandle_t](#) BlockId, [size_t](#) BufferLength)
Get a Block name for a specified Block ID.
- [CFE_Status_t CFE_ES_CopyToCDS](#) ([CFE_ES_CDSHandle_t](#) Handle, const void *DataToCopy)
Save a block of data in the Critical Data Store (CDS)
- [CFE_Status_t CFE_ES_RestoreFromCDS](#) (void *RestoreToMemory, [CFE_ES_CDSHandle_t](#) Handle)
Recover a block of data from the Critical Data Store (CDS)

10.18.1 Detailed Description

10.18.2 Function Documentation

10.18.2.1 CFE_ES_CopyToCDS() [CFE_Status_t](#) CFE_ES_CopyToCDS (

```
    CFE\_ES\_CDSHandle\_t Handle,
    const void * DataToCopy )
```

Save a block of data in the Critical Data Store (CDS)

Description

This routine copies a specified block of memory into the Critical Data Store that had been previously registered via [CFE_ES_RegisterCDS](#). The block of memory to be copied must be at least as big as the size specified when registering the CDS.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>Handle</i>	The handle of the CDS block that was previously obtained from CFE_ES_RegisterCDS .
in	<i>DataToCopy</i>	A Pointer to the block of memory to be copied into the CDS (must not be null).

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.

See also

[CFE_ES_RegisterCDS](#), [CFE_ES_RestoreFromCDS](#)

10.18.2.2 CFE_ES_GetCDSBlockIDByName() *CFE_Status_t* CFE_ES_GetCDSBlockIDByName (
CFE_ES_CDSHandle_t * *BlockIdPtr*,
const char * *BlockName*)

Get a CDS Block ID associated with a specified CDS Block name.

Description

This routine retrieves the CDS Block ID associated with a specified CDS Block name.

Assumptions, External Events, and Notes:

None

Parameters

<i>out</i>	<i>BlockIdPtr</i>	Pointer to variable that is to receive the CDS Block ID (must not be null).
<i>in</i>	<i>BlockName</i>	Pointer to null terminated character string containing a CDS Block name (must not be null).

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_NAME_NOT_FOUND</i>	Resource Name Error.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.
<i>CFE_ES_NOT_IMPLEMENTED</i>	The processor does not support a Critical Data Store.

See also

[CFE_ES_GetCDSBlockName](#)

10.18.2.3 CFE_ES_GetCDSBlockName() *CFE_Status_t* CFE_ES_GetCDSBlockName (

```
char * BlockName,  
      CFE_ES_CDSHandle_t BlockId,  
      size_t BufferLength )
```

Get a Block name for a specified Block ID.

Description

This routine retrieves the cFE Block name associated with a specified Block ID.

Assumptions, External Events, and Notes:

In the case of a failure ([CFE_ES_ERR_RESOURCEID_NOT_VALID](#)), an empty string is returned.

Parameters

out	<i>BlockName</i>	Pointer to a character array (must not be null) of at least <i>BufferLength</i> in size that will be filled with the CDS Block name.
in	<i>BlockId</i>	Block ID/Handle of CDS registry entry whose name is being requested.
in	<i>BufferLength</i>	The maximum number of characters, including the null terminator, that can be put into the <i>BlockName</i> buffer. This routine will truncate the name to this length, if necessary.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_BAD_ARGUMENT	Bad Argument.
CFE_ES_NOT_IMPLEMENTED	The processor does not support a Critical Data Store.

See also

[CFE_ES_GetCDSBlockIDByName](#)

10.18.2.4 CFE_ES_RegisterCDS() [CFE_Status_t](#) CFE_ES_RegisterCDS (

```
      CFE_ES_CDSHandle_t * CDSHandlePtr,  
      size_t BlockSize,  
      const char * Name )
```

Reserve space (or re-obtain previously reserved space) in the Critical Data Store (CDS)

Description

This routine allocates a block of memory in the Critical Data Store and associates it with the calling Application. The memory can survive an Application restart as well as a Processor Reset.

Assumptions, External Events, and Notes:

This function does *not* clear or otherwise initialize/modify the data within the CDS block. If this function returns [CFE_ES_CDS_ALREADY_EXISTS](#) the block may already have valid data in it.

If a new CDS block is reserved (either because the name did not exist, or existed as a different size) it is the responsibility of the calling application to fill the CDS block with valid data. This is indicated by a [CFE_SUCCESS](#) return code, and in this case the calling application should ensure that it also calls [CFE_ES_CopyToCDS\(\)](#) to fill the block with valid data.

Parameters

<i>out</i>	<i>CDSHandlePtr</i>	Pointer Application's variable that will contain the CDS Memory Block Handle (must not be null). HandlePtr is the handle of the CDS block that can be used in CFE_ES_CopyToCDS and CFE_ES_RestoreFromCDS .
<i>in</i>	<i>BlockSize</i>	The number of bytes needed in the CDS (must not be zero).
<i>in</i>	<i>Name</i>	A pointer to a character string (must not be null) containing an application unique name of CFE_MISSION_ES_CDS_MAX_NAME_LENGTH characters or less.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	The memory block was successfully created in the CDS.
CFE_ES_NOT_IMPLEMENTED	The processor does not support a Critical Data Store.
CFE_ES_CDS_ALREADY_EXISTS	CDS Already Exists.
CFE_ES_CDS_INVALID_SIZE	CDS Invalid Size.
CFE_ES_CDS_INVALID_NAME	CDS Invalid Name.
CFE_ES_BAD_ARGUMENT	Bad Argument.
CFE_ES_CDS_INVALID	(return value only verified in coverage test) CDS Invalid.

See also

[CFE_ES_CopyToCDS](#), [CFE_ES_RestoreFromCDS](#)

10.18.2.5 CFE_ES_RestoreFromCDS() [CFE_Status_t](#) CFE_ES_RestoreFromCDS (

```
void * RestoreToMemory,
CFE\_ES\_CDSHandle\_t Handle )
```

Recover a block of data from the Critical Data Store (CDS)

Description

This routine copies data from the Critical Data Store identified with the Handle into the area of memory pointed to by the `RestoreToMemory` pointer. The area of memory to be copied into must be at least as big as the size specified when registering the CDS. The recovery will indicate an error if the data integrity check maintained by the CDS indicates the contents of the CDS have changed. However, the contents will still be copied into the specified area of memory.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>Handle</i>	The handle of the CDS block that was previously obtained from CFE_ES_RegisterCDS .
out	<i>RestoreToMemory</i>	A Pointer to the block of memory (must not be null) that is to be restored with the contents of the CDS. * <i>RestoreToMemory</i> is the contents of the specified CDS.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_CDS_BLOCK_CRC_ERR	(return value only verified in coverage test) CDS Block CRC Error.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_RegisterCDS](#), [CFE_ES_CopyToCDS](#)

10.19 cFE Memory Manager APIs

Functions

- [CFE_Status_t CFE_ES_PoolCreateNoSem \(CFE_ES_MemHandle_t *PoolID, void *MemPtr, size_t Size\)](#)

Initializes a memory pool created by an application without using a semaphore during processing.
- [CFE_Status_t CFE_ES_PoolCreate \(CFE_ES_MemHandle_t *PoolID, void *MemPtr, size_t Size\)](#)

Initializes a memory pool created by an application while using a semaphore during processing.
- [CFE_Status_t CFE_ES_PoolCreateEx \(CFE_ES_MemHandle_t *PoolID, void *MemPtr, size_t Size, uint16 NumBlockSizes, const size_t *BlockSizes, bool UseMutex\)](#)

Initializes a memory pool created by an application with application specified block sizes.
- [int32 CFE_ES_PoolDelete \(CFE_ES_MemHandle_t PoolID\)](#)

Deletes a memory pool that was previously created.
- [int32 CFE_ES_GetPoolBuf \(CFE_ES_MemPoolBuf_t *BufPtr, CFE_ES_MemHandle_t Handle, size_t Size\)](#)

Gets a buffer from the memory pool created by [CFE_ES_PoolCreate](#) or [CFE_ES_PoolCreateNoSem](#).
- [CFE_Status_t CFE_ES_GetPoolBufInfo \(CFE_ES_MemHandle_t Handle, CFE_ES_MemPoolBuf_t BufPtr\)](#)

Gets info on a buffer previously allocated via [CFE_ES_GetPoolBuf](#).
- [int32 CFE_ES_PutPoolBuf \(CFE_ES_MemHandle_t Handle, CFE_ES_MemPoolBuf_t BufPtr\)](#)

Releases a buffer from the memory pool that was previously allocated via [CFE_ES_GetPoolBuf](#).
- [CFE_Status_t CFE_ES_GetMemPoolStats \(CFE_ES_MemPoolStats_t *BufPtr, CFE_ES_MemHandle_t Handle\)](#)

Extracts the statistics maintained by the memory pool software.

10.19.1 Detailed Description

10.19.2 Function Documentation

```
10.19.2.1 CFE_ES_GetMemPoolStats() CFE_Status_t CFE_ES_GetMemPoolStats (
    CFE_ES_MemPoolStats_t * BufPtr,
    CFE_ES_MemHandle_t Handle )
```

Extracts the statistics maintained by the memory pool software.

Description

This routine fills the *CFE_ES_MemPoolStats_t* data structure with the statistics maintained by the memory pool software. These statistics can then be telemetered by the calling Application.

Assumptions, External Events, and Notes:

None

Parameters

<i>out</i>	<i>BufPtr</i>	Pointer to <i>CFE_ES_MemPoolStats_t</i> data structure (must not be null) to be filled with memory statistics. * <i>BufPtr</i> is the Memory Pool Statistics stored in given data structure.
<i>in</i>	<i>Handle</i>	The handle to the memory pool whose statistics are desired.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.

See also

[CFE_ES_PoolCreate](#), [CFE_ES_PoolCreateNoSem](#), [CFE_ES_PoolCreateEx](#), [CFE_ES_GetPoolBuf](#), [CFE_ES_PutPoolBuf](#)

```
10.19.2.2 CFE_ES_GetPoolBuf() int32 CFE_ES_GetPoolBuf (
    CFE_ES_MemPoolBuf_t * BufPtr,
    CFE_ES_MemHandle_t Handle,
    size_t Size )
```

Gets a buffer from the memory pool created by [CFE_ES_PoolCreate](#) or [CFE_ES_PoolCreateNoSem](#).

Description

This routine obtains a block of memory from the memory pool supplied by the calling application.

Assumptions, External Events, and Notes:

1. The size allocated from the memory pool is, at a minimum, 12 bytes more than requested.

Parameters

out	<i>BufPtr</i>	A pointer to the Application's pointer (must not be null) in which will be stored the address of the allocated memory buffer. *BufPtr is the address of the requested buffer.
in	<i>Handle</i>	The handle to the memory pool as returned by CFE_ES_PoolCreate or CFE_ES_PoolCreateNoSem .
in	<i>Size</i>	The size of the buffer requested. NOTE: The size allocated may be larger.

Returns

Bytes Allocated, or error code [cFE Return Code Defines](#)

Return values

CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_ERR_MEM_BLOCK_SIZE	Memory Block Size Error.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_PoolCreate](#), [CFE_ES_PoolCreateNoSem](#), [CFE_ES_PoolCreateEx](#), [CFE_ES_PutPoolBuf](#), [CFE_ES_GetMemPoolStats](#), [CFE_ES_GetPoolBufInfo](#)

10.19.2.3 CFE_ES_GetPoolBufInfo() [CFE_Status_t](#) [CFE_ES_GetPoolBufInfo](#) (

```
    CFE\_ES\_MemHandle\_t Handle,
    CFE\_ES\_MemPoolBuf\_t BufPtr )
```

Gets info on a buffer previously allocated via [CFE_ES_GetPoolBuf](#).

Description

This routine gets info on a buffer in the memory pool.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>Handle</i>	The handle to the memory pool as returned by CFE_ES_PoolCreate or CFE_ES_PoolCreateNoSem .
in	<i>BufPtr</i>	A pointer to the memory buffer to provide status for (must not be null).

Returns

Size of the buffer if successful, or status code if not successful, see [cFE Return Code Defines](#)

Return values

CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_BUFFER_NOT_IN_POOL	Buffer Not In Pool.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_PoolCreate](#), [CFE_ES_PoolCreateNoSem](#), [CFE_ES_PoolCreateEx](#), [CFE_ES_GetPoolBuf](#), [CFE_ES_GetMemPoolStats](#), [CFE_ES_PutPoolBuf](#)

10.19.2.4 CFE_ES_PoolCreate() `CFE_Status_t CFE_ES_PoolCreate (`

```
    CFE_ES_MemHandle_t * PoolID,
    void * MemPtr,
    size_t Size )
```

Initializes a memory pool created by an application while using a semaphore during processing.

Description

This routine initializes a pool of memory supplied by the calling application. When a memory pool created by this routine is processed, mutex handling will be performed.

Assumptions, External Events, and Notes:

1. The size of the pool must be an integral number of 32-bit words
2. The start address of the pool must be 32-bit aligned
3. 168 bytes are used for internal bookkeeping, therefore, they will not be available for allocation.

Parameters

out	<i>PoolID</i>	A pointer to the variable the caller wishes to have the memory pool handle kept in (must not be null). PoolID is the memory pool handle.
in	<i>MemPtr</i>	A Pointer to the pool of memory created by the calling application (must not be null). This address must be aligned suitably for the processor architecture. The CFE_ES_STATIC_POOL_TYPE macro may be used to assist in creating properly aligned memory pools.
in	<i>Size</i>	The size of the pool of memory (must not be zero). Note that this must be an integral multiple of the memory alignment of the processor architecture.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_PoolCreateNoSem](#), [CFE_ES_PoolCreateEx](#), [CFE_ES_GetPoolBuf](#), [CFE_ES_PutPoolBuf](#), [CFE_ES_GetMemPoolStats](#)

10.19.2.5 CFE_ES_PoolCreateEx() `CFE_Status_t CFE_ES_PoolCreateEx (`

```
    CFE_ES_MemHandle_t * PoolID,
```

```
void * MemPtr,
size_t Size,
uint16 NumBlockSizes,
const size_t * BlockSizes,
bool UseMutex )
```

Initializes a memory pool created by an application with application specified block sizes.

Description

This routine initializes a pool of memory supplied by the calling application.

Assumptions, External Events, and Notes:

1. The size of the pool must be an integral number of 32-bit words
2. The start address of the pool must be 32-bit aligned
3. 168 bytes are used for internal bookkeeping, therefore, they will not be available for allocation.

Parameters

out	<i>PoolID</i>	A pointer to the variable the caller wishes to have the memory pool handle kept in (must not be null). PoolID is the memory pool handle.
in	<i>MemPtr</i>	A Pointer to the pool of memory created by the calling application (must not be null). This address must be aligned suitably for the processor architecture. The CFE_ES_STATIC_POOL_TYPE macro may be used to assist in creating properly aligned memory pools.
in	<i>Size</i>	The size of the pool of memory (must not be zero). Note that this must be an integral multiple of the memory alignment of the processor architecture.
in	<i>NumBlockSizes</i>	The number of different block sizes specified in the <i>BlockSizes</i> array. If set larger than CFE_PLATFORM_ES_POOL_MAX_BUCKETS , CFE_ES_BAD_ARGUMENT will be returned. If <i>BlockSizes</i> is null and <i>NumBlockSizes</i> is 0, <i>NubBlockSizes</i> will be set to CFE_PLATFORM_ES_POOL_MAX_BUCKETS .
in	<i>BlockSizes</i>	Pointer to an array of sizes to be used instead of the default block sizes specified by CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01 through CFE_PLATFORM_ES_MAX_BLOCK_SIZE . If the pointer is equal to NULL, the default block sizes are used.
in	<i>UseMutex</i>	Flag indicating whether the new memory pool will be processing with mutex handling or not. Valid parameter values are CFE_ES_USE_MUTEX and CFE_ES_NO_MUTEX

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_BAD_ARGUMENT	Bad Argument.
CFE_ES_NO_RESOURCE_IDS_AVAILABLE	Resource ID is not available.
CFE_STATUS_EXTERNAL_RESOURCE_FAIL	(return value only verified in coverage test) External failure.

See also

[CFE_ES_PoolCreate](#), [CFE_ES_PoolCreateNoSem](#), [CFE_ES_GetPoolBuf](#), [CFE_ES_PutPoolBuf](#), [CFE_ES_GetMemPoolStats](#)

10.19.2.6 CFE_ES_PoolCreateNoSem() `CFE_Status_t CFE_ES_PoolCreateNoSem (`

```
    CFE_ES_MemHandle_t * PoolID,
    void * MemPtr,
    size_t Size )
```

Initializes a memory pool created by an application without using a semaphore during processing.

Description

This routine initializes a pool of memory supplied by the calling application. When a memory pool created by this routine is processed, no mutex handling is performed.

Assumptions, External Events, and Notes:

1. The size of the pool must be an integral number of 32-bit words
2. The start address of the pool must be 32-bit aligned
3. 168 bytes are used for internal bookkeeping, therefore, they will not be available for allocation.

Parameters

<code>out</code>	<code>PoolID</code>	A pointer to the variable the caller wishes to have the memory pool handle kept in (must not be null). PoolID is the memory pool handle.
<code>in</code>	<code>MemPtr</code>	A Pointer to the pool of memory created by the calling application (must not be null). This address must be aligned suitably for the processor architecture. The CFE_ES_STATIC_POOL_TYPE macro may be used to assist in creating properly aligned memory pools.
<code>in</code>	<code>Size</code>	The size of the pool of memory (must not be zero). Note that this must be an integral multiple of the memory alignment of the processor architecture.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_PoolCreate](#), [CFE_ES_PoolCreateEx](#), [CFE_ES_GetPoolBuf](#), [CFE_ES_PutPoolBuf](#), [CFE_ES_GetMemPoolStats](#)

10.19.2.7 CFE_ES_PoolDelete() `int32 CFE_ES_PoolDelete (`

```
    CFE_ES_MemHandle_t PoolID )
```

Deletes a memory pool that was previously created.

Description

This routine removes the pool ID and frees the global table entry for future re-use.

Assumptions, External Events, and Notes:

All buffers associated with the pool become invalid after this call. The application should ensure that buffers/references to the pool are returned before deleting the pool.

Parameters

in	<i>PoolID</i>	The ID of the pool to delete
----	---------------	------------------------------

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.

See also

[CFE_ES_PoolCreate](#), [CFE_ES_PoolCreateNoSem](#), [CFE_ES_GetPoolBuf](#), [CFE_ES_PutPoolBuf](#), [CFE_ES_GetMemPoolStats](#)

10.19.2.8 CFE_ES_PutPoolBuf() `int32 CFE_ES_PutPoolBuf (`
`CFE_ES_MemHandle_t Handle,`
`CFE_ES_MemPoolBuf_t BufPtr)`

Releases a buffer from the memory pool that was previously allocated via [CFE_ES_GetPoolBuf](#).

Description

This routine releases a buffer back into the memory pool.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>Handle</i>	The handle to the memory pool as returned by CFE_ES_PoolCreate or CFE_ES_PoolCreateNoSem .
in	<i>BufPtr</i>	A pointer to the memory buffer to be released (must not be null).

Returns

Bytes released, or error code [cFE Return Code Defines](#)

Return values

CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_ES_BAD_ARGUMENT	Bad Argument.
CFE_ES_BUFFER_NOT_IN_POOL	Buffer Not In Pool.
CFE_ES_POOL_BLOCK_INVALID	Invalid pool block.

See also

[CFE_ES_PoolCreate](#), [CFE_ES_PoolCreateNoSem](#), [CFE_ES_PoolCreateEx](#), [CFE_ES_GetPoolBuf](#), [CFE_ES_GetMemPoolStats](#), [CFE_ES_GetPoolBufInfo](#)

10.20 cFE Performance Monitor APIs**Macros**

- #define [CFE_ES_PerfLogEntry\(id\)](#) ([CFE_ES_PerfLogAdd\(id, 0\)](#))

Entry marker for use with Software Performance Analysis Tool.
- #define [CFE_ES_PerfLogExit\(id\)](#) ([CFE_ES_PerfLogAdd\(id, 1\)](#))

Exit marker for use with Software Performance Analysis Tool.

Functions

- void [CFE_ES_PerfLogAdd](#) ([uint32](#) Marker, [uint32](#) EntryExit)

Adds a new entry to the data buffer.

10.20.1 Detailed Description**10.20.2 Macro Definition Documentation****10.20.2.1 CFE_ES_PerfLogEntry** [#define CFE_ES_PerfLogEntry\(](#)
[id \)](#) ([CFE_ES_PerfLogAdd\(id, 0\)](#))

Entry marker for use with Software Performance Analysis Tool.

Description

This macro logs the entry or start event/marker for the specified entry `id`. This macro, in conjunction with the [CFE_ES_PerfLogExit](#), is used by the Software Performance Analysis tool.

Assumptions, External Events, and Notes:

None

Parameters

in	id	Identifier of the specific event or marker.
--------------------	--------------------	---

See also

[CFE_ES_PerfLogExit](#), [CFE_ES_PerfLogAdd](#)

Definition at line 1464 of file cfe_es.h.

10.20.2.2 CFE_ES_PerfLogExit #define CFE_ES_PerfLogExit (
 id) (CFE_ES_PerfLogAdd(*id*, 1))

Exit marker for use with Software Performance Analysis Tool.

Description

This macro logs the exit or end event/marker for the specified entry *id*. This macro, in conjunction with the [CFE_ES_PerfLogEntry](#), is used by the Software Performance Analysis tool.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>id</i>	Identifier of the specific event or marker.
----	-----------	---

See also

[CFE_ES_PerfLogEntry](#), [CFE_ES_PerfLogAdd](#)

Definition at line 1483 of file cfe_es.h.

10.20.3 Function Documentation

10.20.3.1 CFE_ES_PerfLogAdd() void CFE_ES_PerfLogAdd (

```
    uint32 Marker,  
    uint32 EntryExit )
```

Adds a new entry to the data buffer.

Function called by [CFE_ES_PerfLogEntry](#) and [CFE_ES_PerfLogExit](#) macros

Description

This function logs the entry and exit marker for the specified *id*. This function is used by the Software Performance Analysis tool.

Assumptions, External Events, and Notes:

Marker limited to the range of 0 to [CFE_MISSION_ES_PERF_MAX_IDS](#) - 1. Any performance ids outside of this range will be ignored and will be flagged as an error.

This function implements a circular buffer using an array. DataStart points to first stored entry DataEnd points to next available entry if DataStart == DataEnd then the buffer is either empty or full depending on the value of the DataCount Time is stored as 2 32 bit integers, (TimerLower32, TimerUpper32): TimerLower32 is the current value of the hardware timer register. TimerUpper32 is the number of times the timer has rolled over.

Parameters

in	<i>Marker</i>	Identifier of the specific event or marker.
in	<i>EntryExit</i>	Used to specify Entry(0) or Exit(1)

See also

[CFE_ES_PerfLogEntry](#), [CFE_ES_PerfLogExit](#)

10.21 cFE Generic Counter APIs**Functions**

- [CFE_Status_t CFE_ES_RegisterGenCounter \(CFE_ES_CounterId_t *CounterIdPtr, const char *CounterName\)](#)
Register a generic counter.
- [CFE_Status_t CFE_ES_DeleteGenCounter \(CFE_ES_CounterId_t CounterId\)](#)
Delete a generic counter.
- [CFE_Status_t CFE_ES_IncrementGenCounter \(CFE_ES_CounterId_t CounterId\)](#)
Increments the specified generic counter.
- [CFE_Status_t CFE_ES_SetGenCount \(CFE_ES_CounterId_t CounterId, uint32 Count\)](#)
Set the specified generic counter.
- [CFE_Status_t CFE_ES_GetGenCount \(CFE_ES_CounterId_t CounterId, uint32 *Count\)](#)
Get the specified generic counter count.
- [CFE_Status_t CFE_ES_GetGenCounterIDByName \(CFE_ES_CounterId_t *CounterIdPtr, const char *CounterName\)](#)
Get the Id associated with a generic counter name.
- [CFE_Status_t CFE_ES_GetGenCounterName \(char *CounterName, CFE_ES_CounterId_t CounterId, size_t BufferLength\)](#)
Get a Counter name for a specified Counter ID.

10.21.1 Detailed Description**10.21.2 Function Documentation****10.21.2.1 CFE_ES_DeleteGenCounter()** [CFE_Status_t CFE_ES_DeleteGenCounter \(CFE_ES_CounterId_t CounterId \)](#)

Delete a generic counter.

Description

This routine deletes a previously registered generic counter.

Assumptions, External Events, and Notes:

None.

Parameters

in	<i>CounterId</i>	The Counter Id of the newly created counter.
----	------------------	--

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_IncrementGenCounter](#), [CFE_ES_RegisterGenCounter](#), [CFE_ES_SetGenCount](#), [CFE_ES_GetGenCount](#),
[CFE_ES_GetGenCounterIDByName](#)

10.21.2.2 CFE_ES_GetGenCount() [CFE_Status_t](#) CFE_ES_GetGenCount (

```
    CFE\_ES\_CounterId\_t CounterId,  
    uint32 * Count )
```

Get the specified generic counter count.

Description

This routine gets the value of a generic counter.

Assumptions, External Events, and Notes:

None.

Parameters

in	<i>CounterId</i>	The Counter to get the value from.
out	<i>Count</i>	Buffer to store value of the Counter (must not be null).

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_RegisterGenCounter](#), [CFE_ES_DeleteGenCounter](#), [CFE_ES_SetGenCount](#), [CFE_ES_IncrementGenCounter](#),
[CFE_ES_GetGenCounterIDByName](#)

10.21.2.3 CFE_ES_GetGenCounterIDByName() [CFE_Status_t](#) CFE_ES_GetGenCounterIDByName (

```
CFE_ES_CounterId_t * CounterIdPtr,
const char * CounterName )
```

Get the Id associated with a generic counter name.

Description

This routine gets the Counter Id for a generic counter specified by name.

Assumptions, External Events, and Notes:

None.

Parameters

out	<i>CounterIdPtr</i>	Pointer to variable that is to receive the Counter's ID (must not be null).
in	<i>CounterName</i>	Pointer to null terminated character string containing a Counter name (must not be null).

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_NAME_NOT_FOUND	Resource Name Error.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_GetGenCounterName](#)

10.21.2.4 CFE_ES_GetGenCounterName() [CFE_Status_t](#) CFE_ES_GetGenCounterName (

```
char * CounterName,
CFE_ES_CounterId_t CounterId,
size_t BufferLength )
```

Get a Counter name for a specified Counter ID.

Description

This routine retrieves the cFE Counter name associated with a specified Counter ID.

Assumptions, External Events, and Notes:

In the case of a failure ([CFE_ES_ERR_RESOURCEID_NOT_VALID](#)), an empty string is returned.

Parameters

out	<i>CounterName</i>	Pointer to a character array (must not be null) of at least <i>BufferLength</i> in size that will be filled with the Counter name.
in	<i>CounterId</i>	ID of Counter whose name is being requested.
in	<i>BufferLength</i>	The maximum number of characters, including the null terminator (must not be zero), that can be put into the <i>CounterName</i> buffer. This routine will truncate the name to this length, if necessary.
Generated by Doxygen		

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.

See also

[CFE_ES_GetGenCounterIDByName](#)

10.21.2.5 CFE_ES_IncrementGenCounter() *CFE_Status_t* CFE_ES_IncrementGenCounter (*CFE_ES_CounterId_t CounterId*)

Increments the specified generic counter.

Description

This routine increments the specified generic counter.

Assumptions, External Events, and Notes:

None.

Parameters

<i>in</i>	<i>CounterId</i>	The Counter to be incremented.
-----------	------------------	--------------------------------

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.

See also

[CFE_ES_RegisterGenCounter](#), [CFE_ES_DeleteGenCounter](#), [CFE_ES_SetGenCount](#), [CFE_ES_GetGenCount](#),
[CFE_ES_GetGenCounterIDByName](#)

10.21.2.6 CFE_ES_RegisterGenCounter() *CFE_Status_t* CFE_ES_RegisterGenCounter (

*CFE_ES_CounterId_t * CounterIdPtr,*
*const char * CounterName*)

Register a generic counter.

Description

This routine registers a generic thread-safe counter which can be used for inter-task management.

Assumptions, External Events, and Notes:

The initial value of all newly registered counters is 0.

Parameters

<i>out</i>	<i>CounterIdPtr</i>	Buffer to store the Counter Id of the newly created counter (must not be null).
<i>in</i>	<i>CounterName</i>	The Name of the generic counter (must not be null).

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_BAD_ARGUMENT</i>	Bad Argument.
<i>CFE_ES_ERR_DUPLICATE_NAME</i>	Duplicate Name Error.
<i>CFE_ES_NO_RESOURCE_IDS_AVAILABLE</i>	Resource ID is not available.

See also

[*CFE_ES_IncrementGenCounter*](#), [*CFE_ES_DeleteGenCounter*](#), [*CFE_ES_SetGenCount*](#), [*CFE_ES_GetGenCount*](#), [*CFE_ES_GetGenCounterIDByName*](#)

10.21.2.7 CFE_ES_SetGenCount() [*CFE_Status_t*](#) *CFE_ES_SetGenCount* (

```
    CFE_ES_CounterId_t CounterId,
    uint32 Count )
```

Set the specified generic counter.

Description

This routine sets the specified generic counter to the specified value.

Assumptions, External Events, and Notes:

None.

Parameters

<i>in</i>	<i>CounterId</i>	The Counter to be set.
<i>in</i>	<i>Count</i>	The new value of the Counter.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_BAD_ARGUMENT	Bad Argument.

See also

[CFE_ES_RegisterGenCounter](#), [CFE_ES_DeleteGenCounter](#), [CFE_ES_IncrementGenCounter](#), [CFE_ES_GetGenCount](#),
[CFE_ES_GetGenCounterIDByName](#)

10.22 cFE Registration APIs

Functions

- [CFE_Status_t CFE_EVS_Register](#) (const void *Filters, [uint16](#) NumEventFilters, [uint16](#) FilterScheme)

Register an application for receiving event services.

10.22.1 Detailed Description

10.22.2 Function Documentation

10.22.2.1 CFE_EVS_Register() [CFE_Status_t](#) CFE_EVS_Register (

```
    const void * Filters,
    uint16 NumEventFilters,
    uint16 FilterScheme )
```

Register an application for receiving event services.

Description

This routine registers an application with event services and allocates/initializes the internal data structures used to support this application's events. An application may not send events unless it has called this routine. The routine also accepts a filter array structure for applications requiring event filtering. In the current implementation of the EVS, only the binary filtering scheme is supported. See section TBD of the cFE Application Programmer's Guide for a description of the behavior of binary filters. Applications may call [CFE_EVS_Register](#) more than once, but each call will wipe out all filters registered by previous calls (filter registration is NOT cumulative).

Assumptions, External Events, and Notes:

Note: Event filters can be added, deleted or modified by ground commands. All filtering schemes include a default setting that results in no filtering (such as [CFE_EVS_NO_FILTER](#) for binary filters).

Filter Scheme: Binary

Code: [CFE_EVS_EventFilter_BINARY](#)

Filter Structure:

```
typedef struct CFE_EVS_BinFilter {
    uint16 EventID,
    uint16 Mask ;
} CFE_EVS_BinFilter_t;
```

Parameters

in	<i>Filters</i>	Pointer to an array of event message filters, or NULL if no filtering is desired. The structure of an event message filter depends on the FilterScheme selected. (see Filter Schemes mentioned above)
in	<i>NumEventFilters</i>	The number of event message filters included in this call. This must be less than or equal to the maximum number of events allowed per application (CFE_PLATFORM_EVS_MAX_EVENT_FILTERS).
in	<i>FilterScheme</i>	The event filtering scheme that this application will use. For the first implementation of the event services, only filter type CFE_EVS_EventFilter_BINARY will be supported.

Returns

Execution status below or from [CFE_ES_GetAppID](#), see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_EVS_APP_FILTER_OVERLOAD	Application Filter Overload.
CFE_EVS_UNKNOWN_FILTER	Unknown Filter.
CFE_EVS_APP_ILLEGAL_APP_ID	Illegal Application ID.
CFE_ES_BAD_ARGUMENT	Bad Argument.

Referenced by FM_AppInit().

10.23 cFE Send Event APIs

Functions

- [CFE_Status_t CFE_EVS_SendEvent \(uint16 EventID, CFE_EVS_EventType_Enum_t EventType, const char *Spec,...\) OS_PRINTF\(3\)](#)
Generate a software event.
- [CFE_Status_t CFE_Status_t CFE_EVS_SendEventWithAppID \(uint16 EventID, CFE_EVS_EventType_Enum_t EventType, CFE_ES_AppId_t AppID, const char *Spec,...\) OS_PRINTF\(4\)](#)
Generate a software event given the specified Application ID.
- [CFE_Status_t CFE_Status_t CFE_Status_t CFE_EVS_SendTimedEvent \(CFE_TIME_SysTime_t Time, uint16 EventID, CFE_EVS_EventType_Enum_t EventType, const char *Spec,...\) OS_PRINTF\(4\)](#)
Generate a software event with a specific time tag.

10.23.1 Detailed Description

10.23.2 Function Documentation

```
10.23.2.1 CFE_EVS_SendEvent() CFE_Status_t CFE_EVS_SendEvent (
    uint16 EventID,
    CFE_EVS_EventType_Enum_t EventType,
    const char * Spec,
    ... )
```

Generate a software event.

Description

This routine generates a software event message. If the EventID is not filtered, the event will be sent as a software bus message, optionally logged in the local event log, and optionally sent as an ASCII text string out the enabled output port(s).

Assumptions, External Events, and Notes:

This API only works within the context of a registered application or core service. For messages outside the context of a registered application (for example early in app initialization or if registration fails) [CFE_ES_WriteToSysLog](#) can be used for reporting.

Parameters

in	<i>EventID</i>	A numeric literal used to uniquely identify an application event. The <code>EventID</code> is defined and supplied by the application sending the event.
in	<i>EventType</i>	A numeric literal used to classify an event, one of: <ul style="list-style-type: none"> • CFE_EVS_EventType_DEBUG • CFE_EVS_EventType_INFORMATION • CFE_EVS_EventType_ERROR • CFE_EVS_EventType_CRITICAL
in	<i>Spec</i>	A pointer to a null terminated text string (must not be null) describing the output format for the event. This is the same type of format string used for the ANSI <code>printf</code> function. Nominally the post-conversion string is limited to 80 characters, but this limit is configurable through the parameter CFE_MISSION_EVS_MAX_MESSAGE_LENGTH . Characters beyond the limit will be truncated. Do not use floating point conversions (f, e, E, g, and G) in the format string unless your application will be running in a system that supports floating point arithmetic. Do not use non-printable characters (\t, \n, etc.) in the format string; they will mess up the formatting when the events are displayed on the ground system.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_EVS_APP_NOT_REGISTERED	Application Not Registered.
CFE_EVS_APP_ILLEGAL_APP_ID	Illegal Application ID.
CFE_EVS_INVALID_PARAMETER	Invalid Pointer.

See also

[CFE_EVS_SendEventWithAppID](#), [CFE_EVS_SendTimedEvent](#)

Referenced by `FM_AppInit()`, `FM_AppMain()`, `FM_ChildConcatFilesCmd()`, `FM_ChildCopyCmd()`, `FM_ChildCreateDirectoryCmd()`, `FM_ChildDecompressFileCmd()`, `FM_ChildDeleteAllFilesCmd()`, `FM_ChildDeleteCmd()`, `FM_ChildDeleteDirectoryCmd()`, `FM_ChildDirListFileCmd()`, `FM_ChildDirListFileInit()`, `FM_ChildDirListFileLoop()`, `FM_ChildDirListPktCmd()`, `FM_ChildFileInfoCmd()`, `FM_ChildInit()`, `FM_ChildLoop()`, `FM_ChildMoveCmd()`, `FM_ChildProcess()`,

FM_ChildRenameCmd(), FM_ChildSetPermissionsCmd(), FM_ChildTask(), FM_GetDirectorySpaceEstimate(), FM←_GetOpenFilesCmd(), FM_GetVolumeFreeSpace(), FM_IsValidCmdPktLength(), FM_MonitorFilesystemSpaceCmd(), FM_NoopCmd(), FM_ProcessCmd(), FM_ProcessPkt(), FM_ResetCountersCmd(), FM_SetTableStateCmd(), FM←_ValidateTable(), FM_VerifyChildTask(), FM_VerifyFileState(), FM_VerifyNameValid(), and FM_VerifyOverwrite().

```
10.23.2.2 CFE_EVS_SendEventWithAppID() CFE\_Status\_t CFE\_Status\_t CFE_EVS_SendEventWithAppID (
    uint16 EventID,
    CFE\_EVS\_EventType\_Enum\_t EventType,
    CFE\_ES\_AppId\_t AppID,
    const char * Spec,
    ...
)
```

Generate a software event given the specified Application ID.

Description

This routine generates a software event message. If the EventID is not filtered, the event will be sent as a software bus message, optionally logged in the local event log, and optionally sent as an ASCII text string out the enabled output port(s). Note that this function should really only be used from within an API in order to preserve the context of an Application's event. In general, [CFE_EVS_SendEvent](#) should be used.

Assumptions, External Events, and Notes:

The Application ID must correspond to a registered application or core service. For messages outside the context of a registered application (for example early in app initialization or if registration fails) [CFE_ES_WriteToSysLog](#) can be used for reporting.

Parameters

in	<i>EventID</i>	A numeric literal used to uniquely identify an application event. The EventID is defined and supplied by the application sending the event.
in	<i>EventType</i>	A numeric literal used to classify an event, one of: <ul style="list-style-type: none"> • CFE_EVS_EventType_DEBUG • CFE_EVS_EventType_INFORMATION • CFE_EVS_EventType_ERROR • CFE_EVS_EventType_CRITICAL
in	<i>AppID</i>	The Application ID from which the event message should appear.
in	<i>Spec</i>	A pointer to a null terminated text string (must not be null) describing the output format for the event. This is the same type of format string used for the ANSI <code>printf</code> function. Nominally the post-conversion string is limited to 80 characters, but this limit is configurable through the parameter CFE_MISSION_EVS_MAX_MESSAGE_LENGTH . Characters beyond the limit will be truncated. Do not use floating point conversions (f, e, E, g, and G) in the format string unless your application will be running in a system that supports floating point arithmetic. Do not use non-printable characters (\t, \n, etc.) in the format string; they will mess up the formatting when the events are displayed on the ground system.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_EVS_APP_NOT_REGISTERED</code>	Application Not Registered.
<code>CFE_EVS_APP_ILLEGAL_APP_ID</code>	Illegal Application ID.
<code>CFE_EVS_INVALID_PARAMETER</code>	Invalid Pointer.

See also

[CFE_EVS_SendEvent](#), [CFE_EVS_SendTimedEvent](#)

10.23.2.3 CFE_EVS_SendTimedEvent() `CFE_Status_t CFE_Status_t CFE_Status_t CFE_EVS_SendTimedEvent(Event (`

```
    CFE_TIME_SysTime_t Time,
    uint16 EventID,
    CFE_EVS_EventType_Enum_t EventType,
    const char * Spec,
    ... )
```

Generate a software event with a specific time tag.

Description

This routine is the same as [CFE_EVS_SendEvent](#) except that the caller specifies the event time instead of having the EVS use the current spacecraft time. This routine should be used in situations where an error condition is detected at one time, but the event message is reported at a later time.

Assumptions, External Events, and Notes:

This API only works within the context of a registered application or core service. For messages outside the context of a registered application (for example early in app initialization or if registration fails) [CFE_ES_WriteToSysLog](#) can be used for reporting.

Parameters

in	<i>Time</i>	The time to include in the event. This will usually be a time returned by the function CFE_TIME_GetTime .
in	<i>EventID</i>	A numeric literal used to uniquely identify an application event. The <code>EventID</code> is defined and supplied by the application sending the event.
in	<i>EventType</i>	A numeric literal used to classify an event, one of: <ul style="list-style-type: none"> • CFE_EVS_EventType_DEBUG • CFE_EVS_EventType_INFORMATION • CFE_EVS_EventType_ERROR • CFE_EVS_EventType_CRITICAL

Parameters

in	<i>Spec</i>	A pointer to a null terminated text string (must not be null) describing the output format for the event. This is the same type of format string used for the ANSI <code>printf</code> function. Nominally the post-conversion string is limited to 80 characters, but this limit is configurable through the parameter <code>CFE_MISSION_EVS_MAX_MESSAGE_LENGTH</code> . Characters beyond the limit will be truncated. Do not use floating point conversions (f, e, E, g, and G) in the format string unless your application will be running in a system that supports floating point arithmetic. Do not use non-printable characters (\t, \n, etc.) in the format string; they will mess up the formatting when the events are displayed on the ground system.
----	-------------	--

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_EVS_APP_NOT_REGISTERED</code>	Application Not Registered.
<code>CFE_EVS_APP_ILLEGAL_APP_ID</code>	Illegal Application ID.
<code>CFE_EVS_INVALID_PARAMETER</code>	Invalid Pointer.

See also

[CFE_EVS_SendEvent](#), [CFE_EVS_SendEventWithAppID](#)

10.24 cFE Reset Event Filter APIs

Functions

- `CFE_Status_t CFE_EVS_ResetFilter (uint16 EventID)`
Resets the calling application's event filter for a single event ID.
- `CFE_Status_t CFE_EVS_ResetAllFilters (void)`
Resets all of the calling application's event filters.

10.24.1 Detailed Description

10.24.2 Function Documentation

10.24.2.1 `CFE_EVS_ResetAllFilters()` `CFE_Status_t CFE_EVS_ResetAllFilters (` `void)`

Resets all of the calling application's event filters.

Description

This routine resets all the calling application's event filter counters to zero, providing a quick and convenient method for resetting event filters.

Assumptions, External Events, and Notes:

None

Returns

Execution status below or from [CFE_ES_GetAppID](#), see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_EVS_APP_NOT_REGISTERED	Application Not Registered.
CFE_EVS_APP_ILLEGAL_APP_ID	Illegal Application ID.

See also

[CFE_EVS_ResetFilter](#)

10.24.2.2 CFE_EVS_ResetFilter() [CFE_Status_t](#) CFE_EVS_ResetFilter (
 [uint16 EventID](#))

Resets the calling application's event filter for a single event ID.

Description

Resets the filter such that the next event is treated like the first. For example, if the filter was set to only send the first event, the next event following the reset would be sent.

Assumptions, External Events, and Notes:

None

Parameters

in	EventID	A numeric literal used to uniquely identify an application event. The <code>EventID</code> is defined and supplied by the application sending the event.
--------------------	-------------------------	--

Returns

Execution status below or from [CFE_ES_GetAppID](#), see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_EVS_APP_NOT_REGISTERED	Application Not Registered.
CFE_EVS_APP_ILLEGAL_APP_ID	Illegal Application ID.
CFE_EVS_EVT_NOT_REGISTERED	Event Not Registered.

See also

[CFE_EVS_ResetAllFilters](#)

10.25 cFE File Header Management APIs

Functions

- `CFE_Status_t CFE_FS_ReadHeader (CFE_FS_Header_t *Hdr, osal_id_t FileDes)`
Read the contents of the Standard cFE File Header.
- `void CFE_FS_InitHeader (CFE_FS_Header_t *Hdr, const char *Description, uint32 SubType)`
Initializes the contents of the Standard cFE File Header.
- `CFE_Status_t CFE_FS_WriteHeader (osal_id_t FileDes, CFE_FS_Header_t *Hdr)`
Write the specified Standard cFE File Header to the specified file.
- `CFE_Status_t CFE_FS_SetTimestamp (osal_id_t FileDes, CFE_TIME_SysTime_t NewTimestamp)`
Modifies the Time Stamp field in the Standard cFE File Header for the specified file.

10.25.1 Detailed Description

10.25.2 Function Documentation

10.25.2.1 CFE_FS_InitHeader() `void CFE_FS_InitHeader (`
 `CFE_FS_Header_t * Hdr,`
 `const char * Description,`
 `uint32 SubType)`

Initializes the contents of the Standard cFE File Header.

Description

This API will clear the specified `CFE_FS_Header_t` variable and initialize the description field with the specified value

Parameters

in	<code>Hdr</code>	Pointer to a variable of type <code>CFE_FS_Header_t</code> that will be cleared and initialized
in	<code>Description</code>	Initializes Header's Description (must not be null)
in	<code>SubType</code>	Initializes Header's SubType

See also

[CFE_FS_WriteHeader](#)

Referenced by FM_ChildDirListFileInit().

10.25.2.2 CFE_FS_ReadHeader() `CFE_Status_t CFE_FS_ReadHeader (`
 `CFE_FS_Header_t * Hdr,`
 `osal_id_t FileDes)`

Read the contents of the Standard cFE File Header.

Description

This API will fill the specified [CFE_FS_Header_t](#) variable with the contents of the Standard cFE File Header of the file identified by the given File Descriptor.

Assumptions, External Events, and Notes:

1. The File has already been successfully opened using [OS_OpenCreate](#) and the caller has a legitimate File Descriptor.
2. File offset behavior: Agnostic on entry since it will move the offset to the start of the file, on success the offset will be at the end of the header, undefined offset behavior for error cases.

Parameters

<i>out</i>	<i>Hdr</i>	Pointer to a variable of type CFE_FS_Header_t (must not be null) that will be filled with the contents of the Standard cFE File Header. *Hdr is the contents of the Standard cFE File Header for the specified file.
<i>in</i>	<i>FileDes</i>	File Descriptor obtained from a previous call to OS_OpenCreate that is associated with the file whose header is to be read.

Returns

Bytes read or error status from OSAL

Return values

CFE_FS_BAD_ARGUMENT	Bad Argument.
-------------------------------------	---------------

Note

This function invokes OSAL API routines and the current implementation may return OSAL error codes to the caller if failure occurs. In a future version of CFE, the status codes will be converted to a value in [cFE Return Code Defines](#).

See also

[CFE_FS_WriteHeader](#)

10.25.2.3 CFE_FS_SetTimestamp() [CFE_Status_t](#) CFE_FS_SetTimestamp (
osal_id_t *FileDes*,
CFE_TIME_SysTime_t *NewTimestamp*)

Modifies the Time Stamp field in the Standard cFE File Header for the specified file.

Description

This API will modify the [timestamp](#) found in the Standard cFE File Header of the specified file. The timestamp will be replaced with the time specified by the caller.

Assumptions, External Events, and Notes:

1. The File has already been successfully opened using [OS_OpenCreate](#) and the caller has a legitimate File Descriptor.
2. The NewTimestamp field has been filled appropriately by the Application.
3. File offset behavior: Agnostic on entry since it will move the offset, on success the offset will be at the end of the time stamp, undefined offset behavior for error cases.

Parameters

in	<i>FileDes</i>	File Descriptor obtained from a previous call to OS_OpenCreate that is associated with the file whose header is to be read.
in	<i>NewTimestamp</i>	A CFE_TIME_SysTime_t data structure containing the desired time to be put into the file's Standard cFE File Header.

Returns

Execution status, see [cFE Return Code Defines](#), or OSAL status

Return values

CFE_STATUS_EXTERNAL_RESOURCE_FAIL	(return value only verified in coverage test) External failure.
CFE_SUCCESS	Successful execution.

Note

This function invokes OSAL API routines and the current implementation may return OSAL error codes to the caller if failure occurs. In a future version of CFE, the status codes will be converted to a value in [cFE Return Code Defines](#).

10.25.2.4 CFE_FS_WriteHeader() [CFE_Status_t](#) CFE_FS_WriteHeader (
 osal_id_t *FileDes*,
 CFE_FS_Header_t * *Hdr*)

Write the specified Standard cFE File Header to the specified file.

Description

This API will output the specified [CFE_FS_Header_t](#) variable, with some fields automatically updated, to the specified file as the Standard cFE File Header. This API will automatically populate the following fields in the specified [CFE_FS_Header_t](#):

1. [ContentType](#) - Filled with 0x63464531 ('cFE1')
2. [Length](#) - Filled with the sizeof(CFE_FS_Header_t)
3. [SpacecraftID](#) - Filled with the Spacecraft ID
4. [ProcessorID](#) - Filled with the Processor ID
5. [ApplicationID](#) - Filled with the Application ID
6. [TimeSeconds](#) - Filled with the Time, in seconds, as obtained by [CFE_TIME_GetTime](#)
7. [TimeSubSeconds](#) - Filled with the Time, subseconds, as obtained by [CFE_TIME_GetTime](#)

Assumptions, External Events, and Notes:

1. The File has already been successfully opened using [OS_OpenCreate](#) and the caller has a legitimate File Descriptor.
2. The SubType field has been filled appropriately by the Application.
3. The Description field has been filled appropriately by the Application.
4. File offset behavior: Agnostic on entry since it will move the offset to the start of the file, on success the offset will be at the end of the header, undefined offset behavior for error cases.

Parameters

in	<i>FileDes</i>	File Descriptor obtained from a previous call to OS_OpenCreate that is associated with the file whose header is to be read.
out	<i>Hdr</i>	Pointer to a variable of type CFE_FS_Header_t (must not be null) that will be filled with the contents of the Standard cFE File Header. *Hdr is the contents of the Standard cFE File Header for the specified file.

Returns

Bytes read or error status from OSAL

Return values

CFE_FS_BAD_ARGUMENT	Bad Argument.
-------------------------------------	---------------

Note

This function invokes OSAL API routines and the current implementation may return OSAL error codes to the caller if failure occurs. In a future version of CFE, the status codes will be converted to a value in [cFE Return Code Defines](#).

See also

[CFE_FS_ReadHeader](#)

Referenced by [FM_ChildDirListFileInit\(\)](#).

10.26 cFE File Utility APIs

Functions

- const char * [CFE_FS_GetDefaultMountPoint](#) ([CFE_FS_FileCategory_t](#) FileCategory)
Get the default virtual mount point for a file category.
- const char * [CFE_FS_GetDefaultExtension](#) ([CFE_FS_FileCategory_t](#) FileCategory)
Get the default filename extension for a file category.
- int32 [CFE_FS_ParseInputFileNameEx](#) (char *OutputBuffer, const char *InputBuffer, size_t OutputBufSize, size_t InputBufSize, const char *DefaultInput, const char *DefaultPath, const char *DefaultExtension)
Parse a filename input from an input buffer into a local buffer.
- int32 [CFE_FS_ParseInputFileName](#) (char *OutputBuffer, const char *InputName, size_t OutputBufSize, [CFE_FS_FileCategory_t](#) FileCategory)
Parse a filename string from the user into a local buffer.

- `CFE_Status_t CFE_FS_ExtractFilenameFromPath (const char *OriginalPath, char *FileNameOnly)`
Extracts the filename from a unix style path and filename string.
- `int32 CFE_FS_BackgroundFileDumpRequest (CFE_FS_FileWriteMetaData_t *Meta)`
Register a background file dump request.
- `bool CFE_FS_BackgroundFileDumpIsPending (const CFE_FS_FileWriteMetaData_t *Meta)`
Query if a background file write request is currently pending.

10.26.1 Detailed Description

10.26.2 Function Documentation

10.26.2.1 CFE_FS_BackgroundFileDumpIsPending() `bool CFE_FS_BackgroundFileDumpIsPending (const CFE_FS_FileWriteMetaData_t * Meta)`
Query if a background file write request is currently pending.

Description

This returns "true" while the request is on the background work queue. This returns "false" once the request is complete and removed from the queue.

Assumptions, External Events, and Notes:

None

Parameters

<code>in, out</code>	<code>Meta</code>	The background file write persistent state object (must not be null)
----------------------	-------------------	--

Returns

boolean value indicating if request is already pending

Return values

<code>true</code>	if request is pending
<code>false</code>	if request is not pending

10.26.2.2 CFE_FS_BackgroundFileDumpRequest() `int32 CFE_FS_BackgroundFileDumpRequest (CFE_FS_FileWriteMetaData_t * Meta)`

Register a background file dump request.

Description

Puts the previously-initialized metadata into the pending request queue

Assumptions, External Events, and Notes:

Metadata structure should be stored in a persistent memory area (not on stack) as it must remain accessible by the file writer task throughout the asynchronous job operation.

Parameters

<code>in, out</code>	<code>Meta</code>	The background file write persistent state object (must not be null)
----------------------	-------------------	--

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_FS_BAD_ARGUMENT</code>	Bad Argument.
<code>CFE_FS_INVALID_PATH</code>	Invalid Path.
<code>CFE_STATUS_REQUEST_ALREADY_PENDING</code>	Request already pending.
<code>CFE_SUCCESS</code>	Successful execution.

10.26.2.3 CFE_FS_ExtractFilenameFromPath() `CFE_Status_t CFE_FS_ExtractFilenameFromPath (`

```
    const char * OriginalPath,
    char * FileNameOnly )
```

Extracts the filename from a unix style path and filename string.

Description

This API will take the original unix path/filename combination and extract the base filename. Example: Given the path/filename : "/cf/apps/myapp.o.gz" this function will return the filename: "myapp.o.gz".

Assumptions, External Events, and Notes:

1. The paths and filenames used here are the standard unix style filenames separated by "/" characters.
2. The extracted filename (including terminator) is no longer than `OS_MAX_PATH_LEN`

Parameters

<code>in</code>	<code>OriginalPath</code>	The original path (must not be null)
<code>out</code>	<code>FileNameOnly</code>	The filename that is extracted from the path (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_FS_BAD_ARGUMENT</code>	Bad Argument.
<code>CFE_FS_FNAME_TOO_LONG</code>	Filename Too Long.
<code>CFE_FS_INVALID_PATH</code>	Invalid Path.
<code>CFE_SUCCESS</code>	Successful execution.

10.26.2.4 CFE_FS_GetDefaultExtension() `const char* CFE_FS_GetDefaultExtension (`
`CFE_FS_FileCategory_t FileCategory)`

Get the default filename extension for a file category.

Certain file types may have an extension that varies from system to system. This is primarily an issue for application modules which are ".so" on Linux systems, ".dll" on Windows, ".o" on VxWorks, ".obj" on RTEMS, and so on.

This uses a combination of compile-time configuration and hints from the build environment to get the default/expected extension for a given file category.

Returns

String containing the extension

Return values

<code>NULL</code>	if no default extension is known for the given file category
-------------------	--

10.26.2.5 CFE_FS_GetDefaultMountPoint() `const char* CFE_FS_GetDefaultMountPoint (`
`CFE_FS_FileCategory_t FileCategory)`

Get the default virtual mount point for a file category.

Certain classes of files generally reside in a common directory, mainly either the persistent storage (/cf typically) or ram disk (/ram typically).

Ephemeral status files are generally in the ram disk while application modules and scripts are generally in the persistent storage.

This returns the expected directory for a given class of files in the form of a virtual OSAL mount point string.

Returns

String containing the mount point

Return values

<code>NULL</code>	if no mount point is known for the given file category
-------------------	--

10.26.2.6 CFE_FS_ParseInputFileName() `int32 CFE_FS_ParseInputFileName (`
`char * OutputBuffer,`
`const char * InputName,`
`size_t OutputBufSize,`
`CFE_FS_FileCategory_t FileCategory)`

Parse a filename string from the user into a local buffer.

Description

Simplified API for `CFE_FS_ParseInputFileNameEx()` where input is always known to be a non-empty, null terminated string and the fixed-length input buffer not needed. For instance this may be used where the input is a fixed string from `cfe_platform_cfg.h` or similar.

Assumptions, External Events, and Notes:

The parameters are organized such that this is basically like `strncpy()` with an extra argument, and existing file name accesses which use a direct copy can easily change to use this instead.

See also

[CFE_FS_ParseInputFileNameEx\(\)](#)

Parameters

<i>out</i>	<i>OutputBuffer</i>	Buffer to store result (must not be null).
<i>in</i>	<i>InputName</i>	A null terminated input string (must not be null).
<i>in</i>	<i>OutputBufSize</i>	Maximum Size of output buffer (must not be zero).
<i>in</i>	<i>FileCategory</i>	The generalized category of file (implies default path/extension)

Returns

Execution status, see [cFE Return Code Defines](#)

10.26.2.7 CFE_FS_ParseInputFileNameEx() `int32 CFE_FS_ParseInputFileNameEx (`

```
    char * OutputBuffer,
    const char * InputBuffer,
    size_t OutputBufSize,
    size_t InputBufSize,
    const char * DefaultInput,
    const char * DefaultPath,
    const char * DefaultExtension )
```

Parse a filename input from an input buffer into a local buffer.

Description

This provides a more user friendly way to specify file names, using default values for the path and extension, which can vary from system to system.

If InputBuffer is null or its length is zero, then DefaultInput is used as if it was the content of the input buffer.

If either the pathname or extension is missing from the input, it will be added from defaults, with the complete fully-qualified filename stored in the output buffer.

Assumptions, External Events, and Notes:

1. The paths and filenames used here are the standard unix style filenames separated by "/" (path) and "." (extension) characters.
2. Input Buffer has a fixed max length. Parsing will not exceed InputBufSize, and does not need to be null terminated. However parsing will stop at the first null char, when the input is shorter than the maximum.

Parameters

<i>out</i>	<i>OutputBuffer</i>	Buffer to store result (must not be null).
<i>in</i>	<i>InputBuffer</i>	A input buffer that may contain a file name (e.g. from command) (must not be null).
<i>in</i>	<i>OutputBufSize</i>	Maximum Size of output buffer (must not be zero).
<i>in</i>	<i>InputBufSize</i>	Maximum Size of input buffer.
<i>in</i>	<i>DefaultInput</i>	Default value to use for input if InputBffer is empty
<i>in</i>	<i>DefaultPath</i>	Default value to use for pathname if omitted from input
<i>in</i>	<i>DefaultExtension</i>	Default value to use for extension if omitted from input

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_FS_BAD_ARGUMENT	Bad Argument.
CFE_FS_FNAME_TOO_LONG	Filename Too Long.
CFE_FS_INVALID_PATH	Invalid Path.
CFE_SUCCESS	Successful execution.

10.27 cFE Generic Message APIs

Functions

- [CFE_Status_t CFE_MSG_Init \(CFE_MSG_Message_t *MsgPtr, CFE_SB_MsgId_t MsgId, CFE_MSG_Size_t Size\)](#)

Initialize a message.

10.27.1 Detailed Description

10.27.2 Function Documentation

10.27.2.1 CFE_MSG_Init() [CFE_Status_t CFE_MSG_Init \(](#)
[CFE_MSG_Message_t * MsgPtr,](#)
[CFE_SB_MsgId_t MsgId,](#)
[CFE_MSG_Size_t Size \)](#)

Initialize a message.

Description

This routine initialize a message. The entire message is set to zero (based on size), defaults are set, then the size and bits from MsgId are set.

Parameters

out	MsgPtr	A pointer to the buffer that contains the message (must not be null).
in	MsgId	MsgId that corresponds to message
in	Size	Total size of the message (used to set length field)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

Referenced by FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_GetOpenFilesCmd(), FM_MonitorFilesystemSpaceCmd(), and FM_SendHkCmd().

10.28 cFE Message Primary Header APIs

Functions

- `CFE_Status_t CFE_MSG_GetSize (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Size_t *Size)`
Gets the total size of a message.
- `CFE_Status_t CFE_MSG_SetSize (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Size_t Size)`
Sets the total size of a message.
- `CFE_Status_t CFE_MSG.GetType (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Type_t *Type)`
Gets the message type.
- `CFE_Status_t CFE_MSG_SetType (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Type_t Type)`
Sets the message type.
- `CFE_Status_t CFE_MSG_GetHeaderVersion (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_HeaderVersion_t *Version)`
Gets the message header version.
- `CFE_Status_t CFE_MSG_SetHeaderVersion (CFE_MSG_Message_t *MsgPtr, CFE_MSG_HeaderVersion_t Version)`
Sets the message header version.
- `CFE_Status_t CFE_MSG_GetHasSecondaryHeader (const CFE_MSG_Message_t *MsgPtr, bool *HasSecondary)`
Gets the message secondary header boolean.
- `CFE_Status_t CFE_MSG_SetHasSecondaryHeader (CFE_MSG_Message_t *MsgPtr, bool HasSecondary)`
Sets the message secondary header boolean.
- `CFE_Status_t CFE_MSG_GetApld (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Apld_t *Apld)`
Gets the message application ID.
- `CFE_Status_t CFE_MSG_SetApld (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Apld_t Apld)`
Sets the message application ID.
- `CFE_Status_t CFE_MSG_GetSegmentationFlag (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_SegmentationFlag_t *SegFlag)`
Gets the message segmentation flag.
- `CFE_Status_t CFE_MSG_SetSegmentationFlag (CFE_MSG_Message_t *MsgPtr, CFE_MSG_SegmentationFlag_t SegFlag)`
Sets the message segmentation flag.
- `CFE_Status_t CFE_MSG_GetSequenceCount (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_SequenceCount_t *SeqCntr)`
Gets the message sequence count.
- `CFE_Status_t CFE_MSG_SetSequenceCount (CFE_MSG_Message_t *MsgPtr, CFE_MSG_SequenceCount_t SeqCntr)`
Sets the message sequence count.
- `CFE_MSG_SequenceCount_t CFE_MSG_GetNextSequenceCount (CFE_MSG_SequenceCount_t SeqCntr)`
Gets the next sequence count value (rolls over if appropriate)

10.28.1 Detailed Description

10.28.2 Function Documentation

10.28.2.1 CFE_MSG_GetApId() `CFE_Status_t CFE_MSG_GetApId (`
 `const CFE_MSG_Message_t * MsgPtr,`
 `CFE_MSG_ApId_t * ApId)`

Gets the message application ID.

Description

This routine gets the message application ID.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>ApId</i>	Application ID (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

10.28.2.2 CFE_MSG_GetHasSecondaryHeader() `CFE_Status_t CFE_MSG_GetHasSecondaryHeader (`
 `const CFE_MSG_Message_t * MsgPtr,`
 `bool * HasSecondary)`

Gets the message secondary header boolean.

Description

This routine gets the message secondary header boolean.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>HasSecondary</i>	Has secondary header flag (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

```
10.28.2.3 CFE_MSG_GetHeaderVersion() CFE_Status_t CFE_MSG_GetHeaderVersion (
    const CFE_MSG_Message_t * MsgPtr,
    CFE_MSG_HeaderVersion_t * Version )
```

Gets the message header version.

Description

This routine gets the message header version.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>Version</i>	Header version (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

```
10.28.2.4 CFE_MSG_GetNextSequenceCount() CFE_MSG_SequenceCount_t CFE_MSG_GetNextSequenceCount (
    CFE_MSG_SequenceCount_t SeqCnt )
```

Gets the next sequence count value (rolls over if appropriate)

Description

Abstract method to get the next valid sequence count value. Will roll over to zero for any input value greater than or equal to the maximum possible sequence count value given the field in the header.

Parameters

in	<i>SeqCnt</i>	Sequence count
----	---------------	----------------

Returns

The next valid sequence count value

```
10.28.2.5 CFE_MSG_GetSegmentationFlag() CFE_Status_t CFE_MSG_GetSegmentationFlag (
    const CFE_MSG_Message_t * MsgPtr,
    CFE_MSG_SegmentationFlag_t * SegFlag )
```

Gets the message segmentation flag.

Description

This routine gets the message segmentation flag

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>SegFlag</i>	Segmentation flag (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.28.2.6 CFE_MSG_GetSequenceCount() *CFE_Status_t* CFE_MSG_GetSequenceCount (

```
const CFE_MSG_Message_t * MsgPtr,  
CFE_MSG_SequenceCount_t * SeqCnt )
```

Gets the message sequence count.

Description

This routine gets the message sequence count.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>SeqCnt</i>	Sequence count (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.28.2.7 CFE_MSG.GetSize() *CFE_Status_t* CFE_MSG_GetSize (

```
const CFE_MSG_Message_t * MsgPtr,  
CFE_MSG_Size_t * Size )
```

Gets the total size of a message.

Description

This routine gets the total size of the message.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>Size</i>	Total message size (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

Referenced by FM_IsValidCmdPktLength().

10.28.2.8 CFE_MSG_GetType() *CFE_Status_t* CFE_MSG_GetType (

```
const CFE_MSG_Message_t * MsgPtr,
CFE_MSG_Type_t * Type )
```

Gets the message type.

Description

This routine gets the message type.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>Type</i>	Message type (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.28.2.9 CFE_MSG_SetApId() *CFE_Status_t* CFE_MSG_SetApId (

```
CFE_MSG_Message_t * MsgPtr,
CFE_MSG_ApId_t ApId )
```

Sets the message application ID.

Description

This routine sets the message application ID. Typically set at initialization using the MsgId, but API available to set bits that may not be included in MsgId.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>ApId</i>	Application ID

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.28.2.10 CFE_MSG_SetHasSecondaryHeader() *CFE_Status_t* CFE_MSG_SetHasSecondaryHeader (

```
    CFE_MSG_Message_t * MsgPtr,  
    bool HasSecondary )
```

Sets the message secondary header boolean.

Description

This routine sets the message secondary header boolean. Typically only set within message initialization and not used by APPs.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>HasSecondary</i>	Has secondary header flag

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.28.2.11 CFE_MSG_SetHeaderVersion() *CFE_Status_t* CFE_MSG_SetHeaderVersion (

```
    CFE_MSG_Message_t * MsgPtr,  
    CFE_MSG_HeaderVersion_t Version )
```

Sets the message header version.

Description

This routine sets the message header version. Typically only set within message initialization and not used by APPs.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message.
in	<i>Version</i>	Header version

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.28.2.12 CFE_MSG_SetSegmentationFlag() *CFE_Status_t* CFE_MSG_SetSegmentationFlag (
CFE_MSG_Message_t * *MsgPtr*,
CFE_MSG_SegmentationFlag_t *SegFlag*)

Sets the message segmentation flag.

Description

This routine sets the message segmentation flag.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>SegFlag</i>	Segmentation flag

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.28.2.13 CFE_MSG_SetSequenceCount() *CFE_Status_t* CFE_MSG_SetSequenceCount (
CFE_MSG_Message_t * *MsgPtr*,
CFE_MSG_SequenceCount_t *SeqCnt*)

Sets the message sequence count.

Description

This routine sets the message sequence count.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>SeqCnt</i>	Sequence count

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.28.2.14 CFE_MSG_SetSize() *CFE_Status_t* CFE_MSG_SetSize (

```
    CFE_MSG_Message_t * MsgPtr,
    CFE_MSG_Size_t Size )
```

Sets the total size of a message.

Description

This routine sets the total size of the message.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>Size</i>	Total message size

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.28.2.15 CFE_MSG_SetType() *CFE_Status_t* CFE_MSG_SetType (

```
    CFE_MSG_Message_t * MsgPtr,
    CFE_MSG_Type_t Type )
```

Sets the message type.

Description

This routine sets the message type.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>Type</i>	Message type

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.29 cFE Message Extended Header APIs

Functions

- `CFE_Status_t CFE_MSG_GetEDSVersion (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_EDSVersion_t *Version)`
Gets the message EDS version.
- `CFE_Status_t CFE_MSG_SetEDSVersion (CFE_MSG_Message_t *MsgPtr, CFE_MSG_EDSVersion_t Version)`
Sets the message EDS version.
- `CFE_Status_t CFE_MSG_GetEndian (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Endian_t *Endian)`
Gets the message endian.
- `CFE_Status_t CFE_MSG_SetEndian (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Endian_t Endian)`
Sets the message endian.
- `CFE_Status_t CFE_MSG_GetPlaybackFlag (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_PlaybackFlag_t *PlayFlag)`
Gets the message playback flag.
- `CFE_Status_t CFE_MSG_SetPlaybackFlag (CFE_MSG_Message_t *MsgPtr, CFE_MSG_PlaybackFlag_t PlayFlag)`
Sets the message playback flag.
- `CFE_Status_t CFE_MSG_GetSubsystem (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Subsystem_t *Subsystem)`
Gets the message subsystem.
- `CFE_Status_t CFE_MSG_SetSubsystem (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Subsystem_t Subsystem)`
Sets the message subsystem.
- `CFE_Status_t CFE_MSG_GetSystem (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_System_t *System)`
Gets the message system.
- `CFE_Status_t CFE_MSG_SetSystem (CFE_MSG_Message_t *MsgPtr, CFE_MSG_System_t System)`
Sets the message system.

10.29.1 Detailed Description

10.29.2 Function Documentation

10.29.2.1 CFE_MSG_GetEDSVersion() `CFE_Status_t CFE_MSG_GetEDSVersion (`
 `const CFE_MSG_Message_t * MsgPtr,`
 `CFE_MSG_EDSVersion_t * Version)`

Gets the message EDS version.

Description

This routine gets the message EDS version.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>Version</i>	EDS Version (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

10.29.2.2 CFE_MSG_GetEndian() `CFE_Status_t CFE_MSG_GetEndian (`
 `const CFE_MSG_Message_t * MsgPtr,`
 `CFE_MSG_Endian_t * Endian)`

Gets the message endian.

Description

This routine gets the message endian.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>Endian</i>	Endian (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

```
10.29.2.3 CFE_MSG_GetPlaybackFlag() CFE_Status_t CFE_MSG_GetPlaybackFlag (
    const CFE_MSG_Message_t * MsgPtr,
    CFE_MSG_PlaybackFlag_t * PlayFlag )
```

Gets the message playback flag.

Description

This routine gets the message playback flag.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>PlayFlag</i>	Playback Flag (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

```
10.29.2.4 CFE_MSG_GetSubsystem() CFE_Status_t CFE_MSG_GetSubsystem (
```

```
    const CFE_MSG_Message_t * MsgPtr,
    CFE_MSG_Subsystem_t * Subsystem )
```

Gets the message subsystem.

Description

This routine gets the message subsystem

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>Subsystem</i>	Subsystem (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

10.29.2.5 CFE_MSG_GetSystem() `CFE_Status_t` CFE_MSG_GetSystem (
 const `CFE_MSG_Message_t` * *MsgPtr*,
 `CFE_MSG_System_t` * *System*)

Gets the message system.

Description

This routine gets the message system id

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>System</i>	System (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_MSG_BAD_ARGUMENT</code>	Error - bad argument.

10.29.2.6 CFE_MSG_SetEDSVersion() `CFE_Status_t` CFE_MSG_SetEDSVersion (
 `CFE_MSG_Message_t` * *MsgPtr*,
 `CFE_MSG_EDSVersion_t` *Version*)

Sets the message EDS version.

Description

This routine sets the message EDS version.

Parameters

in,out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>Version</i>	EDS Version

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_MSG_BAD_ARGUMENT</code>	Error - bad argument.

10.29.2.7 CFE_MSG_SetEndian() `CFE_Status_t CFE_MSG_SetEndian (`
 `CFE_MSG_Message_t * MsgPtr,`
 `CFE_MSG_Endian_t Endian)`

Sets the message endian.

Description

This routine sets the message endian. Invalid endian selection will set big endian.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>Endian</i>	Endian

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_MSG_BAD_ARGUMENT</code>	Error - bad argument.

10.29.2.8 CFE_MSG_SetPlaybackFlag() `CFE_Status_t CFE_MSG_SetPlaybackFlag (`
 `CFE_MSG_Message_t * MsgPtr,`
 `CFE_MSG_PlaybackFlag_t PlayFlag)`

Sets the message playback flag.

Description

This routine sets the message playback flag.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>PlayFlag</i>	Playback Flag

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_MSG_BAD_ARGUMENT</code>	Error - bad argument.

10.29.2.9 CFE_MSG_SetSubsystem() `CFE_Status_t CFE_MSG_SetSubsystem (`
 `CFE_MSG_Message_t * MsgPtr,`
 `CFE_MSG_Subsystem_t Subsystem)`

Sets the message subsystem.

Description

This routine sets the message subsystem. Some bits may be set at initialization using the MsgId, but API available to set bits that may not be included in MsgId.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>Subsystem</i>	Subsystem

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.29.2.10 CFE_MSG_SetSystem() `CFE_Status_t CFE_MSG_SetSystem (`
 `CFE_MSG_Message_t * MsgPtr,`
 `CFE_MSG_System_t System)`

Sets the message system.

Description

This routine sets the message system id. Some bits may be set at initialization using the MsgId, but API available to set bits that may not be included in MsgId.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>System</i>	System

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.30 cFE Message Secondary Header APIs

Functions

- `CFE_Status_t CFE_MSG_GenerateChecksum (CFE_MSG_Message_t *MsgPtr)`
Calculates and sets the checksum of a message.
- `CFE_Status_t CFE_MSG_ValidateChecksum (const CFE_MSG_Message_t *MsgPtr, bool *isValid)`
Validates the checksum of a message.
- `CFE_Status_t CFE_MSG_SetFcnCode (CFE_MSG_Message_t *MsgPtr, CFE_MSG_FcnCode_t FcnCode)`
Sets the function code field in a message.
- `CFE_Status_t CFE_MSG_GetFcnCode (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_FcnCode_t *FcnCode)`
Gets the function code field from a message.
- `CFE_Status_t CFE_MSG_GetMsgTime (const CFE_MSG_Message_t *MsgPtr, CFE_TIME_SysTime_t *Time)`
Gets the time field from a message.
- `CFE_Status_t CFE_MSG_SetMsgTime (CFE_MSG_Message_t *MsgPtr, CFE_TIME_SysTime_t NewTime)`
Sets the time field in a message.

10.30.1 Detailed Description

10.30.2 Function Documentation

10.30.2.1 CFE_MSG_GenerateChecksum() `CFE_Status_t CFE_MSG_GenerateChecksum (`
`CFE_MSG_Message_t * MsgPtr)`

Calculates and sets the checksum of a message.

Description

This routine calculates the checksum of a message according to an implementation-defined algorithm. Then, it sets the checksum field in the message with the calculated value. The contents and location of this field will depend on the underlying implementation of messages. It may be a checksum, a CRC, or some other algorithm.

Assumptions, External Events, and Notes:

- If the underlying implementation of messages does not include a checksum field, then this routine will return `CFE_MSG_WRONG_MSG_TYPE`

Parameters

<code>in, out</code>	<code>MsgPtr</code>	A pointer to the buffer that contains the message (must not be null).
----------------------	---------------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_MSG_BAD_ARGUMENT</code>	Error - bad argument.
<code>CFE_MSG_WRONG_MSG_TYPE</code>	Error - wrong type.

```
10.30.2.2 CFE_MSG_GetFcnCode() CFE_Status_t CFE_MSG_GetFcnCode (
    const CFE_MSG_Message_t * MsgPtr,
    CFE_MSG_FcnCode_t * FcnCode )
```

Gets the function code field from a message.

Description

This routine gets the function code from a message.

Assumptions, External Events, and Notes:

- If the underlying implementation of messages does not include a function code field, then this routine will set FcnCode to zero and return [CFE_MSG_WRONG_MSG_TYPE](#)

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>FcnCode</i>	The function code from the message (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.
CFE_MSG_WRONG_MSG_TYPE	Error - wrong type.

Referenced by FM_DeleteFileCmd(), and FM_ProcessCmd().

```
10.30.2.3 CFE_MSG_GetMsgTime() CFE_Status_t CFE_MSG_GetMsgTime (
    const CFE_MSG_Message_t * MsgPtr,
    CFE_TIME_SysTime_t * Time )
```

Gets the time field from a message.

Description

This routine gets the time from a message.

Assumptions, External Events, and Notes:

- If the underlying implementation of messages does not include a time field, then this routine will set Time to zero and return [CFE_MSG_WRONG_MSG_TYPE](#)
- Note default implementation of command messages do not have a time field.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
out	<i>Time</i>	Time from the message (must not be null)

ReturnsExecution status, see [cFE Return Code Defines](#)**Return values**

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.
<i>CFE_MSG_WRONG_MSG_TYPE</i>	Error - wrong type.

10.30.2.4 CFE_MSG_SetFcnCode() *CFE_Status_t* CFE_MSG_SetFcnCode (

```
    CFE_MSG_Message_t * MsgPtr,
    CFE_MSG_FcnCode_t FcnCode )
```

Sets the function code field in a message.

Description

This routine sets the function code of a message.

Assumptions, External Events, and Notes:

- If the underlying implementation of messages does not include a function code field, then this routine will do nothing to the message contents and will return [CFE_MSG_WRONG_MSG_TYPE](#).

Parameters

in,out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>FcnCode</i>	The function code to include in the message.

ReturnsExecution status, see [cFE Return Code Defines](#)**Return values**

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.
<i>CFE_MSG_WRONG_MSG_TYPE</i>	Error - wrong type.

10.30.2.5 CFE_MSG_SetMsgTime() *CFE_Status_t* CFE_MSG_SetMsgTime (

```
CFE_MSG_Message_t * MsgPtr,
CFE_TIME_SysTime_t NewTime )
```

Sets the time field in a message.

Description

This routine sets the time of a message. Most applications will want to use [CFE_SB_TimeStampMsg](#) instead of this function. But, when needed, this API can be used to set multiple messages with identical time stamps.

Assumptions, External Events, and Notes:

- If the underlying implementation of messages does not include a time field, then this routine will do nothing to the message contents and will return [CFE_MSG_WRONG_MSG_TYPE](#).
- Note default implementation of command messages do not have a time field.

Parameters

in, out	<i>MsgPtr</i>	A pointer to the message (must not be null).
in	<i>NewTime</i>	The time to include in the message. This will usually be a time from CFE_TIME_GetTime .

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.
CFE_MSG_WRONG_MSG_TYPE	Error - wrong type.

10.30.2.6 CFE_MSG_ValidateChecksum() [CFE_Status_t](#) CFE_MSG_ValidateChecksum (

```
const CFE_MSG_Message_t * MsgPtr,
bool * IsValid )
```

Validates the checksum of a message.

Description

This routine validates the checksum of a message according to an implementation-defined algorithm.

Assumptions, External Events, and Notes:

- If the underlying implementation of messages does not include a checksum field, then this routine will return [CFE_MSG_WRONG_MSG_TYPE](#) and set the IsValid parameter false.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null). This must point to the first byte of the message header.
----	---------------	--

Parameters

<i>out</i>	<i>IsValid</i>	Checksum validation result (must not be null) <ul style="list-style-type: none">• true - valid• false - invalid or not supported/implemented
------------	----------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.
<i>CFE_MSG_WRONG_MSG_TYPE</i>	Error - wrong type.

10.31 cFE Message Id APIs

Functions

- `CFE_Status_t CFE_MSG_GetMsgId (const CFE_MSG_Message_t *MsgPtr, CFE_SB_MsgId_t *MsgId)`
Gets the message id from a message.
- `CFE_Status_t CFE_MSG_SetMsgId (CFE_MSG_Message_t *MsgPtr, CFE_SB_MsgId_t MsgId)`
Sets the message id bits in a message.
- `CFE_Status_t CFE_MSG.GetTypeFromMsgId (CFE_SB_MsgId_t MsgId, CFE_MSG_Type_t *Type)`
Gets message type using message ID.

10.31.1 Detailed Description

10.31.2 Function Documentation

10.31.2.1 `CFE_MSG_GetMsgId()` `CFE_Status_t CFE_MSG_GetMsgId (`

```
const CFE_MSG_Message_t * MsgPtr,
CFE_SB_MsgId_t * MsgId )
```

Gets the message id from a message.

Description

This routine gets the message id from a message. The message id is a hash of bits in the message header, used by the software bus for routing. Message id needs to be unique for each endpoint in the system.

Parameters

<i>in</i>	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
<i>out</i>	<i>MsgId</i>	Message id (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

Referenced by FM_ProcessPkt().

10.31.2.2 CFE_MSG_GetTypeFromMsgId() [CFE_Status_t](#) CFE_MSG_GetTypeFromMsgId (
 [CFE_SB_MsgId_t](#) *MsgId*,
 [CFE_MSG_Type_t](#) * *Type*)

Gets message type using message ID.

Description

This routine gets the message type using the message ID

Parameters

in	<i>MsgId</i>	Message id
out	<i>Type</i>	Message type (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

10.31.2.3 CFE_MSG_SetMsgId() [CFE_Status_t](#) CFE_MSG_SetMsgId (
 [CFE_MSG_Message_t](#) * *MsgPtr*,
 [CFE_SB_MsgId_t](#) *MsgId*)

Sets the message id bits in a message.

Description

This routine sets the message id bits in a message. The message id is a hash of bits in the message header, used by the software bus for routing. Message id needs to be unique for each endpoint in the system.

Note

This API only sets the bits in the header that make up the message ID. No other values in the header are modified.

The user should ensure that this function is only called with a valid MsgId parameter value. If called with an invalid value, the results are implementation-defined. The implementation may or may not return the error code [CFE_MSG_BAD_ARGUMENT](#) in this case.

Parameters

<code>in, out</code>	<code>MsgPtr</code>	A pointer to the buffer that contains the message (must not be null).
<code>in</code>	<code>MsgId</code>	Message id

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_MSG_BAD_ARGUMENT</code>	Error - bad argument.

10.32 cFE Message Integrity APIs

Functions

- `CFE_Status_t CFE_MSG_OriginationAction (CFE_MSG_Message_t *MsgPtr, size_t BufferSize, bool *IsAcceptable)`

Perform any necessary actions on a newly-created message, prior to sending.

- `CFE_Status_t CFE_MSG_VerificationAction (const CFE_MSG_Message_t *MsgPtr, size_t BufferSize, bool *IsAcceptable)`

Checks message integrity/acceptability.

10.32.1 Detailed Description

10.32.2 Function Documentation

10.32.2.1 CFE_MSG_OriginationAction() `CFE_Status_t CFE_MSG_OriginationAction (`
`CFE_MSG_Message_t * MsgPtr,`
`size_t BufferSize,`
`bool * IsAcceptable)`

Perform any necessary actions on a newly-created message, prior to sending.

Description

This routine updates and/or appends any necessary fields on a message, is invoked via SB just prior to broadcasting the message. The actions include updating any values that should be computed/updated per message, including:

- setting the sequence number
- updating the timestamp, if present

- computing any error control or checksum fields, if present

The MSG module implementation determines which header fields meet this criteria and how they should be computed. The BufferSize parameter indicates the allocation size message of the buffer that holds the message (i.e. the message envelope size). In some implementations, the allocated buffer may include extra space in order to append a CRC or digital signature.

See also

[CFE_MSG_VerificationAction](#)

Parameters

in, out	<i>MsgPtr</i>	A pointer to the buffer that contains the message (must not be null).
in	<i>BufferSize</i>	The size of the buffer encapsulating the message
out	<i>IsAcceptable</i>	Output variable to be set, indicates message acceptability (must not be null)

Returns

Execution status, see [CFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_MSG_BAD_ARGUMENT	Error - bad argument.

10.32.2.2 CFE_MSG_VerificationAction() `CFE_Status_t CFE_MSG_VerificationAction (`
 `const CFE_MSG_Message_t * MsgPtr,`
 `size_t BufferSize,`
 `bool * IsAcceptable)`

Checks message integrity/acceptability.

Description

This routine validates that any error-control field(s) in the message header matches the expected value.

The specific function of this API is entirely dependent on the header fields and may be a no-op if no error checking is implemented. In that case, it will always output "true".

Note

Due to the fact that software bus uses a multicast architecture, this function must not modify the message, as the buffer may be shared among multiple receivers. This should generally be the inverse of [CFE_MSG_OriGinationAction\(\)](#), but on the origination side it may update header fields and/or modify the message, on the verification/receive side it must only check those fields, not modify them.

See also

[CFE_MSG_OriGinationAction](#)

Parameters

in	<i>MsgPtr</i>	Message Pointer (must not be null)
in	<i>BufferSize</i>	The size of the buffer encapsulating the message
out	<i>IsAcceptable</i>	Output variable to be set, indicates message acceptability (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_MSG_BAD_ARGUMENT</i>	Error - bad argument.

10.33 cFE Pipe Management APIs

Functions

- `CFE_Status_t CFE_SB_CreatePipe (CFE_SB_Pipeld_t *PipeldPtr, uint16 Depth, const char *PipeName)`
Creates a new software bus pipe.
- `CFE_Status_t CFE_SB_DeletePipe (CFE_SB_Pipeld_t Pipeld)`
Delete a software bus pipe.
- `CFE_Status_t CFE_SB_Pipeld_ToIndex (CFE_SB_Pipeld_t PipeID, uint32 *Idx)`
Obtain an index value correlating to an SB Pipe ID.
- `CFE_Status_t CFE_SB_SetPipeOpts (CFE_SB_Pipeld_t Pipeld, uint8 Opts)`
Set options on a pipe.
- `CFE_Status_t CFE_SB_GetPipeOpts (CFE_SB_Pipeld_t Pipeld, uint8 *OptsPtr)`
Get options on a pipe.
- `CFE_Status_t CFE_SB_GetPipeName (char *PipeNameBuf, size_t PipeNameSize, CFE_SB_Pipeld_t Pipeld)`
Get the pipe name for a given id.
- `CFE_Status_t CFE_SB_GetPipeldByName (CFE_SB_Pipeld_t *PipeldPtr, const char *PipeName)`
Get pipe id by pipe name.

10.33.1 Detailed Description

10.33.2 Function Documentation

10.33.2.1 CFE_SB_CreatePipe() `CFE_Status_t CFE_SB_CreatePipe (`
`CFE_SB_Pipeld_t * PipeIdPtr,`
`uint16 Depth,`
`const char * PipeName)`

Creates a new software bus pipe.

Description

This routine creates and initializes an input pipe that the calling application can use to receive software bus messages. By default, no messages are routed to the new pipe. So, the application must use [CFE_SB_Subscribe](#) to specify which messages it wants to receive on this pipe.

Assumptions, External Events, and Notes:

None

Parameters

out	<i>PipeIdPtr</i>	A pointer to a variable of type CFE_SB_PipeId_t (must not be null), which will be filled in with the pipe ID information by the CFE_SB_CreatePipe routine. *PipeIdPtr is the identifier for the created pipe.
in	<i>Depth</i>	The maximum number of messages that will be allowed on this pipe at one time.
in	<i>PipeName</i>	A string (must not be null) to be used to identify this pipe in error messages and routing information telemetry. The string must be no longer than OS_MAX_API_NAME (including terminator). Longer strings will be truncated.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.
CFE_SB_MAX_PIPES_MET	Max Pipes Met.
CFE_SB_PIPE_CR_ERR	Pipe Create Error.

See also

[CFE_SB_DeletePipe](#) [CFE_SB_GetPipeOpts](#) [CFE_SB_SetPipeOpts](#) [CFE_SB_GetPipeIdByName](#)

Referenced by [FM_AppInit\(\)](#).

10.33.2.2 CFE_SB_DeletePipe() [CFE_Status_t](#) CFE_SB_DeletePipe (
 [CFE_SB_PipeId_t](#) PipeId)

Delete a software bus pipe.

Description

This routine deletes an input pipe and cleans up all data structures associated with the pipe. All subscriptions made for this pipe by calls to [CFE_SB_Subscribe](#) will be automatically removed from the SB routing tables. Any messages in the pipe will be discarded.

Applications should not call this routine for all of their SB pipes as part of their orderly shutdown process, as the pipe will be deleted by the support framework at the appropriate time.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>PipeId</i>	The pipe ID (obtained previously from CFE_SB_CreatePipe) of the pipe to be deleted.
----	---------------	--

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.

See also

[CFE_SB_CreatePipe](#) [CFE_SB_GetPipeOpts](#) [CFE_SB_SetPipeOpts](#) [CFE_SB_GetPipeIdByName](#)

10.33.2.3 CFE_SB_GetPipeIdByName() [CFE_Status_t](#) CFE_SB_GetPipeIdByName (
 [CFE_SB_PipeId_t](#) * *PipeIdPtr*,
 const char * *PipeName*)

Get pipe id by pipe name.

Description

This routine finds the pipe id for a pipe name.

Parameters

in	<i>PipeName</i>	The name of the pipe (must not be null).
out	<i>PipeldPtr</i>	The Pipeld for that name (must not be null).

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.

See also

[CFE_SB_CreatePipe](#) [CFE_SB_DeletePipe](#) [CFE_SB_SetPipeOpts](#) [CFE_SB_PIPEOPTS_IGNOREMINE](#)

10.33.2.4 CFE_SB_GetPipeName() [CFE_Status_t](#) CFE_SB_GetPipeName (
 char * *PipeNameBuf*,
 size_t *PipeNameSize*,
 [CFE_SB_PipeId_t](#) *PipeId*)

Get the pipe name for a given id.

Description

This routine finds the pipe name for a pipe id.

Parameters

out	<i>PipeNameBuf</i>	The buffer to receive the pipe name (must not be null).
in	<i>PipeNameSize</i>	The size (in chars) of the PipeName buffer (must not be zero).
in	<i>Pipeld</i>	The Pipeld for that name.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.

See also

[CFE_SB_CreatePipe](#) [CFE_SB_DeletePipe](#) [CFE_SB_SetPipeOpts](#) [CFE_SB_GetPipeldByName](#)

10.33.2.5 CFE_SB_GetPipeOpts() `CFE_Status_t CFE_SB_GetPipeOpts (`
`CFE_SB_PipeId_t PipeId,`
`uint8 * OptsPtr)`

Get options on a pipe.

Description

This routine gets the current options on a pipe.

Parameters

in	<i>Pipeld</i>	The pipe ID of the pipe to get options from.
out	<i>OptsPtr</i>	A bit field of options: cFE SB Pipe options (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.

See also

[CFE_SB_CreatePipe](#) [CFE_SB_DeletePipe](#) [CFE_SB_SetPipeOpts](#) [CFE_SB_GetPipeIdByName](#) [CFE_SB_PIPEOPTS_IGNOREMIN](#)

10.33.2.6 CFE_SB_PipeId_ToIndex() `CFE_Status_t CFE_SB_PipeId_ToIndex (`

```
CFE_SB_PipeId_t PipeID,
uint32 * Idx )
```

Obtain an index value correlating to an SB Pipe ID.

This calculates a zero based integer value that may be used for indexing into a local resource table/array.

Index values are only guaranteed to be unique for resources of the same type. For instance, the indices corresponding to two [valid] application IDs will never overlap, but the index of a pipe ID and an app ID may be the same. Furthermore, indices may be reused if a resource is deleted and re-created.

Note

There is no inverse of this function - indices cannot be converted back to the original PipeID value. The caller should retain the original ID for future use.

Parameters

in	<i>PipeID</i>	Pipe ID to convert
out	<i>Idx</i>	Buffer where the calculated index will be stored (must not be null)

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.

10.33.2.7 CFE_SB_SetPipeOpts() `CFE_Status_t CFE_SB_SetPipeOpts (`

```
CFE_SB_PipeId_t PipeId,
uint8 Opts )
```

Set options on a pipe.

Description

This routine sets (or clears) options to alter the pipe's behavior. Options are (re)set every call to this routine.

Parameters

in	<i>PipeId</i>	The pipe ID of the pipe to set options on.
in	<i>Opts</i>	A bit field of options: cFE SB Pipe options

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.

See also

[CFE_SB_CreatePipe](#) [CFE_SB_DeletePipe](#) [CFE_SB_GetPipeOpts](#) [CFE_SB_GetPipeIdByName](#) [CFE_SB_PIPEOPTS_IGNOREMIN](#)

10.34 cFE Message Subscription Control APIs

Functions

- [CFE_Status_t CFE_SB_SubscribeEx](#) ([CFE_SB_MsgId_t](#) MsgId, [CFE_SB_PipeId_t](#) PipeId, [CFE_SB_Qos_t](#) Quality, [uint16](#) MsgLim)
Subscribe to a message on the software bus.
- [CFE_Status_t CFE_SB_Subscribe](#) ([CFE_SB_MsgId_t](#) MsgId, [CFE_SB_PipeId_t](#) PipeId)
Subscribe to a message on the software bus with default parameters.
- [CFE_Status_t CFE_SB_SubscribeLocal](#) ([CFE_SB_MsgId_t](#) MsgId, [CFE_SB_PipeId_t](#) PipeId, [uint16](#) MsgLim)
Subscribe to a message while keeping the request local to a cpu.
- [CFE_Status_t CFE_SB_Unsubscribe](#) ([CFE_SB_MsgId_t](#) MsgId, [CFE_SB_PipeId_t](#) PipeId)
Remove a subscription to a message on the software bus.
- [CFE_Status_t CFE_SB_UnsubscribeLocal](#) ([CFE_SB_MsgId_t](#) MsgId, [CFE_SB_PipeId_t](#) PipeId)
Remove a subscription to a message on the software bus on the current CPU.

10.34.1 Detailed Description

10.34.2 Function Documentation

10.34.2.1 [CFE_SB_Subscribe\(\)](#) [CFE_Status_t CFE_SB_Subscribe](#) (

```
    CFE\_SB\_MsgId\_t MsgId,  
    CFE\_SB\_PipeId\_t PipeId )
```

Subscribe to a message on the software bus with default parameters.

Description

This routine adds the specified pipe to the destination list for the specified message ID. This is the same as [CFE_SB_SubscribeEx](#) with the Quality field set to [CFE_SB_DEFAULT_QOS](#) and MsgLim set to [CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT](#) (4).

Assumptions, External Events, and Notes:

Note: As subscriptions are received, the destinations are added to the head of a linked list. During the sending of a message, the list is traversed beginning at the head of the list. Therefore the message will first be sent to the last subscriber. If an application has timing constraints and needs to receive a message in the shortest possible time, the developer may consider holding off its subscription until other applications have subscribed to the message.

Parameters

in	<i>MsgId</i>	The message ID of the message to be subscribed to.
in	<i>PipeId</i>	The pipe ID of the pipe the subscribed message should be sent to.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_MAX_MSGS_MET	(return value only verified in coverage test) Max Messages Met.
CFE_SB_MAX_DESTS_MET	Max Destinations Met.
CFE_SB_BAD_ARGUMENT	Bad Argument.
CFE_SB_BUF_ALLOC_ERR	(return value only verified in coverage test) Buffer Allocation Error.

See also

[CFE_SB_SubscribeEx](#), [CFE_SB_SubscribeLocal](#), [CFE_SB_Unsubscribe](#), [CFE_SB_UnsubscribeLocal](#)

Referenced by [FM_ApplInit\(\)](#).

```
10.34.2.2 CFE_SB_SubscribeEx() CFE\_Status\_t CFE_SB_SubscribeEx (
    CFE\_SB\_MsgId\_t MsgId,
    CFE\_SB\_PipeId\_t PipeId,
    CFE\_SB\_Qos\_t Quality,
    uint16 MsgLim )
```

Subscribe to a message on the software bus.

Description

This routine adds the specified pipe to the destination list associated with the specified message ID.

Assumptions, External Events, and Notes:

Note: As subscriptions are received, the destinations are added to the head of a linked list. During the sending of a message, the list is traversed beginning at the head of the list. Therefore the message will first be sent to the last subscriber. If an application has timing constraints and needs to receive a message in the shortest possible time, the developer may consider holding off its subscription until other applications have subscribed to the message.

Parameters

in	<i>MsgId</i>	The message ID of the message to be subscribed to.
in	<i>PipeId</i>	The pipe ID of the pipe the subscribed message should be sent to.
in	<i>Quality</i>	The requested Quality of Service (QoS) required of the messages. Most callers will use CFE_SB_DEFAULT_QOS for this parameter.
in	<i>MsgLim</i>	The maximum number of messages with this Message ID to allow in this pipe at the same time.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_SB_MAX_MSGS_MET</code>	(return value only verified in coverage test) Max Messages Met.
<code>CFE_SB_MAX_DESTS_MET</code>	Max Destinations Met.
<code>CFE_SB_BAD_ARGUMENT</code>	Bad Argument.
<code>CFE_SB_BUF_ALOC_ERR</code>	(return value only verified in coverage test) Buffer Allocation Error.

See also

[CFE_SB_Subscribe](#), [CFE_SB_SubscribeLocal](#), [CFE_SB_Unsubscribe](#), [CFE_SB_UnsubscribeLocal](#)

10.34.2.3 CFE_SB_SubscribeLocal() `CFE_Status_t CFE_SB_SubscribeLocal (`
 `CFE_SB_MsgId_t MsgId,`
 `CFE_SB_PipeId_t PipeId,`
 `uint16 MsgLim)`

Subscribe to a message while keeping the request local to a cpu.

Description

This routine adds the specified pipe to the destination list for the specified message ID. This is similar to [CFE_SB_SubscribeEx](#) with the Quality field set to [`CFE_SB_DEFAULT_QOS`](#) and `MsgLim` set to [`CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT`](#), but will not report the subscription.

Software Bus Network (SBN) application is an example use case, where local subscriptions should not be reported to peers.

Assumptions, External Events, and Notes:

- This API is typically only used by Software Bus Network (SBN) Application

Parameters

in	<i>MsgId</i>	The message ID of the message to be subscribed to.
in	<i>PipeId</i>	The pipe ID of the pipe the subscribed message should be sent to.
in	<i>MsgLim</i>	The maximum number of messages with this Message ID to allow in this pipe at the same time.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_SB_MAX_MSGS_MET</code>	(return value only verified in coverage test) Max Messages Met.
<code>CFE_SB_MAX_DESTS_MET</code>	Max Destinations Met.

Return values

CFE_SB_BAD_ARGUMENT	Bad Argument.
CFE_SB_BUF_ALOC_ERR	(return value only verified in coverage test) Buffer Allocation Error.

See also

[CFE_SB_Subscribe](#), [CFE_SB_SubscribeEx](#), [CFE_SB_Unsubscribe](#), [CFE_SB_UnsubscribeLocal](#)

10.34.2.4 CFE_SB_Unsubscribe() [CFE_Status_t](#) CFE_SB_Unsubscribe (
 [CFE_SB_MsgId_t](#) MsgId,
 [CFE_SB_PipeId_t](#) PipeId)

Remove a subscription to a message on the software bus.

Description

This routine removes the specified pipe from the destination list for the specified message ID.

Assumptions, External Events, and Notes:

If the Pipe is not subscribed to MsgId, the [CFE_SB_UNSUB_NO_SUBS_EID](#) event will be generated and [CFE_SUCCESS](#) will be returned

Parameters

in	<i>MsgId</i>	The message ID of the message to be unsubscribed.
in	<i>PipeId</i>	The pipe ID of the pipe the subscribed message should no longer be sent to.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.

See also

[CFE_SB_Subscribe](#), [CFE_SB_SubscribeEx](#), [CFE_SB_SubscribeLocal](#), [CFE_SB_UnsubscribeLocal](#)

10.34.2.5 CFE_SB_UnsubscribeLocal() [CFE_Status_t](#) CFE_SB_UnsubscribeLocal (
 [CFE_SB_MsgId_t](#) MsgId,
 [CFE_SB_PipeId_t](#) PipeId)

Remove a subscription to a message on the software bus on the current CPU.

Description

This routine removes the specified pipe from the destination list for the specified message ID on the current CPU.

Assumptions, External Events, and Notes:

This API is typically only used by Software Bus Network (SBN) Application. If the Pipe is not subscribed to MsgId, the CFE_SB_UNSUB_NO_SUBS_EID event will be generated and [CFE_SUCCESS](#) will be returned

Parameters

in	<i>MsgId</i>	The message ID of the message to be unsubscribed.
in	<i>PipeId</i>	The pipe ID of the pipe the subscribed message should no longer be sent to.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.

See also

[CFE_SB_Subscribe](#), [CFE_SB_SubscribeEx](#), [CFE_SB_SubscribeLocal](#), [CFE_SB_Unsubscribe](#)

10.35 cFE Send/Receive Message APIs

Functions

- [CFE_Status_t CFE_SB_TransmitMsg](#) (`const CFE_MSG_Message_t *MsgPtr, bool IsOrigination`)
Transmit a message.
- [CFE_Status_t CFE_SB_ReceiveBuffer](#) (`CFE_SB_Buffer_t **BufPtr, CFE_SB_PipeId_t PipeId, int32 TimeOut`)
Receive a message from a software bus pipe.

10.35.1 Detailed Description

10.35.2 Function Documentation

10.35.2.1 CFE_SB_ReceiveBuffer() `CFE_Status_t CFE_SB_ReceiveBuffer (`
`CFE_SB_Buffer_t ** BufPtr,`
`CFE_SB_PipeId_t PipeId,`
`int32 TimeOut)`

Receive a message from a software bus pipe.

Description

This routine retrieves the next message from the specified pipe. If the pipe is empty, this routine will block until either a new message comes in or the timeout value is reached.

Assumptions, External Events, and Notes:

Note - If an error occurs in this API, the *BufPtr value may be NULL or random. Therefore, it is recommended that the return code be tested for CFE_SUCCESS before processing the message.

Parameters

in, out	<i>BufPtr</i>	A pointer to the software bus buffer to receive to (must not be null). Typically a caller declares a ptr of type CFE_SB_Buffer_t (i.e. CFE_SB_Buffer_t *Ptr) then gives the address of that pointer (&Ptr) as this parameter. After a successful receipt of a message, *BufPtr will point to the first byte of the software bus buffer. This should be used as a read-only pointer (in systems with an MMU, writes to this pointer may cause a memory protection fault). The *BufPtr is valid only until the next call to CFE_SB_ReceiveBuffer for the same pipe.
in	<i>PipeId</i>	The pipe ID of the pipe containing the message to be obtained.
in	<i>TimeOut</i>	The number of milliseconds to wait for a new message if the pipe is empty at the time of the call. This can also be set to CFE_SB_POLL for a non-blocking receive or CFE_SB_PEND_FOREVER to wait forever for a message to arrive.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.
CFE_SB_TIME_OUT	Time Out.
CFE_SB_PIPE_RD_ERR	(return value only verified in coverage test) Pipe Read Error.
CFE_SB_NO_MESSAGE	No Message.

Referenced by FM_AppMain().

```
10.35.2.2 CFE_SB_TransmitMsg() CFE_Status_t CFE_SB_TransmitMsg (
    const CFE_MSG_Message_t * MsgPtr,
    bool IsOrigination )
```

Transmit a message.

Description

This routine copies the specified message into a software bus buffer which is then transmitted to all subscribers. The software bus will read the message ID from the message header to determine which pipes should receive the message.

The IsOrigination parameter should be passed as "true" if the message was newly constructed by the sender and is being sent for the first time. This enables the message origination actions as determined by the CFE MSG module, which may include (but not limited to):

- Updating sequence number
- Updating timestamp
- Calculating a CRC, checksum, or other message error control field

Conversely, when forwarding a message that originated from an external entity (e.g. messages passing through CI or SBN), the parameter should be passed as "false" to not overwrite existing data.

Assumptions, External Events, and Notes:

- This routine will not normally wait for the receiver tasks to process the message before returning control to the caller's task.
- However, if a higher priority task is pending and subscribed to this message, that task may get to run before returning control to the caller.
- In previous versions of CFE, the boolean parameter referred to the sequence number header of telemetry messages only. This has been extended to apply more generically to any headers, as determined by the CFE MSG implementation.

Parameters

in	<i>MsgPtr</i>	A pointer to the message to be sent (must not be null). This must point to the first byte of the message header.
in	<i>IsOrigination</i>	Update the headers of the message

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BAD_ARGUMENT	Bad Argument.
CFE_SB_MSG_TOO_BIG	Message Too Big.
CFE_SB_BUF_ALOC_ERR	(return value only verified in coverage test) Buffer Allocation Error.

Referenced by FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_GetOpenFilesCmd(), FM_MonitorFilesystemSpaceCmd(), and FM_SendHkCmd().

10.36 cFE Zero Copy APIs

Functions

- [CFE_SB_Buffer_t * CFE_SB_AllocateMessageBuffer](#) (size_t MsgSize)
Get a buffer pointer to use for "zero copy" SB sends.
- [CFE_Status_t CFE_SB_ReleaseMessageBuffer](#) ([CFE_SB_Buffer_t](#) *BufPtr)
Release an unused "zero copy" buffer pointer.
- [CFE_Status_t CFE_SB_TransmitBuffer](#) ([CFE_SB_Buffer_t](#) *BufPtr, bool IsOrigination)
Transmit a buffer.

10.36.1 Detailed Description

10.36.2 Function Documentation

10.36.2.1 CFE_SB_AllocateMessageBuffer() `CFE_SB_Buffer_t* CFE_SB_AllocateMessageBuffer (`

`size_t MsgSize)`

Get a buffer pointer to use for "zero copy" SB sends.

Description

This routine can be used to get a pointer to one of the software bus' internal memory buffers that are used for sending messages. The caller can use this memory buffer to build an SB message, then send it using the [CFE_SB_TransmitBuffer\(\)](#) function. This interface avoids an extra copy of the message from the user's memory buffer to the software bus internal buffer.

Assumptions, External Events, and Notes:

1. The pointer returned by [CFE_SB_AllocateMessageBuffer\(\)](#) is only good for one call to [CFE_SB_TransmitBuffer\(\)](#).
2. Once a buffer has been successfully transmitted (as indicated by a successful return from [CFE_SB_TransmitBuffer\(\)](#)) the buffer becomes owned by the SB application. It will automatically be freed by SB once all recipients have finished reading it.
3. Applications must not de-reference the message pointer (for reading or writing) after the call to [CFE_SB_TransmitBuffer\(\)](#).
4. If [CFE_SB_ReleaseMessageBuffer](#) should be used only if a message is not transmitted

Parameters

in	<code>MsgSize</code>	The size of the SB message buffer the caller wants (including the SB message header).
----	----------------------	---

Returns

A pointer to a memory buffer that message data can be written to for use with [CFE_SB_TransmitBuffer\(\)](#).

10.36.2.2 CFE_SB_ReleaseMessageBuffer() `CFE_Status_t CFE_SB_ReleaseMessageBuffer (`

`CFE_SB_Buffer_t * BufPtr)`

Release an unused "zero copy" buffer pointer.

Description

This routine can be used to release a pointer to one of the software bus' internal memory buffers.

Assumptions, External Events, and Notes:

1. This function is not needed for normal "zero copy" transfers. It is needed only for cleanup when an application gets a pointer using [CFE_SB_AllocateMessageBuffer\(\)](#), but (due to some error condition) never uses that pointer in a call to [CFE_SB_TransmitBuffer\(\)](#).

Parameters

in	<i>BufPtr</i>	A pointer to the SB internal buffer (must not be null). This must be a pointer returned by a call to CFE_SB_AllocateMessageBuffer() , but never used in a call to CFE_SB_TransmitBuffer() .
----	---------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_SB_BUFFER_INVALID	Buffer Invalid.

10.36.2.3 CFE_SB_TransmitBuffer() [CFE_Status_t](#) CFE_SB_TransmitBuffer (

```
    CFE_SB_Buffer_t * BufPtr,  
    bool IsOrigination )
```

Transmit a buffer.

Description

This routine sends a message that has been created directly in an internal SB message buffer by an application (after a call to [CFE_SB_AllocateMessageBuffer\(\)](#)). This interface is more complicated than the normal [CFE_SB_TransmitMsg](#) interface, but it avoids an extra copy of the message from the user's memory buffer to the software bus internal buffer. The "zero copy" interface can be used to improve performance in high-rate, high-volume software bus traffic.

The `IsOrigination` parameter should be passed as "true" if the message was newly constructed by the sender and is being sent for the first time. This enables the message origination actions as determined by the CFE MSG module, which may include (but not limited to):

- Updating sequence number
- Updating timestamp
- Calculating a CRC, checksum, or other message error control field

Conversely, when forwarding a message that originated from an external entity (e.g. messages passing through CI or SBN), the parameter should be passed as "false" to not overwrite existing data.

Assumptions, External Events, and Notes:

1. A handle returned by [CFE_SB_AllocateMessageBuffer](#) is "consumed" by a *successful* call to [CFE_SB_TransmitBuffer](#).
2. If this function returns [CFE_SUCCESS](#), this indicates the zero copy handle is now owned by software bus, and is no longer owned by the calling application, and should not be re-used.
3. However if this function fails (returns any error status) it does not change the state of the buffer at all, meaning the calling application still owns it. (a failure means the buffer is left in the same state it was before the call).
4. Applications should be written as if [CFE_SB_AllocateMessageBuffer](#) is equivalent to a `malloc()` and a successful call to [CFE_SB_TransmitBuffer](#) is equivalent to a `free()`.
5. Applications must not de-reference the message pointer (for reading or writing) after a successful call to [CFE_SB_TransmitBuffer](#).
6. This function will increment and apply the internally tracked sequence counter if set to do so.

Parameters

in	<i>BufPtr</i>	A pointer to the buffer to be sent (must not be null).
in	<i>IsOrigination</i>	Update applicable header field(s) of a newly constructed message

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_SB_BAD_ARGUMENT</i>	Bad Argument.
<i>CFE_SB_MSG_TOO_BIG</i>	Message Too Big.

10.37 cFE Message Characteristics APIs**Functions**

- void [*CFE_SB_SetUserDataLength*](#) (*CFE_MSG_Message_t* **MsgPtr*, *size_t* *DataLength*)

Sets the length of user data in a software bus message.
- void [*CFE_SB_TimeStampMsg*](#) (*CFE_MSG_Message_t* **MsgPtr*)

Sets the time field in a software bus message with the current spacecraft time.
- *int32* [*CFE_SB_MessageStringSet*](#) (*char* **DestStringPtr*, *const char* **SourceStringPtr*, *size_t* *DestMaxSize*, *size_t* *SourceMaxSize*)

Copies a string into a software bus message.
- void * [*CFE_SB_GetUserData*](#) (*CFE_MSG_Message_t* **MsgPtr*)

Get a pointer to the user data portion of a software bus message.
- *size_t* [*CFE_SB_GetUserDataLength*](#) (*const CFE_MSG_Message_t* **MsgPtr*)

Gets the length of user data in a software bus message.
- *int32* [*CFE_SB_MessageStringGet*](#) (*char* **DestStringPtr*, *const char* **SourceStringPtr*, *const char* **DefaultString*, *size_t* *DestMaxSize*, *size_t* *SourceMaxSize*)

Copies a string out of a software bus message.

10.37.1 Detailed Description**10.37.2 Function Documentation****10.37.2.1 *CFE_SB_GetUserData()*** *void** [*CFE_SB_GetUserData*](#) (
 CFE_MSG_Message_t * *MsgPtr*)

Get a pointer to the user data portion of a software bus message.

Description

This routine returns a pointer to the user data portion of a software bus message. SB message header formats can be different for each deployment of the cFE. So, applications should use this function and avoid hard coding offsets into their SB message buffers.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the software bus message (must not be null).
----	---------------	--

Returns

A pointer to the first byte of user data within the software bus message.

10.37.2.2 CFE_SB_GetUserDataLength() `size_t CFE_SB_GetUserDataLength (`
`const CFE_MSG_Message_t * MsgPtr)`

Gets the length of user data in a software bus message.

Description

This routine returns the size of the user data in a software bus message.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the software bus message (must not be null). This must point to the first byte of the message header.
----	---------------	---

Returns

The size (in bytes) of the user data in the software bus message.

Return values

0	if an error occurs, such as if the <i>MsgPtr</i> argument is not valid.
---	---

10.37.2.3 CFE_SB_MessageStringGet() `int32 CFE_SB_MessageStringGet (`
`char * DestStringPtr,`
`const char * SourceStringPtr,`
`const char * DefaultString,`
`size_t DestMaxSize,`
`size_t SourceMaxSize)`

Copies a string out of a software bus message.

Description

Strings within software bus messages have a defined/fixed maximum length, and may not necessarily be null terminated within the message. This presents a possible issue when using the C library functions to copy strings out of a message.

This function should replace use of C library functions such as strcpy/strncpy when copying strings out of software bus messages to local storage buffers.

Up to [SourceMaxSize] or [DestMaxSize-1] (whichever is smaller) characters will be copied from the source buffer to the destination buffer, and a NUL termination character will be written to the destination buffer as the last character.

If the DefaultString pointer is non-NULL, it will be used in place of the source string if the source is an empty string. This is typically a string constant that comes from the platform configuration, allowing default values to be assumed for fields that are unspecified.

IMPORTANT - the default string, if specified, must be null terminated. This will be the case if a string literal is passed in (the typical/expected use case).

If the default is NULL, then only the source string will be copied, and the result will be an empty string if the source was empty.

If the destination buffer is too small to store the entire string, it will be truncated, but it will still be null terminated.

Parameters

out	<i>DestStringPtr</i>	Pointer to destination buffer (must not be null)
in	<i>SourceStringPtr</i>	Pointer to source buffer (component of SB message definition)
in	<i>DefaultString</i>	Default string to use if source is empty
in	<i>DestMaxSize</i>	Size of destination storage buffer (must not be zero)
in	<i>SourceMaxSize</i>	Size of source buffer as defined by the message definition

Returns

Number of characters copied or error code, see [cFE Return Code Defines](#)

Return values

CFE_SB_BAD_ARGUMENT	Bad Argument.
-------------------------------------	---------------

Referenced by FM_VerifyFileState(), and FM_VerifyNameValid().

```
10.37.2.4 CFE_SB_MessageStringSet() int32 CFE_SB_MessageStringSet (
    char * DestStringPtr,
    const char * SourceStringPtr,
    size_t DestMaxSize,
    size_t SourceMaxSize )
```

Copies a string into a software bus message.

Description

Strings within software bus messages have a defined/fixed maximum length, and may not necessarily be null terminated within the message. This presents a possible issue when using the C library functions to copy strings out of a message.

This performs a very similar function to "strncpy()" except that the sizes of *both* buffers are passed in. Neither buffer is required to be null-terminated, but copying will stop after the first termination character is encountered.

If the destination buffer is not completely filled by the source data (such as if the supplied string was shorter than the allotted length) the destination buffer will be padded with NUL characters up to the size of the buffer, similar to what `strncpy()` does. This ensures that the entire destination buffer is set.

Note

If the source string buffer is already guaranteed to be null terminated, then there is no difference between the C library "strncpy()" function and this implementation. It is only necessary to use this when termination of the source buffer is not guaranteed.

Parameters

out	<i>DestStringPtr</i>	Pointer to destination buffer (component of SB message definition) (must not be null)
in	<i>SourceStringPtr</i>	Pointer to source buffer (must not be null)
in	<i>DestMaxSize</i>	Size of destination buffer as defined by the message definition
in	<i>SourceMaxSize</i>	Size of source buffer

Returns

Number of characters copied or error code, see [cFE Return Code Defines](#)

Return values

CFE_SB_BAD_ARGUMENT	Bad Argument.
-------------------------------------	---------------

Referenced by FM_MonitorFilesystemSpaceCmd().

10.37.2.5 CFE_SB_SetUserDataLength() `void CFE_SB_SetUserDataLength (`
`CFE_MSG_Message_t * MsgPtr,`
`size_t DataLength)`

Sets the length of user data in a software bus message.

Description

This routine sets the field in the SB message header that determines the size of the user data in a software bus message. SB message header formats can be different for each deployment of the cFE. So, applications should use this function rather than trying to poke a length value directly into their SB message buffers.

Assumptions, External Events, and Notes:

- You must set a valid message ID in the SB message header before calling this function.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the software bus message (must not be null). This must point to the first byte of the message header.
in	<i>DataLength</i>	The length to set (size of the user data, in bytes).

10.37.2.6 CFE_SB_TimeStampMsg() `void CFE_SB_TimeStampMsg (`
`CFE_MSG_Message_t * MsgPtr)`

Sets the time field in a software bus message with the current spacecraft time.

Description

This routine sets the time of a software bus message with the current spacecraft time. This will be the same time that is returned by the function [CFE_TIME_GetTime](#).

Assumptions, External Events, and Notes:

- If the underlying implementation of software bus messages does not include a time field, then this routine will do nothing.

Parameters

in	<i>MsgPtr</i>	A pointer to the buffer that contains the software bus message (must not be null). This must point to the first byte of the message header.
----	---------------	---

Referenced by FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_GetOpenFilesCmd(), FM_MonitorFilesystemSpaceCmd(), and FM_SendHkCmd().

10.38 cFE Message ID APIs

Functions

- `bool CFE_SB_IsValidMsgId (CFE_SB_MsgId_t MsgId)`
Identifies whether a given `CFE_SB_MsgId_t` is valid.
- `static bool CFE_SB_MsgId_Equal (CFE_SB_MsgId_t MsgId1, CFE_SB_MsgId_t MsgId2)`
Identifies whether two `CFE_SB_MsgId_t` values are equal.
- `static CFE_SB_MsgId_Atom_t CFE_SB_MsgIdToValue (CFE_SB_MsgId_t MsgId)`
Converts a `CFE_SB_MsgId_t` to a normal integer.
- `static CFE_SB_MsgId_t CFE_SB_ValueToMsgId (CFE_SB_MsgId_Atom_t MsgIdValue)`
Converts a normal integer into a `CFE_SB_MsgId_t`.
- `CFE_SB_MsgId_Atom_t CFE_SB_CmdTopicIdToMsgId (uint16 TopicId, uint16 InstanceNum)`
Converts a topic ID and instance number combination into a MsgID value integer.
- `CFE_SB_MsgId_Atom_t CFE_SB_TlmTopicIdToMsgId (uint16 TopicId, uint16 InstanceNum)`
Converts a topic ID and instance number combination into a MsgID value integer.
- `CFE_SB_MsgId_Atom_t CFE_SB_GlobalCmdTopicIdToMsgId (uint16 TopicId)`
Converts a topic ID to a MsgID value integer for Global commands.
- `CFE_SB_MsgId_Atom_t CFE_SB_GlobalTlmTopicIdToMsgId (uint16 TopicId)`
Converts a topic ID to a MsgID value integer for Global telemetry.
- `CFE_SB_MsgId_Atom_t CFE_SB_LocalCmdTopicIdToMsgId (uint16 TopicId)`
Converts a topic ID to a MsgID value integer for local commands.
- `CFE_SB_MsgId_Atom_t CFE_SB_LocalTlmTopicIdToMsgId (uint16 TopicId)`
Converts a topic ID to a MsgID value integer for local telemetry.

10.38.1 Detailed Description

10.38.2 Function Documentation

10.38.2.1 CFE_SB_CmdTopicIdToMsgId() [CFE_SB_MsgId_Atom_t](#) CFE_SB_CmdTopicIdToMsgId (
 uint16 TopicId,
 uint16 InstanceNum)

Converts a topic ID and instance number combination into a MsgID value integer.

Description

This function accepts a data pair of topic ID + instance number and returns the corresponding MsgID Value (integer) for commands.

Assumptions and Notes:

A topic ID identifies a certain data stream from an application, for example the CFE Software bus ground commands (CFE_MISSION_SB_CMD_TOPICID). In contrast to MsgID, the topic ID is consistent across all CPUs in a system, whereas each CPU instance will have a unique MsgID.

CPU instance numbers are 1-based. The instance number of 0 is reserved for "global" MsgID values that are the same on all CPUs. The PSP function may be used to obtain the current CPU number for the host processor.

See also

[CFE_SB_TlmTopicIdToMsgId\(\)](#), [CFE_PSP_GetProcessorId\(\)](#)

Returns

Integer representation of the [CFE_SB_MsgId_t](#)

10.38.2.2 CFE_SB_GlobalCmdTopicIdToMsgId() [CFE_SB_MsgId_Atom_t](#) CFE_SB_GlobalCmdTopicIdToMsgId (
 uint16 TopicId)

Converts a topic ID to a MsgID value integer for Global commands.

Description

This is a wrapper around [CFE_SB_CmdTopicIdToMsgId\(\)](#) for topic IDs which are the same on all CPUs within a system (i.e. not specific to a certain processor)

Assumptions and Notes:

Global MsgIDs may be used when only a single instance of a service exists within the system. The CFE framework does not use this feature for commands, but is defined for future use.

See also

[CFE_SB_CmdTopicIdToMsgId\(\)](#), [CFE_SB_LocalCmdTopicIdToMsgId\(\)](#)

Returns

Integer representation of the [CFE_SB_MsgId_t](#)

10.38.2.3 CFE_SB_GlobalTlmTopicIdToMsgId() `CFE_SB_MsgId_Atom_t CFE_SB_GlobalTlmTopicIdToMsgId (uint16 TopicId)`

Converts a topic ID to a MsgID value integer for Global telemetry.

Description

This is a wrapper around [CFE_SB_TlmTopicIdToMsgId\(\)](#) for topic IDs which are the same on all CPUs within a system (i.e. not specific to a certain processor)

Assumptions and Notes:

Global MsgIDs may be used when only a single instance of a service exists within the system. An example for such telemetry is the time synchronization service published by CFE_TIME.

See also

[CFE_SB_TlmTopicIdToMsgId\(\)](#), [CFE_SB_LocalTlmTopicIdToMsgId\(\)](#)

Returns

Integer representation of the [CFE_SB_MsgId_t](#)

10.38.2.4 CFE_SB_IsValidMsgId() `bool CFE_SB_IsValidMsgId (CFE_SB_MsgId_t MsgId)`

Identifies whether a given [CFE_SB_MsgId_t](#) is valid.

Description

Implements a basic sanity check on the value provided

Returns

Boolean message ID validity indicator

Return values

<i>true</i>	Message ID is within the valid range
<i>false</i>	Message ID is not within the valid range

10.38.2.5 CFE_SB_LocalCmdTopicIdToMsgId() `CFE_SB_MsgId_Atom_t CFE_SB_LocalCmdTopicIdToMsgId (uint16 TopicId)`

Converts a topic ID to a MsgID value integer for local commands.

Description

This is a wrapper around [CFE_SB_CmdTopicIdToMsgId\(\)](#) for topic IDs which are unique on all CPUs within a system (i.e. specific to a certain processor)

Assumptions and Notes:

This assumes the caller is referring to a service running on the same processor instance as itself.

See also

[CFE_SB_CmdTopicIdToMsgId\(\)](#), [CFE_SB_LocalTlmTopicIdToMsgId\(\)](#)

Returns

Integer representation of the [CFE_SB_MsgId_t](#)

10.38.2.6 CFE_SB_LocalTlmTopicIdToMsgId() [CFE_SB_MsgId_Atom_t](#) CFE_SB_LocalTlmTopicIdToMsgId (
 `uint16 TopicId)`

Converts a topic ID to a MsgID value integer for local telemetry.

Description

This is a wrapper around [CFE_SB_TlmTopicIdToMsgId\(\)](#) for topic IDs which are unique on all CPUs within a system (i.e. specific to a certain processor)

Assumptions and Notes:

This assumes the caller is referring to a service running on the same processor instance as itself.

See also

[CFE_SB_TlmTopicIdToMsgId\(\)](#), [CFE_SB_LocalCmdTopicIdToMsgId\(\)](#)

Returns

Integer representation of the [CFE_SB_MsgId_t](#)

10.38.2.7 CFE_SB_MsgId_Equal() static bool CFE_SB_MsgId_Equal (
 `CFE_SB_MsgId_t MsgId1,`
 `CFE_SB_MsgId_t MsgId2) [inline], [static]`

Identifies whether two [CFE_SB_MsgId_t](#) values are equal.

Description

In cases where the [CFE_SB_MsgId_t](#) type is not a simple integer type, it may not be possible to do a direct equality check. This inline function provides an abstraction for the equality check between two [CFE_SB_MsgId_t](#) values.

Applications should transition to using this function to compare MsgId values for equality to remain compatible with future versions of cFE.

Returns

Boolean message ID equality indicator

Return values

<code>true</code>	Message IDs are Equal
<code>false</code>	Message IDs are not Equal

Definition at line 791 of file cfe_sb.h.

References CFE_SB_MSGID_UNWRAP_VALUE.

10.38.2.8 CFE_SB_MsgIdToValue() static CFE_SB_MsgId_Atom_t CFE_SB_MsgIdToValue (CFE_SB_MsgId_t MsgId) [inline], [static]

Converts a [CFE_SB_MsgId_t](#) to a normal integer.

Description

In cases where the [CFE_SB_MsgId_t](#) type is not a simple integer type, it is not possible to directly display the value in a printf-style statement, use it in a switch() statement, or other similar use cases.

This inline function provides the ability to map a [CFE_SB_MsgId_t](#) type back into a simple integer value.

Applications should transition to using this function wherever a [CFE_SB_MsgId_t](#) type needs to be used as an integer.

Assumptions and Notes:

This negates the type safety that was gained by using a non-integer type for the [CFE_SB_MsgId_t](#) value. This should only be used in specific cases such as UI display (printf, events, etc) where the value is being sent externally. Any internal API calls should be updated to use the [CFE_SB_MsgId_t](#) type directly, rather than an integer type.

Returns

Integer representation of the [CFE_SB_MsgId_t](#)

Definition at line 822 of file cfe_sb.h.

References CFE_SB_MSGID_UNWRAP_VALUE.

Referenced by FM_ProcessPkt().

10.38.2.9 CFE_SB_TlmTopicIdToMsgId() CFE_SB_MsgId_Atom_t CFE_SB_TlmTopicIdToMsgId (uint16 TopicId, uint16 InstanceNum)

Converts a topic ID and instance number combination into a MsgID value integer.

Description

This function accepts a data pair of topic ID + instance number and returns the corresponding MsgID Value (integer) for telemetry.

Assumptions and Notes:

A topic ID identifies a certain data stream from an application, for example the CFE Software bus housekeeping telemetry (CFE_MISSION_SB_HK_TLM_TOPICID). In contrast to MsgID, the topic ID is consistent across all CPUs in a system, whereas each CPU instance will have a unique MsgID.

CPU instance numbers are 1-based. The instance number of 0 is reserved for "global" MsgID values that are the same on all CPUs. The PSP function may be used to obtain the current CPU number for the host processor.

See also

[CFE_SB_CmdTopicIdToMsgId\(\)](#), [CFE_PSP_GetProcessorId\(\)](#)

Returns

Integer representation of the [CFE_SB_MsgId_t](#)

10.38.2.10 CFE_SB_ValueToMsgId() static [CFE_SB_MsgId_t](#) CFE_SB_ValueToMsgId ([CFE_SB_MsgId_Atom_t](#) MsgIdValue) [inline], [static]
Converts a normal integer into a [CFE_SB_MsgId_t](#).

Description

In cases where the [CFE_SB_MsgId_t](#) type is not a simple integer type, it is not possible to directly use an integer value supplied via a define or similar method.

This inline function provides the ability to map an integer value into a corresponding [CFE_SB_MsgId_t](#) value. Applications should transition to using this function wherever an integer needs to be used for a [CFE_SB_MsgId_t](#).

Assumptions and Notes:

This negates the type safety that was gained by using a non-integer type for the [CFE_SB_MsgId_t](#) value. This should only be used in specific cases where the value is coming from an external source. Any internal API calls should be updated to return the [CFE_SB_MsgId_t](#) type directly, rather than an integer type.

Returns

[CFE_SB_MsgId_t](#) representation of the integer

Definition at line 851 of file cfe_sb.h.

References [CFE_SB_MSGID_C](#).

Referenced by [FM_AppInit\(\)](#), [FM_ChildDirListPktCmd\(\)](#), [FM_ChildFileInfoCmd\(\)](#), [FM_GetOpenFilesCmd\(\)](#), [FM_MonitorFilesystemSpaceCmd\(\)](#), and [FM_SendHkCmd\(\)](#).

10.39 cFE SB Pipe options

Macros

- #define [CFE_SB_PIPEOPTS_IGNOREMINE](#) 0x00000001

Messages sent by the app that owns this pipe will not be sent to this pipe.

10.39.1 Detailed Description

10.39.2 Macro Definition Documentation

10.39.2.1 CFE_SB_PIPEOPTS_IGNOREMINE #define CFE_SB_PIPEOPTS_IGNOREMINE 0x00000001

Messages sent by the app that owns this pipe will not be sent to this pipe.

Definition at line 132 of file cfe_sb_api_typedefs.h.

10.40 cFE Registration APIs

Functions

- [CFE_Status_t CFE_TBL_Register](#) ([CFE_TBL_Handle_t](#) *TblHandlePtr, const char *Name, size_t Size, uint16 TblOptionFlags, [CFE_TBL_CallbackFuncPtr_t](#) TblValidationFuncPtr)
Register a table with cFE to obtain Table Management Services.
- [CFE_Status_t CFE_TBL_Share](#) ([CFE_TBL_Handle_t](#) *TblHandlePtr, const char *TblName)
Obtain handle of table registered by another application.
- [CFE_Status_t CFE_TBL_Unregister](#) ([CFE_TBL_Handle_t](#) TblHandle)
Unregister a table.

10.40.1 Detailed Description

10.40.2 Function Documentation

```
10.40.2.1 CFE_TBL_Register() CFE_Status_t CFE_TBL_Register (
    CFE_TBL_Handle_t * TblHandlePtr,
    const char * Name,
    size_t Size,
    uint16 TblOptionFlags,
    CFE_TBL_CallbackFuncPtr_t TblValidationFuncPtr )
```

Register a table with cFE to obtain Table Management Services.

Description

When an application is created and initialized, it is responsible for creating its table images via the TBL API. The application must inform the Table Service of the table name, table size and selection of optional table features.

Assumptions, External Events, and Notes:

Note: This function call can block. Therefore, interrupt service routines should NOT create their own tables. An application should create any table(s) and provide the handle(s) to the interrupt service routine.

Parameters

out	<i>TblHandlePtr</i>	a pointer to a CFE_TBL_Handle_t type variable (must not be null) that will be assigned the table's handle. The table handle is required for other API calls when accessing the data contained in the table. *TblHandlePtr is the handle used to identify table to cFE when performing Table operations. This value is returned at address specified by TblHandlePtr.
in	<i>Name</i>	The raw table name. This name will be combined with the name of the application to produce a name of the form "AppName.RawTableName". This application specific name will be used in commands for modifying or viewing the contents of the table.
in	<i>Size</i>	The size, in bytes, of the table to be created (must not be zero). This is the size that will be allocated as a shared memory resource between the Table Management Service and the calling application.

Parameters

in	<i>TblOptionFlags</i>	<p>Flag bits indicating selected options for table. A bitwise OR of the following option flags:</p> <ul style="list-style-type: none"> • CFE_TBL_OPT_DEFAULT - The default setting for table options is a combination of CFE_TBL_OPT_SNGL_BUFFER and CFE_TBL_OPT_LOAD_DUMP. See below for a description of these two options. This option is mutually exclusive with the CFE_TBL_OPT_DBL_BUFFER, CFE_TBL_OPT_DUMP_ONLY and CFE_TBL_OPT_USR_DEF_ADDR options. • CFE_TBL_OPT_SNGL_BUFFER - When this option is selected, the table will use a shared session table for performing table modifications and a memory copy from the session table to the "active" table buffer will occur when the table is updated. This is the preferred option since it will minimize memory usage. This option is mutually exclusive with the CFE_TBL_OPT_DBL_BUFFER option • CFE_TBL_OPT_DBL_BUFFER - When this option is selected, two instances of the table are created. One is considered the "active" table and the other the "inactive" table. Whenever table modifications occur, they do not require the use of a common session table. Modifications occur in the "inactive" buffer. Then, when it is time to update the table, the pointer to the "active" table is changed to point to the "inactive" buffer thus making it the new "active" buffer. This feature is most useful for time critical applications (ie - interrupt service routines, etc). This option is mutually exclusive with the CFE_TBL_OPT_SNGL_BUFFER and CFE_TBL_OPT_DEFAULT option. • CFE_TBL_OPT_LOAD_DUMP - When this option is selected, the Table Service is allowed to perform all operations on the specified table. This option is mutually exclusive with the CFE_TBL_OPT_DUMP_ONLY option. • CFE_TBL_OPT_DUMP_ONLY - When this option is selected, the Table Service will not perform table loads to this table. This does not prevent, however, a task from writing to the table via an address obtained with the CFE_TBL_GetAddress API function. This option is mutually exclusive with the CFE_TBL_OPT_LOAD_DUMP and CFE_TBL_OPT_DEFAULT options. If the Application wishes to specify their own block of memory as the Dump Only table, they need to also include the CFE_TBL_OPT_USR_DEF_ADDR option explained below. • CFE_TBL_OPT_NOT_USR_DEF - When this option is selected, Table Services allocates memory for the table and, in the case of a double buffered table, it allocates the same amount of memory again for the second buffer. This option is mutually exclusive with the CFE_TBL_OPT_USR_DEF_ADDR option. • CFE_TBL_OPT_USR_DEF_ADDR - When this option is selected, the Table Service will not allocate memory for the table. Table Services will require the Application to identify the location of the active table buffer via the CFE_TBL_Load function. This option implies the CFE_TBL_OPT_DUMP_ONLY and the CFE_TBL_OPT_SNGL_BUFFER options and is mutually exclusive of the CFE_TBL_OPT_DBL_BUFFER option. • CFE_TBL_OPT_CRITICAL - When this option is selected, the Table Service will automatically allocate space in the Critical Data Store (CDS) for the table and ensure that the contents in the CDS are the same as the contents of the currently active buffer for the table. This option is mutually exclusive of the CFE_TBL_OPT_USR_DEF_ADDR and CFE_TBL_OPT_DUMP_ONLY options. It should also be noted that the use of this option with double buffered tables will prevent the update of the double buffered table from being quick and it could be blocked. Therefore, critical tables should not be

Parameters

in	<i>TblValidationFuncPtr</i>	<p>is a pointer to a function that will be executed in the context of the Table Management Service when the contents of a table need to be validated. If set to NULL, then the Table Management Service will assume any data is valid. If the value is not NULL, it must be a pointer to a function with the following prototype:</p> <pre>int32 CallbackFunc(void *TblPtr);</pre> <p>where</p> <p>TblPtr will be a pointer to the table data that is to be verified. When the function returns CFE_SUCCESS, the data is considered valid and ready for a commit. When the function returns a negative value, the data is considered invalid and an Event Message will be issued containing the returned value. If the function should return a positive number, the table is considered invalid and the return code is considered invalid. Validation functions must return either CFE_SUCCESS or a negative number (whose value is at the developer's discretion). The validation function will be executed in the Application's context so that Event Messages describing the validation failure are possible from within the function.</p>
----	-----------------------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_TBL_INFO_RECOVERED_TBL	Recovered Table.
CFE_TBL_ERR_DUPLICATE_DIFF_SIZE	Duplicate Table With Different Size.
CFE_TBL_ERR_DUPLICATE_NOT_OWNED	Duplicate Table And Not Owned.
CFE_TBL_ERR_REGISTRY_FULL	Registry Full.
CFE_TBL_ERR_HANDLES_FULL	Handles Full.
CFE_TBL_ERR_INVALID_SIZE	Invalid Size.
CFE_TBL_ERR_INVALID_NAME	Invalid Name.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_TBL_BAD_ARGUMENT	Bad Argument.
CFE_TBL_ERR_INVALID_OPTIONS	Invalid Options.
CFE_TBL_WARN_DUPLICATE	Duplicate Warning.
CFE_TBL_WARN_NOT_CRITICAL	Not Critical Warning.

See also

[CFE_TBL_Unregister](#), [CFE_TBL_Share](#)

Referenced by [FM_TableInit\(\)](#).

10.40.2.2 CFE_TBL_Share() [CFE_Status_t](#) CFE_TBL_Share (

```
CFE_TBL_Handle_t * TblHandlePtr,
const char * TblName )
```

Obtain handle of table registered by another application.

Description

After a table has been created, other applications can gain access to that table via the table handle. In order for two or more applications to share a table, the applications that do not create the table must obtain the handle using this function.

Assumptions, External Events, and Notes:

None

Parameters

<i>out</i>	<i>TblHandlePtr</i>	A pointer to a CFE_TBL_Handle_t type variable (must not be null) that will be assigned the table's handle. The table handle is required for other API calls when accessing the data contained in the table. *TblHandlePtr is the handle used to identify table to cFE when performing Table operations. This value is returned at the address specified by TblHandlePtr.
<i>in</i>	<i>TblName</i>	The application specific name of the table of the form "AppName.RawTableName", where RawTableName is the name specified in the CFE_TBL_Register API call. Example: "ACS.TamParams" for a table called "TamParams" that was registered by the application called "ACS".

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_TBL_ERR_HANDLES_FULL	Handles Full.
CFE_TBL_ERR_INVALID_NAME	Invalid Name.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_TBL_BAD_ARGUMENT	Bad Argument.

See also

[CFE_TBL_Unregister](#), [CFE_TBL_Register](#)

10.40.2.3 CFE_TBL_Unregister()

```
CFE_Status_t CFE_TBL_Unregister (
    CFE_TBL_Handle_t TblHandle )
```

Unregister a table.

Description

When an application is being removed from the system, ES will clean up/free all the application related resources including tables so apps are not required to call this function.

A valid use-case for this API is to unregister a shared table if access is no longer needed or the owning application was removed from the system (CS app is an example).

Typically apps should only register tables during initialization and registration/unregistration by the owning application during operation should be avoided. If unavoidable, special care needs to be taken (especially for shared tables) to avoid race conditions due to competing requests from multiple tasks.

Note the table will not be removed from memory until all table access links have been removed (registration and all shared access).

Assumptions, External Events, and Notes:

None

Parameters

in	<i>TblHandle</i>	Handle, previously obtained from CFE_TBL_Register or CFE_TBL_Share , that identifies the Table to be unregistered.
----	------------------	--

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_TBL_ERR_NO_ACCESS	No Access.
CFE_TBL_ERR_INVALID_HANDLE	Invalid Handle.

See also

[CFE_TBL_Share](#), [CFE_TBL_Register](#)

10.41 cFE Manage Table Content APIs

Functions

- [CFE_Status_t CFE_TBL_Load \(CFE_TBL_Handle_t TblHandle, CFE_TBL_SrcEnum_t SrcType, const void *SrcDataPtr\)](#)
Load a specified table with data from specified source.
- [CFE_Status_t CFE_TBL_Update \(CFE_TBL_Handle_t TblHandle\)](#)
Update contents of a specified table, if an update is pending.
- [CFE_Status_t CFE_TBL_Validate \(CFE_TBL_Handle_t TblHandle\)](#)
Perform steps to validate the contents of a table image.
- [CFE_Status_t CFE_TBL_Manage \(CFE_TBL_Handle_t TblHandle\)](#)
Perform standard operations to maintain a table.
- [CFE_Status_t CFE_TBL_DumpToBuffer \(CFE_TBL_Handle_t TblHandle\)](#)
Copies the contents of a Dump Only Table to a shared buffer.
- [CFE_Status_t CFE_TBL_Modified \(CFE_TBL_Handle_t TblHandle\)](#)
Notify cFE Table Services that table contents have been modified by the Application.

10.41.1 Detailed Description

10.41.2 Function Documentation

10.41.2.1 CFE_TBL_DumpToBuffer() `CFE_Status_t CFE_TBL_DumpToBuffer (`
`CFE_TBL_Handle_t TblHandle)`

Copies the contents of a Dump Only Table to a shared buffer.

Description

Typically, apps should just call [CFE_TBL_Manage](#) as part of routine processing which will perform validation, update, or dump if pending. This API is provided for the case where just a dump should be performed.

Assumptions, External Events, and Notes:

If the table does not have a dump pending status, nothing will occur (no error, no dump)

Parameters

in	<i>TblHandle</i>	Handle of Table to be dumped.
----	------------------	-------------------------------

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_TBL_ERR_NO_ACCESS	No Access.
CFE_TBL_ERR_INVALID_HANDLE	Invalid Handle.
CFE_TBL_INFO_DUMP_PENDING	Dump Pending.

See also

[CFE_TBL_Manage](#)

10.41.2.2 CFE_TBL_Load() `CFE_Status_t CFE_TBL_Load (`

```
    CFE_TBL_Handle_t TblHandle,  
    CFE_TBL_SrcEnum_t SrcType,  
    const void * SrcDataPtr )
```

Load a specified table with data from specified source.

Description

Once an application has created a table ([CFE_TBL_Register](#)), it must provide the values that initialize the contents of that table. The application accomplishes this with one of two different TBL API calls. This function call initializes the table with values that are held in a data structure.

Assumptions, External Events, and Notes:

This function call can block. Therefore, interrupt service routines should NOT initialize their own tables. An application should initialize any table(s) prior to providing the handle(s) to the interrupt service routine.

Parameters

in	<i>TblHandle</i>	Handle, previously obtained from CFE_TBL_Register or CFE_TBL_Share , that identifies the Table to be loaded.
in	<i>SrcType</i>	Flag indicating the nature of the given <i>SrcDataPtr</i> below. This value can be any one of the following: <ul style="list-style-type: none"> • CFE_TBL_SRC_FILE - File source When this option is selected, the <i>SrcDataPtr</i> will be interpreted as a pointer to a null terminated character string. The string should specify the full path and filename of the file containing the initial data contents of the table. • CFE_TBL_SRC_ADDRESS - Address source When this option is selected, the <i>SrcDataPtr</i> will be interpreted as a pointer to a memory location that is the beginning of the initialization data for loading the table OR, in the case of a "user defined" dump only table, the address of the active table itself. The block of memory is assumed to be of the same size specified in the CFE_TBL_Register function Size parameter.
in	<i>SrcDataPtr</i>	Pointer (must not be null) to either a character string specifying a filename or a memory address of a block of binary data to be loaded into a table or, if the table was registered with the CFE_TBL_OPT_USR_DEF_ADDR option, the address of the active table buffer.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_TBL_ERR_NO_ACCESS	No Access.
CFE_TBL_ERR_INVALID_HANDLE	Invalid Handle.
CFE_TBL_ERR_DUMP_ONLY	Dump Only Error.
CFE_TBL_ERR_ILLEGAL_SRC_TYPE	Illegal Source Type.
CFE_TBL_ERR_LOAD_IN_PROGRESS	Load In Progress.
CFE_TBL_ERR_LOAD_INCOMPLETE	Load Incomplete.
CFE_TBL_ERR_NO_BUFFER_AVAIL	No Buffer Available.
CFE_TBL_ERR_ACCESS	
CFE_TBL_ERR_FILE_TOO_LARGE	File Too Large.
CFE_TBL_ERR_BAD_CONTENT_ID	Bad Content ID.
CFE_TBL_ERR_BAD_SUBTYPE_ID	Bad Subtype ID.
CFE_TBL_ERR_NO_STD_HEADER	No Standard Header.
CFE_TBL_ERR_NO_TBL_HEADER	No Table Header.
CFE_TBL_ERR_PARTIAL_LOAD	Partial Load Error.
CFE_TBL_BAD_ARGUMENT	Bad Argument.

See also

[CFE_TBL_Update](#), [CFE_TBL_Validate](#), [CFE_TBL_Manage](#)

Referenced by FM_TableInit().

10.41.2.3 CFE_TBL_Manage() `CFE_Status_t CFE_TBL_Manage (`
`CFE_TBL_Handle_t TblHandle)`

Perform standard operations to maintain a table.

Description

Applications should call this API periodically to process pending requests for update, validation, or dump to buffer. Typically, the application that created the table would call this function at the start or conclusion of any routine processing cycle.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>TblHandle</i>	Handle, previously obtained from CFE_TBL_Register or CFE_TBL_Share , that identifies the Table to be managed.
----	------------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_TBL_INFO_UPDATED	Updated.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_TBL_ERR_NO_ACCESS	No Access.
CFE_TBL_ERR_INVALID_HANDLE	Invalid Handle.
CFE_TBL_INFO_DUMP_PENDING	Dump Pending.
CFE_TBL_INFO_UPDATE_PENDING	Update Pending.
CFE_TBL_INFO_VALIDATION_PENDING	

See also

[CFE_TBL_Update](#), [CFE_TBL_Validate](#), [CFE_TBL_Load](#), [CFE_TBL_DumpToBuffer](#)

Referenced by FM_AcquireTablePointers().

10.41.2.4 CFE_TBL_Modified() `CFE_Status_t CFE_TBL_Modified (`
`CFE_TBL_Handle_t TblHandle)`

Notify cFE Table Services that table contents have been modified by the Application.

Description

This API notifies Table Services that the contents of the specified table has been modified by the Application. This notification is important when a table has been registered as "Critical" because Table Services can then update the contents of the table kept in the Critical Data Store.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>TblHandle</i>	Handle of Table that was modified.
----	------------------	------------------------------------

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_TBL_ERR_NO_ACCESS</i>	No Access.
<i>CFE_TBL_ERR_INVALID_HANDLE</i>	Invalid Handle.

See also

[CFE_TBL_Manage](#)

Referenced by FM_SetTableStateCmd().

10.41.2.5 CFE_TBL_Update() *CFE_Status_t* CFE_TBL_Update (
 CFE_TBL_Handle_t TblHandle)

Update contents of a specified table, if an update is pending.

Description

Typically, apps should just call [CFE_TBL_Manage](#) as part of routine processing which will perform validation, update, or dump if pending. This API is provided for the case where just an update should be performed.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>TblHandle</i>	Handle, previously obtained from CFE_TBL_Register or CFE_TBL_Share , that identifies the Table to be updated.
----	------------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_TBL_INFO_NO_UPDATE_PENDING</i>	No Update Pending.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_TBL_ERR_NO_ACCESS</i>	No Access.
<i>CFE_TBL_ERR_INVALID_HANDLE</i>	Invalid Handle.

See also

[CFE_TBL_Load](#), [CFE_TBL_Validate](#), [CFE_TBL_Manage](#)

10.41.2.6 CFE_TBL_Validate() *CFE_Status_t* CFE_TBL_Validate (*CFE_TBL_Handle_t TblHandle*)

Perform steps to validate the contents of a table image.

Description

Typically, apps should just call [CFE_TBL_Manage](#) as part of routine processing which will perform validation, update, or dump if pending. This API is provided for the case where just a validation should be performed.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>TblHandle</i>	Handle, previously obtained from CFE_TBL_Register or CFE_TBL_Share , that identifies the Table to be managed.
----	------------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_TBL_INFO_NO_VALIDATION_PENDING</i>	
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_TBL_ERR_NO_ACCESS</i>	No Access.
<i>CFE_TBL_ERR_INVALID_HANDLE</i>	Invalid Handle.

See also

[CFE_TBL_Update](#), [CFE_TBL_Manage](#), [CFE_TBL_Load](#)

10.42 cFE Access Table Content APIs

Functions

- [CFE_Status_t CFE_TBL_GetAddress](#) (void **TblPtr, [CFE_TBL_Handle_t](#) TblHandle)
Obtain the current address of the contents of the specified table.
- [CFE_Status_t CFE_TBL_ReleaseAddress](#) ([CFE_TBL_Handle_t](#) TblHandle)
Release previously obtained pointer to the contents of the specified table.
- [CFE_Status_t CFE_TBL_GetAddresses](#) (void **TblPtrs[], [uint16](#) NumTables, const [CFE_TBL_Handle_t](#) TblHandles[])
Obtain the current addresses of an array of specified tables.
- [CFE_Status_t CFE_TBL_ReleaseAddresses](#) ([uint16](#) NumTables, const [CFE_TBL_Handle_t](#) TblHandles[])
Release the addresses of an array of specified tables.

10.42.1 Detailed Description

10.42.2 Function Documentation

10.42.2.1 CFE_TBL_GetAddress() [CFE_Status_t](#) CFE_TBL_GetAddress (void ** *TblPtr*, [CFE_TBL_Handle_t](#) *TblHandle*)

Obtain the current address of the contents of the specified table.

Description

When a table has been created and initialized, it is available to any application that can identify it with its unique handle. In order to view the data contained in the table, an application must call this function or [CFE_TBL_GetAddresses](#).

Assumptions, External Events, and Notes:

1. This call can be a blocking call when the table is not double buffered and is shared with another application of lower priority that just happens to be in the middle of a table update of the specific table. If this occurs, the application performing the table update will automatically have its priority elevated in order to release the resource as soon as possible.
2. An application must always release the returned table address using the [CFE_TBL_ReleaseAddress](#) or [CFE_TBL_ReleaseAddresses](#) function prior to either a [CFE_TBL_Update](#) call or any blocking call (e.g. - pending on software bus message, etc). Table updates cannot occur while table addresses have not been released.
3. [CFE_TBL_ERR_NEVER_LOADED](#) will be returned if the table has never been loaded (either from file or from a block of memory), but the function will still return a valid table pointer to a table with all zero content. This pointer must be released with the [CFE_TBL_ReleaseAddress](#) API before the table can be loaded with data.

Parameters

out	<i>TblPtr</i>	The address of a pointer (must not be null) that will be loaded with the address of the first byte of the table. This pointer can then be typecast by the calling application to the appropriate table data structure. *TblPtr is the address of the first byte of data associated with the specified table.
in	<i>TblHandle</i>	Handle, previously obtained from CFE_TBL_Register or CFE_TBL_Share , that identifies the Table whose address is to be returned.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_TBL_INFO_UPDATED	Updated.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_TBL_ERR_NO_ACCESS	No Access.
CFE_TBL_ERR_INVALID_HANDLE	Invalid Handle.
CFE_TBL_ERR_UNREGISTERED	Unregistered.
CFE_TBL_ERR_NEVER_LOADED	Never Loaded.
CFE_TBL_BAD_ARGUMENT	Bad Argument.

See also

[CFE_TBL_ReleaseAddress](#), [CFE_TBL_GetAddresses](#), [CFE_TBL_ReleaseAddresses](#)

Referenced by FM_AcquireTablePointers().

```
10.42.2.2 CFE_TBL_GetAddresses() CFE\_Status\_t CFE_TBL_GetAddresses (
    void ** TblPtrs[],
    uint16 NumTables,
    const CFE\_TBL\_Handle\_t TblHandles[] )
```

Obtain the current addresses of an array of specified tables.

Description

When a table has been created and initialized, it is available to any application that can identify it with its unique handle. In order to view the data contained in the table, an application must call this function or [CFE_TBL_GetAddress](#).

Assumptions, External Events, and Notes:

1. This call can be a blocking call when the table is not double buffered and is shared with another application of lower priority that just happens to be in the middle of a table update of the specific table. If this occurs, the application performing the table update will automatically have its priority elevated in order to release the resource as soon as possible.
2. An application must always release the returned table address using the [CFE_TBL_ReleaseAddress](#) or [CFE_TBL_ReleaseAddresses](#) function prior to either a [CFE_TBL_Update](#) call or any blocking call (e.g. - pending on software bus message, etc). Table updates cannot occur while table addresses have not been released.

3. `CFE_TBL_ERR_NEVER_LOADED` will be returned if the table has never been loaded (either from file or from a block of memory), but the function will still return a valid table pointer to a table with all zero content. This pointer must be released with the `CFE_TBL_ReleaseAddress` API before the table can be loaded with data.

Parameters

<code>out</code>	<code>TblPtrs</code>	Array of Pointers (must not be null) to variables that calling Application wishes to hold the start addresses of the Tables. <code>*TblPtrs</code> is an array of addresses of the first byte of data associated with the specified tables.
<code>in</code>	<code>NumTables</code>	Size of <code>TblPtrs</code> and <code>TblHandles</code> arrays.
<code>in</code>	<code>TblHandles</code>	Array of Table Handles, previously obtained from <code>CFE_TBL_Register</code> or <code>CFE_TBL_Share</code> , of those tables whose start addresses are to be obtained.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_TBL_INFO_UPDATED</code>	Updated.
<code>CFE_ES_ERR_RESOURCEID_NOT_VALID</code>	Resource ID is not valid.
<code>CFE_TBL_ERR_NO_ACCESS</code>	No Access.
<code>CFE_TBL_ERR_INVALID_HANDLE</code>	Invalid Handle.
<code>CFE_TBL_ERR_UNREGISTERED</code>	Unregistered.
<code>CFE_TBL_ERR_NEVER_LOADED</code>	Never Loaded.
<code>CFE_TBL_BAD_ARGUMENT</code>	Bad Argument.

See also

[CFE_TBL_GetAddress](#), [CFE_TBL_ReleaseAddress](#), [CFE_TBL_ReleaseAddresses](#)

10.42.2.3 `CFE_TBL_ReleaseAddress()`

```
CFE_Status_t CFE_TBL_ReleaseAddress (
    CFE_TBL_Handle_t TblHandle )
```

Release previously obtained pointer to the contents of the specified table.

Description

Each application is **required** to release a table address obtained through the `CFE_TBL_GetAddress` function.

Assumptions, External Events, and Notes:

An application must always release the returned table address using the `CFE_TBL_ReleaseAddress` function prior to either a `CFE_TBL_Update` call or any blocking call (e.g. - pending on software bus message, etc). Table updates cannot occur while table addresses have not been released.

Parameters

in	<i>TblHandle</i>	Handle, previously obtained from CFE_TBL_Register or CFE_TBL_Share , that identifies the Table whose address is to be released.
----	------------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_TBL_INFO_UPDATED	Updated.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_TBL_ERR_NO_ACCESS	No Access.
CFE_TBL_ERR_INVALID_HANDLE	Invalid Handle.
CFE_TBL_ERR_NEVER_LOADED	Never Loaded.

See also

[CFE_TBL_GetAddress](#), [CFE_TBL_GetAddresses](#), [CFE_TBL_ReleaseAddresses](#)

Referenced by [FM_ReleaseTablePointers\(\)](#).

```
10.42.2.4 CFE_TBL_ReleaseAddresses() CFE\_Status\_t CFE_TBL_ReleaseAddresses (
    uint16 NumTables,
    const CFE\_TBL\_Handle\_t TblHandles[] )
```

Release the addresses of an array of specified tables.

Description

Each application is **required** to release a table address obtained through the [CFE_TBL_GetAddress](#) function.

Assumptions, External Events, and Notes:

An application must always release the returned table address using the [CFE_TBL_ReleaseAddress](#) function prior to either a [CFE_TBL_Update](#) call or any blocking call (e.g. - pending on software bus message, etc). Table updates cannot occur while table addresses have not been released.

Parameters

in	<i>NumTables</i>	Size of TblHandles array.
in	<i>TblHandles</i>	Array of Table Handles (must not be null), previously obtained from CFE_TBL_Register or CFE_TBL_Share , of those tables whose start addresses are to be released.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_TBL_INFO_UPDATED</i>	Updated.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_TBL_ERR_NO_ACCESS</i>	No Access.
<i>CFE_TBL_ERR_INVALID_HANDLE</i>	Invalid Handle.
<i>CFE_TBL_ERR_NEVER_LOADED</i>	Never Loaded.
<i>CFE_TBL_BAD_ARGUMENT</i>	Bad Argument.

See also

[CFE_TBL_GetAddress](#), [CFE_TBL_ReleaseAddress](#), [CFE_TBL_GetAddresses](#)

10.43 cFE Get Table Information APIs

Functions

- ***CFE_Status_t CFE_TBL_GetStatus (CFE_TBL_Handle_t TblHandle)***
Obtain current status of pending actions for a table.
- ***CFE_Status_t CFE_TBL_GetInfo (CFE_TBL_Info_t *TblInfoPtr, const char *TblName)***
Obtain characteristics/information of/about a specified table.
- ***CFE_Status_t CFE_TBL_NotifyByMessage (CFE_TBL_Handle_t TblHandle, CFE_SB_MsgId_t MsgId, CFE_MSG_FcnCode_t CommandCode, uint32 Parameter)***
Instruct cFE Table Services to notify Application via message when table requires management.

10.43.1 Detailed Description

10.43.2 Function Documentation

10.43.2.1 CFE_TBL_GetInfo() *CFE_Status_t CFE_TBL_GetInfo (*
*CFE_TBL_Info_t * TblInfoPtr,*
*const char * TblName)*

Obtain characteristics/information of/about a specified table.

Description

This API provides the registry information associated with the specified table. The function fills the given data structure with the data found in the Table Registry.

Assumptions, External Events, and Notes:

None

Parameters

<i>out</i>	<i>TblInfoPtr</i>	A pointer to a CFE_TBL_Info_t data structure (must not be null) that is to be populated with table characteristics and information. *TblInfoPtr is the description of the tables characteristics and registry information stored in the CFE_TBL_Info_t data structure format.
<i>in</i>	<i>TblName</i>	The application specific name (must not be null) of the table of the form "AppName.RawTableName", where RawTableName is the name specified in the CFE_TBL_Register API call. Example: "ACS.TamParams" for a table called "TamParams" that was registered by the application called "ACS".

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_TBL_ERR_INVALID_NAME</i>	Invalid Name.
<i>CFE_TBL_BAD_ARGUMENT</i>	Bad Argument.

See also

[CFE_TBL_GetStatus](#)

10.43.2.2 CFE_TBL_GetStatus() *CFE_Status_t* CFE_TBL_GetStatus (*CFE_TBL_Handle_t* *TblHandle*)

Obtain current status of pending actions for a table.

Description

An application is **required** to perform a periodic check for an update or a validation request for all the tables that it creates. Typically, the application that created the table would call this function at the start or conclusion of any routine processing cycle. If a table update or validation request is pending, the Application should follow up with a call to [CFE_TBL_Update](#) or [CFE_TBL_Validate](#) respectively.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>TblHandle</i>	Handle, previously obtained from CFE_TBL_Register or CFE_TBL_Share , that identifies the Table to be managed.
----	------------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<i>CFE_SUCCESS</i>	Successful execution.
<i>CFE_TBL_INFO_UPDATE_PENDING</i>	Update Pending.
<i>CFE_TBL_INFO_VALIDATION_PENDING</i>	
<i>CFE_TBL_INFO_DUMP_PENDING</i>	Dump Pending.
<i>CFE_ES_ERR_RESOURCEID_NOT_VALID</i>	Resource ID is not valid.
<i>CFE_TBL_ERR_NO_ACCESS</i>	No Access.
<i>CFE_TBL_ERR_INVALID_HANDLE</i>	Invalid Handle.

Note

Some status return codes are "success" while being non-zero. This behavior will change in the future.

See also

[CFE_TBL_Manage](#), [CFE_TBL_Update](#), [CFE_TBL_Validate](#), [CFE_TBL_GetInfo](#)

10.43.2.3 CFE_TBL_NotifyByMessage() [CFE_Status_t](#) CFE_TBL_NotifyByMessage (

```
CFE_TBL_Handle_t TblHandle,
CFE_SB_MsgId_t MsgId,
CFE_MSG_FcnCode_t CommandCode,
uint32 Parameter )
```

Instruct cFE Table Services to notify Application via message when table requires management.

Description

This API instructs Table Services to send a message to the calling Application whenever the specified table requires management by the application. This feature allows applications to avoid polling table services via the [CFE_TBL_Manage](#) call to determine whether a table requires updates, validation, etc. This API should be called following the [CFE_TBL_Register](#) API whenever the owning application requires this feature.

Assumptions, External Events, and Notes:

- Only the application that owns the table is allowed to register a notification message
- Recommend **NOT** using the ground command MID which typically impacts command counters. The typical approach is to use a unique MID for inter-task communications similar to how schedulers typically trigger application housekeeping messages.

Parameters

in	<i>TblHandle</i>	Handle of Table with which the message should be associated.
in	<i>MsgId</i>	Message ID to be used in notification message sent by Table Services.
in	<i>CommandCode</i>	Command Code value to be placed in secondary header of message sent by Table Services.
in	<i>Parameter</i>	Application defined value to be passed as a parameter in the message sent by Table Services. Suggested use includes an application's table index that allows the same MsgId and Command Code to be used for all table management notifications.

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.
CFE_TBL_ERR_NO_ACCESS	No Access.
CFE_TBL_ERR_INVALID_HANDLE	Invalid Handle.

See also

[CFE_TBL_Register](#)

10.44 cFE Table Type Defines

Macros

- `#define CFE_TBL_OPT_BUFFER_MSK (0x0001)`
Table buffer mask.
- `#define CFE_TBL_OPT_SNGL_BUFFER (0x0000)`
Single buffer table.
- `#define CFE_TBL_OPT_DBL_BUFFER (0x0001)`
Double buffer table.
- `#define CFE_TBL_OPT_LD_DMP_MSK (0x0002)`
Table load/dump mask.
- `#define CFE_TBL_OPT_LOAD_DUMP (0x0000)`
Load/Dump table.
- `#define CFE_TBL_OPT_DUMP_ONLY (0x0002)`
Dump only table.
- `#define CFE_TBL_OPT_USR_DEF_MSK (0x0004)`
Table user defined mask.
- `#define CFE_TBL_OPT_NOT_USR_DEF (0x0000)`
Not user defined table.
- `#define CFE_TBL_OPT_USR_DEF_ADDR (0x0006)`
User Defined table.,
- `#define CFE_TBL_OPT_CRITICAL_MSK (0x0008)`
Table critical mask.
- `#define CFE_TBL_OPT_NOT_CRITICAL (0x0000)`
Not critical table.
- `#define CFE_TBL_OPT_CRITICAL (0x0008)`
Critical table.
- `#define CFE_TBL_OPT_DEFAULT (CFE_TBL_OPT_SNGL_BUFFER | CFE_TBL_OPT_LOAD_DUMP)`
Default table options.

10.44.1 Detailed Description

10.44.2 Macro Definition Documentation

10.44.2.1 CFE_TBL_OPT_BUFFER_MSK `#define CFE_TBL_OPT_BUFFER_MSK (0x0001)`

Table buffer mask.

Definition at line 48 of file `cfe_tbl_api_typedefs.h`.

10.44.2.2 CFE_TBL_OPT_CRITICAL `#define CFE_TBL_OPT_CRITICAL (0x0008)`

Critical table.

Definition at line 63 of file `cfe_tbl_api_typedefs.h`.

10.44.2.3 CFE_TBL_OPT_CRITICAL_MSK #define CFE_TBL_OPT_CRITICAL_MSK (0x0008)

Table critical mask.

Definition at line 61 of file cfe_tbl_api_typedefs.h.

10.44.2.4 CFE_TBL_OPT_DBL_BUFFER #define CFE_TBL_OPT_DBL_BUFFER (0x0001)

Double buffer table.

Definition at line 50 of file cfe_tbl_api_typedefs.h.

10.44.2.5 CFE_TBL_OPT_DEFAULT #define CFE_TBL_OPT_DEFAULT (CFE_TBL_OPT_SNGL_BUFFER | CFE_TBL_OPT_LOAD_DUMP)

Default table options.

Definition at line 66 of file cfe_tbl_api_typedefs.h.

10.44.2.6 CFE_TBL_OPT_DUMP_ONLY #define CFE_TBL_OPT_DUMP_ONLY (0x0002)

Dump only table.

Definition at line 54 of file cfe_tbl_api_typedefs.h.

10.44.2.7 CFE_TBL_OPT_LD_DMP_MSK #define CFE_TBL_OPT_LD_DMP_MSK (0x0002)

Table load/dump mask.

Definition at line 52 of file cfe_tbl_api_typedefs.h.

10.44.2.8 CFE_TBL_OPT_LOAD_DUMP #define CFE_TBL_OPT_LOAD_DUMP (0x0000)

Load/Dump table.

Definition at line 53 of file cfe_tbl_api_typedefs.h.

10.44.2.9 CFE_TBL_OPT_NOT_CRITICAL #define CFE_TBL_OPT_NOT_CRITICAL (0x0000)

Not critical table.

Definition at line 62 of file cfe_tbl_api_typedefs.h.

10.44.2.10 CFE_TBL_OPT_NOT_USR_DEF #define CFE_TBL_OPT_NOT_USR_DEF (0x0000)

Not user defined table.

Definition at line 57 of file cfe_tbl_api_typedefs.h.

10.44.2.11 CFE_TBL_OPT_SNGL_BUFFER #define CFE_TBL_OPT_SNGL_BUFFER (0x0000)

Single buffer table.

Definition at line 49 of file cfe_tbl_api_typedefs.h.

10.44.2.12 CFE_TBL_OPT_USR_DEF_ADDR #define CFE_TBL_OPT_USR_DEF_ADDR (0x0006)

User Defined table.,

Note

Automatically includes [CFE_TBL_OPT_DUMP_ONLY](#) option

Definition at line 59 of file cfe_tbl_api_typedefs.h.

10.44.2.13 CFE_TBL_OPT_USR_DEF_MSK #define CFE_TBL_OPT_USR_DEF_MSK (0x0004)

Table user defined mask.

Definition at line 56 of file cfe_tbl_api_typedefs.h.

10.45 cFE Get Current Time APIs

Functions

- [CFE_TIME_SysTime_t CFE_TIME_GetTime \(void\)](#)
Get the current spacecraft time.
- [CFE_TIME_SysTime_t CFE_TIME_GetTAI \(void\)](#)
Get the current TAI (MET + SCTF) time.
- [CFE_TIME_SysTime_t CFE_TIME_GetUTC \(void\)](#)
Get the current UTC (MET + SCTF - Leap Seconds) time.
- [CFE_TIME_SysTime_t CFE_TIME_GetMET \(void\)](#)
Get the current value of the Mission Elapsed Time (MET).
- [uint32 CFE_TIME_GetMETseconds \(void\)](#)
Get the current seconds count of the mission-elapsed time.
- [uint32 CFE_TIME_GetMETsubsecs \(void\)](#)
Get the current sub-seconds count of the mission-elapsed time.

10.45.1 Detailed Description

10.45.2 Function Documentation

10.45.2.1 CFE_TIME_GetMET() [CFE_TIME_SysTime_t](#) CFE_TIME_GetMET (void)

Get the current value of the Mission Elapsed Time (MET).

Description

This routine returns the current mission-elapsed time (MET). MET is usually derived from a hardware-based clock that is not adjusted during normal operations. Callers of this routine should not assume that the MET return value has any specific relationship to any ground-based time standard.

Assumptions, External Events, and Notes:

None

Returns

The current MET

See also

[CFE_TIME_GetTime](#), [CFE_TIME_GetTAI](#), [CFE_TIME_GetUTC](#), [CFE_TIME_GetMETseconds](#), [CFE_TIME_GetMETsubsecs](#),
[CFE_TIME_MET2SCTime](#)

```
10.45.2.2 CFE_TIME_GetMETseconds() uint32 CFE_TIME_GetMETseconds (
    void )
```

Get the current seconds count of the mission-elapsed time.

Description

This routine is the same as [CFE_TIME_GetMET](#), except that it returns only the integer seconds portion of the MET time.

Assumptions, External Events, and Notes:

None

Returns

The current MET seconds

See also

[CFE_TIME_GetTime](#), [CFE_TIME_GetTAI](#), [CFE_TIME_GetUTC](#), [CFE_TIME_GetMET](#), [CFE_TIME_GetMETsubsecs](#),
[CFE_TIME_MET2SCTime](#)

```
10.45.2.3 CFE_TIME_GetMETsubsecs() uint32 CFE_TIME_GetMETsubsecs (
    void )
```

Get the current sub-seconds count of the mission-elapsed time.

Description

This routine is the same as [CFE_TIME_GetMET](#), except that it returns only the integer sub-seconds portion of the MET time. Each count is equal to 2^{-32} seconds.

Assumptions, External Events, and Notes:

None

Returns

The current MET sub-seconds

See also

[CFE_TIME_GetTime](#), [CFE_TIME_GetTAI](#), [CFE_TIME_GetUTC](#), [CFE_TIME_GetMET](#), [CFE_TIME_GetMETseconds](#),
[CFE_TIME_MET2SCTime](#)

```
10.45.2.4 CFE_TIME_GetTAI() CFE_TIME_SysTime_t CFE_TIME_GetTAI (
    void )
```

Get the current TAI (MET + SCTF) time.

Description

This routine returns the current TAI time to the caller. TAI is an international time standard that does not include leap seconds. This routine should only be used in situations where TAI is absolutely required. Applications that call [CFE_TIME_GetTAI](#) may not be portable to all missions. Maintenance of correct TAI in flight is not guaranteed under all mission operations scenarios. To maintain re-usability across missions, most applications should be using [CFE_TIME_GetTime](#), rather than the specific routines for getting UTC/TAI directly.

Assumptions, External Events, and Notes:

1. The "TAI" time returned is referenced to the mission-defined time epoch, which may or may not be the same as the standard TAI epoch.
2. Even though TAI does not include leap seconds, the time returned by this function can still jump forward or backward without warning when the spacecraft clock is set or adjusted by operators. Applications using this function must be able to handle these time discontinuities gracefully.

Returns

The current spacecraft time in TAI

See also

[CFE_TIME_GetTime](#), [CFE_TIME_GetUTC](#), [CFE_TIME_GetMET](#), [CFE_TIME_GetMETseconds](#), [CFE_TIME_GetMETsubsecs](#)

10.45.2.5 CFE_TIME_GetTime() `CFE_TIME_SysTime_t CFE_TIME_GetTime (void)`

Get the current spacecraft time.

Description

This routine returns the current spacecraft time, which is the amount of time elapsed since the epoch as set in mission configuration. The time returned is either TAI (no leap seconds) or UTC (including leap seconds). This choice is made in the mission configuration file by defining either [CFE_MISSION_TIME_CFG_DEFAULT_TAI](#) or [CFE_MISSION_TIME_CFG_DEFAULT_UTC](#) as true at compile time. To maintain re-usability across missions, most applications should be using this function rather than the specific routines for getting UTC/TAI directly.

Assumptions, External Events, and Notes:

None

Returns

The current spacecraft time in default format

See also

[CFE_TIME_GetTAI](#), [CFE_TIME_GetUTC](#), [CFE_TIME_GetMET](#), [CFE_TIME_GetMETseconds](#), [CFE_TIME_GetMETsubsecs](#)

10.45.2.6 CFE_TIME_GetUTC() `CFE_TIME_SysTime_t CFE_TIME_GetUTC (void)`

Get the current UTC (MET + SCTF - Leap Seconds) time.

Description

This routine returns the current UTC time to the caller. This routine should only be used in situations where UTC is absolutely required. Applications that call [CFE_TIME_GetUTC](#) may not be portable to all missions. Maintenance of correct UTC in flight is not guaranteed under all mission operations scenarios. If UTC is maintained in flight, it will jump backwards occasionally due to leap second adjustments. To maintain re-usability across missions, most applications should be using [CFE_TIME_GetTime](#), rather than the specific routines for getting UTC/TAI directly.

Assumptions, External Events, and Notes:

Note: The "UTC" time returned is referenced to the mission-defined time epoch, which may or may not be the same as the standard UTC epoch.

Returns

The current spacecraft time in UTC

See also

[CFE_TIME_GetTime](#), [CFE_TIME_GetTAI](#), [CFE_TIME_GetMET](#), [CFE_TIME_GetMETseconds](#), [CFE_TIME_GetMETsubsecs](#)

10.46 cFE Get Time Information APIs

Functions

- [CFE_TIME_SysTime_t CFE_TIME_GetSTCF \(void\)](#)
Get the current value of the spacecraft time correction factor (STCF).
- [int16 CFE_TIME_GetLeapSeconds \(void\)](#)
Get the current value of the leap seconds counter.
- [CFE_TIME_ClockState_Enum_t CFE_TIME_GetClockState \(void\)](#)
Get the current state of the spacecraft clock.
- [uint16 CFE_TIME_GetClockInfo \(void\)](#)
Provides information about the spacecraft clock.

10.46.1 Detailed Description

10.46.2 Function Documentation

10.46.2.1 CFE_TIME_GetClockInfo() `uint16 CFE_TIME_GetClockInfo (` `void)`

Provides information about the spacecraft clock.

Description

This routine returns information on the spacecraft clock in a bit mask.

Assumptions, External Events, and Notes:

None

Returns

Spacecraft clock information, [cFE Clock State Flag Defines](#). To extract the information from the returned value, the flags can be used as in the following:

```
if ((ReturnValue & CFE_TIME_FLAG_xxxxxxx) == CFE_TIME_FLAG_xxxxxxx) then the following definition of the CFE_TIME_FLAG_xxxxxxx is true.
```

See also

[CFE_TIME_GetSTCF](#), [CFE_TIME_GetLeapSeconds](#), [CFE_TIME_GetClockState](#)

10.46.2.2 CFE_TIME_GetClockState() `CFE_TIME_ClockState_Enum_t` `CFE_TIME_GetClockState (`
 `void)`

Get the current state of the spacecraft clock.

Description

This routine returns the spacecraft clock state. Applications that are highly dependent on valid time may want to call this routine before taking actions based on the times returned by the various clock routines

Assumptions, External Events, and Notes:

None

Returns

The current spacecraft clock state

See also

[CFE_TIME_GetSTCF](#), [CFE_TIME_GetLeapSeconds](#), [CFE_TIME_GetClockInfo](#)

10.46.2.3 CFE_TIME_GetLeapSeconds() `int16` `CFE_TIME_GetLeapSeconds (`
 `void)`

Get the current value of the leap seconds counter.

Description

This routine returns the current value of the leap seconds counter. This is the delta seconds between international atomic time (TAI) and universal coordinated time (UTC). There is no API provided to set or adjust leap seconds or SCTF, those actions should be done by command only. This API is provided for applications to be able to include leap seconds in their data products to aid in time correlation during downstream science data processing. Note that some mission operations teams do not maintain the leap seconds count, preferring to adjust the STCF instead. Users of this function should check with their mission ops team to see how they are planning to handle leap seconds.

Assumptions, External Events, and Notes:

None

Returns

The current spacecraft leap seconds.

See also

[CFE_TIME_GetSTCF](#), [CFE_TIME_GetClockState](#), [CFE_TIME_GetClockInfo](#)

10.46.2.4 CFE_TIME_GetSTCF() `CFE_TIME_SysTime_t` `CFE_TIME_GetSTCF (`
 `void)`

Get the current value of the spacecraft time correction factor (STCF).

Description

This routine returns the current value of the spacecraft time correction factor. This is the delta time between the MET and the TAI time. There is no API provided to set or adjust leap seconds or SCTF, those actions should be done by command only. This API is provided for applications to be able to include STCF in their data products to aid in time correlation during downstream science data processing.

Assumptions, External Events, and Notes:

Does not include leap seconds

Returns

The current SCTF

See also

[CFE_TIME_GetLeapSeconds](#), [CFE_TIME_GetClockState](#), [CFE_TIME_GetClockInfo](#)

10.47 cFE Time Arithmetic APIs

Functions

- [CFE_TIME_SysTime_t CFE_TIME_Add \(CFE_TIME_SysTime_t Time1, CFE_TIME_SysTime_t Time2\)](#)
Adds two time values.
- [CFE_TIME_SysTime_t CFE_TIME_Subtract \(CFE_TIME_SysTime_t Time1, CFE_TIME_SysTime_t Time2\)](#)
Subtracts two time values.
- [CFE_TIME_Compare_t CFE_TIME_Compare \(CFE_TIME_SysTime_t TimeA, CFE_TIME_SysTime_t TimeB\)](#)
Compares two time values.

10.47.1 Detailed Description

10.47.2 Function Documentation

10.47.2.1 [CFE_TIME_Add\(\)](#) `CFE_TIME_SysTime_t CFE_TIME_Add (` `CFE_TIME_SysTime_t Time1,` `CFE_TIME_SysTime_t Time2)`

Adds two time values.

Description

This routine adds the two specified times and returns the result. Normally, at least one of the input times should be a value representing a delta time. Adding two absolute times together will not cause an error, but the result will probably be meaningless.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>Time1</i>	The first time to be added.
in	<i>Time2</i>	The second time to be added.

Returns

The sum of the two times. If the sum is greater than the maximum value that can be stored in a [CFE_TIME_SysTime_t](#), the result will roll over (this is not considered an error).

See also

[CFE_TIME_Subtract](#), [CFE_TIME_Compare](#)

10.47.2.2 CFE_TIME_Compare() `CFE_TIME_Compare_t CFE_TIME_Compare (`
 `CFE_TIME_SysTime_t TimeA,`
 `CFE_TIME_SysTime_t TimeB)`

Compares two time values.

Description

This routine compares two time values to see which is "greater". It is important that applications use this function rather than trying to directly compare the component pieces of times. This function will handle roll-over cases seamlessly, which may not be intuitively obvious. The cFE's internal representation of time "rolls over" when the 32 bit seconds count reaches 0xFFFFFFFF. Also, subtracting a delta time from an absolute time close to the epoch could result in "roll under". The strange cases that result from these situations can be handled by defining the comparison function for times as follows: Plot the two times on the circumference of a circle where 0 is at the top and 0x80000000 is at the bottom. If the shortest arc from time A to time B runs clockwise around the circle, then time A is less than time B. If the shortest arc from A to B runs counter-clockwise, then time A is greater than time B.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>TimeA</i>	The first time to compare.
in	<i>TimeB</i>	The second time to compare.

Returns

The result of comparing the two times.

Return values

CFE_TIME_EQUAL	The two specified times are considered to be equal.
CFE_TIME_A_GT_B	The first specified time is considered to be after the second specified time.
CFE_TIME_A_LT_B	The first specified time is considered to be before the second specified time.

See also

[CFE_TIME_Add](#), [CFE_TIME_Subtract](#)

10.47.2.3 CFE_TIME_Subtract() `CFE_TIME_SysTime_t CFE_TIME_Subtract (`
`CFE_TIME_SysTime_t Time1,`
`CFE_TIME_SysTime_t Time2)`

Subtracts two time values.

Description

This routine subtracts time2 from time1 and returns the result. The time values can represent either absolute or delta times, but not all combinations make sense.

- AbsTime - AbsTime = DeltaTime
- AbsTime - DeltaTime = AbsTime
- DeltaTime - DeltaTime = DeltaTime
- DeltaTime - AbsTime = garbage

Assumptions, External Events, and Notes:

None

Parameters

in	<i>Time1</i>	The base time.
in	<i>Time2</i>	The time to be subtracted from the base time.

Returns

The result of subtracting the two times. If the subtraction results in an underflow, the result will roll over (this is not considered an error).

See also

[CFE_TIME_Add](#), [CFE_TIME_Compare](#)

10.48 cFE Time Conversion APIs

Functions

- [`CFE_TIME_SysTime_t CFE_TIME_MET2SCTime \(CFE_TIME_SysTime_t METTime\)`](#)
Convert specified MET into Spacecraft Time.
- [`uint32 CFE_TIME_Sub2MicroSecs \(uint32 SubSeconds\)`](#)
Converts a sub-seconds count to an equivalent number of microseconds.
- [`uint32 CFE_TIME_Micro2SubSecs \(uint32 MicroSeconds\)`](#)
Converts a number of microseconds to an equivalent sub-seconds count.

10.48.1 Detailed Description

10.48.2 Function Documentation

10.48.2.1 CFE_TIME_MET2SCTime() `CFE_TIME_SysTime_t CFE_TIME_MET2SCTime (`
`CFE_TIME_SysTime_t METTime)`

Convert specified MET into Spacecraft Time.

Description

This function returns Spacecraft Time given MET. Note that Spacecraft Time is returned as either UTC or TAI depending on whether the mission configuration parameter [CFE_MISSION_TIME_CFG_DEFAULT_UTC](#) or [CFE_MISSION_TIME_CFG_DEFAULT_TAI](#) was set to true at compile time.

Assumptions, External Events, and Notes:

None

Parameters

in	<i>METTime</i>	The MET to be converted.
----	----------------	--------------------------

Returns

Spacecraft Time (UTC or TAI) corresponding to the specified MET

See also

[CFE_TIME_GetMET](#), [CFE_TIME_GetMETseconds](#), [CFE_TIME_GetMETsubsecs](#), [CFE_TIME_Sub2MicroSecs](#), [CFE_TIME_Micro2SubSecs](#)

10.48.2.2 CFE_TIME_Micro2SubSecs() `uint32 CFE_TIME_Micro2SubSecs (`
`uint32 MicroSeconds)`

Converts a number of microseconds to an equivalent sub-seconds count.

Description

This routine converts from microseconds (each tick is 1e-06 seconds) to a subseconds count (each tick is 1 / 2^32 seconds).

Assumptions, External Events, and Notes:

None

Parameters

in	<i>MicroSeconds</i>	The sub-seconds count to convert.
----	---------------------	-----------------------------------

Returns

The equivalent number of subseconds. If the number of microseconds passed in is greater than one second, (i.e. > 999,999), the return value is equal to 0xffffffff.

See also

[CFE_TIME_MET2SCTime](#), [CFE_TIME_Sub2MicroSecs](#),

10.48.2.3 CFE_TIME_Sub2MicroSecs() `uint32 CFE_TIME_Sub2MicroSecs (`
`uint32 SubSeconds)`

Converts a sub-seconds count to an equivalent number of microseconds.

Description

This routine converts from a sub-seconds count (each tick is $1 / 2^{32}$ seconds) to microseconds (each tick is $1e-06$ seconds).

Assumptions, External Events, and Notes:

None

Parameters

in	SubSeconds	The sub-seconds count to convert.
----	------------	-----------------------------------

Returns

The equivalent number of microseconds.

See also

[CFE_TIME_MET2SCTime](#), [CFE_TIME_Micro2SubSecs](#),

10.49 cFE External Time Source APIs

Functions

- void [CFE_TIME_ExternalTone](#) (void)
Provides the 1 Hz signal from an external source.
- void [CFE_TIME_ExternalMET](#) ([CFE_TIME_SysTime_t](#) NewMET)
Provides the Mission Elapsed Time from an external source.
- void [CFE_TIME_ExternalGPS](#) ([CFE_TIME_SysTime_t](#) NewTime, [int16](#) NewLeaps)
Provide the time from an external source that has data common to GPS receivers.
- void [CFE_TIME_ExternalTime](#) ([CFE_TIME_SysTime_t](#) NewTime)
Provide the time from an external source that measures time relative to a known epoch.
- [CFE_Status_t](#) [CFE_TIME_RegisterSyncCallback](#) ([CFE_TIME_SynchCallbackPtr_t](#) CallbackFuncPtr)
Registers a callback function that is called whenever time synchronization occurs.
- [CFE_Status_t](#) [CFE_TIME_UnregisterSyncCallback](#) ([CFE_TIME_SynchCallbackPtr_t](#) CallbackFuncPtr)
Unregisters a callback function that is called whenever time synchronization occurs.

10.49.1 Detailed Description

10.49.2 Function Documentation

10.49.2.1 [CFE_TIME_ExternalGPS\(\)](#) void CFE_TIME_ExternalGPS (

```
    CFE_TIME_SysTime_t NewTime,
    int16 NewLeaps )
```

Provide the time from an external source that has data common to GPS receivers.

Description

This routine provides a method to provide cFE TIME with current time data acquired from an external source. There is a presumption that this function will be called at the appropriate time (relative to the tone) such that this call may be used by cFE TIME as the signal to generate the "time at the tone" data command. The "time at the tone" data command must arrive within the configuration parameter specified window for tone signal and data packet verification.

Internally, cFE TIME will calculate a new STCF as the difference between this new time value and the spacecraft MET value at the tone. This allows cFE TIME to always calculate time as the sum of MET and STCF. The value of STCF will change only as much as the drift factor between spacecraft MET and the external time source.

Assumptions, External Events, and Notes:

- This routine is included in the API only when 3 specific configuration parameters are set to true. The first is [CFE_PLATFORM_TIME_CFG_SERVER](#) which defines this instantiation of cFE TIME as a time server (not a client). The second required configuration parameter is [CFE_PLATFORM_TIME_CFG_SOURCE](#) which enables time source selection commands to the cFE TIME task, and further enables configuration definitions for the selected type of external time data. The third configuration parameter required for this routine is [CFE_PLATFORM_TIME_CFG_SRC_GPS](#), which indicates that the external time data consists of a time value relative to a known epoch, plus a leap seconds value.

Parameters

in	<i>NewTime</i>	The MET value at the next (or previous) 1 Hz tone signal.
in	<i>NewLeaps</i>	The Leap Seconds value used to calculate time as UTC.

See also

[CFE_TIME_ExternalTone](#), [CFE_TIME_ExternalMET](#), [CFE_TIME_ExternalTime](#)

10.49.2.2 CFE_TIME_ExternalMET()

```
void CFE_TIME_ExternalMET (
    CFE_TIME_SysTime_t NewMET )
```

Provides the Mission Elapsed Time from an external source.

Description

This routine provides a method to provide cFE TIME with MET acquired from an external source. There is a presumption that this function will be called at the appropriate time (relative to the tone) such that this call may be used by cFE TIME as the signal to generate the "time at the tone" data command. The "time at the tone" data command must arrive within the configuration parameter specified window for tone signal and data packet verification.

The MET value at the tone "should" have zero subseconds. Although the interface accepts non-zero values for sub-seconds, it may be harmful to other applications that expect zero subseconds at the moment of the tone. Any decision to use non-zero subseconds should be carefully considered.

Assumptions, External Events, and Notes:

- This routine is included in the API only when 3 specific configuration parameters are set to true. The first is [CFE_PLATFORM_TIME_CFG_SERVER](#) which defines this instantiation of cFE TIME as a time server (not a client). The second required configuration parameter is [CFE_PLATFORM_TIME_CFG_SOURCE](#) which enables time source selection commands to the cFE TIME task, and further enables configuration definitions for the selected type of external time data. The third configuration parameter required for this routine is [CFE_PLATFORM_TIME_CFG_SRC_MET](#), which indicates that the external time data consists of MET.

Parameters

in	NewMET	The MET value at the next (or previous) 1 Hz tone signal.
----	------------------------	---

See also

[CFE_TIME_ExternalTone](#), [CFE_TIME_ExternalGPS](#), [CFE_TIME_ExternalTime](#)

10.49.2.3 CFE_TIME_ExternalTime() `void CFE_TIME_ExternalTime (`
`CFE_TIME_SysTime_t NewTime)`

Provide the time from an external source that measures time relative to a known epoch.

Description

This routine provides a method to provide cFE TIME with current time data acquired from an external source. There is a presumption that this function will be called at the appropriate time (relative to the tone) such that this call may be used by cFE TIME as the signal to generate the "time at the tone" data command. The "time at the tone" data command must arrive within the configuration specified window for tone signal and data packet verification.

Internally, cFE TIME will calculate a new STCF as the difference between this new time value and the spacecraft MET value at the tone. This allows cFE TIME to always calculate time as the sum of MET and STCF. The value of STCF will change only as much as the drift factor between spacecraft MET and the external time source.

Assumptions, External Events, and Notes:

- This routine is included in the API only when 3 specific configuration parameters are set to true. The first is [CFE_PLATFORM_TIME_CFG_SERVER](#) which defines this instantiation of cFE TIME as a time server (not a client). The second required configuration parameter is [CFE_PLATFORM_TIME_CFG_SOURCE](#) which enables time source selection commands to the cFE TIME task, and further enables configuration definitions for the selected type of external time data. The third configuration parameter required for this routine is [CFE_PLATFORM_TIME_CFG_SRC_TIME](#), which indicates that the external time data consists of a time value relative to a known epoch.

Parameters

in	NewTime	The MET value at the next (or previous) 1 Hz tone signal.
----	-------------------------	---

See also

[CFE_TIME_ExternalTone](#), [CFE_TIME_ExternalMET](#), [CFE_TIME_ExternalGPS](#)

10.49.2.4 CFE_TIME_ExternalTone() `void CFE_TIME_ExternalTone (`
 `void)`

Provides the 1 Hz signal from an external source.

Description

This routine provides a method for cFE TIME software to be notified of the occurrence of the 1Hz tone signal without knowledge of the specific hardware design. Regardless of the source of the tone, this routine should be called as soon as possible after detection to allow cFE TIME software the opportunity to latch the local clock as close as possible to the instant of the tone.

Assumptions, External Events, and Notes:

- This routine may be called directly from within the context of an interrupt handler.

See also

[CFE_TIME_ExternalMET](#), [CFE_TIME_ExternalGPS](#), [CFE_TIME_ExternalTime](#)

10.49.2.5 CFE_TIME_RegisterSynchCallback() `CFE_Status_t CFE_TIME_RegisterSynchCallback (`
 `CFE_TIME_SynchCallbackPtr_t CallbackFuncPtr)`

Registers a callback function that is called whenever time synchronization occurs.

Description

This routine passes a callback function pointer for an Application that wishes to be notified whenever a legitimate time synchronization signal (typically a 1 Hz) is received.

Assumptions, External Events, and Notes:

Only a single callback per application is supported, and this function should only be called from a single thread within each application (typically the apps main thread). If an application requires triggering multiple child tasks at 1Hz, it should distribute the timing signal internally, rather than registering for multiple callbacks.

Parameters

in	<code>CallbackFuncPtr</code>	Function to call at synchronization interval (must not be null)
----	------------------------------	---

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_TIME_TOO_MANY_SYNCH_CALLBACKS</code>	Too Many Sync Callbacks.
<code>CFE_TIME_BAD_ARGUMENT</code>	Bad Argument.

See also

[CFE_TIME_UnregisterSynchCallback](#)

10.49.2.6 CFE_TIME_UnregisterSynchCallback() `CFE_Status_t CFE_TIME_UnregisterSynchCallback (CFE_TIME_SynchCallbackPtr_t CallbackFuncPtr)`

Unregisters a callback function that is called whenever time synchronization occurs.

Description

This routine removes the specified callback function pointer from the list of Callback functions that are called whenever a time synchronization (typically the 1Hz signal) is received.

Assumptions, External Events, and Notes:

Only a single callback per application is supported, and this function should only be called from a single thread within each application (typically the apps main thread).

Parameters

in	<code>CallbackFuncPtr</code>	Function to remove from synchronization call list (must not be null)
----	------------------------------	--

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
<code>CFE_TIME_CALLBACK_NOT_REGISTERED</code>	Callback Not Registered.
<code>CFE_TIME_BAD_ARGUMENT</code>	Bad Argument.

See also

[CFE_TIME_RegisterSynchCallback](#)

10.50 cFE Miscellaneous Time APIs

Functions

- void `CFE_TIME_Print` (char *PrintBuffer, `CFE_TIME_SysTime_t` TimeToPrint)

Print a time value as a string.

- void `CFE_TIME_Local1HzISR` (void)

This function is called via a timer callback set up at initialization of the TIME service.

10.50.1 Detailed Description

10.50.2 Function Documentation

```
10.50.2.1 CFE_TIME_Local1HzISR() void CFE_TIME_Local1HzISR (
    void )
```

This function is called via a timer callback set up at initialization of the TIME service.

Description

Drives the time processing logic from the system PSP layer. This must be called once per second based on a hardware interrupt or OS kernel signal.

Assumptions, External Events, and Notes:

This will update the global data structures accordingly, incrementing each by the 1Hz amount.

```
10.50.2.2 CFE_TIME_Print() void CFE_TIME_Print (
    char * PrintBuffer,
    CFE_TIME_SysTime_t TimeToPrint )
```

Print a time value as a string.

Description

This routine prints the specified time to the specified string buffer in the following format:

yyyy-ddd-hh:mm:ss.xxxxx\0

where:

- yyyy = year
- ddd = Julian day of the year
- hh = hour of the day (0 to 23)
- mm = minute (0 to 59)
- ss = second (0 to 59)
- xxxx = subsecond formatted as a decimal fraction (1/4 second = 0.25000)
- \0 = trailing null

Assumptions, External Events, and Notes:

- The value of the time argument is simply added to the configuration definitions for the ground epoch and converted into a fixed length string in the buffer provided by the caller.
- A loss of data during the string conversion will occur if the computed year exceeds 9999. However, a year that large would require an unrealistic definition for the ground epoch since the maximum amount of time represented by a [CFE_TIME_SysTime](#) structure is approximately 136 years.

Parameters

out	<i>PrintBuffer</i>	Pointer to a character array (must not be null) of at least CFE_TIME_PRINTED_STRING_SIZE characters in length. *PrintBuffer is the time as a character string as described above.
in	<i>TimeToPrint</i>	The time to print into the character array.

10.51 cFE Resource ID base values

Enumerations

- enum {

`CFE_RESOURCEID_ES_TASKID_BASE_OFFSET = OS_OBJECT_TYPE_OS_TASK, CFE_RESOURCEID_ES_APPID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 1, CFE_RESOURCEID_ES_LIBID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 2, CFE_RESOURCEID_ES_COUNTID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 3, CFE_RESOURCEID_ES_POOLID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 4, CFE_RESOURCEID_ES_CDSBLOCKID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 5, CFE_RESOURCEID_SB_PIPEID_RESOURCE_BASE_OFFSET = OS_OBJECT_TYPE_USER + 6, CFE_RESOURCEID_CONFIGID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 7, CFE_RESOURCEID_TBL_VALRESULTID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 8, CFE_RESOURCEID_TBL_DUMPCTRLID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 9 }`
- enum {

`CFE_ES_TASKID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_TASKID_BASE_OFFSET), CFE_ES_APPID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_APPID_BASE_OFFSET), CFE_ES_LIBID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_LIBID_BASE_OFFSET), CFE_ES_COUNTID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_COUNTID_BASE_OFFSET), CFE_ES_POOLID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_POOLID_BASE_OFFSET), CFE_ES_CDSBLOCKID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_CDSBLOCKID_BASE_OFFSET), CFE_SB_PIPEID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_SB_PIPEID_RESOURCE_BASE_OFFSET), CFE_CONFIGID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_CONFIGID_BASE_OFFSET), CFE_TBL_VALRESULTID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_TBL_VALRESULTID_BASE_OFFSET), CFE_TBL_DUMPCTRLID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_TBL_DUMPCTRLID_BASE_OFFSET) }`

10.51.1 Detailed Description

10.51.2 Enumeration Type Documentation

10.51.2.1 anonymous enum anonymous enum

Enumerator

CFE_RESOURCEID_ES_TASKID_BASE_OFFSET
CFE_RESOURCEID_ES_APPID_BASE_OFFSET
CFE_RESOURCEID_ES_LIBID_BASE_OFFSET
CFE_RESOURCEID_ES_COUNTID_BASE_OFFSET
CFE_RESOURCEID_ES_POOLID_BASE_OFFSET
CFE_RESOURCEID_ES_CDSBLOCKID_BASE_OFFSET
CFE_RESOURCEID_SB_PIPEID_RESOURCE_BASE_OFFSET
CFE_RESOURCEID_CONFIGID_BASE_OFFSET
CFE_RESOURCEID_TBL_VALRESULTID_BASE_OFFSET
CFE_RESOURCEID_TBL_DUMPCTRLID_BASE_OFFSET

Definition at line 48 of file cfe_core_resourceid_basevalues.h.

10.51.2.2 anonymous enum anonymous enum

Enumerator

CFE_ES_TASKID_BASE	
CFE_ES_APPID_BASE	
CFE_ES_LIBID_BASE	
CFE_ES_COUNTID_BASE	
CFE_ES_POOLID_BASE	
CFE_ES_CDSBLOCKID_BASE	
CFE_SB_PIPEID_BASE	
CFE_CONFIGID_BASE	
CFE_TBL_VALRESULTID_BASE	
CFE_TBL_DUMPCTRLID_BASE	

Definition at line 85 of file cfe_core_resourceid_basevalues.h.

10.52 cFE Clock State Flag Defines

Macros

- #define CFE_TIME_FLAG_CLKSET 0x8000
The spacecraft time has been set.
- #define CFE_TIME_FLAG_FLYING 0x4000
This instance of Time Services is flywheeling.
- #define CFE_TIME_FLAG_SRCINT 0x2000
The clock source is set to "internal".
- #define CFE_TIME_FLAG_SIGPRI 0x1000
The clock signal is set to "primary".
- #define CFE_TIME_FLAG_SRVFLY 0x0800
The Time Server is in flywheel mode.
- #define CFE_TIME_FLAG_CMDFLY 0x0400
This instance of Time Services was commanded into flywheel mode.
- #define CFE_TIME_FLAG_ADDADJ 0x0200
One time STCF Adjustment is to be done in positive direction.
- #define CFE_TIME_FLAG_ADD1HZ 0x0100
1 Hz STCF Adjustment is to be done in a positive direction
- #define CFE_TIME_FLAG_ADDTCL 0x0080
Time Client Latency is applied in a positive direction.
- #define CFE_TIME_FLAG_SERVER 0x0040
This instance of Time Services is a Time Server.
- #define CFE_TIME_FLAG_GDTONE 0x0020
The tone received is good compared to the last tone received.
- #define CFE_TIME_FLAG_REFERR 0x0010
GetReference read error, will be set if unable to get a consistent ref value.
- #define CFE_TIME_FLAG_UNUSED 0x000F
Reserved flags - should be zero.

10.52.1 Detailed Description

10.52.2 Macro Definition Documentation

10.52.2.1 CFE_TIME_FLAG_ADD1HZ #define CFE_TIME_FLAG_ADD1HZ 0x0100
1 Hz STCF Adjustment is to be done in a positive direction
Definition at line 44 of file default_cfe_time_msgdefs.h.

10.52.2.2 CFE_TIME_FLAG_ADDADJ #define CFE_TIME_FLAG_ADDADJ 0x0200
One time STCF Adjustment is to be done in positive direction.
Definition at line 43 of file default_cfe_time_msgdefs.h.

10.52.2.3 CFE_TIME_FLAG_ADDTCL #define CFE_TIME_FLAG_ADDTCL 0x0080
Time Client Latency is applied in a positive direction.
Definition at line 45 of file default_cfe_time_msgdefs.h.

10.52.2.4 CFE_TIME_FLAG_CLKSET #define CFE_TIME_FLAG_CLKSET 0x8000
The spacecraft time has been set.
Definition at line 37 of file default_cfe_time_msgdefs.h.

10.52.2.5 CFE_TIME_FLAG_CMDFLY #define CFE_TIME_FLAG_CMDFLY 0x0400
This instance of Time Services was commanded into flywheel mode.
Definition at line 42 of file default_cfe_time_msgdefs.h.

10.52.2.6 CFE_TIME_FLAG_FLYING #define CFE_TIME_FLAG_FLYING 0x4000
This instance of Time Services is flywheeling.
Definition at line 38 of file default_cfe_time_msgdefs.h.

10.52.2.7 CFE_TIME_FLAG_GDTONE #define CFE_TIME_FLAG_GDTONE 0x0020
The tone received is good compared to the last tone received.
Definition at line 47 of file default_cfe_time_msgdefs.h.

10.52.2.8 CFE_TIME_FLAG_REFERR #define CFE_TIME_FLAG_REFERR 0x0010
GetReference read error, will be set if unable to get a consistent ref value.
Definition at line 49 of file default_cfe_time_msgdefs.h.

10.52.2.9 CFE_TIME_FLAG_SERVER #define CFE_TIME_FLAG_SERVER 0x0040
This instance of Time Services is a Time Server.
Definition at line 46 of file default_cfe_time_msgdefs.h.

10.52.2.10 CFE_TIME_FLAG_SIGPRI #define CFE_TIME_FLAG_SIGPRI 0x1000
The clock signal is set to "primary".
Definition at line 40 of file default_cfe_time_msgdefs.h.

10.52.2.11 CFE_TIME_FLAG_SRCINT #define CFE_TIME_FLAG_SRCINT 0x2000
The clock source is set to "internal".
Definition at line 39 of file default_cfe_time_msgdefs.h.

10.52.2.12 CFE_TIME_FLAG_SRVFLY #define CFE_TIME_FLAG_SRVFLY 0x0800
The Time Server is in flywheel mode.
Definition at line 41 of file default_cfe_time_msgdefs.h.

10.52.2.13 CFE_TIME_FLAG_UNUSED #define CFE_TIME_FLAG_UNUSED 0x000F
Reserved flags - should be zero.
Definition at line 50 of file default_cfe_time_msgdefs.h.

10.53 OSAL Semaphore State Defines

Macros

- #define [OS_SEM_FULL](#) 1
Semaphore full state.
- #define [OS_SEM_EMPTY](#) 0
Semaphore empty state.

10.53.1 Detailed Description

10.53.2 Macro Definition Documentation

10.53.2.1 OS_SEM_EMPTY #define OS_SEM_EMPTY 0
Semaphore empty state.
Definition at line 35 of file osapi-binsem.h.

10.53.2.2 OS_SEM_FULL #define OS_SEM_FULL 1
Semaphore full state.
Definition at line 34 of file osapi-binsem.h.

10.54 OSAL Binary Semaphore APIs

Functions

- int32 [OS_BinSemCreate](#) (osal_id_t *sem_id, const char *sem_name, uint32 sem_initial_value, uint32 options)
Creates a binary semaphore.
- int32 [OS_BinSemFlush](#) (osal_id_t sem_id)
Unblock all tasks pending on the specified semaphore.
- int32 [OS_BinSemGive](#) (osal_id_t sem_id)
Increment the semaphore value.
- int32 [OS_BinSemTake](#) (osal_id_t sem_id)
Decrement the semaphore value.
- int32 [OS_BinSemTimedWait](#) (osal_id_t sem_id, uint32 msecs)
Decrement the semaphore value with a timeout.

- `int32 OS_BinSemDelete (osal_id_t sem_id)`
Deletes the specified Binary Semaphore.
- `int32 OS_BinSemGetIdByName (osal_id_t *sem_id, const char *sem_name)`
Find an existing semaphore ID by name.
- `int32 OS_BinSemGetInfo (osal_id_t sem_id, OS_bin_sem_prop_t *bin_prop)`
Fill a property object buffer with details regarding the resource.

10.54.1 Detailed Description

10.54.2 Function Documentation

10.54.2.1 OS_BinSemCreate() `int32 OS_BinSemCreate (`
`osal_id_t * sem_id,`
`const char * sem_name,`
`uint32 sem_initial_value,`
`uint32 options)`

Creates a binary semaphore.

Creates a binary semaphore with initial value specified by `sem_initial_value` and name specified by `sem_name`. `sem_id` will be returned to the caller

Parameters

<code>out</code>	<code>sem_id</code>	will be set to the non-zero ID of the newly-created resource (must not be null)
<code>in</code>	<code>sem_name</code>	the name of the new resource to create (must not be null)
<code>in</code>	<code>sem_initial_value</code>	the initial value of the binary semaphore
<code>in</code>	<code>options</code>	Reserved for future use, should be passed as 0.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if <code>sem_name</code> or <code>sem_id</code> are NULL
<code>OS_ERR_NAME_TOO_LONG</code>	name length including null terminator greater than <code>OS_MAX_API_NAME</code>
<code>OS_ERR_NO_FREE_IDS</code>	if all of the semaphore ids are taken
<code>OS_ERR_NAME_TAKEN</code>	if this is already the name of a binary semaphore
<code>OS_SEM_FAILURE</code>	if the OS call failed (return value only verified in coverage test)

10.54.2.2 OS_BinSemDelete() `int32 OS_BinSemDelete (`
`osal_id_t sem_id)`

Deletes the specified Binary Semaphore.

This is the function used to delete a binary semaphore in the operating system. This also frees the respective `sem_id` to be used again when another semaphore is created.

Parameters

in	<i>sem->_id</i>	The object ID to delete
----	--------------------	-------------------------

ReturnsExecution status, see [OSAL Return Code Defines](#)**Return values**

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a valid binary semaphore
<i>OS_SEM_FAILURE</i>	if an unspecified failure occurs (return value only verified in coverage test)

10.54.2.3 OS_BinSemFlush() `int32 OS_BinSemFlush (osal_id_t sem_id)`

Unblock all tasks pending on the specified semaphore.

The function unblocks all tasks pending on the specified semaphore. However, this function does not change the state of the semaphore.

Parameters

in	<i>sem->_id</i>	The object ID to operate on
----	--------------------	-----------------------------

ReturnsExecution status, see [OSAL Return Code Defines](#)**Return values**

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a binary semaphore
<i>OS_SEM_FAILURE</i>	if an unspecified failure occurs (return value only verified in coverage test)

10.54.2.4 OS_BinSemGetIdByName() `int32 OS_BinSemGetIdByName (osal_id_t * sem_id, const char * sem_name)`

Find an existing semaphore ID by name.

This function tries to find a binary sem id given the name of a bin_sem. The id is returned through sem_id

Parameters

out	<i>sem_id</i>	will be set to the ID of the existing resource
in	<i>sem_name</i>	the name of the existing resource to find (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if semid or sem_name are NULL pointers
<i>OS_ERR_NAME_TOO_LONG</i>	name length including null terminator greater than <i>OS_MAX_API_NAME</i>
<i>OS_ERR_NAME_NOT_FOUND</i>	if the name was not found in the table

10.54.2.5 OS_BinSemGetInfo() `int32 OS_BinSemGetInfo(`

```
osal_id_t sem_id,
OS_bin_sem_prop_t * bin_prop )
```

Fill a property object buffer with details regarding the resource.

This function will pass back a pointer to structure that contains all of the relevant info(name and creator) about the specified binary semaphore.

Parameters

in	<i>sem_id</i>	The object ID to operate on
out	<i>bin_prop</i>	The property object buffer to fill (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a valid semaphore
<i>OS_INVALID_POINTER</i>	if the bin_prop pointer is null
<i>OS_ERR_NOT_IMPLEMENTED</i>	Not implemented.

10.54.2.6 OS_BinSemGive() `int32 OS_BinSemGive(`

```
osal_id_t sem_id )
```

Increment the semaphore value.

The function unlocks the semaphore referenced by *sem_id* by performing a semaphore unlock operation on that semaphore. If the semaphore value resulting from this operation is positive, then no threads were blocked waiting for the semaphore to become unlocked; the semaphore value is simply incremented for this semaphore.

Parameters

in	<i>sem_id</i>	The object ID to operate on
----	---------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a binary semaphore
<i>OS_SEM_FAILURE</i>	if an unspecified failure occurs (return value only verified in coverage test)

10.54.2.7 OS_BinSemTake() `int32 OS_BinSemTake (osal_id_t sem_id)`

Decrement the semaphore value.

The locks the semaphore referenced by `sem_id` by performing a semaphore lock operation on that semaphore. If the semaphore value is currently zero, then the calling thread shall not return from the call until it either locks the semaphore or the call is interrupted.

Parameters

in	<i>sem_id</i>	The object ID to operate on
----	---------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	the Id passed in is not a valid binary semaphore
<i>OS_SEM_FAILURE</i>	if an unspecified failure occurs (return value only verified in coverage test)

10.54.2.8 OS_BinSemTimedWait() `int32 OS_BinSemTimedWait (osal_id_t sem_id, uint32 msecs)`

Decrement the semaphore value with a timeout.

The function locks the semaphore referenced by `sem_id`. However, if the semaphore cannot be locked without waiting for another process or thread to unlock the semaphore, this wait shall be terminated when the specified timeout, `msecs`, expires.

Parameters

in	<i>sem_id</i>	The object ID to operate on
in	<i>msecs</i>	The maximum amount of time to block, in milliseconds

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_SEM_TIMEOUT</code>	if semaphore was not relinquished in time
<code>OS_ERR_INVALID_ID</code>	if the ID passed in is not a valid semaphore ID
<code>OS_SEM_FAILURE</code>	if an unspecified failure occurs (return value only verified in coverage test)

10.55 OSAL BSP low level access APIs

Functions

- void `OS_BSP_SetResourceTypeConfig` (`uint32 ResourceType, uint32 ConfigOptionValue`)
- `uint32 OS_BSP_GetResourceTypeConfig` (`uint32 ResourceType`)
- `uint32 OS_BSP_GetArgC` (`void`)
- `char *const * OS_BSP_GetArgV` (`void`)
- void `OS_BSP_SetExitCode` (`int32 code`)

10.55.1 Detailed Description

These are for OSAL internal BSP information access to pass any BSP-specific boot/command line/startup arguments through to the application, and return a status code back to the OS after exit.
Not intended for user application use

10.55.2 Function Documentation

10.55.2.1 OS_BSP_GetArgC() `uint32 OS_BSP_GetArgC (`
`void)`

10.55.2.2 OS_BSP_GetArgV() `char* const* OS_BSP_GetArgV (`
`void)`

10.55.2.3 OS_BSP_GetResourceTypeConfig() `uint32 OS_BSP_GetResourceTypeConfig (`
`uint32 ResourceType)`

10.55.2.4 OS_BSP_SetExitCode() `void OS_BSP_SetExitCode (`
`int32 code)`

10.55.2.5 OS_BSP_SetResourceTypeConfig() `void OS_BSP_SetResourceTypeConfig (`
`uint32 ResourceType,`
`uint32 ConfigOptionValue)`

10.56 OSAL Real Time Clock APIs

Functions

- `int32 OS_GetLocalTime (OS_time_t *time_struct)`
Get the local time.
- `int32 OS_SetLocalTime (const OS_time_t *time_struct)`
Set the local time.
- `OS_time_t OS_TimeFromRelativeMilliseconds (int32 relative_msec)`
Gets an absolute time value relative to the current time.
- `int32 OS_TimeToRelativeMilliseconds (OS_time_t time)`
Gets a relative time value from an absolute time.
- `static int64 OS_TimeGetTotalSeconds (OS_time_t tm)`
Get interval from an `OS_time_t` object normalized to whole number of seconds.
- `static OS_time_t OS_TimeFromTotalSeconds (int64 tm)`
Get an `OS_time_t` interval object from an integer number of seconds.
- `static int64 OS_TimeGetTotalMilliseconds (OS_time_t tm)`
Get interval from an `OS_time_t` object normalized to millisecond units.
- `static OS_time_t OS_TimeFromTotalMilliseconds (int64 tm)`
Get an `OS_time_t` interval object from a integer number of milliseconds.
- `static int64 OS_TimeGetTotalMicroseconds (OS_time_t tm)`
Get interval from an `OS_time_t` object normalized to microsecond units.
- `static OS_time_t OS_TimeFromTotalMicroseconds (int64 tm)`
Get an `OS_time_t` interval object from a integer number of microseconds.
- `static int64 OS_TimeGetTotalNanoseconds (OS_time_t tm)`
Get interval from an `OS_time_t` object normalized to nanosecond units.
- `static OS_time_t OS_TimeFromTotalNanoseconds (int64 tm)`
Get an `OS_time_t` interval object from a integer number of nanoseconds.
- `static int32 OS_TimeGetSubsecondsPart (OS_time_t tm)`
Get subseconds portion (fractional part only) from an `OS_time_t` object.
- `static uint32 OS_TimeGetSubsecondsPart (OS_time_t tm)`
Get 32-bit normalized subseconds (fractional part only) from an `OS_time_t` object.
- `static uint32 OS_TimeGetMillisecondsPart (OS_time_t tm)`
Get milliseconds portion (fractional part only) from an `OS_time_t` object.
- `static uint32 OS_TimeGetMicrosecondsPart (OS_time_t tm)`
Get microseconds portion (fractional part only) from an `OS_time_t` object.
- `static uint32 OS_TimeGetNanosecondsPart (OS_time_t tm)`
Get nanoseconds portion (fractional part only) from an `OS_time_t` object.
- `static OS_time_t OS_TimeAssembleFromNanoseconds (int64 seconds, uint32 nanoseconds)`
Assemble/Convert a number of seconds + nanoseconds into an `OS_time_t` interval.
- `static OS_time_t OS_TimeAssembleFromMicroseconds (int64 seconds, uint32 microseconds)`
Assemble/Convert a number of seconds + microseconds into an `OS_time_t` interval.
- `static OS_time_t OS_TimeAssembleFromMilliseconds (int64 seconds, uint32 milliseconds)`
Assemble/Convert a number of seconds + milliseconds into an `OS_time_t` interval.
- `static OS_time_t OS_TimeAssembleFromSubseconds (int64 seconds, uint32 subseconds)`
Assemble/Convert a number of seconds + subseconds into an `OS_time_t` interval.
- `static OS_time_t OS_TimeAdd (OS_time_t time1, OS_time_t time2)`
Computes the sum of two time intervals.

- static `OS_time_t OS_TimeSubtract (OS_time_t time1, OS_time_t time2)`
Computes the difference between two time intervals.
- static bool `OS_TimeEqual (OS_time_t time1, OS_time_t time2)`
Checks if two time values are equal.
- static int8_t `OS_TimeGetSign (OS_time_t time)`
Checks the sign of the time value.
- static int8_t `OS_TimeCompare (OS_time_t time1, OS_time_t time2)`
Compares two time values.

10.56.1 Detailed Description

10.56.2 Function Documentation

10.56.2.1 `OS_GetLocalTime()` `int32 OS_GetLocalTime (OS_time_t * time_struct)`

Get the local time.

This function gets the local time from the underlying OS.

Note

Mission time management typically uses the cFE Time Service

Parameters

out	<code>time_struct</code>	An <code>OS_time_t</code> that will be set to the current time (must not be null)
-----	--------------------------	---

Returns

Get local time status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if time_struct is null

10.56.2.2 `OS_SetLocalTime()` `int32 OS_SetLocalTime (const OS_time_t * time_struct)`

Set the local time.

This function sets the local time on the underlying OS.

Note

Mission time management typically uses the cFE Time Services

Parameters

in	<code>time_struct</code>	An <code>OS_time_t</code> containing the current time (must not be null)
----	--------------------------	--

Returns

Set local time status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if time_struct is null

10.56.2.3 OS_TimeAdd() static `OS_time_t` OS_TimeAdd (
 `OS_time_t` time1,
 `OS_time_t` time2) [inline], [static]

Computes the sum of two time intervals.

Parameters

in	<code>time1</code>	The first interval
in	<code>time2</code>	The second interval

Returns

The sum of the two intervals (time1 + time2)

Definition at line 530 of file osapi-clock.h.

References `OS_time_t::ticks`.

10.56.2.4 OS_TimeAssembleFromMicroseconds() static `OS_time_t` OS_TimeAssembleFromMicroseconds (
 `int64` seconds,
 `uint32` microseconds) [inline], [static]

Assemble/Convert a number of seconds + microseconds into an `OS_time_t` interval.

This creates an `OS_time_t` value using a whole number of seconds and a fractional part in units of microseconds. This is the inverse of `OS_TimeGetTotalSeconds()` and `OS_TimeGetMicrosecondsPart()`, and should recreate the original `OS_time_t` value from these separate values (aside from any potential conversion losses due to limited resolution of the data types/units).

See also

[OS_TimeGetTotalSeconds\(\)](#), [OS_TimeGetMicrosecondsPart\(\)](#)

Parameters

in	<code>seconds</code>	Whole number of seconds
in	<code>microseconds</code>	Number of microseconds (fractional part only)

Returns

The input arguments represented as an `OS_time_t` interval

Definition at line 465 of file osapi-clock.h.

References `OS_TIME_TICKS_PER_SECOND`, `OS_TIME_TICKS_PER_USEC`, and `OS_time_t::ticks`.

10.56.2.5 OS_TimeAssembleFromMilliseconds() static `OS_time_t` OS_TimeAssembleFromMilliseconds (
`int64 seconds,`
`uint32 milliseconds`) [inline], [static]

Assemble/Convert a number of seconds + milliseconds into an `OS_time_t` interval.

This creates an `OS_time_t` value using a whole number of seconds and a fractional part in units of milliseconds. This is the inverse of `OS_TimeGetTotalSeconds()` and `OS_TimeGetMillisecondsPart()`, and should recreate the original `OS_time_t` value from these separate values (aside from any potential conversion losses due to limited resolution of the data types/units).

See also

[OS_TimeGetTotalSeconds\(\)](#), [OS_TimeGetMillisecondsPart\(\)](#)

Parameters

in	<code>seconds</code>	Whole number of seconds
in	<code>milliseconds</code>	Number of milliseconds (fractional part only)

Returns

The input arguments represented as an `OS_time_t` interval

Definition at line 489 of file osapi-clock.h.

References `OS_TIME_TICKS_PER_MSEC`, `OS_TIME_TICKS_PER_SECOND`, and `OS_time_t::ticks`.

10.56.2.6 OS_TimeAssembleFromNanoseconds() static `OS_time_t` OS_TimeAssembleFromNanoseconds (
`int64 seconds,`
`uint32 nanoseconds`) [inline], [static]

Assemble/Convert a number of seconds + nanoseconds into an `OS_time_t` interval.

This creates an `OS_time_t` value using a whole number of seconds and a fractional part in units of nanoseconds. This is the inverse of `OS_TimeGetTotalSeconds()` and `OS_TimeGetNanosecondsPart()`, and should recreate the original `OS_time_t` value from these separate values (aside from any potential conversion losses due to limited resolution of the data types/units).

See also

[OS_TimeGetTotalSeconds\(\)](#), [OS_TimeGetNanosecondsPart\(\)](#)

Parameters

in	<code>seconds</code>	Whole number of seconds
in	<code>nanoseconds</code>	Number of nanoseconds (fractional part only)

Returns

The input arguments represented as an `OS_time_t` interval

Definition at line 441 of file osapi-clock.h.

References `OS_TIME_TICK_RESOLUTION_NS`, `OS_TIME_TICKS_PER_SECOND`, and `OS_time_t::ticks`.

10.56.2.7 OS_TimeAssembleFromSubseconds() static `OS_time_t` OS_TimeAssembleFromSubseconds (
`int64 seconds,`

```
    uint32 subseconds ) [inline], [static]
```

Assemble/Convert a number of seconds + subseconds into an [OS_time_t](#) interval.

This creates an [OS_time_t](#) value using a whole number of seconds and a fractional part in units of sub-seconds ($1/2^{32}$). This is the inverse of [OS_TimeGetTotalSeconds\(\)](#) and [OS_TimeGetSubsecondsPart\(\)](#), and should recreate the original [OS_time_t](#) value from these separate values (aside from any potential conversion losses due to limited resolution of the data types/units).

See also

[OS_TimeGetTotalSeconds\(\)](#), [OS_TimeGetNanosecondsPart\(\)](#)

Parameters

in	<i>seconds</i>	Whole number of seconds
in	<i>subseconds</i>	Number of subseconds (32 bit fixed point fractional part)

Returns

The input arguments represented as an [OS_time_t](#) interval

Definition at line 512 of file osapi-clock.h.

References OS_TIME_TICKS_PER_SECOND, and [OS_time_t::ticks](#).

10.56.2.8 OS_TimeCompare() static int8_t OS_TimeCompare (
 [OS_time_t](#) time1,
 [OS_time_t](#) time2) [inline], [static]

Compares two time values.

Parameters

in	<i>time1</i>	The first time
in	<i>time2</i>	The second time

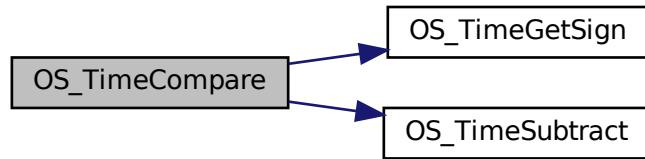
Return values

-1	if the <i>time1</i> < <i>time2</i>
0	if the times are equal
1	if the <i>time1</i> > <i>time2</i>

Definition at line 592 of file osapi-clock.h.

References [OS_TimeGetSign\(\)](#), and [OS_TimeSubtract\(\)](#).

Here is the call graph for this function:



10.56.2.9 OS_TimeEqual() `static bool OS_TimeEqual (OS_time_t time1, OS_time_t time2) [inline], [static]`

Checks if two time values are equal.

Parameters

in	<i>time1</i>	The first time value
in	<i>time2</i>	The second time value

Return values

<i>true</i>	if the two values are equal
<i>false</i>	if the two values are not equal

Definition at line 561 of file osapi-clock.h.

References OS_time_t::ticks.

10.56.2.10 OS_TimeFromRelativeMilliseconds() `OS_time_t OS_TimeFromRelativeMilliseconds (int32 relative_msec)`

Gets an absolute time value relative to the current time.

This function adds the given interval, expressed in milliseconds, to the current clock and returns the result.

Note

This is intended to ease transitioning from a relative timeout value to an absolute timeout value. The result can be passed to any function that accepts an absolute timeout, to mimic the behavior of a relative timeout.

Parameters

in	<i>relative_msec</i>	A relative time interval, in milliseconds
----	----------------------	---

Returns

Absolute time value after adding interval

10.56.2.11 OS_TimeFromTotalMicroseconds() static `OS_time_t` OS_TimeFromTotalMicroseconds (`int64 tm`) [inline], [static]

Get an `OS_time_t` interval object from a integer number of microseconds.

This is the inverse operation of [OS_TimeGetTotalMicroseconds\(\)](#), converting the total number of microseconds into an `OS_time_t` value.

See also

[OS_TimeGetTotalMicroseconds\(\)](#)

Parameters

in	<code>tm</code>	Time interval value, in microseconds
----	-----------------	--------------------------------------

Returns

`OS_time_t` value representing the interval

Definition at line 278 of file osapi-clock.h.

References OS_TIME_TICKS_PER_USEC.

10.56.2.12 OS_TimeFromTotalMilliseconds() static `OS_time_t` OS_TimeFromTotalMilliseconds (`int64 tm`) [inline], [static]

Get an `OS_time_t` interval object from a integer number of milliseconds.

This is the inverse operation of [OS_TimeGetTotalMilliseconds\(\)](#), converting the total number of milliseconds into an `OS_time_t` value.

See also

[OS_TimeGetTotalMilliseconds\(\)](#)

Parameters

in	<code>tm</code>	Time interval value, in milliseconds
----	-----------------	--------------------------------------

Returns

`OS_time_t` value representing the interval

Definition at line 244 of file osapi-clock.h.

References OS_TIME_TICKS_PER_MSEC.

10.56.2.13 OS_TimeFromTotalNanoseconds() static `OS_time_t` OS_TimeFromTotalNanoseconds (`int64 tm`) [inline], [static]

Get an `OS_time_t` interval object from a integer number of nanoseconds.

This is the inverse operation of [OS_TimeGetTotalNanoseconds\(\)](#), converting the total number of nanoseconds into an `OS_time_t` value.

See also

[OS_TimeGetTotalNanoseconds\(\)](#)

Parameters

in	<i>tm</i>	Time interval value, in nanoseconds
----	-----------	-------------------------------------

Returns

[OS_time_t](#) value representing the interval

Definition at line 317 of file osapi-clock.h.

References OS_TIME_TICK_RESOLUTION_NS.

10.56.2.14 OS_TimeFromTotalSeconds() static [OS_time_t](#) OS_TimeFromTotalSeconds (

 int64 *tm*) [inline], [static]

Get an [OS_time_t](#) interval object from an integer number of seconds.

This is the inverse operation of [OS_TimeGetTotalSeconds\(\)](#), converting the total number of seconds into an [OS_time_t](#) value.

See also

[OS_TimeGetTotalSeconds\(\)](#)

Parameters

in	<i>tm</i>	Time interval value, in seconds
----	-----------	---------------------------------

Returns

[OS_time_t](#) value representing the interval

Definition at line 210 of file osapi-clock.h.

References OS_TIME_TICKS_PER_SECOND.

10.56.2.15 OS_TimeGetFractionalPart() static int64 OS_TimeGetFractionalPart (

[OS_time_t](#) *tm*) [inline], [static]

Get subseconds portion (fractional part only) from an [OS_time_t](#) object.

Extracts the fractional part from a given [OS_time_t](#) object. Units returned are in ticks, not normalized to any standard time unit.

Parameters

in	<i>tm</i>	Time interval value
----	-----------	---------------------

Returns

Fractional/subsecond portion of time interval in ticks

Definition at line 333 of file osapi-clock.h.

References OS_TIME_TICKS_PER_SECOND, and [OS_time_t::ticks](#).

Referenced by OS_TimeGetMicrosecondsPart(), OS_TimeGetMillisecondsPart(), OS_TimeGetNanosecondsPart(), and OS_TimeGetSubsecondsPart().

10.56.2.16 OS_TimeGetMicrosecondsPart() static uint32 OS_TimeGetMicrosecondsPart (OS_time_t tm) [inline], [static]

Get microseconds portion (fractional part only) from an `OS_time_t` object.

Extracts the fractional part from a given `OS_time_t` object normalized to units of microseconds.

This function may be used to adapt applications initially implemented using an older OSAL version where `OS_time_t` was a structure containing a "seconds" and "microsecs" field.

This function will obtain a value that is compatible with the "microsecs" field of `OS_time_t` as it was defined in previous versions of OSAL, as well as the "tv_usec" field of POSIX-style "struct timeval" values.

See also

[OS_TimeGetTotalSeconds\(\)](#)

Parameters

in	tm	Time interval value
----	----	---------------------

Returns

Number of microseconds in time interval

Definition at line 401 of file osapi-clock.h.

References OS_TIME_TICKS_PER_USEC, and OS_TimeGetFractionalPart().

Here is the call graph for this function:



10.56.2.17 OS_TimeGetMillisecondsPart() static uint32 OS_TimeGetMillisecondsPart (OS_time_t tm) [inline], [static]

Get milliseconds portion (fractional part only) from an `OS_time_t` object.

Extracts the fractional part from a given `OS_time_t` object normalized to units of milliseconds.

See also

[OS_TimeGetTotalSeconds\(\)](#)

Parameters

in	tm	Time interval value
----	----	---------------------

Returns

Number of milliseconds in time interval

Definition at line 376 of file osapi-clock.h.

References OS_TIME_TICKS_PER_MSEC, and OS_TimeGetFractionalPart().

Here is the call graph for this function:



10.56.2.18 OS_TimeGetNanosecondsPart() static uint32 OS_TimeGetNanosecondsPart (OS_time_t tm) [inline], [static]

Get nanoseconds portion (fractional part only) from an `OS_time_t` object.

Extracts the only number of nanoseconds from a given `OS_time_t` object.

This function will obtain a value that is compatible with the "tv_nsec" field of POSIX-style "struct timespec" values.

See also

[OS_TimeGetTotalSeconds\(\)](#)

Parameters

in	<i>tm</i>	Time interval value
----	-----------	---------------------

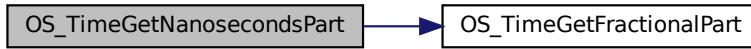
Returns

Number of nanoseconds in time interval

Definition at line 420 of file osapi-clock.h.

References OS_TIME_TICK_RESOLUTION_NS, and OS_TimeGetFractionalPart().

Here is the call graph for this function:



10.56.2.19 OS_TimeGetSign() static int8_t OS_TimeGetSign (OS_time_t time) [inline], [static]

Checks the sign of the time value.

Parameters

in	<i>time</i>	The time to check
----	-------------	-------------------

Return values

-1	if the time value is negative / below 0
0	if the time value is 0
1	if the time value is positive / above 0

Definition at line 576 of file osapi-clock.h.

References OS_time_t::ticks.

Referenced by OS_TimeCompare().

10.56.2.20 OS_TimeGetSubsecondsPart() static `uint32` OS_TimeGetSubsecondsPart (
 `OS_time_t tm`) [inline], [static]

Get 32-bit normalized subseconds (fractional part only) from an `OS_time_t` object.

Extracts the fractional part from a given `OS_time_t` object in maximum precision, with units of 2^{-32} sec. This is a base-2 fixed-point fractional value with the point left-justified in the 32-bit value (i.e. left of MSB).

This is (mostly) compatible with the CFE "subseconds" value, where 0x80000000 represents exactly one half second, and 0 represents a full second.

Parameters

in	<i>tm</i>	Time interval value
----	-----------	---------------------

Returns

Fractional/subsecond portion of time interval as 32-bit fixed point value

Definition at line 352 of file osapi-clock.h.

References OS_TIME_TICKS_PER_SECOND, and OS_TimeGetFractionalPart().

Here is the call graph for this function:



10.56.2.21 OS_TimeGetTotalMicroseconds() static `int64` OS_TimeGetTotalMicroseconds (
 `OS_time_t tm`) [inline], [static]

Get interval from an `OS_time_t` object normalized to microsecond units.

Note this refers to the complete interval, not just the fractional part.

See also

[OS_TimeFromTotalMicroseconds\(\)](#)

Parameters

in	tm	Time interval value
----	----	---------------------

Returns

Whole number of microseconds in time interval

Definition at line 261 of file osapi-clock.h.

References OS_TIME_TICKS_PER_USEC, and OS_time_t::ticks.

10.56.2.22 OS_TimeGetTotalMilliseconds() static int64 OS_TimeGetTotalMilliseconds (
 OS_time_t tm) [inline], [static]

Get interval from an [OS_time_t](#) object normalized to millisecond units.

Note this refers to the complete interval, not just the fractional part.

See also

[OS_TimeFromTotalMilliseconds\(\)](#)

Parameters

in	tm	Time interval value
----	----	---------------------

Returns

Whole number of milliseconds in time interval

Definition at line 227 of file osapi-clock.h.

References OS_TIME_TICKS_PER_MSEC, and OS_time_t::ticks.

10.56.2.23 OS_TimeGetTotalNanoseconds() static int64 OS_TimeGetTotalNanoseconds (
 OS_time_t tm) [inline], [static]

Get interval from an [OS_time_t](#) object normalized to nanosecond units.

Note this refers to the complete interval, not just the fractional part.

Note

There is no protection against overflow of the 64-bit return value. Applications must use caution to ensure that the interval does not exceed the representable range of a signed 64 bit integer - approximately 140 years.

See also

[OS_TimeFromTotalNanoseconds](#)

Parameters

in	tm	Time interval value
----	----	---------------------

Returns

Whole number of microseconds in time interval

Definition at line 300 of file osapi-clock.h.

References OS_TIME_TICK_RESOLUTION_NS, and OS_time_t::ticks.

10.56.2.24 OS_TimeGetTotalSeconds() static int64 OS_TimeGetTotalSeconds (OS_time_t tm) [inline], [static]

Get interval from an [OS_time_t](#) object normalized to whole number of seconds.

Extracts the number of whole seconds from a given [OS_time_t](#) object, discarding any fractional component.

This may also replace a direct read of the "seconds" field from the [OS_time_t](#) object from previous versions of OSAL, where the structure was defined with separate seconds/microseconds fields.

See also

[OS_TimeGetMicrosecondsPart\(\)](#)

[OS_TimeFromTotalSeconds\(\)](#)

Parameters

in	<i>tm</i>	Time interval value
----	-----------	---------------------

Returns

Whole number of seconds in time interval

Definition at line 193 of file osapi-clock.h.

References OS_TIME_TICKS_PER_SECOND, and OS_time_t::ticks.

10.56.2.25 OS_TimeSubtract() static OS_time_t OS_TimeSubtract (OS_time_t time1, OS_time_t time2) [inline], [static]

Computes the difference between two time intervals.

Parameters

in	<i>time1</i>	The first interval
in	<i>time2</i>	The second interval

Returns

The difference of the two intervals (*time1* - *time2*)

Definition at line 545 of file osapi-clock.h.

References OS_time_t::ticks.

Referenced by [OS_TimeCompare\(\)](#).

10.56.2.26 OS_TimeToRelativeMilliseconds() int32 OS_TimeToRelativeMilliseconds (OS_time_t time)

Gets a relative time value from an absolute time.

This function computes the number of milliseconds until the given absolute time value is reached in the system clock.

Note

This is intended to ease transitioning from a relative timeout value to an absolute timeout value. The result can be passed to any function that accepts a relative timeout, to mimic the behavior of an absolute timeout.

The return value of this function is intended to be compatible with the relative timeout parameter of various OSAL APIs e.g. [OS_TimedRead\(\)](#) / [OS_TimedWrite\(\)](#)

Parameters

in	time	An absolute time value
----	------	------------------------

Returns

Milliseconds until time value will be reached

Return values

<code>OS_CHECK</code>	(0) if time is the current time or is in the past
<code>OS_PEND</code>	(-1) if time is far in the future (not expressable as an int32)

10.57 OSAL Core Operation APIs

Functions

- void [OS_Application_Startup](#) (void)
Application startup.
- void [OS_Application_Run](#) (void)
Application run.
- int32 [OS_API_Init](#) (void)
Initialization of API.
- void [OS_API_Teardown](#) (void)
Teardown/de-initialization of OSAL API.
- void [OS_IdleLoop](#) (void)
Background thread implementation - waits forever for events to occur.
- void [OS_DeleteAllObjects](#) (void)
delete all resources created in OSAL.
- void [OS_ApplicationShutdown](#) (uint8 flag)
Initiate orderly shutdown.
- void [OS_ApplicationExit](#) (int32 Status)
Exit/Abort the application.
- int32 [OS_RegisterEventHandler](#) (OS_EventHandler_t handler)
Callback routine registration.
- size_t [OS_strlen](#) (const char *s, size_t maxlen)
get string length

10.57.1 Detailed Description

These are for OSAL core operations for startup/initialization, running, and shutdown. Typically only used in bsp's, unit tests, psp's, etc.

Not intended for user application use

10.57.2 Function Documentation

10.57.2.1 OS_API_Init() `int32 OS_API_Init (`
 `void)`

Initialization of API.

This function returns initializes the internal data structures of the OS Abstraction Layer. It must be called in the application startup code before calling any other OS routines.

Returns

Execution status, see [OSAL Return Code Defines](#). Any error code (negative) means the OSAL can not be initialized. Typical platform specific response is to abort since additional OSAL calls will have undefined behavior.

Return values

OS_SUCCESS	Successful execution.
OS_ERROR	Failed execution. (return value only verified in coverage test)

10.57.2.2 OS_API_Teardown() `void OS_API_Teardown (`
 `void)`

Teardown/de-initialization of OSAL API.

This is the inverse of [OS_API_Init\(\)](#). It will release all OS resources and return the system to a state similar to what it was prior to invoking [OS_API_Init\(\)](#) initially.

Normally for embedded applications, the OSAL is initialized after boot and will remain initialized in memory until the processor is rebooted. However for testing and development purposes, it is potentially useful to reset back to initial conditions.

For testing purposes, this API is designed/intended to be compatible with the `UtTest_AddTeardown()` routine provided by the UT-Assert subsystem.

Note

This is a "best-effort" routine and it may not always be possible/guaranteed to recover all resources, particularly in the case of off-nominal conditions, or if a resource is used outside of OSAL.

For example, while this will attempt to unload all dynamically-loaded modules, doing so may not be possible and/or may induce undefined behavior if resources are in use by tasks/functions outside of OSAL.

10.57.2.3 OS_Application_Run() `void OS_Application_Run (`
 `void)`

Application run.

Run abstraction such that the same BSP can be used for operations and testing.

10.57.2.4 OS_Application_Startup() `void OS_Application_Startup (`
 `void)`

Application startup.

Startup abstraction such that the same BSP can be used for operations and testing.

10.57.2.5 OS_ApplicationExit() `void OS_ApplicationExit (`
 `int32 Status)`

Exit/Abort the application.

Indicates that the OSAL application should exit and return control to the OS. This is intended for e.g. scripted unit testing where the test needs to end without user intervention.

This function does not return. Production code typically should not ever call this.

Note

This exits the entire process including tasks that have been created.

10.57.2.6 OS_ApplicationShutdown() `void OS_ApplicationShutdown (`
`uint8 flag)`

Initiate orderly shutdown.

Indicates that the OSAL application should perform an orderly shutdown of ALL tasks, clean up all resources, and exit the application.

This allows the task currently blocked in [OS_IdleLoop\(\)](#) to wake up, and for that function to return to its caller.

This is preferred over e.g. [OS_ApplicationExit\(\)](#) which exits immediately and does not provide for any means to clean up first.

Parameters

in	<i>flag</i>	set to true to initiate shutdown, false to cancel
----	-------------	---

10.57.2.7 OS_DeleteAllObjects() `void OS_DeleteAllObjects (`
`void)`

delete all resources created in OSAL.

provides a means to clean up all resources allocated by this instance of OSAL. It would typically be used during an orderly shutdown but may also be helpful for testing purposes.

10.57.2.8 OS_IdleLoop() `void OS_IdleLoop (`
`void)`

Background thread implementation - waits forever for events to occur.

This should be called from the BSP main routine or initial thread after all other board and application initialization has taken place and all other tasks are running.

Typically just waits forever until "OS_shutdown" flag becomes true.

10.57.2.9 OS_RegisterEventHandler() `int32 OS_RegisterEventHandler (`
`OS_EventHandler_t handler)`

Callback routine registration.

This hook enables the application code to perform extra platform-specific operations on various system events such as resource creation/deletion.

Note

Some events are invoked while the resource is "locked" and therefore application-defined handlers for these events should not block or attempt to access other OSAL resources.

Parameters

in	<i>handler</i>	The application-provided event handler (must not be null)
----	----------------	---

Returns

Execution status, see [OSAL Return Code Defines](#).

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if handler is NULL

```
10.57.2.10 OS_strlen() size_t OS_strlen (
    const char * s,
    size_t maxlen )
```

get string length

Provides an OSAL routine to get the functionality of the (non-C99) "strnlen()" function, via the C89/C99 standard "memchr()" function instead.

Parameters

in	<i>s</i>	The input string
in	<i>maxlen</i>	Maximum length to check

Return values

<i>Length</i>	of the string or maxlen, whichever is smaller.
---------------	--

Referenced by FM_AppendPathSep(), FM_ChildDirListFileLoop(), FM_ChildDirListPktCmd(), and FM_GetDirectorySpaceEstimate().

10.58 OSAL Condition Variable APIs

Functions

- [int32 OS_CondVarCreate \(osal_id_t *var_id, const char *var_name, uint32 options\)](#)
Creates a condition variable resource.
- [int32 OS_CondVarLock \(osal_id_t var_id\)](#)
Locks/Acquires the underlying mutex associated with a condition variable.
- [int32 OS_CondVarUnlock \(osal_id_t var_id\)](#)
Unlocks/Releases the underlying mutex associated with a condition variable.
- [int32 OS_CondVarSignal \(osal_id_t var_id\)](#)
Signals the condition variable resource referenced by var_id.
- [int32 OS_CondVarBroadcast \(osal_id_t var_id\)](#)
Broadcasts the condition variable resource referenced by var_id.
- [int32 OS_CondVarWait \(osal_id_t var_id\)](#)
Waits on the condition variable object referenced by var_id.
- [int32 OS_CondVarTimedWait \(osal_id_t var_id, const OS_time_t *abs_wakeup_time\)](#)
Time-limited wait on the condition variable object referenced by var_id.
- [int32 OS_CondVarDelete \(osal_id_t var_id\)](#)
Deletes the specified condition variable.

- `int32 OS_CondVarGetIdByName (osal_id_t *var_id, const char *var_name)`
Find an existing condition variable ID by name.
- `int32 OS_CondVarGetInfo (osal_id_t var_id, OS_condvar_prop_t *condvar_prop)`
Fill a property object buffer with details regarding the resource.

10.58.1 Detailed Description

10.58.2 Function Documentation

10.58.2.1 OS_CondVarBroadcast() `int32 OS_CondVarBroadcast (` `osal_id_t var_id)`

Broadcasts the condition variable resource referenced by var_id.

This function may be used to indicate when the state of a data object has been changed.

If there are threads blocked on the condition variable object referenced by var_id when this function is called, all threads will be unblocked.

Note that although all threads are unblocked, because the mutex is re-acquired before the wait function returns, only a single task will be testing the condition at a given time. The order with which each blocked task runs is determined by the scheduling policy.

Parameters

in	<code>var←_id</code>	The object ID to operate on
----	----------------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the id passed in is not a valid condition variable

10.58.2.2 OS_CondVarCreate() `int32 OS_CondVarCreate (` `osal_id_t * var_id,` `const char * var_name,` `uint32 options)`

Creates a condition variable resource.

A condition variable adds a more sophisticated synchronization option for mutexes, such that it can operate on arbitrary user-defined conditions rather than simply a counter or boolean (as in the case of simple semaphores).

Creating a condition variable resource in OSAL will in turn create both a basic mutex as well as a synchronization overlay. The underlying mutex is similar to the mutex functionality provided by the OSAL mutex subsystem, and can be locked and unlocked normally.

This mutex is intended to protect access to any arbitrary user-defined data object that serves as the condition being tested.

A task that needs a particular state of the object should follow this general flow:

- Lock the underlying mutex

- Test for the condition being waited for (a user-defined check on user-defined data)
- If condition IS NOT met, then call [OS_CondVarWait\(\)](#) to wait, then repeat test
- If condition IS met, then unlock the underlying mutex and continue

A task that changes the state of the object should follow this general flow:

- Lock the underlying mutex
- Change the state as necessary
- Call either [OS_CondVarSignal\(\)](#) or [OS_CondVarBroadcast\(\)](#)
- Unlock the underlying mutex

Parameters

out	<i>var_id</i>	will be set to the non-zero ID of the newly-created resource (must not be null)
in	<i>var_name</i>	the name of the new resource to create (must not be null)
in	<i>options</i>	reserved for future use. Should be passed as 0.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if var_id or var_name are NULL
OS_ERR_NAME_TOO_LONG	name length including null terminator greater than OS_MAX_API_NAME
OS_ERR_NO_FREE_IDS	if there are no more free condition variable IDs
OS_ERR_NAME_TAKEN	if there is already a condition variable with the same name

10.58.2.3 OS_CondVarDelete() `int32 OS_CondVarDelete (osal_id_t var_id)`

Deletes the specified condition variable.

Delete the condition variable and releases any related system resources.

Parameters

in	<i>var_id</i>	The object ID to delete
----	---------------	-------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
----------------------------	-----------------------

Return values

<code>OS_ERR_INVALID_ID</code>	if the id passed in is not a valid condvar
--------------------------------	--

```
10.58.2.4 OS_CondVarGetIdByName() int32 OS_CondVarGetIdByName (
    osal_id_t * var_id,
    const char * var_name )
```

Find an existing condition variable ID by name.

This function tries to find an existing condition variable ID given the name. The id is returned through var_id.

Parameters

out	<code>var_id</code>	will be set to the ID of the existing resource
in	<code>var_name</code>	the name of the existing resource to find (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	is var_id or var_name are NULL pointers
<code>OS_ERR_NAME_TOO_LONG</code>	name length including null terminator greater than <code>OS_MAX_API_NAME</code>
<code>OS_ERR_NAME_NOT_FOUND</code>	if the name was not found in the table

```
10.58.2.5 OS_CondVarGetInfo() int32 OS_CondVarGetInfo (
    osal_id_t var_id,
    OS_condvar_prop_t * condvar_prop )
```

Fill a property object buffer with details regarding the resource.

This function will fill a structure to contain the information (name and creator) about the specified condition variable.

Parameters

in	<code>var_id</code>	The object ID to operate on
out	<code>condvar_prop</code>	The property object buffer to fill (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the id passed in is not a valid semaphore
<code>OS_INVALID_POINTER</code>	if the mut_prop pointer is null

10.58.2.6 OS_CondVarLock() `int32 OS_CondVarLock (`
 `osal_id_t var_id)`

Locks/Acquires the underlying mutex associated with a condition variable.

The mutex should always be locked by a task before reading or modifying the data object associated with a condition variable.

Note

This lock must be acquired by a task before invoking [OS_CondVarWait\(\)](#) or [OS_CondVarTimedWait\(\)](#) on the same condition variable.

Parameters

in	<i>var_id</i>	The object ID to operate on
----	---------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	if the id passed in is not a valid condition variable

10.58.2.7 OS_CondVarSignal() `int32 OS_CondVarSignal (`
 `osal_id_t var_id)`

Signals the condition variable resource referenced by var_id.

This function may be used to indicate when the state of a data object has been changed.

If there are threads blocked on the condition variable object referenced by var_id when this function is called, one of those threads will be unblocked, as determined by the scheduling policy.

Parameters

in	<i>var_id</i>	The object ID to operate on
----	---------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	if the id passed in is not a valid condition variable

```
10.58.2.8 OS_CondVarTimedWait() int32 OS_CondVarTimedWait (
    osal_id_t var_id,
    const OS_time_t * abs_wakeup_time )
```

Time-limited wait on the condition variable object referenced by var_id.

Identical in operation to [OS_CondVarWait\(\)](#), except that the maximum amount of time that the task will be blocked is limited.

The abs_wakeup_time refers to the absolute time of the system clock at which the task should be unblocked to run, regardless of the state of the condition variable. This refers to the same system clock that is the subject of the [OS_GetLocalTime\(\)](#) API.

Parameters

in	var_id	The object ID to operate on
in	abs_wakeup_time	The system time at which the task should be unblocked (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	the id passed in is not a valid condvar

```
10.58.2.9 OS_CondVarUnlock() int32 OS_CondVarUnlock (
    osal_id_t var_id )
```

Unlocks/Releases the underlying mutex associated with a condition variable.

The mutex should be unlocked by a task once reading or modifying the data object associated with a condition variable is complete.

Parameters

in	var_id	The object ID to operate on
----	--------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	if the id passed in is not a valid condition variable

```
10.58.2.10 OS_CondVarWait() int32 OS_CondVarWait (
    osal_id_t var_id )
```

Waits on the condition variable object referenced by var_id.

The calling task will be blocked until another task calls the function [OS_CondVarSignal\(\)](#) or [OS_CondVarBroadcast\(\)](#) on the same condition variable.

The underlying mutex associated with the condition variable must be locked and owned by the calling task at the time this function is invoked. As part of this call, the mutex will be unlocked as the task blocks. This is done in such a way that there is no possibility that another task could acquire the mutex before the calling task has actually blocked.

This atomicity with respect to blocking the task and unlocking the mutex is a critical difference between condition variables and other synchronization primitives. It avoids a window of opportunity where inherent in the simpler synchronization resource types where the state of the data could change between the time that the calling task tested the state and the time that the task actually blocks on the sync resource.

Parameters

in	<i>var_id</i>	The object ID to operate on
----	---------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	the id passed in is not a valid condvar

10.59 OSAL Counting Semaphore APIs

Functions

- `int32 OS_CountSemCreate (osal_id_t *sem_id, const char *sem_name, uint32 sem_initial_value, uint32 options)`
Creates a counting semaphore.
- `int32 OS_CountSemGive (osal_id_t sem_id)`
Increment the semaphore value.
- `int32 OS_CountSemTake (osal_id_t sem_id)`
Decrement the semaphore value.
- `int32 OS_CountSemTimedWait (osal_id_t sem_id, uint32 msecs)`
Decrement the semaphore value with timeout.
- `int32 OS_CountSemDelete (osal_id_t sem_id)`
Deletes the specified counting Semaphore.
- `int32 OS_CountSemGetIdByName (osal_id_t *sem_id, const char *sem_name)`
Find an existing semaphore ID by name.
- `int32 OS_CountSemGetInfo (osal_id_t sem_id, OS_count_sem_prop_t *count_prop)`
Fill a property object buffer with details regarding the resource.

10.59.1 Detailed Description

10.59.2 Function Documentation

```
10.59.2.1 OS_CountSemCreate() int32 OS_CountSemCreate (
    osal_id_t * sem_id,
    const char * sem_name,
    uint32 sem_initial_value,
    uint32 options )
```

Creates a counting semaphore.

Creates a counting semaphore with initial value specified by `sem_initial_value` and name specified by `sem_name`. `sem_id` will be returned to the caller.

Note

Underlying RTOS implementations may or may not impose a specific upper limit to the value of a counting semaphore. If the OS has a specific limit and the `sem_initial_value` exceeds this limit, then `OS_INVALID_SEM_VALUE` is returned. On other implementations, any 32-bit integer value may be acceptable. For maximum portability, it is recommended to keep counting semaphore values within the range of a "short int" (i.e. between 0 and 32767). Many platforms do accept larger values, but may not be guaranteed.

Parameters

out	<code>sem_id</code>	will be set to the non-zero ID of the newly-created resource (must not be null)
in	<code>sem_name</code>	the name of the new resource to create (must not be null)
in	<code>sem_initial_value</code>	the initial value of the counting semaphore
in	<code>options</code>	Reserved for future use, should be passed as 0.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if sen name or sem_id are NULL
<code>OS_ERR_NAME_TOO_LONG</code>	name length including null terminator greater than <code>OS_MAX_API_NAME</code>
<code>OS_ERR_NO_FREE_IDS</code>	if all of the semaphore ids are taken
<code>OS_ERR_NAME_TAKEN</code>	if this is already the name of a counting semaphore
<code>OS_INVALID_SEM_VALUE</code>	if the semaphore value is too high (return value only verified in coverage test)
<code>OS_SEM_FAILURE</code>	if an unspecified implementation error occurs (return value only verified in coverage test)

Referenced by FM_ChildInit().

```
10.59.2.2 OS_CountSemDelete() int32 OS_CountSemDelete (
    osal_id_t sem_id )
```

Deletes the specified counting Semaphore.

Parameters

in	<code>sem_id</code>	The object ID to delete
----	---------------------	-------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the id passed in is not a valid counting semaphore
<code>OS_SEM_FAILURE</code>	if an unspecified implementation error occurs (return value only verified in coverage test)

```
10.59.2.3 OS_CountSemGetIdByName() int32 OS_CountSemGetIdByName(
    osal_id_t * sem_id,
    const char * sem_name )
```

Find an existing semaphore ID by name.

This function tries to find a counting sem Id given the name of a count_sem. The id is returned through sem_id

Parameters

<code>out</code>	<code>sem_id</code>	will be set to the ID of the existing resource
<code>in</code>	<code>sem_name</code>	the name of the existing resource to find (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	is semid or sem_name are NULL pointers
<code>OS_ERR_NAME_TOO_LONG</code>	name length including null terminator greater than <code>OS_MAX_API_NAME</code>
<code>OS_ERR_NAME_NOT_FOUND</code>	if the name was not found in the table

```
10.59.2.4 OS_CountSemGetInfo() int32 OS_CountSemGetInfo(
    osal_id_t sem_id,
    OS_count_sem_prop_t * count_prop )
```

Fill a property object buffer with details regarding the resource.

This function will pass back a pointer to structure that contains all of the relevant info(name and creator) about the specified counting semaphore.

Parameters

<code>in</code>	<code>sem_id</code>	The object ID to operate on
<code>out</code>	<code>count_prop</code>	The property object buffer to fill (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a valid semaphore
<i>OS_INVALID_POINTER</i>	if the count_prop pointer is null
<i>OS_ERR_NOT_IMPLEMENTED</i>	Not implemented.

10.59.2.5 OS_CountSemGive() `int32 OS_CountSemGive (osal_id_t sem_id)`

Increment the semaphore value.

The function unlocks the semaphore referenced by `sem_id` by performing a semaphore unlock operation on that semaphore. If the semaphore value resulting from this operation is positive, then no threads were blocked waiting for the semaphore to become unlocked; the semaphore value is simply incremented for this semaphore.

Parameters

in	<i>sem_id</i>	The object ID to operate on
----	---------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a counting semaphore
<i>OS_SEM_FAILURE</i>	if an unspecified implementation error occurs (return value only verified in coverage test)

Referenced by FM_InvokeChildTask().

10.59.2.6 OS_CountSemTake() `int32 OS_CountSemTake (osal_id_t sem_id)`

Decrement the semaphore value.

The locks the semaphore referenced by `sem_id` by performing a semaphore lock operation on that semaphore. If the semaphore value is currently zero, then the calling thread shall not return from the call until it either locks the semaphore or the call is interrupted.

Parameters

in	<i>sem_id</i>	The object ID to operate on
----	---------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	the Id passed in is not a valid counting semaphore
<code>OS_SEM_FAILURE</code>	if an unspecified implementation error occurs (return value only verified in coverage test)

Referenced by FM_ChildLoop().

10.59.2.7 OS_CountSemTimedWait() `int32 OS_CountSemTimedWait (osal_id_t sem_id, uint32 msecs)`

Decrement the semaphore value with timeout.

The function locks the semaphore referenced by `sem_id`. However, if the semaphore cannot be locked without waiting for another process or thread to unlock the semaphore, this wait shall be terminated when the specified timeout, `msecs`, expires.

Parameters

in	<code>sem_id</code>	The object ID to operate on
in	<code>msecs</code>	The maximum amount of time to block, in milliseconds

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_SEM_TIMEOUT</code>	if semaphore was not relinquished in time
<code>OS_ERR_INVALID_ID</code>	if the ID passed in is not a valid semaphore ID
<code>OS_SEM_FAILURE</code>	if an unspecified implementation error occurs (return value only verified in coverage test)

10.60 OSAL Directory APIs

Functions

- `int32 OS_DirectoryOpen (osal_id_t *dir_id, const char *path)`
Opens a directory.
- `int32 OS_DirectoryClose (osal_id_t dir_id)`
Closes an open directory.
- `int32 OS_DirectoryRewind (osal_id_t dir_id)`
Rewinds an open directory.
- `int32 OS_DirectoryRead (osal_id_t dir_id, os_dirent_t *dirent)`

Reads the next name in the directory.

- `int32 OS_mkdir (const char *path, uint32 access)`

Makes a new directory.

- `int32 OS_rmdir (const char *path)`

Removes a directory from the file system.

10.60.1 Detailed Description

10.60.2 Function Documentation

10.60.2.1 OS_DirectoryClose() `int32 OS_DirectoryClose (`

`osal_id_t dir_id)`

Closes an open directory.

The directory referred to by `dir_id` will be closed

Parameters

in	<code>dir_id</code>	The handle ID of the directory
----	---------------------	--------------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the directory handle is invalid

Referenced by `FM_ChildDeleteAllFilesCmd()`, `FM_ChildDeleteDirectoryCmd()`, `FM_ChildDirListFileCmd()`, `FM_ChildDirListPktCmd()`, and `FM_GetDirectorySpaceEstimate()`.

10.60.2.2 OS_DirectoryOpen() `int32 OS_DirectoryOpen (`

`osal_id_t * dir_id,`
`const char * path)`

Opens a directory.

Prepares for reading the files within a directory

Parameters

out	<code>dir_id</code>	Location to store handle ID of the directory (must not be null)
in	<code>path</code>	The directory to open (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if dir_id or path is NULL
<code>OS_FS_ERR_PATH_TOO_LONG</code>	if the path argument exceeds the maximum length
<code>OS_FS_ERR_PATH_INVALID</code>	if the path argument is not valid
<code>OS_ERROR</code>	if the directory could not be opened

Referenced by FM_ChildDeleteAllFilesCmd(), FM_ChildDeleteDirectoryCmd(), FM_ChildDirListFileCmd(), FM_ChildDirListPktCmd(), and FM_GetDirectorySpaceEstimate().

10.60.2.3 OS_DirectoryRead() `int32 OS_DirectoryRead (`
`osal_id_t dir_id,`
`os_dirent_t * dirent)`

Reads the next name in the directory.

Obtains directory entry data for the next file from an open directory

Parameters

in	<code>dir_id</code>	The handle ID of the directory
out	<code>dirent</code>	Buffer to store directory entry information (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if dirent argument is NULL
<code>OS_ERR_INVALID_ID</code>	if the directory handle is invalid
<code>OS_ERROR</code>	at the end of the directory or if the OS call otherwise fails

Referenced by FM_ChildDeleteAllFilesCmd(), FM_ChildDeleteDirectoryCmd(), FM_ChildDirListFileLoop(), FM_ChildDirListPktCmd(), and FM_GetDirectorySpaceEstimate().

10.60.2.4 OS_DirectoryRewind() `int32 OS_DirectoryRewind (`
`osal_id_t dir_id)`

Rewinds an open directory.

Resets a directory read handle back to the first file.

Parameters

in	<code>dir_id</code>	The handle ID of the directory
----	---------------------	--------------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the directory handle is invalid

Referenced by FM_ChildDeleteAllFilesCmd().

```
10.60.2.5 OS_mkdir() int32 OS_mkdir (
    const char * path,
    uint32 access )
```

Makes a new directory.

Makes a directory specified by path.

Parameters

in	<i>path</i>	The new directory name (must not be null)
in	<i>access</i>	The permissions for the directory (reserved for future use)

Note

Current implementations do not utilize the "access" parameter. Applications should still pass the intended value (`OS_READ_WRITE` or `OS_READ_ONLY`) to be compatible with future implementations.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if path is NULL
<code>OS_FS_ERR_PATH_TOO_LONG</code>	if the path is too long to be stored locally
<code>OS_FS_ERR_PATH_INVALID</code>	if path cannot be parsed
	<code>OS_ERROR</code> if the OS call fails (return value only verified in coverage test)

Referenced by FM_ChildCreateDirectoryCmd().

```
10.60.2.6 OS_rmdir() int32 OS_rmdir (
    const char * path )
```

Removes a directory from the file system.

Removes a directory from the structure. The directory must be empty prior to this operation.

Parameters

in	<i>path</i>	The directory to remove
----	-------------	-------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if path is NULL
<code>OS_FS_ERR_PATH_INVALID</code>	if path cannot be parsed
<code>OS_FS_ERR_PATH_TOO_LONG</code>	
<code>OS_ERROR</code>	if the directory remove operation failed (return value only verified in coverage test)

Referenced by FM_ChildDeleteDirectoryCmd().

10.61 OSAL Return Code Defines

Macros

- #define `OS_SUCCESS` (0)

Successful execution.
- #define `OS_ERROR` (-1)

Failed execution.
- #define `OS_INVALID_POINTER` (-2)

Invalid pointer.
- #define `OS_ERROR_ADDRESS_MISALIGNED` (-3)

Address misalignment.
- #define `OS_ERROR_TIMEOUT` (-4)

Error timeout.
- #define `OS_INVALID_INT_NUM` (-5)

Invalid interrupt number.
- #define `OS_SEM_FAILURE` (-6)

Semaphore failure.
- #define `OS_SEM_TIMEOUT` (-7)

Semaphore timeout.
- #define `OS_QUEUE_EMPTY` (-8)

Queue empty.
- #define `OS_QUEUE_FULL` (-9)

Queue full.
- #define `OS_QUEUE_TIMEOUT` (-10)

Queue timeout.
- #define `OS_QUEUE_INVALID_SIZE` (-11)

Queue invalid size.
- #define `OS_QUEUE_ID_ERROR` (-12)

Queue ID error.
- #define `OS_ERR_NAME_TOO_LONG` (-13)

name length including null terminator greater than `OS_MAX_API_NAME`
- #define `OS_ERR_NO_FREE_IDS` (-14)

No free IDs.
- #define `OS_ERR_NAME_TAKEN` (-15)

- `#define OS_ERR_INVALID_ID (-16)`
Name taken.
- `#define OS_ERR_NAME_NOT_FOUND (-17)`
Name not found.
- `#define OS_ERR_SEM_NOT_FULL (-18)`
Semaphore not full.
- `#define OS_ERR_INVALID_PRIORITY (-19)`
Invalid priority.
- `#define OS_INVALID_SEM_VALUE (-20)`
Invalid semaphore value.
- `#define OS_ERR_FILE (-27)`
File error.
- `#define OS_ERR_NOT_IMPLEMENTED (-28)`
Not implemented.
- `#define OS_TIMER_ERR_INVALID_ARGS (-29)`
Timer invalid arguments.
- `#define OS_TIMER_ERR_TIMER_ID (-30)`
Timer ID error.
- `#define OS_TIMER_ERR_UNAVAILABLE (-31)`
Timer unavailable.
- `#define OS_TIMER_ERR_INTERNAL (-32)`
Timer internal error.
- `#define OS_ERR_OBJECT_IN_USE (-33)`
Object in use.
- `#define OS_ERR_BAD_ADDRESS (-34)`
Bad address.
- `#define OS_ERR_INCORRECT_OBJ_STATE (-35)`
Incorrect object state.
- `#define OS_ERR_INCORRECT_OBJ_TYPE (-36)`
Incorrect object type.
- `#define OS_ERR_STREAM_DISCONNECTED (-37)`
Stream disconnected.
- `#define OS_ERR_OPERATION_NOT_SUPPORTED (-38)`
Requested operation not support on supplied object(s)
- `#define OS_ERR_INVALID_SIZE (-40)`
Invalid Size.
- `#define OS_ERR_OUTPUT_TOO_LARGE (-41)`
Size of output exceeds limit
- `#define OS_ERR_INVALID_ARGUMENT (-42)`
Invalid argument value (other than ID or size)
- `#define OS_FS_ERR_PATH_TOO_LONG (-103)`
FS path too long.
- `#define OS_FS_ERR_NAME_TOO_LONG (-104)`
FS name too long.
- `#define OS_FS_ERR_DRIVE_NOT_CREATED (-106)`

- FS drive not created.*
- #define OS_FS_ERR_DEVICE_NOT_FREE (-107)
- FS device not free.*
- #define OS_FS_ERR_PATH_INVALID (-108)
- FS path invalid.*

10.61.1 Detailed Description

The specific status/return code definitions listed in this section may be extended or refined in future versions of OSAL.

Note

Application developers should assume that any OSAL API may return any status value listed here. While the documentation of each OSAL API function indicates the return/status values that function may directly generate, functions may also pass through other status codes from related functions, so that list should not be considered absolute/exhaustive.

The int32 data type should be used to store an OSAL status code. Negative values will always represent errors, while non-negative values indicate success. Most APIs specifically return OS_SUCCESS (0) upon successful execution, but some return a nonzero value, such as data size.

Ideally, in order to more easily adapt to future OSAL versions and status code extensions/refinements, applications should typically check for errors as follows:

```
int32 status;
status = OS_TaskCreate(...);  (or any other API)
if (status < OS_SUCCESS)
{
    handle or report error....
    may also check for specific codes here.
}
else
{
    handle normal/successful status...
}
```

10.61.2 Macro Definition Documentation

10.61.2.1 OS_ERR_BAD_ADDRESS #define OS_ERR_BAD_ADDRESS (-34)

Bad address.

Definition at line 124 of file osapi-error.h.

10.61.2.2 OS_ERR_FILE #define OS_ERR_FILE (-27)

File error.

Definition at line 117 of file osapi-error.h.

10.61.2.3 OS_ERR_INCORRECT_OBJ_STATE #define OS_ERR_INCORRECT_OBJ_STATE (-35)

Incorrect object state.

Definition at line 125 of file osapi-error.h.

10.61.2.4 OS_ERR_INCORRECT_OBJ_TYPE #define OS_ERR_INCORRECT_OBJ_TYPE (-36)

Incorrect object type.

Definition at line 126 of file osapi-error.h.

10.61.2.5 OS_ERR_INVALID_ARGUMENT #define OS_ERR_INVALID_ARGUMENT (-42)
Invalid argument value (other than ID or size)
Definition at line 131 of file osapi-error.h.

10.61.2.6 OS_ERR_INVALID_ID #define OS_ERR_INVALID_ID (-16)
Invalid ID.
Definition at line 112 of file osapi-error.h.

10.61.2.7 OS_ERR_INVALID_PRIORITY #define OS_ERR_INVALID_PRIORITY (-19)
Invalid priority.
Definition at line 115 of file osapi-error.h.

10.61.2.8 OS_ERR_INVALID_SIZE #define OS_ERR_INVALID_SIZE (-40)
Invalid Size.
Definition at line 129 of file osapi-error.h.

10.61.2.9 OS_ERR_NAME_NOT_FOUND #define OS_ERR_NAME_NOT_FOUND (-17)
Name not found.
Definition at line 113 of file osapi-error.h.

10.61.2.10 OS_ERR_NAME_TAKEN #define OS_ERR_NAME_TAKEN (-15)
Name taken.
Definition at line 111 of file osapi-error.h.

10.61.2.11 OS_ERR_NAME_TOO_LONG #define OS_ERR_NAME_TOO_LONG (-13)
name length including null terminator greater than [OS_MAX_API_NAME](#)
Definition at line 109 of file osapi-error.h.

10.61.2.12 OS_ERR_NO_FREE_IDS #define OS_ERR_NO_FREE_IDS (-14)
No free IDs.
Definition at line 110 of file osapi-error.h.

10.61.2.13 OS_ERR_NOT_IMPLEMENTED #define OS_ERR_NOT_IMPLEMENTED (-28)
Not implemented.
Definition at line 118 of file osapi-error.h.

10.61.2.14 OS_ERR_OBJECT_IN_USE #define OS_ERR_OBJECT_IN_USE (-33)
Object in use.
Definition at line 123 of file osapi-error.h.

10.61.2.15 OS_ERR_OPERATION_NOT_SUPPORTED #define OS_ERR_OPERATION_NOT_SUPPORTED (-38)
Requested operation not support on supplied object(s)
Definition at line 128 of file osapi-error.h.

10.61.2.16 OS_ERR_OUTPUT_TOO_LARGE #define OS_ERR_OUTPUT_TOO_LARGE (-41)
Size of output exceeds limit

Definition at line 130 of file osapi-error.h.

10.61.2.17 OS_ERR_SEM_NOT_FULL #define OS_ERR_SEM_NOT_FULL (-18)
Semaphore not full.
Definition at line 114 of file osapi-error.h.

10.61.2.18 OS_ERR_STREAM_DISCONNECTED #define OS_ERR_STREAM_DISCONNECTED (-37)
Stream disconnected.
Definition at line 127 of file osapi-error.h.

10.61.2.19 OS_ERROR #define OS_ERROR (-1)
Failed execution.
Definition at line 97 of file osapi-error.h.

10.61.2.20 OS_ERROR_ADDRESS_MISALIGNED #define OS_ERROR_ADDRESS_MISALIGNED (-3)
Address misalignment.
Definition at line 99 of file osapi-error.h.

10.61.2.21 OS_ERROR_TIMEOUT #define OS_ERROR_TIMEOUT (-4)
Error timeout.
Definition at line 100 of file osapi-error.h.

10.61.2.22 OS_FS_ERR_DEVICE_NOT_FREE #define OS_FS_ERR_DEVICE_NOT_FREE (-107)
FS device not free.
Definition at line 144 of file osapi-error.h.

10.61.2.23 OS_FS_ERR_DRIVE_NOT_CREATED #define OS_FS_ERR_DRIVE_NOT_CREATED (-106)
FS drive not created.
Definition at line 143 of file osapi-error.h.

10.61.2.24 OS_FS_ERR_NAME_TOO_LONG #define OS_FS_ERR_NAME_TOO_LONG (-104)
FS name too long.
Definition at line 142 of file osapi-error.h.

10.61.2.25 OS_FS_ERR_PATH_INVALID #define OS_FS_ERR_PATH_INVALID (-108)
FS path invalid.
Definition at line 145 of file osapi-error.h.

10.61.2.26 OS_FS_ERR_PATH_TOO_LONG #define OS_FS_ERR_PATH_TOO_LONG (-103)
FS path too long.
Definition at line 141 of file osapi-error.h.

10.61.2.27 OS_INVALID_INT_NUM #define OS_INVALID_INT_NUM (-5)
Invalid Interrupt number.
Definition at line 101 of file osapi-error.h.

10.61.2.28 OS_INVALID_POINTER #define OS_INVALID_POINTER (-2)
Invalid pointer.
Definition at line 98 of file osapi-error.h.

10.61.2.29 OS_INVALID_SEM_VALUE #define OS_INVALID_SEM_VALUE (-20)
Invalid semaphore value.
Definition at line 116 of file osapi-error.h.

10.61.2.30 OS_QUEUE_EMPTY #define OS_QUEUE_EMPTY (-8)
Queue empty.
Definition at line 104 of file osapi-error.h.

10.61.2.31 OS_QUEUE_FULL #define OS_QUEUE_FULL (-9)
Queue full.
Definition at line 105 of file osapi-error.h.

10.61.2.32 OS_QUEUE_ID_ERROR #define OS_QUEUE_ID_ERROR (-12)
Queue ID error.
Definition at line 108 of file osapi-error.h.

10.61.2.33 OS_QUEUE_INVALID_SIZE #define OS_QUEUE_INVALID_SIZE (-11)
Queue invalid size.
Definition at line 107 of file osapi-error.h.

10.61.2.34 OS_QUEUE_TIMEOUT #define OS_QUEUE_TIMEOUT (-10)
Queue timeout.
Definition at line 106 of file osapi-error.h.

10.61.2.35 OS_SEM_FAILURE #define OS_SEM_FAILURE (-6)

Semaphore failure.

Definition at line 102 of file osapi-error.h.

10.61.2.36 OS_SEM_TIMEOUT #define OS_SEM_TIMEOUT (-7)

Semaphore timeout.

Definition at line 103 of file osapi-error.h.

10.61.2.37 OS_SUCCESS #define OS_SUCCESS (0)

Successful execution.

Definition at line 96 of file osapi-error.h.

10.61.2.38 OS_TIMER_ERR_INTERNAL #define OS_TIMER_ERR_INTERNAL (-32)

Timer internal error.

Definition at line 122 of file osapi-error.h.

10.61.2.39 OS_TIMER_ERR_INVALID_ARGS #define OS_TIMER_ERR_INVALID_ARGS (-29)

Timer invalid arguments.

Definition at line 119 of file osapi-error.h.

10.61.2.40 OS_TIMER_ERR_TIMER_ID #define OS_TIMER_ERR_TIMER_ID (-30)

Timer ID error.

Definition at line 120 of file osapi-error.h.

10.61.2.41 OS_TIMER_ERR_UNAVAILABLE #define OS_TIMER_ERR_UNAVAILABLE (-31)

Timer unavailable.

Definition at line 121 of file osapi-error.h.

10.62 OSAL Error Info APIs

Functions

- static long [OS_StatusToInteger \(osal_status_t Status\)](#)
Convert a status code to a native "long" type.
- int32 [OS_GetErrorName \(int32 error_num, os_err_name_t *err_name\)](#)
Convert an error number to a string.
- char * [OS_StatusToString \(osal_status_t status, os_status_string_t *status_string\)](#)
Convert status to a string.

10.62.1 Detailed Description

10.62.2 Function Documentation

```
10.62.2.1 OS_GetErrorName() int32 OS_GetErrorName (
    int32 error_num,
    os_err_name_t * err_name )
```

Convert an error number to a string.

Parameters

in	<i>error_num</i>	Error number to convert
out	<i>err_name</i>	Buffer to store error string

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	if successfully converted to a string
<i>OS_INVALID_POINTER</i>	if <i>err_name</i> is NULL
<i>OS_ERROR</i>	if error could not be converted

```
10.62.2.2 OS_StatusToInteger() static long OS_StatusToInteger (
```

```
    osal_status_t Status ) [inline], [static]
```

Convert a status code to a native "long" type.

For printing or logging purposes, this converts the given status code to a "long" (signed integer) value. It should be used in conjunction with the "%ld" conversion specifier in printf-style statements.

Parameters

in	<i>Status</i>	Execution status, see OSAL Return Code Defines
----	---------------	--

Returns

Same status value converted to the "long" data type

Definition at line 164 of file osapi-error.h.

```
10.62.2.3 OS_StatusToString() char* OS_StatusToString (
```

```
    osal_status_t status,
    os_status_string_t * status_string )
```

Convert status to a string.

Parameters

in	<i>status</i>	Status value to convert
out	<i>status_string</i>	Buffer to store status converted to string

Returns

Passed in string pointer

10.63 OSAL File Access Option Defines

Macros

- #define OS_READ_ONLY 0
- #define OS_WRITE_ONLY 1
- #define OS_READ_WRITE 2

10.63.1 Detailed Description

10.63.2 Macro Definition Documentation

10.63.2.1 OS_READ_ONLY #define OS_READ_ONLY 0

Read only file access

Definition at line 35 of file osapi-file.h.

10.63.2.2 OS_READ_WRITE #define OS_READ_WRITE 2

Read write file access

Definition at line 37 of file osapi-file.h.

10.63.2.3 OS_WRITE_ONLY #define OS_WRITE_ONLY 1

Write only file access

Definition at line 36 of file osapi-file.h.

10.64 OSAL Reference Point For Seek Offset Defines

Macros

- #define OS_SEEK_SET 0
- #define OS_SEEK_CUR 1
- #define OS_SEEK_END 2

10.64.1 Detailed Description

10.64.2 Macro Definition Documentation

10.64.2.1 OS_SEEK_CUR #define OS_SEEK_CUR 1

Seek offset current

Definition at line 44 of file osapi-file.h.

10.64.2.2 OS_SEEK_END #define OS_SEEK_END 2

Seek offset end

Definition at line 45 of file osapi-file.h.

10.64.2.3 OS_SEEK_SET #define OS_SEEK_SET 0
Seek offset set
Definition at line 43 of file osapi-file.h.

10.65 OSAL Standard File APIs

Functions

- int32 **OS_OpenCreate** (osal_id_t *filedes, const char *path, int32 flags, int32 access_mode)
Open or create a file.
- int32 **OS_close** (osal_id_t filedes)
Closes an open file handle.
- int32 **OS_read** (osal_id_t filedes, void *buffer, size_t nbytes)
Read from a file handle.
- int32 **OS_write** (osal_id_t filedes, const void *buffer, size_t nbytes)
Write to a file handle.
- int32 **OS_TimedReadAbs** (osal_id_t filedes, void *buffer, size_t nbytes, OS_time_t abstime)
File/Stream input read with a timeout.
- int32 **OS_TimedRead** (osal_id_t filedes, void *buffer, size_t nbytes, int32 timeout)
File/Stream input read with a timeout.
- int32 **OS_TimedWriteAbs** (osal_id_t filedes, const void *buffer, size_t nbytes, OS_time_t abstime)
File/Stream output write with a timeout.
- int32 **OS_TimedWrite** (osal_id_t filedes, const void *buffer, size_t nbytes, int32 timeout)
File/Stream output write with a timeout.
- int32 **OS_chmod** (const char *path, uint32 access_mode)
Changes the permissions of a file.
- int32 **OS_stat** (const char *path, os_fstat_t *filestats)
Obtain information about a file or directory.
- int32 **OS_lseek** (osal_id_t filedes, int32 offset, uint32 whence)
Seeks to the specified position of an open file.
- int32 **OS_remove** (const char *path)
Removes a file from the file system.
- int32 **OS_rename** (const char *old_filename, const char *new_filename)
Renames a file.
- int32 **OS_cp** (const char *src, const char *dest)
Copies a single file from src to dest.
- int32 **OS_mv** (const char *src, const char *dest)
Move a single file from src to dest.
- int32 **OS_FDGetInfo** (osal_id_t filedes, OS_file_prop_t *fd_prop)
Obtain information about an open file.
- int32 **OS_FileOpenCheck** (const char *Filename)
Checks to see if a file is open.
- int32 **OS_CloseAllFiles** (void)
Close all open files.
- int32 **OS_CloseFileByName** (const char *Filename)
Close a file by filename.

10.65.1 Detailed Description

10.65.2 Function Documentation

10.65.2.1 OS_chmod() `int32 OS_chmod (`
 `const char * path,`
 `uint32 access_mode)`

Changes the permissions of a file.

Parameters

in	<i>path</i>	File to change (must not be null)
in	<i>access_mode</i>	Desired access mode - see OSAL File Access Option Defines

Note

Some file systems do not implement permissions. If the underlying OS does not support this operation, then [OS_ERR_NOT_IMPLEMENTED](#) is returned.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution. (return value only verified in coverage test)
OS_ERR_NOT_IMPLEMENTED	if the filesystem does not support this call
OS_INVALID_POINTER	if the path argument is NULL

Referenced by FM_ChildSetPermissionsCmd().

10.65.2.2 OS_close() `int32 OS_close (`
 `osal_id_t filedes)`

Closes an open file handle.

This closes regular file handles and any other file-like resource, such as network streams or pipes.

Parameters

in	<i>filedes</i>	The handle ID to operate on
----	----------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	if the file descriptor passed in is invalid
OS_ERROR	if an unexpected/unhandled error occurs (return value only verified in coverage test)

Referenced by FM_ChildConcatFilesCmd(), FM_ChildDirListFileCmd(), FM_ChildDirListFileInit(), and FM_ChildFileInfoCmd().

10.65.2.3 OS_CloseAllFiles() `int32 OS_CloseAllFiles (void)`

Close all open files.

Closes All open files that were opened through the OSAL

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERROR</code>	if one or more file close returned an error (return value only verified in coverage test)

10.65.2.4 OS_CloseFileByName() `int32 OS_CloseFileByName (const char * Filename)`

Close a file by filename.

Allows a file to be closed by name. This will only work if the name passed in is the same name used to open the file.

Parameters

in	<code>Filename</code>	The file to close (must not be null)
----	-----------------------	--------------------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_FS_ERR_PATH_INVALID</code>	if the file is not found
<code>OS_ERROR</code>	if the file close returned an error (return value only verified in coverage test)
<code>OS_INVALID_POINTER</code>	if the filename argument is NULL

10.65.2.5 OS_cp() `int32 OS_cp (const char * src, const char * dest)`

Copies a single file from src to dest.

Note

The behavior of this API on an open file is not defined at the OSAL level due to dependencies on the underlying OS which may or may not allow the related operation based on a variety of potential configurations. For portability, it is recommended that applications ensure the file is closed prior to removal.

Parameters

in	<i>src</i>	The source file to operate on (must not be null)
in	<i>dest</i>	The destination file (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERROR	if the file could not be accessed
OS_INVALID_POINTER	if src or dest are NULL
OS_FS_ERR_PATH_INVALID	if path cannot be parsed
OS_FS_ERR_PATH_TOO_LONG	if the paths given are too long to be stored locally
OS_FS_ERR_NAME_TOO_LONG	if the dest name is too long to be stored locally

Referenced by FM_ChildConcatFilesCmd(), and FM_ChildCopyCmd().

10.65.2.6 OS_FDGetInfo() `int32 OS_FDGetInfo (`
`osal_id_t filedes,`
`os_file_prop_t * fd_prop)`

Obtain information about an open file.

Copies the information of the given file descriptor into a structure passed in

Parameters

in	<i>filedes</i>	The handle ID to operate on
out	<i>fd_prop</i>	Storage buffer for file information (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	if the file descriptor passed in is invalid
OS_INVALID_POINTER	if the fd_prop argument is NULL

Referenced by LoadOpenFileData(), and SearchOpenFileData().

10.65.2.7 OS_FileOpenCheck() `int32 OS_FileOpenCheck (`
`const char * Filename)`

Checks to see if a file is open.

This function takes a filename and determines if the file is open. The function will return success if the file is open.

Parameters

in	<i>Filename</i>	The file to operate on (must not be null)
----	-----------------	---

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	if the file is open
<i>OS_ERROR</i>	if the file is not open
<i>OS_INVALID_POINTER</i>	if the filename argument is NULL

10.65.2.8 OS_lseek() `int32 OS_lseek (`

```
    osal_id_t filedes,
    int32 offset,
    uint32 whence )
```

Seeks to the specified position of an open file.

Sets the read/write pointer to a specific offset in a specific file.

Parameters

in	<i>filedes</i>	The handle ID to operate on
in	<i>offset</i>	The file offset to seek to
in	<i>whence</i>	The reference point for offset, see OSAL Reference Point For Seek Offset Defines

Returns

Byte offset from the beginning of the file or appropriate error code, see [OSAL Return Code Defines](#)

Return values

<i>OS_ERR_INVALID_ID</i>	if the file descriptor passed in is invalid
<i>OS_ERROR</i>	if OS call failed (return value only verified in coverage test)

Referenced by FM_ChildConcatFilesCmd(), and FM_ChildDirListFileLoop().

10.65.2.9 OS_mv() `int32 OS_mv (`

```
    const char * src,
    const char * dest )
```

Move a single file from *src* to *dest*.

This first attempts to rename the file, which is faster if the source and destination reside on the same file system. If this fails, it falls back to copying the file and removing the original.

Note

The behavior of this API on an open file is not defined at the OSAL level due to dependencies on the underlying OS which may or may not allow the related operation based on a variety of potential configurations. For portability, it is recommended that applications ensure the file is closed prior to removal.

Parameters

in	<i>src</i>	The source file to operate on (must not be null)
in	<i>dest</i>	The destination file (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERROR	if the file could not be renamed.
OS_INVALID_POINTER	if src or dest are NULL
OS_FS_ERR_PATH_INVALID	if path cannot be parsed
OS_FS_ERR_PATH_TOO_LONG	if the paths given are too long to be stored locally
OS_FS_ERR_NAME_TOO_LONG	if the dest name is too long to be stored locally

Referenced by FM_ChildMoveCmd().

```
10.65.2.10 OS_OpenCreate() int32 OS_OpenCreate (
    osal_id_t * filedes,
    const char * path,
    int32 flags,
    int32 access_mode )
```

Open or create a file.

Implements the same as OS_open/OS_creat but follows the OSAL paradigm of outputting the ID/descriptor separately from the return value, rather than relying on the user to convert it back.

Parameters

out	<i>filedes</i>	The handle ID (OS_OBJECT_ID_UNDEFINED on failure) (must not be null)
in	<i>path</i>	File name to create or open (must not be null)
in	<i>flags</i>	The file permissions - see OS_file_flag_t
in	<i>access_mode</i>	Intended access mode - see OSAL File Access Option Defines

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
----------------------------	-----------------------

Return values

<i>OS_ERROR</i>	if the command was not executed properly
<i>OS_INVALID_POINTER</i>	if pointer argument was NULL
<i>OS_ERR_NO_FREE_IDS</i>	if all available file handles are in use
<i>OS_FS_ERR_NAME_TOO_LONG</i>	if the filename portion of the path exceeds OS_MAX_FILE_NAME
<i>OS_FS_ERR_PATH_INVALID</i>	if the path argument is not valid
<i>OS_FS_ERR_PATH_TOO_LONG</i>	if the path argument exceeds OS_MAX_PATH_LEN

Referenced by FM_ChildConcatFilesCmd(), FM_ChildDirListFileInit(), and FM_ChildFileInfoCmd().

```
10.65.2.11 OS_read() int32 OS_read (
    osal_id_t filedes,
    void * buffer,
    size_t nbytes )
```

Read from a file handle.

Reads up to nbytes from a file, and puts them into buffer.

If the file position is at the end of file (or beyond, if the OS allows) then this function will return 0.

Parameters

in	<i>filedes</i>	The handle ID to operate on
out	<i>buffer</i>	Storage location for file data (must not be null)
in	<i>nbytes</i>	Maximum number of bytes to read (must not be zero)

Note

All OSAL error codes are negative int32 values. Failure of this call can be checked by testing if the result is less than 0.

Returns

A non-negative byte count or appropriate error code, see [OSAL Return Code Defines](#)

Return values

<i>OS_INVALID_POINTER</i>	if buffer is a null pointer
<i>OS_ERR_INVALID_SIZE</i>	if the passed-in size is not valid
<i>OS_ERROR</i>	if OS call failed (return value only verified in coverage test)
<i>OS_ERR_INVALID_ID</i>	if the file descriptor passed in is invalid
0	if at end of file/stream data

Referenced by FM_ChildConcatFilesCmd(), and FM_ChildFileInfoCmd().

```
10.65.2.12 OS_remove() int32 OS_remove (
    const char * path )
```

Removes a file from the file system.

Removes a given filename from the drive

Note

The behavior of this API on an open file is not defined at the OSAL level due to dependencies on the underlying OS which may or may not allow the related operation based on a variety of potential configurations. For portability, it is recommended that applications ensure the file is closed prior to removal.

Parameters

in	<i>path</i>	The file to operate on (must not be null)
----	-------------	---

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERROR</i>	if there is no device or the driver returns error
<i>OS_INVALID_POINTER</i>	if path is NULL
<i>OS_FS_ERR_PATH_TOO_LONG</i>	if path is too long to be stored locally
<i>OS_FS_ERR_PATH_INVALID</i>	if path cannot be parsed
<i>OS_FS_ERR_NAME_TOO_LONG</i>	if the name of the file to remove is too long

Referenced by FM_ChildConcatFilesCmd(), FM_ChildDeleteAllFilesCmd(), and FM_ChildDeleteCmd().

10.65.2.13 OS_rename() `int32 OS_rename (`
 `const char * old_filename,`
 `const char * new_filename)`

Renames a file.

Changes the name of a file, where the source and destination reside on the same file system.

Note

The behavior of this API on an open file is not defined at the OSAL level due to dependencies on the underlying OS which may or may not allow the related operation based on a variety of potential configurations. For portability, it is recommended that applications ensure the file is closed prior to removal.

Parameters

in	<i>old_filename</i>	The original filename (must not be null)
in	<i>new_filename</i>	The desired filename (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERROR</i>	if the file could not be opened or renamed.

Return values

<code>OS_INVALID_POINTER</code>	if old_filename or new_filename are NULL
<code>OS_FS_ERR_PATH_INVALID</code>	if path cannot be parsed
<code>OS_FS_ERR_PATH_TOO_LONG</code>	if the paths given are too long to be stored locally
<code>OS_FS_ERR_NAME_TOO_LONG</code>	if the new name is too long to be stored locally

Referenced by FM_ChildRenameCmd().

```
10.65.2.14 OS_stat() int32 OS_stat (
    const char * path,
    os_fstat_t * filestats )
```

Obtain information about a file or directory.

Returns information about a file or directory in an `os_fstat_t` structure

Parameters

in	<code>path</code>	The file to operate on (must not be null)
out	<code>filestats</code>	Buffer to store file information (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if path or filestats is NULL
<code>OS_FS_ERR_PATH_TOO_LONG</code>	if the path is too long to be stored locally
<code>OS_FS_ERR_NAME_TOO_LONG</code>	if the name of the file is too long to be stored
<code>OS_FS_ERR_PATH_INVALID</code>	if path cannot be parsed
<code>OS_ERROR</code>	if the OS call failed

Referenced by FM_ChildSizeTimeMode(), FM_GetDirectorySpaceEstimate(), and FM_GetFilenameState().

```
10.65.2.15 OS_TimedRead() int32 OS_TimedRead (
    osal_id_t filedes,
    void * buffer,
    size_t nbytes,
    int32 timeout )
```

File/Stream input read with a timeout.

This implements a time-limited read and is primarily intended for use with sockets but may also work with any other stream-like resource that the underlying OS supports, such as pipes or special devices.

If data is immediately available on the file/socket, this will return that data along with the actual number of bytes that were immediately available. It will not block.

If the file position is at the end of file or end of stream data (e.g. if the remote end has closed the connection), then this function will immediately return 0 without blocking for the timeout period.

If no data is immediately available, but the underlying resource/stream is still connected to a peer, this will wait up

to the given timeout for additional data to appear. If no data appears within the timeout period, then this returns the [OS_ERROR_TIMEOUT](#) status code. This allows the caller to differentiate an open (but idle) socket connection from a connection which has been closed by the remote peer.

In all cases this will return successfully as soon as at least 1 byte of actual data is available. It will not attempt to read the entire input buffer.

If an EOF condition occurs prior to timeout, this function returns zero.

Parameters

in	<i>filedes</i>	The handle ID to operate on
out	<i>buffer</i>	Storage location for file data (must not be null)
in	<i>nbytes</i>	Maximum number of bytes to read (must not be zero)
in	<i>timeout</i>	Maximum time to wait, in milliseconds, relative to current time (OS_PEND = forever)

Returns

Byte count on success or appropriate error code, see [OSAL Return Code Defines](#)

Return values

OS_ERROR_TIMEOUT	if no data became available during timeout period
OS_ERR_INVALID_ID	if the file descriptor passed in is invalid
OS_ERR_INVALID_SIZE	if the passed-in size is not valid
OS_INVALID_POINTER	if the passed-in buffer is not valid
0	if at end of file/stream data

10.65.2.16 OS_TimedReadAbs()

```
int32 OS_TimedReadAbs (
    osal_id_t filedes,
    void * buffer,
    size_t nbytes,
    OS_time_t abstime )
```

File/Stream input read with a timeout.

This implements a time-limited read and is primarily intended for use with sockets but may also work with any other stream-like resource that the underlying OS supports, such as pipes or special devices.

If data is immediately available on the file/socket, this will return that data along with the actual number of bytes that were immediately available. It will not block.

If the file position is at the end of file or end of stream data (e.g. if the remote end has closed the connection), then this function will immediately return 0 without blocking for the timeout period.

If no data is immediately available, but the underlying resource/stream is still connected to a peer, this will wait up to the given timeout for additional data to appear. If no data appears within the timeout period, then this returns the [OS_ERROR_TIMEOUT](#) status code. This allows the caller to differentiate an open (but idle) socket connection from a connection which has been closed by the remote peer.

In all cases this will return successfully as soon as at least 1 byte of actual data is available. It will not attempt to read the entire input buffer.

If an EOF condition occurs prior to timeout, this function returns zero.

Parameters

in	<i>filedes</i>	The handle ID to operate on
----	----------------	-----------------------------

Parameters

out	<i>buffer</i>	Storage location for file data (must not be null)
in	<i>nbytes</i>	Maximum number of bytes to read (must not be zero)
in	<i>abstime</i>	Absolute time at which this function should return, if no data is readable

Returns

Byte count on success or appropriate error code, see [OSAL Return Code Defines](#)

Return values

<i>OS_ERROR_TIMEOUT</i>	if no data became available during timeout period
<i>OS_ERR_INVALID_ID</i>	if the file descriptor passed in is invalid
<i>OS_ERR_INVALID_SIZE</i>	if the passed-in size is not valid
<i>OS_INVALID_POINTER</i>	if the passed-in buffer is not valid
0	if at end of file/stream data

10.65.2.17 OS_TimedWrite() `int32 OS_TimedWrite(`

```
    osal_id_t filedes,
    const void * buffer,
    size_t nbytes,
    int32 timeout )
```

File/Stream output write with a timeout.

This implements a time-limited write and is primarily intended for use with sockets but may also work with any other stream-like resource that the underlying OS supports.

If output buffer space is immediately available on the file/socket, this will place data into the buffer and return the actual number of bytes that were queued for output. It will not block.

If no output buffer space is immediately available, this will wait up to the given timeout for space to become available. If no space becomes available within the timeout period, then this returns an error code (not zero).

In all cases this will return successfully as soon as at least 1 byte of actual data is output. It will *not* attempt to write the entire output buffer.

If an EOF condition occurs prior to timeout, this function returns zero.

Parameters

in	<i>filedes</i>	The handle ID to operate on
in	<i>buffer</i>	Source location for file data (must not be null)
in	<i>nbytes</i>	Maximum number of bytes to read (must not be zero)
in	<i>timeout</i>	Maximum time to wait, in milliseconds, relative to current time (OS_PEND = forever)

Returns

A non-negative byte count or appropriate error code, see [OSAL Return Code Defines](#)

Return values

<i>OS_ERROR_TIMEOUT</i>	if no data became available during timeout period
-------------------------	---

Return values

<i>OS_ERR_INVALID_ID</i>	if the file descriptor passed in is invalid
<i>OS_ERR_INVALID_SIZE</i>	if the passed-in size is not valid
<i>OS_INVALID_POINTER</i>	if the passed-in buffer is not valid
<i>0</i>	if file/stream cannot accept any more data

```
10.65.2.18 OS_TimedWriteAbs() int32 OS_TimedWriteAbs (
    osal_id_t filedes,
    const void * buffer,
    size_t nbytes,
    OS_time_t abstime )
```

File/Stream output write with a timeout.

This implements a time-limited write and is primarily intended for use with sockets but may also work with any other stream-like resource that the underlying OS supports.

If output buffer space is immediately available on the file/socket, this will place data into the buffer and return the actual number of bytes that were queued for output. It will not block.

If no output buffer space is immediately available, this will wait up to the given timeout for space to become available. If no space becomes available within the timeout period, then this returns an error code (not zero).

In all cases this will return successfully as soon as at least 1 byte of actual data is output. It will *not* attempt to write the entire output buffer.

If an EOF condition occurs prior to timeout, this function returns zero.

Parameters

in	<i>filedes</i>	The handle ID to operate on
in	<i>buffer</i>	Source location for file data (must not be null)
in	<i>nbytes</i>	Maximum number of bytes to read (must not be zero)
in	<i>abstime</i>	Absolute time at which this function should return, if no data is readable

Returns

A non-negative byte count or appropriate error code, see [OSAL Return Code Defines](#)

Return values

<i>OS_ERROR_TIMEOUT</i>	if no data became available during timeout period
<i>OS_ERR_INVALID_ID</i>	if the file descriptor passed in is invalid
<i>OS_ERR_INVALID_SIZE</i>	if the passed-in size is not valid
<i>OS_INVALID_POINTER</i>	if the passed-in buffer is not valid
<i>0</i>	if file/stream cannot accept any more data

```
10.65.2.19 OS_write() int32 OS_write (
    osal_id_t filedes,
    const void * buffer,
    size_t nbytes )
```

Write to a file handle.

Writes to a file. copies up to a maximum of nbytes of buffer to the file described in filedes

Parameters

in	<i>filedes</i>	The handle ID to operate on
in	<i>buffer</i>	Source location for file data (must not be null)
in	<i>nbytes</i>	Maximum number of bytes to read (must not be zero)

Note

All OSAL error codes are negative int32 values. Failure of this call can be checked by testing if the result is less than 0.

Returns

A non-negative byte count or appropriate error code, see [OSAL Return Code Defines](#)

Return values

<i>OS_INVALID_POINTER</i>	if buffer is NULL
<i>OS_ERR_INVALID_SIZE</i>	if the passed-in size is not valid
<i>OS_ERROR</i>	if OS call failed (return value only verified in coverage test)
<i>OS_ERR_INVALID_ID</i>	if the file descriptor passed in is invalid
0	if file/stream cannot accept any more data

Referenced by FM_ChildConcatFilesCmd(), FM_ChildDirListFileInit(), and FM_ChildDirListFileLoop().

10.66 OSAL File System Level APIs

Functions

- [int32 OS_FileSysAddFixedMap \(osal_id_t *filesys_id, const char *phys_path, const char *virt_path\)](#)

Create a fixed mapping between an existing directory and a virtual OSAL mount point.
- [int32 OS_mkfs \(char *address, const char *devname, const char *volname, size_t blocksize, osal_blockcount_t numblocks\)](#)

Makes a file system on the target.
- [int32 OS_mount \(const char *devname, const char *mountpoint\)](#)

Mounts a file system.
- [int32 OS_initfs \(char *address, const char *devname, const char *volname, size_t blocksize, osal_blockcount_t numblocks\)](#)

Initializes an existing file system.
- [int32 OS_rmfs \(const char *devname\)](#)

Removes a file system.
- [int32 OS_unmount \(const char *mountpoint\)](#)

Unmounts a mounted file system.
- [int32 OS_FileSysStatVolume \(const char *name, OS_statvfs_t *statbuf\)](#)

Obtains information about size and free space in a volume.
- [int32 OS_chkfs \(const char *name, bool repair\)](#)

Checks the health of a file system and repairs it if necessary.

- `int32 OS_FS_GetPhysDriveName (char *PhysDriveName, const char *MountPoint)`
Obtains the physical drive name associated with a mount point.
- `int32 OS_TranslatePath (const char *VirtualPath, char *LocalPath)`
Translates an OSAL Virtual file system path to a host Local path.
- `int32 OS_GetFsInfo (os_fsinfo_t *filesys_info)`
Returns information about the file system.

10.66.1 Detailed Description

10.66.2 Function Documentation

10.66.2.1 OS_chkfs()

```
int32 OS_chkfs (
    const char * name,
    bool repair )
```

Checks the health of a file system and repairs it if necessary.

Checks the drives for inconsistencies and optionally also repairs it

Note

not all operating systems implement this function. If the underlying OS does not provide a facility to check the volume, then `OS_ERR_NOT_IMPLEMENTED` will be returned.

Parameters

in	<i>name</i>	The device/path to operate on (must not be null)
in	<i>repair</i>	Whether to also repair inconsistencies

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution. (return value only verified in coverage test)
<code>OS_INVALID_POINTER</code>	Name is NULL
<code>OS_ERR_NOT_IMPLEMENTED</code>	Not implemented.
<code>OS_FS_ERR_PATH_TOO_LONG</code>	if the name is too long
<code>OS_ERROR</code>	Failed execution. (return value only verified in coverage test)

10.66.2.2 OS_FileSysAddFixedMap()

```
int32 OS_FileSysAddFixedMap (
    osal_id_t * filesys_id,
    const char * phys_path,
    const char * virt_path )
```

Create a fixed mapping between an existing directory and a virtual OSAL mount point.

This mimics the behavior of a "FS_BASED" entry in the VolumeTable but is registered at runtime. It is intended to be called by the PSP/BSP prior to starting the application.

Note

OSAL virtual mount points are required to be a single, non-empty top-level directory name. Virtual path names always follow the form /<virt_mount_point>/<relative_path>/<file>. Only the relative path may be omitted/empty (i.e. /<virt_mount_point>/<file>) but the virtual mount point must be present and not an empty string. In particular this means it is not possible to directly refer to files in the "root" of the native file system from OSAL. However it is possible to create a virtual map to the root, such as by calling:

```
OS_FileSysAddFixedMap(&fs_id, "/", "/root");
```

Parameters

<i>out</i>	<i>filesys_id</i>	A buffer to store the ID of the file system mapping (must not be null)
<i>in</i>	<i>phys_path</i>	The native system directory (an existing mount point) (must not be null)
<i>in</i>	<i>virt_path</i>	The virtual mount point of this filesystem (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_FS_ERR_PATH_TOO_LONG	if the overall phys_path is too long
OS_ERR_NAME_TOO_LONG	if the phys_path basename (filesystem name) is too long
OS_INVALID_POINTER	if any argument is NULL

10.66.2.3 OS_FileSysStatVolume() `int32 OS_FileSysStatVolume (`

```
    const char * name,
    OS_statvfs_t * statbuf )
```

Obtains information about size and free space in a volume.

Populates the supplied `OS_statvfs_t` structure, which includes the block size and total/free blocks in a file system volume. This replaces two older OSAL calls:

`OS_fsBlocksFree()` is determined by reading the `blocks_free` output struct member `OS_fsBytesFree()` is determined by multiplying `blocks_free` by the `block_size` member

Parameters

<i>in</i>	<i>name</i>	The device/path to operate on (must not be null)
<i>out</i>	<i>statbuf</i>	Output structure to populate (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if name or statbuf is NULL

Return values

<i>OS_FS_ERR_PATH_TOO_LONG</i>	if the name is too long
<i>OS_ERROR</i>	if an unexpected/unhandled OS error occurs (return value only verified in coverage test)

Referenced by FM_GetVolumeFreeSpace().

10.66.2.4 OS_FS_GetPhysDriveName() `int32 OS_FS_GetPhysDriveName (`

```
    char * PhysDriveName,  
    const char * MountPoint )
```

Obtains the physical drive name associated with a mount point.

Returns the name of the physical volume associated with the drive, when given the OSAL mount point of the drive

Parameters

<i>out</i>	<i>PhysDriveName</i>	Buffer to store physical drive name (must not be null)
<i>in</i>	<i>MountPoint</i>	OSAL mount point (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if either parameter is NULL
<i>OS_ERR_NAME_NOT_FOUND</i>	if the MountPoint is not mounted in OSAL
<i>OS_FS_ERR_PATH_TOO_LONG</i>	if the MountPoint is too long

10.66.2.5 OS_GetFsInfo() `int32 OS_GetFsInfo (`

```
    os_fsinfo_t * filesys_info )
```

Returns information about the file system.

Returns information about the file system in an `os_fsinfo_t`. This includes the number of open files and file systems

Parameters

<i>out</i>	<i>filesys_info</i>	Buffer to store filesystem information (must not be null)
------------	---------------------	---

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if filesys_info is NULL

```
10.66.2.6 OS_initfs() int32 OS_initfs (
    char * address,
    const char * devname,
    const char * volname,
    size_t blocksize,
    osal_blockcount_t numblocks )
```

Initializes an existing file system.

Initializes a file system on the target.

Note

The "volname" parameter of RAM disks should always begin with the string "RAM", e.g. "RAMDISK" or "RAM0", "RAM1", etc if multiple devices are created. The underlying implementation uses this to select the correct filesystem type/format, and this may also be used to differentiate between RAM disks and real physical disks.

Parameters

in	<i>address</i>	The address at which to start the new disk. If address == 0, then space will be allocated by the OS
in	<i>devname</i>	The underlying kernel device to use, if applicable. (must not be null)
in	<i>volname</i>	The name of the volume (see note) (must not be null)
in	<i>blocksize</i>	The size of a single block on the drive
in	<i>numblocks</i>	The number of blocks to allocate for the drive

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if devname or volname are NULL
OS_FS_ERR_PATH_TOO_LONG	if the name is too long
OS_FS_ERR_DEVICE_NOT_FREE	if the volume table is full
OS_FS_ERR_DRIVE_NOT_CREATED	if an unexpected/unhandled OS error occurs (return value only verified in coverage test)

```
10.66.2.7 OS_mkfs() int32 OS_mkfs (
    char * address,
    const char * devname,
    const char * volname,
    size_t blocksize,
    osal_blockcount_t numblocks )
```

Makes a file system on the target.

Makes a file system on the target. Highly dependent on underlying OS and dependent on OS volume table definition.

Note

The "volname" parameter of RAM disks should always begin with the string "RAM", e.g. "RAMDISK" or "RAM0", "RAM1", etc if multiple devices are created. The underlying implementation uses this to select the correct filesystem type/format, and this may also be used to differentiate between RAM disks and real physical disks.

Parameters

in	<i>address</i>	The address at which to start the new disk. If address == 0 space will be allocated by the OS.
in	<i>devname</i>	The underlying kernel device to use, if applicable. (must not be null)
in	<i>volname</i>	The name of the volume (see note) (must not be null)
in	<i>blocksize</i>	The size of a single block on the drive
in	<i>numblocks</i>	The number of blocks to allocate for the drive

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if devname or volname is NULL
<i>OS_FS_ERR_PATH_TOO_LONG</i>	if the overall devname or volname is too long
<i>OS_FS_ERR_DEVICE_NOT_FREE</i>	if the volume table is full
<i>OS_FS_ERR_DRIVE_NOT_CREATED</i>	if an unexpected/unhandled OS error occurs (return value only verified in coverage test)

```
10.66.2.8 OS_mount() int32 OS_mount (
    const char * devname,
    const char * mountpoint )
```

Mounts a file system.

Mounts a file system / block device at the given mount point.

Parameters

in	<i>devname</i>	The name of the drive to mount. devname is the same from OS_mkfs (must not be null)
in	<i>mountpoint</i>	The name to call this disk from now on (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_NAME_NOT_FOUND</i>	if the device name does not exist in OSAL
<i>OS_FS_ERR_PATH_TOO_LONG</i>	if the mount point string is too long
<i>OS_INVALID_POINTER</i>	if any argument is NULL

Return values

<i>OS_ERROR</i>	if an unexpected/unhandled OS error occurs (return value only verified in coverage test)
-----------------	--

```
10.66.2.9 OS_rmfs() int32 OS_rmfs (
    const char * devname )
```

Removes a file system.

This function will remove or un-map the target file system. Note that this is not the same as un-mounting the file system.

Parameters

in	<i>devname</i>	The name of the "generic" drive (must not be null)
----	----------------	--

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if devname is NULL
<i>OS_FS_ERR_PATH_TOO_LONG</i>	if the devname is too long
<i>OS_ERR_NAME_NOT_FOUND</i>	if the devname does not exist in OSAL
<i>OS_ERROR</i>	if an unexpected/unhandled OS error occurs (return value only verified in coverage test)

```
10.66.2.10 OS_TranslatePath() int32 OS_TranslatePath (
    const char * VirtualPath,
    char * LocalPath )
```

Translates an OSAL Virtual file system path to a host Local path.

Translates a virtual path to an actual system path name

Note

The buffer provided in the LocalPath argument is required to be at least OS_MAX_PATH_LEN characters in length.

Parameters

in	<i>VirtualPath</i>	OSAL virtual path name (must not be null)
out	<i>LocalPath</i>	Buffer to store native/translated path name (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if either parameter is NULL
OS_FS_ERR_NAME_TOO_LONG	if the filename component is too long
OS_FS_ERR_PATH_INVALID	if either parameter cannot be interpreted as a path
OS_FS_ERR_PATH_TOO_LONG	if either input or output pathnames are too long

10.66.2.11 OS_unmount()

```
int32 OS_unmount (
```

```
    const char * mountpoint )
```

Unmounts a mounted file system.

This function will unmount a drive from the file system and make all open file descriptors useless.

Note

Any open file descriptors referencing this file system should be closed prior to unmounting a drive

Parameters

in	<i>mountpoint</i>	The mount point to remove from OS_mount (must not be null)
----	-------------------	--

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if name is NULL
OS_FS_ERR_PATH_TOO_LONG	if the absolute path given is too long
OS_ERR_NAME_NOT_FOUND	if the mountpoint is not mounted in OSAL
OS_ERROR	if an unexpected/unhandled OS error occurs (return value only verified in coverage test)

10.67 OSAL Heap APIs

Functions

- [int32 OS_HeapGetInfo \(OS_heap_prop_t *heap_prop\)](#)

Return current info on the heap.

10.67.1 Detailed Description**10.67.2 Function Documentation**

10.67.2.1 OS_HeapGetInfo() `int32 OS_HeapGetInfo (`
 `OS_heap_prop_t * heap_prop)`

Return current info on the heap.

Parameters

<code>out</code>	<code>heap_prop</code>	Storage buffer for heap info
------------------	------------------------	------------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if the heap_prop argument is NULL

10.68 OSAL Object Type Defines

Macros

- `#define OS_OBJECT_TYPE_UNDEFINED 0x00`
Object type undefined.
- `#define OS_OBJECT_TYPE_OS_TASK 0x01`
Object task type.
- `#define OS_OBJECT_TYPE_OS_QUEUE 0x02`
Object queue type.
- `#define OS_OBJECT_TYPE_OS_COUNTSEM 0x03`
Object counting semaphore type.
- `#define OS_OBJECT_TYPE_OS_BINSEM 0x04`
Object binary semaphore type.
- `#define OS_OBJECT_TYPE_OS_MUTEX 0x05`
Object mutex type.
- `#define OS_OBJECT_TYPE_OS_STREAM 0x06`
Object stream type.
- `#define OS_OBJECT_TYPE_OS_DIR 0x07`
Object directory type.
- `#define OS_OBJECT_TYPE_OS_TIMEBASE 0x08`
Object timebase type.
- `#define OS_OBJECT_TYPE_OS_TIMECB 0x09`
Object timer callback type.
- `#define OS_OBJECT_TYPE_OS_MODULE 0x0A`
Object module type.
- `#define OS_OBJECT_TYPE_OS_FILESYS 0x0B`
Object file system type.
- `#define OS_OBJECT_TYPE_OS_CONSOLE 0x0C`
Object console type.
- `#define OS_OBJECT_TYPE_OS_CONDVAR 0x0D`

Object condition variable type.

- `#define OS_OBJECT_TYPE_USER 0x10`

Object user type.

10.68.1 Detailed Description

10.68.2 Macro Definition Documentation

10.68.2.1 OS_OBJECT_TYPE_OS_BINSEM `#define OS_OBJECT_TYPE_OS_BINSEM 0x04`

Object binary semaphore type.

Definition at line 42 of file osapi-idmap.h.

10.68.2.2 OS_OBJECT_TYPE_OS_CONDVAR `#define OS_OBJECT_TYPE_OS_CONDVAR 0x0D`

Object condition variable type.

Definition at line 51 of file osapi-idmap.h.

10.68.2.3 OS_OBJECT_TYPE_OS_CONSOLE `#define OS_OBJECT_TYPE_OS_CONSOLE 0x0C`

Object console type.

Definition at line 50 of file osapi-idmap.h.

10.68.2.4 OS_OBJECT_TYPE_OS_COUNTSEM `#define OS_OBJECT_TYPE_OS_COUNTSEM 0x03`

Object counting semaphore type.

Definition at line 41 of file osapi-idmap.h.

10.68.2.5 OS_OBJECT_TYPE_OS_DIR `#define OS_OBJECT_TYPE_OS_DIR 0x07`

Object directory type.

Definition at line 45 of file osapi-idmap.h.

10.68.2.6 OS_OBJECT_TYPE_OS_FILESYS `#define OS_OBJECT_TYPE_OS_FILESYS 0x0B`

Object file system type.

Definition at line 49 of file osapi-idmap.h.

10.68.2.7 OS_OBJECT_TYPE_OS_MODULE `#define OS_OBJECT_TYPE_OS_MODULE 0x0A`

Object module type.

Definition at line 48 of file osapi-idmap.h.

10.68.2.8 OS_OBJECT_TYPE_OS_MUTEX `#define OS_OBJECT_TYPE_OS_MUTEX 0x05`

Object mutex type.

Definition at line 43 of file osapi-idmap.h.

10.68.2.9 OS_OBJECT_TYPE_OS_QUEUE #define OS_OBJECT_TYPE_OS_QUEUE 0x02
Object queue type.
Definition at line 40 of file osapi-idmap.h.

10.68.2.10 OS_OBJECT_TYPE_OS_STREAM #define OS_OBJECT_TYPE_OS_STREAM 0x06
Object stream type.
Definition at line 44 of file osapi-idmap.h.

10.68.2.11 OS_OBJECT_TYPE_OS_TASK #define OS_OBJECT_TYPE_OS_TASK 0x01
Object task type.
Definition at line 39 of file osapi-idmap.h.

10.68.2.12 OS_OBJECT_TYPE_OS_TIMEBASE #define OS_OBJECT_TYPE_OS_TIMEBASE 0x08
Object timebase type.
Definition at line 46 of file osapi-idmap.h.

10.68.2.13 OS_OBJECT_TYPE_OS_TIMECB #define OS_OBJECT_TYPE_OS_TIMECB 0x09
Object timer callback type.
Definition at line 47 of file osapi-idmap.h.

10.68.2.14 OS_OBJECT_TYPE_UNDEFINED #define OS_OBJECT_TYPE_UNDEFINED 0x00
Object type undefined.
Definition at line 38 of file osapi-idmap.h.

10.68.2.15 OS_OBJECT_TYPE_USER #define OS_OBJECT_TYPE_USER 0x10
Object user type.
Definition at line 52 of file osapi-idmap.h.

10.69 OSAL Object ID Utility APIs

Functions

- static unsigned long [OS_ObjectIdToInteger \(osal_id_t object_id\)](#)
Obtain an integer value corresponding to an object ID.
- static [osal_id_t OS_ObjectIdFromInteger \(unsigned long value\)](#)
Obtain an osal ID corresponding to an integer value.
- static bool [OS_ObjectIdEqual \(osal_id_t object_id1, osal_id_t object_id2\)](#)
Check two OSAL object ID values for equality.
- static bool [OS_ObjectIdDefined \(osal_id_t object_id\)](#)
Check if an object ID is defined.
- [int32 OS_GetResourceName \(osal_id_t object_id, char *buffer, size_t buffer_size\)](#)
Obtain the name of an object given an arbitrary object ID.
- [osal_objtype_t OS_IdentifyObject \(osal_id_t object_id\)](#)
Obtain the type of an object given an arbitrary object ID.
- [int32 OS_ConvertToArrayIndex \(osal_id_t object_id, osal_index_t *ArrayIndex\)](#)

Converts an abstract ID into a number suitable for use as an array index.

- `int32 OS_ObjectIdToArrayIndex (osal_objtype_t idtype, osal_id_t object_id, osal_index_t *ArrayIndex)`
Converts an abstract ID into a number suitable for use as an array index.
- `void OS_ForEachObject (osal_id_t creator_id, OS_ArgCallback_t callback_ptr, void *callback_arg)`
call the supplied callback function for all valid object IDs
- `void OS_ForEachObjectType (osal_objtype_t objtype, osal_id_t creator_id, OS_ArgCallback_t callback_ptr, void *callback_arg)`
call the supplied callback function for valid object IDs of a specific type

10.69.1 Detailed Description

10.69.2 Function Documentation

10.69.2.1 OS_ConvertToArrayIndex() `int32 OS_ConvertToArrayIndex (`
 `osal_id_t object_id,`
 `osal_index_t * ArrayIndex)`

Converts an abstract ID into a number suitable for use as an array index.

This will return a unique zero-based integer number in the range of [0,MAX) for any valid object ID. This may be used by application code as an array index for indexing into local tables.

Note

This does NOT verify the validity of the ID, that is left to the caller. This is only the conversion logic.

This routine accepts any object type, and returns a value based on the maximum number of objects for that type. This is equivalent to invoking `OS_ObjectIdToArrayIndex()` with the idtype set to `OS_OBJECT_TYPE_UNDEFINED`.

See also

[OS_ObjectIdToArrayIndex](#)

Parameters

in	<code>object_id</code>	The object ID to operate on
out	<code>*ArrayIndex</code>	The Index to return (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the object_id argument is not valid
<code>OS_INVALID_POINTER</code>	if the ArrayIndex is NULL

10.69.2.2 OS_ForEachObject() `void OS_ForEachObject (`
 `osal_id_t creator_id,`

```
OS_ArgCallback_t callback_ptr,
void * callback_arg )
```

call the supplied callback function for all valid object IDs

Loops through all defined OSAL objects of all types and calls callback_ptr on each one If creator_id is nonzero then only objects with matching creator id are processed.

Parameters

in	<i>creator_id</i>	Filter objects to those created by a specific task This may be passed as OS_OBJECT_CREATOR_ANY to return all objects
in	<i>callback_ptr</i>	Function to invoke for each matching object ID
in	<i>callback_arg</i>	Opaque Argument to pass to callback function (may be NULL)

Referenced by FM_GetFilenameState(), and FM_GetOpenFilesData().

10.69.2.3 OS_ForEachObjectType()

```
void OS_ForEachObjectType (
    osal_objtype_t objtype,
    osal_id_t creator_id,
    OS_ArgCallback_t callback_ptr,
    void * callback_arg )
```

call the supplied callback function for valid object IDs of a specific type

Loops through all defined OSAL objects of a specific type and calls callback_ptr on each one If creator_id is nonzero then only objects with matching creator id are processed.

Parameters

in	<i>objtype</i>	The type of objects to iterate
in	<i>creator_id</i>	Filter objects to those created by a specific task This may be passed as OS_OBJECT_CREATOR_ANY to return all objects
in	<i>callback_ptr</i>	Function to invoke for each matching object ID
in	<i>callback_arg</i>	Opaque Argument to pass to callback function (may be NULL)

10.69.2.4 OS_GetResourceName()

```
int32 OS_GetResourceName (
    osal_id_t object_id,
    char * buffer,
    size_t buffer_size )
```

Obtain the name of an object given an arbitrary object ID.

All OSAL resources generally have a name associated with them. This allows application code to retrieve the name of any valid OSAL object ID.

Parameters

in	<i>object_id</i>	The object ID to operate on
out	<i>buffer</i>	Buffer in which to store the name (must not be null)
in	<i>buffer_size</i>	Size of the output storage buffer (must not be zero)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the passed-in ID is not a valid OSAL ID
<i>OS_INVALID_POINTER</i>	if the passed-in buffer is invalid
<i>OS_ERR_NAME_TOO_LONG</i>	if the name will not fit in the buffer provided

10.69.2.5 OS_IdentifyObject() `osal_objtype_t OS_IdentifyObject (osal_id_t object_id)`

Obtain the type of an object given an arbitrary object ID.

Given an arbitrary object ID, get the type of the object

Parameters

in	<i>object_id</i>	The object ID to operate on
----	------------------	-----------------------------

Returns

The object type portion of the object_id, see [OSAL Object Type Defines](#) for expected values

Referenced by `LoadOpenFileData()`, and `SearchOpenFileData()`.

10.69.2.6 OS_ObjectIdDefined() `static bool OS_ObjectIdDefined (osal_id_t object_id) [inline], [static]`

Check if an object ID is defined.

The OSAL ID values should be treated as abstract values by applications, and not directly manipulated using standard C operators.

This returns false if the ID is NOT a defined resource (i.e. free/empty/invalid).

Note

`OS_ObjectIdDefined(OS_OBJECT_ID_UNDEFINED)` is always guaranteed to be false.

Parameters

in	<i>object_id</i>	The first object ID
----	------------------	---------------------

Definition at line 150 of file `osapi-idmap.h`.

References `OS_ObjectIdToInteger()`.

Referenced by `FM_InvokeChildTask()`, and `FM_VerifyChildTask()`.

10.69.2.7 OS_ObjectIdEqual() `static bool OS_ObjectIdEqual (`

```
osal_id_t object_id1,
osal_id_t object_id2 ) [inline], [static]
```

Check two OSAL object ID values for equality.

The OSAL ID values should be treated as abstract values by applications, and not directly manipulated using standard C operators.

This checks two values for equality, replacing the "==" operator.

Parameters

in	<i>object_id1</i>	The first object ID
in	<i>object_id2</i>	The second object ID

Returns

true if the object IDs are equal

Definition at line 129 of file osapi-idmap.h.

References OS_ObjectIdToInteger().

10.69.2.8 OS_ObjectIdFromInteger() static `osal_id_t` OS_ObjectIdFromInteger (
 unsigned long *value*) [inline], [static]

Obtain an osal ID corresponding to an integer value.

Provides the inverse of [OS_ObjectIdToInteger\(\)](#). Reconstitutes the original `osal_id_t` type from an integer representation.

Parameters

in	<i>value</i>	The integer representation of an OSAL ID
----	--------------	--

Returns

The ID value converted to an `osal_id_t`

Definition at line 102 of file osapi-idmap.h.

10.69.2.9 OS_ObjectIdToArrayIndex() int32 OS_ObjectIdToArrayIndex (
 osal_objtype_t *idtype*,
 osal_id_t *object_id*,
 osal_index_t * *ArrayIndex*)

Converts an abstract ID into a number suitable for use as an array index.

This will return a unique zero-based integer number in the range of [0,MAX) for any valid object ID. This may be used by application code as an array index for indexing into local tables.

This routine operates on a specific object type, and returns a value based on the maximum number of objects for that type.

If the *idtype* is passed as `OS_OBJECT_TYPE_UNDEFINED`, then object type verification is skipped and any object ID will be accepted and converted to an index. In this mode, the range of the output depends on the actual passed-in object type.

If the *idtype* is passed as any other value, the passed-in ID value is first confirmed to be the correct type. This check will guarantee that the output is within an expected range; for instance, if the type is passed as `OS_OBJECT_TYPE_OS_TASK`, then the output index is guaranteed to be between 0 and `OS_MAX_TASKS`-1 after successful conversion.

Parameters

in	<i>idtype</i>	The object type to convert
in	<i>object_id</i>	The object ID to operate on
out	* <i>ArrayIndex</i>	The Index to return (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the <i>object_id</i> argument is not valid
<i>OS_INVALID_POINTER</i>	if the <i>ArrayIndex</i> is NULL

10.69.2.10 OS_ObjectIdToInteger() static unsigned long OS_ObjectIdToInteger (
 [*osal_id_t*](#) *object_id*) [inline], [static]

Obtain an integer value corresponding to an object ID.

Obtains an integer representation of an object id, generally for the purpose of printing to the console or system logs. The returned value is of the type "unsigned long" for direct use with printf-style functions. It is recommended to use the "%lx" conversion specifier as the hexadecimal encoding clearly delineates the internal fields.

Note

This provides the raw integer value and is *not* suitable for use as an array index, as the result is not zero-based. See the [OS_ConvertToArrayIndex\(\)](#) to obtain a zero-based index value.

Parameters

in	<i>object_id</i>	The object ID
----	------------------	---------------

Returns

integer value representation of object ID

Definition at line 80 of file osapi-idmap.h.

Referenced by [OS_ObjectIdDefined\(\)](#), and [OS_ObjectIdEqual\(\)](#).

10.70 OSAL Dynamic Loader and Symbol APIs

Functions

- [int32 OS_SymbolLookup \(*cpuaddr* *symbol_address, const char *symbol_name\)](#)
Find the Address of a Symbol.
- [int32 OS_ModuleSymbolLookup \(*osal_id_t* module_id, *cpuaddr* *symbol_address, const char *symbol_name\)](#)
Find the Address of a Symbol within a module.
- [int32 OS_SymbolTableDump \(const char *filename, size_t size_limit\)](#)
Dumps the system symbol table to a file.

- `int32 OS_ModuleLoad (osal_id_t *module_id, const char *module_name, const char *filename, uint32 flags)`
Loads an object file.
- `int32 OS_ModuleUnload (osal_id_t module_id)`
Unloads the module file.
- `int32 OS_ModuleInfo (osal_id_t module_id, OS_module_prop_t *module_info)`
Obtain information about a module.

10.70.1 Detailed Description

10.70.2 Function Documentation

10.70.2.1 OS_ModuleInfo() `int32 OS_ModuleInfo (`
`osal_id_t module_id,`
`OS_module_prop_t * module_info)`

Obtain information about a module.

Returns information about the loadable module

Parameters

in	<i>module_id</i>	OSAL ID of the previously the loaded module
out	<i>module_info</i>	Buffer to store module information (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the module id invalid
<code>OS_INVALID_POINTER</code>	if the pointer to the ModuleInfo structure is invalid
<code>OS_ERROR</code>	if an other/unspecified error occurs (return value only verified in coverage test)

10.70.2.2 OS_ModuleLoad() `int32 OS_ModuleLoad (`
`osal_id_t * module_id,`
`const char * module_name,`
`const char * filename,`
`uint32 flags)`

Loads an object file.

Loads an object file into the running operating system

The "flags" parameter may influence how the loaded module symbols are made available for use in the application. See [OS_MODULE_FLAG_LOCAL_SYMBOLS](#) and [OS_MODULE_FLAG_GLOBAL_SYMBOLS](#) for descriptions.

Parameters

out	<i>module_id</i>	Non-zero OSAL ID corresponding to the loaded module
in	<i>module_name</i>	Name of module (must not be null)

Parameters

in	<i>filename</i>	File containing the object code to load (must not be null)
in	<i>flags</i>	Options for the loaded module

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if one of the parameters is NULL
OS_ERR_NO_FREE_IDS	if the module table is full
OS_ERR_NAME_TAKEN	if the name is in use
OS_ERR_NAME_TOO_LONG	if the module_name is too long
OS_FS_ERR_PATH_INVALID	if the filename argument is not valid
OS_ERROR	if an other/unspecified error occurs (return value only verified in coverage test)

10.70.2.3 OS_ModuleSymbolLookup() `int32 OS_ModuleSymbolLookup (`

```
    osal_id_t module_id,
    cpuaddr * symbol_address,
    const char * symbol_name )
```

Find the Address of a Symbol within a module.

This is similar to [OS_SymbolLookup\(\)](#) but for a specific module ID. This should be used to look up a symbol in a module that has been loaded with the [OS_MODULE_FLAG_LOCAL_SYMBOLS](#) flag.

Parameters

in	<i>module_id</i>	Module ID that should contain the symbol
out	<i>symbol_address</i>	Set to the address of the symbol (must not be null)
in	<i>symbol_name</i>	Name of the symbol to look up (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERROR	if the symbol could not be found
OS_INVALID_POINTER	if one of the pointers passed in are NULL

10.70.2.4 OS_ModuleUnload() `int32 OS_ModuleUnload (`

```
    osal_id_t module_id )
```

Unloads the module file.

Unloads the module file from the running operating system

Parameters

in	<i>module_id</i>	OSAL ID of the previously loaded module
----	------------------	---

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the module id invalid
<i>OS_ERROR</i>	if an other/unspecified error occurs (return value only verified in coverage test)

10.70.2.5 OS_SymbolLookup() `int32 OS_SymbolLookup(`

```
    cpuaddr * symbol_address,
    const char * symbol_name )
```

Find the Address of a Symbol.

This calls to the OS dynamic symbol lookup implementation, and/or checks a static symbol table for a matching symbol name.

The static table is intended to support embedded targets that do not have module loading capability or have it disabled.

Parameters

out	<i>symbol_address</i>	Set to the address of the symbol (must not be null)
in	<i>symbol_name</i>	Name of the symbol to look up (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERROR</i>	if the symbol could not be found
<i>OS_INVALID_POINTER</i>	if one of the pointers passed in are NULL

10.70.2.6 OS_SymbolTableDump() `int32 OS_SymbolTableDump(`

```
    const char * filename,
    size_t size_limit )
```

Dumps the system symbol table to a file.

Dumps the system symbol table to the specified filename

Note

Not all RTOS implementations support this API. If the underlying module subsystem does not provide a facility to iterate through the symbol table, then the [OS_ERR_NOT_IMPLEMENTED](#) status code is returned.

Parameters

in	<i>filename</i>	File to write to (must not be null)
in	<i>size_limit</i>	Maximum number of bytes to write

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_NOT_IMPLEMENTED	Not implemented.
OS_INVALID_POINTER	if the filename argument is NULL
OS_FS_ERR_PATH_INVALID	if the filename argument is not valid
OS_ERR_NAME_TOO_LONG	if any of the symbol names are too long (return value only verified in coverage test)
OS_ERR_OUTPUT_TOO_LARGE	if the size_limit was reached before completing all symbols (return value only verified in coverage test)
OS_ERROR	if an other/unspecified error occurs (return value only verified in coverage test)

10.71 OSAL Mutex APIs

Functions

- `int32 OS_MutSemCreate (osal_id_t *sem_id, const char *sem_name, uint32 options)`
Creates a mutex semaphore.
- `int32 OS_MutSemGive (osal_id_t sem_id)`
Releases the mutex object referenced by sem_id.
- `int32 OS_MutSemTake (osal_id_t sem_id)`
Acquire the mutex object referenced by sem_id.
- `int32 OS_MutSemDelete (osal_id_t sem_id)`
Deletes the specified Mutex Semaphore.
- `int32 OS_MutSemGetIdByName (osal_id_t *sem_id, const char *sem_name)`
Find an existing mutex ID by name.
- `int32 OS_MutSemGetInfo (osal_id_t sem_id, OS_mut_sem_prop_t *mut_prop)`
Fill a property object buffer with details regarding the resource.

10.71.1 Detailed Description

10.71.2 Function Documentation

```
10.71.2.1 OS_MutSemCreate() int32 OS_MutSemCreate (
    osal_id_t * sem_id,
    const char * sem_name,
    uint32 options )
```

Creates a mutex semaphore.

Mutex semaphores are always created in the unlocked (full) state.

Parameters

out	<i>sem_id</i>	will be set to the non-zero ID of the newly-created resource (must not be null)
in	<i>sem_name</i>	the name of the new resource to create (must not be null)
in	<i>options</i>	reserved for future use. Should be passed as 0.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if <i>sem_id</i> or <i>sem_name</i> are NULL
<i>OS_ERR_NAME_TOO_LONG</i>	name length including null terminator greater than <i>OS_MAX_API_NAME</i>
<i>OS_ERR_NO_FREE_IDS</i>	if there are no more free mutex IDs
<i>OS_ERR_NAME_TAKEN</i>	if there is already a mutex with the same name
<i>OS_SEM_FAILURE</i>	if the OS call failed (return value only verified in coverage test)

Referenced by FM_ChildInit().

```
10.71.2.2 OS_MutSemDelete() int32 OS_MutSemDelete (
    osal_id_t sem_id )
```

Deletes the specified Mutex Semaphore.

Delete the semaphore. This also frees the respective *sem_id* such that it can be used again when another is created.

Parameters

in	<i>sem_id</i>	The object ID to delete
----	---------------	-------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a valid mutex
<i>OS_SEM_FAILURE</i>	if an unspecified error occurs (return value only verified in coverage test)

10.71.2.3 OS_MutSemGetIdByName() `int32 OS_MutSemGetIdByName (`
 `osal_id_t * sem_id,`
 `const char * sem_name)`

Find an existing mutex ID by name.

This function tries to find a mutex sem id given the name of a mut_sem. The id is returned through sem_id

Parameters

out	<code>sem_id</code>	will be set to the ID of the existing resource
in	<code>sem_name</code>	the name of the existing resource to find (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	is semid or sem_name are NULL pointers
<code>OS_ERR_NAME_TOO_LONG</code>	name length including null terminator greater than <code>OS_MAX_API_NAME</code>
<code>OS_ERR_NAME_NOT_FOUND</code>	if the name was not found in the table

10.71.2.4 OS_MutSemGetInfo() `int32 OS_MutSemGetInfo (`
 `osal_id_t sem_id,`
 `OS_mut_sem_prop_t * mut_prop)`

Fill a property object buffer with details regarding the resource.

This function will pass back a pointer to structure that contains all of the relevant info(name and creator) about the specified mutex semaphore.

Parameters

in	<code>sem_id</code>	The object ID to operate on
out	<code>mut_prop</code>	The property object buffer to fill (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the id passed in is not a valid semaphore
<code>OS_INVALID_POINTER</code>	if the mut_prop pointer is null

10.71.2.5 OS_MutSemGive() `int32 OS_MutSemGive (`
 `osal_id_t sem_id)`

Releases the mutex object referenced by sem_id.

If there are threads blocked on the mutex object referenced by mutex when this function is called, resulting in the mutex becoming available, the scheduling policy shall determine which thread shall acquire the mutex.

Parameters

in	<code>sem-> _id</code>	The object ID to operate on
----	-------------------------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the id passed in is not a valid mutex
<code>OS_SEM_FAILURE</code>	if an unspecified error occurs (return value only verified in coverage test)

Referenced by FM_ChildProcess(), and FM_InvokeChildTask().

10.71.2.6 OS_MutSemTake() `int32 OS_MutSemTake (`
`osal_id_t sem_id)`

Acquire the mutex object referenced by sem_id.

If the mutex is already locked, the calling thread shall block until the mutex becomes available. This operation shall return with the mutex object referenced by mutex in the locked state with the calling thread as its owner.

Parameters

in	<code>sem-> _id</code>	The object ID to operate on
----	-------------------------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	the id passed in is not a valid mutex
<code>OS_SEM_FAILURE</code>	if an unspecified error occurs (return value only verified in coverage test)

Referenced by FM_ChildProcess(), and FM_InvokeChildTask().

10.72 OSAL Network ID APIs

Functions

- `int32 OS_NetworkGetID (void)`

Gets the network ID of the local machine.

- `int32 OS_NetworkGetHostName (char *host_name, size_t name_len)`
Gets the local machine network host name.

10.72.1 Detailed Description

Provides some basic methods to query a network host name and ID

10.72.2 Function Documentation

10.72.2.1 OS_NetworkGetHostName() `int32 OS_NetworkGetHostName (`

```
    char * host_name,
    size_t name_len )
```

Gets the local machine network host name.

If configured in the underlying network stack, this function retrieves the local hostname of the system.

Parameters

<code>out</code>	<code>host_name</code>	Buffer to hold name information (must not be null)
<code>in</code>	<code>name_len</code>	Maximum length of host name buffer (must not be zero)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_SIZE</code>	if the name_len is zero
<code>OS_INVALID_POINTER</code>	if the host_name is NULL

10.72.2.2 OS_NetworkGetID() `int32 OS_NetworkGetID (`

```
    void )
```

Gets the network ID of the local machine.

The ID is an implementation-defined value and may not be consistent in meaning across different platform types.

Note

This API may be removed in a future version of OSAL due to inconsistencies between platforms.

Returns

The ID or fixed value of -1 if the host id could not be found. Note it is not possible to differentiate between error codes and valid network IDs here. It is assumed, however, that -1 is never a valid ID.

10.73 OSAL Printf APIs

Functions

- `void OS_printf (const char *string,...) OS_PRINTF(1`

Abstraction for the system printf() call.

- `void void OS_printf_disable (void)`
This function disables the output from OS_printf.
- `void OS_printf_enable (void)`
This function enables the output from OS_printf.

10.73.1 Detailed Description

10.73.2 Function Documentation

10.73.2.1 OS_printf() `void OS_printf (`
`const char * string,`
`...`
`)`

Abstraction for the system printf() call.

This function abstracts out the printf type statements. This is useful for using OS- specific thots that will allow non-polled print statements for the real time systems.

Operates in a manner similar to the printf() call defined by the standard C library and takes all the parameters and formatting options of printf. This abstraction may implement additional buffering, if necessary, to improve the real-time performance of the call.

Strings (including terminator) longer than `OS_BUFFER_SIZE` will be truncated.

The output of this routine also may be dynamically enabled or disabled by the `OS_printf_enable()` and `OS_printf_disable()` calls, respectively.

Parameters

<code>in</code>	<code>string</code>	Format string, followed by additional arguments
-----------------	---------------------	---

10.73.2.2 OS_printf_disable() `void void OS_printf_disable (`
`void)`

This function disables the output from OS_printf.

10.73.2.3 OS_printf_enable() `void OS_printf_enable (`
`void)`

This function enables the output from OS_printf.

10.74 OSAL Message Queue APIs

Functions

- `int32 OS_QueueCreate (osal_id_t *queue_id, const char *queue_name, osal_blockcount_t queue_depth, size_t data_size, uint32 flags)`
Create a message queue.
- `int32 OS_QueueDelete (osal_id_t queue_id)`
Deletes the specified message queue.
- `int32 OS_QueueGet (osal_id_t queue_id, void *data, size_t size, size_t *size_copied, int32 timeout)`
Receive a message on a message queue.
- `int32 OS_QueuePut (osal_id_t queue_id, const void *data, size_t size, uint32 flags)`

Put a message on a message queue.

- `int32 OS_QueuePutByName (osal_id_t *queue_id, const char *queue_name)`
Find an existing queue ID by name.
- `int32 OS_QueueGetInfo (osal_id_t queue_id, OS_queue_prop_t *queue_prop)`
Fill a property object buffer with details regarding the resource.

10.74.1 Detailed Description

10.74.2 Function Documentation

10.74.2.1 OS_QueueCreate() `int32 OS_QueueCreate (`

```
    osal_id_t * queue_id,
    const char * queue_name,
    osal_blockcount_t queue_depth,
    size_t data_size,
    uint32 flags )
```

Create a message queue.

This is the function used to create a queue in the operating system. Depending on the underlying operating system, the memory for the queue will be allocated automatically or allocated by the code that sets up the queue. Queue names must be unique; if the name already exists this function fails. Names cannot be NULL.

Parameters

out	<code>queue_id</code>	will be set to the non-zero ID of the newly-created resource (must not be null)
in	<code>queue_name</code>	the name of the new resource to create (must not be null)
in	<code>queue_depth</code>	the maximum depth of the queue
in	<code>data_size</code>	the size of each entry in the queue (must not be zero)
in	<code>flags</code>	options for the queue (reserved for future use, pass as 0)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if a pointer passed in is NULL
<code>OS_ERR_NAME_TOO_LONG</code>	name length including null terminator greater than <code>OS_MAX_API_NAME</code>
<code>OS_ERR_NO_FREE_IDS</code>	if there are already the max queues created
<code>OS_ERR_NAME_TAKEN</code>	if the name is already being used on another queue
<code>OS_ERR_INVALID_SIZE</code>	if <code>data_size</code> is 0
<code>OS_QUEUE_INVALID_SIZE</code>	if the queue depth exceeds the limit
<code>OS_ERROR</code>	if the OS create call fails

10.74.2.2 OS_QueueDelete() `int32 OS_QueueDelete (`

```
    osal_id_t queue_id )
```

Deletes the specified message queue.

This is the function used to delete a queue in the operating system. This also frees the respective queue_id to be used again when another queue is created.

Note

If There are messages on the queue, they will be lost and any subsequent calls to QueueGet or QueuePut to this queue will result in errors

Parameters

in	<i>queue_id</i>	The object ID to delete
----	-----------------	-------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in does not exist
<i>OS_ERROR</i>	if the OS call returns an unexpected error (return value only verified in coverage test)

```
10.74.2.3 OS_QueueGet() int32 OS_QueueGet (
    osal_id_t queue_id,
    void * data,
    size_t size,
    size_t * size_copied,
    int32 timeout )
```

Receive a message on a message queue.

If a message is pending, it is returned immediately. Otherwise the calling task will block until a message arrives or the timeout expires.

Parameters

in	<i>queue_id</i>	The object ID to operate on
out	<i>data</i>	The buffer to store the received message (must not be null)
in	<i>size</i>	The size of the data buffer (must not be zero)
out	<i>size_copied</i>	Set to the actual size of the message (must not be null)
in	<i>timeout</i>	The maximum amount of time to block, or OS_PEND to wait forever

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
-------------------	-----------------------

Return values

<code>OS_ERR_INVALID_ID</code>	if the given ID does not exist
<code>OS_INVALID_POINTER</code>	if a pointer passed in is NULL
<code>OS_QUEUE_EMPTY</code>	if the Queue has no messages on it to be received
<code>OS_QUEUE_TIMEOUT</code>	if the timeout was OS_PEND and the time expired
<code>OS_QUEUE_INVALID_SIZE</code>	if the size copied from the queue was not correct
<code>OS_ERROR</code>	if the OS call returns an unexpected error (return value only verified in coverage test)

10.74.2.4 `OS_QueueGetIdByName()` `int32 OS_QueueGetIdByName (`

```
    osal_id_t * queue_id,
    const char * queue_name )
```

Find an existing queue ID by name.

This function tries to find a queue Id given the name of the queue. The id of the queue is passed back in `queue_id`.

Parameters

<code>out</code>	<code>queue_id</code>	will be set to the ID of the existing resource
<code>in</code>	<code>queue_name</code>	the name of the existing resource to find (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if the name or id pointers are NULL
<code>OS_ERR_NAME_TOO_LONG</code>	name length including null terminator greater than <code>OS_MAX_API_NAME</code>
<code>OS_ERR_NAME_NOT_FOUND</code>	the name was not found in the table

10.74.2.5 `OS_QueueGetInfo()` `int32 OS_QueueGetInfo (`

```
    osal_id_t queue_id,
    OS_queue_prop_t * queue_prop )
```

Fill a property object buffer with details regarding the resource.

This function will pass back a pointer to structure that contains all of the relevant info (name and creator) about the specified queue.

Parameters

<code>in</code>	<code>queue_id</code>	The object ID to operate on
<code>out</code>	<code>queue_prop</code>	The property object buffer to fill (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if queue_prop is NULL
<code>OS_ERR_INVALID_ID</code>	if the ID given is not a valid queue

```
10.74.2.6 OS_QueuePut() int32 OS_QueuePut (
    osal_id_t queue_id,
    const void * data,
    size_t size,
    uint32 flags )
```

Put a message on a message queue.

Parameters

in	<code>queue_id</code>	The object ID to operate on
in	<code>data</code>	The buffer containing the message to put (must not be null)
in	<code>size</code>	The size of the data buffer (must not be zero)
in	<code>flags</code>	Currently reserved/unused, should be passed as 0

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the queue id passed in is not a valid queue
<code>OS_INVALID_POINTER</code>	if the data pointer is NULL
<code>OS_QUEUE_INVALID_SIZE</code>	if the data message is too large for the queue
<code>OS_QUEUE_FULL</code>	if the queue cannot accept another message
<code>OS_ERROR</code>	if the OS call returns an unexpected error (return value only verified in coverage test)

10.75 OSAL Select APIs

Functions

- `int32 OS_SelectMultipleAbs (OS_FdSet *ReadSet, OS_FdSet *WriteSet, OS_time_t abs_timeout)`
Wait for events across multiple file handles.
- `int32 OS_SelectMultiple (OS_FdSet *ReadSet, OS_FdSet *WriteSet, int32 msecs)`
Wait for events across multiple file handles.
- `int32 OS_SelectSingleAbs (osal_id_t objid, uint32 *StateFlags, OS_time_t abs_timeout)`

Wait for events on a single file handle.

- `int32 OS_SelectSingle (osal_id_t objid, uint32 *StateFlags, int32 msecs)`

Wait for events on a single file handle.

- `int32 OS_SelectFdZero (OS_FdSet *Set)`

Clear a FdSet structure.

- `int32 OS_SelectFdAdd (OS_FdSet *Set, osal_id_t objid)`

Add an ID to an FdSet structure.

- `int32 OS_SelectFdClear (OS_FdSet *Set, osal_id_t objid)`

Clear an ID from an FdSet structure.

- `bool OS_SelectFdIsSet (const OS_FdSet *Set, osal_id_t objid)`

Check if an FdSet structure contains a given ID.

10.75.1 Detailed Description

10.75.2 Function Documentation

10.75.2.1 OS_SelectFdAdd() `int32 OS_SelectFdAdd (`

```
    OS_FdSet * Set,  
    osal_id_t objid )
```

Add an ID to an FdSet structure.

After this call the set will contain the given OSAL ID

Parameters

in,out	<code>Set</code>	Pointer to <code>OS_FdSet</code> object to operate on (must not be null)
in	<code>objid</code>	The handle ID to add to the set

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_INVALID_POINTER</code>	if argument is NULL
<code>OS_ERR_INVALID_ID</code>	if the objid is not a valid handle

10.75.2.2 OS_SelectFdClear() `int32 OS_SelectFdClear (`

```
    OS_FdSet * Set,  
    osal_id_t objid )
```

Clear an ID from an FdSet structure.

After this call the set will no longer contain the given OSAL ID

Parameters

in,out	<code>Set</code>	Pointer to <code>OS_FdSet</code> object to operate on (must not be null)
in	<code>objid</code>	The handle ID to remove from the set

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if argument is NULL
<i>OS_ERR_INVALID_ID</i>	if the objid is not a valid handle

```
10.75.2.3 OS_SelectFdIsSet() bool OS_SelectFdIsSet (
    const OS_FdSet * Set,
    osal_id_t objid )
```

Check if an FdSet structure contains a given ID.

Parameters

in	<i>Set</i>	Pointer to OS_FdSet object to operate on (must not be null)
in	<i>objid</i>	The handle ID to check for in the set

Returns

Boolean set status

Return values

<i>true</i>	FdSet structure contains ID
<i>false</i>	FdSet structure does not contain ID

```
10.75.2.4 OS_SelectFdZero() int32 OS_SelectFdZero (
    OS_FdSet * Set )
```

Clear a FdSet structure.

After this call the set will contain no OSAL IDs

Parameters

out	<i>Set</i>	Pointer to OS_FdSet object to clear (must not be null)
-----	------------	--

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if argument is NULL

```
10.75.2.5 OS_SelectMultiple() int32 OS_SelectMultiple (
    OS_FdSet * ReadSet,
    OS_FdSet * WriteSet,
    int32 msecs )
```

Wait for events across multiple file handles.

Wait for any of the given sets of IDs to become readable or writable

This function will block until any of the following occurs:

- At least one OSAL ID in the ReadSet is readable
- At least one OSAL ID in the WriteSet is writable
- The timeout has elapsed

The sets are input/output parameters. On entry, these indicate the file handle(s) to wait for. On exit, these are set to the actual file handle(s) that have activity.

If the timeout occurs this returns an error code and all output sets should be empty.

The timeout is expressed in milliseconds, relative to the time that the API was invoked. Use [OS_SelectMultipleAbs\(\)](#) for higher timing precision.

Note

This does not lock or otherwise protect the file handles in the given sets. If a filehandle supplied via one of the FdSet arguments is closed or modified by another while this function is in progress, the results are undefined. Because of this limitation, it is recommended to use [OS_SelectSingle\(\)](#) whenever possible.

Parameters

in, out	<i>ReadSet</i>	Set of handles to check/wait to become readable
in, out	<i>WriteSet</i>	Set of handles to check/wait to become writable
in	<i>msecs</i>	Indicates the timeout. Positive values will wait up to that many milliseconds. Zero will not wait (poll). Negative values will wait forever (pend)

See also

[OS_SelectMultipleAbs\(\)](#)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	If any handle in the ReadSet or WriteSet is readable or writable, respectively
OS_ERROR_TIMEOUT	If no handles in the ReadSet or WriteSet became readable or writable within the timeout
OS_ERR_OPERATION_NOT_SUPPORTED	if a specified handle does not support select
OS_ERR_INVALID_ID	if no valid handles were contained in the ReadSet/WriteSet

```
10.75.2.6 OS_SelectMultipleAbs() int32 OS_SelectMultipleAbs (
    OS_FdSet * ReadSet,
    OS_FdSet * WriteSet,
    OS_time_t abs_timeout )
```

Wait for events across multiple file handles.

Wait for any of the given sets of IDs to become readable or writable

This function will block until any of the following occurs:

- At least one OSAL ID in the ReadSet is readable
- At least one OSAL ID in the WriteSet is writable
- The timeout has elapsed

The sets are input/output parameters. On entry, these indicate the file handle(s) to wait for. On exit, these are set to the actual file handle(s) that have activity.

If the timeout occurs this returns an error code and all output sets should be empty.

This API is identical to [OS_SelectMultiple\(\)](#) except for the timeout parameter. In this call, timeout is expressed as an absolute value of the OS clock, in the same time domain as obtained via [OS_GetLocalTime\(\)](#). This allows for a more precise timeout than what is possible via the normal [OS_SelectMultiple\(\)](#).

Note

This does not lock or otherwise protect the file handles in the given sets. If a filehandle supplied via one of the FdSet arguments is closed or modified by another while this function is in progress, the results are undefined. Because of this limitation, it is recommended to use [OS_SelectSingle\(\)](#) whenever possible.

Parameters

in,out	<i>ReadSet</i>	Set of handles to check/wait to become readable
in,out	<i>WriteSet</i>	Set of handles to check/wait to become writable
in	<i>abs_timeout</i>	The absolute time that the call may block until

See also

[OS_SelectMultiple\(\)](#)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	If any handle in the ReadSet or WriteSet is readable or writable, respectively
OS_ERROR_TIMEOUT	If no handles in the ReadSet or WriteSet became readable or writable within the timeout
OS_ERR_OPERATION_NOT_SUPPORTED	if a specified handle does not support select
OS_ERR_INVALID_ID	if no valid handles were contained in the ReadSet/WriteSet

10.75.2.7 OS_SelectSingle() int32 OS_SelectSingle (

```
    osal_id_t objid,
    uint32 * StateFlags,
    int32 msecs )
```

Wait for events on a single file handle.

Wait for a single OSAL filehandle to change state

This function can be used to wait for a single OSAL stream ID to become readable or writable. On entry, the "StateFlags" parameter should be set to the desired state (OS_STREAM_STATE_READABLE and/or OS_STREAM_STATE_WRITABLE) and upon return the flags will be set to the state actually detected.

As this operates on a single ID, the filehandle is protected during this call, such that another thread accessing the same handle will return an error. However, it is important to note that once the call returns then other threads may then also read/write and affect the state before the current thread can service it.

To mitigate this risk the application may prefer to use the OS_TimedRead/OS_TimedWrite calls.

The timeout is expressed in milliseconds, relative to the time that the API was invoked. Use [OS_SelectSingleAbs\(\)](#) for higher timing precision.

Parameters

in	<i>objid</i>	The handle ID to select on
in, out	<i>StateFlags</i>	State flag(s) (readable or writable) (must not be null)
in	<i>msecs</i>	Indicates the timeout. Positive values will wait up to that many milliseconds. Zero will not wait (poll). Negative values will wait forever (pend)

See also

[OS_SelectSingleAbs\(\)](#)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	If the handle is readable and/or writable, as requested
OS_ERROR_TIMEOUT	If the handle did not become readable or writable within the timeout
OS_INVALID_POINTER	if argument is NULL
OS_ERR_INVALID_ID	if the objid is not a valid handle

10.75.2.8 OS_SelectSingleAbs() `int32 OS_SelectSingleAbs(`

```
    osal_id_t objid,
    uint32 * StateFlags,
    OS_time_t abs_timeout )
```

Wait for events on a single file handle.

Wait for a single OSAL filehandle to change state

This function can be used to wait for a single OSAL stream ID to become readable or writable. On entry, the "StateFlags" parameter should be set to the desired state (OS_STREAM_STATE_READABLE and/or OS_STREAM_STATE_WRITABLE) and upon return the flags will be set to the state actually detected.

As this operates on a single ID, the filehandle is protected during this call, such that another thread accessing the same handle will return an error. However, it is important to note that once the call returns then other threads may then also read/write and affect the state before the current thread can service it.

To mitigate this risk the application may prefer to use the OS_TimedRead/OS_TimedWrite calls.

This API is identical to [OS_SelectSingle\(\)](#) except for the timeout parameter. In this call, timeout is expressed as an absolute value of the OS clock, in the same time domain as obtained via [OS_GetLocalTime\(\)](#). This allows for a more precise timeout than what is possible via the normal [OS_SelectSingle\(\)](#).

Parameters

in	<i>objid</i>	The handle ID to select on
in, out	<i>StateFlags</i>	State flag(s) (readable or writable) (must not be null)
in	<i>abs_timeout</i>	The absolute time that the call may block until

See also

[OS_SelectSingle\(\)](#)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	If the handle is readable and/or writable, as requested
OS_ERROR_TIMEOUT	If the handle did not become readable or writable within the timeout
OS_INVALID_POINTER	if argument is NULL
OS_ERR_INVALID_ID	if the objid is not a valid handle

10.76 OSAL Shell APIs

Functions

- `int32 OS_ShellOutputToFile (const char *Cmd, osal_id_t filedes)`

Executes the command and sends output to a file.

10.76.1 Detailed Description

10.76.2 Function Documentation

10.76.2.1 OS_ShellOutputToFile() `int32 OS_ShellOutputToFile (`
`const char * Cmd,`
`osal_id_t filedes)`

Executes the command and sends output to a file.

Takes a shell command in and writes the output of that command to the specified file. The output file must be opened previously with write access (OS_WRITE_ONLY or OS_READ_WRITE).

Parameters

in	<i>Cmd</i>	Command to pass to shell (must not be null)
in	<i>filedes</i>	File to send output to.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERROR</code>	if the command was not executed properly
<code>OS_INVALID_POINTER</code>	if Cmd argument is NULL
<code>OS_ERR_INVALID_ID</code>	if the file descriptor passed in is invalid

10.77 OSAL Socket Address APIs

Functions

- `int32 OS_SocketAddrInit (OS_SockAddr_t *Addr, OS_SocketDomain_t Domain)`
Initialize a socket address structure to hold an address of the given family.
- `int32 OS_SocketAddrToString (char *buffer, size_t buflen, const OS_SockAddr_t *Addr)`
Get a string representation of a network host address.
- `int32 OS_SocketAddrFromString (OS_SockAddr_t *Addr, const char *string)`
Set a network host address from a string representation.
- `int32 OS_SocketAddrGetPort (uint16 *PortNum, const OS_SockAddr_t *Addr)`
Get the port number of a network address.
- `int32 OS_SocketAddrSetPort (OS_SockAddr_t *Addr, uint16 PortNum)`
Set the port number of a network address.

10.77.1 Detailed Description

These functions provide a means to manipulate network addresses in a manner that is (mostly) agnostic to the actual network address type.

Every network address should be representable as a string (i.e. dotted decimal IP, etc). This can serve as the "common denominator" to all address types.

10.77.2 Function Documentation

10.77.2.1 OS_SocketAddrFromString() `int32 OS_SocketAddrFromString (`
 `OS_SockAddr_t * Addr,`
 `const char * string)`

Set a network host address from a string representation.

The specific format of the output string depends on the address family.

The address structure should have been previously initialized using [OS_SocketAddrInit\(\)](#) to set the address family type.

Note

For IPv4, this would typically be the dotted-decimal format (X.X.X.X). It is up to the discretion of the underlying implementation whether to accept hostnames, as this depends on the availability of DNS services. Since many embedded deployments do not have name services, this should not be relied upon.

Parameters

out	<i>Addr</i>	The address buffer to initialize (must not be null)
in	<i>string</i>	The string to initialize the address from (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if argument is NULL
<i>OS_ERROR</i>	if the string cannot be converted to an address

10.77.2.2 OS_SocketAddrGetPort() `int32 OS_SocketAddrGetPort (`

```
    uint16 * PortNum,
    const OS_SockAddr_t * Addr )
```

Get the port number of a network address.

For network protocols that have the concept of a port number (such as TCP/IP and UDP/IP) this function gets the port number from the address structure.

Parameters

out	<i>PortNum</i>	Buffer to store the port number (must not be null)
in	<i>Addr</i>	The network address buffer (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if argument is NULL
<i>OS_ERR_BAD_ADDRESS</i>	if the address domain is not compatible

10.77.2.3 OS_SocketAddrInit() `int32 OS_SocketAddrInit (`

```
    OS_SockAddr_t * Addr,
    OS_SocketDomain_t Domain )
```

Initialize a socket address structure to hold an address of the given family.

The address is set to a suitable default value for the family.

Parameters

out	<i>Addr</i>	The address buffer to initialize (must not be null)
-----	-------------	---

Parameters

in	<i>Domain</i>	The address family
----	---------------	--------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if Addr argument is NULL
<i>OS_ERR_NOT_IMPLEMENTED</i>	if the system does not implement the requested domain

10.77.2.4 OS_SocketAddrSetPort() `int32 OS_SocketAddrSetPort (`

```
    OS_SockAddr_t * Addr,  
    uint16 PortNum )
```

Set the port number of a network address.

For network protocols that have the concept of a port number (such as TCP/IP and UDP/IP) this function sets the port number from the address structure.

Parameters

out	<i>Addr</i>	The network address buffer (must not be null)
in	<i>PortNum</i>	The port number to set

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if argument is NULL
<i>OS_ERR_BAD_ADDRESS</i>	if the address domain is not compatible

10.77.2.5 OS_SocketAddrToString() `int32 OS_SocketAddrToString (`

```
    char * buffer,  
    size_t bufLen,  
    const OS_SockAddr_t * Addr )
```

Get a string representation of a network host address.

The specific format of the output string depends on the address family.

This string should be suitable to pass back into [OS_SocketAddrFromString\(\)](#) which should recreate the same network address, and it should also be meaningful to a user of printed or logged as a C string.

Note

For IPv4, this would typically be the dotted-decimal format (X.X.X.X).

Parameters

out	<i>buffer</i>	Buffer to hold the output string (must not be null)
in	<i>buflen</i>	Maximum length of the output string (must not be zero)
in	<i>Addr</i>	The network address buffer to convert (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if argument is NULL
OS_ERR_INVALID_SIZE	if passed-in buflen is not valid
OS_ERROR	if the address cannot be converted to string, or string buffer too small

10.78 OSAL Socket Management APIs

Functions

- [`int32 OS_SocketOpen \(osal_id_t *sock_id, OS_SocketDomain_t Domain, OS_SocketType_t Type\)`](#)

Opens a socket.
- [`int32 OS_SocketBind \(osal_id_t sock_id, const OS_SockAddr_t *Addr\)`](#)

Binds a socket to a given local address and enter listening (server) mode.
- [`int32 OS_SocketListen \(osal_id_t sock_id\)`](#)

Places the specified socket into a listening state.
- [`int32 OS_SocketBindAddress \(osal_id_t sock_id, const OS_SockAddr_t *Addr\)`](#)

Binds a socket to a given local address.
- [`int32 OS_SocketConnectAbs \(osal_id_t sock_id, const OS_SockAddr_t *Addr, OS_time_t abs_timeout\)`](#)

Connects a socket to a given remote address.
- [`int32 OS_SocketConnect \(osal_id_t sock_id, const OS_SockAddr_t *Addr, int32 timeout\)`](#)

Connects a socket to a given remote address.
- [`int32 OS_SocketShutdown \(osal_id_t sock_id, OS_SocketShutdownMode_t Mode\)`](#)

Implement graceful shutdown of a stream socket.
- [`int32 OS_SocketAcceptAbs \(osal_id_t sock_id, osal_id_t *connsock_id, OS_SockAddr_t *Addr, OS_time_t abs_timeout\)`](#)

Waits for and accept the next incoming connection on the given socket.
- [`int32 OS_SocketAccept \(osal_id_t sock_id, osal_id_t *connsock_id, OS_SockAddr_t *Addr, int32 timeout\)`](#)

Waits for and accept the next incoming connection on the given socket.
- [`int32 OS_SocketRecvFromAbs \(osal_id_t sock_id, void *buffer, size_t buflen, OS_SockAddr_t *RemoteAddr, OS_time_t abs_timeout\)`](#)

Reads data from a message-oriented (datagram) socket.

- `int32 OS_SocketRecvFrom (osal_id_t sock_id, void *buffer, size_t buflen, OS_SockAddr_t *RemoteAddr, int32 timeout)`
Reads data from a message-oriented (datagram) socket.
- `int32 OS_SocketSendTo (osal_id_t sock_id, const void *buffer, size_t buflen, const OS_SockAddr_t *RemoteAddr)`
Sends data to a message-oriented (datagram) socket.
- `int32 OS_SocketGetIdByName (osal_id_t *sock_id, const char *sock_name)`
Gets an OSAL ID from a given name.
- `int32 OS_SocketGetInfo (osal_id_t sock_id, OS_socket_prop_t *sock_prop)`
Gets information about an OSAL Socket ID.

10.78.1 Detailed Description

These functions are loosely related to the BSD Sockets API but made to be more consistent with other OSAL API functions. That is, they operate on OSAL IDs (32-bit opaque number values) and return an OSAL error code.

OSAL Socket IDs are very closely related to File IDs and share the same ID number space. Additionally, the file `OS_read()` / `OS_write()` / `OS_close()` calls also work on sockets.

Note that all of functions may return `OS_ERR_NOT_IMPLEMENTED` if network support is not configured at compile time.

10.78.2 Function Documentation

10.78.2.1 `OS_SocketAccept()` `int32 OS_SocketAccept (`

```
    osal_id_t sock_id,
    osal_id_t * connsock_id,
    OS_SockAddr_t * Addr,
    int32 timeout )
```

Waits for and accept the next incoming connection on the given socket.

This is used for sockets operating in a "server" role. The socket must be a stream type (connection-oriented) and previously bound to a local address using `OS_SocketBind()`. This will block the caller up to the given timeout or until an incoming connection request occurs, whichever happens first.

The new stream connection is then returned to the caller and the original server socket ID can be reused for the next connection.

The timeout is expressed in milliseconds, relative to the time that the API was invoked. Use `OS_SocketAcceptAbs()` for higher timing precision.

Parameters

in	<code>sock_id</code>	The server socket ID, previously bound using <code>OS_SocketBind()</code>
out	<code>connsock_id</code>	The connection socket, a new ID that can be read/written (must not be null)
in	<code>Addr</code>	The remote address of the incoming connection (must not be null)
in	<code>timeout</code>	The maximum amount of time to wait, or <code>OS_PEND</code> to wait forever

See also

[OS_SocketAcceptAbs\(\)](#)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if argument is NULL
<i>OS_ERR_INVALID_ID</i>	if the <i>sock_id</i> parameter is not valid
<i>OS_ERR_INCORRECT_OBJ_TYPE</i>	if the handle is not a socket
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if the socket is not bound or already connected

10.78.2.2 OS_SocketAcceptAbs() `int32 OS_SocketAcceptAbs (`

```
    osal_id_t sock_id,
    osal_id_t * connsock_id,
    OS_SockAddr_t * Addr,
    OS_time_t abs_timeout )
```

Waits for and accept the next incoming connection on the given socket.

This is used for sockets operating in a "server" role. The socket must be a stream type (connection-oriented) and previously bound to a local address using [OS_SocketBind\(\)](#). This will block the caller up to the given timeout or until an incoming connection request occurs, whichever happens first.

The new stream connection is then returned to the caller and the original server socket ID can be reused for the next connection.

This API is identical to [OS_SocketAccept\(\)](#) except for the timeout parameter. In this call, timeout is expressed as an absolute value of the OS clock, in the same time domain as obtained via [OS_GetLocalTime\(\)](#). This allows for a more precise timeout than what is possible via the normal [OS_SocketAccept\(\)](#).

Parameters

in	<i>sock_id</i>	The server socket ID, previously bound using OS_SocketBind()
out	<i>connsock_id</i>	The connection socket, a new ID that can be read/written (must not be null)
in	<i>Addr</i>	The remote address of the incoming connection (must not be null)
in	<i>abs_timeout</i>	The absolute time that the call may block until

See also

[OS_SocketAccept\(\)](#)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if argument is NULL
<i>OS_ERR_INVALID_ID</i>	if the <i>sock_id</i> parameter is not valid
<i>OS_ERR_INCORRECT_OBJ_TYPE</i>	if the handle is not a socket
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if the socket is not bound or already connected

```
10.78.2.3 OS_SocketBind() int32 OS_SocketBind (
    osal_id_t sock_id,
    const OS_SockAddr_t * Addr )
```

Binds a socket to a given local address and enter listening (server) mode.

This is a convenience/compatibility routine to perform both [OS_SocketBindAddress\(\)](#) and [OS_SocketListen\(\)](#) operations in a single call, intended to simplify the setup for a server role.

If the socket is connectionless, then it only binds to the local address.

Parameters

in	<i>sock_id</i>	The socket ID
in	<i>Addr</i>	The local address to bind to (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the <i>sock_id</i> parameter is not valid
<i>OS_INVALID_POINTER</i>	if argument is NULL
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if the socket is already bound
<i>OS_ERR_INCORRECT_OBJ_TYPE</i>	if the handle is not a socket

```
10.78.2.4 OS_SocketBindAddress() int32 OS_SocketBindAddress (
    osal_id_t sock_id,
    const OS_SockAddr_t * Addr )
```

Binds a socket to a given local address.

The specified socket will be bound to the local address and port, if available. This controls the source address reflected in network traffic transmitted via this socket.

After binding to the address, a stream socket may be followed by a call to either [OS_SocketListen\(\)](#) for a server role or to [OS_SocketConnect\(\)](#) for a client role.

Parameters

in	<i>sock_id</i>	The socket ID
in	<i>Addr</i>	The local address to bind to (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the <code>sock_id</code> parameter is not valid
<code>OS_INVALID_POINTER</code>	if argument is NULL
<code>OS_ERR_INCORRECT_OBJ_STATE</code>	if the socket is already bound
<code>OS_ERR_INCORRECT_OBJ_TYPE</code>	if the handle is not a socket

10.78.2.5 OS_SocketConnect() `int32 OS_SocketConnect (`

```
    osal_id_t sock_id,
    const OS_SockAddr_t * Addr,
    int32 timeout )
```

Connects a socket to a given remote address.

The socket will be connected to the remote address and port, if available. This only applies to stream-oriented sockets. Calling this on a datagram socket will return an error (these sockets should use SendTo/RecvFrom).

The timeout is expressed in milliseconds, relative to the time that the API was invoked. Use `OS_SocketConnectAbs()` for higher timing precision.

Parameters

in	<code>sock_id</code>	The socket ID
in	<code>Addr</code>	The remote address to connect to (must not be null)
in	<code>timeout</code>	The maximum amount of time to wait, or <code>OS_PEND</code> to wait forever

See also

[OS_SocketConnectAbs\(\)](#)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INCORRECT_OBJ_STATE</code>	if the socket is already connected
<code>OS_ERR_INVALID_ID</code>	if the <code>sock_id</code> parameter is not valid
<code>OS_ERR_INCORRECT_OBJ_TYPE</code>	if the handle is not a socket
<code>OS_INVALID_POINTER</code>	if <code>Addr</code> argument is NULL

10.78.2.6 OS_SocketConnectAbs() `int32 OS_SocketConnectAbs (`

```
    osal_id_t sock_id,
    const OS_SockAddr_t * Addr,
    OS_time_t abs_timeout )
```

Connects a socket to a given remote address.

The socket will be connected to the remote address and port, if available. This only applies to stream-oriented sockets. Calling this on a datagram socket will return an error (these sockets should use SendTo/RecvFrom).

This API is identical to [OS_SocketConnect\(\)](#) except for the timeout parameter. In this call, timeout is expressed as an absolute value of the OS clock, in the same time domain as obtained via [OS_GetLocalTime\(\)](#). This allows for a more precise timeout than what is possible via the normal [OS_SocketConnect\(\)](#).

Parameters

in	<i>sock_id</i>	The socket ID
in	<i>Addr</i>	The remote address to connect to (must not be null)
in	<i>abs_timeout</i>	The absolute time that the call may block until

See also

[OS_SocketConnect\(\)](#)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INCORRECT_OBJ_STATE	if the socket is already connected
OS_ERR_INVALID_ID	if the <i>sock_id</i> parameter is not valid
OS_ERR_INCORRECT_OBJ_TYPE	if the handle is not a socket
OS_INVALID_POINTER	if <i>Addr</i> argument is NULL

10.78.2.7 OS_SocketGetIdByName() `int32 OS_SocketGetIdByName (`

```
    osal_id_t * sock_id,
    const char * sock_name )
```

Gets an OSAL ID from a given name.

Note

OSAL Sockets use generated names according to the address and type.

See also

[OS_SocketGetInfo\(\)](#)

Parameters

out	<i>sock_id</i>	Buffer to hold result (must not be null)
in	<i>sock_name</i>	Name of socket to find (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if id or name are NULL pointers
OS_ERR_NAME_TOO_LONG	name length including null terminator greater than OS_MAX_API_NAME
OS_ERR_NAME_NOT_FOUND	if the name was not found in the table

10.78.2.8 OS_SocketGetInfo() `int32 OS_SocketGetInfo (`

```
    osal_id_t sock_id,
    OS_socket_prop_t * sock_prop )
```

Gets information about an OSAL Socket ID.

OSAL Sockets use generated names according to the address and type. This allows applications to find the name of a given socket.

Parameters

in	<code>sock_id</code>	The socket ID
out	<code>sock_prop</code>	Buffer to hold socket information (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	if the id passed in is not a valid semaphore
OS_INVALID_POINTER	if the count_prop pointer is null

10.78.2.9 OS_SocketListen() `int32 OS_SocketListen (`

```
    osal_id_t sock_id )
```

Places the specified socket into a listening state.

This function only applies to connection-oriented (stream) sockets that are intended to be used in a server-side role. This places the socket into a state where it can accept incoming connections from clients.

Parameters

in	<code>sock_id</code>	The socket ID
----	----------------------	---------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the <i>sock_id</i> parameter is not valid
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if the socket is already listening
<i>OS_ERR_INCORRECT_OBJ_TYPE</i>	if the handle is not a stream socket

10.78.2.10 OS_SocketOpen() `int32 OS_SocketOpen (`
 `osal_id_t * sock_id,`
 `OS_SocketDomain_t Domain,`
 `OS_SocketType_t Type)`

Opens a socket.

A new, unconnected and unbound socket is allocated of the given domain and type.

Parameters

<i>out</i>	<i>sock_id</i>	Buffer to hold the non-zero OSAL ID (must not be null)
<i>in</i>	<i>Domain</i>	The domain / address family of the socket (INET or INET6, etc)
<i>in</i>	<i>Type</i>	The type of the socket (STREAM or DATAGRAM)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if argument is NULL
<i>OS_ERR_NOT_IMPLEMENTED</i>	if the system does not implement the requested socket/address domain

10.78.2.11 OS_SocketRecvFrom() `int32 OS_SocketRecvFrom (`
 `osal_id_t sock_id,`
 `void * buffer,`
 `size_t buflen,`
 `OS_SockAddr_t * RemoteAddr,`
 `int32 timeout)`

Reads data from a message-oriented (datagram) socket.

If a message is already available on the socket, this should immediately return that data without blocking. Otherwise, it may block up to the given timeout.

The timeout is expressed in milliseconds, relative to the time that the API was invoked. Use [OS_SocketRecvFromAbs\(\)](#) for higher timing precision.

Parameters

in	<i>sock_id</i>	The socket ID, previously bound using OS_SocketBind()
out	<i>buffer</i>	Pointer to message data receive buffer (must not be null)
in	<i>buflen</i>	The maximum length of the message data to receive (must not be zero)
out	<i>RemoteAddr</i>	Buffer to store the remote network address (may be NULL)
in	<i>timeout</i>	The maximum amount of time to wait or OS_PEND to wait forever

See also

[OS_SocketRecvFromAbs\(\)](#)

Returns

Count of actual bytes received or error status, see [OSAL Return Code Defines](#)

Return values

OS_INVALID_POINTER	if argument is NULL
OS_ERR_INVALID_SIZE	if passed-in buflen is not valid
OS_ERR_INVALID_ID	if the sock_id parameter is not valid
OS_ERR_INCORRECT_OBJ_TYPE	if the handle is not a socket

```
10.78.2.12 OS_SocketRecvFromAbs() int32 OS_SocketRecvFromAbs (
    osal_id_t sock_id,
    void * buffer,
    size_t buflen,
    OS_SockAddr_t * RemoteAddr,
    OS_time_t abs_timeout )
```

Reads data from a message-oriented (datagram) socket.

If a message is already available on the socket, this should immediately return that data without blocking. Otherwise, it may block up to the given timeout.

This API is identical to [OS_SocketRecvFrom\(\)](#) except for the timeout parameter. In this call, timeout is expressed as an absolute value of the OS clock, in the same time domain as obtained via [OS_GetLocalTime\(\)](#). This allows for a more precise timeout than what is possible via the normal [OS_SocketRecvFrom\(\)](#).

Parameters

in	<i>sock_id</i>	The socket ID, previously bound using OS_SocketBind()
out	<i>buffer</i>	Pointer to message data receive buffer (must not be null)
in	<i>buflen</i>	The maximum length of the message data to receive (must not be zero)
out	<i>RemoteAddr</i>	Buffer to store the remote network address (may be NULL)
in	<i>abs_timeout</i>	The absolute time at which the call should return if nothing received

Returns

Count of actual bytes received or error status, see [OSAL Return Code Defines](#)

Return values

<code>OS_INVALID_POINTER</code>	if argument is NULL
<code>OS_ERR_INVALID_SIZE</code>	if passed-in buflen is not valid
<code>OS_ERR_INVALID_ID</code>	if the sock_id parameter is not valid
<code>OS_ERR_INCORRECT_OBJ_TYPE</code>	if the handle is not a socket

10.78.2.13 OS_SocketSendTo() `int32 OS_SocketSendTo (`

```
    osal_id_t sock_id,
    const void * buffer,
    size_t buflen,
    const OS_SockAddr_t * RemoteAddr )
```

Sends data to a message-oriented (datagram) socket.

This sends data in a non-blocking mode. If the socket is not currently able to queue the message, such as if its outbound buffer is full, then this returns an error code.

Parameters

in	<i>sock_id</i>	The socket ID, which must be of the datagram type
in	<i>buffer</i>	Pointer to message data to send (must not be null)
in	<i>buflen</i>	The length of the message data to send (must not be zero)
in	<i>RemoteAddr</i>	Buffer containing the remote network address to send to

Returns

Count of actual bytes sent or error status, see [OSAL Return Code Defines](#)

Return values

<code>OS_INVALID_POINTER</code>	if argument is NULL
<code>OS_ERR_INVALID_SIZE</code>	if passed-in buflen is not valid
<code>OS_ERR_INVALID_ID</code>	if the sock_id parameter is not valid
<code>OS_ERR_INCORRECT_OBJ_TYPE</code>	if the handle is not a socket

10.78.2.14 OS_SocketShutdown() `int32 OS_SocketShutdown (`

```
    osal_id_t sock_id,
    OS_SocketShutdownMode_t Mode )
```

Implement graceful shutdown of a stream socket.

This can be utilized to indicate the end of data stream without immediately closing the socket, giving the remote side an indication that the data transfer is complete.

Parameters

in	<i>sock_id</i>	The socket ID
in	<i>Mode</i>	Whether to shutdown reading, writing, or both.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_INVALID_ID</code>	if the <code>sock_id</code> parameter is not valid
<code>OS_ERR_INVALID_ARGUMENT</code>	if the <code>Mode</code> argument is not one of the valid options
<code>OS_ERR_INCORRECT_OBJ_TYPE</code>	if the handle is not a socket
<code>OS_ERR_INCORRECT_OBJ_STATE</code>	if the socket is not connected

10.79 OSAL Task APIs

Functions

- `int32 OS_TaskCreate (osal_id_t *task_id, const char *task_name, osal_task_entry function_pointer, osal_stackptr_t stack_pointer, size_t stack_size, osal_priority_t priority, uint32 flags)`

Creates a task and starts running it.
- `int32 OS_TaskDelete (osal_id_t task_id)`

Deletes the specified Task.
- `void OS_TaskExit (void)`

Exits the calling task.
- `int32 OS_TaskInstallDeleteHandler (osal_task_entry function_pointer)`

Installs a handler for when the task is deleted.
- `int32 OS_TaskDelay (uint32 millisecond)`

Delay a task for specified amount of milliseconds.
- `int32 OS_TaskSetPriority (osal_id_t task_id, osal_priority_t new_priority)`

Sets the given task to a new priority.
- `osal_id_t OS_TaskGetId (void)`

Obtain the task id of the calling task.
- `int32 OS_TaskGetIdByName (osal_id_t *task_id, const char *task_name)`

Find an existing task ID by name.
- `int32 OS_TaskGetInfo (osal_id_t task_id, OS_task_prop_t *task_prop)`

Fill a property object buffer with details regarding the resource.
- `int32 OS_TaskFindIdBySystemData (osal_id_t *task_id, const void *sysdata, size_t sysdata_size)`

Reverse-lookup the OSAL task ID from an operating system ID.

10.79.1 Detailed Description

10.79.2 Function Documentation

10.79.2.1 OS_TaskCreate() `int32 OS_TaskCreate (`

```
osal_id_t * task_id,
const char * task_name,
osal_task_entry function_pointer,
osal_stackptr_t stack_pointer,
size_t stack_size,
```

```
    osal_priority_t priority,  
    uint32 flags )
```

Creates a task and starts running it.

Creates a task and passes back the id of the task created. Task names must be unique; if the name already exists this function fails. Names cannot be NULL.

Portable applications should always specify the actual stack size in the stack_size parameter, not 0. This size value is not enforced/checked by OSAL, but is simply passed through to the RTOS for stack creation. Some RTOS implementations may assume 0 means a default stack size while others may actually create a task with no stack.

Unlike stack_size, the stack_pointer is optional and can be specified as NULL. In that case, a stack of the requested size will be dynamically allocated from the system heap.

Parameters

out	<i>task_id</i>	will be set to the non-zero ID of the newly-created resource (must not be null)
in	<i>task_name</i>	the name of the new resource to create (must not be null)
in	<i>function_pointer</i>	the entry point of the new task (must not be null)
in	<i>stack_pointer</i>	pointer to the stack for the task, or NULL to allocate a stack from the system memory heap
in	<i>stack_size</i>	the size of the stack (must not be zero)
in	<i>priority</i>	initial priority of the new task
in	<i>flags</i>	initial options for the new task

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_INVALID_POINTER	if any of the necessary pointers are NULL
OS_ERR_INVALID_SIZE	if the stack_size argument is zero
OS_ERR_NAME_TOO_LONG	name length including null terminator greater than OS_MAX_API_NAME
OS_ERR_INVALID_PRIORITY	if the priority is bad (return value only verified in coverage test)
OS_ERR_NO_FREE_IDS	if there can be no more tasks created
OS_ERR_NAME_TAKEN	if the name specified is already used by a task
OS_ERROR	if an unspecified/other error occurs (return value only verified in coverage test)

10.79.2.2 OS_TaskDelay() `int32 OS_TaskDelay (` `uint32 millisecond)`

Delay a task for specified amount of milliseconds.

Causes the current thread to be suspended from execution for the period of millisecond. This is a scheduled wait (clock_nanosleep/rtems_task_wake_after/taskDelay), not a "busy" wait.

Parameters

in	<i>millisecond</i>	Amount of time to delay
----	--------------------	-------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERROR</i>	if an unspecified/other error occurs (return value only verified in coverage test)

Referenced by FM_ChildConcatFilesCmd(), FM_ChildFileInfoCmd(), and FM_ChildSleepStat().

10.79.2.3 OS_TaskDelete() `int32 OS_TaskDelete (`
`osal_id_t task_id)`

Deletes the specified Task.

The task will be removed from the local tables. and the OS will be configured to stop executing the task at the next opportunity.

Parameters

<code>in</code>	<code>task_id</code>	The object ID to operate on
-----------------	----------------------	-----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the ID given to it is invalid
<i>OS_ERROR</i>	if the OS delete call fails (return value only verified in coverage test)

10.79.2.4 OS_TaskExit() `void OS_TaskExit (`
`void)`

Exits the calling task.

The calling thread is terminated. This function does not return.

10.79.2.5 OS_TaskFindIdBySystemData() `int32 OS_TaskFindIdBySystemData (`
`osal_id_t * task_id,`
`const void * sysdata,`
`size_t sysdata_size)`

Reverse-lookup the OSAL task ID from an operating system ID.

This provides a method by which an external entity may find the OSAL task ID corresponding to a system-defined identifier (e.g. TASK_ID, pthread_t, rtems_id, etc).

Normally OSAL does not expose the underlying OS-specific values to the application, but in some circumstances, such as exception handling, the OS may provide this information directly to a BSP handler outside of the normal OSAL API.

Parameters

out	<i>task_id</i>	The buffer where the task id output is stored (must not be null)
in	<i>sysdata</i>	Pointer to the system-provided identification data
in	<i>sysdata_size</i>	Size of the system-provided identification data

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution. (return value only verified in coverage test)
<i>OS_INVALID_POINTER</i>	if a pointer argument is NULL

10.79.2.6 OS_TaskGetId() `osal_id_t OS_TaskGetId (`
 `void)`

Obtain the task id of the calling task.

This function returns the task id of the calling task

Returns

Task ID, or zero if the operation failed (zero is never a valid task ID)

10.79.2.7 OS_TaskGetIdByName() `int32 OS_TaskGetIdByName (`
 `osal_id_t * task_id,`
 `const char * task_name)`

Find an existing task ID by name.

This function tries to find a task Id given the name of a task

Parameters

out	<i>task_id</i>	will be set to the ID of the existing resource
in	<i>task_name</i>	the name of the existing resource to find (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if the pointers passed in are NULL
<i>OS_ERR_NAME_TOO_LONG</i>	name length including null terminator greater than OS_MAX_API_NAME
<i>OS_ERR_NAME_NOT_FOUND</i>	if the name wasn't found in the table

```
10.79.2.8 OS_TaskGetInfo() int32 OS_TaskGetInfo (
    osal_id_t task_id,
    OS_task_prop_t * task_prop )
```

Fill a property object buffer with details regarding the resource.

This function will pass back a pointer to structure that contains all of the relevant info (creator, stack size, priority, name) about the specified task.

Parameters

in	<i>task_id</i>	The object ID to operate on
out	<i>task_prop</i>	The property object buffer to fill (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the ID passed to it is invalid
<i>OS_INVALID_POINTER</i>	if the task_prop pointer is NULL

Referenced by LoadOpenFileData().

```
10.79.2.9 OS_TaskInstallDeleteHandler() int32 OS_TaskInstallDeleteHandler (
    osal_task_entry function_pointer )
```

Installs a handler for when the task is deleted.

This function is used to install a callback that is called when the task is deleted. The callback is called when OS_TaskDelete is called with the task ID. A task delete handler is useful for cleaning up resources that a task creates, before the task is removed from the system.

Parameters

in	<i>function_pointer</i>	function to be called when task exits
----	-------------------------	---------------------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_ERR_INVALID_ID</i>	if the calling context is not an OSAL task
--------------------------	--

```
10.79.2.10 OS_TaskSetPriority() int32 OS_TaskSetPriority (
    osal_id_t task_id,
```

```
osal_priority_t new_priority )
```

Sets the given task to a new priority.

Parameters

in	<i>task_id</i>	The object ID to operate on
in	<i>new_priority</i>	Set the new priority

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the ID passed to it is invalid
<i>OS_ERR_INVALID_PRIORITY</i>	if the priority is greater than the max allowed (return value only verified in coverage test)
<i>OS_ERROR</i>	if an unspecified/other error occurs (return value only verified in coverage test)

10.80 OSAL Time Base APIs

Functions

- [`int32 OS_TimeBaseCreate \(osal_id_t *timebase_id, const char *timebase_name, OS_TimerSync_t external_sync\)`](#)

Create an abstract Time Base resource.
- [`int32 OS_TimeBaseSet \(osal_id_t timebase_id, uint32 start_time, uint32 interval_time\)`](#)

Sets the tick period for simulated time base objects.
- [`int32 OS_TimeBaseDelete \(osal_id_t timebase_id\)`](#)

Deletes a time base object.
- [`int32 OS_TimeBaseGetIdByName \(osal_id_t *timebase_id, const char *timebase_name\)`](#)

Find the ID of an existing time base resource.
- [`int32 OS_TimeBaseGetInfo \(osal_id_t timebase_id, OS_timebase_prop_t *timebase_prop\)`](#)

Obtain information about a timebase resource.
- [`int32 OS_TimeBaseGetFreeRun \(osal_id_t timebase_id, uint32 *freerun_val\)`](#)

Read the value of the timebase free run counter.

10.80.1 Detailed Description

10.80.2 Function Documentation

10.80.2.1 OS_TimeBaseCreate() [`int32 OS_TimeBaseCreate \(`](#)
[`osal_id_t * timebase_id,`](#)
[`const char * timebase_name,`](#)
[`OS_TimerSync_t external_sync \)`](#)

Create an abstract Time Base resource.

An OSAL time base is an abstraction of a "timer tick" that can, in turn, be used for measurement of elapsed time between events.

Time bases can be simulated by the operating system using the OS kernel-provided timing facilities, or based on a hardware timing source if provided by the BSP.

A time base object has a servicing task associated with it, that runs at elevated priority and will thereby interrupt user-level tasks when timing ticks occur.

If the `external_sync` function is passed as NULL, the operating system kernel timing resources will be utilized for a simulated timer tick.

If the `external_sync` function is not NULL, this should point to a BSP-provided function that will block the calling task until the next tick occurs. This can be used for synchronizing with hardware events.

Note

When provisioning a tunable RTOS kernel, such as RTEMS, the kernel should be configured to support at least `(OS_MAX_TASKS + OS_MAX_TIMEBASES)` threads, to account for the helper threads associated with time base objects.

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

Parameters

<code>out</code>	<code>timebase_id</code>	will be set to the non-zero ID of the newly-created resource (must not be null)
<code>in</code>	<code>timebase_name</code>	The name of the time base (must not be null)
<code>in</code>	<code>external_sync</code>	A synchronization function for BSP hardware-based timer ticks

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<code>OS_SUCCESS</code>	Successful execution.
<code>OS_ERR_NAME_TAKEN</code>	if the name specified is already used
<code>OS_ERR_NO_FREE_IDS</code>	if there can be no more timebase resources created
<code>OS_ERR_INCORRECT_OBJ_STATE</code>	if called from timer/timebase context
<code>OS_ERR_NAME_TOO_LONG</code>	if the <code>timebase_name</code> is too long
<code>OS_INVALID_POINTER</code>	if a pointer argument is NULL

10.80.2.2 `OS_TimeBaseDelete()`

```
int32 OS_TimeBaseDelete (
    osal_id_t timebase_id )
```

Deletes a time base object.

The helper task and any other resources associated with the time base abstraction will be freed.

Note

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

Parameters

in	<i>timebase_id</i>	The timebase resource to delete
----	--------------------	---------------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a valid timebase
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if called from timer/timebase context

10.80.2.3 OS_TimeBaseGetFreeRun() `int32 OS_TimeBaseGetFreeRun (`

```
    osal_id_t timebase_id,  
    uint32 * freerun_val )
```

Read the value of the timebase free run counter.

Poll the timer free-running time counter in a lightweight fashion.

The free run count is a monotonically increasing value reflecting the total time elapsed since the timebase inception. Units are the same as the timebase itself, usually microseconds.

Applications may quickly and efficiently calculate relative time differences by polling this value and subtracting the previous counter value.

The absolute value of this counter is not relevant, because it will "roll over" after 2^{32} units of time. For a timebase with microsecond units, this occurs approximately every 4294 seconds, or about 1.2 hours.

Note

To ensure consistency of results, the application should sample the value at a minimum of two times the roll over frequency, and calculate the difference between the consecutive samples.

Parameters

in	<i>timebase_id</i>	The timebase to operate on
out	<i>freerun_val</i>	Buffer to store the free run counter (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a valid timebase
<i>OS_INVALID_POINTER</i>	if pointer argument is NULL

```
10.80.2.4 OS_TimeBaseGetIdByName() int32 OS_TimeBaseGetIdByName (
    osal_id_t * timebase_id,
    const char * timebase_name )
```

Find the ID of an existing time base resource.

Given a time base name, find and output the ID associated with it.

Note

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

Parameters

out	<i>timebase_id</i>	will be set to the non-zero ID of the matching resource (must not be null)
in	<i>timebase_name</i>	The name of the timebase resource to find (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if timebase_id or timebase_name are NULL pointers
<i>OS_ERR_NAME_TOO_LONG</i>	name length including null terminator greater than OS_MAX_API_NAME
<i>OS_ERR_NAME_NOT_FOUND</i>	if the name was not found in the table
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if called from timer/timebase context

```
10.80.2.5 OS_TimeBaseGetInfo() int32 OS_TimeBaseGetInfo (
    osal_id_t timebase_id,
    OS_timebase_prop_t * timebase_prop )
```

Obtain information about a timebase resource.

Fills the buffer referred to by the timebase_prop parameter with relevant information about the time base resource.

This function will pass back a pointer to structure that contains all of the relevant info(name and creator) about the specified timebase.

Note

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

Parameters

in	<i>timebase_id</i>	The timebase resource ID
out	<i>timebase_prop</i>	Buffer to store timebase properties (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a valid timebase
<i>OS_INVALID_POINTER</i>	if the timebase_prop pointer is null
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if called from timer/timebase context

```
10.80.2.6 OS_TimeBaseSet() int32 OS_TimeBaseSet (
    osal_id_t timebase_id,
    uint32 start_time,
    uint32 interval_time )
```

Sets the tick period for simulated time base objects.

This sets the actual tick period for timing ticks that are simulated by the RTOS kernel (i.e. the "external_sync" parameter on the call to [OS_TimeBaseCreate\(\)](#) is NULL).

The RTOS will be configured to wake up the helper thread at the requested interval.

This function has no effect for time bases that are using a BSP-provided external_sync function.

Note

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

Parameters

in	<i>timebase_id</i>	The timebase resource to configure
in	<i>start_time</i>	The amount of delay for the first tick, in microseconds.
in	<i>interval_time</i>	The amount of delay between ticks, in microseconds.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the id passed in is not a valid timebase
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if called from timer/timebase context
<i>OS_TIMER_ERR_INVALID_ARGS</i>	if start_time or interval_time are out of range

10.81 OSAL Timer APIs

Functions

- `int32 OS_TimerCreate (osal_id_t *timer_id, const char *timer_name, uint32 *clock_accuracy, OS_TimerCallback_t callback_ptr)`
Create a timer object.
- `int32 OS_TimerAdd (osal_id_t *timer_id, const char *timer_name, osal_id_t timebase_id, OS_ArgCallback_t callback_ptr, void *callback_arg)`
Add a timer object based on an existing TimeBase resource.
- `int32 OS_TimerSet (osal_id_t timer_id, uint32 start_time, uint32 interval_time)`
Configures a periodic or one shot timer.
- `int32 OS_TimerDelete (osal_id_t timer_id)`
Deletes a timer resource.
- `int32 OS_TimerGetIdByName (osal_id_t *timer_id, const char *timer_name)`
Locate an existing timer resource by name.
- `int32 OS_TimerGetInfo (osal_id_t timer_id, OS_timer_prop_t *timer_prop)`
Gets information about an existing timer.

10.81.1 Detailed Description

10.81.2 Function Documentation

10.81.2.1 OS_TimerAdd() `int32 OS_TimerAdd (`
 `osal_id_t * timer_id,`
 `const char * timer_name,`
 `osal_id_t timebase_id,`
 `OS_ArgCallback_t callback_ptr,`
 `void * callback_arg)`

Add a timer object based on an existing TimeBase resource.

A timer object is a resource that invokes the specified application-provided function upon timer expiration. Timers may be one-shot or periodic in nature.

This function uses an existing time base object to service this timer, which must exist prior to adding the timer. The precision of the timer is the same as that of the underlying time base object. Multiple timer objects can be created referring to a single time base object.

This routine also uses a different callback function prototype from `OS_TimerCreate()`, allowing a single opaque argument to be passed to the callback routine. The OSAL implementation does not use this parameter, and may be set NULL.

The callback function for this method should be declared according to the `OS_ArgCallback_t` function pointer type. The `timer_id` is passed in to the function by the OSAL, and the `arg` parameter is passed through from the `callback_arg` argument on this call.

Note

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

See also

[OS_ArgCallback_t](#)

Parameters

out	<i>timer_id</i>	Will be set to the non-zero resource ID of the timer object (must not be null)
in	<i>timer_name</i>	Name of the timer object (must not be null)
in	<i>timebase_id</i>	The time base resource to use as a reference
in	<i>callback_ptr</i>	Application-provided function to invoke (must not be null)
in	<i>callback_arg</i>	Opaque argument to pass to callback function, may be NULL

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if any parameters are NULL
<i>OS_ERR_INVALID_ID</i>	if the timebase_id parameter is not valid
<i>OS_ERR_NAME_TOO_LONG</i>	name length including null terminator greater than <i>OS_MAX_API_NAME</i>
<i>OS_ERR_NAME_TAKEN</i>	if the name is already in use by another timer.
<i>OS_ERR_NO_FREE_IDS</i>	if all of the timers are already allocated.
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if invoked from a timer context
<i>OS_TIMER_ERR_INTERNAL</i>	if there was an error programming the OS timer (return value only verified in coverage test)

```
10.81.2.2 OS_TimerCreate() int32 OS_TimerCreate (
    osal_id_t * timer_id,
    const char * timer_name,
    uint32 * clock_accuracy,
    OS_TimerCallback_t callback_ptr )
```

Create a timer object.

A timer object is a resource that invokes the specified application-provided function upon timer expiration. Timers may be one-shot or periodic in nature.

This function creates a dedicated (hidden) time base object to service this timer, which is created and deleted with the timer object itself. The internal time base is configured for an OS simulated timer tick at the same interval as the timer. The callback function should be declared according to the *OS_TimerCallback_t* function pointer type. The *timer_id* value is passed to the callback function.

Note

clock_accuracy comes from the underlying OS tick value. The nearest integer microsecond value is returned, so may not be exact.

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

See also

[OS_TimerCallback_t](#)

Parameters

out	<i>timer_id</i>	Will be set to the non-zero resource ID of the timer object (must not be null)
in	<i>timer_name</i>	Name of the timer object (must not be null)
out	<i>clock_accuracy</i>	Expected precision of the timer, in microseconds. This is the underlying tick value rounded to the nearest microsecond integer. (must not be null)
in	<i>callback_ptr</i>	The function pointer of the timer callback (must not be null).

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if any parameters are NULL
<i>OS_ERR_NAME_TOO_LONG</i>	name length including null terminator greater than OS_MAX_API_NAME
<i>OS_ERR_NAME_TAKEN</i>	if the name is already in use by another timer.
<i>OS_ERR_NO_FREE_IDS</i>	if all of the timers are already allocated.
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if invoked from a timer context
<i>OS_TIMER_ERR_INTERNAL</i>	if there was an error programming the OS timer (return value only verified in coverage test)

10.81.2.3 OS_TimerDelete() `int32 OS_TimerDelete (osal_id_t timer_id)`

Deletes a timer resource.

The application callback associated with the timer will be stopped, and the resources freed for future use.

Note

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

Parameters

in	<i>timer_id</i>	The timer ID to operate on
----	-----------------	----------------------------

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_ERR_INVALID_ID</i>	if the timer_id is invalid.
<i>OS_TIMER_ERR_INTERNAL</i>	if there was a problem deleting the timer in the host OS (return value only verified in coverage test)
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if called from timer/timebase context

```
10.81.2.4 OS_TimerGetIdByName() int32 OS_TimerGetIdByName (
    osal_id_t * timer_id,
    const char * timer_name )
```

Locate an existing timer resource by name.

Outputs the ID associated with the given timer, if it exists.

Note

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

Parameters

out	<i>timer_id</i>	Will be set to the timer ID corresponding to the name (must not be null)
in	<i>timer_name</i>	The timer name to find (must not be null)

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

<i>OS_SUCCESS</i>	Successful execution.
<i>OS_INVALID_POINTER</i>	if timer_id or timer_name are NULL pointers
<i>OS_ERR_NAME_TOO_LONG</i>	name length including null terminator greater than OS_MAX_API_NAME
<i>OS_ERR_NAME_NOT_FOUND</i>	if the name was not found in the table
<i>OS_ERR_INCORRECT_OBJ_STATE</i>	if called from timer/timebase context

```
10.81.2.5 OS_TimerGetInfo() int32 OS_TimerGetInfo (
    osal_id_t timer_id,
    OS_timer_prop_t * timer_prop )
```

Gets information about an existing timer.

This function takes timer_id, and looks it up in the OS table. It puts all of the information known about that timer into a structure pointer to by timer_prop.

Parameters

Note

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

Parameters

in	<i>timer_id</i>	The timer ID to operate on
out	<i>timer_prop</i>	<p>Buffer containing timer properties (must not be null)</p> <ul style="list-style-type: none"> • creator: the OS task ID of the task that created this timer • name: the string name of the timer • start_time: the start time in microseconds, if any • interval_time: the interval time in microseconds, if any • accuracy: the accuracy of the timer in microseconds

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	if the id passed in is not a valid timer
OS_INVALID_POINTER	if the timer_prop pointer is null
OS_ERR_INCORRECT_OBJ_STATE	if called from timer/timebase context

10.81.2.6 OS_TimerSet() `int32 OS_TimerSet(`

```
    osal_id_t timer_id,
    uint32 start_time,
    uint32 interval_time )
```

Configures a periodic or one shot timer.

This function programs the timer with a start time and an optional interval time. The start time is the time in microseconds when the user callback function will be called. If the interval time is non-zero, the timer will be reprogrammed with that interval in microseconds to call the user callback function periodically. If the start time and interval time are zero, the function will return an error.

For a "one-shot" timer, the start_time configures the expiration time, and the interval_time should be passed as zero to indicate the timer is not to be automatically reset.

Note

The resolution of the times specified is limited to the clock accuracy returned in the OS_TimerCreate call. If the times specified in the start_msec or interval_msec parameters are less than the accuracy, they will be rounded up to the accuracy of the timer.

This configuration API must not be used from the context of a timer callback. Timers should only be configured from the context of normal OSAL tasks.

Parameters

in	<i>timer_id</i>	The timer ID to operate on
in	<i>start_time</i>	Time in microseconds to the first expiration
in	<i>interval_time</i>	Time in microseconds between subsequent intervals, value of zero will only call the user callback function once after the start_msec time.

Returns

Execution status, see [OSAL Return Code Defines](#)

Return values

OS_SUCCESS	Successful execution.
OS_ERR_INVALID_ID	if the timer_id is not valid.
OS_TIMER_ERR_INTERNAL	if there was an error programming the OS timer (return value only verified in coverage test)
OS_ERR_INCORRECT_OBJ_STATE	if called from timer/timebase context
OS_TIMER_ERR_INVALID_ARGS	if the start_time or interval_time is out of range, or both 0

11 Data Structure Documentation

11.1 CCSDS_ExtendedHeader Struct Reference

CCSDS packet extended header.

```
#include <ccsds_hdr.h>
```

Data Fields

- `uint8 Subsystem [2]`
subsystem qualifier
- `uint8 SystemId [2]`
system qualifier

11.1.1 Detailed Description

CCSDS packet extended header.

Definition at line 73 of file ccsds_hdr.h.

11.1.2 Field Documentation

11.1.2.1 Subsystem `uint8 CCSDS_ExtendedHeader::Subsystem [2]`

subsystem qualifier

Definition at line 75 of file ccsds_hdr.h.

11.1.2.2 SystemId `uint8 CCSDS_ExtendedHeader::SystemId[2]`

system qualifier

Definition at line 82 of file `ccsds_hdr.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/msg/fsw/inc/ccsds_hdr.h`

11.2 CCSDS_PrimaryHeader Struct Reference

CCSDS packet primary header.

```
#include <ccsds_hdr.h>
```

Data Fields

- `uint8 StreamId [2]`
packet identifier word (stream ID)
- `uint8 Sequence [2]`
packet sequence word
- `uint8 Length [2]`
packet length word

11.2.1 Detailed Description

CCSDS packet primary header.

Definition at line 51 of file `ccsds_hdr.h`.

11.2.2 Field Documentation

11.2.2.1 Length `uint8 CCSDS_PrimaryHeader::Length[2]`

packet length word

Definition at line 65 of file `ccsds_hdr.h`.

11.2.2.2 Sequence `uint8 CCSDS_PrimaryHeader::Sequence[2]`

packet sequence word

Definition at line 60 of file `ccsds_hdr.h`.

11.2.2.3 StreamId `uint8 CCSDS_PrimaryHeader::StreamId[2]`

packet identifier word (stream ID)

Definition at line 53 of file `ccsds_hdr.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/msg/fsw/inc/ccsds_hdr.h`

11.3 CFE_Config_ArrayValue Struct Reference

Wrapper type for array configuration.

```
#include <cfe_config_api_typedefs.h>
```

Data Fields

- size_t [NumElements](#)
- const void * [ElementPtr](#)

11.3.1 Detailed Description

Wrapper type for array configuration.

This is a pair containing a size and pointer that is get/set via a single config table entry

Definition at line 59 of file [cfe_config_api_typedefs.h](#).

11.3.2 Field Documentation**11.3.2.1 ElementPtr const void* CFE_Config_ArrayValue::ElementPtr**

Definition at line 62 of file [cfe_config_api_typedefs.h](#).

11.3.2.2 NumElements size_t CFE_Config_ArrayValue::NumElements

Definition at line 61 of file [cfe_config_api_typedefs.h](#).

The documentation for this struct was generated from the following file:

- [cfe/modules/core_api/fsw/inc/cfe_config_api_typedefs.h](#)

11.4 CFE_Config_IdNameEntry Struct Reference

```
#include <cfe_config_nametable.h>
```

Data Fields

- const char * [Name](#)

11.4.1 Detailed Description

Definition at line 33 of file [cfe_config_nametable.h](#).

11.4.2 Field Documentation**11.4.2.1 Name const char* CFE_Config_IdNameEntry::Name**

Definition at line 35 of file [cfe_config_nametable.h](#).

The documentation for this struct was generated from the following file:

- [cfe/modules/config/fsw/inc/cfe_config_nametable.h](#)

11.5 CFE_Config_ValueBuffer Union Reference

```
#include <cfe_config_table.h>
```

Data Fields

- uint32 [AsInteger](#)
- const void * [AsPointer](#)

11.5.1 Detailed Description

Definition at line 43 of file cfe_config_table.h.

11.5.2 Field Documentation

11.5.2.1 AsInteger `uint32 CFE_Config_ValueBuffer::AsInteger`

Definition at line 45 of file cfe_config_table.h.

11.5.2.2 AsPointer `const void* CFE_Config_ValueBuffer::AsPointer`

Definition at line 46 of file cfe_config_table.h.

The documentation for this union was generated from the following file:

- [cfe/modules/config/fsw/inc/cfe_config_table.h](#)

11.6 CFE_Config_ValueEntry Struct Reference

```
#include <cfe_config_table.h>
```

Data Fields

- `CFE_ConfigType_t ActualType`
- `CFE_Config_ValueBuffer_t Datum`

11.6.1 Detailed Description

Definition at line 49 of file cfe_config_table.h.

11.6.2 Field Documentation

11.6.2.1 ActualType `CFE_ConfigType_t CFE_Config_ValueEntry::ActualType`

Definition at line 51 of file cfe_config_table.h.

11.6.2.2 Datum `CFE_Config_ValueBuffer_t CFE_Config_ValueEntry::Datum`

Definition at line 52 of file cfe_config_table.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/config/fsw/inc/cfe_config_table.h](#)

11.7 CFE_ES_AppInfo Struct Reference

Application Information.

```
#include <default_cfe_es_extern_typedefs.h>
```

Data Fields

- CFE_ResourceId_t **ResourceID**
Application or Library ID for this resource.
- uint32 **Type**
The type of App: CORE or EXTERNAL.
- char **Name [CFE_MISSION_MAX_API_LEN]**
The Registered Name of the Application.
- char **EntryPoint [CFE_MISSION_MAX_API_LEN]**
The Entry Point label for the Application.
- char **FileName [CFE_MISSION_MAX_PATH_LEN]**
The Filename of the file containing the Application.
- CFE_ES_MemOffset_t **StackSize**
The Stack Size of the Application.
- uint32 **AddressesAreValid**
Indicates that the Code, Data, and BSS addresses/sizes are valid.
- CFE_ES_MemAddress_t **CodeAddress**
The Address of the Application Code Segment.
- CFE_ES_MemOffset_t **CodeSize**
The Code Size of the Application.
- CFE_ES_MemAddress_t **DataAddress**
The Address of the Application Data Segment.
- CFE_ES_MemOffset_t **DataSize**
The Data Size of the Application.
- CFE_ES_MemAddress_t **BSSAddress**
The Address of the Application BSS Segment.
- CFE_ES_MemOffset_t **BSSSize**
The BSS Size of the Application.
- CFE_ES_MemAddress_t **StartAddress**
The Start Address of the Application.
- CFE_ES_ExceptionAction_Enum_t **ExceptionAction**
What should occur if Application has an exception (Restart Application OR Restart Processor)
- CFE_ES_TaskPriority_Atom_t **Priority**
The Priority of the Application.
- CFE_ES_TaskId_t **MainTaskId**
The Application's Main Task ID.
- uint32 **ExecutionCounter**
The Application's Main Task Execution Counter.
- char **MainTaskName [CFE_MISSION_MAX_API_LEN]**
The Application's Main Task ID.
- uint32 **NumOfChildTasks**
Number of Child tasks for an App.

11.7.1 Detailed Description

Application Information.

Structure that is used to provide information about an app. It is primarily used for the QueryOne and QueryAll Commands.

While this structure is primarily intended for Application info, it can also represent Library information where only a subset of the information applies.

Definition at line 441 of file default_cfe_es_extern_typedefs.h.

11.7.2 Field Documentation

11.7.2.1 AddressesAreValid `uint32 CFE_ES_AppInfo::AddressesAreValid`
Indicates that the Code, Data, and BSS addresses/sizes are valid.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_AddrsValid

Definition at line 457 of file default_cfe_es_extern_typedefs.h.

11.7.2.2 BSSAddress `CFE_ES_MemAddress_t CFE_ES_AppInfo::BSSAddress`
The Address of the Application BSS Segment.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_BSSAddress

Definition at line 467 of file default_cfe_es_extern_typedefs.h.

11.7.2.3 BSSSize `CFE_ES_MemOffset_t CFE_ES_AppInfo::BSSSize`
The BSS Size of the Application.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_BSSSize

Definition at line 469 of file default_cfe_es_extern_typedefs.h.

11.7.2.4 CodeAddress `CFE_ES_MemAddress_t CFE_ES_AppInfo::CodeAddress`
The Address of the Application Code Segment.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_CodeAddress

Definition at line 459 of file default_cfe_es_extern_typedefs.h.

11.7.2.5 CodeSize `CFE_ES_MemOffset_t CFE_ES_AppInfo::CodeSize`
The Code Size of the Application.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_CodeSize

Definition at line 461 of file default_cfe_es_extern_typedefs.h.

11.7.2.6 DataAddress `CFE_ES_MemAddress_t CFE_ES_AppInfo::DataAddress`
The Address of the Application Data Segment.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_DataAddress

Definition at line 463 of file default_cfe_es_extern_typedefs.h.

11.7.2.7 DataSize `CFE_ES_MemOffset_t CFE_ES_AppInfo::DataSize`
The Data Size of the Application.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_DataSize

Definition at line 465 of file default_cfe_es_extern_typedefs.h.

11.7.2.8 EntryPoint `char CFE_ES_AppInfo::EntryPoint[CFE_MISSION_MAX_API_LEN]`
The Entry Point label for the Application.

Telemetry Mnemonic(s) `$sc_$cpu_ES_AppEntryPt[OS_MAX_API_NAME]`

Definition at line 450 of file default_cfe_es_extern_typedefs.h.

11.7.2.9 ExceptionAction `CFE_ES_ExceptionAction_Enum_t CFE_ES_AppInfo::ExceptionAction`
What should occur if Application has an exception (Restart Application OR Restart Processor)

Telemetry Mnemonic(s) `$sc_$cpu_ES_ExceptnActn`

Definition at line 473 of file default_cfe_es_extern_typedefs.h.

11.7.2.10 ExecutionCounter `uint32 CFE_ES_AppInfo::ExecutionCounter`
The Application's Main Task Execution Counter.

Telemetry Mnemonic(s) `$sc_$cpu_ES_ExecutionCtr`

Definition at line 480 of file default_cfe_es_extern_typedefs.h.

11.7.2.11 FileName `char CFE_ES_AppInfo::FileName[CFE_MISSION_MAX_PATH_LEN]`
The Filename of the file containing the Application.

Telemetry Mnemonic(s) `$sc_$cpu_ES_AppFilename[OS_MAX_PATH_LEN]`

Definition at line 452 of file default_cfe_es_extern_typedefs.h.

11.7.2.12 MainTaskId `CFE_ES_TaskId_t CFE_ES_AppInfo::MainTaskId`
The Application's Main Task ID.

Telemetry Mnemonic(s) `$sc_$cpu_ES_MainTaskId`

Definition at line 478 of file default_cfe_es_extern_typedefs.h.

11.7.2.13 MainTaskName `char CFE_ES_AppInfo::MainTaskName[CFE_MISSION_MAX_API_LEN]`
The Application's Main Task ID.

Telemetry Mnemonic(s) `$sc_$cpu_ES_MainTaskName[OS_MAX_API_NAME]`

Definition at line 482 of file default_cfe_es_extern_typedefs.h.

11.7.2.14 Name `char CFE_ES_AppInfo::Name[CFE_MISSION_MAX_API_LEN]`
The Registered Name of the Application.

Telemetry Mnemonic(s) `$sc_$cpu_ES_AppName[OS_MAX_API_NAME]`

Definition at line 448 of file default_cfe_es_extern_typedefs.h.

11.7.2.15 NumOfChildTasks `uint32` `CFE_ES_AppInfo::NumOfChildTasks`
Number of Child tasks for an App.

Telemetry Mnemonic(s) `$sc_$cpu_ES_ChildTasks`

Definition at line 484 of file `default_cfe_es_extern_typedefs.h`.

11.7.2.16 Priority `CFE_ES_TaskPriority_Atom_t` `CFE_ES_AppInfo::Priority`
The Priority of the Application.

Telemetry Mnemonic(s) `$sc_$cpu_ES_Priority`

Definition at line 476 of file `default_cfe_es_extern_typedefs.h`.

11.7.2.17 ResourceId `CFE_ResourceId_t` `CFE_ES_AppInfo::ResourceId`
Application or Library ID for this resource.

Telemetry Mnemonic(s) `$sc_$cpu_ES_AppID`

Definition at line 443 of file `default_cfe_es_extern_typedefs.h`.

11.7.2.18 StackSize `CFE_ES_MemOffset_t` `CFE_ES_AppInfo::StackSize`
The Stack Size of the Application.

Telemetry Mnemonic(s) `$sc_$cpu_ES_StackSize`

Definition at line 455 of file `default_cfe_es_extern_typedefs.h`.

11.7.2.19 StartAddress `CFE_ES_MemAddress_t` `CFE_ES_AppInfo::StartAddress`
The Start Address of the Application.

Telemetry Mnemonic(s) `$sc_$cpu_ES_StartAddr`

Definition at line 471 of file `default_cfe_es_extern_typedefs.h`.

11.7.2.20 Type `uint32` `CFE_ES_AppInfo::Type`
The type of App: CORE or EXTERNAL.

Telemetry Mnemonic(s) `$sc_$cpu_ES_AppType`

Definition at line 445 of file `default_cfe_es_extern_typedefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/es/config/default_cfe_es_extern_typedefs.h`

11.8 CFE_ES_AppNameCmd_Payload Struct Reference

Generic application name command payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- char [Application \[CFE_MISSION_MAX_API_LEN\]](#)
ASCII text string containing Application or Library Name.

11.8.1 Detailed Description

Generic application name command payload.

For command details, see [CFE_ES_STOP_APP_CC](#), [CFE_ES_RESTART_APP_CC](#), [CFE_ES_QUERY_ONE_CC](#)
Definition at line 104 of file default_cfe_es_msgdefs.h.

11.8.2 Field Documentation

11.8.2.1 Application [char CFE_ES_AppNameCmd_Payload::Application \[CFE_MISSION_MAX_API_LEN\]](#)

ASCII text string containing Application or Library Name.

Definition at line 106 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgdefs.h

11.9 CFE_ES_AppReloadCmd_Payload Struct Reference

Reload Application Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- char [Application \[CFE_MISSION_MAX_API_LEN\]](#)
ASCII text string containing Application Name.
- char [AppFileName \[CFE_MISSION_MAX_PATH_LEN\]](#)
Full path and filename of Application's executable image.

11.9.1 Detailed Description

Reload Application Command Payload.

For command details, see [CFE_ES_RELOAD_APP_CC](#)

Definition at line 115 of file default_cfe_es_msgdefs.h.

11.9.2 Field Documentation

11.9.2.1 AppFileName [char CFE_ES_AppReloadCmd_Payload::AppFileName \[CFE_MISSION_MAX_PATH_LEN\]](#)

Full path and filename of Application's executable image.

Definition at line 118 of file default_cfe_es_msgdefs.h.

11.9.2.2 Application [char CFE_ES_AppReloadCmd_Payload::Application \[CFE_MISSION_MAX_API_LEN\]](#)

ASCII text string containing Application Name.

Definition at line 117 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgdefs.h

11.10 CFE_ES_BlockStats Struct Reference

Block statistics.

```
#include <default_cfe_es_extern_typedefs.h>
```

Data Fields

- **CFE_ES_MemOffset_t BlockSize**
Number of bytes in each of these blocks.
- **uint32 NumCreated**
Number of Memory Blocks of this size created.
- **uint32 NumFree**
Number of Memory Blocks of this size that are free.

11.10.1 Detailed Description

Block statistics.

Sub-Structure that is used to provide information about a specific block size/bucket within a memory pool.

Definition at line 538 of file default_cfe_es_extern_typedefs.h.

11.10.2 Field Documentation

11.10.2.1 BlockSize `CFE_ES_MemOffset_t CFE_ES_BlockStats::BlockSize`

Number of bytes in each of these blocks.

Definition at line 540 of file default_cfe_es_extern_typedefs.h.

11.10.2.2 NumCreated `uint32 CFE_ES_BlockStats::NumCreated`

Number of Memory Blocks of this size created.

Definition at line 541 of file default_cfe_es_extern_typedefs.h.

11.10.2.3 NumFree `uint32 CFE_ES_BlockStats::NumFree`

Number of Memory Blocks of this size that are free.

Definition at line 542 of file default_cfe_es_extern_typedefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_extern_typedefs.h

11.11 CFE_ES_CDSRegDumpRec Struct Reference

CDS Register Dump Record.

```
#include <default_cfe_es_extern_typedefs.h>
```

Data Fields

- **CFE_ES_CDCHandle_t Handle**
Handle of CDS.
- **CFE_ES_MemOffset_t Size**
Size, in bytes, of the CDS memory block.
- **bool Table**

Flag that indicates whether CDS contains a Critical Table.

- char **Name** [CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN]

Processor Unique Name of CDS.

- uint8 **ByteAlignSpare** [3]

Spare bytes to ensure structure size is multiple of 4 bytes.

11.11.1 Detailed Description

CDS Register Dump Record.

Structure that is used to provide information about a critical data store. It is primarily used for the Dump CDS registry ([CFE_ES_DUMP_CDS_REGISTRY_CC](#)) command.

Note

There is not currently a telemetry message directly containing this data structure, but it does define the format of the data file generated by the Dump CDS registry command. Therefore it should be considered part of the overall telemetry interface.

Definition at line 523 of file [default_cfe_es_extern_typedefs.h](#).

11.11.2 Field Documentation

11.11.2.1 **ByteAlignSpare** uint8 [CFE_ES_CDSRegDumpRec::ByteAlignSpare](#) [3]

Spare bytes to ensure structure size is multiple of 4 bytes.

Definition at line 529 of file [default_cfe_es_extern_typedefs.h](#).

11.11.2.2 **Handle** [CFE_ES_CDSHandle_t](#) [CFE_ES_CDSRegDumpRec::Handle](#)

Handle of CDS.

Definition at line 525 of file [default_cfe_es_extern_typedefs.h](#).

11.11.2.3 **Name** char [CFE_ES_CDSRegDumpRec::Name](#) [CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN]

Processor Unique Name of CDS.

Definition at line 528 of file [default_cfe_es_extern_typedefs.h](#).

11.11.2.4 **Size** [CFE_ES_MemOffset_t](#) [CFE_ES_CDSRegDumpRec::Size](#)

Size, in bytes, of the CDS memory block.

Definition at line 526 of file [default_cfe_es_extern_typedefs.h](#).

11.11.2.5 **Table** bool [CFE_ES_CDSRegDumpRec::Table](#)

Flag that indicates whether CDS contains a Critical Table.

Definition at line 527 of file [default_cfe_es_extern_typedefs.h](#).

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_extern_typedefs.h](#)

11.12 CFE_ES_ClearERLogCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.12.1 Detailed Description

Definition at line 68 of file default_cfe_es_msgstruct.h.

11.12.2 Field Documentation**11.12.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_ES_ClearERLogCmd::CommandHeader
Command header.

Definition at line 70 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgstruct.h](#)

11.13 CFE_ES_ClearSysLogCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.13.1 Detailed Description

Definition at line 63 of file default_cfe_es_msgstruct.h.

11.13.2 Field Documentation**11.13.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_ES_ClearSysLogCmd::CommandHeader
Command header.

Definition at line 65 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgstruct.h](#)

11.14 CFE_ES_DeleteCDSCmd Struct Reference

Delete Critical Data Store Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_DeleteCDSCmd_Payload_t](#) Payload
Command payload.

11.14.1 Detailed Description

Delete Critical Data Store Command.

Definition at line 192 of file default_cfe_es_msgstruct.h.

11.14.2 Field Documentation

11.14.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_DeleteCDSCmd::CommandHeader

Command header.

Definition at line 194 of file default_cfe_es_msgstruct.h.

11.14.2.2 Payload [CFE_ES_DeleteCDSCmd_Payload_t](#) CFE_ES_DeleteCDSCmd::Payload

Command payload.

Definition at line 195 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.15 CFE_ES_DeleteCDSCmd_Payload Struct Reference

Delete Critical Data Store Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- char [CdsName \[CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN\]](#)

ASCII text string containing name of CDS to delete.

11.15.1 Detailed Description

Delete Critical Data Store Command Payload.

For command details, see [CFE_ES_DELETE_CDS_CC](#)

Definition at line 140 of file default_cfe_es_msgdefs.h.

11.15.2 Field Documentation

11.15.2.1 CdsName char CFE_ES_DeleteCDSCmd_Payload::CdsName [[CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN](#)]

ASCII text string containing name of CDS to delete.

Definition at line 143 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgdefs.h

11.16 CFE_ES_DumpCDSRegistryCmd Struct Reference

Dump CDS Registry Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_DumpCDSRegistryCmd_Payload_t](#) Payload
Command payload.

11.16.1 Detailed Description

Dump CDS Registry Command.

Definition at line 246 of file default_cfe_es_msgstruct.h.

11.16.2 Field Documentation

11.16.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_DumpCDSRegistryCmd::CommandHeader

Command header.

Definition at line 248 of file default_cfe_es_msgstruct.h.

11.16.2.2 Payload [CFE_ES_DumpCDSRegistryCmd_Payload_t](#) CFE_ES_DumpCDSRegistryCmd::Payload

Command payload.

Definition at line 249 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.17 CFE_ES_DumpCDSRegistryCmd_Payload Struct Reference

Dump CDS Registry Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- char DumpFilename [[CFE_MISSION_MAX_PATH_LEN](#)]
ASCII text string of full path and filename of file CDS Registry is to be written.

11.17.1 Detailed Description

Dump CDS Registry Command Payload.

For command details, see [CFE_ES_DUMP_CDS_REGISTRY_CC](#)

Definition at line 225 of file default_cfe_es_msgdefs.h.

11.17.2 Field Documentation

11.17.2.1 DumpFilename char CFE_ES_DumpCDSRegistryCmd_Payload::DumpFilename [[CFE_MISSION_MAX_PATH_LEN](#)]

ASCII text string of full path and filename of file CDS Registry is to be written.

Definition at line 227 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgdefs.h

11.18 CFE_ES_FileNameCmd Struct Reference

Generic file name command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)
Command header.
- [CFE_ES_FileNameCmd_Payload_t Payload](#)
Command payload.

11.18.1 Detailed Description

Generic file name command.

Definition at line 96 of file default_cfe_es_msgstruct.h.

11.18.2 Field Documentation

11.18.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_FileNameCmd::CommandHeader

Command header.

Definition at line 98 of file default_cfe_es_msgstruct.h.

11.18.2.2 Payload [CFE_ES_FileNameCmd_Payload_t](#) CFE_ES_FileNameCmd::Payload

Command payload.

Definition at line 99 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.19 CFE_ES_FileNameCmd_Payload Struct Reference

Generic file name command payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- char [FileName \[CFE_MISSION_MAX_PATH_LEN\]](#)
ASCII text string containing full path and filename of file in which Application data is to be dumped.

11.19.1 Detailed Description

Generic file name command payload.

This format is shared by several executive services commands. For command details, see [CFE_ES_QUERY_ALL_CC](#), [CFE_ES_QUERY_ALL_TASKS_CC](#), [CFE_ES_WRITE_SYS_LOG_CC](#), and [CFE_ES_WRITE_ER_LOG_CC](#)

Definition at line 58 of file default_cfe_es_msgdefs.h.

11.19.2 Field Documentation

11.19.2.1 FileName `char CFE_ES_FileNameCmd_Payload::FileName[CFE_MISSION_MAX_PATH_LEN]`
ASCII text string containing full path and filename of file in which Application data is to be dumped.
Definition at line 60 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/es/config/default_cfe_es_msgdefs.h`

11.20 CFE_ES_HousekeepingTlm Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry header.
- `CFE_ES_HousekeepingTlm_Payload_t Payload`
Telemetry payload.

11.20.1 Detailed Description

Name Executive Services Housekeeping Packet

Definition at line 279 of file default_cfe_es_msgstruct.h.

11.20.2 Field Documentation

11.20.2.1 Payload `CFE_ES_HousekeepingTlm_Payload_t CFE_ES_HousekeepingTlm::Payload`
Telemetry payload.

Definition at line 282 of file default_cfe_es_msgstruct.h.

11.20.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t CFE_ES_HousekeepingTlm::TelemetryHeader`
Telemetry header.

Definition at line 281 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/es/config/default_cfe_es_msgstruct.h`

11.21 CFE_ES_HousekeepingTlm_Payload Struct Reference

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- `uint8 CommandCounter`
The ES Application Command Counter.
- `uint8 CommandErrorCounter`
The ES Application Command Error Counter.
- `uint16 CFECOREChecksum`
Checksum of cFE Core Code.
- `uint8 CFEMajorVersion`

- **uint8 CFEMinorVersion**
Minor Version Number of cFE.
- **uint8 CFERevision**
Sub-Minor Version Number of cFE.
- **uint8 CFEMissionRevision**
Mission Version Number of cFE.
- **uint8 OSALMajorVersion**
OS Abstraction Layer Major Version Number.
- **uint8 OSALMinorVersion**
OS Abstraction Layer Minor Version Number.
- **uint8 OSALRevision**
OS Abstraction Layer Revision Number.
- **uint8 OSALMissionRevision**
OS Abstraction Layer MissionRevision Number.
- **uint8 PSPMajorVersion**
Platform Support Package Major Version Number.
- **uint8 PSPMinorVersion**
Platform Support Package Minor Version Number.
- **uint8 PSPRevision**
Platform Support Package Revision Number.
- **uint8 PSPMissionRevision**
Platform Support Package MissionRevision Number.
- **CFE_ES_MemOffset_t SysLogBytesUsed**
Total number of bytes used in system log.
- **CFE_ES_MemOffset_t SysLogSize**
Total size of the system log.
- **uint32 SysLogEntries**
Number of entries in the system log.
- **uint32 SysLogMode**
Write/Overwrite Mode.
- **uint32 ERLogIndex**
Current index of the ER Log (wraps around)
- **uint32 ERLogEntries**
Number of entries made in the ER Log since the power on.
- **uint32 RegisteredCoreApps**
Number of Applications registered with ES.
- **uint32 RegisteredExternalApps**
Number of Applications registered with ES.
- **uint32 RegisteredTasks**
Number of Tasks (main AND child tasks) registered with ES.
- **uint32 RegisteredLibs**
Number of Libraries registered with ES.
- **uint32 ResetType**
Reset type (PROCESSOR or POWERON)
- **uint32 ResetSubtype**
Reset Sub Type.

- `uint32 ProcessorResets`
Number of processor resets since last power on.
- `uint32 MaxProcessorResets`
Max processor resets before a power on is done.
- `uint32 BootSource`
Boot source (as provided from BSP)
- `uint32 PerfState`
Current state of Performance Analyzer.
- `uint32 PerfMode`
Current mode of Performance Analyzer.
- `uint32 PerfTriggerCount`
Number of Times Performance Analyzer has Triggered.
- `uint32 PerfFilterMask [CFE_MISSION_ES_PERF_MAX_IDS/32]`
Current Setting of Performance Analyzer Filter Masks.
- `uint32 PerfTriggerMask [CFE_MISSION_ES_PERF_MAX_IDS/32]`
Current Setting of Performance Analyzer Trigger Masks.
- `uint32 PerfDataStart`
Identifies First Stored Entry in Performance Analyzer Log.
- `uint32 PerfDataEnd`
Identifies Last Stored Entry in Performance Analyzer Log.
- `uint32 PerfDataCount`
Number of Entries Put Into the Performance Analyzer Log.
- `uint32 PerfDataToWrite`
Number of Performance Analyzer Log Entries Left to be Written to Log Dump File.
- `CFE_ES_MemOffset_t HeapBytesFree`
Number of free bytes remaining in the OS heap.
- `CFE_ES_MemOffset_t HeapBlocksFree`
Number of free blocks remaining in the OS heap.
- `CFE_ES_MemOffset_t HeapMaxBlockSize`
Number of bytes in the largest free block.

11.21.1 Detailed Description

Name Executive Services Housekeeping Packet

Definition at line 263 of file default_cfe_es_msgdefs.h.

11.21.2 Field Documentation

11.21.2.1 BootSource `uint32 CFE_ES_HousekeepingTlm_Payload::BootSource`
Boot source (as provided from BSP)

Telemetry Mnemonic(s) \$sc_\$cpu_ES_BootSource

Definition at line 329 of file default_cfe_es_msgdefs.h.

11.21.2.2 CFECoreChecksum `uint16 CFE_ES_HousekeepingTlm_Payload::CFECoreChecksum`
Checksum of cFE Core Code.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_CKSUM

Definition at line 270 of file default_cfe_es_msgdefs.h.

11.21.2.3 CFEMajorVersion `uint8 CFE_ES_HousekeepingTlm_Payload::CFEMajorVersion`
Major Version Number of cFE.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_CFEMAJORVER

Definition at line 272 of file default_cfe_es_msgdefs.h.

11.21.2.4 CFEMinorVersion `uint8 CFE_ES_HousekeepingTlm_Payload::CFEMinorVersion`
Minor Version Number of cFE.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_CFE_MINORVER

Definition at line 274 of file default_cfe_es_msgdefs.h.

11.21.2.5 CFEMissionRevision `uint8 CFE_ES_HousekeepingTlm_Payload::CFEMissionRevision`
Mission Version Number of cFE.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_CFEMISSIONREV

Definition at line 278 of file default_cfe_es_msgdefs.h.

11.21.2.6 CFERevision `uint8 CFE_ES_HousekeepingTlm_Payload::CFERevision`
Sub-Minor Version Number of cFE.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_CFEREVISION

Definition at line 276 of file default_cfe_es_msgdefs.h.

11.21.2.7 CommandCounter `uint8 CFE_ES_HousekeepingTlm_Payload::CommandCounter`
The ES Application Command Counter.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_CMDPC

Definition at line 265 of file default_cfe_es_msgdefs.h.

11.21.2.8 CommandErrorCounter `uint8 CFE_ES_HousekeepingTlm_Payload::CommandErrorCounter`
The ES Application Command Error Counter.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_CMDEC

Definition at line 267 of file default_cfe_es_msgdefs.h.

11.21.2.9 ERLogEntries `uint32` `CFE_ES_HousekeepingTlm_Payload::ERLogEntries`
Number of entries made in the ER Log since the power on.

Telemetry Mnemonic(s) `$sc_$cpu_ES_ERLOGENTRIES`

Definition at line 309 of file default_cfe_es_msgdefs.h.

11.21.2.10 ERLogIndex `uint32` `CFE_ES_HousekeepingTlm_Payload::ERLogIndex`
Current index of the ER Log (wraps around)

Telemetry Mnemonic(s) `$sc_$cpu_ES_ERLOGINDEX`

Definition at line 307 of file default_cfe_es_msgdefs.h.

11.21.2.11 HeapBlocksFree `CFE_ES_MemOffset_t` `CFE_ES_HousekeepingTlm_Payload::HeapBlocksFree`
Number of free blocks remaining in the OS heap.

Telemetry Mnemonic(s) `$sc_$cpu_ES_HeapBlocksFree`

Definition at line 354 of file default_cfe_es_msgdefs.h.

11.21.2.12 HeapBytesFree `CFE_ES_MemOffset_t` `CFE_ES_HousekeepingTlm_Payload::HeapBytesFree`
Number of free bytes remaining in the OS heap.

Telemetry Mnemonic(s) `$sc_$cpu_ES_HeapBytesFree`

Definition at line 352 of file default_cfe_es_msgdefs.h.

11.21.2.13 HeapMaxBlockSize `CFE_ES_MemOffset_t` `CFE_ES_HousekeepingTlm_Payload::HeapMaxBlockSize`
Number of bytes in the largest free block.

Telemetry Mnemonic(s) `$sc_$cpu_ES_HeapMaxBlkSize`

Definition at line 356 of file default_cfe_es_msgdefs.h.

11.21.2.14 MaxProcessorResets `uint32` `CFE_ES_HousekeepingTlm_Payload::MaxProcessorResets`
Max processor resets before a power on is done.

Telemetry Mnemonic(s) `$sc_$cpu_ES_MaxProcResets`

Definition at line 327 of file default_cfe_es_msgdefs.h.

11.21.2.15 OSALMajorVersion `uint8` `CFE_ES_HousekeepingTlm_Payload::OSALMajorVersion`
OS Abstraction Layer Major Version Number.

Telemetry Mnemonic(s) `$sc_$cpu_ES_OSMAJORVER`

Definition at line 280 of file default_cfe_es_msgdefs.h.

11.21.2.16 OSALMinorVersion `uint8 CFE_ES_HousekeepingTlm_Payload::OSALMinorVersion`
OS Abstraction Layer Minor Version Number.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_OSMINORVER

Definition at line 282 of file default_cfe_es_msgdefs.h.

11.21.2.17 OSALMissionRevision `uint8 CFE_ES_HousekeepingTlm_Payload::OSALMissionRevision`
OS Abstraction Layer MissionRevision Number.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_OSMISSIONREV

Definition at line 286 of file default_cfe_es_msgdefs.h.

11.21.2.18 OSALRevision `uint8 CFE_ES_HousekeepingTlm_Payload::OSALRevision`
OS Abstraction Layer Revision Number.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_OSREVISION

Definition at line 284 of file default_cfe_es_msgdefs.h.

11.21.2.19 PerfDataCount `uint32 CFE_ES_HousekeepingTlm_Payload::PerfDataCount`
Number of Entries Put Into the Performance Analyzer Log.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_PerfDataCnt

Definition at line 347 of file default_cfe_es_msgdefs.h.

11.21.2.20 PerfDataEnd `uint32 CFE_ES_HousekeepingTlm_Payload::PerfDataEnd`
Identifies Last Stored Entry in Performance Analyzer Log.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_PerfDataEnd

Definition at line 345 of file default_cfe_es_msgdefs.h.

11.21.2.21 PerfDataStart `uint32 CFE_ES_HousekeepingTlm_Payload::PerfDataStart`
Identifies First Stored Entry in Performance Analyzer Log.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_PerfDataStart

Definition at line 343 of file default_cfe_es_msgdefs.h.

11.21.2.22 PerfDataToWrite `uint32 CFE_ES_HousekeepingTlm_Payload::PerfDataToWrite`
Number of Performance Analyzer Log Entries Left to be Written to Log Dump File.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_PerfData2Write

Definition at line 350 of file default_cfe_es_msgdefs.h.

11.21.2.23 PerfFilterMask `uint32` `CFE_ES_HousekeepingTlm_Payload::PerfFilterMask` [`CFE_MISSION_ES_PERF_MAX_IDS/32`]
Current Setting of Performance Analyzer Filter Masks.

Telemetry Mnemonic(s) `$sc_$cpu_ES_PerfFltrMask[MaskCnt]`

Definition at line 338 of file `default_cfe_es_msgdefs.h`.

11.21.2.24 PerfMode `uint32` `CFE_ES_HousekeepingTlm_Payload::PerfMode`
Current mode of Performance Analyzer.

Telemetry Mnemonic(s) `$sc_$cpu_ES_PerfMode`

Definition at line 334 of file `default_cfe_es_msgdefs.h`.

11.21.2.25 PerfState `uint32` `CFE_ES_HousekeepingTlm_Payload::PerfState`
Current state of Performance Analyzer.

Telemetry Mnemonic(s) `$sc_$cpu_ES_PerfState`

Definition at line 332 of file `default_cfe_es_msgdefs.h`.

11.21.2.26 PerfTriggerCount `uint32` `CFE_ES_HousekeepingTlm_Payload::PerfTriggerCount`
Number of Times Performance Analyzer has Triggered.

Telemetry Mnemonic(s) `$sc_$cpu_ES_PerfTrigCnt`

Definition at line 336 of file `default_cfe_es_msgdefs.h`.

11.21.2.27 PerfTriggerMask `uint32` `CFE_ES_HousekeepingTlm_Payload::PerfTriggerMask` [`CFE_MISSION_ES_PERF_MAX_IDS/32`]
Current Setting of Performance Analyzer Trigger Masks.

Telemetry Mnemonic(s) `$sc_$cpu_ES_PerfTrigMask[MaskCnt]`

Definition at line 341 of file `default_cfe_es_msgdefs.h`.

11.21.2.28 ProcessorResets `uint32` `CFE_ES_HousekeepingTlm_Payload::ProcessorResets`
Number of processor resets since last power on.

Telemetry Mnemonic(s) `$sc_$cpu_ES_ProcResetCnt`

Definition at line 325 of file `default_cfe_es_msgdefs.h`.

11.21.2.29 PSPMajorVersion `uint8` `CFE_ES_HousekeepingTlm_Payload::PSPMajorVersion`
Platform Support Package Major Version Number.

Telemetry Mnemonic(s) `$sc_$cpu_ES_PSPMAJORVER`

Definition at line 289 of file `default_cfe_es_msgdefs.h`.

11.21.2.30 PSPMinorVersion `uint8 CFE_ES_HousekeepingTlm_Payload::PSPMinorVersion`
Platform Support Package Minor Version Number.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_PSPMINORVER

Definition at line 291 of file default_cfe_es_msgdefs.h.

11.21.2.31 PSPMissionRevision `uint8 CFE_ES_HousekeepingTlm_Payload::PSPMissionRevision`
Platform Support Package MissionRevision Number.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_PSPMISSIONREV

Definition at line 295 of file default_cfe_es_msgdefs.h.

11.21.2.32 PSPRevision `uint8 CFE_ES_HousekeepingTlm_Payload::PSPRevision`
Platform Support Package Revision Number.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_PSPREVISION

Definition at line 293 of file default_cfe_es_msgdefs.h.

11.21.2.33 RegisteredCoreApps `uint32 CFE_ES_HousekeepingTlm_Payload::RegisteredCoreApps`
Number of Applications registered with ES.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_RegCoreApps

Definition at line 312 of file default_cfe_es_msgdefs.h.

11.21.2.34 RegisteredExternalApps `uint32 CFE_ES_HousekeepingTlm_Payload::RegisteredExternalApps`
Number of Applications registered with ES.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_RegExtApps

Definition at line 314 of file default_cfe_es_msgdefs.h.

11.21.2.35 RegisteredLibs `uint32 CFE_ES_HousekeepingTlm_Payload::RegisteredLibs`
Number of Libraries registered with ES.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_RegLibs

Definition at line 318 of file default_cfe_es_msgdefs.h.

11.21.2.36 RegisteredTasks `uint32 CFE_ES_HousekeepingTlm_Payload::RegisteredTasks`
Number of Tasks (main AND child tasks) registered with ES.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_RegTasks

Definition at line 316 of file default_cfe_es_msgdefs.h.

11.21.2.37 ResetSubtype `uint32` `CFE_ES_HousekeepingTlm_Payload::ResetSubtype`
Reset Sub Type.

Telemetry Mnemonic(s) `$sc_$cpu_ES_ResetSubtype`

Definition at line 323 of file `default_cfe_es_msgdefs.h`.

11.21.2.38 ResetType `uint32` `CFE_ES_HousekeepingTlm_Payload::ResetType`
Reset type (PROCESSOR or POWERON)

Telemetry Mnemonic(s) `$sc_$cpu_ES_ResetType`

Definition at line 321 of file `default_cfe_es_msgdefs.h`.

11.21.2.39 SysLogBytesUsed `CFE_ES_MemOffset_t` `CFE_ES_HousekeepingTlm_Payload::SysLogBytesUsed`
Total number of bytes used in system log.

Telemetry Mnemonic(s) `$sc_$cpu_ES_SYSLOGBYTEUSED`

Definition at line 298 of file `default_cfe_es_msgdefs.h`.

11.21.2.40 SysLogEntries `uint32` `CFE_ES_HousekeepingTlm_Payload::SysLogEntries`
Number of entries in the system log.

Telemetry Mnemonic(s) `$sc_$cpu_ES_SYSLOGENTRIES`

Definition at line 302 of file `default_cfe_es_msgdefs.h`.

11.21.2.41 SysLogMode `uint32` `CFE_ES_HousekeepingTlm_Payload::SysLogMode`
Write/Overwrite Mode.

Telemetry Mnemonic(s) `$sc_$cpu_ES_SYSLOGMODE`

Definition at line 304 of file `default_cfe_es_msgdefs.h`.

11.21.2.42 SysLogSize `CFE_ES_MemOffset_t` `CFE_ES_HousekeepingTlm_Payload::SysLogSize`
Total size of the system log.

Telemetry Mnemonic(s) `$sc_$cpu_ES_SYSLOGSIZE`

Definition at line 300 of file `default_cfe_es_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/es/config/default_cfe_es_msgdefs.h`

11.22 CFE_ES_MemPoolStats Struct Reference

Memory Pool Statistics.

```
#include <default_cfe_es_extern_typedefs.h>
```

Data Fields

- **CFE_ES_MemOffset_t PoolSize**
Size of Memory Pool (in bytes)
- **uint32 NumBlocksRequested**
Number of times a memory block has been allocated.
- **uint32 CheckErrCtr**
Number of errors detected when freeing a memory block.
- **CFE_ES_MemOffset_t NumFreeBytes**
Number of bytes never allocated to a block.
- **CFE_ES_BlockStats_t BlockStats [CFE_MISSION_ES_POOL_MAX_BUCKETS]**
Contains stats on each block size.

11.22.1 Detailed Description

Memory Pool Statistics.

Structure that is used to provide information about a memory pool. Used by the Memory Pool Stats telemetry message.

See also

[CFE_ES_SEND_MEM_POOL_STATS_CC](#)

Definition at line 553 of file default_cfe_es_extern_typedefs.h.

11.22.2 Field Documentation

11.22.2.1 BlockStats [CFE_ES_BlockStats_t](#) CFE_ES_MemPoolStats::BlockStats[CFE_MISSION_ES_POOL_MAX_BUCKETS]
Contains stats on each block size.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_BlkStats[BLK_SIZES]

Definition at line 563 of file default_cfe_es_extern_typedefs.h.

11.22.2.2 CheckErrCtr [uint32](#) CFE_ES_MemPoolStats::CheckErrCtr
Number of errors detected when freeing a memory block.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_BlkErrCTR

Definition at line 559 of file default_cfe_es_extern_typedefs.h.

11.22.2.3 NumBlocksRequested [uint32](#) CFE_ES_MemPoolStats::NumBlocksRequested
Number of times a memory block has been allocated.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_BlkREQ

Definition at line 557 of file default_cfe_es_extern_typedefs.h.

11.22.2.4 NumFreeBytes `CFE_ES_MemOffset_t` `CFE_ES_MemPoolStats::NumFreeBytes`
Number of bytes never allocated to a block.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_FreeBytes

Definition at line 561 of file default_cfe_es_extern_typedefs.h.

11.22.2.5 PoolSize `CFE_ES_MemOffset_t` `CFE_ES_MemPoolStats::PoolSize`
Size of Memory Pool (in bytes)

Telemetry Mnemonic(s) \$sc_\$cpu_ES_PoolSize

Definition at line 555 of file default_cfe_es_extern_typedefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_extern_typedefs.h

11.23 CFE_ES_MemStatsTlm Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry header.
- `CFE_ES_PoolStatsTlm_Payload_t Payload`
Telemetry payload.

11.23.1 Detailed Description

Name Memory Pool Statistics Packet

Definition at line 270 of file default_cfe_es_msgstruct.h.

11.23.2 Field Documentation

11.23.2.1 Payload `CFE_ES_PoolStatsTlm_Payload_t` `CFE_ES_MemStatsTlm::Payload`
Telemetry payload.

Definition at line 273 of file default_cfe_es_msgstruct.h.

11.23.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `CFE_ES_MemStatsTlm::TelemetryHeader`
Telemetry header.

Definition at line 272 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.24 CFE_ES_NoopCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.24.1 Detailed Description

Definition at line 53 of file default_cfe_es_msgstruct.h.

11.24.2 Field Documentation**11.24.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_NoopCmd::CommandHeader**

Command header.

Definition at line 55 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.25 CFE_ES_OneAppTlm Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_TelemetryHeader_t](#) TelemetryHeader
Telemetry header.
- [CFE_ES_OneAppTlm_Payload_t](#) Payload
Telemetry payload.

11.25.1 Detailed Description

Name Single Application Information Packet

Definition at line 261 of file default_cfe_es_msgstruct.h.

11.25.2 Field Documentation**11.25.2.1 Payload [CFE_ES_OneAppTlm_Payload_t](#) CFE_ES_OneAppTlm::Payload**

Telemetry payload.

Definition at line 264 of file default_cfe_es_msgstruct.h.

11.25.2.2 TelemetryHeader [CFE_MSG_TelemetryHeader_t](#) CFE_ES_OneAppTlm::TelemetryHeader

Telemetry header.

Definition at line 263 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.26 CFE_ES_OneAppTlm_Payload Struct Reference

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- [CFE_ES_AppInfo_t AppInfo](#)

For more information, see [CFE_ES_AppInfo_t](#).

11.26.1 Detailed Description

Name Single Application Information Packet

Definition at line 243 of file default_cfe_es_msgdefs.h.

11.26.2 Field Documentation

11.26.2.1 AppInfo [CFE_ES_AppInfo_t](#) CFE_ES_OneAppTlm_Payload::AppInfo

For more information, see [CFE_ES_AppInfo_t](#).

Definition at line 245 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgdefs.h](#)

11.27 CFE_ES_OverWriteSysLogCmd Struct Reference

Overwrite/Discard System Log Configuration Command Payload.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)
Command header.
- [CFE_ES_OverWriteSysLogCmd_Payload_t Payload](#)
Command payload.

11.27.1 Detailed Description

Overwrite/Discard System Log Configuration Command Payload.

Definition at line 133 of file default_cfe_es_msgstruct.h.

11.27.2 Field Documentation

11.27.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_OverWriteSysLogCmd::CommandHeader

Command header.

Definition at line 135 of file default_cfe_es_msgstruct.h.

11.27.2.2 Payload `CFE_ES_OverWriteSysLogCmd_Payload_t` `CFE_ES_OverWriteSysLogCmd::Payload`
Command payload.

Definition at line 136 of file `default_cfe_es_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/es/config/default_cfe_es_msgstruct.h`

11.28 CFE_ES_OverWriteSysLogCmd_Payload Struct Reference

Overwrite/Discard System Log Configuration Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- `uint32 Mode`

`CFE_ES_LogMode_DISCARD`=Throw away most recent messages, `CFE_ES_LogMode_OVERWRITE`=Overwrite oldest with most recent

11.28.1 Detailed Description

Overwrite/Discard System Log Configuration Command Payload.

For command details, see [CFE_ES_OVER_WRITE_SYS_LOG_CC](#)

Definition at line 70 of file `default_cfe_es_msgdefs.h`.

11.28.2 Field Documentation

11.28.2.1 Mode `uint32 CFE_ES_OverWriteSysLogCmd_Payload::Mode`

`CFE_ES_LogMode_DISCARD`=Throw away most recent messages, `CFE_ES_LogMode_OVERWRITE`=Overwrite oldest with most recent

Definition at line 72 of file `default_cfe_es_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/es/config/default_cfe_es_msgdefs.h`

11.29 CFE_ES_PoolAlign Union Reference

Pool Alignment.

```
#include <cfe_es_api_typedefs.h>
```

Data Fields

- `void * Ptr`

Aligned pointer.

- `long long int LongInt`

Aligned Long Integer.

- `long double LongDouble`

Aligned Long Double.

11.29.1 Detailed Description

Pool Alignment.

Union that can be used for minimum memory alignment of ES memory pools on the target. It contains the longest native data types such that the alignment of this structure should reflect the largest possible alignment requirements for any data on this processor.

Definition at line 145 of file cfe_es_api_typedefs.h.

11.29.2 Field Documentation

11.29.2.1 LongDouble long double CFE_ES_PoolAlign::LongDouble

Aligned Long Double.

Definition at line 150 of file cfe_es_api_typedefs.h.

11.29.2.2 LongInt long long int CFE_ES_PoolAlign::LongInt

Aligned Long Integer.

Definition at line 149 of file cfe_es_api_typedefs.h.

11.29.2.3 Ptr void* CFE_ES_PoolAlign::Ptr

Aligned pointer.

Definition at line 147 of file cfe_es_api_typedefs.h.

The documentation for this union was generated from the following file:

- cfe/modules/core_api/fsw/inc/cfe_es_api_typedefs.h

11.30 CFE_ES_PoolStatsTlm_Payload Struct Reference

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- [CFE_ES_MemHandle_t PoolHandle](#)
Handle of memory pool whose stats are being telemetered.
- [CFE_ES_MemPoolStats_t PoolStats](#)
For more info, see [CFE_ES_MemPoolStats_t](#).

11.30.1 Detailed Description

Name Memory Pool Statistics Packet

Definition at line 251 of file default_cfe_es_msgdefs.h.

11.30.2 Field Documentation

11.30.2.1 PoolHandle [CFE_ES_MemHandle_t](#) CFE_ES_PoolStatsTlm_Payload::PoolHandle

Handle of memory pool whose stats are being telemetered.

Telemetry Mnemonic(s) \$sc_\$cpu_ES_PoolHandle

Definition at line 253 of file default_cfe_es_msgdefs.h.

11.30.2.2 PoolStats [CFE_ES_MemPoolStats_t](#) CFE_ES_PoolStatsTlm_Payload::PoolStats

For more info, see [CFE_ES_MemPoolStats_t](#).

Definition at line 255 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgdefs.h

11.31 CFE_ES_QueryAllCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_FileNameCmd_Payload_t](#) Payload
Command payload.

11.31.1 Detailed Description

Definition at line 106 of file default_cfe_es_msgstruct.h.

11.31.2 Field Documentation

11.31.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_QueryAllCmd::CommandHeader

Command header.

Definition at line 108 of file default_cfe_es_msgstruct.h.

11.31.2.2 Payload [CFE_ES_FileNameCmd_Payload_t](#) CFE_ES_QueryAllCmd::Payload

Command payload.

Definition at line 109 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.32 CFE_ES_QueryAllTasksCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_FileNameCmd_Payload_t](#) Payload
Command payload.

11.32.1 Detailed Description

Definition at line 112 of file default_cfe_es_msgstruct.h.

11.32.2 Field Documentation

11.32.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_QueryAllTasksCmd::CommandHeader
Command header.

Definition at line 114 of file default_cfe_es_msgstruct.h.

11.32.2.2 Payload [CFE_ES_FileNameCmd_Payload_t](#) CFE_ES_QueryAllTasksCmd::Payload
Command payload.

Definition at line 115 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.33 CFE_ES_QueryOneCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_AppNameCmd_Payload_t](#) Payload
Command payload.

11.33.1 Detailed Description

Definition at line 165 of file default_cfe_es_msgstruct.h.

11.33.2 Field Documentation

11.33.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_QueryOneCmd::CommandHeader
Command header.

Definition at line 167 of file default_cfe_es_msgstruct.h.

11.33.2.2 Payload [CFE_ES_AppNameCmd_Payload_t](#) CFE_ES_QueryOneCmd::Payload
Command payload.

Definition at line 168 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.34 CFE_ES_ReloadAppCmd Struct Reference

Reload Application Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_AppReloadCmd_Payload_t](#) Payload
Command payload.

11.34.1 Detailed Description

Reload Application Command.

Definition at line 174 of file default_cfe_es_msgstruct.h.

11.34.2 Field Documentation**11.34.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_ES_ReloadAppCmd::CommandHeader
Command header.

Definition at line 176 of file default_cfe_es_msgstruct.h.

11.34.2.2 Payload [CFE_ES_AppReloadCmd_Payload_t](#) CFE_ES_ReloadAppCmd::Payload
Command payload.

Definition at line 177 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.35 CFE_ES_ResetCountersCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.35.1 Detailed Description

Definition at line 58 of file default_cfe_es_msgstruct.h.

11.35.2 Field Documentation**11.35.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_ES_ResetCountersCmd::CommandHeader
Command header.

Definition at line 60 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.36 CFE_ES_ResetPRCountCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.36.1 Detailed Description

Definition at line 73 of file default_cfe_es_msgstruct.h.

11.36.2 Field Documentation**11.36.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_ES_ResetPRCountCmd::CommandHeader
Command header.

Definition at line 75 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgstruct.h](#)

11.37 CFE_ES_RestartAppCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_AppNameCmd_Payload_t](#) Payload
Command payload.

11.37.1 Detailed Description

Definition at line 159 of file default_cfe_es_msgstruct.h.

11.37.2 Field Documentation**11.37.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_ES_RestartAppCmd::CommandHeader
Command header.

Definition at line 161 of file default_cfe_es_msgstruct.h.

11.37.2.2 Payload [CFE_ES_AppNameCmd_Payload_t](#) CFE_ES_RestartAppCmd::Payload
Command payload.

Definition at line 162 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgstruct.h](#)

11.38 CFE_ES_RestartCmd Struct Reference

Restart cFE Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_RestartCmd_Payload_t](#) Payload
Command payload.

11.38.1 Detailed Description

Restart cFE Command.

Definition at line 86 of file default_cfe_es_msgstruct.h.

11.38.2 Field Documentation

11.38.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_RestartCmd::CommandHeader

Command header.

Definition at line 88 of file default_cfe_es_msgstruct.h.

11.38.2.2 Payload [CFE_ES_RestartCmd_Payload_t](#) CFE_ES_RestartCmd::Payload

Command payload.

Definition at line 89 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.39 CFE_ES_RestartCmd_Payload Struct Reference

Restart cFE Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- uint16 RestartType
CFE_PSP_RST_TYPE_PROCESSOR=Processor Reset or CFE_PSP_RST_TYPE_POWERON=Power-On Reset

11.39.1 Detailed Description

Restart cFE Command Payload.

For command details, see [CFE_ES_RESTART_CC](#)

Definition at line 44 of file default_cfe_es_msgdefs.h.

11.39.2 Field Documentation

11.39.2.1 RestartType uint16 CFE_ES_RestartCmd_Payload::RestartType

CFE_PSP_RST_TYPE_PROCESSOR=Processor Reset or CFE_PSP_RST_TYPE_POWERON=Power-On Reset

Definition at line 46 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgdefs.h

11.40 CFE_ES_SendHkCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t** CommandHeader
Command header.

11.40.1 Detailed Description

Definition at line 78 of file default_cfe_es_msgstruct.h.

11.40.2 Field Documentation

11.40.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_SendHkCmd::CommandHeader

Command header.

Definition at line 80 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgstruct.h](#)

11.41 CFE_ES_SendMemPoolStatsCmd Struct Reference

Send Memory Pool Statistics Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t** CommandHeader
Command header.
- **CFE_ES_SendMemPoolStatsCmd_Payload_t** Payload
Command payload.

11.41.1 Detailed Description

Send Memory Pool Statistics Command.

Definition at line 237 of file default_cfe_es_msgstruct.h.

11.41.2 Field Documentation

11.41.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_SendMemPoolStatsCmd::CommandHeader

Command header.

Definition at line 239 of file default_cfe_es_msgstruct.h.

11.41.2.2 Payload [CFE_ES_SendMemPoolStatsCmd_Payload_t](#) CFE_ES_SendMemPoolStatsCmd::Payload

Command payload.

Definition at line 240 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgstruct.h](#)

11.42 CFE_ES_SendMemPoolStatsCmd_Payload Struct Reference

Send Memory Pool Statistics Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- char [Application \[CFE_MISSION_MAX_API_LEN\]](#)
 - *RESERVED - should be all zeroes*
- [CFE_ES_MemHandle_t PoolHandle](#)

Handle of Pool whose statistics are to be telemetered.

11.42.1 Detailed Description

Send Memory Pool Statistics Command Payload.

For command details, see [CFE_ES_SEND_MEM_POOL_STATS_CC](#)

Definition at line 213 of file default_cfe_es_msgdefs.h.

11.42.2 Field Documentation

11.42.2.1 Application [char CFE_ES_SendMemPoolStatsCmd_Payload::Application \[CFE_MISSION_MAX_API_LEN\]](#)

- RESERVED - should be all zeroes

Definition at line 215 of file default_cfe_es_msgdefs.h.

11.42.2.2 PoolHandle [CFE_ES_MemHandle_t CFE_ES_SendMemPoolStatsCmd_Payload::PoolHandle](#)

Handle of Pool whose statistics are to be telemetered.

Definition at line 216 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgdefs.h

11.43 CFE_ES_SetMaxPRCountCmd Struct Reference

Set Maximum Processor Reset Count Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)

Command header.
- [CFE_ES_SetMaxPRCountCmd_Payload_t Payload](#)

Command payload.

11.43.1 Detailed Description

Set Maximum Processor Reset Count Command.

Definition at line 183 of file default_cfe_es_msgstruct.h.

11.43.2 Field Documentation

11.43.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_SetMaxPRCountCmd::CommandHeader
Command header.

Definition at line 185 of file default_cfe_es_msgstruct.h.

11.43.2.2 Payload [CFE_ES_SetMaxPRCountCmd_Payload_t](#) CFE_ES_SetMaxPRCountCmd::Payload
Command payload.

Definition at line 186 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.44 CFE_ES_SetMaxPRCountCmd_Payload Struct Reference

Set Maximum Processor Reset Count Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- [uint16 MaxPRCount](#)

New maximum number of Processor Resets before an automatic Power-On Reset is performed.

11.44.1 Detailed Description

Set Maximum Processor Reset Count Command Payload.

For command details, see [CFE_ES_SET_MAX_PR_COUNT_CC](#)

Definition at line 128 of file default_cfe_es_msgdefs.h.

11.44.2 Field Documentation

11.44.2.1 MaxPRCount [uint16](#) CFE_ES_SetMaxPRCountCmd_Payload::MaxPRCount

New maximum number of Processor Resets before an automatic Power-On Reset is performed.

Definition at line 130 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgdefs.h

11.45 CFE_ES_SetPerfFilterMaskCmd Struct Reference

Set Performance Analyzer Filter Mask Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)

Command header.

- [CFE_ES_SetPerfFilterMaskCmd_Payload_t Payload](#)

Command payload.

11.45.1 Detailed Description

Set Performance Analyzer Filter Mask Command.
Definition at line 219 of file default_cfe_es_msgstruct.h.

11.45.2 Field Documentation

11.45.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_SetPerfFilterMaskCmd::CommandHeader

Command header.

Definition at line 221 of file default_cfe_es_msgstruct.h.

11.45.2.2 Payload [CFE_ES_SetPerfFilterMaskCmd_Payload_t](#) CFE_ES_SetPerfFilterMaskCmd::Payload

Command payload.

Definition at line 222 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgstruct.h](#)

11.46 CFE_ES_SetPerfFilterMaskCmd_Payload Struct Reference

Set Performance Analyzer Filter Mask Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- [uint32 FilterMaskNum](#)

Index into array of Filter Masks.

- [uint32 FilterMask](#)

New Mask for specified entry in array of Filter Masks.

11.46.1 Detailed Description

Set Performance Analyzer Filter Mask Command Payload.
For command details, see [CFE_ES_SET_PERF_FILTER_MASK_CC](#)
Definition at line 189 of file default_cfe_es_msgdefs.h.

11.46.2 Field Documentation

11.46.2.1 FilterMask [uint32 CFE_ES_SetPerfFilterMaskCmd_Payload::FilterMask](#)

New Mask for specified entry in array of Filter Masks.

Definition at line 192 of file default_cfe_es_msgdefs.h.

11.46.2.2 FilterMaskNum [uint32 CFE_ES_SetPerfFilterMaskCmd_Payload::FilterMaskNum](#)

Index into array of Filter Masks.

Definition at line 191 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgdefs.h](#)

11.47 CFE_ES_SetPerfTriggerMaskCmd Struct Reference

Set Performance Analyzer Trigger Mask Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_SetPerfTrigMaskCmd_Payload_t](#) Payload
Command payload.

11.47.1 Detailed Description

Set Performance Analyzer Trigger Mask Command.

Definition at line 228 of file default_cfe_es_msgstruct.h.

11.47.2 Field Documentation

11.47.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_SetPerfTriggerMaskCmd::CommandHeader

Command header.

Definition at line 230 of file default_cfe_es_msgstruct.h.

11.47.2.2 Payload [CFE_ES_SetPerfTrigMaskCmd_Payload_t](#) CFE_ES_SetPerfTriggerMaskCmd::Payload

Command payload.

Definition at line 231 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.48 CFE_ES_SetPerfTrigMaskCmd_Payload Struct Reference

Set Performance Analyzer Trigger Mask Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- [uint32](#) TriggerMaskNum
Index into array of Trigger Masks.
- [uint32](#) TriggerMask
New Mask for specified entry in array of Trigger Masks.

11.48.1 Detailed Description

Set Performance Analyzer Trigger Mask Command Payload.

For command details, see [CFE_ES_SET_PERF_TRIGGER_MASK_CC](#)

Definition at line 201 of file default_cfe_es_msgdefs.h.

11.48.2 Field Documentation

11.48.2.1 TriggerMask `uint32 CFE_ES_SetPerfTrigMaskCmd_Payload::TriggerMask`
New Mask for specified entry in array of Trigger Masks.
Definition at line 204 of file default_cfe_es_msgdefs.h.

11.48.2.2 TriggerMaskNum `uint32 CFE_ES_SetPerfTrigMaskCmd_Payload::TriggerMaskNum`
Index into array of Trigger Masks.
Definition at line 203 of file default_cfe_es_msgdefs.h.
The documentation for this struct was generated from the following file:

- [cfe/modules/es/config/default_cfe_es_msgdefs.h](#)

11.49 CFE_ES_StartApp Struct Reference

Start Application Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_ES_StartAppCmd_Payload_t Payload`
Command payload.

11.49.1 Detailed Description

Start Application Command.

Definition at line 142 of file default_cfe_es_msgstruct.h.

11.49.2 Field Documentation

11.49.2.1 CommandHeader `CFE_MSG_CommandHeader_t CFE_ES_StartApp::CommandHeader`
Command header.
Definition at line 144 of file default_cfe_es_msgstruct.h.

11.49.2.2 Payload `CFE_ES_StartAppCmd_Payload_t CFE_ES_StartApp::Payload`
Command payload.
Definition at line 145 of file default_cfe_es_msgstruct.h.
The documentation for this struct was generated from the following file:

- [cfe/modules/es/config/default_cfe_es_msgstruct.h](#)

11.50 CFE_ES_StartAppCmd_Payload Struct Reference

Start Application Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- char [Application](#) [CFE_MISSION_MAX_API_LEN]
Name of Application to be started.
- char [AppEntryPoint](#) [CFE_MISSION_MAX_API_LEN]
Symbolic name of Application's entry point.
- char [AppFileName](#) [CFE_MISSION_MAX_PATH_LEN]
Full path and filename of Application's executable image.
- [CFE_ES_MemOffset_t](#) [StackSize](#)
Desired stack size for the new application.
- [CFE_ES_ExceptionAction_Enum_t](#) [ExceptionAction](#)
CFE_ES_ExceptionAction_RESTART_APP=On exception, restart Application, CFE_ES_ExceptionAction_PROC_RESTART=On exception, perform a Processor Reset
- [CFE_ES_TaskPriority_Atom_t](#) [Priority](#)
The new Applications runtime priority.

11.50.1 Detailed Description

Start Application Command Payload.

For command details, see [CFE_ES_START_APP_CC](#)

Definition at line 82 of file default_cfe_es_msgdefs.h.

11.50.2 Field Documentation

11.50.2.1 AppEntryPoint [char CFE_ES_StartAppCmd_Payload::AppEntryPoint](#) [CFE_MISSION_MAX_API_LEN]

Symbolic name of Application's entry point.

Definition at line 85 of file default_cfe_es_msgdefs.h.

11.50.2.2 AppFileName [char CFE_ES_StartAppCmd_Payload::AppFileName](#) [CFE_MISSION_MAX_PATH_LEN]

Full path and filename of Application's executable image.

Definition at line 86 of file default_cfe_es_msgdefs.h.

11.50.2.3 Application [char CFE_ES_StartAppCmd_Payload::Application](#) [CFE_MISSION_MAX_API_LEN]

Name of Application to be started.

Definition at line 84 of file default_cfe_es_msgdefs.h.

11.50.2.4 ExceptionAction [CFE_ES_ExceptionAction_Enum_t](#) [CFE_ES_StartAppCmd_Payload::ExceptionAction](#)

CFE_ES_ExceptionAction_RESTART_APP=On exception, restart Application, CFE_ES_ExceptionAction_PROC_RESTART=On exception, perform a Processor Reset

Definition at line 91 of file default_cfe_es_msgdefs.h.

11.50.2.5 Priority [CFE_ES_TaskPriority_Atom_t](#) [CFE_ES_StartAppCmd_Payload::Priority](#)

The new Applications runtime priority.

Definition at line 95 of file default_cfe_es_msgdefs.h.

11.50.2.6 StackSize `CFE_ES_MemOffset_t CFE_ES_StartAppCmd_Payload::StackSize`
Desired stack size for the new application.

Definition at line 89 of file `default_cfe_es_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/es/config/default_cfe_es_msgdefs.h`

11.51 CFE_ES_StartPerfCmd_Payload Struct Reference

Start Performance Analyzer Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- `CFE_ES_PerfMode_Enum_t TriggerMode`
Desired trigger position (Start, Center, End). Values defined by `CFE_ES_PerfMode`.

11.51.1 Detailed Description

Start Performance Analyzer Command Payload.

For command details, see `CFE_ES_START_PERF_DATA_CC`

Definition at line 165 of file `default_cfe_es_msgdefs.h`.

11.51.2 Field Documentation

11.51.2.1 TriggerMode `CFE_ES_PerfMode_Enum_t CFE_ES_StartPerfCmd_Payload::TriggerMode`
Desired trigger position (Start, Center, End). Values defined by `CFE_ES_PerfMode`.

Definition at line 168 of file `default_cfe_es_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/es/config/default_cfe_es_msgdefs.h`

11.52 CFE_ES_StartPerfDataCmd Struct Reference

Start Performance Analyzer Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_ES_StartPerfCmd_Payload_t Payload`
Command payload.

11.52.1 Detailed Description

Start Performance Analyzer Command.

Definition at line 201 of file `default_cfe_es_msgstruct.h`.

11.52.2 Field Documentation

11.52.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_StartPerfDataCmd::CommandHeader
Command header.
Definition at line 203 of file default_cfe_es_msgstruct.h.

11.52.2.2 Payload [CFE_ES_StartPerfCmd_Payload_t](#) CFE_ES_StartPerfDataCmd::Payload
Command payload.
Definition at line 204 of file default_cfe_es_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.53 CFE_ES_StopAppCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_ES_AppNameCmd_Payload_t](#) Payload
Command payload.

11.53.1 Detailed Description

Definition at line 153 of file default_cfe_es_msgstruct.h.

11.53.2 Field Documentation

11.53.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_StopAppCmd::CommandHeader
Command header.
Definition at line 155 of file default_cfe_es_msgstruct.h.

11.53.2.2 Payload [CFE_ES_AppNameCmd_Payload_t](#) CFE_ES_StopAppCmd::Payload
Command payload.
Definition at line 156 of file default_cfe_es_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.54 CFE_ES_StopPerfCmd_Payload Struct Reference

Stop Performance Analyzer Command Payload.

```
#include <default_cfe_es_msgdefs.h>
```

Data Fields

- char DataFileName [[CFE_MISSION_MAX_PATH_LEN](#)]
ASCII text string of full path and filename of file Performance Analyzer data is to be written.

11.54.1 Detailed Description

Stop Performance Analyzer Command Payload.

For command details, see [CFE_ES_STOP_PERF_DATA_CC](#)

Definition at line 177 of file default_cfe_es_msgdefs.h.

11.54.2 Field Documentation

11.54.2.1 DataFileName `char CFE_ES_StopPerfCmd_Payload::DataFileName[CFE_MISSION_MAX_PATH_LEN]`

ASCII text string of full path and filename of file Performance Analyzer data is to be written.

Definition at line 179 of file default_cfe_es_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgdefs.h](#)

11.55 CFE_ES_StopPerfDataCmd Struct Reference

Stop Performance Analyzer Command.

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_ES_StopPerfCmd_Payload_t Payload`
Command payload.

11.55.1 Detailed Description

Stop Performance Analyzer Command.

Definition at line 210 of file default_cfe_es_msgstruct.h.

11.55.2 Field Documentation

11.55.2.1 CommandHeader `CFE_MSG_CommandHeader_t CFE_ES_StopPerfDataCmd::CommandHeader`

Command header.

Definition at line 212 of file default_cfe_es_msgstruct.h.

11.55.2.2 Payload `CFE_ES_StopPerfCmd_Payload_t CFE_ES_StopPerfDataCmd::Payload`

Command payload.

Definition at line 213 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/[default_cfe_es_msgstruct.h](#)

11.56 CFE_ES_TaskInfo Struct Reference

Task Information.

```
#include <default_cfe_es_extern_typedefs.h>
```

Data Fields

- `CFE_ES_TaskId_t TaskId`
Task Id.
- `uint32 ExecutionCounter`
Task Execution Counter.
- `char TaskName [CFE_MISSION_MAX_API_LEN]`
Task Name.
- `CFE_ES_AppId_t AppId`
Parent Application ID.
- `charAppName [CFE_MISSION_MAX_API_LEN]`
Parent Application Name.
- `CFE_ES_MemOffset_t StackSize`
- `CFE_ES_TaskPriority_Atom_t Priority`
- `uint8 Spare [2]`

11.56.1 Detailed Description

Task Information.

Structure that is used to provide information about a task. It is primarily used for the Query All Tasks ([CFE_ES_QUERY_ALL_TASKS_CC](#)) command.

Note

There is not currently a telemetry message directly containing this data structure, but it does define the format of the data file generated by the Query All Tasks command. Therefore it should be considered part of the overall telemetry interface.

Definition at line 499 of file default_cfe_es_extern_typedefs.h.

11.56.2 Field Documentation

11.56.2.1 AppId `CFE_ES_AppId_t CFE_ES_TaskInfo::AppId`

Parent Application ID.

Definition at line 504 of file default_cfe_es_extern_typedefs.h.

11.56.2.2 AppName `char CFE_ES_TaskInfo::AppName [CFE_MISSION_MAX_API_LEN]`

Parent Application Name.

Definition at line 505 of file default_cfe_es_extern_typedefs.h.

11.56.2.3 ExecutionCounter `uint32 CFE_ES_TaskInfo::ExecutionCounter`

Task Execution Counter.

Definition at line 502 of file default_cfe_es_extern_typedefs.h.

11.56.2.4 Priority `CFE_ES_TaskPriority_Atom_t CFE_ES_TaskInfo::Priority`

Priority of task

Definition at line 507 of file default_cfe_es_extern_typedefs.h.

11.56.2.5 Spare `uint8 CFE_ES_TaskInfo::Spare[2]`

Spare bytes for alignment

Definition at line 508 of file default_cfe_es_extern_typedefs.h.

11.56.2.6 StackSize `CFE_ES_MemOffset_t CFE_ES_TaskInfo::StackSize`

Size of task stack

Definition at line 506 of file default_cfe_es_extern_typedefs.h.

11.56.2.7 TaskId `CFE_ES_TaskId_t CFE_ES_TaskInfo::TaskId`

Task Id.

Definition at line 501 of file default_cfe_es_extern_typedefs.h.

11.56.2.8 TaskName `char CFE_ES_TaskInfo::TaskName[CFE_MISSION_MAX_API_LEN]`

Task Name.

Definition at line 503 of file default_cfe_es_extern_typedefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_extern_typedefs.h

11.57 CFE_ES_WriteERLogCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_ES_FileNameCmd_Payload_t Payload`
Command payload.

11.57.1 Detailed Description

Definition at line 124 of file default_cfe_es_msgstruct.h.

11.57.2 Field Documentation

11.57.2.1 CommandHeader `CFE_MSG_CommandHeader_t CFE_ES_WriteERLogCmd::CommandHeader`

Command header.

Definition at line 126 of file default_cfe_es_msgstruct.h.

11.57.2.2 Payload `CFE_ES_FileNameCmd_Payload_t CFE_ES_WriteERLogCmd::Payload`

Command payload.

Definition at line 127 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.58 CFE_ES_WriteSysLogCmd Struct Reference

```
#include <default_cfe_es_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t** CommandHeader
Command header.
- **CFE_ES_FileNameCmd_Payload_t** Payload
Command payload.

11.58.1 Detailed Description

Definition at line 118 of file default_cfe_es_msgstruct.h.

11.58.2 Field Documentation

11.58.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_ES_WriteSysLogCmd::CommandHeader

Command header.

Definition at line 120 of file default_cfe_es_msgstruct.h.

11.58.2.2 Payload [CFE_ES_FileNameCmd_Payload_t](#) CFE_ES_WriteSysLogCmd::Payload

Command payload.

Definition at line 121 of file default_cfe_es_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/es/config/default_cfe_es_msgstruct.h

11.59 CFE_EVS_AddEventFilterCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t** CommandHeader
Command header.
- **CFE_EVS_AppNameEventIDMaskCmd_Payload_t** Payload
Command payload.

11.59.1 Detailed Description

Definition at line 203 of file default_cfe_evs_msgstruct.h.

11.59.2 Field Documentation

11.59.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_AddEventFilterCmd::CommandHeader

Command header.

Definition at line 205 of file default_cfe_evs_msgstruct.h.

11.59.2.2 Payload `CFE_EVS_AppNameEventIDMaskCmd_Payload_t` `CFE_EVS_AddEventFilterCmd::Payload`
Command payload.

Definition at line 206 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.60 CFE_EVS_AppDataCmd_Payload Struct Reference

Write Event Services Application Information to File Command Payload.

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- char `AppDataFilename [CFE_MISSION_MAX_PATH_LEN]`
Filename where application data is to be written.

11.60.1 Detailed Description

Write Event Services Application Information to File Command Payload.

For command details, see [CFE_EVS_WRITE_APP_DATA_FILE_CC](#)

Definition at line 68 of file default_cfe_evs_msgdefs.h.

11.60.2 Field Documentation

11.60.2.1 AppDataFilename `char CFE_EVS_AppDataCmd_Payload::AppDataFilename [CFE_MISSION_MAX_PATH_LEN]`
Filename where application data is to be written.

Definition at line 70 of file default_cfe_evs_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.61 CFE_EVS_AppNameBitMaskCmd_Payload Struct Reference

Generic App Name and Bitmask Command Payload.

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- char `AppName [CFE_MISSION_MAX_API_LEN]`
Application name to use in the command.
- `uint8 BitMask`
BitMask to use in the command.
- `uint8 Spare`
Pad to even byte.

11.61.1 Detailed Description

Generic App Name and Bitmask Command Payload.

For command details, see [CFE_EVS_ENABLE_APP_EVENT_TYPE_CC](#) and/or [CFE_EVS_DISABLE_APP_EVENT_TYPE_CC](#)

Definition at line 140 of file default_cfe_evs_msgdefs.h.

11.61.2 Field Documentation

11.61.2.1 AppName `char CFE_EVS_AppNameBitMaskCmd_Payload::AppName [CFE_MISSION_MAX_API_LEN]`
Application name to use in the command.
Definition at line 142 of file default_cfe_evs_msgdefs.h.

11.61.2.2 BitMask `uint8 CFE_EVS_AppNameBitMaskCmd_Payload::BitMask`
BitMask to use in the command.
Definition at line 143 of file default_cfe_evs_msgdefs.h.

11.61.2.3 Spare `uint8 CFE_EVS_AppNameBitMaskCmd_Payload::Spare`
Pad to even byte.
Definition at line 144 of file default_cfe_evs_msgdefs.h.
The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.62 CFE_EVS_AppNameCmd_Payload Struct Reference

Generic App Name Command Payload.

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- `char AppName [CFE_MISSION_MAX_API_LEN]`
Application name to use in the command.

11.62.1 Detailed Description

Generic App Name Command Payload.

For command details, see `CFE_EVS_ENABLE_APP_EVENTS_CC`, `CFE_EVS_DISABLE_APP_EVENTS_CC`, `CFE_EVS_RESET_APP_COUNTER_CC` and/or `CFE_EVS_RESET_ALL_FILTERS_CC`

Definition at line 117 of file default_cfe_evs_msgdefs.h.

11.62.2 Field Documentation

11.62.2.1 AppName `char CFE_EVS_AppNameCmd_Payload::AppName [CFE_MISSION_MAX_API_LEN]`
Application name to use in the command.
Definition at line 119 of file default_cfe_evs_msgdefs.h.
The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.63 CFE_EVS_AppNameEventIDCmd_Payload Struct Reference

Generic App Name and Event ID Command Payload.

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- char [AppName \[CFE_MISSION_MAX_API_LEN\]](#)
Application name to use in the command.
- [uint16 EventID](#)
Event ID to use in the command.

11.63.1 Detailed Description

Generic App Name and Event ID Command Payload.

For command details, see [CFE_EVS_RESET_FILTER_CC](#) and [CFE_EVS_DELETE_EVENT_FILTER_CC](#)

Definition at line 128 of file default_cfe_evs_msgdefs.h.

11.63.2 Field Documentation

11.63.2.1 [AppName](#) `char CFE_EVS_AppNameEventIDCmd_Payload::AppName [CFE_MISSION_MAX_API_LEN]`

Application name to use in the command.

Definition at line 130 of file default_cfe_evs_msgdefs.h.

11.63.2.2 [EventID](#) `uint16 CFE_EVS_AppNameEventIDCmd_Payload::EventID`

Event ID to use in the command.

Definition at line 131 of file default_cfe_evs_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.64 CFE_EVS_AppNameEventIDMaskCmd_Payload Struct Reference

Generic App Name, Event ID, Mask Command Payload.

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- char [AppName \[CFE_MISSION_MAX_API_LEN\]](#)
Application name to use in the command.
- [uint16 EventID](#)
Event ID to use in the command.
- [uint16 Mask](#)
Mask to use in the command.

11.64.1 Detailed Description

Generic App Name, Event ID, Mask Command Payload.

For command details, see [CFE_EVS_SET_FILTER_CC](#), [CFE_EVS_ADD_EVENT_FILTER_CC](#) and/or [CFE_EVS_DELETE_EVENT_FILTER_CC](#)

Definition at line 154 of file default_cfe_evs_msgdefs.h.

11.64.2 Field Documentation

11.64.2.1 AppName `char CFE_EVS_AppNameEventIDMaskCmd_Payload::AppName[CFE_MISSION_MAX_API_LEN]`
Application name to use in the command.
Definition at line 156 of file default_cfe_evs_msgdefs.h.

11.64.2.2 EventID `uint16 CFE_EVS_AppNameEventIDMaskCmd_Payload::EventID`
Event ID to use in the command.
Definition at line 157 of file default_cfe_evs_msgdefs.h.

11.64.2.3 Mask `uint16 CFE_EVS_AppNameEventIDMaskCmd_Payload::Mask`
Mask to use in the command.
Definition at line 158 of file default_cfe_evs_msgdefs.h.
The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.65 CFE_EVS_AppTlmData Struct Reference

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- **CFE_ES_AppId_t AppID**
Numerical application identifier.
- **uint16 AppMessageSentCounter**
Application message sent counter.
- **uint8 AppEnableStatus**
Application event service enable status.
- **uint8 AppMessageSquelchedCounter**
Number of events squelched.

11.65.1 Detailed Description

Definition at line 167 of file default_cfe_evs_msgdefs.h.

11.65.2 Field Documentation

11.65.2.1 AppEnableStatus `uint8 CFE_EVS_AppTlmData::AppEnableStatus`
Application event service enable status.

Telemetry Mnemonic(s) \$sc_\$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS].APPENASTAT

Definition at line 173 of file default_cfe_evs_msgdefs.h.

11.65.2.2 AppID `CFE_ES_AppId_t CFE_EVS_AppTlmData::AppID`
Numerical application identifier.

Telemetry Mnemonic(s) \$sc_\$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS].APPID

Definition at line 169 of file default_cfe_evs_msgdefs.h.

11.65.2.3 AppMessageSentCounter `uint16` `CFE_EVS_AppTlmData::AppMessageSentCounter`
Application message sent counter.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS].APPMSGSENTC`

Definition at line 171 of file `default_cfe_evs_msgdefs.h`.

11.65.2.4 AppMessageSquelchedCounter `uint8` `CFE_EVS_AppTlmData::AppMessageSquelchedCounter`
Number of events squelched.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS].SQUELCHEDC`

Definition at line 175 of file `default_cfe_evs_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/evs/config/default_cfe_evs_msgdefs.h`

11.66 CFE_EVS_BinFilter Struct Reference

Event message filter definition structure.

```
#include <cfe_evs_api_typedefs.h>
```

Data Fields

- **uint16 EventID**
Numerical event identifier.
- **uint16 Mask**
Binary filter mask value.

11.66.1 Detailed Description

Event message filter definition structure.

Definition at line 60 of file `cfe_evs_api_typedefs.h`.

11.66.2 Field Documentation

11.66.2.1 EventID `uint16` `CFE_EVS_BinFilter::EventID`

Numerical event identifier.

Definition at line 62 of file `cfe_evs_api_typedefs.h`.

11.66.2.2 Mask `uint16` `CFE_EVS_BinFilter::Mask`

Binary filter mask value.

Definition at line 63 of file `cfe_evs_api_typedefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/core_api/fsw/inc/cfe_evs_api_typedefs.h`

11.67 CFE_EVS_BitMaskCmd_Payload Struct Reference

Generic Bitmask Command Payload.

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- `uint8 BitMask`
BitMask to use in the command.
- `uint8 Spare`
Pad to even byte.

11.67.1 Detailed Description

Generic Bitmask Command Payload.

For command details, see `CFE_EVS_ENABLE_EVENT_TYPE_CC`, `CFE_EVS_DISABLE_EVENT_TYPE_CC`, `CFE_EVS_ENABLE_PORTS_CC` and/or `CFE_EVS_DISABLE_PORTS_CC`

Definition at line 104 of file `default_cfe_evs_msgdefs.h`.

11.67.2 Field Documentation**11.67.2.1 BitMask `uint8 CFE_EVS_BitMaskCmd_Payload::BitMask`**

BitMask to use in the command.

Definition at line 106 of file `default_cfe_evs_msgdefs.h`.

11.67.2.2 Spare `uint8 CFE_EVS_BitMaskCmd_Payload::Spare`

Pad to even byte.

Definition at line 107 of file `default_cfe_evs_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/evs/config/default_cfe_evs_msgdefs.h`

11.68 CFE_EVS_ClearLogCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.

11.68.1 Detailed Description

Definition at line 60 of file `default_cfe_evs_msgstruct.h`.

11.68.2 Field Documentation**11.68.2.1 CommandHeader `CFE_MSG_CommandHeader_t CFE_EVS_ClearLogCmd::CommandHeader`**

Command header.

Definition at line 62 of file `default_cfe_evs_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/evs/config/default_cfe_evs_msgstruct.h`

11.69 CFE_EVS_DeleteEventFilterCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t** CommandHeader
Command header.
- **CFE_EVS_AppNameEventIDCmd_Payload_t** Payload
Command payload.

11.69.1 Detailed Description

Definition at line 175 of file default_cfe_evs_msgstruct.h.

11.69.2 Field Documentation

11.69.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_DeleteEventFilterCmd::CommandHeader

Command header.

Definition at line 177 of file default_cfe_evs_msgstruct.h.

11.69.2.2 Payload [CFE_EVS_AppNameEventIDCmd_Payload_t](#) CFE_EVS_DeleteEventFilterCmd::Payload

Command payload.

Definition at line 178 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.70 CFE_EVS_DisableAppEventsCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t** CommandHeader
Command header.
- **CFE_EVS_AppNameCmd_Payload_t** Payload
Command payload.

11.70.1 Detailed Description

Definition at line 146 of file default_cfe_evs_msgstruct.h.

11.70.2 Field Documentation

11.70.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_DisableAppEventsCmd::CommandHeader

Command header.

Definition at line 148 of file default_cfe_evs_msgstruct.h.

11.70.2.2 Payload `CFE_EVS_AppNameCmd_Payload_t` `CFE_EVS_DisableAppEventsCmd::Payload`
Command payload.

Definition at line 149 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.71 CFE_EVS_DisableAppEventTypeCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_EVS_AppNameBitMaskCmd_Payload_t Payload`
Command payload.

11.71.1 Detailed Description

Definition at line 192 of file default_cfe_evs_msgstruct.h.

11.71.2 Field Documentation

11.71.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_EVS_DisableAppEventTypeCmd::CommandHeader`
Command header.

Definition at line 194 of file default_cfe_evs_msgstruct.h.

11.71.2.2 Payload `CFE_EVS_AppNameBitMaskCmd_Payload_t` `CFE_EVS_DisableAppEventTypeCmd::Payload`
Command payload.

Definition at line 195 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.72 CFE_EVS_DisableEventTypeCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_EVS_BitMaskCmd_Payload_t Payload`
Command payload.

11.72.1 Detailed Description

Definition at line 129 of file default_cfe_evs_msgstruct.h.

11.72.2 Field Documentation

11.72.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_EVS_DisableEventTypeCmd::CommandHeader`
Command header.

Definition at line 131 of file `default_cfe_evs_msgstruct.h`.

11.72.2.2 Payload `CFE_EVS_BitMaskCmd_Payload_t` `CFE_EVS_DisableEventTypeCmd::Payload`
Command payload.

Definition at line 132 of file `default_cfe_evs_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/evs/config/default_cfe_evs_msgstruct.h`

11.73 CFE_EVS_DisablePortsCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_EVS_BitMaskCmd_Payload_t Payload`
Command payload.

11.73.1 Detailed Description

Definition at line 117 of file `default_cfe_evs_msgstruct.h`.

11.73.2 Field Documentation

11.73.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_EVS_DisablePortsCmd::CommandHeader`
Command header.

Definition at line 119 of file `default_cfe_evs_msgstruct.h`.

11.73.2.2 Payload `CFE_EVS_BitMaskCmd_Payload_t` `CFE_EVS_DisablePortsCmd::Payload`
Command payload.

Definition at line 120 of file `default_cfe_evs_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/evs/config/default_cfe_evs_msgstruct.h`

11.74 CFE_EVS_EnableAppEventsCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_EVS_AppNameCmd_Payload_t](#) Payload
Command payload.

11.74.1 Detailed Description

Definition at line 140 of file default_cfe_evs_msgstruct.h.

11.74.2 Field Documentation**11.74.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_EVS_EnableAppEventsCmd::CommandHeader
Command header.

Definition at line 142 of file default_cfe_evs_msgstruct.h.

11.74.2.2 Payload [CFE_EVS_AppNameCmd_Payload_t](#) CFE_EVS_EnableAppEventsCmd::Payload
Command payload.

Definition at line 143 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.75 CFE_EVS_EnableAppEventTypeCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_EVS_AppNameBitMaskCmd_Payload_t](#) Payload
Command payload.

11.75.1 Detailed Description

Definition at line 186 of file default_cfe_evs_msgstruct.h.

11.75.2 Field Documentation**11.75.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_EVS_EnableAppEventTypeCmd::CommandHeader
Command header.

Definition at line 188 of file default_cfe_evs_msgstruct.h.

11.75.2.2 Payload `CFE_EVS_AppNameBitMaskCmd_Payload_t` `CFE_EVS_EnableEventTypeCmd::Payload`
Command payload.

Definition at line 189 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/evs/config/default_cfe_evs_msgstruct.h`

11.76 CFE_EVS_EnableEventTypeCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_EVS_BitMaskCmd_Payload_t Payload`
Command payload.

11.76.1 Detailed Description

Definition at line 123 of file default_cfe_evs_msgstruct.h.

11.76.2 Field Documentation

11.76.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_EVS_EnableEventTypeCmd::CommandHeader`
Command header.

Definition at line 125 of file default_cfe_evs_msgstruct.h.

11.76.2.2 Payload `CFE_EVS_BitMaskCmd_Payload_t` `CFE_EVS_EnableEventTypeCmd::Payload`
Command payload.

Definition at line 126 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/evs/config/default_cfe_evs_msgstruct.h`

11.77 CFE_EVS_EnablePortsCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_EVS_BitMaskCmd_Payload_t Payload`
Command payload.

11.77.1 Detailed Description

Definition at line 111 of file default_cfe_evs_msgstruct.h.

11.77.2 Field Documentation

11.77.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_EnablePortsCmd::CommandHeader
Command header.

Definition at line 113 of file default_cfe_evs_msgstruct.h.

11.77.2.2 Payload [CFE_EVS_BitMaskCmd_Payload_t](#) CFE_EVS_EnablePortsCmd::Payload
Command payload.

Definition at line 114 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.78 CFE_EVS_HousekeepingTlm Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_TelemetryHeader_t](#) TelemetryHeader
Telemetry header.
- [CFE_EVS_HousekeepingTlm_Payload_t](#) Payload
Telemetry payload.

11.78.1 Detailed Description

Definition at line 221 of file default_cfe_evs_msgstruct.h.

11.78.2 Field Documentation

11.78.2.1 Payload [CFE_EVS_HousekeepingTlm_Payload_t](#) CFE_EVS_HousekeepingTlm::Payload
Telemetry payload.

Definition at line 224 of file default_cfe_evs_msgstruct.h.

11.78.2.2 TelemetryHeader [CFE_MSG_TelemetryHeader_t](#) CFE_EVS_HousekeepingTlm::TelemetryHeader
Telemetry header.

Definition at line 223 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.79 CFE_EVS_HousekeepingTlm_Payload Struct Reference

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- `uint8 CommandCounter`
EVS Command Counter.
- `uint8 CommandErrorCounter`
EVS Command Error Counter.
- `uint8 MessageFormatMode`
Event message format mode (short/long)
- `uint8 MessageTruncCounter`
Event message truncation counter.
- `uint8 UnregisteredAppCounter`
Unregistered application message send counter.
- `uint8 OutputPort`
Output port mask.
- `uint8 LogFullFlag`
Local event log full flag.
- `uint8 LogMode`
Local event logging mode (overwrite/discard)
- `uint16 MessageSendCounter`
Event message send counter.
- `uint16 LogOverflowCounter`
Local event log overflow counter.
- `uint8 LogEnabled`
Current event log enable/disable state.
- `uint8 Spare1`
Padding for 32 bit boundary.
- `uint8 Spare2`
Padding for 32 bit boundary.
- `uint8 Spare3`
Padding for 32 bit boundary.
- `CFE_EVS_AppTlmData_t AppData [CFE_MISSION_ES_MAX_APPLICATIONS]`
Array of registered application table data.

11.79.1 Detailed Description

Name Event Services Housekeeping Telemetry Packet

Definition at line 182 of file default_cfe_evs_msgdefs.h.

11.79.2 Field Documentation

11.79.2.1 AppData `CFE_EVS_AppTlmData_t CFE_EVS_HousekeepingTlm_Payload::AppData[CFE_MISSION_ES_MAX_APPLICATIONS]`
Array of registered application table data.

Telemetry Mnemonic(s) \$sc_\$cpu_EVS_APP[CFE_PLATFORM_ES_MAX_APPLICATIONS]

Definition at line 216 of file default_cfe_evs_msgdefs.h.

11.79.2.2 CommandCounter `uint8` `CFE_EVS_HousekeepingTlm_Payload::CommandCounter`
EVS Command Counter.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_CMDPC`

Definition at line 184 of file `default_cfe_evs_msgdefs.h`.

11.79.2.3 CommandErrorCounter `uint8` `CFE_EVS_HousekeepingTlm_Payload::CommandErrorCounter`
EVS Command Error Counter.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_CMDEC`

Definition at line 186 of file `default_cfe_evs_msgdefs.h`.

11.79.2.4 LogEnabled `uint8` `CFE_EVS_HousekeepingTlm_Payload::LogEnabled`
Current event log enable/disable state.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_LOGENABLED`

Definition at line 207 of file `default_cfe_evs_msgdefs.h`.

11.79.2.5 LogFullFlag `uint8` `CFE_EVS_HousekeepingTlm_Payload::LogFullFlag`
Local event log full flag.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_LOGFULL`

Definition at line 197 of file `default_cfe_evs_msgdefs.h`.

11.79.2.6 LogMode `uint8` `CFE_EVS_HousekeepingTlm_Payload::LogMode`
Local event logging mode (overwrite/discard)

Telemetry Mnemonic(s) `$sc_$cpu_EVS_LOGMODE`

Definition at line 199 of file `default_cfe_evs_msgdefs.h`.

11.79.2.7 LogOverflowCounter `uint16` `CFE_EVS_HousekeepingTlm_Payload::LogOverflowCounter`
Local event log overflow counter.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_LOGOVERFLOWC`

Definition at line 204 of file `default_cfe_evs_msgdefs.h`.

11.79.2.8 MessageFormatMode `uint8` `CFE_EVS_HousekeepingTlm_Payload::MessageFormatMode`
Event message format mode (short/long)

Telemetry Mnemonic(s) `$sc_$cpu_EVS_MSGFMTMODE`

Definition at line 188 of file `default_cfe_evs_msgdefs.h`.

11.79.2.9 MessageSendCounter `uint16 CFE_EVS_HousekeepingTlm_Payload::MessageSendCounter`
Event message send counter.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_MSGSENTC`

Definition at line 202 of file default_cfe_evs_msgdefs.h.

11.79.2.10 MessageTruncCounter `uint8 CFE_EVS_HousekeepingTlm_Payload::MessageTruncCounter`
Event message truncation counter.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_MSGTRUNC`

Definition at line 190 of file default_cfe_evs_msgdefs.h.

11.79.2.11 OutputPort `uint8 CFE_EVS_HousekeepingTlm_Payload::OutputPort`
Output port mask.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_OUTPUTPORT`

Definition at line 195 of file default_cfe_evs_msgdefs.h.

11.79.2.12 Spare1 `uint8 CFE_EVS_HousekeepingTlm_Payload::Spare1`
Padding for 32 bit boundary.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_HK_SPARE1`

Definition at line 209 of file default_cfe_evs_msgdefs.h.

11.79.2.13 Spare2 `uint8 CFE_EVS_HousekeepingTlm_Payload::Spare2`
Padding for 32 bit boundary.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_HK_SPARE2`

Definition at line 211 of file default_cfe_evs_msgdefs.h.

11.79.2.14 Spare3 `uint8 CFE_EVS_HousekeepingTlm_Payload::Spare3`
Padding for 32 bit boundary.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_HK_SPARE3`

Definition at line 213 of file default_cfe_evs_msgdefs.h.

11.79.2.15 UnregisteredAppCounter `uint8 CFE_EVS_HousekeepingTlm_Payload::UnregisteredAppCounter`
Unregistered application message send counter.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_UNREGAPPC`

Definition at line 193 of file default_cfe_evs_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.80 CFE_EVS_LogFileCmd_Payload Struct Reference

Write Event Log to File Command Payload.

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- char [LogFilename \[CFE_MISSION_MAX_PATH_LEN\]](#)

Filename where log data is to be written.

11.80.1 Detailed Description

Write Event Log to File Command Payload.

For command details, see [CFE_EVS_WRITE_LOG_DATA_FILE_CC](#)

Definition at line 57 of file default_cfe_evs_msgdefs.h.

11.80.2 Field Documentation

11.80.2.1 LogFilename char CFE_EVS_LogFileCmd_Payload::LogFilename [CFE_MISSION_MAX_PATH_LEN]

Filename where log data is to be written.

Definition at line 59 of file default_cfe_evs_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.81 CFE_EVS_LongEventTlm Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_TelemetryHeader_t TelemetryHeader](#)

Telemetry header.

- [CFE_EVS_LongEventTlm_Payload_t Payload](#)

Telemetry payload.

11.81.1 Detailed Description

Definition at line 227 of file default_cfe_evs_msgstruct.h.

11.81.2 Field Documentation

11.81.2.1 Payload [CFE_EVS_LongEventTlm_Payload_t](#) CFE_EVS_LongEventTlm::Payload

Telemetry payload.

Definition at line 230 of file default_cfe_evs_msgstruct.h.

11.81.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `CFE_EVS_LongEventTlm::TelemetryHeader`
Telemetry header.

Definition at line 229 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.82 CFE_EVS_LongEventTlm_Payload Struct Reference

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- `CFE_EVS_PacketID_t PacketID`
Event packet information.
- `char Message [CFE_MISSION_EVS_MAX_MESSAGE_LENGTH]`
Event message string.
- `uint8 Spare1`
Structure padding.
- `uint8 Spare2`
Structure padding.

11.82.1 Detailed Description

Name Event Message Telemetry Packet (Long format)

Definition at line 239 of file default_cfe_evs_msgdefs.h.

11.82.2 Field Documentation

11.82.2.1 Message `char CFE_EVS_LongEventTlm_Payload::Message[CFE_MISSION_EVS_MAX_MESSAGE_LENGTH]`
Event message string.

Telemetry Mnemonic(s) \$sc_\$cpu_EVS_EVENT[CFE_MISSION_EVS_MAX_MESSAGE_LENGTH]

Definition at line 242 of file default_cfe_evs_msgdefs.h.

11.82.2.2 PacketID `CFE_EVS_PacketID_t CFE_EVS_LongEventTlm_Payload::PacketID`
Event packet information.

Definition at line 241 of file default_cfe_evs_msgdefs.h.

11.82.2.3 Spare1 `uint8 CFE_EVS_LongEventTlm_Payload::Spare1`
Structure padding.

Telemetry Mnemonic(s) \$sc_\$cpu_EVS_SPARE1

Definition at line 244 of file default_cfe_evs_msgdefs.h.

11.82.2.4 Spare2 `uint8 CFE_EVS_LongEventTlm_Payload::Spare2`
Structure padding.

Telemetry Mnemonic(s) \$sc_\$cpu_EVS_SPARE2

Definition at line 246 of file default_cfe_evs_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.83 CFE_EVS_NoopCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)
Command header.

11.83.1 Detailed Description

Definition at line 50 of file default_cfe_evs_msgstruct.h.

11.83.2 Field Documentation

11.83.2.1 CommandHeader [CFE_MSG_CommandHeader_t CFE_EVS_NoopCmd::CommandHeader](#)
Command header.

Definition at line 52 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.84 CFE_EVS_PacketID Struct Reference

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- char [AppName \[CFE_MISSION_MAX_API_LEN\]](#)
Application name.
- `uint16 EventID`
Numerical event identifier.
- [CFE_EVS_EventType_Enum_t EventType](#)
Numerical event type identifier.
- `uint32 SpacecraftID`
Spacecraft identifier.
- `uint32 ProcessorID`
Numerical processor identifier.

11.84.1 Detailed Description

Telemetry packet structures

Definition at line 222 of file default_cfe_evs_msgdefs.h.

11.84.2 Field Documentation

11.84.2.1 AppName `char CFE_EVS_PacketID::AppName[CFE_MISSION_MAX_API_LEN]`
Application name.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_APPNAME[OS_MAX_API_NAME]`

Definition at line 224 of file default_cfe_evs_msgdefs.h.

11.84.2.2 EventID `uint16 CFE_EVS_PacketID::EventID`
Numerical event identifier.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_EVENTID`

Definition at line 226 of file default_cfe_evs_msgdefs.h.

11.84.2.3 EventType `CFE_EVS_EventType_Enum_t CFE_EVS_PacketID::EventType`
Numerical event type identifier.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_EVENTTYPE`

Definition at line 228 of file default_cfe_evs_msgdefs.h.

11.84.2.4 ProcessorID `uint32 CFE_EVS_PacketID::ProcessorID`
Numerical processor identifier.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_PROCESSORID`

Definition at line 232 of file default_cfe_evs_msgdefs.h.

11.84.2.5 SpacecraftID `uint32 CFE_EVS_PacketID::SpacecraftID`
Spacecraft identifier.

Telemetry Mnemonic(s) `$sc_$cpu_EVS_SCID`

Definition at line 230 of file default_cfe_evs_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.85 CFE_EVS_ResetAllFiltersCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_EVS_AppNameCmd_Payload_t Payload`
Command payload.

11.85.1 Detailed Description

Definition at line 158 of file default_cfe_evs_msgstruct.h.

11.85.2 Field Documentation

11.85.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_ResetAllFiltersCmd::CommandHeader
Command header.

Definition at line 160 of file default_cfe_evs_msgstruct.h.

11.85.2.2 Payload [CFE_EVS_AppNameCmd_Payload_t](#) CFE_EVS_ResetAllFiltersCmd::Payload
Command payload.

Definition at line 161 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.86 CFE_EVS_ResetAppCounterCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_EVS_AppNameCmd_Payload_t](#) Payload
Command payload.

11.86.1 Detailed Description

Definition at line 152 of file default_cfe_evs_msgstruct.h.

11.86.2 Field Documentation

11.86.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_ResetAppCounterCmd::CommandHeader
Command header.

Definition at line 154 of file default_cfe_evs_msgstruct.h.

11.86.2.2 Payload [CFE_EVS_AppNameCmd_Payload_t](#) CFE_EVS_ResetAppCounterCmd::Payload
Command payload.

Definition at line 155 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.87 CFE_EVS_ResetCountersCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.87.1 Detailed Description

Definition at line 55 of file default_cfe_evs_msgstruct.h.

11.87.2 Field Documentation

11.87.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_ResetCountersCmd::CommandHeader
Command header.

Definition at line 57 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/[default_cfe_evs_msgstruct.h](#)

11.88 CFE_EVS_ResetFilterCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_EVS_AppNameEventIDCmd_Payload_t](#) Payload
Command payload.

11.88.1 Detailed Description

Definition at line 169 of file default_cfe_evs_msgstruct.h.

11.88.2 Field Documentation

11.88.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_ResetFilterCmd::CommandHeader
Command header.

Definition at line 171 of file default_cfe_evs_msgstruct.h.

11.88.2.2 Payload [CFE_EVS_AppNameEventIDCmd_Payload_t](#) CFE_EVS_ResetFilterCmd::Payload
Command payload.

Definition at line 172 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/[default_cfe_evs_msgstruct.h](#)

11.89 CFE_EVS_SendHkCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.89.1 Detailed Description

Definition at line 65 of file default_cfe_evs_msgstruct.h.

11.89.2 Field Documentation**11.89.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_EVS_SendHkCmd::CommandHeader
Command header.

Definition at line 67 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.90 CFE_EVS_SetEventFormatCode_Payload Struct Reference

Set Event Format Mode Command Payload.

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- [CFE_EVS_MsgFormat_Enum_t](#) MsgFormat
Mode to use in the command.
- [uint8](#) Spare
Pad to even byte.

11.90.1 Detailed Description

Set Event Format Mode Command Payload.

For command details, see [CFE_EVS_SET_EVENT_FORMAT_MODE_CC](#)

Definition at line 91 of file default_cfe_evs_msgdefs.h.

11.90.2 Field Documentation**11.90.2.1 MsgFormat** [CFE_EVS_MsgFormat_Enum_t](#) CFE_EVS_SetEventFormatCode_Payload::MsgFormat
Mode to use in the command.

Definition at line 93 of file default_cfe_evs_msgdefs.h.

11.90.2.2 Spare [uint8](#) CFE_EVS_SetEventFormatCode_Payload::Spare

Pad to even byte.

Definition at line 94 of file default_cfe_evs_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.91 CFE_EVS_SetEventFormatModeCmd Struct Reference

Set Event Format Mode Command.

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) `CommandHeader`
Command header.
- [CFE_EVS_SetEventFormatMode_Payload_t](#) `Payload`
Command payload.

11.91.1 Detailed Description

Set Event Format Mode Command.

Definition at line 100 of file default_cfe_evs_msgstruct.h.

11.91.2 Field Documentation

11.91.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_SetEventFormatModeCmd::CommandHeader

Command header.

Definition at line 102 of file default_cfe_evs_msgstruct.h.

11.91.2.2 Payload [CFE_EVS_SetEventFormatMode_Payload_t](#) CFE_EVS_SetEventFormatModeCmd::Payload

Command payload.

Definition at line 103 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.92 CFE_EVS_SetFilterCmd Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) `CommandHeader`
Command header.
- [CFE_EVS_AppNameEventIDMaskCmd_Payload_t](#) `Payload`
Command payload.

11.92.1 Detailed Description

Definition at line 209 of file default_cfe_evs_msgstruct.h.

11.92.2 Field Documentation

11.92.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_SetFilterCmd::CommandHeader
Command header.
Definition at line 211 of file default_cfe_evs_msgstruct.h.

11.92.2.2 Payload [CFE_EVS_AppNameEventIDMaskCmd_Payload_t](#) CFE_EVS_SetFilterCmd::Payload
Command payload.
Definition at line 212 of file default_cfe_evs_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.93 CFE_EVS_SetLogMode_Payload Struct Reference

Set Log Mode Command Payload.

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- [CFE_EVS_LogMode_Enum_t LogMode](#)
Mode to use in the command.
- [uint8 Spare](#)
Pad to even byte.

11.93.1 Detailed Description

Set Log Mode Command Payload.

For command details, see [CFE_EVS_SET_LOG_MODE_CC](#)
Definition at line 79 of file default_cfe_evs_msgdefs.h.

11.93.2 Field Documentation

11.93.2.1 LogMode [CFE_EVS_LogMode_Enum_t](#) CFE_EVS_SetLogMode_Payload::LogMode
Mode to use in the command.
Definition at line 81 of file default_cfe_evs_msgdefs.h.

11.93.2.2 Spare [uint8](#) CFE_EVS_SetLogMode_Payload::Spare
Pad to even byte.
Definition at line 82 of file default_cfe_evs_msgdefs.h.
The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.94 CFE_EVS_SetLogModeCmd Struct Reference

Set Log Mode Command.

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_EVS_SetLogMode_Payload_t](#) Payload
Command payload.

11.94.1 Detailed Description

Set Log Mode Command.

Definition at line 91 of file `default_cfe_evs_msgstruct.h`.

11.94.2 Field Documentation

11.94.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_SetLogModeCmd::CommandHeader

Command header.

Definition at line 93 of file `default_cfe_evs_msgstruct.h`.

11.94.2.2 Payload [CFE_EVS_SetLogMode_Payload_t](#) CFE_EVS_SetLogModeCmd::Payload

Command payload.

Definition at line 94 of file `default_cfe_evs_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/evs/config/default_cfe_evs_msgstruct.h`

11.95 CFE_EVS_ShortEventTlm Struct Reference

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_TelemetryHeader_t](#) TelemetryHeader
Telemetry header.
- [CFE_EVS_ShortEventTlm_Payload_t](#) Payload
Telemetry payload.

11.95.1 Detailed Description

Definition at line 233 of file `default_cfe_evs_msgstruct.h`.

11.95.2 Field Documentation

11.95.2.1 Payload [CFE_EVS_ShortEventTlm_Payload_t](#) CFE_EVS_ShortEventTlm::Payload

Telemetry payload.

Definition at line 236 of file `default_cfe_evs_msgstruct.h`.

11.95.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `CFE_EVS_ShortEventTlm::TelemetryHeader`
Telemetry header.

Definition at line 235 of file default_cfe_evs_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.96 CFE_EVS_ShortEventTlm_Payload Struct Reference

```
#include <default_cfe_evs_msgdefs.h>
```

Data Fields

- **CFE_EVS_PacketID_t** `PacketID`

Event packet information.

11.96.1 Detailed Description

Name Event Message Telemetry Packet (Short format)

Definition at line 253 of file default_cfe_evs_msgdefs.h.

11.96.2 Field Documentation

11.96.2.1 PacketID `CFE_EVS_PacketID_t` `CFE_EVS_ShortEventTlm_Payload::PacketID`

Event packet information.

Definition at line 255 of file default_cfe_evs_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgdefs.h

11.97 CFE_EVS_WriteAppDataFileCmd Struct Reference

Write Event Services Application Information to File Command.

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t** `CommandHeader`

Command header.

- **CFE_EVS_AppDataCmd_Payload_t** `Payload`

Command payload.

11.97.1 Detailed Description

Write Event Services Application Information to File Command.

Definition at line 82 of file default_cfe_evs_msgstruct.h.

11.97.2 Field Documentation

11.97.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_WriteAppDataFileCmd::CommandHeader
Command header.
Definition at line 84 of file default_cfe_evs_msgstruct.h.

11.97.2.2 Payload [CFE_EVS_AppDataCmd_Payload_t](#) CFE_EVS_WriteAppDataFileCmd::Payload
Command payload.
Definition at line 85 of file default_cfe_evs_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.98 CFE_EVS_WriteLogFileCmd Struct Reference

Write Event Log to File Command.

```
#include <default_cfe_evs_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_EVS_LogFileCmd_Payload_t](#) Payload
Command payload.

11.98.1 Detailed Description

Write Event Log to File Command.

Definition at line 73 of file default_cfe_evs_msgstruct.h.

11.98.2 Field Documentation

11.98.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_EVS_WriteLogFileCmd::CommandHeader
Command header.
Definition at line 75 of file default_cfe_evs_msgstruct.h.

11.98.2.2 Payload [CFE_EVS_LogFileCmd_Payload_t](#) CFE_EVS_WriteLogFileCmd::Payload
Command payload.
Definition at line 76 of file default_cfe_evs_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/evs/config/default_cfe_evs_msgstruct.h

11.99 CFE_FS_FileWriteMetaData Struct Reference

External Metadata/State object associated with background file writes.

```
#include <cfe_fs_api_typedefs.h>
```

Data Fields

- volatile bool `IsPending`
- char `FileName` [`CFE_MISSION_MAX_PATH_LEN`]
- `uint32 FileSubType`
- char `Description` [`CFE_FS_HDR_DESC_MAX_LEN`]
- `CFE_FS_FileWriteGetData_t GetData`
- `CFE_FS_FileWriteOnEvent_t OnEvent`

11.99.1 Detailed Description

External Metadata/State object associated with background file writes.

Applications intending to schedule background file write jobs should instantiate this object in static/global data memory.

This keeps track of the state of the file write request(s).

Definition at line 124 of file `cfe_fs_api_typedefs.h`.

11.99.2 Field Documentation

11.99.2.1 `Description` `char CFE_FS_FileWriteMetaData::Description[CFE_FS_HDR_DESC_MAX_LEN]`

Description of file (for FS header)

Definition at line 132 of file `cfe_fs_api_typedefs.h`.

11.99.2.2 `FileName` `char CFE_FS_FileWriteMetaData::FileName[CFE_MISSION_MAX_PATH_LEN]`

Name of file to write

Definition at line 128 of file `cfe_fs_api_typedefs.h`.

11.99.2.3 `FileSubType` `uint32 CFE_FS_FileWriteMetaData::FileSubType`

Type of file to write (for FS header)

Definition at line 131 of file `cfe_fs_api_typedefs.h`.

11.99.2.4 `GetData` `CFE_FS_FileWriteGetData_t CFE_FS_FileWriteMetaData::GetData`

Application callback to get a data record

Definition at line 134 of file `cfe_fs_api_typedefs.h`.

11.99.2.5 `IsPending` `volatile bool CFE_FS_FileWriteMetaData::IsPending`

Whether request is pending (volatile as it may be checked outside lock)

Definition at line 126 of file `cfe_fs_api_typedefs.h`.

11.99.2.6 `OnEvent` `CFE_FS_FileWriteOnEvent_t CFE_FS_FileWriteMetaData::OnEvent`

Application callback for abstract event processing

Definition at line 135 of file `cfe_fs_api_typedefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/core_api/fsw/inc/cfe_fs_api_typedefs.h`

11.100 CFE_FS_Header Struct Reference

Standard cFE File header structure definition.

```
#include <default_cfe_fs_filedef.h>
```

Data Fields

- **uint32 ContentType**
Identifies the content type (=cFE1'=0x63464531)
- **uint32 SubType**
Type of ContentType, if necessary.
- **uint32 Length**
Length of this header to support external processing.
- **uint32 SpacecraftID**
Spacecraft that generated the file.
- **uint32 ProcessorID**
Processor that generated the file.
- **uint32 ApplicationID**
Application that generated the file.
- **uint32 TimeSeconds**
File creation timestamp (seconds)
- **uint32 TimeSubSeconds**
File creation timestamp (sub-seconds)
- **char Description [CFE_FS_HDR_DESC_MAX_LEN]**
File description.

11.100.1 Detailed Description

Standard cFE File header structure definition.

Definition at line 181 of file default_cfe_fs_filedef.h.

11.100.2 Field Documentation

11.100.2.1 ApplicationID `uint32 CFE_FS_Header::ApplicationID`

Application that generated the file.

Definition at line 190 of file default_cfe_fs_filedef.h.

11.100.2.2 ContentType `uint32 CFE_FS_Header::ContentType`

Identifies the content type (=cFE1'=0x63464531)

Definition at line 183 of file default_cfe_fs_filedef.h.

11.100.2.3 Description `char CFE_FS_Header::Description[CFE_FS_HDR_DESC_MAX_LEN]`

File description.

Definition at line 195 of file default_cfe_fs_filedef.h.

11.100.2.4 Length `uint32` `CFE_FS_Header::Length`
Length of this header to support external processing.
Definition at line 187 of file default_cfe_fs_filedef.h.

11.100.2.5 ProcessorID `uint32` `CFE_FS_Header::ProcessorID`
Processor that generated the file.
Definition at line 189 of file default_cfe_fs_filedef.h.

11.100.2.6 SpacecraftID `uint32` `CFE_FS_Header::SpacecraftID`
Spacecraft that generated the file.
Definition at line 188 of file default_cfe_fs_filedef.h.

11.100.2.7 SubType `uint32` `CFE_FS_Header::SubType`
Type of `ContentType`, if necessary.
Standard SubType definitions can be found [here](#)
Definition at line 184 of file default_cfe_fs_filedef.h.

11.100.2.8 TimeSeconds `uint32` `CFE_FS_Header::TimeSeconds`
File creation timestamp (seconds)
Definition at line 192 of file default_cfe_fs_filedef.h.

11.100.2.9 TimeSubSeconds `uint32` `CFE_FS_Header::TimeSubSeconds`
File creation timestamp (sub-seconds)
Definition at line 193 of file default_cfe_fs_filedef.h.
The documentation for this struct was generated from the following file:

- cfe/modules/fs/config/default_cfe_fs_filedef.h

11.101 CFE_SB_AllSubscriptionsTlm Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry header.
- `CFE_SB_AllSubscriptionsTlm_Payload_t Payload`
Telemetry payload.

11.101.1 Detailed Description

Definition at line 145 of file default_cfe_sb_msgstruct.h.

11.101.2 Field Documentation

11.101.2.1 Payload `CFE_SB_AllSubscriptionsTlm_Payload_t` `CFE_SB_AllSubscriptionsTlm::Payload`
Telemetry payload.

Definition at line 148 of file `default_cfe_sb_msgstruct.h`.

11.101.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `CFE_SB_AllSubscriptionsTlm::TelemetryHeader`
Telemetry header.

Definition at line 147 of file `default_cfe_sb_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/sb/config/default_cfe_sb_msgstruct.h`

11.102 CFE_SB_AllSubscriptionsTlm_Payload Struct Reference

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- `uint32 PktSegment`
Pkt number(starts at 1) in the series.
- `uint32 TotalSegments`
Total number of pkts needed to complete the request.
- `uint32 Entries`
Number of entries in the pkt.
- `CFE_SB_SubEntries_t Entry [CFE_SB_SUB_ENTRIES_PER_PKT]`
Array of `CFE_SB_SubEntries_t` entries.

11.102.1 Detailed Description

Name SB Previous Subscriptions Packet

This structure defines the pkt(s) sent by SB that contains a list of all current subscriptions. This pkt is generated on cmd and intended to be used primarily by the Software Bus Networking Application (SBN). Typically, when the cmd is received there are more subscriptions than can fit in one pkt. The complete list of subscriptions is sent via a series of segmented pkts.

Definition at line 274 of file `default_cfe_sb_msgdefs.h`.

11.102.2 Field Documentation

11.102.2.1 Entries `uint32 CFE_SB_AllSubscriptionsTlm_Payload::Entries`

Number of entries in the pkt.

Definition at line 278 of file `default_cfe_sb_msgdefs.h`.

11.102.2.2 Entry `CFE_SB_SubEntries_t CFE_SB_AllSubscriptionsTlm_Payload::Entry [CFE_SB_SUB_ENTRIES_PER_PKT]`

Array of `CFE_SB_SubEntries_t` entries.

Definition at line 279 of file `default_cfe_sb_msgdefs.h`.

11.102.2.3 PktSegment `uint32` `CFE_SB_AllSubscriptionsTlm_Payload::PktSegment`
Pkt number(starts at 1) in the series.

Definition at line 276 of file default_cfe_sb_msgdefs.h.

11.102.2.4 TotalSegments `uint32` `CFE_SB_AllSubscriptionsTlm_Payload::TotalSegments`

Total number of pkts needed to complete the request.

Definition at line 277 of file default_cfe_sb_msgdefs.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgdefs.h](#)

11.103 CFE_SB_DisableRouteCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)
Command header.
- [CFE_SB_RouteCmd_Payload_t Payload](#)
Command payload.

11.103.1 Detailed Description

Definition at line 117 of file default_cfe_sb_msgstruct.h.

11.103.2 Field Documentation

11.103.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) `CFE_SB_DisableRouteCmd::CommandHeader`
Command header.

Definition at line 119 of file default_cfe_sb_msgstruct.h.

11.103.2.2 Payload [CFE_SB_RouteCmd_Payload_t](#) `CFE_SB_DisableRouteCmd::Payload`
Command payload.

Definition at line 120 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgstruct.h](#)

11.104 CFE_SB_DisableSubReportingCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)

11.104.1 Detailed Description

Definition at line 67 of file default_cfe_sb_msgstruct.h.

11.104.2 Field Documentation

11.104.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_SB_DisableSubReportingCmd::CommandHeader`
Definition at line 69 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgstruct.h](#)

11.105 CFE_SB_EnableRouteCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t** `CommandHeader`
Command header.
- **CFE_SB_RouteCmd_Payload_t** `Payload`
Command payload.

11.105.1 Detailed Description

Definition at line 111 of file default_cfe_sb_msgstruct.h.

11.105.2 Field Documentation

11.105.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_SB_EnableRouteCmd::CommandHeader`
Command header.

Definition at line 113 of file default_cfe_sb_msgstruct.h.

11.105.2.2 Payload `CFE_SB_RouteCmd_Payload_t` `CFE_SB_EnableRouteCmd::Payload`
Command payload.

Definition at line 114 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgstruct.h](#)

11.106 CFE_SB_EnableSubReportingCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t** `CommandHeader`

11.106.1 Detailed Description

Definition at line 62 of file default_cfe_sb_msgstruct.h.

11.106.2 Field Documentation

11.106.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_SB_EnableSubReportingCmd::CommandHeader
Definition at line 64 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgstruct.h

11.107 CFE_SB_HousekeepingTlm Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- [CFE_MSG_TelemetryHeader_t](#) TelemetryHeader
Telemetry header.
- [CFE_SB_HousekeepingTlm_Payload_t](#) Payload
Telemetry payload.

11.107.1 Detailed Description

Definition at line 127 of file default_cfe_sb_msgstruct.h.

11.107.2 Field Documentation

11.107.2.1 Payload [CFE_SB_HousekeepingTlm_Payload_t](#) CFE_SB_HousekeepingTlm::Payload
Telemetry payload.

Definition at line 130 of file default_cfe_sb_msgstruct.h.

11.107.2.2 TelemetryHeader [CFE_MSG_TelemetryHeader_t](#) CFE_SB_HousekeepingTlm::TelemetryHeader
Telemetry header.

Definition at line 129 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgstruct.h

11.108 CFE_SB_HousekeepingTlm_Payload Struct Reference

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- [uint8](#) CommandCounter
Count of valid commands received.
- [uint8](#) CommandErrorCounter
Count of invalid commands received.
- [uint8](#) NoSubscribersCounter
Count pkts sent with no subscribers.
- [uint8](#) MsgSendErrorCounter

Count of message send errors.

- `uint8 MsgReceiveErrorCounter`

Count of message receive errors.

- `uint8 InternalErrorCounter`

Count of queue read or write errors.

- `uint8 CreatePipeErrorCounter`

Count of errors in create pipe API.

- `uint8 SubscribeErrorCounter`

Count of errors in subscribe API.

- `uint8 PipeOptsErrorCounter`

Count of errors in set/get pipe options API.

- `uint8 DuplicateSubscriptionsCounter`

Count of duplicate subscriptions.

- `uint8 GetPipeldByNameErrorCounter`

Count of errors in get pipe id by name API.

- `uint8 Spare2Align [1]`

Spare bytes to ensure alignment.

- `uint16 PipeOverflowErrorCounter`

Count of pipe overflow errors.

- `uint16 MsgLimitErrorCounter`

Count of msg id to pipe errors.

- `CFE_ES_MemHandle_t MemPoolHandle`

Handle to SB's Memory Pool.

- `uint32 MemInUse`

Memory in use.

- `uint32 UnmarkedMem`

cfg param CFE_PLATFORM_SB_BUF_MEMORY_BYTES minus Peak Memory in use

11.108.1 Detailed Description

Name Software Bus task housekeeping Packet

Definition at line 67 of file default_cfe_sb_msgdefs.h.

11.108.2 Field Documentation

11.108.2.1 CommandCounter `uint8 CFE_SB_HousekeepingTlm_Payload::CommandCounter`

Count of valid commands received.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_CMDPC

Definition at line 69 of file default_cfe_sb_msgdefs.h.

11.108.2.2 CommandErrorCounter `uint8 CFE_SB_HousekeepingTlm_Payload::CommandErrorCounter`

Count of invalid commands received.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_CMDEC

Definition at line 71 of file default_cfe_sb_msgdefs.h.

11.108.2.3 CreatePipeErrorCounter `uint8` CFE_SB_HousekeepingTlm_Payload::CreatePipeErrorCounter
Count of errors in create pipe API.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_NewPipeEC

Definition at line 82 of file default_cfe_sb_msgdefs.h.

11.108.2.4 DuplicateSubscriptionsCounter `uint8` CFE_SB_HousekeepingTlm_Payload::DuplicateSubscriptions←
Counter
Count of duplicate subscriptions.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_DupSubCnt

Definition at line 88 of file default_cfe_sb_msgdefs.h.

11.108.2.5 GetPipeIdByNameErrorCounter `uint8` CFE_SB_HousekeepingTlm_Payload::GetPipeIdByName←
ErrorCounter
Count of errors in get pipe id by name API.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_GetPipeIDByNameEC

Definition at line 90 of file default_cfe_sb_msgdefs.h.

11.108.2.6 InternalErrorCounter `uint8` CFE_SB_HousekeepingTlm_Payload::InternalErrorCounter
Count of queue read or write errors.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_InternalEC

Definition at line 80 of file default_cfe_sb_msgdefs.h.

11.108.2.7 MemInUse `uint32` CFE_SB_HousekeepingTlm_Payload::MemInUse
Memory in use.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_MemInUse

Definition at line 103 of file default_cfe_sb_msgdefs.h.

11.108.2.8 MemPoolHandle `CFE_ES_MemHandle_t` CFE_SB_HousekeepingTlm_Payload::MemPoolHandle
Handle to SB's Memory Pool.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_MemPoolHdl

Definition at line 100 of file default_cfe_sb_msgdefs.h.

11.108.2.9 MsgLimitErrorCounter `uint16` CFE_SB_HousekeepingTlm_Payload::MsgLimitErrorCounter
Count of msg id to pipe errors.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_MsgLimEC

Definition at line 97 of file default_cfe_sb_msgdefs.h.

11.108.2.10 MsgReceiveErrorCounter `uint8 CFE_SB_HousekeepingTlm_Payload::MsgReceiveErrorCounter`
Count of message receive errors.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_MsgRecEC

Definition at line 78 of file default_cfe_sb_msgdefs.h.

11.108.2.11 MsgSendErrorCounter `uint8 CFE_SB_HousekeepingTlm_Payload::MsgSendErrorCounter`
Count of message send errors.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_MsgSndEC

Definition at line 75 of file default_cfe_sb_msgdefs.h.

11.108.2.12 NoSubscribersCounter `uint8 CFE_SB_HousekeepingTlm_Payload::NoSubscribersCounter`
Count pkts sent with no subscribers.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_NoSubEC

Definition at line 73 of file default_cfe_sb_msgdefs.h.

11.108.2.13 PipeOptsErrorCounter `uint8 CFE_SB_HousekeepingTlm_Payload::PipeOptsErrorCounter`
Count of errors in set/get pipe options API.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_PipeOptsEC

Definition at line 86 of file default_cfe_sb_msgdefs.h.

11.108.2.14 PipeOverflowErrorCounter `uint16 CFE_SB_HousekeepingTlm_Payload::PipeOverflowErrorCounter`
Count of pipe overflow errors.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_PipeOvrEC

Definition at line 95 of file default_cfe_sb_msgdefs.h.

11.108.2.15 Spare2Align `uint8 CFE_SB_HousekeepingTlm_Payload::Spare2Align[1]`
Spare bytes to ensure alignment.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_Spare2Align[2]

Definition at line 92 of file default_cfe_sb_msgdefs.h.

11.108.2.16 SubscribeErrorCounter `uint8 CFE_SB_HousekeepingTlm_Payload::SubscribeErrorCounter`
Count of errors in subscribe API.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_SubscrEC

Definition at line 84 of file default_cfe_sb_msgdefs.h.

11.108.2.17 UnmarkedMem `uint32 CFE_SB_HousekeepingTlm_Payload::UnmarkedMem`
cfg param CFE_PLATFORM_SB_BUFS_MEMORY_BYTES minus Peak Memory in use

Telemetry Mnemonic(s) \$sc_\$cpu_SB_UnMarkedMem

Definition at line 106 of file default_cfe_sb_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgdefs.h

11.109 CFE_SB_Msg Union Reference

Software Bus generic message.

```
#include <cfesb_api_typedefs.h>
```

Data Fields

- **CFE_MSG_Message_t Msg**
Base message type without enforced alignment.
- long long int **LongInt**
Align to support Long Integer.
- long double **LongDouble**
Align to support Long Double.

11.109.1 Detailed Description

Software Bus generic message.

Definition at line 142 of file cfe_sb_api_typedefs.h.

11.109.2 Field Documentation

11.109.2.1 LongDouble long double CFE_SB_Msg::LongDouble

Align to support Long Double.

Definition at line 146 of file cfe_sb_api_typedefs.h.

11.109.2.2 LongInt long long int CFE_SB_Msg::LongInt

Align to support Long Integer.

Definition at line 145 of file cfe_sb_api_typedefs.h.

11.109.2.3 Msg CFE_MSG_Message_t CFE_SB_Msg::Msg

Base message type without enforced alignment.

Definition at line 144 of file cfe_sb_api_typedefs.h.

Referenced by FM_ConcatFilesVerifyDispatch(), FM_CopyFileVerifyDispatch(), FM_CreateDirectoryVerifyDispatch(), FM_DecompressFileVerifyDispatch(), FM_DeleteAllFilesVerifyDispatch(), FM_DeleteDirectoryVerifyDispatch(), FM_DeleteFileCmd(), FM_DeleteFileVerifyDispatch(), FM_GetDirListFileVerifyDispatch(), FM_GetDirListPktVerifyDispatch(), FM_GetFileInfoVerifyDispatch(), FM_GetOpenFilesVerifyDispatch(), FM_MonitorFilesystemSpaceVerifyDispatch(), FM_MoveFileVerifyDispatch(), FM_NoopVerifyDispatch(), FM_ProcessCmd(), FM_ProcessPkt(), FM_RenameFileVerifyDispatch(), FM_ResetCountersVerifyDispatch(), FM_SendHkVerifyDispatch(), FM_SetPermissionsVerifyDispatch(), and FM_SetTableStateVerifyDispatch().

The documentation for this union was generated from the following file:

- cfe/modules/core_api/fsw/inc/cfe_sb_api_typedefs.h

11.110 CFE_SB_MsgId_t Struct Reference

[CFE_SB_MsgId_t](#) type definition.

```
#include <default_cfe_sb_extern_typedefs.h>
```

Data Fields

- [CFE_SB_MsgId_Atom_t Value](#)

11.110.1 Detailed Description

[CFE_SB_MsgId_t](#) type definition.

Software Bus message identifier used in many SB APIs

Currently this is directly mapped to the underlying holding type (not wrapped) for compatibility with existing usage semantics in apps (mainly switch/case statements)

Note

In a future version it could become a type-safe wrapper similar to the route index, to avoid message IDs getting mixed between other integer values.

Definition at line 104 of file default_cfe_sb_extern_typedefs.h.

11.110.2 Field Documentation

11.110.2.1 Value [CFE_SB_MsgId_Atom_t CFE_SB_MsgId_t::Value](#)

Definition at line 106 of file default_cfe_sb_extern_typedefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_extern_typedefs.h

11.111 CFE_SB_MsgMapFileEntry Struct Reference

SB Map File Entry.

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- [CFE_SB_MsgId_t MsgId](#)
Message Id which has been subscribed to.
- [CFE_SB_RoutId_Atom_t Index](#)
Routing raw index value (0 based, not Route ID)

11.111.1 Detailed Description

SB Map File Entry.

Structure of one element of the map information in response to [CFE_SB_WRITE_MAP_INFO_CC](#)

Definition at line 226 of file default_cfe_sb_msgdefs.h.

11.111.2 Field Documentation

11.111.2.1 Index `CFE_SB_RouteId_Atom_t` `CFE_SB_MsgMapFileEntry::Index`
Routing raw index value (0 based, not Route ID)
Definition at line 229 of file default_cfe_sb_msgdefs.h.

11.111.2.2 MsgId `CFE_SB_MsgId_t` `CFE_SB_MsgMapFileEntry::MsgId`

Message Id which has been subscribed to.
Definition at line 228 of file default_cfe_sb_msgdefs.h.
The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgdefs.h](#)

11.112 CFE_SB_NoopCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t` `CommandHeader`

11.112.1 Detailed Description

Definition at line 52 of file default_cfe_sb_msgstruct.h.

11.112.2 Field Documentation

11.112.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_SB_NoopCmd::CommandHeader`
Definition at line 54 of file default_cfe_sb_msgstruct.h.
The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgstruct.h](#)

11.113 CFE_SB_PipeDepthStats Struct Reference

SB Pipe Depth Statistics.

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- `CFE_SB_Pipeld_t` `Pipeld`
Pipe Id associated with the stats below.
- `uint16` `MaxQueueDepth`
Number of messages the pipe can hold.
- `uint16` `CurrentQueueDepth`
Number of messages currently on the pipe.
- `uint16` `PeakQueueDepth`
Peak number of messages that have been on the pipe.
- `uint16` `Spare`
Spare word to ensure alignment.

11.113.1 Detailed Description

SB Pipe Depth Statistics.

Used in SB Statistics Telemetry Packet [CFE_SB_StatsTlm_t](#)

Definition at line 115 of file default_cfe_sb_msgdefs.h.

11.113.2 Field Documentation

11.113.2.1 CurrentQueueDepth `uint16 CFE_SB_PipeDepthStats::CurrentQueueDepth`

Number of messages currently on the pipe.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDINUSE

Definition at line 121 of file default_cfe_sb_msgdefs.h.

11.113.2.2 MaxQueueDepth `uint16 CFE_SB_PipeDepthStats::MaxQueueDepth`

Number of messages the pipe can hold.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDDEPTH

Definition at line 119 of file default_cfe_sb_msgdefs.h.

11.113.2.3 PeakQueueDepth `uint16 CFE_SB_PipeDepthStats::PeakQueueDepth`

Peak number of messages that have been on the pipe.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDPKINUSE

Definition at line 123 of file default_cfe_sb_msgdefs.h.

11.113.2.4 PipeId `CFE_SB_PipeId_t CFE_SB_PipeDepthStats::PipeId`

Pipe Id associated with the stats below.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDPIPEID

Definition at line 117 of file default_cfe_sb_msgdefs.h.

11.113.2.5 Spare `uint16 CFE_SB_PipeDepthStats::Spare`

Spare word to ensure alignment.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES].SB_PDSPARE

Definition at line 125 of file default_cfe_sb_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgdefs.h

11.114 CFE_SB_PipeInfoEntry Struct Reference

SB Pipe Information File Entry.

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- `CFE_SB_PipeId_t PipeId`
- `CFE_ES_AppId_t AppId`
- `char PipeName [CFE_MISSION_MAX_API_LEN]`
- `charAppName [CFE_MISSION_MAX_API_LEN]`
- `uint16 MaxQueueDepth`
- `uint16 CurrentQueueDepth`
- `uint16 PeakQueueDepth`
- `uint16 SendErrors`
- `uint8 Opts`
- `uint8 Spare [3]`

11.114.1 Detailed Description

SB Pipe Information File Entry.

This statistics structure is output as part of the CFE SB "Send Pipe Info" command (CFE_SB_SEND_PIPE_INFO_CC). Previous versions of CFE simply wrote the internal CFE_SB_PipeD_t object to the file, but this also contains information such as pointers which are not relevant outside the running CFE process.

By defining the pipe info structure separately, it also provides some independence, such that the internal CFE_SB_PipeD_t definition can evolve without changing the binary format of the information file.

Definition at line 144 of file default_cfe_sb_msgdefs.h.

11.114.2 Field Documentation

11.114.2.1 **AppId** `CFE_ES_AppId_t CFE_SB_PipeInfoEntry::AppId`

The runtime ID of the application that owns the pipe

Definition at line 147 of file default_cfe_sb_msgdefs.h.

11.114.2.2 **AppName** `char CFE_SB_PipeInfoEntry::AppName [CFE_MISSION_MAX_API_LEN]`

The Name of the application that owns the pipe

Definition at line 149 of file default_cfe_sb_msgdefs.h.

11.114.2.3 **CurrentQueueDepth** `uint16 CFE_SB_PipeInfoEntry::CurrentQueueDepth`

The current depth of the pipe

Definition at line 151 of file default_cfe_sb_msgdefs.h.

11.114.2.4 **MaxQueueDepth** `uint16 CFE_SB_PipeInfoEntry::MaxQueueDepth`

The allocated depth of the pipe (max capacity)

Definition at line 150 of file default_cfe_sb_msgdefs.h.

11.114.2.5 **Opts** `uint8 CFE_SB_PipeInfoEntry::Opts`

Pipe options set (bitmask)

Definition at line 154 of file default_cfe_sb_msgdefs.h.

11.114.2.6 PeakQueueDepth `uint16 CFE_SB_PipeInfoEntry::PeakQueueDepth`

The peak depth of the pipe (high watermark)

Definition at line 152 of file `default_cfe_sb_msgdefs.h`.

11.114.2.7 PipeId `CFE_SB_PipeId_t CFE_SB_PipeInfoEntry::PipeId`

The runtime ID of the pipe

Definition at line 146 of file `default_cfe_sb_msgdefs.h`.

11.114.2.8 PipeName `char CFE_SB_PipeInfoEntry::PipeName [CFE_MISSION_MAX_API_LEN]`

The Name of the pipe

Definition at line 148 of file `default_cfe_sb_msgdefs.h`.

11.114.2.9 SendErrors `uint16 CFE_SB_PipeInfoEntry::SendErrors`

Number of errors when writing to this pipe

Definition at line 153 of file `default_cfe_sb_msgdefs.h`.

11.114.2.10 Spare `uint8 CFE_SB_PipeInfoEntry::Spare[3]`

Padding to make this structure a multiple of 4 bytes

Definition at line 155 of file `default_cfe_sb_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/sb/config/default_cfe_sb_msgdefs.h`

11.115 CFE_SB_Qos_t Struct Reference

Quality Of Service Type Definition.

```
#include <default_cfe_sb_extern_typedefs.h>
```

Data Fields

- `uint8 Priority`

Specify high(1) or low(0) message priority for off-board routing, currently unused.

- `uint8 Reliability`

Specify high(1) or low(0) message transfer reliability for off-board routing, currently unused.

11.115.1 Detailed Description

Quality Of Service Type Definition.

Currently an unused parameter in `CFE_SB_SubscribeEx` Intended to be used for interprocessor communication only

Definition at line 121 of file `default_cfe_sb_extern_typedefs.h`.

11.115.2 Field Documentation

11.115.2.1 Priority `uint8 CFE_SB_Qos_t::Priority`

Specify high(1) or low(0) message priority for off-board routing, currently unused.

Definition at line 123 of file `default_cfe_sb_extern_typedefs.h`.

11.115.2.2 Reliability `uint8 CFE_SB_Qos_t::Reliability`

Specify high(1) or low(0) message transfer reliability for off-board routing, currently unused.

Definition at line 124 of file default_cfe_sb_extern_typedefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_extern_typedefs.h

11.116 CFE_SB_ResetCountersCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`

11.116.1 Detailed Description

Definition at line 57 of file default_cfe_sb_msgstruct.h.

11.116.2 Field Documentation**11.116.2.1 CommandHeader** `CFE_MSG_CommandHeader_t CFE_SB_ResetCountersCmd::CommandHeader`

Definition at line 59 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgstruct.h

11.117 CFE_SB_RouteCmd_Payload Struct Reference

Enable/Disable Route Command Payload.

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- `CFE_SB_MsgId_t MsgId`
Message ID of route to be enabled or disabled `CFE_SB_MsgId_t`.
- `CFE_SB_Pipeld_t Pipe`
Pipe ID of route to be enabled or disabled `CFE_SB_Pipeld_t`.
- `uint8 Spare`
Spare byte to make command even number of bytes.

11.117.1 Detailed Description

Enable/Disable Route Command Payload.

This structure contains a definition used by two SB commands, 'Enable Route' `CFE_SB_ENABLE_ROUTE_CC` and 'Disable Route' `CFE_SB_DISABLE_ROUTE_CC`. A route is the destination pipe for a particular message and is therefore defined as a MsgId and Pipeld combination.

Definition at line 53 of file default_cfe_sb_msgdefs.h.

11.117.2 Field Documentation

11.117.2.1 MsgId `CFE_SB_MsgId_t` `CFE_SB_RouteCmd_Payload::MsgId`
Message ID of route to be enabled or disabled `CFE_SB_MsgId_t`.
Definition at line 55 of file `default_cfe_sb_msgdefs.h`.

11.117.2.2 Pipe `CFE_SB_PipeId_t` `CFE_SB_RouteCmd_Payload::Pipe`
Pipe ID of route to be enabled or disabled `CFE_SB_PipeId_t`.
Definition at line 56 of file `default_cfe_sb_msgdefs.h`.

11.117.2.3 Spare `uint8` `CFE_SB_RouteCmd_Payload::Spare`
Spare byte to make command even number of bytes.
Definition at line 57 of file `default_cfe_sb_msgdefs.h`.
The documentation for this struct was generated from the following file:

- `cfe/modules/sb/config/default_cfe_sb_msgdefs.h`

11.118 CFE_SB_RoutingFileEntry Struct Reference

SB Routing File Entry.

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- **CFE_SB_MsgId_t MsgId**
Message Id portion of the route.
- **CFE_SB_PipeId_t PipeId**
Pipe Id portion of the route.
- **uint8 State**
Route Enabled or Disabled.
- **uint16 MsgCnt**
Number of msgs with this MsgId sent to this PipeId.
- **char AppName [CFE_MISSION_MAX_API_LEN]**
Pipe Depth Statistics.
- **char PipeName [CFE_MISSION_MAX_API_LEN]**
Pipe Depth Statistics.

11.118.1 Detailed Description

SB Routing File Entry.

Structure of one element of the routing information in response to `CFE_SB_WRITE_ROUTING_INFO_CC`
Definition at line 211 of file `default_cfe_sb_msgdefs.h`.

11.118.2 Field Documentation

11.118.2.1 AppName `char CFE_SB_RoutingFileEntry::AppName[CFE_MISSION_MAX_API_LEN]`
Pipe Depth Statistics.
Definition at line 217 of file `default_cfe_sb_msgdefs.h`.

11.118.2.2 MsgCnt `uint16` `CFE_SB_RoutingFileEntry::MsgCnt`

Number of msgs with this MsgId sent to this PipeId.

Definition at line 216 of file default_cfe_sb_msgdefs.h.

11.118.2.3 MsgId `CFE_SB_MsgId_t` `CFE_SB_RoutingFileEntry::MsgId`

Message Id portion of the route.

Definition at line 213 of file default_cfe_sb_msgdefs.h.

11.118.2.4 PipeId `CFE_SB_PipeId_t` `CFE_SB_RoutingFileEntry::PipeId`

Pipe Id portion of the route.

Definition at line 214 of file default_cfe_sb_msgdefs.h.

11.118.2.5 PipeName `char` `CFE_SB_RoutingFileEntry::PipeName[CFE_MISSION_MAX_API_LEN]`

Pipe Depth Statistics.

Definition at line 218 of file default_cfe_sb_msgdefs.h.

11.118.2.6 State `uint8` `CFE_SB_RoutingFileEntry::State`

Route Enabled or Disabled.

Definition at line 215 of file default_cfe_sb_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgdefs.h

11.119 CFE_SB_SendHkCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t` `CommandHeader`

11.119.1 Detailed Description

Definition at line 82 of file default_cfe_sb_msgstruct.h.

11.119.2 Field Documentation**11.119.2.1 CommandHeader** `CFE_MSG_CommandHeader_t` `CFE_SB_SendHkCmd::CommandHeader`

Definition at line 84 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgstruct.h

11.120 CFE_SB_SendPrevSubsCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader

11.120.1 Detailed Description

Definition at line 77 of file [default_cfe_sb_msgstruct.h](#).

11.120.2 Field Documentation**11.120.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_SB_SendPrevSubsCmd::CommandHeader**

Definition at line 79 of file [default_cfe_sb_msgstruct.h](#).

The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgstruct.h](#)

11.121 CFE_SB_SendSbStatsCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader

11.121.1 Detailed Description

Definition at line 72 of file [default_cfe_sb_msgstruct.h](#).

11.121.2 Field Documentation**11.121.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_SB_SendSbStatsCmd::CommandHeader**

Definition at line 74 of file [default_cfe_sb_msgstruct.h](#).

The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgstruct.h](#)

11.122 CFE_SB_SingleSubscriptionTlm Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- [CFE_MSG_TelemetryHeader_t](#) TelemetryHeader
Telemetry header.
- [CFE_SB_SingleSubscriptionTlm_Payload_t](#) Payload
Telemetry payload.

11.122.1 Detailed Description

Definition at line 139 of file [default_cfe_sb_msgstruct.h](#).

11.122.2 Field Documentation

11.122.2.1 Payload [CFE_SB_SingleSubscriptionTlm_Payload_t](#) CFE_SB_SingleSubscriptionTlm::Payload
Telemetry payload.

Definition at line 142 of file default_cfe_sb_msgstruct.h.

11.122.2.2 TelemetryHeader [CFE_MSG_TelemetryHeader_t](#) CFE_SB_SingleSubscriptionTlm::TelemetryHeader
Telemetry header.

Definition at line 141 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgstruct.h

11.123 CFE_SB_SingleSubscriptionTlm_Payload Struct Reference

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- [uint8 SubType](#)
Subscription or Unsubscription.
- [CFE_SB_MsgId_t MsgId](#)
MsgId subscribed or unsubscribe to.
- [CFE_SB_Qos_t Qos](#)
Quality of Service, used only for interprocessor communication.
- [CFE_SB_PipeId_t Pipe](#)
Destination pipe id to send above msg id

11.123.1 Detailed Description

Name SB Subscription Report Packet

This structure defines the pkt sent by SB when a subscription or a request to unsubscribe is received while subscription reporting is enabled. By default subscription reporting is disabled. This feature is intended to be used primarily by Software Bus Networking Application (SBN)

See also

[CFE_SB_ENABLE_SUB_REPORTING_CC](#), [CFE_SB_DISABLE_SUB_REPORTING_CC](#)

Definition at line 242 of file default_cfe_sb_msgdefs.h.

11.123.2 Field Documentation

11.123.2.1 MsgId [CFE_SB_MsgId_t](#) CFE_SB_SingleSubscriptionTlm_Payload::MsgId
MsgId subscribed or unsubscribe to.

Definition at line 245 of file default_cfe_sb_msgdefs.h.

11.123.2.2 Pipe `CFE_SB_PipeId_t` `CFE_SB_SingleSubscriptionTlm_Payload::Pipe`
Destination pipe id to send above msg id

Definition at line 247 of file default_cfe_sb_msgdefs.h.

11.123.2.3 Qos `CFE_SB_Qos_t` `CFE_SB_SingleSubscriptionTlm_Payload::Qos`
Quality of Service, used only for interprocessor communication.

Definition at line 246 of file default_cfe_sb_msgdefs.h.

11.123.2.4 SubType `uint8` `CFE_SB_SingleSubscriptionTlm_Payload::SubType`
Subscription or Unsubscription.

Definition at line 244 of file default_cfe_sb_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgdefs.h

11.124 CFE_SB_StatsTlm Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry header.
- `CFE_SB_StatsTlm_Payload_t Payload`
Telemetry payload.

11.124.1 Detailed Description

Definition at line 133 of file default_cfe_sb_msgstruct.h.

11.124.2 Field Documentation

11.124.2.1 Payload `CFE_SB_StatsTlm_Payload_t` `CFE_SB_StatsTlm::Payload`
Telemetry payload.

Definition at line 136 of file default_cfe_sb_msgstruct.h.

11.124.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `CFE_SB_StatsTlm::TelemetryHeader`
Telemetry header.

Definition at line 135 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgstruct.h

11.125 CFE_SB_StatsTlm_Payload Struct Reference

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- `uint32 MsgIdsInUse`
Current number of MsgIds with a destination.
- `uint32 PeakMsgIdsInUse`
Peak number of MsgIds with a destination.
- `uint32 MaxMsgIdsAllowed`
cFE Cfg Param `CFE_PLATFORM_SB_MAX_MSG_IDS`
- `uint32 PipesInUse`
Number of pipes currently in use.
- `uint32 PeakPipesInUse`
Peak number of pipes since last reboot.
- `uint32 MaxPipesAllowed`
cFE Cfg Param `CFE_PLATFORM_SB_MAX_PIPES`
- `uint32 MemInUse`
Memory bytes currently in use for SB msg transfers.
- `uint32 PeakMemInUse`
Peak memory bytes in use for SB msg transfers.
- `uint32 MaxMemAllowed`
cFE Cfg Param `CFE_PLATFORM_SB_BUF_MEMORY_BYTES`
- `uint32 SubscriptionsInUse`
Number of current subscriptions.
- `uint32 PeakSubscriptionsInUse`
Peak number of subscriptions.
- `uint32 MaxSubscriptionsAllowed`
product of `CFE_PLATFORM_SB_MAX_MSG_IDS` and `CFE_PLATFORM_SB_MAX_DEST_PER_PKT`
- `uint32 SBBuffersInUse`
Number of SB message buffers currently in use.
- `uint32 PeakSBBuffersInUse`
Max number of SB message buffers in use.
- `uint32 MaxPipeDepthAllowed`
Maximum allowed pipe depth.
- `CFE_SB_PipeDepthStats_t PipeDepthStats [CFE_MISSION_SB_MAX_PIPES]`
Pipe Depth Statistics `CFE_SB_PipeDepthStats_t`.

11.125.1 Detailed Description

Name SB Statistics Telemetry Packet

SB Statistics packet sent in response to `CFE_SB_SEND_SB_STATS_CC`
 Definition at line 163 of file default_cfe_sb_msgdefs.h.

11.125.2 Field Documentation

11.125.2.1 MaxMemAllowed `uint32 CFE_SB_StatsTlm_Payload::MaxMemAllowed`
 cFE Cfg Param `CFE_PLATFORM_SB_BUF_MEMORY_BYTES`

Telemetry Mnemonic(s) \$sc_\$cpu_SB_Stat.SB_SMMBMALW

Definition at line 183 of file default_cfe_sb_msgdefs.h.

11.125.2.2 MaxMsgIdsAllowed `uint32 CFE_SB_StatsTlm_Payload::MaxMsgIdsAllowed`
cFE Cfg Param `CFE_PLATFORM_SB_MAX_MSG_IDS`

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMMMDALW`

Definition at line 169 of file default_cfe_sb_msgdefs.h.

11.125.2.3 MaxPipeDepthAllowed `uint32 CFE_SB_StatsTlm_Payload::MaxPipeDepthAllowed`
Maximum allowed pipe depth.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMMPDALW`

Definition at line 199 of file default_cfe_sb_msgdefs.h.

11.125.2.4 MaxPipesAllowed `uint32 CFE_SB_StatsTlm_Payload::MaxPipesAllowed`
cFE Cfg Param `CFE_PLATFORM_SB_MAX_PIPES`

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMMPALW`

Definition at line 176 of file default_cfe_sb_msgdefs.h.

11.125.2.5 MaxSubscriptionsAllowed `uint32 CFE_SB_StatsTlm_Payload::MaxSubscriptionsAllowed`
product of `CFE_PLATFORM_SB_MAX_MSG_IDS` and `CFE_PLATFORM_SB_MAX_DEST_PER_PKT`

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMMSALW`

Definition at line 190 of file default_cfe_sb_msgdefs.h.

11.125.2.6 MemInUse `uint32 CFE_SB_StatsTlm_Payload::MemInUse`
Memory bytes currently in use for SB msg transfers.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMBMIU`

Definition at line 179 of file default_cfe_sb_msgdefs.h.

11.125.2.7 MsgIdsInUse `uint32 CFE_SB_StatsTlm_Payload::MsgIdsInUse`
Current number of MsgIds with a destination.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMMIDIU`

Definition at line 165 of file default_cfe_sb_msgdefs.h.

11.125.2.8 PeakMemInUse `uint32 CFE_SB_StatsTlm_Payload::PeakMemInUse`
Peak memory bytes in use for SB msg transfers.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMPBMIU`

Definition at line 181 of file default_cfe_sb_msgdefs.h.

11.125.2.9 PeakMsgIdsInUse `uint32` `CFE_SB_StatsTlm_Payload::PeakMsgIdsInUse`
Peak number of MsgIds with a destination.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMPMIDIU`

Definition at line 167 of file `default_cfe_sb_msgdefs.h`.

11.125.2.10 PeakPipesInUse `uint32` `CFE_SB_StatsTlm_Payload::PeakPipesInUse`
Peak number of pipes since last reboot.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMPPIU`

Definition at line 174 of file `default_cfe_sb_msgdefs.h`.

11.125.2.11 PeakSBBuffersInUse `uint32` `CFE_SB_StatsTlm_Payload::PeakSBBuffersInUse`
Max number of SB message buffers in use.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMPSBBIU`

Definition at line 196 of file `default_cfe_sb_msgdefs.h`.

11.125.2.12 PeakSubscriptionsInUse `uint32` `CFE_SB_StatsTlm_Payload::PeakSubscriptionsInUse`
Peak number of subscriptions.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMPSIU`

Definition at line 188 of file `default_cfe_sb_msgdefs.h`.

11.125.2.13 PipeDepthStats `CFE_SB_PipeDepthStats_t` `CFE_SB_StatsTlm_Payload::PipeDepthStats[CFE_MISSION_SB_MAX_PIPES]`
Pipe Depth Statistics `CFE_SB_PipeDepthStats_t`.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMPDS[CFE_PLATFORM_SB_MAX_PIPES]`

Definition at line 202 of file `default_cfe_sb_msgdefs.h`.

11.125.2.14 PipesInUse `uint32` `CFE_SB_StatsTlm_Payload::PipesInUse`
Number of pipes currently in use.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMPIU`

Definition at line 172 of file `default_cfe_sb_msgdefs.h`.

11.125.2.15 SBBuffersInUse `uint32` `CFE_SB_StatsTlm_Payload::SBBuffersInUse`
Number of SB message buffers currently in use.

Telemetry Mnemonic(s) `$sc_$cpu_SB_Stat.SB_SMSBBIU`

Definition at line 194 of file `default_cfe_sb_msgdefs.h`.

11.125.2.16 SubscriptionsInUse `uint32 CFE_SB_StatsTlm_Payload::SubscriptionsInUse`
Number of current subscriptions.

Telemetry Mnemonic(s) \$sc_\$cpu_SB_Stat.SB_SMSIU

Definition at line 186 of file default_cfe_sb_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgdefs.h

11.126 CFE_SB_SubEntries Struct Reference

SB Previous Subscriptions Entry.

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- **CFE_SB_MsgId_t MsgId**
MsgId portion of the subscription.
- **CFE_SB_Qos_t Qos**
Qos portion of the subscription.
- **CFE_SB_PipeId_t Pipe**
PipeId portion of the subscription.

11.126.1 Detailed Description

SB Previous Subscriptions Entry.

This structure defines an entry used in the CFE_SB_PrevSubsPkt_t Intended to be used primarily by Software Bus Networking Application (SBN)

Used in structure definition [CFE_SB_AllSubscriptionsTlm_t](#)

Definition at line 258 of file default_cfe_sb_msgdefs.h.

11.126.2 Field Documentation

11.126.2.1 MsgId `CFE_SB_MsgId_t CFE_SB_SubEntries::MsgId`

MsgId portion of the subscription.

Definition at line 260 of file default_cfe_sb_msgdefs.h.

11.126.2.2 Pipe `CFE_SB_PipeId_t CFE_SB_SubEntries::Pipe`

PipeId portion of the subscription.

Definition at line 262 of file default_cfe_sb_msgdefs.h.

11.126.2.3 Qos `CFE_SB_Qos_t CFE_SB_SubEntries::Qos`

Qos portion of the subscription.

Definition at line 261 of file default_cfe_sb_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgdefs.h

11.127 CFE_SB_WriteFileInfoCmd_Payload Struct Reference

Write File Info Command Payload.

```
#include <default_cfe_sb_msgdefs.h>
```

Data Fields

- char [Filename \[CFE_MISSION_MAX_PATH_LEN\]](#)

Path and Filename of data to be loaded.

11.127.1 Detailed Description

Write File Info Command Payload.

This structure contains a generic definition used by SB commands that write to a file

Definition at line 40 of file default_cfe_sb_msgdefs.h.

11.127.2 Field Documentation

11.127.2.1 **Filename** char CFE_SB_WriteFileInfoCmd_Payload::Filename [[CFE_MISSION_MAX_PATH_LEN](#)]

Path and Filename of data to be loaded.

Definition at line 42 of file default_cfe_sb_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/[default_cfe_sb_msgdefs.h](#)

11.128 CFE_SB_WriteMapInfoCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)
Command header.
- [CFE_SB_WriteFileInfoCmd_Payload_t Payload](#)
Command payload.

11.128.1 Detailed Description

Definition at line 102 of file default_cfe_sb_msgstruct.h.

11.128.2 Field Documentation

11.128.2.1 **CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_SB_WriteMapInfoCmd::CommandHeader

Command header.

Definition at line 104 of file default_cfe_sb_msgstruct.h.

11.128.2.2 Payload `CFE_SB_WriteFileInfoCmd_Payload_t` `CFE_SB_WriteMapInfoCmd::Payload`
Command payload.

Definition at line 105 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgstruct.h](#)

11.129 CFE_SB_WritePipeInfoCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_SB_WriteFileInfoCmd_Payload_t Payload`
Command payload.

11.129.1 Detailed Description

Definition at line 96 of file default_cfe_sb_msgstruct.h.

11.129.2 Field Documentation

11.129.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_SB_WritePipeInfoCmd::CommandHeader`
Command header.

Definition at line 98 of file default_cfe_sb_msgstruct.h.

11.129.2.2 Payload `CFE_SB_WriteFileInfoCmd_Payload_t` `CFE_SB_WritePipeInfoCmd::Payload`
Command payload.

Definition at line 99 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/sb/config/default_cfe_sb_msgstruct.h](#)

11.130 CFE_SB_WriteRoutingInfoCmd Struct Reference

```
#include <default_cfe_sb_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_SB_WriteFileInfoCmd_Payload_t Payload`
Command payload.

11.130.1 Detailed Description

Definition at line 90 of file default_cfe_sb_msgstruct.h.

11.130.2 Field Documentation

11.130.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_SB_WriteRoutingInfoCmd::CommandHeader
Command header.

Definition at line 92 of file default_cfe_sb_msgstruct.h.

11.130.2.2 Payload [CFE_SB_WriteFileInfoCmd_Payload_t](#) CFE_SB_WriteRoutingInfoCmd::Payload
Command payload.

Definition at line 93 of file default_cfe_sb_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/sb/config/default_cfe_sb_msgstruct.h

11.131 CFE_TBL_AbortLoadCmd Struct Reference

Abort Load Command.

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TBL_AbortLoadCmd_Payload_t](#) Payload
Command payload.

11.131.1 Detailed Description

Abort Load Command.

Definition at line 131 of file default_cfe_tbl_msgstruct.h.

11.131.2 Field Documentation

11.131.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_AbortLoadCmd::CommandHeader
Command header.

Definition at line 133 of file default_cfe_tbl_msgstruct.h.

11.131.2.2 Payload [CFE_TBL_AbortLoadCmd_Payload_t](#) CFE_TBL_AbortLoadCmd::Payload
Command payload.

Definition at line 134 of file default_cfe_tbl_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.132 CFE_TBL_AbortLoadCmd_Payload Struct Reference

Abort Load Command Payload.

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- char [TableName \[CFE_MISSION_TBL_MAX_FULL_NAME_LEN\]](#)
Full Name of Table whose load is to be aborted.

11.132.1 Detailed Description

Abort Load Command Payload.

For command details, see [CFE_TBL_ABORT_LOAD_CC](#)

Definition at line 148 of file default_cfe_tbl_msgdefs.h.

11.132.2 Field Documentation

11.132.2.1 TableName char CFE_TBL_AbortLoadCmd_Payload::TableName [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]

Full Name of Table whose load is to be aborted.

ASCII string containing full table name identifier of a table whose load is to be aborted

Definition at line 150 of file default_cfe_tbl_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h

11.133 CFE_TBL_ActivateCmd Struct Reference

Activate Table Command.

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)
Command header.
- [CFE_TBL_ActivateCmd_Payload_t Payload](#)
Command payload.

11.133.1 Detailed Description

Activate Table Command.

Definition at line 95 of file default_cfe_tbl_msgstruct.h.

11.133.2 Field Documentation

11.133.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_ActivateCmd::CommandHeader

Command header.

Definition at line 97 of file default_cfe_tbl_msgstruct.h.

11.133.2.2 Payload [CFE_TBL_ActivateCmd_Payload_t](#) CFE_TBL_ActivateCmd::Payload

Command payload.

Definition at line 98 of file default_cfe_tbl_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.134 CFE_TBL_ActivateCmd_Payload Struct Reference

Activate Table Command Payload.

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- char **TableName** [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]

Full Name of Table to be activated.

11.134.1 Detailed Description

Activate Table Command Payload.

For command details, see [CFE_TBL_ACTIVATE_CC](#)

Definition at line 95 of file default_cfe_tbl_msgdefs.h.

11.134.2 Field Documentation

11.134.2.1 TableName char CFE_TBL_ActivateCmd_Payload::TableName [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]

Full Name of Table to be activated.

ASCII string containing full table name identifier of table to be activated

Definition at line 97 of file default_cfe_tbl_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h

11.135 CFE_TBL_DelCDSCmd_Payload Struct Reference

Delete Critical Table CDS Command Payload.

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- char **TableName** [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]

Full Name of Table whose CDS is to be deleted.

11.135.1 Detailed Description

Delete Critical Table CDS Command Payload.

For command details, see [CFE_TBL_DELETE_CDS_CC](#)

Definition at line 134 of file default_cfe_tbl_msgdefs.h.

11.135.2 Field Documentation

11.135.2.1 TableName char CFE_TBL_DelCDSCmd_Payload::TableName [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]

Full Name of Table whose CDS is to be deleted.

ASCII string containing full table name identifier of a critical table whose CDS is to be deleted

Definition at line 136 of file default_cfe_tbl_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h

11.136 CFE_TBL_DeleteCDSCmd Struct Reference

Delete Critical Table CDS Command.

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TBL_DelCDSCmd_Payload_t](#) Payload
Command payload.

11.136.1 Detailed Description

Delete Critical Table CDS Command.

Definition at line 122 of file default_cfe_tbl_msgstruct.h.

11.136.2 Field Documentation

11.136.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_DeleteCDSCmd::CommandHeader

Command header.

Definition at line 124 of file default_cfe_tbl_msgstruct.h.

11.136.2.2 Payload [CFE_TBL_DelCDSCmd_Payload_t](#) CFE_TBL_DeleteCDSCmd::Payload

Command payload.

Definition at line 125 of file default_cfe_tbl_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.137 CFE_TBL_DumpCmd Struct Reference

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TBL_DumpCmd_Payload_t](#) Payload
Command payload.

11.137.1 Detailed Description

/brief Dump Table Command

Definition at line 77 of file default_cfe_tbl_msgstruct.h.

11.137.2 Field Documentation

11.137.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_DumpCmd::CommandHeader
Command header.
Definition at line 79 of file default_cfe_tbl_msgstruct.h.

11.137.2.2 Payload [CFE_TBL_DumpCmd_Payload_t](#) CFE_TBL_DumpCmd::Payload
Command payload.
Definition at line 80 of file default_cfe_tbl_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.138 CFE_TBL_DumpCmd_Payload Struct Reference

Dump Table Command Payload.

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- [CFE_TBL_BufferSelect_Enum_t](#) ActiveTableFlag
 - CFE_TBL_BufferSelect_INACTIVE=Inactive Table, CFE_TBL_BufferSelect_ACTIVE=Active Table*
- char TableName [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]
 - Full name of table to be dumped.*
- char DumpFilename [CFE_MISSION_MAX_PATH_LEN]
 - Full Filename where data is to be written.*

11.138.1 Detailed Description

Dump Table Command Payload.

For command details, see [CFE_TBL_DUMP_CC](#)

Definition at line 56 of file default_cfe_tbl_msgdefs.h.

11.138.2 Field Documentation

11.138.2.1 ActiveTableFlag [CFE_TBL_BufferSelect_Enum_t](#) CFE_TBL_DumpCmd_Payload::ActiveTableFlag
[CFE_TBL_BufferSelect_INACTIVE](#)=Inactive Table, [CFE_TBL_BufferSelect_ACTIVE](#)=Active Table
Selects either the "Inactive" ([CFE_TBL_BufferSelect_INACTIVE](#)) buffer or the "Active" ([CFE_TBL_BufferSelect_ACTIVE](#)) buffer to be dumped
Definition at line 58 of file default_cfe_tbl_msgdefs.h.

11.138.2.2 DumpFilename char CFE_TBL_DumpCmd_Payload::DumpFilename [CFE_MISSION_MAX_PATH_LEN]
Full Filename where data is to be written.
ASCII string containing full path of filename where data is to be dumped
Definition at line 67 of file default_cfe_tbl_msgdefs.h.

11.138.2.3 TableName `char CFE_TBL_DumpCmd_Payload::TableName[CFE_MISSION_TBL_MAX_FULL_NAME_LEN]`

Full name of table to be dumped.

ASCII string containing full table name identifier of table to be dumped

Definition at line 64 of file default_cfe_tbl_msgdefs.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h`

11.139 CFE_TBL_DumpRegistryCmd Struct Reference

Dump Registry Command.

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_TBL_DumpRegistryCmd_Payload_t Payload`
Command payload.

11.139.1 Detailed Description

Dump Registry Command.

Definition at line 104 of file default_cfe_tbl_msgstruct.h.

11.139.2 Field Documentation

11.139.2.1 CommandHeader `CFE_MSG_CommandHeader_t CFE_TBL_DumpRegistryCmd::CommandHeader`

Command header.

Definition at line 106 of file default_cfe_tbl_msgstruct.h.

11.139.2.2 Payload `CFE_TBL_DumpRegistryCmd_Payload_t CFE_TBL_DumpRegistryCmd::Payload`

Command payload.

Definition at line 107 of file default_cfe_tbl_msgstruct.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h`

11.140 CFE_TBL_DumpRegistryCmd_Payload Struct Reference

Dump Registry Command Payload.

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- `char DumpFilename [CFE_MISSION_MAX_PATH_LEN]`
Full Filename where dumped data is to be written.

11.140.1 Detailed Description

Dump Registry Command Payload.

For command details, see [CFE_TBL_DUMP_REGISTRY_CC](#)

Definition at line 107 of file default_cfe_tbl_msgdefs.h.

11.140.2 Field Documentation

11.140.2.1 DumpFilename `char CFE_TBL_DumpRegistryCmd_Payload::DumpFilename[CFE_MISSION_MAX_PATH_LEN]`

Full Filename where dumped data is to be written.

ASCII string containing full path of filename where registry is to be dumped

Definition at line 109 of file default_cfe_tbl_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h

11.141 CFE_TBL_File_Hdr Struct Reference

The definition of the header fields that are included in CFE Table Data files.

```
#include <default_cfe_tbl_extern_typedefs.h>
```

Data Fields

- `uint32 Reserved`
- `uint32 Offset`
- `uint32 NumBytes`
- `char TableName[CFE_MISSION_TBL_MAX_FULL_NAME_LEN]`

11.141.1 Detailed Description

The definition of the header fields that are included in CFE Table Data files.

This header follows the CFE_FS header and precedes the actual table data.

Note

The Offset and NumBytes fields in the table header are to 32 bits for backward compatibility with existing CFE versions. This means that even on 64-bit CPUs, individual table files will be limited to 4GiB in size.

Definition at line 64 of file default_cfe_tbl_extern_typedefs.h.

11.141.2 Field Documentation

11.141.2.1 NumBytes `uint32 CFE_TBL_File_Hdr::NumBytes`

Number of bytes to load into table

Definition at line 68 of file default_cfe_tbl_extern_typedefs.h.

11.141.2.2 Offset `uint32 CFE_TBL_File_Hdr::Offset`

Byte Offset at which load should commence

Definition at line 67 of file default_cfe_tbl_extern_typedefs.h.

11.141.2.3 Reserved `uint32 CFE_TBL_File_Hdr::Reserved`

Future Use: NumTblSegments in File?

Definition at line 66 of file default_cfe_tbl_extern_typedefs.h.

11.141.2.4 TableName char CFE_TBL_File_Hdr::TableName[CFE_MISSION_TBL_MAX_FULL_NAME_LEN]

Fully qualified name of table to load

Definition at line 69 of file default_cfe_tbl_extern_typedefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_extern_typedefs.h

11.142 CFE_TBL_FileDef Struct Reference

Table File summary object.

```
#include <cfe_tbl_filedef.h>
```

Data Fields

- char **ObjectName** [64]
Name of instantiated variable that contains desired table image.
- char **TableName** [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]
Name of Table as defined onboard.
- char **Description** [CFE_FS_HDR_DESC_MAX_LEN]
Description of table image that is included in cFE File Header.
- char **TgtFilename** [CFE_MISSION_MAX_FILE_LEN]
Default filename to be used for output of elf2cfetbl utility.
- uint32 **ObjectSize**
Size, in bytes, of instantiated object.

11.142.1 Detailed Description

Table File summary object.

The definition of the file definition metadata that can be used by external tools (e.g. elf2cfetbl) to generate CFE table data files.

Definition at line 58 of file cfe_tbl_filedef.h.

11.142.2 Field Documentation

11.142.2.1 Description

 char CFE_TBL_FileDef::Description[CFE_FS_HDR_DESC_MAX_LEN]

Description of table image that is included in cFE File Header.

This is a free-form text string that can be any meaningful value

Definition at line 94 of file cfe_tbl_filedef.h.

11.142.2.2 ObjectName

 char CFE_TBL_FileDef::ObjectName[64]

Name of instantiated variable that contains desired table image.

Note

For consistency and future compatibility with auto-generated table files and table definitions, the "ObjectName" should match the table struct typedef name without the "_t" suffix. For example, the limit checker action table (ADT) is defined by a type called "LC_ADT_t", the ObjectName should be "LC_ADT".

This naming convention allows the type name to be inferred from the ObjectName (and vice-versa) without having to directly specify both the type name and object name here.

Although the traditional elf2cfcfetbl tool does not currently do any type checking, future tool versions may add more robust type verification and therefore need to know the type name as well as the object name.

Definition at line 76 of file cfe_tbl_filedef.h.

11.142.2.3 ObjectSize `uint32 CFE_TBL_FileDef::ObjectSize`

Size, in bytes, of instantiated object.

This may be used by tools to check for consistency between the actual defined table size and the expected table size.

This is set automatically via the `CFE_TBL_FILEDEF` macro.

Definition at line 112 of file cfe_tbl_filedef.h.

11.142.2.4 TableName `char CFE_TBL_FileDef::TableName[CFE_MISSION_TBL_MAX_FULL_NAME_LEN]`

Name of Table as defined onboard.

This should be in the form of "APP_NAME.TABLE_NAME" where APP_NAME matches what the app is named at runtime (the 4th column of cfe_es_startup.scr) and TABLE_NAME matches the 2nd parameter of the call to `CFE_TBL_Register()`. Preferably the TABLE_NAME should also match the ObjectName here in this structure, although this is not strictly required, it helps keep things consistent.

Definition at line 87 of file cfe_tbl_filedef.h.

11.142.2.5 TgtFilename `char CFE_TBL_FileDef::TgtFilename[CFE_MISSION_MAX_FILE_LEN]`

Default filename to be used for output of elf2cfcfetbl utility.

This must match the expected table file name, which is the name of the source file but the ".c" extension replaced with ".tbl". This is the filename only - do not include a directory/path name here, it can be copied to any runtime directory on the target by external scripts, but should not be renamed.

Definition at line 104 of file cfe_tbl_filedef.h.

The documentation for this struct was generated from the following file:

- cfe/modules/core_api/fsw/inc/cfe_tbl_filedef.h

11.143 CFE_TBL_HousekeepingTlm Struct Reference

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry header.
- `CFE_TBL_HousekeepingTlm_Payload_t Payload`
Telemetry payload.

11.143.1 Detailed Description

Definition at line 154 of file default_cfe_tbl_msgstruct.h.

11.143.2 Field Documentation

11.143.2.1 Payload `CFE_TBL_HousekeepingTlm_Payload_t CFE_TBL_HousekeepingTlm::Payload`

Telemetry payload.

Definition at line 157 of file default_cfe_tbl_msgstruct.h.

11.143.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `CFE_TBL_HousekeepingTlm::TelemetryHeader`
Telemetry header.

Definition at line 156 of file `default_cfe_tbl_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h`

11.144 CFE_TBL_HousekeepingTlm_Payload Struct Reference

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- `uint8 CommandCounter`
Count of valid commands received.
- `uint8 CommandErrorCounter`
Count of invalid commands received.
- `uint16 NumTables`
Number of Tables Registered.
- `uint16 NumLoadPending`
Number of Tables pending on Applications for their update.
- `uint16 ValidationCounter`
Number of completed table validations.
- `uint32 LastValCrc`
Data Integrity Value computed for last table validated.
- `int32 LastValStatus`
Returned status from validation function for last table validated.
- `bool ActiveBuffer`
Indicator of whether table buffer validated was 0=Inactive, 1=Active.
- `char LastValTableName [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]`
Name of last table validated.
- `uint8 SuccessValCounter`
Total number of successful table validations.
- `uint8 FailedValCounter`
Total number of unsuccessful table validations.
- `uint8 NumValRequests`
Number of times Table Services has requested validations from Apps.
- `uint8 NumFreeSharedBufs`
Number of free Shared Working Buffers.
- `uint8 ByteAlignPad1`
Spare byte to ensure longword alignment.
- `CFE_ES_MemHandle_t MemPoolHandle`
Handle to TBL's memory pool.
- `CFE_TIME_SysTime_t LastUpdateTime`
Time of last table update.
- `char LastUpdatedTable [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]`
Name of the last table updated.
- `char LastFileLoaded [CFE_MISSION_MAX_PATH_LEN]`
Path and Name of last table image file loaded.

- char `LastFileDumped` [CFE_MISSION_MAX_PATH_LEN]
Path and Name of last file dumped to.
- char `LastTableLoaded` [CFE_MISSION_TBL_MAX_FULL_NAME_LEN]
Name of the last table loaded.

11.144.1 Detailed Description

Name Table Services Housekeeping Packet

Definition at line 179 of file default_cfe_tbl_msgdefs.h.

11.144.2 Field Documentation

11.144.2.1 ActiveBuffer `bool` CFE_TBL_HousekeepingTlm_Payload::ActiveBuffer
Indicator of whether table buffer validated was 0=Inactive, 1=Active.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_LastValBuf

Definition at line 206 of file default_cfe_tbl_msgdefs.h.

11.144.2.2 ByteAlignPad1 `uint8` CFE_TBL_HousekeepingTlm_Payload::ByteAlignPad1
Spare byte to ensure longword alignment.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_ByteAlignPad1

Definition at line 222 of file default_cfe_tbl_msgdefs.h.

11.144.2.3 CommandCounter `uint8` CFE_TBL_HousekeepingTlm_Payload::CommandCounter
Count of valid commands received.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_CMDPC

Definition at line 184 of file default_cfe_tbl_msgdefs.h.

11.144.2.4 CommandErrorCounter `uint8` CFE_TBL_HousekeepingTlm_Payload::CommandErrorCounter
Count of invalid commands received.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_CMDEC

Definition at line 186 of file default_cfe_tbl_msgdefs.h.

11.144.2.5 FailedValCounter `uint8` CFE_TBL_HousekeepingTlm_Payload::FailedValCounter
Total number of unsuccessful table validations.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_ValFailedCtr

Definition at line 212 of file default_cfe_tbl_msgdefs.h.

11.144.2.6 LastFileDumped `char CFE_TBL_HousekeepingTlm_Payload::LastFileDumped[CFE_MISSION_MAX_PATH_LEN]`
Path and Name of last file dumped to.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_LastFileDumped[OS_MAX_PATH_LEN]`

Definition at line 232 of file default_cfe_tbl_msgdefs.h.

11.144.2.7 LastFileLoaded `char CFE_TBL_HousekeepingTlm_Payload::LastFileLoaded[CFE_MISSION_MAX_PATH_LEN]`
Path and Name of last table image file loaded.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_LastFileLoaded[OS_MAX_PATH_LEN]`

Definition at line 230 of file default_cfe_tbl_msgdefs.h.

11.144.2.8 LastTableLoaded `char CFE_TBL_HousekeepingTlm_Payload::LastTableLoaded[CFE_MISSION_TBL_MAX_FULL_NAME_LEN]`
Name of the last table loaded.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_LastTableLoaded[CFE_TBL_MAX_FULL_NAME_LEN]`

Definition at line 234 of file default_cfe_tbl_msgdefs.h.

11.144.2.9 LastUpdatedTable `char CFE_TBL_HousekeepingTlm_Payload::LastUpdatedTable[CFE_MISSION_TBL_MAX_FULL_NAME_LEN]`
Name of the last table updated.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_LastUpdTblName[CFE_TB_MAX_FULL_NAME_LEN]`

Definition at line 228 of file default_cfe_tbl_msgdefs.h.

11.144.2.10 LastUpdateTime `CFE_TIME_SysTime_t CFE_TBL_HousekeepingTlm_Payload::LastUpdateTime`
Time of last table update.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_LastUpdTime, $sc_$cpu_TBL_SECONDS, $sc_$cpu_TBL_SUBSECONDS`

Definition at line 226 of file default_cfe_tbl_msgdefs.h.

11.144.2.11 LastValCrc `uint32 CFE_TBL_HousekeepingTlm_Payload::LastValCrc`
Data Integrity Value computed for last table validated.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_LastValCRC`

Definition at line 202 of file default_cfe_tbl_msgdefs.h.

11.144.2.12 LastValStatus `int32 CFE_TBL_HousekeepingTlm_Payload::LastValStatus`
Returned status from validation function for last table validated.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_LastVals`

Definition at line 204 of file default_cfe_tbl_msgdefs.h.

11.144.2.13 LastValTableName `char CFE_TBL_HousekeepingTlm_Payload::LastValTableName[CFE_MISSION_TBL_MAX_FULL_NAME_LEN]`
Name of last table validated.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_LastValTblName[CFE_TB_MAX_FULL_NAME_LEN]`

Definition at line 208 of file default_cfe_tbl_msgdefs.h.

11.144.2.14 MemPoolHandle `CFE_ES_MemHandle_t CFE_TBL_HousekeepingTlm_Payload::MemPoolHandle`
Handle to TBL's memory pool.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_MemPoolHandle`

Definition at line 224 of file default_cfe_tbl_msgdefs.h.

11.144.2.15 NumFreeSharedBufs `uint8 CFE_TBL_HousekeepingTlm_Payload::NumFreeSharedBufs`
Number of free Shared Working Buffers.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_NumFreeShrBuf`

Definition at line 220 of file default_cfe_tbl_msgdefs.h.

11.144.2.16 NumLoadPending `uint16 CFE_TBL_HousekeepingTlm_Payload::NumLoadPending`
Number of Tables pending on Applications for their update.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_NumUpdatesPend`

Definition at line 194 of file default_cfe_tbl_msgdefs.h.

11.144.2.17 NumTables `uint16 CFE_TBL_HousekeepingTlm_Payload::NumTables`
Number of Tables Registered.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_NumTables`

Definition at line 192 of file default_cfe_tbl_msgdefs.h.

11.144.2.18 NumValRequests `uint8 CFE_TBL_HousekeepingTlm_Payload::NumValRequests`
Number of times Table Services has requested validations from Apps.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_ValReqCtr`

Definition at line 214 of file default_cfe_tbl_msgdefs.h.

11.144.2.19 SuccessValCounter `uint8 CFE_TBL_HousekeepingTlm_Payload::SuccessValCounter`
Total number of successful table validations.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_ValSuccessCtr`

Definition at line 210 of file default_cfe_tbl_msgdefs.h.

11.144.2.20 ValidationCounter `uint16 CFE_TBL_HousekeepingTlm_Payload::ValidationCounter`
Number of completed table validations.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_ValCompltdCtr

Definition at line 200 of file default_cfe_tbl_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h

11.145 CFE_TBL_Info Struct Reference

Table Info.

```
#include <cfef_tbl_api_typedefs.h>
```

Data Fields

- `size_t Size`
Size, in bytes, of Table.
- `uint32 NumUsers`
Number of Apps with access to the table.
- `CFE_TIME_SysTime_t FileTime`
File creation time from last file loaded into table.
- `uint32 Crc`
Most recently calculated CRC by TBL services on table contents.
- `CFE_TIME_SysTime_t TimeOfLastUpdate`
Time when Table was last updated.
- `bool TableLoadedOnce`
Flag indicating whether table has been loaded once or not.
- `bool DumpOnly`
Flag indicating Table is NOT to be loaded.
- `bool DoubleBuffered`
Flag indicating Table has a dedicated inactive buffer.
- `bool UserDefAddr`
Flag indicating Table address was defined by Owner Application.
- `bool Critical`
Flag indicating Table contents are maintained in a CDS.
- `char LastFileLoaded [CFE_MISSION_MAX_PATH_LEN]`
Filename of last file loaded into table.

11.145.1 Detailed Description

Table Info.

Definition at line 109 of file cfe_tbl_api_typedefs.h.

11.145.2 Field Documentation

11.145.2.1 Crc `uint32 CFE_TBL_Info::Crc`

Most recently calculated CRC by TBL services on table contents.

Definition at line 114 of file cfe_tbl_api_typedefs.h.

11.145.2.2 Critical `bool CFE_TBL_Info::Critical`
Flag indicating Table contents are maintained in a CDS.
Definition at line 120 of file `cfe_tbl_api_typedefs.h`.

11.145.2.3 DoubleBuffered `bool CFE_TBL_Info::DoubleBuffered`
Flag indicating Table has a dedicated inactive buffer.
Definition at line 118 of file `cfe_tbl_api_typedefs.h`.

11.145.2.4 DumpOnly `bool CFE_TBL_Info::DumpOnly`
Flag indicating Table is NOT to be loaded.
Definition at line 117 of file `cfe_tbl_api_typedefs.h`.

11.145.2.5 FileTime `CFE_TIME_SysTime_t CFE_TBL_Info::FileTime`
File creation time from last file loaded into table.
Definition at line 113 of file `cfe_tbl_api_typedefs.h`.

11.145.2.6 LastFileLoaded `char CFE_TBL_Info::LastFileLoaded[CFE_MISSION_MAX_PATH_LEN]`
Filename of last file loaded into table.
Definition at line 121 of file `cfe_tbl_api_typedefs.h`.

11.145.2.7 NumUsers `uint32 CFE_TBL_Info::NumUsers`
Number of Apps with access to the table.
Definition at line 112 of file `cfe_tbl_api_typedefs.h`.

11.145.2.8 Size `size_t CFE_TBL_Info::Size`
Size, in bytes, of Table.
Definition at line 111 of file `cfe_tbl_api_typedefs.h`.

11.145.2.9 TableLoadedOnce `bool CFE_TBL_Info::TableLoadedOnce`
Flag indicating whether table has been loaded once or not.
Definition at line 116 of file `cfe_tbl_api_typedefs.h`.

11.145.2.10 TimeOfLastUpdate `CFE_TIME_SysTime_t CFE_TBL_Info::TimeOfLastUpdate`
Time when Table was last updated.
Definition at line 115 of file `cfe_tbl_api_typedefs.h`.

11.145.2.11 UserDefAddr `bool CFE_TBL_Info::UserDefAddr`
Flag indicating Table address was defined by Owner Application.
Definition at line 119 of file `cfe_tbl_api_typedefs.h`.
The documentation for this struct was generated from the following file:

- `cfe/modules/core_api/fsw/inc/cfe_tbl_api_typedefs.h`

11.146 CFE_TBL_LoadCmd Struct Reference

Load Table Command.

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TBL_LoadCmd_Payload_t](#) Payload
Command payload.

11.146.1 Detailed Description

Load Table Command.

Definition at line 68 of file default_cfe_tbl_msgstruct.h.

11.146.2 Field Documentation

11.146.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_LoadCmd::CommandHeader

Command header.

Definition at line 70 of file default_cfe_tbl_msgstruct.h.

11.146.2.2 Payload [CFE_TBL_LoadCmd_Payload_t](#) CFE_TBL_LoadCmd::Payload

Command payload.

Definition at line 71 of file default_cfe_tbl_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.147 CFE_TBL_LoadCmd_Payload Struct Reference

Load Table Command Payload.

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- char LoadFilename [[CFE_MISSION_MAX_PATH_LEN](#)]
Filename (and path) of data to be loaded.

11.147.1 Detailed Description

Load Table Command Payload.

For command details, see [CFE_TBL_LOAD_CC](#)

Definition at line 46 of file default_cfe_tbl_msgdefs.h.

11.147.2 Field Documentation

11.147.2.1 LoadFilename char CFE_TBL_LoadCmd_Payload::LoadFilename[[CFE_MISSION_MAX_PATH_LEN](#)]
Filename (and path) of data to be loaded.

Definition at line 48 of file [default_cfe_tbl_msgdefs.h](#).

The documentation for this struct was generated from the following file:

- [cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h](#)

11.148 CFE_TBL_NoopCmd Struct Reference

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)

Command header.

11.148.1 Detailed Description

Definition at line 50 of file [default_cfe_tbl_msgstruct.h](#).

11.148.2 Field Documentation

11.148.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_NoopCmd::CommandHeader
Command header.

Definition at line 52 of file [default_cfe_tbl_msgstruct.h](#).

The documentation for this struct was generated from the following file:

- [cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h](#)

11.149 CFE_TBL_NotifyCmd Struct Reference

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)

Command header.

- [CFE_TBL_NotifyCmd_Payload_t Payload](#)

Command payload.

11.149.1 Detailed Description

/brief Table Management Notification Command

Definition at line 142 of file [default_cfe_tbl_msgstruct.h](#).

11.149.2 Field Documentation

11.149.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_NotifyCmd::CommandHeader
Command header.

Definition at line 144 of file [default_cfe_tbl_msgstruct.h](#).

11.149.2.2 Payload `CFE_TBL_NotifyCmd_Payload_t` `CFE_TBL_NotifyCmd::Payload`
Command payload.

Definition at line 145 of file default_cfe_tbl_msgstruct.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h](#)

11.150 CFE_TBL_NotifyCmd_Payload Struct Reference

Table Management Notification Command Payload.

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- `uint32 Parameter`

Application specified command parameter.

11.150.1 Detailed Description

Table Management Notification Command Payload.

Description

Whenever an application that owns a table calls the [CFE_TBL_NotifyByMessage](#) API following the table registration, Table services will generate the following command message with the application specified message ID, command code and parameter whenever the table requires management (e.g. - loads and validations).

Definition at line 166 of file default_cfe_tbl_msgdefs.h.

11.150.2 Field Documentation

11.150.2.1 Parameter `uint32 CFE_TBL_NotifyCmd_Payload::Parameter`

Application specified command parameter.

Definition at line 168 of file default_cfe_tbl_msgdefs.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h](#)

11.151 CFE_TBL_ResetCountersCmd Struct Reference

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`

Command header.

11.151.1 Detailed Description

Definition at line 55 of file default_cfe_tbl_msgstruct.h.

11.151.2 Field Documentation

11.151.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_ResetCountersCmd::CommandHeader
Command header.

Definition at line 57 of file default_cfe_tbl_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.152 CFE_TBL_SendHkCmd Struct Reference

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.152.1 Detailed Description

Definition at line 60 of file default_cfe_tbl_msgstruct.h.

11.152.2 Field Documentation

11.152.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_SendHkCmd::CommandHeader
Command header.

Definition at line 62 of file default_cfe_tbl_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.153 CFE_TBL_SendRegistryCmd Struct Reference

Send Table Registry Command.

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TBL_SendRegistryCmd_Payload_t](#) Payload
Command payload.

11.153.1 Detailed Description

Send Table Registry Command.

Definition at line 113 of file default_cfe_tbl_msgstruct.h.

11.153.2 Field Documentation

11.153.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_SendRegistryCmd::CommandHeader
Command header.
Definition at line 115 of file default_cfe_tbl_msgstruct.h.

11.153.2.2 Payload [CFE_TBL_SendRegistryCmd_Payload_t](#) CFE_TBL_SendRegistryCmd::Payload
Command payload.
Definition at line 116 of file default_cfe_tbl_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.154 CFE_TBL_SendRegistryCmd_Payload Struct Reference

Send Table Registry Command Payload.

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- char [TableName](#) [[CFE_MISSION_TBL_MAX_FULL_NAME_LEN](#)]
Full Name of Table whose registry entry is to be telemetered.

11.154.1 Detailed Description

Send Table Registry Command Payload.

For command details, see [CFE_TBL_SEND_REGISTRY_CC](#)

Definition at line 120 of file default_cfe_tbl_msgdefs.h.

11.154.2 Field Documentation

11.154.2.1 TableName char CFE_TBL_SendRegistryCmd_Payload::TableName [[CFE_MISSION_TBL_MAX_FULL_NAME_LEN](#)]
Full Name of Table whose registry entry is to be telemetered.
ASCII string containing full table name identifier of table whose registry entry is to be telemetered via
[CFE_TBL_TableRegistryTlm_t](#)
Definition at line 122 of file default_cfe_tbl_msgdefs.h.
The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h

11.155 CFE_TBL_TableRegistryTlm Struct Reference

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- [CFE_MSG_TelemetryHeader_t](#) TelemetryHeader
Telemetry header.
- [CFE_TBL_TblRegPacket_Payload_t](#) Payload
Telemetry payload.

11.155.1 Detailed Description

Definition at line 160 of file default_cfe_tbl_msgstruct.h.

11.155.2 Field Documentation

11.155.2.1 Payload [CFE_TBL_TblRegPacket_Payload_t](#) CFE_TBL_TableRegistryTlm::Payload
Telemetry payload.

Definition at line 163 of file default_cfe_tbl_msgstruct.h.

11.155.2.2 TelemetryHeader [CFE_MSG_TelemetryHeader_t](#) CFE_TBL_TableRegistryTlm::TelemetryHeader
Telemetry header.

Definition at line 162 of file default_cfe_tbl_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.156 CFE_TBL_TblRegPacket_Payload Struct Reference

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- [CFE_ES_MemOffset_t](#) **Size**
Size, in bytes, of Table.
- [uint32](#) **Crc**
Most recently calculated CRC of Table.
- [CFE_ES_MemAddress_t](#) **ActiveBufferAddr**
Address of Active Buffer.
- [CFE_ES_MemAddress_t](#) **InactiveBufferAddr**
Address of Inactive Buffer.
- [CFE_ES_MemAddress_t](#) **ValidationFuncPtr**
Ptr to Owner App's function that validates tbl contents.
- [CFE_TIME_SysTime_t](#) **TimeOfLastUpdate**
Time when Table was last updated.
- [CFE_TIME_SysTime_t](#) **FileTime**
File creation time from last file loaded into table.
- [bool](#) **TableLoadedOnce**
Flag indicating whether table has been loaded once or not.
- [bool](#) **LoadPending**
Flag indicating an inactive buffer is ready to be copied.
- [bool](#) **DumpOnly**
Flag indicating Table is NOT to be loaded.
- [bool](#) **DoubleBuffered**
Flag indicating Table has a dedicated inactive buffer.
- [char](#) **Name** [[CFE_MISSION_TBL_MAX_FULL_NAME_LEN](#)]
Processor specific table name.
- [char](#) **LastFileLoaded** [[CFE_MISSION_MAX_PATH_LEN](#)]
Filename of last file loaded into table.
- [char](#) **OwnerAppName** [[CFE_MISSION_MAX_API_LEN](#)]
Name of owning application.

- bool **Critical**
Indicates whether table is Critical or not.
- uint8 **ByteAlign4**
Spare byte to maintain byte alignment.

11.156.1 Detailed Description

Name Table Registry Info Packet

Definition at line 241 of file default_cfe_tbl_msgdefs.h.

11.156.2 Field Documentation

11.156.2.1 ActiveBufferAddr `CFE_ES_MemAddress_t CFE_TBL_TblRegPacket_Payload::ActiveBufferAddr`
Address of Active Buffer.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_ActBufAdd

Definition at line 247 of file default_cfe_tbl_msgdefs.h.

11.156.2.2 ByteAlign4 `uint8 CFE_TBL_TblRegPacket_Payload::ByteAlign4`
Spare byte to maintain byte alignment.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_Spare4

Definition at line 273 of file default_cfe_tbl_msgdefs.h.

11.156.2.3 Crc `uint32 CFE_TBL_TblRegPacket_Payload::Crc`
Most recently calculated CRC of Table.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_CRC

Definition at line 245 of file default_cfe_tbl_msgdefs.h.

11.156.2.4 Critical `bool CFE_TBL_TblRegPacket_Payload::Critical`
Indicates whether table is Critical or not.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_Spare3

Definition at line 271 of file default_cfe_tbl_msgdefs.h.

11.156.2.5 DoubleBuffered `bool CFE_TBL_TblRegPacket_Payload::DoubleBuffered`
Flag indicating Table has a dedicated inactive buffer.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_DblBuffered

Definition at line 263 of file default_cfe_tbl_msgdefs.h.

11.156.2.6 DumpOnly bool CFE_TBL_TblRegPacket_Payload::DumpOnly
Flag indicating Table is NOT to be loaded.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_DumpOnly

Definition at line 261 of file default_cfe_tbl_msgdefs.h.

11.156.2.7 FileTime CFE_TIME_SysTime_t CFE_TBL_TblRegPacket_Payload::FileTime
File creation time from last file loaded into table.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_FILECTIME

Definition at line 255 of file default_cfe_tbl_msgdefs.h.

11.156.2.8 InactiveBufferAddr CFE_ES_MemAddress_t CFE_TBL_TblRegPacket_Payload::InactiveBufferAddr
Address of Inactive Buffer.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_IActBufAdd

Definition at line 249 of file default_cfe_tbl_msgdefs.h.

11.156.2.9 LastFileLoaded char CFE_TBL_TblRegPacket_Payload::LastFileLoaded[CFE_MISSION_MAX_PATH_LEN]
Filename of last file loaded into table.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_LastFileUpd[OS_MAX_PATH_LEN]

Definition at line 267 of file default_cfe_tbl_msgdefs.h.

11.156.2.10 LoadPending bool CFE_TBL_TblRegPacket_Payload::LoadPending
Flag indicating an inactive buffer is ready to be copied.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_UpdatePndng

Definition at line 259 of file default_cfe_tbl_msgdefs.h.

11.156.2.11 Name char CFE_TBL_TblRegPacket_Payload::Name[CFE_MISSION_TBL_MAX_FULL_NAME_LEN]
Processor specific table name.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_Name[CFE_TB_MAX_FULL_NAME_LEN]

Definition at line 265 of file default_cfe_tbl_msgdefs.h.

11.156.2.12 OwnerAppName char CFE_TBL_TblRegPacket_Payload::OwnerAppName[CFE_MISSION_MAX_API_LEN]
Name of owning application.

Telemetry Mnemonic(s) \$sc_\$cpu_TBL_OwnerApp[OS_MAX_API_NAME]

Definition at line 269 of file default_cfe_tbl_msgdefs.h.

11.156.2.13 Size `CFE_ES_MemOffset_t` `CFE_TBL_TblRegPacket_Payload::Size`
Size, in bytes, of Table.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_SIZE`

Definition at line 243 of file `default_cfe_tbl_msgdefs.h`.

11.156.2.14 TableLoadedOnce `bool` `CFE_TBL_TblRegPacket_Payload::TableLoadedOnce`
Flag indicating whether table has been loaded once or not.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_LoadedOnce`

Definition at line 257 of file `default_cfe_tbl_msgdefs.h`.

11.156.2.15 TimeOfLastUpdate `CFE_TIME_SysTime_t` `CFE_TBL_TblRegPacket_Payload::TimeOfLastUpdate`
Time when Table was last updated.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_TimeLastUpd`, `$sc_$cpu_TBL_TLUSECONDS`, `$sc_$cpu_TBL_TLUSUBSECONDS`

Definition at line 253 of file `default_cfe_tbl_msgdefs.h`.

11.156.2.16 ValidationFuncPtr `CFE_ES_MemAddress_t` `CFE_TBL_TblRegPacket_Payload::ValidationFuncPtr`
Ptr to Owner App's function that validates tbl contents.

Telemetry Mnemonic(s) `$sc_$cpu_TBL_ValFuncPtr`

Definition at line 251 of file `default_cfe_tbl_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h`

11.157 CFE_TBL_ValidateCmd Struct Reference

Validate Table Command.

```
#include <default_cfe_tbl_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t` `CommandHeader`
Command header.
- `CFE_TBL_ValidateCmd_Payload_t` `Payload`
Command payload.

11.157.1 Detailed Description

Validate Table Command.

Definition at line 86 of file `default_cfe_tbl_msgstruct.h`.

11.157.2 Field Documentation

11.157.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TBL_ValidateCmd::CommandHeader
Command header.
Definition at line 88 of file default_cfe_tbl_msgstruct.h.

11.157.2.2 Payload [CFE_TBL_ValidateCmd_Payload_t](#) CFE_TBL_ValidateCmd::Payload
Command payload.
Definition at line 89 of file default_cfe_tbl_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h

11.158 CFE_TBL_ValidateCmd_Payload Struct Reference

Validate Table Command Payload.

```
#include <default_cfe_tbl_msgdefs.h>
```

Data Fields

- [CFE_TBL_BufferSelect_Enum_t](#) ActiveTableFlag
 - [CFE_TBL_BufferSelect_INACTIVE](#)=Inactive Table, [CFE_TBL_BufferSelect_ACTIVE](#)=Active Table
- char TableName [[CFE_MISSION_TBL_MAX_FULL_NAME_LEN](#)]
Full Name of Table to be validated.

11.158.1 Detailed Description

Validate Table Command Payload.

For command details, see [CFE_TBL_VALIDATE_CC](#)
Definition at line 77 of file default_cfe_tbl_msgdefs.h.

11.158.2 Field Documentation

11.158.2.1 ActiveTableFlag [CFE_TBL_BufferSelect_Enum_t](#) CFE_TBL_ValidateCmd_Payload::ActiveTable←
Flag
[CFE_TBL_BufferSelect_INACTIVE](#)=Inactive Table, [CFE_TBL_BufferSelect_ACTIVE](#)=Active Table
Selects either the "Inactive" ([CFE_TBL_BufferSelect_INACTIVE](#)) buffer or the "Active" ([CFE_TBL_BufferSelect_ACTIVE](#))
buffer to be validated
Definition at line 79 of file default_cfe_tbl_msgdefs.h.

11.158.2.2 TableName char CFE_TBL_ValidateCmd_Payload::TableName [[CFE_MISSION_TBL_MAX_FULL_NAME_LEN](#)]
Full Name of Table to be validated.
ASCII string containing full table name identifier of table to be validated
Definition at line 85 of file default_cfe_tbl_msgdefs.h.
The documentation for this struct was generated from the following file:

- cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h

11.159 CFE_TIME_AddAdjustCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_TimeCmd_Payload_t](#) Payload
Command payload.

11.159.1 Detailed Description

Definition at line 146 of file default_cfe_time_msgstruct.h.

11.159.2 Field Documentation**11.159.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_TIME_AddAdjustCmd::CommandHeader
Command header.

Definition at line 148 of file default_cfe_time_msgstruct.h.

11.159.2.2 Payload [CFE_TIME_TimeCmd_Payload_t](#) CFE_TIME_AddAdjustCmd::Payload
Command payload.

Definition at line 149 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.160 CFE_TIME_AddDelayCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_TimeCmd_Payload_t](#) Payload
Command payload.

11.160.1 Detailed Description

Definition at line 122 of file default_cfe_time_msgstruct.h.

11.160.2 Field Documentation**11.160.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) CFE_TIME_AddDelayCmd::CommandHeader
Command header.

Definition at line 124 of file default_cfe_time_msgstruct.h.

11.160.2.2 Payload `CFE_TIME_TimeCmd_Payload_t` `CFE_TIME_AddDelayCmd::Payload`
Command payload.

Definition at line 125 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgstruct.h`

11.161 CFE_TIME_AddOneHzAdjustmentCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_TIME_OneHzAdjustmentCmd_Payload_t Payload`
Command payload.

11.161.1 Detailed Description

Definition at line 169 of file default_cfe_time_msgstruct.h.

11.161.2 Field Documentation

11.161.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_TIME_AddOneHzAdjustmentCmd::CommandHeader`
Command header.

Definition at line 171 of file default_cfe_time_msgstruct.h.

11.161.2.2 Payload `CFE_TIME_OneHzAdjustmentCmd_Payload_t` `CFE_TIME_AddOneHzAdjustmentCmd::Payload`
Command payload.

Definition at line 172 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgstruct.h`

11.162 CFE_TIME_DiagnosticTlm Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry header.
- `CFE_TIME_DiagnosticTlm_Payload_t Payload`
Telemetry payload.

11.162.1 Detailed Description

Definition at line 198 of file default_cfe_time_msgstruct.h.

11.162.2 Field Documentation

11.162.2.1 Payload `CFE_TIME_DiagnosticTlm_Payload_t` `CFE_TIME_DiagnosticTlm::Payload`
Telemetry payload.

Definition at line 201 of file `default_cfe_time_msgstruct.h`.

11.162.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `CFE_TIME_DiagnosticTlm::TelemetryHeader`
Telemetry header.

Definition at line 200 of file `default_cfe_time_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgstruct.h`

11.163 CFE_TIME_DiagnosticTlm_Payload Struct Reference

```
#include <default_cfe_time_msgdefs.h>
```

Data Fields

- `CFE_TIME_SysTime_t AtToneMET`
MET at time of tone.
- `CFE_TIME_SysTime_t AtToneSTCF`
STCF at time of tone.
- `CFE_TIME_SysTime_t AtToneDelay`
Adjustment for slow tone detection.
- `CFE_TIME_SysTime_t AtToneLatch`
Local clock latched at time of tone.
- `int16 AtToneLeapSeconds`
Leap Seconds at time of tone.
- `CFE_TIME_ClockState_Enum_t ClockStateAPI`
Clock state as per API.
- `CFE_TIME_SysTime_t TimeSinceTone`
Time elapsed since the tone.
- `CFE_TIME_SysTime_t CurrentLatch`
Local clock latched just "now".
- `CFE_TIME_SysTime_t CurrentMET`
MET at this instant.
- `CFE_TIME_SysTime_t CurrentTAI`
TAI at this instant.
- `CFE_TIME_SysTime_t CurrentUTC`
UTC at this instant.
- `int16 ClockSetState`
Time has been "set".
- `int16 ClockFlyState`
Current fly-wheel state.
- `int16 ClockSource`
Internal vs external, etc.

- int16 ClockSignal
Primary vs redundant, etc.
- int16 ServerFlyState
Used by clients only.
- int16 Forced2Fly
Commanded into fly-wheel.
- uint16 ClockStateFlags
Clock State Flags.
- int16 OneTimeDirection
One time STCF adjustment direction (Add = 1, Sub = 2)
- int16 OneHzDirection
1Hz STCF adjustment direction
- int16 DelayDirection
Client latency adjustment direction.
- CFE_TIME_SysTime_t OneTimeAdjust
Previous one-time STCF adjustment.
- CFE_TIME_SysTime_t OneHzAdjust
Current 1Hz STCF adjustment.
- CFE_TIME_SysTime_t ToneSignalLatch
Local Clock latched at most recent tone signal.
- CFE_TIME_SysTime_t ToneDataLatch
Local Clock latched at arrival of tone data.
- uint32 ToneMatchCounter
Tone signal / data verification count.
- uint32 ToneMatchErrorCounter
Tone signal / data verification error count.
- uint32 ToneSignalCounter
Tone signal detected SB message count.
- uint32 ToneDataCounter
Time at the tone data SB message count.
- uint32 ToneIntCounter
Tone signal ISR execution count.
- uint32 ToneIntErrorCounter
Tone signal ISR error count.
- uint32 ToneTaskCounter
Tone task execution count.
- uint32 VersionCounter
Count of mods to time at tone reference data (version)
- uint32 LocalIntCounter
Local 1Hz ISR execution count.
- uint32 LocalTaskCounter
Local 1Hz task execution count.
- uint32 VirtualMET
Software MET.
- uint32 MinElapsed
Min tone signal / data pkt arrival window (Sub-seconds)
- uint32 MaxElapsed

Max tone signal / data pkt arrival window (Sub-seconds)

- **CFE_TIME_SysTime_t** **MaxLocalClock**

Max local clock value before rollover.

- **uint32** **ToneOverLimit**

Max between tone signal interrupts.

- **uint32** **ToneUnderLimit**

Min between tone signal interrupts.

- **uint32** **DataStoreStatus**

Data Store status (preserved across processor reset)

11.163.1 Detailed Description

Name Time Services Diagnostics Packet

Definition at line 190 of file default_cfe_time_msgdefs.h.

11.163.2 Field Documentation

11.163.2.1 AtToneDelay **CFE_TIME_SysTime_t** **CFE_TIME_DiagnosticTlm_Payload::AtToneDelay**
Adjustment for slow tone detection.

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_DLlatentS, \$sc_\$cpu_TIME_DLlatentSs

Definition at line 199 of file default_cfe_time_msgdefs.h.

11.163.2.2 AtToneLatch **CFE_TIME_SysTime_t** **CFE_TIME_DiagnosticTlm_Payload::AtToneLatch**
Local clock latched at time of tone.

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_DTVlids, \$sc_\$cpu_TIME_DTVlidsS

Definition at line 201 of file default_cfe_time_msgdefs.h.

11.163.2.3 AtToneLeapSeconds **int16** **CFE_TIME_DiagnosticTlm_Payload::AtToneLeapSeconds**
Leap Seconds at time of tone.

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_DLapS

Definition at line 204 of file default_cfe_time_msgdefs.h.

11.163.2.4 AtToneMET **CFE_TIME_SysTime_t** **CFE_TIME_DiagnosticTlm_Payload::AtToneMET**
MET at time of tone.

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_DTMETS, \$sc_\$cpu_TIME_DTMETSs

Definition at line 195 of file default_cfe_time_msgdefs.h.

11.163.2.5 AtToneSTCF `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::AtToneSTCF`
STCF at time of tone.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DSTCFS`, `$sc_$cpu_TIME_DSTCFSS`

Definition at line 197 of file `default_cfe_time_msgdefs.h`.

11.163.2.6 ClockFlyState `int16` `CFE_TIME_DiagnosticTlm_Payload::ClockFlyState`
Current fly-wheel state.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DFlywheel`

Definition at line 228 of file `default_cfe_time_msgdefs.h`.

11.163.2.7 ClockSetState `int16` `CFE_TIME_DiagnosticTlm_Payload::ClockSetState`
Time has been "set".

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DValid`

Definition at line 226 of file `default_cfe_time_msgdefs.h`.

11.163.2.8 ClockSignal `int16` `CFE_TIME_DiagnosticTlm_Payload::ClockSignal`
Primary vs redundant, etc.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DSignal`

Definition at line 232 of file `default_cfe_time_msgdefs.h`.

11.163.2.9 ClockSource `int16` `CFE_TIME_DiagnosticTlm_Payload::ClockSource`
Internal vs external, etc.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DSource`

Definition at line 230 of file `default_cfe_time_msgdefs.h`.

11.163.2.10 ClockStateAPI `CFE_TIME_ClockState_Enum_t` `CFE_TIME_DiagnosticTlm_Payload::ClockStateAPI`
Clock state as per API.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DAPIState`

Definition at line 206 of file `default_cfe_time_msgdefs.h`.

11.163.2.11 ClockStateFlags `uint16` `CFE_TIME_DiagnosticTlm_Payload::ClockStateFlags`
Clock State Flags.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DStateFlags`, `$sc_$cpu_TIME_DFlagSet`, `$sc_$cpu_TIME_DFlagFly`,
`$sc_$cpu_TIME_DFlagSrc`, `$sc_$cpu_TIME_DFlagPri`, `$sc_$cpu_TIME_DFlagSfly`, `$sc_←$cpu_TIME_DFlagCfly`,
`$sc_$cpu_TIME_DFlagAdj`, `$sc_$cpu_TIME_DFlag1Hzd`, `$sc_←$cpu_TIME_DFlagClat`, `$sc_$cpu_TIME_DFlagSorC`, `$sc_$cpu_TIME_DFlagNIU`

Definition at line 242 of file `default_cfe_time_msgdefs.h`.

11.163.2.12 CurrentLatch `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::CurrentLatch`
Local clock latched just "now".

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DLLocalS`, `$sc_$cpu_TIME_DLLocalSs`

Definition at line 214 of file `default_cfe_time_msgdefs.h`.

11.163.2.13 CurrentMET `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::CurrentMET`
MET at this instant.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DMETS`, `$sc_$cpu_TIME_DMETSS`

Definition at line 216 of file `default_cfe_time_msgdefs.h`.

11.163.2.14 CurrentTAI `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::CurrentTAI`
TAI at this instant.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DTAIS`, `$sc_$cpu_TIME_DTAISS`

Definition at line 218 of file `default_cfe_time_msgdefs.h`.

11.163.2.15 CurrentUTC `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::CurrentUTC`
UTC at this instant.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DUTCS`, `$sc_$cpu_TIME_DUTCSS`

Definition at line 220 of file `default_cfe_time_msgdefs.h`.

11.163.2.16 DataStoreStatus `uint32` `CFE_TIME_DiagnosticTlm_Payload::DataStoreStatus`
Data Store status (preserved across processor reset)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DataStStat`

Definition at line 332 of file `default_cfe_time_msgdefs.h`.

11.163.2.17 DelayDirection `int16` `CFE_TIME_DiagnosticTlm_Payload::DelayDirection`
Client latency adjustment direction.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DLLatentDir`

Definition at line 252 of file `default_cfe_time_msgdefs.h`.

11.163.2.18 Forced2Fly `int16` `CFE_TIME_DiagnosticTlm_Payload::Forced2Fly`
Commanded into fly-wheel.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DCMD2Fly`

Definition at line 236 of file `default_cfe_time_msgdefs.h`.

11.163.2.19 LocalIntCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::LocalIntCounter`
Local 1Hz ISR execution count.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_D1HzISRCNT`

Definition at line 290 of file default_cfe_time_msgdefs.h.

11.163.2.20 LocalTaskCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::LocalTaskCounter`
Local 1Hz task execution count.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_D1HzTaskCNT`

Definition at line 292 of file default_cfe_time_msgdefs.h.

11.163.2.21 MaxElapsed `uint32` `CFE_TIME_DiagnosticTlm_Payload::MaxElapsed`
Max tone signal / data pkt arrival window (Sub-seconds)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DMaxWindow`

Definition at line 312 of file default_cfe_time_msgdefs.h.

11.163.2.22 MaxLocalClock `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::MaxLocalClock`
Max local clock value before rollover.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DWrapS, $sc_$cpu_TIME_DWrapSs`

Definition at line 318 of file default_cfe_time_msgdefs.h.

11.163.2.23 MinElapsed `uint32` `CFE_TIME_DiagnosticTlm_Payload::MinElapsed`
Min tone signal / data pkt arrival window (Sub-seconds)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DMinWindow`

Definition at line 310 of file default_cfe_time_msgdefs.h.

11.163.2.24 OneHzAdjust `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::OneHzAdjust`
Current 1Hz STCF adjustment.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_D1HzAdjS, $sc_$cpu_TIME_D1HzAdjSs`

Definition at line 260 of file default_cfe_time_msgdefs.h.

11.163.2.25 OneHzDirection `int16` `CFE_TIME_DiagnosticTlm_Payload::OneHzDirection`
1Hz STCF adjustment direction

Telemetry Mnemonic(s) `$sc_$cpu_TIME_D1HzAdjDir`

Definition at line 250 of file default_cfe_time_msgdefs.h.

11.163.2.26 OneTimeAdjust `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::OneTimeAdjust`
Previous one-time STCF adjustment.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DAdjustS`, `$sc_$cpu_TIME_DAdjustSs`

Definition at line 258 of file default_cfe_time_msgdefs.h.

11.163.2.27 OneTimeDirection `int16` `CFE_TIME_DiagnosticTlm_Payload::OneTimeDirection`
One time STCF adjustment direction (Add = 1, Sub = 2)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DAdjustDir`

Definition at line 248 of file default_cfe_time_msgdefs.h.

11.163.2.28 ServerFlyState `int16` `CFE_TIME_DiagnosticTlm_Payload::ServerFlyState`
Used by clients only.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DSrvFly`

Definition at line 234 of file default_cfe_time_msgdefs.h.

11.163.2.29 TimeSinceTone `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::TimeSinceTone`
Time elapsed since the tone.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DElapsedS`, `$sc_$cpu_TIME_DElapsedSs`

Definition at line 212 of file default_cfe_time_msgdefs.h.

11.163.2.30 ToneDataCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::ToneDataCounter`
Time at the tone data SB message count.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DTatTCNT`

Definition at line 280 of file default_cfe_time_msgdefs.h.

11.163.2.31 ToneDataLatch `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::ToneDataLatch`
Local Clock latched at arrival of tone data.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DTDS`, `$sc_$cpu_TIME_DTDSs`

Definition at line 268 of file default_cfe_time_msgdefs.h.

11.163.2.32 ToneIntCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::ToneIntCounter`
Tone signal ISR execution count.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DTsISRCNT`

Definition at line 282 of file default_cfe_time_msgdefs.h.

11.163.2.33 ToneIntErrorCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::ToneIntErrorCounter`
Tone signal ISR error count.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DTsISRERR`

Definition at line 284 of file `default_cfe_time_msgdefs.h`.

11.163.2.34 ToneMatchCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::ToneMatchCounter`
Tone signal / data verification count.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DVerifyCNT`

Definition at line 274 of file `default_cfe_time_msgdefs.h`.

11.163.2.35 ToneMatchErrorCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::ToneMatchErrorCounter`
Tone signal / data verification error count.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DVerifyER`

Definition at line 276 of file `default_cfe_time_msgdefs.h`.

11.163.2.36 ToneOverLimit `uint32` `CFE_TIME_DiagnosticTlm_Payload::ToneOverLimit`
Max between tone signal interrupts.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DMaxSs`

Definition at line 324 of file `default_cfe_time_msgdefs.h`.

11.163.2.37 ToneSignalCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::ToneSignalCounter`
Tone signal detected SB message count.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DTSDetCNT`

Definition at line 278 of file `default_cfe_time_msgdefs.h`.

11.163.2.38 ToneSignalLatch `CFE_TIME_SysTime_t` `CFE_TIME_DiagnosticTlm_Payload::ToneSignalLatch`
Local Clock latched at most recent tone signal.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DTTS, $sc_$cpu_TIME_DTTSS`

Definition at line 266 of file `default_cfe_time_msgdefs.h`.

11.163.2.39 ToneTaskCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::ToneTaskCounter`
Tone task execution count.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DTsTaskCNT`

Definition at line 286 of file `default_cfe_time_msgdefs.h`.

11.163.2.40 ToneUnderLimit `uint32` `CFE_TIME_DiagnosticTlm_Payload::ToneUnderLimit`
Min between tone signal interrupts.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DMinSs`

Definition at line 326 of file `default_cfe_time_msgdefs.h`.

11.163.2.41 VersionCounter `uint32` `CFE_TIME_DiagnosticTlm_Payload::VersionCounter`
Count of mods to time at tone reference data (version)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DVersionCNT`

Definition at line 288 of file `default_cfe_time_msgdefs.h`.

11.163.2.42 VirtualMET `uint32` `CFE_TIME_DiagnosticTlm_Payload::VirtualMET`
Software MET.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_DLLogicalMET`

Definition at line 298 of file `default_cfe_time_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgdefs.h`

11.164 CFE_TIME_FakeToneCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- **CFE_MSG_CommandHeader_t CommandHeader**
Command header.

11.164.1 Detailed Description

Definition at line 71 of file `default_cfe_time_msgstruct.h`.

11.164.2 Field Documentation

11.164.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_TIME_FakeToneCmd::CommandHeader`
Command header.

Definition at line 73 of file `default_cfe_time_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgstruct.h`

11.165 CFE_TIME_HousekeepingTlm Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry header.
- `CFE_TIME_HousekeepingTlm_Payload_t Payload`
Telemetry payload.

11.165.1 Detailed Description

Definition at line 192 of file default_cfe_time_msgstruct.h.

11.165.2 Field Documentation**11.165.2.1 Payload** `CFE_TIME_HousekeepingTlm_Payload_t CFE_TIME_HousekeepingTlm::Payload`
Telemetry payload.

Definition at line 195 of file default_cfe_time_msgstruct.h.

11.165.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t CFE_TIME_HousekeepingTlm::TelemetryHeader`
Telemetry header.

Definition at line 194 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.166 CFE_TIME_HousekeepingTlm_Payload Struct Reference

```
#include <default_cfe_time_msgdefs.h>
```

Data Fields

- `uint8 CommandCounter`
Time Command Execution Counter.
- `uint8 CommandErrorCounter`
Time Command Error Counter.
- `uint16 ClockStateFlags`
State Flags.
- `CFE_TIME_ClockState_Enum_t ClockStateAPI`
API State.
- `int16 LeapSeconds`
Current Leaps Seconds.
- `uint32 SecondsMET`
Current MET (seconds)
- `uint32 SubsecsMET`
Current MET (sub-seconds)
- `uint32 SecondsSTCF`
Current STCF (seconds)
- `uint32 SubsecsSTCF`
Current STCF (sub-seconds)

- `uint32 Seconds1HzAdj`
Current 1 Hz SCTF adjustment (seconds)
- `uint32 Subsecs1HzAdj`
Current 1 Hz SCTF adjustment (sub-seconds)
- `uint32 SecondsDelay`
Current 1 Hz SCTF Delay (seconds)
- `uint32 SubsecsDelay`
Current 1 Hz SCTF Delay (sub-seconds)

11.166.1 Detailed Description

Name Time Services Housekeeping Packet

Definition at line 127 of file default_cfe_time_msgdefs.h.

11.166.2 Field Documentation

11.166.2.1 ClockStateAPI `CFE_TIME_ClockState_Enum_t CFE_TIME_HousekeepingTlm_Payload::ClockState`↔
API
API State.

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_DAPIState

Definition at line 142 of file default_cfe_time_msgdefs.h.

11.166.2.2 ClockStateFlags `uint16 CFE_TIME_HousekeepingTlm_Payload::ClockStateFlags`
State Flags.

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_StateFlg, \$sc_\$cpu_TIME_FlagSet, \$sc_\$cpu_TIME_FlagFly, \$sc_\$cpu↔
_TIME_FlagSrc, \$sc_\$cpu_TIME_FlagPri, \$sc_\$cpu_TIME_FlagSfly, \$sc_\$cpu_TIME↔
FlagCfly, \$sc_\$cpu_TIME_FlagAdjd, \$sc_\$cpu_TIME_Flag1Hzd, \$sc_\$cpu_TIME_FlagClat,
\$sc_\$cpu_TIME_FlagSorC, \$sc_\$cpu_TIME_FlagNIU

Definition at line 140 of file default_cfe_time_msgdefs.h.

11.166.2.3 CommandCounter `uint8 CFE_TIME_HousekeepingTlm_Payload::CommandCounter`
Time Command Execution Counter.

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_CMDPC

Definition at line 132 of file default_cfe_time_msgdefs.h.

11.166.2.4 CommandErrorCounter `uint8 CFE_TIME_HousekeepingTlm_Payload::CommandErrorCounter`
Time Command Error Counter.

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_CMDEC

Definition at line 134 of file default_cfe_time_msgdefs.h.

11.166.2.5 LeapSeconds `int16` `CFE_TIME_HousekeepingTlm_Payload::LeapSeconds`
Current Leaps Seconds.

Telemetry Mnemonic(s) `$sc_$cpu_TIME_LeapSecs`

Definition at line 148 of file default_cfe_time_msgdefs.h.

11.166.2.6 Seconds1HzAdj `uint32` `CFE_TIME_HousekeepingTlm_Payload::Seconds1HzAdj`
Current 1 Hz SCTF adjustment (seconds)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_1HzAdjSecs`

Definition at line 168 of file default_cfe_time_msgdefs.h.

11.166.2.7 SecondsDelay `uint32` `CFE_TIME_HousekeepingTlm_Payload::SecondsDelay`
Current 1 Hz SCTF Delay (seconds)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_1HzAdjSecs`

Definition at line 178 of file default_cfe_time_msgdefs.h.

11.166.2.8 SecondsMET `uint32` `CFE_TIME_HousekeepingTlm_Payload::SecondsMET`
Current MET (seconds)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_METSecs`

Definition at line 154 of file default_cfe_time_msgdefs.h.

11.166.2.9 SecondsSTCF `uint32` `CFE_TIME_HousekeepingTlm_Payload::SecondsSTCF`
Current STCF (seconds)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_STCFSecs`

Definition at line 159 of file default_cfe_time_msgdefs.h.

11.166.2.10 Subsecs1HzAdj `uint32` `CFE_TIME_HousekeepingTlm_Payload::Subsecs1HzAdj`
Current 1 Hz SCTF adjustment (sub-seconds)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_1HzAdjSSecs`

Definition at line 170 of file default_cfe_time_msgdefs.h.

11.166.2.11 SubsecsDelay `uint32` `CFE_TIME_HousekeepingTlm_Payload::SubsecsDelay`
Current 1 Hz SCTF Delay (sub-seconds)

Telemetry Mnemonic(s) `$sc_$cpu_TIME_1HzAdjSSecs`

Definition at line 180 of file default_cfe_time_msgdefs.h.

11.166.2.12 SubsecsMET `uint32 CFE_TIME_HousekeepingTlm_Payload::SubsecsMET`
Current MET (sub-seconds)

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_METSubsecs

Definition at line 156 of file default_cfe_time_msgdefs.h.

11.166.2.13 SubsecsSTCF `uint32 CFE_TIME_HousekeepingTlm_Payload::SubsecsSTCF`
Current STCF (sub-seconds)

Telemetry Mnemonic(s) \$sc_\$cpu_TIME_STCFSubsecs

Definition at line 161 of file default_cfe_time_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgdefs.h

11.167 CFE_TIME_LeapsCmd_Payload Struct Reference

Set leap seconds command payload.

```
#include <default_cfe_time_msgdefs.h>
```

Data Fields

- `int16 LeapSeconds`

11.167.1 Detailed Description

Set leap seconds command payload.

Definition at line 56 of file default_cfe_time_msgdefs.h.

11.167.2 Field Documentation

11.167.2.1 LeapSeconds `int16 CFE_TIME_LeapsCmd_Payload::LeapSeconds`

Definition at line 58 of file default_cfe_time_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgdefs.h

11.168 CFE_TIME_NoopCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`

Command header.

11.168.1 Detailed Description

Definition at line 46 of file default_cfe_time_msgstruct.h.

11.168.2 Field Documentation

11.168.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_TIME_NoopCmd::CommandHeader`
Command header.

Definition at line 48 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/time/config/default_cfe_time_msgstruct.h](#)

11.169 CFE_TIME_OneHzAdjustmentCmd_Payload Struct Reference

Generic seconds, subseconds command payload.

```
#include <default_cfe_time_msgdefs.h>
```

Data Fields

- `uint32 Seconds`
- `uint32 Subseconds`

11.169.1 Detailed Description

Generic seconds, subseconds command payload.

Definition at line 105 of file default_cfe_time_msgdefs.h.

11.169.2 Field Documentation

11.169.2.1 Seconds `uint32` `CFE_TIME_OneHzAdjustmentCmd_Payload::Seconds`

Definition at line 107 of file default_cfe_time_msgdefs.h.

11.169.2.2 Subseconds `uint32` `CFE_TIME_OneHzAdjustmentCmd_Payload::Subseconds`

Definition at line 108 of file default_cfe_time_msgdefs.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/time/config/default_cfe_time_msgdefs.h](#)

11.170 CFE_TIME_OneHzCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.

11.170.1 Detailed Description

Definition at line 61 of file default_cfe_time_msgstruct.h.

11.170.2 Field Documentation

11.170.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_OneHzCmd::CommandHeader
Command header.

Definition at line 63 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.171 CFE_TIME_ResetCountersCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.171.1 Detailed Description

Definition at line 51 of file default_cfe_time_msgstruct.h.

11.171.2 Field Documentation

11.171.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_ResetCountersCmd::CommandHeader
Command header.

Definition at line 53 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.172 CFE_TIME_SendDiagnosticCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.172.1 Detailed Description

Definition at line 56 of file default_cfe_time_msgstruct.h.

11.172.2 Field Documentation

11.172.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SendDiagnosticCmd::CommandHeader
Command header.

Definition at line 58 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.173 CFE_TIME_SendHkCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader

Command header.

11.173.1 Detailed Description

Definition at line 76 of file default_cfe_time_msgstruct.h.

11.173.2 Field Documentation

11.173.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SendHkCmd::CommandHeader

Command header.

Definition at line 78 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.174 CFE_TIME_SetLeapSecondsCmd Struct Reference

Set leap seconds command.

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader

Command header.

- [CFE_TIME_LeapsCmd_Payload_t](#) Payload

Command payload.

11.174.1 Detailed Description

Set leap seconds command.

Definition at line 84 of file default_cfe_time_msgstruct.h.

11.174.2 Field Documentation

11.174.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SetLeapSecondsCmd::CommandHeader

Command header.

Definition at line 86 of file default_cfe_time_msgstruct.h.

11.174.2.2 Payload [CFE_TIME_LeapsCmd_Payload_t](#) CFE_TIME_SetLeapSecondsCmd::Payload

Command payload.

Definition at line 87 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.175 CFE_TIME_SetMETCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_TimeCmd_Payload_t](#) Payload
Command payload.

11.175.1 Detailed Description

Definition at line 134 of file default_cfe_time_msgstruct.h.

11.175.2 Field Documentation

11.175.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SetMETCmd::CommandHeader

Command header.

Definition at line 136 of file default_cfe_time_msgstruct.h.

11.175.2.2 Payload [CFE_TIME_TimeCmd_Payload_t](#) CFE_TIME_SetMETCmd::Payload

Command payload.

Definition at line 137 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.176 CFE_TIME_SetSignalCmd Struct Reference

Set tone signal source command.

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_SignalCmd_Payload_t](#) Payload
Command payload.

11.176.1 Detailed Description

Set tone signal source command.

Definition at line 111 of file default_cfe_time_msgstruct.h.

11.176.2 Field Documentation

11.176.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SetSignalCmd::CommandHeader
Command header.
Definition at line 113 of file default_cfe_time_msgstruct.h.

11.176.2.2 Payload [CFE_TIME_SignalCmd_Payload_t](#) CFE_TIME_SetSignalCmd::Payload
Command payload.
Definition at line 114 of file default_cfe_time_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.177 CFE_TIME_SetSourceCmd Struct Reference

Set time data source command.

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_SourceCmd_Payload_t](#) Payload
Command payload.

11.177.1 Detailed Description

Set time data source command.

Definition at line 102 of file default_cfe_time_msgstruct.h.

11.177.2 Field Documentation

11.177.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SetSourceCmd::CommandHeader
Command header.
Definition at line 104 of file default_cfe_time_msgstruct.h.

11.177.2.2 Payload [CFE_TIME_SourceCmd_Payload_t](#) CFE_TIME_SetSourceCmd::Payload
Command payload.
Definition at line 105 of file default_cfe_time_msgstruct.h.
The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.178 CFE_TIME_SetStateCmd Struct Reference

Set clock state command.

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_StateCmd_Payload_t](#) Payload
Command payload.

11.178.1 Detailed Description

Set clock state command.

Definition at line 93 of file `default_cfe_time_msgstruct.h`.

11.178.2 Field Documentation**11.178.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SetStateCmd::CommandHeader**
Command header.

Definition at line 95 of file `default_cfe_time_msgstruct.h`.

11.178.2.2 Payload [CFE_TIME_StateCmd_Payload_t](#) CFE_TIME_SetStateCmd::Payload
Command payload.

Definition at line 96 of file `default_cfe_time_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgstruct.h`

11.179 CFE_TIME_SetSTCFCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_TimeCmd_Payload_t](#) Payload
Command payload.

11.179.1 Detailed Description

Definition at line 140 of file `default_cfe_time_msgstruct.h`.

11.179.2 Field Documentation**11.179.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SetSTCFCmd::CommandHeader**
Command header.

Definition at line 142 of file `default_cfe_time_msgstruct.h`.

11.179.2.2 Payload `CFE_TIME_TimeCmd_Payload_t` `CFE_TIME_SetSTCFCmd::Payload`
Command payload.

Definition at line 143 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgstruct.h`

11.180 CFE_TIME_SetTimeCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_TIME_TimeCmd_Payload_t Payload`
Command payload.

11.180.1 Detailed Description

Definition at line 158 of file default_cfe_time_msgstruct.h.

11.180.2 Field Documentation

11.180.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `CFE_TIME_SetTimeCmd::CommandHeader`
Command header.

Definition at line 160 of file default_cfe_time_msgstruct.h.

11.180.2.2 Payload `CFE_TIME_TimeCmd_Payload_t` `CFE_TIME_SetTimeCmd::Payload`
Command payload.

Definition at line 161 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgstruct.h`

11.181 CFE_TIME_SignalCmd_Payload Struct Reference

Set tone signal source command payload.

```
#include <default_cfe_time_msgdefs.h>
```

Data Fields

- `int16 ToneSource`
`CFE_TIME_ToneSignalSelect_PRIMARY`=Primary Source, `CFE_TIME_ToneSignalSelect_REDUNDANT`=Redundant Source

11.181.1 Detailed Description

Set tone signal source command payload.

Definition at line 86 of file default_cfe_time_msgdefs.h.

11.181.2 Field Documentation

11.181.2.1 ToneSource `int16 CFE_TIME_SignalCmd_Payload::ToneSource`
`CFE_TIME_ToneSignalSelect_PRIMARY`=Primary Source, `CFE_TIME_ToneSignalSelect_REDUNDANT`=Redundant Source

Selects either the "Primary" or "Redundant" tone signal source

Definition at line 88 of file `default_cfe_time_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgdefs.h`

11.182 CFE_TIME_SourceCmd_Payload Struct Reference

Set time data source command payload.

```
#include <default_cfe_time_msgdefs.h>
```

Data Fields

- `int16 TimeSource`
`CFE_TIME_SourceSelect_INTERNAL`=Internal Source, `CFE_TIME_SourceSelect_EXTERNAL`=External Source

11.182.1 Detailed Description

Set time data source command payload.

Definition at line 76 of file `default_cfe_time_msgdefs.h`.

11.182.2 Field Documentation

11.182.2.1 TimeSource `int16 CFE_TIME_SourceCmd_Payload::TimeSource`
`CFE_TIME_SourceSelect_INTERNAL`=Internal Source, `CFE_TIME_SourceSelect_EXTERNAL`=External Source

Selects either the "Internal" and "External" clock source

Definition at line 78 of file `default_cfe_time_msgdefs.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgdefs.h`

11.183 CFE_TIME_StateCmd_Payload Struct Reference

Set clock state command payload.

```
#include <default_cfe_time_msgdefs.h>
```

Data Fields

- `CFE_TIME_ClockState_Enum_t ClockState`
`CFE_TIME_ClockState_INVALID`=Spacecraft time has not been accurately set, `CFE_TIME_ClockState_VALID`=Spacecraft clock has been accurately set, `CFE_TIME_ClockState_FLYWHEEL`=Force into FLYWHEEL mode

11.183.1 Detailed Description

Set clock state command payload.

Definition at line 64 of file default_cfe_time_msgdefs.h.

11.183.2 Field Documentation

11.183.2.1 ClockState [CFE_TIME_ClockState_Enum_t](#) CFE_TIME_StateCmd_Payload::ClockState
[CFE_TIME_ClockState_INVALID](#)=Spacecraft time has not been accurately set, [CFE_TIME_ClockState_VALID](#)=Spacecraft clock has been accurately set, [CFE_TIME_ClockState_FLYWHEEL](#)=Force into FLYWHEEL mode

Selects the current clock state

Definition at line 66 of file default_cfe_time_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgdefs.h

11.184 CFE_TIME_SubAdjustCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_TimeCmd_Payload_t](#) Payload
Command payload.

11.184.1 Detailed Description

Definition at line 152 of file default_cfe_time_msgstruct.h.

11.184.2 Field Documentation

11.184.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SubAdjustCmd::CommandHeader
Command header.

Definition at line 154 of file default_cfe_time_msgstruct.h.

11.184.2.2 Payload [CFE_TIME_TimeCmd_Payload_t](#) CFE_TIME_SubAdjustCmd::Payload

Command payload.

Definition at line 155 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.185 CFE_TIME_SubDelayCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_TimeCmd_Payload_t](#) Payload
Command payload.

11.185.1 Detailed Description

Definition at line 128 of file default_cfe_time_msgstruct.h.

11.185.2 Field Documentation**11.185.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SubDelayCmd::CommandHeader**
Command header.

Definition at line 130 of file default_cfe_time_msgstruct.h.

11.185.2.2 Payload [CFE_TIME_TimeCmd_Payload_t](#) CFE_TIME_SubDelayCmd::Payload
Command payload.

Definition at line 131 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.186 CFE_TIME_SubOneHzAdjustmentCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [CFE_TIME_OneHzAdjustmentCmd_Payload_t](#) Payload
Command payload.

11.186.1 Detailed Description

Definition at line 175 of file default_cfe_time_msgstruct.h.

11.186.2 Field Documentation**11.186.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_SubOneHzAdjustmentCmd::CommandHeader**
Command header.

Definition at line 177 of file default_cfe_time_msgstruct.h.

11.186.2.2 Payload `CFE_TIME_OneHzAdjustmentCmd_Payload_t` `CFE_TIME_SubOneHzAdjustmentCmd::Payload`
Command payload.

Definition at line 178 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/time/config/default_cfe_time_msgstruct.h](#)

11.187 CFE_TIME_SysTime Struct Reference

Data structure used to hold system time values.

```
#include <default_cfe_time_extern_typedefs.h>
```

Data Fields

- `uint32 Seconds`
Number of seconds since epoch.
- `uint32 Subseconds`
Number of subseconds since epoch (LSB = 2^{-32} seconds)

11.187.1 Detailed Description

Data structure used to hold system time values.

Description

The `CFE_TIME_SysTime_t` data structure is used to hold time values. Time is referred to as the elapsed time (in seconds and subseconds) since a specified epoch time. The subseconds field contains the number of 2^{-32} second intervals that have elapsed since the epoch.

Definition at line 41 of file default_cfe_time_extern_typedefs.h.

11.187.2 Field Documentation

11.187.2.1 Seconds `uint32 CFE_TIME_SysTime::Seconds`

Number of seconds since epoch.

Definition at line 43 of file default_cfe_time_extern_typedefs.h.

11.187.2.2 Subseconds `uint32 CFE_TIME_SysTime::Subseconds`

Number of subseconds since epoch (LSB = 2^{-32} seconds)

Definition at line 44 of file default_cfe_time_extern_typedefs.h.

The documentation for this struct was generated from the following file:

- [cfe/modules/time/config/default_cfe_time_extern_typedefs.h](#)

11.188 CFE_TIME_TimeCmd_Payload Struct Reference

Generic seconds, microseconds command payload.

```
#include <default_cfe_time_msgdefs.h>
```

Data Fields

- `uint32 Seconds`
- `uint32 MicroSeconds`

11.188.1 Detailed Description

Generic seconds, microseconds command payload.
Definition at line 96 of file default_cfe_time_msgdefs.h.

11.188.2 Field Documentation

11.188.2.1 MicroSeconds `uint32 CFE_TIME_TimeCmd_Payload::MicroSeconds`

Definition at line 99 of file default_cfe_time_msgdefs.h.

11.188.2.2 Seconds `uint32 CFE_TIME_TimeCmd_Payload::Seconds`

Definition at line 98 of file default_cfe_time_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgdefs.h

11.189 CFE_TIME_ToneDataCmd Struct Reference

Time at tone data command.

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `CFE_TIME_ToneDataCmd_Payload_t Payload`
Command payload.

11.189.1 Detailed Description

Time at tone data command.

Definition at line 184 of file default_cfe_time_msgstruct.h.

11.189.2 Field Documentation

11.189.2.1 CommandHeader `CFE_MSG_CommandHeader_t CFE_TIME_ToneDataCmd::CommandHeader`

Command header.

Definition at line 186 of file default_cfe_time_msgstruct.h.

11.189.2.2 Payload `CFE_TIME_ToneDataCmd_Payload_t CFE_TIME_ToneDataCmd::Payload`

Command payload.

Definition at line 187 of file default_cfe_time_msgstruct.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgstruct.h

11.190 CFE_TIME_ToneDataCmd_Payload Struct Reference

Time at tone data command payload.

```
#include <default_cfe_time_msgdefs.h>
```

Data Fields

- **CFE_TIME_SysTime_t AtToneMET**
MET at time of tone.
- **CFE_TIME_SysTime_t AtToneSTCF**
STCF at time of tone.
- **int16 AtToneLeapSeconds**
Leap Seconds at time of tone.
- **CFE_TIME_ClockState_Enum_t AtToneState**
Clock state at time of tone.

11.190.1 Detailed Description

Time at tone data command payload.

Definition at line 114 of file default_cfe_time_msgdefs.h.

11.190.2 Field Documentation

11.190.2.1 AtToneLeapSeconds `int16 CFE_TIME_ToneDataCmd_Payload::AtToneLeapSeconds`

Leap Seconds at time of tone.

Definition at line 118 of file default_cfe_time_msgdefs.h.

11.190.2.2 AtToneMET `CFE_TIME_SysTime_t CFE_TIME_ToneDataCmd_Payload::AtToneMET`

MET at time of tone.

Definition at line 116 of file default_cfe_time_msgdefs.h.

11.190.2.3 AtToneState `CFE_TIME_ClockState_Enum_t CFE_TIME_ToneDataCmd_Payload::AtToneState`

Clock state at time of tone.

Definition at line 119 of file default_cfe_time_msgdefs.h.

11.190.2.4 AtToneSTCF `CFE_TIME_SysTime_t CFE_TIME_ToneDataCmd_Payload::AtToneSTCF`

STCF at time of tone.

Definition at line 117 of file default_cfe_time_msgdefs.h.

The documentation for this struct was generated from the following file:

- cfe/modules/time/config/default_cfe_time_msgdefs.h

11.191 CFE_TIME_ToneSignalCmd Struct Reference

```
#include <default_cfe_time_msgstruct.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.191.1 Detailed Description

Definition at line 66 of file `default_cfe_time_msgstruct.h`.

11.191.2 Field Documentation**11.191.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) CFE_TIME_ToneSignalCmd::CommandHeader**
Command header.

Definition at line 68 of file `default_cfe_time_msgstruct.h`.

The documentation for this struct was generated from the following file:

- `cfe/modules/time/config/default_cfe_time_msgstruct.h`

11.192 FM_ChildQueueEntry_t Struct Reference

Child Task Interface command queue entry structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_FcnCode_t](#) CommandCode
Command code - identifies the command.
- [uint16](#) Padding1
Structure padding to align to 32-bit boundaries.
- [uint32](#) DirListOffset
Starting entry for dir list commands.
- [uint32](#) FileInfoState
File info state.
- [uint32](#) FileInfoSize
File info size.
- [uint32](#) FileInfoTime
File info time.
- [uint32](#) FileInfoCRC
File info CRC method.
- [char](#) Source1 [[OS_MAX_PATH_LEN](#)]
First source file or directory name command argument.
- [char](#) Source2 [[OS_MAX_PATH_LEN](#)]
Second source filename command argument.
- [char](#) Target [[OS_MAX_PATH_LEN](#)]
Target filename command argument.
- [uint8](#) GetSizeTimeMode
Whether to invoke stat call for size and time (CPU intensive)
- [uint8](#) Padding2 [3]
Structure padding to align to 32-bit boundaries.
- [uint32](#) Mode
File Mode.

11.192.1 Detailed Description

Child Task Interface command queue entry structure.
Definition at line 657 of file fm_msg.h.

11.192.2 Field Documentation

11.192.2.1 CommandCode `CFE_MSG_FcnCode_t` `FM_ChildQueueEntry_t::CommandCode`

Command code - identifies the command.

Definition at line 659 of file fm_msg.h.

Referenced by `FM_ChildConcatFilesCmd()`, `FM_ChildCopyCmd()`, `FM_ChildCreateDirectoryCmd()`, `FM_ChildDecompressFileCmd()`, `FM_ChildDeleteAllFilesCmd()`, `FM_ChildDeleteCmd()`, `FM_ChildDeleteDirectoryCmd()`, `FM_ChildDirListFileCmd()`, `FM_ChildDirListPktCmd()`, `FM_ChildFileInfoCmd()`, `FM_ChildMoveCmd()`, `FM_ChildProcess()`, `FM_ChildRenameCmd()`, `FM_ChildSetPermissionsCmd()`, `FM_ConcatFilesCmd()`, `FM_CopyFileCmd()`, `FM_CreateDirectoryCmd()`, `FM_DecompressFileCmd()`, `FM_DeleteAllFilesCmd()`, `FM_DeleteDirectoryCmd()`, `FM_DeleteFileCmd()`, `FM_GetDirListFileCmd()`, `FM_GetDirListPktCmd()`, `FM_GetFileInfoCmd()`, `FM_MoveFileCmd()`, `FM_RenameFileCmd()`, and `FM_SetPermissionsCmd()`.

11.192.2.2 DirListOffset `uint32` `FM_ChildQueueEntry_t::DirListOffset`

Starting entry for dir list commands.

Definition at line 661 of file fm_msg.h.

Referenced by `FM_ChildDirListPktCmd()`, and `FM_GetDirListPktCmd()`.

11.192.2.3 FileInfoCRC `uint32` `FM_ChildQueueEntry_t::FileInfoCRC`

File info CRC method.

Definition at line 665 of file fm_msg.h.

Referenced by `FM_ChildFileInfoCmd()`, and `FM_GetFileInfoCmd()`.

11.192.2.4 FileInfoSize `uint32` `FM_ChildQueueEntry_t::FileInfoSize`

File info size.

Definition at line 663 of file fm_msg.h.

Referenced by `FM_ChildFileInfoCmd()`, and `FM_GetFileInfoCmd()`.

11.192.2.5 FileInfoState `uint32` `FM_ChildQueueEntry_t::FileInfoState`

File info state.

Definition at line 662 of file fm_msg.h.

Referenced by `FM_ChildFileInfoCmd()`, and `FM_GetFileInfoCmd()`.

11.192.2.6 FileInfoTime `uint32` `FM_ChildQueueEntry_t::FileInfoTime`

File info time.

Definition at line 664 of file fm_msg.h.

Referenced by `FM_ChildFileInfoCmd()`, and `FM_GetFileInfoCmd()`.

11.192.2.7 GetSizeTimeMode `uint8 FM_ChildQueueEntry_t::GetSizeTimeMode`

Whether to invoke stat call for size and time (CPU intensive)

Definition at line 669 of file fm_msg.h.

Referenced by FM_ChildDirListFileCmd(), FM_ChildDirListPktCmd(), FM_GetDirListFileCmd(), and FM_GetDirListPktCmd().

11.192.2.8 Mode `uint32 FM_ChildQueueEntry_t::Mode`

File Mode.

Definition at line 671 of file fm_msg.h.

Referenced by FM_ChildFileInfoCmd(), FM_ChildSetPermissionsCmd(), FM_GetFileInfoCmd(), and FM_SetPermissionsCmd().

11.192.2.9 Padding1 `uint16 FM_ChildQueueEntry_t::Padding1`

Structure padding to align to 32-bit boundaries.

Definition at line 660 of file fm_msg.h.

11.192.2.10 Padding2 `uint8 FM_ChildQueueEntry_t::Padding2[3]`

Structure padding to align to 32-bit boundaries.

Definition at line 670 of file fm_msg.h.

11.192.2.11 Source1 `char FM_ChildQueueEntry_t::Source1[OS_MAX_PATH_LEN]`

First source file or directory name command argument.

Definition at line 666 of file fm_msg.h.

Referenced by FM_ChildConcatFilesCmd(), FM_ChildCopyCmd(), FM_ChildCreateDirectoryCmd(), FM_ChildDecompressFileCmd(), FM_ChildDeleteAllFilesCmd(), FM_ChildDeleteCmd(), FM_ChildDeleteDirectoryCmd(), FM_ChildDirListFileCmd(), FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_ChildMoveCmd(), FM_ChildRenameCmd(), FM_ChildSetPermissionsCmd(), FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_CreateDirectoryCmd(), FM_DecompressFileCmd(), FM_DeleteAllFilesCmd(), FM_DeleteDirectoryCmd(), FM_DeleteFileCmd(), FM_GetDirListFileCmd(), FM_GetDirListPktCmd(), FM_GetFileInfoCmd(), FM_MoveFileCmd(), FM_RenameFileCmd(), and FM_SetPermissionsCmd().

11.192.2.12 Source2 `char FM_ChildQueueEntry_t::Source2[OS_MAX_PATH_LEN]`

Second source filename command argument.

Definition at line 667 of file fm_msg.h.

Referenced by FM_ChildConcatFilesCmd(), FM_ChildDeleteAllFilesCmd(), FM_ChildDirListFileCmd(), FM_ChildDirListPktCmd(), FM_ConcatFilesCmd(), FM_DeleteAllFilesCmd(), FM_GetDirListFileCmd(), and FM_GetDirListPktCmd().

11.192.2.13 Target `char FM_ChildQueueEntry_t::Target[OS_MAX_PATH_LEN]`

Target filename command argument.

Definition at line 668 of file fm_msg.h.

Referenced by FM_ChildConcatFilesCmd(), FM_ChildCopyCmd(), FM_ChildDecompressFileCmd(), FM_ChildDirListFileCmd(), FM_ChildMoveCmd(), FM_ChildRenameCmd(), FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_DecompressFileCmd(), FM_GetDirListFileCmd(), FM_MoveFileCmd(), and FM_RenameFileCmd().

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.193 FM_ConcatFilesCmd_t Struct Reference

Concatenate Files command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_TwoSourceOneTarget_Payload_t](#) Payload
Command Payload.

11.193.1 Detailed Description

Concatenate Files command packet structure.

For command details see [FM_CONCAT_FILES_CC](#)

Definition at line 204 of file fm_msg.h.

11.193.2 Field Documentation

11.193.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_ConcatFilesCmd_t::CommandHeader

Command header.

Definition at line 206 of file fm_msg.h.

11.193.2.2 Payload [FM_TwoSourceOneTarget_Payload_t](#) FM_ConcatFilesCmd_t::Payload

Command Payload.

Definition at line 208 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.194 FM_CopyFileCmd_t Struct Reference

Copy File command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_OvwSourceTargetFilename_Payload_t](#) Payload
Command payload.

11.194.1 Detailed Description

Copy File command packet structure.

For command details see [FM_COPY_FILE_CC](#)

Definition at line 89 of file fm_msg.h.

11.194.2 Field Documentation

11.194.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_CopyFileCmd_t::CommandHeader
Command header.
Definition at line 91 of file fm_msg.h.

11.194.2.2 Payload [FM_OvwSourceTargetFilename_Payload_t](#) FM_CopyFileCmd_t::Payload
Command payload.
Definition at line 93 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.195 FM_CreateDirectoryCmd_t Struct Reference

Create Directory command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)
Command header.
- [FM_DirectoryName_Payload_t Payload](#)
Command Payload.

11.195.1 Detailed Description

Create Directory command packet structure.

For command details see [FM_CREATE_DIRECTORY_CC](#)

Definition at line 249 of file fm_msg.h.

11.195.2 Field Documentation

11.195.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_CreateDirectoryCmd_t::CommandHeader
Command header.
Definition at line 251 of file fm_msg.h.

11.195.2.2 Payload [FM_DirectoryName_Payload_t](#) FM_CreateDirectoryCmd_t::Payload
Command Payload.
Definition at line 253 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.196 FM_DecompressFileCmd_t Struct Reference

Decompress File command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_SourceTargetFileName_Payload_t](#) Payload
Command Payload.

11.196.1 Detailed Description

Decompress File command packet structure.
For command details see [FM_DECOMPRESS_FILE_CC](#)
Definition at line 180 of file fm_msg.h.

11.196.2 Field Documentation

11.196.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_DecompressFileCmd_t::CommandHeader
Command header.
Definition at line 182 of file fm_msg.h.

11.196.2.2 Payload [FM_SourceTargetFileName_Payload_t](#) FM_DecompressFileCmd_t::Payload
Command Payload.
Definition at line 184 of file fm_msg.h.
The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.197 FM_Decompressor_State Struct Reference

The state object for a compressor.

Data Fields

- [FS_LIB_Decompress_State_t](#) LibState

11.197.1 Detailed Description

The state object for a compressor.
This is a wrapper around the object defined in CFS FS Lib
Definition at line 41 of file fm_compression_fslib.c.

11.197.2 Field Documentation

11.197.2.1 LibState [FS_LIB_Decompress_State_t](#) FM_Decompressor_State::LibState
Definition at line 43 of file fm_compression_fslib.c.
Referenced by [FM_Decompress_Impl\(\)](#).
The documentation for this struct was generated from the following file:

- [apps/fm/fsw/src/fm_compression_fslib.c](#)

11.198 FM_DeleteAllFilesCmd_t Struct Reference

Delete All command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_DirectoryName_Payload_t](#) Payload
Command Payload.

11.198.1 Detailed Description

Delete All command packet structure.

For command details see [FM_DELETE_ALL_FILES_CC](#)

Definition at line 168 of file fm_msg.h.

11.198.2 Field Documentation

11.198.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_DeleteAllFilesCmd_t::CommandHeader

Command header.

Definition at line 170 of file fm_msg.h.

11.198.2.2 Payload [FM_DirectoryName_Payload_t](#) FM_DeleteAllFilesCmd_t::Payload

Command Payload.

Definition at line 172 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.199 FM_DeleteDirectoryCmd_t Struct Reference

Delete Directory command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_DirectoryName_Payload_t](#) Payload
Command Payload.

11.199.1 Detailed Description

Delete Directory command packet structure.

For command details see [FM_DELETE_DIRECTORY_CC](#)

Definition at line 261 of file fm_msg.h.

11.199.2 Field Documentation

11.199.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_DeleteDirectoryCmd_t::CommandHeader
Command header.
Definition at line 263 of file fm_msg.h.

11.199.2.2 Payload [FM_DirectoryName_Payload_t](#) FM_DeleteDirectoryCmd_t::Payload
Command Payload.
Definition at line 265 of file fm_msg.h.
The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.200 FM_DeleteFileCmd_t Struct Reference

Delete File command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_SingleFilename_Payload_t](#) Payload
Command Payload.

11.200.1 Detailed Description

Delete File command packet structure.

For command details see [FM_DELETE_FILE_CC](#)

Definition at line 146 of file fm_msg.h.

11.200.2 Field Documentation

11.200.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_DeleteFileCmd_t::CommandHeader
Command header.
Definition at line 148 of file fm_msg.h.

11.200.2.2 Payload [FM_SingleFilename_Payload_t](#) FM_DeleteFileCmd_t::Payload
Command Payload.
Definition at line 150 of file fm_msg.h.
The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.201 FM_DirectoryName_Payload_t Struct Reference

Single directory command payload structure.

```
#include <fm_msg.h>
```

Data Fields

- char Directory [[OS_MAX_PATH_LEN](#)]
Directory name.

11.201.1 Detailed Description

Single directory command payload structure.

Used by [FM_DELETE_ALL_FILES_CC](#), [FM_CREATE_DIRECTORY_CC](#), [FM_DELETE_DIRECTORY_CC](#)

Definition at line 158 of file fm_msg.h.

11.201.2 Field Documentation

11.201.2.1 Directory `char FM_DirectoryName_Payload_t::Directory[OS_MAX_PATH_LEN]`

Directory name.

Definition at line 160 of file fm_msg.h.

Referenced by [FM_CreateDirectoryCmd\(\)](#), [FM_DeleteAllFilesCmd\(\)](#), and [FM_DeleteDirectoryCmd\(\)](#).

The documentation for this struct was generated from the following file:

- [apps/fmw/inc/fm_msg.h](#)

11.202 FM_DirListEntry_t Struct Reference

Get Directory Listing entry structure.

```
#include <fm_msg.h>
```

Data Fields

- `char EntryName [OS_MAX_PATH_LEN]`
Directory Listing Filename.
- `uint32 EntrySize`
Directory Listing File Size.
- `uint32 ModifyTime`
Directory Listing File Last Modification Times.
- `uint32 Mode`
Mode of the file (Permissions from OS_FILESTAT_MODE)

11.202.1 Detailed Description

Get Directory Listing entry structure.

Definition at line 392 of file fm_msg.h.

11.202.2 Field Documentation

11.202.2.1 EntryName `char FM_DirListEntry_t::EntryName[OS_MAX_PATH_LEN]`

Directory Listing Filename.

Definition at line 394 of file fm_msg.h.

Referenced by [FM_ChildDirListFileLoop\(\)](#), and [FM_ChildDirListPktCmd\(\)](#).

11.202.2.2 EntrySize `uint32 FM_DirListEntry_t::EntrySize`

Directory Listing File Size.

Definition at line 395 of file fm_msg.h.

Referenced by [FM_ChildSleepStat\(\)](#).

11.202.2.3 Mode `uint32` `FM_DirListEntry_t::Mode`
Mode of the file (Permissions from `OS_FILESTAT_MODE`)
Definition at line 397 of file fm_msg.h.
Referenced by `FM_ChildSleepStat()`.

11.202.2.4 ModifyTime `uint32` `FM_DirListEntry_t::ModifyTime`
Directory Listing File Last Modification Times.
Definition at line 396 of file fm_msg.h.
Referenced by `FM_ChildSleepStat()`.
The documentation for this struct was generated from the following file:

- `apps/fmw/inc/fm_msg.h`

11.203 FM_DirListFileStats_t Struct Reference

Get Directory Listing file statistics structure.

```
#include <fm_msg.h>
```

Data Fields

- `char DirName [OS_MAX_PATH_LEN]`
Directory name.
- `uint32 DirEntries`
Number of entries in the directory.
- `uint32 FileEntries`
Number of entries written to output file.

11.203.1 Detailed Description

Get Directory Listing file statistics structure.

Definition at line 431 of file fm_msg.h.

11.203.2 Field Documentation

11.203.2.1 DirEntries `uint32` `FM_DirListFileStats_t::DirEntries`
Number of entries in the directory.
Definition at line 434 of file fm_msg.h.
Referenced by `FM_ChildDirListFileLoop()`.

11.203.2.2 DirName `char` `FM_DirListFileStats_t::DirName[OS_MAX_PATH_LEN]`
Directory name.
Definition at line 433 of file fm_msg.h.
Referenced by `FM_ChildDirListFileInit()`.

11.203.2.3 FileEntries `uint32` `FM_DirListFileStats_t::FileEntries`

Number of entries written to output file.

Definition at line 435 of file fm_msg.h.

Referenced by FM_ChildDirListFileLoop().

The documentation for this struct was generated from the following file:

- `apps/fmw/inc/fm_msg.h`

11.204 FM_DirListPkt_Payload_t Struct Reference

Get Directory Listing telemetry payload.

```
#include <fm_msg.h>
```

Data Fields

- `char DirName [OS_MAX_PATH_LEN]`
Directory Name.
- `uint32 TotalFiles`
Number of files in the directory.
- `uint32 PacketFiles`
Number of files in this packet.
- `uint32 FirstFile`
Index into directory files of first packet file.
- `FM_DirListEntry_t FileList [FM_DIR_LIST_PKT_ENTRIES]`
Directory listing file data.

11.204.1 Detailed Description

Get Directory Listing telemetry payload.

Definition at line 403 of file fm_msg.h.

11.204.2 Field Documentation**11.204.2.1 DirName** `char` `FM_DirListPkt_Payload_t::DirName[OS_MAX_PATH_LEN]`

Directory Name.

Definition at line 405 of file fm_msg.h.

Referenced by FM_ChildDirListPktCmd().

11.204.2.2 FileList `FM_DirListEntry_t` `FM_DirListPkt_Payload_t::FileList[FM_DIR_LIST_PKT_ENTRIES]`

Directory listing file data.

Definition at line 409 of file fm_msg.h.

Referenced by FM_ChildDirListPktCmd().

11.204.2.3 FirstFile `uint32` `FM_DirListPkt_Payload_t::FirstFile`

Index into directory files of first packet file.

Definition at line 408 of file fm_msg.h.

Referenced by FM_ChildDirListPktCmd().

11.204.2.4 PacketFiles `uint32` `FM_DirListPkt_Payload_t::PacketFiles`

Number of files in this packet.

Definition at line 407 of file fm_msg.h.

Referenced by FM_ChildDirListPktCmd().

11.204.2.5 TotalFiles `uint32` `FM_DirListPkt_Payload_t::TotalFiles`

Number of files in the directory.

Definition at line 406 of file fm_msg.h.

Referenced by FM_ChildDirListPktCmd().

The documentation for this struct was generated from the following file:

- `apps/fmw/inc/fm_msg.h`

11.205 FM_DirListPkt_t Struct Reference

Get Directory Listing telemetry packet.

```
#include <fm_msg.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry Header.
- `FM_DirListPkt_Payload_t Payload`
Telemetry Payload.

11.205.1 Detailed Description

Get Directory Listing telemetry packet.

Definition at line 415 of file fm_msg.h.

11.205.2 Field Documentation**11.205.2.1 Payload** `FM_DirListPkt_Payload_t` `FM_DirListPkt_t::Payload`

Telemetry Payload.

Definition at line 419 of file fm_msg.h.

Referenced by FM_ChildDirListPktCmd().

11.205.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `FM_DirListPkt_t::TelemetryHeader`

Telemetry Header.

Definition at line 417 of file fm_msg.h.

Referenced by FM_ChildDirListPktCmd().

The documentation for this struct was generated from the following file:

- `apps/fmw/inc/fm_msg.h`

11.206 FM_FileInfoPkt_Payload_t Struct Reference

Get File Info telemetry payload.

```
#include <fm_msg.h>
```

Data Fields

- **uint8 FileStatus**
Status indicating whether the file is open or closed.
- **uint8 CRC_Computed**
Flag indicating whether a CRC was computed or not.
- **uint8 Spare [2]**
Structure padding.
- **uint32 CRC**
CRC value if computed.
- **uint32 FileSize**
File Size.
- **uint32 LastModifiedTime**
Last Modification Time of File.
- **uint32 Mode**
Mode of the file (Permissions)
- **char Filename [OS_MAX_PATH_LEN]**
Name of File.

11.206.1 Detailed Description

Get File Info telemetry payload.
Definition at line 447 of file fm_msg.h.

11.206.2 Field Documentation

11.206.2.1 CRC `uint32 FM_FileInfoPkt_Payload_t::CRC`

CRC value if computed.
Definition at line 452 of file fm_msg.h.
Referenced by FM_ChildFileInfoCmd().

11.206.2.2 CRC_Computed `uint8 FM_FileInfoPkt_Payload_t::CRC_Computed`

Flag indicating whether a CRC was computed or not.
Definition at line 450 of file fm_msg.h.
Referenced by FM_ChildFileInfoCmd().

11.206.2.3 Filename `char FM_FileInfoPkt_Payload_t::Filename[OS_MAX_PATH_LEN]`

Name of File.
Definition at line 456 of file fm_msg.h.
Referenced by FM_ChildFileInfoCmd().

11.206.2.4 FileSize `uint32 FM_FileInfoPkt_Payload_t::FileSize`

File Size.
Definition at line 453 of file fm_msg.h.
Referenced by FM_ChildFileInfoCmd().

11.206.2.5 FileStatus `uint8` `FM_FileInfoPkt_Payload_t::FileStatus`

Status indicating whether the file is open or closed.

Definition at line 449 of file fm_msg.h.

Referenced by FM_ChildFileInfoCmd().

11.206.2.6 LastModifiedTime `uint32` `FM_FileInfoPkt_Payload_t::LastModifiedTime`

Last Modification Time of File.

Definition at line 454 of file fm_msg.h.

Referenced by FM_ChildFileInfoCmd().

11.206.2.7 Mode `uint32` `FM_FileInfoPkt_Payload_t::Mode`

Mode of the file (Permissions)

Definition at line 455 of file fm_msg.h.

Referenced by FM_ChildFileInfoCmd().

11.206.2.8 Spare `uint8` `FM_FileInfoPkt_Payload_t::Spare[2]`

Structure padding.

Definition at line 451 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.207 FM_FileInfoPkt_t Struct Reference

Get File Info telemetry packet.

```
#include <fm_msg.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry Header.
- `FM_FileInfoPkt_Payload_t Payload`
Telemetry Payload.

11.207.1 Detailed Description

Get File Info telemetry packet.

Definition at line 462 of file fm_msg.h.

11.207.2 Field Documentation

11.207.2.1 Payload `FM_FileInfoPkt_Payload_t` `FM_FileInfoPkt_t::Payload`

Telemetry Payload.

Definition at line 466 of file fm_msg.h.

Referenced by FM_ChildFileInfoCmd().

11.207.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `FM_FileInfoPkt_t::TelemetryHeader`
Telemetry Header.

Definition at line 464 of file fm_msg.h.

Referenced by FM_ChildFileInfoCmd().

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.208 FM_FilenameAndCRC_Payload_t Struct Reference

Filename and CRC command payload structure.

```
#include <fm_msg.h>
```

Data Fields

- `char Filename [OS_MAX_PATH_LEN]`
Filename.
- `uint32 FileInfoCRC`
File info CRC method.

11.208.1 Detailed Description

Filename and CRC command payload structure.

Used by `FM_GET_FILE_INFO_CC`

Definition at line 216 of file fm_msg.h.

11.208.2 Field Documentation

11.208.2.1 FileInfoCRC `uint32 FM_FilenameAndCRC_Payload_t::FileInfoCRC`

File info CRC method.

Definition at line 219 of file fm_msg.h.

Referenced by FM_GetFileInfoCmd().

11.208.2.2 Filename `char FM_FilenameAndCRC_Payload_t::Filename [OS_MAX_PATH_LEN]`

Filename.

Definition at line 218 of file fm_msg.h.

Referenced by FM_GetFileInfoCmd().

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.209 FM_FilenameAndMode_Payload_t Struct Reference

File name and mode command payload structure.

```
#include <fm_msg.h>
```

Data Fields

- `char FileName [OS_MAX_PATH_LEN]`
File name of the permissions to set.
- `uint32 Mode`
Permissions, passed directly to OS_chmod.

11.209.1 Detailed Description

File name and mode command payload structure.

Used by [FM_SET_PERMISSIONS_CC](#)

Definition at line 358 of file fm_msg.h.

11.209.2 Field Documentation

11.209.2.1 FileName `char FM_FilenameAndMode_Payload_t::FileName[OS_MAX_PATH_LEN]`

File name of the permissions to set.

Definition at line 360 of file fm_msg.h.

Referenced by [FM_SetPermissionsCmd\(\)](#).

11.209.2.2 Mode `uint32 FM_FilenameAndMode_Payload_t::Mode`

Permissions, passed directly to OS_chmod.

Definition at line 361 of file fm_msg.h.

Referenced by [FM_SetPermissionsCmd\(\)](#).

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.210 FM_GetDirectoryToFile_Payload_t Struct Reference

Get Directory and output to file command payload.

```
#include <fm_msg.h>
```

Data Fields

- `char Directory [OS_MAX_PATH_LEN]`
Directory name.
- `char Filename [OS_MAX_PATH_LEN]`
Filenname.
- `uint8 GetSizeTimeMode`
Option to query size, time, and mode of files (CPU intensive)
- `uint8 Spare01 [3]`
Padding to 32 bit boundary.

11.210.1 Detailed Description

Get Directory and output to file command payload.

Contains a directory and output file name, with optional flags Used by [FM_GET_DIR_LIST_FILE_CC](#)

Definition at line 274 of file fm_msg.h.

11.210.2 Field Documentation

11.210.2.1 Directory `char FM_GetDirectoryToFile_Payload_t::Directory[OS_MAX_PATH_LEN]`

Directory name.

Definition at line 276 of file fm_msg.h.

Referenced by [FM_GetDirListFileCmd\(\)](#).

11.210.2.2 Filename `char FM_GetDirectoryToFile_Payload_t::Filename[OS_MAX_PATH_LEN]`
Filename.
Definition at line 277 of file fm_msg.h.
Referenced by FM_GetDirListFileCmd().

11.210.2.3 GetSizeTimeMode `uint8 FM_GetDirectoryToFile_Payload_t::GetSizeTimeMode`
Option to query size, time, and mode of files (CPU intensive)
Definition at line 278 of file fm_msg.h.
Referenced by FM_GetDirListFileCmd().

11.210.2.4 Spare01 `uint8 FM_GetDirectoryToFile_Payload_t::Spare01[3]`
Padding to 32 bit boundary.
Definition at line 279 of file fm_msg.h.
The documentation for this struct was generated from the following file:

- `apps/fmw/inc/fm_msg.h`

11.211 FM_GetDirectoryToPkt_Payload_t Struct Reference

Get Directory and output to message command payload.

```
#include <fm_msg.h>
```

Data Fields

- `char Directory[OS_MAX_PATH_LEN]`
Directory name.
- `uint32 DirListOffset`
Index of 1st dir entry to put in packet.
- `uint8 GetSizeTimeMode`
Option to query size, time, and mode of files (CPU intensive)
- `uint8 Spare01[3]`
Padding to 32 bit boundary.

11.211.1 Detailed Description

Get Directory and output to message command payload.
Contains a directory and position offset, with optional flags Used by FM_GET_DIR_LIST_PKT_CC
Definition at line 300 of file fm_msg.h.

11.211.2 Field Documentation

11.211.2.1 Directory `char FM_GetDirectoryToPkt_Payload_t::Directory[OS_MAX_PATH_LEN]`
Directory name.
Definition at line 302 of file fm_msg.h.
Referenced by FM_GetDirListPktCmd().

11.211.2.2 DirListOffset `uint32` `FM_GetDirectoryToPkt_Payload_t::DirListOffset`
Index of 1st dir entry to put in packet.
Definition at line 303 of file fm_msg.h.
Referenced by `FM_GetDirListPktCmd()`.

11.211.2.3 GetSizeTimeMode `uint8` `FM_GetDirectoryToPkt_Payload_t::GetSizeTimeMode`
Option to query size, time, and mode of files (CPU intensive)
Definition at line 304 of file fm_msg.h.
Referenced by `FM_GetDirListPktCmd()`.

11.211.2.4 Spare01 `uint8` `FM_GetDirectoryToPkt_Payload_t::Spare01[3]`
Padding to 32 bit boundary.
Definition at line 305 of file fm_msg.h.
The documentation for this struct was generated from the following file:

- `apps/fmw/inc/fm_msg.h`

11.212 FM_GetDirListFileCmd_t Struct Reference

Get DIR List to File command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `FM_GetDirectoryToFile_Payload_t Payload`
Command Payload.

11.212.1 Detailed Description

Get DIR List to File command packet structure.

For command details see [FM_GET_DIR_LIST_FILE_CC](#)

Definition at line 287 of file fm_msg.h.

11.212.2 Field Documentation

11.212.2.1 CommandHeader `CFE_MSG_CommandHeader_t` `FM_GetDirListFileCmd_t::CommandHeader`
Command header.
Definition at line 289 of file fm_msg.h.

11.212.2.2 Payload `FM_GetDirectoryToFile_Payload_t` `FM_GetDirListFileCmd_t::Payload`
Command Payload.
Definition at line 291 of file fm_msg.h.
The documentation for this struct was generated from the following file:

- `apps/fmw/inc/fm_msg.h`

11.213 FM_GetDirListPktCmd_t Struct Reference

Get DIR List to Packet command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_GetDirectoryToPkt_Payload_t](#) Payload
Command Payload.

11.213.1 Detailed Description

Get DIR List to Packet command packet structure.

For command details see [FM_GET_DIR_LIST_PKT_CC](#)

Definition at line 313 of file fm_msg.h.

11.213.2 Field Documentation

11.213.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_GetDirListPktCmd_t::CommandHeader

Command header.

Definition at line 315 of file fm_msg.h.

11.213.2.2 Payload [FM_GetDirectoryToPkt_Payload_t](#) FM_GetDirListPktCmd_t::Payload

Command Payload.

Definition at line 317 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.214 FM_GetFileInfoCmd_t Struct Reference

Get File Info command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_FilenameAndCRC_Payload_t](#) Payload
Command Payload.

11.214.1 Detailed Description

Get File Info command packet structure.

For command details see [FM_GET_FILE_INFO_CC](#)

Definition at line 227 of file fm_msg.h.

11.214.2 Field Documentation

11.214.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_GetFileInfoCmd_t::CommandHeader
Command header.
Definition at line 229 of file fm_msg.h.

11.214.2.2 Payload [FM_FilenameAndCRC_Payload_t](#) FM_GetFileInfoCmd_t::Payload
Command Payload.
Definition at line 231 of file fm_msg.h.
The documentation for this struct was generated from the following file:

- [apps/fmw/inc/fm_msg.h](#)

11.215 FM_GetOpenFilesCmd_t Struct Reference

Get Open Files command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)
Command header.

11.215.1 Detailed Description

Get Open Files command packet structure.

For command details see [FM_GET_OPEN_FILES_CC](#)

Definition at line 239 of file fm_msg.h.

11.215.2 Field Documentation

11.215.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_GetOpenFilesCmd_t::CommandHeader
Command header.
Definition at line 241 of file fm_msg.h.
The documentation for this struct was generated from the following file:

- [apps/fmw/inc/fm_msg.h](#)

11.216 FM_GlobalData_t Struct Reference

Application global data structure.

```
#include <fm_app.h>
```

Data Fields

- [FM_MonitorTable_t * MonitorTablePtr](#)
File System Table Pointer.
- [CFE_TBL_Handle_t MonitorTableHandle](#)
File System Table Handle.
- [CFE_SB_Pipeld_t CmdPipe](#)
cFE software bus command pipe
- [CFE_ES_TaskId_t ChildTaskID](#)
Child task ID.

- **osal_id_t ChildSemaphore**
Child task wakeup counting semaphore.
- **osal_id_t ChildQueueCountSem**
Child queue counter mutex semaphore.
- **uint8 ChildCmdCounter**
Child task command success counter.
- **uint8 ChildCmdErrCounter**
Child task command error counter.
- **uint8 ChildCmdWarnCounter**
Child task command warning counter.
- **uint8 ChildWriteIndex**
Array index for next write to command args.
- **uint8 ChildReadIndex**
Array index for next read from command args.
- **uint8 ChildQueueCount**
Number of pending commands in queue.
- **uint8 CommandCounter**
Application command success counter.
- **uint8 CommandErrCounter**
Application command error counter.
- **uint8 Spare8a**
Placeholder for unused command warning counter.
- **uint8 ChildCurrentCC**
Command code currently executing.
- **uint8 ChildPreviousCC**
Command code previously executed.
- **uint8 Spare8b**
Structure alignment spare.
- **uint32 FileStatTime**
Modify time from most recent OS_stat.
- **uint32 FileStatSize**
File size from most recent OS_stat.
- **uint32 FileStatMode**
File mode from most recent OS_stat (OS_FILESTAT_MODE)
- **FM_DirListFileStats_t DirListFileStats**
Get dir list to file statistics structure.
- **FM_DirListPkt_t DirListPkt**
Get dir list to packet telemetry packet.
- **FM_MonitorReportPkt_t MonitorReportPkt**
Telemetry packet reporting status of items in the monitor table.
- **FM_FileInfoPkt_t FileInfoPkt**
Get file info telemetry packet.
- **FM_OpenFilesPkt_t OpenFilesPkt**
Get open files telemetry packet.
- **FM_HousekeepingPkt_t HousekeepingPkt**
Application housekeeping telemetry packet.
- **char ChildBuffer [FM_CHILD_FILE_BLOCK_SIZE]**

Child task file I/O buffer.

- **FM_ChildQueueEntry_t ChildQueue [FM_CHILD_QUEUE_DEPTH]**

Child task command queue.

- **FM_Decompressor_State_t * DecompressorStatePtr**

State of the embedded decompression routine This depends on the decompression option and may be NULL.

- **FM_Compressor_State_t * CompressorStatePtr**

State of the embedded compression routine This depends on the compression option and may be NULL.

11.216.1 Detailed Description

Application global data structure.

Definition at line 55 of file fm_app.h.

11.216.2 Field Documentation

11.216.2.1 ChildBuffer `char FM_GlobalData_t::ChildBuffer[FM_CHILD_FILE_BLOCK_SIZE]`

Child task file I/O buffer.

Definition at line 99 of file fm_app.h.

Referenced by FM_ChildConcatFilesCmd(), and FM_ChildFileInfoCmd().

11.216.2.2 ChildCmdCounter `uint8 FM_GlobalData_t::ChildCmdCounter`

Child task command success counter.

Definition at line 66 of file fm_app.h.

Referenced by FM_ChildConcatFilesCmd(), FM_ChildCopyCmd(), FM_ChildCreateDirectoryCmd(), FM_ChildDecompressFileCmd(), FM_ChildDeleteAllFilesCmd(), FM_ChildDeleteCmd(), FM_ChildDeleteDirectoryCmd(), FM_ChildDirListFileLoop(), FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_ChildMoveCmd(), FM_ChildRenameCmd(), FM_ChildSetPermissionsCmd(), FM_ResetCountersCmd(), and FM_SendHkCmd().

11.216.2.3 ChildCmdErrCounter `uint8 FM_GlobalData_t::ChildCmdErrCounter`

Child task command error counter.

Definition at line 67 of file fm_app.h.

Referenced by FM_ChildConcatFilesCmd(), FM_ChildCopyCmd(), FM_ChildCreateDirectoryCmd(), FM_ChildDecompressFileCmd(), FM_ChildDeleteAllFilesCmd(), FM_ChildDeleteCmd(), FM_ChildDeleteDirectoryCmd(), FM_ChildDirListFileCmd(), FM_ChildDirListFileInit(), FM_ChildDirListFileLoop(), FM_ChildDirListPktCmd(), FM_ChildLoop(), FM_ChildMoveCmd(), FM_ChildProcess(), FM_ChildRenameCmd(), FM_ChildSetPermissionsCmd(), FM_ResetCountersCmd(), and FM_SendHkCmd().

11.216.2.4 ChildCmdWarnCounter `uint8 FM_GlobalData_t::ChildCmdWarnCounter`

Child task command warning counter.

Definition at line 68 of file fm_app.h.

Referenced by FM_ChildDeleteAllFilesCmd(), FM_ChildDirListFileLoop(), FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_ResetCountersCmd(), and FM_SendHkCmd().

11.216.2.5 ChildCurrentCC `uint8 FM_GlobalData_t::ChildCurrentCC`

Command code currently executing.

Definition at line 78 of file fm_app.h.

Referenced by FM_ChildConcatFilesCmd(), FM_ChildCopyCmd(), FM_ChildCreateDirectoryCmd(), FM_ChildDecompressFileCmd(), FM_ChildDeleteAllFilesCmd(), FM_ChildDeleteCmd(), FM_ChildDeleteDirectoryCmd(), FM_ChildDirListFileCmd(), FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_ChildMoveCmd(), FM_ChildRenameCmd(), FM_ChildSetPermissionsCmd(), and FM_SendHkCmd().

11.216.2.6 ChildPreviousCC `uint8 FM_GlobalData_t::ChildPreviousCC`

Command code previously executed.

Definition at line 79 of file fm_app.h.

Referenced by FM_ChildConcatFilesCmd(), FM_ChildCopyCmd(), FM_ChildCreateDirectoryCmd(), FM_ChildDecompressFileCmd(), FM_ChildDeleteAllFilesCmd(), FM_ChildDeleteCmd(), FM_ChildDeleteDirectoryCmd(), FM_ChildDirListFileCmd(), FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_ChildMoveCmd(), FM_ChildRenameCmd(), FM_ChildSetPermissionsCmd(), and FM_SendHkCmd().

11.216.2.7 ChildQueue `FM_ChildQueueEntry_t FM_GlobalData_t::ChildQueue[FM_CHILD_QUEUE_DEPTH]`

Child task command queue.

Definition at line 101 of file fm_app.h.

Referenced by FM_ChildProcess(), FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_CreateDirectoryCmd(), FM_DecompressFileCmd(), FM_DeleteAllFilesCmd(), FM_DeleteDirectoryCmd(), FM_DeleteFileCmd(), FM_GetDirListFileCmd(), FM_GetDirListPktCmd(), FM_GetFileInfoCmd(), FM_MoveFileCmd(), FM_RenameFileCmd(), FM_SetPermissionsCmd(), and FM_VerifyChildTask().

11.216.2.8 ChildQueueCount `uint8 FM_GlobalData_t::ChildQueueCount`

Number of pending commands in queue.

Definition at line 72 of file fm_app.h.

Referenced by FM_ChildLoop(), FM_ChildProcess(), FM_InvokeChildTask(), FM_SendHkCmd(), and FM_VerifyChildTask().

11.216.2.9 ChildQueueCountSem `osal_id_t FM_GlobalData_t::ChildQueueCountSem`

Child queue counter mutex semaphore.

Definition at line 64 of file fm_app.h.

Referenced by FM_ChildInit(), FM_ChildProcess(), and FM_InvokeChildTask().

11.216.2.10 ChildReadIndex `uint8 FM_GlobalData_t::ChildReadIndex`

Array index for next read from command args.

Definition at line 71 of file fm_app.h.

Referenced by FM_ChildLoop(), and FM_ChildProcess().

11.216.2.11 ChildSemaphore `osal_id_t FM_GlobalData_t::ChildSemaphore`

Child task wakeup counting semaphore.

Definition at line 63 of file fm_app.h.

Referenced by FM_ChildInit(), FM_ChildLoop(), FM_ChildTask(), FM_InvokeChildTask(), and FM_VerifyChildTask().

11.216.2.12 ChildTaskID `CFE_ES_TaskId_t` `FM_GlobalData_t::ChildTaskID`
Child task ID.
Definition at line 62 of file fm_app.h.
Referenced by FM_ChildInit().

11.216.2.13 ChildWriteIndex `uint8` `FM_GlobalData_t::ChildWriteIndex`
Array index for next write to command args.
Definition at line 70 of file fm_app.h.
Referenced by FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_CreateDirectoryCmd(), FM_DecompressFileCmd(), FM_DeleteAllFilesCmd(), FM_DeleteDirectoryCmd(), FM_DeleteFileCmd(), FM_GetDirListFileCmd(), FM_GetDirListPktCmd(), FM_GetFileInfoCmd(), FM_InvokeChildTask(), FM_MoveFileCmd(), FM_RenameFileCmd(), FM_SetPermissionsCmd(), and FM_VerifyChildTask().

11.216.2.14 CmdPipe `CFE_SB_PipeId_t` `FM_GlobalData_t::CmdPipe`
cFE software bus command pipe
Definition at line 60 of file fm_app.h.
Referenced by FM_AppInit(), and FM_AppMain().

11.216.2.15 CommandCounter `uint8` `FM_GlobalData_t::CommandCounter`
Application command success counter.
Definition at line 74 of file fm_app.h.
Referenced by FM_ProcessCmd(), FM_ResetCountersCmd(), and FM_SendHkCmd().

11.216.2.16 CommandErrCounter `uint8` `FM_GlobalData_t::CommandErrCounter`
Application command error counter.
Definition at line 75 of file fm_app.h.
Referenced by FM_ProcessCmd(), FM_ResetCountersCmd(), and FM_SendHkCmd().

11.216.2.17 CompressorStatePtr `FM_Compressor_State_t*` `FM_GlobalData_t::CompressorStatePtr`
State of the embedded compression routine This depends on the compression option and may be NULL.
Definition at line 113 of file fm_app.h.

11.216.2.18 DecompressorStatePtr `FM_Decompressor_State_t*` `FM_GlobalData_t::DecompressorStatePtr`
State of the embedded decompression routine This depends on the decompression option and may be NULL.
Definition at line 107 of file fm_app.h.
Referenced by FM_ChildDecompressFileCmd(), and FM_CompressionService_Init().

11.216.2.19 DirListFileStats `FM_DirListFileStats_t` `FM_GlobalData_t::DirListFileStats`
Get dir list to file statistics structure.
Definition at line 86 of file fm_app.h.
Referenced by FM_ChildDirListFileInit(), and FM_ChildDirListFileLoop().

11.216.2.20 DirListPkt `FM_DirListPkt_t` `FM_GlobalData_t::DirListPkt`

Get dir list to packet telemetry packet.

Definition at line 88 of file fm_app.h.

Referenced by FM_ChildDirListPktCmd().

11.216.2.21 FileInfoPkt `FM_FileInfoPkt_t` `FM_GlobalData_t::FileInfoPkt`

Get file info telemetry packet.

Definition at line 93 of file fm_app.h.

Referenced by FM_ChildFileInfoCmd().

11.216.2.22 FileStatMode `uint32` `FM_GlobalData_t::FileStatMode`

File mode from most recent OS_stat (OS_FILESTAT_MODE)

Definition at line 84 of file fm_app.h.

Referenced by FM_GetFileInfoCmd(), and FM_GetFilenameState().

11.216.2.23 FileStatSize `uint32` `FM_GlobalData_t::FileStatSize`

File size from most recent OS_stat.

Definition at line 83 of file fm_app.h.

Referenced by FM_GetFileInfoCmd(), and FM_GetFilenameState().

11.216.2.24 FileStatTime `uint32` `FM_GlobalData_t::FileStatTime`

Modify time from most recent OS_stat.

Definition at line 82 of file fm_app.h.

Referenced by FM_GetFileInfoCmd(), and FM_GetFilenameState().

11.216.2.25 HousekeepingPkt `FM_HousekeepingPkt_t` `FM_GlobalData_t::HousekeepingPkt`

Application housekeeping telemetry packet.

Definition at line 97 of file fm_app.h.

Referenced by FM_SendHkCmd().

11.216.2.26 MonitorReportPkt `FM_MonitorReportPkt_t` `FM_GlobalData_t::MonitorReportPkt`

Telemetry packet reporting status of items in the monitor table.

Definition at line 91 of file fm_app.h.

Referenced by FM_MonitorFilesystemSpaceCmd().

11.216.2.27 MonitorTableHandle `CFE_TBL_Handle_t` `FM_GlobalData_t::MonitorTableHandle`

File System Table Handle.

Definition at line 58 of file fm_app.h.

Referenced by FM_AcquireTablePointers(), FM_ReleaseTablePointers(), FM_SetTableStateCmd(), and FM_TableInit().

11.216.2.28 MonitorTablePtr `FM_MonitorTable_t*` `FM_GlobalData_t::MonitorTablePtr`

File System Table Pointer.

Definition at line 57 of file fm_app.h.

Referenced by FM_AcquireTablePointers(), FM_MonitorFilesystemSpaceCmd(), FM_ReleaseTablePointers(), FM_SetTableStateCmd(), and FM_TableInit().

11.216.2.29 OpenFilesPkt [FM_OpenFilesPkt_t](#) FM_GlobalData_t::OpenFilesPkt

Get open files telemetry packet.

Definition at line 95 of file fm_app.h.

Referenced by FM_GetOpenFilesCmd().

11.216.2.30 Spare8a [uint8](#) FM_GlobalData_t::Spare8a

Placeholder for unused command warning counter.

Definition at line 76 of file fm_app.h.

11.216.2.31 Spare8b [uint8](#) FM_GlobalData_t::Spare8b

Structure alignment spare.

Definition at line 80 of file fm_app.h.

The documentation for this struct was generated from the following file:

- apps/fm/fsw/src/[fm_app.h](#)

11.217 FM_HousekeepingPkt_Payload_t Struct Reference

Housekeeping telemetry payload.

```
#include <fm_msg.h>
```

Data Fields

- [uint8 CommandCounter](#)
Application command counter.
- [uint8 CommandErrCounter](#)
Application command error counter.
- [uint8 Spare](#)
Placeholder for unused command warning counter.
- [uint8 NumOpenFiles](#)
Number of open files in the system.
- [uint8 ChildCmdCounter](#)
Child task command counter.
- [uint8 ChildCmdErrCounter](#)
Child task command error counter.
- [uint8 ChildCmdWarnCounter](#)
Child task command warning counter.
- [uint8 ChildQueueCount](#)
Number of pending commands in queue.
- [uint8 ChildCurrentCC](#)
Command code currently executing.
- [uint8 ChildPreviousCC](#)
Command code previously executed.

11.217.1 Detailed Description

Housekeeping telemetry payload.
Definition at line 548 of file fm_msg.h.

11.217.2 Field Documentation

11.217.2.1 ChildCmdCounter `uint8 FM_HousekeepingPkt_Payload_t::ChildCmdCounter`

Child task command counter.
Definition at line 556 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.217.2.2 ChildCmdErrCounter `uint8 FM_HousekeepingPkt_Payload_t::ChildCmdErrCounter`

Child task command error counter.
Definition at line 557 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.217.2.3 ChildCmdWarnCounter `uint8 FM_HousekeepingPkt_Payload_t::ChildCmdWarnCounter`

Child task command warning counter.
Definition at line 558 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.217.2.4 ChildCurrentCC `uint8 FM_HousekeepingPkt_Payload_t::ChildCurrentCC`

Command code currently executing.
Definition at line 562 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.217.2.5 ChildPreviousCC `uint8 FM_HousekeepingPkt_Payload_t::ChildPreviousCC`

Command code previously executed.
Definition at line 563 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.217.2.6 ChildQueueCount `uint8 FM_HousekeepingPkt_Payload_t::ChildQueueCount`

Number of pending commands in queue.
Definition at line 560 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.217.2.7 CommandCounter `uint8 FM_HousekeepingPkt_Payload_t::CommandCounter`

Application command counter.
Definition at line 550 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.217.2.8 CommandErrCounter `uint8` `FM_HousekeepingPkt_Payload_t::CommandErrCounter`
Application command error counter.
Definition at line 551 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.217.2.9 NumOpenFiles `uint8` `FM_HousekeepingPkt_Payload_t::NumOpenFiles`
Number of open files in the system.
Definition at line 554 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.217.2.10 Spare `uint8` `FM_HousekeepingPkt_Payload_t::Spare`
Placeholder for unused command warning counter.
Definition at line 552 of file fm_msg.h.
The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.218 FM_HousekeepingPkt_t Struct Reference

Housekeeping telemetry packet.

```
#include <fm_msg.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry Header.
- `FM_HousekeepingPkt_Payload_t Payload`
Telemetry Payload.

11.218.1 Detailed Description

Housekeeping telemetry packet.

Definition at line 569 of file fm_msg.h.

11.218.2 Field Documentation

11.218.2.1 Payload `FM_HousekeepingPkt_Payload_t` `FM_HousekeepingPkt_t::Payload`
Telemetry Payload.
Definition at line 573 of file fm_msg.h.
Referenced by FM_SendHkCmd().

11.218.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t` `FM_HousekeepingPkt_t::TelemetryHeader`
Telemetry Header.
Definition at line 571 of file fm_msg.h.
Referenced by FM_SendHkCmd().
The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.219 FM_MonitorFilesystemSpaceCmd_t Struct Reference

Get Free Space command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t CommandHeader](#)

Command header.

11.219.1 Detailed Description

Get Free Space command packet structure.

For command details see [FM_MONITOR_FILESYSTEM_SPACE_CC](#)

Definition at line 325 of file fm_msg.h.

11.219.2 Field Documentation

11.219.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_MonitorFilesystemSpaceCmd_t ::CommandHeader

Command header.

Definition at line 327 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.220 FM_MonitorReportEntry_t Struct Reference

Monitor filesystem list entry structure.

```
#include <fm_msg.h>
```

Data Fields

- [uint8 ReportType](#)
- [uint8 Padding \[7\]](#)

Padding to align Name (and subsequent members) to 64-bit boundaries.

- [char Name \[OS_MAX_PATH_LEN\]](#)

File system name.

- [uint64 Blocks](#)

Block count from last check/poll, 0 if unknown.

- [uint64 Bytes](#)

Byte count from last check/poll, 0 if unknown.

11.220.1 Detailed Description

Monitor filesystem list entry structure.

Definition at line 512 of file fm_msg.h.

11.220.2 Field Documentation

11.220.2.1 Blocks `uint64` `FM_MonitorReportEntry_t::Blocks`
Block count from last check/poll, 0 if unknown.
Definition at line 517 of file fm_msg.h.
Referenced by FM_MonitorFilesystemSpaceCmd().

11.220.2.2 Bytes `uint64` `FM_MonitorReportEntry_t::Bytes`
Byte count from last check/poll, 0 if unknown.
Definition at line 518 of file fm_msg.h.
Referenced by FM_MonitorFilesystemSpaceCmd().

11.220.2.3 Name `char` `FM_MonitorReportEntry_t::Name[OS_MAX_PATH_LEN]`
File system name.
Definition at line 516 of file fm_msg.h.
Referenced by FM_MonitorFilesystemSpaceCmd().

11.220.2.4 Padding `uint8` `FM_MonitorReportEntry_t::Padding[7]`
Padding to align Name (and subsequent members) to 64-bit boundaries.
Definition at line 515 of file fm_msg.h.

11.220.2.5 ReportType `uint8` `FM_MonitorReportEntry_t::ReportType`
Definition at line 514 of file fm_msg.h.
Referenced by FM_MonitorFilesystemSpaceCmd().
The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.221 FM_MonitorReportPkt_Payload_t Struct Reference

Monitor filesystem telemetry payload.

```
#include <fm_msg.h>
```

Data Fields

- **FM_MonitorReportEntry_t FileSys [FM_TABLE_ENTRY_COUNT]**
Array of file system free space entries.

11.221.1 Detailed Description

Monitor filesystem telemetry payload.

Definition at line 524 of file fm_msg.h.

11.221.2 Field Documentation

11.221.2.1 FileSys `FM_MonitorReportEntry_t` `FM_MonitorReportPkt_Payload_t::FileSys[FM_TABLE_ENTRY_COUNT]`
Array of file system free space entries.
Definition at line 526 of file fm_msg.h.
Referenced by FM_MonitorFilesystemSpaceCmd().
The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.222 FM_MonitorReportPkt_t Struct Reference

Monitor filesystem telemetry packet.

```
#include <fm_msg.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry Header.
- `FM_MonitorReportPkt_Payload_t Payload`
Telemetry Payload.

11.222.1 Detailed Description

Monitor filesystem telemetry packet.

Definition at line 532 of file fm_msg.h.

11.222.2 Field Documentation

11.222.2.1 Payload `FM_MonitorReportPkt_Payload_t FM_MonitorReportPkt_t::Payload`

Telemetry Payload.

Definition at line 536 of file fm_msg.h.

Referenced by `FM_MonitorFilesystemSpaceCmd()`.

11.222.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t FM_MonitorReportPkt_t::TelemetryHeader`

Telemetry Header.

Definition at line 534 of file fm_msg.h.

Referenced by `FM_MonitorFilesystemSpaceCmd()`.

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.223 FM_MonitorTable_t Struct Reference

Get Free Space table definition.

```
#include <fm_msg.h>
```

Data Fields

- `FM_MonitorTableEntry_t Entries [FM_TABLE_ENTRY_COUNT]`
One entry for each monitor.

11.223.1 Detailed Description

Get Free Space table definition.

Definition at line 643 of file fm_msg.h.

11.223.2 Field Documentation

11.223.2.1 Entries `FM_MonitorTableEntry_t` `FM_MonitorTable_t::Entries[FM_TABLE_ENTRY_COUNT]`

One entry for each monitor.

Definition at line 645 of file fm_msg.h.

Referenced by FM_MonitorFilesystemSpaceCmd(), FM_SetTableStateCmd(), and FM_ValidateTable().

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.224 FM_MonitorTableEntry_t Struct Reference

Monitor table entry.

```
#include <fm_msg.h>
```

Data Fields

- `uint8_t Type`
- `uint8_t Enabled`
- `char Name [OS_MAX_PATH_LEN]`

11.224.1 Detailed Description

Monitor table entry.

Definition at line 616 of file fm_msg.h.

11.224.2 Field Documentation

11.224.2.1 Enabled `uint8_t FM_MonitorTableEntry_t::Enabled`

Boolean flag indicating whether this entry is active or not

Definition at line 629 of file fm_msg.h.

Referenced by FM_MonitorFilesystemSpaceCmd(), and FM_SetTableStateCmd().

11.224.2.2 Name `char FM_MonitorTableEntry_t::Name[OS_MAX_PATH_LEN]`

Location to monitor

The interpretation of this string depends on Type See description of the FM_MonitorTableEntry_Type_t for how this is to be set

Definition at line 637 of file fm_msg.h.

Referenced by FM_MonitorFilesystemSpaceCmd(), and FM_ValidateTable().

11.224.2.3 Type `uint8_t FM_MonitorTableEntry_t::Type`

Table entry type.

This should be one of the enumeration values in FM_MonitorTableEntry_Type_t. It is defined as a uint8 in this table to ensure a consistent size.

Definition at line 624 of file fm_msg.h.

Referenced by FM_MonitorFilesystemSpaceCmd(), FM_SetTableStateCmd(), and FM_ValidateTable().

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.225 FM_MoveFileCmd_t Struct Reference

Move File command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_OvwSourceTargetFilename_Payload_t](#) Payload
Command payload.

11.225.1 Detailed Description

Move File command packet structure.

For command details see [FM_MOVE_FILE_CC](#)

Definition at line 101 of file fm_msg.h.

11.225.2 Field Documentation**11.225.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_MoveFileCmd_t::CommandHeader**
Command header.

Definition at line 103 of file fm_msg.h.

11.225.2.2 Payload [FM_OvwSourceTargetFilename_Payload_t](#) FM_MoveFileCmd_t::Payload
Command payload.

Definition at line 105 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.226 FM_NoopCmd_t Struct Reference

No-Operation command packet structure.

#include <fm_msg.h>

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.226.1 Detailed Description

No-Operation command packet structure.

For command details see [FM_NOOP_CC](#)

Definition at line 55 of file fm_msg.h.

11.226.2 Field Documentation**11.226.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_NoopCmd_t::CommandHeader**
Command header.

Definition at line 57 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.227 FM_OpenFilesEntry_t Struct Reference

Get Open Files list entry structure.

```
#include <fm_msg.h>
```

Data Fields

- char [LogicalName \[OS_MAX_PATH_LEN\]](#)
Logical filename.
- char [AppName \[OS_MAX_API_NAME\]](#)
Application that opened file.

11.227.1 Detailed Description

Get Open Files list entry structure.

Definition at line 478 of file fm_msg.h.

11.227.2 Field Documentation

11.227.2.1 AppName char FM_OpenFilesEntry_t::AppName [OS_MAX_API_NAME]

Application that opened file.

Definition at line 481 of file fm_msg.h.

11.227.2.2 LogicalName char FM_OpenFilesEntry_t::LogicalName [OS_MAX_PATH_LEN]

Logical filename.

Definition at line 480 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.228 FM_OpenFilesPkt_Payload_t Struct Reference

Get Open Files telemetry payload.

```
#include <fm_msg.h>
```

Data Fields

- uint32 NumOpenFiles
Number of files opened via cFE.
- [FM_OpenFilesEntry_t OpenFilesList \[OS_MAX_NUM_OPEN_FILES\]](#)
List of files opened via cFE.

11.228.1 Detailed Description

Get Open Files telemetry payload.

Definition at line 487 of file fm_msg.h.

11.228.2 Field Documentation

11.228.2.1 NumOpenFiles `uint32 FM_OpenFilesPkt_Payload_t::NumOpenFiles`

Number of files opened via cFE.

Definition at line 489 of file fm_msg.h.

Referenced by FM_GetOpenFilesCmd().

11.228.2.2 OpenFilesList `FM_OpenFilesEntry_t FM_OpenFilesPkt_Payload_t::OpenFilesList[OS_MAX_NUM_OPEN_FILES]`

List of files opened via cFE.

Definition at line 490 of file fm_msg.h.

Referenced by FM_GetOpenFilesCmd().

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.229 FM_OpenFilesPkt_t Struct Reference

Get Open Files telemetry packet.

```
#include <fm_msg.h>
```

Data Fields

- `CFE_MSG_TelemetryHeader_t TelemetryHeader`
Telemetry Header.
- `FM_OpenFilesPkt_Payload_t Payload`
Telemetry Payload.

11.229.1 Detailed Description

Get Open Files telemetry packet.

Definition at line 496 of file fm_msg.h.

11.229.2 Field Documentation

11.229.2.1 Payload `FM_OpenFilesPkt_Payload_t FM_OpenFilesPkt_t::Payload`

Telemetry Payload.

Definition at line 500 of file fm_msg.h.

Referenced by FM_GetOpenFilesCmd().

11.229.2.2 TelemetryHeader `CFE_MSG_TelemetryHeader_t FM_OpenFilesPkt_t::TelemetryHeader`

Telemetry Header.

Definition at line 498 of file fm_msg.h.

Referenced by FM_GetOpenFilesCmd().

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.230 FM_OvwSourceTargetFilename_Payload_t Struct Reference

Copy/Move File command payload structure.

```
#include <fm_msg.h>
```

Data Fields

- `uint16 Overwrite`
Allow overwrite.
- `char Source [OS_MAX_PATH_LEN]`
Source filename.
- `char Target [OS_MAX_PATH_LEN]`
Target filename.

11.230.1 Detailed Description

Copy/Move File command payload structure.
Contains a source and target file name and an overwrite flag
Used by [FM_COPY_FILE_CC](#), [FM_MOVE_FILE_CC](#)
Definition at line 77 of file fm_msg.h.

11.230.2 Field Documentation**11.230.2.1 Overwrite** `uint16 FM_OvwSourceTargetFilename_Payload_t::Overwrite`

Allow overwrite.
Definition at line 79 of file fm_msg.h.
Referenced by [FM_CopyFileCmd\(\)](#), and [FM_MoveFileCmd\(\)](#).

11.230.2.2 Source `char FM_OvwSourceTargetFilename_Payload_t::Source[OS_MAX_PATH_LEN]`

Source filename.
Definition at line 80 of file fm_msg.h.
Referenced by [FM_CopyFileCmd\(\)](#), and [FM_MoveFileCmd\(\)](#).

11.230.2.3 Target `char FM_OvwSourceTargetFilename_Payload_t::Target[OS_MAX_PATH_LEN]`

Target filename.
Definition at line 81 of file fm_msg.h.
Referenced by [FM_CopyFileCmd\(\)](#), and [FM_MoveFileCmd\(\)](#).
The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.231 FM_RenameFileCmd_t Struct Reference

Rename File command packet structure.
`#include <fm_msg.h>`

Data Fields

- `CFE_MSG_CommandHeader_t CommandHeader`
Command header.
- `FM_SourceTargetFileName_Payload_t Payload`
Command payload.

11.231.1 Detailed Description

Rename File command packet structure.

For command details see [FM_RENAME_FILE_CC](#)

Definition at line 124 of file fm_msg.h.

11.231.2 Field Documentation

11.231.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_RenameFileCmd_t::CommandHeader

Command header.

Definition at line 126 of file fm_msg.h.

11.231.2.2 Payload [FM_SourceTargetFileName_Payload_t](#) FM_RenameFileCmd_t::Payload

Command payload.

Definition at line 128 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.232 FM_ResetCountersCmd_t Struct Reference

Reset Counters command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.232.1 Detailed Description

Reset Counters command packet structure.

For command details see [FM_RESET_COUNTERS_CC](#)

Definition at line 65 of file fm_msg.h.

11.232.2 Field Documentation

11.232.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_ResetCountersCmd_t::CommandHeader

Command header.

Definition at line 67 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fm/fsw/inc/fm_msg.h](#)

11.233 FM_SendHkCmd_t Struct Reference

Housekeeping Request command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.

11.233.1 Detailed Description

Housekeeping Request command packet structure.

Definition at line 45 of file fm_msg.h.

11.233.2 Field Documentation**11.233.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) FM_SendHkCmd_t::CommandHeader

Command header.

Definition at line 47 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fmw/fsw/inc/fm_msg.h](#)

11.234 FM_SetPermissionsCmd_t Struct Reference

Set Permissions for a file.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_FilenameAndMode_Payload_t](#) Payload

11.234.1 Detailed Description

Set Permissions for a file.

For command details see [FM_SET_PERMISSIONS_CC](#)

Definition at line 369 of file fm_msg.h.

11.234.2 Field Documentation**11.234.2.1 CommandHeader** [CFE_MSG_CommandHeader_t](#) FM_SetPermissionsCmd_t::CommandHeader

Command header.

Definition at line 371 of file fm_msg.h.

11.234.2.2 Payload [FM_FilenameAndMode_Payload_t](#) FM_SetPermissionsCmd_t::Payload

Definition at line 373 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- [apps/fmw/fsw/inc/fm_msg.h](#)

11.235 FM_SetTableStateCmd_t Struct Reference

Set Table State command packet structure.

```
#include <fm_msg.h>
```

Data Fields

- [CFE_MSG_CommandHeader_t](#) CommandHeader
Command header.
- [FM_TableIndexAndState_Payload_t](#) Payload
Command Payload.

11.235.1 Detailed Description

Set Table State command packet structure.

For command details see [FM_SET_TABLE_STATE_CC](#)

Definition at line 346 of file fm_msg.h.

11.235.2 Field Documentation

11.235.2.1 CommandHeader [CFE_MSG_CommandHeader_t](#) FM_SetTableStateCmd_t::CommandHeader

Command header.

Definition at line 348 of file fm_msg.h.

11.235.2.2 Payload [FM_TableIndexAndState_Payload_t](#) FM_SetTableStateCmd_t::Payload

Command Payload.

Definition at line 350 of file fm_msg.h.

The documentation for this struct was generated from the following file:

- apps/fm/fsw/inc/[fm_msg.h](#)

11.236 FM_SingleFilename_Payload_t Struct Reference

Single filename command payload structure.

```
#include <fm_msg.h>
```

Data Fields

- char [Filename](#) [[OS_MAX_PATH_LEN](#)]
Delete filename.

11.236.1 Detailed Description

Single filename command payload structure.

Used by [FM_DELETE_FILE_CC](#)

Definition at line 136 of file fm_msg.h.

11.236.2 Field Documentation

11.236.2.1 Filename char FM_SingleFilename_Payload_t::Filename[OS_MAX_PATH_LEN]

Delete filename.

Definition at line 138 of file fm_msg.h.

Referenced by FM_DeleteFileCmd().

The documentation for this struct was generated from the following file:

- apps/fm/fsw/inc/fm_msg.h

11.237 FM_SourceTargetFileName_Payload_t Struct Reference

Source and Target filename command payload structure.

```
#include <fm_msg.h>
```

Data Fields

- char **Source** [OS_MAX_PATH_LEN]
Source filename.

- char **Target** [OS_MAX_PATH_LEN]
Target filename.

11.237.1 Detailed Description

Source and Target filename command payload structure.

Used by FM_RENAME_FILE_CC, FM_DECOMPRESS_FILE_CC

Definition at line 113 of file fm_msg.h.

11.237.2 Field Documentation**11.237.2.1 Source** char FM_SourceTargetFileName_Payload_t::Source[OS_MAX_PATH_LEN]

Source filename.

Definition at line 115 of file fm_msg.h.

Referenced by FM_DecompressFileCmd(), and FM_RenameFileCmd().

11.237.2.2 Target char FM_SourceTargetFileName_Payload_t::Target[OS_MAX_PATH_LEN]

Target filename.

Definition at line 116 of file fm_msg.h.

Referenced by FM_DecompressFileCmd(), and FM_RenameFileCmd().

The documentation for this struct was generated from the following file:

- apps/fm/fsw/inc/fm_msg.h

11.238 FM_TableIndexAndState_Payload_t Struct Reference

Table Index and State command payload structure.

```
#include <fm_msg.h>
```

Data Fields

- uint32 **TableEntryIndex**

Table entry index.

- uint32 **TableEntryState**

New table entry state.

11.238.1 Detailed Description

Table Index and State command payload structure.

Used by [FM_SET_TABLE_STATE_CC](#)

Definition at line 335 of file fm_msg.h.

11.238.2 Field Documentation

11.238.2.1 TableEntryIndex `uint32` FM_TableIndexAndState_Payload_t::TableEntryIndex

Table entry index.

Definition at line 337 of file fm_msg.h.

Referenced by [FM_SetTableStateCmd\(\)](#).

11.238.2.2 TableEntryState `uint32` FM_TableIndexAndState_Payload_t::TableEntryState

New table entry state.

Definition at line 338 of file fm_msg.h.

Referenced by [FM_SetTableStateCmd\(\)](#).

The documentation for this struct was generated from the following file:

- `apps/fm/fsw/inc/fm_msg.h`

11.239 FM_TwoSourceOneTarget_Payload_t Struct Reference

Two source, one target filename command payload structure.

```
#include <fm_msg.h>
```

Data Fields

- `char Source1 [OS_MAX_PATH_LEN]`
Source 1 filename.
- `char Source2 [OS_MAX_PATH_LEN]`
Source 2 filename.
- `char Target [OS_MAX_PATH_LEN]`
Target filename.

11.239.1 Detailed Description

Two source, one target filename command payload structure.

Used by [FM_CONCAT_FILES_CC](#)

Definition at line 192 of file fm_msg.h.

11.239.2 Field Documentation

11.239.2.1 Source1 `char` FM_TwoSourceOneTarget_Payload_t::Source1[OS_MAX_PATH_LEN]

Source 1 filename.

Definition at line 194 of file fm_msg.h.

Referenced by [FM_ConcatFilesCmd\(\)](#).

11.239.2.2 Source2 char FM_TwoSourceOneTarget_Payload_t::Source2[OS_MAX_PATH_LEN]
Source 2 filename.
Definition at line 195 of file fm_msg.h.
Referenced by FM_ConcatFilesCmd().

11.239.2.3 Target char FM_TwoSourceOneTarget_Payload_t::Target[OS_MAX_PATH_LEN]
Target filename.
Definition at line 196 of file fm_msg.h.
Referenced by FM_ConcatFilesCmd().
The documentation for this struct was generated from the following file:

- [apps/fmw/inc/fm_msg.h](#)

11.240 OS_bin_sem_prop_t Struct Reference

OSAL binary semaphore properties.

```
#include <osapi-binsem.h>
```

Data Fields

- char [name](#) [OS_MAX_API_NAME]
- [osal_id_t creator](#)
- int32 [value](#)

11.240.1 Detailed Description

OSAL binary semaphore properties.

Definition at line 39 of file osapi-binsem.h.

11.240.2 Field Documentation

11.240.2.1 creator [osal_id_t](#) OS_bin_sem_prop_t::creator
Definition at line 42 of file osapi-binsem.h.

11.240.2.2 name char OS_bin_sem_prop_t::name[OS_MAX_API_NAME]
Definition at line 41 of file osapi-binsem.h.

11.240.2.3 value int32 OS_bin_sem_prop_t::value

Definition at line 43 of file osapi-binsem.h.

The documentation for this struct was generated from the following file:

- [osal/src/os/inc/osapi-binsem.h](#)

11.241 OS_condvar_prop_t Struct Reference

OSAL condition variable properties.

```
#include <osapi-condvar.h>
```

Data Fields

- char `name` [OS_MAX_API_NAME]
- `osal_id_t creator`

11.241.1 Detailed Description

OSAL condition variable properties.

Definition at line 34 of file osapi-condvar.h.

11.241.2 Field Documentation**11.241.2.1 `creator` `osal_id_t OS_condvar_prop_t::creator`**

Definition at line 37 of file osapi-condvar.h.

11.241.2.2 `name` char OS_condvar_prop_t::name[OS_MAX_API_NAME]

Definition at line 36 of file osapi-condvar.h.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-condvar.h`

11.242 OS_count_sem_prop_t Struct Reference

OSAL counting semaphore properties.

```
#include <osapi-countsem.h>
```

Data Fields

- char `name` [OS_MAX_API_NAME]
- `osal_id_t creator`
- `int32 value`

11.242.1 Detailed Description

OSAL counting semaphore properties.

Definition at line 32 of file osapi-countsem.h.

11.242.2 Field Documentation**11.242.2.1 `creator` `osal_id_t OS_count_sem_prop_t::creator`**

Definition at line 35 of file osapi-countsem.h.

11.242.2.2 `name` char OS_count_sem_prop_t::name[OS_MAX_API_NAME]

Definition at line 34 of file osapi-countsem.h.

11.242.2.3 value int32 OS_count_sem_prop_t::value

Definition at line 36 of file osapi-countsem.h.

The documentation for this struct was generated from the following file:

- [osal/src/os/inc/osapi-countsem.h](#)

11.243 os_dirent_t Struct Reference

Directory entry.

```
#include <osapi-dir.h>
```

Data Fields

- char [FileName \[OS_MAX_FILE_NAME\]](#)

11.243.1 Detailed Description

Directory entry.

Definition at line 32 of file osapi-dir.h.

11.243.2 Field Documentation

11.243.2.1 FileName char os_dirent_t::FileName[OS_MAX_FILE_NAME]

Definition at line 34 of file osapi-dir.h.

The documentation for this struct was generated from the following file:

- [osal/src/os/inc/osapi-dir.h](#)

11.244 OS_FdSet Struct Reference

An abstract structure capable of holding several OSAL IDs.

```
#include <osapi-select.h>
```

Data Fields

- uint8 [object_ids \[\(OS_MAX_NUM_OPEN_FILES+7\)/8\]](#)

11.244.1 Detailed Description

An abstract structure capable of holding several OSAL IDs.

This is part of the select API and is manipulated using the related API calls. It should not be modified directly by applications.

Note: Math is to determine uint8 array size needed to represent single bit OS_MAX_NUM_OPEN_FILES objects, + 7 rounds up and 8 is the size of uint8.

See also

[OS_SelectFdZero\(\)](#), [OS_SelectFdAdd\(\)](#), [OS_SelectFdClear\(\)](#), [OS_SelectFdIsSet\(\)](#)

Definition at line 44 of file osapi-select.h.

11.244.2 Field Documentation

11.244.2.1 object_ids `uint8 OS_FdSet::object_ids[(OS_MAX_NUM_OPEN_FILES+7) / 8]`

Definition at line 46 of file osapi-select.h.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-select.h`

11.245 OS_file_prop_t Struct Reference

OSAL file properties.

```
#include <osapi-file.h>
```

Data Fields

- `char Path [OS_MAX_PATH_LEN]`
- `osal_id_t User`
- `uint8 IsValid`

11.245.1 Detailed Description

OSAL file properties.

Definition at line 49 of file osapi-file.h.

11.245.2 Field Documentation

11.245.2.1 IsValid

`uint8 OS_file_prop_t::IsValid`

Definition at line 53 of file osapi-file.h.

11.245.2.2 Path

`char OS_file_prop_t::Path[OS_MAX_PATH_LEN]`

Definition at line 51 of file osapi-file.h.

Referenced by `LoadOpenFileData()`, and `SearchOpenFileData()`.

11.245.2.3 User

`osal_id_t OS_file_prop_t::User`

Definition at line 52 of file osapi-file.h.

Referenced by `LoadOpenFileData()`.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-file.h`

11.246 os_fsinfo_t Struct Reference

OSAL file system info.

```
#include <osapi-fsinfo.h>
```

Data Fields

- `uint32 MaxFds`
Total number of file descriptors.
- `uint32 FreeFds`
Total number that are free.
- `uint32 MaxVolumes`

Maximum number of volumes.

- **uint32 FreeVolumes**

Total number of volumes free.

11.246.1 Detailed Description

OSAL file system info.

Definition at line 35 of file osapi-filesystems.h.

11.246.2 Field Documentation

11.246.2.1 **FreeFds** `uint32 os_fsinfo_t::FreeFds`

Total number that are free.

Definition at line 38 of file osapi-filesystems.h.

11.246.2.2 **FreeVolumes** `uint32 os_fsinfo_t::FreeVolumes`

Total number of volumes free.

Definition at line 40 of file osapi-filesystems.h.

11.246.2.3 **MaxFds** `uint32 os_fsinfo_t::MaxFds`

Total number of file descriptors.

Definition at line 37 of file osapi-filesystems.h.

11.246.2.4 **MaxVolumes** `uint32 os_fsinfo_t::MaxVolumes`

Maximum number of volumes.

Definition at line 39 of file osapi-filesystems.h.

The documentation for this struct was generated from the following file:

- [osal/src/os/inc/osapi-filesystems.h](#)

11.247 **os_fstat_t** Struct Reference

File system status.

```
#include <osapi-file.h>
```

Data Fields

- `uint32 FileModeBits`
- `OS_time_t FileTime`
- `size_t FileSize`

11.247.1 Detailed Description

File system status.

Note

This used to be directly typedef'ed to the "struct stat" from the C library

Some C libraries (glibc in particular) actually define member names to reference into sub-structures, so attempting to reuse a name like "st_mtime" might not work.

Definition at line 64 of file osapi-file.h.

11.247.2 Field Documentation

11.247.2.1 FileModeBits `uint32 os_fstat_t::FileModeBits`

Definition at line 66 of file osapi-file.h.

11.247.2.2 FileSize `size_t os_fstat_t::FileSize`

Definition at line 68 of file osapi-file.h.

Referenced by FM_GetDirectorySpaceEstimate().

11.247.2.3 FileTime `os_time_t os_fstat_t::FileTime`

Definition at line 67 of file osapi-file.h.

The documentation for this struct was generated from the following file:

- [osal/src/os/inc/osapi-file.h](#)

11.248 OS_heap_prop_t Struct Reference

OSAL heap properties.

```
#include <osapi-heap.h>
```

Data Fields

- `size_t free_bytes`
- `osal_blockcount_t free_blocks`
- `size_t largest_free_block`

11.248.1 Detailed Description

OSAL heap properties.

See also

[OS_HeapGetInfo\(\)](#)

Definition at line 36 of file osapi-heap.h.

11.248.2 Field Documentation

11.248.2.1 free_blocks `osal_blockcount_t OS_heap_prop_t::free_blocks`

Definition at line 39 of file osapi-heap.h.

11.248.2.2 free_bytes `size_t OS_heap_prop_t::free_bytes`

Definition at line 38 of file osapi-heap.h.

11.248.2.3 largest_free_block `size_t OS_heap_prop_t::largest_free_block`

Definition at line 40 of file osapi-heap.h.

The documentation for this struct was generated from the following file:

- [osal/src/os/inc/osapi-heap.h](#)

11.249 OS_module_address_t Struct Reference

OSAL module address properties.

```
#include <osapi-module.h>
```

Data Fields

- `uint32 valid`
- `uint32 flags`
- `cpuaddr code_address`
- `cpuaddr code_size`
- `cpuaddr data_address`
- `cpuaddr data_size`
- `cpuaddr bss_address`
- `cpuaddr bss_size`

11.249.1 Detailed Description

OSAL module address properties.

Definition at line 78 of file osapi-module.h.

11.249.2 Field Documentation

11.249.2.1 `bss_address` `cpuaddr` OS_module_address_t::bss_address

Definition at line 86 of file osapi-module.h.

11.249.2.2 `bss_size` `cpuaddr` OS_module_address_t::bss_size

Definition at line 87 of file osapi-module.h.

11.249.2.3 `code_address` `cpuaddr` OS_module_address_t::code_address

Definition at line 82 of file osapi-module.h.

11.249.2.4 `code_size` `cpuaddr` OS_module_address_t::code_size

Definition at line 83 of file osapi-module.h.

11.249.2.5 `data_address` `cpuaddr` OS_module_address_t::data_address

Definition at line 84 of file osapi-module.h.

11.249.2.6 `data_size` `cpuaddr` OS_module_address_t::data_size

Definition at line 85 of file osapi-module.h.

11.249.2.7 `flags` `uint32` OS_module_address_t::flags

Definition at line 81 of file osapi-module.h.

11.249.2.8 valid `uint32 OS_module_address_t::valid`

Definition at line 80 of file osapi-module.h.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-module.h`

11.250 OS_module_prop_t Struct Reference

OSAL module properties.

```
#include <osapi-module.h>
```

Data Fields

- `cpuaddr entry_point`
- `cpuaddr host_module_id`
- `char filename [OS_MAX_PATH_LEN]`
- `char name [OS_MAX_API_NAME]`
- `OS_module_address_t addr`

11.250.1 Detailed Description

OSAL module properties.

Definition at line 91 of file osapi-module.h.

11.250.2 Field Documentation

11.250.2.1 addr `OS_module_address_t OS_module_prop_t::addr`

Definition at line 97 of file osapi-module.h.

11.250.2.2 entry_point `cpuaddr OS_module_prop_t::entry_point`

Definition at line 93 of file osapi-module.h.

11.250.2.3 filename `char OS_module_prop_t::filename[OS_MAX_PATH_LEN]`

Definition at line 95 of file osapi-module.h.

11.250.2.4 host_module_id `cpuaddr OS_module_prop_t::host_module_id`

Definition at line 94 of file osapi-module.h.

11.250.2.5 name `char OS_module_prop_t::name[OS_MAX_API_NAME]`

Definition at line 96 of file osapi-module.h.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-module.h`

11.251 OS_mut_sem_prop_t Struct Reference

OSAL mutex properties.

```
#include <osapi-mutex.h>
```

Data Fields

- char `name` [`OS_MAX_API_NAME`]
- `osal_id_t` `creator`

11.251.1 Detailed Description

OSAL mutex properties.

Definition at line 32 of file osapi-mutex.h.

11.251.2 Field Documentation**11.251.2.1 creator `osal_id_t` `OS_mut_sem_prop_t::creator`**

Definition at line 35 of file osapi-mutex.h.

11.251.2.2 name char `OS_mut_sem_prop_t::name[OS_MAX_API_NAME]`

Definition at line 34 of file osapi-mutex.h.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-mutex.h`

11.252 OS_queue_prop_t Struct Reference

OSAL queue properties.

```
#include <osapi-queue.h>
```

Data Fields

- char `name` [`OS_MAX_API_NAME`]
- `osal_id_t` `creator`

11.252.1 Detailed Description

OSAL queue properties.

Definition at line 32 of file osapi-queue.h.

11.252.2 Field Documentation**11.252.2.1 creator `osal_id_t` `OS_queue_prop_t::creator`**

Definition at line 35 of file osapi-queue.h.

11.252.2.2 name char `OS_queue_prop_t::name[OS_MAX_API_NAME]`

Definition at line 34 of file osapi-queue.h.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-queue.h`

11.253 OS_SockAddr_t Struct Reference

Encapsulates a generic network address.

```
#include <osapi-sockets.h>
```

Data Fields

- size_t [ActualLength](#)
Length of the actual address data.
- [OS_SockAddrData_t AddrData](#)
Abstract Address data.

11.253.1 Detailed Description

Encapsulates a generic network address.

This is just an abstract buffer type that holds a network address. It is allocated for the worst-case size defined by OS SOCKADDR_MAX_LEN, and the real size is stored within.

Definition at line 110 of file osapi-sockets.h.

11.253.2 Field Documentation

11.253.2.1 ActualLength size_t OS_SockAddr_t::ActualLength

Length of the actual address data.

Definition at line 112 of file osapi-sockets.h.

11.253.2.2 AddrData OS_SockAddrData_t OS_SockAddr_t::AddrData

Abstract Address data.

Definition at line 113 of file osapi-sockets.h.

The documentation for this struct was generated from the following file:

- [osal/src/os/inc/osapi-sockets.h](#)

11.254 OS_SockAddrData_t Union Reference

Storage buffer for generic network address.

```
#include <osapi-sockets.h>
```

Data Fields

- [uint8 Buffer \[OS SOCKADDR_MAX_LEN\]](#)
Ensures length of at least OS SOCKADDR_MAX_LEN.
- [uint32 AlignU32](#)
Ensures uint32 alignment.
- [void * AlignPtr](#)
Ensures pointer alignment.

11.254.1 Detailed Description

Storage buffer for generic network address.

This is a union type that helps to ensure a minimum alignment value for the data storage, such that it can be cast to the system-specific type without increasing alignment requirements.

Definition at line 96 of file osapi-sockets.h.

11.254.2 Field Documentation

11.254.2.1 AlignPtr void* OS_SockAddrData_t::AlignPtr

Ensures pointer alignment.

Definition at line 100 of file osapi-sockets.h.

11.254.2.2 AlignU32 uint32 OS_SockAddrData_t::AlignU32

Ensures uint32 alignment.

Definition at line 99 of file osapi-sockets.h.

11.254.2.3 Buffer uint8 OS_SockAddrData_t::Buffer[OS SOCKADDR_MAX_LEN]

Ensures length of at least OS SOCKADDR_MAX_LEN.

Definition at line 98 of file osapi-sockets.h.

The documentation for this union was generated from the following file:

- [osal/src/os/inc/osapi-sockets.h](#)

11.255 OS_socket_prop_t Struct Reference

Encapsulates socket properties.

```
#include <osapi-sockets.h>
```

Data Fields

- char **name** [OS_MAX_API_NAME]

Name of the socket.

- **osal_id_t creator**

OSAL TaskID which opened the socket.

11.255.1 Detailed Description

Encapsulates socket properties.

This is for consistency with other OSAL resource types. Currently no extra properties are exposed here but this could change in a future revision of OSAL as needed.

Definition at line 123 of file osapi-sockets.h.

11.255.2 Field Documentation

11.255.2.1 **creator** [osal_id_t](#) OS_socket_prop_t::creator

OSAL TaskID which opened the socket.

Definition at line 126 of file osapi-sockets.h.

11.255.2.2 **name** char OS_socket_prop_t::name[OS_MAX_API_NAME]

Name of the socket.

Definition at line 125 of file osapi-sockets.h.

The documentation for this struct was generated from the following file:

- [osal/src/os/inc/osapi-sockets.h](#)

11.256 OS_static_symbol_record_t Struct Reference

Associates a single symbol name with a memory address.

```
#include <osapi-module.h>
```

Data Fields

- const char * [Name](#)
- void(* [Address](#))(void)
- const char * [Module](#)

11.256.1 Detailed Description

Associates a single symbol name with a memory address.

If the OS_STATIC_SYMBOL_TABLE feature is enabled, then an array of these structures should be provided by the application. When the application needs to find a symbol address, the static table will be checked in addition to (or instead of) the OS/library-provided lookup function.

This static symbol allows systems that do not implement dynamic module loading to maintain the same semantics as dynamically loaded modules.

Definition at line 113 of file osapi-module.h.

11.256.2 Field Documentation

11.256.2.1 Address void(* OS_static_symbol_record_t::Address) (void)

Definition at line 116 of file osapi-module.h.

11.256.2.2 Module const char* OS_static_symbol_record_t::Module

Definition at line 117 of file osapi-module.h.

11.256.2.3 Name const char* OS_static_symbol_record_t::Name

Definition at line 115 of file osapi-module.h.

The documentation for this struct was generated from the following file:

- [osal/src/os/inc/osapi-module.h](#)

11.257 OS_statvfs_t Struct Reference

```
#include <osapi-fs.h>
```

Data Fields

- size_t [block_size](#)
- [osal_blockcount_t total_blocks](#)
- [osal_blockcount_t blocks_free](#)

11.257.1 Detailed Description

Definition at line 49 of file osapi-fs.h.

11.257.2 Field Documentation

11.257.2.1 block_size size_t OS_statvfs_t::block_size

Block size of underlying FS

Definition at line 51 of file osapi-filesystems.h.

Referenced by FM_GetVolumeFreeSpace().

11.257.2.2 blocks_free osal_blockcount_t OS_statvfs_t::blocks_free

Available blocks in underlying FS

Definition at line 53 of file osapi-filesystems.h.

Referenced by FM_GetVolumeFreeSpace().

11.257.2.3 total_blocks osal_blockcount_t OS_statvfs_t::total_blocks

Total blocks in underlying FS

Definition at line 52 of file osapi-filesystems.h.

The documentation for this struct was generated from the following file:

- osal/src/os/inc/osapi-filesystems.h

11.258 OS_task_prop_t Struct Reference

OSAL task properties.

```
#include <osapi-task.h>
```

Data Fields

- char name [OS_MAX_API_NAME]
- osal_id_t creator
- size_t stack_size
- osal_priority_t priority

11.258.1 Detailed Description

OSAL task properties.

Definition at line 57 of file osapi-task.h.

11.258.2 Field Documentation

11.258.2.1 creator osal_id_t OS_task_prop_t::creator

Definition at line 60 of file osapi-task.h.

11.258.2.2 name char OS_task_prop_t::name[OS_MAX_API_NAME]

Definition at line 59 of file osapi-task.h.

Referenced by LoadOpenFileData().

11.258.2.3 priority `osal_priority_t` `OS_task_prop_t::priority`
Definition at line 62 of file osapi-task.h.

11.258.2.4 stack_size `size_t` `OS_task_prop_t::stack_size`
Definition at line 61 of file osapi-task.h.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-task.h`

11.259 OS_time_t Struct Reference

OSAL time interval structure.

```
#include <osapi-clock.h>
```

Data Fields

- `int64 ticks`

11.259.1 Detailed Description

OSAL time interval structure.

This is used to represent a basic time interval.

When used with `OS_GetLocalTime`/`OS_SetLocalTime`, this represents the interval from the OS's epoch point, typically 01 Jan 1970 00:00:00 UTC on systems that have a persistent real time clock (RTC), or the system boot time if there is no RTC available.

Applications should not directly access fields within this structure, as the definition may change in future versions of OSAL. Instead, applications should use the accessor/conversion methods defined below.

Definition at line 45 of file osapi-clock.h.

11.259.2 Field Documentation

11.259.2.1 ticks `int64` `OS_time_t::ticks`

Ticks elapsed since reference point

Definition at line 47 of file osapi-clock.h.

Referenced by `OS_TimeAdd()`, `OS_TimeAssembleFromMicroseconds()`, `OS_TimeAssembleFromMilliseconds()`, `OS_TimeAssembleFromNanoseconds()`, `OS_TimeAssembleFromSubseconds()`, `OS_TimeEqual()`, `OS_TimeGetFractionalPart()`, `OS_TimeGetSign()`, `OS_TimeGetTotalMicroseconds()`, `OS_TimeGetTotalMilliseconds()`, `OS_TimeGetTotalNanoseconds()`, `OS_TimeGetTotalSeconds()`, and `OS_TimeSubtract()`.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-clock.h`

11.260 OS_timebase_prop_t Struct Reference

Time base properties.

```
#include <osapi-timebase.h>
```

Data Fields

- `char name [OS_MAX_API_NAME]`
- `osal_id_t creator`
- `uint32 nominal_interval_time`

- `uint32 freerun_time`
- `uint32 accuracy`

11.260.1 Detailed Description

Time base properties.

Definition at line 37 of file osapi-timebase.h.

11.260.2 Field Documentation

11.260.2.1 `accuracy` `uint32 OS_timebase_prop_t::accuracy`

Definition at line 43 of file osapi-timebase.h.

11.260.2.2 `creator` `osal_id_t OS_timebase_prop_t::creator`

Definition at line 40 of file osapi-timebase.h.

11.260.2.3 `freerun_time` `uint32 OS_timebase_prop_t::freerun_time`

Definition at line 42 of file osapi-timebase.h.

11.260.2.4 `name` `char OS_timebase_prop_t::name[OS_MAX_API_NAME]`

Definition at line 39 of file osapi-timebase.h.

11.260.2.5 `nominal_interval_time` `uint32 OS_timebase_prop_t::nominal_interval_time`

Definition at line 41 of file osapi-timebase.h.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-timebase.h`

11.261 OS_timer_prop_t Struct Reference

Timer properties.

```
#include <osapi-timer.h>
```

Data Fields

- `char name [OS_MAX_API_NAME]`
- `osal_id_t creator`
- `uint32 start_time`
- `uint32 interval_time`
- `uint32 accuracy`

11.261.1 Detailed Description

Timer properties.

Definition at line 37 of file osapi-timer.h.

11.261.2 Field Documentation

11.261.2.1 **accuracy** `uint32 OS_timer_prop_t::accuracy`

Definition at line 43 of file osapi-timer.h.

11.261.2.2 **creator** `osal_id_t OS_timer_prop_t::creator`

Definition at line 40 of file osapi-timer.h.

11.261.2.3 **interval_time** `uint32 OS_timer_prop_t::interval_time`

Definition at line 42 of file osapi-timer.h.

11.261.2.4 **name** `char OS_timer_prop_t::name[OS_MAX_API_NAME]`

Definition at line 39 of file osapi-timer.h.

11.261.2.5 **start_time** `uint32 OS_timer_prop_t::start_time`

Definition at line 41 of file osapi-timer.h.

The documentation for this struct was generated from the following file:

- `osal/src/os/inc/osapi-timer.h`

12 File Documentation

12.1 `apps/fm/docs/dox_src/cfs_fm.dox` File Reference

12.2 `apps/fm/fsw/inc/fm_events.h` File Reference

Macros

- `#define FM_INIT_INF_EID 1`
FM Initialization Event ID.
- `#define FM_STARTUP_EVENTS_ERR_EID 2`
FM Initialization Register For Event Services Failed Event ID.
- `#define FM_CR_PIPE_ERR_EID 3`
FM Initialization Create SB Input Pipe Failed Event ID.
- `#define FM_STARTUP_SUBSCRIB_HK_ERR_EID 4`
FM Initialization Subscribe to HK Request Failed Event ID.
- `#define FM_STARTUP_SUBSCRIB_GCMD_ERR_EID 5`
FM Initialization Subscribe to FM Commands Failed Event ID.
- `#define FM_STARTUP_TABLE_INIT_ERR_EID 6`
FM Initialization Register Free Space Table Failed Event ID.
- `#define FM_SB_RECEIVE_ERR_EID 7`
FM Main Loop Receive from Software Bus Failed Event ID.
- `#define FM_EXIT_ERR_EID 8`
FM Application Termination Event ID.
- `#define FM_MID_ERR_EID 9`

- #define FM_CC_ERR_EID 10
 - FM Main Loop Message ID Invalid Event ID.*
- #define FM_HKREQ_LEN_ERR_EID 11
 - FM Main Loop Command Code Invalid Event ID.*
- #define FM_NOOP_INF_EID 12
 - FM Command Packet Length Invalid Event ID.*
- #define FM_NOOP_PKT_ERR_EID 13
 - FM No-op Command Event ID.*
- #define FM_RESET_INF_EID 14
 - FM No-op Command Length Invalid Event ID.*
- #define FM_RESET_PKT_ERR_EID 15
 - FM Reset Counters Command Event ID.*
- #define FM_COPY_CMD_INF_EID 16
 - FM Reset Counters Command Length Invalid Event ID.*
- #define FM_COPY_PKT_ERR_EID 17
 - FM Copy File Command Event ID.*
- #define FM_COPY_OVR_ERR_EID 18
 - FM Copy File Command Length Invalid Event ID.*
- #define FM_COPY_OS_ERR_EID 19
 - FM Copy File Command OS Error Event ID.*
- #define FM_MOVE_CMD_INF_EID 20
 - FM Move File Command Event ID.*
- #define FM_MOVE_PKT_ERR_EID 21
 - FM Move File Command Length Invalid Event ID.*
- #define FM_MOVE_OVR_ERR_EID 22
 - FM Move File Command Overwrite Invalid Event ID.*
- #define FM_MOVE_OS_ERR_EID 23
 - FM Move File Command OS Error Event ID.*
- #define FM_RENAME_CMD_INF_EID 24
 - FM Rename File Command Event ID.*
- #define FM_RENAME_PKT_ERR_EID 25
 - FM Rename File Command Length Invalid Event ID.*
- #define FM_RENAME_OVR_ERR_EID 26
 - FM Rename File Command Overwrite Invalid Event ID.*
- #define FM_RENAME_OS_ERR_EID 27
 - FM Rename File Command OS Error Event ID.*
- #define FM_DELETE_CMD_INF_EID 28
 - FM Delete File Command Event ID.*
- #define FM_DELETE_PKT_ERR_EID 29
 - FM Delete File Command Length Invalid Event ID.*
- #define FM_DELETE_OS_ERR_EID 30
 - FM Delete File Command OS Error Event ID.*
- #define FM_DELETE_ALL_CMD_INF_EID 31
 - FM Delete All Files Command Event ID.*
- #define FM_DELETE_ALL_FILES_ND_WARNING_EID 32
 - FM Delete All Files Unable To Delete All Event ID.*

- #define FM_DELETE_ALL_SKIP_WARNING_EID 33
FM Delete All Files Directories Skipped Event ID.
- #define FM_DELETE_ALL_PKT_ERR_EID 34
FM Delete All Files Command Length Invalid Event ID.
- #define FM_DELETE_ALL_OS_ERR_EID 35
FM Delete All Files Command OS Error Event ID.
- #define FM_DECOM_CMD_INF_EID 36
FM Decompress File Command Event ID.
- #define FM_DECOM_PKT_ERR_EID 37
FM Decompress File Command Length Invalid Event ID.
- #define FM_DECOM_CFE_ERR_EID 38
FM Decompress File Decompression Failed Event ID.
- #define FM_CONCAT_CMD_INF_EID 39
FM Concat Files Command Event ID.
- #define FM_CONCAT_PKT_ERR_EID 40
FM Concat Files Command Length Invalid Event ID.
- #define FM_CONCAT_OSCPY_ERR_EID 41
FM Concat Files Copy Failed Event ID.
- #define FM_CONCAT_OPEN_SRC2_ERR_EID 42
FM Concat Files Command Open Second Source File Failed Event ID.
- #define FM_CONCAT_OPEN_TGT_ERR_EID 43
FM Concat Files Command Open Target File Failed Event ID.
- #define FM_CONCAT_OSRD_ERR_EID 44
FM Concat Files Command Read Second Source File Failed Event ID.
- #define FM_CONCAT_OSWR_ERR_EID 45
FM Concat Files Command Write Target File Failed Event ID.
- #define FM_GET_FILE_INFO_CMD_INF_EID 46
FM Get File Info Command Event ID.
- #define FM_GET_FILE_INFO_STATE_WARNING_EID 47
FM Get File Info Unable To Compute CRC File State Invalid Event ID.
- #define FM_GET_FILE_INFO_TYPE_WARNING_EID 48
FM Get File Info Unable To Compute CRC, CRC Type Invalid Event ID.
- #define FM_GET_FILE_INFO_OPEN_ERR_EID 49
FM Get File Info Unable To Compute CRC File Open Failed Event ID.
- #define FM_GET_FILE_INFO_READ_WARNING_EID 50
FM Get File Info Unable To Compute CRC File Read Failed Event ID.
- #define FM_GET_FILE_INFO_PKT_ERR_EID 51
FM Get File Info Command Length Invalid Event ID.
- #define FM_GET_FILE_INFO_SRC_ERR_EID 52
FM Get File Info Command Filename Invalid Event ID.
- #define FM_GET_OPEN_FILES_CMD_INF_EID 53
FM Get Open Files Command Event ID.
- #define FM_GET_OPEN_FILES_PKT_ERR_EID 54
FM Get Open Files Command Length Invalid Event ID.
- #define FM_CREATE_DIR_CMD_INF_EID 55
FM Create Directory Command Event ID.
- #define FM_CREATE_DIR_PKT_ERR_EID 56

- #define FM_CREATE_DIR_OS_ERR_EID 57
 - FM Create Directory Command Length Invalid Event ID.
- #define FM_DELETE_DIR_CMD_INF_EID 58
 - FM Delete Directory Command Event ID.
- #define FM_DELETE_DIR_PKT_ERR_EID 59
 - FM Delete Directory Command Length Invalid Event ID.
- #define FM_DELETE_DIR_EMPTY_ERR_EID 60
 - FM Delete Directory Command Failed Directory Not Empty Event ID.
- #define FM_DELETE_OPENDIR_OS_ERR_EID 61
 - FM Delete Directory, Directoy Open Failed Event ID.
- #define FM_DELETE_RMDIR_OS_ERR_EID 62
 - FM Delete Directory Remove Directory Failed Event ID.
- #define FM_GET_DIR_FILE_CMD_INF_EID 63
 - FM Directory List To File Command Event ID.
- #define FM_GET_DIR_FILE_PKT_ERR_EID 64
 - FM Directory List To File Command Length Invalid Event ID.
- #define FM_GET_DIR_FILE_WARNING_EID 65
 - FM Directory List To File Command Combined Path and Name Too Long Event ID.
- #define FM_GET_DIR_FILE_OSOPENDIR_ERR_EID 66
 - FM Directory List To File Directory Open Failed Event ID.
- #define FM_GET_DIR_FILE_WRBLANK_ERR_EID 67
 - FM Directory List To File Write Blank Stats Failed Event ID.
- #define FM_GET_DIR_FILE_WRHDR_ERR_EID 68
 - FM Directory List To File Write Header Failed Event ID.
- #define FM_GET_DIR_FILE_OSCREAT_ERR_EID 69
 - FM Directory List To File Create File Failed Event ID.
- #define FM_GET_DIR_FILE_WRENTRY_ERR_EID 70
 - FM Directory List To File Write Entry Failed Event ID.
- #define FM_GET_DIR_FILE_UPSTATS_ERR_EID 71
 - FM Directory List To File Write Update Stats Failed Event ID.
- #define FM_GET_DIR_PKT_CMD_INF_EID 72
 - FM Directory List To Packet Command Event ID.
- #define FM_GET_DIR_PKT_WARNING_EID 73
 - FM Directory List To Packet Command Directory and Entry Too Long Event ID.
- #define FM_GET_DIR_PKT_PKT_ERR_EID 74
 - FM Directory List To Packet Command Length Invalid Event ID.
- #define FM_GET_DIR_PKT_OS_ERR_EID 75
 - FM Directory List To Packet Directory Open Failed Event ID.
- #define FM_MONITOR_FILESYSTEM_SPACE_CMD_INF_EID 76
 - FM Monitor Filesystem Command Event ID.
- #define FM_GET_FREE_SPACE_PKT_ERR_EID 77
 - FM Get Free Space Command Length Invalid Event ID.
- #define FM_GET_FREE_SPACE_TBL_ERR_EID 78
 - FM Get Free Space Table Not Loaded Event ID.
- #define FM_SET_TABLE_STATE_CMD_EID 79
 - FM Set Table State Command Event ID.

- #define FM_SET_TABLE_STATE_PKT_ERR_EID 80
FM Set Table State Command Length Invalid Event ID.
- #define FM_SET_TABLE_STATE_TBL_ERR_EID 81
FM Set Table State Command Table Not Loaded Event ID.
- #define FM_SET_TABLE_STATE_ARG_IDX_ERR_EID 82
FM Set Table State Command Index Invalid Event ID.
- #define FM_SET_TABLE_STATE_ARG_STATE_ERR_EID 83
FM Set Table State Command State Invalid Event ID.
- #define FM_SET_TABLE_STATE_UNUSED_ERR_EID 84
FM Set Table State Command Unused Entry Event ID.
- #define FM_TABLE_VERIFY_EMPTY_ERR_EID 85
FM Free Space Table Verification Failed Empty Name Event ID.
- #define FM_TABLE_VERIFY_TOOLONG_ERR_EID 86
FM Free Space Table Verification Failed Name Too Long Event ID.
- #define FM_TABLE_VERIFY_BAD_STATE_ERR_EID 88
FM Free Space Table Verification Failed State Invalid Event ID.
- #define FM_CHILD_INIT_EID 89
FM Child Task Initialization Complete Event ID.
- #define FM_CHILD_INIT_SEM_ERR_EID 90
FM Child Task Initialization Create Semaphore Failed Event ID.
- #define FM_CHILD_INIT_QSEM_ERR_EID 91
FM Child Task Initialization Create Queue Count Semaphore Failed Event ID.
- #define FM_CHILD_INIT_CREATE_ERR_EID 92
FM Child Task Initialization Create Task Failed Event ID.
- #define FM_CHILD_TERM_EMPTYQ_ERR_EID 93
FM Child Task Termination Error Empty Queue Event ID.
- #define FM_CHILD_TERM_QIDX_ERR_EID 94
FM Child Task Termination Error Invalid Queue Index Event ID.
- #define FM_CHILD_TERM_SEM_ERR_EID 95
FM Child Task Termination Error Semaphore Take Failed Event ID.
- #define FM_CHILD_EXE_ERR_EID 96
FM Child Task Command Code Invalid Event ID.
- #define FM_TABLE_VERIFY_EID 97
FM Free Space Table Validation Results Event ID.
- #define FM_SET_PERM_ERR_EID 98
FM Set Permissions Command Length Invalid Event ID.
- #define FM_SET_PERM_CMD_INF_EID 99
FM Set Permissions Command Event ID.
- #define FM_SET_PERM_OS_ERR_EID 100
FM Set Permissions Command Chmod Error Event ID.
- #define FM_TABLE_VERIFY_NULL_PTR_ERR_EID 101
FM Free Space Table Verification Failed Null Pointer Detected.
- #define FM_SB_RECEIVE_NULL_PTR_ERR_EID 102
FM Main Loop Software Bus Returned NULL On Success Event ID.
- #define FM_OS_SYS_STAT_ERR_EID 103
FM Get Free Space Get File System Stats Failed Event ID.
- #define FM_DIRECTORY_ESTIMATE_ERR_EID 104

- *FM Directory Size Estimate Failed Event ID.*
 - #define FM_FNAME_INVALID_EID_OFFSET 0
 - #define FM_FNAME_DNE_EID_OFFSET 1
 - #define FM_FNAME_EXIST_EID_OFFSET 1 /* mutually exclusive with DNE */
 - #define FM_FNAME_ISDIR_EID_OFFSET 2
 - #define FM_FNAME_ISFILE_EID_OFFSET 2 /* mutually exclusive with ISDIR */
 - #define FM_FNAME_ISOPEN_EID_OFFSET 3
 - #define FM_FNAME_ISCLOSED_EID_OFFSET 4
 - #define FM_FNAME_NUM_OFFSETS 6
 - #define FM_CHILD_DISABLED_EID_OFFSET 0
 - #define FM_CHILD_Q_FULL_EID_OFFSET 1
 - #define FM_CHILD_BROKEN_EID_OFFSET 2
 - #define FM_CHILD_NUM_OFFSETS 3
 - #define FM_COPY_SRC_BASE_EID 151
- *FM Child Task Copy File Source Filename Error Base ID.*
 - #define FM_COPY_SRC_INVALID_ERR_EID (FM_COPY_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
- *FM Child Task Copy File Source Name Invalid Event ID.*
 - #define FM_COPY_SRC_DNE_ERR_EID (FM_COPY_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
- *FM Child Task Copy File Source File Does Not Exist Event ID.*
 - #define FM_COPY_SRC_ISDIR_ERR_EID (FM_COPY_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
- *FM Child Task Copy File Source File Name Is Directory Event ID.*
 - #define FM_COPY_TGT_BASE_EID (FM_COPY_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
- *FM Child Task Copy File Target Filename Error Base ID.*
 - #define FM_COPY_TGT_INVALID_ERR_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
- *FM Child Task Copy File Target Filename Invalid Event ID.*
 - #define FM_COPY_TGT_EXIST_ERR_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
- *FM Child Task Copy File Target File Already Exists Event ID.*
 - #define FM_COPY_TGT_ISDIR_ERR_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
- *FM Child Task Copy File Target Filename Is A Directory Event ID.*
 - #define FM_COPY_TGT_ISOPEN_ERR_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
- *FM Child Task Copy File Target Filename Exists As Open File Event ID.*
 - #define FM_COPY_CHILD_BASE_EID (FM_COPY_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
- *FM Child Task Copy File Child Task Error Base ID.*
 - #define FM_COPY_CHILD_DISABLED_ERR_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
- *FM Child Task Copy File Child Task Disabled Event ID.*
 - #define FM_COPY_CHILD_FULL_ERR_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
- *FM Child Task Copy File Child Task Queue Full Event ID.*
 - #define FM_COPY_CHILD_BROKEN_ERR_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
- *FM Child Task Copy File Child Task Interface Broken Event ID.*
 - #define FM_MOVE_SRC_BASE_EID (FM_COPY_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
- *FM Child Task Move File Source Filename Error Base ID.*
 - #define FM_MOVE_SRC_INVALID_ERR_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
- *FM Child Task Move File Source Filename Invalid Event ID.*
 - #define FM_MOVE_SRC_DNE_ERR_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
- *FM Child Task Move File Source File Does Not Exist Event ID.*
 - #define FM_MOVE_SRC_ISDIR_ERR_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
- *FM Child Task Move File Source Filename Is A Directory Event ID.*
 - #define FM_MOVE_TGT_BASE_EID (FM_MOVE_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)

- #define FM_MOVE_TGT_INVALID_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Move File Target Filename Invalid Event ID.
- #define FM_MOVE_TGT_EXIST_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
 FM Child Task Move File Target File Already Exists Event ID.
- #define FM_MOVE_TGT_ISDIR_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Move File Target Filename Is A Directory Event ID.
- #define FM_MOVE_TGT_ISOPEN_ERR_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
 FM Child Task Move File Target File Exists As An Open File Event ID.
- #define FM_MOVE_CHILD_BASE_EID (FM_MOVE_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Move File Child Task Error Base ID.
- #define FM_MOVE_CHILD_DISABLED_ERR_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Move File Child Task Disabled Event ID.
- #define FM_MOVE_CHILD_FULL_ERR_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Move File Child Task Queue Full Event ID.
- #define FM_MOVE_CHILD_BROKEN_ERR_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Move File Child Task Interface Broken Event ID.
- #define FM_RENAME_SRC_BASE_EID (FM_MOVE_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Rename File Source Filename Error Base ID.
- #define FM_RENAME_SRC_INVALID_ERR_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Rename File Source Filename Invalid Event ID.
- #define FM_RENAME_SRC_DNE_ERR_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Rename File Source File Does Not Exist Event ID.
- #define FM_RENAME_SRC_ISDIR_ERR_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Rename File Source Filename Is Directory Event ID.
- #define FM_RENAME_TGT_BASE_EID (FM_RENAME_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Rename File Target Filename Error Base ID.
- #define FM_RENAME_TGT_INVALID_ERR_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Rename File Target Filename Invalid Event ID.
- #define FM_RENAME_TGT_EXIST_ERR_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
 FM Child Task Rename File Target File Already Exists Event ID.
- #define FM_RENAME_TGT_ISDIR_ERR_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Rename File Target Filename Is Directory Event ID.
- #define FM_RENAME_TGT_ISOPEN_ERR_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
 FM Child Task Rename File Target Filename Exists As Open File Event ID.
- #define FM_RENAME_CHILD_BASE_EID (FM_RENAME_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Rename File Child Task Error Base ID.
- #define FM_RENAME_CHILD_DISABLED_ERR_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Rename File Child Task Disabled Event ID.
- #define FM_RENAME_CHILD_FULL_ERR_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Rename File Child Task Queue Full Event ID.
- #define FM_RENAME_CHILD_BROKEN_ERR_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Rename File Child Task Interface Broken Event ID.
- #define FM_DELETE_SRC_BASE_EID (FM_RENAME_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Delete File Source Filename Error Base ID.
- #define FM_DELETE_SRC_INVALID_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Delete File Source Filename Invalid Event ID.

- #define FM_DELETE_SRC_DNE_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Delete File Source File Does Not Exist Event ID.
- #define FM_DELETE_SRC_ISDIR_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Delete File Source Filename Is Directory Event ID.
- #define FM_DELETE_SRC_OPEN_ERR_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
 FM Child Task Delete File File Is Open Event ID.
- #define FM_DELETE_CHILD_BASE_EID (FM_DELETE_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Delete File Child Task Error Base ID.
- #define FM_DELETE_CHILD_DISABLED_ERR_EID (FM_DELETE_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Delete File Child Task Disabled Event ID.
- #define FM_DELETE_CHILD_FULL_ERR_EID (FM_DELETE_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Delete File Child Task Queue Full Event ID.
- #define FM_DELETE_CHILD_BROKEN_ERR_EID (FM_DELETE_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Delete File Child Task Interface Broken Event ID.
- #define FM_DELETE_ALL_SRC_BASE_EID (FM_DELETE_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Delete All Files Directory Error Base ID.
- #define FM_DELETE_ALL_SRC_INVALID_ERR_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Delete All Files Directory Name Invalid Event ID.
- #define FM_DELETE_ALL_SRC_DNE_ERR_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Delete All Files Directory Does Not Exist Event ID.
- #define FM_DELETE_ALL_SRC_FILE_ERR_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_ISFILE_EID_OFFSET)
 FM Child Task Delete All Files Directory Name Is A File Event ID.
- #define FM_DELETE_ALL_CHILD_BASE_EID (FM_DELETE_ALL_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Delete All Files Child Task Error Base ID.
- #define FM_DELETE_ALL_CHILD_DISABLED_ERR_EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Delete All Files Child Task Disabled Event ID.
- #define FM_DELETE_ALL_CHILD_FULL_ERR_EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Delete All Files Child Task Queue Full Event ID.
- #define FM_DELETE_ALL_CHILD_BROKEN_ERR_EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Delete All Files Child Task Interface Broken Event ID.
- #define FM_DECOM_SRC_BASE_EID (FM_DELETE_ALL_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Decompress File Source Filename Error Base ID.
- #define FM_DECOM_SRC_INVALID_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Decompress File Source Filename Invalid Event ID.
- #define FM_DECOM_SRC_DNE_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Decompress File Source Filename Does Not Exist Event ID.
- #define FM_DECOM_SRC_ISDIR_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Decompress File Source Filename Is A Directory Event ID.
- #define FM_DECOM_SRC_OPEN_ERR_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
 FM Child Task Decompress File Source File Is Open Event ID.
- #define FM_DECOM_TGT_BASE_EID (FM_DECOM_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Decompress File Target Filenname Error Base ID.
- #define FM_DECOM_TGT_INVALID_ERR_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Decompress File Target Filenname Invalid Event ID.
- #define FM_DECOM_TGT_EXIST_ERR_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
 FM Child Task Decompress File Target File Already Exists Event ID.
- #define FM_DECOM_TGT_ISDIR_ERR_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)

- #define FM_DECOM_CHILD_BASE_EID (FM_DECOM_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Decompress File Target Filename Is Directory Event ID.
- #define FM_DECOM_CHILD_DISABLED_ERR_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Decompress File Child Task Error Base ID.
- #define FM_DECOM_CHILD_FULL_ERR_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Decompress File Child Task Queue Full Event ID.
- #define FM_DECOM_CHILD_BROKEN_ERR_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Decompress File Child Task Interface Broken Event ID.
- #define FM_CONCAT_SRC1_BASE_EID (FM_DECOM_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Concat Files Source 1 Filename Error Base ID.
- #define FM_CONCAT_SRC1_INVALID_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Concat Files Source 1 Filename Invalid Event ID.
- #define FM_CONCAT_SRC1_DNE_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Concat Files Source 1 File Does Not Exist Event ID.
- #define FM_CONCAT_SRC1_ISDIR_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Concat Files Source 1 Filename Is Directory Event ID.
- #define FM_CONCAT_SRC1_OPEN_ERR_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
 FM Child Task Concat Files Source 1 File Already Open Event ID.
- #define FM_CONCAT_SRC2_BASE_EID (FM_CONCAT_SRC1_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Concat Files Source 2 Filename Error Base ID.
- #define FM_CONCAT_SRC2_INVALID_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Concat Files Source 2 Filename Invalid Event ID.
- #define FM_CONCAT_SRC2_DNE_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Concat Files Source 2 File Does Not Exist Event ID.
- #define FM_CONCAT_SRC2_ISDIR_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Concat Files Source 2 Filename Is Directory Event ID.
- #define FM_CONCAT_SRC2_OPEN_ERR_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_ISOPEN_EID_OFFSET)
 FM Child Task Concat Files Source 2 File Already Open Event ID.
- #define FM_CONCAT_TGT_BASE_EID (FM_CONCAT_SRC2_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Concat Files Target Filename Error Base ID.
- #define FM_CONCAT_TGT_INVALID_ERR_EID (FM_CONCAT_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Concat Files Target Filename Invalid Event ID.
- #define FM_CONCAT_TGT_EXIST_ERR_EID (FM_CONCAT_TGT_BASE_EID + FM_FNAME_EXIST_EID_OFFSET)
 FM Child Task Concat Files Target Filename Already Exists Event ID.
- #define FM_CONCAT_TGT_ISDIR_ERR_EID (FM_CONCAT_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Concat Files Target Filename Is Directory Event ID.
- #define FM_CONCAT_CHILD_BASE_EID (FM_CONCAT_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Concat Files Child Task Error Base ID.
- #define FM_CONCAT_CHILD_DISABLED_ERR_EID (FM_CONCAT_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Concat Files Child Task Disabled Event ID.
- #define FM_CONCAT_CHILD_FULL_ERR_EID (FM_CONCAT_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Concat Files Child Task Queue Full Event ID.
- #define FM_CONCAT_CHILD_BROKEN_ERR_EID (FM_CONCAT_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Concat Files Child Task Interface Broken Event ID.
- #define FM_FILE_INFO_CHILD_BASE_EID (FM_CONCAT_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Get File Info Child Task Error Base ID.

- #define FM_FILE_INFO_CHILD_DISABLED_ERR_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Get File Info Child Task Disabled Event ID.
- #define FM_FILE_INFO_CHILD_FULL_ERR_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Get File Info Child Task Queue Full Event ID.
- #define FM_FILE_INFO_CHILD_BROKEN_ERR_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Get File Info Child Task Interface Broken Event ID.
- #define FM_CREATE_DIR_SRC_BASE_EID (FM_FILE_INFO_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Create Directory, Directory Error Base ID.
- #define FM_CREATE_DIR_SRC_INVALID_ERR_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Create Directory Name Invalid Event ID.
- #define FM_CREATE_DIR_SRC_DNE_ERR_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Create Directory Name Exists As File Event ID.
- #define FM_CREATE_DIR_SRC_ISDIR_ERR_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
 FM Child Task Create Directory Already Exists Event ID.
- #define FM_CREATE_DIR_CHILD_BASE_EID (FM_CREATE_DIR_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Create Directory Child Task Error Base ID.
- #define FM_CREATE_DIR_CHILD_DISABLED_ERR_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Create Directory Child Task Disabled Event ID.
- #define FM_CREATE_DIR_CHILD_FULL_ERR_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Create Directory Child Task Queue Full Event ID.
- #define FM_CREATE_DIR_CHILD_BROKEN_ERR_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Create Directory Child Task Interface Broken Event ID.
- #define FM_DELETE_DIR_SRC_BASE_EID (FM_CREATE_DIR_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Delete Directory, Directory Error Base ID.
- #define FM_DELETE_DIR_SRC_INVALID_ERR_EID (FM_DELETE_DIR_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Delete Directory Name Invalid Event ID.
- #define FM_DELETE_DIR_SRC_DNE_ERR_EID (FM_DELETE_DIR_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Delete Directory Name Exists As File Event ID.
- #define FM_DELETE_DIR_CHILD_BASE_EID (FM_DELETE_DIR_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Delete Directory Child Task Error Base ID.
- #define FM_DELETE_DIR_CHILD_DISABLED_ERR_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
 FM Child Task Delete Directory Child Task Disabled Event ID.
- #define FM_DELETE_DIR_CHILD_FULL_ERR_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
 FM Child Task Delete Directory Child Task Queue Full Event ID.
- #define FM_DELETE_DIR_CHILD_BROKEN_ERR_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
 FM Child Task Delete Directory Child Task Interface Broken Event ID.
- #define FM_GET_DIR_FILE_SRC_BASE_EID (FM_DELETE_DIR_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
 FM Child Task Directory List to File Source Filename Error Base ID.
- #define FM_GET_DIR_FILE_SRC_INVALID_ERR_EID (FM_GET_DIR_FILE_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Directory List to File Directory Name Invalid Event ID.
- #define FM_GET_DIR_FILE_SRC_DNE_ERR_EID (FM_GET_DIR_FILE_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
 FM Child Task Directory List to File Directory Does Not Exist Event ID.
- #define FM_GET_DIR_FILE_SRC_ISDIR_ERR_EID (FM_GET_DIR_FILE_SRC_BASE_EID + FM_FNAME_ISFILE_EID_OFFSET)
 FM Child Task Directory List to File Directory Name Is File Event ID.
- #define FM_GET_DIR_FILE_TGT_BASE_EID (FM_GET_DIR_FILE_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
 FM Child Task Directory List to File Target Error Base ID.
- #define FM_GET_DIR_FILE_TGT_INVALID_ERR_EID (FM_GET_DIR_FILE_TGT_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
 FM Child Task Directory List to File Target Invalid Event ID.

FM Child Task Directory List to File Target Filename Invalid Event ID.

- #define FM_GET_DIR_FILE_TGT_ISDIR_ERR_EID (FM_GET_DIR_FILE_TGT_BASE_EID + FM_FNAME_ISDIR_EID_OFFSET)
FM Child Task Directory List to File Target Filename Is Directory Event ID.
- #define FM_GET_DIR_FILE_CHILD_BASE_EID (FM_GET_DIR_FILE_TGT_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Directory List to File Child Task Error Base ID.
 - #define FM_GET_DIR_FILE_CHILD_DISABLED_ERR_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Directory List to File Child Task Disabled Event ID.
 - #define FM_GET_DIR_FILE_CHILD_FULL_ERR_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Directory List to File Child Task Queue Full Event ID.
 - #define FM_GET_DIR_FILE_CHILD_BROKEN_ERR_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Directory List to File Child Task Interface Broken Event ID.
 - #define FM_GET_DIR_PKT_SRC_BASE_EID (FM_GET_DIR_FILE_CHILD_BASE_EID + FM_CHILD_NUM_OFFSETS)
FM Child Task Directory List to Packet Directory Error Base ID.
 - #define FM_GET_DIR_PKT_SRC_INVALID_ERR_EID (FM_GET_DIR_PKT_SRC_BASE_EID + FM_FNAME_INVALID_EID_OFFSET)
FM Child Task Directory List to Packet Directory Name Invalid Event ID.
 - #define FM_GET_DIR_PKT_SRC_DNE_ERR_EID (FM_GET_DIR_PKT_SRC_BASE_EID + FM_FNAME_DNE_EID_OFFSET)
FM Child Task Directory List to Packet Directory Does Not Exist Event ID.
 - #define FM_GET_DIR_PKT_SRC_ISDIR_ERR_EID (FM_GET_DIR_PKT_SRC_BASE_EID + FM_FNAME_ISFILE_EID_OFFSET)
FM Child Task Directory List to Packet Directory Is File Event ID.
 - #define FM_GET_DIR_PKT_CHILD_BASE_EID (FM_GET_DIR_PKT_SRC_BASE_EID + FM_FNAME_NUM_OFFSETS)
FM Child Task Directory List to Packet Child Task Error Base ID.
 - #define FM_GET_DIR_PKT_CHILD_DISABLED_ERR_EID (FM_GET_DIR_PKT_CHILD_BASE_EID + FM_CHILD_DISABLED_EID_OFFSET)
FM Child Task Directory List to Packet Child Task Disabled Event ID.
 - #define FM_GET_DIR_PKT_CHILD_FULL_ERR_EID (FM_GET_DIR_PKT_CHILD_BASE_EID + FM_CHILD_Q_FULL_EID_OFFSET)
FM Child Task Directory List to Packet Child Task Queue Full Event ID.
 - #define FM_GET_DIR_PKT_CHILD_BROKEN_ERR_EID (FM_GET_DIR_PKT_CHILD_BASE_EID + FM_CHILD_BROKEN_EID_OFFSET)
FM Child Task Directory List to Packet Child Task Interface Broken Event ID.

12.2.1 Detailed Description

Specification for the CFS File Manager Event Identifiers.

12.3 apps/fm/fsw/inc/fm_extern_typedefs.h File Reference

Macros

- #define FM_NAME_IS_INVALID 0
- #define FM_NAME_IS_NOT_IN_USE 1
- #define FM_NAME_IS_FILE_OPEN 2
- #define FM_NAME_IS_FILE_CLOSED 3
- #define FM_NAME_IS_DIRECTORY 4
- #define FM_TABLE_ENTRY_DISABLED 0
- #define FM_TABLE_ENTRY_ENABLED 1
- #define FM_THIS_DIRECTORY ".."
- #define FM_PARENT_DIRECTORY ".."
- #define FM_IGNORE_CRC 0

12.3.1 Detailed Description

Declarations and prototypes for fm_extern_typedefs module

12.3.2 Macro Definition Documentation

12.3.2.1 **FM_IGNORE_CRC** #define FM_IGNORE_CRC 0

Definition at line 65 of file fm_extern_typedefs.h.

12.3.2.2 **FM_NAME_IS_DIRECTORY** #define FM_NAME_IS_DIRECTORY 4

Definition at line 39 of file fm_extern_typedefs.h.

12.3.2.3 **FM_NAME_IS_FILE_CLOSED** #define FM_NAME_IS_FILE_CLOSED 3

Definition at line 38 of file fm_extern_typedefs.h.

12.3.2.4 **FM_NAME_IS_FILE_OPEN** #define FM_NAME_IS_FILE_OPEN 2

Definition at line 37 of file fm_extern_typedefs.h.

12.3.2.5 **FM_NAME_IS_INVALID** #define FM_NAME_IS_INVALID 0

Definition at line 35 of file fm_extern_typedefs.h.

12.3.2.6 **FM_NAME_IS_NOT_IN_USE** #define FM_NAME_IS_NOT_IN_USE 1

Definition at line 36 of file fm_extern_typedefs.h.

12.3.2.7 **FM_PARENT_DIRECTORY** #define FM_PARENT_DIRECTORY ".."

Definition at line 57 of file fm_extern_typedefs.h.

12.3.2.8 **FM_TABLE_ENTRY_DISABLED** #define FM_TABLE_ENTRY_DISABLED 0

Definition at line 47 of file fm_extern_typedefs.h.

12.3.2.9 **FM_TABLE_ENTRY_ENABLED** #define FM_TABLE_ENTRY_ENABLED 1

Definition at line 48 of file fm_extern_typedefs.h.

12.3.2.10 **FM_THIS_DIRECTORY** #define FM_THIS_DIRECTORY ".."

Definition at line 56 of file fm_extern_typedefs.h.

12.4 apps/fm/fsw/inc/fm_msg.h File Reference

```
#include <cfe.h>
#include <fm_platform_cfg.h>
#include <fm_extern_typedefs.h>
```

Data Structures

- struct [FM_SendHkCmd_t](#)
Housekeeping Request command packet structure.
- struct [FM_NoopCmd_t](#)
No-Operation command packet structure.
- struct [FM_ResetCountersCmd_t](#)
Reset Counters command packet structure.
- struct [FM_OvvSourceTargetFilename_Payload_t](#)
Copy/Move File command payload structure.
- struct [FM_CopyFileCmd_t](#)
Copy File command packet structure.
- struct [FM_MoveFileCmd_t](#)
Move File command packet structure.
- struct [FM_SourceTargetFileName_Payload_t](#)
Source and Target filename command payload structure.
- struct [FM_RenameFileCmd_t](#)
Rename File command packet structure.
- struct [FM_SingleFilename_Payload_t](#)
Single filename command payload structure.
- struct [FM_DeleteFileCmd_t](#)
Delete File command packet structure.
- struct [FM_DirectoryName_Payload_t](#)
Single directory command payload structure.
- struct [FM_DeleteAllFilesCmd_t](#)
Delete All command packet structure.
- struct [FM_DecompressFileCmd_t](#)
Decompress File command packet structure.
- struct [FM_TwoSourceOneTarget_Payload_t](#)
Two source, one target filename command payload structure.
- struct [FM_ConcatFilesCmd_t](#)
Concatenate Files command packet structure.
- struct [FM_FilenameAndCRC_Payload_t](#)
Filenname and CRC command payload structure.
- struct [FM_GetFileInfoCmd_t](#)
Get File Info command packet structure.
- struct [FM_GetOpenFilesCmd_t](#)
Get Open Files command packet structure.
- struct [FM_CreateDirectoryCmd_t](#)
Create Directory command packet structure.
- struct [FM_DeleteDirectoryCmd_t](#)
Delete Directory command packet structure.
- struct [FM_GetDirectoryToFile_Payload_t](#)
Get Directory and output to file command payload.
- struct [FM_GetDirListFileCmd_t](#)
Get DIR List to File command packet structure.
- struct [FM_GetDirectoryToPkt_Payload_t](#)
Get Directory and output to message command payload.

- struct [FM_GetDirListPktCmd_t](#)
Get DIR List to Packet command packet structure.
- struct [FM_MonitorFilesystemSpaceCmd_t](#)
Get Free Space command packet structure.
- struct [FM_TableIndexAndState_Payload_t](#)
Table Index and State command payload structure.
- struct [FM_SetTableStateCmd_t](#)
Set Table State command packet structure.
- struct [FM_FilenameAndMode_Payload_t](#)
File name and mode command payload structure.
- struct [FM_SetPermissionsCmd_t](#)
Set Permissions for a file.
- struct [FM_DirListEntry_t](#)
Get Directory Listing entry structure.
- struct [FM_DirListPkt_Payload_t](#)
Get Directory Listing telemetry payload.
- struct [FM_DirListPkt_t](#)
Get Directory Listing telemetry packet.
- struct [FM_DirListFileStats_t](#)
Get Directory Listing file statistics structure.
- struct [FM_FileInfoPkt_Payload_t](#)
Get File Info telemetry payload.
- struct [FM_FileInfoPkt_t](#)
Get File Info telemetry packet.
- struct [FM_OpenFilesEntry_t](#)
Get Open Files list entry structure.
- struct [FM_OpenFilesPkt_Payload_t](#)
Get Open Files telemetry payload.
- struct [FM_OpenFilesPkt_t](#)
Get Open Files telemetry packet.
- struct [FM_MonitorReportEntry_t](#)
Monitor filesystem list entry structure.
- struct [FM_MonitorReportPkt_Payload_t](#)
Monitor filesystem telemetry payload.
- struct [FM_MonitorReportPkt_t](#)
Monitor filesystem telemetry packet.
- struct [FM_HousekeepingPkt_Payload_t](#)
Housekeeping telemetry payload.
- struct [FM_HousekeepingPkt_t](#)
Housekeeping telemetry packet.
- struct [FM_MonitorTableEntry_t](#)
Monitor table entry.
- struct [FM_MonitorTable_t](#)
Get Free Space table definition.
- struct [FM_ChildQueueEntry_t](#)
Child Task Interface command queue entry structure.

Enumerations

- enum `FM_MonitorTableEntry_Type_t` { `FM_MonitorTableEntry_Type_UNUSED` = 0 , `FM_MonitorTableEntry_Type_VOLUME_FREE_SPACE` = 1 , `FM_MonitorTableEntry_Type_DIRECTORY_ESTIMATE` = 2 }

12.4.1 Detailed Description

Specification for the CFS FM command and telemetry messages.

12.4.2 Enumeration Type Documentation

12.4.2.1 `FM_MonitorTableEntry_Type_t` enum `FM_MonitorTableEntry_Type_t`

Enumerator

<code>FM_MonitorTableEntry_Type_UNUSED</code>	Table entry is not used, these entries are ignored
<code>FM_MonitorTableEntry_Type_VOLUME_FREE_SPACE</code>	Monitor the free space on given volume The given path will be passed to <code>OS_FileSysStatVolume()</code> and the results will be reported in the generated TLM entry.
<code>FM_MonitorTableEntry_Type_DIRECTORY_ESTIMATE</code>	Estimate the sum of space used by files within specified directory The given path will be opened as a directory. The size of each regular file present in that directory will be summed to produce an estimate of the total space associated with that directory. Note that this yields only an estimate, as there can be discrepancies between the file size as observed by this method and the actual disk blocks used by a given file.

Definition at line 584 of file fm_msg.h.

12.5 apps/fm/fsw/inc/fm_msgdefs.h File Reference

Macros

- #define `FM_NOOP_CC` 0
No Operation.
- #define `FM_RESET_COUNTERS_CC` 1
Reset Counters.
- #define `FM_COPY_FILE_CC` 2
Copy File.
- #define `FM_MOVE_FILE_CC` 3
Move File.
- #define `FM_RENAME_FILE_CC` 4
Rename File.
- #define `FM_DELETE_FILE_CC` 5
Delete File.
- #define `FM_DELETE_ALL_FILES_CC` 7
Delete All Files.

- #define FM_DECOMPRESS_FILE_CC 8
Decompress File.
- #define FM_CONCAT_FILES_CC 9
Concatenate Files.
- #define FM_GET_FILE_INFO_CC 10
Get File Information.
- #define FM_GET_OPEN_FILES_CC 11
Get Open Files Listing.
- #define FM_CREATE_DIRECTORY_CC 12
Create Directory.
- #define FM_DELETE_DIRECTORY_CC 13
Remove Directory.
- #define FM_GET_DIR_LIST_FILE_CC 14
Get Directory Listing to a File.
- #define FM_GET_DIR_LIST_PKT_CC 15
Get Directory Listing to a Packet.
- #define FM_MONITOR_FILESYSTEM_SPACE_CC 16
Monitor Filesystem Space.
- #define FM_SET_TABLE_STATE_CC 17
Set Free Space Table Entry State.
- #define FM_SET_PERMISSIONS_CC 19
Set Permissions of a file.

12.5.1 Detailed Description

Specification for the CFS FM command and telemetry message macro definitions.

12.6 apps/fm/fsw/inc/fm_msgids.h File Reference

Macros

- #define FM_CMD_MID 0x188C /** < \brief FM ground commands */
- #define FM_SEND_HK_MID 0x188D /** < \brief FM send housekeeping */
- #define FM_HK_TLM_MID 0x088A /** < \brief FM housekeeping */
- #define FM_FILE_INFO_TLM_MID 0x088B /** < \brief FM get file info */
- #define FM_DIR_LIST_TLM_MID 0x088C /** < \brief FM get dir list */
- #define FM_OPEN_FILES_TLM_MID 0x088D /** < \brief FM get open files */
- #define FM_FREE_SPACE_TLM_MID 0x088E /** < \brief FM get free space */

12.6.1 Detailed Description

Specification for the CFS FM application software bus message identifiers

12.7 apps/fm/fsw/inc/fm_perfids.h File Reference

Macros

- #define FM_APPMAIN_PERF_ID 39
Main application performance ID.
- #define FM_CHILD_TASK_PERF_ID 44
Child task performance ID.

12.7.1 Detailed Description

Specification for the CFS File Manager (FM) Application Performance IDs

12.8 apps/fm/fsw/inc/fm_platform_cfg.h File Reference

Macros

- `#define FM_APP_NAME "FM"`
File Manager Application Name.
- `#define FM_APP_PIPE_NAME "FM_CMD_PIPE"`
File Manager Command Pipe Name.
- `#define FM_APP_PIPE_DEPTH 10`
File Manager Command Pipe Depth.
- `#define FM_MISSION_REV 0`
Mission specific version number for FM application.
- `#define FM_DIR_LIST_FILE_DEFNAME "/ram/fm_dirlist.out"`
Default Directory List Output Filename.
- `#define FM_DIR_LIST_FILE_ENTRIES 3000`
Maximum Directory List Output File Entries.
- `#define FM_DIR_LIST_FILE_SUBTYPE 12345`
Directory List Output File Header Sub-Type.
- `#define FM_DIR_LIST_PKT_ENTRIES 20`
Directory List Telemetry Packet Entry Count.
- `#define FM_CHILD_FILE_BLOCK_SIZE 2048`
Child Task File I/O Control Settings.
- `#define FM_CHILD_FILE_LOOP_COUNT 16`
- `#define FM_CHILD_FILE_SLEEP_MS 20`
- `#define FM_CHILD_STAT_SLEEP_MS 0`
Child file stat sleep.
- `#define FM_CHILD_STAT_SLEEP_FILECOUNT 0`
- `#define FM_CHILD_QUEUE_DEPTH 3`
Child Task Command Queue Entry Count.
- `#define FM_CHILD_TASK_NAME "FM_CHILD_TASK"`
Child Task Name - cFE object name.
- `#define FM_CHILD_TASK_STACK_SIZE 20480`
Child Task Stack Size.
- `#define FM_CHILD_TASK_PRIORITY 205`
Child Task Execution Priority.
- `#define FM_CHILD_SEM_NAME "FM_CHILD_SEM"`
Child Task Semaphore Name - cFE object name.
- `#define FM_TABLE_CFE_NAME "FreeSpace"`
Free Space Table Name - cFE object name.
- `#define FM_TABLE_DEF_NAME "/cf/fm_monitor.tbl"`
Monitor Table Name - filename with path.
- `#define FM_TABLE_FILENAME "fm_monitor.tbl"`
Monitor Table Name - filename without path.
- `#define FM_TABLE_DEF_DESC "FM File System Free Space Table"`
Free Space Table Description.

- `#define FM_TABLE_ENTRY_COUNT 8`
Number of Free Space Table Entries.
- `#define FM_TABLE_VALIDATION_ERR (-1)`
Table Data Validation Error Code.

12.8.1 Detailed Description

Specification for the CFS FM application constants that can be configured from one platform to another

12.9 apps/fm/fsw/src/fm_app.c File Reference

```
#include "cfe.h"
#include "fm_msg.h"
#include "fm_msgefs.h"
#include "fm_msgids.h"
#include "fm_app.h"
#include "fm_tbl.h"
#include "fm_child.h"
#include "fm_cmds.h"
#include "fm_cmd_utils.h"
#include "fm_dispatch.h"
#include "fm_events.h"
#include "fm_perfids.h"
#include "fm_platform_cfg.h"
#include "fm_version.h"
#include "fm_verify.h"
#include <string.h>
```

Functions

- `void FM_AppMain (void)`
Application entry point and main process loop.
- `CFE_Status_t FM_AppInit (void)`
FM Application Initialization Function.
- `void FM_SendHkCmd (const CFE_SB_Buffer_t *BufPtr)`
Housekeeping Request Command Handler.

Variables

- `FM_GlobalData_t FM_GlobalData`
File Manager global.

12.9.1 Detailed Description

Core Flight System (CFS) File Manager (FM) Application

The File Manager (FM) Application provides onboard file system management services by processing commands for copying and moving files, decompressing files, concatenating files, creating directories, deleting files and directories, and providing file and directory status. When the File Manager application receives a housekeeping request (scheduled within the scheduler application), FM reports its housekeeping status values via telemetry messaging.

12.9.2 Function Documentation

12.9.2.1 FM_AppInit() `CFE_Status_t` FM_AppInit (
 `void`)

FM Application Initialization Function.

Description

Initialize FM global data structure.
Register FM application for CFE Event Services.
Create Software Bus input pipe.
Subscribe to FM housekeeping request command packet.
Subscribe to FM ground command packet.
Invoke FM table initialization function.
Invoke FM child task initialization function.

Assumptions, External Events, and Notes: None

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
-----------------------------	-----------------------

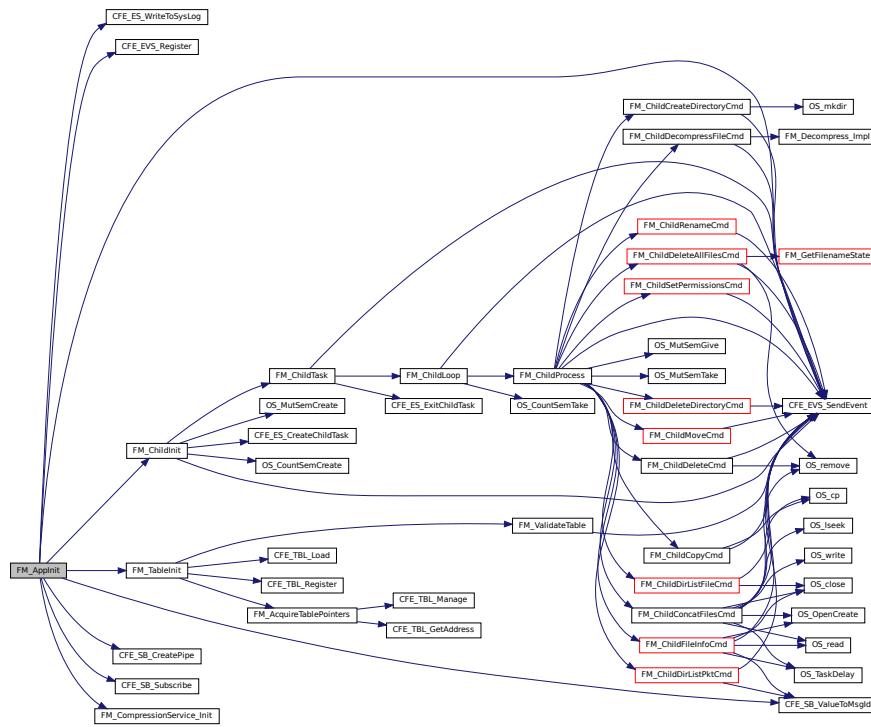
See also

[CFE_EVS_Register](#), [CFE_SB_CreatePipe](#), [CFE_SB_Subscribe](#)

Definition at line 168 of file fm_app.c.

References `CFE_ES_WriteToSysLog()`, `CFE_EVS_EventFilter_BINARY`, `CFE_EVS_EventType_ERROR`, `CFE_EVS_EventType_INFORMATION`, `CFE_EVS_Register()`, `CFE_EVS_SendEvent()`, `CFE_SB_CreatePipe()`, `CFE_SB_Subscribe()`, `CFE_SB_ValueToMsgId()`, `CFE_SUCCESS`, `FM_GlobalData_t::CmdPipe`, `FM_APP_PIPE_DEPTH`, `FM_APP_PIPE_NAME`, `FM_ChildInit()`, `FM_CMD_MID`, `FM_CompressionService_Init()`, `FM_CR_PIPE_ERR_EID`, `FM_GlobalData`, `FM_INIT_INF_EID`, `FM_MAJOR_VERSION`, `FM_MINOR_VERSION`, `FM_MISSION_REV`, `FM_REVISION`, `FM_SEND_HK_MID`, `FM_STARTUP_SUBSCRIB_GCMD_ERR_EID`, `FM_STARTUP_SUBSCRIB_HK_ERR_EID`, `FM_STARTUP_TABLE_INIT_ERR_EID`, and `FM_TableInit()`.
Referenced by `FM_AppMain()`.

Here is the call graph for this function:



12.9.2.2 FM_AppMain() void FM_AppMain (void)

Application entry point and main process loop.

Description

Register FM as a CFE application.
 Invoke FM application initialization function.
 Enter FM main process loop.
 Pend (forever) on next Software Bus command packet.
 Process received Software Bus command packet.
 Repeat main process loop.
 Allow CFE to terminate the FM application.

Assumptions, External Events, and Notes: None

See also

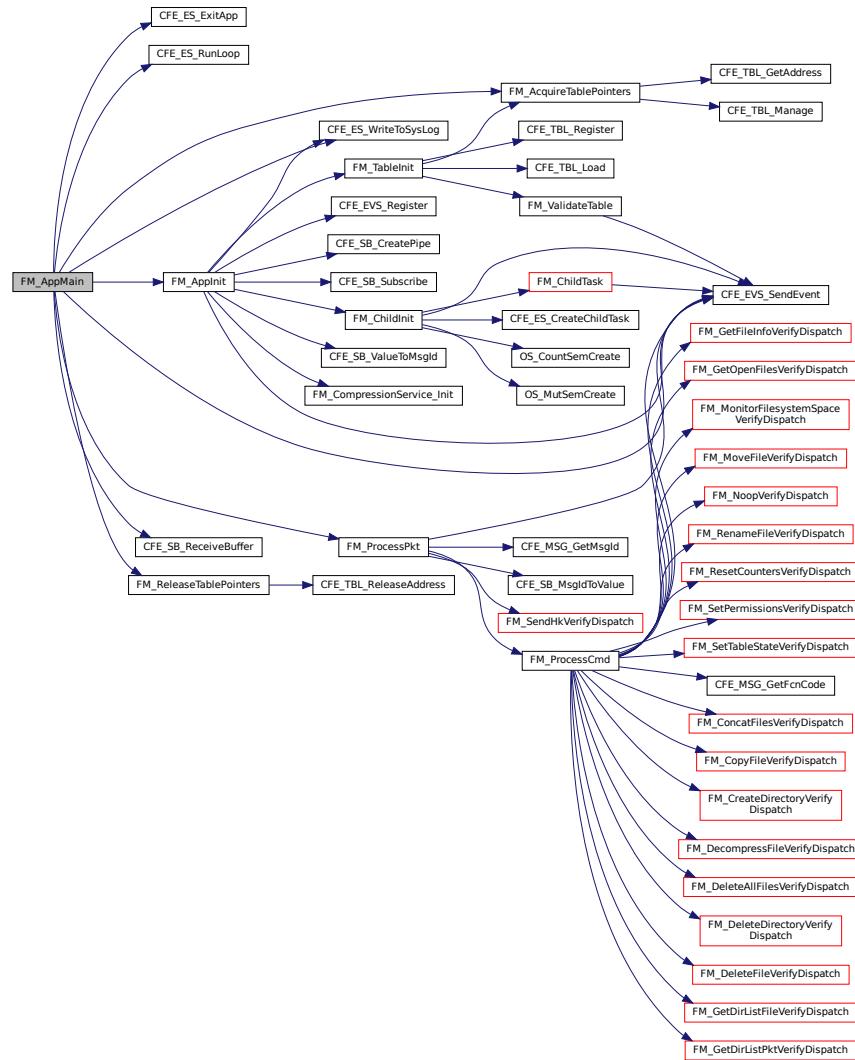
[FM_AppInit](#), [CFE_ES_RunLoop](#), [FM_ProcessPkt](#)

Definition at line 65 of file fm_app.c.

References CFE_ES_ExitApp(), CFE_ES_PerfLogEntry, CFE_ES_PerfLogExit, CFE_ES_RunLoop(), CFE_ES_RunStatus_APP_ERROR, CFE_ES_RunStatus_APP_RUN, CFE_ES_WriteToSysLog(), CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_SB_ReceiveBuffer(), CFE_SB_TIME_OUT, CFE_SUCCESS, FM_GlobalData_t::CmdPipe, FM_AcquireTablePointers(), FM_AppInit(), FM_APPMAIN_PERF_ID, FM_EXIT_ERR_EID, FM_GlobalData,

FM_ProcessPkt(), FM_ReleaseTablePointers(), FM_SB_RECEIVE_ERR_EID, FM_SB_RECEIVE_NULL_PTR_ERR_EID, and FM_SB_TIMEOUT.

Here is the call graph for this function:



12.9.2.3 FM_SendHkCmd() void FM_SendHkCmd (

const CFE_SB_Buffer_t * BufPtr)

Housekeeping Request Command Handler.

Description

Allow CFE Table Services the opportunity to manage the File System Free Space Table. This provides a mechanism to receive table updates.

Populate the FM application Housekeeping Telemetry packet. Timestamp the packet and send it to ground via the Software Bus.

Assumptions, External Events, and Notes: None

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

See also

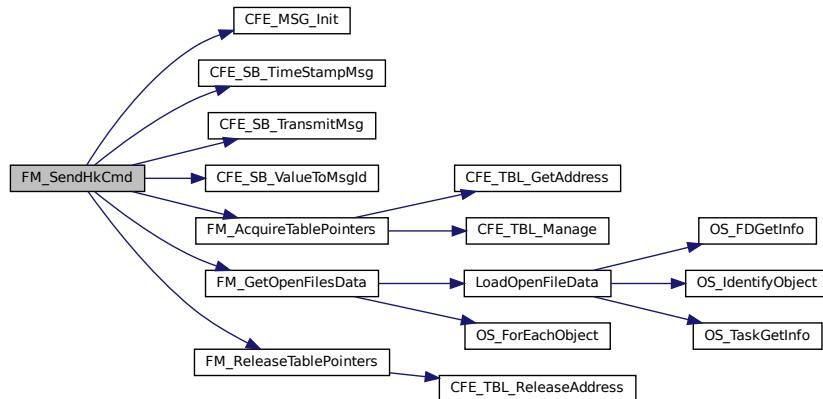
[FM_SendHkCmd_t](#), [FM_HousekeepingPkt_t](#)

Definition at line 249 of file fm_app.c.

References CFE_MSG_Init(), CFE_SB_TimeStampMsg(), CFE_SB_TransmitMsg(), CFE_SB_ValueToMsgId(), FM_HousekeepingPkt_Payload_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdCounter, FM_HousekeepingPkt_Payload_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_HousekeepingPkt_Payload_t::ChildCmdWarnCounter, FM_GlobalData_t::ChildCmdWarnCounter, FM_HousekeepingPkt_Payload_t::ChildCurrentCC, FM_GlobalData_t::ChildCurrentCC, FM_HousekeepingPkt_Payload_t::ChildPreviousCC, FM_GlobalData_t::ChildPreviousCC, FM_HousekeepingPkt_Payload_t::ChildQueueCount, FM_GlobalData_t::ChildQueueCount, FM_HousekeepingPkt_Payload_t::CommandCounter, FM_GlobalData_t::CommandCounter, FM_HousekeepingPkt_Payload_t::CommandErrCounter, FM_GlobalData_t::CommandErrCounter, FM_AcquireTablePointers(), FM_GetOpenFilesData(), FM_GlobalData, FM_HK_TLM_MID, FM_ReleaseTablePointers(), FM_GlobalData_t::HousekeepingPkt, FM_HousekeepingPkt_Payload_t::NumOpenFiles, FM_HousekeepingPkt_t::Payload, and FM_HousekeepingPkt_t::TelemetryHeader.

Referenced by FM_SendHkVerifyDispatch().

Here is the call graph for this function:



12.9.3 Variable Documentation

12.9.3.1 FM_GlobalData [FM_GlobalData_t](#) FM_GlobalData

File Manager global.

Definition at line 57 of file fm_app.c.

Referenced by FM_AcquireTablePointers(), FM_AppInit(), FM_AppMain(), FM_ChildConcatFilesCmd(), FM_ChildCopyCmd(), FM_Child.CreateDirectoryCmd(), FM_ChildDecompressFileCmd(), FM_ChildDeleteAllFilesCmd(), FM_ChildReadFileCmd(), FM_ChildWriteFileCmd(), and FM_HousekeepingPkt_Payload_t::HousekeepingPkt.

_ChildDeleteCmd(), FM_ChildDeleteDirectoryCmd(), FM_ChildDirListFileCmd(), FM_ChildDirListFileInit(), FM_ChildDirListFileLoop(), FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_ChildInit(), FM_ChildLoop(), FM_ChildMoveCmd(), FM_ChildProcess(), FM_ChildRenameCmd(), FM_ChildSetPermissionsCmd(), FM_ChildTask(), FM_CompressionService_Init(), FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_CreateDirectoryCmd(), FM_DecompressFileCmd(), FM_DeleteAllFilesCmd(), FM_DeleteDirectoryCmd(), FM_DeleteFileCmd(), FM_GetDirListFileCmd(), FM_GetDirListPktCmd(), FM_GetFileInfoCmd(), FM_GetFilenameState(), FM_GetOpenFilesCmd(), FM_InvokeChildTask(), FM_MonitorFilesystemSpaceCmd(), FM_MoveFileCmd(), FM_ProcessCmd(), FM_ReleaseTablePointers(), FM_RenameFileCmd(), FM_ResetCountersCmd(), FM_SendHkCmd(), FM_SetPermissionsCmd(), FM_SetTableStateCmd(), FM_TableInit(), and FM_VerifyChildTask().

12.10 apps/fm/fsw/src/fm_app.h File Reference

```
#include "cfe.h"
#include "fm_msg.h"
#include "fm_compression.h"
```

Data Structures

- struct **FM_GlobalData_t**
Application global data structure.

Macros

- #define **FM_SB_TIMEOUT** 1000

Wakeup for FM.

Functions

- void **FM_AppMain** (void)
Application entry point and main process loop.
- **CFE_Status_t FM_AppInit** (void)
FM Application Initialization Function.
- void **FM_SendHkCmd** (const **CFE_SB_Buffer_t** *BufPtr)
Housekeeping Request Command Handler.

Variables

- **FM_GlobalData_t FM_GlobalData**
File Manager global.

12.10.1 Detailed Description

Unit specification for the CFS File Manager Application.

12.10.2 Macro Definition Documentation

12.10.2.1 FM_SB_TIMEOUT #define FM_SB_TIMEOUT 1000
Wakeup for FM.

Description

Wakes up FM every 1 second for routine maintenance whether a message was received or not.

Definition at line 44 of file fm_app.h.

12.10.3 Function Documentation

12.10.3.1 FM_AppInit() CFE_Status_t FM_AppInit (void)

FM Application Initialization Function.

Description

Initialize FM global data structure.
Register FM application for CFE Event Services.
Create Software Bus input pipe.
Subscribe to FM housekeeping request command packet.
Subscribe to FM ground command packet.
Invoke FM table initialization function.
Invoke FM child task initialization function.

Assumptions, External Events, and Notes: None

Returns

Execution status, see [CFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
-----------------------------	-----------------------

See also

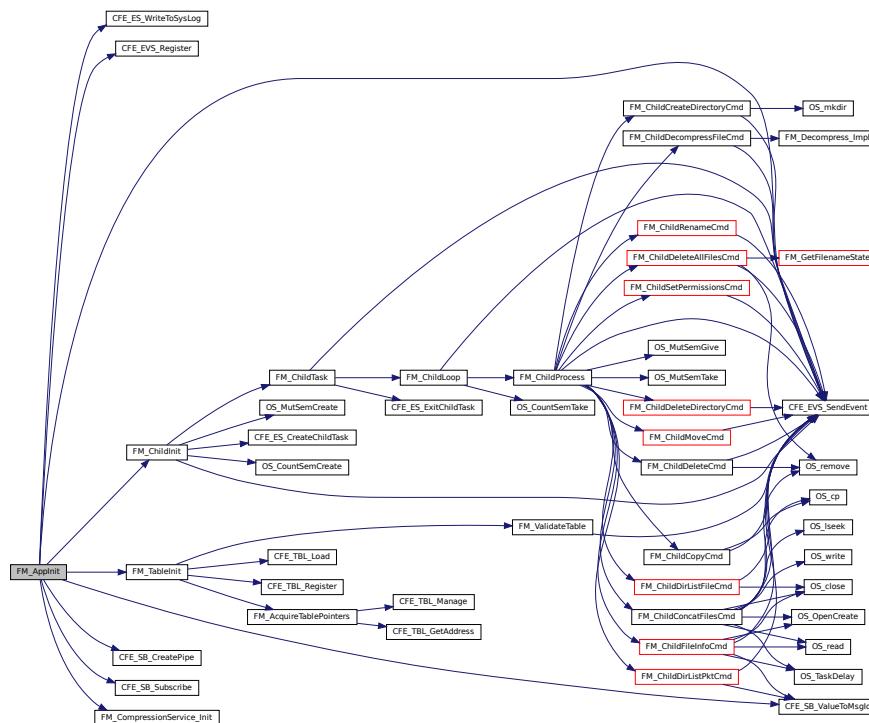
[CFE_EVS_Register](#), [CFE_SB_CreatePipe](#), [CFE_SB_Subscribe](#)

Definition at line 168 of file fm_app.c.

References [CFE_ES_WriteToSysLog\(\)](#), [CFE_EVS_EventFilter_BINARY](#), [CFE_EVS_EventType_ERROR](#), [CFE_EVS_EventType_INFORMATION](#), [CFE_EVS_Register\(\)](#), [CFE_EVS_SendEvent\(\)](#), [CFE_SB_CreatePipe\(\)](#), [CFE_SB_Subscribe\(\)](#), [CFE_SB_ValueToMsgId\(\)](#), [CFE_SUCCESS](#), [FM_GlobalData_t::CmdPipe](#), [FM_APP_PIPE_DEPTH](#), [FM_APP_PIPE_NAME](#), [FM_ChildInit\(\)](#), [FM_CMD_MID](#), [FM_CompressionService_Init\(\)](#), [FM_CR_PIPE_ERR_EID](#), [FM_GlobalData](#), [FM_INIT_INF_EID](#), [FM_MAJOR_VERSION](#), [FM_MINOR_VERSION](#), [FM_MISSION_REV](#), [FM_REVISION](#), [FM_SEND_HK_MID](#), [FM_STARTUP_SUBSCRIB_GCMD_ERR_EID](#), [FM_STARTUP_SUBSCRIB_HK_ERR_EID](#), [FM_STARTUP_TABLE_INIT_ERR_EID](#), and [FM_TableInit\(\)](#).

Referenced by [FM_AppMain\(\)](#).

Here is the call graph for this function:



12.10.3.2 FM_AppMain()

```
void FM_AppMain (
    void )
```

Application entry point and main process loop.

Description

```

Register FM as a CFE application.
Invoke FM application initialization function.
Enter FM main process loop.
Pend (forever) on next Software Bus command packet.
Process received Software Bus command packet.
Repeat main process loop.
Allow CFE to terminate the FM application.
```

Assumptions, External Events, and Notes: None

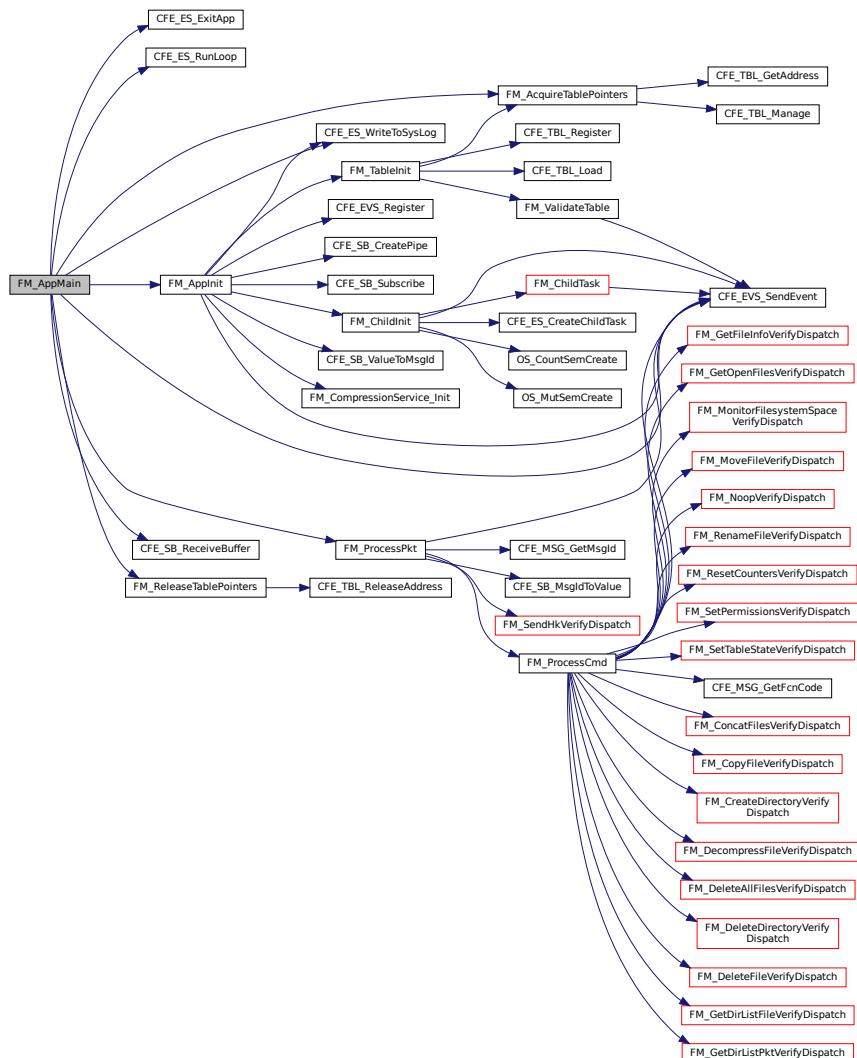
See also

[FM_AppInit](#), [CFE_ES_RunLoop](#), [FM_ProcessPkt](#)

Definition at line 65 of file fm_app.c.

References CFE_ES_ExitApp(), CFE_ES_PerfLogEntry(), CFE_ES_PerfLogExit(), CFE_ES_RunLoop(), CFE_ES_RunStatus_APP_ERROR, CFE_ES_RunStatus_APP_RUN, CFE_ES_WriteToSysLog(), CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_SB_ReceiveBuffer(), CFE_SB_TIME_OUT, CFE_SUCCESS, FM_GlobalData_t::CmdPipe, FM_AcquireTablePointers(), FM_AppInit(), FM_APPMAIN_PERF_ID, FM_EXIT_ERR_EID, FM_GlobalData, FM_ProcessPkt(), FM_ReleaseTablePointers(), FM_SB_RECEIVE_ERR_EID, FM_SB_RECEIVE_NULL_PTR_ERR_EID, and FM_SB_TIMEOUT.

Here is the call graph for this function:



```
12.10.3.3 FM_SendHkCmd() void FM_SendHkCmd (
    const CFE_SB_Buffer_t * BufPtr )
```

Housekeeping Request Command Handler.

Description

Allow CFE Table Services the opportunity to manage the File System Free Space Table. This provides a mechanism to receive table updates.

Populate the FM application Housekeeping Telemetry packet. Timestamp the packet and send it to ground via the Software Bus.

Assumptions, External Events, and Notes: None

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

See also

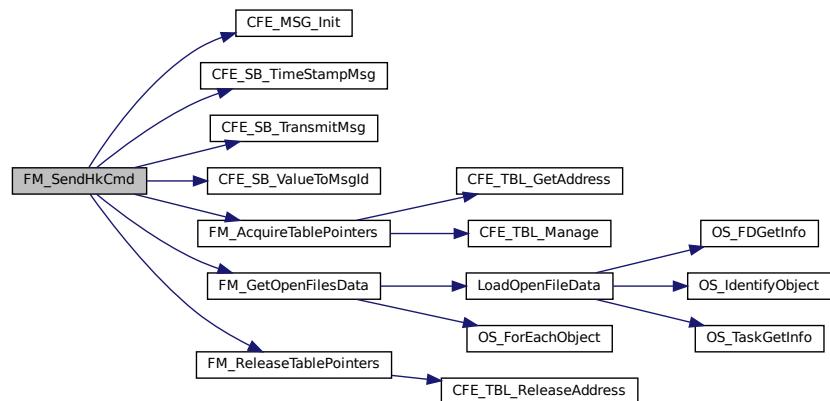
[FM_SendHkCmd_t](#), [FM_HousekeepingPkt_t](#)

Definition at line 249 of file fm_app.c.

References `CFE_MSG_Init()`, `CFE_SB_TimeStampMsg()`, `CFE_SB_TransmitMsg()`, `CFE_SB_ValueToMsgId()`, `FM_HousekeepingPkt_Payload_t::ChildCmdCounter`, `FM_GlobalData_t::ChildCmdCounter`, `FM_HousekeepingPkt_Payload_t::ChildCmdErrCounter`, `FM_GlobalData_t::ChildCmdErrCounter`, `FM_HousekeepingPkt_Payload_t::ChildCmdWarnCounter`, `FM_GlobalData_t::ChildCmdWarnCounter`, `FM_HousekeepingPkt_Payload_t::ChildCurrentCC`, `FM_GlobalData_t::ChildCurrentCC`, `FM_HousekeepingPkt_Payload_t::ChildPreviousCC`, `FM_GlobalData_t::ChildPreviousCC`, `FM_HousekeepingPkt_Payload_t::ChildQueueCount`, `FM_GlobalData_t::ChildQueueCount`, `FM_HousekeepingPkt_Payload_t::CommandCounter`, `FM_GlobalData_t::CommandCounter`, `FM_HousekeepingPkt_Payload_t::CommandErrCounter`, `FM_GlobalData_t::CommandErrCounter`, `FM_AcquireTablePointers()`, `FM_GetOpenFilesData()`, `FM_GlobalData`, `FM_HK_TLM_MID`, `FM_ReleaseTablePointers()`, `FM_GlobalData_t::HousekeepingPkt`, `FM_HousekeepingPkt_Payload_t::NumOpenFiles`, `FM_HousekeepingPkt_t::Payload`, and `FM_HousekeepingPkt_t::TelemetryHeader`.

Referenced by `FM_SendHkVerifyDispatch()`.

Here is the call graph for this function:



12.10.4 Variable Documentation

12.10.4.1 FM_GlobalData [FM_GlobalData_t](#) FM_GlobalData [extern]

File Manager global.

Definition at line 57 of file fm_app.c.

Referenced by FM_AcquireTablePointers(), FM_AppInit(), FM_AppMain(), FM_ChildConcatFilesCmd(), FM_ChildCopyCmd(), FM_ChildCreateDirectoryCmd(), FM_ChildDecompressFileCmd(), FM_ChildDeleteAllFilesCmd(), FM_ChildDeleteCmd(), FM_ChildDeleteDirectoryCmd(), FM_ChildDirListFileCmd(), FM_ChildDirListFileInit(), FM_ChildDirListFileLoop(), FM_ChildDirListPktCmd(), FM_ChildFileInfoCmd(), FM_ChildInit(), FM_ChildLoop(), FM_ChildMoveCmd(), FM_ChildProcess(), FM_ChildRenameCmd(), FM_ChildSetPermissionsCmd(), FM_ChildTask(), FM_CompressionService_Init(), FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_CreateDirectoryCmd(), FM_DecompressFileCmd(), FM_DeleteAllFilesCmd(), FM_DeleteDirectoryCmd(), FM_DeleteFileCmd(), FM_GetDirListFileCmd(), FM_GetDirListPktCmd(), FM_GetFileInfoCmd(), FM_GetFilenameState(), FM_GetOpenFilesCmd(), FM_InvokeChildTask(), FM_MonitorFilesystemSpaceCmd(), FM_MoveFileCmd(), FM_ProcessCmd(), FM_ReleaseTablePointers(), FM_RenameFileCmd(), FM_ResetCountersCmd(), FM_SendHkCmd(), FM_SetPermissionsCmd(), FM_SetTableStateCmd(), FM_TableInit(), and FM_VerifyChildTask().

12.11 apps/fm/fsw/src/fm_child.c File Reference

```
#include "cfe.h"
#include "fm_msg.h"
#include "fm_msgefs.h"
#include "fm_msigid.h"
#include "fm_events.h"
#include "fm_app.h"
#include "fm_child.h"
#include "fm_cmds.h"
#include "fm_cmd_utils.h"
#include "fm_perfids.h"
#include "fm_platform_cfg.h"
#include "fm_verify.h"
#include <string.h>
```

Macros

- #define OS_DIRENTRY_NAME(x) ((x).d_name)
- #define FM_QUEUE_SEM_NAME "FM_QUEUE_SEM"

Functions

- [CFE_Status_t FM_ChildInit \(void\)](#)
Child Task Initialization Function.
- void [FM_ChildTask \(void\)](#)
Child Task Entry Point Function.
- void [FM_ChildLoop \(void\)](#)
Child Task Main Loop Processor Function.
- void [FM_ChildProcess \(void\)](#)
Child Task Command Queue Processor Function.
- void [FM_ChildCopyCmd \(const FM_ChildQueueEntry_t *CmdArgs\)](#)
Child Task Copy File Command Handler.

- void **FM_ChildMoveCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Move File Command Handler.
- void **FM_ChildRenameCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Rename File Command Handler.
- void **FM_ChildDeleteCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Delete File Command Handler.
- void **FM_ChildDeleteAllFilesCmd** (**FM_ChildQueueEntry_t** *CmdArgs)
Child Task Delete All Files Command Handler.
- void **FM_ChildDecompressFileCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Decompress File Command Handler.
- void **FM_ChildConcatFilesCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Concatenate Files Command Handler.
- void **FM_ChildFileInfoCmd** (**FM_ChildQueueEntry_t** *CmdArgs)
Child Task Get File Info Command Handler.
- void **FM_ChildCreateDirectoryCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Create Directory Command Handler.
- void **FM_ChildDeleteDirectoryCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Delete Directory Command Handler.
- void **FM_ChildDirListFileCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Get Dir List to File Command Handler.
- void **FM_ChildDirListPktCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Get Dir List to Packet Command Handler.
- void **FM_ChildSetPermissionsCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Set Permissions Command Handler.
- bool **FM_ChildDirListFileInit** (**osal_id_t** *FileHandlePtr, const char *Directory, const char *Filename)
Child Task Get Dir List to File Initialization Function.
- void **FM_ChildDirListFileLoop** (**osal_id_t** DirlId, **osal_id_t** FileHandle, const char *Directory, const char *DirWithSep, const char *Filename, **uint8** getSizeTimeMode)
Child Task Get Dir List to File Loop Processor Function.
- **int32** **FM_ChildSizeTimeMode** (const char *Filename, **uint32** *FileSize, **uint32** *FileTime, **uint32** * FileMode)
Child Task File Size Time and Mode Utility Function.
- void **FM_ChildSleepStat** (const char *Filename, **FM_DirListEntry_t** *DirListData, **int32** *FilesTillSleep, bool getSizeTimeMode)
Child Task Sleep and Stat Utility Function.

12.11.1 Detailed Description

File Manager (FM) Child task (low priority command handler)

12.11.2 Macro Definition Documentation

12.11.2.1 FM_QUEUE_SEM_NAME #define FM_QUEUE_SEM_NAME "FM_QUEUE_SEM"
Definition at line 49 of file fm_child.c.

12.11.2.2 OS_DIRENTRY_NAME #define OS_DIRENTRY_NAME (x) ((x).d_name)
Definition at line 46 of file fm_child.c.

12.11.3 Function Documentation

12.11.3.1 FM_ChildConcatFilesCmd() `void FM_ChildConcatFilesCmd (const FM_ChildQueueEntry_t * CmdArgs)`

Child Task Concatenate Files Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a concatenate files command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

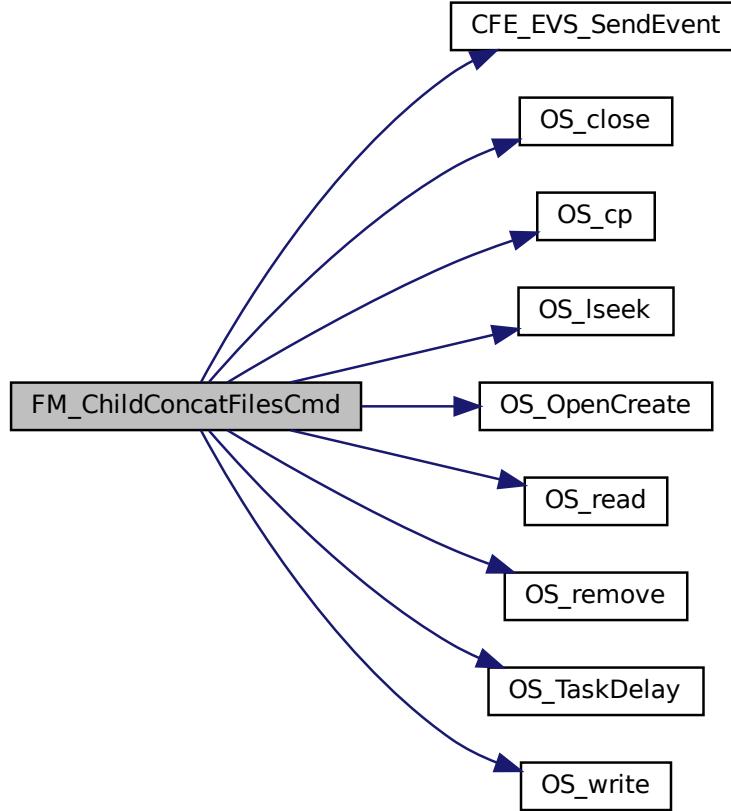
[FM_ChildQueueEntry_t](#), [FM_ConcatFilesCmd_t](#)

Definition at line 628 of file fm_child.c.

References CFE_ES_PerfLogEntry, CFE_ES_PerfLogExit, CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildBuffer, FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_CHILD_FILE_BLOCK_SIZE, FM_CHILD_FILE_LOOP_COUNT, FM_CHILD_FILE_SLEEP_MS, FM_CHILD_TASK_PERF_ID, FM_CONCAT_CMD_INF_EID, FM_CONCAT_OPEN_SRC2_ERR_EID, FM_CONCAT_OPEN_TGT_ERR_EID, FM_CONCAT_OSCPY_ERR_EID, FM_CONCAT_OSRD_ERR_EID, FM_CONCAT_OSWR_ERR_EID, FM_GlobalData, OS_close(), OS_cp(), OS_FILE_FLAG_NONE, OS_lseek(), OS_OBJECT_ID_UNDEFINED, OS_OpenCreate(), OS_read(), OS_READ_ONLY, OS_READ_WRITE, OS_remove(), OS_SEEK_END, OS_SUCCESS, OS_TaskDelay(), OS_write(), FM_ChildQueueEntry_t::Source1, FM_ChildQueueEntry_t::Source2, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.2 `FM_ChildCopyCmd()`

```
void FM_ChildCopyCmd (
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Copy File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a copy file command.

Assumptions, External Events, and Notes:

Parameters

in	<code>CmdArgs</code>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------------	---

See also

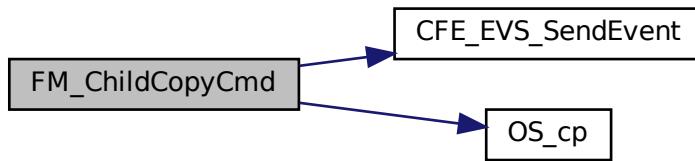
[FM_ChildQueueEntry_t](#), [FM_CopyFileCmd_t](#)

Definition at line 280 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_COPY_CMD_INF_EID, FM_COPY_OS_ERR_EID, FM_GlobalData, OS_cp(), OS_SUCCESS, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.3 FM_Child.CreateDirectoryCmd()

```
void FM_Child.CreateDirectoryCmd (
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Create Directory Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a create directory command.

Assumptions, External Events, and Notes:

Parameters

in	CmdArgs	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	---------	---

See also

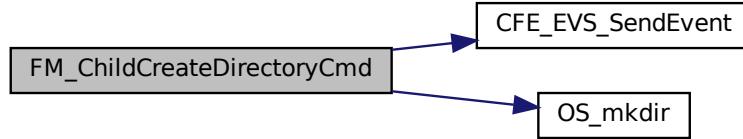
[FM_ChildQueueEntry_t](#), [FM_CreateDirectoryCmd_t](#)

Definition at line 932 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_CREATE_DIR_CMD_INF_EID, FM_CREATE_DIR_OS_ERR_EID, FM_GlobalData, OS_mkdir(), OS_SUCCESS, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.4 FM_ChildDecompressFileCmd()

```
void FM_ChildDecompressFileCmd (
```

```
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Decompress File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a decompress file command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

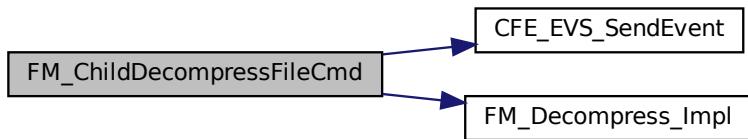
[FM_ChildQueueEntry_t](#), [FM_DecompressFileCmd_t](#)

Definition at line 588 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), CFE_SUCCESS, FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_GlobalData_t::DecompressorStatePtr, FM_DECOM_CFE_ERR_EID, FM_DECOM_CMD_INF_EID, FM_Decompress_Impl(), FM_GlobalData, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.5 FM_ChildDeleteAllFilesCmd()

```
void FM_ChildDeleteAllFilesCmd (
    FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Delete All Files Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a delete all files from a directory command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

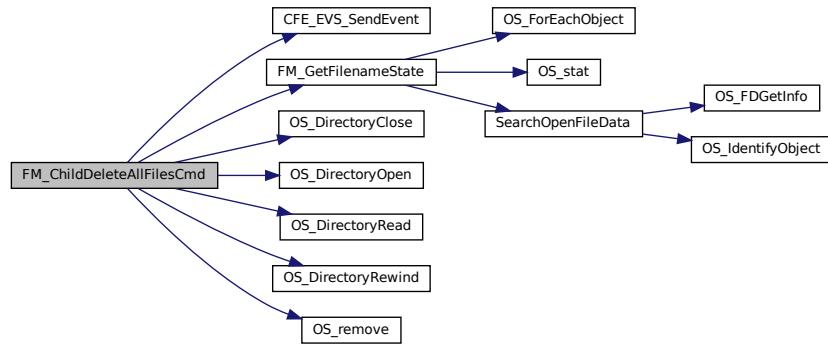
[FM_ChildQueueEntry_t](#), [FM_DeleteAllFilesCmd_t](#)

Definition at line 437 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCmdWarnCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_DELETE_ALL_CMD_INF_EID, FM_DELETE_ALL_FILES_ND_WARNING_EID, FM_DELETE_ALL_OS_ERR_EID, FM_DELETE_ALL_SKIP_WARNING_EID, FM_GetFilenameState(), FM_GlobalData, FM_NAME_IS_

DIRECTORY, FM_NAME_IS_FILE_CLOSED, FM_NAME_IS_FILE_OPEN, FM_NAME_IS_INVALID, FM_NAME_IS_NOT_IN_USE, FM_PARENT_DIRECTORY, FM_THIS_DIRECTORY, OS_DirectoryClose(), OS_DirectoryOpen(), OS_DirectoryRead(), OS_DirectoryRewind(), OS_DIRENTY_NAME, OS_MAX_PATH_LEN, OS_OBJECT_ID_UNDEFINED, OS_remove(), OS_SUCCESS, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Source2. Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.6 FM_ChildDeleteCmd() void FM_ChildDeleteCmd (const FM_ChildQueueEntry_t * CmdArgs)

Child Task Delete File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a delete file command.

Assumptions, External Events, and Notes:

Parameters

in	CmdArgs	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	---------	---

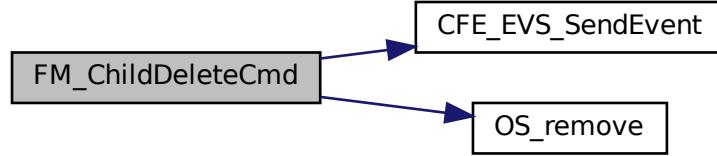
See also

[FM_ChildQueueEntry_t](#), [FM_DeleteFileCmd_t](#)

Definition at line 398 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_DELETE_CMD_INF_EID, FM_DELETE_OS_ERR_EID, FM_GlobalData, OS_remove(), OS_SUCCESS, and FM_ChildQueueEntry_t::Source1. Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.7 FM_ChildDeleteDirectoryCmd() void FM_ChildDeleteDirectoryCmd (const FM_ChildQueueEntry_t * CmdArgs)

Child Task Delete Directory Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a delete directory command.

Assumptions, External Events, and Notes:

Parameters

in	CmdArgs	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	---------	---

See also

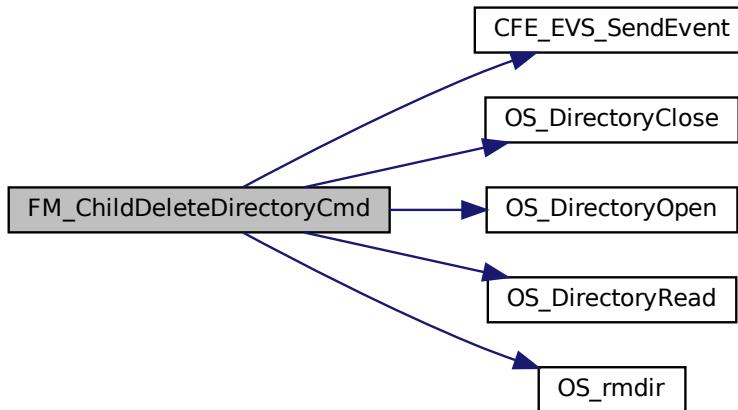
[FM_ChildQueueEntry_t](#), [FM_DeleteDirectoryCmd_t](#)

Definition at line 971 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_DELETE_DIR_CMD_INF_EID, FM_DELETE_DIR_EMPTY_ERR_EID, FM_DELETE_OPENDIR_OS_ERR_EID, FM_DELETE_RMDIR_OS_ERR_EID, FM_GlobalData, FM_PARENT_DIRECTORY, FM_THIS_DIRECTORY, OS_DirectoryClose(), OS_DirectoryOpen(), OS_DirectoryRead(), OS_DIRENT_NAME, OS_OBJECT_ID_UNDEFINED, OS_rmdir(), OS_SUCCESS, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.8 FM_ChildDirListFileCmd() void FM_ChildDirListFileCmd (const FM_ChildQueueEntry_t * CmdArgs)

Child Task Get Dir List to File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a get directory listing to a file command.

Assumptions, External Events, and Notes:

Parameters

in	CmdArgs	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	---------	---

See also

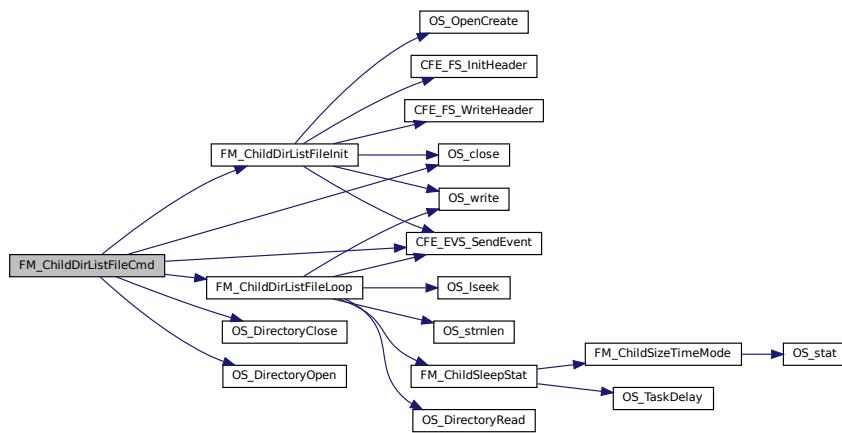
[FM_ChildQueueEntry_t](#), [FM_GetDirListFileCmd_t](#)

Definition at line 1049 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_ChildDirListFileInit(), FM_ChildDirListFileLoop(), FM_GET_DIR_FILE_OSOPENDIR_ERR_EID, FM_GlobalData, FM_ChildQueueEntry_t::GetSizeTimeMode, OS_close(), OS_DirectoryClose(), OS_DirectoryOpen(), OS_OBJECT_ID_UNDEFINED, OS_SUCCESS, FM_ChildQueueEntry_t::Source1, FM_ChildQueueEntry_t::Source2, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.9 FM_ChildDirListFileInit() `bool FM_ChildDirListFileInit (`
`osal_id_t * FileHandlePtr,`
`const char * Directory,`
`const char * Filename)`

Child Task Get Dir List to File Initialization Function.

Description

This function creates the output file and then writes both the CFE file header and a blank copy of the directory list statistics structure to the output file. At the end of the command, software will re-write the statistics structure, this time with up to date values.

Assumptions, External Events, and Notes:

Parameters

out	<i>FileHandlePtr</i>	A pointer to a file handle variable which is modified to contain the newly created output file handle.
in	<i>Directory</i>	A pointer to a buffer containing the directory name.
in	<i>Filename</i>	A pointer to a buffer containing the output filename.

Returns

Execution status, see [cFE Return Code Defines](#) and [OSAL Return Code Defines](#)

Return values

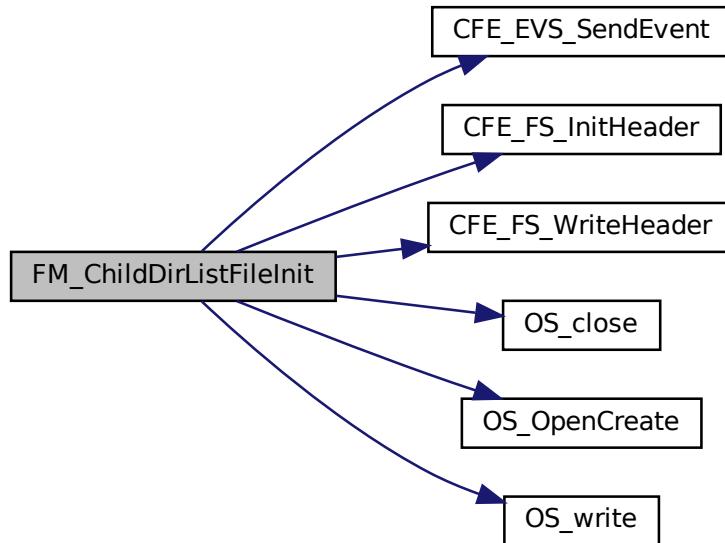
CFE_SUCCESS	Successful execution.
-----------------------------	-----------------------

Definition at line 1278 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_FS_InitHeader(), CFE_FS_WriteHeader(), FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::DirListFileStats, FM_DirListFileStats_t::DirName, FM_DIR_LIST_FILE_SUBTYPE, FM_GET_DIR_FILE_OSCREAT_ERR_EID, FM_GET_DIR_FILE_WRBLANK_ERR_EID, FM_GET_DIR_FILE_WRHDR_ERR_EID, FM_GlobalData, OS_close(), OS_FILE_FLAG_CREATE, OS_FILE_FLAG_TRUNCATE, OS_MAX_PATH_LEN, OS_OBJECT_ID_UNDEFINED, OS_OpenCreate(), OS_READ_WRITE, OS_SUCCESS, and OS_write().

Referenced by FM_ChildDirListFileCmd().

Here is the call graph for this function:



```

12.11.3.10 FM_ChildDirListFileLoop() void FM_ChildDirListFileLoop (
    osal_id_t DirId,
    osal_id_t FileHandle,
    const char * Directory,
    const char * DirWithSep,
    const char * Filename,
    uint8 GetSizeTimeMode )
  
```

Child Task Get Dir List to File Loop Processor Function.

Description

This function reads each directory entry, determines the last modify time size and mode for each entry, and writes the entry data to the output file.

Assumptions, External Events, and Notes:

Parameters

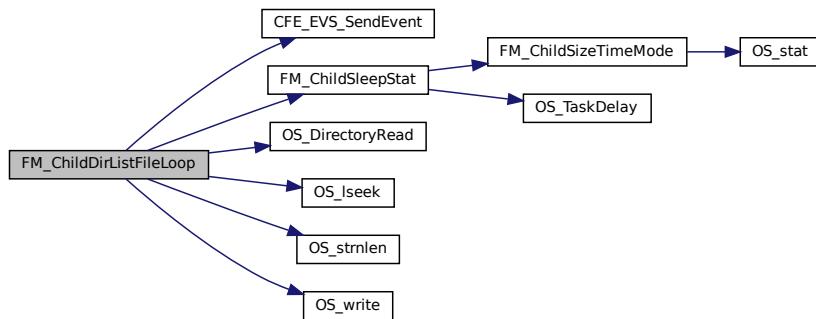
in	<i>DirId</i>	Directory ID, a handle used to read directory entries.
in	<i>FileHandle</i>	Output file handle.
in	<i>Directory</i>	Pointer to a buffer containing the directory name.
in	<i>DirWithSep</i>	Pointer to directory name with path separator appended.
in	<i>Filename</i>	Pointer to a buffer containing the output filename.
in	<i>GetSizeTimeMode</i>	Option to call OS_stat for size, time, mode of files

Definition at line 1358 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCmdWarnCounter, FM_DirListFileStats_t::DirEntries, FM_GlobalData_t::DirListFileStats, FM_DirListEntry_t::EntryName, FM_DirListFileStats_t::FileEntries, FM_CHILD_STAT_SLEEP_FILECOUNT, FM_ChildSleepStat(), FM_DIR_LIST_FILE_ENTRIES, FM_GET_DIR_FILE_CMD_INF_EID, FM_GET_DIR_FILE_UPSTATS_ERR_EID, FM_GET_DIR_FILE_WARNING_EID, FM_GET_DIR_FILE_WRENTRY_ERR_EID, FM_GlobalData, FM_PARENT_DIRECTORY, FM_THIS_DIRECTORY, OS_DirectoryRead(), OS_DIRENTRY_NAME, OS_Iseek(), OS_MAX_FILE_NAME, OS_MAX_PATH_LEN, OS_SEEK_SET, OS_strnlen(), OS_SUCCESS, and OS_write().

Referenced by FM_ChildDirListFileCmd().

Here is the call graph for this function:



12.11.3.11 FM_ChildDirListPktCmd()

```
void FM_ChildDirListPktCmd (
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Get Dir List to Packet Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a get directory listing to a packet command.

Assumptions, External Events, and Notes:**Parameters**

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

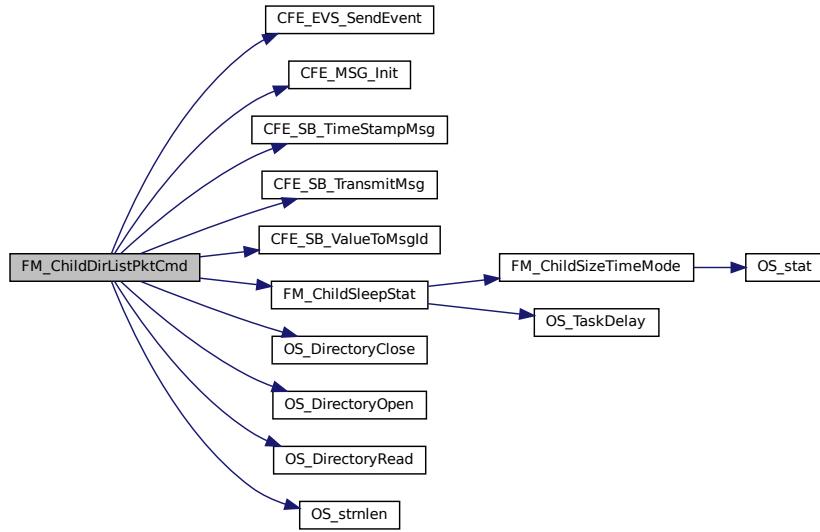
[FM_ChildQueueEntry_t](#), [FM_GetDirListPktCmd_t](#)

Definition at line 1109 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), CFE_MSG_Init(), CFE_SB_TimeStampMsg(), CFE_SB_TransmitMsg(), CFE_SB_ValueToMsgId(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCmdWarnCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_ChildQueueEntry_t::DirListOffset, FM_GlobalData_t::DirListPkt, FM_DirListPkt_Payload_t::DirName, FM_DirListEntry_t::EntryName, FM_DirListPkt_Payload_t::FileList, FM_DirListPkt_Payload_t::FirstFile, FM_CHILD_STAT_SLEEP_FILECOUNT, FM_ChildSleepStat(), FM_DIR_LIST_PKT_ENTRIES, FM_DIR_LIST_TLM_MID, FM_GET_DIR_PKT_CMD_INF_EID, FM_GET_DIR_PKT_OS_ERR_EID, FM_GET_DIR_PKT_WARNING_EID, FM_GlobalData, FM_PARENT_DIRECTORY, FM_THIS_DIRECTORY, FM_ChildQueueEntry_t::GetSizeTimeMode, OS_DirectoryClose(), OS_DirectoryOpen(), OS_DirectoryRead(), OS_DIRENTRY_NAME, OS_MAX_FILE_NAME, OS_MAX_PATH_LEN, OS_OBJECT_ID_UNDEFINED, OS_strnlen(), OS_SUCCESS, FM_DirListPkt_Payload_t::PacketFiles, FM_DirListPkt_t::Payload, FM_ChildQueueEntry_t::Source1, FM_ChildQueueEntry_t::Source2, FM_DirListPkt_t::TelemetryHeader, and FM_DirListPkt_Payload_t::TotalFiles.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.12 FM_ChildFileInfoCmd() void FM_ChildFileInfoCmd (
 FM_ChildQueueEntry_t * CmdArgs)

Child Task Get File Info Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a get file info command.

Assumptions, External Events, and Notes:

Parameters

in	<code>CmdArgs</code>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------------	---

See also

[FM_ChildQueueEntry_t](#), [FM_GetFileInfoCmd_t](#)

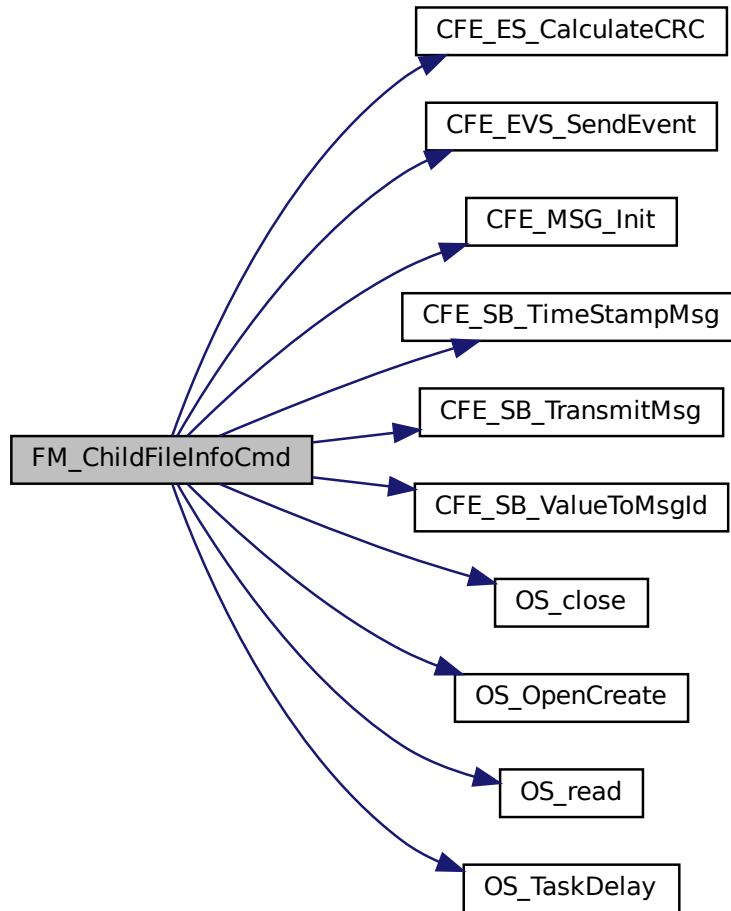
Definition at line 771 of file fm_child.c.

References `CFE_ES_CalculateCRC()`, `CFE_ES_CrcType_CRC_16`, `CFE_ES_CrcType_CRC_32`, `CFE_ES_CrcType_CRC_8`, `CFE_ES_PerfLogEntry`, `CFE_ES_PerfLogExit`, `CFE_EVS_EventType_ERROR`, `CFE_EVS_EventType_INFORMATION`, `CFE_EVS_SendEvent()`, `CFE_MSG_Init()`, `CFE_SB_TimeStampMsg()`, `CFE_SB_TransmitMsg()`, `CFE_SB_ValueToMsgId()`, `FM_GlobalData_t::ChildBuffer`, `FM_GlobalData_t::ChildCmdCounter`, `FM_GlobalData_t::ChildCmdWarnCounter`, `FM_GlobalData_t::ChildCurrentCC`, `FM_GlobalData_t::ChildPreviousCC`, `FM_ChildQueue`

Entry_t::CommandCode, FM_FileInfoPkt_Payload_t::CRC, FM_FileInfoPkt_Payload_t::CRC_Computed, FM_ChildQueueEntry_t::FileInfoCRC, FM_GlobalData_t::FileInfoPkt, FM_ChildQueueEntry_t::FileInfoSize, FM_ChildQueueEntry_t::FileInfoState, FM_ChildQueueEntry_t::FileInfoTime, FM_FileInfoPkt_Payload_t::Filename, FM_FileInfoPkt_Payload_t::FileSize, FM_FileInfoPkt_Payload_t::FileStatus, FM_CHILD_FILE_BLOCK_SIZE, FM_CHILD_FILE_LOOP_COUNT, FM_CHILD_FILE_SLEEP_MS, FM_CHILD_TASK_PERF_ID, FM_FILE_INFO_TLM_MID, FM_GETFILEINFO_CMD_INF_EID, FM_GETFILEINFO_OPEN_ERR_EID, FM_GETFILEINFO_READ_WARNING_EID, FM_GETFILEINFO_STATE_WARNING_EID, FM_GETFILEINFO_TYPE_WARNING_EID, FM_GlobalData, FM_IGNORE_CRC, FM_NAME_IS_FILE_CLOSED, FM_FileInfoPkt_Payload_t::LastModifiedTime, FM_FileInfoPkt_Payload_t::Mode, FM_ChildQueueEntry_t::Mode, OS_close(), OS_FILE_FLAG_NONE, OS_MAX_PATH_LEN, OS_OBJECT_ID_UNDEFINED, OS_OpenCreate(), OS_read(), OS_READ_ONLY, OS_SUCCESS, OS_TaskDelay(), FM_FileInfoPkt_t::Payload, FM_ChildQueueEntry_t::Source1, and FM_FileInfoPkt_t::TelemetryHeader.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.13 FM_ChildInit() CFE_Status_t FM_ChildInit (

```
    void )
```

Child Task Initialization Function.

Description

This function is invoked during FM application startup initialization to create and initialize the FM Child Task. The purpose for the child task is to process FM application commands that take too long to execute within the main task.

Assumptions, External Events, and Notes:

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
-----------------------------	-----------------------

See also

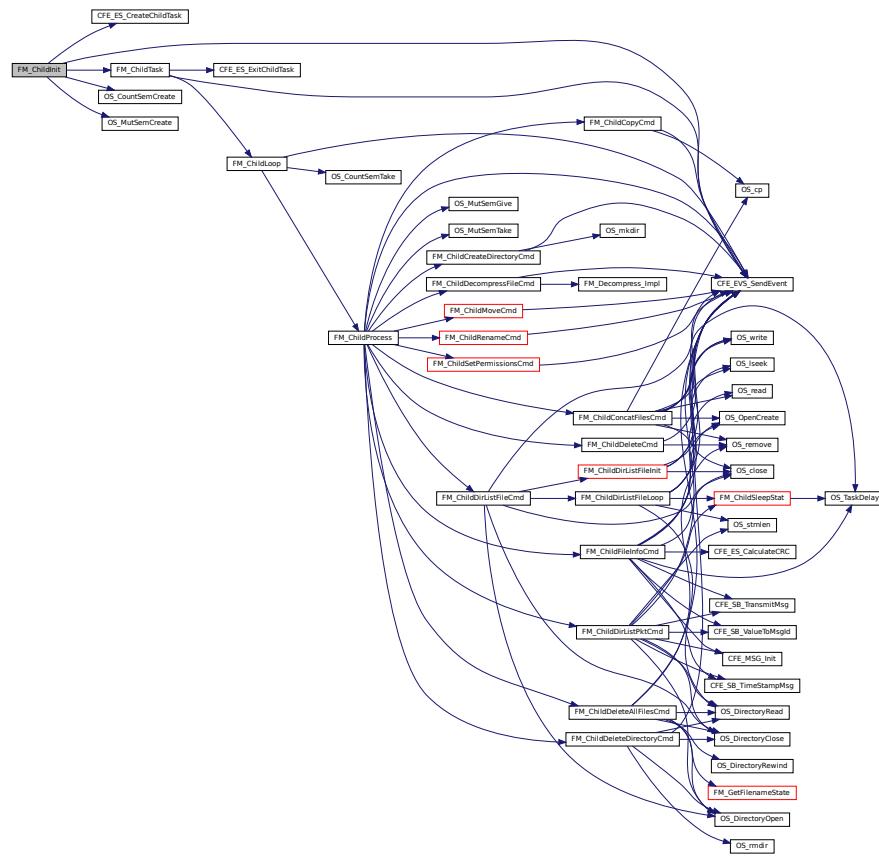
[FM_AppInit](#)

Definition at line 57 of file fm_child.c.

References [CFE_ES_CreateChildTask\(\)](#), [CFE_EVS_EventType_ERROR](#), [CFE_EVS_SendEvent\(\)](#), [CFE_SUCCESS](#), [FM_GlobalData_t::ChildQueueCountSem](#), [FM_GlobalData_t::ChildSemaphore](#), [FM_GlobalData_t::ChildTaskID](#), [FM_CHILD_INIT_CREATE_ERR_EID](#), [FM_CHILD_INIT_QSEM_ERR_EID](#), [FM_CHILD_INIT_SEM_ERR_EID](#), [FM_CHILD_SEM_NAME](#), [FM_CHILD_TASK_NAME](#), [FM_CHILD_TASK_PRIORITY](#), [FM_CHILD_TASK_STACK_SIZE](#), [FM_ChildTask\(\)](#), [FM_GlobalData](#), [FM_QUEUE_SEM_NAME](#), [OS_CountSemCreate\(\)](#), [OS_MAX_PATH_LEN](#), and [OS_MutSemCreate\(\)](#).

Referenced by [FM_AppInit\(\)](#).

Here is the call graph for this function:



12.11.3.14 FM_ChildLoop()

```
void FM_ChildLoop (
    void )
```

Child Task Main Loop Processor Function.

Description

This function is the main loop for the FM application child task. The function waits indefinitely for the parent task to grant the handshake semaphore, which is the signal that there are fresh command arguments in the child task handshake queue. The function will remain in this loop until the child task is terminated by the CFE, or until a fatal error occurs which causes the child task to terminate itself. Fatal errors are defined as any error returned by [OS_CountSemTake](#) or if the handshake queue is empty, or if the read index for the handshake queue is invalid.

Assumptions, External Events, and Notes:

See also

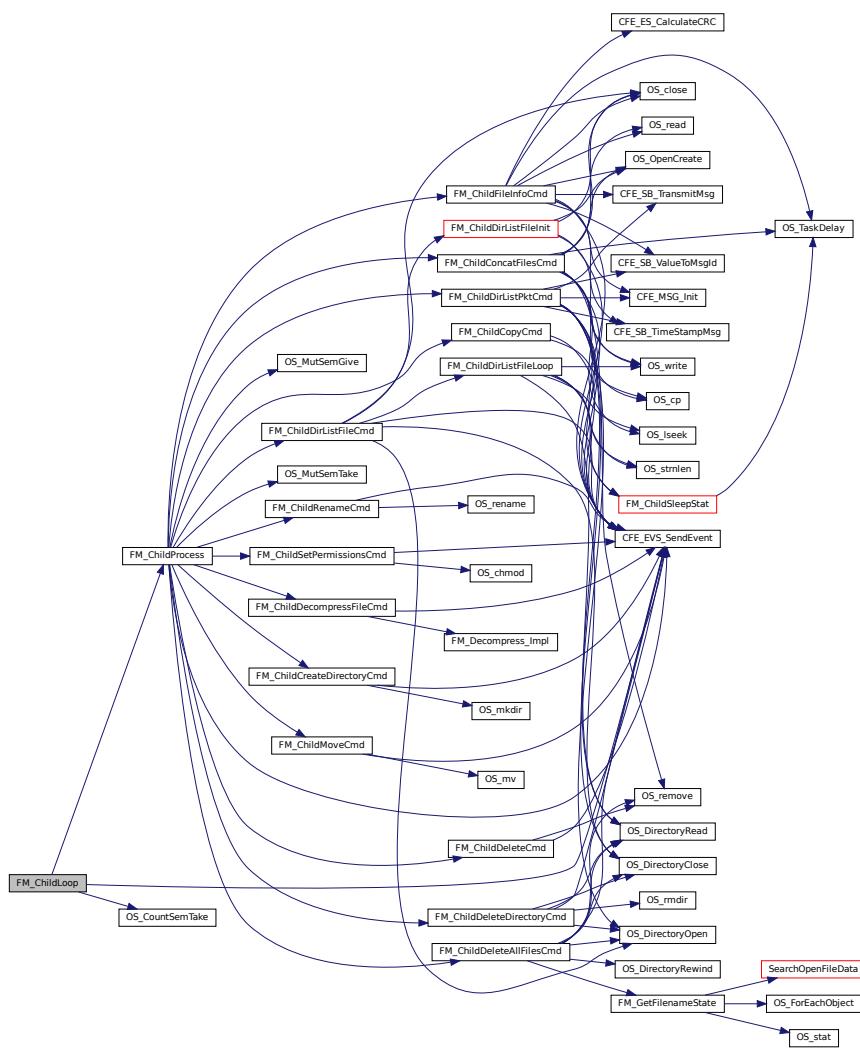
[FM_ChildQueueEntry_t](#), [FM_ChildProcess](#)

Definition at line 138 of file fm_child.c.

References CFE_ES_PerfLogEntry, CFE_ES_PerfLogExit, CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_SUCCESS, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildQueueCount, FM_GlobalData_t::ChildReadIndex, FM_GlobalData_t::ChildSemaphore, FM_CHILD_QUEUE_DEPTH, FM_CHILD_TASK_PERF_ID, FM_CHILD_TERM_EMPTYQ_ERR_EID, FM_CHILD_TERM_QIDX_ERR_EID, FM_CHILD_TERM_SEM_ERR_EID, FM_ChildProcess(), FM_GlobalData, OS_CountSemTake(), and OS_ERROR.

Referenced by FM_ChildTask().

Here is the call graph for this function:



12.11.3.15 FM_ChildMoveCmd() void FM_ChildMoveCmd (const FM_ChildQueueEntry_t * CmdArgs)

Child Task Move File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a move file command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

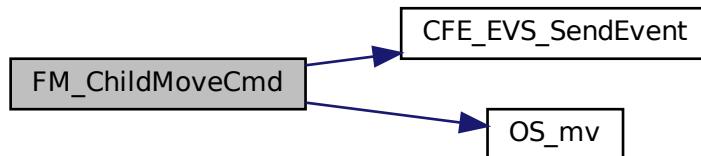
[FM_ChildQueueEntry_t](#), [FM_MoveFileCmd_t](#)

Definition at line 320 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_GlobalData, FM_MOVE_CMD_INF_EID, FM_MOVE_OS_ERR_EID, OS_mv(), OS_SUCCESS, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.16 FM_ChildProcess()

```
void FM_ChildProcess (
    void )
```

Child Task Command Queue Processor Function.

Description

This function routes control to the appropriate child task command handler. After the command handler has finished, this function then updates the queue access variables to point to the next queue entry.

Assumptions, External Events, and Notes:

See also

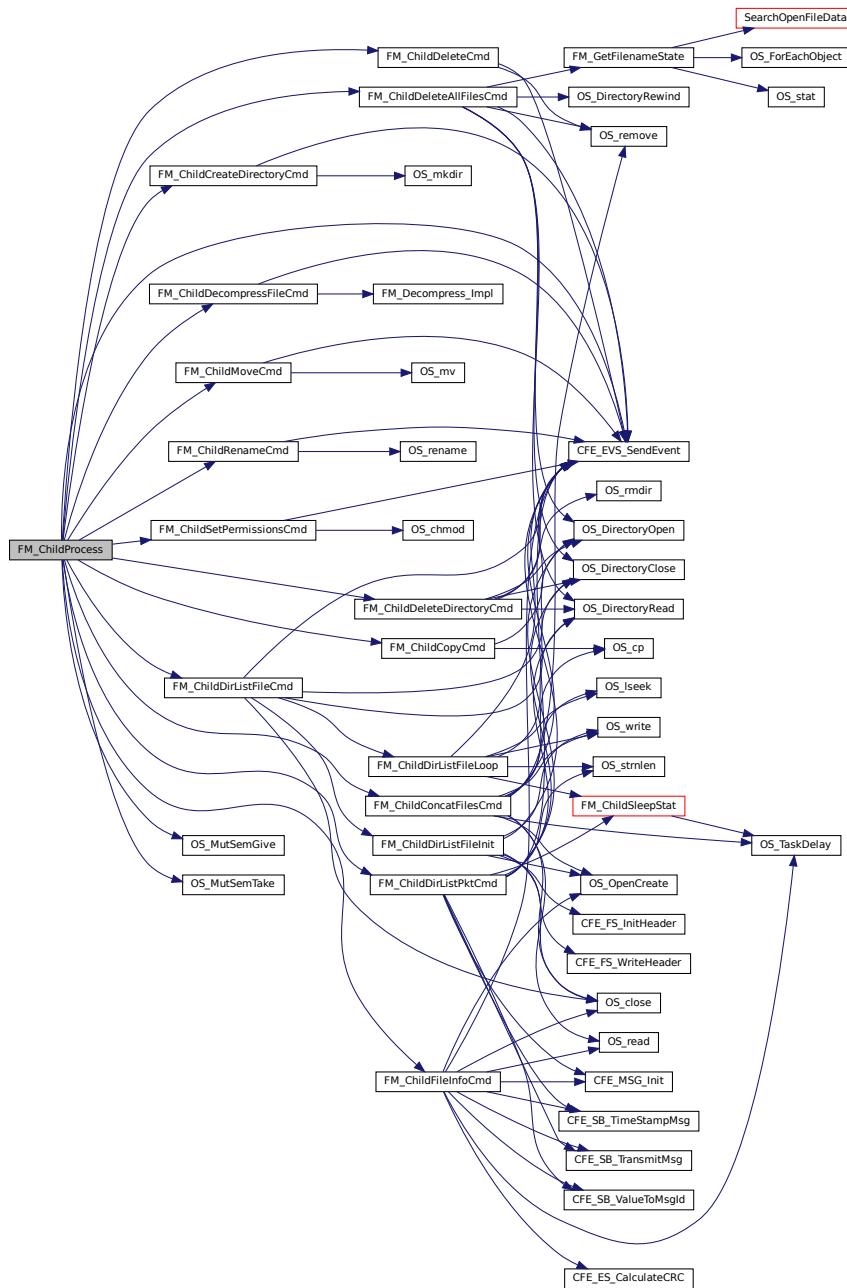
[FM_ChildQueueEntry_t](#), [FM_ChildTask](#)

Definition at line 193 of file fm_child.c.

References `CFE_EVS_EventType_ERROR`, `CFE_EVS_SendEvent()`, `FM_GlobalData_t::ChildCmdErrCounter`, `FM_GlobalData_t::ChildQueue`, `FM_GlobalData_t::ChildQueueCount`, `FM_GlobalData_t::ChildQueueCountSem`, `FM_GlobalData_t::ChildReadIndex`, `FM_ChildQueueEntry_t::CommandCode`, `FM_CHILD_EXE_ERR_EID`, `FM_CHILD_QUEUE_DEPTH`, `FM_ChildConcatFilesCmd()`, `FM_ChildCopyCmd()`, `FM_ChildCreateDirectoryCmd()`, `FM_ChildDecompressFileCmd()`, `FM_ChildDeleteAllFilesCmd()`, `FM_ChildDeleteCmd()`, `FM_ChildDeleteDirectoryCmd()`, `FM_ChildDirListFileCmd()`, `FM_ChildDirListPktCmd()`, `FM_ChildFileInfoCmd()`, `FM_ChildMoveCmd()`, `FM_ChildRenameCmd()`, `FM_ChildSetPermissionsCmd()`, `FM_CONCAT_FILES_CC`, `FM_COPY_FILE_CC`, `FM_CREATE_DIRECTORY_CC`, `FM_DECOMPRESS_FILE_CC`, `FM_DELETE_ALL_FILES_CC`, `FM_DELETE_DIRECTORY_CC`, `FM_DELETE_FILE_CC`, `FM_GET_DIR_LIST_FILE_CC`, `FM_GET_DIR_LIST_PKT_CC`, `FM_GET_FILE_INFO_CC`, `FM_GlobalData`, `FM_MOVE_FILE_CC`, `FM_RENAME_FILE_CC`, `FM_SET_PERMISSIONS_CC`, `OS_MutSemGive()`, and `OS_MutSemTake()`.

Referenced by `FM_ChildLoop()`.

Here is the call graph for this function:



12.11.3.17 FM_ChildRenameCmd() void FM_ChildRenameCmd (const [FM_ChildQueueEntry_t](#) * CmdArgs)

Child Task Rename File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a rename file command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

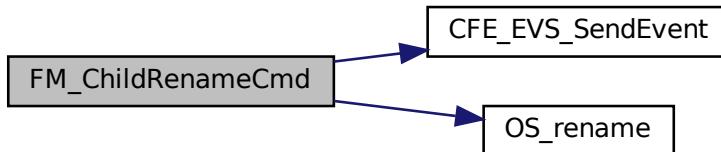
[FM_ChildQueueEntry_t](#), [FM_RenameFileCmd_t](#)

Definition at line 359 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM↔_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM↔_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_GlobalData, FM_RENAME_CMD↔_INF_EID, FM_RENAME_OS_ERR_EID, OS_rename(), OS_SUCCESS, FM_ChildQueueEntry_t::Source1, and FM↔_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.18 FM_ChildSetPermissionsCmd()

```
void FM_ChildSetPermissionsCmd (
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Set Permissions Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a set permissions / mode on the source1 file or directory

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

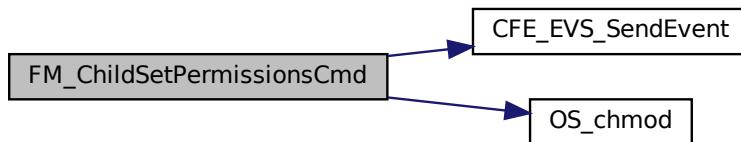
[FM_ChildQueueEntry_t](#), [FM_SetPermissionsCmd_t](#)

Definition at line 1242 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_GlobalData, FM_SET_PERM_CMD_INF_EID, FM_SET_PERM_OS_ERR_EID, FM_ChildQueueEntry_t::Mode, OS_chmod(), OS_SUCCESS, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.11.3.19 FM_ChildSizeTimeMode() `int32 FM_ChildSizeTimeMode (`
 `const char * Filename,`
 `uint32 * FileSize,`
 `uint32 * FileTime,`
 `uint32 * FileMode)`

Child Task File Size Time and Mode Utility Function.

Description

This function is invoked to query the last modify time, current size and mode (permissions) for each directory entry when processing either the Get Directory List to File or Get Directory List to Packet commands.

Assumptions, External Events, and Notes:**Parameters**

in	<i>Filename</i>	Pointer to the combined directory and entry names.
out	<i>FileSize</i>	Pointer to the number containing the current entry size.
out	<i>FileTime</i>	Pointer to the number containing the last modify time.
out	<i> FileMode</i>	Pointer to the value containing the mode (permissions).

Returns

Execution status, see [cFE Return Code Defines](#) and [OSAL Return Code Defines](#)

Return values

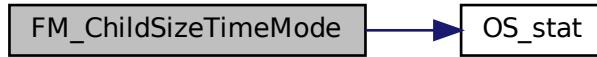
CFE_SUCCESS	Successful execution.
-----------------------------	-----------------------

Definition at line 1496 of file fm_child.c.

References OS_FILESTAT_MODE, OS_FILESTAT_SIZE, OS_FILESTAT_TIME, OS_stat(), and OS_SUCCESS.

Referenced by FM_ChildSleepStat().

Here is the call graph for this function:

**12.11.3.20 FM_ChildSleepStat()** `void FM_ChildSleepStat (`

```

        const char * Filename,
        FM_DirListEntry_t * DirListData,
        int32 * FilesTillSleep,
        bool GetSizeTimeMode )
```

Child Task Sleep and Stat Utility Function.

Description

This function is invoked to query the last modify time, current size and mode (permissions) for each directory entry when processing either the Get Directory List to File or Get Directory List to Packet commands. However it only will sleep if FM_CHILD_STAT_SLEEP_FILECOUNT reaches zero and call FM_ChildSizeTimeMode if getSizeTimeMode is TRUE, otherwise this function has no effect

Assumptions, External Events, and Notes:**Parameters**

in	<i>Filename</i>	Pointer to the combined directory and entry names.
out	<i>DirListData</i>	Pointer to the data containing the current entry size, last modify time, and mode
out	<i>FilesTillSleep</i>	If this is zero the function will sleep for FM_CHILD_STAT_SLEEP_MS and reset it to FM_CHILD_STAT_SLEEP_FILECOUNT . Otherwise it will subtract 1
in	<i>GetSizeTimeMode</i>	Whether this function should call FM_ChildSizeTimeMode

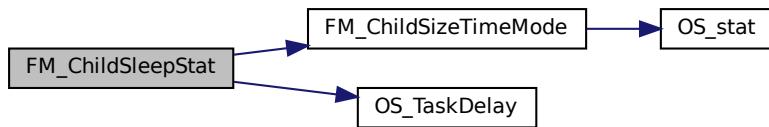
Definition at line 1527 of file fm_child.c.

References CFE_ES_PerfLogEntry, CFE_ES_PerfLogExit, FM_DirListEntry_t::EntrySize, FM_CHILD_STAT_SLEEP←

_FILECOUNT, FM_CHILD_STAT_SLEEP_MS, FM_CHILD_TASK_PERF_ID, FM_ChildSizeTimeMode(), FM_DirListEntry_t::Mode, FM_DirListEntry_t::ModifyTime, and OS_TaskDelay().

Referenced by FM_ChildDirListFileLoop(), and FM_ChildDirListPktCmd().

Here is the call graph for this function:



12.11.3.21 FM_ChildTask()

```
void FM_ChildTask (
    void )
```

Child Task Entry Point Function.

Description

This function is the entry point for the FM application child task. The function registers with CFE as a child task, creates the semaphore to interface with the parent task and calls the child task main loop function. Should the main loop function return due to a breakdown in the interface handshake with the parent task, this function will self delete as a child task with CFE. There is no return from [CFE_ES_DeleteChildTask](#).

Assumptions, External Events, and Notes:

See also

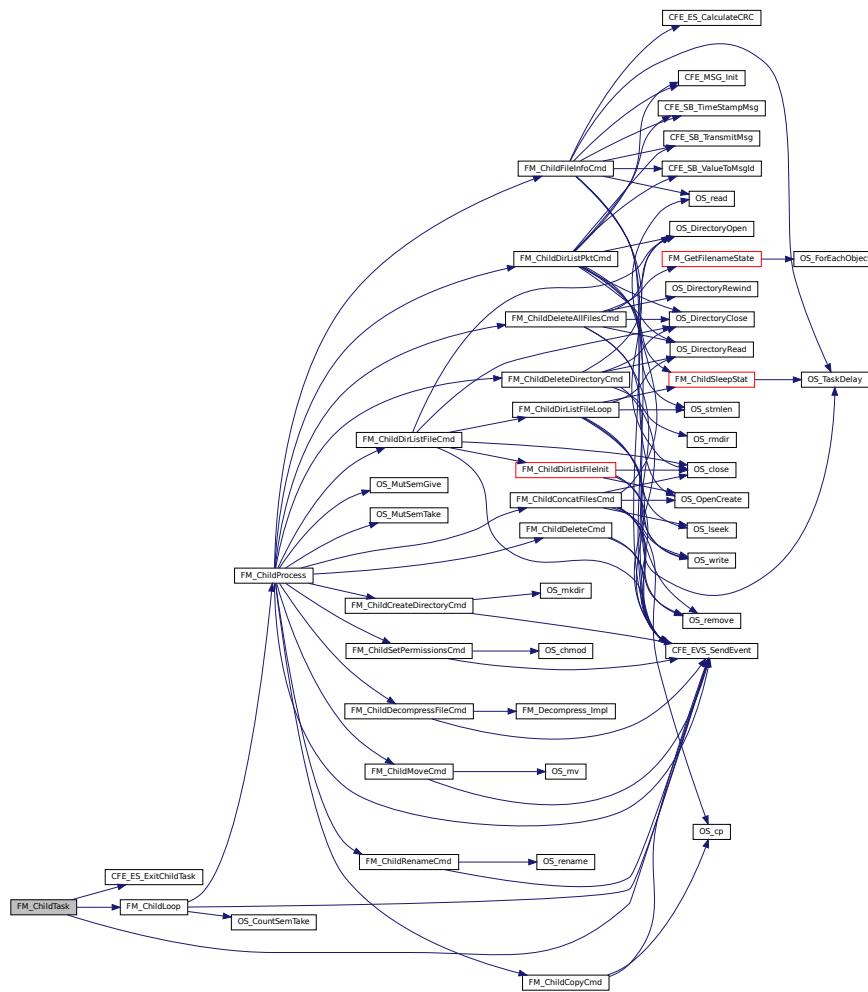
- [CFE_ES_DeleteChildTask](#), [FM_ChildLoop](#)

Definition at line 112 of file fm_child.c.

References `CFE_ES_ExitChildTask()`, `CFE_EVS_EventType_INFORMATION`, `CFE_EVS_SendEvent()`, `FM_ChildGlobalData_t::ChildSemaphore`, `FM_CHILD_INIT_EID`, `FM_ChildLoop()`, `FM_GlobalData`, and `OS_OBJECT_ID_UNDEFINED`.

Referenced by `FM_ChildInit()`.

Here is the call graph for this function:



12.12 apps/fm/fsw/src/fm_child.h File Reference

```
#include "cfe.h"
#include "fm_msg.h"
```

Functions

- [CFE_Status_t FM_ChildInit \(void\)](#)

- void **FM_ChildTask** (void)
Child Task Initialization Function.
- void **FM_ChildLoop** (void)
Child Task Main Loop Processor Function.
- void **FM_ChildProcess** (void)
Child Task Command Queue Processor Function.
- void **FM_ChildCopyCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Copy File Command Handler.
- void **FM_ChildMoveCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Move File Command Handler.
- void **FM_ChildRenameCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Rename File Command Handler.
- void **FM_ChildDeleteCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Delete File Command Handler.
- void **FM_ChildDeleteAllFilesCmd** (**FM_ChildQueueEntry_t** *CmdArgs)
Child Task Delete All Files Command Handler.
- void **FM_ChildDecompressFileCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Decompress File Command Handler.
- void **FM_ChildConcatFilesCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Concatenate Files Command Handler.
- void **FM_ChildFileInfoCmd** (**FM_ChildQueueEntry_t** *CmdArgs)
Child Task Get File Info Command Handler.
- void **FM_ChildCreateDirectoryCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Create Directory Command Handler.
- void **FM_ChildDeleteDirectoryCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Delete Directory Command Handler.
- void **FM_ChildDirListFileCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Get Dir List to File Command Handler.
- void **FM_ChildDirListPktCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Get Dir List to Packet Command Handler.
- void **FM_ChildSetPermissionsCmd** (const **FM_ChildQueueEntry_t** *CmdArgs)
Child Task Set Permissions Command Handler.
- bool **FM_ChildDirListFileInit** (osal_id_t *FileHandlePtr, const char *Directory, const char *Filename)
Child Task Get Dir List to File Initialization Function.
- void **FM_ChildDirListFileLoop** (osal_id_t DirId, osal_id_t FileHandle, const char *Directory, const char *DirWithSep, const char *Filename, uint8 GetSizeTimeMode)
Child Task Get Dir List to File Loop Processor Function.
- int32 **FM_ChildSizeTimeMode** (const char *Filename, uint32 *FileSize, uint32 *FileTime, uint32 * FileMode)
Child Task File Size Time and Mode Utility Function.
- void **FM_ChildSleepStat** (const char *Filename, **FM_DirListEntry_t** *DirListData, int32 *FilesTillSleep, bool GetSizeTimeMode)
Child Task Sleep and Stat Utility Function.

12.12.1 Detailed Description

Prototypes for child task functions.

12.12.2 Function Documentation

12.12.2.1 FM_ChildConcatFilesCmd() `void FM_ChildConcatFilesCmd (const FM_ChildQueueEntry_t * CmdArgs)`

Child Task Concatenate Files Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a concatenate files command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

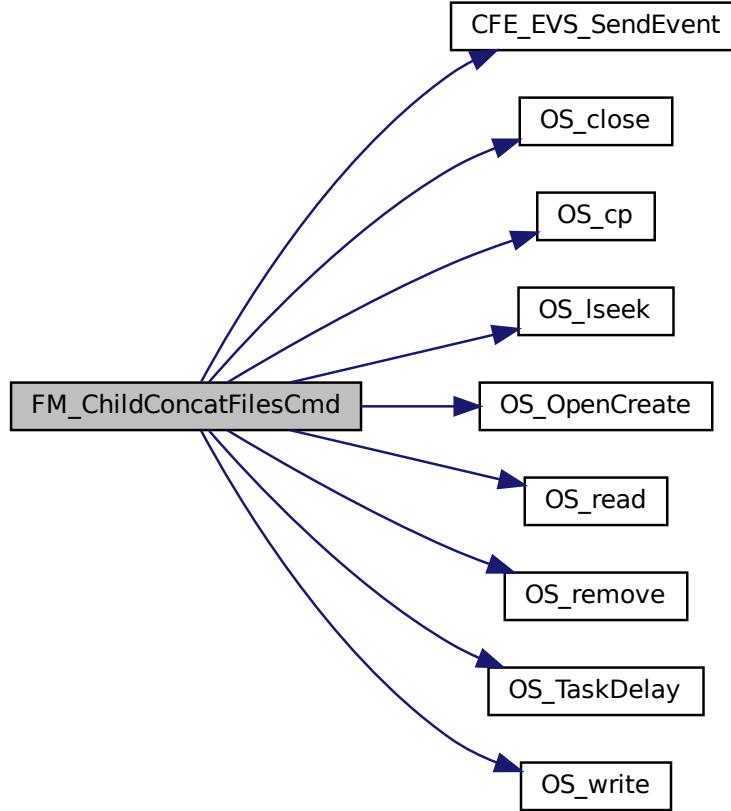
[FM_ChildQueueEntry_t](#), [FM_ConcatFilesCmd_t](#)

Definition at line 628 of file fm_child.c.

References CFE_ES_PerfLogEntry, CFE_ES_PerfLogExit, CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildBuffer, FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_CHILD_FILE_BLOCK_SIZE, FM_CHILD_FILE_LOOP_COUNT, FM_CHILD_FILE_SLEEP_MS, FM_CHILD_TASK_PERF_ID, FM_CONCAT_CMD_INF_EID, FM_CONCAT_OPEN_SRC2_ERR_EID, FM_CONCAT_OPEN_TGT_ERR_EID, FM_CONCAT_OSCPY_ERR_EID, FM_CONCAT_OSRD_ERR_EID, FM_CONCAT_OSWR_ERR_EID, FM_GlobalData, OS_close(), OS_cp(), OS_FILE_FLAG_NONE, OS_lseek(), OS_OBJECT_ID_UNDEFINED, OS_OpenCreate(), OS_read(), OS_READ_ONLY, OS_READ_WRITE, OS_remove(), OS_SEEK_END, OS_SUCCESS, OS_TaskDelay(), OS_write(), FM_ChildQueueEntry_t::Source1, FM_ChildQueueEntry_t::Source2, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.2 `FM_ChildCopyCmd()`

```
void FM_ChildCopyCmd (
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Copy File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a copy file command.

Assumptions, External Events, and Notes:

Parameters

in	<code>CmdArgs</code>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------------	---

See also

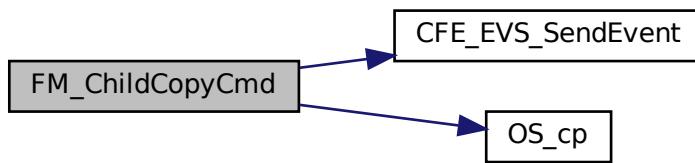
[FM_ChildQueueEntry_t](#), [FM_CopyFileCmd_t](#)

Definition at line 280 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_COPY_CMD_INF_EID, FM_COPY_OS_ERR_EID, FM_GlobalData, OS_cp(), OS_SUCCESS, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.3 FM_Child.CreateDirectoryCmd()

```
void FM_Child.CreateDirectoryCmd (
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Create Directory Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a create directory command.

Assumptions, External Events, and Notes:

Parameters

in	CmdArgs	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	---------	---

See also

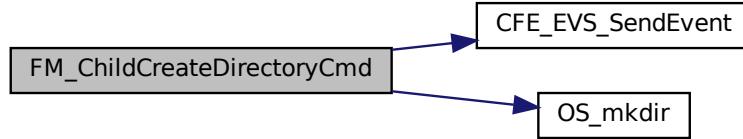
[FM_ChildQueueEntry_t](#), [FM_CreateDirectoryCmd_t](#)

Definition at line 932 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_CREATE_DIR_CMD_INF_EID, FM_CREATE_DIR_OS_ERR_EID, FM_GlobalData, OS_mkdir(), OS_SUCCESS, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.4 FM_ChildDecompressFileCmd() void FM_ChildDecompressFileCmd (

```
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Decompress File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a decompress file command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

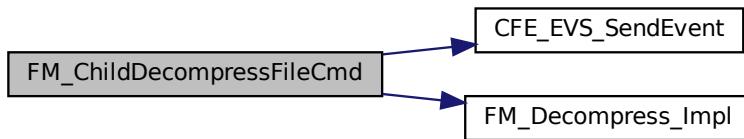
[FM_ChildQueueEntry_t](#), [FM_DecompressFileCmd_t](#)

Definition at line 588 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), CFE_SUCCESS, FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_GlobalData_t::DecompressorStatePtr, FM_DECOM_CFE_ERR_EID, FM_DECOM_CMD_INF_EID, FM_Decompress_Impl(), FM_GlobalData, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.5 FM_ChildDeleteAllFilesCmd()

```
void FM_ChildDeleteAllFilesCmd (
    FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Delete All Files Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a delete all files from a directory command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

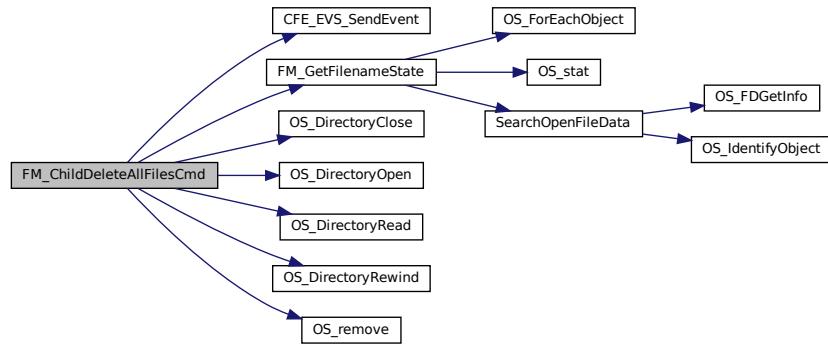
[FM_ChildQueueEntry_t](#), [FM_DeleteAllFilesCmd_t](#)

Definition at line 437 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCmdWarnCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_DELETE_ALL_CMD_INF_EID, FM_DELETE_ALL_FILES_ND_WARNING_EID, FM_DELETE_ALL_OS_ERR_EID, FM_DELETE_ALL_SKIP_WARNING_EID, FM_GetFilenameState(), FM_GlobalData, FM_NAME_IS_

DIRECTORY, FM_NAME_IS_FILE_CLOSED, FM_NAME_IS_FILE_OPEN, FM_NAME_IS_INVALID, FM_NAME_IS_NOT_IN_USE, FM_PARENT_DIRECTORY, FM_THIS_DIRECTORY, OS_DirectoryClose(), OS_DirectoryOpen(), OS_DirectoryRead(), OS_DirectoryRewind(), OS_DIRENTY_NAME, OS_MAX_PATH_LEN, OS_OBJECT_ID_UNDEFINED, OS_remove(), OS_SUCCESS, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Source2. Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.6 FM_ChildDeleteCmd() `void FM_ChildDeleteCmd (const FM_ChildQueueEntry_t * CmdArgs)`

Child Task Delete File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a delete file command.

Assumptions, External Events, and Notes:

Parameters

in	<code>CmdArgs</code>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------------	---

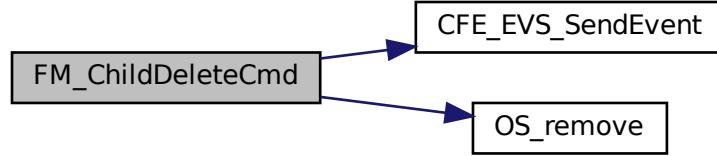
See also

[FM_ChildQueueEntry_t](#), [FM_DeleteFileCmd_t](#)

Definition at line 398 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_DELETE_CMD_INF_EID, FM_DELETE_OS_ERR_EID, FM_GlobalData, OS_remove(), OS_SUCCESS, and FM_ChildQueueEntry_t::Source1. Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.7 FM_ChildDeleteDirectoryCmd() void FM_ChildDeleteDirectoryCmd (const FM_ChildQueueEntry_t * CmdArgs)

Child Task Delete Directory Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a delete directory command.

Assumptions, External Events, and Notes:

Parameters

in	CmdArgs	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	---------	---

See also

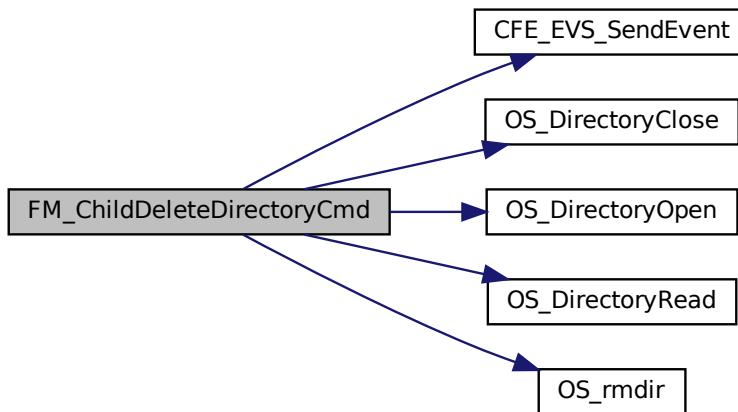
[FM_ChildQueueEntry_t](#), [FM_DeleteDirectoryCmd_t](#)

Definition at line 971 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_DELETE_DIR_CMD_INF_EID, FM_DELETE_DIR_EMPTY_ERR_EID, FM_DELETE_OPENDIR_OS_ERR_EID, FM_DELETE_RMDIR_OS_ERR_EID, FM_GlobalData, FM_PARENT_DIRECTORY, FM_THIS_DIRECTORY, OS_DirectoryClose(), OS_DirectoryOpen(), OS_DirectoryRead(), OS_DIRENT_NAME, OS_OBJECT_ID_UNDEFINED, OS_rmdir(), OS_SUCCESS, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.8 FM_ChildDirListFileCmd() void FM_ChildDirListFileCmd (const FM_ChildQueueEntry_t * CmdArgs)

Child Task Get Dir List to File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a get directory listing to a file command.

Assumptions, External Events, and Notes:

Parameters

in	CmdArgs	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	---------	---

See also

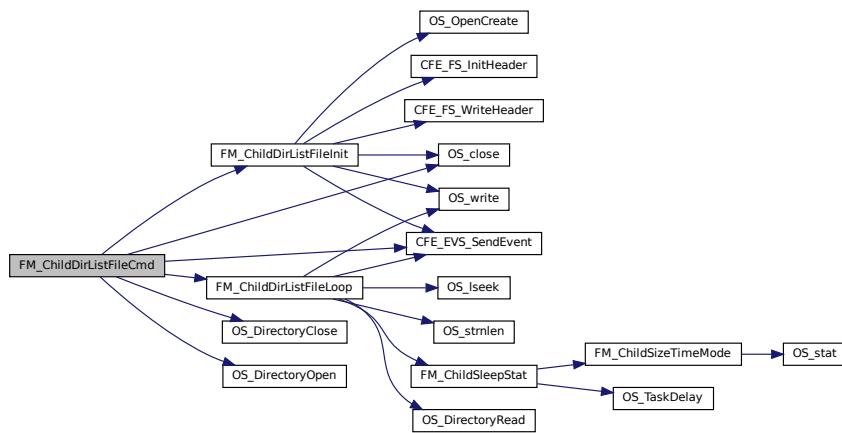
[FM_ChildQueueEntry_t](#), [FM_GetDirListFileCmd_t](#)

Definition at line 1049 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_ChildDirListFileInit(), FM_ChildDirListFileLoop(), FM_GET_DIR_FILE_OSOPENDIR_ERR_EID, FM_GlobalData, FM_ChildQueueEntry_t::GetSizeTimeMode, OS_close(), OS_DirectoryClose(), OS_DirectoryOpen(), OS_OBJECT_ID_UNDEFINED, OS_SUCCESS, FM_ChildQueueEntry_t::Source1, FM_ChildQueueEntry_t::Source2, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.9 FM_ChildDirListFileInit() `bool FM_ChildDirListFileInit (`
`osal_id_t * FileHandlePtr,`
`const char * Directory,`
`const char * Filename)`

Child Task Get Dir List to File Initialization Function.

Description

This function creates the output file and then writes both the CFE file header and a blank copy of the directory list statistics structure to the output file. At the end of the command, software will re-write the statistics structure, this time with up to date values.

Assumptions, External Events, and Notes:

Parameters

out	<i>FileHandlePtr</i>	A pointer to a file handle variable which is modified to contain the newly created output file handle.
in	<i>Directory</i>	A pointer to a buffer containing the directory name.
in	<i>Filename</i>	A pointer to a buffer containing the output filename.

Returns

Execution status, see [cFE Return Code Defines](#) and [OSAL Return Code Defines](#)

Return values

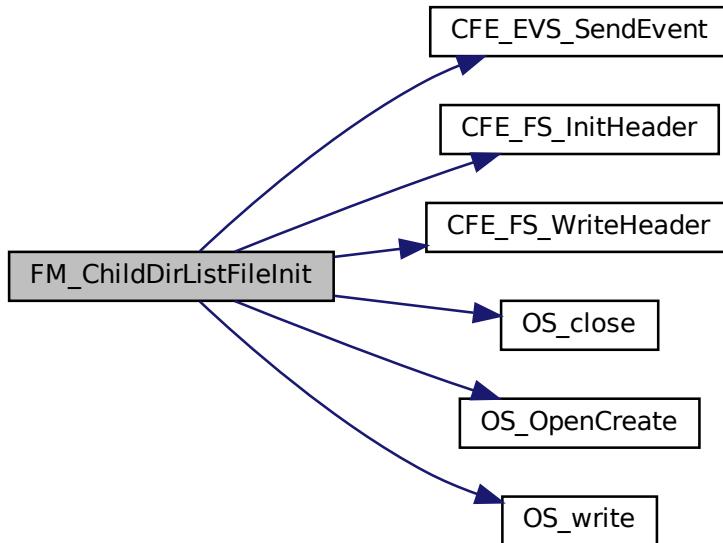
CFE_SUCCESS	Successful execution.
-----------------------------	-----------------------

Definition at line 1278 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_FS_InitHeader(), CFE_FS_WriteHeader(), FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::DirListFileStats, FM_DirListFileStats_t::DirName, FM_DIR_LIST_FILE_SUBTYPE, FM_GET_DIR_FILE_OSCREAT_ERR_EID, FM_GET_DIR_FILE_WRBLANK_ERR_EID, FM_GET_DIR_FILE_WRHDR_ERR_EID, FM_GlobalData, OS_close(), OS_FILE_FLAG_CREATE, OS_FILE_FLAG_TRUNCATE, OS_MAX_PATH_LEN, OS_OBJECT_ID_UNDEFINED, OS_OpenCreate(), OS_READ_WRITE, OS_SUCCESS, and OS_write().

Referenced by FM_ChildDirListFileCmd().

Here is the call graph for this function:



12.12.2.10 FM_ChildDirListFileLoop() void FM_ChildDirListFileLoop (
`osal_id_t DirId,`
`osal_id_t FileHandle,`
`const char * Directory,`
`const char * DirWithSep,`
`const char * Filename,`
`uint8 GetSizeTimeMode)`

Child Task Get Dir List to File Loop Processor Function.

Description

This function reads each directory entry, determines the last modify time size and mode for each entry, and writes the entry data to the output file.

Assumptions, External Events, and Notes:

Parameters

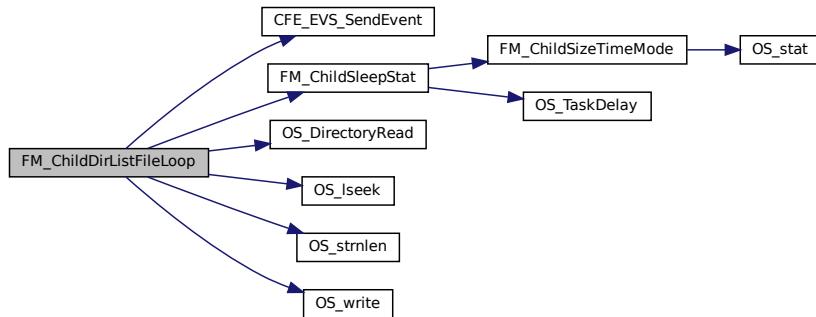
in	<i>DirId</i>	Directory ID, a handle used to read directory entries.
in	<i>FileHandle</i>	Output file handle.
in	<i>Directory</i>	Pointer to a buffer containing the directory name.
in	<i>DirWithSep</i>	Pointer to directory name with path separator appended.
in	<i>Filename</i>	Pointer to a buffer containing the output filename.
in	<i>GetSizeTimeMode</i>	Option to call OS_stat for size, time, mode of files

Definition at line 1358 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCmdWarnCounter, FM_DirListFileStats_t::DirEntries, FM_GlobalData_t::DirListFileStats, FM_DirListEntry_t::EntryName, FM_DirListFileStats_t::FileEntries, FM_CHILD_STAT_SLEEP_FILECOUNT, FM_ChildSleepStat(), FM_DIR_LIST_FILE_ENTRIES, FM_GET_DIR_FILE_CMD_INF_EID, FM_GET_DIR_FILE_UPSTATS_ERR_EID, FM_GET_DIR_FILE_WARNING_EID, FM_GET_DIR_FILE_WRENTRY_ERR_EID, FM_GlobalData, FM_PARENT_DIRECTORY, FM_THIS_DIRECTORY, OS_DirectoryRead(), OS_DIRENTRY_NAME, OS_Iseek(), OS_MAX_FILE_NAME, OS_MAX_PATH_LEN, OS_SEEK_SET, OS_strnlen(), OS_SUCCESS, and OS_write().

Referenced by FM_ChildDirListFileCmd().

Here is the call graph for this function:



12.12.2.11 FM_ChildDirListPktCmd()

```
void FM_ChildDirListPktCmd (
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Get Dir List to Packet Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a get directory listing to a packet command.

Assumptions, External Events, and Notes:**Parameters**

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

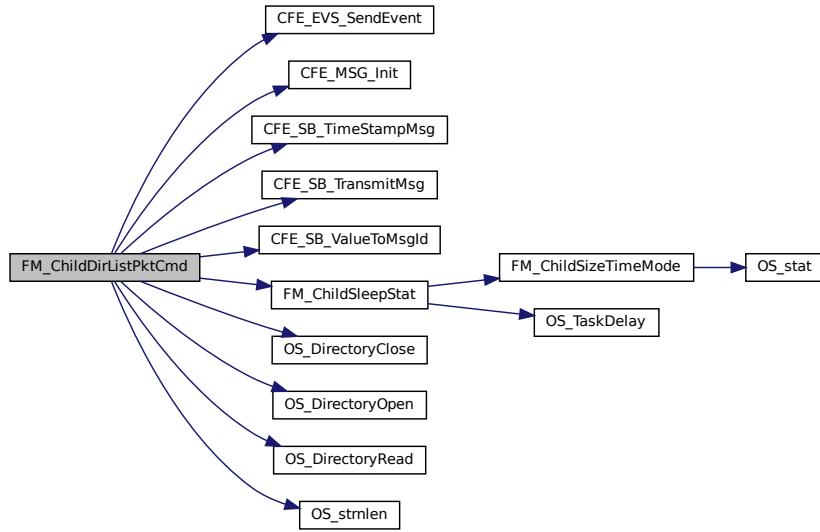
[FM_ChildQueueEntry_t](#), [FM_GetDirListPktCmd_t](#)

Definition at line 1109 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), CFE_MSG_Init(), CFE_SB_TimeStampMsg(), CFE_SB_TransmitMsg(), CFE_SB_ValueToMsgId(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCmdWarnCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_ChildQueueEntry_t::DirListOffset, FM_GlobalData_t::DirListPkt, FM_DirListPkt_Payload_t::DirName, FM_DirListEntry_t::EntryName, FM_DirListPkt_Payload_t::FileList, FM_DirListPkt_Payload_t::FirstFile, FM_CHILD_STAT_SLEEP_FILECOUNT, FM_ChildSleepStat(), FM_DIR_LIST_PKT_ENTRIES, FM_DIR_LIST_TLM_MID, FM_GET_DIR_PKT_CMD_INF_EID, FM_GET_DIR_PKT_OS_ERR_EID, FM_GET_DIR_PKT_WARNING_EID, FM_GlobalData, FM_PARENT_DIRECTORY, FM_THIS_DIRECTORY, FM_ChildQueueEntry_t::GetSizeTimeMode, OS_DirectoryClose(), OS_DirectoryOpen(), OS_DirectoryRead(), OS_DIRENTRY_NAME, OS_MAX_FILE_NAME, OS_MAX_PATH_LEN, OS_OBJECT_ID_UNDEFINED, OS_strnlen(), OS_SUCCESS, FM_DirListPkt_Payload_t::PacketFiles, FM_DirListPkt_t::Payload, FM_ChildQueueEntry_t::Source1, FM_ChildQueueEntry_t::Source2, FM_DirListPkt_t::TelemetryHeader, and FM_DirListPkt_Payload_t::TotalFiles.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.12 FM_ChildFileInfoCmd() `void FM_ChildFileInfoCmd (`
 `FM_ChildQueueEntry_t * CmdArgs)`

Child Task Get File Info Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a get file info command.

Assumptions, External Events, and Notes:

Parameters

in	<code>CmdArgs</code>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------------	---

See also

[FM_ChildQueueEntry_t](#), [FM_GetFileInfoCmd_t](#)

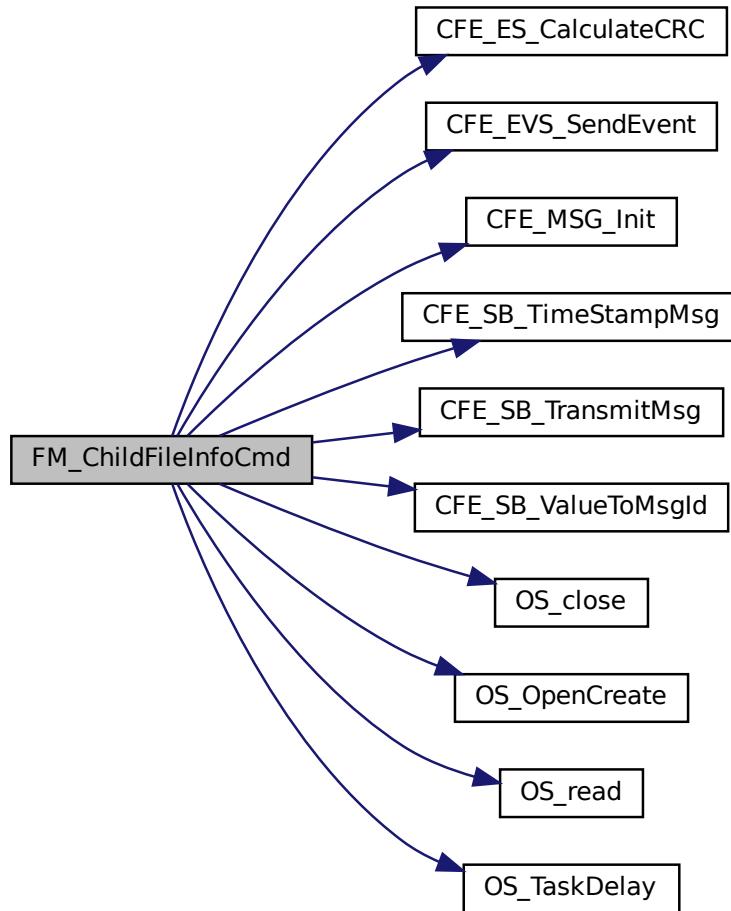
Definition at line 771 of file fm_child.c.

References `CFE_ES_CalculateCRC()`, `CFE_ES_CrcType_CRC_16`, `CFE_ES_CrcType_CRC_32`, `CFE_ES_CrcType_CRC_8`, `CFE_ES_PerfLogEntry`, `CFE_ES_PerfLogExit`, `CFE_EVS_EventType_ERROR`, `CFE_EVS_EventType_INFORMATION`, `CFE_EVS_SendEvent()`, `CFE_MSG_Init()`, `CFE_SB_TimeStampMsg()`, `CFE_SB_TransmitMsg()`, `CFE_SB_ValueToMsgId()`, `FM_GlobalData_t::ChildBuffer`, `FM_GlobalData_t::ChildCmdCounter`, `FM_GlobalData_t::ChildCmdWarnCounter`, `FM_GlobalData_t::ChildCurrentCC`, `FM_GlobalData_t::ChildPreviousCC`, `FM_ChildQueue`

Entry_t::CommandCode, FM_FileInfoPkt_Payload_t::CRC, FM_FileInfoPkt_Payload_t::CRC_Computed, FM_ChildQueueEntry_t::FileInfoCRC, FM_GlobalData_t::FileInfoPkt, FM_ChildQueueEntry_t::FileInfoSize, FM_ChildQueueEntry_t::FileInfoState, FM_ChildQueueEntry_t::FileInfoTime, FM_FileInfoPkt_Payload_t::Filename, FM_FileInfoPkt_Payload_t::FileSize, FM_FileInfoPkt_Payload_t::FileStatus, FM_CHILD_FILE_BLOCK_SIZE, FM_CHILD_FILE_LOOP_COUNT, FM_CHILD_FILE_SLEEP_MS, FM_CHILD_TASK_PERF_ID, FM_FILE_INFO_TLM_MID, FM_GETFILEINFO_CMD_INF_EID, FM_GETFILEINFO_OPEN_ERR_EID, FM_GETFILEINFO_READ_WARNING_EID, FM_GETFILEINFO_STATE_WARNING_EID, FM_GETFILEINFO_TYPE_WARNING_EID, FM_GlobalData, FM_IGNORE_CRC, FM_NAME_IS_FILE_CLOSED, FM_FileInfoPkt_Payload_t::LastModifiedTime, FM_FileInfoPkt_Payload_t::Mode, FM_ChildQueueEntry_t::Mode, OS_close(), OS_FILE_FLAG_NONE, OS_MAX_PATH_LEN, OS_OBJECT_ID_UNDEFINED, OS_OpenCreate(), OS_read(), OS_READ_ONLY, OS_SUCCESS, OS_TaskDelay(), FM_FileInfoPkt_t::Payload, FM_ChildQueueEntry_t::Source1, and FM_FileInfoPkt_t::TelemetryHeader.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.13 FM_ChildInit() CFE_Status_t FM_ChildInit (

```
    void )
```

Child Task Initialization Function.

Description

This function is invoked during FM application startup initialization to create and initialize the FM Child Task. The purpose for the child task is to process FM application commands that take too long to execute within the main task.

Assumptions, External Events, and Notes:

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
-----------------------------	-----------------------

See also

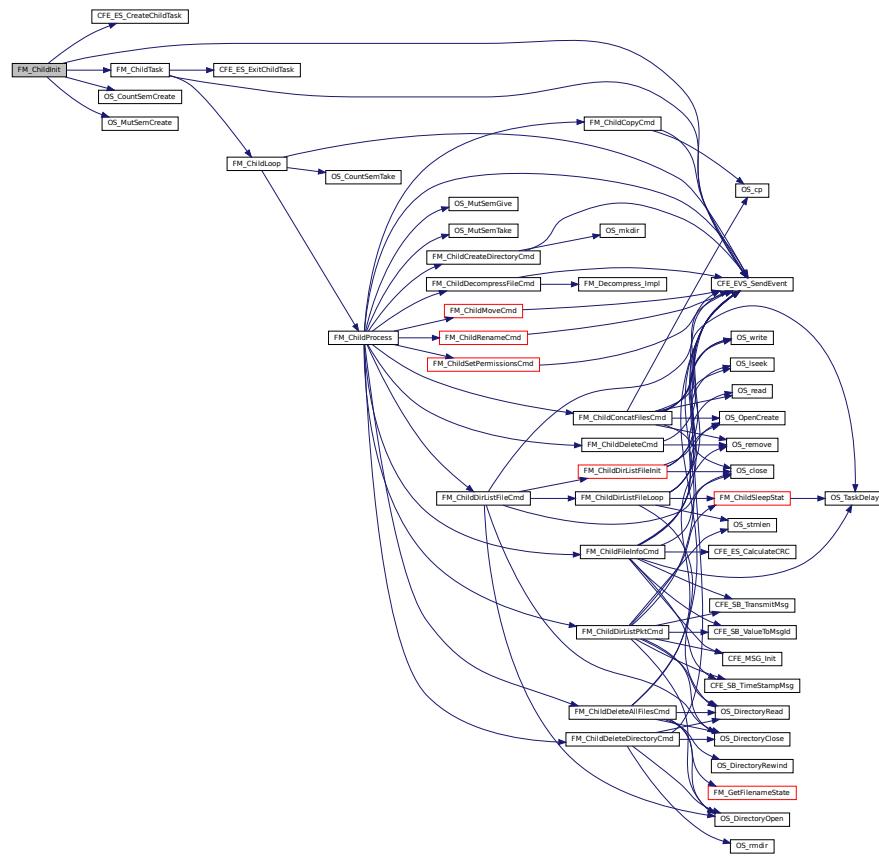
[FM_AppInit](#)

Definition at line 57 of file fm_child.c.

References [CFE_ES_CreateChildTask\(\)](#), [CFE_EVS_EventType_ERROR](#), [CFE_EVS_SendEvent\(\)](#), [CFE_SUCCESS](#), [FM_GlobalData_t::ChildQueueCountSem](#), [FM_GlobalData_t::ChildSemaphore](#), [FM_GlobalData_t::ChildTaskID](#), [FM_CHILD_INIT_CREATE_ERR_EID](#), [FM_CHILD_INIT_QSEM_ERR_EID](#), [FM_CHILD_INIT_SEM_ERR_EID](#), [FM_CHILD_SEM_NAME](#), [FM_CHILD_TASK_NAME](#), [FM_CHILD_TASK_PRIORITY](#), [FM_CHILD_TASK_STACK_SIZE](#), [FM_ChildTask\(\)](#), [FM_GlobalData](#), [FM_QUEUE_SEM_NAME](#), [OS_CountSemCreate\(\)](#), [OS_MAX_PATH_LEN](#), and [OS_MutSemCreate\(\)](#).

Referenced by [FM_AppInit\(\)](#).

Here is the call graph for this function:



12.12.2.14 FM_ChildLoop()

```
void FM_ChildLoop (
    void )
```

Child Task Main Loop Processor Function.

Description

This function is the main loop for the FM application child task. The function waits indefinitely for the parent task to grant the handshake semaphore, which is the signal that there are fresh command arguments in the child task handshake queue. The function will remain in this loop until the child task is terminated by the CFE, or until a fatal error occurs which causes the child task to terminate itself. Fatal errors are defined as any error returned by `OS_CountSemTake` or if the handshake queue is empty, or if the read index for the handshake queue is invalid.

Assumptions, External Events, and Notes:

See also

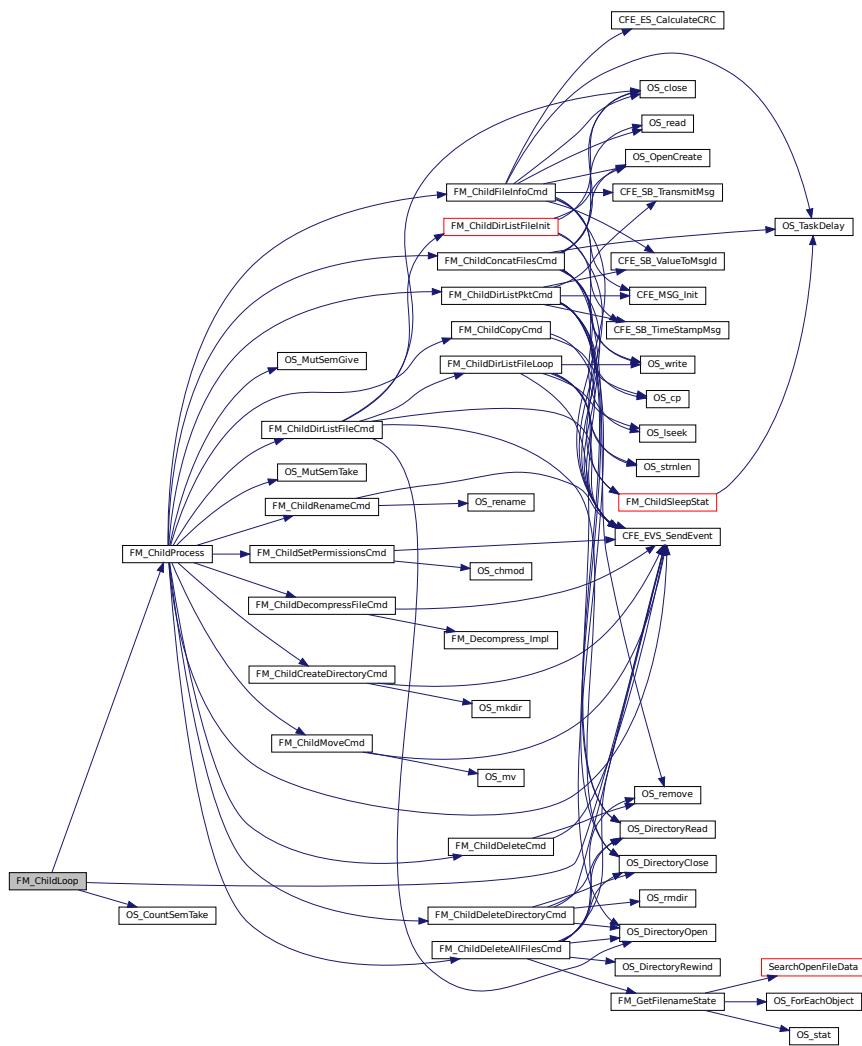
`FM_ChildQueueEntry_t`, `FM_ChildProcess`

Definition at line 138 of file fm_child.c.

References CFE_ES_PerfLogEntry, CFE_ES_PerfLogExit, CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_SUCCESS, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildQueueCount, FM_GlobalData_t::ChildReadIndex, FM_GlobalData_t::ChildSemaphore, FM_CHILD_QUEUE_DEPTH, FM_CHILD_TASK_PERF_ID, FM_CHILD_TERM_EMPTYQ_ERR_EID, FM_CHILD_TERM_QIDX_ERR_EID, FM_CHILD_TERM_SEM_ERR_EID, FM_ChildProcess(), FM_GlobalData, OS_CountSemTake(), and OS_ERROR.

Referenced by FM_ChildTask().

Here is the call graph for this function:



12.12.2.15 FM_ChildMoveCmd() void FM_ChildMoveCmd (const FM_ChildQueueEntry t * CmdArgs)

[Child Task Move File Command Handler.](#)

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a move file command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

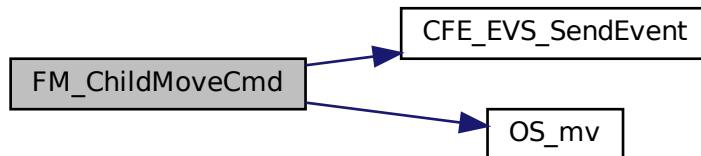
[FM_ChildQueueEntry_t](#), [FM_MoveFileCmd_t](#)

Definition at line 320 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_GlobalData, FM_MOVE_CMD_INF_EID, FM_MOVE_OS_ERR_EID, OS_mv(), OS_SUCCESS, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.16 FM_ChildProcess()

```
void FM_ChildProcess (
    void )
```

Child Task Command Queue Processor Function.

Description

This function routes control to the appropriate child task command handler. After the command handler has finished, this function then updates the queue access variables to point to the next queue entry.

Assumptions, External Events, and Notes:

See also

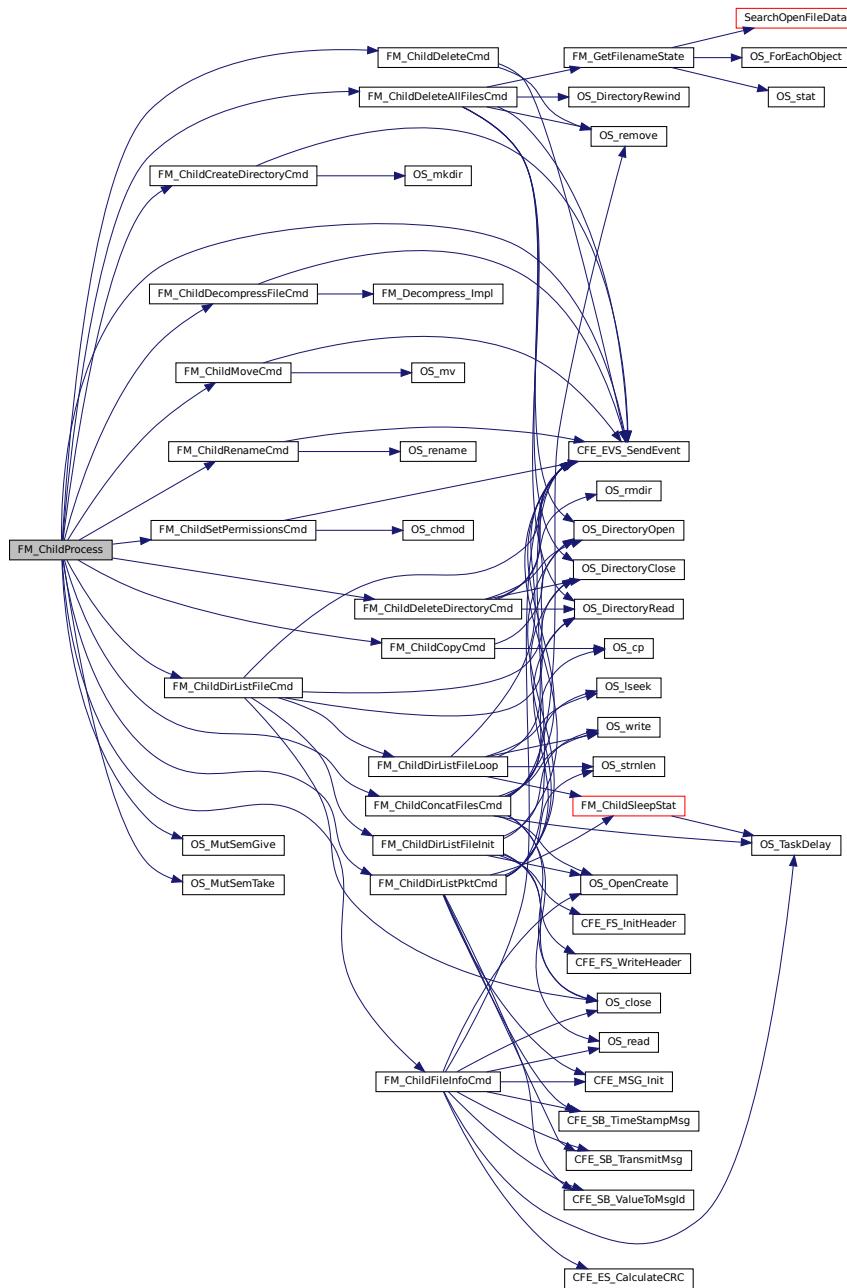
[FM_ChildQueueEntry_t](#), [FM_ChildTask](#)

Definition at line 193 of file fm_child.c.

References `CFE_EVS_EventType_ERROR`, `CFE_EVS_SendEvent()`, `FM_GlobalData_t::ChildCmdErrCounter`, `FM_GlobalData_t::ChildQueue`, `FM_GlobalData_t::ChildQueueCount`, `FM_GlobalData_t::ChildQueueCountSem`, `FM_GlobalData_t::ChildReadIndex`, `FM_ChildQueueEntry_t::CommandCode`, `FM_CHILD_EXE_ERR_EID`, `FM_CHILD_QUEUE_DEPTH`, `FM_ChildConcatFilesCmd()`, `FM_ChildCopyCmd()`, `FM_ChildCreateDirectoryCmd()`, `FM_ChildDecompressFileCmd()`, `FM_ChildDeleteAllFilesCmd()`, `FM_ChildDeleteCmd()`, `FM_ChildDeleteDirectoryCmd()`, `FM_ChildDirListFileCmd()`, `FM_ChildDirListPktCmd()`, `FM_ChildFileInfoCmd()`, `FM_ChildMoveCmd()`, `FM_ChildRenameCmd()`, `FM_ChildSetPermissionsCmd()`, `FM_CONCAT_FILES_CC`, `FM_COPY_FILE_CC`, `FM_CREATE_DIRECTORY_CC`, `FM_DECOMPRESS_FILE_CC`, `FM_DELETE_ALL_FILES_CC`, `FM_DELETE_DIRECTORY_CC`, `FM_DELETE_FILE_CC`, `FM_GET_DIR_LIST_FILE_CC`, `FM_GET_DIR_LIST_PKT_CC`, `FM_GET_FILE_INFO_CC`, `FM_GlobalData`, `FM_MOVE_FILE_CC`, `FM_RENAME_FILE_CC`, `FM_SET_PERMISSIONS_CC`, `OS_MutSemGive()`, and `OS_MutSemTake()`.

Referenced by `FM_ChildLoop()`.

Here is the call graph for this function:



12.12.2.17 FM_ChildRenameCmd() void FM_ChildRenameCmd (const [FM_ChildQueueEntry_t](#) * CmdArgs)

Child Task Rename File Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a rename file command.

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

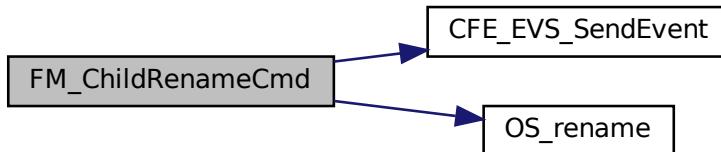
[FM_ChildQueueEntry_t](#), [FM_RenameFileCmd_t](#)

Definition at line 359 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM↔_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM↔_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_GlobalData, FM_RENAME_CMD↔_INF_EID, FM_RENAME_OS_ERR_EID, OS_rename(), OS_SUCCESS, FM_ChildQueueEntry_t::Source1, and FM↔_ChildQueueEntry_t::Target.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.18 FM_ChildSetPermissionsCmd()

```
void FM_ChildSetPermissionsCmd (
    const FM_ChildQueueEntry_t * CmdArgs )
```

Child Task Set Permissions Command Handler.

Description

This function is invoked when the FM child task has been granted the child task handshake semaphore and the child task command queue contains arguments that signal a set permissions / mode on the source1 file or directory

Assumptions, External Events, and Notes:

Parameters

in	<i>CmdArgs</i>	A pointer to an entry in the child task handshake command queue which contains the arguments necessary to process this command.
----	----------------	---

See also

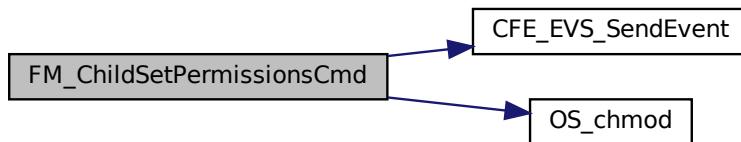
[FM_ChildQueueEntry_t](#), [FM_SetPermissionsCmd_t](#)

Definition at line 1242 of file fm_child.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCurrentCC, FM_GlobalData_t::ChildPreviousCC, FM_ChildQueueEntry_t::CommandCode, FM_GlobalData, FM_SET_PERM_CMD_INF_EID, FM_SET_PERM_OS_ERR_EID, FM_ChildQueueEntry_t::Mode, OS_chmod(), OS_SUCCESS, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_ChildProcess().

Here is the call graph for this function:



12.12.2.19 FM_ChildSizeTimeMode() `int32 FM_ChildSizeTimeMode (`
 `const char * Filename,`
 `uint32 * FileSize,`
 `uint32 * FileTime,`
 `uint32 * FileMode)`

Child Task File Size Time and Mode Utility Function.

Description

This function is invoked to query the last modify time, current size and mode (permissions) for each directory entry when processing either the Get Directory List to File or Get Directory List to Packet commands.

Assumptions, External Events, and Notes:**Parameters**

in	<i>Filename</i>	Pointer to the combined directory and entry names.
out	<i>FileSize</i>	Pointer to the number containing the current entry size.
out	<i>FileTime</i>	Pointer to the number containing the last modify time.
out	<i> FileMode</i>	Pointer to the value containing the mode (permissions).

Returns

Execution status, see [cFE Return Code Defines](#) and [OSAL Return Code Defines](#)

Return values

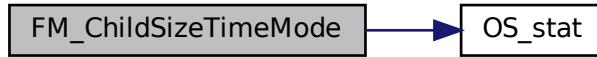
CFE_SUCCESS	Successful execution.
-----------------------------	-----------------------

Definition at line 1496 of file fm_child.c.

References OS_FILESTAT_MODE, OS_FILESTAT_SIZE, OS_FILESTAT_TIME, OS_stat(), and OS_SUCCESS.

Referenced by FM_ChildSleepStat().

Here is the call graph for this function:

**12.12.2.20 FM_ChildSleepStat()** `void FM_ChildSleepStat (`

```

        const char * Filename,
        FM_DirListEntry_t * DirListData,
        int32 * FilesTillSleep,
        bool GetSizeTimeMode )
```

Child Task Sleep and Stat Utility Function.

Description

This function is invoked to query the last modify time, current size and mode (permissions) for each directory entry when processing either the Get Directory List to File or Get Directory List to Packet commands. However it only will sleep if FM_CHILD_STAT_SLEEP_FILECOUNT reaches zero and call FM_ChildSizeTimeMode if getSizeTimeMode is TRUE, otherwise this function has no effect

Assumptions, External Events, and Notes:**Parameters**

in	<i>Filename</i>	Pointer to the combined directory and entry names.
out	<i>DirListData</i>	Pointer to the data containing the current entry size, last modify time, and mode
out	<i>FilesTillSleep</i>	If this is zero the function will sleep for FM_CHILD_STAT_SLEEP_MS and reset it to FM_CHILD_STAT_SLEEP_FILECOUNT . Otherwise it will subtract 1
in	<i>GetSizeTimeMode</i>	Whether this function should call FM_ChildSizeTimeMode

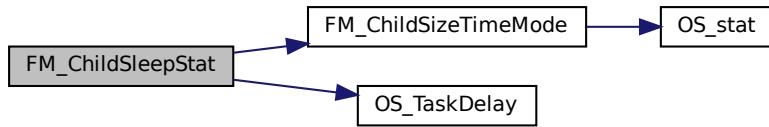
Definition at line 1527 of file fm_child.c.

References CFE_ES_PerfLogEntry, CFE_ES_PerfLogExit, FM_DirListEntry_t::EntrySize, FM_CHILD_STAT_SLEEP←

_FILECOUNT, FM_CHILD_STAT_SLEEP_MS, FM_CHILD_TASK_PERF_ID, FM_ChildSizeTimeMode(), FM_DirListEntry_t::Mode, FM_DirListEntry_t::ModifyTime, and OS_TaskDelay().

Referenced by FM_ChildDirListFileLoop(), and FM_ChildDirListPktCmd().

Here is the call graph for this function:



12.12.2.21 FM_ChildTask()

```
void FM_ChildTask (
    void )
```

Child Task Entry Point Function.

Description

This function is the entry point for the FM application child task. The function registers with CFE as a child task, creates the semaphore to interface with the parent task and calls the child task main loop function. Should the main loop function return due to a breakdown in the interface handshake with the parent task, this function will self delete as a child task with CFE. There is no return from [CFE_ES_DeleteChildTask](#).

Assumptions, External Events, and Notes:

See also

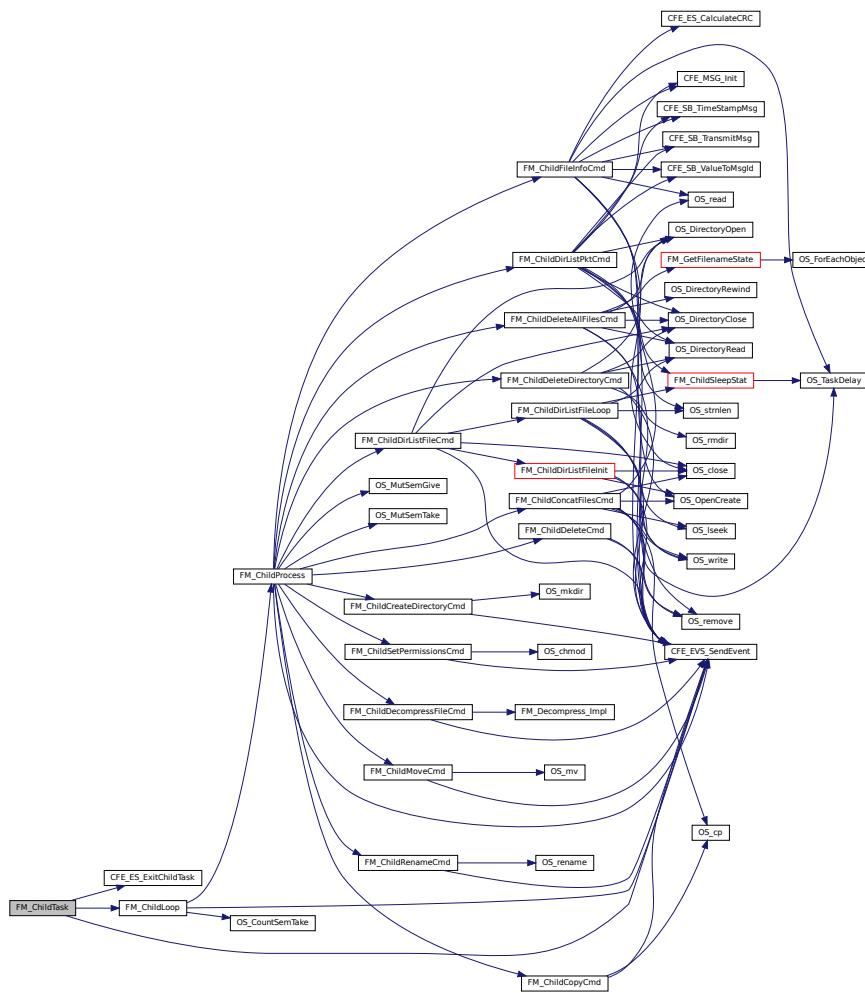
[CFE_ES_DeleteChildTask](#), [FM_ChildLoop](#)

Definition at line 112 of file fm_child.c.

References [CFE_ES_ExitChildTask\(\)](#), [CFE_EVS_EventType_INFORMATION](#), [CFE_EVS_SendEvent\(\)](#), [FM_GlobalData_t::ChildSemaphore](#), [FM_CHILD_INIT_EID](#), [FM_ChildLoop\(\)](#), [FM_GlobalData](#), and [OS_OBJECT_ID_UNDEFINED](#).

Referenced by [FM_ChildInit\(\)](#).

Here is the call graph for this function:



12.13 apps/fm/fsw/src/fm_cmd_utils.c File Reference

```
#include "cfe.h"
#include "fm_app.h"
#include "fm_msg.h"
#include "fm_cmd_utils.h"
#include "fm_child.h"
#include "fm_perfids.h"
#include "fm_events.h"
#include <string.h>
```

```
#include <ctype.h>
```

Functions

- bool **FM_VerifyOverwrite** (uint16 Overwrite, uint32 EventID, const char *CmdText)
Verify Target File Overwrite Function.
- static void **LoadOpenFileData** (osal_id_t ObjId, void *CallbackArg)
- uint32 **FM_GetOpenFilesData** (FM_OpenFilesEntry_t *OpenFilesData)
Get Open Files Data Function.
- static void **SearchOpenFileData** (osal_id_t ObjId, void *CallbackArg)
- uint32 **FM_GetFilenameState** (const char *Filename, size_t BufferSize, bool FileInfoCmd)
Get Filename State Function.
- uint32 **FM_VerifyNameValid** (const char *Name, size_t BufferSize, uint32 EventID, const char *CmdText)
Verify Name Function.
- bool **FM_VerifyFileState** (FM_File_States State, const char *Filename, size_t BufferSize, uint32 EventID, const char *CmdText)
Verify File State Function.
- bool **FM_VerifyFileClosed** (const char *Filename, size_t BufferSize, uint32 EventID, const char *CmdText)
Verify File is Closed Function.
- bool **FM_VerifyFileExists** (const char *Filename, size_t BufferSize, uint32 EventID, const char *CmdText)
Verify File Exists Function.
- bool **FM_VerifyFileNotExist** (const char *Filename, size_t BufferSize, uint32 EventID, const char *CmdText)
Verify File Does Not Exist Function.
- bool **FM_VerifyFileNotOpen** (const char *Filename, size_t BufferSize, uint32 EventID, const char *CmdText)
Verify File Is Not Open Function.
- bool **FM_VerifyDirExists** (const char *Directory, size_t BufferSize, uint32 EventID, const char *CmdText)
Verify Directory Exists Function.
- bool **FM_VerifyDirNotExist** (const char *Name, size_t BufferSize, uint32 EventID, const char *CmdText)
Verify Directory Does Not Exist Function.
- bool **FM_VerifyChildTask** (uint32 EventID, const char *CmdText)
Verify Child Task Interface Function.
- void **FM_InvokeChildTask** (void)
Invoke Child Task Function.
- void **FM_AppendPathSep** (char *Directory, uint32 BufferSize)
Append Path Separator Function.
- CFE_Status_t **FM_GetVolumeFreeSpace** (const char *FileSys, uint64 *BlockCount, uint64 *ByteCount)
Gets the free space on the volume.
- CFE_Status_t **FM_GetDirectorySpaceEstimate** (const char *Directory, uint64 *BlockCount, uint64 *ByteCount)
Estimate the disk space used by files in a specified directory.

Variables

- static uint32 **OpenFileCount** = 0
- static bool **FileIsOpen** = false

12.13.1 Detailed Description

File Manager (FM) Command Utility Functions

Provides file manager utility function definitions for processing file manager commands

12.13.2 Function Documentation

12.13.2.1 FM_AppendPathSep() `void FM_AppendPathSep (`
 `char * Directory,`
 `uint32 BufferSize)`

Append Path Separator Function.

Description

This function appends a path separator character (slash) to a directory name in advance of combining the directory name with directory entry names to create qualified filenames. The function will only append the separator character if there is room in the buffer for another character.

Assumptions, External Events, and Notes:

Parameters

in	<i>Directory</i>	Pointer to buffer containing directory name
in	<i>BufferSize</i>	Size of directory name character buffer

See also

[FM_GetFilenameState](#)

Definition at line 502 of file fm_cmd_utils.c.

References OS_MAX_PATH_LEN, and OS_strlen().

Referenced by FM_DeleteAllFilesCmd(), FM_GetDirListFileCmd(), and FM_GetDirListPktCmd().

Here is the call graph for this function:



12.13.2.2 FM_GetDirectorySpaceEstimate() `CFE_Status_t FM_GetDirectorySpaceEstimate (`
 `const char * Directory,`
 `uint64 * BlockCount,`
 `uint64 * ByteCount)`

Estimate the disk space used by files in a specified directory.

Description

Opens the directory and queries the size of every file currently present in the directory. Outputs the sum of all file sizes to get an estimate of the total disk space used by that directory.

Assumptions, External Events, and Notes:

This is just a simple estimate, as the actual disk space consumed a file can be quite different than the reported size, depending on the underlying file system.

If not successful, the output variables will not be set

Parameters

in	<i>Directory</i>	Pointer to buffer containing directory name
out	<i>BlockCount</i>	Count of blocks used
out	<i>ByteCount</i>	Count of bytes used

Returns

Status code

Return values

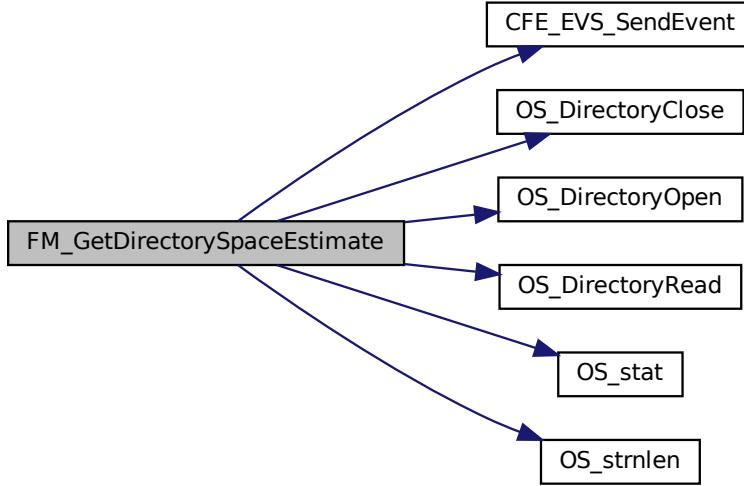
<i>CFE_SUCCESS</i>	if successful
--------------------	---------------

Definition at line 566 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_STATUS_EXTERNAL_RESOURCE_FAIL, CFE_SUCCESS, os_fstat_t::FileSize, FM_DIRECTORY_ESTIMATE_ERR_EID, OS_DirectoryClose(), OS_DirectoryOpen(), OS_DirectoryRead(), OS_DIRENTRY_NAME, OS_ERR_NAME_TOO_LONG, OS_FILESTAT_ISDIR, OS_MAX_PATH_LEN, OS_stat(), OS_strnlen(), and OS_SUCCESS.

Referenced by FM_MonitorFilesystemSpaceCmd().

Here is the call graph for this function:



12.13.2.3 FM_GetFilenameState() `uint32 FM_GetFilenameState(`

```

        const char * Filename,
        size_t BufferSize,
        bool FileInfoCmd )
  
```

Get Filename State Function.

Description

This function performs a series of tests on the input filename to determine first whether the filename is currently in use by the file system as a file or directory. If the caller is the Get File Info command handler, the function also stores the file size and last modified timestamp.

Assumptions, External Events, and Notes:

Parameters

in	<i>Filename</i>	Pointer to buffer containing filename
in	<i>BufferSize</i>	Size of filename character buffer
in	<i>FileInfoCmd</i>	Is this for the Get File Info command?

Returns

File state

Return values

<i>FM_NAME_IS_INVALID</i>	
<i>FM_NAME_IS_NOT_IN_USE</i>	
<i>FM_NAME_IS_FILE_OPEN</i>	
<i>FM_NAME_IS_FILE_CLOSED</i>	
<i>FM_NAME_IS_DIRECTORY</i>	

See also

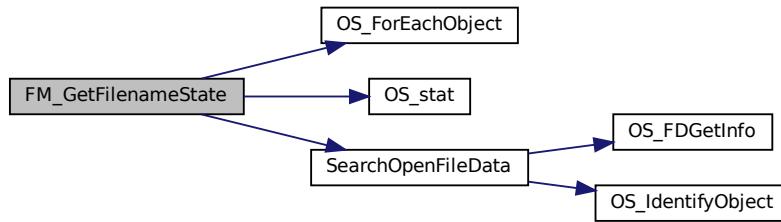
[OS_stat](#), [OS_FDGetInfo](#)

Definition at line 135 of file fm_cmd_utils.c.

References `FileIsOpen`, `FM_GlobalData_t::FileStatMode`, `FM_GlobalData_t::FileStatSize`, `FM_GlobalData_t::FileStatTime`, `FM_GlobalData`, `FM_NAME_IS_DIRECTORY`, `FM_NAME_IS_FILE_CLOSED`, `FM_NAME_IS_FILE_OPEN`, `FM_NAME_IS_INVALID`, `FM_NAME_IS_NOT_IN_USE`, `OS_FILESTAT_ISDIR`, `OS_FILESTAT_MODE`, `OS_FILESTAT_SIZE`, `OS_FILESTAT_TIME`, `OS_ForEachObject()`, `OS_OBJECT_CREATOR_ANY`, `OS_stat()`, `OS_SUCCESS`, and `SearchOpenFileData()`.

Referenced by `FM_ChildDeleteAllFilesCmd()`, `FM_VerifyFileState()`, and `FM_VerifyNameValid()`.

Here is the call graph for this function:



12.13.2.4 FM_GetOpenFilesData() `uint32 FM_GetOpenFilesData (`
 `FM_OpenFilesEntry_t * OpenFilesData)`

Get Open Files Data Function.

Description

This function creates a list of open files

Assumptions, External Events, and Notes:

Parameters

in	<i>OpenFilesData</i>	pointer to open files data
----	----------------------	----------------------------

Returns

The number of open files

See also

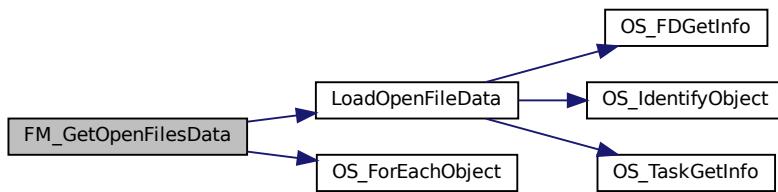
[OS_FDGetInfo](#)

Definition at line 99 of file fm_cmd_utils.c.

References LoadOpenFileData(), OpenFileCount, OS_ForEachObject(), and OS_OBJECT_CREATOR_ANY.

Referenced by FM_GetOpenFilesCmd(), and FM_SendHkCmd().

Here is the call graph for this function:

**12.13.2.5 FM_GetVolumeFreeSpace()** [CFE_Status_t](#) FM_GetVolumeFreeSpace (

```

    const char * FileSys,
    uint64 * BlockCount,
    uint64 * ByteCount )
  
```

Gets the free space on the volume.

Description

Queries the free space on the specified volume and reports the result in units of blocks and bytes

Assumptions, External Events, and Notes:

If not successful, the output variables will not be set

Parameters

in	<i>FileSys</i>	Pointer to buffer containing filesystem name
out	<i>BlockCount</i>	Count of blocks free
out	<i>ByteCount</i>	Count of bytes free

Returns

Status code

Return values

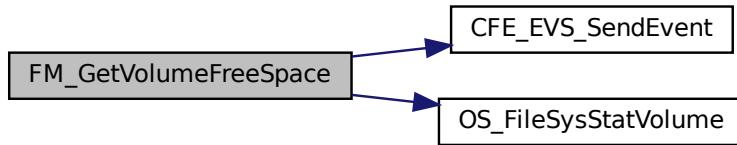
<code>CFE_SUCCESS</code>	if successful
--------------------------	---------------

Definition at line 534 of file fm_cmd_utils.c.

References `OS_statvfs_t::block_size`, `OS_statvfs_t::blocks_free`, `CFE_EVS_EventType_ERROR`, `CFE_EVS_SendEvent()`, `CFE_STATUS_EXTERNAL_RESOURCE_FAIL`, `CFE_SUCCESS`, `FM_OS_SYS_STAT_ERR_EID`, `OS_FileSysStatVolume()`, and `OS_SUCCESS`.

Referenced by `FM_MonitorFilesystemSpaceCmd()`.

Here is the call graph for this function:



12.13.2.6 FM_InvokeChildTask() `void FM_InvokeChildTask (`
`void)`

Invoke Child Task Function.

Description

This function is called after the caller has loaded the next available entry in the child task queue with the arguments for the current command. The function updates the queue access index and then verifies that the Child Task is operational. If the Child Task is operational then it is signaled via handshake semaphore to process the next command from the queue. If instead, the Child Task is not operational, the Child Task queue processor function is called directly to process the current command. The difference between the two methods is in which execution thread is active when the command is processed.

Assumptions, External Events, and Notes:

See also

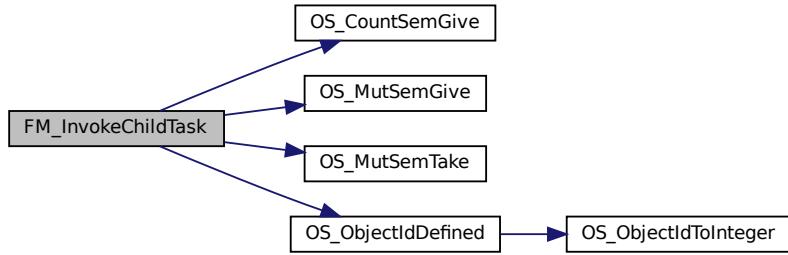
[OS_CountSemGive](#), [FM_ChildProcess](#)

Definition at line 473 of file fm_cmd_utils.c.

References `FM_GlobalData_t::ChildQueueCount`, `FM_GlobalData_t::ChildQueueCountSem`, `FM_GlobalData_t::ChildSemaphore`, `FM_GlobalData_t::ChildWriteIndex`, `FM_CHILD_QUEUE_DEPTH`, `FM_GlobalData`, `OS_CountSemGive()`, `OS_MutSemGive()`, `OS_MutSemTake()`, and `OS_ObjectIdDefined()`.

Referenced by `FM_ConcatFilesCmd()`, `FM_CopyFileCmd()`, `FM_CreateDirectoryCmd()`, `FM_DecompressFileCmd()`, `FM_DeleteAllFilesCmd()`, `FM_DeleteDirectoryCmd()`, `FM_DeleteFileCmd()`, `FM_GetDirListFileCmd()`, `FM_GetDirListPktCmd()`, `FM_GetFileInfoCmd()`, `FM_MoveFileCmd()`, `FM_RenameFileCmd()`, and `FM_SetPermissionsCmd()`.

Here is the call graph for this function:



12.13.2.7 FM_VerifyChildTask()

```
bool FM_VerifyChildTask (
    uint32 EventID,
    const char * CmdText )
```

Verify Child Task Interface Function.

Description

This function verifies that the child task interface queue is not full and that the queue index values are within bounds.

Assumptions, External Events, and Notes:

Parameters

in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean child task queue available response

Return values

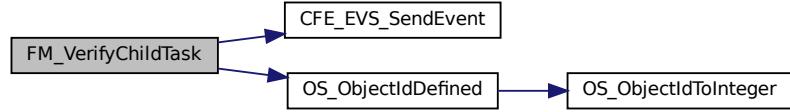
<i>true</i>	Child task queue available
<i>false</i>	Child task queue not available

Definition at line 423 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildQueueCount, FM_GlobalData_t::ChildSemaphore, FM_GlobalData_t::ChildWriteIndex, FM_CHILD_BROKEN_EID_OFFSET, FM_CHILD_DISABLED_EID_OFFSET, FM_CHILD_Q_FULL_EID_OFFSET, FM_CHILD_QUEUE_DEPTH, FM_GlobalData, and OS_ObjectIdDefined().

Referenced by FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_CreateDirectoryCmd(), FM_DecompressFileCmd(),

FM_DeleteAllFilesCmd(), FM_DeleteDirectoryCmd(), FM_DeleteFileCmd(), FM_GetDirListFileCmd(), FM_GetDirListPktCmd(), FM_GetFileInfoCmd(), FM_MoveFileCmd(), FM_RenameFileCmd(), and FM_SetPermissionsCmd().
Here is the call graph for this function:



12.13.2.8 FM_VerifyDirExists() `bool FM_VerifyDirExists (`
 `const char * Directory,`
 `size_t BufferSize,`
 `uint32 EventID,`
 `const char * CmdText)`

Verify Directory Exists Function.

Description

This function calls the Verify File State function and generates an error event if the state is not an existing directory.

Assumptions, External Events, and Notes:

Parameters

in	<i>Directory</i>	Pointer to buffer containing directory name
in	<i>BufferSize</i>	Size of directory name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean directory exists response

Return values

<i>true</i>	Directory exists
<i>false</i>	Directory does not exist

See also

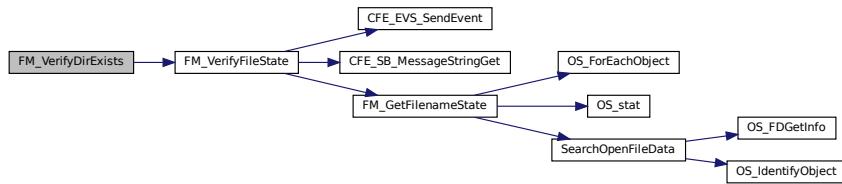
[FM_VerifyFileState](#)

Definition at line 401 of file fm_cmd_utils.c.

References FM_DIR_EXISTS, and FM_VerifyFileState().

Referenced by FM_DeleteAllFilesCmd(), FM_DeleteDirectoryCmd(), FM_GetDirListFileCmd(), and FM_GetDirListPktCmd().

Here is the call graph for this function:



```

12.13.2.9 FM_VerifyDirNotExist() bool FM_VerifyDirNotExist (
    const char * Name,
    size_t BufferSize,
    uint32 EventID,
    const char * CmdText )
  
```

Verify Directory Does Not Exist Function.

Description

This function calls the Verify File State function and generates an error event if the state is an existing file or directory.

Assumptions, External Events, and Notes:

Parameters

in	<i>Name</i>	Pointer to buffer containing directory name
in	<i>BufferSize</i>	Size of directory name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean directory does not exist response

Return values

<i>true</i>	Directory does not exist
<i>false</i>	Directory exists

See also

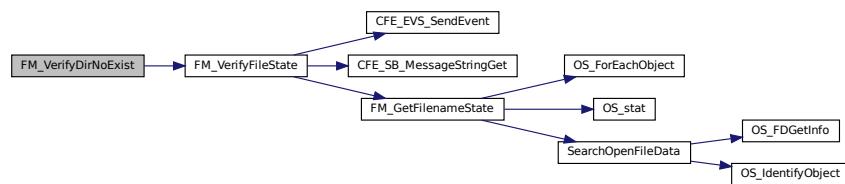
[FM_VerifyFileState](#)

Definition at line 412 of file fm_cmd_utils.c.

References FM_DIR_NOEXIST, and FM_VerifyFileState().

Referenced by FM_CreateDirectoryCmd().

Here is the call graph for this function:



12.13.2.10 FM_VerifyFileClosed() `bool FM_VerifyFileClosed(`

```

    const char * Filename,
    size_t BufferSize,
    uint32 EventID,
    const char * CmdText )
```

Verify File is Closed Function.

Description

This function calls the Verify File State function and generates an error event if the state is anything other than a closed file.

Assumptions, External Events, and Notes:

Parameters

in	<i>Filename</i>	Pointer to buffer containing filename
in	<i>BufferSize</i>	Size of filename character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file closed response

Return values

<i>true</i>	File is closed
<i>false</i>	File is not closed

See also

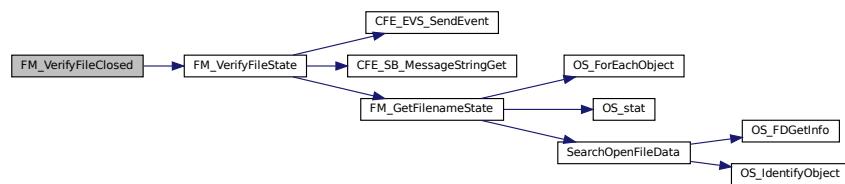
[FM_VerifyFileState](#)

Definition at line 357 of file fm_cmd_utils.c.

References FM_FILE_CLOSED, and FM_VerifyFileState().

Referenced by FM_ConcatFilesCmd(), FM_DecompressFileCmd(), and FM_DeleteFileCmd().

Here is the call graph for this function:



12.13.2.11 FM_VerifyFileExists() `bool FM_VerifyFileExists (`

```

    const char * Filename,
    size_t BufferSize,
    uint32 EventID,
    const char * CmdText )
```

Verify File Exists Function.

Description

This function calls the Verify File State function and generates an error event if the state is anything other than an open file or a closed file.

Assumptions, External Events, and Notes:

Parameters

in	<i>Filename</i>	Pointer to buffer containing filename
in	<i>BufferSize</i>	Size of filename character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file exists response

Return values

<i>true</i>	File exists
<i>false</i>	File does not exist

See also

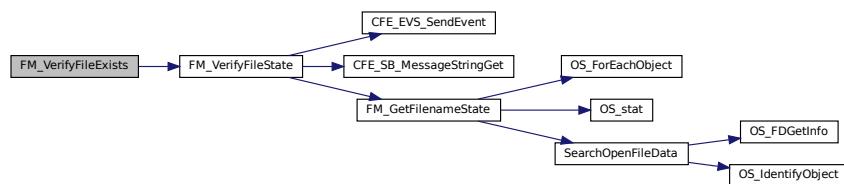
[FM_VerifyFileState](#)

Definition at line 368 of file fm_cmd_utils.c.

References FM_FILE_EXISTS, and FM_VerifyFileState().

Referenced by FM_CopyFileCmd(), FM_MoveFileCmd(), and FM_RenameFileCmd().

Here is the call graph for this function:



```

12.13.2.12 FM_VerifyFileNotExist() bool FM_VerifyFileNotExist (
    const char * Filename,
    size_t BufferSize,
    uint32 EventID,
    const char * CmdText )
  
```

Verify File Does Not Exist Function.

Description

This function calls the Verify File State function and generates an error event if the state is anything other than the name is unused the name is not a file and is not a directory.

Assumptions, External Events, and Notes:

Parameters

in	<i>Filename</i>	Pointer to buffer containing name
in	<i>BufferSize</i>	Size of name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file does not exist response

Return values

<i>true</i>	File does not exist
<i>false</i>	File exists

See also

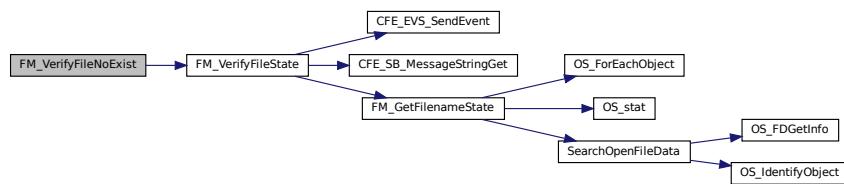
[FM_VerifyFileState](#)

Definition at line 379 of file fm_cmd_utils.c.

References FM_FILE_NOEXIST, and FM_VerifyFileState().

Referenced by FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_DecompressFileCmd(), FM_MoveFileCmd(), and FM_RenameFileCmd().

Here is the call graph for this function:



12.13.2.13 FM_VerifyFileNotOpen() `bool FM_VerifyFileNotOpen(`

```

        const char * Filename,
        size_t BufferSize,
        uint32 EventID,
        const char * CmdText )
```

Verify File Is Not Open Function.

Description

This function calls the Verify File State function and generates an error event if the state is a directory or an open file.

Assumptions, External Events, and Notes:

Parameters

in	<i>Filename</i>	Pointer to buffer containing name
in	<i>BufferSize</i>	Size of name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file not open or not in use response

Return values

<i>true</i>	File is not open or not in use
<i>false</i>	File anything other than closed or not in use

See also

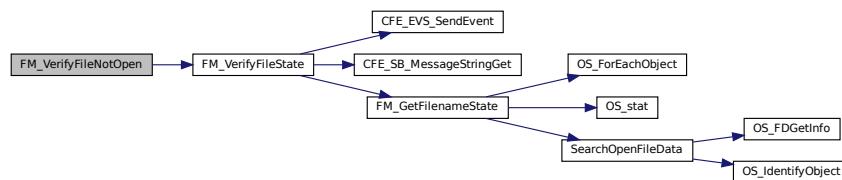
[FM_VerifyFileState](#)

Definition at line 390 of file fm_cmd_utils.c.

References FM_FILE_NOTOPEN, and FM_VerifyFileState().

Referenced by FM_CopyFileCmd(), FM_GetDirListFileCmd(), and FM_MoveFileCmd().

Here is the call graph for this function:



12.13.2.14 FM_VerifyFileState() `bool FM_VerifyFileState (`
 `FM_File_States State,`
 `const char * Filename,`
 `size_t BufferSize,`
 `uint32 EventID,`
 `const char * CmdText)`

Verify File State Function.

Description

This function calls the Get Filename State function and generates an error event if the state is anything other than the given state.

Assumptions, External Events, and Notes:

Parameters

in	<i>State</i>	State of file to verify
in	<i>Filename</i>	Pointer to buffer containing filename
in	<i>BufferSize</i>	Size of filename character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file state response

Return values

<i>true</i>	File is in the given state
<i>false</i>	File is not in the given state

See also

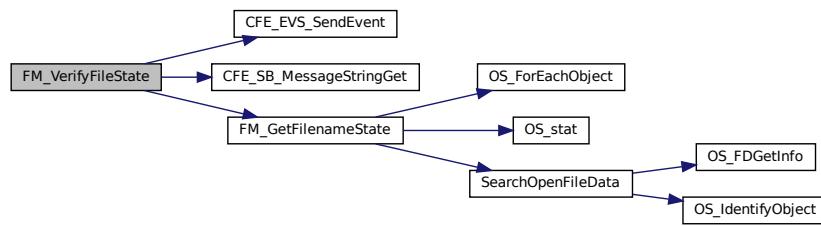
[FM_GetFilenameState](#)

Definition at line 247 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_SB_MessageStringGet(), FM_DIR_EXISTS, FM_DIR_NOEXIST, FM_FILE_CLOSED, FM_FILE_EXISTS, FM_FILE_NOEXIST, FM_FILE_NOTOPEN, FM_FNAME_DNE_EID_OFFSET, FM_FNAME_EXIST_EID_OFFSET, FM_FNAME_INVALID_EID_OFFSET, FM_FNAME_ISDIR_EID_OFFSET, FM_FNAME_ISFILE_EID_OFFSET, FM_FNAME_ISOPEN_EID_OFFSET, FM_GetFilenameState(), FM_NAME_IS_DIRECTORY, FM_NAME_IS_FILE_CLOSED, FM_NAME_IS_FILE_OPEN, FM_NAME_IS_INVALID, FM_NAME_IS_NOT_IN_USE, and OS_MAX_PATH_LEN.

Referenced by FM_VerifyDirExists(), FM_VerifyDirNotExist(), FM_VerifyFileClosed(), FM_VerifyFileExists(), FM_VerifyFileNotExist(), and FM_VerifyFileNotOpen().

Here is the call graph for this function:



12.13.2.15 FM_VerifyNameValid() [uint32](#) FM_VerifyNameValid (

```

    const char * Name,
    size_t BufferSize,
    uint32 EventID,
    const char * CmdText )
  
```

Verify Name Function.

Description

This function calls the Get Filename State function and generates an error event if the state is invalid.

Assumptions, External Events, and Notes:

Parameters

in	<i>Name</i>	Pointer to buffer containing name
in	<i>BufferSize</i>	Size of name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

File state

Return values

<i>FM_NAME_IS_INVALID</i>
<i>FM_NAME_IS_NOT_IN_USE</i>
<i>FM_NAME_IS_FILE_OPEN</i>
<i>FM_NAME_IS_FILE_CLOSED</i>
<i>FM_NAME_IS_DIRECTORY</i>

See also

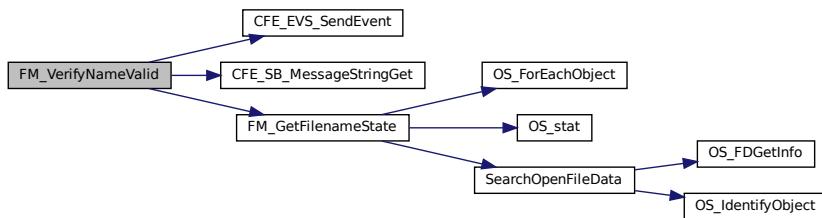
[FM_GetFilenameState](#)

Definition at line 220 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_SB_MessageStringGet(), FM_GetFilenameState(), FM_NAME_IS_INVALID, and OS_MAX_PATH_LEN.

Referenced by FM_GetFileInfoCmd(), and FM_SetPermissionsCmd().

Here is the call graph for this function:



```

12.13.2.16 FM_VerifyOverwrite() bool FM_VerifyOverwrite (
    uint16 Overwrite,
    uint32 EventID,
    const char * CmdText )
  
```

Verify Target File Overwrite Function.

Description

This function is invoked from the copy and move file command handlers to verify the target file overwrite argument. Acceptable values are TRUE (one) and FALSE (zero).

Assumptions, External Events, and Notes:**Parameters**

in	<i>Overwrite</i>	Value being tested
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean valid overwrite response

Return values

<i>true</i>	Overwrite argument valid
<i>false</i>	Overwrite argument invalid

See also

[FM_COPY_FILE_CC](#), [FM_MOVE_FILE_CC](#)

Definition at line 48 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, and CFE_EVS_SendEvent().

Referenced by FM_CopyFileCmd(), and FM_MoveFileCmd().

Here is the call graph for this function:

**12.13.2.17 LoadOpenFileDialog()** static void LoadOpenFileDialog (

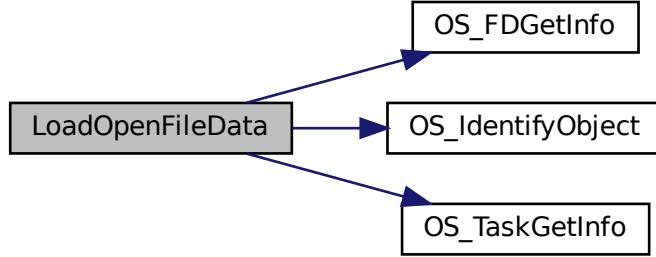
```
    osal_id_t ObjId,  
    void * CallbackArg ) [static]
```

Definition at line 69 of file fm_cmd_utils.c.

References OS_task_prop_t::name, OpenFileCount, OS_FDGetInfo(), OS_IdentifyObject(), OS_MAX_API_NAME, OS_MAX_PATH_LEN, OS_OBJECT_TYPE_OS_STREAM, OS_SUCCESS, OS_TaskGetInfo(), OS_file_prop_t::Path, and OS_file_prop_t::User.

Referenced by FM_GetOpenFilesData().

Here is the call graph for this function:



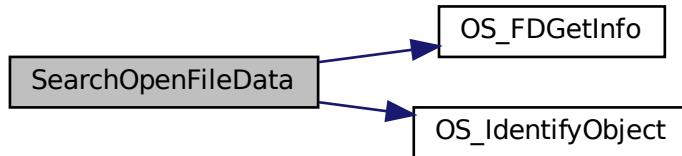
12.13.2.18 SearchOpenFileData() static void SearchOpenFileData (osal_id_t ObjId,
void * CallbackArg) [static]

Definition at line 114 of file fm_cmd_utils.c.

References FileIsOpen, OS_FDGetInfo(), OS_IdentifyObject(), OS_OBJECT_TYPE_OS_STREAM, OS_SUCCESS, and OS_file_prop_t::Path.

Referenced by FM_GetFilenameState().

Here is the call graph for this function:



12.13.3 Variable Documentation

12.13.3.1 FileIsOpen bool FileIsOpen = false [static]

Definition at line 40 of file fm_cmd_utils.c.

Referenced by FM_GetFilenameState(), and SearchOpenFileData().

12.13.3.2 OpenFileCount uint32 OpenFileCount = 0 [static]

Definition at line 39 of file fm_cmd_utils.c.
Referenced by FM_GetOpenFilesData(), and LoadOpenFileData().

12.14 apps/fm/fsw/src/fm_cmd_utils.h File Reference

```
#include "cfe.h"
#include "fm_msg.h"
```

Enumerations

- enum **FM_File_States** {
 FM_FILE_CLOSED , **FM_FILE_EXISTS** , **FM_FILE_NOEXIST** , **FM_FILE_NOTOPEN** ,
 FM_DIR_EXISTS , **FM_DIR_NOEXIST** }

FM enum used for verifying file states.

Functions

- bool **FM_VerifyOverwrite** (**uint16** Overwrite, **uint32** EventID, const char *CmdText)
Verify Target File Overwrite Function.
- **uint32 FM_GetOpenFilesData** (**FM_OpenFilesEntry_t** *OpenFilesData)
Get Open Files Data Function.
- **uint32 FM_GetFilenameState** (const char *Filename, size_t BufferSize, bool FileInfoCmd)
Get Filename State Function.
- **uint32 FM_VerifyNameValid** (const char *Name, size_t BufferSize, **uint32** EventID, const char *CmdText)
Verify Name Function.
- bool **FM_VerifyFileState** (**FM_File_States** State, const char *Filename, size_t BufferSize, **uint32** EventID, const char *CmdText)
Verify File State Function.
- bool **FM_VerifyFileClosed** (const char *Filename, size_t BufferSize, **uint32** EventID, const char *CmdText)
Verify File is Closed Function.
- bool **FM_VerifyFileExists** (const char *Filename, size_t BufferSize, **uint32** EventID, const char *CmdText)
Verify File Exists Function.
- bool **FM_VerifyFileNotExist** (const char *Filename, size_t BufferSize, **uint32** EventID, const char *CmdText)
Verify File Does Not Exist Function.
- bool **FM_VerifyFileNotOpen** (const char *Filename, size_t BufferSize, **uint32** EventID, const char *CmdText)
Verify File Is Not Open Function.
- bool **FM_VerifyDirExists** (const char *Directory, size_t BufferSize, **uint32** EventID, const char *CmdText)
Verify Directory Exists Function.
- bool **FM_VerifyDirNotExist** (const char *Name, size_t BufferSize, **uint32** EventID, const char *CmdText)
Verify Directory Does Not Exist Function.
- bool **FM_VerifyChildTask** (**uint32** EventID, const char *CmdText)
Verify Child Task Interface Function.
- void **FM_InvokeChildTask** (void)
Invoke Child Task Function.
- void **FM_AppendPathSep** (char *Directory, **uint32** BufferSize)
Append Path Separator Function.
- **CFE_Status_t FM_GetVolumeFreeSpace** (const char *FileSys, **uint64** *BlockCount, **uint64** *ByteCount)
Gets the free space on the volume.
- **CFE_Status_t FM_GetDirectorySpaceEstimate** (const char *Directory, **uint64** *BlockCount, **uint64** *ByteCount)
Estimate the disk space used by files in a specified directory.

12.14.1 Detailed Description

Specification for the CFS File Manager command utility functions.

12.14.2 Enumeration Type Documentation

12.14.2.1 FM_File_States `enum FM_File_States`

FM enum used for verifying file states.

Enumerator

<code>FM_FILE_CLOSED</code>	FM File Is Closed.
<code>FM_FILE_EXISTS</code>	FM File Exists.
<code>FM_FILE_NOEXIST</code>	FM File Does Not Exist.
<code>FM_FILE_NOTOPEN</code>	FM File Is Not Open.
<code>FM_DIR_EXISTS</code>	FM Directory Exists.
<code>FM_DIR_NOEXIST</code>	FM Directory Does Not Exist.

Definition at line 38 of file fm_cmd_utils.h.

12.14.3 Function Documentation

12.14.3.1 FM_AppendPathSep() `void FM_AppendPathSep (` `char * Directory,` `uint32 BufferSize)`

Append Path Separator Function.

Description

This function appends a path separator character (slash) to a directory name in advance of combining the directory name with directory entry names to create qualified filenames. The function will only append the separator character if there is room in the buffer for another character.

Assumptions, External Events, and Notes:

Parameters

<code>in</code>	<code>Directory</code>	Pointer to buffer containing directory name
<code>in</code>	<code>BufferSize</code>	Size of directory name character buffer

See also

[FM_GetFilenameState](#)

Definition at line 502 of file fm_cmd_utils.c.

References OS_MAX_PATH_LEN, and OS_strnlen().

Referenced by FM_DeleteAllFilesCmd(), FM_GetDirListFileCmd(), and FM_GetDirListPktCmd().

Here is the call graph for this function:



12.14.3.2 FM_GetDirectorySpaceEstimate() CFE_Status_t FM_GetDirectorySpaceEstimate (

```

    const char * Directory,
    uint64 * BlockCount,
    uint64 * ByteCount )
  
```

Estimate the disk space used by files in a specified directory.

Description

Opens the directory and queries the size of every file currently present in the directory. Outputs the sum of all file sizes to get an estimate of the total disk space used by that directory.

Assumptions, External Events, and Notes:

This is just a simple estimate, as the actual disk space consumed a file can be quite different than the reported size, depending on the underlying file system.

If not successful, the output variables will not be set

Parameters

in	<i>Directory</i>	Pointer to buffer containing directory name
out	<i>BlockCount</i>	Count of blocks used
out	<i>ByteCount</i>	Count of bytes used

Returns

Status code

Return values

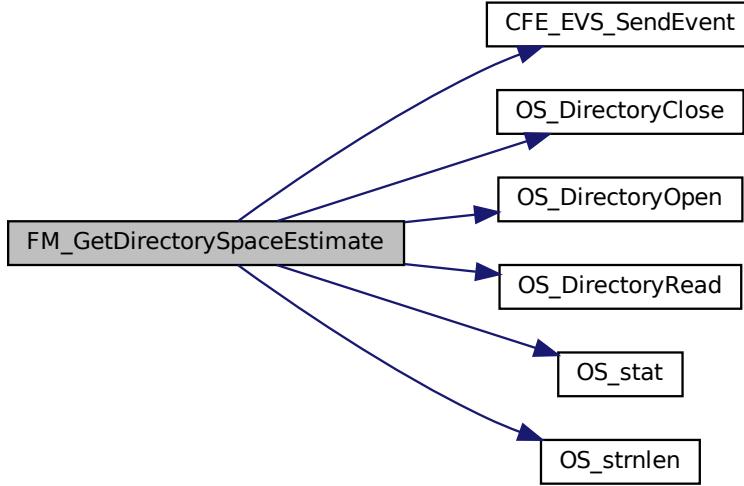
CFE_SUCCESS	if successful
-------------	---------------

Definition at line 566 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_STATUS_EXTERNAL_RESOURCE_FAIL, CFE_SUCCESS, os_fstat_t::FileSize, FM_DIRECTORY_ESTIMATE_ERR_EID, OS_DirectoryClose(), OS_DirectoryOpen(), OS_DirectoryRead(), OS_DIRENTNAME_NAME, OS_ERR_NAME_TOO_LONG, OS_FILESTAT_ISDIR, OS_MAX_PATH_LEN, OS_stat(), OS_strlen(), and OS_SUCCESS.

Referenced by FM_MonitorFilesystemSpaceCmd().

Here is the call graph for this function:



12.14.3.3 `FM_GetFilenameState()`

```

uint32 FM_GetFilenameState (
    const char * Filename,
    size_t BufferSize,
    bool FileInfoCmd )
  
```

Get Filename State Function.

Description

This function performs a series of tests on the input filename to determine first whether the filename is currently in use by the file system as a file or directory. If the caller is the Get File Info command handler, the function also stores the file size and last modified timestamp.

Assumptions, External Events, and Notes:

Parameters

in	<i>Filename</i>	Pointer to buffer containing filename
in	<i>BufferSize</i>	Size of filename character buffer
in	<i>FileInfoCmd</i>	Is this for the Get File Info command?

Returns

File state

Return values

<code>FM_NAME_IS_INVALID</code>	
<code>FM_NAME_IS_NOT_IN_USE</code>	
<code>FM_NAME_IS_FILE_OPEN</code>	
<code>FM_NAME_IS_FILE_CLOSED</code>	
<code>FM_NAME_IS_DIRECTORY</code>	

See also

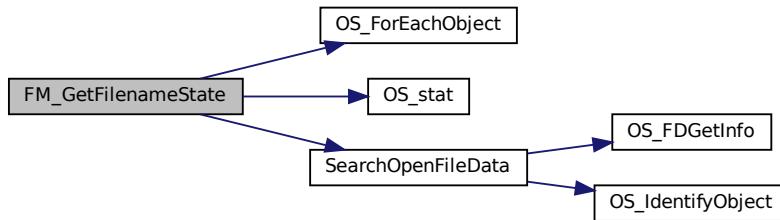
[OS_stat](#), [OS_FDGetInfo](#)

Definition at line 135 of file fm_cmd_utils.c.

References `FileIsOpen`, `FM_GlobalData_t::FileStatMode`, `FM_GlobalData_t::FileStatSize`, `FM_GlobalData_t::FileStatTime`, `FM_GlobalData`, `FM_NAME_IS_DIRECTORY`, `FM_NAME_IS_FILE_CLOSED`, `FM_NAME_IS_FILE_OPEN`, `FM_NAME_IS_INVALID`, `FM_NAME_IS_NOT_IN_USE`, `OS_FILESTAT_ISDIR`, `OS_FILESTAT_MODE`, `OS_FILESTAT_SIZE`, `OS_FILESTAT_TIME`, `OS_ForEachObject()`, `OS_OBJECT_CREATOR_ANY`, `OS_stat()`, `OS_SUCCESS`, and `SearchOpenFileData()`.

Referenced by `FM_ChildDeleteAllFilesCmd()`, `FM_VerifyFileState()`, and `FM_VerifyNameValid()`.

Here is the call graph for this function:



12.14.3.4 FM_GetOpenFilesData() `uint32 FM_GetOpenFilesData (` `FM_OpenFilesEntry_t * OpenFilesData)`

Get Open Files Data Function.

Description

This function creates a list of open files

Assumptions, External Events, and Notes:

Parameters

in	<code>OpenFilesData</code>	pointer to open files data
----	----------------------------	----------------------------

Returns

The number of open files

See also

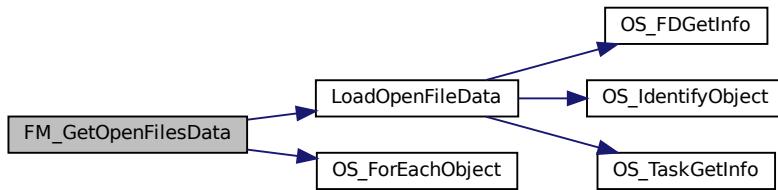
[OS_FDGetInfo](#)

Definition at line 99 of file fm_cmd_utils.c.

References LoadOpenFileData(), OpenFileCount, OS_ForEachObject(), and OS_OBJECT_CREATOR_ANY.

Referenced by FM_GetOpenFilesCmd(), and FM_SendHkCmd().

Here is the call graph for this function:

**12.14.3.5 FM_GetVolumeFreeSpace()** [CFE_Status_t](#) FM_GetVolumeFreeSpace (

```

    const char * FileSys,
    uint64 * BlockCount,
    uint64 * ByteCount
  )

```

Gets the free space on the volume.

Description

Queries the free space on the specified volume and reports the result in units of blocks and bytes

Assumptions, External Events, and Notes:

If not successful, the output variables will not be set

Parameters

in	<i>FileSys</i>	Pointer to buffer containing filesystem name
out	<i>BlockCount</i>	Count of blocks free
out	<i>ByteCount</i>	Count of bytes free

Returns

Status code

Return values

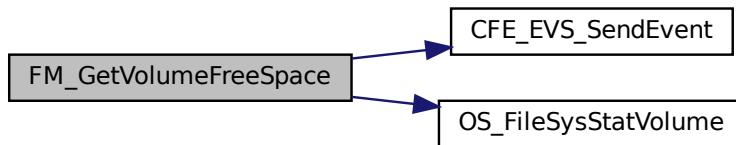
<code>CFE_SUCCESS</code>	if successful
--------------------------	---------------

Definition at line 534 of file fm_cmd_utils.c.

References `OS_statvfs_t::block_size`, `OS_statvfs_t::blocks_free`, `CFE_EVS_EventType_ERROR`, `CFE_EVS_SendEvent()`, `CFE_STATUS_EXTERNAL_RESOURCE_FAIL`, `CFE_SUCCESS`, `FM_OS_SYS_STAT_ERR_EID`, `OS_FileSysStatVolume()`, and `OS_SUCCESS`.

Referenced by `FM_MonitorFilesystemSpaceCmd()`.

Here is the call graph for this function:



12.14.3.6 FM_InvokeChildTask()

```
void FM_InvokeChildTask (
    void )
```

Invoke Child Task Function.

Description

This function is called after the caller has loaded the next available entry in the child task queue with the arguments for the current command. The function updates the queue access index and then verifies that the Child Task is operational. If the Child Task is operational then it is signaled via handshake semaphore to process the next command from the queue. If instead, the Child Task is not operational, the Child Task queue processor function is called directly to process the current command. The difference between the two methods is in which execution thread is active when the command is processed.

Assumptions, External Events, and Notes:

See also

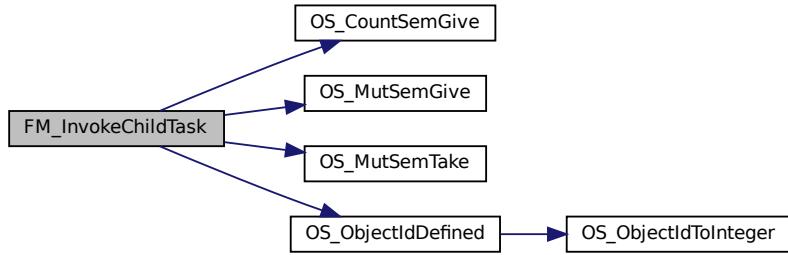
[OS_CountSemGive](#), [FM_ChildProcess](#)

Definition at line 473 of file fm_cmd_utils.c.

References `FM_GlobalData_t::ChildQueueCount`, `FM_GlobalData_t::ChildQueueCountSem`, `FM_GlobalData_t::ChildSemaphore`, `FM_GlobalData_t::ChildWriteIndex`, `FM_CHILD_QUEUE_DEPTH`, `FM_GlobalData`, `OS_CountSemGive()`, `OS_MutSemGive()`, `OS_MutSemTake()`, and `OS_ObjectIdDefined()`.

Referenced by `FM_ConcatFilesCmd()`, `FM_CopyFileCmd()`, `FM_CreateDirectoryCmd()`, `FM_DecompressFileCmd()`, `FM_DeleteAllFilesCmd()`, `FM_DeleteDirectoryCmd()`, `FM_DeleteFileCmd()`, `FM_GetDirListFileCmd()`, `FM_GetDirListPktCmd()`, `FM_GetFileInfoCmd()`, `FM_MoveFileCmd()`, `FM_RenameFileCmd()`, and `FM_SetPermissionsCmd()`.

Here is the call graph for this function:



12.14.3.7 FM_VerifyChildTask() bool FM_VerifyChildTask (

```

    uint32 EventID,
    const char * CmdText )
  
```

Verify Child Task Interface Function.

Description

This function verifies that the child task interface queue is not full and that the queue index values are within bounds.

Assumptions, External Events, and Notes:

Parameters

in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean child task queue available response

Return values

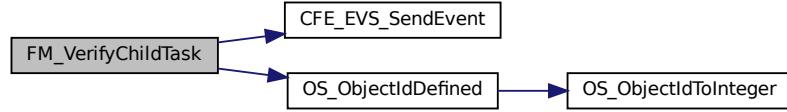
<i>true</i>	Child task queue available
<i>false</i>	Child task queue not available

Definition at line 423 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildQueueCount, FM_GlobalData_t::ChildSemaphore, FM_GlobalData_t::ChildWriteIndex, FM_CHILD_BROKEN_EID_OFFSET, FM_CHILD_DISABLED_EID_OFFSET, FM_CHILD_Q_FULL_EID_OFFSET, FM_CHILD_QUEUE_DEPTH, FM_GlobalData, and OS_ObjectIdDefined().

Referenced by FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_CreateDirectoryCmd(), FM_DecompressFileCmd(),

FM_DeleteAllFilesCmd(), FM_DeleteDirectoryCmd(), FM_DeleteFileCmd(), FM_GetDirListFileCmd(), FM_GetDirListPktCmd(), FM_GetFileInfoCmd(), FM_MoveFileCmd(), FM_RenameFileCmd(), and FM_SetPermissionsCmd().
Here is the call graph for this function:



12.14.3.8 FM_VerifyDirExists() `bool FM_VerifyDirExists (`

```

        const char * Directory,
        size_t BufferSize,
        uint32 EventID,
        const char * CmdText )
  
```

Verify Directory Exists Function.

Description

This function calls the Verify File State function and generates an error event if the state is not an existing directory.

Assumptions, External Events, and Notes:

Parameters

in	<i>Directory</i>	Pointer to buffer containing directory name
in	<i>BufferSize</i>	Size of directory name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean directory exists response

Return values

<i>true</i>	Directory exists
<i>false</i>	Directory does not exist

See also

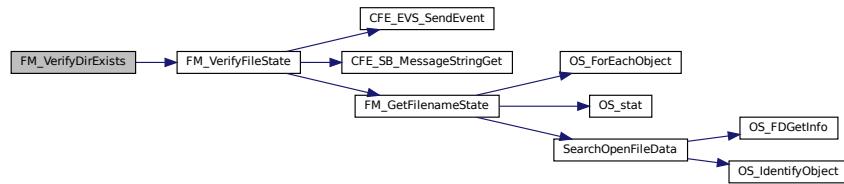
[FM_VerifyFileState](#)

Definition at line 401 of file fm_cmd_utils.c.

References FM_DIR_EXISTS, and FM_VerifyFileState().

Referenced by FM_DeleteAllFilesCmd(), FM_DeleteDirectoryCmd(), FM_GetDirListFileCmd(), and FM_GetDirListPktCmd().

Here is the call graph for this function:



```
12.14.3.9 FM_VerifyDirNotExist() bool FM_VerifyDirNotExist (
    const char * Name,
    size_t BufferSize,
    uint32 EventID,
    const char * CmdText )
```

Verify Directory Does Not Exist Function.

Description

This function calls the Verify File State function and generates an error event if the state is an existing file or directory.

Assumptions, External Events, and Notes:

Parameters

in	<i>Name</i>	Pointer to buffer containing directory name
in	<i>BufferSize</i>	Size of directory name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean directory does not exist response

Return values

<i>true</i>	Directory does not exist
<i>false</i>	Directory exists

See also

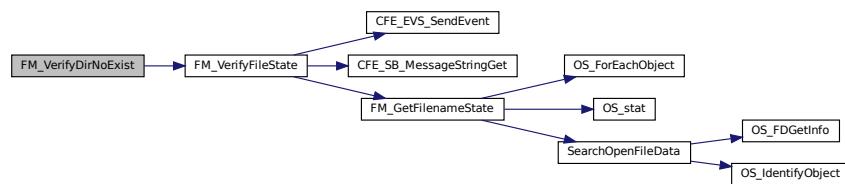
[FM_VerifyFileState](#)

Definition at line 412 of file fm_cmd_utils.c.

References FM_DIR_NOEXIST, and FM_VerifyFileState().

Referenced by FM_CreateDirectoryCmd().

Here is the call graph for this function:



12.14.3.10 FM_VerifyFileClosed() `bool FM_VerifyFileClosed(`

```

        const char * Filename,
        size_t BufferSize,
        uint32 EventID,
        const char * CmdText )
```

Verify File is Closed Function.

Description

This function calls the Verify File State function and generates an error event if the state is anything other than a closed file.

Assumptions, External Events, and Notes:

Parameters

in	<i>Filename</i>	Pointer to buffer containing filename
in	<i>BufferSize</i>	Size of filename character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file closed response

Return values

<i>true</i>	File is closed
<i>false</i>	File is not closed

See also

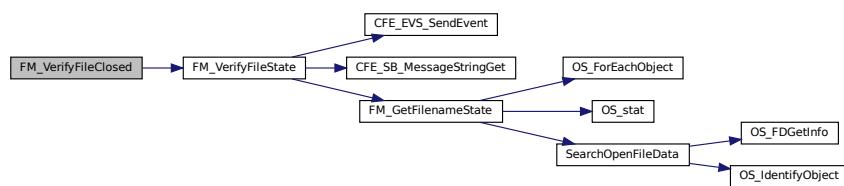
[FM_VerifyFileState](#)

Definition at line 357 of file fm_cmd_utils.c.

References FM_FILE_CLOSED, and FM_VerifyFileState().

Referenced by FM_ConcatFilesCmd(), FM_DecompressFileCmd(), and FM_DeleteFileCmd().

Here is the call graph for this function:



12.14.3.11 FM_VerifyFileExists() `bool FM_VerifyFileExists (`

```

    const char * Filename,
    size_t BufferSize,
    uint32 EventID,
    const char * CmdText )
```

Verify File Exists Function.

Description

This function calls the Verify File State function and generates an error event if the state is anything other than an open file or a closed file.

Assumptions, External Events, and Notes:

Parameters

in	<i>Filename</i>	Pointer to buffer containing filename
in	<i>BufferSize</i>	Size of filename character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file exists response

Return values

<i>true</i>	File exists
<i>false</i>	File does not exist

See also

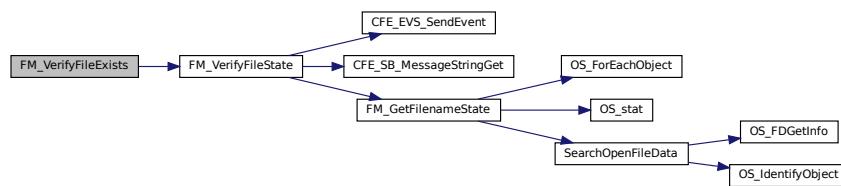
[FM_VerifyFileState](#)

Definition at line 368 of file fm_cmd_utils.c.

References FM_FILE_EXISTS, and FM_VerifyFileState().

Referenced by FM_CopyFileCmd(), FM_MoveFileCmd(), and FM_RenameFileCmd().

Here is the call graph for this function:



```

12.14.3.12 FM_VerifyFileNotExist() bool FM_VerifyFileNotExist (
    const char * Filename,
    size_t BufferSize,
    uint32 EventID,
    const char * CmdText )
  
```

Verify File Does Not Exist Function.

Description

This function calls the Verify File State function and generates an error event if the state is anything other than the name is unused the name is not a file and is not a directory.

Assumptions, External Events, and Notes:

Parameters

in	<i>Filename</i>	Pointer to buffer containing name
in	<i>BufferSize</i>	Size of name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file does not exist response

Return values

<i>true</i>	File does not exist
<i>false</i>	File exists

See also

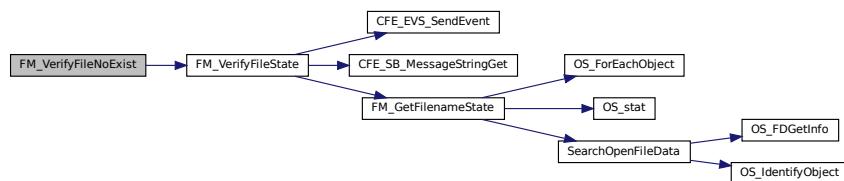
[FM_VerifyFileState](#)

Definition at line 379 of file fm_cmd_utils.c.

References FM_FILE_NOEXIST, and FM_VerifyFileState().

Referenced by FM_ConcatFilesCmd(), FM_CopyFileCmd(), FM_DecompressFileCmd(), FM_MoveFileCmd(), and FM_RenameFileCmd().

Here is the call graph for this function:



12.14.3.13 FM_VerifyFileNotOpen() `bool FM_VerifyFileNotOpen(`

```

        const char * Filename,
        size_t BufferSize,
        uint32 EventID,
        const char * CmdText )
```

Verify File Is Not Open Function.

Description

This function calls the Verify File State function and generates an error event if the state is a directory or an open file.

Assumptions, External Events, and Notes:**Parameters**

in	<i>Filename</i>	Pointer to buffer containing name
in	<i>BufferSize</i>	Size of name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file not open or not in use response

Return values

<i>true</i>	File is not open or not in use
<i>false</i>	File anything other than closed or not in use

See also

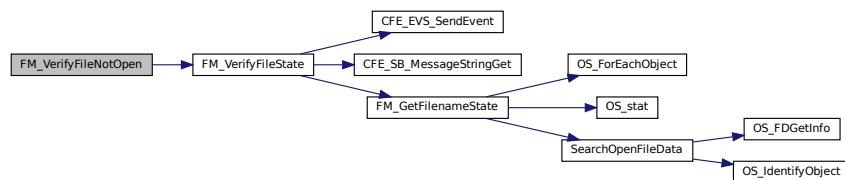
[FM_VerifyFileState](#)

Definition at line 390 of file fm_cmd_utils.c.

References FM_FILE_NOTOPEN, and FM_VerifyFileState().

Referenced by FM_CopyFileCmd(), FM_GetDirListFileCmd(), and FM_MoveFileCmd().

Here is the call graph for this function:



12.14.3.14 FM_VerifyFileState() `bool FM_VerifyFileState (`
 `FM_File_States State,`
 `const char * Filename,`
 `size_t BufferSize,`
 `uint32 EventID,`
 `const char * CmdText)`

Verify File State Function.

Description

This function calls the Get Filename State function and generates an error event if the state is anything other than the given state.

Assumptions, External Events, and Notes:

Parameters

in	<i>State</i>	State of file to verify
in	<i>Filename</i>	Pointer to buffer containing filename
in	<i>BufferSize</i>	Size of filename character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean file state response

Return values

<i>true</i>	File is in the given state
<i>false</i>	File is not in the given state

See also

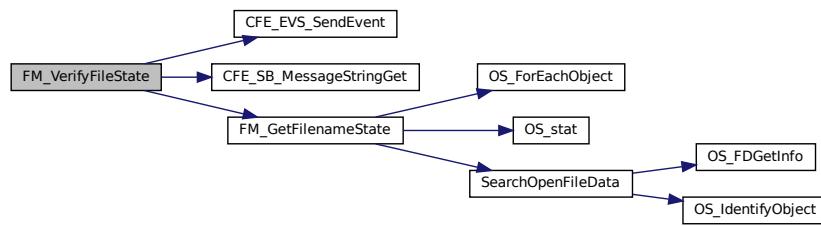
[FM_GetFilenameState](#)

Definition at line 247 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_SB_MessageStringGet(), FM_DIR_EXISTS, FM_DIR_NOEXIST, FM_FILE_CLOSED, FM_FILE_EXISTS, FM_FILE_NOEXIST, FM_FILE_NOTOPEN, FM_FNAME_DNE_EID_OFFSET, FM_FNAME_EXIST_EID_OFFSET, FM_FNAME_INVALID_EID_OFFSET, FM_FNAME_ISDIR_EID_OFFSET, FM_FNAME_ISFILE_EID_OFFSET, FM_FNAME_ISOPEN_EID_OFFSET, FM_GetFilenameState(), FM_NAME_IS_DIRECTORY, FM_NAME_IS_FILE_CLOSED, FM_NAME_IS_FILE_OPEN, FM_NAME_IS_INVALID, FM_NAME_IS_NOT_IN_USE, and OS_MAX_PATH_LEN.

Referenced by FM_VerifyDirExists(), FM_VerifyDirNotExist(), FM_VerifyFileClosed(), FM_VerifyFileExists(), FM_VerifyFileNotExist(), and FM_VerifyFileNotOpen().

Here is the call graph for this function:



12.14.3.15 FM_VerifyNameValid() [uint32](#) FM_VerifyNameValid (

```

    const char * Name,
    size_t BufferSize,
    uint32 EventID,
    const char * CmdText )
  
```

Verify Name Function.

Description

This function calls the Get Filename State function and generates an error event if the state is invalid.

Assumptions, External Events, and Notes:

Parameters

in	<i>Name</i>	Pointer to buffer containing name
in	<i>BufferSize</i>	Size of name character buffer
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

File state

Return values

<i>FM_NAME_IS_INVALID</i>
<i>FM_NAME_IS_NOT_IN_USE</i>
<i>FM_NAME_IS_FILE_OPEN</i>
<i>FM_NAME_IS_FILE_CLOSED</i>
<i>FM_NAME_IS_DIRECTORY</i>

See also

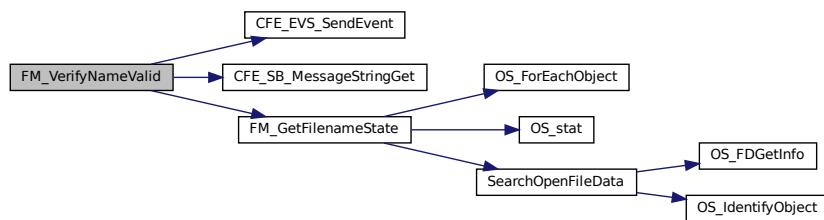
[FM_GetFilenameState](#)

Definition at line 220 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_SB_MessageStringGet(), FM_GetFilenameState(), FM_NAME_IS_INVALID, and OS_MAX_PATH_LEN.

Referenced by FM_GetFileInfoCmd(), and FM_SetPermissionsCmd().

Here is the call graph for this function:

**12.14.3.16 FM_VerifyOverwrite()** `bool FM_VerifyOverwrite (`

```

    uint16 Overwrite,
    uint32 EventID,
    const char * CmdText )
```

Verify Target File Overwrite Function.

Description

This function is invoked from the copy and move file command handlers to verify the target file overwrite argument. Acceptable values are TRUE (one) and FALSE (zero).

Assumptions, External Events, and Notes:**Parameters**

in	<i>Overwrite</i>	Value being tested
in	<i>EventID</i>	Error event ID (command-specific)
in	<i>CmdText</i>	Error event text (command-specific)

Returns

Boolean valid overwrite response

Return values

<i>true</i>	Overwrite argument valid
<i>false</i>	Overwrite argument invalid

See also

[FM_COPY_FILE_CC](#), [FM_MOVE_FILE_CC](#)

Definition at line 48 of file fm_cmd_utils.c.

References CFE_EVS_EventType_ERROR, and CFE_EVS_SendEvent().

Referenced by FM_CopyFileCmd(), and FM_MoveFileCmd().

Here is the call graph for this function:



12.15 apps/fmw/fsw/src/fm_cmds.c File Reference

```
#include "cfe.h"
#include "fm_msg.h"
#include "fm_msgdefs.h"
#include "fm_msgids.h"
#include "fm_events.h"
#include "fm_app.h"
#include "fm_cmds.h"
#include "fm_cmd_utils.h"
#include "fm_perfids.h"
#include "fm_platform_cfg.h"
#include "fm_version.h"
#include "fm_verify.h"
#include <string.h>
```

Macros

- #define [FM_GET_CMD_PAYLOAD](#)(ptr, type) (&((const type *)(ptr))->Payload)
Internal Macro to access the internal payload structure of a message.

Functions

- bool [FM_NoopCmd](#) (const [CFE_SB_Buffer_t](#) *BufPtr)

- bool `FM_ResetCountersCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Reset Counters Command Handler Function.
- bool `FM_CopyFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Copy File Command Handler Function.
- bool `FM_MoveFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Move File Command Handler Function.
- bool `FM_RenameFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Rename File Command Handler Function.
- bool `FM_DeleteFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Delete File Command Handler Function.
- bool `FM_DeleteAllFilesCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Delete All Files Command Handler Function.
- bool `FM_DecompressFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Decompress Files Command Handler Function.
- bool `FM_ConcatFilesCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Concatenate Files Command Handler Function.
- bool `FM_GetFileInfoCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Get File Information Command Handler Function.
- bool `FM_GetOpenFilesCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Get Open Files List Command Handler Function.
- bool `FM_CreateDirectoryCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Create Directory Command Handler Function.
- bool `FM_DeleteDirectoryCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Delete Directory Command Handler Function.
- bool `FM_GetDirListFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Get Directory List to Packet Command Handler Function.
- bool `FM_GetDirListPktCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Get Directory List to Packet Command Handler Function.
- bool `FM_MonitorFilesystemSpaceCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Monitor Filesystem Command Handler Function.
- bool `FM_SetTableStateCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Set Table Entry State Command Handler Function.
- bool `FM_SetPermissionsCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Set File Permissions of a file.

12.15.1 Detailed Description

File Manager (FM) Application Ground Commands
Provides functions for the execution of the FM ground commands

12.15.2 Macro Definition Documentation

```
12.15.2.1 FM_GET_CMD_PAYLOAD #define FM_GET_CMD_PAYLOAD( ptr,  
                           type ) (&((const type *)(ptr))->Payload)
```

Internal Macro to access the internal payload structure of a message.

This is done as a macro so it can be applied consistently to all message processing functions, based on the way FM defines its messages.

Definition at line 48 of file fm_cmds.c.

12.15.3 Function Documentation

```
12.15.3.1 FM_ConcatFilesCmd() bool FM_ConcatFilesCmd ( const CFE_SB_Buffer_t * BufPtr )
```

Concatenate Files Command Handler Function.

Description

This function concatenates two command specified source files into the command specified target file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but copying the first source file to the target file and then appending the second source file to the target file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

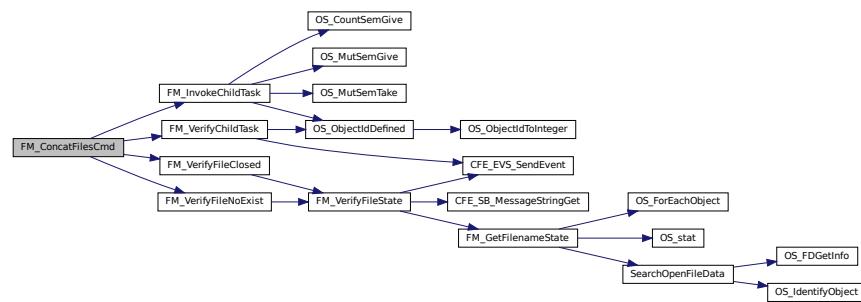
[FM_CONCAT_FILES_CC](#), [FM_ConcatFilesCmd_t](#)

Definition at line 406 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_CONCAT_CHILD_BASE_EID, FM_CONCAT_FILES_CC, FM_CONCAT_SRC1_BASE_EID, FM_CONCAT_SRC2_BASE_EID, FM_CONCAT_TGT_BASE_EID, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyFileClosed(), FM_VerifyFileNotExist(), OS_MAX_PATH_LEN, FM_TwoSourceOneTarget_Payload_t::Source1, FM_ChildQueueEntry_t::Source1, FM_TwoSourceOneTarget_Payload_t::Source2, FM_ChildQueueEntry_t::Source2, FM_TwoSourceOneTarget_Payload_t::Target, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ConcatFilesVerifyDispatch().

Here is the call graph for this function:



12.15.3.2 FM_CopyFileCmd() `bool FM_CopyFileCmd (const CFE_SB_Buffer_t * BufPtr)`

Copy File Command Handler Function.

Description

This function copies the command specified source file to the command specified target file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but copying the file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<code>BufPtr</code>	Pointer to Software Bus command packet.
----	---------------------	---

Returns

Boolean command success response

Return values

<code>true</code>	Command successful
<code>false</code>	Command not successful

See also

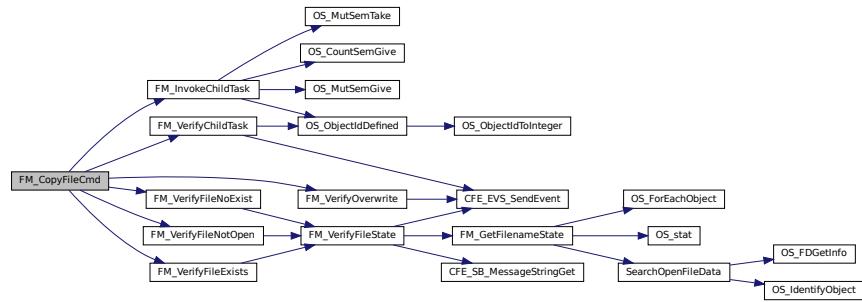
[FM_COPY_FILE_CC](#), [FM_CopyFileCmd_t](#)

Definition at line 95 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_COPY_CHILD_BASE_EID, FM_COPY_FILE_CC, FM_COPY_OVR_ERR_EID, FM_COPY_SRC_BASE_EID, FM_COPY_TGT_BASE_EID, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyFileExists(), FM_VerifyFileNotExist(), FM_VerifyFileNotOpen(), FM_VerifyOverwrite(), OS_MAX_PATH_LEN, FM_OvwSourceTargetFilename_Payload_t::Overwrite, FM_OvwSourceTargetFilename_Payload_t::Source, FM_ChildQueueEntry_t::Source1, FM_OvwSourceTargetFilename_Payload_t::Target, and FM_ChildQueueEntry_t::Target.

Referenced by FM_CopyFileVerifyDispatch().

Here is the call graph for this function:



12.15.3.3 FM_CreateDirectoryCmd() bool FM_CreateDirectoryCmd (const CFE_SB_Buffer_t * BufPtr)

Create Directory Command Handler Function.

Description

This function creates the command specified directory.

Assumptions, External Events, and Notes:

Parameters

in *BufPtr* Pointer to Software Bus command packet.

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

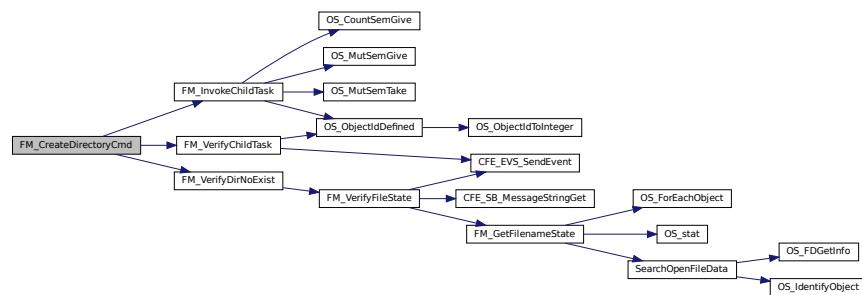
See also

[FM_CREATE_DIRECTORY_CC](#), [FM_CreateDirectoryCmd_t](#)

Definition at line 549 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_DirectoryName_Payload_t::Directory, FM_CREATE_DIR_CHILD_BASE_EID, FM_CREATE_DIR_SRC_BASE_EID, FM_CREATE_DIRECTORY_CC, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirNotExist(), OS_MAX_PATH_LEN, and FM_ChildQueueEntry_t::Source1. Referenced by FM_CreateDirectoryVerifyDispatch().

Here is the call graph for this function:



12.15.3.4 FM_DecompressFileCmd() `bool FM_DecompressFileCmd (const CFE_SB_Buffer_t * BufPtr)`

Decompress Files Command Handler Function.

Description

This function decompresses the command specified source file into the command specified target file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but decompressing the source file into the target file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<code>BufPtr</code>	Pointer to Software Bus command packet.
----	---------------------	---

Returns

Boolean command success response

Return values

<code>true</code>	Command successful
<code>false</code>	Command not successful

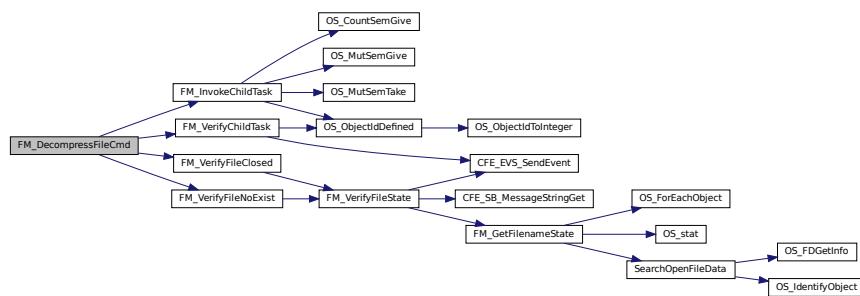
See also

[FM_DECOMPRESS_FILE_CC](#), [FM_DecompressFileCmd_t](#)

Definition at line 360 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_DECOM_CHILD_BASE_EID, FM_DECOM_SRC_BASE_EID, FM_DECOM_TGT_BASE_EID, FM_DECOMFILE_CC, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyFileClosed(), FM_VerifyFileNotExist(), OS_MAX_PATH_LEN, FM_SourceTargetFileName_Payload_t::Source, FM_ChildQueueEntry_t::Source1, FM_SourceTargetFileName_Payload_t::Target, and FM_ChildQueueEntry_t::Target. Referenced by FM_DecompressFileVerifyDispatch().

Here is the call graph for this function:



12.15.3.5 FM_DeleteAllFilesCmd() `bool FM_DeleteAllFilesCmd (const CFE_SB_Buffer_t * BufPtr)`

Delete All Files Command Handler Function.

Description

This function deletes all files from the command specified directory.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but reading the directory and deleting each file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<code>BufPtr</code>	Pointer to Software Bus command packet.
----	---------------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

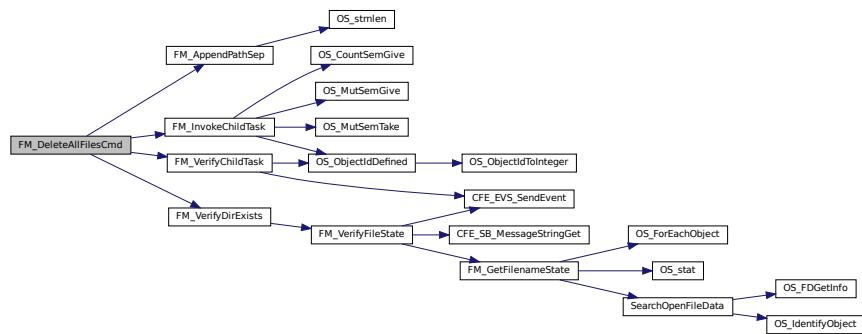
[FM_DELETE_ALL_FILES_CC](#), [FM_DeleteAllFilesCmd_t](#)

Definition at line 310 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_DirectoryName_Payload_t::Directory, FM_AppendPathSep(), FM_DELETE_ALL_CHILD_BASE_EID, FM_DELETE_ALL_FILES_CC, FM_DELETE_ALL_SRC_BASE_EID, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirExists(), OS_MAX_PATH_LEN, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Source2.

Referenced by FM_DeleteAllFilesVerifyDispatch().

Here is the call graph for this function:



12.15.3.6 FM_DeleteDirectoryCmd() `bool FM_DeleteDirectoryCmd (const CFE_SB_Buffer_t * BufPtr)`

Delete Directory Command Handler Function.

Description

This function deletes the command specified directory.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

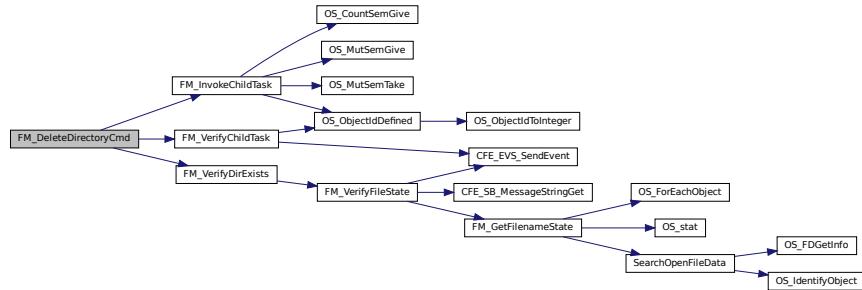
[FM_DELETE_DIRECTORY_CC](#), [FM_DeleteDirectoryCmd_t](#)

Definition at line 590 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_DirectoryName_Payload_t::Directory, FM_DELETE_DIR_CHILD_BASE_EID, FM_DELETE_DIR_SRC_BASE_EID, FM_DELETE_DIRECTORY_CC, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirExists(), OS_MAX_PATH_LEN, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_DeleteDirectoryVerifyDispatch().

Here is the call graph for this function:



12.15.3.7 FM_DeleteFileCmd() `bool FM_DeleteFileCmd (`
`const CFE_SB_Buffer_t * BufPtr)`

Delete File Command Handler Function.

Description

This function deletes the command specified file.

Assumptions, External Events, and Notes:**Parameters**

<i>in</i>	<i>BufPtr</i>	Pointer to Software Bus command packet.
-----------	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

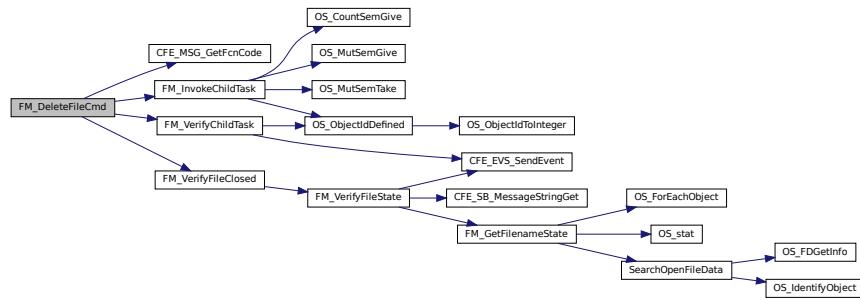
See also

[FM_DELETE_FILE_CC](#), [FM_DeleteFileCmd_t](#)

Definition at line 270 of file fm_cmds.c.

References `CFE_MSG_GetFcnCode()`, `FM_GlobalData_t::ChildQueue`, `FM_GlobalData_t::ChildWriteIndex`, `FM_ChildQueueEntry_t::CommandCode`, `FM_SingleFilename_Payload_t::Filename`, `FM_DELETE_CHILD_BASE_EID`, `FM_DELETE_SRC_BASE_EID`, `FM_GET_CMD_PAYLOAD`, `FM_GlobalData`, `FM_InvokeChildTask()`, `FM_VerifyChildTask()`, `FM_VerifyFileClosed()`, `CFE_SB_Msg::Msg`, `OS_MAX_PATH_LEN`, and `FM_ChildQueueEntry_t::Source1`. Referenced by `FM_DeleteFileVerifyDispatch()`.

Here is the call graph for this function:



12.15.3.8 FM_GetDirListFileCmd() `bool FM_GetDirListFileCmd (` `const CFE_SB_Buffer_t * BufPtr)`

Get Directory List to Packet Command Handler Function.

Description

This function creates an output file and writes a listing of the command specified directory to the file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but reading the directory will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<i>BuPtr</i>	Pointer to Software Bus command packet.
----	--------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

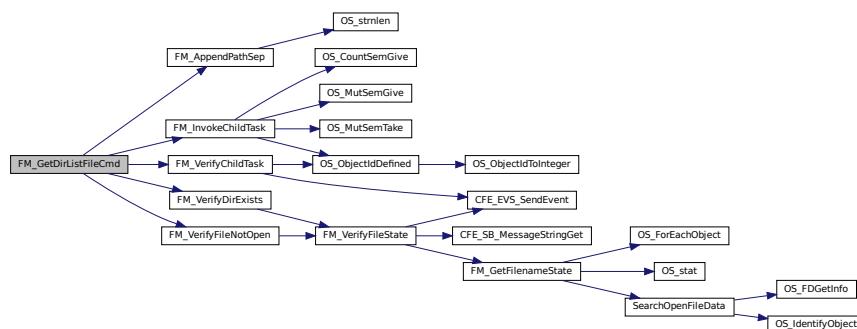
[FM_GET_DIR_LIST_FILE_CC](#), [FM_GetDirListFileCmd_t](#), [FM_DirListFileStats_t](#), [FM_DirListEntry_t](#)

Definition at line 631 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_GetDirectoryToFile_Payload_t::Directory, FM_GetDirectoryToFile_Payload_t::Filename, FM_AppendPathSep(), FM_DIR_LIST_FILE_DEFNAME, FM_GET_CMD_PAYLOAD, FM_GET_DIR_FILE_CHILD_BASE_EID, FM_GET_DIR_FILE_SRC_BASE_EID, FM_GET_DIR_FILE_TGT_BASE_EID, FM_GET_DIR_LIST_FILE_CC, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirExists(), FM_VerifyFileNotOpen(), FM_GetDirectoryToFile_Payload_t::GetSizeTimeMode, FM_ChildQueueEntry_t::GetSizeTimeMode, OS_MAX_PATH_LEN, FM_ChildQueueEntry_t::Source1, FM_ChildQueueEntry_t::Source2, and FM_ChildQueueEntry_t::Target.

Referenced by FM_GetDirListFileVerifyDispatch().

Here is the call graph for this function:



12.15.3.9 FM_GetDirListPktCmd()

```
bool FM_GetDirListPktCmd (
    const CFE_SB_Buffer_t * BuPtr )
```

Get Directory List to Packet Command Handler Function.

Description

This function creates a telemetry packet and populates the packet with the directory listing data for the command specified directory, starting at the command specified directory entry.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but reading the directory will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

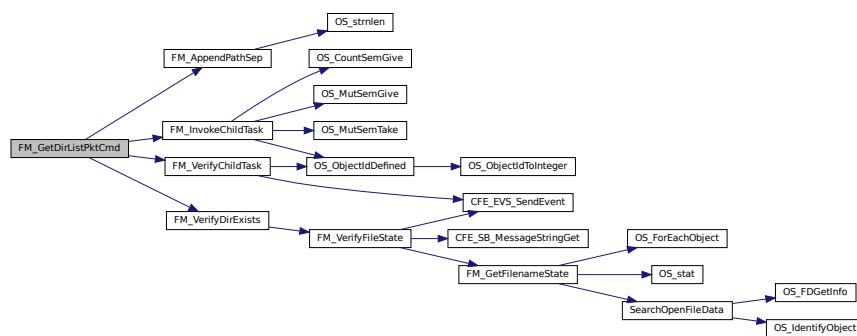
[FM_GET_DIR_LIST_PKT_CC](#), [FM_GetDirListPktCmd_t](#), [FM_DirListPkt_t](#)

Definition at line 704 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_GetDirectoryToPkt_Payload_t::Directory, FM_GetDirectoryToPkt_Payload_t::DirListOffset, FM_ChildQueueEntry_t::DirListOffset, FM_AppendPathSep(), FM_GET_CMD_PAYLOAD, FM_GET_DIR_LIST_PKT_CC, FM_GET_DIR_PKT_CHILD_BASE_EID, FM_GET_DIR_PKT_SRC_BASE_EID, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirExists(), FM_GetDirectoryToPkt_Payload_t::GetSizeTimeMode, FM_ChildQueueEntry_t::GetSizeTimeMode, OS_MAX_PATH_LEN, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Source2.

Referenced by FM_GetDirListPktVerifyDispatch().

Here is the call graph for this function:



```
12.15.3.10 FM_GetFileInfoCmd() bool FM_GetFileInfoCmd (
    const CFE_SB_Buffer_t * BufPtr )
```

Get File Information Command Handler Function.

Description

This function creates a telemetry packet and populates the packet with the current information regarding the command specified file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but collecting the status data and calculating the CRC will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

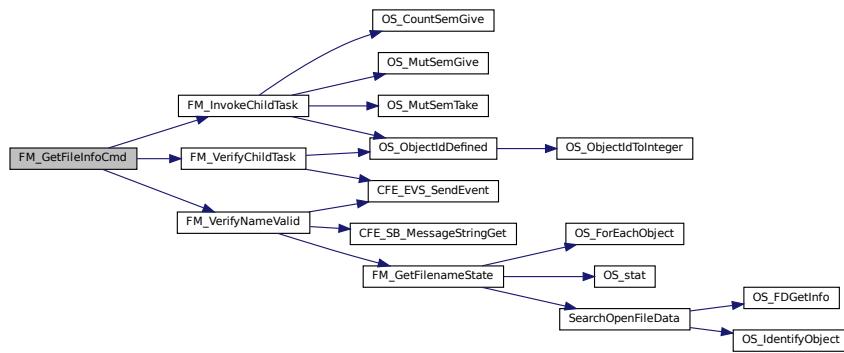
See also

[FM_GET_FILE_INFO_CC](#), [FM_GetFileInfoCmd_t](#), [FM_FileInfoPkt_t](#)

Definition at line 462 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_FilenameAndCRC_Payload_t::FileInfoCRC, FM_ChildQueueEntry_t::FileInfoCRC, FM_ChildQueueEntry_t::FileInfoSize, FM_ChildQueueEntry_t::FileInfoState, FM_ChildQueueEntry_t::FileInfoTime, FM_FilenameAndCRC_Payload_t::Filename, FM_GlobalData_t::FileStatMode, FM_GlobalData_t::FileStatSize, FM_GlobalData_t::FileStatTime, FM_FILE_INFO_CHILD_BASE_EID, FM_GET_CMD_PAYLOAD, FM_GET_FILE_INFO_CC, FM_GET_FILE_INFO_SRC_ERR_EID, FM_GlobalData, FM_InvokeChildTask(), FM_NAME_IS_INVALID, FM_VerifyChildTask(), FM_VerifyNameValid(), FM_ChildQueueEntry_t::Mode, OS_MAX_PATH_LEN, and FM_ChildQueueEntry_t::Source1.
Referenced by FM_GetFileInfoVerifyDispatch().

Here is the call graph for this function:



12.15.3.11 FM_GetOpenFilesCmd() `bool FM_GetOpenFilesCmd (const CFE_SB_Buffer_t * BufPtr)`

Get Open Files List Command Handler Function.

Description

This function creates a telemetry packet and populates it with a list of the current open files.

Assumptions, External Events, and Notes:

Parameters

in	<code>BufPtr</code>	Pointer to Software Bus command packet.
----	---------------------	---

Returns

Boolean command success response

Return values

<code>true</code>	Command successful
<code>false</code>	Command not successful

See also

[FM_GET_OPEN_FILES_CC](#), [FM_GetOpenFilesCmd_t](#), [FM_OpenFilesPkt_t](#)

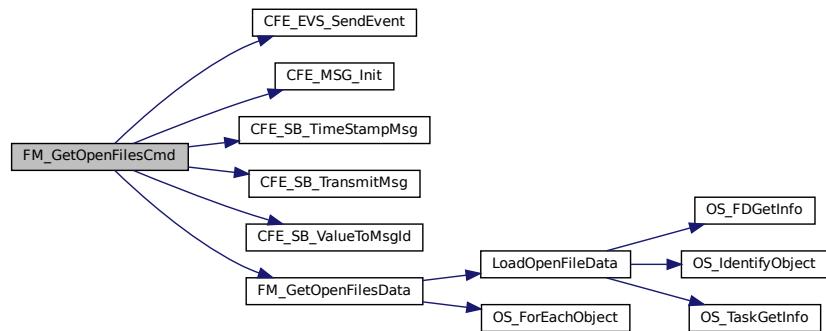
Definition at line 517 of file fm_cmds.c.

References `CFE_EVS_EventType_INFORMATION`, `CFE_EVS_SendEvent()`, `CFE_MSG_Init()`, `CFE_SB_TimeStampMsg()`, `CFE_SB_TransmitMsg()`, `CFE_SB_ValueToMsgId()`, `FM_GET_OPEN_FILES_CMD_INF_EID`, `FM_GetOpenFilesData()`, `FM_GlobalData`, `FM_OPEN_FILES_TLM_MID`, `FM_OpenFilesPkt_Payload_t::NumOpenFiles`,

FM_OpenFilesPkt_Payload_t::OpenFilesList, FM_GlobalData_t::OpenFilesPkt, FM_OpenFilesPkt_t::Payload, and FM_OpenFilesPkt_t::TelemetryHeader.

Referenced by FM_GetOpenFilesVerifyDispatch().

Here is the call graph for this function:



12.15.3.12 FM_MonitorFilesystemSpaceCmd()

```
bool FM_MonitorFilesystemSpaceCmd (
    const CFE_SB_Buffer_t * BufPtr )
```

Monitor Filesystem Command Handler Function.

Description

This function creates a telemetry packet and populates the packet with disk usage data for each location listed in the FM File System Monitor Table.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

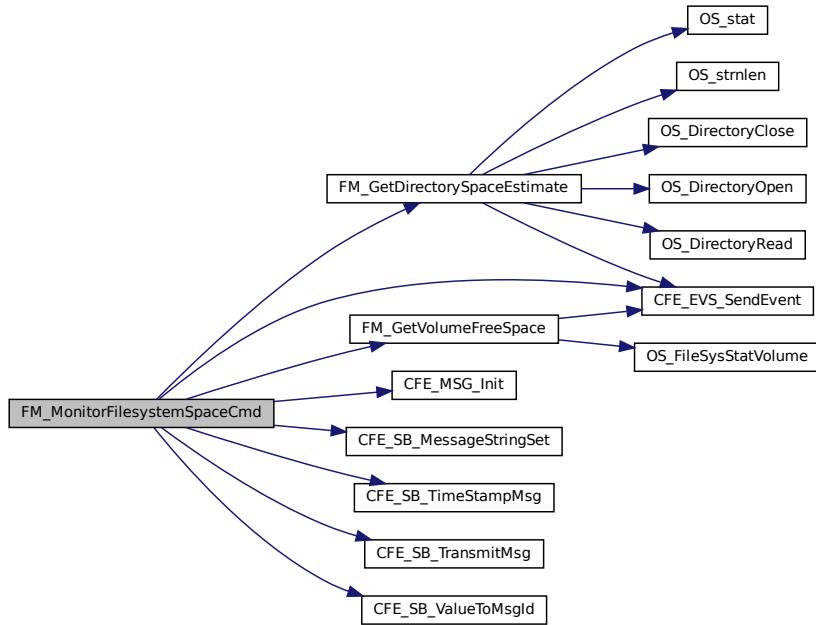
[FM_MONITOR_FILESYSTEM_SPACE_CC](#), [FM_MonitorFilesystemSpaceCmd_t](#), [FM_MonitorReportPkt_t](#)

Definition at line 756 of file fm_cmds.c.

References [FM_MonitorReportEntry_t::Blocks](#), [FM_MonitorReportEntry_t::Bytes](#), [CFE_EVS_EventType_ERROR](#), [CFE_EVS_EventType_INFORMATION](#), [CFE_EVS_SendEvent\(\)](#), [CFE_MSG_Init\(\)](#), [CFE_SB_MessageStringSet\(\)](#), [CFE_SB_TimeStampMsg\(\)](#), [CFE_SB_TransmitMsg\(\)](#), [CFE_SB_ValueToMsgId\(\)](#), [CFE_STATUS_NOT_IMPLEMENTED](#), [CFE_SUCCESS](#), [FM_MonitorTableEntry_t::Enabled](#), [FM_MonitorTable_t::Entries](#), [FM_MonitorReportPkt_Payload_t::FileSys](#), [FM_FREE_SPACE_TLM_MID](#), [FM_GET_FREE_SPACE_TBL_ERR_EID](#), [FM_GetDirectorySpaceEstimate\(\)](#), [FM_GetVolumeFreeSpace\(\)](#), [FM_GlobalData](#), [FM_MONITOR_FILESYSTEM_SPACE_CMD_INF_EID](#), [FM_MonitorTableEntry_Type_DIRECTORY_ESTIMATE](#), [FM_MonitorTableEntry_Type_UNUSED](#), [FM_MonitorTableEntry_Type_VOLUME_FREE_SPACE](#), [FM_TABLE_ENTRY_COUNT](#), [FM_GlobalData_t::MonitorReportPkt](#), [FM_GlobalData_t::MonitorTablePtr](#), [FM_MonitorReportEntry_t::Name](#), [FM_MonitorTableEntry_t::Name](#), [FM_MonitorReportPkt_t::Payload](#), [FM_MonitorReportEntry_t::ReportType](#), [FM_MonitorReportPkt_t::TelemetryHeader](#), and [FM_MonitorTableEntry_t::Type](#).

Referenced by [FM_MonitorFilesystemSpaceVerifyDispatch\(\)](#).

Here is the call graph for this function:



12.15.3.13 FM_MoveFileCmd() `bool FM_MoveFileCmd (const CFE_SB_Buffer_t * BufPtr)`

Move File Command Handler Function.

Description

This function moves the command specified source file to the command specified target filename.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

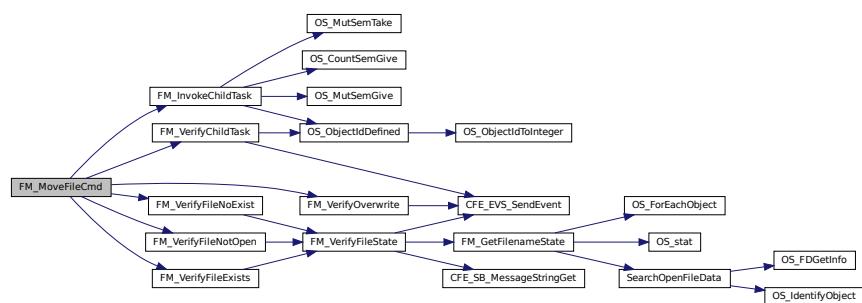
[FM_MOVE_FILE_CC](#), [FM_MoveFileCmd_t](#)

Definition at line 157 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_MOVE_CHILD_BASE_EID, FM_MOVE_FILE_CC, FM_MOVE_OVR_ERR_EID, FM_MOVE_SRC_BASE_EID, FM_MOVE_TGT_BASE_EID, FM.VerifyChildTask(), FM.VerifyFileExists(), FM.VerifyFileNotExist(), FM.VerifyFileNotOpen(), FM.VerifyOverwrite(), OS_MAX_PATH_LEN, FM_OvwSourceTargetFilename_Payload_t::Overwrite, FM_OvwSourceTargetFilename_Payload_t::Source, FM_ChildQueueEntry_t::Source1, FM_OvwSourceTargetFilename_Payload_t::Target, and FM_ChildQueueEntry_t::Target.

Referenced by FM_MoveFileVerifyDispatch().

Here is the call graph for this function:



```

12.15.3.14 FM_NoopCmd() bool FM_NoopCmd (
    const CFE_SB_Buffer_t * BufPtr )

```

Move File Command Handler Function.

Description

This function generates an event that displays the application version numbers.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

[FM_NOOP_CC](#), [FM_NoopCmd_t](#)

Definition at line 56 of file fm_cmds.c.

References CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_MAJOR_VERSION, FM_MINOR_VERSION, FM_MISSION_REV, FM_NOOP_INF_EID, and FM_REVISION.

Referenced by FM_NoopVerifyDispatch().

Here is the call graph for this function:



12.15.3.15 FM_RenameFileCmd()

```
bool FM_RenameFileCmd (
```

```
    const CFE_SB_Buffer_t * BufPtr )
```

Rename File Command Handler Function.

Description

This function renames the command specified source file to the command specified target filename.

Assumptions, External Events, and Notes:

Parameters

in	<i>BuPtr</i>	Pointer to Software Bus command packet.
----	--------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

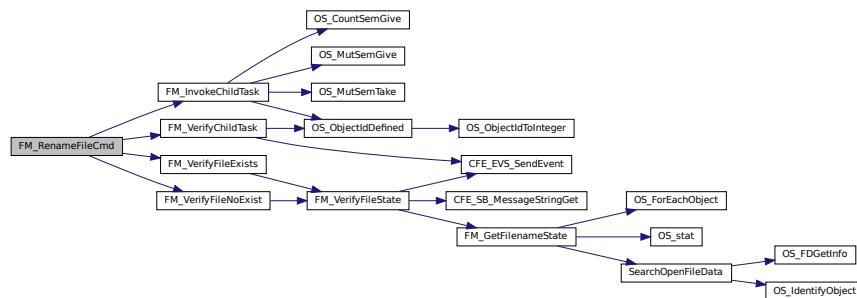
See also

[FM_RENAME_FILE_CC](#), [FM_RenameFileCmd_t](#)

Definition at line 220 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_RENAME_CHILD_BASE_EID, FM_RENAME_FILE_CC, FM_RENAME_SRC_BASE_EID, FM_RENAME_TGT_BASE_EID, FM_VerifyChildTask(), FM_VerifyFileExists(), FM_VerifyFileNoExist(), OS_MAX_PATH_LEN, FM_SourceTargetFileName_Payload_t::Source, FM_ChildQueueEntry_t::Source1, FM_SourceTargetFileName_Payload_t::Target, and FM_ChildQueueEntry_t::Target. Referenced by FM_RenameFileVerifyDispatch().

Here is the call graph for this function:



12.15.3.16 FM_ResetCountersCmd() `bool FM_ResetCountersCmd (const CFE_SB_Buffer_t * BuPtr)`

Reset Counters Command Handler Function.

Description

This function resets the FM housekeeping telemetry counters.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

[FM_RESET_COUNTERS_CC](#), [FM_ResetCountersCmd_t](#)

Definition at line 72 of file fm_cmds.c.

References CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_GlobalData_t::ChildCmdCounter, FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCmdWarnCounter, FM_GlobalData_t::CommandCounter, FM_GlobalData_t::CommandErrCounter, FM_GlobalData, and FM_RESET_INF_EID.

Referenced by FM_ResetCountersVerifyDispatch().

Here is the call graph for this function:

**12.15.3.17 FM_SetPermissionsCmd()** `bool FM_SetPermissionsCmd (`

`const CFE_SB_Buffer_t * BufPtr)`

Set File Permissions of a file.

Description

This function is a direct call to OS_chmod to set the file access

Assumptions, External Events, and Notes:**Parameters**

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

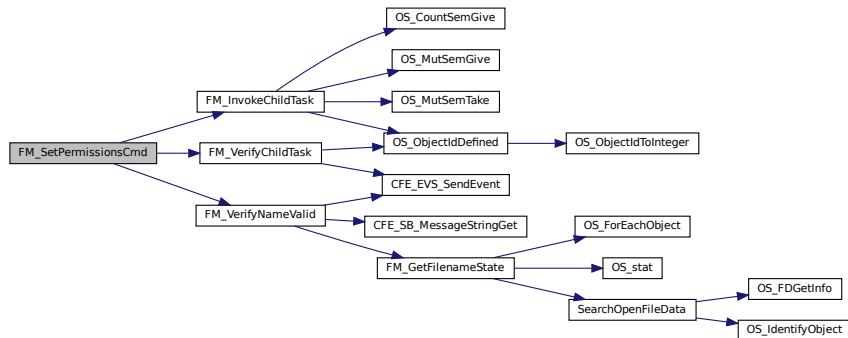
[FM_SET_PERMISSIONS_CC](#), [FM_SetPermissionsCmd_t](#), [FM_SET_PERM_CMD_INF_EID](#), [FM_SET_PERM_ERR_EID](#)

Definition at line 909 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_FilenameAndMode_Payload_t::FileName, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_NAME_IS_INVALID, FM_SET_PERM_ERR_EID, FM_SET_PERMISSIONS_CC, FM_VerifyChildTask(), FM_VerifyNameValid(), FM_FilenameAndMode_Payload_t::Mode, FM_ChildQueueEntry_t::Mode, OS_MAX_PATHLEN, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_SetPermissionsVerifyDispatch().

Here is the call graph for this function:



12.15.3.18 FM_SetTableStateCmd() `bool FM_SetTableStateCmd (const CFE_SB_Buffer_t * BufPtr)`

Set Table Entry State Command Handler Function.

Description

This function modifies the enable/disable state for a single entry in the File System Free Space Table.

Assumptions, External Events, and Notes:**Parameters**

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

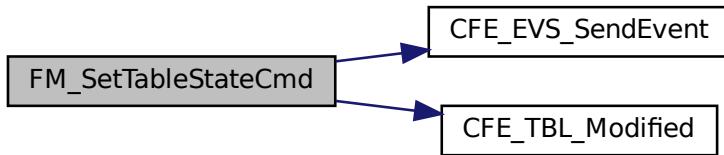
[FM_SET_TABLE_STATE_CC](#), [FM_SetTableStateCmd_t](#), [FM_MonitorTableEntry_t](#)

Definition at line 845 of file fm_cmds.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), CFE_TBL_Modified(), FM_MonitorTableEntry_t::Enabled, FM_MonitorTable_t::Entries, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_MonitorTableEntry_Type_UNUSED, FM_SET_TABLE_STATE_ARG_IDX_ERR_EID, FM_SET_TABLE_STATE_ARG_STATE_ERR_EID, FM_SET_TABLE_STATE_CMD_EID, FM_SET_TABLE_STATE_TBL_ERR_EID, FM_SET_TABLE_STATE_UNUSED_ERR_EID, FM_TABLE_ENTRY_COUNT, FM_TABLE_ENTRY_DISABLED, FM_TABLE_ENTRY_ENABLED, FM_GlobalData_t::MonitorTableHandle, FM_GlobalData_t::MonitorTablePtr, FM_TableIndexAndState_Payload_t::TableEntryIndex, FM_TableIndexAndState_Payload_t::TableEntryState, and FM_MonitorTableEntry_t::Type.

Referenced by FM_SetTableStateVerifyDispatch().

Here is the call graph for this function:

**12.16 apps/fm/fsw/src/fm_cmds.h File Reference**

```
#include "cfe.h"
```

Functions

- bool [FM_NoopCmd](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
Move File Command Handler Function.
- bool [FM_ResetCountersCmd](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
Reset Counters Command Handler Function.
- bool [FM_CopyFileCmd](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
Copy File Command Handler Function.
- bool [FM_MoveFileCmd](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
Move File Command Handler Function.

- bool `FM_RenameFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Rename File Command Handler Function.
- bool `FM_DeleteFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Delete File Command Handler Function.
- bool `FM_DeleteAllFilesCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Delete All Files Command Handler Function.
- bool `FM_DecompressFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Decompress Files Command Handler Function.
- bool `FM_ConcatFilesCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Concatenate Files Command Handler Function.
- bool `FM_GetFileInfoCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Get File Information Command Handler Function.
- bool `FM_GetOpenFilesCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Get Open Files List Command Handler Function.
- bool `FM_CreateDirectoryCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Create Directory Command Handler Function.
- bool `FM_DeleteDirectoryCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Delete Directory Command Handler Function.
- bool `FM_GetDirListFileCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Get Directory List to Packet Command Handler Function.
- bool `FM_GetDirListPktCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Get Directory List to Packet Command Handler Function.
- bool `FM_MonitorFilesystemSpaceCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Monitor Filesystem Command Handler Function.
- bool `FM_SetTableStateCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Set Table Entry State Command Handler Function.
- bool `FM_SetPermissionsCmd` (const `CFE_SB_Buffer_t` *BufPtr)
Set File Permissions of a file.

12.16.1 Detailed Description

Specification for the CFS FM ground commands.

12.16.2 Function Documentation

12.16.2.1 `FM_ConcatFilesCmd()` bool `FM_ConcatFilesCmd` (const `CFE_SB_Buffer_t` * *BufPtr*)

Concatenate Files Command Handler Function.

Description

This function concatenates two command specified source files into the command specified target file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but copying the first source file to the target file and then appending the second source file to the target file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

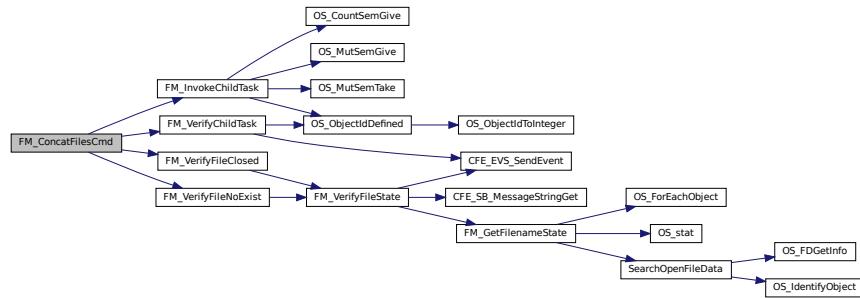
[FM_CONCAT_FILES_CC](#), [FM_ConcatFilesCmd_t](#)

Definition at line 406 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_CONCAT_CHILD_BASE_EID, FM_CONCAT_FILES_CC, FM_CONCAT_SRC1_BASE_EID, FM_CONCAT_SRC2_BASE_EID, FM_CONCAT_TGT_BASE_EID, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyFileClosed(), FM_VerifyFileNotExist(), OS_MAX_PATH_LEN, FM_TwoSourceOneTarget_Payload_t::Source1, FM_ChildQueueEntry_t::Source1, FM_TwoSourceOneTarget_Payload_t::Source2, FM_ChildQueueEntry_t::Source2, FM_TwoSourceOneTarget_Payload_t::Target, and FM_ChildQueueEntry_t::Target.

Referenced by FM_ConcatFilesVerifyDispatch().

Here is the call graph for this function:



12.16.2.2 FM_CopyFileCmd() `bool FM_CopyFileCmd (const CFE_SB_Buffer_t * BufPtr)`

Copy File Command Handler Function.

Description

This function copies the command specified source file to the command specified target file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but copying the file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in *BufPtr* Pointer to Software Bus command packet.

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

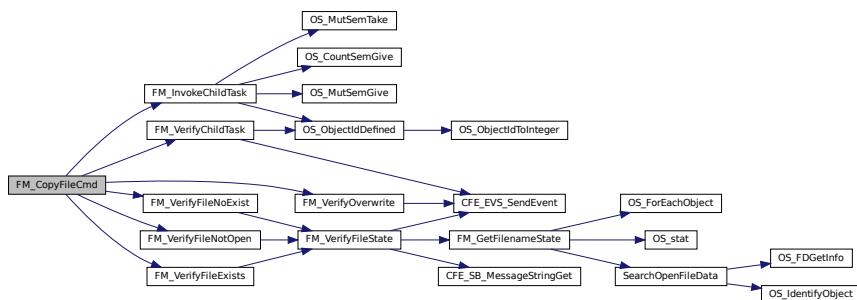
FM_COPY_FILE_CC, **FM_CopyFileCmd_t**

Definition at line 95 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_COPY_CHILD_BASE_EID, FM_COPY_FILE_CC, FM_COPY_OVR_ERR_EID, FM_COPY_SRC_BASE_EID, FM_COPY_TGT_BASE_EID, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyFileExists(), FM_VerifyFileNotExist(), FM_VerifyFileNotOpen(), FM_VerifyOverwrite(), OS_MAX_PATH_LEN, FM_OvwSourceTargetFilename_Payload_t::Overwrite, FM_OvwSourceTargetFilename_Payload_t::Source, FM_ChildQueueEntry_t::Source1, FM_OvwSourceTargetFilename_Payload_t::Target, and FM_ChildQueueEntry_t::Target.

Referenced by FM_CopyFileVerifyDispatch().

Here is the call graph for this function:



12.16.2.3 FM_CreateDirectoryCmd() bool FM_CreateDirectoryCmd (const CFE_SB_Buffer_t * BufPtr)

Create Directory Command Handler Function.

Description

This function creates the command specified directory.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

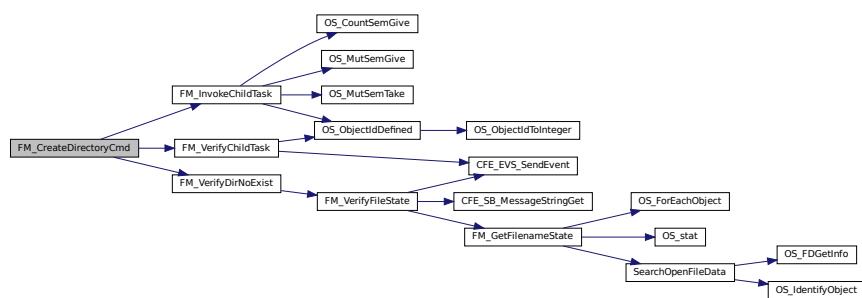
[FM_CREATE_DIRECTORY_CC](#), [FM_CreateDirectoryCmd_t](#)

Definition at line 549 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_DirectoryName_Payload_t::Directory, FM_CREATE_DIR_CHILD_BASE_EID, FM_CREATE_DIR_SRC_BASE_EID, FM_CREATE_DIRECTORY_CC, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirNotExist(), OS_MAX_PATH_LEN, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_CreateDirectoryVerifyDispatch().

Here is the call graph for this function:



12.16.2.4 FM_DecompressFileCmd()

```
bool FM_DecompressFileCmd (
    const CFE_SB_Buffer_t * BufPtr )
```

Decompress Files Command Handler Function.

Description

This function decompresses the command specified source file into the command specified target file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but decompressing the source file into the target file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

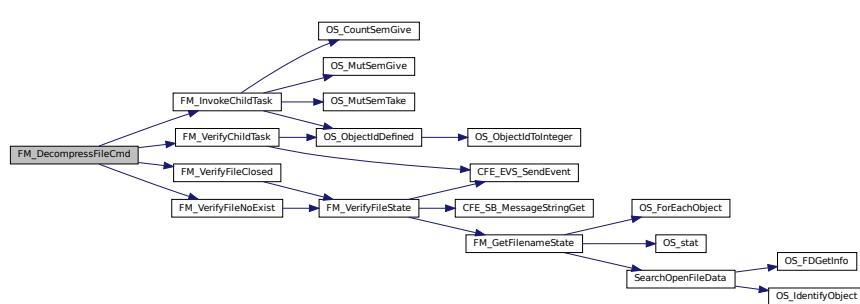
See also

[FM_DECOMPRESS_FILE_CC](#), [FM_DecompressFileCmd_t](#)

Definition at line 360 of file fm_cmnds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_DECOM_CHILD_BASE_EID, FM_DECOM_SRC_BASE_EID, FM_DECOM_TGT_BASE_EID, FM_DECOMPRESS_FILE_CC, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyFileClosed(), FM_VerifyFileNotExist(), OS_MAX_PATH_LEN, FM_SourceTargetFileName_Payload_t::Source, FM_ChildQueueEntry_t::Source1, FM_SourceTargetFileName_Payload_t::Target, and FM_ChildQueueEntry_t::Target. Referenced by FM_DecompressFileVerifyDispatch().

Here is the call graph for this function:



12.16.2.5 FM_DeleteAllFilesCmd() `bool FM_DeleteAllFilesCmd (`
 `const CFE_SB_Buffer_t * BufPtr)`

Delete All Files Command Handler Function.

Description

This function deletes all files from the command specified directory.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but reading the directory and deleting each file will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

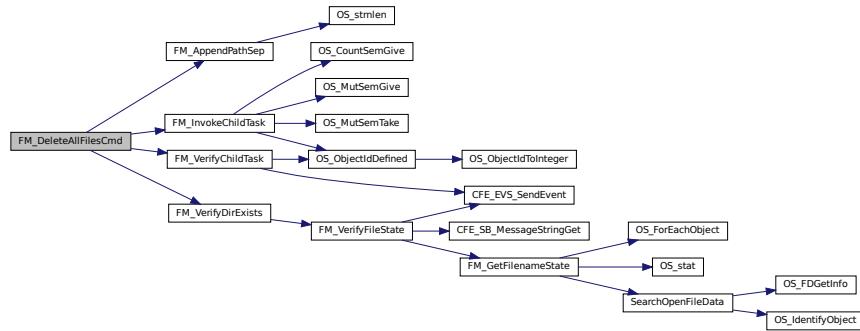
[FM_DELETE_ALL_FILES_CC](#), [FM_DeleteAllFilesCmd_t](#)

Definition at line 310 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_DirectoryName_Payload_t::Directory, FM_AppendPathSep(), FM_DELETE_ALL_CHILD_BASE_EID, FM_DELETE_ALL_FILES_CC, FM_DELETE_ALL_SRC_BASE_EID, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirExists(), OS_MAX_PATH_LEN, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Source2.

Referenced by FM_DeleteAllFilesVerifyDispatch().

Here is the call graph for this function:



12.16.2.6 FM_DeleteDirectoryCmd() `bool FM_DeleteDirectoryCmd (const CFE_SB_Buffer_t * BufPtr)`

Delete Directory Command Handler Function.

Description

This function deletes the command specified directory.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

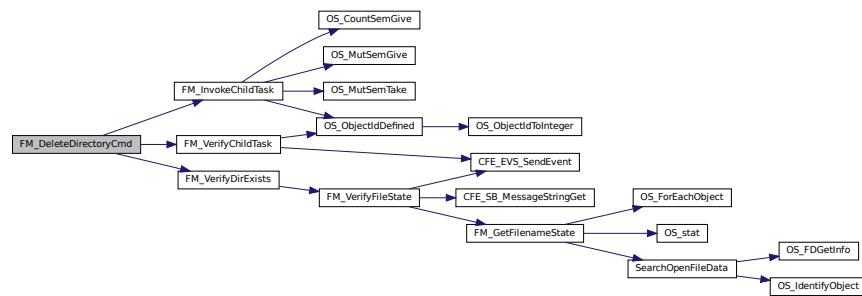
[FM_DELETE_DIRECTORY_CC](#), [FM_DeleteDirectoryCmd_t](#)

Definition at line 590 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_DirectoryName_Payload_t::Directory, FM_DELETE_DIR_CHILD_BASE_EID, FM_DELETE_DIR_SRC_BASE_EID, FM_DELETE_DIRECTORY_CC, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirExists(), OS_MAX_PATH_LEN, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_DeleteDirectoryVerifyDispatch().

Here is the call graph for this function:



12.16.2.7 FM_DeleteFileCmd() bool FM_DeleteFileCmd (

```
const CFE_SB_Buffer_t * BufPtr )
```

Delete File Command Handler Function.

Description

This function deletes the command specified file.

Assumptions, External Events, and Notes:

Parameters

in *BufPtr* Pointer to Software Bus command packet.

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

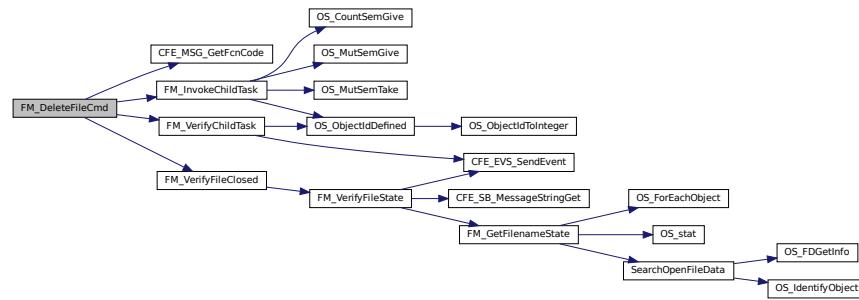
See also

FM DELETE FILE CC, FM DeleteFileCmd t

Definition at line 270 of file fm_cmds.c.

References CFE_MSG_GetFcnCode(), FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_SingleFilename_Payload_t::Filename, FM_DELETE_CHILD_BASE_EID, FM_DELETE_SRC_BASE_EID, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyFileClosed(), CFE_SB_Msg::Msg, OS_MAX_PATH_LEN, and FM_ChildQueueEntry_t::Source1. Referenced by FM_DeleteFileVerifyDispatch().

Here is the call graph for this function:



12.16.2.8 FM_GetDirListFileCmd() `bool FM_GetDirListFileCmd (const CFE_SB_Buffer_t * BufPtr)`

Get Directory List to Packet Command Handler Function.

Description

This function creates an output file and writes a listing of the command specified directory to the file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but reading the directory will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<code>BufPtr</code>	Pointer to Software Bus command packet.
----	---------------------	---

Returns

Boolean command success response

Return values

<code>true</code>	Command successful
<code>false</code>	Command not successful

See also

[FM_GET_DIR_LIST_FILE_CC](#), [FM_GetDirListFileCmd_t](#), [FM_DirListFileStats_t](#), [FM_DirListEntry_t](#)

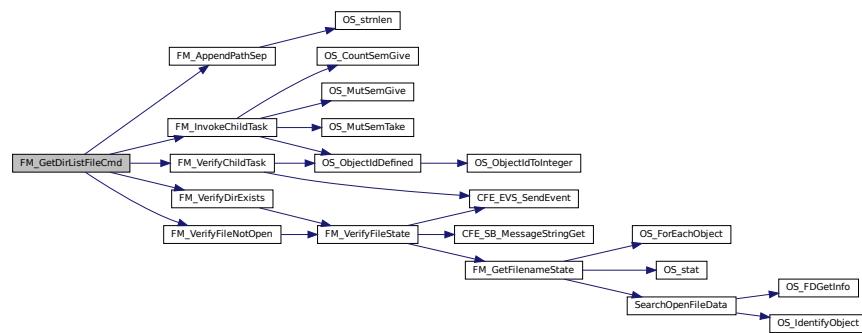
Definition at line 631 of file fm_cmds.c.

References `FM_GlobalData_t::ChildQueue`, `FM_GlobalData_t::ChildWriteIndex`, `FM_ChildQueueEntry_t::CommandCode`, `FM_GetDirectoryToFile_Payload_t::Directory`, `FM_GetDirectoryToFile_Payload_t::Filename`, `FM_Append`

PathSep(), FM_DIR_LIST_FILE_DEFNAME, FM_GET_CMD_PAYLOAD, FM_GET_DIR_FILE_CHILD_BASE_EID, FM_GET_DIR_FILE_SRC_BASE_EID, FM_GET_DIR_FILE_TGT_BASE_EID, FM_GET_DIR_LIST_FILE_CC, FM↔_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirExists(), FM_VerifyFileNotOpen(), FM↔GetDirectoryToFile_Payload_t::GetSizeTimeMode, FM_ChildQueueEntry_t::GetSizeTimeMode, OS_MAX_PATH_LEN, FM_ChildQueueEntry_t::Source1, FM_ChildQueueEntry_t::Source2, and FM_ChildQueueEntry_t::Target.

Referenced by FM_GetDirListFileVerifyDispatch().

Here is the call graph for this function:



12.16.2.9 FM_GetDirListPktCmd()

```
bool FM_GetDirListPktCmd(
```

```
    const CFE_SB_Buffer_t * BufPtr )
```

Get Directory List to Packet Command Handler Function.

Description

This function creates a telemetry packet and populates the packet with the directory listing data for the command specified directory, starting at the command specified directory entry.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but reading the directory will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

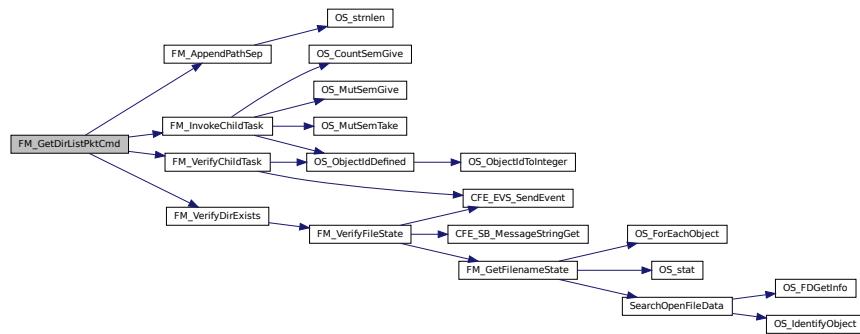
`FM_GET_DIR_LIST_PKT_CC`, `FM_GetDirListPktCmd_t`, `FM_DirListPkt_t`

Definition at line 704 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_GetDirectoryToPkt_Payload_t::Directory, FM_GetDirectoryToPkt_Payload_t::DirListOffset, FM_ChildQueueEntry_t::DirListOffset, FM_AppendPathSep(), FM_GET_CMD_PAYLOAD, FM_GET_DIR_LIST_PKT_CC, FM_GET_DIR_PKT_CHILD_BASE_EID, FM_GET_DIR_PKT_SRC_BASE_EID, FM_GlobalData, FM_InvokeChildTask(), FM_VerifyChildTask(), FM_VerifyDirExists(), FM_GetDirectoryToPkt_Payload_t::GetSizeTimeMode, FM_ChildQueueEntry_t::GetSizeTimeMode, OS_MAX_PATH_LEN, FM_ChildQueueEntry_t::Source1, and FM_ChildQueueEntry_t::Source2.

Referenced by FM_GetDirListPktVerifyDispatch().

Here is the call graph for this function:



12.16.2.10 FM_GetFileInfoCmd() `bool FM_GetFileInfoCmd (const CFE_SB_Buffer_t * BufPtr)`

Get File Information Command Handler Function.

Description

This function creates a telemetry packet and populates the packet with the current information regarding the command specified file.

Because of the possibility that this command might take a very long time to complete, command argument validation will be done immediately but collecting the status data and calculating the CRC will be performed by a lower priority child task. As such, the return value for this function only refers to the result of command argument verification and being able to place the command on the child task interface queue.

Assumptions, External Events, and Notes:

Parameters

in *BufPtr* Pointer to Software Bus command packet.

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

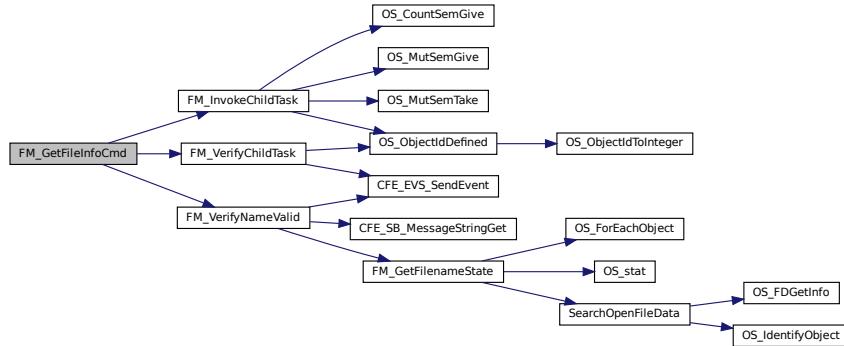
[FM_GET_FILE_INFO_CC](#), [FM_GetFileInfoCmd_t](#), [FM_FileInfoPkt_t](#)

Definition at line 462 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_FilenameAndCRC_Payload_t::FileInfoCRC, FM_ChildQueueEntry_t::FileInfoCRC, FM_ChildQueueEntry_t::FileInfoSize, FM_ChildQueueEntry_t::FileInfoState, FM_ChildQueueEntry_t::FileInfoTime, FM_FilenameAndCRC_Payload_t::Filename, FM_GlobalData_t::FileStatMode, FM_GlobalData_t::FileStatSize, FM_GlobalData_t::FileStatTime, FM_FILE_INFO_CHILD_BASE_EID, FM_GET_CMD_PAYLOAD, FM_GET_FILE_INFO_CC, FM_GET_FILE_INFO_SRC_ERR_EID, FM_GlobalData, FM_InvokeChildTask(), FM_NAME_IS_INVALID, FM_VerifyChildTask(), FM_VerifyNameValid(), FM_ChildQueueEntry_t::Mode, OS_MAX_PATH_LEN, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_GetFileInfoVerifyDispatch().

Here is the call graph for this function:



12.16.2.11 FM_GetOpenFilesCmd()

```
bool FM_GetOpenFilesCmd (
    const CFE_SB_Buffer_t * BufPtr )
```

Get Open Files List Command Handler Function.

Description

This function creates a telemetry packet and populates it with a list of the current open files.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

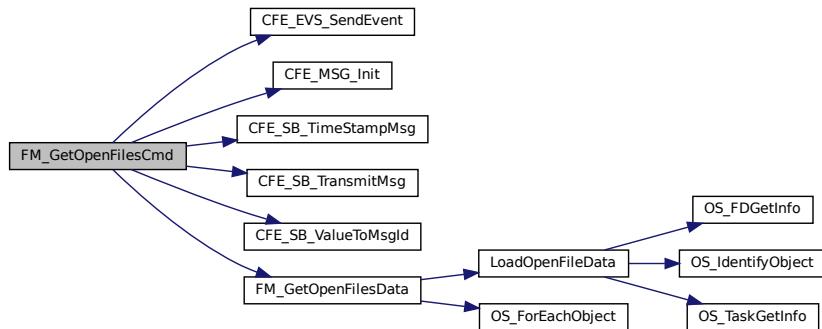
[FM_GET_OPEN_FILES_CC](#), [FM_GetOpenFilesCmd_t](#), [FM_OpenFilesPkt_t](#)

Definition at line 517 of file fm_cmds.c.

References `CFE_EVS_EventType_INFORMATION`, `CFE_EVS_SendEvent()`, `CFE_MSG_Init()`, `CFE_SB_TimeStampMsg()`, `CFE_SB_TransmitMsg()`, `CFE_SB_ValueToMsgId()`, `FM_GET_OPEN_FILES_CMD_INF_EID`, `FM_GetOpenFilesData()`, `FM_GlobalData`, `FM_OPEN_FILES_TLM_MID`, `FM_OpenFilesPkt_Payload_t::NumOpenFiles`, `FM_OpenFilesPkt_Payload_t::OpenFilesList`, `FM_GlobalData_t::OpenFilesPkt`, `FM_OpenFilesPkt_t::Payload`, and `FM_OpenFilesPkt_t::TelemetryHeader`.

Referenced by `FM_GetOpenFilesVerifyDispatch()`.

Here is the call graph for this function:



12.16.2.12 FM_MonitorFilesystemSpaceCmd() `bool FM_MonitorFilesystemSpaceCmd (const CFE_SB_Buffer_t * BufPtr)`

Monitor Filesystem Command Handler Function.

Description

This function creates a telemetry packet and populates the packet with disk usage data for each location listed in the FM File System Monitor Table.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

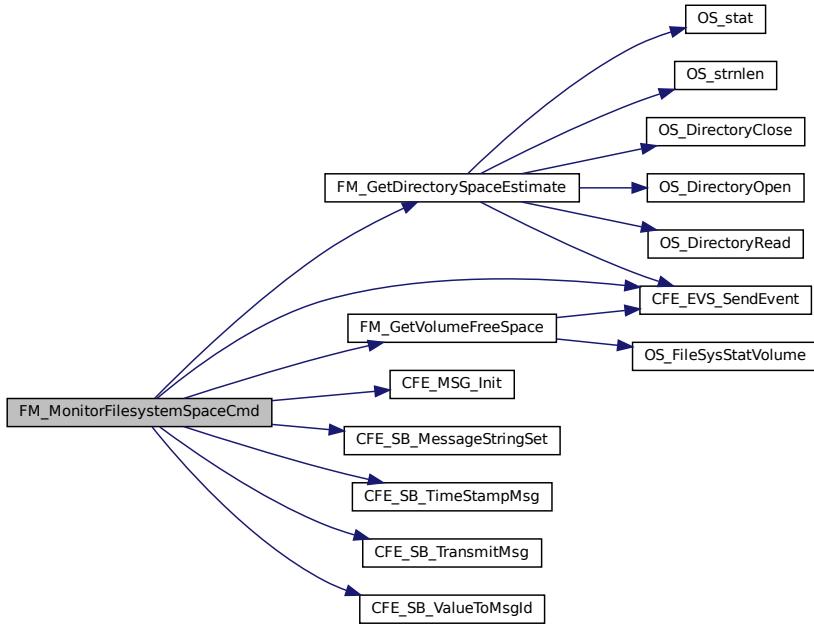
[FM_MONITOR_FILESYSTEM_SPACE_CC](#), [FM_MonitorFilesystemSpaceCmd_t](#), [FM_MonitorReportPkt_t](#)

Definition at line 756 of file fm_cmds.c.

References FM_MonitorReportEntry_t::Blocks, FM_MonitorReportEntry_t::Bytes, CFE_EVS_EventType_ERROR, CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), CFE_MSG_Init(), CFE_SB_MessageStringSet(), CFE_SB_TimeStampMsg(), CFE_SB_TransmitMsg(), CFE_SB_ValueToMsgId(), CFE_STATUS_NOT_IMPLEMENTED, CFE_SUCCESS, FM_MonitorTableEntry_t::Enabled, FM_MonitorTable_t::Entries, FM_MonitorReportPkt_Payload_t::FileSys, FM_FREE_SPACE_TLM_MID, FM_GET_FREE_SPACE_TBL_ERR_EID, FM_GetDirectorySpaceEstimate(), FM_GetVolumeFreeSpace(), FM_GlobalData, FM_MONITOR_FILESYSTEM_SPACE_CMD_INF_EID, FM_MonitorTableEntry_Type_DIRECTORY_ESTIMATE, FM_MonitorTableEntry_Type_UNUSED, FM_MonitorTableEntry_Type_VOLUME_FREE_SPACE, FM_TABLE_ENTRY_COUNT, FM_GlobalData_t::MonitorReportPkt, FM_GlobalData_t::MonitorTablePtr, FM_MonitorReportEntry_t::Name, FM_MonitorTableEntry_t::Name, FM_MonitorReportPkt_t::Payload, FM_MonitorReportEntry_t::ReportType, FM_MonitorReportPkt_t::TelemetryHeader, and FM_MonitorTableEntry_t::Type.

Referenced by FM_MonitorFilesystemSpaceVerifyDispatch().

Here is the call graph for this function:



12.16.2.13 FM_MoveFileCmd() `bool FM_MoveFileCmd (`
`const CFE_SB_Buffer_t * BufPtr)`

Move File Command Handler Function.

Description

This function moves the command specified source file to the command specified target filename.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

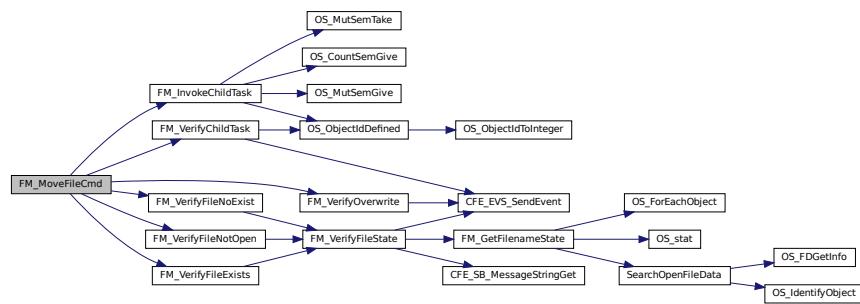
FM_MOVE_FILE_CC, FM_MoveFileCmd_t

Definition at line 157 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_MOVE_CHILD_BASE_EID, FM_MOVE_FILE_CC, FM_MOVE_OVR_ERR_EID, FM_MOVE_SRC_BASE_EID, FM_MOVE_TGT_BASE_EID, FM.VerifyChildTask(), FM.VerifyFileExists(), FM.VerifyFileNotExist(), FM.VerifyFileNotOpen(), FM.VerifyOverwrite(), OS._MAX_PATH_LEN, FM_OvwSourceTargetFilename_Payload_t::Overwrite, FM_OvwSourceTargetFilename_Payload_t::Source, FM_ChildQueueEntry_t::Source1, FM_OvwSourceTargetFilename_Payload_t::Target, and FM_ChildQueueEntry_t::Target.

Referenced by FM_MoveFileVerifyDispatch().

Here is the call graph for this function:



```
12.16.2.14 FM_NoopCmd() bool FM_NoopCmd (           const CFE_SB_Buffer_t * BufPtr )
```

Move File Command Handler Function.

Description

This function generates an event that displays the application version numbers.

Assumptions, External Events, and Notes:

Parameters

in *BufPtr* Pointer to Software Bus command packet.

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

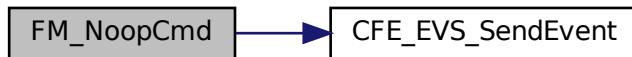
[FM_NOOP_CC](#), [FM_NoopCmd_t](#)

Definition at line 56 of file fm_cmds.c.

References CFE_EVS_EventType_INFORMATION, CFE_EVS_SendEvent(), FM_MAJOR_VERSION, FM_MINOR_VERSION, FM_MISSION_REV, FM_NOOP_INF_EID, and FM_REVISION.

Referenced by FM_NoopVerifyDispatch().

Here is the call graph for this function:



12.16.2.15 FM_RenameFileCmd() bool FM_RenameFileCmd (
 const CFE_SB_Buffer_t * BufPtr)

Rename File Command Handler Function.

Description

This function renames the command specified source file to the command specified target filename.

Assumptions, External Events, and Notes:**Parameters**

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

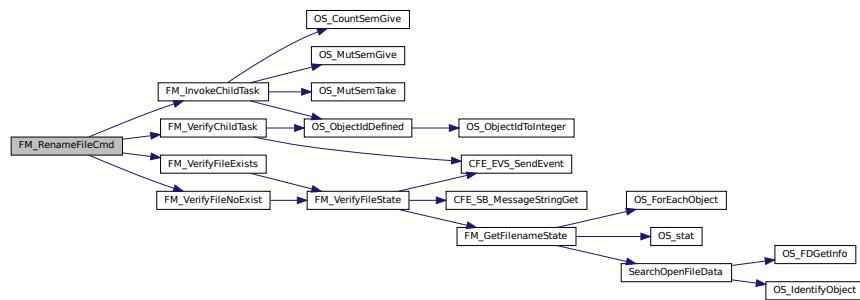
[FM_RENAME_FILE_CC](#), [FM_RenameFileCmd_t](#)

Definition at line 220 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_RENAME_CHILD_BASE_EID, FM↔

_RENAME_FILE_CC, FM_RENAME_SRC_BASE_EID, FM_RENAME_TGT_BASE_EID, FM_VerifyChildTask(), FM_VerifyFileExists(), FM_VerifyFileNotExist(), OS_MAX_PATH_LEN, FM_SourceTargetFileName_Payload_t::Source, FM_ChildQueueEntry_t::Source1, FM_SourceTargetFileName_Payload_t::Target, and FM_ChildQueueEntry_t::Target. Referenced by FM_RenameFileVerifyDispatch().

Here is the call graph for this function:



12.16.2.16 FM_ResetCountersCmd() `bool FM_ResetCountersCmd (const CFE_SB_Buffer_t * BufPtr)`

Reset Counters Command Handler Function.

Description

This function resets the FM housekeeping telemetry counters.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

[FM_RESET_COUNTERS_CC](#), [FM_ResetCountersCmd_t](#)

Definition at line 72 of file fm_cmds.c.

References `CFE_EVS_EventType_INFORMATION`, `CFE_EVS_SendEvent()`, `FM_GlobalData_t::ChildCmdCounter`,

FM_GlobalData_t::ChildCmdErrCounter, FM_GlobalData_t::ChildCmdWarnCounter, FM_GlobalData_t::CommandCounter, FM_GlobalData_t::CommandErrCounter, FM_GlobalData, and FM_RESET_INF_EID.

Referenced by FM_ResetCountersVerifyDispatch().

Here is the call graph for this function:



12.16.2.17 FM_SetPermissionsCmd() `bool FM_SetPermissionsCmd (const CFE_SB_Buffer_t * BufPtr)`

Set File Permissions of a file.

Description

This function is a direct call to OS_chmod to set the file access

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

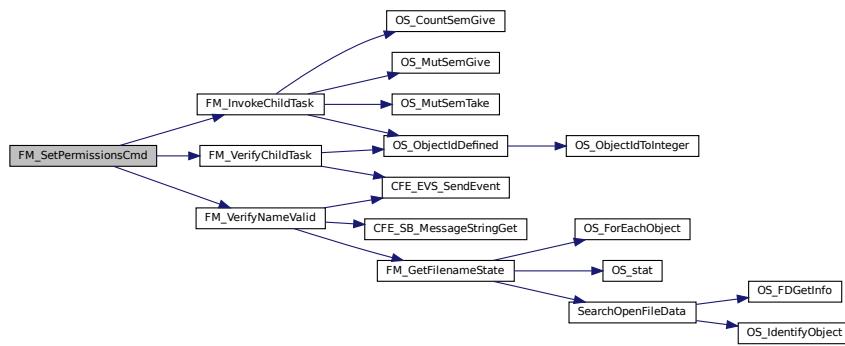
[FM_SET_PERMISSIONS_CC](#), [FM_SetPermissionsCmd_t](#), [FM_SET_PERM_CMD_INF_EID](#), [FM_SET_PERM_ERR_EID](#)

Definition at line 909 of file fm_cmds.c.

References FM_GlobalData_t::ChildQueue, FM_GlobalData_t::ChildWriteIndex, FM_ChildQueueEntry_t::CommandCode, FM_FilenameAndMode_Payload_t::FileName, FM_GET_CMD_PAYLOAD, FM_GlobalData, FM_InvokeChildTask(), FM_NAME_IS_INVALID, FM_SET_PERM_ERR_EID, FM_SET_PERMISSIONS_CC, FM_VerifyChildTask(), FM_VerifyNameValid(), FM_FilenameAndMode_Payload_t::Mode, FM_ChildQueueEntry_t::Mode, OS_MAX_PATH_LEN, and FM_ChildQueueEntry_t::Source1.

Referenced by FM_SetPermissionsVerifyDispatch().

Here is the call graph for this function:



12.16.2.18 FM_SetTableStateCmd() `bool FM_SetTableStateCmd (`
`const CFE_SB_Buffer_t * BufPtr)`

Set Table Entry State Command Handler Function.

Description

This function modifies the enable/disable state for a single entry in the File System Free Space Table.

Assumptions, External Events, and Notes:

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus command packet.
----	---------------	---

Returns

Boolean command success response

Return values

<i>true</i>	Command successful
<i>false</i>	Command not successful

See also

[FM_SET_TABLE_STATE_CC](#), [FM_SetTableStateCmd_t](#), [FM_MonitorTableEntry_t](#)

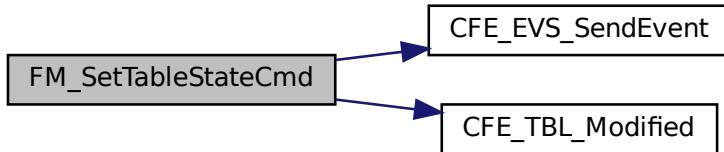
Definition at line 845 of file fm_cmds.c.

References [CFE_EVS_EventType_ERROR](#), [CFE_EVS_EventType_INFORMATION](#), [CFE_EVS_SendEvent\(\)](#), [CFE_TBL_Modified\(\)](#), [FM_MonitorTableEntry_t::Enabled](#), [FM_MonitorTable_t::Entries](#), [FM_GET_CMD_PAYLOAD](#), [FM_GlobalData](#), [FM_MonitorTableEntry_Type_UNUSED](#), [FM_SET_TABLE_STATE_ARG_IDX_ERR_EID](#), [FM_SET_TABLE_STATE_ARG_STATE_ERR_EID](#), [FM_SET_TABLE_STATE_CMD_EID](#), [FM_SET_TABLE_STATE_TBL_ERR_EID](#)

_EID, FM_SET_TABLE_STATE_UNUSED_ERR_EID, FM_TABLE_ENTRY_COUNT, FM_TABLE_ENTRY_DISABLED, FM_TABLE_ENTRY_ENABLED, FM_GlobalData_t::MonitorTableHandle, FM_GlobalData_t::MonitorTablePtr, FM_IndexAndState_Payload_t::TableEntryIndex, FM_TableIndexAndState_Payload_t::TableEntryState, and FM_MonitorTableEntry_t::Type.

Referenced by FM_SetTableStateVerifyDispatch().

Here is the call graph for this function:



12.17 apps/fm/fsw/src/fm_compression.h File Reference

```
#include <common_types.h>
#include <fm_platform_cfg.h>
#include "cfe.h"
```

Typedefs

- `typedef struct FM_Compressor_State FM_Compressor_State_t`
The state object for a compressor.
- `typedef struct FM_Decompressor_State FM_Decompressor_State_t`
The state object for a compressor.

Functions

- `CFE_Status_t FM_CompressionService_Init (void)`
Initialize the compression/decompression service.
- `CFE_Status_t FM_Decompress_Impl (FM_Decompressor_State_t *State, const char *SrcFileName, const char *DstFileName)`
Abstract file decompression routine.
- `CFE_Status_t FM_Compress_Impl (FM_Compressor_State_t *State, const char *SrcFileName, const char *DstFileName)`
Abstract file compression routine.

12.17.1 Detailed Description

FM internal data compression API. These functions may be unimplemented, or they may map to external/3rd party data compression libraries such as zLib. In the latter case, an adapter layer is used to map the FM compression/decompression tasks to the library of choice.

12.17.2 Typedef Documentation

12.17.2.1 FM_Compressor_State_t `typedef struct FM_Compressor_State FM_Compressor_State_t`
The state object for a compressor.

This is an abstract object at this level, the definition of this object depends on the selected implementation.
Definition at line 1 of file fm_compression.h.

12.17.2.2 FM_Decompressor_State_t `typedef struct FM_Decompressor_State FM_Decompressor_State_t`
The state object for a compressor.

This is an abstract object at this level, the definition of this object depends on the selected implementation.
Definition at line 1 of file fm_compression.h.

12.17.3 Function Documentation

12.17.3.1 FM_Compress_Impl() `CFE_Status_t FM_Compress_Impl (`
`FM_Compressor_State_t * State,`
`const char * SrcFileName,`
`const char * DstFileName)`

Abstract file compression routine.

Compresses the file specified by SrcFileName and stores the compressed data in the file specified by DstFileName

Parameters

<i>State</i>	the compressor state object
<i>SrcFileName</i>	the uncompressed input file
<i>DstFileName</i>	the compressed output file

Returns

Status code

Return values

<code>CFE_SUCCESS</code>	if decompression was successful
--------------------------	---------------------------------

Definition at line 66 of file fm_compression_fslib.c.

References CFE_STATUS_NOT_IMPLEMENTED.

12.17.3.2 FM_CompressionService_Init() `CFE_Status_t FM_CompressionService_Init (`
`void)`

Initialize the compression/decompression service.

Called during FM init to prepare service(s). This may be a no-op if compression/decompression services are not enabled.

Returns

Status code

Return values

<code>CFE_SUCCESS</code>	if successful
--------------------------	---------------

Definition at line 54 of file fm_compression_fslib.c.

References CFE_SUCCESS, FM_GlobalData_t::DecompressorStatePtr, FM_FSLIB_DecompressState, and FM_← GlobalData.

Referenced by FM_AppInit().

12.17.3.3 FM_Decompress_Impl() `CFE_Status_t FM_Decompress_Impl (`
 `FM_Decompressor_State_t * State,`
 `const char * SrcFileName,`
 `const char * DstFileName)`

Abstract file decompression routine.

Decompresses the file specified by SrcFileName and stores the uncompressed data in the file specified by DstFileName

Parameters

<i>State</i>	the decompressor state object
<i>SrcFileName</i>	the compressed input file
<i>DstFileName</i>	the uncompressed output file

Returns

Status code

Return values

<code>CFE_SUCCESS</code>	if decompression was successful
--------------------------	---------------------------------

Definition at line 61 of file fm_compression_fslib.c.

References CFE_STATUS_NOT_IMPLEMENTED, and FM_Decompressor_State::LibState.

Referenced by FM_ChildDecompressFileCmd().

12.18 apps/fm/fsw/src/fm_compression_fslib.c File Reference

```
#include <string.h>
#include <common_types.h>
#include <cfte_error.h>
#include <cfs_fs_lib.h>
#include "fm_app.h"
#include "fm_compression.h"
```

Data Structures

- struct [FM_Decompressor_State](#)

The state object for a compressor.

Functions

- [CFE_Status_t FM_CompressionService_Init \(void\)](#)
Initialize the compression/decompression service.
- [CFE_Status_t FM_Decompress_Impl \(FM_Decompressor_State_t *State, const char *SrcFileName, const char *DstFileName\)](#)

Abstract file decompression routine.

- `CFE_Status_t FM_Compress_Impl (FM_Compressor_State_t *State, const char *SrcFileName, const char *DstFileName)`

Abstract file compression routine.

Variables

- static `FM_Decompressor_State_t FM_FSLIB_DecompressState`

Instance of the decompressor state object.

12.18.1 Detailed Description

File Manager (FM) decompression facility via CFS "FS_Lib"

Calls into CFS FS Lib to decompress file(s) Compression is not implemented.

12.18.2 Function Documentation

12.18.2.1 `FM_Compress_Impl()` `CFE_Status_t FM_Compress_Impl (`

```
    FM_Compressor_State_t * State,
    const char * SrcFileName,
    const char * DstFileName )
```

Abstract file compression routine.

Compresses the file specified by SrcFileName and stores the compressed data in the file specified by DstFileName

Parameters

<code>State</code>	the compressor state object
<code>SrcFileName</code>	the uncompressed input file
<code>DstFileName</code>	the compressed output file

Returns

Status code

Return values

<code>CFE_SUCCESS</code>	if decompression was successful
--------------------------	---------------------------------

Definition at line 66 of file fm_compression_fslib.c.

12.18.2.2 `FM_CompressionService_Init()` `CFE_Status_t FM_CompressionService_Init (`

```
    void )
```

Initialize the compression/decompression service.

Called during FM init to prepare service(s). This may be a no-op if compression/decompression services are not enabled.

Returns

Status code

Return values

CFE_SUCCESS	if successful
-----------------------------	---------------

Definition at line 54 of file fm_compression_fslib.c.

12.18.2.3 FM-Decompress-Impl() [CFE_Status_t](#) FM-Decompress-Impl (
 [FM-Decompressor-State_t](#) * State,
 const char * SrcFileName,
 const char * DstFileName)

Abstract file decompression routine.

Decompresses the file specified by SrcFileName and stores the uncompressed data in the file specified by DstFileName

Parameters

<i>State</i>	the decompressor state object
<i>SrcFileName</i>	the compressed input file
<i>DstFileName</i>	the uncompressed output file

Returns

Status code

Return values

CFE_SUCCESS	if decompression was successful
-----------------------------	---------------------------------

Definition at line 61 of file fm_compression_fslib.c.

12.18.3 Variable Documentation

12.18.3.1 FM-FSLIB-DecompressState [FM-Decompressor-State_t](#) FM-FSLIB-DecompressState [static]

Instance of the decompressor state object.

A single instance is OK because this is only invoked from a single thread.

Definition at line 52 of file fm_compression_fslib.c.

Referenced by FM-CompressionService-Init().

12.19 apps/fm/fsw/src/fm_compression_none.c File Reference

```
#include <common_types.h>
#include <cfe_error.h>
#include "fm_compression.h"
```

Functions

- [CFE_Status_t FM-CompressionService-Init \(void\)](#)

Initialize the compression/decompression service.

- `CFE_Status_t FM_Decompress_Impl (FM_Decompressor_State_t *State, const char *SrcFileName, const char *DstFileName)`
Abstract file decompression routine.
- `CFE_Status_t FM_Compress_Impl (FM_Compressor_State_t *State, const char *SrcFileName, const char *DstFileName)`
Abstract file compression routine.

12.19.1 Detailed Description

File Manager (FM) non-implemented compression API

This returns "CFE_STATUS_NOT_IMPLEMENTED" for the internal compression API calls, and is used when compression features are not required.

12.19.2 Function Documentation

12.19.2.1 FM_Compress_Impl() `CFE_Status_t FM_Compress_Impl (`
 `FM_Compressor_State_t * State,`
 `const char * SrcFileName,`
 `const char * DstFileName)`

Abstract file compression routine.

Compresses the file specified by SrcFileName and stores the compressed data in the file specified by DstFileName

Parameters

<i>State</i>	the compressor state object
<i>SrcFileName</i>	the uncompressed input file
<i>DstFileName</i>	the compressed output file

Returns

Status code

Return values

<code>CFE_SUCCESS</code>	if decompression was successful
--------------------------	---------------------------------

Definition at line 43 of file fm_compression_none.c.

References CFE_STATUS_NOT_IMPLEMENTED.

12.19.2.2 FM_CompressionService_Init() `CFE_Status_t FM_CompressionService_Init (`
 `void)`

Initialize the compression/decompression service.

Called during FM init to prepare service(s). This may be a no-op if compression/decompression services are not enabled.

Returns

Status code

Return values

CFE_SUCCESS	if successful
-----------------------------	---------------

Definition at line 33 of file fm_compression_none.c.

References CFE_SUCCESS.

12.19.2.3 FM_Decompress_Impl() [CFE_Status_t](#) FM_Decompress_Impl (

```
    FM_Decompressor_State_t * State,
    const char * SrcFileName,
    const char * DstFileName )
```

Abstract file decompression routine.

Decompresses the file specified by SrcFileName and stores the uncompressed data in the file specified by DstFileName

Parameters

<i>State</i>	the decompressor state object
<i>SrcFileName</i>	the compressed input file
<i>DstFileName</i>	the uncompressed output file

Returns

Status code

Return values

CFE_SUCCESS	if decompression was successful
-----------------------------	---------------------------------

Definition at line 38 of file fm_compression_none.c.

References CFE_STATUS_NOT_IMPLEMENTED.

12.20 apps/fm/fsw/src/fm_compression_zlib.c File Reference

```
#include <common_types.h>
#include <cfe_error.h>
#include "fm_compression.h"
```

Functions

- [CFE_Status_t FM_CompressionService_Init](#) (void)
Initialize the compression/decompression service.
- [CFE_Status_t FM_Decompress_Impl](#) ([FM_Decompressor_State_t](#) *State, [const char](#) *SrcFileName, [const char](#) *DstFileName)
Abstract file decompression routine.
- [CFE_Status_t FM_Compress_Impl](#) ([FM_Compressor_State_t](#) *State, [const char](#) *SrcFileName, [const char](#) *DstFileName)
Abstract file compression routine.

12.20.1 Detailed Description

File Manager (FM) zLib compression API

This invokes inflate/deflate routines in an external zLib library. The library must be provided separately.

12.20.2 Function Documentation

12.20.2.1 FM_Compress_Impl() `CFE_Status_t` FM_Compress_Impl (

```
    FM_Compressor_State_t * State,  
    const char * SrcFileName,  
    const char * DstFileName )
```

Abstract file compression routine.

Compresses the file specified by SrcFileName and stores the compressed data in the file specified by DstFileName

Parameters

<i>State</i>	the compressor state object
<i>SrcFileName</i>	the uncompressed input file
<i>DstFileName</i>	the compressed output file

Returns

Status code

Return values

<code>CFE_SUCCESS</code>	if decompression was successful
--------------------------	---------------------------------

Definition at line 43 of file fm_compression_zlib.c.

References CFE_STATUS_NOT_IMPLEMENTED.

12.20.2.2 FM_CompressionService_Init() `CFE_Status_t` FM_CompressionService_Init (

```
    void )
```

Initialize the compression/decompression service.

Called during FM init to prepare service(s). This may be a no-op if compression/decompression services are not enabled.

Returns

Status code

Return values

<code>CFE_SUCCESS</code>	if successful
--------------------------	---------------

Definition at line 33 of file fm_compression_zlib.c.

References CFE_SUCCESS, FM_GlobalData_t::DecompressorStatePtr, FM_FSLIB_DecompressState, and FM_GlobalData.

Referenced by FM_AppInit().

12.20.2.3 FM_Decompress_Impl() `CFE_Status_t` FM_Decompress_Impl (
 `FM.Decompressor_State_t` * State,
 const char * SrcFileName,
 const char * DstFileName)

Abstract file decompression routine.

Decompresses the file specified by SrcFileName and stores the uncompressed data in the file specified by DstFileName

Parameters

<code>State</code>	the decompressor state object
<code>SrcFileName</code>	the compressed input file
<code>DstFileName</code>	the uncompressed output file

Returns

Status code

Return values

<code>CFE_SUCCESS</code>	if decompression was successful
--------------------------	---------------------------------

Definition at line 38 of file fm_compression_zlib.c.

References CFE_STATUS_NOT_IMPLEMENTED, and FM_Decompressor_State::LibState.

Referenced by FM_ChildDecompressFileCmd().

12.21 apps/fm/fsw/src/fm_dispatch.c File Reference

```
#include "fm_dispatch.h"
#include "fm_msg.h"
#include "fm_msgdefs.h"
#include "fm_msgids.h"
#include "fm_events.h"
#include "fm_cmds.h"
#include "fm_app.h"
#include "cfe.h"
```

Functions

- bool `FM_IsValidCmdPktLength` (const `CFE_MSG_Message_t` *MsgPtr, size_t ExpectedLength, `uint32` EventID, const char *CmdText)
Verify Command Packet Length Function.
- bool `FM_NoopVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
- bool `FM_ResetCountersVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
- bool `FM_CopyFileVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
- bool `FM_MoveFileVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
- bool `FM_RenameFileVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
- bool `FM_DeleteFileVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
- bool `FM_DeleteAllFilesVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
- bool `FM_DecompressFileVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
- bool `FM_ConcatFilesVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
- bool `FM_GetFileInfoVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)

- bool `FM_GetOpenFilesVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
 - bool `FM_CreateDirectoryVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
 - bool `FM_DeleteDirectoryVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
 - bool `FM_GetDirListFileVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
 - bool `FM_GetDirListPktVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
 - bool `FM_MonitorFilesystemSpaceVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
 - bool `FM_SetTableStateVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
 - bool `FM_SetPermissionsVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
 - void `FM_SendHkVerifyDispatch` (const `CFE_SB_Buffer_t` *BufPtr)
 - void `FM_ProcessPkt` (const `CFE_SB_Buffer_t` *BufPtr)
- Process Input Command Packets.*
- void `FM_ProcessCmd` (const `CFE_SB_Buffer_t` *BufPtr)
- Process FM Ground Commands.*

12.21.1 Detailed Description

Core Flight System (CFS) File Manager (FM) Application

The File Manager (FM) Application provides onboard file system management services by processing commands for copying and moving files, decompressing files, concatenating files, creating directories, deleting files and directories, and providing file and directory status. When the File Manager application receives a housekeeping request (scheduled within the scheduler application), FM reports its housekeeping status values via telemetry messaging.

12.21.2 Function Documentation

12.21.2.1 `FM_ConcatFilesVerifyDispatch()` bool `FM_ConcatFilesVerifyDispatch` (

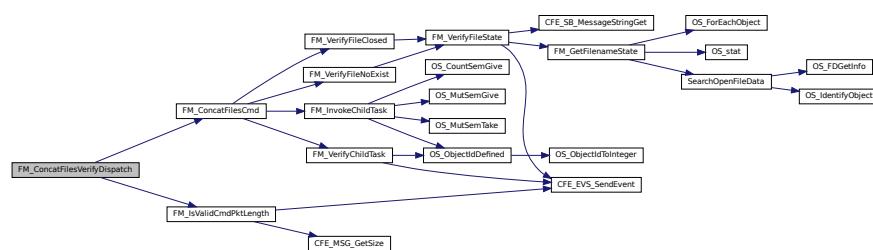
```
    const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 212 of file fm_dispatch.c.

References `FM_CONCAT_PKT_ERR_EID`, `FM_ConcatFilesCmd()`, `FM_IsValidCmdPktLength()`, and `CFE_SB_Msg::Msg`.

Referenced by `FM_ProcessCmd()`.

Here is the call graph for this function:



12.21.2.2 `FM_CopyFileVerifyDispatch()` bool `FM_CopyFileVerifyDispatch` (

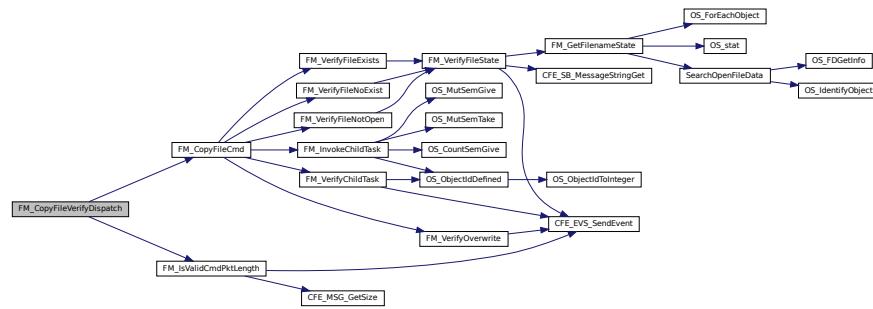
```
    const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 109 of file fm_dispatch.c.

References `FM_COPY_PKT_ERR_EID`, `FM_CopyFileCmd()`, `FM_IsValidCmdPktLength()`, and `CFE_SB_Msg::Msg`.

Referenced by `FM_ProcessCmd()`.

Here is the call graph for this function:



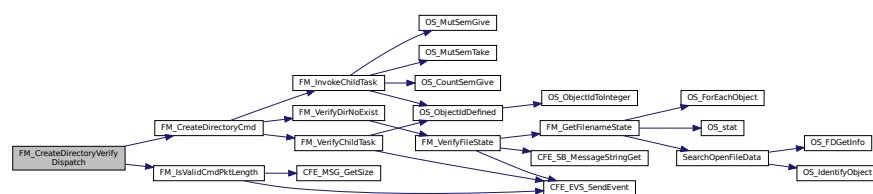
12.21.2.3 FM_CreateDirectoryVerifyDispatch() `bool FM_CreateDirectoryVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)`

Definition at line 265 of file fm_dispatch.c.

References FM_CREATE_DIR_PKT_ERR_EID, FM_CreateDirectoryCmd(), FM_IsValidCmdPktLength(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



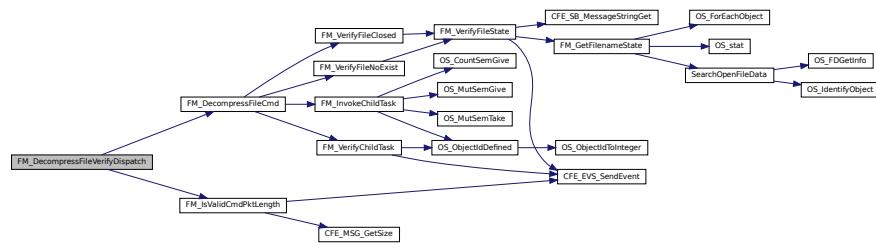
12.21.2.4 FM_DecompressFileVerifyDispatch() `bool FM_DecompressFileVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)`

Definition at line 195 of file fm_dispatch.c.

References FM_DECOM_PKT_ERR_EID, FM_DecompressFileCmd(), FM_IsValidCmdPktLength(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



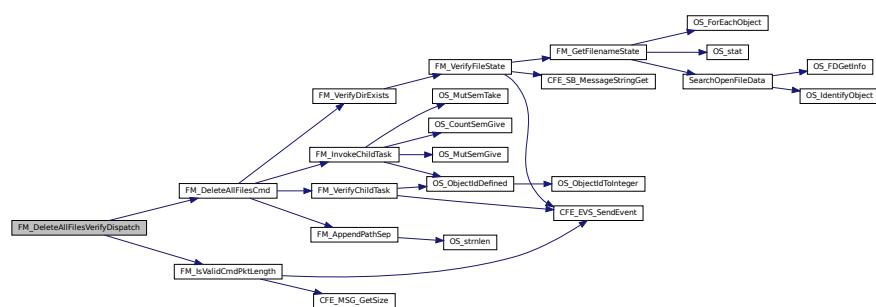
12.21.2.5 FM_DeleteAllFilesVerifyDispatch() bool FM_DeleteAllFilesVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)

Definition at line 177 of file fm_dispatch.c.

References FM_DELETE_ALL_PKT_ERR_EID, FM_DeleteAllFilesCmd(), FM_IsValidCmdPktLength(), and CFE_SB->_Msg::Msg.

Referenced by FM ProcessCmd().

Here is the call graph for this function:



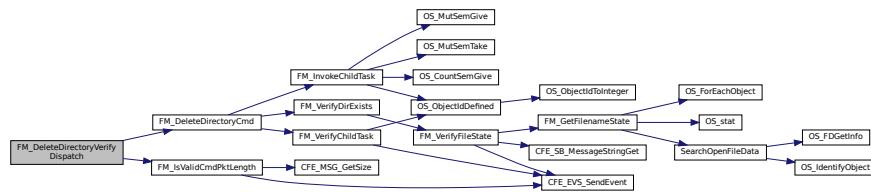
```
12.21.2.6 FM_DeleteDirectoryVerifyDispatch() bool FM_DeleteDirectoryVerifyDispatch (
```

Definition at line 283 of file fm_dispatch.c.

References FM_DELETE_DIR_PKT_ERR_EID, FM_DeleteDirectoryCmd(), FM_IsValidCmdPktLength(), and CFE_SBM::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



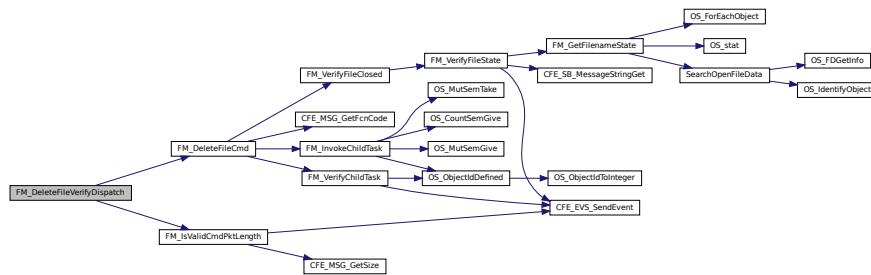
12.21.2.7 FM_DeleteFileVerifyDispatch() bool FM_DeleteFileVerifyDispatch (

```
const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 160 of file fm_dispatch.c.

References FM_DELETE_PKT_ERR_EID, FM_DeleteFileCmd(), FM_IsValidCmdPktLength(), and CFE_SB_Msg::Msg. Referenced by FM_ProcessCmd().

Here is the call graph for this function:



12.21.2.8 FM_GetDirListFileVerifyDispatch() `bool FM_GetDirListFileVerifyDispatch (`

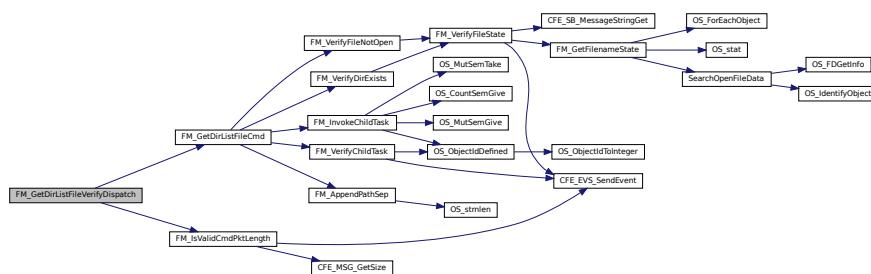
```
const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 301 of file fm_dispatch.c.

References FM_GET_DIR_FILE_PKT_ERR_EID, FM_GetDirListFileCmd(), FM_IsValidCmdPktLength(), and CFE_SBMMsg::Msg.

Referenced by FM ProcessCmd().

Here is the call graph for this function:



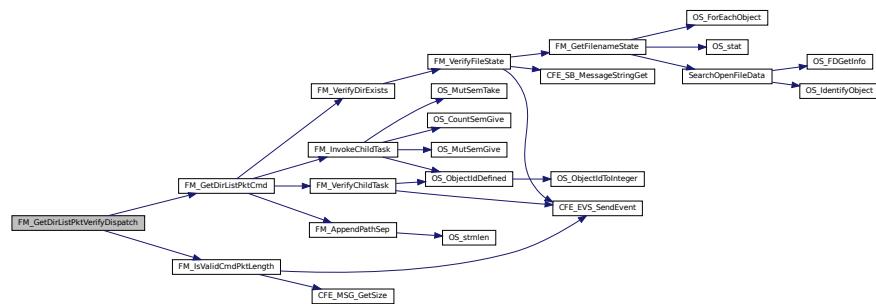
12.21.2.9 FM_GetDirListPktVerifyDispatch() bool FM_GetDirListPktVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)

Definition at line 319 of file fm_dispatch.c.

References FM_GET_DIR_PKT_PKT_ERR_EID, FM_GetDirListPktCmd(), FM_IsValidCmdPktLength(), and CFE_SBM_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



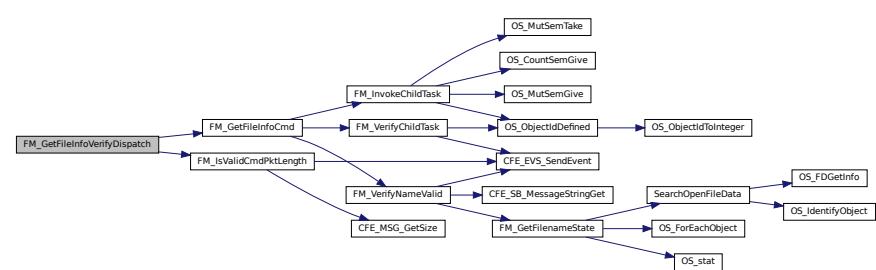
```
12.21.2.10 FM_GetFileInfoVerifyDispatch() bool FM_GetFileInfoVerifyDispatch (
```

Definition at line 229 of file fm_dispatch.c.

References FM_GET_FILE_INFO_PKT_ERR_EID, FM_GetFileInfoCmd(), FM_IsValidCmdPktLength(), and CFE_SB->Msg::Msg.

Referenced by FM ProcessCmd().

Here is the call graph for this function:



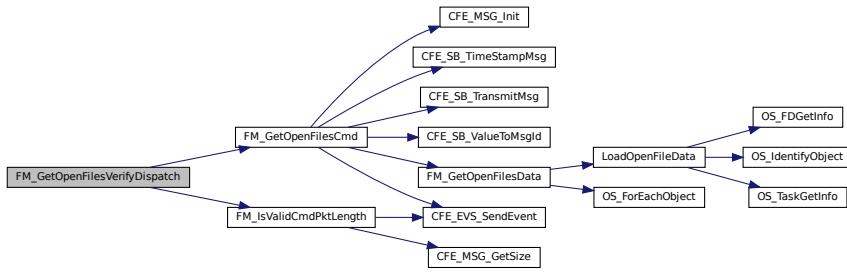
12.21.2.11 FM_GetOpenFilesVerifyDispatch() bool FM_GetOpenFilesVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)

Definition at line 247 of file fm_dispatch.c.

References FM_GET_OPEN_FILES_PKT_ERR_EID, FM_GetOpenFilesCmd(), FM_IsValidCmdPktLength(), and CEE_SR_Msg::Msg.

Referenced by EM_ProcessCmd()

Here is the call graph for this function:



12.21.2.12 FM_IsValidCmdPktLength() bool FM_IsValidCmdPktLength (

```
const CFE_MSG_Message_t * MsgPtr,  
size_t ExpectedLength,  
uint32 EventID,  
const char * CmdText )
```

Verify Command Packet Length Function.

Description

This function is invoked from each of the command handlers to verify the length of the command packet.

Assumptions, External Events, and Notes:

Parameters

in	<i>MsgPtr</i>	Pointer to Message
in	<i>ExpectedLength</i>	Expected packet length (command specific)
in	<i>EventID</i>	Error event ID (command specific)
in	<i>CmdText</i>	Error event text (command specific)

Returns

Boolean valid packet length response

Return values

<i>true</i>	Packet length valid
<i>false</i>	Packet length invalid

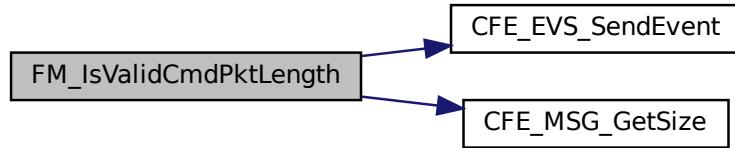
Definition at line 49 of file fm_dispatch.c.

References CFE EVS EventType ERROR, CFE EVS SendEvent(), and CFE MSG GetSize().

Referenced by FM_ConcatFilesVerifyDispatch(), FM_CopyFileVerifyDispatch(), FM_CreateDirectoryVerifyDispatch(), FM-DecompressFileVerifyDispatch(), FM_DeleteAllFilesVerifyDispatch(), FM_DeleteDirectoryVerifyDispatch(), FM- \leftarrow

_DeleteFileVerifyDispatch(), FM_GetDirListFileVerifyDispatch(), FM_GetDirListPktVerifyDispatch(), FM_GetFileInfoVerifyDispatch(), FM_GetOpenFilesVerifyDispatch(), FM_MonitorFilesystemSpaceVerifyDispatch(), FM_MoveFileVerifyDispatch(), FM_NoopVerifyDispatch(), FM_RenameFileVerifyDispatch(), FM_ResetCountersVerifyDispatch(), FM_SendHkVerifyDispatch(), FM_SetPermissionsVerifyDispatch(), and FM_SetTableStateVerifyDispatch().

Here is the call graph for this function:



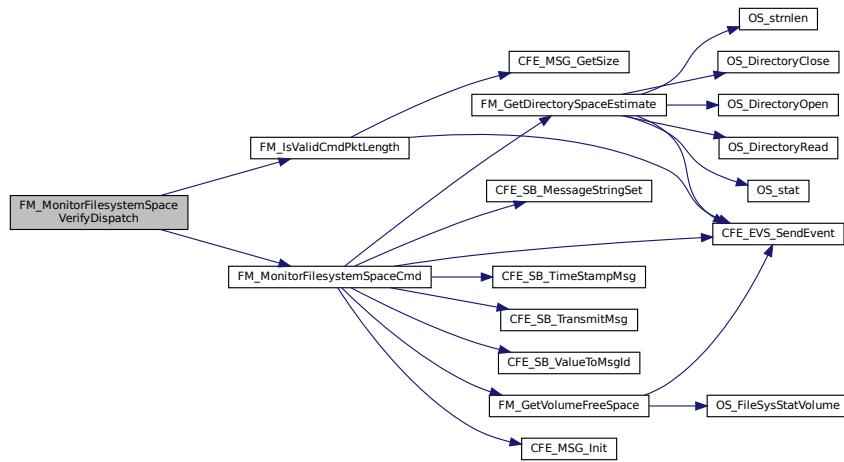
12.21.2.13 FM_MonitorFilesystemSpaceVerifyDispatch() bool FM_MonitorFilesystemSpaceVerifyDispatch()

Definition at line 337 of file fm_dispatch.c.

References FM_GET_FREE_SPACE_PKT_ERR_EID, FM_IsValidCmdPktLength(), FM_MonitorFilesystemSpaceCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



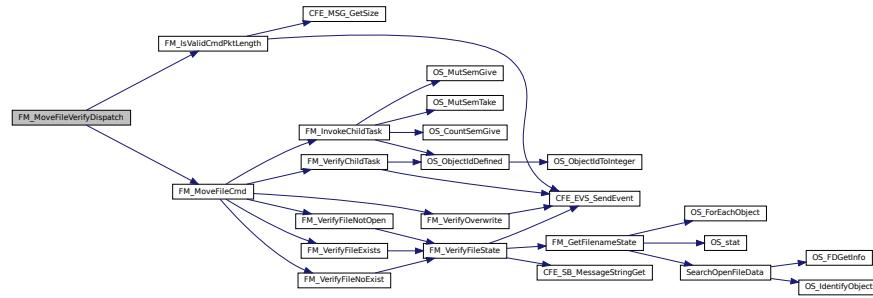
12.21.2.14 FM_MoveFileVerifyDispatch() bool FM_MoveFileVerifyDispatch (

```
const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 126 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_MOVE_PKT_ERR_EID, FM_MoveFileCmd(), and CFE_SB_Msg::Msg. Referenced by FM_ProcessCmd().

Here is the call graph for this function:

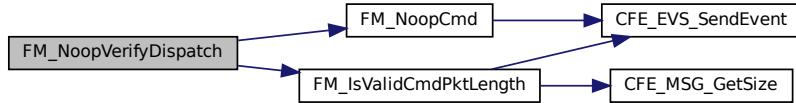


12.21.2.15 FM_NoopVerifyDispatch() bool FM_NoopVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)

Definition at line 75 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_NOOP_PKT_ERR_EID, FM_NoopCmd(), and CFE_SB_Msg::Msg. Referenced by FM_ProcessCmd().

Here is the call graph for this function:



```
12.21.2.16 FM_ProcessCmd() void FM_ProcessCmd (           const CFE_SB_Buffer_t * BufPtr )
```

Process FM Ground Commands.

Description

Branch to the command specific handlers for FM ground commands.

Assumptions, External Events, and Notes: None

Parameters

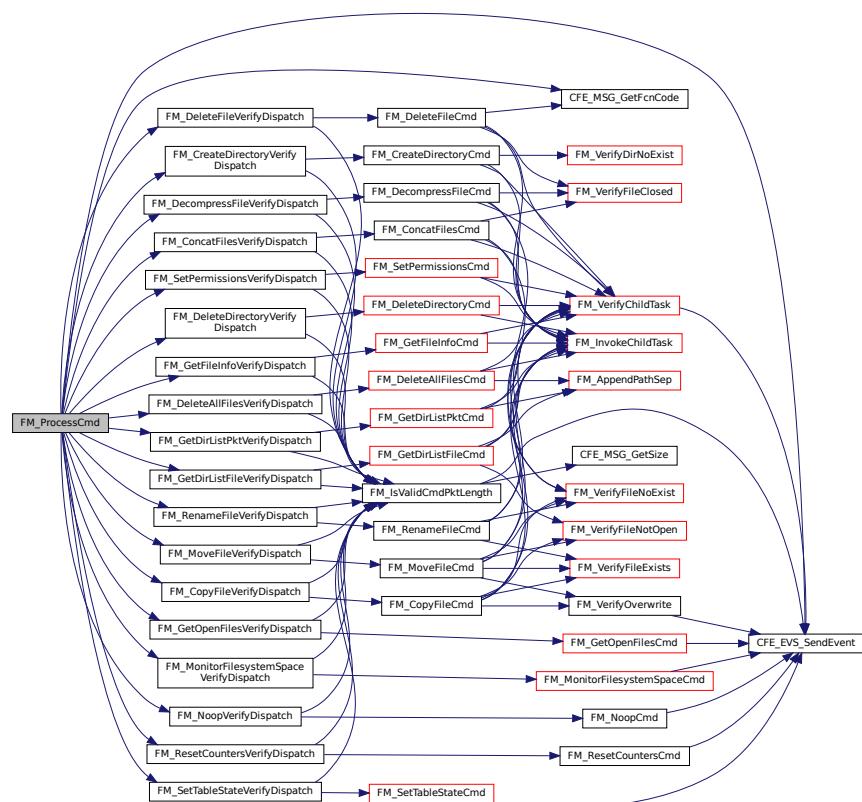
in *BufPtr* Pointer to Software Bus message buffer.

Definition at line 438 of file fm_dispatch.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_MSG_GetFcnCode(), FM_GlobalData_t::CommandCounter, FM_GlobalData_t::CommandErrCounter, FM_CC_ERR_EID, FM_CONCAT_FILES_CC, FM_ConcatFilesVerifyDispatch(), FM_COPY_FILE_CC, FM_CopyFileVerifyDispatch(), FM_CREATE_DIRECTORY_CC, FM_CreateDirectoryVerifyDispatch(), FM_DECOMPRESS_FILE_CC, FM_DecompressFileVerifyDispatch(), FM_DELETE_ALL_FILES_CC, FM_DELETE_DIRECTORY_CC, FM_DELETE_FILE_CC, FM_DeleteAllFilesVerifyDispatch(), FM_DeleteDirectoryVerifyDispatch(), FM_DeleteFileVerifyDispatch(), FM_GET_DIR_LIST_FILE_CC, FM_GET_DIR_LIST_PKT_CC, FM_GET_FILE_INFO_CC, FM_GET_OPEN_FILES_CC, FM_GetDirListFileVerifyDispatch(), FM_GetDirListPktVerifyDispatch(), FM_GetFileInfoVerifyDispatch(), FM_GetOpenFilesVerifyDispatch(), FM_GlobalData, FM_MONITOR_FILESYSTEM_SPACE_CC, FM_MonitorFilesystemSpaceVerifyDispatch(), FM_MOVE_FILE_CC, FM_MoveFileVerifyDispatch(), FM_NOOP_CC, FM_NoopVerifyDispatch(), FM_RENAME_FILE_CC, FM_RenameFileVerifyDispatch(), FM_RESET_COUNTERS_CC, FM_ResetCountersVerifyDispatch(), FM_SET_PERMISSIONS_CC, FM_SET_TABLE_STATE_CC, FM_SetPermissionsVerifyDispatch(), FM_SetTableStateVerifyDispatch(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessPkt().

Here is the call graph for this function:



12.21.2.17 FM_ProcessPkt()

```
void FM_ProcessPkt (
    const CFE_SB_Buffer_t * BufPtr )
```

Process Input Command Packets.

Description

Branch to appropriate input packet handler: HK request or FM commands.

Assumptions, External Events, and Notes: None

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus message buffer.
----	---------------	---

See also

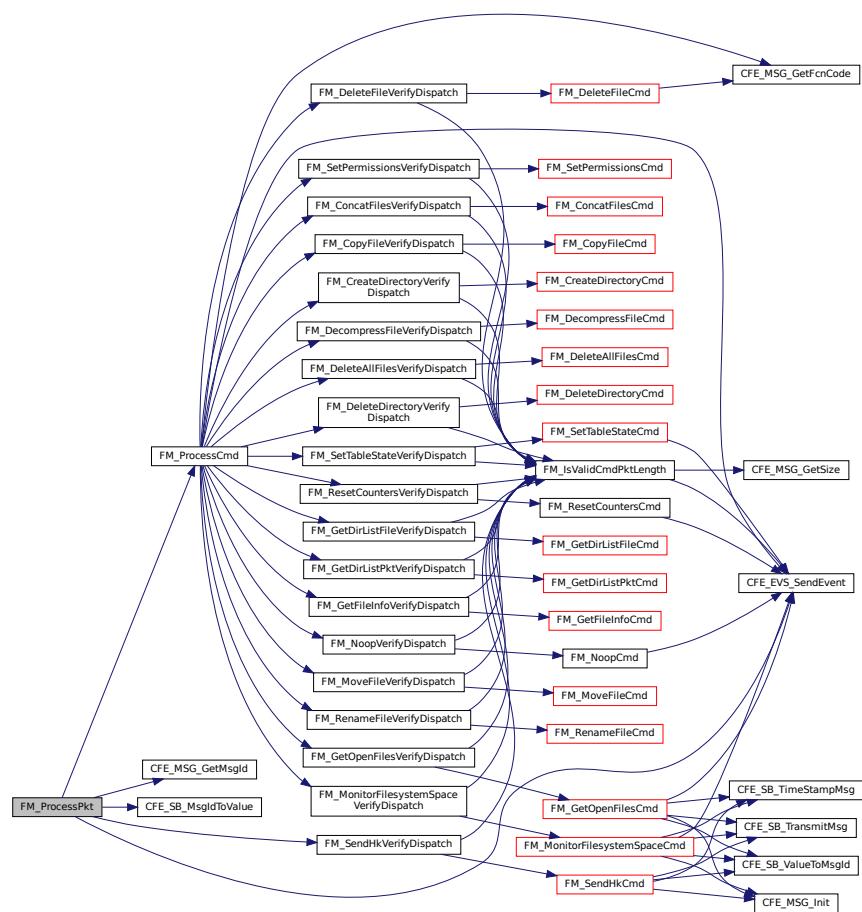
[FM_SendHkCmd](#), [FM_ProcessCmd](#)

Definition at line 407 of file fm_dispatch.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_MSG_GetMsgId(), CFE_SB_INVALID_MSG_ID, CFE_SB_MsgIdToValue(), FM_CMD_MID, FM_MID_ERR_EID, FM_ProcessCmd(), FM_SEND_HK_MID, FM_SendHkVerifyDispatch(), and CFE_SB_Msg::Msg.

Referenced by FM_AppMain().

Here is the call graph for this function:



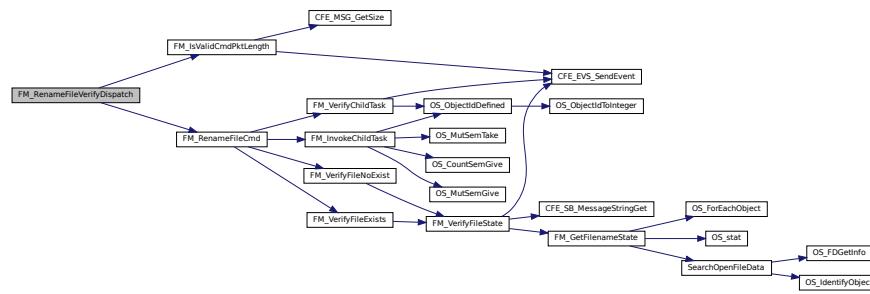
```
12.21.2.18 FM_RenameFileVerifyDispatch() bool FM_RenameFileVerifyDispatch (
    const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 143 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_RENAME_PKT_ERR_EID, FM_RenameFileCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



```
12.21.2.19 FM_ResetCountersVerifyDispatch() bool FM_ResetCountersVerifyDispatch (
    const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 92 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_RESET_PKT_ERR_EID, FM_ResetCountersCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:

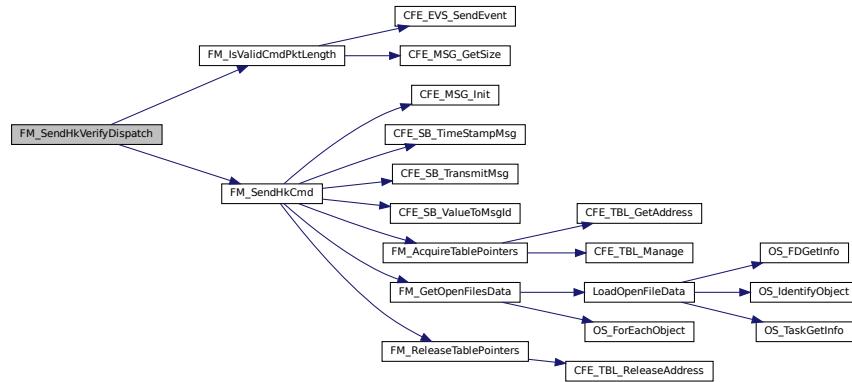


```
12.21.2.20 FM_SendHkVerifyDispatch() void FM_SendHkVerifyDispatch (
    const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 390 of file fm_dispatch.c.

References FM_HKREQ_LEN_ERR_EID, FM_IsValidCmdPktLength(), FM_SendHkCmd(), and CFE_SB_Msg::Msg. Referenced by FM_ProcessPkt().

Here is the call graph for this function:



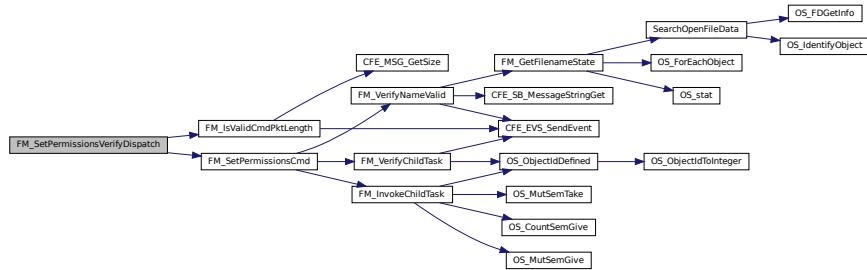
```
12.21.2.21 FM_SetPermissionsVerifyDispatch() bool FM_SetPermissionsVerifyDispatch ( const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 373 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_SET_PERM_ERR_EID, FM_SetPermissionsCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



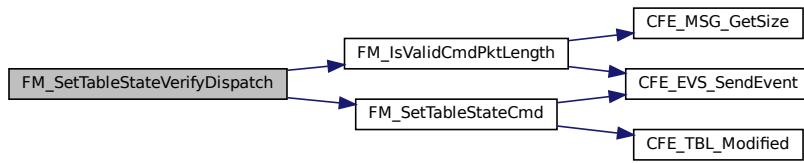
12.21.2.22 FM_SetTableStateVerifyDispatch() bool FM_SetTableStateVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)

Definition at line 355 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_SET_TABLE_STATE_PKT_ERR_EID, FM_SetTableStateCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



12.22 apps/fm/fsw/src/fm_dispatch.h File Reference

```
#include "cfe.h"
#include "fm_msg.h"
```

Functions

- void [FM_ProcessPkt](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
Process Input Command Packets.
- void [FM_ProcessCmd](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
Process FM Ground Commands.
- bool [FM_IsValidCmdPktLength](#) (const [CFE_MSG_Message_t](#) *MsgPtr, size_t ExpectedLength, [uint32](#) EventID, const char *CmdText)
Verify Command Packet Length Function.
- bool [FM_NoopVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_ResetCountersVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_CopyFileVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_MoveFileVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_RenameFileVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_DeleteFileVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_DeleteAllFilesVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_DecompressFileVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_ConcatFilesVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_GetFileInfoVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_GetOpenFilesVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_CreateDirectoryVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_DeleteDirectoryVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_GetDirListFileVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_GetDirListPktVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_MonitorFilesystemSpaceVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_SetTableStateVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- bool [FM_SetPermissionsVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)
- void [FM_SendHkVerifyDispatch](#) (const [CFE_SB_Buffer_t](#) *BufPtr)

12.22.1 Detailed Description

Unit specification for the CFS File Manager Application.

12.22.2 Function Documentation

12.22.2.1 FM_ConcatFilesVerifyDispatch() bool FM_ConcatFilesVerifyDispatch (

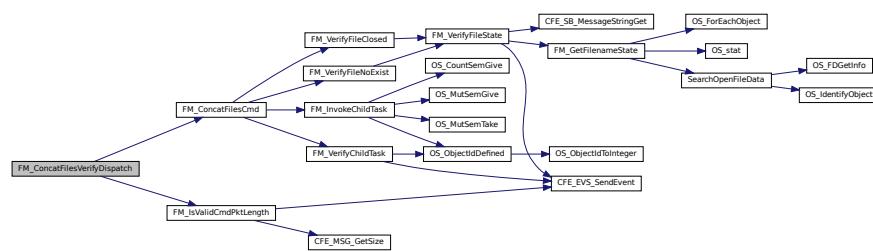
```
const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 212 of file fm_dispatch.c.

References FM_CONCAT_PKT_ERR_EID, FM_ConcatFilesCmd(), FM_IsValidCmdPktLength(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



12.22.2.2 FM_CopyFileVerifyDispatch() bool FM_CopyFileVerifyDispatch (

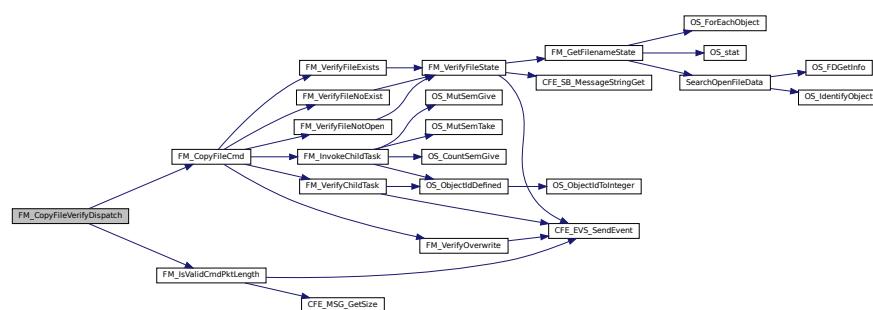
```
const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 109 of file fm_dispatch.c.

References FM COPY PKT ERR EID, FM CopyFileCmd(), FM IsValidCmdPktLength(), and CFE SB Msq::Msq.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



12.22.2.3 FM_CreateDirectoryVerifyDispatch() bool FM_CreateDirectoryVerifyDispatch (

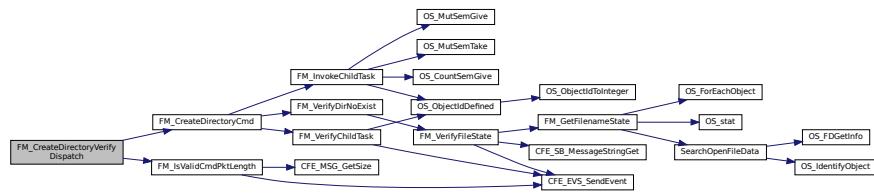
```
const CEE_SB_Buffer_t *BufPtr )
```

Definition at line 265 of file fm_dispatch.c.

References FM_CREATE_DIR_PKT_ERR_EID, FM_CreateDirectoryCmd(), FM_IsValidCmdPktLength(), and CFE_SBM_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



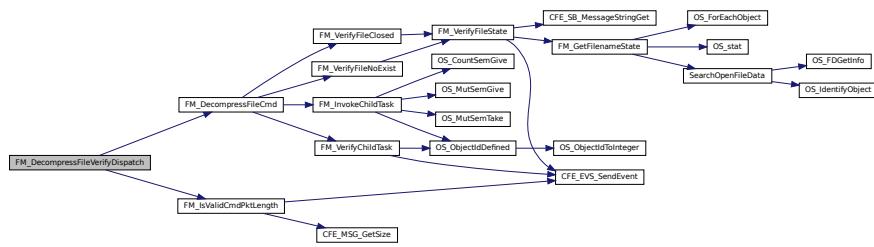
12.22.2.4 FM-DecompressFileVerifyDispatch() bool FM-DecompressFileVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)

Definition at line 195 of file fm_dispatch.c.

References FM_DECOM_PKT_ERR_EID, FM_DecompressFileCmd(), FM_IsValidCmdPktLength(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



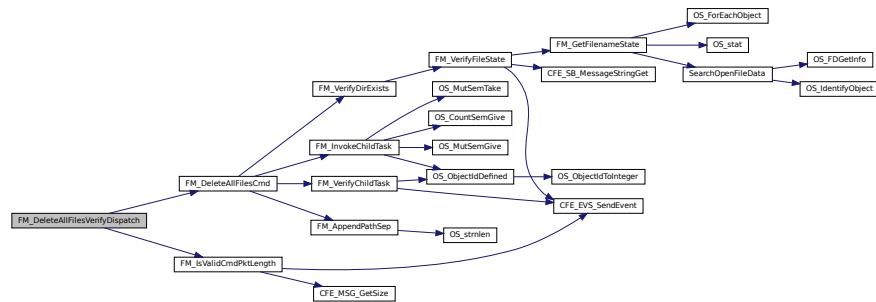
12.22.2.5 FM_DeleteAllFilesVerifyDispatch() bool FM_DeleteAllFilesVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)

Definition at line 177 of file fm_dispatch.c.

References FM_DELETE_ALL_PKT_ERR_EID, FM_DeleteAllFilesCmd(), FM_IsValidCmdPktLength(), and CFE_SB->_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



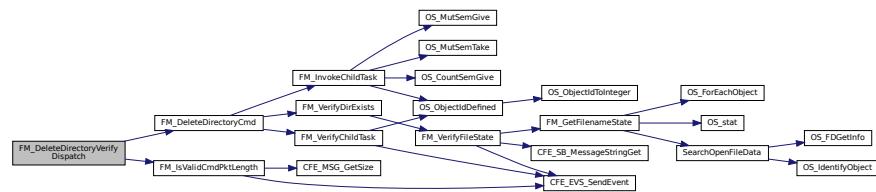
12.22.2.6 FM_DeleteDirectoryVerifyDispatch() bool FM_DeleteDirectoryVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)

Definition at line 283 of file fm_dispatch.c.

References FM_DELETE_DIR_PKT_ERR_EID, FM_DeleteDirectoryCmd(), FM_IsValidCmdPktLength(), and CFE_SBM::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:

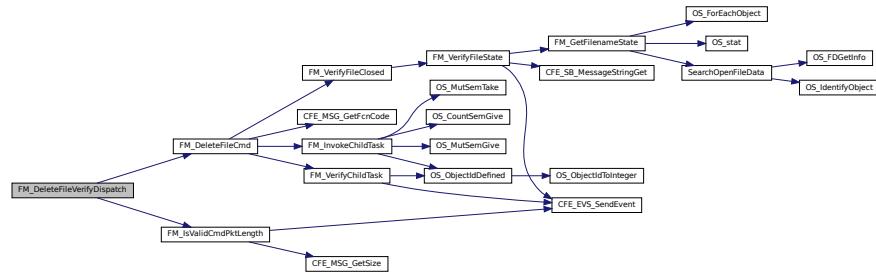


```
12.22.2.7 FM_DeleteFileVerifyDispatch() bool FM_DeleteFileVerifyDispatch (
```

Definition at line 160 of file fm_dispatch.c.

References FM_DELETE_PKT_ERR_EID, FM_DeleteFileCmd(), FM_IsValidCmdPktLength(), and CFE_SB_Msg::Msg. Referenced by FM_ProcessCmd().

Here is the call graph for this function:



12.22.2.8 FM_GetDirListFileVerifyDispatch() bool FM_GetDirListFileVerifyDispatch (

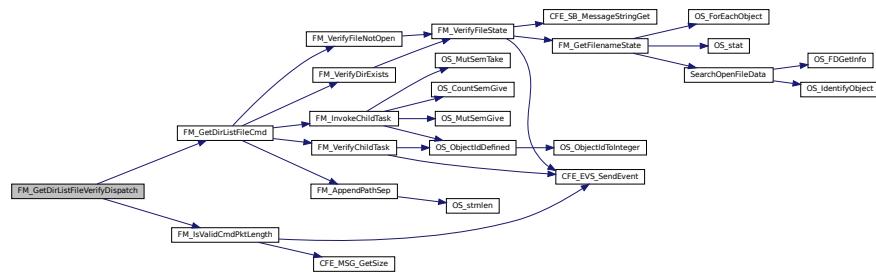
```
const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 301 of file fm_dispatch.c.

References FM_GET_DIR_FILE_PKT_ERR_EID, FM_GetDirListFileCmd(), FM_IsValidCmdPktLength(), and CFE_ShortMsg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



12.22.2.9 FM_GetDirListPktVerifyDispatch() bool FM_GetDirListPktVerifyDispatch (

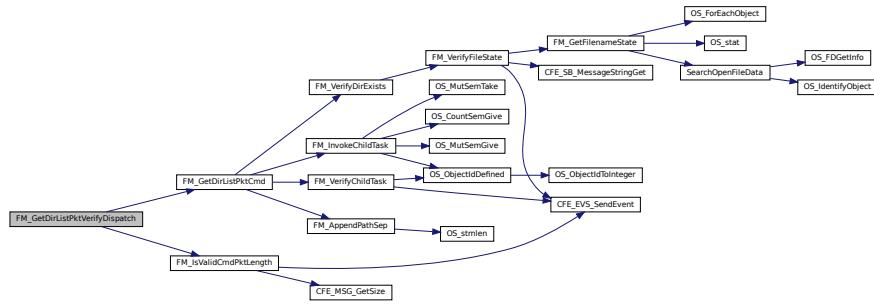
```
const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 319 of file fm_dispatch.c.

References FM_GET_DIR_PKT_PKT_ERR_EID, FM_GetDirListPktCmd(), FM_IsValidCmdPktLength(), and CFE_SBM::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



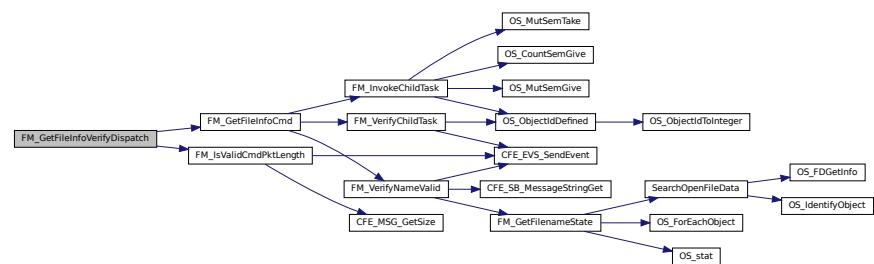
12.22.2.10 FM_GetFileInfoVerifyDispatch() `bool FM_GetFileInfoVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)`

Definition at line 229 of file fm_dispatch.c.

References FM_GET_FILE_INFO_PKT_ERR_EID, FM_GetFileInfoCmd(), FM_IsValidCmdPktLength(), and CFE_SB->_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



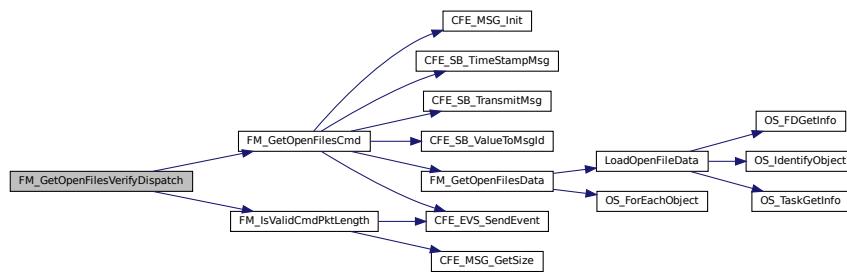
12.22.2.11 FM_GetOpenFilesVerifyDispatch() `bool FM_GetOpenFilesVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)`

Definition at line 247 of file fm_dispatch.c.

References FM_GET_OPEN_FILES_PKT_ERR_EID, FM_GetOpenFilesCmd(), FM_IsValidCmdPktLength(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



12.22.2.12 FM_IsValidCmdPktLength()

```

bool FM_IsValidCmdPktLength (
    const CFE_MSG_Message_t * MsgPtr,
    size_t ExpectedLength,
    uint32 EventID,
    const char * CmdText )

```

Verify Command Packet Length Function.

Description

This function is invoked from each of the command handlers to verify the length of the command packet.

Assumptions, External Events, and Notes:

Parameters

in	<i>MsgPtr</i>	Pointer to Message
in	<i>ExpectedLength</i>	Expected packet length (command specific)
in	<i>EventID</i>	Error event ID (command specific)
in	<i>CmdText</i>	Error event text (command specific)

Returns

Boolean valid packet length response

Return values

<i>true</i>	Packet length valid
<i>false</i>	Packet length invalid

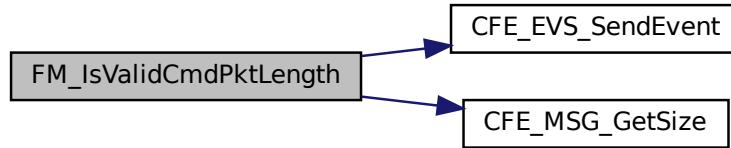
Definition at line 49 of file fm_dispatch.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), and CFE_MSG_GetSize().

Referenced by FM_ConcatFilesVerifyDispatch(), FM_CopyFileVerifyDispatch(), FM_CreateDirectoryVerifyDispatch(), FM_DecompressFileVerifyDispatch(), FM_DeleteAllFilesVerifyDispatch(), FM_DeleteDirectoryVerifyDispatch(), FM↔

_DeleteFileVerifyDispatch(), FM_GetDirListFileVerifyDispatch(), FM_GetDirListPktVerifyDispatch(), FM_GetFileInfoVerifyDispatch(), FM_GetOpenFilesVerifyDispatch(), FM_MonitorFilesystemSpaceVerifyDispatch(), FM_MoveFileVerifyDispatch(), FM_NoopVerifyDispatch(), FM_RenameFileVerifyDispatch(), FM_ResetCountersVerifyDispatch(), FM_SendHkVerifyDispatch(), FM_SetPermissionsVerifyDispatch(), and FM_SetTableStateVerifyDispatch().

Here is the call graph for this function:



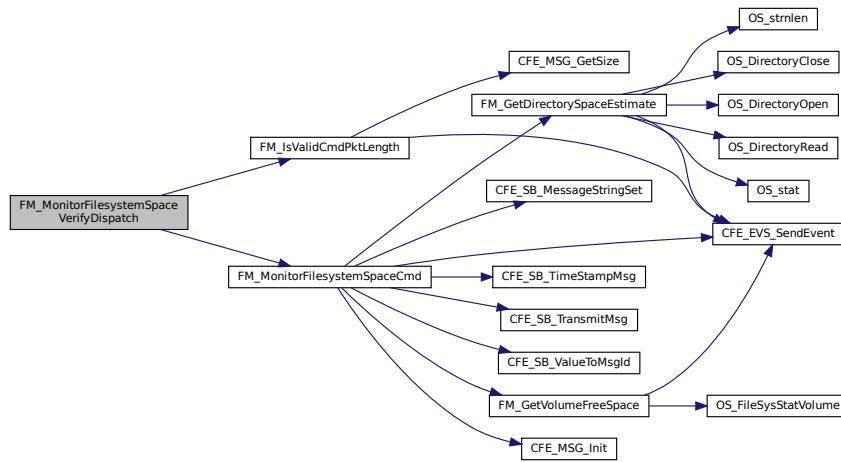
12.22.2.13 FM_MonitorFilesystemSpaceVerifyDispatch() `bool FM_MonitorFilesystemSpaceVerifyDispatch(`

Definition at line 337 of file fm_dispatch.c.

References FM_GET_FREE_SPACE_PKT_ERR_EID, FM_IsValidCmdPktLength(), FM_MonitorFilesystemSpaceCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



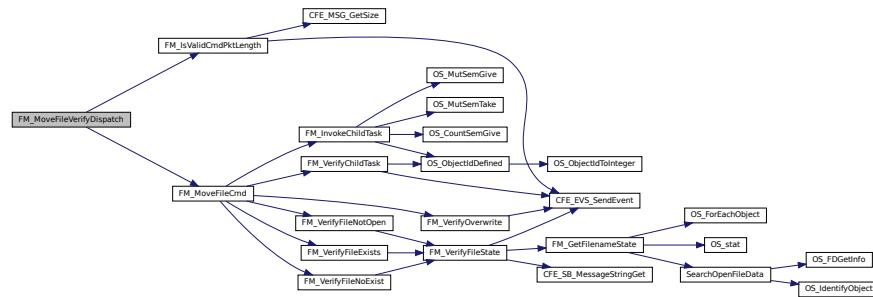
12.22.2.14 FM_MoveFileVerifyDispatch() `bool FM_MoveFileVerifyDispatch(`

`const CFE_SB_Buffer_t * BufPtr)`

Definition at line 126 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_MOVE_PKT_ERR_EID, FM_MoveFileCmd(), and CFE_SB_Msg::Msg. Referenced by FM_ProcessCmd().

Here is the call graph for this function:

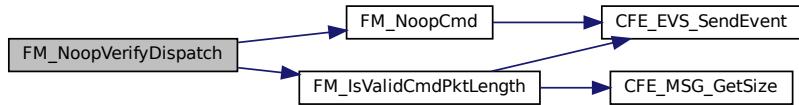


```
12.22.2.15 FM_NoopVerifyDispatch() bool FM_NoopVerifyDispatch ( const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 75 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_NOOP_PKT_ERR_EID, FM_NoopCmd(), and CFE_SB_Msg::Msg. Referenced by FM_ProcessCmd().

Here is the call graph for this function:



```
12.22.2.16 FM_ProcessCmd() void FM_ProcessCmd ( const CFE_SB_Buffer_t * BufPtr )
```

Process FM Ground Commands.

Description

Branch to the command specific handlers for FM ground commands.

Assumptions, External Events, and Notes: None

Parameters

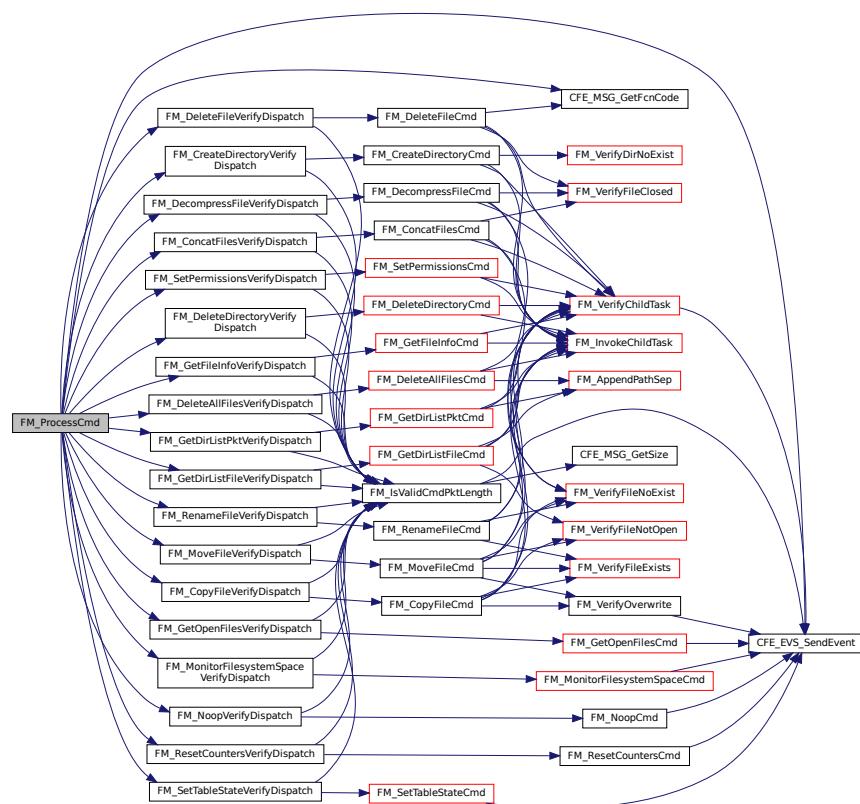
in *BufPtr* Pointer to Software Bus message buffer.

Definition at line 438 of file fm_dispatch.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_MSG_GetFcnCode(), FM_GlobalData_t::CommandCounter, FM_GlobalData_t::CommandErrCounter, FM_CC_ERR_EID, FM_CONCAT_FILES_CC, FM_ConcatFilesVerifyDispatch(), FM_COPY_FILE_CC, FM_CopyFileVerifyDispatch(), FM_CREATE_DIRECTORY_CC, FM_CreateDirectoryVerifyDispatch(), FM_DECOMPRESS_FILE_CC, FM_DecompressFileVerifyDispatch(), FM_DELETE_ALL_FILES_CC, FM_DELETE_DIRECTORY_CC, FM_DELETE_FILE_CC, FM_DeleteAllFilesVerifyDispatch(), FM_DeleteDirectoryVerifyDispatch(), FM_DeleteFileVerifyDispatch(), FM_GET_DIR_LIST_FILE_CC, FM_GET_DIR_LIST_PKT_CC, FM_GET_FILE_INFO_CC, FM_GET_OPEN_FILES_CC, FM_GetDirListFileVerifyDispatch(), FM_GetDirListPktVerifyDispatch(), FM_GetFileInfoVerifyDispatch(), FM_GetOpenFilesVerifyDispatch(), FM_GlobalData, FM_MONITOR_FILESYSTEM_SPACE_CC, FM_MonitorFilesystemSpaceVerifyDispatch(), FM_MOVE_FILE_CC, FM_MoveFileVerifyDispatch(), FM_NOOP_CC, FM_NoopVerifyDispatch(), FM_RENAME_FILE_CC, FM_RenameFileVerifyDispatch(), FM_RESET_COUNTERS_CC, FM_ResetCountersVerifyDispatch(), FM_SET_PERMISSIONS_CC, FM_SET_TABLE_STATE_CC, FM_SetPermissionsVerifyDispatch(), FM_SetTableStateVerifyDispatch(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessPkt().

Here is the call graph for this function:



12.22.2.17 FM_ProcessPkt() void FM_ProcessPkt (

const CFE_SB_Buffer_t * BufPtr)

Process Input Command Packets.

Description

Branch to appropriate input packet handler: HK request or FM commands.

Assumptions, External Events, and Notes: None

Parameters

in	<i>BufPtr</i>	Pointer to Software Bus message buffer.
----	---------------	---

See also

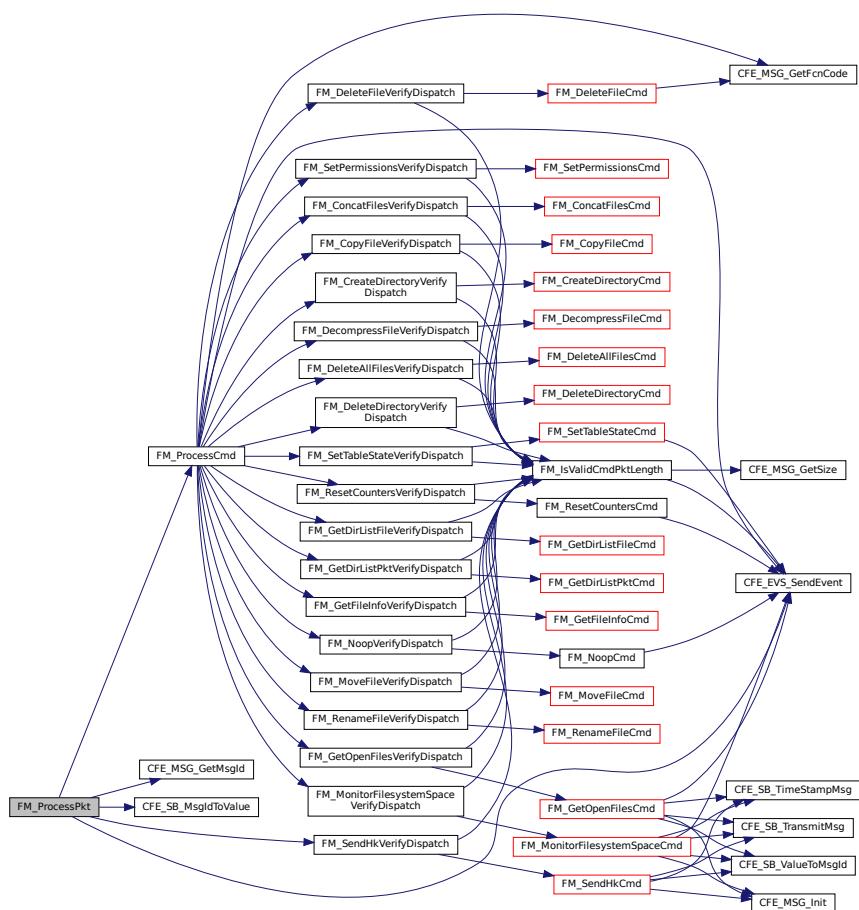
[FM_SendHkCmd](#), [FM_ProcessCmd](#)

Definition at line 407 of file fm_dispatch.c.

References CFE_EVS_EventType_ERROR, CFE_EVS_SendEvent(), CFE_MSG_GetMsgId(), CFE_SB_INVALIDMSG_ID, CFE_SB_MsgIdToValue(), FM_CMD_MID, FM_MID_ERR_EID, FM_ProcessCmd(), FM_SEND_HK_MID, FM_SendHkVerifyDispatch(), and CFE_SB_Msg::Msg.

Referenced by FM_AppMain().

Here is the call graph for this function:



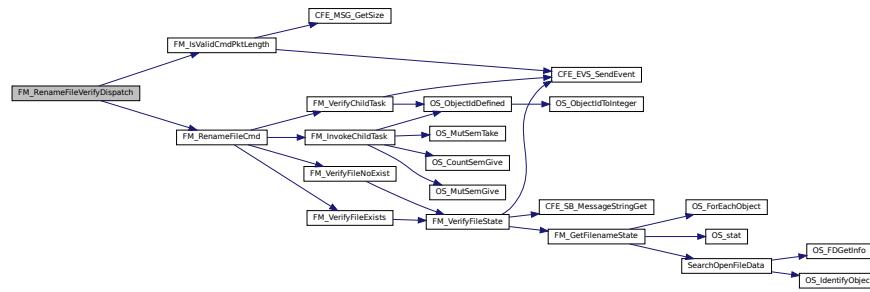
12.22.2.18 FM_RenameFileVerifyDispatch() `bool FM_RenameFileVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)`

Definition at line 143 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_RENAME_PKT_ERR_EID, FM_RenameFileCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



12.22.2.19 FM_ResetCountersVerifyDispatch() `bool FM_ResetCountersVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)`

Definition at line 92 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_RESET_PKT_ERR_EID, FM_ResetCountersCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



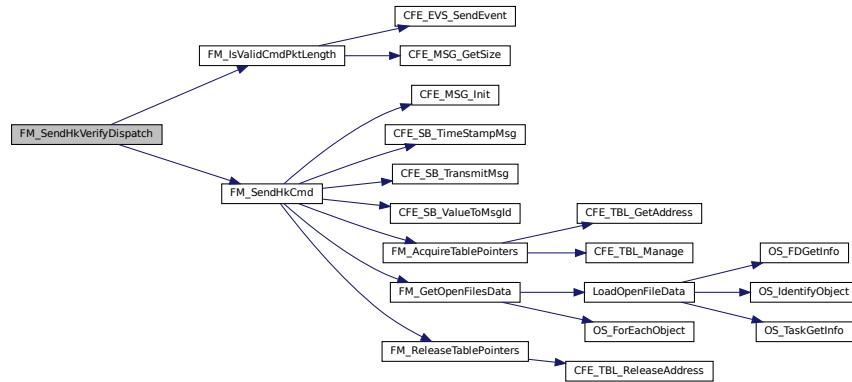
12.22.2.20 FM_SendHkVerifyDispatch() `void FM_SendHkVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)`

Definition at line 390 of file fm_dispatch.c.

References FM_HKREQ_LEN_ERR_EID, FM_IsValidCmdPktLength(), FM_SendHkCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessPkt().

Here is the call graph for this function:



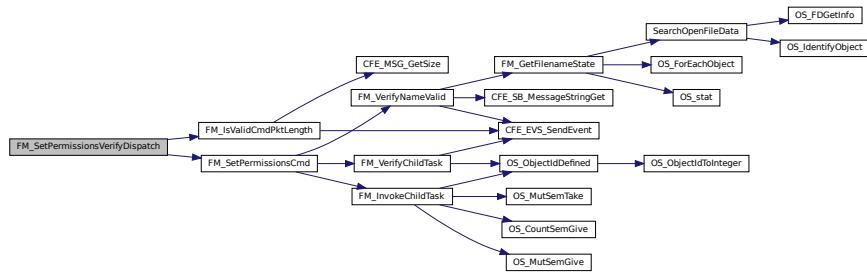
```
12.22.2.21 FM_SetPermissionsVerifyDispatch() bool FM_SetPermissionsVerifyDispatch ( const CFE_SB_Buffer_t * BufPtr )
```

Definition at line 373 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_SET_PERM_ERR_EID, FM_SetPermissionsCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



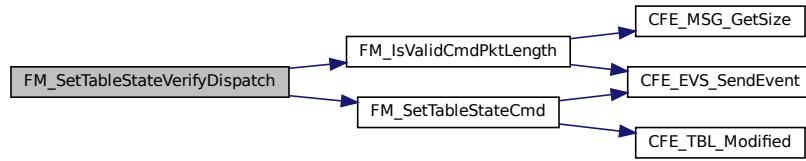
12.22.2.22 FM_SetTableStateVerifyDispatch() bool FM_SetTableStateVerifyDispatch (const CFE_SB_Buffer_t * BufPtr)

Definition at line 355 of file fm_dispatch.c.

References FM_IsValidCmdPktLength(), FM_SET_TABLE_STATE_PKT_ERR_EID, FM_SetTableStateCmd(), and CFE_SB_Msg::Msg.

Referenced by FM_ProcessCmd().

Here is the call graph for this function:



12.23 apps/fm/fsw/src/fm_tbl.c File Reference

```
#include "fm_platform_cfg.h"
#include "fm_app.h"
#include "fm_tbl.h"
#include "fm_events.h"
#include <string.h>
```

Functions

- [CFE_Status_t FM_TableInit \(void\)](#)
Table Initialization Function.
- [CFE_Status_t FM_ValidateTable \(FM_MonitorTable_t *TablePtr\)](#)
Table Verification Function.
- [void FM_AcquireTablePointers \(void\)](#)
Acquire Table Data Pointer Function.
- [void FM_ReleaseTablePointers \(void\)](#)
Release Table Data Pointer Function.

12.23.1 Detailed Description

File Manager (FM) Application Table Definitions

Provides functions for the initialization, validation, and management of the FM File System Free Space Table

12.23.2 Function Documentation

12.23.2.1 FM_AcquireTablePointers() `void FM_AcquireTablePointers (`

`void)`

Acquire Table Data Pointer Function.

Description

This function is invoked to acquire a pointer to the FM file system free space table data. The pointer is maintained in the FM global data structure. Note that the table data pointer will be set to NULL if the table has not yet been successfully loaded.

Assumptions, External Events, and Notes:

See also

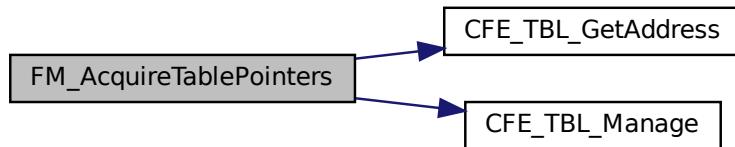
[FM_GlobalData_t](#)

Definition at line 192 of file fm_tbl.c.

References CFE_TBL_ERR_NEVER_LOADED, CFE_TBL_GetAddress(), CFE_TBL_Manage(), FM_GlobalData, FM_GlobalData_t::MonitorTableHandle, and FM_GlobalData_t::MonitorTablePtr.

Referenced by FM_AppMain(), FM_SendHkCmd(), and FM_TableInit().

Here is the call graph for this function:



12.23.2.2 FM_ReleaseTablePointers() void FM_ReleaseTablePointers (void)

Release Table Data Pointer Function.

Description

This function is invoked to release the pointer to the FM file system free space table data. The pointer is maintained in the FM global data structure. The table data pointer must be periodically released to allow CFE Table Services an opportunity to load or dump the table without risk of interfering with users of the table data.

Assumptions, External Events, and Notes:

See also

[FM_GlobalData_t](#)

Definition at line 215 of file fm_tbl.c.

References CFE_TBL_ReleaseAddress(), FM_GlobalData, FM_GlobalData_t::MonitorTableHandle, and FM_GlobalData_t::MonitorTablePtr.

Referenced by FM_AppMain(), and FM_SendHkCmd().

Here is the call graph for this function:



12.23.2.3 FM_TableInit() `CFE_Status_t` `FM_TableInit (`
 `void)`

Table Initialization Function.

Description

This function is invoked during FM application startup initialization to create and initialize the FM file system free space table. The purpose for the table is to define the list of file systems for which free space must be reported.

Assumptions, External Events, and Notes:

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

<code>CFE_SUCCESS</code>	Successful execution.
--------------------------	-----------------------

See also

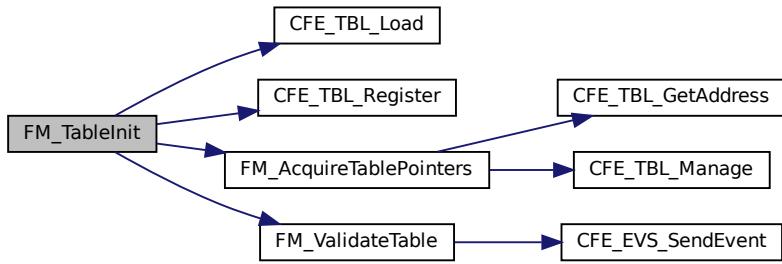
[/FM_AppInit](#)

Definition at line 41 of file fm_tbl.c.

References `CFE_SUCCESS`, `CFE_TBL_Load()`, `CFE_TBL_OPT_LOAD_DUMP`, `CFE_TBL_OPT_SNGL_BUFFER`, `CFE_TBL_Register()`, `CFE_TBL_SRC_FILE`, `FM_AcquireTablePointers()`, `FM_GlobalData`, `FM_TABLE_CFE_NAME`, `FM_TABLE_DEF_NAME`, `FM_ValidateTable()`, `FM_GlobalData_t::MonitorTableHandle`, and `FM_GlobalData_t::MonitorTablePtr`.

Referenced by `FM_AppInit()`.

Here is the call graph for this function:



12.23.2.4 FM_ValidateTable() `CFE_Status_t FM_ValidateTable (`
 `FM_MonitorTable_t * TablePtr)`

Table Verification Function.

Description

This function is called from the CFE Table Services as part of the initial table load, and later in response to a Table Validate command. The function verifies that the table data is acceptable to populate the FM file system free space table.

Assumptions, External Events, and Notes:

Parameters

in	<i>TablePtr</i>	- Pointer to table data for verification.
----	-----------------	---

Returns

Validation status

Return values

<code>CFE_SUCCESS</code>	Successful execution. Operation was performed successfully
<code>FM_TABLE_VALIDATION_ERR</code>	Table Data Validation Error Code.

See also

`/FM_AppInit`

Definition at line 71 of file fm_tbl.c.

References `CFE_EVS_EventType_ERROR`, `CFE_EVS_EventType_INFORMATION`, `CFE_EVS_SendEvent()`, `CFE_SUCCESS`, `FM_MonitorTable_t::Entries`, `FM_MonitorTableEntry_Type_DIRECTORY_ESTIMATE`, `FM_MonitorTableEntry_Type_UNUSED`, `FM_MonitorTableEntry_Type_VOLUME_FREE_SPACE`, `FM_TABLE_ENTRY_COUNT`, `FM_`

TABLE_VALIDATION_ERR, FM_TABLE_VERIFY_BAD_STATE_ERR_EID, FM_TABLE_VERIFY_EID, FM_TABLE_VERIFY_EMPTY_ERR_EID, FM_TABLE_VERIFY_NULL_PTR_ERR_EID, FM_TABLE_VERIFY_TOOLONG_ERR_EID, FM_MonitorTableEntry_t::Name, OS_MAX_PATH_LEN, and FM_MonitorTableEntry_t::Type.

Referenced by FM_TableInit().

Here is the call graph for this function:



12.24 apps/fm/fsw/src/fm_tbl.h File Reference

```
#include "cfe.h"
#include "fm_msg.h"
```

Functions

- [CFE_Status_t FM_TableInit \(void\)](#)
Table Initialization Function.
- [CFE_Status_t FM_ValidateTable \(FM_MonitorTable_t *TablePtr\)](#)
Table Verification Function.
- [void FM_AcquireTablePointers \(void\)](#)
Acquire Table Data Pointer Function.
- [void FM_ReleaseTablePointers \(void\)](#)
Release Table Data Pointer Function.

12.24.1 Detailed Description

Unit specification for the CFS File Manager table structures.

12.24.2 Function Documentation

12.24.2.1 FM_AcquireTablePointers() void FM_AcquireTablePointers (
 void)

Acquire Table Data Pointer Function.

Description

This function is invoked to acquire a pointer to the FM file system free space table data. The pointer is maintained in the FM global data structure. Note that the table data pointer will be set to NULL if the table has not yet been successfully loaded.

Assumptions, External Events, and Notes:

See also

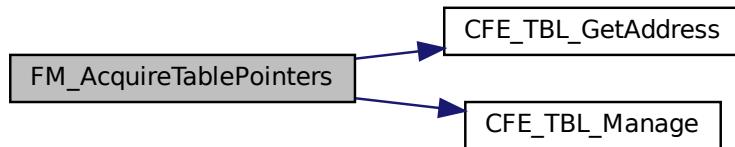
[FM_GlobalData_t](#)

Definition at line 192 of file fm_tbl.c.

References CFE_TBL_ERR_NEVER_LOADED, CFE_TBL_GetAddress(), CFE_TBL_Manage(), FM_GlobalData, FM_GlobalData_t::MonitorTableHandle, and FM_GlobalData_t::MonitorTablePtr.

Referenced by FM_AppMain(), FM_SendHkCmd(), and FM_TableInit().

Here is the call graph for this function:



12.24.2.2 FM_ReleaseTablePointers() void FM_ReleaseTablePointers (void)

Release Table Data Pointer Function.

Description

This function is invoked to release the pointer to the FM file system free space table data. The pointer is maintained in the FM global data structure. The table data pointer must be periodically released to allow CFE Table Services an opportunity to load or dump the table without risk of interfering with users of the table data.

Assumptions, External Events, and Notes:

See also

[FM_GlobalData_t](#)

Definition at line 215 of file fm_tbl.c.

References CFE_TBL_ReleaseAddress(), FM_GlobalData, FM_GlobalData_t::MonitorTableHandle, and FM_GlobalData_t::MonitorTablePtr.

Referenced by FM_AppMain(), and FM_SendHkCmd().

Here is the call graph for this function:



12.24.2.3 FM_TableInit() [CFE_Status_t](#) FM_TableInit (
 void)

Table Initialization Function.

Description

This function is invoked during FM application startup initialization to create and initialize the FM file system free space table. The purpose for the table is to define the list of file systems for which free space must be reported.

Assumptions, External Events, and Notes:

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
-----------------------------	-----------------------

See also

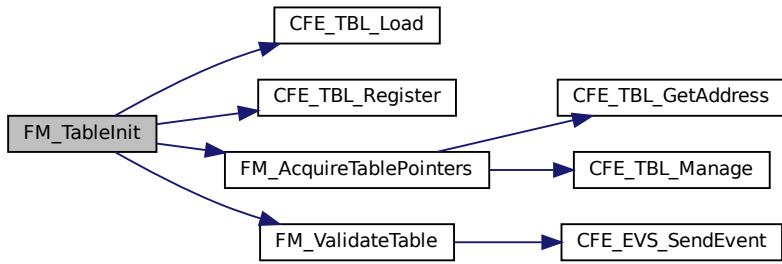
[/FM_AppInit](#)

Definition at line 41 of file fm_tbl.c.

References [CFE_SUCCESS](#), [CFE_TBL_Load\(\)](#), [CFE_TBL_OPT_LOAD_DUMP](#), [CFE_TBL_OPT_SNGL_BUFFER](#), [CFE_TBL_Register\(\)](#), [CFE_TBL_SRC_FILE](#), [FM_AcquireTablePointers\(\)](#), [FM_GlobalData](#), [FM_TABLE_CFE_NAME](#), [FM_TABLE_DEF_NAME](#), [FM_ValidateTable\(\)](#), [FM_GlobalData_t::MonitorTableHandle](#), and [FM_GlobalData_t::MonitorTablePtr](#).

Referenced by [FM_AppInit\(\)](#).

Here is the call graph for this function:



12.24.2.4 FM_ValidateTable() `CFE_Status_t FM_ValidateTable (`
 `FM_MonitorTable_t * TablePtr)`

Table Verification Function.

Description

This function is called from the CFE Table Services as part of the initial table load, and later in response to a Table Validate command. The function verifies that the table data is acceptable to populate the FM file system free space table.

Assumptions, External Events, and Notes:

Parameters

in	<i>TablePtr</i>	- Pointer to table data for verification.
----	-----------------	---

Returns

Validation status

Return values

<code>CFE_SUCCESS</code>	Successful execution. Operation was performed successfully
<code>FM_TABLE_VALIDATION_ERR</code>	Table Data Validation Error Code.

See also

`/FM_AppInit`

Definition at line 71 of file `fm_tbl.c`.

References `CFE_EVS_EventType_ERROR`, `CFE_EVS_EventType_INFORMATION`, `CFE_EVS_SendEvent()`, `CFE_SUCCESS`, `FM_MonitorTable_t::Entries`, `FM_MonitorTableEntry_Type_DIRECTORY_ESTIMATE`, `FM_MonitorTableEntry_Type_UNUSED`, `FM_MonitorTableEntry_Type_VOLUME_FREE_SPACE`, `FM_TABLE_ENTRY_COUNT`, `FM_`

TABLE_VALIDATION_ERR, FM_TABLE_VERIFY_BAD_STATE_ERR_EID, FM_TABLE_VERIFY_EID, FM_TABLE_VERIFY_EMPTY_ERR_EID, FM_TABLE_VERIFY_NULL_PTR_ERR_EID, FM_TABLE_VERIFY_TOOLONG_ERR_EID, FM_MonitorTableEntry_t::Name, OS_MAX_PATH_LEN, and FM_MonitorTableEntry_t::Type.

Referenced by FM_TableInit().

Here is the call graph for this function:



12.25 apps/fm/fsw/src/fm_verify.h File Reference

```
#include "cfe.h"
#include "fm_platform_cfg.h"
```

12.25.1 Detailed Description

Verification of cFS File Manager (FM) configuration parameters

12.26 apps/fm/fsw/src/fm_version.h File Reference

Macros

- #define FM_MAJOR_VERSION 2
Major version number.
- #define FM_MINOR_VERSION 6
Minor version number.
- #define FM_REVISION 99
Revision number.

12.26.1 Detailed Description

Specification for the CFS FM application version label definitions

12.27 apps/fm/fsw/tables/fm_monitor.c File Reference

```
#include "cfe.h"
#include "cfe_tbl_filedef.h"
#include "fm_platform_cfg.h"
#include "fm_msg.h"
```

Variables

- CFE_TBL_FileDef_t CFE_TBL_FileDef
- FM_MonitorTable_t FM_MonitorTable

12.27.1 Detailed Description

File Manager (FM) File System Free Space Table Data
Default table contents

12.27.2 Variable Documentation

12.27.2.1 CFE_TBL_FileDef CFE_TBL_FileDef_t CFE_TBL_FileDef

Initial value:

```
= {"FM_MonitorTable", FM_APP_NAME ".", FM_TABLE_CFE_NAME, FM_TABLE_DEF_DESC,  
    FM_TABLE_FILENAME, sizeof(FM_MonitorTable_t)}
```

Definition at line 40 of file fm_monitor.c.

12.27.2.2 FM_MonitorTable FM_MonitorTable_t FM_MonitorTable

Definition at line 56 of file fm_monitor.c.

12.28 buildosal_public_apiincosconfig.h File Reference

Macros

- #define OSAL_CONFIG_INCLUDE_DYNAMIC_LOADER
 - Configuration file Operating System Abstraction Layer.*
- #define OSAL_CONFIG_INCLUDE_NETWORK
- #define OSAL_CONFIG_INCLUDE_STATIC_LOADER
- #define OSAL_CONFIG_CONSOLE_ASYNC
- #define OS_MAX_TASKS 64
 - The maximum number of tasks to support.*
- #define OS_MAX_QUEUES 64
 - The maximum number of queues to support.*
- #define OS_MAX_COUNT_SEMAPHORES 20
 - The maximum number of counting semaphores to support.*
- #define OS_MAX_BIN_SEMAPHORES 20
 - The maximum number of binary semaphores to support.*
- #define OS_MAX_MUTEXES 20
 - The maximum number of mutexes to support.*
- #define OS_MAX_CONDVARS 4
 - The maximum number of condition variables to support.*
- #define OS_MAX_MODULES 20
 - The maximum number of modules to support.*
- #define OS_MAX_TIMEBASES 5
 - The maximum number of timebases to support.*
- #define OS_MAX_TIMERS 10
 - The maximum number of timer callbacks to support.*
- #define OS_MAX_NUM_OPEN_FILES 50
 - The maximum number of concurrently open files to support.*
- #define OS_MAX_NUM_OPEN_DIRS 4
 - The maximum number of concurrently open directories to support.*
- #define OS_MAX_FILE_SYSTEMS 14

- `#define OS_MAX_SYM_LEN 64`
The maximum length of symbols.
- `#define OS_MAX_FILE_NAME 20`
The maximum length of OSAL file names.
- `#define OS_MAX_PATH_LEN 64`
The maximum length of OSAL path names.
- `#define OS_MAX_API_NAME 20`
The maximum length of OSAL resource names.
- `#define OS_SOCKADDR_MAX_LEN 28`
The maximum size of the socket address structure.
- `#define OS_BUFFER_SIZE 172`
The maximum size of output produced by a single `OS_printf()`
- `#define OS_BUFFER_MSG_DEPTH 100`
The maximum number of `OS_printf()` output strings to buffer.
- `#define OS_UTILITYTASK_PRIORITY 245`
Priority level of the background utility task.
- `#define OS_UTILITYTASK_STACK_SIZE 2048`
The stack size of the background utility task.
- `#define OS_MAX_CMD_LEN 1000`
The maximum size of a shell command.
- `#define OS_QUEUE_MAX_DEPTH 50`
The maximum depth of OSAL queues.
- `#define OS_SHELL_CMD_INPUT_FILE_NAME ""`
The name of the temporary file used to store shell commands.
- `#define OS_PRINTF_CONSOLE_NAME ""`
The name of the primary console device.
- `#define OS_ADD_TASK_FLAGS 0`
Flags added to all tasks on creation.
- `#define OS_MAX_CONSOLES 1`
The maximum number of console devices to support.
- `#define OS_MODULE_FILE_EXTENSION ".so"`
The system-specific file extension used on loadable module files.
- `#define OS_FS_DEV_NAME_LEN 32`
- `#define OS_FS_PHYS_NAME_LEN 64`
- `#define OS_FS_VOL_NAME_LEN 32`

12.28.1 Macro Definition Documentation

12.28.1.1 OS_ADD_TASK_FLAGS `#define OS_ADD_TASK_FLAGS 0`

Flags added to all tasks on creation.

Added to the task flags on creation

Supports adding floating point support for all tasks when the OS requires it

Definition at line 254 of file osconfig.h.

12.28.1.2 OS_BUFFER_MSG_DEPTH `#define OS_BUFFER_MSG_DEPTH 100`
The maximum number of [OS_Printf\(\)](#) output strings to buffer.
Based on the OSAL_CONFIG_PRINTF_BUFFER_DEPTH configuration option
Definition at line 187 of file osconfig.h.

12.28.1.3 OS_BUFFER_SIZE `#define OS_BUFFER_SIZE 172`
The maximum size of output produced by a single [OS_Printf\(\)](#)
Based on the OSAL_CONFIG_PRINTF_BUFFER_SIZE configuration option
Definition at line 180 of file osconfig.h.

12.28.1.4 OS_FS_DEV_NAME_LEN `#define OS_FS_DEV_NAME_LEN 32`
Device name length
Definition at line 281 of file osconfig.h.

12.28.1.5 OS_FS_PHYS_NAME_LEN `#define OS_FS_PHYS_NAME_LEN 64`
Physical drive name length
Definition at line 282 of file osconfig.h.

12.28.1.6 OS_FS_VOL_NAME_LEN `#define OS_FS_VOL_NAME_LEN 32`
Volume name length
Definition at line 283 of file osconfig.h.

12.28.1.7 OS_MAX_API_NAME `#define OS_MAX_API_NAME 20`
The maximum length of OSAL resource names.
Based on the OSAL_CONFIG_MAX_API_NAME configuration option

Note

This value must include a terminating NUL character

Definition at line 163 of file osconfig.h.

12.28.1.8 OS_MAX_BIN_SEMAPHORES `#define OS_MAX_BIN_SEMAPHORES 20`
The maximum number of binary semaphores to support.
Based on the OSAL_CONFIG_MAX_BIN_SEMAPHORES configuration option
Definition at line 65 of file osconfig.h.

12.28.1.9 OS_MAX_CMD_LEN `#define OS_MAX_CMD_LEN 1000`
The maximum size of a shell command.
This limit is only applicable if shell support is enabled.
Based on the OSAL_CONFIG_MAX_CMD_LEN configuration option

Note

This value must include a terminating NUL character

Definition at line 218 of file osconfig.h.

12.28.1.10 OS_MAX_CONDVARSS #define OS_MAX_CONDVARSS 4

The maximum number of condition variables to support.

Based on the OSAL_CONFIG_MAX_CONDVARSS configuration option

Definition at line 79 of file osconfig.h.

12.28.1.11 OS_MAX_CONSOLES #define OS_MAX_CONSOLES 1

The maximum number of console devices to support.

Fixed value based on current OSAL implementation, not user configurable.

Definition at line 269 of file osconfig.h.

12.28.1.12 OS_MAX_COUNT_SEMAPHORES #define OS_MAX_COUNT_SEMAPHORES 20

The maximum number of counting semaphores to support.

Based on the OSAL_CONFIG_MAX_COUNT_SEMAPHORES configuration option

Definition at line 58 of file osconfig.h.

12.28.1.13 OS_MAX_FILE_NAME #define OS_MAX_FILE_NAME 20

The maximum length of OSAL file names.

This limit applies specifically to the file name portion, not the directory portion, of a path name.

Based on the OSAL_CONFIG_MAX_FILE_NAME configuration option

Note

This value must include a terminating NUL character

Definition at line 142 of file osconfig.h.

12.28.1.14 OS_MAX_FILE_SYSTEMS #define OS_MAX_FILE_SYSTEMS 14

The maximum number of file systems to support.

Based on the OSAL_CONFIG_MAX_FILE_SYSTEMS configuration option

Definition at line 121 of file osconfig.h.

12.28.1.15 OS_MAX_MODULES #define OS_MAX_MODULES 20

The maximum number of modules to support.

Based on the OSAL_CONFIG_MAX_MODULES configuration option

Definition at line 86 of file osconfig.h.

12.28.1.16 OS_MAX_MUTEXES #define OS_MAX_MUTEXES 20

The maximum number of mutexes to support.

Based on the OSAL_CONFIG_MAX_MUTEXES configuration option

Definition at line 72 of file osconfig.h.

12.28.1.17 OS_MAX_NUM_OPEN_DIRS #define OS_MAX_NUM_OPEN_DIRS 4

The maximum number of concurrently open directories to support.

Based on the OSAL_CONFIG_MAX_NUM_OPEN_DIRS configuration option

Definition at line 114 of file osconfig.h.

12.28.1.18 OS_MAX_NUM_OPEN_FILES #define OS_MAX_NUM_OPEN_FILES 50

The maximum number of concurrently open files to support.

Based on the OSAL_CONFIG_MAX_NUM_OPEN_FILES configuration option

Definition at line 107 of file osconfig.h.

12.28.1.19 OS_MAX_PATH_LEN #define OS_MAX_PATH_LEN 64

The maximum length of OSAL path names.

This limit applies to the overall length of a path name, including the file name and directory portions.

Based on the OSAL_CONFIG_MAX_PATH_LEN configuration option

Note

This value must include a terminating NUL character

Definition at line 154 of file osconfig.h.

12.28.1.20 OS_MAX_QUEUES #define OS_MAX_QUEUES 64

The maximum number of queues to support.

Based on the OSAL_CONFIG_MAX_QUEUES configuration option

Definition at line 51 of file osconfig.h.

12.28.1.21 OS_MAX_SYM_LEN #define OS_MAX_SYM_LEN 64

The maximum length of symbols.

Based on the OSAL_CONFIG_MAX_SYM_LEN configuration option

Note

This value must include a terminating NUL character

Definition at line 130 of file osconfig.h.

12.28.1.22 OS_MAX_TASKS #define OS_MAX_TASKS 64

The maximum number of tasks to support.

Based on the OSAL_CONFIG_MAX_TASKS configuration option

Definition at line 44 of file osconfig.h.

12.28.1.23 OS_MAX_TIMEBASES #define OS_MAX_TIMEBASES 5

The maximum number of timebases to support.

Based on the OSAL_CONFIG_MAX_TIMEBASES configuration option

Definition at line 93 of file osconfig.h.

12.28.1.24 OS_MAX_TIMERS #define OS_MAX_TIMERS 10

The maximum number of timer callbacks to support.

Based on the OSAL_CONFIG_MAX_TIMERS configuration option

Definition at line 100 of file osconfig.h.

12.28.1.25 OS_MODULE_FILE_EXTENSION #define OS_MODULE_FILE_EXTENSION ".so"

The system-specific file extension used on loadable module files.

Fixed value based on system selection, not user configurable.

Definition at line 276 of file osconfig.h.

12.28.1.26 OS_PRINTF_CONSOLE_NAME #define OS_PRINTF_CONSOLE_NAME ""

The name of the primary console device.

This is the device to which [OS_printf\(\)](#) output is written. The output may be configured to tag each line with this prefix for identification.

Based on the OSAL_CONFIG_PRINTF_CONSOLE_NAME configuration option

Definition at line 245 of file osconfig.h.

12.28.1.27 OS_QUEUE_MAX_DEPTH #define OS_QUEUE_MAX_DEPTH 50

The maximum depth of OSAL queues.

Based on the OSAL_CONFIG_QUEUE_MAX_DEPTH configuration option

Definition at line 225 of file osconfig.h.

12.28.1.28 OS_SHELL_CMD_INPUT_FILE_NAME #define OS_SHELL_CMD_INPUT_FILE_NAME ""

The name of the temporary file used to store shell commands.

This configuration is only applicable if shell support is enabled, and only necessary/relevant on some OS implementations.

Based on the OSAL_CONFIG_SHELL_CMD_INPUT_FILE_NAME configuration option

Definition at line 235 of file osconfig.h.

12.28.1.29 OS SOCKADDR_MAX_LEN #define OS SOCKADDR_MAX_LEN 28

The maximum size of the socket address structure.

This is part of the Socket API, and should be set large enough to hold the largest address type in use on the target system.

Based on the OSAL_CONFIG_SOCKADDR_MAX_LEN configuration option

Definition at line 173 of file osconfig.h.

12.28.1.30 OS UTILITYTASK_PRIORITY #define OS UTILITYTASK_PRIORITY 245

Priority level of the background utility task.

This task is responsible for writing buffered output of OS_printf to the actual console device, and any other future maintenance task.

Based on the OSAL_CONFIG_UTILITYTASK_PRIORITY configuration option

Definition at line 197 of file osconfig.h.

12.28.1.31 OS UTILITYTASK_STACK_SIZE #define OS UTILITYTASK_STACK_SIZE 2048

The stack size of the background utility task.

This task is responsible for writing buffered output of OS_printf to the actual console device, and any other future maintenance task.

Based on the OSAL_CONFIG_UTILITYTASK_STACK_SIZE configuration option

Definition at line 207 of file osconfig.h.

12.28.1.32 OSAL_CONFIG_CONSOLE_ASYNC `#define OSAL_CONFIG_CONSOLE_ASYNC`
 Definition at line 27 of file osconfig.h.

12.28.1.33 OSAL_CONFIG_INCLUDE_DYNAMIC_LOADER `#define OSAL_CONFIG_INCLUDE_DYNAMIC_LOADER`
 Configuration file Operating System Abstraction Layer.

The specific definitions in this file may only be modified by setting the respective OSAL configuration options in the CMake build.

Any direct modifications to the generated copy will be overwritten each time CMake executes.

Note

This file was automatically generated by CMake from /home/runner/work/FM/FMosal/default_config.cmake

Definition at line 21 of file osconfig.h.

12.28.1.34 OSAL_CONFIG_INCLUDE_NETWORK `#define OSAL_CONFIG_INCLUDE_NETWORK`
 Definition at line 22 of file osconfig.h.

12.28.1.35 OSAL_CONFIG_INCLUDE_STATIC_LOADER `#define OSAL_CONFIG_INCLUDE_STATIC_LOADER`
 Definition at line 23 of file osconfig.h.

12.29 cfe/cmake/sample_defs/example_mission_cfg.h File Reference

Macros

- `#define CFE_MISSION_MAX_PATH_LEN 64`
- `#define CFE_MISSION_MAX_FILE_LEN 20`
- `#define CFE_MISSION_MAX_API_LEN 20`
- `#define CFE_MISSION_MAX_NUM_FILES 50`
- `#define CFE_MISSION_ES_MAX_APPLICATIONS 16`
- `#define CFE_MISSION_ES_PERF_MAX_IDS 128`
- `#define CFE_MISSION_ES_POOL_MAX_BUCKETS 17`
- `#define CFE_MISSION_ES_CDS_MAX_NAME_LENGTH 16`
- `#define CFE_MISSION_ES_DEFAULT_CRC CFE_ES_CrcType_CRC_16`
- `#define CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN (CFE_MISSION_ES_CDS_MAX_NAME_LENGTH + CFE_MISSION_MAX_API_LEN + 4)`

Checksum/CRC algorithm identifiers

- `#define CFE_MISSION_ES_CRC_8 CFE_ES_CrcType_CRC_8 /* 1 */`
- `#define CFE_MISSION_ES_CRC_16 CFE_ES_CrcType_CRC_16 /* 2 */`
- `#define CFE_MISSION_ES_CRC_32 CFE_ES_CrcType_CRC_32 /* 3 */`
- `#define CFE_MISSION_ES_MAX_MESSAGE_LENGTH 122`
- `#define CFE_FS_HDR_DESC_MAX_LEN 32`

Max length of description field in a standard cFE File Header.
- `#define CFE_FS_FILE_CONTENT_ID 0x63464531`

Magic Number for cFE compliant files (= 'cFE1')
- `#define CFE_MISSION_SB_MAX_SB_MSG_SIZE 32768`
- `#define CFE_MISSION_SB_MAX_PIPES 64`
- `#define CFE_MISSION_TBL_MAX_NAME_LENGTH 16`
- `#define CFE_MISSION_TBL_MAX_FULL_NAME_LEN (CFE_MISSION_TBL_MAX_NAME_LENGTH + CFE_MISSION_MAX_API_LEN + 4)`
- `#define CFE_MISSION_TIME_CFG_DEFAULT_TAI true`

- #define CFE_MISSION_TIME_CFG_DEFAULT_UTC false
- #define CFE_MISSION_TIME_CFG_FAKE_TONE true
- #define CFE_MISSION_TIME_AT_TONE_WAS true
- #define CFE_MISSION_TIME_AT_TONE_WILL_BE false
- #define CFE_MISSION_TIME_MIN_ELAPSED 0
- #define CFE_MISSION_TIME_MAX_ELAPSED 200000
- #define CFE_MISSION_TIME_DEF_MET_SECS 1000
- #define CFE_MISSION_TIME_DEF_MET_SUBS 0
- #define CFE_MISSION_TIME_DEF_STCF_SECS 1000000
- #define CFE_MISSION_TIME_DEF_STCF_SUBS 0
- #define CFE_MISSION_TIME_DEF_LEAPS 37
- #define CFE_MISSION_TIME_DEF_DELAY_SECS 0
- #define CFE_MISSION_TIME_DEF_DELAY_SUBS 1000
- #define CFE_MISSION_TIME_EPOCH_YEAR 1980
- #define CFE_MISSION_TIME_EPOCH_DAY 1
- #define CFE_MISSION_TIME_EPOCH_HOUR 0
- #define CFE_MISSION_TIME_EPOCH_MINUTE 0
- #define CFE_MISSION_TIME_EPOCH_SECOND 0
- #define CFE_MISSION_TIME_EPOCH_MICROS 0
- #define CFE_MISSION_TIME_FS_FACTOR 789004800

12.29.1 Detailed Description

This header file contains the mission configuration parameters and typedefs with mission scope.

This provides values for configurable items that affect the interface(s) of this module. This includes the CMD/TLM message interface, tables definitions, and any other data products that serve to exchange information with other entities.

Note

It is no longer necessary to provide this file directly in the defs directory, but if present, this file is still supported/usable for backward compatibility. To use this file, it should be called "cfe_mission_cfg.h".

Going forward, more fine-grained (module/purposes-specific) header files are included with each submodule. These may be overridden as necessary, but only if a definition within that file needs to be changed from the default. This approach will reduce the amount of duplicate/cloned definitions and better support alternative build configurations in the future.

Note that if this file is present, the fine-grained header files noted above will *not* be used.

12.29.2 Macro Definition Documentation

12.29.2.1 CFE_FS_FILE_CONTENT_ID #define CFE_FS_FILE_CONTENT_ID 0x63464531

Magic Number for cFE compliant files (= 'cFE1')

Definition at line 313 of file example_mission_cfg.h.

12.29.2.2 CFE_FS_HDR_DESC_MAX_LEN #define CFE_FS_HDR_DESC_MAX_LEN 32

Max length of description field in a standard cFE File Header.

Definition at line 311 of file example_mission_cfg.h.

12.29.2.3 CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN #define CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN (CFE_MISSION_ES_CDS_MAX_NAME_LENGTH + CFE_MISSION_MAX_API_LEN + 4)

Purpose Maximum Length of Full CDS Name in messages

Description:

Indicates the maximum length (in characters) of the entire CDS name of the following form: "ApplicationName.← CDSName"

This affects the layout of command/telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 262 of file example_mission_cfg.h.

12.29.2.4 CFE_MISSION_ES_CDS_MAX_NAME_LENGTH #define CFE_MISSION_ES_CDS_MAX_NAME_LENGTH 16**Purpose** Maximum Length of CDS Name**Description:**

Indicates the maximum length (in characters) of the CDS name ('CDSName') portion of a Full CDS Name of the following form: "ApplicationName.CDSName"

This length does not need to include an extra character for NULL termination.

Limits

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 228 of file example_mission_cfg.h.

12.29.2.5 CFE_MISSION_ES_CRC_16 #define CFE_MISSION_ES_CRC_16 CFE_ES_CrcType_CRC_16 /* 2 */

Definition at line 270 of file example_mission_cfg.h.

12.29.2.6 CFE_MISSION_ES_CRC_32 #define CFE_MISSION_ES_CRC_32 CFE_ES_CrcType_CRC_32 /* 3 */

Definition at line 271 of file example_mission_cfg.h.

12.29.2.7 CFE_MISSION_ES_CRC_8 #define CFE_MISSION_ES_CRC_8 CFE_ES_CrcType_CRC_8 /* 1 */

Definition at line 269 of file example_mission_cfg.h.

12.29.2.8 CFE_MISSION_ES_DEFAULT_CRC #define CFE_MISSION_ES_DEFAULT_CRC CFE_ES_CrcType_CRC_16**Purpose** Mission Default CRC algorithm**Description:**

Indicates the which CRC algorithm should be used as the default for verifying the contents of Critical Data Stores and when calculating Table Image data integrity values.

Limits

Currently only CFE_ES_CrcType_CRC_16 is supported (see brief in CFE_ES_CrcType_Enum definition in [cfe_es_api_typedefs.h](#))

Definition at line 242 of file [example_mission_cfg.h](#).

12.29.2.9 CFE_MISSION_ES_MAX_APPLICATIONS #define CFE_MISSION_ES_MAX_APPLICATIONS 16

Purpose Mission Max Apps in a message

Description:

Indicates the maximum number of apps in a telemetry housekeeping message

This affects the layout of command/telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

Definition at line 173 of file [example_mission_cfg.h](#).

12.29.2.10 CFE_MISSION_ES_PERF_MAX_IDS #define CFE_MISSION_ES_PERF_MAX_IDS 128

Purpose Define Max Number of Performance IDs for messages

Description:

Defines the maximum number of perf ids allowed in command/telemetry messages

This affects the layout of command/telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

Definition at line 190 of file [example_mission_cfg.h](#).

12.29.2.11 CFE_MISSION_ES_POOL_MAX_BUCKETS #define CFE_MISSION_ES_POOL_MAX_BUCKETS 17

Purpose Maximum number of block sizes in pool structures

Description:

The upper limit for the number of block sizes supported in the generic pool implementation, which in turn implements the memory pools and CDS. This definition is used as the array size with the pool stats structure, and therefore should be consistent across all CPUs in a mission, as well as with the ground station.

There is also a platform-specific limit which may be fewer than this value.

Limits:

Must be at least one. No specific upper limit, but the number is anticipated to be reasonably small (i.e. tens, not hundreds). Large values have not been tested.

Definition at line 211 of file [example_mission_cfg.h](#).

12.29.2.12 CFE_MISSION_EVS_MAX_MESSAGE_LENGTH `#define CFE_MISSION_EVS_MAX_MESSAGE_LENGTH 122`

Purpose Maximum Event Message Length

Description:

Indicates the maximum length (in characters) of the formatted text string portion of an event message

This length does not need to include an extra character for NULL termination.

Limits

Not Applicable

Definition at line 297 of file example_mission_cfg.h.

12.29.2.13 CFE_MISSION_MAX_API_LEN `#define CFE_MISSION_MAX_API_LEN 20`

Purpose cFE Maximum length for API names within data exchange structures

Description:

The value of this constant dictates the size of filenames within all structures used for external data exchange, such as Software bus messages and table definitions. This is typically the same as OS_MAX_API_LEN but that is OSAL dependent – and as such it definable on a per-processor/OS basis and hence may be different across multiple processors. It is recommended to set this to the value of the largest OS_MAX_API_LEN in use on any CPU on the mission.

This affects only the layout of command/telemetry messages and table definitions; internal allocation may use the platform-specific OS_MAX_API_LEN value.

This length must include an extra character for NULL termination.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 125 of file example_mission_cfg.h.

12.29.2.14 CFE_MISSION_MAX_FILE_LEN `#define CFE_MISSION_MAX_FILE_LEN 20`

Purpose cFE Maximum length for filenames within data exchange structures

Description:

The value of this constant dictates the size of filenames within all structures used for external data exchange, such as Software bus messages and table definitions. This is typically the same as OS_MAX_FILE_LEN but that is OSAL dependent – and as such it definable on a per-processor/OS basis and hence may be different across multiple processors. It is recommended to set this to the value of the largest OS_MAX_FILE_LEN in use on any CPU on the mission.

This affects only the layout of command/telemetry messages and table definitions; internal allocation may use the platform-specific OS_MAX_FILE_LEN value.

This length must include an extra character for NULL termination.

Limits

All CPUs within the same SB domain (mission) and ground tools must share the same definition. Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 99 of file example_mission_cfg.h.

12.29.2.15 CFE_MISSION_MAX_NUM_FILES #define CFE_MISSION_MAX_NUM_FILES 50

Purpose cFE Maximum number of files in a message/data exchange

Description:

The value of this constant dictates the maximum number of files within all structures used for external data exchange, such as Software bus messages and table definitions. This is typically the same as OS_MAX_NUM_OPEN_FILES but that is OSAL dependent – and as such it definable on a per-processor/OS basis and hence may be different across multiple processors. It is recommended to set this to the value of the largest OS_MAX_NUM_OPEN_FILES in use on any CPU on the mission.

This affects only the layout of command/telemetry messages and table definitions; internal allocation may use the platform-specific OS_MAX_NUM_OPEN_FILES value.

Limits

All CPUs within the same SB domain (mission) must share the same definition. Note this affects the size of messages, so it must not cause any message to exceed the max length.

Definition at line 147 of file example_mission_cfg.h.

12.29.2.16 CFE_MISSION_MAX_PATH_LEN #define CFE_MISSION_MAX_PATH_LEN 64

Purpose cFE Maximum length for pathnames within data exchange structures

Description:

The value of this constant dictates the size of pathnames within all structures used for external data exchange, such as Software bus messages and table definitions. This is typically the same as OS_MAX_PATH_LEN but that is OSAL dependent – and as such it definable on a per-processor/OS basis and hence may be different across multiple processors. It is recommended to set this to the value of the largest OS_MAX_PATH_LEN in use on any CPU on the mission.

This affects only the layout of command/telemetry messages and table definitions; internal allocation may use the platform-specific OS_MAX_PATH_LEN value.

This length must include an extra character for NULL termination.

Limits

All CPUs within the same SB domain (mission) and ground tools must share the same definition. Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 72 of file example_mission_cfg.h.

12.29.2.17 CFE_MISSION_SB_MAX_PIPES #define CFE_MISSION_SB_MAX_PIPES 64

Purpose Maximum Number of pipes that SB command/telemetry messages may hold

Description:

Dictates the maximum number of unique Pipes the SB message definitions will hold.

This affects the layout of command/telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

Definition at line 357 of file example_mission_cfg.h.

12.29.2.18 CFE_MISSION_SB_MAX_SB_MSG_SIZE #define CFE_MISSION_SB_MAX_SB_MSG_SIZE 32768

Purpose Maximum SB Message Size

Description:

The following definition dictates the maximum message size allowed on the software bus. SB checks the pkt length field in the header of all messages sent. If the pkt length field indicates the message is larger than this define, SB sends an event and rejects the send.

Limits

This parameter has a lower limit of 6 (CCSDS primary header size). There are no restrictions on the upper limit however, the maximum message size is system dependent and should be verified. Total message size values that are checked against this configuration are defined by a 16 bit data word.

Definition at line 340 of file example_mission_cfg.h.

12.29.2.19 CFE_MISSION_TBL_MAX_FULL_NAME_LEN #define CFE_MISSION_TBL_MAX_FULL_NAME_LEN ([CFE_MISSION_TBL_MA](#)
+ [CFE_MISSION_MAX_API_LEN](#) + 4)

Purpose Maximum Length of Full Table Name in messages

Description:

Indicates the maximum length (in characters) of the entire table name within software bus messages, in "App←Name.TableName" notation.

This affects the layout of command/telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 402 of file example_mission_cfg.h.

12.29.2.20 CFE_MISSION_TBL_MAX_NAME_LENGTH #define CFE_MISSION_TBL_MAX_NAME_LENGTH 16

Purpose Maximum Table Name Length

Description:

Indicates the maximum length (in characters) of the table name ('TblName') portion of a Full Table Name of the following form: "ApplicationName.TblName"

This length does not need to include an extra character for NULL termination.

Limits

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 382 of file example_mission_cfg.h.

12.29.2.21 CFE_MISSION_TIME_AT_TONE_WAS #define CFE_MISSION_TIME_AT_TONE_WAS true

Purpose Default Time and Tone Order

Description:

Time Services may be configured to expect the time at the tone data packet to either precede or follow the tone signal. If the time at the tone data packet follows the tone signal, then the data within the packet describes what the time "was" at the tone. If the time at the tone data packet precedes the tone signal, then the data within the packet describes what the time "will be" at the tone. One, and only one, of the following symbols must be set to true:

- CFE_MISSION_TIME_AT_TONE_WAS
- CFE_MISSION_TIME_AT_TONE_WILL_BE Note: If Time Services is defined as using a simulated tone signal (see [CFE_MISSION_TIME_CFG_FAKE_TONE](#) above), then the tone data packet must follow the tone signal.

Limits

Either CFE_MISSION_TIME_AT_TONE_WAS or CFE_MISSION_TIME_AT_TONE_WILL_BE must be set to true. They may not both be true and they may not both be false.

Definition at line 468 of file example_mission_cfg.h.

12.29.2.22 CFE_MISSION_TIME_AT_TONE_WILL_BE #define CFE_MISSION_TIME_AT_TONE_WILL_BE false

Definition at line 469 of file example_mission_cfg.h.

12.29.2.23 CFE_MISSION_TIME_CFG_DEFAULT_TAI #define CFE_MISSION_TIME_CFG_DEFAULT_TAI true

Purpose Default Time Format

Description:

The following definitions select either UTC or TAI as the default (mission specific) time format. Although it is possible for an application to request time in a specific format, most callers should use `CFE_TIME_GetTime()`, which returns time in the default format. This avoids having to modify each individual caller when the default choice is changed.

Limits

if `CFE_MISSION_TIME_CFG_DEFAULT_TAI` is defined as true then `CFE_MISSION_TIME_CFG_DEFAULT_UTC` must be defined as false. if `CFE_MISSION_TIME_CFG_DEFAULT_TAI` is defined as false then `CFE_MISSION_TIME_CFG_DEFAULT_UTC` must be defined as true.

Definition at line 432 of file `example_mission_cfg.h`.

12.29.2.24 CFE_MISSION_TIME_CFG_DEFAULT_UTC `#define CFE_MISSION_TIME_CFG_DEFAULT_UTC false`
Definition at line 433 of file `example_mission_cfg.h`.

12.29.2.25 CFE_MISSION_TIME_CFG_FAKE_TONE `#define CFE_MISSION_TIME_CFG_FAKE_TONE true`

Purpose Default Time Format**Description:**

The following definition enables the use of a simulated time at the tone signal using a software bus message.

Limits

Not Applicable

Definition at line 445 of file `example_mission_cfg.h`.

12.29.2.26 CFE_MISSION_TIME_DEF_DELAY_SECS `#define CFE_MISSION_TIME_DEF_DELAY_SECS 0`
Definition at line 527 of file `example_mission_cfg.h`.

12.29.2.27 CFE_MISSION_TIME_DEF_DELAY_SUBS `#define CFE_MISSION_TIME_DEF_DELAY_SUBS 1000`
Definition at line 528 of file `example_mission_cfg.h`.

12.29.2.28 CFE_MISSION_TIME_DEF_LEAPS `#define CFE_MISSION_TIME_DEF_LEAPS 37`
Definition at line 525 of file `example_mission_cfg.h`.

12.29.2.29 CFE_MISSION_TIME_DEF_MET_SECS `#define CFE_MISSION_TIME_DEF_MET_SECS 1000`

Purpose Default Time Values

Description:

Default time values are provided to avoid problems due to time calculations performed after startup but before commands can be processed. For example, if the default time format is UTC then it is important that the sum of MET and STCF always exceed the value of Leap Seconds to prevent the UTC time calculation ($\text{time} = \text{MET} + \text{STCF} - \text{Leap Seconds}$) from resulting in a negative (very large) number.

Some past missions have also created known (albeit wrong) default timestamps. For example, assume the epoch is defined as Jan 1, 1970 and further assume the default time values are set to create a timestamp of Jan 1, 2000. Even though the year 2000 timestamps are wrong, it may be of value to keep the time within some sort of bounds acceptable to the software.

Note: Sub-second units are in micro-seconds (0 to 999,999) and all values must be defined

Limits

Not Applicable

Definition at line 519 of file example_mission_cfg.h.

12.29.2.30 CFE_MISSION_TIME_DEF_MET_SUBS #define CFE_MISSION_TIME_DEF_MET_SUBS 0

Definition at line 520 of file example_mission_cfg.h.

12.29.2.31 CFE_MISSION_TIME_DEF_STCF_SECS #define CFE_MISSION_TIME_DEF_STCF_SECS 1000000

Definition at line 522 of file example_mission_cfg.h.

12.29.2.32 CFE_MISSION_TIME_DEF_STCF_SUBS #define CFE_MISSION_TIME_DEF_STCF_SUBS 0

Definition at line 523 of file example_mission_cfg.h.

12.29.2.33 CFE_MISSION_TIME_EPOCH_DAY #define CFE_MISSION_TIME_EPOCH_DAY 1

Definition at line 546 of file example_mission_cfg.h.

12.29.2.34 CFE_MISSION_TIME_EPOCH_HOUR #define CFE_MISSION_TIME_EPOCH_HOUR 0

Definition at line 547 of file example_mission_cfg.h.

12.29.2.35 CFE_MISSION_TIME_EPOCH_MICROS #define CFE_MISSION_TIME_EPOCH_MICROS 0

Definition at line 550 of file example_mission_cfg.h.

12.29.2.36 CFE_MISSION_TIME_EPOCH_MINUTE #define CFE_MISSION_TIME_EPOCH_MINUTE 0

Definition at line 548 of file example_mission_cfg.h.

12.29.2.37 CFE_MISSION_TIME_EPOCH_SECOND #define CFE_MISSION_TIME_EPOCH_SECOND 0

Definition at line 549 of file example_mission_cfg.h.

12.29.2.38 CFE_MISSION_TIME_EPOCH_YEAR #define CFE_MISSION_TIME_EPOCH_YEAR 1980

Purpose Default EPOCH Values

Description:

Default ground time epoch values Note: these values are used only by the [CFE_TIME_Print\(\)](#) API function

Limits

Year - must be within 136 years Day - Jan 1 = 1, Feb 1 = 32, etc. Hour - 0 to 23 Minute - 0 to 59 Second - 0 to 59
Micros - 0 to 999999

Definition at line 545 of file example_mission_cfg.h.

12.29.2.39 CFE_MISSION_TIME_FS_FACTOR #define CFE_MISSION_TIME_FS_FACTOR 789004800

Purpose Time File System Factor

Description:

Define the s/c vs file system time conversion constant...

Note: this value is intended for use only by CFE TIME API functions to convert time values based on the ground system epoch (s/c time) to and from time values based on the file system epoch (fs time).

FS time = S/C time + factor S/C time = FS time - factor

Worksheet:

S/C epoch = Jan 1, 2005 (LRO ground system epoch) FS epoch = Jan 1, 1980 (vxWorks DOS file system epoch)

Delta = 25 years, 0 days, 0 hours, 0 minutes, 0 seconds

Leap years = 1980, 1984, 1988, 1992, 1996, 2000, 2004 (divisible by 4 – except if by 100 – unless also by 400)

1 year = 31,536,000 seconds 1 day = 86,400 seconds 1 hour = 3,600 seconds 1 minute = 60 seconds

25 years = 788,400,000 seconds 7 extra leap days = 604,800 seconds

total delta = 789,004,800 seconds

Limits

Not Applicable

Definition at line 588 of file example_mission_cfg.h.

12.29.2.40 CFE_MISSION_TIME_MAX_ELAPSED #define CFE_MISSION_TIME_MAX_ELAPSED 200000

Definition at line 494 of file example_mission_cfg.h.

12.29.2.41 CFE_MISSION_TIME_MIN_ELAPSED #define CFE_MISSION_TIME_MIN_ELAPSED 0

Purpose Min and Max Time Elapsed

Description:

Based on the definition of Time and Tone Order (CFE_MISSION_TIME_AT_TONE_WAS/WILL_BE) either the "time at the tone" signal or data packet will follow the other. This definition sets the valid window of time for the second of the pair to lag behind the first. Time Services will invalidate both the tone and packet if the second does not arrive within this window following the first.

For example, if the data packet follows the tone, it might be valid for the data packet to arrive between zero and 100,000 micro-seconds after the tone. But, if the tone follows the packet, it might be valid only if the packet arrived between 200,000 and 700,000 micro-seconds before the tone.

Note: units are in micro-seconds

Limits

0 to 999,999 decimal

Definition at line 493 of file example_mission_cfg.h.

12.30 cfe/cmake/sample_defs/example_platform_cfg.h File Reference

Macros

- #define CFE_PLATFORM_ENDIAN CCSDS_LITTLE_ENDIAN
- #define CFE_PLATFORM_CORE_MAX_STARTUP_MSEC 30000
- #define CFE_PLATFORM_ES_START_TASK_PRIORITY 68
- #define CFE_PLATFORM_ES_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
- #define CFE_PLATFORM_ES_NONVOL_DISK_MOUNT_STRING "/cf"
- #define CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING "/ram"
- #define CFE_PLATFORM_ES_MAX_APPLICATIONS 32
- #define CFE_PLATFORM_ES_MAX_LIBRARIES 10
- #define CFE_PLATFORM_ES_ER_LOG_ENTRIES 20
- #define CFE_PLATFORM_ES_ER_LOG_MAX_CONTEXT_SIZE 256
- #define CFE_PLATFORM_ES_SYSTEM_LOG_SIZE 3072
- #define CFE_PLATFORM_ES_OBJECT_TABLE_SIZE 30
- #define CFE_PLATFORM_ES_MAX_GEN_COUNTERS 8
- #define CFE_PLATFORM_ES_APP_SCAN_RATE 1000
- #define CFE_PLATFORM_ES_APP_KILL_TIMEOUT 5
- #define CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE 512
- #define CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS 4096
- #define CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED 30
- #define CFE_PLATFORM_ES_CDS_SIZE (128 * 1024)
- #define CFE_PLATFORM_ES_USER_RESERVED_SIZE (1024 * 1024)
- #define CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN 4
- #define CFE_PLATFORM_ES_NONVOL_STARTUP_FILE "/cf/cfe_es_startup.scr"
- #define CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE "/ram/cfe_es_startup.scr"
- #define CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE "/ram/cfe_es_app_info.log"
- #define CFE_PLATFORM_ES_DEFAULT_TASK_LOG_FILE "/ram/cfe_es_taskinfo.log"
- #define CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE "/ram/cfe_es_syslog.log"
- #define CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE "/ram/cfe_erlog.log"
- #define CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME "/ram/cfe_es_perf.dat"
- #define CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMP_FILE "/ram/cfe_cds_reg.log"
- #define CFE_PLATFORM_ES_DEFAULT_POR_SYSLOG_MODE 0
- #define CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE 1
- #define CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE 10000

- #define CFE_PLATFORM_ES_PERF_FILTMASK_NONE 0
- #define CFE_PLATFORM_ES_PERF_FILTMASK_ALL ~CFE_PLATFORM_ES_PERF_FILTMASK_NONE
- #define CFE_PLATFORM_ES_PERF_FILTMASK_INIT CFE_PLATFORM_ES_PERF_FILTMASK_ALL
- #define CFE_PLATFORM_ES_PERF_TRIGMASK_NONE 0
- #define CFE_PLATFORM_ES_PERF_TRIGMASK_ALL ~CFE_PLATFORM_ES_PERF_TRIGMASK_NONE
- #define CFE_PLATFORM_ES_PERF_TRIGMASK_INIT CFE_PLATFORM_ES_PERF_TRIGMASK_NONE
- #define CFE_PLATFORM_ES_PERF_CHILD_PRIORITY 200
- #define CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE 4096
- #define CFE_PLATFORM_ES_PERF_CHILD_MS_DELAY 20
- #define CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS 50
- #define CFE_PLATFORM_ES_DEFAULT_STACK_SIZE 8192
- #define CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES 512
- #define CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS 2
- #define CFE_PLATFORM_ES_POOL_MAX_BUCKETS 17
- #define CFE_PLATFORM_ES_MAX_MEMORY_POOLS 10
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01 8
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_02 16
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_03 32
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_04 48
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_05 64
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_06 96
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_07 128
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_08 160
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_09 256
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_10 512
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_11 1024
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_12 2048
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_13 4096
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_14 8192
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_15 16384
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_16 32768
- #define CFE_PLATFORM_ES_MAX_BLOCK_SIZE 80000
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01 8
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_02 16
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_03 32
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_04 48
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_05 64
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_06 96
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_07 128
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_08 160
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_09 256
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_10 512
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_11 1024
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_12 2048
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_13 4096
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_14 8192
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_15 16384
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_16 32768
- #define CFE_PLATFORM_ES_CDS_MAX_BLOCK_SIZE 80000
- #define CFE_PLATFORM_ES_STARTUP_SYNC_POLL_MSEC 50
- #define CFE_PLATFORM_ES_STARTUP_SCRIPT_TIMEOUT_MSEC 1000

- #define CFE_PLATFORM_EVS_START_TASK_PRIORITY 61
- #define CFE_PLATFORM_EVS_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
- #define CFE_PLATFORM_EVS_MAX_EVENT_FILTERS 8
- #define CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST 32
- #define CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC 15
- #define CFE_PLATFORM_EVS_DEFAULT_LOG_FILE "/ram/cfe_evs.log"
- #define CFE_PLATFORM_EVS_LOG_MAX 20
- #define CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE "/ram/cfe_evs_app.dat"
- #define CFE_PLATFORM_EVS_PORT_DEFAULT 0x0001
- #define CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG 0xE
- #define CFE_PLATFORM_EVS_DEFAULT_LOG_MODE 1
- #define CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE CFE_EVS_MsgFormat_LONG
- #define CFE_PLATFORM_SB_MAX_MSG_IDS 256
- #define CFE_PLATFORM_SB_MAX_PIPES 64
- #define CFE_PLATFORM_SB_MAX_DEST_PER_PKT 16
- #define CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT 4
- #define CFE_PLATFORM_SB_BUF_MEMORY_BYTES 524288
- #define CFE_PLATFORM_SB_HIGHEST_VALID_MSGID 0x1FFF
- #define CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME "/ram/cfe_sb_route.dat"
- #define CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME "/ram/cfe_sb_pipe.dat"
- #define CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME "/ram/cfe_sb_msgmap.dat"
- #define CFE_PLATFORM_SB_FILTERED_EVENT1 CFE_SB_SEND_NO_SUBS_EID
- #define CFE_PLATFORM_SB_FILTER_MASK1 CFE_EVS_FIRST_4_STOP
- #define CFE_PLATFORM_SB_FILTERED_EVENT2 CFE_SB_DUP_SUBSCRIP_EID
- #define CFE_PLATFORM_SB_FILTER_MASK2 CFE_EVS_FIRST_4_STOP
- #define CFE_PLATFORM_SB_FILTERED_EVENT3 CFE_SB_MSGID_LIM_ERR_EID
- #define CFE_PLATFORM_SB_FILTER_MASK3 CFE_EVS_FIRST_16_STOP
- #define CFE_PLATFORM_SB_FILTERED_EVENT4 CFE_SB_Q_FULL_ERR_EID
- #define CFE_PLATFORM_SB_FILTER_MASK4 CFE_EVS_FIRST_16_STOP
- #define CFE_PLATFORM_SB_FILTERED_EVENT5 0
- #define CFE_PLATFORM_SB_FILTER_MASK5 CFE_EVS_NO_FILTER
- #define CFE_PLATFORM_SB_FILTERED_EVENT6 0
- #define CFE_PLATFORM_SB_FILTER_MASK6 CFE_EVS_NO_FILTER
- #define CFE_PLATFORM_SB_FILTERED_EVENT7 0
- #define CFE_PLATFORM_SB_FILTER_MASK7 CFE_EVS_NO_FILTER
- #define CFE_PLATFORM_SB_FILTERED_EVENT8 0
- #define CFE_PLATFORM_SB_FILTER_MASK8 CFE_EVS_NO_FILTER
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01 8
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_02 16
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_03 20
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_04 36
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_05 64
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_06 96
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_07 128
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_08 160
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_09 256
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_10 512
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_11 1024
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_12 2048
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_13 4096
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_14 8192

- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_15 16384
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_16 32768
- #define CFE_PLATFORM_SB_MAX_BLOCK_SIZE (CFE_MISSION_SB_MAX_SB_MSG_SIZE + 128)
- #define CFE_PLATFORM_SB_START_TASK_PRIORITY 64
- #define CFE_PLATFORM_SB_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
- #define CFE_PLATFORM_TBL_START_TASK_PRIORITY 70
- #define CFE_PLATFORM_TBL_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
- #define CFE_PLATFORM_TBL_BUF_MEMORY_BYTES 524288
- #define CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE 16384
- #define CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE 16384
- #define CFE_PLATFORM_TBL_MAX_NUM_TABLES 128
- #define CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES 32
- #define CFE_PLATFORM_TBL_MAX_NUM_HANDLES 256
- #define CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS 4
- #define CFE_PLATFORM_TBL_MAX_NUM_VALIDATIONS 10
- #define CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE "/ram/cfe_tbl_reg.log"
- #define CFE_PLATFORM_TBL_VALID_SCID_COUNT 0
- #define CFE_PLATFORM_TBL_U32FROM4CHARS(_C1, _C2, _C3, _C4) ((uint32)(_C1) << 24 | (uint32)(_C2) << 16 | (uint32)(_C3) << 8 | (uint32)(_C4))
- #define CFE_PLATFORM_TBL_VALID_SCID_1 (0x42)
- #define CFE_PLATFORM_TBL_VALID_SCID_2 (CFE_PLATFORM_TBL_U32FROM4CHARS('a', 'b', 'c', 'd'))
- #define CFE_PLATFORM_TBL_VALID_PRID_COUNT 0
- #define CFE_PLATFORM_TBL_VALID_PRID_1 (1)
- #define CFE_PLATFORM_TBL_VALID_PRID_2 (CFE_PLATFORM_TBL_U32FROM4CHARS('a', 'b', 'c', 'd'))
- #define CFE_PLATFORM_TBL_VALID_PRID_3 0
- #define CFE_PLATFORM_TBL_VALID_PRID_4 0
- #define CFE_PLATFORM_TIME_CFG_SERVER true
- #define CFE_PLATFORM_TIME_CFG_CLIENT false
- #define CFE_PLATFORM_TIME_CFG_VIRTUAL true
- #define CFE_PLATFORM_TIME_CFG_SIGNAL false
- #define CFE_PLATFORM_TIME_CFG_SOURCE false
- #define CFE_PLATFORM_TIME_CFG_SRC_MET false
- #define CFE_PLATFORM_TIME_CFG_SRC_GPS false
- #define CFE_PLATFORM_TIME_CFG_SRC_TIME false
- #define CFE_PLATFORM_TIME_MAX_DELTA_SECS 0
- #define CFE_PLATFORM_TIME_MAX_DELTA_SUBS 500000
- #define CFE_PLATFORM_TIME_MAX_LOCAL_SECS 27
- #define CFE_PLATFORM_TIME_MAX_LOCAL_SUBS 0
- #define CFE_PLATFORM_TIME_CFG_TONE_LIMIT 20000
- #define CFE_PLATFORM_TIME_CFG_START_FLY 2
- #define CFE_PLATFORM_TIME_CFG_LATCH_FLY 8
- #define CFE_PLATFORM_TIME_START_TASK_PRIORITY 60
- #define CFE_PLATFORM_TIME_TONE_TASK_PRIORITY 25
- #define CFE_PLATFORM_TIME_ONEHZ_TASK_PRIORITY 25
- #define CFE_PLATFORM_TIME_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
- #define CFE_PLATFORM_TIME_TONE_TASK_STACK_SIZE 4096
- #define CFE_PLATFORM_TIME_ONEHZ_TASK_STACK_SIZE 8192

12.30.1 Detailed Description

This header file contains the internal configuration parameters and typedefs with platform scope. This provides default values for configurable items that do NOT affect the interface(s) of this module. This includes internal parameters, path names, and limit value(s) that are relevant for a specific platform.

Note

It is no longer necessary to provide this file directly in the defs directory, but if present, this file is still supported/usable for backward compatibility. To use this file, it should be called "cfe_platform_cfg.h".

Going forward, more fine-grained (module/purposes-specific) header files are included with each submodule. These may be overridden as necessary, but only if a definition within that file needs to be changed from the default. This approach will reduce the amount of duplicate/cloned definitions and better support alternative build configurations in the future.

Note that if this file is present, the fine-grained header files noted above will *not* be used.

12.30.2 Macro Definition Documentation

12.30.2.1 CFE_PLATFORM_CORE_MAX_STARTUP_MSEC `#define CFE_PLATFORM_CORE_MAX_STARTUP_←
MSEC 30000`

Purpose CFE core application startup timeout

Description:

The upper limit for the amount of time that the cFE core applications (ES, SB, EVS, TIME, TBL) are each allotted to reach their respective "ready" states.

The CFE "main" thread starts individual tasks for each of the core applications (except FS). Each of these must perform some initialization work before the next core application can be started, so the main thread waits to ensure that the application has reached the "ready" state before starting the next application.

If any core application fails to start, then it indicates a major problem with the system and startup is aborted.

Units are in milliseconds

Limits:

Must be defined as an integer value that is greater than or equal to zero.

Definition at line 84 of file example_platform_cfg.h.

12.30.2.2 CFE_PLATFORM_ENDIAN `#define CFE_PLATFORM_ENDIAN CCSDS_LITTLE_ENDIAN`

Purpose Platform Endian Indicator

Description:

The value of this constant indicates the endianess of the target system

Limits

This parameter has a lower limit of 0 and an upper limit of 1.

Definition at line 60 of file example_platform_cfg.h.

12.30.2.3 CFE_PLATFORM_ES_APP_KILL_TIMEOUT #define CFE_PLATFORM_ES_APP_KILL_TIMEOUT 5

Purpose Define ES Application Kill Timeout

Description:

ES Application Kill Timeout. This parameter controls the number of "scan periods" that ES will wait for an application to Exit after getting the signal Delete, Reload or Restart. The sequence works as follows:

1. ES will set the control request for an App to Delete/Restart/Reload and set this kill timer to the value in this parameter.
2. If the App is responding and Calls it's RunLoop function, it will drop out of its main loop and call CFE_ES←_ExitApp. Once it calls Exit App, then ES can delete, restart, or reload the app the next time it scans the app table.
3. If the App is not responding, the ES App will decrement this Kill Timeout value each time it runs. If the timeout value reaches zero, ES will kill the app.

The Kill timeout value depends on the [CFE_PLATFORM_ES_APP_SCAN_RATE](#). If the Scan Rate is 1000, or 1 second, and this [CFE_PLATFORM_ES_APP_KILL_TIMEOUT](#) is set to 5, then it will take 5 seconds to kill a non-responding App. If the Scan Rate is 250, or 1/4 second, and the [CFE_PLATFORM_ES_APP_KILL_TIMEOUT](#) is set to 2, then it will take 1/2 second to time out.

Limits

There is a lower limit of 1 and an upper limit of 100 on this configuration parameter. Units are number of [CFE_PLATFORM_ES_APP_SCAN_RATE](#) cycles.

Definition at line 288 of file example_platform_cfg.h.

12.30.2.4 CFE_PLATFORM_ES_APP_SCAN_RATE #define CFE_PLATFORM_ES_APP_SCAN_RATE 1000

Purpose Define ES Application Control Scan Rate

Description:

ES Application Control Scan Rate. This parameter controls the speed that ES scans the Application Table looking for App Delete/Restart/Reload requests. All Applications are deleted, restarted, or reloaded by the ES Application. ES will periodically scan for control requests to process. The scan rate is controlled by this parameter, which is given in milliseconds. A value of 1000 means that ES will scan the Application Table once per second. Be careful not to set the value of this too low, because ES will use more CPU cycles scanning the table.

Limits

There is a lower limit of 100 and an upper limit of 20000 on this configuration parameter. millisecond units.

Definition at line 259 of file example_platform_cfg.h.

12.30.2.5 CFE_PLATFORM_ES_CDS_MAX_BLOCK_SIZE #define CFE_PLATFORM_ES_CDS_MAX_BLOCK←SIZE 80000

Definition at line 830 of file example_platform_cfg.h.

12.30.2.6 CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES #define CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES 512

Purpose Define Maximum Number of Registered CDS Blocks

Description:

Maximum number of registered CDS Blocks

Limits

There is a lower limit of 8. There are no restrictions on the upper limit however, the maximum number of CDS entries is system dependent and should be verified.

Definition at line 720 of file example_platform_cfg.h.

12.30.2.7 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01 8

Purpose Define ES Critical Data Store Memory Pool Block Sizes

Description:

Intermediate ES Critical Data Store Memory Pool Block Sizes

Limits

These sizes MUST be increasing and MUST be an integral multiple of 4.

Definition at line 814 of file example_platform_cfg.h.

12.30.2.8 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_02 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_02 16

Definition at line 815 of file example_platform_cfg.h.

12.30.2.9 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_03 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_03 32

Definition at line 816 of file example_platform_cfg.h.

12.30.2.10 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_04 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_04 48

Definition at line 817 of file example_platform_cfg.h.

12.30.2.11 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_05 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_05 64

Definition at line 818 of file example_platform_cfg.h.

12.30.2.12 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_06 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_06 96

Definition at line 819 of file example_platform_cfg.h.

12.30.2.13 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_07 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_07 128

Definition at line 820 of file example_platform_cfg.h.

12.30.2.14 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_08 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_08 160

Definition at line 821 of file example_platform_cfg.h.

12.30.2.15 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_09 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_09 256

Definition at line 822 of file example_platform_cfg.h.

12.30.2.16 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_10 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_10 512

Definition at line 823 of file example_platform_cfg.h.

12.30.2.17 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_11 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_11 1024

Definition at line 824 of file example_platform_cfg.h.

12.30.2.18 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_12 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_12 2048

Definition at line 825 of file example_platform_cfg.h.

12.30.2.19 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_13 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_13 4096

Definition at line 826 of file example_platform_cfg.h.

12.30.2.20 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_14 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_14 8192

Definition at line 827 of file example_platform_cfg.h.

12.30.2.21 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_15 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_15 16384

Definition at line 828 of file example_platform_cfg.h.

12.30.2.22 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_16 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_16 32768

Definition at line 829 of file example_platform_cfg.h.

12.30.2.23 CFE_PLATFORM_ES_CDS_SIZE #define CFE_PLATFORM_ES_CDS_SIZE (128 * 1024)

Purpose Define Critical Data Store Size

Description:

Defines the Critical Data Store (CDS) area size in bytes size. The CDS is one of four memory areas that are preserved during a processor reset. NOTE: Changing this value changes memory allocation, and may require changes to platform specific values (in CFE_PSP) such as USER_RESERVED_MEM in VxWorks depending on the memory areas being used for preserved data and on OS specific behavior.

Limits

There is a lower limit of 8192 and an upper limit of `UINT_MAX` (4 Gigabytes) on this configuration parameter.

Definition at line 365 of file example_platform_cfg.h.

12.30.2.24 CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE #define CFE_PLATFORM_ES_DEFAULT_APP_LOGFILE "/ram/cfe_es_app_info.log"

Purpose Default Application Information Filename

Description:

The value of this constant defines the filename used to store information pertaining to all of the Applications that are registered with Executive Services. This filename is used only when no filename is specified in the command to query all system apps.

Limits

The length of each string, including the NULL terminator cannot exceed the `OS_MAX_PATH_LEN` value.

Definition at line 447 of file example_platform_cfg.h.

12.30.2.25 CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMP_FILE #define CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMPFILE "/ram/cfe_cds_reg.log"

Purpose Default Critical Data Store Registry Filename

Description:

The value of this constant defines the filename used to store the Critical Data Store Registry. This filename is used only when no filename is specified in the command to stop performance data collecting.

Limits

The length of each string, including the NULL terminator cannot exceed the `OS_MAX_PATH_LEN` value.

Definition at line 521 of file example_platform_cfg.h.

12.30.2.26 CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE #define CFE_PLATFORM_ES_DEFAULT_ER_LOG_←
FILE "/ram/cfe_erlog.log"

Purpose Default Exception and Reset (ER) Log Filename

Description:

The value of this constant defines the filename used to store the Exception and Reset (ER) Log. This filename is used only when no filename is specified in the command to dump the ER log. No file specified in the cmd means the first character in the cmd filename is a NULL terminator (zero).

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 493 of file example_platform_cfg.h.

12.30.2.27 CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME #define CFE_PLATFORM_ES_DEFAULT_←
PERF_DUMP_FILENAME "/ram/cfe_es_perf.dat"

Purpose Default Performance Data Filename

Description:

The value of this constant defines the filename used to store the Performance Data. This filename is used only when no filename is specified in the command to stop performance data collecting.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 507 of file example_platform_cfg.h.

12.30.2.28 CFE_PLATFORM_ES_DEFAULT_POR_SYSLOG_MODE #define CFE_PLATFORM_ES_DEFAULT_POR_←
_SYSLOG_MODE 0

Purpose Define Default System Log Mode following Power On Reset

Description:

Defines the default mode for the operation of the ES System log following a power on reset. The log may operate in either Overwrite mode = 0, where once the log becomes full the oldest message in the log will be overwritten, or Discard mode = 1, where once the log becomes full the contents of the log are preserved and the new event is discarded. This constant may hold a value of either 0 or 1 depending on the desired default. Overwrite Mode = 0, Discard Mode = 1.

Limits

There is a lower limit of 0 and an upper limit of 1 on this configuration parameter.

Definition at line 539 of file example_platform_cfg.h.

12.30.2.29 CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE #define CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE 1

Purpose Define Default System Log Mode following Processor Reset

Description:

Defines the default mode for the operation of the ES System log following a processor reset. The log may operate in either Overwrite mode = 0, where once the log becomes full the oldest message in the log will be overwritten, or Discard mode = 1, where once the log becomes full the contents of the log are preserved and the new event is discarded. This constant may hold a value of either 0 or 1 depending on the desired default. Overwrite Mode = 0, Discard Mode = 1.

Limits

There is a lower limit of 0 and an upper limit of 1 on this configuration parameter.

Definition at line 557 of file example_platform_cfg.h.

12.30.2.30 CFE_PLATFORM_ES_DEFAULT_STACK_SIZE #define CFE_PLATFORM_ES_DEFAULT_STACK_SIZE 8192

Purpose Define Default Stack Size for an Application

Description:

This parameter defines a default stack size. This parameter is used by the cFE Core Applications.

Limits

There is a lower limit of 2048. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 707 of file example_platform_cfg.h.

12.30.2.31 CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE #define CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE "/ram/cfe_es_syslog.log"

Purpose Default System Log Filename

Description:

The value of this constant defines the filename used to store important information (as ASCII text strings) that might not be able to be sent in an Event Message. This filename is used only when no filename is specified in the command to dump the system log. No file specified in the cmd means the first character in the cmd filename is a NULL terminator (zero).

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 478 of file example_platform_cfg.h.

```
12.30.2.32 CFE_PLATFORM_ES_DEFAULT_TASK_LOG_FILE #define CFE_PLATFORM_ES_DEFAULT_TASK_←  
LOG_FILE "/ram/cfe_es_taskinfo.log"
```

Purpose Default Application Information Filename

Description:

The value of this constant defines the filename used to store information pertaining to all of the Applications that are registered with Executive Services. This filename is used only when no filename is specified in the the command to query all system tasks.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 462 of file example_platform_cfg.h.

```
12.30.2.33 CFE_PLATFORM_ES_ER_LOG_ENTRIES #define CFE_PLATFORM_ES_ER_LOG_ENTRIES 20
```

Purpose Define Max Number of ER (Exception and Reset) log entries

Description:

Defines the maximum number of ER (Exception and Reset) log entries

Limits

There is a lower limit of 1. There are no restrictions on the upper limit however, the maximum number of log entries is system dependent and should be verified.

Definition at line 186 of file example_platform_cfg.h.

```
12.30.2.34 CFE_PLATFORM_ES_ER_LOG_MAX_CONTEXT_SIZE #define CFE_PLATFORM_ES_ER_LOG_MAX_←  
CONTEXT_SIZE 256
```

Purpose Maximum size of CPU Context in ES Error Log

Description:

This should be large enough to accommodate the CPU context information supplied by the PSP on the given platform.

Limits:

Must be greater than zero and a multiple of sizeof(uint32). Limited only by the available memory and the number of entries in the error log. Any context information beyond this size will be truncated.

Definition at line 200 of file example_platform_cfg.h.

12.30.2.35 CFE_PLATFORM_ES_MAX_APPLICATIONS #define CFE_PLATFORM_ES_MAX_APPLICATIONS 32

Purpose Define Max Number of Applications

Description:

Defines the maximum number of applications that can be loaded into the system. This number does not include child tasks.

Limits

There is a lower limit of 6. The lower limit corresponds to the cFE internal applications. There are no restrictions on the upper limit however, the maximum number of applications is system dependent and should be verified. AppIDs that are checked against this configuration are defined by a 32 bit data word.

Definition at line 159 of file example_platform_cfg.h.

12.30.2.36 CFE_PLATFORM_ES_MAX_BLOCK_SIZE #define CFE_PLATFORM_ES_MAX_BLOCK_SIZE 80000

Definition at line 803 of file example_platform_cfg.h.

12.30.2.37 CFE_PLATFORM_ES_MAX_GEN_COUNTERS #define CFE_PLATFORM_ES_MAX_GEN_COUNTERS 8

Purpose Define Max Number of Generic Counters

Description:

Defines the maximum number of Generic Counters that can be registered.

Limits

This parameter has a lower limit of 1 and an upper limit of 65535.

Definition at line 240 of file example_platform_cfg.h.

12.30.2.38 CFE_PLATFORM_ES_MAX_LIBRARIES #define CFE_PLATFORM_ES_MAX_LIBRARIES 10

Purpose Define Max Number of Shared libraries

Description:

Defines the maximum number of cFE Shared libraries that can be loaded into the system.

Limits

There is a lower limit of 1. There are no restrictions on the upper limit however, the maximum number of libraries is system dependent and should be verified.

Definition at line 173 of file example_platform_cfg.h.

12.30.2.39 CFE_PLATFORM_ES_MAX_MEMORY_POOLS #define CFE_PLATFORM_ES_MAX_MEMORY_POOLS 10

Purpose Maximum number of memory pools

Description:

The upper limit for the number of memory pools that can concurrently exist within the system.

The CFE_SB and CFE_TBL core subsystems each define a memory pool. Individual applications may also create memory pools, so this value should be set sufficiently high enough to support the applications being used on this platform.

Limits:

Must be at least 2 to support CFE core - SB and TBL pools. No specific upper limit.

Definition at line 768 of file example_platform_cfg.h.

12.30.2.40 CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS #define CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS 2

Purpose Define Number of Processor Resets Before a Power On Reset

Description:

Number of Processor Resets before a Power On Reset is called. If set to 2, then 2 processor resets will occur, and the 3rd processor reset will be a power on reset instead.

Limits

There is a lower limit of 0. There are no restrictions on the upper limit however, the maximum number of processor resets may be system dependent and should be verified.

Definition at line 735 of file example_platform_cfg.h.

12.30.2.41 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01 8

Purpose Define Default ES Memory Pool Block Sizes

Description:

Default Intermediate ES Memory Pool Block Sizes. If an application is using the CFE_ES Memory Pool APIs ([CFE_ES_PoolCreate](#), [CFE_ES_PoolCreateNoSem](#), [CFE_ES_GetPoolBuf](#) and [CFE_ES_PutPoolBuf](#)) but finds these sizes inappropriate for their use, they may wish to use the [CFE_ES_PoolCreateEx](#) API to specify their own intermediate block sizes

Limits

These sizes MUST be increasing and MUST be an integral multiple of 4. Also, CFE_PLATFORM_ES_MAX_BLOCK_SIZE must be larger than CFE_MISSION_SB_MAX_SB_MSG_SIZE and both CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE and CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE. Note that if Table Services have been removed from the CFE, the table size limits are still enforced although the table size definitions may be reduced.

Definition at line 787 of file example_platform_cfg.h.

12.30.2.42 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_02 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_02 16
Definition at line 788 of file example_platform_cfg.h.

12.30.2.43 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_03 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_03 32
Definition at line 789 of file example_platform_cfg.h.

12.30.2.44 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_04 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_04 48
Definition at line 790 of file example_platform_cfg.h.

12.30.2.45 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_05 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_05 64
Definition at line 791 of file example_platform_cfg.h.

12.30.2.46 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_06 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_06 96
Definition at line 792 of file example_platform_cfg.h.

12.30.2.47 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_07 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_07 128
Definition at line 793 of file example_platform_cfg.h.

12.30.2.48 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_08 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_08 160
Definition at line 794 of file example_platform_cfg.h.

12.30.2.49 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_09 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_09 256
Definition at line 795 of file example_platform_cfg.h.

12.30.2.50 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_10 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_10 512
Definition at line 796 of file example_platform_cfg.h.

12.30.2.51 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_11 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_11 1024
Definition at line 797 of file example_platform_cfg.h.

12.30.2.52 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_12 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_12 2048
Definition at line 798 of file example_platform_cfg.h.

12.30.2.53 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_13 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_13 4096
Definition at line 799 of file example_platform_cfg.h.

12.30.2.54 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_14 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_14 8192
Definition at line 800 of file example_platform_cfg.h.

12.30.2.55 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_15 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_15 16384
Definition at line 801 of file example_platform_cfg.h.

12.30.2.56 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_16 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_16 32768
Definition at line 802 of file example_platform_cfg.h.

12.30.2.57 CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN #define CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN 4

Purpose Define Memory Pool Alignment Size

Description:

Ensures that buffers obtained from a memory pool are aligned to a certain minimum block size. Note the allocator will always align to the minimum required by the CPU architecture. This may be set greater than the CPU requirement as desired for optimal performance.

For some architectures/applications it may be beneficial to set this to the cache line size of the target CPU, or to use special SIMD instructions that require a more stringent memory alignment.

Limits

This must always be a power of 2, as it is used as a binary address mask.

Definition at line 404 of file example_platform_cfg.h.

12.30.2.58 CFE_PLATFORM_ES_NONVOL_DISK_MOUNT_STRING #define CFE_PLATFORM_ES_NONVOL_DISK_MOUNT_STRING "/cf"

Purpose Default virtual path for persistent storage

Description:

This configures the default location in the virtual file system for persistent/non-volatile storage. Files such as the startup script, app/library dynamic modules, and configuration tables are expected to be stored in this directory.

Definition at line 127 of file example_platform_cfg.h.

12.30.2.59 CFE_PLATFORM_ES_NONVOL_STARTUP_FILE #define CFE_PLATFORM_ES_NONVOL_STARTUP_FILE "/cf/cfe_es_startup.scr"

Purpose ES Nonvolatile Startup Filename

Description:

The value of this constant defines the path and name of the file that contains a list of modules that will be loaded and started by the cFE after the cFE finishes its startup sequence.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 418 of file example_platform_cfg.h.

12.30.2.60 CFE_PLATFORM_ES_OBJECT_TABLE_SIZE `#define CFE_PLATFORM_ES_OBJECT_TABLE_SIZE 30`**Purpose** Define Number of entries in the ES Object table**Description:**

Defines the number of entries in the ES Object table. This table controls the core cFE startup.

Limits

There is a lower limit of 15. There are no restrictions on the upper limit however, the maximum object table size is system dependent and should be verified.

Definition at line 229 of file example_platform_cfg.h.

12.30.2.61 CFE_PLATFORM_ES_PERF_CHILD_MS_DELAY `#define CFE_PLATFORM_ES_PERF_CHILD_MS_DELAY 20`**Purpose** Define Performance Analyzer Child Task Delay**Description:**

This parameter defines the delay time (in milliseconds) between performance data file writes performed by the Executive Services Performance Analyzer Child Task.

Limits

It is recommended this parameter be greater than or equal to 20ms. This parameter is limited by the maximum value allowed by the data type. In this case, the data type is an unsigned 32-bit integer, so the valid range is 0 to 0xFFFFFFFF.

Definition at line 681 of file example_platform_cfg.h.

12.30.2.62 CFE_PLATFORM_ES_PERF_CHILD_PRIORITY `#define CFE_PLATFORM_ES_PERF_CHILD_PRIORITY 200`**Purpose** Define Performance Analyzer Child Task Priority**Description:**

This parameter defines the priority of the child task spawned by the Executive Services to write performance data to a file. Lower numbers are higher priority, with 1 being the highest priority in the case of a child task.

Limits

Valid range for a child task is 1 to 255 however, the priority cannot be higher (lower number) than the ES parent application priority.

Definition at line 652 of file example_platform_cfg.h.

```
12.30.2.63 CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE #define CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE 4096
```

Purpose Define Performance Analyzer Child Task Stack Size

Description:

This parameter defines the stack size of the child task spawned by the Executive Services to write performance data to a file.

Limits

It is recommended this parameter be greater than or equal to 4KB. This parameter is limited by the maximum value allowed by the data type. In this case, the data type is an unsigned 32-bit integer, so the valid range is 0 to 0xFFFFFFFF.

Definition at line 666 of file example_platform_cfg.h.

```
12.30.2.64 CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE #define CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE 10000
```

Purpose Define Max Size of Performance Data Buffer

Description:

Defines the maximum size of the performance data buffer. Units are number of performance data entries. An entry is defined by a 32 bit data word followed by a 64 bit time stamp.

Limits

There is a lower limit of 1025. There are no restrictions on the upper limit however, the maximum buffer size is system dependent and should be verified. The units are number of entries. An entry is defined by a 32 bit data word followed by a 64 bit time stamp.

Definition at line 573 of file example_platform_cfg.h.

```
12.30.2.65 CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS #define CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS 50
```

Purpose Define Performance Analyzer Child Task Number of Entries Between Delay

Description:

This parameter defines the number of performance analyzer entries the Performance Analyzer Child Task will write to the file between delays.

Definition at line 691 of file example_platform_cfg.h.

```
12.30.2.66 CFE_PLATFORM_ES_PERF_FILTMASK_ALL #define CFE_PLATFORM_ES_PERF_FILTMASK_ALL ~CFE_PLATFORM_ES_P
```

Purpose Define Filter Mask Setting for Enabling All Performance Entries

Description:

Defines the filter mask for enabling all performance entries. The value is a bit mask. For each bit, 0 means the corresponding entry is disabled and 1 means it is enabled.

Definition at line 593 of file example_platform_cfg.h.

12.30.2.67 CFE_PLATFORM_ES_PERF_FILTMASK_INIT

```
#define CFE_PLATFORM_ES_PERF_FILTMASK_INIT CFE_PLATFORM_ES_PERF_FILTMASK_INIT
```

Purpose Define Default Filter Mask Setting for Performance Data Buffer

Description:

Defines the default filter mask for the performance data buffer. The value is a bit mask. For each bit, 0 means the corresponding entry is disabled and 1 means it is enabled.

Definition at line 604 of file example_platform_cfg.h.

12.30.2.68 CFE_PLATFORM_ES_PERF_FILTMASK_NONE

```
#define CFE_PLATFORM_ES_PERF_FILTMASK_NONE 0
```

Purpose Define Filter Mask Setting for Disabling All Performance Entries

Description:

Defines the filter mask for disabling all performance entries. The value is a bit mask. For each bit, 0 means the corresponding entry is disabled and 1 means it is enabled.

Definition at line 583 of file example_platform_cfg.h.

12.30.2.69 CFE_PLATFORM_ES_PERF_TRIGMASK_ALL

```
#define CFE_PLATFORM_ES_PERF_TRIGMASK_ALL ~CFE_PLATFORM_ES_PERF_TRIGMASK_NONE
```

Purpose Define Filter Trigger Setting for Enabling All Performance Entries

Description:

Defines the trigger mask for enabling all performance data entries. The value is a bit mask. For each bit, 0 means the trigger for the corresponding entry is disabled and 1 means it is enabled.

Definition at line 626 of file example_platform_cfg.h.

12.30.2.70 CFE_PLATFORM_ES_PERF_TRIGMASK_INIT

```
#define CFE_PLATFORM_ES_PERF_TRIGMASK_INIT CFE_PLATFORM_ES_PERF_TRIGMASK_NONE
```

Purpose Define Default Filter Trigger Setting for Performance Data Buffer

Description:

Defines the default trigger mask for the performance data buffer. The value is a 32-bit mask. For each bit, 0 means the trigger for the corresponding entry is disabled and 1 means it is enabled.

Definition at line 637 of file example_platform_cfg.h.

12.30.2.71 CFE_PLATFORM_ES_PERF_TRIGMASK_NONE

```
#define CFE_PLATFORM_ES_PERF_TRIGMASK_NONE 0
```

Purpose Define Default Filter Trigger Setting for Disabling All Performance Entries

Description:

Defines the default trigger mask for disabling all performance data entries. The value is a bit mask. For each bit, 0 means the trigger for the corresponding entry is disabled and 1 means it is enabled.

Definition at line 615 of file example_platform_cfg.h.

12.30.2.72 CFE_PLATFORM_ES_POOL_MAX_BUCKETS #define CFE_PLATFORM_ES_POOL_MAX_BUCKETS 17

Purpose Maximum number of block sizes in pool structures

Description:

The upper limit for the number of block sizes supported in the generic pool implementation, which in turn implements the memory pools and CDS.

Limits:

Must be at least one. No specific upper limit, but the number is anticipated to be reasonably small (i.e. tens, not hundreds). Large values have not been tested.

The ES and CDS block size lists must correlate with this value

Definition at line 750 of file example_platform_cfg.h.

12.30.2.73 CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING #define CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING "/ram"

Purpose Default virtual path for volatile storage

Description:

The **CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING** parameter is used to set the cFE mount path for the CFE RAM disk. This is a parameter for missions that do not want to use the default value of "/ram", or for missions that need to have a different value for different CPUs or Spacecraft. Note that the vxWorks OSAL cannot currently handle names that have more than one path separator in it. The names "/ram", "/ramdisk", "/disk123" will all work, but "/disks/ram" will not. Multiple separators can be used with the posix or RTEMS ports.

Definition at line 143 of file example_platform_cfg.h.

12.30.2.74 CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS #define CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS 4096

Purpose ES Ram Disk Number of Sectors

Description:

Defines the ram disk number of sectors. The ram disk is one of four memory areas that are preserved on a processor reset. NOTE: Changing this value changes memory allocation, and may require changes to platform specific values (in CFE_PSP) such as USER_RESERVED_MEM in VxWorks depending on the memory areas being used for preserved data and on OS specific behavior.

Limits

There is a lower limit of 128. There are no restrictions on the upper limit however, the maximum number of RAM sectors is system dependent and should be verified.

Definition at line 324 of file example_platform_cfg.h.

12.30.2.75 CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED #define CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED 30

Purpose Percentage of Ram Disk Reserved for Decompressing Apps

Description:

The **CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED** parameter is used to make sure that the Volatile (RAM) Disk has a defined amount of free space during a processor reset. The cFE uses the Volatile disk to decompress cFE applications during system startup. If this Volatile disk happens to get filled with logs and misc files, then a processor reset may not work, because there will be no room to decompress cFE apps. To solve that problem, this parameter sets the "Low Water Mark" for disk space on a Processor reset. It should be set to allow the largest cFE Application to be decompressed. During a Processor reset, if there is not sufficient space left on the disk, it will be re-formatted in order to clear up some space.

This feature can be turned OFF by setting the parameter to 0.

Limits

There is a lower limit of 0 and an upper limit of 75 on this configuration parameter. Units are percentage. A setting of zero will turn this feature off.

Definition at line 348 of file example_platform_cfg.h.

12.30.2.76 CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE #define CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE 512

Purpose ES Ram Disk Sector Size

Description:

Defines the ram disk sector size. The ram disk is 1 of 4 memory areas that are preserved on a processor reset. NOTE: Changing this value changes memory allocation, and may require changes to platform specific values (in CFE_PSP) such as USER_RESERVED_MEM in VxWorks depending on the memory areas being used for preserved data and on OS specific behavior.

Limits

There is a lower limit of 128. There are no restrictions on the upper limit however, the maximum RAM disk sector size is system dependent and should be verified.

Definition at line 306 of file example_platform_cfg.h.

12.30.2.77 CFE_PLATFORM_ES_START_TASK_PRIORITY #define CFE_PLATFORM_ES_START_TASK_PRIORITY 68

Purpose Define ES Task Priority

Description:

Defines the cFE_ES Task priority.

Limits

Not Applicable

Definition at line 100 of file example_platform_cfg.h.

```
12.30.2.78 CFE_PLATFORM_ES_START_TASK_STACK_SIZE #define CFE_PLATFORM_ES_START_TASK_←  
STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
```

Purpose Define ES Task Stack Size

Description:

Defines the cFE_ES Task Stack Size

Limits

There is a lower limit of 2048 on this configuration parameter. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 115 of file example_platform_cfg.h.

```
12.30.2.79 CFE_PLATFORM_ES_STARTUP_SCRIPT_TIMEOUT_MSEC #define CFE_PLATFORM_ES_STARTUP←  
_SCRIPT_TIMEOUT_MSEC 1000
```

Purpose Startup script timeout

Description:

The upper limit for the total amount of time that all apps listed in the CFE ES startup script may take to all become ready.

Unlike the "core" app timeout, this is a soft limit; if the allotted time is exceeded, it probably indicates an issue with one of the apps, but does not cause CFE ES to take any additional action other than logging the event to the syslog.

Units are in milliseconds

Limits:

Must be defined as an integer value that is greater than or equal to zero.

Definition at line 870 of file example_platform_cfg.h.

```
12.30.2.80 CFE_PLATFORM_ES_STARTUP_SYNC_POLL_MSEC #define CFE_PLATFORM_ES_STARTUP_SYNC_←  
POLL_MSEC 50
```

Purpose Poll timer for startup sync delay

Description:

During startup, some tasks may need to synchronize their own initialization with the initialization of other applications in the system.

CFE ES implements an API to accomplish this, that performs a task delay (sleep) while polling the overall system state until other tasks are ready.

This value controls the amount of time that the CFE_ES_ApplicationSyncDelay will sleep between each check of the system state. This should be large enough to allow other tasks to run, but not so large as to noticeably delay the startup completion.

Units are in milliseconds

Limits:

Must be defined as an integer value that is greater than or equal to zero.

Definition at line 852 of file example_platform_cfg.h.

12.30.2.81 CFE_PLATFORM_ES_SYSTEM_LOG_SIZE #define CFE_PLATFORM_ES_SYSTEM_LOG_SIZE 3072

Purpose Define Size of the cFE System Log.

Description:

Defines the size in bytes of the cFE system log. The system log holds variable length strings that are terminated by a linefeed and null character.

Limits

There is a lower limit of 512. There are no restrictions on the upper limit however, the maximum system log size is system dependent and should be verified.

Definition at line 215 of file example_platform_cfg.h.

12.30.2.82 CFE_PLATFORM_ES_USER_RESERVED_SIZE #define CFE_PLATFORM_ES_USER_RESERVED_SIZE (1024 * 1024)

Purpose Define User Reserved Memory Size

Description:

User Reserved Memory Size. This is the size in bytes of the cFE User reserved Memory area. This is a block of memory that is available for cFE application use. The address is obtained by calling [CFE_PSP.GetUserReservedArea](#). The User Reserved Memory is one of four memory areas that are preserved during a processor reset. NOTE: Changing this value changes memory allocation, and may require changes to platform specific values (in CFE_PSP) such as USER_RESERVED_MEM in VxWorks depending on the memory areas being used for preserved data and on OS specific behavior.

Limits

There is a lower limit of 1024 and an upper limit of `UINT_MAX` (4 Gigabytes) on this configuration parameter.

Definition at line 385 of file example_platform_cfg.h.

12.30.2.83 CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE #define CFE_PLATFORM_ES_VOLATILE_STARTUPFILE "/ram/cfe_es_startup.scr"

Purpose ES Volatile Startup Filename

Description:

The value of this constant defines the path and name of the file that contains a list of modules that will be loaded and started by the cFE after the cFE finishes its startup sequence.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 432 of file example_platform_cfg.h.

12.30.2.84 CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC #define CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC 15

Purpose Sustained number of event messages per second per app before squelching

Description:

Sustained number of events that may be emitted per app per second.

Limits

This number must be less than or equal to [CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST](#). Values lower than 8 may cause functional and unit test failures.

Definition at line 938 of file example_platform_cfg.h.

12.30.2.85 CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE #define CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE "/ram/cfe_evs_app.dat"

Purpose Default EVS Application Data Filename

Description:

The value of this constant defines the filename used to store the EVS Application Data(event counts/filtering information). This filename is used only when no filename is specified in the command to dump the event log.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 979 of file example_platform_cfg.h.

12.30.2.86 CFE_PLATFORM_EVS_DEFAULT_LOG_FILE #define CFE_PLATFORM_EVS_DEFAULT_LOG_FILE "/ram/cfe_evs.log"

Purpose Default Event Log Filename

Description:

The value of this constant defines the filename used to store the Event Services local event log. This filename is used only when no filename is specified in the command to dump the event log.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 952 of file example_platform_cfg.h.

12.30.2.87 CFE_PLATFORM_EVS_DEFAULT_LOG_MODE #define CFE_PLATFORM_EVS_DEFAULT_LOG_MODE 1

Purpose Default EVS Local Event Log Mode

Description:

Defines a state of overwrite(0) or discard(1) for the operation of the EVS local event log. The log may operate in either Overwrite mode = 0, where once the log becomes full the oldest event in the log will be overwritten, or Discard mode = 1, where once the log becomes full the contents of the log are preserved and the new event is discarded. Overwrite Mode = 0, Discard Mode = 1.

Limits

The valid settings are 0 or 1

Definition at line 1026 of file example_platform_cfg.h.

12.30.2.88 CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE #define CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE CFE_EVS_MsgFormat_LONG

Purpose Default EVS Message Format Mode

Description:

Defines the default message format (long or short) for event messages being sent to the ground. Choose between [CFE_EVS_MsgFormat_LONG](#) or [CFE_EVS_MsgFormat_SHORT](#).

Limits

The valid settings are [CFE_EVS_MsgFormat_LONG](#) or [CFE_EVS_MsgFormat_SHORT](#)

Definition at line 1039 of file example_platform_cfg.h.

12.30.2.89 CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG #define CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG 0xE

Purpose Default EVS Event Type Filter Mask

Description:

Defines a state of on or off for all four event types. The term event 'type' refers to the criticality level and may be Debug, Informational, Error or Critical. Each event type has a bit position. (bit 0 = Debug, bit 1 = Info, bit 2 = Error, bit 3 = Critical). This is a global setting, meaning it applies to all applications. To filter an event type, set its bit to zero. For example, 0xE means Debug = OFF, Info = ON, Error = ON, Critical = ON

Limits

The valid settings are 0x0 to 0xF.

Definition at line 1010 of file example_platform_cfg.h.

12.30.2.90 CFE_PLATFORM_EVS_LOG_MAX #define CFE_PLATFORM_EVS_LOG_MAX 20

Purpose Maximum Number of Events in EVS Local Event Log

Description:

Dictates the EVS local event log capacity. Units are the number of events.

Limits

There are no restrictions on the lower and upper limits however, the maximum log size is system dependent and should be verified.

Definition at line 964 of file example_platform_cfg.h.

12.30.2.91 CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST #define CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST 32

Purpose Maximum number of event before squelching

Description:

Maximum number of events that may be emitted per app per second. Setting this to 0 will cause events to be unrestricted.

Limits

This number must be less than or equal to INT_MAX/1000

Definition at line 926 of file example_platform_cfg.h.

12.30.2.92 CFE_PLATFORM_EVS_MAX_EVENT_FILTERS #define CFE_PLATFORM_EVS_MAX_EVENT_FILTERS 8

Purpose Define Maximum Number of Event Filters per Application

Description:

Maximum number of events that may be filtered per application.

Limits

There are no restrictions on the lower and upper limits however, the maximum number of event filters is system dependent and should be verified.

Definition at line 914 of file example_platform_cfg.h.

12.30.2.93 CFE_PLATFORM_EVS_PORT_DEFAULT #define CFE_PLATFORM_EVS_PORT_DEFAULT 0x0001

Purpose Default EVS Output Port State

Description:

Defines the default port state (enabled or disabled) for the four output ports defined within the Event Service. Port 1 is usually the uart output terminal. To enable a port, set the proper bit to a 1. Bit 0 is port 1, bit 1 is port2 etc.

Limits

The valid settings are 0x0 to 0xF.

Definition at line 993 of file example_platform_cfg.h.

12.30.2.94 CFE_PLATFORM_EVS_START_TASK_PRIORITY #define CFE_PLATFORM_EVS_START_TASK_PRIORITY 61

Purpose Define EVS Task Priority

Description:

Defines the cFE_EVS Task priority.

Limits

Not Applicable

Definition at line 886 of file example_platform_cfg.h.

12.30.2.95 CFE_PLATFORM_EVS_START_TASK_STACK_SIZE #define CFE_PLATFORM_EVS_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

Purpose Define EVS Task Stack Size

Description:

Defines the cFE_EVS Task Stack Size

Limits

There is a lower limit of 2048 on this configuration parameter. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 901 of file example_platform_cfg.h.

12.30.2.96 CFE_PLATFORM_SB_BUF_MEMORY_BYTES #define CFE_PLATFORM_SB_BUF_MEMORY_BYTES 524288

Purpose Size of the SB buffer memory pool

Description:

Dictates the size of the SB memory pool. For each message the SB sends, the SB dynamically allocates from this memory pool, the memory needed to process the message. The memory needed to process each message is msg size + msg descriptor(CFE_SB_BufferD_t). This memory pool is also used to allocate destination descriptors (CFE_SB_DestinationD_t) during the subscription process. To see the run-time, high-water mark and the current utilization figures regarding this parameter, send an SB command to 'Send Statistics Pkt'. Some memory statistics have been added to the SB housekeeping packet. NOTE: It is important to monitor these statistics to ensure the desired memory margin is met.

Limits

This parameter has a lower limit of 512 and an upper limit of UINT_MAX (4 Gigabytes).

Definition at line 1134 of file example_platform_cfg.h.

```
12.30.2.97 CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME #define CFE_PLATFORM_SB_DEFAULT_MAP_←  
FILENAME "/ram/cfe_sb_msgmap.dat"
```

Purpose Default Message Map Filename

Description:

The value of this constant defines the filename used to store the software bus message map information. This filename is used only when no filename is specified in the command. The message map is a lookup table (array of 16bit words) that has an element for each possible MsgId value and holds the routing table index for that MsgId. The Msg Map provides fast access to the destinations of a message.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 1204 of file example_platform_cfg.h.

```
12.30.2.98 CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT #define CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT 4
```

Purpose Default Subscription Message Limit

Description:

Dictates the default Message Limit when using the [CFE_SB_Subscribe](#) API. This will limit the number of messages with a specific message ID that can be received through a subscription. This only changes the default; other message limits can be set on a per subscription basis using [CFE_SB_SubscribeEx](#).

Limits

This parameter has a lower limit of 4 and an upper limit of 65535.

Definition at line 1112 of file example_platform_cfg.h.

```
12.30.2.99 CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME #define CFE_PLATFORM_SB_DEFAULT_PIPE_←  
FILENAME "/ram/cfe_sb_pipe.dat"
```

Purpose Default Pipe Information Filename

Description:

The value of this constant defines the filename used to store the software bus pipe information. This filename is used only when no filename is specified in the command.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 1187 of file example_platform_cfg.h.

12.30.2.100 CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME #define CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME "/ram/cfe_sb_route.dat"

Purpose Default Routing Information Filename

Description:

The value of this constant defines the filename used to store the software bus routing information. This filename is used only when no filename is specified in the command.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 1173 of file `example_platform_cfg.h`.

12.30.2.101 CFE_PLATFORM_SB_FILTER_MASK1 #define CFE_PLATFORM_SB_FILTER_MASK1 [CFE_EVS_FIRST_4_STOP](#)
Definition at line 1222 of file `example_platform_cfg.h`.

12.30.2.102 CFE_PLATFORM_SB_FILTER_MASK2 #define CFE_PLATFORM_SB_FILTER_MASK2 [CFE_EVS_FIRST_4_STOP](#)
Definition at line 1225 of file `example_platform_cfg.h`.

12.30.2.103 CFE_PLATFORM_SB_FILTER_MASK3 #define CFE_PLATFORM_SB_FILTER_MASK3 [CFE_EVS_FIRST_16_STOP](#)
Definition at line 1228 of file `example_platform_cfg.h`.

12.30.2.104 CFE_PLATFORM_SB_FILTER_MASK4 #define CFE_PLATFORM_SB_FILTER_MASK4 [CFE_EVS_FIRST_16_STOP](#)
Definition at line 1231 of file `example_platform_cfg.h`.

12.30.2.105 CFE_PLATFORM_SB_FILTER_MASK5 #define CFE_PLATFORM_SB_FILTER_MASK5 [CFE_EVS_NO_FILTER](#)
Definition at line 1234 of file `example_platform_cfg.h`.

12.30.2.106 CFE_PLATFORM_SB_FILTER_MASK6 #define CFE_PLATFORM_SB_FILTER_MASK6 [CFE_EVS_NO_FILTER](#)
Definition at line 1237 of file `example_platform_cfg.h`.

12.30.2.107 CFE_PLATFORM_SB_FILTER_MASK7 #define CFE_PLATFORM_SB_FILTER_MASK7 [CFE_EVS_NO_FILTER](#)
Definition at line 1240 of file `example_platform_cfg.h`.

12.30.2.108 CFE_PLATFORM_SB_FILTER_MASK8 #define CFE_PLATFORM_SB_FILTER_MASK8 [CFE_EVS_NO_FILTER](#)
Definition at line 1243 of file `example_platform_cfg.h`.

12.30.2.109 CFE_PLATFORM_SB_FILTERED_EVENT1

```
#define CFE_PLATFORM_SB_FILTERED_EVENT1 CFE_SB_SEND_NO_SUBS_EID
```

Purpose SB Event Filtering

Description:

This group of configuration parameters dictates what SB events will be filtered through SB. The filtering will begin after the SB task initializes and stay in effect until a cmd to SB changes it. This allows the operator to set limits on the number of event messages that are sent during system initialization. NOTE: Set all unused event values and mask values to zero

Limits

This filtering applies only to SB events. These parameters have a lower limit of 0 and an upper limit of 65535.

Definition at line 1221 of file example_platform_cfg.h.

12.30.2.110 CFE_PLATFORM_SB_FILTERED_EVENT2

```
#define CFE_PLATFORM_SB_FILTERED_EVENT2 CFE_SB_DUP_SUBSCRIP_EID
```

Definition at line 1224 of file example_platform_cfg.h.

12.30.2.111 CFE_PLATFORM_SB_FILTERED_EVENT3

```
#define CFE_PLATFORM_SB_FILTERED_EVENT3 CFE_SB_MSGID_LIM_ERR_EID
```

Definition at line 1227 of file example_platform_cfg.h.

12.30.2.112 CFE_PLATFORM_SB_FILTERED_EVENT4

```
#define CFE_PLATFORM_SB_FILTERED_EVENT4 CFE_SB_Q_FULL_ERR_EID
```

Definition at line 1230 of file example_platform_cfg.h.

12.30.2.113 CFE_PLATFORM_SB_FILTERED_EVENT5

```
#define CFE_PLATFORM_SB_FILTERED_EVENT5 0
```

Definition at line 1233 of file example_platform_cfg.h.

12.30.2.114 CFE_PLATFORM_SB_FILTERED_EVENT6

```
#define CFE_PLATFORM_SB_FILTERED_EVENT6 0
```

Definition at line 1236 of file example_platform_cfg.h.

12.30.2.115 CFE_PLATFORM_SB_FILTERED_EVENT7

```
#define CFE_PLATFORM_SB_FILTERED_EVENT7 0
```

Definition at line 1239 of file example_platform_cfg.h.

12.30.2.116 CFE_PLATFORM_SB_FILTERED_EVENT8

```
#define CFE_PLATFORM_SB_FILTERED_EVENT8 0
```

Definition at line 1242 of file example_platform_cfg.h.

12.30.2.117 CFE_PLATFORM_SB_HIGHEST_VALID_MSGID

```
#define CFE_PLATFORM_SB_HIGHEST_VALID_
```

MSGID 0x1FFF

Purpose Highest Valid Message Id

Description:

The value of this constant dictates the range of valid message ID's, from 0 to CFE_PLATFORM_SB_HIGHEST_VALID_MSGID (inclusive).

Although this can be defined differently across platforms, each platform can only publish/subscribe to message ids within their allowable range. Typically this value is set the same across all mission platforms to avoid this complexity.

Limits

This parameter has a lower limit is 1, and an upper limit of 0xFFFFFFFF.

When using the direct message map implementation for software bus routing, this value is used to size the map where a value of 0xFFFF results in a 16 KBytes map and 0xFFFF is 128 KBytes.

When using the hash implementation for software bus routing, a multiple of the CFE_PLATFORM_SB_MAX_MSG_IDS is used to size the message map. In that case the range selected here does not impact message map memory use, so it's reasonable to use up to the full range supported by the message ID implementation.

Definition at line 1159 of file example_platform_cfg.h.

12.30.2.118 CFE_PLATFORM_SB_MAX_BLOCK_SIZE #define CFE_PLATFORM_SB_MAX_BLOCK_SIZE ([CFE_MISSION_SB_MAX_SB_M](#)
+ 128)

Definition at line 1272 of file example_platform_cfg.h.

12.30.2.119 CFE_PLATFORM_SB_MAX_DEST_PER_PKT #define CFE_PLATFORM_SB_MAX_DEST_PER_PKT 16

Purpose Maximum Number of unique local destinations a single MsgId can have

Description:

Dictates the maximum number of unique local destinations a single MsgId can have.

Limits

This parameter has a lower limit of 1. There are no restrictions on the upper limit however, the maximum number of destinations per packet is system dependent and should be verified. Destination number values that are checked against this configuration are defined by a 16 bit data word.

Definition at line 1097 of file example_platform_cfg.h.

12.30.2.120 CFE_PLATFORM_SB_MAX_MSG_IDS #define CFE_PLATFORM_SB_MAX_MSG_IDS 256

Purpose Maximum Number of Unique Message IDs SB Routing Table can hold

Description:

Dictates the maximum number of unique MsgIds the SB routing table will hold. This constant has a direct effect on the size of SB's tables and arrays. Keeping this count as low as possible will save memory. To see the run-time, high-water mark and the current utilization figures regarding this parameter, send an SB command to 'Send Statistics Pkt'.

Limits

This must be a power of two if software bus message routing hash implementation is being used. Lower than 64 will cause unit test failures, and telemetry reporting is impacted below 32. There is no hard upper limit, but impacts memory footprint. For software bus message routing search implementation the number of msg ids subscribed to impacts performance.

Definition at line 1064 of file example_platform_cfg.h.

12.30.2.121 CFE_PLATFORM_SB_MAX_PIPES #define CFE_PLATFORM_SB_MAX_PIPES 64

Purpose Maximum Number of Unique Pipes SB Routing Table can hold

Description:

Dictates the maximum number of unique Pipes the SB routing table will hold. This constant has a direct effect on the size of SB's tables and arrays. Keeping this count as low as possible will save memory. To see the run-time, high-water mark and the current utilization figures regarding this parameter, send an SB command to 'Send Statistics Pkt'.

Limits

This parameter has a lower limit of 1. This parameter must also be less than or equal to OS_MAX_QUEUES.

Definition at line 1081 of file example_platform_cfg.h.

12.30.2.122 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01 8

Purpose Define SB Memory Pool Block Sizes

Description:

Software Bus Memory Pool Block Sizes

Limits

These sizes MUST be increasing and MUST be an integral multiple of 4. The number of block sizes defined cannot exceed [CFE_PLATFORM_ES_POOL_MAX_BUCKETS](#)

Definition at line 1256 of file example_platform_cfg.h.

12.30.2.123 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_02 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_02 16

Definition at line 1257 of file example_platform_cfg.h.

12.30.2.124 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_03 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_03 20

Definition at line 1258 of file example_platform_cfg.h.

12.30.2.125 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_04 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_04 36

Definition at line 1259 of file example_platform_cfg.h.

12.30.2.126 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_05 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_05 64

Definition at line 1260 of file example_platform_cfg.h.

12.30.2.127 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_06 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_06 96

Definition at line 1261 of file example_platform_cfg.h.

12.30.2.128 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_07 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_07 128

Definition at line 1262 of file example_platform_cfg.h.

12.30.2.129 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_08 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_08 160

Definition at line 1263 of file example_platform_cfg.h.

12.30.2.130 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_09 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_09 256

Definition at line 1264 of file example_platform_cfg.h.

12.30.2.131 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_10 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_10 512

Definition at line 1265 of file example_platform_cfg.h.

12.30.2.132 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_11 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_11 1024

Definition at line 1266 of file example_platform_cfg.h.

12.30.2.133 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_12 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_12 2048

Definition at line 1267 of file example_platform_cfg.h.

12.30.2.134 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_13 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_13 4096

Definition at line 1268 of file example_platform_cfg.h.

12.30.2.135 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_14 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_14 8192

Definition at line 1269 of file example_platform_cfg.h.

12.30.2.136 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_15 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_15 16384

Definition at line 1270 of file example_platform_cfg.h.

12.30.2.137 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_16 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_16 32768

Definition at line 1271 of file example_platform_cfg.h.

12.30.2.138 CFE_PLATFORM_SB_START_TASK_PRIORITY #define CFE_PLATFORM_SB_START_TASK_PRIORITY 64

Purpose Define SB Task Priority

Description:

Defines the cFE_SB Task priority.

Limits

Not Applicable

Definition at line 1283 of file example_platform_cfg.h.

12.30.2.139 CFE_PLATFORM_SB_START_TASK_STACK_SIZE #define CFE_PLATFORM_SB_START_TASK_←
STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

Purpose Define SB Task Stack Size

Description:

Defines the cFE_SB Task Stack Size

Limits

There is a lower limit of 2048 on this configuration parameter. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 1298 of file example_platform_cfg.h.

12.30.2.140 CFE_PLATFORM_TBL_BUF_MEMORY_BYTES #define CFE_PLATFORM_TBL_BUF_MEMORY_←
BYTES 524288

Purpose Size of Table Services Table Memory Pool

Description:

Defines the TOTAL size of the memory pool that cFE Table Services allocates from the system. The size must be large enough to provide memory for each registered table, the inactive buffers for double buffered tables and for the shared inactive buffers for single buffered tables.

Limits

The cFE does not place a limit on the size of this parameter.

Definition at line 1345 of file example_platform_cfg.h.

12.30.2.141 CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE #define CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE "/ram/cfe_tbl_reg.log"

Purpose Default Filename for a Table Registry Dump

Description:

Defines the file name used to store the table registry when no filename is specified in the dump registry command.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 1459 of file example_platform_cfg.h.

12.30.2.142 CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES #define CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES 32

Purpose Maximum Number of Critical Tables that can be Registered

Description:

Defines the maximum number of critical tables supported by this processor's Table Services.

Limits

This number must be less than 32767. It should be recognized that this parameter determines the size of the Critical Table Registry which is maintained in the Critical Data Store. An excessively high number will waste Critical Data Store memory. Therefore, this number must not exceed the value defined in CFE_ES_CDS_MAX_CRITICAL_TABLES.

Definition at line 1400 of file example_platform_cfg.h.

12.30.2.143 CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE #define CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE 16384

Purpose Maximum Size Allowed for a Double Buffered Table

Description:

Defines the maximum allowed size (in bytes) of a double buffered table.

Limits

The cFE does not place a limit on the size of this parameter but it must be less than half of [CFE_PLATFORM_TBL_BUF_MEMORY_BLOCK_SIZE](#).

Definition at line 1357 of file example_platform_cfg.h.

12.30.2.144 CFE_PLATFORM_TBL_MAX_NUM_HANDLES #define CFE_PLATFORM_TBL_MAX_NUM_HANDLES 256

Purpose Maximum Number of Table Handles

Description:

Defines the maximum number of Table Handles.

Limits

This number must be less than 32767. This number must be at least as big as the number of tables (**CFE_PLATFORM_TBL_MAX_NUM_TABLES**) and should be set higher if tables are shared between applications.

Definition at line 1413 of file example_platform_cfg.h.

12.30.2.145 CFE_PLATFORM_TBL_MAX_NUM_TABLES #define CFE_PLATFORM_TBL_MAX_NUM_TABLES 128

Purpose Maximum Number of Tables Allowed to be Registered

Description:

Defines the maximum number of tables supported by this processor's Table Services.

Limits

This number must be less than 32767. It should be recognized that this parameter determines the size of the Table Registry. An excessively high number will waste memory.

Definition at line 1386 of file example_platform_cfg.h.

12.30.2.146 CFE_PLATFORM_TBL_MAX_NUM_VALIDATIONS #define CFE_PLATFORM_TBL_MAX_NUM_VALIDATIONS 10

Purpose Maximum Number of Simultaneous Table Validations

Description:

Defines the maximum number of pending validations that the Table Services can handle at any one time. When a table has a validation function, a validation request is made of the application to perform that validation. This number determines how many of those requests can be outstanding at any one time.

Limits

This number must be less than 32767. An excessively high number will degrade system performance and waste memory. A number less than 20 is suggested but not required.

Definition at line 1446 of file example_platform_cfg.h.

12.30.2.147 CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS #define CFE_PLATFORM_TBL_MAX_←
SIMULTANEOUS_LOADS 4

Purpose Maximum Number of Simultaneous Loads to Support

Description:

Defines the maximum number of single buffered tables that can be loaded simultaneously. This number is used to determine the number of shared buffers to allocate.

Limits

This number must be less than 32767. An excessively high number will degrade system performance and waste memory. A number less than 5 is suggested but not required.

Definition at line 1428 of file example_platform_cfg.h.

12.30.2.148 CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE #define CFE_PLATFORM_TBL_MAX_SNGL_TABLE←
_SIZE 16384

Purpose Maximum Size Allowed for a Single Buffered Table

Description:

Defines the maximum allowed size (in bytes) of a single buffered table. **NOTE:** This size determines the size of all shared table buffers. Therefore, this size will be multiplied by [CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS](#) below when allocating memory for shared tables.

Limits

The cFE does not place a limit on the size of this parameter but it must be small enough to allow for [CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS](#) number of tables to fit into [CFE_PLATFORM_TBL_BUF_MEMORY_BYTES](#).

Definition at line 1373 of file example_platform_cfg.h.

12.30.2.149 CFE_PLATFORM_TBL_START_TASK_PRIORITY #define CFE_PLATFORM_TBL_START_TASK_←
PRIORITY 70

Purpose Define TBL Task Priority

Description:

Defines the cFE_TBL Task priority.

Limits

Not Applicable

Definition at line 1314 of file example_platform_cfg.h.

12.30.2.150 CFE_PLATFORM_TBL_START_TASK_STACK_SIZE #define CFE_PLATFORM_TBL_START_TASK_←
STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

Purpose Define TBL Task Stack Size

Description:

Defines the cFE_TBL Task Stack Size

Limits

There is a lower limit of 2048 on this configuration parameter. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 1329 of file example_platform_cfg.h.

12.30.2.151 CFE_PLATFORM_TBL_U32FROM4CHARS #define CFE_PLATFORM_TBL_U32FROM4CHARS (←
_C1,
_C2,
_C3,
_C4) ((uint32) (_C1) << 24 | (uint32) (_C2) << 16 | (uint32) (_C3) << 8 | (uint32) (←
_C4))

Definition at line 1481 of file example_platform_cfg.h.

12.30.2.152 CFE_PLATFORM_TBL_VALID_PRID_1 #define CFE_PLATFORM_TBL_VALID_PRID_1 (1)

Purpose Processor ID values used for table load validation

Description:

Defines the processor ID values used for validating the processor ID field in the table file header. To be valid, the spacecraft ID specified in the table file header must match one of the values defined here.

Limits

This value can be any 32 bit unsigned integer.

Definition at line 1530 of file example_platform_cfg.h.

12.30.2.153 CFE_PLATFORM_TBL_VALID_PRID_2 #define CFE_PLATFORM_TBL_VALID_PRID_2 (CFE_PLATFORM_TBL_U32FROM4CH←
'b', 'c', 'd'))

Definition at line 1531 of file example_platform_cfg.h.

12.30.2.154 CFE_PLATFORM_TBL_VALID_PRID_3 #define CFE_PLATFORM_TBL_VALID_PRID_3 0

Definition at line 1532 of file example_platform_cfg.h.

12.30.2.155 CFE_PLATFORM_TBL_VALID_PRID_4 #define CFE_PLATFORM_TBL_VALID_PRID_4 0

Definition at line 1533 of file example_platform_cfg.h.

12.30.2.156 CFE_PLATFORM_TBL_VALID_PRID_COUNT #define CFE_PLATFORM_TBL_VALID_PRID_COUNT 0

Purpose Number of Processor ID's specified for validation

Description:

Defines the number of specified processor ID values that are verified during table loads. If the number is zero then no validation of the processor ID field in the table file header is performed when tables are loaded. Non-zero values indicate how many values from the list of processor ID's defined below are compared to the processor ID field in the table file header. The ELF2CFETBL tool may be used to create table files with specified processor ID values.

Limits

This number must be greater than or equal to zero and less than or equal to 4.

Definition at line 1516 of file example_platform_cfg.h.

12.30.2.157 CFE_PLATFORM_TBL_VALID_SCID_1 #define CFE_PLATFORM_TBL_VALID_SCID_1 (0x42)

Purpose Spacecraft ID values used for table load validation

Description:

Defines the spacecraft ID values used for validating the spacecraft ID field in the table file header. To be valid, the spacecraft ID specified in the table file header must match one of the values defined here.

Limits

This value can be any 32 bit unsigned integer.

Definition at line 1496 of file example_platform_cfg.h.

12.30.2.158 CFE_PLATFORM_TBL_VALID_SCID_2 #define CFE_PLATFORM_TBL_VALID_SCID_2 (CFE_PLATFORM_TBL_U32FROM4CH
'b', 'c', 'd'))

Definition at line 1497 of file example_platform_cfg.h.

12.30.2.159 CFE_PLATFORM_TBL_VALID_SCID_COUNT #define CFE_PLATFORM_TBL_VALID_SCID_COUNT 0

Purpose Number of Spacecraft ID's specified for validation

Description:

Defines the number of specified spacecraft ID values that are verified during table loads. If the number is zero then no validation of the spacecraft ID field in the table file header is performed when tables are loaded. Non-zero values indicate how many values from the list of spacecraft ID's defined below are compared to the spacecraft ID field in the table file header. The ELF2CFETBL tool may be used to create table files with specified spacecraft ID values.

Limits

This number must be greater than or equal to zero and less than or equal to 2.

Definition at line 1478 of file example_platform_cfg.h.

12.30.2.160 CFE_PLATFORM_TIME_CFG_CLIENT #define CFE_PLATFORM_TIME_CFG_CLIENT false
Definition at line 1553 of file example_platform_cfg.h.

12.30.2.161 CFE_PLATFORM_TIME_CFG_LATCH_FLY #define CFE_PLATFORM_TIME_CFG_LATCH_FLY 8

Purpose Define Periodic Time to Update Local Clock Tone Latch

Description:

Define Periodic Time to Update Local Clock Tone Latch. Applies only when in flywheel mode. This define dictates the period at which the simulated 'last tone' time is updated. Units are seconds.

Limits

Not Applicable

Definition at line 1710 of file example_platform_cfg.h.

12.30.2.162 CFE_PLATFORM_TIME_CFG_SERVER #define CFE_PLATFORM_TIME_CFG_SERVER true

Purpose Time Server or Time Client Selection

Description:

This configuration parameter selects whether the Time task functions as a time "server" or "client". A time server generates the "time at the tone" packet which is received by time clients.

Limits

Enable one, and only one by defining either CFE_PLATFORM_TIME_CFG_SERVER or CFE_PLATFORM_TIME_CFG_CLIENT AS true. The other must be defined as false.

Definition at line 1552 of file example_platform_cfg.h.

12.30.2.163 CFE_PLATFORM_TIME_CFG_SIGNAL #define CFE_PLATFORM_TIME_CFG_SIGNAL false

Purpose Include or Exclude the Primary/Redundant Tone Selection Cmd

Description:

Depending on the specific hardware system configuration, it may be possible to switch between a primary and redundant tone signal. If supported by hardware, this definition will enable command interfaces to select the active tone signal. Both Time Clients and Time Servers support this feature. Note: Set the CFE_PLATFORM_TIME_CFG_SIGNAL define to true to enable tone signal commands.

Limits

Not Applicable

Definition at line 1600 of file example_platform_cfg.h.

12.30.2.164 CFE_PLATFORM_TIME_CFG_SOURCE #define CFE_PLATFORM_TIME_CFG_SOURCE false

Purpose Include or Exclude the Internal/External Time Source Selection Cmd

Description:

By default, Time Servers maintain time using an internal MET which may be a h/w register or software counter, depending on available hardware. The following definition enables command interfaces to switch between an internal MET, or external time data received from one of several supported external time sources. Only a Time Server may be configured to use external time data. Note: Set the CFE_PLATFORM_TIME_CFG_SOURCE define to true to include the Time Source Selection Command (command allows selection between the internal or external time source). Then choose the external source with the CFE_TIME_CFG_SRC_??? define.

Limits

Only applies if [CFE_PLATFORM_TIME_CFG_SERVER](#) is set to true.

Definition at line 1620 of file example_platform_cfg.h.

12.30.2.165 CFE_PLATFORM_TIME_CFG_SRC_GPS #define CFE_PLATFORM_TIME_CFG_SRC_GPS false

Definition at line 1637 of file example_platform_cfg.h.

12.30.2.166 CFE_PLATFORM_TIME_CFG_SRC_MET #define CFE_PLATFORM_TIME_CFG_SRC_MET false

Purpose Choose the External Time Source for Server only

Description:

If [CFE_PLATFORM_TIME_CFG_SOURCE](#) is set to true, then one of the following external time source types must also be set to true. Do not set any of the external time source types to true unless [CFE_PLATFORM_TIME_CFG_SOURCE](#) is set to true.

Limits

1. If [CFE_PLATFORM_TIME_CFG_SOURCE](#) is set to true then one and only one of the following three external time sources can and must be set true: [CFE_PLATFORM_TIME_CFG_SRC_MET](#), [CFE_PLATFORM_TIME_CFG_SRC_GPS](#), [CFE_PLATFORM_TIME_CFG_SRC_TIME](#)
2. Only applies if [CFE_PLATFORM_TIME_CFG_SERVER](#) is set to true.

Definition at line 1636 of file example_platform_cfg.h.

12.30.2.167 CFE_PLATFORM_TIME_CFG_SRC_TIME #define CFE_PLATFORM_TIME_CFG_SRC_TIME false

Definition at line 1638 of file example_platform_cfg.h.

12.30.2.168 CFE_PLATFORM_TIME_CFG_START_FLY #define CFE_PLATFORM_TIME_CFG_START_FLY 2

Purpose Define Time to Start Flywheel Since Last Tone

Description:

Define time to enter flywheel mode (in seconds since last tone data update) Units are microseconds as measured with the local clock.

Limits

Not Applicable

Definition at line 1697 of file example_platform_cfg.h.

12.30.2.169 CFE_PLATFORM_TIME_CFG_TONE_LIMIT `#define CFE_PLATFORM_TIME_CFG_TONE_LIMIT 20000`**Purpose** Define Timing Limits From One Tone To The Next**Description:**

Defines limits to the timing of the 1Hz tone signal. A tone signal is valid only if it arrives within one second (plus or minus the tone limit) from the previous tone signal.Units are microseconds as measured with the local clock.

Limits

Not Applicable

Definition at line 1685 of file example_platform_cfg.h.

12.30.2.170 CFE_PLATFORM_TIME_CFG_VIRTUAL `#define CFE_PLATFORM_TIME_CFG_VIRTUAL true`**Purpose** Time Tone In Big-Endian Order**Description:**

If this configuration parameter is defined, the CFE time server will publish time tones with payloads in big-endian order, and time clients will expect the tones to be in big-endian order. This is useful for mixed-endian environments. This will become obsolete once EDS is available and the CFE time tone message is defined.

Purpose Local MET or Virtual MET Selection for Time Servers**Description:**

Depending on the specific hardware system configuration, it may be possible for Time Servers to read the "local" MET from a h/w register rather than having to track the MET as the count of tone signal interrupts (virtual MET)

Time Clients must be defined as using a virtual MET. Also, a Time Server cannot be defined as having both a h/w MET and an external time source (they both cannot synchronize to the same tone).

Note: "disable" this define (set to false) only for Time Servers with local hardware that supports a h/w MET that is synchronized to the tone signal !!!

Limits

Only applies if [CFE_PLATFORM_TIME_CFG_SERVER](#) is set to true.

Definition at line 1585 of file example_platform_cfg.h.

12.30.2.171 CFE_PLATFORM_TIME_MAX_DELTA_SECS #define CFE_PLATFORM_TIME_MAX_DELTA_SECS 0

Purpose Define the Max Delta Limits for Time Servers using an Ext Time Source

Description:

If **CFE_PLATFORM_TIME_CFG_SOURCE** is set to true and one of the external time sources is also set to true, then the delta time limits for range checking is used.

When a new time value is received from an external source, the value is compared against the "expected" time value. If the delta exceeds the following defined amount, then the new time data will be ignored. This range checking is only performed after the clock state has been commanded to "valid". Until then, external time data is accepted unconditionally.

Limits

Applies only if both **CFE_PLATFORM_TIME_CFG_SERVER** and **CFE_PLATFORM_TIME_CFG_SOURCE** are set to true.

Definition at line 1657 of file example_platform_cfg.h.

12.30.2.172 CFE_PLATFORM_TIME_MAX_DELTA_SUBS #define CFE_PLATFORM_TIME_MAX_DELTA_SUBS 500000
Definition at line 1658 of file example_platform_cfg.h.**12.30.2.173 CFE_PLATFORM_TIME_MAX_LOCAL_SECS** #define CFE_PLATFORM_TIME_MAX_LOCAL_SECS 27

Purpose Define the Local Clock Rollover Value in seconds and subseconds

Description:

Specifies the capability of the local clock. Indicates the time at which the local clock rolls over.

Limits

Not Applicable

Definition at line 1670 of file example_platform_cfg.h.

12.30.2.174 CFE_PLATFORM_TIME_MAX_LOCAL_SUBS #define CFE_PLATFORM_TIME_MAX_LOCAL_SUBS 0
Definition at line 1671 of file example_platform_cfg.h.**12.30.2.175 CFE_PLATFORM_TIME_ONEHZ_TASK_PRIORITY** #define CFE_PLATFORM_TIME_ONEHZ_TASK_PRIORITY 25

PRIORITY 25

Definition at line 1727 of file example_platform_cfg.h.

12.30.2.176 CFE_PLATFORM_TIME_ONEHZ_TASK_STACK_SIZE #define CFE_PLATFORM_TIME_ONEHZ_TASK_STACK_SIZE 8192

Definition at line 1746 of file example_platform_cfg.h.

12.30.2.177 CFE_PLATFORM_TIME_START_TASK_PRIORITY #define CFE_PLATFORM_TIME_START_TASK_PRIORITY 60

Purpose Define TIME Task Priorities

Description:

Defines the cFE_TIME Task priority. Defines the cFE_TIME Tone Task priority. Defines the cFE_TIME 1HZ Task priority.

Limits

There is a lower limit of zero and an upper limit of 255 on these configuration parameters. Remember that the meaning of each task priority is inverted – a "lower" number has a "higher" priority.

Definition at line 1725 of file example_platform_cfg.h.

12.30.2.178 CFE_PLATFORM_TIME_START_TASK_STACK_SIZE #define CFE_PLATFORM_TIME_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

Purpose Define TIME Task Stack Sizes

Description:

Defines the cFE_TIME Main Task Stack Size Defines the cFE_TIME Tone Task Stack Size Defines the cFE_TIME 1HZ Task Stack Size

Limits

There is a lower limit of 2048 on these configuration parameters. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 1744 of file example_platform_cfg.h.

12.30.2.179 CFE_PLATFORM_TIME_TONE_TASK_PRIORITY #define CFE_PLATFORM_TIME_TONE_TASK_PRIORITY 25

Definition at line 1726 of file example_platform_cfg.h.

12.30.2.180 CFE_PLATFORM_TIME_TONE_TASK_STACK_SIZE #define CFE_PLATFORM_TIME_TONE_TASK_STACK_SIZE 4096

Definition at line 1745 of file example_platform_cfg.h.

12.31 cfe/cmake/sample_defs/sample_perfids.h File Reference

Macros

- #define CFE_MISSION_ES_PERF_EXIT_BIT 31

bit (31) is reserved by the perf utilities

cFE Performance Monitor IDs (Reserved IDs 0-31)

- #define CFE_MISSION_ES_MAIN_PERF_ID 1
Performance ID for Executive Services Task.
- #define CFE_MISSION_EVS_MAIN_PERF_ID 2
Performance ID for Events Services Task.
- #define CFE_MISSION_TBL_MAIN_PERF_ID 3
Performance ID for Table Services Task.
- #define CFE_MISSION_SB_MAIN_PERF_ID 4
Performance ID for Software Bus Services Task.
- #define CFE_MISSION_SB_MSG_LIM_PERF_ID 5
Performance ID for Software Bus Msg Limit Errors.
- #define CFE_MISSION_SB_PIPE_OFLOW_PERF_ID 27
Performance ID for Software Bus Pipe Overflow Errors.
- #define CFE_MISSION_TIME_MAIN_PERF_ID 6
Performance ID for Time Services Task.
- #define CFE_MISSION_TIME_TONE1HZISR_PERF_ID 7
Performance ID for 1 Hz Tone ISR.
- #define CFE_MISSION_TIME_LOCAL1HZISR_PERF_ID 8
Performance ID for 1 Hz Local ISR.
- #define CFE_MISSION_TIME_SENDMET_PERF_ID 9
Performance ID for Time ToneSendMET.
- #define CFE_MISSION_TIME_LOCAL1HZTASK_PERF_ID 10
Performance ID for 1 Hz Local Task.
- #define CFE_MISSION_TIME_TONE1HZTASK_PERF_ID 11
Performance ID for 1 Hz Tone Task.

12.31.1 Detailed Description

Purpose: This file contains the cFE performance IDs

Design Notes: Each performance id is used to identify something that needs to be measured. Performance ids are limited to the range of 0 to CFE_MISSION_ES_PERF_MAX_IDS - 1. Any performance ids outside of this range will be ignored and will be flagged as an error. Note that performance ids 0-31 are reserved for the cFE Core.

References:

12.31.2 Macro Definition Documentation

12.31.2.1 CFE_MISSION_ES_MAIN_PERF_ID #define CFE_MISSION_ES_MAIN_PERF_ID 1

Performance ID for Executive Services Task.

Definition at line 42 of file sample_perfids.h.

12.31.2.2 CFE_MISSION_ES_PERF_EXIT_BIT #define CFE_MISSION_ES_PERF_EXIT_BIT 31

bit (31) is reserved by the perf utilities

Definition at line 38 of file sample_perfids.h.

12.31.2.3 CFE_MISSION_EVS_MAIN_PERF_ID #define CFE_MISSION_EVS_MAIN_PERF_ID 2

Performance ID for Events Services Task.

Definition at line 43 of file sample_perfids.h.

12.31.2.4 CFE_MISSION_SB_MAIN_PERF_ID #define CFE_MISSION_SB_MAIN_PERF_ID 4
Performance ID for Software Bus Services Task.
Definition at line 45 of file sample_perfids.h.

12.31.2.5 CFE_MISSION_SB_MSG_LIM_PERF_ID #define CFE_MISSION_SB_MSG_LIM_PERF_ID 5
Performance ID for Software Bus Msg Limit Errors.
Definition at line 46 of file sample_perfids.h.

12.31.2.6 CFE_MISSION_SB_PIPE_OFLOW_PERF_ID #define CFE_MISSION_SB_PIPE_OFLOW_PERF_ID 27
Performance ID for Software Bus Pipe Overflow Errors.
Definition at line 47 of file sample_perfids.h.

12.31.2.7 CFE_MISSION_TBL_MAIN_PERF_ID #define CFE_MISSION_TBL_MAIN_PERF_ID 3
Performance ID for Table Services Task.
Definition at line 44 of file sample_perfids.h.

12.31.2.8 CFE_MISSION_TIME_LOCAL1HZISR_PERF_ID #define CFE_MISSION_TIME_LOCAL1HZISR_PERF_ID 8
Performance ID for 1 Hz Local ISR.
Definition at line 51 of file sample_perfids.h.

12.31.2.9 CFE_MISSION_TIME_LOCAL1HZTASK_PERF_ID #define CFE_MISSION_TIME_LOCAL1HZTASK_PERF_ID 10
Performance ID for 1 Hz Local Task.
Definition at line 54 of file sample_perfids.h.

12.31.2.10 CFE_MISSION_TIME_MAIN_PERF_ID #define CFE_MISSION_TIME_MAIN_PERF_ID 6
Performance ID for Time Services Task.
Definition at line 49 of file sample_perfids.h.

12.31.2.11 CFE_MISSION_TIME_SENDMET_PERF_ID #define CFE_MISSION_TIME_SENDMET_PERF_ID 9
Performance ID for Time ToneSendMET.
Definition at line 53 of file sample_perfids.h.

12.31.2.12 CFE_MISSION_TIME_TONE1HZISR_PERF_ID #define CFE_MISSION_TIME_TONE1HZISR_PERF_ID 7
Performance ID for 1 Hz Tone ISR.
Definition at line 50 of file sample_perfids.h.

12.31.2.13 CFE_MISSION_TIME_TONE1HZTASK_PERF_ID #define CFE_MISSION_TIME_TONE1HZTASK_PERF_ID 11
Performance ID for 1 Hz Tone Task.
Definition at line 55 of file sample_perfids.h.

12.32 cfe/docs/src/cfe_api.dox File Reference
12.33 cfe/docs/src/cfe_es.dox File Reference
12.34 cfe/docs/src/cfe_evs.dox File Reference
12.35 cfe/docs/src/cfe_frontpage.dox File Reference
12.36 cfe/docs/src/cfe_glossary.dox File Reference
12.37 cfe/docs/src/cfe_sb.dox File Reference
12.38 cfe/docs/src/cfe_tbl.dox File Reference
12.39 cfe/docs/src/cfe_time.dox File Reference
12.40 cfe/docs/src/cfe_xref.dox File Reference
12.41 cfe/docs/src/cfs_versions.dox File Reference
12.42 cfe/modules/config/fsw/inc/cfe_config_external.h File Reference

```
#include "cfe_config_api_typedefs.h"
```

Functions

- void [CFE_Config_SetupPlatformConfigInfo](#) (void)

12.42.1 Detailed Description

Initialization for CFE configuration registry, external items
These are generated from the build system, they are not directly set

12.42.2 Function Documentation

12.42.2.1 CFE_Config_SetupPlatformConfigInfo() void CFE_Config_SetupPlatformConfigInfo (void)

12.43 cfe/modules/config/fsw/inc/cfe_config_init.h File Reference

```
#include "cfe_config_api_typedefs.h"  
#include "cfe_config_ids.h"
```

Functions

- void [CFE_Config_SetupBasicBuildInfo](#) (void)
- int32 [CFE_Config_Init](#) (void)

12.43.1 Detailed Description

Function declarations for items implemented in init.c

12.43.2 Function Documentation

12.43.2.1 CFE_Config_Init() `int32 CFE_Config_Init (void)`

12.43.2.2 CFE_Config_SetupBasicBuildInfo() `void CFE_Config_SetupBasicBuildInfo (void)`

12.44 cfe/modules/config/fsw/inc/cfe_config_lookup.h File Reference

```
#include "cfe_config_api_typedefs.h"
#include "cfe_config_table.h"
```

Functions

- `CFE_Config_ValueEntry_t * CFE_Config_LocateConfigRecordByID (CFE_ConfigId_t ConfigId)`
Gets the value record associated with a config ID.

12.44.1 Detailed Description

Function declarations for items implemented in lookup.c

12.44.2 Function Documentation

12.44.2.1 CFE_Config_LocateConfigRecordByID() `CFE_Config_ValueEntry_t* CFE_Config_LocateConfigRecordByID (CFE_ConfigId_t ConfigId)`

Gets the value record associated with a config ID.

12.45 cfe/modules/config/fsw/inc/cfe_config_nametable.h File Reference

```
#include "cfe_configid_offset.h"
```

Data Structures

- struct `CFE_Config_IdNameEntry`

Typedefs

- typedef struct `CFE_Config_IdNameEntry` `CFE_Config_IdNameEntry_t`

Variables

- const `CFE_Config_IdNameEntry_t CFE_CONFIGID_NAMETABLE []`

12.45.1 Detailed Description

This file contains the CFE configuration registry global data definitions.

12.45.2 Typedef Documentation

12.45.2.1 CFE_Config_IdNameEntry_t

```
typedef struct CFE_Config_IdNameEntry CFE_Config_IdNameEntry_t
```

12.45.3 Variable Documentation

12.45.3.1 CFE_CONFIGID_NAMETABLE

```
const CFE_Config_IdNameEntry_t CFE_CONFIGID_NAMETABLE[ ]  
[extern]
```

12.46 cfe/modules/config/fsw/inc/cfe_config_set.h File Reference

```
#include "cfe_config_api_typedefs.h"
```

Functions

- void [CFE_Config_SetValue](#) (CFE_ConfigId_t ConfigId, uint32 Value)
- void [CFE_Config_SetObjPointer](#) (CFE_ConfigId_t ConfigId, const void *Ptr)
- void [CFE_Config_SetString](#) (CFE_ConfigId_t ConfigId, const char *Ptr)
- void [CFE_Config_SetArrayValue](#) (CFE_ConfigId_t ConfigId, const CFE_Config_ArrayValue_t *ArrayPtr)

12.46.1 Detailed Description

Function declarations for items implemented in set.c

12.46.2 Function Documentation

12.46.2.1 CFE_Config_SetArrayValue()

```
void CFE_Config_SetArrayValue(  
    CFE_ConfigId_t ConfigId,  
    const CFE_Config_ArrayValue_t * ArrayPtr )
```

12.46.2.2 CFE_Config_SetObjPointer()

```
void CFE_Config_SetObjPointer(   
    CFE_ConfigId_t ConfigId,  
    const void * Ptr )
```

12.46.2.3 CFE_Config_SetString()

```
void CFE_Config_SetString(   
    CFE_ConfigId_t ConfigId,  
    const char * Ptr )
```

12.46.2.4 CFE_Config_SetValue()

```
void CFE_Config_SetValue(   
    CFE_ConfigId_t ConfigId,  
    uint32 Value )
```

12.47 cfe/modules/config/fsw/inc/cfe_config_table.h File Reference

```
#include "common_types.h"
#include "cfe_config_ids.h"
```

Data Structures

- union [CFE_Config_ValueBuffer](#)
- struct [CFE_Config_ValueEntry](#)

TypeDefs

- typedef enum [CFE_ConfigType](#) [CFE_ConfigType_t](#)
- typedef union [CFE_Config_ValueBuffer](#) [CFE_Config_ValueBuffer_t](#)
- typedef struct [CFE_Config_ValueEntry](#) [CFE_Config_ValueEntry_t](#)

Enumerations

- enum [CFE_ConfigType](#) {
 [CFE_ConfigType_UNDEFINED](#) , [CFE_ConfigType_VALUE](#) , [CFE_ConfigType_STRING](#) , [CFE_ConfigType_POINTER](#)
 ,
 [CFE_ConfigType_ARRAY](#) }

12.47.1 Detailed Description

This file contains the CFE configuration registry global data definitions.

12.47.2 Typedef Documentation

12.47.2.1 [CFE_Config_ValueBuffer_t](#) [typedef union CFE_Config_ValueBuffer CFE_Config_ValueBuffer_t](#)

12.47.2.2 [CFE_Config_ValueEntry_t](#) [typedef struct CFE_Config_ValueEntry CFE_Config_ValueEntry_t](#)

12.47.2.3 [CFE_ConfigType_t](#) [typedef enum CFE_ConfigType CFE_ConfigType_t](#)

12.47.3 Enumeration Type Documentation

12.47.3.1 [CFE_ConfigType](#) [enum CFE_ConfigType](#)

Enumerator

CFE_ConfigType_UNDEFINED	
CFE_ConfigType_VALUE	Value is an unsigned int
CFE_ConfigType_STRING	Value is a string pointer
CFE_ConfigType_POINTER	Value is a non-string object pointer
CFE_ConfigType_ARRAY	Value is a combination of length and pointer

Definition at line 34 of file cfe_config_table.h.

12.48 cfe/modules/core_api/config/default_cfe_core_api_base_msgids.h File Reference

Macros

- `#define CFE_CPU1_CMD_MID_BASE 0x1800`
Platform command message ID base offset.
- `#define CFE_CPU1_TLM_MID_BASE 0x0800`
Platform telemetry message ID base offset.
- `#define CFE_GLOBAL_CMD_MID_BASE 0x1860`
"Global" command message ID base offset
- `#define CFE_GLOBAL_TLM_MID_BASE 0x0860`
"Global" telemetry message ID base offset
- `#define CFE_PLATFORM_CMD_TOPICID_TO_MIDV(topic) (CFE_CPU1_CMD_MID_BASE | (topic))`
Convert a command topic ID to a MsgID value.
- `#define CFE_PLATFORM_TLM_TOPICID_TO_MIDV(topic) (CFE_CPU1_TLM_MID_BASE | (topic))`
Convert a telemetry topic ID to a MsgID value.
- `#define CFE_GLOBAL_CMD_TOPICID_TO_MIDV(topic) (CFE_GLOBAL_CMD_MID_BASE | (topic))`
Convert a "global" command topic ID to a MsgID value.
- `#define CFE_GLOBAL_TLM_TOPICID_TO_MIDV(topic) (CFE_GLOBAL_TLM_MID_BASE | (topic))`
Convert a "global" telemetry topic ID to a MsgID value.

12.48.1 Detailed Description

This header file contains the platform-specific base msg ID values and logic to convert a topic ID to a message ID value.

12.48.2 Macro Definition Documentation

12.48.2.1 CFE_CPU1_CMD_MID_BASE `#define CFE_CPU1_CMD_MID_BASE 0x1800`

Platform command message ID base offset.

Example mechanism for setting default command bits and deconflicting MIDs across multiple platforms in a mission. For any sufficiently complex mission this method is typically replaced by a centralized message ID management scheme.
0x1800 - Nominal value for default message ID implementation (V1). This sets the command field and the secondary header present field. Typical V1 command MID range is 0x1800-1FFF. Additional cpus can deconflict message IDs by incrementing this value to provide sub-allocations (0x1900 for example). 0x0080 - Command bit for MISSION_MSGID_V2 message ID implementation (V2). Although this can be used for the value below due to the relatively small set of MIDs in the framework it will not scale so an alternative method of deconfliction is recommended.

Definition at line 46 of file default_cfe_core_api_base_msgids.h.

12.48.2.2 CFE_CPU1_TLM_MID_BASE `#define CFE_CPU1_TLM_MID_BASE 0x0800`

Platform telemetry message ID base offset.

0x0800 - Nominal for message ID V1 0x0000 - Potential value for MISSION_MSGID_V2, but limited to a range of 0x0000-0x007F since the command bit is 0x0080. Alternative method of deconfliction is recommended.

See [CFE_CPU1_CMD_MID_BASE](#) for more information

Definition at line 58 of file default_cfe_core_api_base_msgids.h.

12.48.2.3 CFE_GLOBAL_CMD_MID_BASE #define CFE_GLOBAL_CMD_MID_BASE 0x1860
"Global" command message ID base offset
0x1860 - Nominal value for message ID V1 0x00E0 - Potential value for MISSION_MSGID_V2, note command bit is 0x0080. Works in limited cases only, alternative method of deconfliction is recommended. See [CFE_CPU1_CMD_MID_BASE](#) for more information
Definition at line 69 of file default_cfe_core_api_base_msgids.h.

12.48.2.4 CFE_GLOBAL_CMD_TOPICID_TO_MIDV #define CFE_GLOBAL_CMD_TOPICID_TO_MIDV(
topic) (CFE_GLOBAL_CMD_MID_BASE | (topic))

Convert a "global" command topic ID to a MsgID value.

A global command is one that is not specific to an individual instance of CFE, but rather intended to be broadcast to all CFE instances at the same time.

This is otherwise identical to [CFE_PLATFORM_CMD_TOPICID_TO_MIDV](#)

Definition at line 116 of file default_cfe_core_api_base_msgids.h.

12.48.2.5 CFE_GLOBAL_TLM_MID_BASE #define CFE_GLOBAL_TLM_MID_BASE 0x0860

"Global" telemetry message ID base offset

0x0860 - Nominal value for message ID V1 0x0060 - Potential value for MISSION_MSGID_V2, note command bit is 0x0080. Works in limited cases only, alternative method of deconfliction is recommended. See [CFE_CPU1_CMD_MID_BASE](#) for more information

Definition at line 80 of file default_cfe_core_api_base_msgids.h.

12.48.2.6 CFE_GLOBAL_TLM_TOPICID_TO_MIDV #define CFE_GLOBAL_TLM_TOPICID_TO_MIDV(
topic) (CFE_GLOBAL_TLM_MID_BASE | (topic))

Convert a "global" telemetry topic ID to a MsgID value.

A global telemetry is one that is not specific to an individual instance of CFE, but rather intended to be broadcast to all CFE instances at the same time.

This is otherwise identical to [CFE_PLATFORM_TLM_TOPICID_TO_MIDV](#)

Definition at line 126 of file default_cfe_core_api_base_msgids.h.

12.48.2.7 CFE_PLATFORM_CMD_TOPICID_TO_MIDV #define CFE_PLATFORM_CMD_TOPICID_TO_MIDV(
topic) (CFE_CPU1_CMD_MID_BASE | (topic))

Convert a command topic ID to a MsgID value.

This defines the logic to convert a topic ID value into a message ID value. This operates on integer values and should resolve at compile time such that it can be used in e.g. switch/case statements.

Note

The result of this conversion is a simple integer, thus also needs to go through [CFE_SB_ValueToMsgId\(\)](#) to obtain a properly-typed [CFE_SB_MsgId_t](#) for interacting with SB APIs.

Definition at line 93 of file default_cfe_core_api_base_msgids.h.

12.48.2.8 CFE_PLATFORM_TLM_TOPICID_TO_MIDV #define CFE_PLATFORM_TLM_TOPICID_TO_MIDV(
topic) (CFE_CPU1_TLM_MID_BASE | (topic))

Convert a telemetry topic ID to a MsgID value.

This defines the logic to convert a topic ID value into a message ID value. This operates on integer values and should resolve at compile time such that it can be used in e.g. switch/case statements.

Note

The result of this conversion is a simple integer, thus also needs to go through [CFE_SB_ValueToMsgId\(\)](#) to obtain a properly-typed [CFE_SB_MsgId_t](#) for interacting with SB APIs.

Definition at line 106 of file default_cfe_core_api_base_msgids.h.

12.49 cfe/modules/core_api/config/default_cfe_core_api_interface_cfg.h File Reference

Macros

- `#define CFE_MISSION_MAX_PATH_LEN 64`
- `#define CFE_MISSION_MAX_FILE_LEN 20`
- `#define CFE_MISSION_MAX_API_LEN 20`
- `#define CFE_MISSION_MAX_NUM_FILES 50`

12.49.1 Detailed Description

Purpose: This header file contains the mission configuration parameters and typedefs with mission scope.

12.49.2 Macro Definition Documentation

12.49.2.1 CFE_MISSION_MAX_API_LEN `#define CFE_MISSION_MAX_API_LEN 20`

Purpose cFE Maximum length for API names within data exchange structures

Description:

The value of this constant dictates the size of filenames within all structures used for external data exchange, such as Software bus messages and table definitions. This is typically the same as OS_MAX_API_LEN but that is OSAL dependent – and as such it definable on a per-processor/OS basis and hence may be different across multiple processors. It is recommended to set this to the value of the largest OS_MAX_API_LEN in use on any CPU on the mission.

This affects only the layout of command/telemetry messages and table definitions; internal allocation may use the platform-specific OS_MAX_API_LEN value.

This length must include an extra character for NULL termination.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 108 of file default_cfe_core_api_interface_cfg.h.

12.49.2.2 CFE_MISSION_MAX_FILE_LEN `#define CFE_MISSION_MAX_FILE_LEN 20`

Purpose cFE Maximum length for filenames within data exchange structures

Description:

The value of this constant dictates the size of filenames within all structures used for external data exchange, such as Software bus messages and table definitions. This is typically the same as OS_MAX_FILE_LEN but that is OSAL dependent – and as such it definable on a per-processor/OS basis and hence may be different across multiple processors. It is recommended to set this to the value of the largest OS_MAX_FILE_LEN in use on any CPU on the mission.

This affects only the layout of command/telemetry messages and table definitions; internal allocation may use the platform-specific OS_MAX_FILE_LEN value.

This length must include an extra character for NULL termination.

Limits

All CPUs within the same SB domain (mission) and ground tools must share the same definition. Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 82 of file default_cfe_core_api_interface_cfg.h.

12.49.2.3 CFE_MISSION_MAX_NUM_FILES #define CFE_MISSION_MAX_NUM_FILES 50**Purpose** cFE Maximum number of files in a message/data exchange**Description:**

The value of this constant dictates the maximum number of files within all structures used for external data exchange, such as Software bus messages and table definitions. This is typically the same as OS_MAX_NUM_OPEN_FILES but that is OSAL dependent – and as such it definable on a per-processor/OS basis and hence may be different across multiple processors. It is recommended to set this to the value of the largest OS_MAX_NUM_OPEN_FILES in use on any CPU on the mission.

This affects only the layout of command/telemetry messages and table definitions; internal allocation may use the platform-specific OS_MAX_NUM_OPEN_FILES value.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

Definition at line 130 of file default_cfe_core_api_interface_cfg.h.

12.49.2.4 CFE_MISSION_MAX_PATH_LEN #define CFE_MISSION_MAX_PATH_LEN 64**Purpose** cFE Maximum length for pathnames within data exchange structures**Description:**

The value of this constant dictates the size of pathnames within all structures used for external data exchange, such as Software bus messages and table definitions. This is typically the same as OS_MAX_PATH_LEN but that is OSAL dependent – and as such it definable on a per-processor/OS basis and hence may be different across multiple processors. It is recommended to set this to the value of the largest OS_MAX_PATH_LEN in use on any CPU on the mission.

This affects only the layout of command/telemetry messages and table definitions; internal allocation may use the platform-specific OS_MAX_PATH_LEN value.

This length must include an extra character for NULL termination.

Limits

All CPUs within the same SB domain (mission) and ground tools must share the same definition. Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 55 of file default_cfe_core_api_interface_cfg.h.

12.50 cfe/modules/core_api/config/default_cfe_mission_cfg.h File Reference

```
#include "cfe_core_api_interface_cfg.h"
#include "cfe_es_mission_cfg.h"
#include "cfe_evs_mission_cfg.h"
#include "cfe_sb_mission_cfg.h"
#include "cfe_tbl_mission_cfg.h"
#include "cfe_time_mission_cfg.h"
#include "cfe_fs_mission_cfg.h"
```

12.50.1 Detailed Description

Purpose: This header file contains the mission configuration parameters and typedefs with mission scope.

12.51 cfe/modules/core_api/config/default_cfe_msgids.h File Reference

```
#include "cfe_es_msgids.h"
#include "cfe_evs_msgids.h"
#include "cfe_sb_msgids.h"
#include "cfe_tbl_msgids.h"
#include "cfe_time_msgids.h"
```

12.51.1 Detailed Description

Purpose: This header file contains the Message Id's for messages used by the cFE core.

12.52 cfe/modules/core_api/fsw/inc/cfe.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_mission_cfg.h"
#include "cfe_error.h"
#include "cfe_es.h"
#include "cfe_evs.h"
#include "cfe_fs.h"
#include "cfe_sb.h"
#include "cfe_time.h"
#include "cfe_tbl.h"
#include "cfe_msg.h"
#include "cfe_resourceid.h"
#include "cfe_psp.h"
```

12.52.1 Detailed Description

Purpose: cFE header file

Author: David Kobe, the Hammers Company, Inc.

Notes: This header file centralizes the includes for all cFE Applications. It includes all header files necessary to completely define the cFE interface.

12.53 cfe/modules/core_api/fsw/inc/cfe_config.h File Reference

```
#include "common_types.h"
#include "cfe_config_api_typedefs.h"
#include "cfe_config_ids.h"
```

Functions

- `uint32 CFE_Config_GetValue (CFE_ConfigId_t ConfigId)`
Obtain an integer value correlating to an CFE configuration ID.
- `const void * CFE_Config_GetObjPointer (CFE_ConfigId_t ConfigId)`
Obtain a pointer value correlating to an CFE configuration ID.
- `CFE_Config_ArrayValue_t CFE_Config_GetArrayValue (CFE_ConfigId_t ConfigId)`
Obtain an array correlating to an CFE configuration ID.
- `const char * CFE_Config_GetString (CFE_ConfigId_t ConfigId)`
Obtain a string value correlating to an CFE configuration ID.
- `const char * CFE_Config.GetName (CFE_ConfigId_t ConfigId)`
Obtain the name of a CFE configuration ID.
- `CFE_ConfigId_t CFE_Config_GetIdByName (const char *Name)`
Obtain the ID value associated with a configuration name.
- `void CFE_Config_IterateAll (void *Arg, CFE_Config_Callback_t Callback)`
Iterate all known name/ID value pairs.
- `void CFE_Config_GetVersionString (char *Buf, size_t Size, const char *Component, const char *SrcVersion, const char *CodeName, const char *LastOffcRel)`
Obtain the version string for a cFS component or app.

12.53.1 Detailed Description

Title: cFE Status Code Definition Header File

Purpose: Common source of cFE API return status codes.

Design Notes:

References: Flight Software Branch C Coding Standard Version 1.0a

12.53.2 Function Documentation

12.53.2.1 CFE_Config_GetArrayValue() `CFE_Config_ArrayValue_t CFE_Config_GetArrayValue (` `CFE_ConfigId_t ConfigId)`

Obtain an array correlating to an CFE configuration ID.

Retrieves the CFE_Config_ArrayValue_t value associated with the specified key. This combines an array length (number of elements) and a pointer to the first element.

If no value has been set, or the key is not valid, this returns 0 / NULL.

Parameters

in	<i>ConfigId</i>	Configuration ID/Key to look up
----	-----------------	---------------------------------

Returns

Value associated with key

Return values

NULL	if key is not defined or not set
------	----------------------------------

12.53.2.2 CFE_Config_GetIdByName() `CFE_ConfigId_t CFE_Config_GetIdByName (`
`const char * Name)`

Obtain the ID value associated with a configuration name.

Parameters

in	<i>Name</i>	The name of the ID to look up
----	-------------	-------------------------------

Returns

ID associated with name

Return values

<code>CFE_CONFIGID_UNDEFINED</code>	if the name did not correspond to a key
-------------------------------------	---

12.53.2.3 CFE_Config.GetName() `const char* CFE_Config.GetName (`
`CFE_ConfigId_t ConfigId)`

Obtain the name of a CFE configuration ID.

Retrieves the printable name associated with the specified key.

Note

This function does not return NULL.

If the ID is not valid/known, then the implementation returns the special string '[unknown]' rather than NULL, so this function may be more easily used in printf() style calls.

Parameters

in	<i>ConfigId</i>	Configuration ID/Key to look up
----	-----------------	---------------------------------

Returns

Name associated with key

12.53.2.4 CFE_Config_GetObjPointer() `const void* CFE_Config_GetObjPointer (CFE_ConfigId_t ConfigId)`

Obtain a pointer value correlating to an CFE configuration ID.
Retrieves the pointer value associated with the specified key.
If no value has been set, or the key is not valid, this returns NULL.

Parameters

in	<i>ConfigId</i>	Configuration ID/Key to look up
	<i>Id</i>	

Returns

Value associated with key

Return values

<code>NULL</code>	if key is not defined or not set
-------------------	----------------------------------

12.53.2.5 CFE_ConfigGetString() `const char* CFE_ConfigGetString (CFE_ConfigId_t ConfigId)`

Obtain a string value correlating to an CFE configuration ID.
Retrieves the string value associated with the specified key.
If no value has been set, or the key is not valid, this returns the special string "UNDEFINED"

Note

This function does not return NULL, so it can be used directly in printf-style calls.

Parameters

in	<i>ConfigId</i>	Configuration ID/Key to look up
	<i>Id</i>	

Returns

String value associated with key

12.53.2.6 CFE_ConfigGetValue() `uint32 CFE_ConfigGetValue (CFE_ConfigId_t ConfigId)`

Obtain an integer value correlating to an CFE configuration ID.
Retrieves the integer value associated with the specified key.
If no value has been set, or the key is not valid, this returns 0.

Parameters

in	<i>Config</i> <i>Id</i>	Configuration ID/Key to look up
----	----------------------------	---------------------------------

Returns

Value associated with key

Return values

0	if key is not defined or not set
---	----------------------------------

12.53.2.7 CFE_Config_GetVersionString() void CFE_Config_GetVersionString (

```
    char * Buf,
    size_t Size,
    const char * Component,
    const char * SrcVersion,
    const char * CodeName,
    const char * LastOffcRel )
```

Obtain the version string for a cFS component or app.

Assembles a standardized version string associated with the specified component/app.

Parameters

in	<i>Buf</i>	Buffer to place version string in. Will be populated with standard version string containing the provided parameters (i.e.: "cFE DEVELOPMENT BUILD equuleus-rc1+dev0 (Codename equuleus), Last Official Release: cFE 6.7.0"
in	<i>Size</i>	Size of the provided buffer
in	<i>Component</i>	Component for which to get version string (i.e. "cFE")
in	<i>SrcVersion</i>	Source version identifier (i.e. "equuleus-rc1+dev0")
in	<i>CodeName</i>	Code name for the build (i.e. "equuleus")
in	<i>LastOffcRel</i>	Last official release (i.e. "6.7.0")

12.53.2.8 CFE_Config_IterateAll() void CFE_Config_IterateAll (

```
    void * Arg,
    CFE_Config_Callback_t Callback )
```

Iterate all known name/ID value pairs.

Parameters

in	<i>Arg</i>	User-supplied opaque argument to pass to callback
in	<i>Callback</i>	User-supplied callback function to invoke for each ID

12.54 cfe/modules/core_api/fsw/inc/cfe_config_api_typedefs.h File Reference

```
#include "common_types.h"
#include "cfe_resourceid_api_typedefs.h"
```

Data Structures

- struct [CFE_Config_ArrayValue](#)

Wrapper type for array configuration.

Macros

- #define [CFE_CONFIGID_C](#)(val) (([CFE_ConfigId_t](#))[CFE_RESOURCEID_WRAP](#)(val))
- #define [CFE_CONFIGID_UNDEFINED](#) [CFE_CONFIGID_C](#)([CFE_RESOURCEID_UNDEFINED](#))

Typedefs

- typedef [CFE_RESOURCEID_BASE_TYPE](#) [CFE_ConfigId_t](#)

A type for Configuration IDs.

- typedef void(* [CFE_Config_Callback_t](#)) (void *Arg, [CFE_ConfigId_t](#) Id, const char *Name)

- typedef struct [CFE_Config_ArrayValue](#) [CFE_Config_ArrayValue_t](#)

Wrapper type for array configuration.

12.54.1 Detailed Description

Title: cFE Status Code Definition Header File

Purpose: Common source of cFE API return status codes.

Design Notes:

References: Flight Software Branch C Coding Standard Version 1.0a

12.54.2 Macro Definition Documentation

12.54.2.1 CFE_CONFIGID_C #define [CFE_CONFIGID_C](#)(
 val) (([CFE_ConfigId_t](#))[CFE_RESOURCEID_WRAP](#)(val))

Definition at line 48 of file [cfe_config_api_typedefs.h](#).

12.54.2.2 CFE_CONFIGID_UNDEFINED #define [CFE_CONFIGID_UNDEFINED](#) [CFE_CONFIGID_C](#)([CFE_RESOURCEID_UNDEFINED](#))

Definition at line 49 of file [cfe_config_api_typedefs.h](#).

12.54.3 Typedef Documentation

12.54.3.1 CFE_Config_ArrayValue_t typedef struct [CFE_Config_ArrayValue](#) [CFE_Config_ArrayValue_t](#)
Wrapper type for array configuration.

This is a pair containing a size and pointer that is get/set via a single config table entry

12.54.3.2 CFE_Config_Callback_t `typedef void(* CFE_Config_Callback_t) (void *Arg, CFE_ConfigId_t Id, const char *Name)`
Definition at line 51 of file cfe_config_api_typedefs.h.

12.54.3.3 CFE_ConfigId_t `typedef CFE_RESOURCEID_BASE_TYPE CFE_ConfigId_t`
A type for Configuration IDs.

This is the type that is used for any API accepting or returning a configuration key ID
Definition at line 46 of file cfe_config_api_typedefs.h.

12.55 cfe/modules/core_api/fsw/inc/cfe_endian.h File Reference

```
#include "common_types.h"
```

Macros

- `#define CFE_MAKE_BIG16(n) (((n)&0x00FF) << 8) | (((n)&0xFF00) >> 8))`
- `#define CFE_MAKE_BIG32(n) (((n)&0x000000FF) << 24) | (((n)&0x0000FF00) << 8) | (((n)&0x00FF0000) >> 8) | (((n)&0xFF000000) >> 24))`

12.55.1 Detailed Description

Purpose: Define macros to enforce big-endian/network byte order for 16 and 32 bit integers

12.55.2 Macro Definition Documentation

12.55.2.1 CFE_MAKE_BIG16 `#define CFE_MAKE_BIG16(n) (((n)&0x00FF) << 8) | (((n)&0xFF00) >> 8))`

Definition at line 64 of file cfe_endian.h.

12.55.2.2 CFE_MAKE_BIG32 `#define CFE_MAKE_BIG32(n) (((n)&0x000000FF) << 24) | (((n)&0x0000FF00) << 8) | (((n)&0x00FF0000) >> 8) | (((n)&0xFF000000) >> 24))`

Definition at line 65 of file cfe_endian.h.

12.56 cfe/modules/core_api/fsw/inc/cfe_error.h File Reference

```
#include "osapi.h"
```

Macros

- `#define CFE_STATUS_C(X) ((CFE_Status_t)(X))`
cFE Status macro for literal
- `#define CFE_STATUS_STRING_LENGTH 11`
cFE Status converted to string length limit
- `#define CFE_SEVERITY_BITMASK ((CFE_Status_t)0xc0000000)`
Error Severity Bitmask.
- `#define CFE_SEVERITY_SUCCESS ((CFE_Status_t)0x00000000)`

- Severity Success.
 - #define CFE_SEVERITY_INFO ((CFE_Status_t)0x40000000)
 Severity Info.
 - #define CFE_SEVERITY_ERROR ((CFE_Status_t)0xc0000000)
 Severity Error.
- Error Service Bitmask.
 - #define CFE_EVENTS_SERVICE ((CFE_Status_t)0x02000000)
 Event Service.
 - #define CFE_EXECUTIVE_SERVICE ((CFE_Status_t)0x04000000)
 Executive Service.
 - #define CFE_FILE_SERVICE ((CFE_Status_t)0x06000000)
 File Service.
 - #define CFE_GENERIC_SERVICE ((CFE_Status_t)0x08000000)
 Generic Service.
 - #define CFE_SOFTWARE_BUS_SERVICE ((CFE_Status_t)0x0a000000)
 Software Bus Service.
 - #define CFE_TABLE_SERVICE ((CFE_Status_t)0x0c000000)
 Table Service.
 - #define CFE_TIME_SERVICE ((CFE_Status_t)0x0e000000)
 Time Service.
- Successful execution.
 - #define CFE_STATUS_NO_COUNTER_INCREMENT ((CFE_Status_t)0x48000001)
 No Counter Increment.
 - #define CFE_STATUS_WRONG_MSG_LENGTH ((CFE_Status_t)0xc8000002)
 Wrong Message Length.
 - #define CFE_STATUS_UNKNOWN_MSG_ID ((CFE_Status_t)0xc8000003)
 Unknown Message ID.
 - #define CFE_STATUS_BAD_COMMAND_CODE ((CFE_Status_t)0xc8000004)
 Bad Command Code.
 - #define CFE_STATUS_EXTERNAL_RESOURCE_FAIL ((CFE_Status_t)0xc8000005)
 External failure.
 - #define CFE_STATUS_REQUEST_ALREADY_PENDING ((int32)0xc8000006)
 Request already pending.
 - #define CFE_STATUS_VALIDATION_FAILURE ((int32)0xc8000007)
 Request or input value failed basic structural validation.
 - #define CFE_STATUS_RANGE_ERROR ((int32)0xc8000008)
 Request or input value is out of range.
 - #define CFE_STATUS_INCORRECT_STATE ((int32)0xc8000009)
 Cannot process request at this time.
 - #define CFE_STATUS_NOT_IMPLEMENTED ((CFE_Status_t)0xc800ffff)
 Not Implemented.
 - #define CFE_EVS_UNKNOWN_FILTER ((CFE_Status_t)0xc2000001)
 Unknown Filter.
 - #define CFE_EVS_APP_NOT_REGISTERED ((CFE_Status_t)0xc2000002)
 Application Not Registered.

- #define CFE_EVS_APP_ILLEGAL_APP_ID ((CFE_Status_t)0xc2000003)
Illegal Application ID.
- #define CFE_EVS_APP_FILTER_OVERLOAD ((CFE_Status_t)0xc2000004)
Application Filter Overload.
- #define CFE_EVS_RESET_AREA_POINTER ((CFE_Status_t)0xc2000005)
Reset Area Pointer Failure.
- #define CFE_EVS_EVT_NOT_REGISTERED ((CFE_Status_t)0xc2000006)
Event Not Registered.
- #define CFE_EVS_FILE_WRITE_ERROR ((CFE_Status_t)0xc2000007)
File Write Error.
- #define CFE_EVS_INVALID_PARAMETER ((CFE_Status_t)0xc2000008)
Invalid Pointer.
- #define CFE_EVS_APP_SQUELCHED ((CFE_Status_t)0xc2000009)
Event squelched.
- #define CFE_EVS_NOT_IMPLEMENTED ((CFE_Status_t)0xc200ffff)
Not Implemented.
- #define CFE_ES_ERR_RESOURCEID_NOT_VALID ((CFE_Status_t)0xc4000001)
Resource ID is not valid.
- #define CFE_ES_ERR_NAME_NOT_FOUND ((CFE_Status_t)0xc4000002)
Resource Name Error.
- #define CFE_ES_ERR_APP_CREATE ((CFE_Status_t)0xc4000004)
Application Create Error.
- #define CFE_ES_ERR_CHILD_TASK_CREATE ((CFE_Status_t)0xc4000005)
Child Task Create Error.
- #define CFE_ES_ERR_SYS_LOG_FULL ((CFE_Status_t)0xc4000006)
System Log Full.
- #define CFE_ES_ERR_MEM_BLOCK_SIZE ((CFE_Status_t)0xc4000008)
Memory Block Size Error.
- #define CFE_ES_ERR_LOAD_LIB ((CFE_Status_t)0xc4000009)
Load Library Error.
- #define CFE_ES_BAD_ARGUMENT ((CFE_Status_t)0xc400000a)
Bad Argument.
- #define CFE_ES_ERR_CHILD_TASK_REGISTER ((CFE_Status_t)0xc400000b)
Child Task Register Error.
- #define CFE_ES_CDS_ALREADY_EXISTS ((CFE_Status_t)0x4400000d)
CDS Already Exists.
- #define CFE_ES_CDS_INSUFFICIENT_MEMORY ((CFE_Status_t)0xc400000e)
CDS Insufficient Memory.
- #define CFE_ES_CDS_INVALID_NAME ((CFE_Status_t)0xc400000f)
CDS Invalid Name.
- #define CFE_ES_CDS_INVALID_SIZE ((CFE_Status_t)0xc4000010)
CDS Invalid Size.
- #define CFE_ES_CDS_INVALID ((CFE_Status_t)0xc4000012)
CDS Invalid.
- #define CFE_ES_CDS_ACCESS_ERROR ((CFE_Status_t)0xc4000013)
CDS Access Error.
- #define CFE_ES_FILE_IO_ERR ((CFE_Status_t)0xc4000014)

- File IO Error.*
- #define CFE_ES_RST_ACCESS_ERR ((CFE_Status_t)0xc4000015)
Reset Area Access Error.
 - #define CFE_ES_ERR_APP_REGISTER ((CFE_Status_t)0xc4000017)
Application Register Error.
 - #define CFE_ES_ERR_CHILD_TASK_DELETE ((CFE_Status_t)0xc4000018)
Child Task Delete Error.
 - #define CFE_ES_ERR_CHILD_TASK_DELETE_MAIN_TASK ((CFE_Status_t)0xc4000019)
Child Task Delete Passed Main Task.
 - #define CFE_ES_CDS_BLOCK_CRC_ERR ((CFE_Status_t)0xc400001A)
CDS Block CRC Error.
 - #define CFE_ES_MUT_SEM_DELETE_ERR ((CFE_Status_t)0xc400001B)
Mutex Semaphore Delete Error.
 - #define CFE_ES_BIN_SEM_DELETE_ERR ((CFE_Status_t)0xc400001C)
Binary Semaphore Delete Error.
 - #define CFE_ES_COUNT_SEM_DELETE_ERR ((CFE_Status_t)0xc400001D)
Counting Semaphore Delete Error.
 - #define CFE_ES_QUEUE_DELETE_ERR ((CFE_Status_t)0xc400001E)
Queue Delete Error.
 - #define CFE_ES_FILE_CLOSE_ERR ((CFE_Status_t)0xc400001F)
File Close Error.
 - #define CFE_ES_CDS_WRONG_TYPE_ERR ((CFE_Status_t)0xc4000020)
CDS Wrong Type Error.
 - #define CFE_ES_CDS_OWNER_ACTIVE_ERR ((CFE_Status_t)0xc4000022)
CDS Owner Active Error.
 - #define CFE_ES_APP_CLEANUP_ERR ((CFE_Status_t)0xc4000023)
Application Cleanup Error.
 - #define CFE_ES_TIMER_DELETE_ERR ((CFE_Status_t)0xc4000024)
Timer Delete Error.
 - #define CFE_ES_BUFFER_NOT_IN_POOL ((CFE_Status_t)0xc4000025)
Buffer Not In Pool.
 - #define CFE_ES_TASK_DELETE_ERR ((CFE_Status_t)0xc4000026)
Task Delete Error.
 - #define CFE_ES_OPERATION_TIMED_OUT ((CFE_Status_t)0xc4000027)
Operation Timed Out.
 - #define CFE_ES_LIB_ALREADY_LOADED ((CFE_Status_t)0x44000028)
Library Already Loaded.
 - #define CFE_ES_ERR_SYS_LOG_TRUNCATED ((CFE_Status_t)0x44000029)
System Log Message Truncated.
 - #define CFE_ES_NO_RESOURCE_IDS_AVAILABLE ((CFE_Status_t)0xc400002B)
Resource ID is not available.
 - #define CFE_ES_POOL_BLOCK_INVALID ((CFE_Status_t)0xc400002C)
Invalid pool block.
 - #define CFE_ES_ERR_DUPLICATE_NAME ((CFE_Status_t)0xc400002E)
Duplicate Name Error.
 - #define CFE_ES_NOT_IMPLEMENTED ((CFE_Status_t)0xc400ffff)
Not Implemented.

- #define CFE_FS_BAD_ARGUMENT ((CFE_Status_t)0xc6000001)
Bad Argument.
- #define CFE_FS_INVALID_PATH ((CFE_Status_t)0xc6000002)
Invalid Path.
- #define CFE_FS_FNAME_TOO_LONG ((CFE_Status_t)0xc6000003)
Filename Too Long.
- #define CFE_FS_NOT_IMPLEMENTED ((CFE_Status_t)0xc600ffff)
Not Implemented.
- #define CFE_SB_TIME_OUT ((CFE_Status_t)0xca000001)
Time Out.
- #define CFE_SB_NO_MESSAGE ((CFE_Status_t)0xca000002)
No Message.
- #define CFE_SB_BAD_ARGUMENT ((CFE_Status_t)0xca000003)
Bad Argument.
- #define CFE_SB_MAX_PIPES_MET ((CFE_Status_t)0xca000004)
Max Pipes Met.
- #define CFE_SB_PIPE_CR_ERR ((CFE_Status_t)0xca000005)
Pipe Create Error.
- #define CFE_SB_PIPE_RD_ERR ((CFE_Status_t)0xca000006)
Pipe Read Error.
- #define CFE_SB_MSG_TOO_BIG ((CFE_Status_t)0xca000007)
Message Too Big.
- #define CFE_SB_BUF_ALOC_ERR ((CFE_Status_t)0xca000008)
Buffer Allocation Error.
- #define CFE_SB_MAX_MSGS_MET ((CFE_Status_t)0xca000009)
Max Messages Met.
- #define CFE_SB_MAX_DESTS_MET ((CFE_Status_t)0xca00000a)
Max Destinations Met.
- #define CFE_SB_INTERNAL_ERR ((CFE_Status_t)0xca00000c)
Internal Error.
- #define CFE_SB_WRONG_MSG_TYPE ((CFE_Status_t)0xca00000d)
Wrong Message Type.
- #define CFE_SB_BUFFER_INVALID ((CFE_Status_t)0xca00000e)
Buffer Invalid.
- #define CFE_SB_NOT_IMPLEMENTED ((CFE_Status_t)0xca00ffff)
Not Implemented.
- #define CFE_TBL_ERR_INVALID_HANDLE ((CFE_Status_t)0xcc000001)
Invalid Handle.
- #define CFE_TBL_ERR_INVALID_NAME ((CFE_Status_t)0xcc000002)
Invalid Name.
- #define CFE_TBL_ERR_INVALID_SIZE ((CFE_Status_t)0xcc000003)
Invalid Size.
- #define CFE_TBL_INFO_UPDATE_PENDING ((CFE_Status_t)0x4c000004)
Update Pending.
- #define CFE_TBL_ERR_NEVER_LOADED ((CFE_Status_t)0xcc000005)
Never Loaded.
- #define CFE_TBL_ERR_REGISTRY_FULL ((CFE_Status_t)0xcc000006)

- Registry Full.*
- #define CFE_TBL_WARN_DUPLICATE ((CFE_Status_t)0x4c000007)
Duplicate Warning.
 - #define CFE_TBL_ERR_NO_ACCESS ((CFE_Status_t)0xcc000008)
No Access.
 - #define CFE_TBL_ERR_UNREGISTERED ((CFE_Status_t)0xcc000009)
Unregistered.
 - #define CFE_TBL_ERR_HANDLES_FULL ((CFE_Status_t)0xcc00000B)
Handles Full.
 - #define CFE_TBL_ERR_DUPLICATE_DIFF_SIZE ((CFE_Status_t)0xcc00000C)
Duplicate Table With Different Size.
 - #define CFE_TBL_ERR_DUPLICATE_NOT_OWNED ((CFE_Status_t)0xcc00000D)
Duplicate Table And Not Owned.
 - #define CFE_TBL_INFO_UPDATED ((CFE_Status_t)0x4c00000E)
Updated.
 - #define CFE_TBL_ERR_NO_BUFFER_AVAIL ((CFE_Status_t)0xcc00000F)
No Buffer Available.
 - #define CFE_TBL_ERR_DUMP_ONLY ((CFE_Status_t)0xcc000010)
Dump Only Error.
 - #define CFE_TBL_ERR_ILLEGAL_SRC_TYPE ((CFE_Status_t)0xcc000011)
Illegal Source Type.
 - #define CFE_TBL_ERR_LOAD_IN_PROGRESS ((CFE_Status_t)0xcc000012)
Load In Progress.
 - #define CFE_TBL_ERR_FILE_TOO_LARGE ((CFE_Status_t)0xcc000014)
File Too Large.
 - #define CFE_TBL_WARN_SHORT_FILE ((CFE_Status_t)0x4c000015)
Short File Warning.
 - #define CFE_TBL_ERR_BAD_CONTENT_ID ((CFE_Status_t)0xcc000016)
Bad Content ID.
 - #define CFE_TBL_INFO_NO_UPDATE_PENDING ((CFE_Status_t)0x4c000017)
No Update Pending.
 - #define CFE_TBL_INFO_TABLE_LOCKED ((CFE_Status_t)0x4c000018)
Table Locked.
 - #define CFE_TBL_INFO_VALIDATION_PENDING ((CFE_Status_t)0x4c000019)
 - #define CFE_TBL_INFO_NO_VALIDATION_PENDING ((CFE_Status_t)0x4c00001A)
 - #define CFE_TBL_ERR_BAD_SUBTYPE_ID ((CFE_Status_t)0xcc00001B)
Bad Subtype ID.
 - #define CFE_TBL_ERR_FILE_SIZE_INCONSISTENT ((CFE_Status_t)0xcc00001C)
File Size Inconsistent.
 - #define CFE_TBL_ERR_NO_STD_HEADER ((CFE_Status_t)0xcc00001D)
No Standard Header.
 - #define CFE_TBL_ERR_NO_TBL_HEADER ((CFE_Status_t)0xcc00001E)
No Table Header.
 - #define CFE_TBL_ERR_FILENAME_TOO_LONG ((CFE_Status_t)0xcc00001F)
Filename Too Long.
 - #define CFE_TBL_ERR_FILE_FOR_WRONG_TABLE ((CFE_Status_t)0xcc000020)
File For Wrong Table.

- #define CFE_TBL_ERR_LOAD_INCOMPLETE ((CFE_Status_t)0xcc000021)
Load Incomplete.
- #define CFE_TBL_WARN_PARTIAL_LOAD ((CFE_Status_t)0x4c000022)
Partial Load Warning.
- #define CFE_TBL_ERR_PARTIAL_LOAD ((CFE_Status_t)0xcc000023)
Partial Load Error.
- #define CFE_TBL_INFO_DUMP_PENDING ((CFE_Status_t)0x4c000024)
Dump Pending.
- #define CFE_TBL_ERR_INVALID_OPTIONS ((CFE_Status_t)0xcc000025)
Invalid Options.
- #define CFE_TBL_WARN_NOT_CRITICAL ((CFE_Status_t)0x4c000026)
Not Critical Warning.
- #define CFE_TBL_INFO_RECOVERED_TBL ((CFE_Status_t)0x4c000027)
Recovered Table.
- #define CFE_TBL_ERR_BAD_SPACECRAFT_ID ((CFE_Status_t)0xcc000028)
Bad Spacecraft ID.
- #define CFE_TBL_ERR_BAD_PROCESSOR_ID ((CFE_Status_t)0xcc000029)
Bad Processor ID.
- #define CFE_TBL_MESSAGE_ERROR ((CFE_Status_t)0xcc00002a)
Message Error.
- #define CFE_TBL_ERR_SHORT_FILE ((CFE_Status_t)0xcc00002b)
- #define CFE_TBL_ERR_ACCESS ((CFE_Status_t)0xcc00002c)
- #define CFE_TBL_BAD_ARGUMENT ((CFE_Status_t)0xcc00002d)
Bad Argument.
- #define CFE_TBL_NOT_IMPLEMENTED ((CFE_Status_t)0xcc00ffff)
Not Implemented.
- #define CFE_TIME_NOT_IMPLEMENTED ((CFE_Status_t)0xce00ffff)
Not Implemented.
- #define CFE_TIME_INTERNAL_ONLY ((CFE_Status_t)0xce000001)
Internal Only.
- #define CFE_TIME_OUT_OF_RANGE ((CFE_Status_t)0xce000002)
Out Of Range.
- #define CFE_TIME_TOO_MANY_SYNCH_CALLBACKS ((CFE_Status_t)0xce000003)
Too Many Sync Callbacks.
- #define CFE_TIME_CALLBACK_NOT_REGISTERED ((CFE_Status_t)0xce000004)
Callback Not Registered.
- #define CFE_TIME_BAD_ARGUMENT ((CFE_Status_t)0xce000005)
Bad Argument.

Typedefs

- typedef int32 CFE_Status_t
cFE Status type for readability and eventually type safety
- typedef char CFE_StatusString_t[CFE_STATUS_STRING_LENGTH]
For the [CFE_ES_StatusToString\(\)](#) function, to ensure everyone is making an array of the same length.

Functions

- `char * CFE_ES_StatusToString (CFE_Status_t status, CFE_StatusString_t *status_string)`
Convert status to a string.

12.56.1 Detailed Description

Title: cFE Status Code Definition Header File

Purpose: Common source of cFE API return status codes.

Design Notes:

References: Flight Software Branch C Coding Standard Version 1.0a

12.56.2 Macro Definition Documentation

12.56.2.1 CFE_EVENTS_SERVICE `#define CFE_EVENTS_SERVICE ((CFE_Status_t)0x02000000)`

Event Service.

Definition at line 126 of file cfe_error.h.

12.56.2.2 CFE_EXECUTIVE_SERVICE `#define CFE_EXECUTIVE_SERVICE ((CFE_Status_t)0x04000000)`

Executive Service.

Definition at line 127 of file cfe_error.h.

12.56.2.3 CFE_FILE_SERVICE `#define CFE_FILE_SERVICE ((CFE_Status_t)0x06000000)`

File Service.

Definition at line 128 of file cfe_error.h.

12.56.2.4 CFE_GENERIC_SERVICE `#define CFE_GENERIC_SERVICE ((CFE_Status_t)0x08000000)`

Generic Service.

Definition at line 129 of file cfe_error.h.

12.56.2.5 CFE_SERVICE_BITMASK `#define CFE_SERVICE_BITMASK ((CFE_Status_t)0x0e000000)`

Error Service Bitmask.

Definition at line 124 of file cfe_error.h.

12.56.2.6 CFE_SEVERITY_BITMASK `#define CFE_SEVERITY_BITMASK ((CFE_Status_t)0xc0000000)`

Error Severity Bitmask.

Definition at line 115 of file cfe_error.h.

12.56.2.7 CFE_SEVERITY_ERROR `#define CFE_SEVERITY_ERROR ((CFE_Status_t)0xc0000000)`

Severity Error.

Definition at line 119 of file cfe_error.h.

12.56.2.8 CFE_SEVERITY_INFO #define CFE_SEVERITY_INFO (([CFE_Status_t](#))0x40000000)
Severity Info.
Definition at line 118 of file cfe_error.h.

12.56.2.9 CFE_SEVERITY_SUCCESS #define CFE_SEVERITY_SUCCESS (([CFE_Status_t](#))0x00000000)
Severity Success.
Definition at line 117 of file cfe_error.h.

12.56.2.10 CFE_SOFTWARE_BUS_SERVICE #define CFE_SOFTWARE_BUS_SERVICE (([CFE_Status_t](#))0x0a000000)
Software Bus Service.
Definition at line 130 of file cfe_error.h.

12.56.2.11 CFE_STATUS_C #define CFE_STATUS_C(
 X) (([CFE_Status_t](#))(X))
cFE Status macro for literal
Definition at line 48 of file cfe_error.h.

12.56.2.12 CFE_STATUS_STRING_LENGTH #define CFE_STATUS_STRING_LENGTH 11
cFE Status converted to string length limit
Used for sizing CFE_StatusString_t intended for use in printing CFE_Status_t values Sized for 0x%08x and NULL
Definition at line 56 of file cfe_error.h.

12.56.2.13 CFE_TABLE_SERVICE #define CFE_TABLE_SERVICE (([CFE_Status_t](#))0x0c000000)
Table Service.
Definition at line 131 of file cfe_error.h.

12.56.2.14 CFE_TIME_SERVICE #define CFE_TIME_SERVICE (([CFE_Status_t](#))0x0e000000)
Time Service.
Definition at line 132 of file cfe_error.h.

12.56.3 Typedef Documentation

12.56.3.1 CFE_Status_t [typedef int32 CFE_Status_t](#)
cFE Status type for readability and eventually type safety
Definition at line 43 of file cfe_error.h.

12.56.3.2 CFE_StatusString_t [typedef char CFE_StatusString_t\[CFE_STATUS_STRING_LENGTH\]](#)
For the [CFE_ES_StatusToString\(\)](#) function, to ensure everyone is making an array of the same length.
Definition at line 62 of file cfe_error.h.

12.56.4 Function Documentation

```
12.56.4.1 CFE_ES_StatusToString() char* CFE_ES_StatusToString (
    CFE_Status_t status,
    CFE_StatusString_t * status_string )
```

Convert status to a string.

Parameters

in	<i>status</i>	Status value to convert
out	<i>status_string</i>	Buffer to store status converted to string

Returns

Passed in string pointer

12.57 cfe/modules/core_api/fsw/inc/cfe_es.h File Reference

```
#include "common_types.h"
#include "cfe_error.h"
#include "cfe_es_api_typedefs.h"
#include "cfe_resourceid_api_typedefs.h"
```

Macros

- #define OS_PRINTF(m, n)
- #define CFE_ES_DBIT(x) (1L << (x)) /* Places a one at bit positions 0 thru 31 */
- #define CFE_ES_DTEST(i, x) (((i)&CFE_ES_DBIT(x)) != 0) /* true iff bit x of i is set */
- #define CFE_ES_TEST_LONG_MASK(m, s) (CFE_ES_DTEST(m[(s) / 32], (s) % 32)) /* Test a bit within an array of 32-bit integers. */
- #define CFE_ES_PerfLogEntry(id) (CFE_ES_PerfLogAdd(id, 0))
 Entry marker for use with Software Performance Analysis Tool.
- #define CFE_ES_PerfLogExit(id) (CFE_ES_PerfLogAdd(id, 1))
 Exit marker for use with Software Performance Analysis Tool.

Functions

- CFE_Status_t CFE_ES_AppID_ToIndex (CFE_ES_AppId_t AppID, uint32 *Idx)
 Obtain an index value correlating to an ES Application ID.
- int32 CFE_ES_LibID_ToIndex (CFE_ES_LibId_t LibId, uint32 *Idx)
 Obtain an index value correlating to an ES Library ID.
- CFE_Status_t CFE_ES_TaskID_ToIndex (CFE_ES_TaskId_t TaskID, uint32 *Idx)
 Obtain an index value correlating to an ES Task ID.
- CFE_Status_t CFE_ES_CounterID_ToIndex (CFE_ES_CounterId_t CounterId, uint32 *Idx)
 Obtain an index value correlating to an ES Counter ID.
- void CFE_ES_Main (uint32 StartType, uint32 StartSubtype, uint32 Modeld, const char *StartFilePath)
 cFE Main Entry Point used by Board Support Package to start cFE
- CFE_Status_t CFE_ES_ResetCFE (uint32 ResetType)
 Reset the cFE Core and all cFE Applications.
- CFE_Status_t CFE_ES_RestartApp (CFE_ES_AppId_t AppID)
 Restart a single cFE Application.
- CFE_Status_t CFE_ES_ReloadApp (CFE_ES_AppId_t AppID, const char *AppFileName)

- **`CFE_Status_t CFE_ES_DeleteApp (CFE_ES_AppId_t AppID)`**
Delete a cFE Application.
- **`void CFE_ES_ExitApp (uint32 ExitStatus)`**
Exit a cFE Application.
- **`bool CFE_ES_RunLoop (uint32 *RunStatus)`**
Check for Exit, Restart, or Reload commands.
- **`CFE_Status_t CFE_ES_WaitForSystemState (uint32 MinSystemState, uint32 TimeOutMilliseconds)`**
Allow an Application to Wait for a minimum global system state.
- **`void CFE_ES_WaitForStartupSync (uint32 TimeOutMilliseconds)`**
Allow an Application to Wait for the "OPERATIONAL" global system state.
- **`void CFE_ES_IncrementTaskCounter (void)`**
Increments the execution counter for the calling task.
- **`int32 CFE_ES_GetResetType (uint32 *ResetSubtypePtr)`**
Return the most recent Reset Type.
- **`CFE_Status_t CFE_ES_GetAppID (CFE_ES_AppId_t *AppIdPtr)`**
Get an Application ID for the calling Application.
- **`CFE_Status_t CFE_ES_GetTaskID (CFE_ES_TaskId_t *TaskIdPtr)`**
Get the task ID of the calling context.
- **`CFE_Status_t CFE_ES_GetAppIDByName (CFE_ES_AppId_t *AppIdPtr, const char *AppName)`**
Get an Application ID associated with a specified Application name.
- **`CFE_Status_t CFE_ES_GetLibIDByName (CFE_ES_LibId_t *LibIdPtr, const char *LibName)`**
Get a Library ID associated with a specified Library name.
- **`CFE_Status_t CFE_ES_GetAppName (char *AppName, CFE_ES_AppId_t AppId, size_t BufferLength)`**
Get an Application name for a specified Application ID.
- **`CFE_Status_t CFE_ES_GetLibName (char *LibName, CFE_ES_LibId_t LibId, size_t BufferLength)`**
Get a Library name for a specified Library ID.
- **`CFE_Status_t CFE_ES_GetAppInfo (CFE_ES_AppInfo_t *AppInfo, CFE_ES_AppId_t AppId)`**
Get Application Information given a specified App ID.
- **`CFE_Status_t CFE_ES_GetTaskInfo (CFE_ES_TaskInfo_t *TaskInfo, CFE_ES_TaskId_t TaskId)`**
Get Task Information given a specified Task ID.
- **`int32 CFE_ES_GetLibInfo (CFE_ES_AppInfo_t *LibInfo, CFE_ES_LibId_t LibId)`**
Get Library Information given a specified Resource ID.
- **`int32 CFE_ES_GetModuleInfo (CFE_ES_AppInfo_t *ModuleInfo, CFE_Resourceld_t Resourceld)`**
Get Information given a specified Resource ID.
- **`CFE_Status_t CFE_ES_CreateChildTask (CFE_ES_TaskId_t *TaskIdPtr, const char *TaskName, CFE_ES_ChildTaskMainFuncPtr FunctionPtr, CFE_ES_StackPointer_t StackPtr, size_t StackSize, CFE_ES_TaskPriority_Atom_t Priority, uint32 Flags)`**
Creates a new task under an existing Application.
- **`CFE_Status_t CFE_ES_GetTaskIDByName (CFE_ES_TaskId_t *TaskIdPtr, const char *TaskName)`**
Get a Task ID associated with a specified Task name.
- **`CFE_Status_t CFE_ES_GetTaskName (char *TaskName, CFE_ES_TaskId_t TaskId, size_t BufferLength)`**
Get a Task name for a specified Task ID.
- **`CFE_Status_t CFE_ES_DeleteChildTask (CFE_ES_TaskId_t TaskId)`**
Deletes a task under an existing Application.
- **`void CFE_ES_ExitChildTask (void)`**
Exits a child task.

- void [CFE_ES_BackgroundWakeUp](#) (void)
Wakes up the CFE background task.
- [CFE_Status_t CFE_ES_WriteToSysLog](#) (const char *SpecStringPtr,...) OS_PRINTF(1
Write a string to the cFE System Log.
- [CFE_Status_t uint32 CFE_ES_CalculateCRC](#) (const void *DataPtr, size_t DataLength, uint32 InputCRC, [CFE_ES_CrcType_Enum_t](#) TypeCRC)
Calculate a CRC on a block of memory.
- void [CFE_ES_ProcessAsyncEvent](#) (void)
Notification that an asynchronous event was detected by the underlying OS/PSP.
- [CFE_Status_t CFE_ES_RegisterCDS](#) ([CFE_ES_CDSHandle_t](#) *CDSHandlePtr, size_t BlockSize, const char *Name)
Reserve space (or re-obtain previously reserved space) in the Critical Data Store (CDS)
- [CFE_Status_t CFE_ES_GetCDSBlockIDByName](#) ([CFE_ES_CDSHandle_t](#) *BlockIdPtr, const char *BlockName)
Get a CDS Block ID associated with a specified CDS Block name.
- [CFE_Status_t CFE_ES_GetCDSBlockName](#) (char *BlockName, [CFE_ES_CDSHandle_t](#) BlockId, size_t BufferLength)
Get a Block name for a specified Block ID.
- [CFE_Status_t CFE_ES_CopyToCDS](#) ([CFE_ES_CDSHandle_t](#) Handle, const void *DataToCopy)
Save a block of data in the Critical Data Store (CDS)
- [CFE_Status_t CFE_ES_RestoreFromCDS](#) (void *RestoreToMemory, [CFE_ES_CDSHandle_t](#) Handle)
Recover a block of data from the Critical Data Store (CDS)
- [CFE_Status_t CFE_ES_PoolCreateNoSem](#) ([CFE_ES_MemHandle_t](#) *PoolID, void *MemPtr, size_t Size)
Initializes a memory pool created by an application without using a semaphore during processing.
- [CFE_Status_t CFE_ES_PoolCreate](#) ([CFE_ES_MemHandle_t](#) *PoolID, void *MemPtr, size_t Size)
Initializes a memory pool created by an application while using a semaphore during processing.
- [CFE_Status_t CFE_ES_PoolCreateEx](#) ([CFE_ES_MemHandle_t](#) *PoolID, void *MemPtr, size_t Size, uint16 NumBlockSizes, const size_t *BlockSizes, bool UseMutex)
Initializes a memory pool created by an application with application specified block sizes.
- int32 [CFE_ES_PoolDelete](#) ([CFE_ES_MemHandle_t](#) PoolID)
Deletes a memory pool that was previously created.
- int32 [CFE_ES_GetPoolBuf](#) ([CFE_ES_MemPoolBuf_t](#) *BufPtr, [CFE_ES_MemHandle_t](#) Handle, size_t Size)
Gets a buffer from the memory pool created by [CFE_ES_PoolCreate](#) or [CFE_ES_PoolCreateNoSem](#).
- [CFE_Status_t CFE_ES_GetPoolBufInfo](#) ([CFE_ES_MemHandle_t](#) Handle, [CFE_ES_MemPoolBuf_t](#) BufPtr)
Gets info on a buffer previously allocated via [CFE_ES_GetPoolBuf](#).
- int32 [CFE_ES_PutPoolBuf](#) ([CFE_ES_MemHandle_t](#) Handle, [CFE_ES_MemPoolBuf_t](#) BufPtr)
Releases a buffer from the memory pool that was previously allocated via [CFE_ES_GetPoolBuf](#).
- [CFE_Status_t CFE_ES_GetMemPoolStats](#) ([CFE_ES_MemPoolStats_t](#) *BufPtr, [CFE_ES_MemHandle_t](#) Handle)
Extracts the statistics maintained by the memory pool software.
- void [CFE_ES_PerfLogAdd](#) (uint32 Marker, uint32 EntryExit)
Adds a new entry to the data buffer.
- [CFE_Status_t CFE_ES_RegisterGenCounter](#) ([CFE_ES_CounterId_t](#) *CounterIdPtr, const char *CounterName)
Register a generic counter.
- [CFE_Status_t CFE_ES_DeleteGenCounter](#) ([CFE_ES_CounterId_t](#) CounterId)
Delete a generic counter.
- [CFE_Status_t CFE_ES_IncrementGenCounter](#) ([CFE_ES_CounterId_t](#) CounterId)
Increments the specified generic counter.
- [CFE_Status_t CFE_ES_SetGenCount](#) ([CFE_ES_CounterId_t](#) CounterId, uint32 Count)

Set the specified generic counter.

- **CFE_Status_t CFE_ES_GetGenCount** (*CFE_ES_CounterId_t* CounterId, *uint32* *Count)
Get the specified generic counter count.
- **CFE_Status_t CFE_ES_GetGenCounterIDByName** (*CFE_ES_CounterId_t* *CounterIdPtr, *const char* *CounterName)
Get the Id associated with a generic counter name.
- **CFE_Status_t CFE_ES_GetGenCounterName** (*char* *CounterName, *CFE_ES_CounterId_t* CounterId, *size_t* BufferLength)
Get a Counter name for a specified Counter ID.

12.57.1 Detailed Description

Purpose: Unit specification for Executive Services library functions and macros.

References: Flight Software Branch C Coding Standard Version 1.0a cFE Flight Software Application Developers Guide

Notes:

12.57.2 Macro Definition Documentation

12.57.2.1 CFE_ES_DBIT #define CFE_ES_DBIT(

```
x ) (1L << (x)) /* Places a one at bit positions 0 thru 31 */
```

Definition at line 57 of file cfe_es.h.

12.57.2.2 CFE_ES_DTEST #define CFE_ES_DTEST(

```
i,  
x ) (((i)&CFE_ES_DBIT(x)) != 0) /* true iff bit x of i is set */
```

Definition at line 58 of file cfe_es.h.

12.57.2.3 CFE_ES_TEST_LONG_MASK #define CFE_ES_TEST_LONG_MASK(

```
m,  
s ) (CFE_ES_DTEST(m[(s) / 32], (s) % 32)) /* Test a bit within an array of 32-bit  
integers. */
```

Definition at line 59 of file cfe_es.h.

12.57.2.4 OS_PRINTF #define OS_PRINTF(

```
m,  
n )
```

Definition at line 50 of file cfe_es.h.

12.58 cfe/modules/core_api/fsw/inc/cfe_es_api_typedefs.h File Reference

```
#include "common_types.h"  
#include "cfe_es_extern_typedefs.h"
```

Data Structures

- union **CFE_ES_PoolAlign**

Pool Alignment.

Macros

- `#define CFE_ES_STATIC_POOL_TYPE(size)`
Static Pool Type.
- `#define CFE_ES_MEMPOOLBUF_C(x) ((CFE_ES_MemPoolBuf_t)(x))`
Conversion macro to create buffer pointer from another type.
- `#define CFE_ES_NO_MUTEX false`
Indicates that the memory pool selection will not use a semaphore.
- `#define CFE_ES_USE_MUTEX true`
Indicates that the memory pool selection will use a semaphore.

Reset Type extensions

- `#define CFE_ES_APP_RESTART CFE_PSP_RST_TYPE_MAX`

Conversions for ES resource IDs

- `#define CFE_ES_APPID_C(val) ((CFE_ES_AppId_t)CFE_RESOURCEID_WRAP(val))`
- `#define CFE_ES_TASKID_C(val) ((CFE_ES_TaskId_t)CFE_RESOURCEID_WRAP(val))`
- `#define CFE_ES_LIBID_C(val) ((CFE_ES_LibId_t)CFE_RESOURCEID_WRAP(val))`
- `#define CFE_ES_COUNTERID_C(val) ((CFE_ES_CounterId_t)CFE_RESOURCEID_WRAP(val))`
- `#define CFE_ES_MEMHANDLE_C(val) ((CFE_ES_MemHandle_t)CFE_RESOURCEID_WRAP(val))`
- `#define CFE_ES_CDSHANDLE_C(val) ((CFE_ES_CDSHandle_t)CFE_RESOURCEID_WRAP(val))`

Type-specific initializers for "undefined" resource IDs

- `#define CFE_ES_APPID_UNDEFINED CFE_ES_APPID_C(CFE_RESOURCEID_UNDEFINED)`
- `#define CFE_ES_TASKID_UNDEFINED CFE_ES_TASKID_C(CFE_RESOURCEID_UNDEFINED)`
- `#define CFE_ES_LIBID_UNDEFINED CFE_ES_LIBID_C(CFE_RESOURCEID_UNDEFINED)`
- `#define CFE_ES_COUNTERID_UNDEFINED CFE_ES_COUNTERID_C(CFE_RESOURCEID_UNDEFINED)`
- `#define CFE_ES_MEMHANDLE_UNDEFINED CFE_ES_MEMHANDLE_C(CFE_RESOURCEID_UNDEFINED)`
- `#define CFE_ES_CDS_BAD_HANDLE CFE_ES_CDSHANDLE_C(CFE_RESOURCEID_UNDEFINED)`

Task Stack Constants

- `#define CFE_ES_TASK_STACK_ALLOCATE NULL /* aka OS_TASK_STACK_ALLOCATE in proposed OSAL change */`
Indicates that the stack for the child task should be dynamically allocated.

Typedefs

- `typedef void(* CFE_ES_TaskEntryFuncPtr_t) (void)`
Required Prototype of Task Main Functions.
- `typedef int32(* CFE_ES_LibraryEntryFuncPtr_t) (CFE_ES_LibId_t LibId)`
Required Prototype of Library Initialization Functions.
- `typedef CFE_ES_TaskEntryFuncPtr_t CFE_ES_ChildTaskMainFuncPtr_t`
Compatible typedef for ES child task entry point.
- `typedef void * CFE_ES_StackPointer_t`
Type for the stack pointer of tasks.
- `typedef enum CFE_ES_CrcType_Enum CFE_ES_CrcType_Enum_t`
Checksum/CRC algorithm identifiers.
- `typedef union CFE_ES_PoolAlign CFE_ES_PoolAlign_t`
Pool Alignment.
- `typedef void * CFE_ES_MemPoolBuf_t`
Pointer type used for memory pool API.

Enumerations

- enum **CFE_ES_CrcType_Enum** {
 CFE_ES_CrcType_NONE = 0, **CFE_ES_CrcType_16_ARC** = 1, **CFE_ES_CrcType_MAX** = 2, **CFE_ES_CrcType_CRC_16** = **CFE_ES_CrcType_16_ARC**,
 CFE_ES_CrcType_CRC_8 = **CFE_ES_CrcType_MAX** + 1, **CFE_ES_CrcType_CRC_32** = **CFE_ES_CrcType_MAX** + 2 }
}

Checksum/CRC algorithm identifiers.

12.58.1 Detailed Description

Purpose: Unit specification for Executive Services library functions and macros.

References: Flight Software Branch C Coding Standard Version 1.0a cFE Flight Software Application Developers Guide

Notes:

12.58.2 Macro Definition Documentation

12.58.2.1 **CFE_ES_APP_RESTART** #define CFE_ES_APP_RESTART CFE_PSP_RST_TYPE_MAX

Application only was reset (extend the PSP enumeration here)

Definition at line 57 of file cfe_es_api_typedefs.h.

12.58.2.2 **CFE_ES_APPID_C** #define CFE_ES_APPID_C(val) ((**CFE_ES_AppId_t**)CFE_RESOURCEID_WRAP(val))

Definition at line 208 of file cfe_es_api_typedefs.h.

12.58.2.3 **CFE_ES_APPID_UNDEFINED** #define CFE_ES_APPID_UNDEFINED CFE_ES_APPID_C(CFE_RESOURCEID_UNDEFINED)

Definition at line 220 of file cfe_es_api_typedefs.h.

12.58.2.4 **CFE_ES_CDS_BAD_HANDLE** #define CFE_ES_CDS_BAD_HANDLE CFE_ES_CDSHANDLE_C(CFE_RESOURCEID_UNDEFINED)

Definition at line 225 of file cfe_es_api_typedefs.h.

12.58.2.5 **CFE_ES_CDSHANDLE_C** #define CFE_ES_CDSHANDLE_C(val) ((**CFE_ES_CDSHandle_t**)CFE_RESOURCEID_WRAP(val))

Definition at line 213 of file cfe_es_api_typedefs.h.

12.58.2.6 **CFE_ES_COUNTERID_C** #define CFE_ES_COUNTERID_C(val) ((**CFE_ES_CounterId_t**)CFE_RESOURCEID_WRAP(val))

Definition at line 211 of file cfe_es_api_typedefs.h.

12.58.2.7 **CFE_ES_COUNTERID_UNDEFINED** #define CFE_ES_COUNTERID_UNDEFINED CFE_ES_COUNTERID_C(CFE_RESOURCEID_UNDEFINED)

Definition at line 223 of file cfe_es_api_typedefs.h.

12.58.2.8 CFE_ES_LIBID_C #define CFE_ES_LIBID_C(
 val) ((CFE_ES_LibId_t)CFE_RESOURCEID_WRAP(val))

Definition at line 210 of file cfe_es_api_typedefs.h.

12.58.2.9 CFE_ES_LIBID_UNDEFINED #define CFE_ES_LIBID_UNDEFINED CFE_ES_LIBID_C(CFE_RESOURCEID_UNDEFINED)

Definition at line 222 of file cfe_es_api_typedefs.h.

12.58.2.10 CFE_ES_MEMHANDLE_C #define CFE_ES_MEMHANDLE_C(
 val) ((CFE_ES_MemHandle_t)CFE_RESOURCEID_WRAP(val))

Definition at line 212 of file cfe_es_api_typedefs.h.

12.58.2.11 CFE_ES_MEMHANDLE_UNDEFINED #define CFE_ES_MEMHANDLE_UNDEFINED CFE_ES_MEMHANDLE_C(CFE_RESOURCEID_UNDEFINED)

Definition at line 224 of file cfe_es_api_typedefs.h.

12.58.2.12 CFE_ES_MEMPOOLBUF_C #define CFE_ES_MEMPOOLBUF_C(
 x) ((CFE_ES_MemPoolBuf_t)(x))

Conversion macro to create buffer pointer from another type.

In cases where the actual buffer pointer is computed, this macro aids in converting the computed address (typically an OSAL "cpuaddr" type) into a buffer pointer.

Note

Any address calculation needs to take machine alignment requirements into account.

Definition at line 193 of file cfe_es_api_typedefs.h.

12.58.2.13 CFE_ES_NO_MUTEX #define CFE_ES_NO_MUTEX false

Indicates that the memory pool selection will not use a semaphore.

Definition at line 240 of file cfe_es_api_typedefs.h.

12.58.2.14 CFE_ES_STATIC_POOL_TYPE #define CFE_ES_STATIC_POOL_TYPE(
 size)

Value:

```
union
{
    CFE_ES_PoolAlign_t Align;
    uint8             Data[size];
}
```

Static Pool Type.

A macro to help instantiate static memory pools that are correctly aligned. This resolves to a union type that contains a member called "Data" that will be correctly aligned to be a memory pool and sized according to the argument.

Definition at line 160 of file cfe_es_api_typedefs.h.

12.58.2.15 CFE_ES_TASK_STACK_ALLOCATE #define CFE_ES_TASK_STACK_ALLOCATE NULL /* aka OS_<→
 TASK_STACK_ALLOCATE in proposed OSAL change */

Indicates that the stack for the child task should be dynamically allocated.

This value may be supplied as the Stack Pointer argument to CFE_ES_ChildTaskCreate() to indicate that the stack should be dynamically allocated.

Definition at line 237 of file cfe_es_api_typedefs.h.

12.58.2.16 CFE_ES_TASKID_C #define CFE_ES_TASKID_C(
 val) ((CFE_ES_TaskId_t)CFE_RESOURCEID_WRAP(val))

Definition at line 209 of file cfe_es_api_typedefs.h.

12.58.2.17 CFE_ES_TASKID_UNDEFINED #define CFE_ES_TASKID_UNDEFINED CFE_ES_TASKID_C(CFE_RESOURCEID_UNDEFINED)

Definition at line 221 of file cfe_es_api_typedefs.h.

12.58.2.18 CFE_ES_USE_MUTEX #define CFE_ES_USE_MUTEX true

Indicates that the memory pool selection will use a semaphore.

Definition at line 241 of file cfe_es_api_typedefs.h.

12.58.3 Typedef Documentation

12.58.3.1 CFE_ES_ChildTaskMainFuncPtr_t typedef CFE_ES_TaskEntryFuncPtr_t CFE_ES_ChildTaskMainFuncPtr_t

Compatible typedef for ES child task entry point.

All ES task functions (main + child) use the same entry point type.

Definition at line 77 of file cfe_es_api_typedefs.h.

12.58.3.2 CFE_ES_CrcType_Enum_t typedef enum CFE_ES_CrcType_Enum CFE_ES_CrcType_Enum_t

CHECKSUM/CRC algorithm identifiers.

Currently only CFE_ES_CrcType_16_ARC is supported.

All defined CRC algorithms should include a check value, which is the accepted result of computing the CRC across the fixed string "123456789"

12.58.3.3 CFE_ES_LibraryEntryFuncPtr_t typedef int32 (* CFE_ES_LibraryEntryFuncPtr_t) (CFE_ES_LibId_t LibId)

Required Prototype of Library Initialization Functions.

Definition at line 69 of file cfe_es_api_typedefs.h.

12.58.3.4 CFE_ES_MemPoolBuf_t typedef void* CFE_ES_MemPoolBuf_t

Pointer type used for memory pool API.

This is used in the Get/Put API calls to refer to a pool buffer.

This pointer is expected to be type cast to the real object type after getting a new buffer. Using void* allows this type conversion to occur easily.

Note

Older versions of CFE implemented the API using a uint32*, which required explicit type casting everywhere it was called. Although the API type is now void* to make usage easier, the pool buffers are aligned to machine requirements - typically 64 bits.

Definition at line 181 of file cfe_es_api_typedefs.h.

12.58.3.5 CFE_ES_PoolAlign_t `typedef union CFE_ES_PoolAlign CFE_ES_PoolAlign_t`
 Pool Alignment.

Union that can be used for minimum memory alignment of ES memory pools on the target. It contains the longest native data types such that the alignment of this structure should reflect the largest possible alignment requirements for any data on this processor.

12.58.3.6 CFE_ES_StackPointer_t `typedef void* CFE_ES_StackPointer_t`

Type for the stack pointer of tasks.

This type is used in the CFE ES task API.

Definition at line 84 of file `cfe_es_api_typedefs.h`.

12.58.3.7 CFE_ES_TaskEntryFuncPtr_t `typedef void(* CFE_ES_TaskEntryFuncPtr_t) (void)`

Required Prototype of Task Main Functions.

Definition at line 68 of file `cfe_es_api_typedefs.h`.

12.58.4 Enumeration Type Documentation

12.58.4.1 CFE_ES_CrcType_Enum `enum CFE_ES_CrcType_Enum`

Checksum/CRC algorithm identifiers.

Currently only `CFE_ES_CrcType_16_ARC` is supported.

All defined CRC algorithms should include a check value, which is the accepted result of computing the CRC across the fixed string "123456789"

Enumerator

<code>CFE_ES_CrcType_NONE</code>	Reserved placeholder value. No computation is performed, always returns 0 as a result.
<code>CFE_ES_CrcType_16_ARC</code>	Implementation of CRC-16/ARC. Polynomial: 0x8005 Initialization: 0x0000 Reflect Input/Output: true Check value: 0xbb3d XorOut: 0x0000
<code>CFE_ES_CrcType_MAX</code>	Placeholder for end of normal enumeration list This should reflect the number of algorithms defined.
<code>CFE_ES_CrcType_CRC_16</code>	CRC-16 historically implied CRC-16/ARC CRC-8 historically defined but not implemented, value must not be 0
<code>CFE_ES_CrcType_CRC_8</code>	CRC-32 historically defined but not implemented, value must not be 0
<code>CFE_ES_CrcType_CRC_32</code>	

Definition at line 94 of file `cfe_es_api_typedefs.h`.

12.59 cfe/modules/core_api/fsw/inc/cfe_evs.h File Reference

```
#include "common_types.h"
#include "cfe_error.h"
```

```
#include "cfe_evs_api_typedefs.h"
#include "cfe_es_api_typedefs.h"
#include "cfe_time_api_typedefs.h"
```

Macros

- #define CFE_EVS_Send(E, T, ...) CFE_EVS_SendEvent((E), CFE_EVS_EventType_##T, __VA_ARGS__)
- #define CFE_EVS_SendDbg(E, ...) CFE_EVS_Send(E, DEBUG, __VA_ARGS__)
- #define CFE_EVS_SendInfo(E, ...) CFE_EVS_Send(E, INFORMATION, __VA_ARGS__)
- #define CFE_EVS_SendErr(E, ...) CFE_EVS_Send(E, ERROR, __VA_ARGS__)
- #define CFE_EVS_SendCrit(E, ...) CFE_EVS_Send(E, CRITICAL, __VA_ARGS__)

Functions

- CFE_Status_t CFE_EVS_Register (const void *Filters, uint16 NumEventFilters, uint16 FilterScheme)
Register an application for receiving event services.
- CFE_Status_t CFE_EVS_SendEvent (uint16 EventID, CFE_EVS_EventType_Enum_t EventType, const char *Spec,...) OS_PRINTF(3)
Generate a software event.
- CFE_Status_t CFE_Status_t CFE_EVS_SendEventWithAppID (uint16 EventID, CFE_EVS_EventType_Enum_t EventType, CFE_ES_AppId_t AppID, const char *Spec,...) OS_PRINTF(4)
Generate a software event given the specified Application ID.
- CFE_Status_t CFE_Status_t CFE_Status_t CFE_EVS_SendTimedEvent (CFE_TIME_SysTime_t Time, uint16 EventID, CFE_EVS_EventType_Enum_t EventType, const char *Spec,...) OS_PRINTF(4)
Generate a software event with a specific time tag.
- CFE_Status_t CFE_EVS_ResetFilter (uint16 EventID)
Resets the calling application's event filter for a single event ID.
- CFE_Status_t CFE_EVS_ResetAllFilters (void)
Resets all of the calling application's event filters.

12.59.1 Detailed Description

Title: Event Services API Application Library Header File

Purpose: Unit specification for Event services library functions and macros.

Design Notes:

References: Flight Software Branch C Coding Standard Version 1.0a

12.59.2 Macro Definition Documentation

```
12.59.2.1 CFE_EVS_Send #define CFE_EVS_Send(
    E,
    T,
    ... ) CFE_EVS_SendEvent ((E), CFE_EVS_EventType_##T, __VA_ARGS__)
```

Definition at line 46 of file cfe_evs.h.

12.59.2.2 CFE_EVS_SendCrit #define CFE_EVS_SendCrit(
 E,
 ...) CFE_EVS_Send(E, CRITICAL, __VA_ARGS__)

Definition at line 50 of file cfe_evs.h.

12.59.2.3 CFE_EVS_SendDbg #define CFE_EVS_SendDbg(
 E,
 ...) CFE_EVS_Send(E, DEBUG, __VA_ARGS__)

Definition at line 47 of file cfe_evs.h.

12.59.2.4 CFE_EVS_SendErr #define CFE_EVS_SendErr(
 E,
 ...) CFE_EVS_Send(E, ERROR, __VA_ARGS__)

Definition at line 49 of file cfe_evs.h.

12.59.2.5 CFE_EVS_SendInfo #define CFE_EVS_SendInfo(
 E,
 ...) CFE_EVS_Send(E, INFORMATION, __VA_ARGS__)

Definition at line 48 of file cfe_evs.h.

12.60 cfe/modules/core_api/fsw/inc/cfe_evs_api_typedefs.h File Reference

```
#include "common_types.h"
#include "cfe_evs_extern_typedefs.h"
```

Data Structures

- struct **CFE_EVS_BinFilter**
Event message filter definition structure.

Macros

Common Event Filter Mask Values

Message is sent if (previous event count) & MASK == 0

- #define **CFE_EVS_NO_FILTER** 0x0000
Stops any filtering. All messages are sent.
- #define **CFE_EVS_FIRST_ONE_STOP** 0xFFFF
Sends the first event. All remaining messages are filtered.
- #define **CFE_EVS_FIRST_TWO_STOP** 0xFFFE
Sends the first 2 events. All remaining messages are filtered.
- #define **CFE_EVS_FIRST_4_STOP** 0xFFFFC
Sends the first 4 events. All remaining messages are filtered.
- #define **CFE_EVS_FIRST_8_STOP** 0xFFF8
Sends the first 8 events. All remaining messages are filtered.
- #define **CFE_EVS_FIRST_16_STOP** 0xFFF0
Sends the first 16 events. All remaining messages are filtered.
- #define **CFE_EVS_FIRST_32_STOP** 0xFFE0
Sends the first 32 events. All remaining messages are filtered.
- #define **CFE_EVS_FIRST_64_STOP** 0xFFC0

Sends the first 64 events. All remaining messages are filtered.

- #define CFE_EVS_EVERY_OTHER_ONE 0x0001
Sends every other event.
- #define CFE_EVS_EVERY_OTHER_TWO 0x0002
Sends two, filters one, sends two, filters one, etc.
- #define CFE_EVS_EVERY_FOURTH_ONE 0x0003
Sends every fourth event message. All others are filtered.

Typedefs

- typedef struct CFE_EVS_BinFilter CFE_EVS_BinFilter_t
Event message filter definition structure.

12.60.1 Detailed Description

Title: Event Services API Application Library Header File

Purpose: Unit specification for Event services library functions and macros.

Design Notes:

References: Flight Software Branch C Coding Standard Version 1.0a

12.60.2 Macro Definition Documentation

12.60.2.1 CFE_EVS_EVERY_FOURTH_ONE #define CFE_EVS_EVERY_FOURTH_ONE 0x0003

Sends every fourth event message. All others are filtered.

Definition at line 54 of file cfe_evs_api_typedefs.h.

12.60.2.2 CFE_EVS_EVERY_OTHER_ONE #define CFE_EVS_EVERY_OTHER_ONE 0x0001

Sends every other event.

Definition at line 52 of file cfe_evs_api_typedefs.h.

12.60.2.3 CFE_EVS_EVERY_OTHER_TWO #define CFE_EVS_EVERY_OTHER_TWO 0x0002

Sends two, filters one, sends two, filters one, etc.

Definition at line 53 of file cfe_evs_api_typedefs.h.

12.60.2.4 CFE_EVS_FIRST_16_STOP #define CFE_EVS_FIRST_16_STOP 0xFFFF0

Sends the first 16 events. All remaining messages are filtered.

Definition at line 49 of file cfe_evs_api_typedefs.h.

12.60.2.5 CFE_EVS_FIRST_32_STOP #define CFE_EVS_FIRST_32_STOP 0xFFE0

Sends the first 32 events. All remaining messages are filtered.

Definition at line 50 of file cfe_evs_api_typedefs.h.

12.60.2.6 CFE_EVS_FIRST_4_STOP #define CFE_EVS_FIRST_4_STOP 0xFFFFC

Sends the first 4 events. All remaining messages are filtered.

Definition at line 47 of file cfe_evs_api_typedefs.h.

12.60.2.7 CFE_EVS_FIRST_64_STOP #define CFE_EVS_FIRST_64_STOP 0xFFC0

Sends the first 64 events. All remaining messages are filtered.

Definition at line 51 of file cfe_evs_api_typedefs.h.

12.60.2.8 CFE_EVS_FIRST_8_STOP #define CFE_EVS_FIRST_8_STOP 0xFFFF8

Sends the first 8 events. All remaining messages are filtered.

Definition at line 48 of file cfe_evs_api_typedefs.h.

12.60.2.9 CFE_EVS_FIRST_ONE_STOP #define CFE_EVS_FIRST_ONE_STOP 0xFFFFF

Sends the first event. All remaining messages are filtered.

Definition at line 45 of file cfe_evs_api_typedefs.h.

12.60.2.10 CFE_EVS_FIRST_TWO_STOP #define CFE_EVS_FIRST_TWO_STOP 0xFFFFE

Sends the first 2 events. All remaining messages are filtered.

Definition at line 46 of file cfe_evs_api_typedefs.h.

12.60.2.11 CFE_EVS_NO_FILTER #define CFE_EVS_NO_FILTER 0x0000

Stops any filtering. All messages are sent.

Definition at line 44 of file cfe_evs_api_typedefs.h.

12.60.3 Typedef Documentation

12.60.3.1 CFE_EVS_BinFilter_t

typedef struct [CFE_EVS_BinFilter](#) CFE_EVS_BinFilter_t

Event message filter definition structure.

12.61 cfe/modules/core_api/fsw/inc/cfe_fs.h File Reference

```
#include "common_types.h"
#include "osconfig.h"
#include "cfe_platform_cfg.h"
#include "cfe_error.h"
#include "cfe_fs_api_typedefs.h"
#include "cfe_fs_extern_typedefs.h"
#include "cfe_time_api_typedefs.h"
```

Functions

- [CFE_Status_t CFE_FS_ReadHeader \(CFE_FS_Header_t *Hdr, osal_id_t FileDes\)](#)
Read the contents of the Standard cFE File Header.
- [void CFE_FS_InitHeader \(CFE_FS_Header_t *Hdr, const char *Description, uint32 SubType\)](#)
Initializes the contents of the Standard cFE File Header.
- [CFE_Status_t CFE_FS_WriteHeader \(osal_id_t FileDes, CFE_FS_Header_t *Hdr\)](#)
Write the specified Standard cFE File Header to the specified file.
- [CFE_Status_t CFE_FS_SetTimestamp \(osal_id_t FileDes, CFE_TIME_SysTime_t NewTimestamp\)](#)
Modifies the Time Stamp field in the Standard cFE File Header for the specified file.

- const char * [CFE_FS_GetDefaultMountPoint](#) (CFE_FS_FileCategory_t FileCategory)
Get the default virtual mount point for a file category.
- const char * [CFE_FS_GetDefaultExtension](#) (CFE_FS_FileCategory_t FileCategory)
Get the default filename extension for a file category.
- int32 [CFE_FS_ParseInputFileNameEx](#) (char *OutputBuffer, const char *InputBuffer, size_t OutputBufSize, size_t InputBufSize, const char *DefaultInput, const char *DefaultPath, const char *DefaultExtension)
Parse a filename input from an input buffer into a local buffer.
- int32 [CFE_FS_ParseInputFileName](#) (char *OutputBuffer, const char *InputName, size_t OutputBufSize, CFE_FS_FileCategory_t FileCategory)
Parse a filename string from the user into a local buffer.
- CFE_Status_t [CFE_FS_ExtractFilenameFromPath](#) (const char *OriginalPath, char *FileNameOnly)
Extracts the filename from a unix style path and filename string.
- int32 [CFE_FS_BackgroundFileDumpRequest](#) (CFE_FS_FileWriteMetaData_t *Meta)
Register a background file dump request.
- bool [CFE_FS_BackgroundFileDumplIsPending](#) (const CFE_FS_FileWriteMetaData_t *Meta)
Query if a background file write request is currently pending.

12.61.1 Detailed Description

Purpose: cFE File Services (FS) library API header file

Author: S.Walling/Microtel

12.62 cfe/modules/core_api/fsw/inc/cfe_fs_api_typedefs.h File Reference

```
#include "common_types.h"
#include "osconfig.h"
#include "cfe_mission_cfg.h"
#include "cfe_fs_extern_typedefs.h"
```

Data Structures

- struct [CFE_FS_FileWriteMetaData](#)
External Metadata/State object associated with background file writes.

TypeDefs

- typedef bool(* [CFE_FS_FileWriteGetData_t](#)) (void *Meta, uint32 RecordNum, void **Buffer, size_t *BufSize)
- typedef void(* [CFE_FS_FileWriteOnEvent_t](#)) (void *Meta, [CFE_FS_FileWriteEvent_t](#) Event, int32 Status, uint32 RecordNum, size_t BlockSize, size_t Position)
- typedef struct [CFE_FS_FileWriteMetaData](#) [CFE_FS_FileWriteMetaData_t](#)
External Metadata/State object associated with background file writes.

Enumerations

- enum [CFE_FS_FileCategory_t](#) {
 [CFE_FS_FileCategory_UNKNOWN](#) , [CFE_FS_FileCategory_DYNAMIC_MODULE](#) , [CFE_FS_FileCategory_BINARY_DATA_DUMP](#) ,
 [CFE_FS_FileCategory_TEXT_LOG](#) ,
 [CFE_FS_FileCategory_SCRIPT](#) , [CFE_FS_FileCategory_TEMP](#) , [CFE_FS_FileCategory_MAX](#) }

Generalized file types/categories known to FS.

- enum `CFE_FS_FileWriteEvent_t` {
 `CFE_FS_FileWriteEvent_UNDEFINED`, `CFE_FS_FileWriteEvent_COMPLETE`, `CFE_FS_FileWriteEvent_CREATE_ERROR`,
`CFE_FS_FileWriteEvent_HEADER_WRITE_ERROR`,
`CFE_FS_FileWriteEvent_RECORD_WRITE_ERROR`, `CFE_FS_FileWriteEvent_MAX` }

12.62.1 Detailed Description

Purpose: cFE File Services (FS) library API header file

Author: S.Walling/Microtel

12.62.2 Typedef Documentation

12.62.2.1 CFE_FS_FileWriteGetData_t `typedef bool(* CFE_FS_FileWriteGetData_t) (void *Meta, uint32 RecordNum, void **Buffer, size_t *BufSize)`

Data Getter routine provided by requester

Outputs a data block. Should return true if the file is complete (last record/EOF), otherwise return false.

Parameters

<i>in, out</i>	<i>Meta</i>	Pointer to the metadata object
<i>in</i>	<i>RecordNum</i>	Incrementing record number counter
<i>out</i>	<i>Buffer</i>	Pointer to buffer data block, should be set by implementation
<i>out</i>	<i>BufSize</i>	Pointer to buffer data size, should be set by implementation

Returns

End of file status

Return values

<i>true</i>	if at last data record, and output file should be closed
<i>false</i>	if not at last record, more data records to write

Note

The implementation of this function must always set the "Buffer" and "BufSize" outputs. If no data is available, they may be set to NULL and 0, respectively.

Definition at line 98 of file `cfe_fs_api_typedefs.h`.

12.62.2.2 CFE_FS_FileWriteMetaData_t `typedef struct CFE_FS_FileWriteMetaData CFE_FS_FileWriteMetaData_t`

External Metadata/State object associated with background file writes.

Applications intending to schedule background file write jobs should instantiate this object in static/global data memory. This keeps track of the state of the file write request(s).

12.62.2.3 CFE_FS_FileWriteOnEvent_t `typedef void(* CFE_FS_FileWriteOnEvent_t) (void *Meta, CFE_FS_FileWriteEvent_t Event, int32 Status, uint32 RecordNum, size_t BlockSize, size_t Position)`

Event generator routine provided by requester

Invoked from certain points in the file write process. Implementation may invoke [CFE_EVS_SendEvent\(\)](#) appropriately to inform of progress.

Parameters

<i>in, out</i>	<i>Meta</i>	Pointer to the metadata object
<i>in</i>	<i>Event</i>	Generalized type of event to report (not actual event ID)
<i>in</i>	<i>Status</i>	Generalized status code (may be from OSAL or CFE)
<i>in</i>	<i>RecordNum</i>	Record number counter at which event occurred
<i>in</i>	<i>BlockSize</i>	Size of record being processed when event occurred (if applicable)
<i>in</i>	<i>Position</i>	File position/size when event occurred

Definition at line 114 of file cfe_fs_api_typedefs.h.

12.62.3 Enumeration Type Documentation

12.62.3.1 CFE_FS_FileCategory_t enum CFE_FS_FileCategory_t

Generalized file types/categories known to FS.

This defines different categories of files, where they may reside in different default locations of the virtualized file system. This is different from, and should not be confused with, the "SubType" field in the FS header. This value is only used at runtime for FS APIs and should not actually appear in any output file or message.

Enumerator

CFE_FS_FileCategory_UNKNOWN	Placeholder, unknown file category
CFE_FS_FileCategory_DYNAMIC_MODULE	Dynamically loadable apps/libraries (e.g. .so, .o, .dll, etc)
CFE_FS_FileCategory_BINARY_DATA_DUMP	Binary log file generated by various data dump commands
CFE_FS_FileCategory_TEXT_LOG	Text-based log file generated by various commands
CFE_FS_FileCategory_SCRIPT	Text-based Script files (e.g. ES startup script)
CFE_FS_FileCategory_TEMP	Temporary/Ephemeral files
CFE_FS_FileCategory_MAX	Placeholder, keep last

Definition at line 49 of file cfe_fs_api_typedefs.h.

12.62.3.2 CFE_FS_FileWriteEvent_t enum CFE_FS_FileWriteEvent_t

Enumerator

CFE_FS_FileWriteEvent_UNDEFINED	
CFE_FS_FileWriteEvent_COMPLETE	File is completed successfully
CFE_FS_FileWriteEvent_CREATE_ERROR	Unable to create/open file
CFE_FS_FileWriteEvent_HEADER_WRITE_ERROR	Unable to write FS header
CFE_FS_FileWriteEvent_RECORD_WRITE_ERROR	Unable to write data record
CFE_FS_FileWriteEvent_MAX	

Definition at line 69 of file cfe_fs_api_typedefs.h.

12.63 cfe/modules/core_api/fsw/inc/cfe_msg.h File Reference

```
#include "common_types.h"
```

```
#include "cfe_error.h"
#include "cfe_msg_hdr.h"
#include "cfe_msg_api_typedefs.h"
#include "cfe_es_api_typedefs.h"
#include "cfe_sb_api_typedefs.h"
#include "cfe_time_api_typedefs.h"
```

Functions

- `CFE_Status_t CFE_MSG_Init (CFE_MSG_Message_t *MsgPtr, CFE_SB_MsgId_t MsgId, CFE_MSG_Size_t Size)`
Initialize a message.
- `CFE_Status_t CFE_MSG_GetSize (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Size_t *Size)`
Gets the total size of a message.
- `CFE_Status_t CFE_MSG_SetSize (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Size_t Size)`
Sets the total size of a message.
- `CFE_Status_t CFE_MSG.GetType (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Type_t *Type)`
Gets the message type.
- `CFE_Status_t CFE_MSG_SetType (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Type_t Type)`
Sets the message type.
- `CFE_Status_t CFE_MSG_GetHeaderVersion (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_HeaderVersion_t *Version)`
Gets the message header version.
- `CFE_Status_t CFE_MSG_SetHeaderVersion (CFE_MSG_Message_t *MsgPtr, CFE_MSG_HeaderVersion_t Version)`
Sets the message header version.
- `CFE_Status_t CFE_MSG_GetHasSecondaryHeader (const CFE_MSG_Message_t *MsgPtr, bool *HasSecondary)`
Gets the message secondary header boolean.
- `CFE_Status_t CFE_MSG_SetHasSecondaryHeader (CFE_MSG_Message_t *MsgPtr, bool HasSecondary)`
Sets the message secondary header boolean.
- `CFE_Status_t CFE_MSG_GetApld (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Apld_t *Apld)`
Gets the message application ID.
- `CFE_Status_t CFE_MSG_SetApld (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Apld_t Apld)`
Sets the message application ID.
- `CFE_Status_t CFE_MSG_GetSegmentationFlag (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_SegmentationFlag_t *SegFlag)`
Gets the message segmentation flag.
- `CFE_Status_t CFE_MSG_SetSegmentationFlag (CFE_MSG_Message_t *MsgPtr, CFE_MSG_SegmentationFlag_t SegFlag)`
Sets the message segmentation flag.
- `CFE_Status_t CFE_MSG_GetSequenceCount (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_SequenceCount_t *SeqCnt)`
Gets the message sequence count.
- `CFE_Status_t CFE_MSG_SetSequenceCount (CFE_MSG_Message_t *MsgPtr, CFE_MSG_SequenceCount_t SeqCnt)`
Sets the message sequence count.
- `CFE_MSG_SequenceCount_t CFE_MSG_GetNextSequenceCount (CFE_MSG_SequenceCount_t SeqCnt)`

- Gets the next sequence count value (rolls over if appropriate)
- `CFE_Status_t CFE_MSG_GetEDSVersion (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_EDSVersion_t *Version)`
 Gets the message EDS version.
- `CFE_Status_t CFE_MSG_SetEDSVersion (CFE_MSG_Message_t *MsgPtr, CFE_MSG_EDSVersion_t Version)`
 Sets the message EDS version.
- `CFE_Status_t CFE_MSG_GetEndian (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Endian_t *Endian)`
 Gets the message endian.
- `CFE_Status_t CFE_MSG_SetEndian (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Endian_t Endian)`
 Sets the message endian.
- `CFE_Status_t CFE_MSG_GetPlaybackFlag (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_PlaybackFlag_t *PlayFlag)`
 Gets the message playback flag.
- `CFE_Status_t CFE_MSG_SetPlaybackFlag (CFE_MSG_Message_t *MsgPtr, CFE_MSG_PlaybackFlag_t PlayFlag)`
 Sets the message playback flag.
- `CFE_Status_t CFE_MSG_GetSubsystem (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_Subsystem_t *Subsystem)`
 Gets the message subsystem.
- `CFE_Status_t CFE_MSG_SetSubsystem (CFE_MSG_Message_t *MsgPtr, CFE_MSG_Subsystem_t Subsystem)`
 Sets the message subsystem.
- `CFE_Status_t CFE_MSG_GetSystem (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_System_t *System)`
 Gets the message system.
- `CFE_Status_t CFE_MSG_SetSystem (CFE_MSG_Message_t *MsgPtr, CFE_MSG_System_t System)`
 Sets the message system.
- `CFE_Status_t CFE_MSG_GenerateChecksum (CFE_MSG_Message_t *MsgPtr)`
 Calculates and sets the checksum of a message.
- `CFE_Status_t CFE_MSG_ValidateChecksum (const CFE_MSG_Message_t *MsgPtr, bool *isValid)`
 Validates the checksum of a message.
- `CFE_Status_t CFE_MSG_SetFcnCode (CFE_MSG_Message_t *MsgPtr, CFE_MSG_FcnCode_t FcnCode)`
 Sets the function code field in a message.
- `CFE_Status_t CFE_MSG_GetFcnCode (const CFE_MSG_Message_t *MsgPtr, CFE_MSG_FcnCode_t *FcnCode)`
 Gets the function code field from a message.
- `CFE_Status_t CFE_MSG_GetMsgTime (const CFE_MSG_Message_t *MsgPtr, CFE_TIME_SysTime_t *Time)`
 Gets the time field from a message.
- `CFE_Status_t CFE_MSG_SetMsgTime (CFE_MSG_Message_t *MsgPtr, CFE_TIME_SysTime_t NewTime)`
 Sets the time field in a message.
- `CFE_Status_t CFE_MSG_GetMsgId (const CFE_MSG_Message_t *MsgPtr, CFE_SB_MsgId_t *MsgId)`
 Gets the message id from a message.
- `CFE_Status_t CFE_MSG_SetMsgId (CFE_MSG_Message_t *MsgPtr, CFE_SB_MsgId_t MsgId)`
 Sets the message id bits in a message.
- `CFE_Status_t CFE_MSG_GetTypeFromMsgId (CFE_SB_MsgId_t MsgId, CFE_MSG_Type_t *Type)`
 Gets message type using message ID.
- `CFE_Status_t CFE_MSG_OriginationAction (CFE_MSG_Message_t *MsgPtr, size_t BufferSize, bool *IsAcceptable)`
 Perform any necessary actions on a newly-created message, prior to sending.

- `CFE_Status_t CFE_MSG_VerificationAction (const CFE_MSG_Message_t *MsgPtr, size_t BufferSize, bool *IsAcceptable)`

Checks message integrity/acceptability.

12.63.1 Detailed Description

Message access APIs

12.64 cfe/modules/core_api/fsw/inc/cfe_msg_api_typedefs.h File Reference

```
#include "common_types.h"
#include "cfe_error.h"
```

Macros

- `#define CFE_MSG_BAD_ARGUMENT CFE_SB_BAD_ARGUMENT`
Error - bad argument.
- `#define CFE_MSG_NOT_IMPLEMENTED CFE_SB_NOT_IMPLEMENTED`
Error - not implemented.
- `#define CFE_MSG_WRONG_MSG_TYPE CFE_SB_WRONG_MSG_TYPE`
Error - wrong type.

Typedefs

- `typedef size_t CFE_MSG_Size_t`
Message size, note CCSDS maximum is UINT16_MAX+7.
- `typedef uint32 CFE_MSG_Checksum_t`
Message checksum (Oversized to avoid redefine)
- `typedef uint16 CFE_MSG_FcnCode_t`
Message function code.
- `typedef uint16 CFE_MSG_HeaderVersion_t`
Message header version.
- `typedef uint16 CFE_MSG_Apld_t`
Message application ID.
- `typedef uint16 CFE_MSG_SequenceCount_t`
Message sequence count.
- `typedef uint16 CFE_MSG_EDSVersion_t`
Message EDS version.
- `typedef uint16 CFE_MSG_Subsystem_t`
Message subsystem.
- `typedef uint16 CFE_MSG_System_t`
Message system.
- `typedef enum CFE_MSG_Type CFE_MSG_Type_t`
Message type.
- `typedef enum CFE_MSG_SegmentationFlag CFE_MSG_SegmentationFlag_t`
Segmentation flags.
- `typedef enum CFE_MSG_Endian CFE_MSG_Endian_t`
Endian flag.
- `typedef enum CFE_MSG_PlaybackFlag CFE_MSG_PlaybackFlag_t`

Playback flag.

- **typedef struct CFE_MSG_Message CFE_MSG_Message_t**
cFS generic base message
- **typedef struct CFE_MSG_CommandHeader CFE_MSG_CommandHeader_t**
cFS command header
- **typedef struct CFE_MSG_TelemetryHeader CFE_MSG_TelemetryHeader_t**
cFS telemetry header

Enumerations

- **enum CFE_MSG_Type { CFE_MSG_Type_Invalid , CFE_MSG_Type_Cmd , CFE_MSG_Type_Tlm }**
Message type.
- **enum CFE_MSG_SegmentationFlag { CFE_MSG_SegFlag_Invalid , CFE_MSG_SegFlag_Continue , CFE_MSG_SegFlag_First , CFE_MSG_SegFlag_Last , CFE_MSG_SegFlag_Unsegmented }**
Segmentation flags.
- **enum CFE_MSG_Endian { CFE_MSG_Endian_Invalid , CFE_MSG_Endian_Big , CFE_MSG_Endian_Little }**
Endian flag.
- **enum CFE_MSG_PlaybackFlag { CFE_MSG_PlayFlag_Invalid , CFE_MSG_PlayFlag_Original , CFE_MSG_PlayFlag_Playback }**
Playback flag.

12.64.1 Detailed Description

Typedefs for Message API

- Separate from API so these can be adjusted for custom implementations

12.64.2 Macro Definition Documentation

12.64.2.1 CFE_MSG_BAD_ARGUMENT #define CFE_MSG_BAD_ARGUMENT CFE_SB_BAD_ARGUMENT
Error - bad argument.

Definition at line 39 of file cfe_msg_api_typedefs.h.

12.64.2.2 CFE_MSG_NOT_IMPLEMENTED #define CFE_MSG_NOT_IMPLEMENTED CFE_SB_NOT_IMPLEMENTED
Error - not implemented.

Definition at line 40 of file cfe_msg_api_typedefs.h.

12.64.2.3 CFE_MSG_WRONG_MSG_TYPE #define CFE_MSG_WRONG_MSG_TYPE CFE_SB_WRONG_MSG_TYPE
Error - wrong type.

Definition at line 41 of file cfe_msg_api_typedefs.h.

12.64.3 Typedef Documentation

12.64.3.1 CFE_MSG_ApId_t `typedef uint16 CFE_MSG_ApId_t`

Message application ID.

Definition at line 50 of file `cfe_msg_api_typedefs.h`.

12.64.3.2 CFE_MSG_Checksum_t `typedef uint32 CFE_MSG_Checksum_t`

Message checksum (Oversized to avoid redefine)

Definition at line 47 of file `cfe_msg_api_typedefs.h`.

12.64.3.3 CFE_MSG_CommandHeader_t `typedef struct CFE_MSG_CommandHeader CFE_MSG_CommandHeader_t`

cFS command header

Definition at line 54 of file `cfe_msg_api_typedefs.h`.

12.64.3.4 CFE_MSG_EDSVersion_t `typedef uint16 CFE_MSG_EDSVersion_t`

Message EDS version.

Definition at line 52 of file `cfe_msg_api_typedefs.h`.

12.64.3.5 CFE_MSG_Endian_t `typedef enum CFE_MSG_Endian CFE_MSG_Endian_t`

Endian flag.

12.64.3.6 CFE_MSG_FcnCode_t `typedef uint16 CFE_MSG_FcnCode_t`

Message function code.

Definition at line 48 of file `cfe_msg_api_typedefs.h`.

12.64.3.7 CFE_MSG_HeaderVersion_t `typedef uint16 CFE_MSG_HeaderVersion_t`

Message header version.

Definition at line 49 of file `cfe_msg_api_typedefs.h`.

12.64.3.8 CFE_MSG_Message_t `typedef struct CFE_MSG_Message CFE_MSG_Message_t`

cFS generic base message

Definition at line 54 of file `cfe_msg_api_typedefs.h`.

12.64.3.9 CFE_MSG_PlaybackFlag_t `typedef enum CFE_MSG_PlaybackFlag CFE_MSG_PlaybackFlag_t`

Playback flag.

12.64.3.10 CFE_MSG_SegmentationFlag_t `typedef enum CFE_MSG_SegmentationFlag CFE_MSG_SegmentationFlag_t`

Segmentation flags.

12.64.3.11 CFE_MSG_SequenceCount_t `typedef uint16 CFE_MSG_SequenceCount_t`

Message sequence count.

Definition at line 51 of file `cfe_msg_api_typedefs.h`.

12.64.3.12 CFE_MSG_Size_t `typedef size_t CFE_MSG_Size_t`

Message size, note CCSDS maximum is `UINT16_MAX+7`.

Definition at line 46 of file `cfe_msg_api_typedefs.h`.

12.64.3.13 CFE_MSG_Subsystem_t `typedef uint16 CFE_MSG_Subsystem_t`

Message subsystem.

Definition at line 53 of file `cfe_msg_api_typedefs.h`.

12.64.3.14 CFE_MSG_System_t `typedef uint16 CFE_MSG_System_t`

Message system.

Definition at line 54 of file `cfe_msg_api_typedefs.h`.

12.64.3.15 CFE_MSG_TelemetryHeader_t `typedef struct CFE_MSG_TelemetryHeader CFE_MSG_TelemetryHeader_t`

cFS telemetry header

Definition at line 54 of file `cfe_msg_api_typedefs.h`.

12.64.3.16 CFE_MSG_Type_t `typedef enum CFE_MSG_Type CFE_MSG_Type_t`

Message type.

12.64.4 Enumeration Type Documentation

12.64.4.1 CFE_MSG_Endian `enum CFE_MSG_Endian`

Endian flag.

Enumerator

<code>CFE_MSG_Endian_Invalid</code>	Invalid endian setting.
<code>CFE_MSG_Endian_Big</code>	Big endian.
<code>CFE_MSG_Endian_Little</code>	Little endian.

Definition at line 75 of file `cfe_msg_api_typedefs.h`.

12.64.4.2 CFE_MSG_PlaybackFlag `enum CFE_MSG_PlaybackFlag`

Playback flag.

Enumerator

<code>CFE_MSG_PlayFlag_Invalid</code>	Invalid playback setting.
<code>CFE_MSG_PlayFlag_Original</code>	Original.
<code>CFE_MSG_PlayFlag_Playback</code>	Playback.

Definition at line 83 of file `cfe_msg_api_typedefs.h`.

12.64.4.3 CFE_MSG_SegmentationFlag enum [CFE_MSG_SegmentationFlag](#)
Segmentation flags.

Enumerator

CFE_MSG_SegFlag_Invalid	Invalid segmentation flag.
CFE_MSG_SegFlag_Continue	Continuation segment of User Data.
CFE_MSG_SegFlag_First	First segment of User Data.
CFE_MSG_SegFlag_Last	Last segment of User Data.
CFE_MSG_SegFlag_Unsegmented	Unsegmented data.

Definition at line 65 of file `cfe_msg_api_typedefs.h`.**12.64.4.4 CFE_MSG_Type** enum [CFE_MSG_Type](#)
Message type.

Enumerator

CFE_MSG_Type_Invalid	Message type invalid, undefined, not implemented.
CFE_MSG_Type_Cmd	Command message type.
CFE_MSG_Type_Tlm	Telemetry message type.

Definition at line 57 of file `cfe_msg_api_typedefs.h`.**12.65 cfe/modules/core_api/fsw/inc/cfe_resourceid.h File Reference**

#include "cfe_resourceid_api_typedefs.h"

Functions

- `uint32 CFE_ResourceId_GetBase (CFE_ResourceId_t ResourceId)`
Get the Base value (type/category) from a resource ID value.
- `uint32 CFE_ResourceId_GetSerial (CFE_ResourceId_t ResourceId)`
Get the Serial Number (sequential ID) from a resource ID value.
- `CFE_ResourceId_t CFE_ResourceId_FindNext (CFE_ResourceId_t StartId, uint32 TableSize, bool(*Check← Func)(CFE_ResourceId_t))`
Locate the next resource ID which does not map to an in-use table entry.
- `int32 CFE_ResourceId_ToIndex (CFE_ResourceId_t Id, uint32 BaseValue, uint32 TableSize, uint32 *Idx)`
Internal routine to aid in converting an ES resource ID to an array index.

Resource ID test/conversion macros and inline functions

- `#define CFE_RESOURCEID_TO ULONG(id) CFE_ResourceId_ToInteger(CFE_RESOURCEID_UNWRAP(id))`
Convert a derived (app-specific) ID directly into an "unsigned long".
- `#define CFE_RESOURCEID_TEST_DEFINED(id) CFE_ResourceId_IsDefined(CFE_RESOURCEID← UNWRAP(id))`
Determine if a derived (app-specific) ID is defined or not.
- `#define CFE_RESOURCEID_TEST_EQUAL(id1, id2) CFE_ResourceId_Equal(CFE_RESOURCEID← UNWRAP(id1), CFE_RESOURCEID_UNWRAP(id2))`

Determine if two derived (app-specific) IDs are equal.

- static unsigned long [CFE_Resourceld_ToInteger](#) (CFE_Resourceld_t id)
Convert a resource ID to an integer.
- static CFE_Resourceld_t [CFE_Resourceld_FromInteger](#) (unsigned long Value)
Convert an integer to a resource ID.
- static bool [CFE_Resourceld_Equal](#) (CFE_Resourceld_t id1, CFE_Resourceld_t id2)
Compare two Resource ID values for equality.
- static bool [CFE_Resourceld_IsDefined](#) (CFE_Resourceld_t id)
Check if a resource ID value is defined.

12.65.1 Detailed Description

Contains global prototypes and definitions related to resource management and related CFE resource IDs. A CFE ES Resource ID is a common way to identify CFE-managed resources such as apps, tasks, counters, memory pools, CDS blocks, and other entities.

Simple operations are provided as inline functions, which should alleviate the need to do direct manipulation of resource IDs:

- Check for undefined ID value
- Check for equality of two ID values
- Convert ID to simple integer (typically for printing/logging)
- Convert simple integer to ID (inverse of above)

12.65.2 Macro Definition Documentation

12.65.2.1 CFE_RESOURCEID_TEST_DEFINED `#define CFE_RESOURCEID_TEST_DEFINED (` `id) CFE_ResourceId_IsDefined(CFE_RESOURCEID_UNWRAP(id))`

Determine if a derived (app-specific) ID is defined or not.

This generic routine is implemented as a macro so it is agnostic to the actual argument type, and it will evaluate correctly so long as the argument type is based on the CFE_RESOURCEID_BASE_TYPE.

Definition at line 70 of file cfe_resourceid.h.

12.65.2.2 CFE_RESOURCEID_TEST_EQUAL `#define CFE_RESOURCEID_TEST_EQUAL (` `id1,` `id2) CFE_ResourceId_Equal(CFE_RESOURCEID_UNWRAP(id1), CFE_RESOURCEID_UNWRAP(id2))`

Determine if two derived (app-specific) IDs are equal.

This generic routine is implemented as a macro so it is agnostic to the actual argument type, and it will evaluate correctly so long as the argument type is based on the CFE_RESOURCEID_BASE_TYPE.

Definition at line 78 of file cfe_resourceid.h.

12.65.2.3 CFE_RESOURCEID_TO ULONG `#define CFE_RESOURCEID_TO ULONG (` `id) CFE_ResourceId_ToInteger(CFE_RESOURCEID_UNWRAP(id))`

Convert a derived (app-specific) ID directly into an "unsigned long".

This generic routine is implemented as a macro so it is agnostic to the actual argument type, and it will evaluate correctly so long as the argument type is based on the CFE_RESOURCEID_BASE_TYPE.

There is no inverse of this macro, as it depends on the actual derived type desired. Applications needing to recreate an ID from an integer should use [CFE_Resourceld_FromInteger\(\)](#) combined with a cast/conversion to the correct/intended derived type, as needed.

Note

This evaluates as an "unsigned long" such that it can be used in printf()-style functions with the "%lx" modifier without extra casting, as this is the most typical use-case for representing an ID as an integer.

Definition at line 62 of file cfe_resourceid.h.

12.65.3 Function Documentation

12.65.3.1 CFE_ResourceId_Equal() static bool CFE_ResourceId_Equal (CFE_ResourceId_t id1, CFE_ResourceId_t id2) [inline], [static]

Compare two Resource ID values for equality.

Parameters

in	<i>id1</i>	Resource ID to check
in	<i>id2</i>	Resource ID to check

Returns

true if id1 and id2 are equal, false otherwise.

Definition at line 133 of file cfe_resourceid.h.

Referenced by CFE_ResourceId_IsDefined().

12.65.3.2 CFE_ResourceId_FindNext() CFE_ResourceId_t CFE_ResourceId_FindNext (CFE_ResourceId_t StartId, uint32 TableSize, bool (*) (CFE_ResourceId_t) CheckFunc)

Locate the next resource ID which does not map to an in-use table entry.

This begins searching from StartId which should be the most recently issued ID for the resource category. This will then search for the next ID which does *not* map to a table entry that is in use. That is, it does not alias any valid ID when converted to an array index.

returns an undefined ID value if no open slots are available

Parameters

in	<i>StartId</i>	the last issued ID for the resource category (app, lib, etc).
in	<i>TableSize</i>	the maximum size of the target table
in	<i>CheckFunc</i>	a function to check if the given ID is available

Returns

Next ID value which does not map to a valid entry

Return values

CFE_RESOURCEID_UNDEFINED if no open slots or bad arguments.

12.65.3.3 CFE_ResourceId_FromInteger() static CFE_ResourceId_t CFE_ResourceId_FromInteger (unsigned long Value) [inline], [static]

Convert an integer to a resource ID.

This is the inverse of [CFE_ResourceId_ToInteger\(\)](#), and reconstitutes the original CFE_ResourceId_t value from the integer representation.

This may be used, for instance, where an ID value is parsed from a text file or message using C library APIs such as scanf() or strtoul().

See also

[CFE_ResourceId_ToInteger\(\)](#)

Parameters

in	<i>Value</i>	Integer value to convert
----	--------------	--------------------------

Returns

ID value corresponding to integer

Definition at line 121 of file cfe_resourceid.h.

12.65.3.4 CFE_ResourceId_GetBase() uint32 CFE_ResourceId_GetBase (CFE_ResourceId_t ResourceId)

Get the Base value (type/category) from a resource ID value.

This masks out the ID serial number to obtain the base value, which is different for each resource type.

Note

The value is NOT shifted or otherwise adjusted.

Parameters

in	<i>Resource← Id</i>	the resource ID to decode
----	-------------------------	---------------------------

Returns

The base value associated with that ID

12.65.3.5 CFE_ResourceId_GetSerial() uint32 CFE_ResourceId_GetSerial (CFE_ResourceId_t ResourceId)

Get the Serial Number (sequential ID) from a resource ID value.

This masks out the ID base value to obtain the serial number, which is different for each entity created.

Parameters

in	<i>Resource← Id</i>	the resource ID to decode
----	-------------------------	---------------------------

Returns

The serial number associated with that ID

12.65.3.6 CFE_ResourcId_IsDefined() static bool CFE_ResourcId_IsDefined (CFE_ResourcId_t id) [inline], [static]

Check if a resource ID value is defined.

The constant [CFE_RESOURCEID_UNDEFINED](#) represents an undefined ID value, such that the expression:

```
CFE_ResourcId_IsDefined(CFE_RESOURCEID_UNDEFINED)
```

Always returns false.

Parameters

in	<i>id</i>	Resource ID to check
----	-----------	----------------------

Returns

True if the ID may refer to a defined entity, false if invalid/undefined.

Definition at line 151 of file cfe_resourceid.h.

References [CFE_ResourcId_Equal\(\)](#), and [CFE_RESOURCEID_UNDEFINED](#).

Here is the call graph for this function:



12.65.3.7 CFE_ResourcId_ToIndex() int32 CFE_ResourcId_ToIndex (

```
CFE_ResourcId_t Id,  
uint32 BaseValue,  
uint32 TableSize,  
uint32 * Idx )
```

Internal routine to aid in converting an ES resource ID to an array index.

Parameters

in	<i>Id</i>	The resource ID
in	<i>BaseValue</i>	The respective ID base value corresponding to the ID type
in	<i>TableSize</i>	The actual size of the internal table (MAX index value + 1)
out	<i>Idx</i>	The output index

Returns

Execution status, see [cFE Return Code Defines](#)

Return values

CFE_SUCCESS	Successful execution.
CFE_ES_BAD_ARGUMENT	Bad Argument.
CFE_ES_ERR_RESOURCEID_NOT_VALID	Resource ID is not valid.

12.65.3.8 CFE_ResourceId_ToInteger() static unsigned long CFE_ResourceId_ToInteger (CFE_ResourceId_t id) [inline], [static]

Convert a resource ID to an integer.

This is primarily intended for logging purposes, such as writing to debug console, event messages, or log files, using printf-like APIs.

For compatibility with C library APIs, this returns an "unsigned long" type and should be used with the "%lx" format specifier in a printf format string.

Note

No assumptions should be made about the actual integer value, such as its base/range. It may be printed, but should not be modified or tested/compared using other arithmetic ops, and should never be used as the index to an array or table. See the related function [CFE_ResourceId_ToIndex\(\)](#) for cases where a zero-based array/table index is needed.

See also

[CFE_ResourceId_FromInteger\(\)](#)

Parameters

in	<i>id</i>	Resource ID to convert
----	-----------	------------------------

Returns

Integer value corresponding to ID

Definition at line 102 of file cfe_resourceid.h.

12.66 cfe/modules/core_api/fsw/inc/cfe_resourceid_api_typedefs.h File Reference

```
#include "cfe_resourceid_typedef.h"
```

Macros**Resource ID predefined values**

- #define [CFE_RESOURCEID_UNDEFINED](#) ((CFE_ResourceId_t)CFE_RESOURCEID_WRAP(0))
A resource ID value that represents an undefined/unused resource.
- #define [CFE_RESOURCEID_RESERVED](#) ((CFE_ResourceId_t)CFE_RESOURCEID_WRAP(0xFFFFFFFF))
A resource ID value that represents a reserved entry.

12.66.1 Detailed Description

Contains global prototypes and definitions related to resource management and related CFE resource IDs. A CFE ES Resource ID is a common way to identify CFE-managed resources such as apps, tasks, counters, memory pools, CDS blocks, and other entities. Simple operations are provided as inline functions, which should alleviate the need to do direct manipulation of resource IDs:

- Check for undefined ID value
- Check for equality of two ID values
- Convert ID to simple integer (typically for printing/logging)
- Convert simple integer to ID (inverse of above)

12.66.2 Macro Definition Documentation

12.66.2.1 CFE_RESOURCEID_RESERVED `#define CFE_RESOURCEID_RESERVED ((CFE_ResourceId_t)CFE_RESOURCEID_WRAP(0xFFFFFFFF))`

A resource ID value that represents a reserved entry.

This is not a valid value for any resource type, but is used to mark table entries that are not available for use. For instance, this may be used while setting up an entry initially.

Definition at line 74 of file `cfe_resourceid_api_typedefs.h`.

12.66.2.2 CFE_RESOURCEID_UNDEFINED `#define CFE_RESOURCEID_UNDEFINED ((CFE_ResourceId_t)CFE_RESOURCEID_WRAP(0))`

A resource ID value that represents an undefined/unused resource.

This constant may be used to initialize local variables of the `CFE_ResourceId_t` type to a safe value that will not alias a valid ID.

By design, this value is also the result of zeroing a `CFE_ResourceId_t` type via standard functions like `memset()`, such that objects initialized using this method will also be set to safe values.

Definition at line 65 of file `cfe_resourceid_api_typedefs.h`.

12.67 cfe/modules/core_api/fsw/inc/cfe_sb.h File Reference

```
#include "common_types.h"
#include "cfe_error.h"
#include "cfe_sb_api_typedefs.h"
#include "cfe_es_api_typedefs.h"
```

Macros

- `#define CFE_BIT(x) (1 << (x))`
Places a one at bit positions 0 - 31.
- `#define CFE_SET(i, x) ((i) |= CFE_BIT(x))`
Sets bit x of i.
- `#define CFE_CLR(i, x) ((i) &= ~CFE_BIT(x))`
Clears bit x of i.
- `#define CFE_TST(i, x) (((i)&CFE_BIT(x)) != 0)`
true(non zero) if bit x of i is set

Functions

- `CFE_Status_t CFE_SB_CreatePipe (CFE_SB_Pipeld_t *PipeldPtr, uint16 Depth, const char *PipeName)`
Creates a new software bus pipe.
- `CFE_Status_t CFE_SB_DeletePipe (CFE_SB_Pipeld_t Pipeld)`
Delete a software bus pipe.
- `CFE_Status_t CFE_SB_Pipeld_ToIndex (CFE_SB_Pipeld_t PipeID, uint32 *Idx)`
Obtain an index value correlating to an SB Pipe ID.
- `CFE_Status_t CFE_SB_SetPipeOpts (CFE_SB_Pipeld_t Pipeld, uint8 Opts)`
Set options on a pipe.
- `CFE_Status_t CFE_SB_GetPipeOpts (CFE_SB_Pipeld_t Pipeld, uint8 *OptsPtr)`
Get options on a pipe.
- `CFE_Status_t CFE_SB_GetPipeName (char *PipeNameBuf, size_t PipeNameSize, CFE_SB_Pipeld_t Pipeld)`
Get the pipe name for a given id.
- `CFE_Status_t CFE_SB_GetPipeldByName (CFE_SB_Pipeld_t *PipeldPtr, const char *PipeName)`
Get pipe id by pipe name.
- `CFE_Status_t CFE_SB_SubscribeEx (CFE_SB_MsgId_t MsgId, CFE_SB_Pipeld_t Pipeld, CFE_SB_Qos_t Quality, uint16 MsgLim)`
Subscribe to a message on the software bus.
- `CFE_Status_t CFE_SB_Subscribe (CFE_SB_MsgId_t MsgId, CFE_SB_Pipeld_t Pipeld)`
Subscribe to a message on the software bus with default parameters.
- `CFE_Status_t CFE_SB_SubscribeLocal (CFE_SB_MsgId_t MsgId, CFE_SB_Pipeld_t Pipeld, uint16 MsgLim)`
Subscribe to a message while keeping the request local to a cpu.
- `CFE_Status_t CFE_SB_Unsubscribe (CFE_SB_MsgId_t MsgId, CFE_SB_Pipeld_t Pipeld)`
Remove a subscription to a message on the software bus.
- `CFE_Status_t CFE_SB_UnsubscribeLocal (CFE_SB_MsgId_t MsgId, CFE_SB_Pipeld_t Pipeld)`
Remove a subscription to a message on the software bus on the current CPU.
- `CFE_Status_t CFE_SB_TransmitMsg (const CFE_MSG_Message_t *MsgPtr, bool IsOrigination)`
Transmit a message.
- `CFE_Status_t CFE_SB_ReceiveBuffer (CFE_SB_Buffer_t **BufPtr, CFE_SB_Pipeld_t Pipeld, int32 TimeOut)`
Receive a message from a software bus pipe.
- `CFE_SB_Buffer_t * CFE_SB_AllocateMessageBuffer (size_t MsgSize)`
Get a buffer pointer to use for "zero copy" SB sends.
- `CFE_Status_t CFE_SB_ReleaseMessageBuffer (CFE_SB_Buffer_t *BufPtr)`
Release an unused "zero copy" buffer pointer.
- `CFE_Status_t CFE_SB_TransmitBuffer (CFE_SB_Buffer_t *BufPtr, bool IsOrigination)`
Transmit a buffer.
- `void CFE_SB_SetUserDataLength (CFE_MSG_Message_t *MsgPtr, size_t DataLength)`
Sets the length of user data in a software bus message.
- `void CFE_SB_TimeStampMsg (CFE_MSG_Message_t *MsgPtr)`
Sets the time field in a software bus message with the current spacecraft time.
- `int32 CFE_SB_MessageStringSet (char *DestStringPtr, const char *SourceStringPtr, size_t DestMaxSize, size_t SourceMaxSize)`
Copies a string into a software bus message.
- `void * CFE_SB_GetUserData (CFE_MSG_Message_t *MsgPtr)`
Get a pointer to the user data portion of a software bus message.
- `size_t CFE_SB_GetUserDataLength (const CFE_MSG_Message_t *MsgPtr)`
Gets the length of user data in a software bus message.

- `int32 CFE_SB_MessageStringGet (char *DestStringPtr, const char *SourceStringPtr, const char *DefaultString, size_t DestMaxSize, size_t SourceMaxSize)`
Copies a string out of a software bus message.
- `bool CFE_SB_IsValidMsgId (CFE_SB_MsgId_t MsgId)`
Identifies whether a given `CFE_SB_MsgId_t` is valid.
- `static bool CFE_SB_MsgId_Equal (CFE_SB_MsgId_t MsgId1, CFE_SB_MsgId_t MsgId2)`
Identifies whether two `CFE_SB_MsgId_t` values are equal.
- `static CFE_SB_MsgId_Atom_t CFE_SB_MsgIdToValue (CFE_SB_MsgId_t MsgId)`
Converts a `CFE_SB_MsgId_t` to a normal integer.
- `static CFE_SB_MsgId_t CFE_SB_ValueToMsgId (CFE_SB_MsgId_Atom_t MsgIdValue)`
Converts a normal integer into a `CFE_SB_MsgId_t`.
- `CFE_SB_MsgId_Atom_t CFE_SB_CmdTopicIdToMsgId (uint16 TopicId, uint16 InstanceNum)`
Converts a topic ID and instance number combination into a MsgID value integer.
- `CFE_SB_MsgId_Atom_t CFE_SB_TlmTopicIdToMsgId (uint16 TopicId, uint16 InstanceNum)`
Converts a topic ID and instance number combination into a MsgID value integer.
- `CFE_SB_MsgId_Atom_t CFE_SB_GlobalCmdTopicIdToMsgId (uint16 TopicId)`
Converts a topic ID to a MsgID value integer for Global commands.
- `CFE_SB_MsgId_Atom_t CFE_SB_GlobalTlmTopicIdToMsgId (uint16 TopicId)`
Converts a topic ID to a MsgID value integer for Global telemetry.
- `CFE_SB_MsgId_Atom_t CFE_SB_LocalCmdTopicIdToMsgId (uint16 TopicId)`
Converts a topic ID to a MsgID value integer for local commands.
- `CFE_SB_MsgId_Atom_t CFE_SB_LocalTlmTopicIdToMsgId (uint16 TopicId)`
Converts a topic ID to a MsgID value integer for local telemetry.

12.67.1 Detailed Description

Purpose: This header file contains all definitions for the cFE Software Bus Application Programmer's Interface.
Author: R.McGraw/SSI

12.67.2 Macro Definition Documentation

12.67.2.1 CFE_BIT `#define CFE_BIT(`
`x) (1 << (x))`

Places a one at bit positions 0 - 31.

Definition at line 44 of file cfe_sb.h.

12.67.2.2 CFE_CLR `#define CFE_CLR(`
`i,`
`x) ((i) &= ~CFE_BIT(x))`

Clears bit x of i.

Definition at line 46 of file cfe_sb.h.

12.67.2.3 CFE_SET `#define CFE_SET(`
`i,`
`x) ((i) |= CFE_BIT(x))`

Sets bit x of i.

Definition at line 45 of file cfe_sb.h.

```
12.67.2.4 CFE_TST #define CFE_TST(
    i,
    x ) (((i)&CFE_BIT(x)) != 0)
```

true(non zero) if bit x of i is set

Definition at line 47 of file cfe_sb.h.

12.68 cfe/modules/core_api/fsw/inc/cfe_sb_api_typedefs.h File Reference

```
#include "common_types.h"
#include "cfe_sb_extern_typedefs.h"
#include "cfe_msg_api_typedefs.h"
#include "cfe_resourceid_api_typedefs.h"
#include "cfe_msg_hdr.h"
```

Data Structures

- union **CFE_SB_Msg**
Software Bus generic message.

Macros

- #define **CFE_SB_POLL** 0
Option used with [CFE_SB_ReceiveBuffer](#) to request immediate pipe status.
- #define **CFE_SB_PEND_FOREVER** -1
Option used with [CFE_SB_ReceiveBuffer](#) to force a wait for next message.
- #define **CFE_SB_SUBSCRIPTION** 0
Subtype specifier used in [CFE_SB_SingleSubscriptionTlm_t](#) by SBN App.
- #define **CFE_SB_UNSUBSCRIPTION** 1
Subtype specified used in [CFE_SB_SingleSubscriptionTlm_t](#) by SBN App.
- #define **CFE_SB_MSGID_WRAP_VALUE**(val)
Translation macro to convert from MsgId integer values to opaque/abstract API values.
- #define **CFE_SB_MSGID_C**(val) (([CFE_SB_MsgId_t](#))[CFE_SB_MSGID_WRAP_VALUE](#)(val))
Translation macro to convert to MsgId integer values from a literal.
- #define **CFE_SB_MSGID_UNWRAP_VALUE**(mid) ((mid).Value)
Translation macro to convert to MsgId integer values from opaque/abstract API values.
- #define **CFE_SB_MSGID_RESERVED** [CFE_SB_MSGID_WRAP_VALUE](#)(0)
Reserved value for [CFE_SB_MsgId_t](#) that will not match any valid MsgId.
- #define **CFE_SB_INVALID_MSG_ID** [CFE_SB_MSGID_C](#)(0)
A literal of the [CFE_SB_MsgId_t](#) type representing an invalid ID.
- #define **CFE_SB_PIPEID_C**(val) (([CFE_SB_Pipeld_t](#))[CFE_RESOURCEID_WRAP](#)(val))
Cast/Convert a generic [CFE_ResourceId_t](#) to a [CFE_SB_Pipeld_t](#).
- #define **CFE_SB_INVALID_PIPE** [CFE_SB_PIPEID_C](#)([CFE_RESOURCEID_UNDEFINED](#))
A [CFE_SB_Pipeld_t](#) value which is always invalid.
- #define **CFE_SB_PIPEOPTS_IGNOREMINE** 0x00000001
Messages sent by the app that owns this pipe will not be sent to this pipe.
- #define **CFE_SB_DEFAULT_QOS** (([CFE_SB_Qos_t](#)) {0})
Default Qos macro.

Typedefs

- **typedef union CFE_SB_Msg CFE_SB_Buffer_t**
Software Bus generic message.

12.68.1 Detailed Description

Purpose: This header file contains all definitions for the cFE Software Bus Application Programmer's Interface.

Author: R.McGraw/SSI

12.68.2 Macro Definition Documentation**12.68.2.1 CFE_SB_DEFAULT_QOS** `#define CFE_SB_DEFAULT_QOS ((CFE_SB_Qos_t) { 0 })`

Default Qos macro.

Definition at line 135 of file cfe_sb_api_typedefs.h.

12.68.2.2 CFE_SB_INVALID_MSG_ID `#define CFE_SB_INVALID_MSG_ID CFE_SB_MSGID_C(0)`

A literal of the **CFE_SB_MsgId_t** type representing an invalid ID.

This value should be used for runtime initialization of **CFE_SB_MsgId_t** values.

Note

This may be a compound literal in a future revision. Per C99, compound literals are lvalues, not rvalues, so this value should not be used in static/compile-time data initialization. For static data initialization purposes (rvalue), **CFE_SB_MSGID_RESERVED** should be used instead. However, in the current implementation, they are equivalent.

Definition at line 113 of file cfe_sb_api_typedefs.h.

12.68.2.3 CFE_SB_INVALID_PIPE `#define CFE_SB_INVALID_PIPE CFE_SB_PIPEID_C(CFE_RESOURCEID_UNDEFINED)`

A **CFE_SB_Pipeld_t** value which is always invalid.

This may be used as a safe initializer for **CFE_SB_Pipeld_t** values

Definition at line 125 of file cfe_sb_api_typedefs.h.

12.68.2.4 CFE_SB_MSGID_C `#define CFE_SB_MSGID_C(val) ((CFE_SB_MsgId_t)CFE_SB_MSGID_WRAP_VALUE(val))`

Translation macro to convert to MsgId integer values from a literal.

This ensures that the literal is interpreted as the **CFE_SB_MsgId_t** type, rather than the default type associated with that literal (e.g. int/unsigned int).

Note

Due to constraints in C99 this style of initializer can only be used at runtime, not for static/compile-time initializers.

See also

[CFE_SB_ValueToMsgId\(\)](#)

Definition at line 80 of file cfe_sb_api_typedefs.h.

12.68.2.5 CFE_SB_MSGID_RESERVED #define CFE_SB_MSGID_RESERVED CFE_SB_MSGID_WRAP_VALUE(0)
 Reserved value for [CFE_SB_MsgId_t](#) that will not match any valid MsgId.

This rvalue macro can be used for static/compile-time data initialization to ensure that the initialized value does not alias to a valid MsgId object.

Definition at line 100 of file [cfe_sb_api_typedefs.h](#).

12.68.2.6 CFE_SB_MSGID_UNWRAP_VALUE #define CFE_SB_MSGID_UNWRAP_VALUE(
 mid) ((mid).Value)

Translation macro to convert to MsgId integer values from opaque/abstract API values.

This conversion exists in macro form to allow compile-time evaluation for constants, and should not be used directly in application code.

For applications, use the [CFE_SB_MsgIdToValue\(\)](#) inline function instead.

See also

[CFE_SB_MsgIdToValue\(\)](#)

Definition at line 92 of file [cfe_sb_api_typedefs.h](#).

12.68.2.7 CFE_SB_MSGID_WRAP_VALUE #define CFE_SB_MSGID_WRAP_VALUE(
 val)

Value:

```
{
    val
}
```

\

Translation macro to convert from MsgId integer values to opaque/abstract API values.

This conversion exists in macro form to allow compile-time evaluation for constants, and should not be used directly in application code.

For applications, use the [CFE_SB_ValueToMsgId\(\)](#) inline function instead.

See also

[CFE_SB_ValueToMsgId\(\)](#)

Definition at line 64 of file [cfe_sb_api_typedefs.h](#).

12.68.2.8 CFE_SB_PEND_FOREVER #define CFE_SB_PEND_FOREVER -1

Option used with [CFE_SB_ReceiveBuffer](#) to force a wait for next message.

Definition at line 46 of file [cfe_sb_api_typedefs.h](#).

12.68.2.9 CFE_SB_PIPEID_C #define CFE_SB_PIPEID_C(
 val) (([CFE_SB_PipeId_t](#))CFE_RESOURCEID_WRAP(val))

Cast/Convert a generic CFE_Resourceld_t to a CFE_SB_PipeId_t.

Definition at line 118 of file [cfe_sb_api_typedefs.h](#).

12.68.2.10 CFE_SB_POLL #define CFE_SB_POLL 0

Option used with [CFE_SB_ReceiveBuffer](#) to request immediate pipe status.

Definition at line 45 of file [cfe_sb_api_typedefs.h](#).

12.68.2.11 CFE_SB_SUBSCRIPTION #define CFE_SB_SUBSCRIPTION 0
Subtype specifier used in [CFE_SB_SingleSubscriptionTlm_t](#) by SBN App.
Definition at line 47 of file cfe_sb_api_typedefs.h.

12.68.2.12 CFE_SB_UNSUBSCRIPTION #define CFE_SB_UNSUBSCRIPTION 1
Subtype specified used in [CFE_SB_SingleSubscriptionTlm_t](#) by SBN App.
Definition at line 48 of file cfe_sb_api_typedefs.h.

12.68.3 Typedef Documentation

12.68.3.1 CFE_SB_Buffer_t typedef union [CFE_SB_Msg](#) CFE_SB_Buffer_t
Software Bus generic message.

12.69 cfe/modules/core_api/fsw/inc/cfe_tbl.h File Reference

```
#include "common_types.h"
#include "cfe_error.h"
#include "cfe_tbl_api_typedefs.h"
#include "cfe_sb_api_typedefs.h"
```

Functions

- [CFE_Status_t CFE_TBL_Register \(CFE_TBL_Handle_t *TblHandlePtr, const char *Name, size_t Size, uint16 TblOptionFlags, CFE_TBL_CallbackFuncPtr_t TblValidationFuncPtr\)](#)
Register a table with cFE to obtain Table Management Services.
- [CFE_Status_t CFE_TBL_Share \(CFE_TBL_Handle_t *TblHandlePtr, const char *TblName\)](#)
Obtain handle of table registered by another application.
- [CFE_Status_t CFE_TBL_Unregister \(CFE_TBL_Handle_t TblHandle\)](#)
Unregister a table.
- [CFE_Status_t CFE_TBL_Load \(CFE_TBL_Handle_t TblHandle, CFE_TBL_SrcEnum_t SrcType, const void *SrcDataPtr\)](#)
Load a specified table with data from specified source.
- [CFE_Status_t CFE_TBL_Update \(CFE_TBL_Handle_t TblHandle\)](#)
Update contents of a specified table, if an update is pending.
- [CFE_Status_t CFE_TBL_Validate \(CFE_TBL_Handle_t TblHandle\)](#)
Perform steps to validate the contents of a table image.
- [CFE_Status_t CFE_TBL_Manage \(CFE_TBL_Handle_t TblHandle\)](#)
Perform standard operations to maintain a table.
- [CFE_Status_t CFE_TBL_DumpToBuffer \(CFE_TBL_Handle_t TblHandle\)](#)
Copies the contents of a Dump Only Table to a shared buffer.
- [CFE_Status_t CFE_TBL_Modified \(CFE_TBL_Handle_t TblHandle\)](#)
Notify cFE Table Services that table contents have been modified by the Application.
- [CFE_Status_t CFE_TBL_GetAddress \(void **TblPtr, CFE_TBL_Handle_t TblHandle\)](#)
Obtain the current address of the contents of the specified table.
- [CFE_Status_t CFE_TBL_ReleaseAddress \(CFE_TBL_Handle_t TblHandle\)](#)
Release previously obtained pointer to the contents of the specified table.

- **CFE_Status_t CFE_TBL_GetAddresses** (void **TblPtrs[], uint16 NumTables, const CFE_TBL_Handle_t TblHandles[])

Obtain the current addresses of an array of specified tables.
- **CFE_Status_t CFE_TBL_ReleaseAddresses** (uint16 NumTables, const CFE_TBL_Handle_t TblHandles[])

Release the addresses of an array of specified tables.
- **CFE_Status_t CFE_TBL_GetStatus** (CFE_TBL_Handle_t TblHandle)

Obtain current status of pending actions for a table.
- **CFE_Status_t CFE_TBL_GetInfo** (CFE_TBL_Info_t *TblInfoPtr, const char *TblName)

Obtain characteristics/information of/about a specified table.
- **CFE_Status_t CFE_TBL_NotifyByMessage** (CFE_TBL_Handle_t TblHandle, CFE_SB_MsgId_t MsgId, CFE_MSG_FcnCode_t CommandCode, uint32 Parameter)

Instruct cFE Table Services to notify Application via message when table requires management.

12.69.1 Detailed Description

Title: Table Services API Application Library Header File
 Purpose: Unit specification for Table services library functions and macros.
 Design Notes:
 References: Flight Software Branch C Coding Standard Version 1.0a
 Notes:

12.70 cfe/modules/core_api/fsw/inc/cfe_tbl_api_typedefs.h File Reference

```
#include "common_types.h"
#include "cfe_mission_cfg.h"
#include "cfe_tbl_extern_typedefs.h"
#include "cfe_time_extern_typedefs.h"
```

Data Structures

- struct **CFE_TBL_Info**

Table Info.

Macros

- #define **CFE_TBL_OPT_BUFFER_MSK** (0x0001)

Table buffer mask.
- #define **CFE_TBL_OPT_SNGL_BUFFER** (0x0000)

Single buffer table.
- #define **CFE_TBL_OPT_DBL_BUFFER** (0x0001)

Double buffer table.
- #define **CFE_TBL_OPT_LD_DMP_MSK** (0x0002)

Table load/dump mask.
- #define **CFE_TBL_OPT_LOAD_DUMP** (0x0000)

Load/Dump table.
- #define **CFE_TBL_OPT_DUMP_ONLY** (0x0002)

Dump only table.
- #define **CFE_TBL_OPT_USR_DEF_MSK** (0x0004)

Table user defined mask.
- #define **CFE_TBL_OPT_NOT_USR_DEF** (0x0000)

- `#define CFE_TBL_OPT_USR_DEF_ADDR` (0x0006)
Not user defined table.
- `#define CFE_TBL_OPT_CRITICAL_MSK` (0x0008)
User Defined table.,
- `#define CFE_TBL_OPT_NOT_CRITICAL` (0x0000)
Table critical mask.
- `#define CFE_TBL_OPT_CRITICAL` (0x0008)
Not critical table.
- `#define CFE_TBL_OPT_DEFAULT (CFE_TBL_OPT_SNGL_BUFFER | CFE_TBL_OPT_LOAD_DUMP)`
Critical table.
- `#define CFE_TBL_MAX_FULL_NAME_LEN (CFE_MISSION_TBL_MAX_FULL_NAME_LEN)`
Default table options.
- `#define CFE_TBL_BAD_TABLE_HANDLE (CFE_TBL_Handle_t)0xFFFF`
Table maximum full name length.
- `#define CFE_TBL_BAD_TABLE_HANDLE (CFE_TBL_Handle_t)0xFFFF`
Bad table handle.

Typedefs

- `typedef int32(* CFE_TBL_CallbackFuncPtr_t) (void *TblPtr)`
Table Callback Function.
- `typedef int16 CFE_TBL_Handle_t`
Table Handle primitive.
- `typedef enum CFE_TBL_SrcEnum CFE_TBL_SrcEnum_t`
Table Source.
- `typedef struct CFE_TBL_Info CFE_TBL_Info_t`
Table Info.

Enumerations

- `enum CFE_TBL_SrcEnum { CFE_TBL_SRC_FILE = 0 , CFE_TBL_SRC_ADDRESS }`
Table Source.

12.70.1 Detailed Description

Title: Table Services API Application Library Header File

Purpose: Unit specification for Table services library functions and macros.

Design Notes:

References: Flight Software Branch C Coding Standard Version 1.0a

Notes:

12.70.2 Macro Definition Documentation

12.70.2.1 CFE_TBL_BAD_TABLE_HANDLE `#define CFE_TBL_BAD_TABLE_HANDLE (CFE_TBL_Handle_t)0xFFFF`

Bad table handle.

Definition at line 79 of file cfe_tbl_api_typedefs.h.

12.70.2.2 CFE_TBL_MAX_FULL_NAME_LEN #define CFE_TBL_MAX_FULL_NAME_LEN (CFE_MISSION_TBL_MAX_FULL_NAME_LEN)
Table maximum full name length.

The full length of table names is defined at the mission scope. This is defined here to support applications that depend on [cfe_tbl.h](#) providing this value.

Definition at line 76 of file [cfe_tbl_api_typedefs.h](#).

12.70.3 Typedef Documentation

12.70.3.1 CFE_TBL_CallbackFuncPtr_t typedef int32 (* CFE_TBL_CallbackFuncPtr_t) (void *TblPtr)
Table Callback Function.

Definition at line 84 of file [cfe_tbl_api_typedefs.h](#).

12.70.3.2 CFE_TBL_Handle_t typedef int16 CFE_TBL_Handle_t
Table Handle primitive.

Definition at line 87 of file [cfe_tbl_api_typedefs.h](#).

12.70.3.3 CFE_TBL_Info_t typedef struct CFE_TBL_Info CFE_TBL_Info_t
Table Info.

12.70.3.4 CFE_TBL_SrcEnum_t typedef enum CFE_TBL_SrcEnum CFE_TBL_SrcEnum_t
Table Source.

12.70.4 Enumeration Type Documentation

12.70.4.1 CFE_TBL_SrcEnum enum CFE_TBL_SrcEnum
Table Source.

Enumerator

CFE_TBL_SRC_FILE	File source When this option is selected, the SrcDataPtr will be interpreted as a pointer to a null terminated character string. The string should specify the full path and filename of the file containing the initial data contents of the table.
CFE_TBL_SRC_ADDRESS	Address source When this option is selected, the SrcDataPtr will be interpreted as a pointer to a memory location that is the beginning of the initialization data for loading the table OR, in the case of a "user defined" dump only table, the address of the active table itself. The block of memory is assumed to be of the same size specified in the CFE_TBL_Register function Size parameter.

Definition at line 90 of file [cfe_tbl_api_typedefs.h](#).

12.71 cfe/modules/core_api/fsw/inc/cfe_tbl_filedef.h File Reference

```
#include "cfe_mission_cfg.h"
#include "common_types.h"
#include "cfe_tbl_extern_typedefs.h"
#include "cfe_fs_extern_typedefs.h"
```

Data Structures

- struct [CFE_TBL_FileDef](#)
Table File summary object.

Macros

- `#define CFE_TBL_FILEDEF(ObjName, TblName, Desc, Filename) CFE_TBL_FileDef_t CFE_TBL_FileDef = {#ObjName "\0", #TblName "\0", #Desc "\0", #Filename "\0", sizeof(ObjName)};`
Macro to assist in with table definition object declaration.

Typedefs

- `typedef struct CFE_TBL_FileDef CFE_TBL_FileDef_t`
Table File summary object.

12.71.1 Detailed Description

Title: ELF2CFETBL Utility Header File for Table Images

Purpose: This header file provides a data structure definition and macro definition required in source code that is intended to be compiled into a cFE compatible Table Image file.

Design Notes:

Typically, a user would include this file in a ".c" file that contains nothing but a desired instantiation of values for a table image along with the macro defined below. After compilation, the resultant elf file can be processed using the 'elf2cfetbl' utility to generate a file that can be loaded onto a cFE flight system and successfully loaded into a table using the cFE Table Services.

References: Flight Software Branch C Coding Standard Version 1.0a

Notes:

12.71.2 Macro Definition Documentation

12.71.2.1 CFE_TBL_FILEDEF `#define CFE_TBL_FILEDEF (`
`ObjName,`
`TblName,`
`Desc,`
`Filename)` `CFE_TBL_FileDef_t CFE_TBL_FileDef = {#ObjName "\0", #TblName "\0", #Desc "\0", #Filename "\0", sizeof(ObjName)};`

Macro to assist in with table definition object declaration.

See notes in the [CFE_TBL_FileDef_t](#) structure type about naming conventions and recommended practices for the various fields.

The CFE_TBL_FILEDEF macro can be used to simplify the declaration of a table image when using the elf2cfetbl utility. Note that the macro adds a NULL at the end to ensure that it is null-terminated. (C allows a struct to be statically initialized with a string exactly the length of the array, which loses the null terminator.) This means the actual length limit of the fields are the above LEN - 1.

An example of the source code and how this macro would be used is as follows:

```
#include "cfe_tbl_filedef.h"
typedef struct MyTblStruct
{
    int      Int1;
    int      Int2;
    int      Int3;
    char    Char1;
} MyTblStruct_t;
```

```
MyTblStruct_t MyTblStruct = { 0x01020304, 0x05060708, 0x090A0B0C, 0x0D };
CFE_TBL_FILEDEF(MyTblStruct, MyApp.TableName, Table Utility Test Table, MyTblDefault.bin )
Definition at line 149 of file cfe_tbl_filedef.h.
```

12.71.3 Typedef Documentation

12.71.3.1 CFE_TBL_FileDef_t [typedef struct CFE_TBL_FileDef CFE_TBL_FileDef_t](#)

Table File summary object.

The definition of the file definition metadata that can be used by external tools (e.g. elf2cfetbl) to generate CFE table data files.

12.72 cfe/modules/core_api/fsw/inc/cfe_time.h File Reference

```
#include "common_types.h"
#include "cfe_error.h"
#include "cfe_time_api_typedefs.h"
#include "cfe_es_api_typedefs.h"
```

Macros

- [#define CFE_TIME_Copy\(m, t\)](#)
Time Copy.

Functions

- [CFE_TIME_SysTime_t CFE_TIME_GetTime \(void\)](#)
Get the current spacecraft time.
- [CFE_TIME_SysTime_t CFE_TIME_GetTAI \(void\)](#)
Get the current TAI (MET + SCTF) time.
- [CFE_TIME_SysTime_t CFE_TIME_GetUTC \(void\)](#)
Get the current UTC (MET + SCTF - Leap Seconds) time.
- [CFE_TIME_SysTime_t CFE_TIME_GetMET \(void\)](#)
Get the current value of the Mission Elapsed Time (MET).
- [uint32 CFE_TIME_GetMETseconds \(void\)](#)
Get the current seconds count of the mission-elapsed time.
- [uint32 CFE_TIME_GetMETsubsecs \(void\)](#)
Get the current sub-seconds count of the mission-elapsed time.
- [CFE_TIME_SysTime_t CFE_TIME_GetSTCF \(void\)](#)
Get the current value of the spacecraft time correction factor (STCF).
- [int16 CFE_TIME_GetLeapSeconds \(void\)](#)
Get the current value of the leap seconds counter.
- [CFE_TIME_ClockState_Enum_t CFE_TIME_GetClockState \(void\)](#)
Get the current state of the spacecraft clock.
- [uint16 CFE_TIME_GetClockInfo \(void\)](#)
Provides information about the spacecraft clock.
- [CFE_TIME_SysTime_t CFE_TIME_Add \(CFE_TIME_SysTime_t Time1, CFE_TIME_SysTime_t Time2\)](#)
Adds two time values.
- [CFE_TIME_SysTime_t CFE_TIME_Subtract \(CFE_TIME_SysTime_t Time1, CFE_TIME_SysTime_t Time2\)](#)
Subtracts one time value from another.

Subtracts two time values.

- `CFE_TIME_Compare_t CFE_TIME_Compare (CFE_TIME_SysTime_t TimeA, CFE_TIME_SysTime_t TimeB)`

Compares two time values.

- `CFE_TIME_SysTime_t CFE_TIME_MET2SCTime (CFE_TIME_SysTime_t METTime)`

Convert specified MET into Spacecraft Time.

- `uint32 CFE_TIME_Sub2MicroSecs (uint32 SubSeconds)`

Converts a sub-seconds count to an equivalent number of microseconds.

- `uint32 CFE_TIME_Micro2SubSecs (uint32 MicroSeconds)`

Converts a number of microseconds to an equivalent sub-seconds count.

- `void CFE_TIME_ExternalTone (void)`

Provides the 1 Hz signal from an external source.

- `void CFE_TIME_ExternalMET (CFE_TIME_SysTime_t NewMET)`

Provides the Mission Elapsed Time from an external source.

- `void CFE_TIME_ExternalGPS (CFE_TIME_SysTime_t NewTime, int16 NewLeaps)`

Provide the time from an external source that has data common to GPS receivers.

- `void CFE_TIME_ExternalTime (CFE_TIME_SysTime_t NewTime)`

Provide the time from an external source that measures time relative to a known epoch.

- `CFE_Status_t CFE_TIME_RegisterSynchCallback (CFE_TIME_SynchCallbackPtr_t CallbackFuncPtr)`

Registers a callback function that is called whenever time synchronization occurs.

- `CFE_Status_t CFE_TIME_UnregisterSynchCallback (CFE_TIME_SynchCallbackPtr_t CallbackFuncPtr)`

Unregisters a callback function that is called whenever time synchronization occurs.

- `void CFE_TIME_Print (char *PrintBuffer, CFE_TIME_SysTime_t TimeToPrint)`

Print a time value as a string.

- `void CFE_TIME_Local1HzISR (void)`

This function is called via a timer callback set up at initialization of the TIME service.

12.72.1 Detailed Description

Purpose: cFE Time Services (TIME) library API header file

Author: S.Walling/Microtel

Notes:

12.72.2 Macro Definition Documentation

12.72.2.1 CFE_TIME_Copy #define CFE_TIME_Copy (

```
    m,  
    t )
```

Value:

```
{  
    (m)->Seconds      = (t)->Seconds;      \  
    (m)->Subseconds   = (t)->Subseconds;  \  
}
```

Time Copy.

Macro to copy systime into another systime. Preferred to use this macro as it does not require the two arguments to be exactly the same type, it will work with any two structures that define "Seconds" and "Subseconds" members.

Definition at line 48 of file cfe_time.h.

12.73 cfe/modules/core_api/fsw/inc/cfe_time_api_typedefs.h File Reference

```
#include "common_types.h"
#include "cfe_time_extern_typedefs.h"
```

Macros

- `#define CFE_TIME_PRINTED_STRING_SIZE 24`
Required size of buffer to be passed into `CFE_TIME_Print` (includes null terminator)
- `#define CFE_TIME_ZERO_VALUE ((CFE_TIME_SysTime_t) {0, 0})`

Typedefs

- `typedef enum CFE_TIME_Compare CFE_TIME_Compare_t`
Enumerated types identifying the relative relationships of two times.
- `typedef int32(* CFE_TIME_SynchCallbackPtr_t) (void)`
Time Synchronization Callback Function Ptr Type.

Enumerations

- `enum CFE_TIME_Compare { CFE_TIME_A_LT_B = -1 , CFE_TIME_EQUAL = 0 , CFE_TIME_A_GT_B = 1 }`
Enumerated types identifying the relative relationships of two times.

12.73.1 Detailed Description

Purpose: cFE Time Services (TIME) library API header file

Author: S.Walling/Microtel

Notes:

12.73.2 Macro Definition Documentation

12.73.2.1 CFE_TIME_PRINTED_STRING_SIZE `#define CFE_TIME_PRINTED_STRING_SIZE 24`

Required size of buffer to be passed into `CFE_TIME_Print` (includes null terminator)

Definition at line 45 of file `cfe_time_api_typedefs.h`.

12.73.2.2 CFE_TIME_ZERO_VALUE `#define CFE_TIME_ZERO_VALUE ((CFE_TIME_SysTime_t) {0, 0})`

A general-purpose initializer for `CFE_TIME_SysTime_t` values.

Represents "time zero" in the `CFE_TIME_SysTime_t` domain. This can be used as a general purpose initializer for instantiations of the `CFE_TIME_SysTime_t` type.

Definition at line 54 of file `cfe_time_api_typedefs.h`.

12.73.3 Typedef Documentation

12.73.3.1 CFE_TIME_Compare_t `typedef enum CFE_TIME_Compare CFE_TIME_Compare_t`

Enumerated types identifying the relative relationships of two times.

Description

Since time fields contain numbers that are relative to an epoch time, then it is possible for a time value to be "negative". This can lead to some confusion about what relationship exists between two time values. To resolve this confusion, the cFE provides the API [CFE_TIME_Compare](#) which returns these enumerated values.

12.73.3.2 CFE_TIME_SynchCallbackPtr_t `typedef int32 (* CFE_TIME_SynchCallbackPtr_t) (void)`
Time Synchronization Callback Function Ptr Type.**Description**

Applications that wish to get direct notification of the receipt of the cFE Time Synchronization signal (typically a 1 Hz signal), must register a callback function with the following prototype via the [CFE_TIME_RegisterSynchCallback](#) API.

Definition at line 84 of file `cfe_time_api_typedefs.h`.

12.73.4 Enumeration Type Documentation**12.73.4.1 CFE_TIME_Compare** `enum CFE_TIME_Compare`
Enumerated types identifying the relative relationships of two times.**Description**

Since time fields contain numbers that are relative to an epoch time, then it is possible for a time value to be "negative". This can lead to some confusion about what relationship exists between two time values. To resolve this confusion, the cFE provides the API [CFE_TIME_Compare](#) which returns these enumerated values.

Enumerator

<code>CFE_TIME_A_LT_B</code>	The first specified time is considered to be before the second specified time.
<code>CFE_TIME_EQUAL</code>	The two specified times are considered to be equal.
<code>CFE_TIME_A_GT_B</code>	The first specified time is considered to be after the second specified time.

Definition at line 69 of file `cfe_time_api_typedefs.h`.

12.74 cfe/modules/core_api/fsw/inc/cfe_version.h File Reference**Macros**

- `#define CFE_BUILD_NUMBER 247`
Development: Number of development git commits since CFE_BUILD_BASELINE.
- `#define CFE_BUILD_BASELINE "equuleus-rc1"`
Development: Reference git tag for build number.
- `#define CFE_BUILD_DEV_CYCLE "equuleus-rc2"`
Development: Release name for current development cycle.
- `#define CFE_BUILD_CODENAME "Equuleus"`
: Development: Code name for the current build
- `#define CFE_MAJOR_VERSION 6`

- `#define CFE_MINOR_VERSION 7`
Minor version number.
- `#define CFE_REVISION 0`
Revision version number. Value of 0 indicates a development version.
- `#define CFE_LAST_OFFICIAL "v6.7.0"`
Last official release.
- `#define CFE_MISSION_REV 0xFF`
Mission revision.
- `#define CFE_STR_HELPER(x) #x`
Convert argument to string.
- `#define CFE_STR(x) CFE_STR_HELPER(x)`
Expand macro before conversion.
- `#define CFE_SRC_VERSION CFE_BUILD_BASELINE "+dev" CFE_STR(CFE_BUILD_NUMBER)`
Short Build Version String.
- `#define CFE_CFG_MAX_VERSION_STR_LEN 256`
Max Version String length.

12.74.1 Detailed Description

Provide version identifiers for the cFE core. See [Version Numbers](#) for further details.

12.74.2 Macro Definition Documentation

12.74.2.1 CFE_BUILD_BASELINE `#define CFE_BUILD_BASELINE "equuleus-rc1"`

: Development: Reference git tag for build number.

Definition at line 30 of file `cfe_version.h`.

12.74.2.2 CFE_BUILD_CODENAME `#define CFE_BUILD_CODENAME "Equuleus"`

: Development: Code name for the current build

Definition at line 32 of file `cfe_version.h`.

12.74.2.3 CFE_BUILD_DEV_CYCLE `#define CFE_BUILD_DEV_CYCLE "equuleus-rc2"`

: Development: Release name for current development cycle.

Definition at line 31 of file `cfe_version.h`.

12.74.2.4 CFE_BUILD_NUMBER `#define CFE_BUILD_NUMBER 247`

: Development: Number of development git commits since CFE_BUILD_BASELINE.

Definition at line 29 of file `cfe_version.h`.

12.74.2.5 CFE_CFG_MAX_VERSION_STR_LEN `#define CFE_CFG_MAX_VERSION_STR_LEN 256`

: Max Version String length.

: Maximum length that a cFE version string can be.

Definition at line 69 of file `cfe_version.h`.

12.74.2.6 CFE_LAST_OFFICIAL #define CFE_LAST_OFFICIAL "v6.7.0"
Last official release.
Definition at line 42 of file cfe_version.h.

12.74.2.7 CFE_MAJOR_VERSION #define CFE_MAJOR_VERSION 6
Major version number.
Definition at line 35 of file cfe_version.h.

12.74.2.8 CFE_MINOR_VERSION #define CFE_MINOR_VERSION 7
Minor version number.
Definition at line 36 of file cfe_version.h.

12.74.2.9 CFE_MISSION_REV #define CFE_MISSION_REV 0xFF
Mission revision.
Values 1-254 are reserved for mission use to denote patches/customizations as needed. NOTE: Reserving 0 and 0xFF for cFS open-source development use (pending resolution of nasa/cFS#440)
Definition at line 51 of file cfe_version.h.

12.74.2.10 CFE_REVISION #define CFE_REVISION 0
Revision version number. Value of 0 indicates a development version.
Definition at line 37 of file cfe_version.h.

12.74.2.11 CFE_SRC_VERSION #define CFE_SRC_VERSION CFE_BUILD_BASELINE "+dev" CFE_STR(CFE_BUILD_NUMBER)
Short Build Version String.
Short string identifying the build, see [Version Numbers](#) for suggested format for development and official releases.
Definition at line 62 of file cfe_version.h.

12.74.2.12 CFE_STR #define CFE_STR(
 x) CFE_STR_HELPER(x)
Expand macro before conversion.
Definition at line 54 of file cfe_version.h.

12.74.2.13 CFE_STR_HELPER #define CFE_STR_HELPER(
 x) #x
Convert argument to string.
Definition at line 53 of file cfe_version.h.

12.75 cfe/modules/es/config/default_cfe_es_extern_typedefs.h File Reference

```
#include "common_types.h"
#include "cfe_resourceid_typedef.h"
#include "cfe_mission_cfg.h"
```

Data Structures

- struct [CFE_ES_AppInfo](#)
Application Information.
- struct [CFE_ES_TaskInfo](#)
Task Information.
- struct [CFE_ES_CDSRegDumpRec](#)
CDS Register Dump Record.
- struct [CFE_ES_BlockStats](#)
Block statistics.
- struct [CFE_ES_MemPoolStats](#)
Memory Pool Statistics.

Macros

- #define [CFE_ES_MEMOFFSET_C](#)(x) (([CFE_ES_MemOffset_t](#))(x))
Memory Offset initializer wrapper.
- #define [CFE_ES_MEMOFFSET_TO_SIZE_T](#)(x) (([size_t](#))(x))
Memory Offset to integer value ([size_t](#)) wrapper.
- #define [CFE_ES_MEMADDRESS_C](#)(x) (([CFE_ES_MemAddress_t](#))(([cpuaddr](#))(x)&0xFFFFFFFF))
Memory Address initializer wrapper.
- #define [CFE_ES_MEMADDRESS_TO_PTR](#)(x) (([void *](#))([cpuaddr](#))(x))
Memory Address to pointer wrapper.

Typedefs

- typedef [uint8 CFE_ES_LogMode_Enum_t](#)
Identifies handling of log messages after storage is filled.
- typedef [uint8 CFE_ES_ExceptionAction_Enum_t](#)
Identifies action to take if exception occurs.
- typedef [uint8 CFE_ES_AppType_Enum_t](#)
Identifies type of CFE application.
- typedef [uint32 CFE_ES_RunStatus_Enum_t](#)
Run Status and Exit Status identifiers.
- typedef [uint32 CFE_ES_SystemState_Enum_t](#)
The overall cFE System State.
- typedef [uint8 CFE_ES_LogEntryType_Enum_t](#)
Type of entry in the Error and Reset (ER) Log.
- typedef [uint32 CFE_ES_AppState_Enum_t](#)
Application Run State.
- typedef [CFE_RESOURCEID_BASE_TYPE CFE_ES_AppId_t](#)
A type for Application IDs.
- typedef [CFE_RESOURCEID_BASE_TYPE CFE_ES_TaskId_t](#)
A type for Task IDs.
- typedef [CFE_RESOURCEID_BASE_TYPE CFE_ES_LibId_t](#)
A type for Library IDs.
- typedef [CFE_RESOURCEID_BASE_TYPE CFE_ES_CounterId_t](#)
A type for Counter IDs.
- typedef [CFE_RESOURCEID_BASE_TYPE CFE_ES_MemHandle_t](#)

Memory Handle type.

- **typedef CFE_RESOURCEID_BASE_TYPE CFE_ES_CDSHandle_t**
CDS Handle type.
- **typedef uint16 CFE_ES_TaskPriority_Atom_t**
Type used for task priority in CFE ES as including the commands/telemetry messages.
- **typedef uint32 CFE_ES_MemOffset_t**
Type used for memory sizes and offsets in commands and telemetry.
- **typedef uint32 CFE_ES_MemAddress_t**
Type used for memory addresses in command and telemetry messages.
- **typedef struct CFE_ES_AppInfo CFE_ES_AppInfo_t**
Application Information.
- **typedef struct CFE_ES_TaskInfo CFE_ES_TaskInfo_t**
Task Information.
- **typedef struct CFE_ES_CDSRegDumpRec CFE_ES_CDSRegDumpRec_t**
CDS Register Dump Record.
- **typedef struct CFE_ES_BlockStats CFE_ES_BlockStats_t**
Block statistics.
- **typedef struct CFE_ES_MemPoolStats CFE_ES_MemPoolStats_t**
Memory Pool Statistics.

Enumerations

- **enum CFE_ES_LogMode { CFE_ES_LogMode_OVERWRITE = 0 , CFE_ES_LogMode_DISCARD = 1 }**
Label definitions associated with CFE_ES_LogMode_Enum_t.
- **enum CFE_ES_ExceptionAction { CFE_ES_ExceptionAction_RESTART_APP = 0 , CFE_ES_ExceptionAction_PROC_RESTART = 1 }**
Label definitions associated with CFE_ES_ExceptionAction_Enum_t.
- **enum CFE_ES_AppType { CFE_ES_AppType_CORE = 1 , CFE_ES_AppType_EXTERNAL = 2 , CFE_ES_AppType_LIBRARY = 3 }**
Label definitions associated with CFE_ES_AppType_Enum_t.
- **enum CFE_ES_RunStatus {
CFE_ES_RunStatus_UNDEFINED = 0 , CFE_ES_RunStatus_APP_RUN = 1 , CFE_ES_RunStatus_APP_EXIT
= 2 , CFE_ES_RunStatus_APP_ERROR = 3 ,
CFE_ES_RunStatus_SYS_EXCEPTION = 4 , CFE_ES_RunStatus_SYS_RESTART = 5 , CFE_ES_RunStatus_SYS_RELOAD
= 6 , CFE_ES_RunStatus_SYS_DELETE = 7 ,
CFE_ES_RunStatus_CORE_APP_INIT_ERROR = 8 , CFE_ES_RunStatus_CORE_APP_RUNTIME_ERROR =
9 , CFE_ES_RunStatus_MAX }**
Label definitions associated with CFE_ES_RunStatus_Enum_t.
- **enum CFE_ES_SystemState {
CFE_ES_SystemState_UNDEFINED = 0 , CFE_ES_SystemState_EARLY_INIT = 1 , CFE_ES_SystemState_CORE_STARTUP
= 2 , CFE_ES_SystemState_CORE_READY = 3 ,
CFE_ES_SystemState_APPS_INIT = 4 , CFE_ES_SystemState_OPERATIONAL = 5 , CFE_ES_SystemState_SHUTDOWN
= 6 , CFE_ES_SystemState_MAX }**
Label definitions associated with CFE_ES_SystemState_Enum_t.
- **enum CFE_ES_LogEntryType { CFE_ES_LogEntryType_CORE = 1 , CFE_ES_LogEntryType_APPLICATION = 2 }**
Label definitions associated with CFE_ES_LogEntryType_Enum_t.

- enum CFE_ES_AppState {
 CFE_ES_AppState_UNDEFINED = 0 , CFE_ES_AppState_EARLY_INIT = 1 , CFE_ES_AppState_LATE_INIT =
 2 , CFE_ES_AppState_RUNNING = 3 ,
 CFE_ES_AppState_WAITING = 4 , CFE_ES_AppState_STOPPED = 5 , CFE_ES_AppState_MAX }

Label definitions associated with CFE_ES_AppState_Enum_t.

12.75.1 Detailed Description

Declarations and prototypes for cfe_es_extern_typedefs module

12.75.2 Macro Definition Documentation

12.75.2.1 CFE_ES_MEMADDRESS_C #define CFE_ES_MEMADDRESS_C (
 x) ((CFE_ES_MemAddress_t)((cpuaddr)(x)&0xFFFFFFFF))

Memory Address initializer wrapper.

A converter macro to use when initializing a CFE_ES_MemAddress_t from a pointer value of a different type.
Definition at line 417 of file default_cfe_es_extern_typedefs.h.

12.75.2.2 CFE_ES_MEMADDRESS_TO_PTR #define CFE_ES_MEMADDRESS_TO_PTR (
 x) ((void *) (cpuaddr)(x))

Memory Address to pointer wrapper.

A converter macro to use when interpreting a CFE_ES_MemAddress_t as a pointer value.
Definition at line 425 of file default_cfe_es_extern_typedefs.h.

12.75.2.3 CFE_ES_MEMOFFSET_C #define CFE_ES_MEMOFFSET_C (
 x) ((CFE_ES_MemOffset_t)(x))

Memory Offset initializer wrapper.

A converter macro to use when initializing a CFE_ES_MemOffset_t from an integer value of a different type.
Definition at line 380 of file default_cfe_es_extern_typedefs.h.

12.75.2.4 CFE_ES_MEMOFFSET_TO_SIZE_T #define CFE_ES_MEMOFFSET_TO_SIZE_T (
 x) ((size_t)(x))

Memory Offset to integer value (size_t) wrapper.

A converter macro to use when interpreting a CFE_ES_MemOffset_t value as a "size_t" type
Definition at line 388 of file default_cfe_es_extern_typedefs.h.

12.75.3 Typedef Documentation

12.75.3.1 CFE_ES_AppId_t typedef CFE_RESOURCEID_BASE_TYPE CFE_ES_AppId_t
A type for Application IDs.

This is the type that is used for any API accepting or returning an App ID
Definition at line 312 of file default_cfe_es_extern_typedefs.h.

12.75.3.2 CFE_ES_AppInfo_t `typedef struct CFE_ES_AppInfo CFE_ES_AppInfo_t`
Application Information.

Structure that is used to provide information about an app. It is primarily used for the QueryOne and QueryAll Commands.

While this structure is primarily intended for Application info, it can also represent Library information where only a subset of the information applies.

12.75.3.3 CFE_ES_AppState_Enum_t `typedef uint32 CFE_ES_AppState_Enum_t`
Application Run State.

The normal progression of APP states: UNDEFINED -> EARLY_INIT -> LATE_INIT -> RUNNING -> WAITING -> STOPPED

Note

These are defined in order so that relational comparisons e.g. if (STATEA < STATEB) are possible

See also

enum [CFE_ES_AppState](#)

Definition at line 305 of file default_cfe_es_extern_typedefs.h.

12.75.3.4 CFE_ES_AppType_Enum_t `typedef uint8 CFE_ES_AppType_Enum_t`
Identifies type of CFE application.

See also

enum [CFE_ES_AppType](#)

Definition at line 104 of file default_cfe_es_extern_typedefs.h.

12.75.3.5 CFE_ES_BlockStats_t `typedef struct CFE_ES_BlockStats CFE_ES_BlockStats_t`
Block statistics.

Sub-Structure that is used to provide information about a specific block size/bucket within a memory pool.

12.75.3.6 CFE_ES_CDSHandle_t `typedef CFE_RESOURCEID_BASE_TYPE CFE_ES_CDSHandle_t`
CDS Handle type.

Data type used to hold Handles of Critical Data Stores. See [CFE_ES_RegisterCDS](#)

Definition at line 348 of file default_cfe_es_extern_typedefs.h.

12.75.3.7 CFE_ES_CDSRegDumpRec_t `typedef struct CFE_ES_CDSRegDumpRec CFE_ES_CDSRegDumpRec_t`
CDS Register Dump Record.

Structure that is used to provide information about a critical data store. It is primarily used for the Dump CDS registry ([CFE_ES_DUMP_CDS_REGISTRY_CC](#)) command.

Note

There is not currently a telemetry message directly containing this data structure, but it does define the format of the data file generated by the Dump CDS registry command. Therefore it should be considered part of the overall telemetry interface.

12.75.3.8 CFE_ES_CounterId_t `typedef CFE_RESOURCEID_BASE_TYPE CFE_ES_CounterId_t`
A type for Counter IDs.

This is the type that is used for any API accepting or returning a Counter ID

Definition at line 333 of file default_cfe_es_extern_typedefs.h.

12.75.3.9 CFE_ES_ExceptionAction_Enum_t `typedef uint8 CFE_ES_ExceptionAction_Enum_t`
Identifies action to take if exception occurs.

See also

enum [CFE_ES_ExceptionAction](#)

Definition at line 76 of file default_cfe_es_extern_typedefs.h.

12.75.3.10 CFE_ES_LibId_t `typedef CFE_RESOURCEID_BASE_TYPE CFE_ES_LibId_t`
A type for Library IDs.

This is the type that is used for any API accepting or returning a Lib ID

Definition at line 326 of file default_cfe_es_extern_typedefs.h.

12.75.3.11 CFE_ES_LogEntryType_Enum_t `typedef uint8 CFE_ES_LogEntryType_Enum_t`
Type of entry in the Error and Reset (ER) Log.

See also

enum [CFE_ES_LogEntryType](#)

Definition at line 252 of file default_cfe_es_extern_typedefs.h.

12.75.3.12 CFE_ES_LogMode_Enum_t `typedef uint8 CFE_ES_LogMode_Enum_t`
Identifies handling of log messages after storage is filled.

See also

enum [CFE_ES_LogMode](#)

Definition at line 53 of file default_cfe_es_extern_typedefs.h.

12.75.3.13 CFE_ES_MemAddress_t `typedef uint32 CFE_ES_MemAddress_t`
Type used for memory addresses in command and telemetry messages.

For backward compatibility with existing CFE code this should be uint32, but if running on a 64-bit platform, addresses in telemetry will be truncated to 32 bits and therefore will not be valid.

On 64-bit platforms this can be a 64-bit address which will allow the full memory address in commands and telemetry, but this will break compatibility with existing control systems, and may also change the alignment/padding of messages. In either case this must be an unsigned type.

FSW code should access this value via the macros provided, which converts to the native "cpuaddr" type provided by OSAL. This macro provides independence between the message representation and local representation of a memory address.

Definition at line 409 of file default_cfe_es_extern_typedefs.h.

12.75.3.14 CFE_ES_MemHandle_t `typedef CFE_RESOURCEID_BASE_TYPE CFE_ES_MemHandle_t`
Memory Handle type.

Data type used to hold Handles of Memory Pools created via CFE_ES_PoolCreate and CFE_ES_PoolCreateNoSem
Definition at line 341 of file default_cfe_es_extern_typedefs.h.

12.75.3.15 CFE_ES_MemOffset_t `typedef uint32 CFE_ES_MemOffset_t`
Type used for memory sizes and offsets in commands and telemetry.

For backward compatibility with existing CFE code this should be uint32, but all telemetry information will be limited to 4GB in size as a result.

On 64-bit platforms this can be a 64-bit value which will allow larger memory objects, but this will break compatibility with existing control systems, and may also change the alignment/padding of messages.

In either case this must be an unsigned type.

Definition at line 372 of file default_cfe_es_extern_typedefs.h.

12.75.3.16 CFE_ES_MemPoolStats_t `typedef struct CFE_ES_MemPoolStats CFE_ES_MemPoolStats_t`
Memory Pool Statistics.

Structure that is used to provide information about a memory pool. Used by the Memory Pool Stats telemetry message.

See also

[CFE_ES_SEND_MEM_POOL_STATS_CC](#)

12.75.3.17 CFE_ES_RunStatus_Enum_t `typedef uint32 CFE_ES_RunStatus_Enum_t`
Run Status and Exit Status identifiers.

See also

enum [CFE_ES_RunStatus](#)

Definition at line 172 of file default_cfe_es_extern_typedefs.h.

12.75.3.18 CFE_ES_SystemState_Enum_t `typedef uint32 CFE_ES_SystemState_Enum_t`
The overall cFE System State.

These values are used with the [CFE_ES_WaitForSystemState](#) API call to synchronize application startup.

Note

These are defined in order so that relational comparisons e.g. if (STATEA < STATEB) are possible

See also

enum [CFE_ES_SystemState](#)

Definition at line 229 of file default_cfe_es_extern_typedefs.h.

12.75.3.19 CFE_ES_TaskId_t `typedef CFE_RESOURCEID_BASE_TYPE CFE_ES_TaskId_t`
A type for Task IDs.

This is the type that is used for any API accepting or returning a Task ID

Definition at line 319 of file default_cfe_es_extern_typedefs.h.

12.75.3.20 CFE_ES_TaskInfo_t `typedef struct CFE_ES_TaskInfo CFE_ES_TaskInfo_t`
Task Information.

Structure that is used to provide information about a task. It is primarily used for the Query All Tasks ([CFE_ES_QUERY_ALL_TASKS_CC](#)) command.

Note

There is not currently a telemetry message directly containing this data structure, but it does define the format of the data file generated by the Query All Tasks command. Therefore it should be considered part of the overall telemetry interface.

12.75.3.21 CFE_ES_TaskPriority_Atom_t `typedef uint16 CFE_ES_TaskPriority_Atom_t`

Type used for task priority in CFE ES as including the commands/telemetry messages.

Note

the valid range is only 0-255 (same as OSAL) but a wider type is used for backward compatibility in binary formats of messages.

Definition at line 358 of file default_cfe_es_extern_typedefs.h.

12.75.4 Enumeration Type Documentation

12.75.4.1 CFE_ES_AppState `enum CFE_ES_AppState`

Label definitions associated with CFE_ES_AppState_Enum_t.

Enumerator

<code>CFE_ES_AppState_UNDEFINED</code>	Initial state before app thread is started.
<code>CFE_ES_AppState_EARLY_INIT</code>	App thread has started, app performing early initialization of its own data.
<code>CFE_ES_AppState_LATE_INIT</code>	Early/Local initialization is complete. First sync point.
<code>CFE_ES_AppState_RUNNING</code>	All initialization is complete. Second sync point.
<code>CFE_ES_AppState_WAITING</code>	Application is waiting on a Restart/Reload/Delete request.
<code>CFE_ES_AppState_STOPPED</code>	Application is stopped.
<code>CFE_ES_AppState_MAX</code>	Reserved entry, marker for the maximum state.

Definition at line 257 of file default_cfe_es_extern_typedefs.h.

12.75.4.2 CFE_ES_AppType `enum CFE_ES_AppType`

Label definitions associated with CFE_ES_AppType_Enum_t.

Enumerator

<code>CFE_ES_AppType_CORE</code>	CFE core application.
<code>CFE_ES_AppType_EXTERNAL</code>	CFE external application.
<code>CFE_ES_AppType_LIBRARY</code>	CFE library.

Definition at line 81 of file default_cfe_es_extern_typedefs.h.

12.75.4.3 CFE_ES_ExceptionAction enum [CFE_ES_ExceptionAction](#)
Label definitions associated with CFE_ES_ExceptionAction_Enum_t.

Enumerator

CFE_ES_ExceptionAction_RESTART_APP	Restart application if exception occurs.
CFE_ES_ExceptionAction_PROC_RESTART	Restart processor if exception occurs.

Definition at line 58 of file default_cfe_es_extern_typedefs.h.

12.75.4.4 CFE_ES_LogEntryType enum [CFE_ES_LogEntryType](#)
Label definitions associated with CFE_ES_LogEntryType_Enum_t.

Enumerator

CFE_ES_LogEntryType_CORE	Log entry from a core subsystem.
CFE_ES_LogEntryType_APPLICATION	Log entry from an application.

Definition at line 234 of file default_cfe_es_extern_typedefs.h.

12.75.4.5 CFE_ES_LogMode enum [CFE_ES_LogMode](#)
Label definitions associated with CFE_ES_LogMode_Enum_t.

Enumerator

CFE_ES_LogMode_OVERWRITE	Overwrite Log Mode.
CFE_ES_LogMode_DISCARD	Discard Log Mode.

Definition at line 35 of file default_cfe_es_extern_typedefs.h.

12.75.4.6 CFE_ES_RunStatus enum [CFE_ES_RunStatus](#)
Label definitions associated with CFE_ES_RunStatus_Enum_t.

Enumerator

CFE_ES_RunStatus_UNDEFINED	Reserved value, should not be used.
CFE_ES_RunStatus_APP_RUN	Indicates that the Application should continue to run.
CFE_ES_RunStatus_APP_EXIT	Indicates that the Application wants to exit normally.
CFE_ES_RunStatus_APP_ERROR	Indicates that the Application is quitting with an error.
CFE_ES_RunStatus_SYS_EXCEPTION	The cFE App caused an exception.
CFE_ES_RunStatus_SYS_RESTART	The system is requesting a restart of the cFE App.
CFE_ES_RunStatus_SYS_RELOAD	The system is requesting a reload of the cFE App.
CFE_ES_RunStatus_SYS_DELETE	The system is requesting that the cFE App is stopped.
CFE_ES_RunStatus_CORE_APP_INIT_ERROR	Indicates that the Core Application could not Init.
CFE_ES_RunStatus_CORE_APP_RUNTIME_ERROR	Indicates that the Core Application had a runtime failure.

Enumerator

<code>CFE_ES_RunStatus_MAX</code>	Reserved value, marker for the maximum state.
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Definition at line 109 of file default_cfe_es_extern_typedefs.h.

12.75.4.7 `CFE_ES_SystemState` enum `CFE_ES_SystemState`

Label definitions associated with `CFE_ES_SystemState_Enum_t`.

Enumerator

<code>CFE_ES_SystemState_UNDEFINED</code>	reserved
<code>CFE_ES_SystemState_EARLY_INIT</code>	single threaded mode while setting up CFE itself
<code>CFE_ES_SystemState_CORE_STARTUP</code>	core apps (CFE_ES_ObjectTable) are starting (multi-threaded)
<code>CFE_ES_SystemState_CORE_READY</code>	core is ready, starting other external apps/libraries (if any)
<code>CFE_ES_SystemState_APPS_INIT</code>	startup apps have all completed their early init, but not necessarily operational yet
<code>CFE_ES_SystemState_OPERATIONAL</code>	normal operation mode; all apps are RUNNING
<code>CFE_ES_SystemState_SHUTDOWN</code>	reserved for future use, all apps would be STOPPED
<code>CFE_ES_SystemState_MAX</code>	Reserved value, marker for the maximum state.

Definition at line 177 of file default_cfe_es_extern_typedefs.h.

12.76 cfe/modules/es/config/default_cfe_es_fcncodes.h File Reference

Macros

Executive Services Command Codes

- #define `CFE_ES_NOOP_CC` 0
- #define `CFE_ES_RESET_COUNTERS_CC` 1
- #define `CFE_ES_RESTART_CC` 2
- #define `CFE_ES_START_APP_CC` 4
- #define `CFE_ES_STOP_APP_CC` 5
- #define `CFE_ES_RESTART_APP_CC` 6
- #define `CFE_ES_RELOAD_APP_CC` 7
- #define `CFE_ES_QUERY_ONE_CC` 8
- #define `CFE_ES_QUERY_ALL_CC` 9
- #define `CFE_ES_CLEAR_SYS_LOG_CC` 10
- #define `CFE_ES_WRITE_SYS_LOG_CC` 11
- #define `CFE_ES_CLEAR_ER_LOG_CC` 12
- #define `CFE_ES_WRITE_ER_LOG_CC` 13
- #define `CFE_ES_START_PERF_DATA_CC` 14
- #define `CFE_ES_STOP_PERF_DATA_CC` 15
- #define `CFE_ES_SET_PERF_FILTER_MASK_CC` 16
- #define `CFE_ES_SET_PERF_TRIGGER_MASK_CC` 17
- #define `CFE_ES_OVER_WRITE_SYS_LOG_CC` 18
- #define `CFE_ES_RESET_PR_COUNT_CC` 19
- #define `CFE_ES_SET_MAX_PR_COUNT_CC` 20
- #define `CFE_ES_DELETE_CDS_CC` 21
- #define `CFE_ES_SEND_MEM_POOL_STATS_CC` 22
- #define `CFE_ES_DUMP_CDS_REGISTRY_CC` 23
- #define `CFE_ES_QUERY_ALL_TASKS_CC` 24

12.76.1 Detailed Description

Specification for the CFE Executive Services (CFE_ES) command function codes

Note

This file should be strictly limited to the command/function code (CC) macro definitions. Other definitions such as enums, typedefs, or other macros should be placed in the msgdefs.h or msg.h files.

12.76.2 Macro Definition Documentation

12.76.2.1 CFE_ES_CLEAR_ER_LOG_CC #define CFE_ES_CLEAR_ER_LOG_CC 12

Name Clears the contents of the Exception and Reset Log

Description

This command causes the contents of the Executive Services Exception and Reset Log to be cleared.

Command Mnemonic(s) \$sc_\$cpu_ES_ClearERLog

Command Structure

[CFE_ES_ClearERLogCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- The [CFE_ES_ERLOG1_INF_EID](#) informational event message will be generated.
- [\\$sc_\\$cpu_ES_ERLOGINDEX](#) - Index into Exception Reset Log goes to zero

Error Conditions

There are no error conditions for this command. If the Executive Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

This command is not dangerous. However, any previously logged data will be lost.

See also

[CFE_ES_CLEAR_SYS_LOG_CC](#), [CFE_ES_WRITE_SYS_LOG_CC](#), [CFE_ES_WRITE_ER_LOG_CC](#)

Definition at line 540 of file default_cfe_es_fcncodes.h.

12.76.2.2 CFE_ES_CLEAR_SYS_LOG_CC #define CFE_ES_CLEAR_SYS_LOG_CC 10**Name** Clear Executive Services System Log**Description**

This command clears the contents of the Executive Services System Log.

Command Mnemonic(s) \$sc_\$cpu_ES_ClearSysLog**Command Structure**

[CFE_ES_ClearSysLogCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_ES_CMDPC** - command execution counter will increment
- The [CFE_ES_SYSLOG1_INF_EID](#) informational event message will be generated.
- **\$sc_\$cpu_ES_SYSLOGBYTEUSED** - System Log Bytes Used will go to zero
- **\$sc_\$cpu_ES_SYSLOGENTRIES** - Number of System Log Entries will go to zero

Error Conditions

There are no error conditions for this command. If the Executive Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

This command is not dangerous. However, any previously logged data will be lost.

See also

[CFE_ES_WRITE_SYS_LOG_CC](#), [CFE_ES_CLEAR_ER_LOG_CC](#), [CFE_ES_WRITE_ER_LOG_CC](#), [CFE_ES_OVER_WRITE_SY](#)

Definition at line 463 of file default_cfe_es_fcncodes.h.

12.76.2.3 CFE_ES_DELETE_CDS_CC #define CFE_ES_DELETE_CDS_CC 21**Name** Delete Critical Data Store**Description**

This command allows the user to delete a Critical Data Store that was created by an Application that is now no longer executing.

Command Mnemonic(s) \$sc_\$cpu_ES_DeleteCDS**Command Structure**

[CFE_ES_DeleteCDSCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_ES_CMDPC` - command execution counter will increment
- The `CFE_ES_CDS_DELETED_INFO_EID` informational event message will be generated.
- The specified CDS should no longer appear in a CDS Registry dump generated upon receipt of the `CFE_ES_DUMP_CDS_REGISTRY_CC` command

Error Conditions

This command may fail for the following reason(s):

- The specified CDS is the CDS portion of a Critical Table
- The specified CDS is not found in the CDS Registry
- The specified CDS is associated with an Application that is still active
- An error occurred while accessing the CDS memory (see the System Log for more details)

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_ES_CMDEC` - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

This command is not critical because it is not possible to delete a CDS that is associated with an active application. However, deleting a CDS does eliminate any "history" that an application may be wishing to keep.

See also

[CFE_ES_DUMP_CDS_REGISTRY_CC](#), [CFE_TBL_DELETE_CDS_CC](#)

Definition at line 909 of file default_cfe_es_fcncodes.h.

12.76.2.4 CFE_ES_DUMP_CDS_REGISTRY_CC #define CFE_ES_DUMP_CDS_REGISTRY_CC 23

Name Dump Critical Data Store Registry to a File

Description

This command allows the user to dump the Critical Data Store Registry to an onboard file.

Command Mnemonic(s) `$sc_$cpu_ES_WriteCDS2File`

Command Structure

[CFE_ES_DumpCDSRegistryCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_ES_CMDPC` - command execution counter will increment
- The `CFE_ES_CDS_REG_DUMP_INF_EID` debug event message will be generated.
- The file specified in the command (or the default specified by the `CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMP_FILE` configuration parameter) will be updated with the latest information.

Error Conditions

This command may fail for the following reason(s):

- The file name specified could not be parsed
- Error occurred while creating or writing to the dump file

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_ES_CMDEC` - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

This command is not inherently dangerous. It will create a new file in the file system (or overwrite an existing one) and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

See also

[CFE_ES_DELETE_CDS_CC](#), [CFE_TBL_DELETE_CDS_CC](#)

Definition at line 990 of file default_cfe_es_fcncodes.h.

12.76.2.5 CFE_ES_NOOP_CC #define CFE_ES_NOOP_CC 0

Name Executive Services No-Op

Description

This command performs no other function than to increment the command execution counter. The command may be used to verify general aliveness of the Executive Services task.

Command Mnemonic(s) \$sc_\$cpu_ES_NOOP

Command Structure

[CFE_ES_NoopCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_ES_CMDPC` - command execution counter will increment
- The [CFE_ES_BUILD_INF_EID](#) informational event message will be generated
- The [CFE_ES_NOOP_INF_EID](#) informational event message will be generated

Error Conditions

This command may fail for the following reason(s):

- The command packet length is incorrect

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_ES_CMDEC` - command error counter will increment
- the [CFE_ES_LEN_ERR_EID](#) error event message will be generated

Criticality

None

See also

Definition at line 73 of file default_cfe_es_fcncodes.h.

12.76.2.6 CFE_ES_OVER_WRITE_SYS_LOG_CC #define CFE_ES_OVER_WRITE_SYS_LOG_CC 18

Name Set Executive Services System Log Mode to Discard/Overwrite

Description

This command allows the user to configure the Executive Services to either discard new System Log messages when it is full or to overwrite the oldest messages.

Command Mnemonic(s) \$sc_\$cpu_ES_OverwriteSysLogMode

Command Structure

[CFE_ES_OverWriteSysLogCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- [\\$sc_\\$cpu_ES_SYSLOGMODE](#) - Current System Log Mode should reflect the commanded value
- The [CFE_ES_SYSLOGMODE_EID](#) debug event message will be generated.

Error Conditions

This command may fail for the following reason(s):

- The desired mode is neither [CFE_ES_LogMode_OVERWRITE](#) or [CFE_ES_LogMode_DISCARD](#)

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_ES_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

None. (It should be noted that "Overwrite" mode would allow a message identifying the cause of a problem to be lost by a subsequent flood of additional messages).

See also

[CFE_ES_CLEAR_SYS_LOG_CC](#), [CFE_ES_WRITE_SYS_LOG_CC](#)

Definition at line 792 of file default_cfe_es_fcncodes.h.

12.76.2.7 CFE_ES_QUERY_ALL_CC #define CFE_ES_QUERY_ALL_CC 9

Name Writes all Executive Services Information on all loaded modules to a File

Description

This command takes the information kept by Executive Services on all of the registered applications and libraries and writes it to the specified file.

Command Mnemonic(s) \$sc_\$cpu_ES_WriteAppInfo2File

Command Structure

[CFE_ES_QueryAllCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- The [CFE_ES_ALL_APPS_EID](#) debug event message will be generated.
- The file specified in the command (or the default specified by the [CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE](#) configuration parameter) will be updated with the latest information.

Error Conditions

This command may fail for the following reason(s):

- The specified FileName cannot be parsed
- An Error occurs while trying to write to the file

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_ES_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

This command is not inherently dangerous. It will create a new file in the file system (or overwrite an existing one) and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

See also

[CFE_ES_QUERY_ONE_CC](#), [CFE_ES_QUERY_ALL_TASKS_CC](#)

Definition at line 428 of file default_cfe_es_fcncodes.h.

12.76.2.8 CFE_ES_QUERY_ALL_TASKS_CC #define CFE_ES_QUERY_ALL_TASKS_CC 24

Name Writes a list of All Executive Services Tasks to a File

Description

This command takes the information kept by Executive Services on all of the registered tasks and writes it to the specified file.

Command Mnemonic(s) \$sc_\$cpu_ES_WriteTaskInfo2File

Command Structure

[CFE_ES_QueryAllTasksCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- The [CFE_ES_TASKINFO_EID](#) debug event message will be generated.
- The file specified in the command (or the default specified by the [CFE_PLATFORM_ES_DEFAULT_TASK_LOG_FILE](#) configuration parameter) will be updated with the latest information.

Error Conditions

This command may fail for the following reason(s):

- The file name specified could not be parsed
- An Error occurs while trying to write to the file

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_ES_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

This command is not inherently dangerous. It will create a new file in the file system (or overwrite an existing one) and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

See also

[CFE_ES_QUERY_ALL_CC](#), [CFE_ES_QUERY_ONE_CC](#)

Definition at line 1032 of file default_cfe_es_fcncodes.h.

12.76.2.9 CFE_ES_QUERY_ONE_CC #define CFE_ES_QUERY_ONE_CC 8

Name Request Executive Services Information on a specified module

Description

This command takes the information kept by Executive Services on the specified application or library and telemeters it to the ground.

Command Mnemonic(s) \$sc_\$cpu_ES_QueryApp

Command Structure

[CFE_ES_QueryOneCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_ES_CMDPC` - command execution counter will increment
- The [CFE_ES_ONE_APP_EID](#) debug event message will be generated.
- Receipt of the [CFE_ES_OneAppTlm_t](#) telemetry packet

Error Conditions

This command may fail for the following reason(s):

- The specified name is not recognized as an active application or library

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_ES_CMDEC` - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

None

See also

[CFE_ES_QUERY_ALL_CC](#), [CFE_ES_QUERY_ALL_TASKS_CC](#)

Definition at line 386 of file default_cfe_es_fcncodes.h.

12.76.2.10 CFE_ES_RELOAD_APP_CC #define CFE_ES_RELOAD_APP_CC 7

Name Stops, Unloads, Loads from the command specified File and Restarts an Application

Description

This command halts and removes the specified Application from the system. Then it immediately loads the Application from the command specified file and restarts it. This command is especially useful for restarting a Command Ingest Application since once it has been stopped, no further commands can come in to restart it.

Command Mnemonic(s) \$sc_\$cpu_ES_ReloadApp

Command Structure

[CFE_ES_ReloadAppCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_ES_CMDPC` - command execution counter will increment
- The [CFE_ES_RELOAD_APP_DBG_EID](#) debug event message will be generated. NOTE: This event message only identifies that the reload process has been initiated, not that it has completed.

Error Conditions

This command may fail for the following reason(s):

- The specified application filename string cannot be parsed
- The specified application name is not recognized as an active application
- The specified application is one of the cFE's Core applications (ES, EVS, SB, TBL, TIME)

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_ES_CMDEC** - command error counter will increment
- A command specific error event message is issued for all error cases
- Additional information on the reason for command failure may be found in the System Log

Criticality

This command is not inherently dangerous, however the restarting of certain applications (e.g. - Spacecraft Attitude and Control) may have a detrimental effect on the spacecraft.

See also

[CFE_ES_START_APP_CC](#), [CFE_ES_STOP_APP_CC](#), [CFE_ES_RESTART_APP_CC](#)

Definition at line 350 of file default_cfe_es_fcncodes.h.

12.76.2.11 CFE_ES_RESET_COUNTERS_CC #define CFE_ES_RESET_COUNTERS_CC 1

Name Executive Services Reset Counters

Description

This command resets the following counters within the Executive Services housekeeping telemetry:

- Command Execution Counter
- Command Error Counter

Command Mnemonic(s) \$sc_\$cpu_ES_ResetCtrs

Command Structure

[CFE_ES_ResetCountersCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_ES_CMDPC** - command execution counter and error counter will be reset to zero
- The [CFE_ES_RESET_INF_EID](#) informational event message will be generated

Error Conditions

There are no error conditions for this command. If the Executive Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

This command is not inherently dangerous. However, it is possible for ground systems and on-board safing procedures to be designed such that they react to changes in the counter values that are reset by this command.

See also

[CFE_ES_RESET_PR_COUNT_CC](#)

Definition at line 110 of file default_cfe_es_fcncodes.h.

12.76.2.12 CFE_ES_RESET_PR_COUNT_CC #define CFE_ES_RESET_PR_COUNT_CC 19

Name Resets the Processor Reset Counter to Zero

Description

This command allows the user to reset the Processor Reset Counter to zero. The Processor Reset Counter counts the number of Processor Resets that have occurred so as to identify when a Processor Reset should automatically be upgraded to a full Power-On Reset.

Command Mnemonic(s) \$sc_\$cpu_ES_ResetPRCnT

Command Structure

[CFE_ES_ResetPRCountCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- [\\$sc_\\$cpu_ES_ProcResetCnt](#) - Current number of processor resets will go to zero
- The [CFE_ES_RESET_PR_COUNT_EID](#) informational event message will be generated.

Error Conditions

There are no error conditions for this command. If the Executive Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

This command is not critical. The only impact would be that the system would have to have more processor resets before an automatic power-on reset occurred.

See also

[CFE_ES_SET_MAX_PR_COUNT_CC](#), [CFE_ES_RESET_COUNTERS_CC](#)

Definition at line 829 of file default_cfe_es_fcncodes.h.

12.76.2.13 CFE_ES_RESTART_APP_CC #define CFE_ES_RESTART_APP_CC 6

Name Stops, Unloads, Loads using the previous File name, and Restarts an Application

Description

This command halts and removes the specified Application from the system. Then it immediately loads the Application from the same filename last used to start. This command is especially useful for restarting a Command Ingest Application since once it has been stopped, no further commands can come in to restart it.

Command Mnemonic(s) \$sc_\$cpu_ES_ResetApp

Command Structure

[CFE_ES_RestartAppCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- The [CFE_ES_RESTART_APP_DBG_EID](#) debug event message will be generated. NOTE: This event message only identifies that the restart process has been initiated, not that it has completed.

Error Conditions

This command may fail for the following reason(s):

- The original file is missing
- The specified application name is not recognized as an active application
- The specified application is one of the cFE's Core applications (ES, EVS, SB, TBL, TIME)

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_ES_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases
- Additional information on the reason for command failure may be found in the System Log

Criticality

This command is not inherently dangerous, however the restarting of certain applications (e.g. - Spacecraft Attitude and Control) may have a detrimental effect on the spacecraft.

See also

[CFE_ES_START_APP_CC](#), [CFE_ES_STOP_APP_CC](#), [CFE_ES_RELOAD_APP_CC](#)

Definition at line 304 of file default_cfe_es_fcncodes.h.

12.76.2.14 CFE_ES_RESTART_CC #define CFE_ES_RESTART_CC 2**Name** Executive Services Processor / Power-On Reset**Description**

This command restarts the cFE in one of two modes. The Power-On Reset will cause the cFE to restart as though the power were first applied to the processor. The Processor Reset will attempt to retain the contents of the volatile disk and the contents of the Critical Data Store. NOTE: If a requested Processor Reset should cause the Processor Reset Counter (**\$sc_\$cpu_ES_ProcResetCnt**) to exceed OR EQUAL the limit **CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS** (which is reported in housekeeping telemetry as **\$sc_<cpu>_ES_MaxProcResets**), the command is **AUTOMATICALLY** upgraded to a Power-On Reset.

Command Mnemonic(s) \$sc_\$cpu_ES_ProcessorReset, \$sc_\$cpu_ES_PowerOnReset**Command Structure****CFE_ES_RestartCmd_t****Command Verification**

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_ES_ProcResetCnt** - processor reset counter will increment (processor reset) or reset to zero (power-on reset)
 - **\$sc_\$cpu_ES_ResetType** - processor reset type will be updated
 - **\$sc_\$cpu_ES_ResetSubtype** - processor reset subtype will be updated
 - New entries in the Exception Reset Log and System Log can be found
- NOTE: Verification of a Power-On Reset is shown through the loss of data nominally retained through a Processor Reset
- NOTE: Since the reset of the processor resets the command execution counter (**\$sc_\$cpu_ES_CMDPC**), this counter **CANNOT** be used to verify command execution.

Error Conditions

This command may fail for the following reason(s):

- The **Restart Type** was not a recognized value.

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_ES_CMDEC** - command error counter will increment
- the **CFE_ES_BOOT_ERR_EID** error event message will be generated

Criticality

This command is, by definition, dangerous. Significant loss of data will occur. All processes and the cFE itself will be stopped and restarted. With the Power-On reset option, all data on the volatile disk and the contents of the Critical Data Store will be lost.

See also**CFE_ES_RESET_PR_COUNT_CC, CFE_ES_SET_MAX_PR_COUNT_CC**

Definition at line 162 of file default_cfe_es_fcncodes.h.

12.76.2.15 CFE_ES_SEND_MEM_POOL_STATS_CC #define CFE_ES_SEND_MEM_POOL_STATS_CC 22**Name** Telemeter Memory Pool Statistics**Description**

This command allows the user to obtain a snapshot of the statistics maintained for a specified memory pool.

Command Mnemonic(s) \$sc_\$cpu_ES_PoolStats**Command Structure**

[CFE_ES_SendMemPoolStatsCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- The [CFE_ES_TLM_POOL_STATS_INFO_EID](#) debug event message will be generated.
- The [Memory Pool Statistics Telemetry Packet](#) is produced

Error Conditions

This command may fail for the following reason(s):

- The specified handle is not associated with a known memory pool

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_ES_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

An incorrect Memory Pool Handle value can cause a system crash. Extreme care should be taken to ensure the memory handle value used in the command is correct.

See also

Definition at line 948 of file default_cfe_es_fcncodes.h.

12.76.2.16 CFE_ES_SET_MAX_PR_COUNT_CC #define CFE_ES_SET_MAX_PR_COUNT_CC 20**Name** Configure the Maximum Number of Processor Resets before a Power-On Reset**Description**

This command allows the user to specify the number of Processor Resets that are allowed before the next Processor Reset is upgraded to a Power-On Reset.

Command Mnemonic(s) \$sc_\$cpu_ES_SetMaxPRCntr

Command Structure

[CFE_ES_SetMaxPRCountCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_ES_CMDPC` - command execution counter will increment
- `$sc_$cpu_ES_MaxProcResets` - Current maximum number of processor resets before an automatic power-on reset will go to the command specified value.
- The [CFE_ES_SET_MAX_PR_COUNT_EID](#) informational event message will be generated.

Error Conditions

There are no error conditions for this command. If the Executive Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

If the operator were to set the Maximum Processor Reset Count to too high a value, the processor would require an inordinate number of consecutive processor resets before an automatic power-on reset would occur. This could potentially leave the spacecraft without any control for a significant amount of time if a processor reset fails to clear a problem.

See also

[CFE_ES_RESET_PR_COUNT_CC](#)

Definition at line 867 of file default_cfe_es_fcncodes.h.

12.76.2.17 CFE_ES_SET_PERF_FILTER_MASK_CC #define CFE_ES_SET_PERF_FILTER_MASK_CC 16

Name Set Performance Analyzer's Filter Masks

Description

This command sets the Performance Analyzer's Filter Masks.

Command Mnemonic(s) \$sc_\$cpu_ES_LAFilterMask

Command Structure

[CFE_ES_SetPerfFilterMaskCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_ES_CMDPC` - command execution counter will increment
- `$sc_$cpu_ES_PerfFltrMask[MaskCnt]` - the current performance filter mask value(s) should reflect the commanded value
- The [CFE_ES_PERF_FILTMSKCMD_EID](#) debug event message will be generated.

Error Conditions

This command may fail for the following reason(s):

- The Filter Mask ID number is out of range

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_ES_CMDEC** - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

Changing the filter masks may cause a small change in the Performance Analyzer's CPU utilization.

See also

[CFE_ES_START_PERF_DATA_CC](#), [CFE_ES_STOP_PERF_DATA_CC](#), [CFE_ES_SET_PERF_TRIGGER_MASK_CC](#)

Definition at line 715 of file default_cfe_es_fcncodes.h.

12.76.2.18 CFE_ES_SET_PERF_TRIGGER_MASK_CC #define CFE_ES_SET_PERF_TRIGGER_MASK_CC 17

Name Set Performance Analyzer's Trigger Masks

Description

This command sets the Performance Analyzer's Trigger Masks.

Command Mnemonic(s) \$sc_\$cpu_ES_LATriggerMask

Command Structure

[CFE_ES_SetPerfTriggerMaskCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_ES_CMDPC** - command execution counter will increment
- **\$sc_\$cpu_ES_PerfTrigMask[MaskCnt]** - the current performance trigger mask value(s) should reflect the commanded value
- The [CFE_ES_PERF_TRIGMSKCMD_EID](#) debug event message will be generated.

Error Conditions

This command may fail for the following reason(s):

- The Trigger Mask ID number is out of range

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_ES_CMDEC** - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

Changing the trigger masks may cause a small change in the Performance Analyzer's CPU utilization.

See also

[CFE_ES_START_PERF_DATA_CC](#), [CFE_ES_STOP_PERF_DATA_CC](#), [CFE_ES_SET_PERF_FILTER_MASK_CC](#)

Definition at line 752 of file default_cfe_es_fcncodes.h.

12.76.2.19 CFE_ES_START_APP_CC #define CFE_ES_START_APP_CC 4**Name** Load and Start an Application**Description**

This command starts the specified application with the specified start address, stack size, etc options.

Command Mnemonic(s) \$sc_\$cpu_ES_StartApp**Command Structure**[CFE_ES_StartAppCmd_t](#)**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- The [CFE_ES_START_INF_EID](#) informational event message will be generated

Error Conditions

This command may fail for the following reason(s):

- The specified application filename string cannot be parsed
- The specified application entry point is an empty string
- The specified application name is an empty string
- The specified priority is greater than 255
- The specified exception action is neither [CFE_ES_ExceptionAction_RESTART_APP](#) (0) or [CFE_ES_ExceptionAction_PROC_1](#) (1)
- The Operating System was unable to load the specified application file

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_ES_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

This command is not inherently dangerous although system resources could be taxed beyond their limits with the starting of erroneous or invalid applications.

See also[CFE_ES_STOP_APP_CC](#), [CFE_ES_RESTART_APP_CC](#), [CFE_ES_RELOAD_APP_CC](#)

Definition at line 205 of file default_cfe_es_fcncodes.h.

12.76.2.20 CFE_ES_START_PERF_DATA_CC #define CFE_ES_START_PERF_DATA_CC 14

Name Start Performance Analyzer

Description

This command causes the Performance Analyzer to begin collecting data using the specified trigger mode.

Command Mnemonic(s) \$sc_\$cpu_ES_StartLAData

Command Structure

[CFE_ES_StartPerfDataCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_ES_CMDPC** - command execution counter will increment
- **\$sc_\$cpu_ES_PerfState** - Current performance analyzer state will change to either WAITING FOR TRIGGER or, if conditions are appropriate fast enough, TRIGGERED.
- **\$sc_\$cpu_ES_PerfMode** - Performance Analyzer Mode will change to the commanded trigger mode (TRIGGER START, TRIGGER CENTER, or TRIGGER END).
- **\$sc_\$cpu_ES_PerfTrigCnt** - Performance Trigger Count will go to zero
- **\$sc_\$cpu_ES_PerfDataStart** - Data Start Index will go to zero
- **\$sc_\$cpu_ES_PerfDataEnd** - Data End Index will go to zero
- **\$sc_\$cpu_ES_PerfDataCnt** - Performance Data Counter will go to zero
- The [CFE_ES_PERF_STARTCMD_EID](#) debug event message will be generated.

Error Conditions

This command may fail for the following reason(s):

- A previous [CFE_ES_STOP_PERF_DATA_CC](#) command has not completely finished.
- An invalid trigger mode is requested.

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_ES_CMDEC** - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

This command is not inherently dangerous but may cause a small increase in CPU utilization as the performance analyzer data is collected.

See also

[CFE_ES_STOP_PERF_DATA_CC](#), [CFE_ES_SET_PERF_FILTER_MASK_CC](#), [CFE_ES_SET_PERF_TRIGGER_MASK_CC](#)

Definition at line 628 of file default_cfe_es_fcncodes.h.

12.76.2.21 CFE_ES_STOP_APP_CC #define CFE_ES_STOP_APP_CC 5**Name** Stop and Unload Application**Description**

This command halts and removes the specified Application from the system. **NOTE:** This command should never be used on the Command Ingest application. This would prevent further commands from entering the system. If Command Ingest needs to be stopped and restarted, use [CFE_ES_RESTART_APP_CC](#) or [CFE_ES_RELOAD_APP_CC](#).

Command Mnemonic(s) \$sc_\$cpu_ES_StopApp**Command Structure**`CFE_ES_StopAppCmd_t`**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_ES_CMDPC` - command execution counter will increment
- The [CFE_ES_STOP_DBG_EID](#) debug event message will be generated. NOTE: This event message only identifies that the stop request has been initiated, not that it has completed.
- Once the stop has successfully completed, the list of Applications and Tasks created in response to the `$sc_$cpu_ES_WriteAppInfo2File`, `$sc_$cpu_ES_WriteTaskInfo2File` should no longer contain the specified application.
- `$sc_$cpu_ES_RegTasks` - number of tasks will decrease after tasks associated with app (main task and any child tasks) are stopped
- `$sc_$cpu_ES_RegExtApps` - external application counter will decrement after app is cleaned up

Error Conditions

This command may fail for the following reason(s):

- The specified application name is not recognized as an active application
- The specified application is one of the cFE's Core applications (ES, EVS, SB, TBL, TIME)

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_ES_CMDEC` - command error counter will increment
- A command specific error event message is issued for all error cases
- Additional information on the reason for command failure may be found in the System Log

Criticality

This command is not inherently dangerous, however the removal of certain applications (e.g. - Spacecraft Attitude and Control) may have a detrimental effect on the spacecraft.

See also[CFE_ES_START_APP_CC](#), [CFE_ES_RESTART_APP_CC](#), [CFE_ES_RELOAD_APP_CC](#)

Definition at line 258 of file default_cfe_es_fcncodes.h.

12.76.2.22 CFE_ES_STOP_PERF_DATA_CC #define CFE_ES_STOP_PERF_DATA_CC 15

Name Stop Performance Analyzer and write data file

Description

This command stops the Performance Analyzer from collecting any more data, and writes all previously collected performance data to a log file.

Command Mnemonic(s) \$sc_\$cpu_ES_StopLAData

Command Structure

[CFE_ES_StopPerfDataCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- [\\$sc_\\$cpu_ES_PerfState](#) - Current performance analyzer state will change to IDLE.
- The [CFE_ES_PERF_STOPCMD_EID](#) debug event message will be generated to indicate that data collection has been stopped. NOTE: Performance log data is written to the file as a background job. This event indicates that the file write process is initiated, not that it has completed.
- The file specified in the command (or the default specified by the [CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME](#) configuration parameter) will be updated with the latest information.

Error Conditions

This command may fail for the following reason(s):

- The file name specified could not be parsed
- Log data from a previous Stop Performance Analyzer command is still being written to a file.

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_ES_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases

NOTE: The performance analyzer data collection will still be stopped in the event of an error parsing the log file name or writing the log file.

Criticality

This command is not inherently dangerous. However, depending on configuration, performance data log files may be large in size and thus may fill the available storage.

See also

[CFE_ES_START_PERF_DATA_CC](#), [CFE_ES_SET_PERF_FILTER_MASK_CC](#), [CFE_ES_SET_PERF_TRIGGER_MASK_CC](#)

Definition at line 678 of file `default_cfe_es_fcncodes.h`.

12.76.2.23 CFE_ES_WRITE_ER_LOG_CC #define CFE_ES_WRITE_ER_LOG_CC 13

Name Writes Exception and Reset Log to a File

Description

This command causes the contents of the Executive Services Exception and Reset Log to be written to the specified file.

Command Mnemonic(s) \$sc_\$cpu_ES_WriteERLog2File

Command Structure

[CFE_ES_WriteERLogCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- The [CFE_ES_ERLOG2_EID](#) debug event message will be generated.
- The file specified in the command (or the default specified by the [CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE](#) configuration parameter) will be updated with the latest information.

Error Conditions

This command may fail for the following reason(s):

- A previous request to write the ER log has not yet completed
- The specified FileName cannot be parsed
- An Error occurs while trying to write to the file

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_ES_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

This command is not inherently dangerous. It will create a new file in the file system (or overwrite an existing one) and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

See also

[CFE_ES_CLEAR_SYS_LOG_CC](#), [CFE_ES_WRITE_SYS_LOG_CC](#), [CFE_ES_CLEAR_ER_LOG_CC](#)

Definition at line 583 of file `default_cfe_es_fcncodes.h`.

12.76.2.24 CFE_ES_WRITE_SYS_LOG_CC #define CFE_ES_WRITE_SYS_LOG_CC 11

Name Writes contents of Executive Services System Log to a File

Description

This command causes the contents of the Executive Services System Log to be written to a log file.

Command Mnemonic(s) \$sc_\$cpu_ES_WriteSysLog2File

Command Structure

[CFE_ES_WriteSysLogCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_ES_CMDPC](#) - command execution counter will increment
- The [CFE_ES_SYSLOG2_EID](#) debug event message will be generated.
- The file specified in the command (or the default specified by the [CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE](#) configuration parameter) will be updated with the latest information.

Error Conditions

This command may fail for the following reason(s):

- The specified FileName cannot be parsed
- An Error occurs while trying to write to the file

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_ES_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

This command is not inherently dangerous. It will create a new file in the file system (or overwrite an existing one) and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

See also

[CFE_ES_CLEAR_SYS_LOG_CC](#), [CFE_ES_CLEAR_ER_LOG_CC](#), [CFE_ES_WRITE_ER_LOG_CC](#), [CFE_ES_OVER_WRITE_SYS](#)

Definition at line 506 of file default_cfe_es_fcncodes.h.

12.77 cfe/modules/es/config/default_cfe_es_interface_cfg.h File Reference**Macros**

- #define CFE_MISSION_ES_MAX_APPLICATIONS 16
- #define CFE_MISSION_ES_PERF_MAX_IDS 128
- #define CFE_MISSION_ES_POOL_MAX_BUCKETS 17
- #define CFE_MISSION_ES_CDS_MAX_NAME_LENGTH 16
- #define CFE_MISSION_ES_DEFAULT_CRC CFE_ES_CrcType_16_ARC
- #define CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN (CFE_MISSION_ES_CDS_MAX_NAME_LENGTH + CFE_MISSION_MAX_API_LEN + 4)

Checksum/CRC algorithm identifiers

- #define CFE_MISSION_ES_CRC_8 CFE_ES_CrcType_CRC_8
- #define CFE_MISSION_ES_CRC_16 CFE_ES_CrcType_CRC_16
- #define CFE_MISSION_ES_CRC_32 CFE_ES_CrcType_CRC_32

12.77.1 Detailed Description

CFE Executive Services (CFE_ES) Application Public Definitions

This provides default values for configurable items that affect the interface(s) of this module. This includes the CMD/TLM message interface, tables definitions, and any other data products that serve to exchange information with other entities.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.77.2 Macro Definition Documentation

12.77.2.1 CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN #define CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN (CFE_MISSION_ES_CDS_MAX_NAME_LENGTH + CFE_MISSION_MAX_API_LEN + 4)

Purpose Maximum Length of Full CDS Name in messages

Description:

Indicates the maximum length (in characters) of the entire CDS name of the following form: "ApplicationName.CDSName"

This affects the layout of command/telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 143 of file default_cfe_es_interface_cfg.h.

12.77.2.2 CFE_MISSION_ES_CDS_MAX_NAME_LENGTH #define CFE_MISSION_ES_CDS_MAX_NAME_LENGTH 16

Purpose Maximum Length of CDS Name

Description:

Indicates the maximum length (in characters) of the CDS name ('CDSName') portion of a Full CDS Name of the following form: "ApplicationName.CDSName"

This length does not need to include an extra character for NULL termination.

Limits

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 109 of file default_cfe_es_interface_cfg.h.

12.77.2.3 CFE_MISSION_ES_CRC_16 #define CFE_MISSION_ES_CRC_16 CFE_ES_CrcType_CRC_16

Definition at line 151 of file default_cfe_es_interface_cfg.h.

12.77.2.4 CFE_MISSION_ES_CRC_32 #define CFE_MISSION_ES_CRC_32 CFE_ES_CrcType_CRC_32
Definition at line 152 of file default_cfe_es_interface_cfg.h.

12.77.2.5 CFE_MISSION_ES_CRC_8 #define CFE_MISSION_ES_CRC_8 CFE_ES_CrcType_CRC_8
Definition at line 150 of file default_cfe_es_interface_cfg.h.

12.77.2.6 CFE_MISSION_ES_DEFAULT_CRC #define CFE_MISSION_ES_DEFAULT_CRC CFE_ES_CrcType_16_ARC

Purpose Mission Default CRC algorithm

Description:

Indicates the which CRC algorithm should be used as the default for verifying the contents of Critical Data Stores and when calculating Table Image data integrity values.

Limits

Currently only CFE_ES_CrcType_16_ARC is supported (see brief in CFE_ES_CrcType_Enum definition in [cfe_es_api_typedefs.h](#))

Definition at line 123 of file default_cfe_es_interface_cfg.h.

12.77.2.7 CFE_MISSION_ES_MAX_APPLICATIONS #define CFE_MISSION_ES_MAX_APPLICATIONS 16

Purpose Mission Max Apps in a message

Description:

Indicates the maximum number of apps in a telemetry housekeeping message

This affects the layout of command/telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

Definition at line 49 of file default_cfe_es_interface_cfg.h.

12.77.2.8 CFE_MISSION_ES_PERF_MAX_IDS #define CFE_MISSION_ES_PERF_MAX_IDS 128

Purpose Define Max Number of Performance IDs for messages

Description:

Defines the maximum number of perf ids allowed.

Each performance id is used to identify something that needs to be measured. Performance ids are limited to the range of 0 to [CFE_MISSION_ES_PERF_MAX_IDS](#) - 1. Any performance ids outside of this range will be ignored and will be flagged as an error.

This affects the layout of telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

Definition at line 71 of file default_cfe_es_interface_cfg.h.

12.77.2.9 CFE_MISSION_ES_POOL_MAX_BUCKETS #define CFE_MISSION_ES_POOL_MAX_BUCKETS 17

Purpose Maximum number of block sizes in pool structures

Description:

The upper limit for the number of block sizes supported in the generic pool implementation, which in turn implements the memory pools and CDS. This definition is used as the array size with the pool stats structure, and therefore should be consistent across all CPUs in a mission, as well as with the ground station.

There is also a platform-specific limit which may be fewer than this value.

Limits:

Must be at least one. No specific upper limit, but the number is anticipated to be reasonably small (i.e. tens, not hundreds). Large values have not been tested.

Definition at line 92 of file default_cfe_es_interface_cfg.h.

12.78 cfe/modules/es/config/default_cfe_es_internal_cfg.h File Reference**Macros**

- #define CFE_PLATFORM_ES_START_TASK_PRIORITY 68
- #define CFE_PLATFORM_ES_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
- #define CFE_PLATFORM_ES_NONVOL_DISK_MOUNT_STRING "/cf"
- #define CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING "/ram"
- #define CFE_PLATFORM_ES_MAX_APPLICATIONS 32
- #define CFE_PLATFORM_ES_MAX_LIBRARIES 10
- #define CFE_PLATFORM_ES_ER_LOG_ENTRIES 20
- #define CFE_PLATFORM_ES_ER_LOG_MAX_CONTEXT_SIZE 256
- #define CFE_PLATFORM_ES_SYSTEM_LOG_SIZE 3072
- #define CFE_PLATFORM_ES_OBJECT_TABLE_SIZE 30
- #define CFE_PLATFORM_ES_MAX_GEN_COUNTERS 8
- #define CFE_PLATFORM_ES_APP_SCAN_RATE 1000
- #define CFE_PLATFORM_ES_APP_KILL_TIMEOUT 5
- #define CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE 512
- #define CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS 4096
- #define CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED 30
- #define CFE_PLATFORM_ES_CDS_SIZE (128 * 1024)
- #define CFE_PLATFORM_ES_USER_RESERVED_SIZE (1024 * 1024)
- #define CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN 4
- #define CFE_PLATFORM_ES_NONVOL_STARTUP_FILE "/cf/cfe_es_startup.scr"
- #define CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE "/ram/cfe_es_startup.scr"
- #define CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE "/ram/cfe_es_app_info.log"
- #define CFE_PLATFORM_ES_DEFAULT_TASK_LOG_FILE "/ram/cfe_es_taskinfo.log"
- #define CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE "/ram/cfe_es_syslog.log"
- #define CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE "/ram/cfe_erlog.log"
- #define CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME "/ram/cfe_es_perf.dat"
- #define CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMP_FILE "/ram/cfe_cds_reg.log"
- #define CFE_PLATFORM_ES_DEFAULT_POR_SYSLOG_MODE 0
- #define CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE 1
- #define CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE 10000
- #define CFE_PLATFORM_ES_PERF_FILTMASK_NONE 0

- #define CFE_PLATFORM_ES_PERF_FILTMASK_ALL ~CFE_PLATFORM_ES_PERF_FILTMASK_NONE
- #define CFE_PLATFORM_ES_PERF_FILTMASK_INIT CFE_PLATFORM_ES_PERF_FILTMASK_ALL
- #define CFE_PLATFORM_ES_PERF_TRIGMASK_NONE 0
- #define CFE_PLATFORM_ES_PERF_TRIGMASK_ALL ~CFE_PLATFORM_ES_PERF_TRIGMASK_NONE
- #define CFE_PLATFORM_ES_PERF_TRIGMASK_INIT CFE_PLATFORM_ES_PERF_TRIGMASK_NONE
- #define CFE_PLATFORM_ES_PERF_CHILD_PRIORITY 200
- #define CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE 4096
- #define CFE_PLATFORM_ES_PERF_CHILD_MS_DELAY 20
- #define CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS 50
- #define CFE_PLATFORM_ES_DEFAULT_STACK_SIZE 8192
- #define CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES 512
- #define CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS 2
- #define CFE_PLATFORM_ES_POOL_MAX_BUCKETS 17
- #define CFE_PLATFORM_ES_MAX_MEMORY_POOLS 10
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01 8
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_02 16
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_03 32
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_04 48
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_05 64
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_06 96
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_07 128
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_08 160
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_09 256
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_10 512
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_11 1024
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_12 2048
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_13 4096
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_14 8192
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_15 16384
- #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_16 32768
- #define CFE_PLATFORM_ES_MAX_BLOCK_SIZE 80000
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01 8
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_02 16
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_03 32
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_04 48
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_05 64
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_06 96
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_07 128
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_08 160
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_09 256
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_10 512
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_11 1024
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_12 2048
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_13 4096
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_14 8192
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_15 16384
- #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_16 32768
- #define CFE_PLATFORM_ES_CDS_MAX_BLOCK_SIZE 80000
- #define CFE_PLATFORM_ES_STARTUP_SYNC_POLL_MSEC 50
- #define CFE_PLATFORM_ES_STARTUP_SCRIPT_TIMEOUT_MSEC 1000

12.78.1 Detailed Description

CFE Executive Services (CFE_ES) Application Private Config Definitions

This provides default values for configurable items that are internal to this module and do NOT affect the interface(s) of this module. Changes to items in this file only affect the local module and will be transparent to external entities that are using the public interface(s).

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.78.2 Macro Definition Documentation

12.78.2.1 CFE_PLATFORM_ES_APP_KILL_TIMEOUT #define CFE_PLATFORM_ES_APP_KILL_TIMEOUT 5

Purpose Define ES Application Kill Timeout

Description:

ES Application Kill Timeout. This parameter controls the number of "scan periods" that ES will wait for an application to Exit after getting the signal Delete, Reload or Restart. The sequence works as follows:

1. ES will set the control request for an App to Delete/Restart/Reload and set this kill timer to the value in this parameter.
2. If the App is responding and Calls it's RunLoop function, it will drop out of its main loop and call CFE_ES->_ExitApp. Once it calls Exit App, then ES can delete, restart, or reload the app the next time it scans the app table.
3. If the App is not responding, the ES App will decrement this Kill Timeout value each time it runs. If the timeout value reaches zero, ES will kill the app.

The Kill timeout value depends on the [CFE_PLATFORM_ES_APP_SCAN_RATE](#). If the Scan Rate is 1000, or 1 second, and this [CFE_PLATFORM_ES_APP_KILL_TIMEOUT](#) is set to 5, then it will take 5 seconds to kill a non-responding App. If the Scan Rate is 250, or 1/4 second, and the [CFE_PLATFORM_ES_APP_KILL_TIMEOUT](#) is set to 2, then it will take 1/2 second to time out.

Limits

There is a lower limit of 1 and an upper limit of 100 on this configuration parameter. Units are number of [CFE_PLATFORM_ES_APP_SCAN_RATE](#) cycles.

Definition at line 232 of file default_cfe_es_internal_cfg.h.

12.78.2.2 CFE_PLATFORM_ES_APP_SCAN_RATE #define CFE_PLATFORM_ES_APP_SCAN_RATE 1000

Purpose Define ES Application Control Scan Rate

Description:

ES Application Control Scan Rate. This parameter controls the speed that ES scans the Application Table looking for App Delete/Restart/Reload requests. All Applications are deleted, restarted, or reloaded by the ES Application. ES will periodically scan for control requests to process. The scan rate is controlled by this parameter, which is given in milliseconds. A value of 1000 means that ES will scan the Application Table once per second. Be careful not to set the value of this too low, because ES will use more CPU cycles scanning the table.

Limits

There is a lower limit of 100 and an upper limit of 20000 on this configuration parameter. millisecond units.

Definition at line 203 of file default_cfe_es_internal_cfg.h.

12.78.2.3 CFE_PLATFORM_ES_CDS_MAX_BLOCK_SIZE #define CFE_PLATFORM_ES_CDS_MAX_BLOCK_SIZE 80000

Definition at line 774 of file default_cfe_es_internal_cfg.h.

12.78.2.4 CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES #define CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES 512

Purpose Define Maximum Number of Registered CDS Blocks

Description:

Maximum number of registered CDS Blocks

Limits

There is a lower limit of 8. There are no restrictions on the upper limit however, the maximum number of CDS entries is system dependent and should be verified.

Definition at line 664 of file default_cfe_es_internal_cfg.h.

12.78.2.5 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01 8

Purpose Define ES Critical Data Store Memory Pool Block Sizes

Description:

Intermediate ES Critical Data Store Memory Pool Block Sizes

Limits

These sizes MUST be increasing and MUST be an integral multiple of 4.

Definition at line 758 of file default_cfe_es_internal_cfg.h.

12.78.2.6 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_02 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_02 16

Definition at line 759 of file default_cfe_es_internal_cfg.h.

12.78.2.7 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_03 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_03 32

Definition at line 760 of file default_cfe_es_internal_cfg.h.

12.78.2.8 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_04 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_04 48

Definition at line 761 of file default_cfe_es_internal_cfg.h.

12.78.2.9 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_05 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_05 64

Definition at line 762 of file default_cfe_es_internal_cfg.h.

12.78.2.10 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_06 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_06 96

Definition at line 763 of file default_cfe_es_internal_cfg.h.

12.78.2.11 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_07 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_07 128

Definition at line 764 of file default_cfe_es_internal_cfg.h.

12.78.2.12 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_08 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_08 160

Definition at line 765 of file default_cfe_es_internal_cfg.h.

12.78.2.13 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_09 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_09 256

Definition at line 766 of file default_cfe_es_internal_cfg.h.

12.78.2.14 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_10 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_10 512

Definition at line 767 of file default_cfe_es_internal_cfg.h.

12.78.2.15 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_11 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_11 1024

Definition at line 768 of file default_cfe_es_internal_cfg.h.

12.78.2.16 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_12 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_12 2048

Definition at line 769 of file default_cfe_es_internal_cfg.h.

12.78.2.17 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_13 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_13 4096

Definition at line 770 of file default_cfe_es_internal_cfg.h.

12.78.2.18 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_14 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_14 8192

Definition at line 771 of file default_cfe_es_internal_cfg.h.

12.78.2.19 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_15 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_15 16384

Definition at line 772 of file default_cfe_es_internal_cfg.h.

12.78.2.20 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_16 #define CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_16 32768

Definition at line 773 of file default_cfe_es_internal_cfg.h.

12.78.2.21 CFE_PLATFORM_ES_CDS_SIZE #define CFE_PLATFORM_ES_CDS_SIZE (128 * 1024)

Purpose Define Critical Data Store Size

Description:

Defines the Critical Data Store (CDS) area size in bytes size. The CDS is one of four memory areas that are preserved during a processor reset. NOTE: Changing this value changes memory allocation, and may require changes to platform specific values (in CFE_PSP) such as USER_RESERVED_MEM in VxWorks depending on the memory areas being used for preserved data and on OS specific behavior.

Limits

There is a lower limit of 8192 and an upper limit of UINT_MAX (4 Gigabytes) on this configuration parameter.

Definition at line 309 of file default_cfe_es_internal_cfg.h.

12.78.2.22 CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE #define CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE "/ram/cfe_es_app_info.log"

Purpose Default Application Information Filename

Description:

The value of this constant defines the filename used to store information pertaining to all of the Applications that are registered with Executive Services. This filename is used only when no filename is specified in the the command to query all system apps.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 391 of file default_cfe_es_internal_cfg.h.

```
12.78.2.23 CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMP_FILE #define CFE_PLATFORM_ES_DEFAULT_←  
CDS_REG_DUMP_FILE "/ram/cfe_cds_reg.log"
```

Purpose Default Critical Data Store Registry Filename

Description:

The value of this constant defines the filename used to store the Critical Data Store Registry. This filename is used only when no filename is specified in the command to stop performance data collecting.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 465 of file default_cfe_es_internal_cfg.h.

```
12.78.2.24 CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE #define CFE_PLATFORM_ES_DEFAULT_ER_LOG_←  
FILE "/ram/cfe_erlog.log"
```

Purpose Default Exception and Reset (ER) Log Filename

Description:

The value of this constant defines the filename used to store the Exception and Reset (ER) Log. This filename is used only when no filename is specified in the command to dump the ER log. No file specified in the cmd means the first character in the cmd filename is a NULL terminator (zero).

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 437 of file default_cfe_es_internal_cfg.h.

```
12.78.2.25 CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME #define CFE_PLATFORM_ES_DEFAULT_←  
PERF_DUMP_FILENAME "/ram/cfe_es_perf.dat"
```

Purpose Default Performance Data Filename

Description:

The value of this constant defines the filename used to store the Performance Data. This filename is used only when no filename is specified in the command to stop performance data collecting.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 451 of file default_cfe_es_internal_cfg.h.

12.78.2.26 CFE_PLATFORM_ES_DEFAULT_POR_SYSLOG_MODE #define CFE_PLATFORM_ES_DEFAULT_POR_SYSLOG_MODE 0

Purpose Define Default System Log Mode following Power On Reset

Description:

Defines the default mode for the operation of the ES System log following a power on reset. The log may operate in either Overwrite mode = 0, where once the log becomes full the oldest message in the log will be overwritten, or Discard mode = 1, where once the log becomes full the contents of the log are preserved and the new event is discarded. This constant may hold a value of either 0 or 1 depending on the desired default. Overwrite Mode = 0, Discard Mode = 1.

Limits

There is a lower limit of 0 and an upper limit of 1 on this configuration parameter.

Definition at line 483 of file default_cfe_es_internal_cfg.h.

12.78.2.27 CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE #define CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE 1

Purpose Define Default System Log Mode following Processor Reset

Description:

Defines the default mode for the operation of the ES System log following a processor reset. The log may operate in either Overwrite mode = 0, where once the log becomes full the oldest message in the log will be overwritten, or Discard mode = 1, where once the log becomes full the contents of the log are preserved and the new event is discarded. This constant may hold a value of either 0 or 1 depending on the desired default. Overwrite Mode = 0, Discard Mode = 1.

Limits

There is a lower limit of 0 and an upper limit of 1 on this configuration parameter.

Definition at line 501 of file default_cfe_es_internal_cfg.h.

12.78.2.28 CFE_PLATFORM_ES_DEFAULT_STACK_SIZE #define CFE_PLATFORM_ES_DEFAULT_STACK_SIZE 8192

Purpose Define Default Stack Size for an Application

Description:

This parameter defines a default stack size. This parameter is used by the cFE Core Applications.

Limits

There is a lower limit of 2048. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 651 of file default_cfe_es_internal_cfg.h.

12.78.2.29 CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE #define CFE_PLATFORM_ES_DEFAULT_SYSLOG_←
FILE "/ram/cfe_es_syslog.log"

Purpose Default System Log Filename

Description:

The value of this constant defines the filename used to store important information (as ASCII text strings) that might not be able to be sent in an Event Message. This filename is used only when no filename is specified in the command to dump the system log. No file specified in the cmd means the first character in the cmd filename is a NULL terminator (zero).

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 422 of file default_cfe_es_internal_cfg.h.

12.78.2.30 CFE_PLATFORM_ES_DEFAULT_TASK_LOG_FILE #define CFE_PLATFORM_ES_DEFAULT_TASK_←
LOG_FILE "/ram/cfe_es_taskinfo.log"

Purpose Default Application Information Filename

Description:

The value of this constant defines the filename used to store information pertaining to all of the Applications that are registered with Executive Services. This filename is used only when no filename is specified in the the command to query all system tasks.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 406 of file default_cfe_es_internal_cfg.h.

12.78.2.31 CFE_PLATFORM_ES_ER_LOG_ENTRIES #define CFE_PLATFORM_ES_ER_LOG_ENTRIES 20

Purpose Define Max Number of ER (Exception and Reset) log entries

Description:

Defines the maximum number of ER (Exception and Reset) log entries

Limits

There is a lower limit of 1. There are no restrictions on the upper limit however, the maximum number of log entries is system dependent and should be verified.

Definition at line 130 of file default_cfe_es_internal_cfg.h.

12.78.2.32 CFE_PLATFORM_ES_ER_LOG_MAX_CONTEXT_SIZE #define CFE_PLATFORM_ES_ER_LOG_MAX_CONTEXT_SIZE 256

Purpose Maximum size of CPU Context in ES Error Log

Description:

This should be large enough to accommodate the CPU context information supplied by the PSP on the given platform.

Limits:

Must be greater than zero and a multiple of sizeof(uint32). Limited only by the available memory and the number of entries in the error log. Any context information beyond this size will be truncated.

Definition at line 144 of file default_cfe_es_internal_cfg.h.

12.78.2.33 CFE_PLATFORM_ES_MAX_APPLICATIONS #define CFE_PLATFORM_ES_MAX_APPLICATIONS 32

Purpose Define Max Number of Applications

Description:

Defines the maximum number of applications that can be loaded into the system. This number does not include child tasks.

Limits

There is a lower limit of 6. The lower limit corresponds to the cFE internal applications. There are no restrictions on the upper limit however, the maximum number of applications is system dependent and should be verified. AppIDs that are checked against this configuration are defined by a 32 bit data word.

Definition at line 103 of file default_cfe_es_internal_cfg.h.

12.78.2.34 CFE_PLATFORM_ES_MAX_BLOCK_SIZE #define CFE_PLATFORM_ES_MAX_BLOCK_SIZE 80000

Definition at line 747 of file default_cfe_es_internal_cfg.h.

12.78.2.35 CFE_PLATFORM_ES_MAX_GEN_COUNTERS #define CFE_PLATFORM_ES_MAX_GEN_COUNTERS 8

Purpose Define Max Number of Generic Counters

Description:

Defines the maximum number of Generic Counters that can be registered.

Limits

This parameter has a lower limit of 1 and an upper limit of 65535.

Definition at line 184 of file default_cfe_es_internal_cfg.h.

12.78.2.36 CFE_PLATFORM_ES_MAX_LIBRARIES #define CFE_PLATFORM_ES_MAX_LIBRARIES 10

Purpose Define Max Number of Shared libraries

Description:

Defines the maximum number of cFE Shared libraries that can be loaded into the system.

Limits

There is a lower limit of 1. There are no restrictions on the upper limit however, the maximum number of libraries is system dependent and should be verified.

Definition at line 117 of file default_cfe_es_internal_cfg.h.

12.78.2.37 CFE_PLATFORM_ES_MAX_MEMORY_POOLS #define CFE_PLATFORM_ES_MAX_MEMORY_POOLS 10

Purpose Maximum number of memory pools

Description:

The upper limit for the number of memory pools that can concurrently exist within the system.

The CFE_SB and CFE_TBL core subsystems each define a memory pool.

Individual applications may also create memory pools, so this value should be set sufficiently high enough to support the applications being used on this platform.

Limits:

Must be at least 2 to support CFE core - SB and TBL pools. No specific upper limit.

Definition at line 712 of file default_cfe_es_internal_cfg.h.

12.78.2.38 CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS #define CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS 2

Purpose Define Number of Processor Resets Before a Power On Reset

Description:

Number of Processor Resets before a Power On Reset is called. If set to 2, then 2 processor resets will occur, and the 3rd processor reset will be a power on reset instead.

Limits

There is a lower limit of 0. There are no restrictions on the upper limit however, the maximum number of processor resets may be system dependent and should be verified.

Definition at line 679 of file default_cfe_es_internal_cfg.h.

12.78.2.39 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01 8

Purpose Define Default ES Memory Pool Block Sizes

Description:

Default Intermediate ES Memory Pool Block Sizes. If an application is using the CFE_ES Memory Pool APIs ([CFE_ES_PoolCreate](#), [CFE_ES_PoolCreateNoSem](#), [CFE_ES_GetPoolBuf](#) and [CFE_ES_PutPoolBuf](#)) but finds these sizes inappropriate for their use, they may wish to use the [CFE_ES_PoolCreateEx](#) API to specify their own intermediate block sizes

Limits

These sizes MUST be increasing and MUST be an integral multiple of 4. Also, CFE_PLATFORM_ES_MAX_BLOCK_SIZE must be larger than CFE_MISSION_SB_MAX_SB_MSG_SIZE and both CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE and CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE. Note that if Table Services have been removed from the CFE, the table size limits are still enforced although the table size definitions may be reduced.

Definition at line 731 of file default_cfe_es_internal_cfg.h.

12.78.2.40 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_02 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_02 16
Definition at line 732 of file default_cfe_es_internal_cfg.h.

12.78.2.41 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_03 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_03 32
Definition at line 733 of file default_cfe_es_internal_cfg.h.

12.78.2.42 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_04 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_04 48
Definition at line 734 of file default_cfe_es_internal_cfg.h.

12.78.2.43 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_05 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_05 64
Definition at line 735 of file default_cfe_es_internal_cfg.h.

12.78.2.44 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_06 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_06 96
Definition at line 736 of file default_cfe_es_internal_cfg.h.

12.78.2.45 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_07 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_07 128
Definition at line 737 of file default_cfe_es_internal_cfg.h.

12.78.2.46 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_08 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_08 160
Definition at line 738 of file default_cfe_es_internal_cfg.h.

12.78.2.47 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_09 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_09 256
Definition at line 739 of file default_cfe_es_internal_cfg.h.

12.78.2.48 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_10 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_10 512
Definition at line 740 of file default_cfe_es_internal_cfg.h.

12.78.2.49 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_11 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_11 1024
Definition at line 741 of file default_cfe_es_internal_cfg.h.

12.78.2.50 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_12 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_12 2048
Definition at line 742 of file default_cfe_es_internal_cfg.h.

12.78.2.51 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_13 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_13 4096
Definition at line 743 of file default_cfe_es_internal_cfg.h.

12.78.2.52 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_14 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_14 8192
Definition at line 744 of file default_cfe_es_internal_cfg.h.

12.78.2.53 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_15 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_15 16384
Definition at line 745 of file default_cfe_es_internal_cfg.h.

12.78.2.54 CFE_PLATFORM_ES_MEM_BLOCK_SIZE_16 #define CFE_PLATFORM_ES_MEM_BLOCK_SIZE_16 32768
Definition at line 746 of file default_cfe_es_internal_cfg.h.

12.78.2.55 CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN #define CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN 4

Purpose

Define Memory Pool Alignment Size

Description:

Ensures that buffers obtained from a memory pool are aligned to a certain minimum block size. Note the allocator will always align to the minimum required by the CPU architecture. This may be set greater than the CPU requirement as desired for optimal performance.

For some architectures/applications it may be beneficial to set this to the cache line size of the target CPU, or to use special SIMD instructions that require a more stringent memory alignment.

Limits

This must always be a power of 2, as it is used as a binary address mask.

Definition at line 348 of file default_cfe_es_internal_cfg.h.

12.78.2.56 CFE_PLATFORM_ES_NONVOL_DISK_MOUNT_STRING #define CFE_PLATFORM_ES_NONVOL_↪
DISK_MOUNT_STRING "/cf"

Purpose Default virtual path for persistent storage

Description:

This configures the default location in the virtual file system for persistent/non-volatile storage. Files such as the startup script, app/library dynamic modules, and configuration tables are expected to be stored in this directory.

Definition at line 71 of file default_cfe_es_internal_cfg.h.

12.78.2.57 CFE_PLATFORM_ES_NONVOL_STARTUP_FILE #define CFE_PLATFORM_ES_NONVOL_STARTUP_↪
FILE "/cf/cfe_es_startup.scr"

Purpose ES Nonvolatile Startup Filename

Description:

The value of this constant defines the path and name of the file that contains a list of modules that will be loaded and started by the cFE after the cFE finishes its startup sequence.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 362 of file default_cfe_es_internal_cfg.h.

12.78.2.58 CFE_PLATFORM_ES_OBJECT_TABLE_SIZE #define CFE_PLATFORM_ES_OBJECT_TABLE_SIZE 30

Purpose Define Number of entries in the ES Object table

Description:

Defines the number of entries in the ES Object table. This table controls the core cFE startup.

Limits

There is a lower limit of 15. There are no restrictions on the upper limit however, the maximum object table size is system dependent and should be verified.

Definition at line 173 of file default_cfe_es_internal_cfg.h.

12.78.2.59 CFE_PLATFORM_ES_PERF_CHILD_MS_DELAY #define CFE_PLATFORM_ES_PERF_CHILD_MS_↪
DELAY 20

Purpose Define Performance Analyzer Child Task Delay

Description:

This parameter defines the delay time (in milliseconds) between performance data file writes performed by the Executive Services Performance Analyzer Child Task.

Limits

It is recommended this parameter be greater than or equal to 20ms. This parameter is limited by the maximum value allowed by the data type. In this case, the data type is an unsigned 32-bit integer, so the valid range is 0 to 0xFFFFFFFF.

Definition at line 625 of file default_cfe_es_internal_cfg.h.

12.78.2.60 CFE_PLATFORM_ES_PERF_CHILD_PRIORITY #define CFE_PLATFORM_ES_PERF_CHILD_PRIORITY 200

Purpose Define Performance Analyzer Child Task Priority

Description:

This parameter defines the priority of the child task spawned by the Executive Services to write performance data to a file. Lower numbers are higher priority, with 1 being the highest priority in the case of a child task.

Limits

Valid range for a child task is 1 to 255 however, the priority cannot be higher (lower number) than the ES parent application priority.

Definition at line 596 of file default_cfe_es_internal_cfg.h.

12.78.2.61 CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE #define CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE 4096

Purpose Define Performance Analyzer Child Task Stack Size

Description:

This parameter defines the stack size of the child task spawned by the Executive Services to write performance data to a file.

Limits

It is recommended this parameter be greater than or equal to 4KB. This parameter is limited by the maximum value allowed by the data type. In this case, the data type is an unsigned 32-bit integer, so the valid range is 0 to 0xFFFFFFFF.

Definition at line 610 of file default_cfe_es_internal_cfg.h.

12.78.2.62 CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE #define CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE 10000

Purpose Define Max Size of Performance Data Buffer

Description:

Defines the maximum size of the performance data buffer. Units are number of performance data entries. An entry is defined by a 32 bit data word followed by a 64 bit time stamp.

Limits

There is a lower limit of 1025. There are no restrictions on the upper limit however, the maximum buffer size is system dependent and should be verified. The units are number of entries. An entry is defined by a 32 bit data word followed by a 64 bit time stamp.

Definition at line 517 of file default_cfe_es_internal_cfg.h.

12.78.2.63 CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS #define CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS 50

Purpose Define Performance Analyzer Child Task Number of Entries Between Delay

Description:

This parameter defines the number of performance analyzer entries the Performance Analyzer Child Task will write to the file between delays.

Definition at line 635 of file default_cfe_es_internal_cfg.h.

12.78.2.64 CFE_PLATFORM_ES_PERF_FILTMASK_ALL #define CFE_PLATFORM_ES_PERF_FILTMASK_ALL ~CFE_PLATFORM_ES_PERF_FILTMASK_ALL

Purpose Define Filter Mask Setting for Enabling All Performance Entries

Description:

Defines the filter mask for enabling all performance entries. The value is a bit mask. For each bit, 0 means the corresponding entry is disabled and 1 means it is enabled.

Definition at line 537 of file default_cfe_es_internal_cfg.h.

12.78.2.65 CFE_PLATFORM_ES_PERF_FILTMASK_INIT #define CFE_PLATFORM_ES_PERF_FILTMASK_INIT CFE_PLATFORM_ES_PERF_FILTMASK_INIT

Purpose Define Default Filter Mask Setting for Performance Data Buffer

Description:

Defines the default filter mask for the performance data buffer. The value is a bit mask. For each bit, 0 means the corresponding entry is disabled and 1 means it is enabled.

Definition at line 548 of file default_cfe_es_internal_cfg.h.

12.78.2.66 CFE_PLATFORM_ES_PERF_FILTMASK_NONE #define CFE_PLATFORM_ES_PERF_FILTMASK_NONE 0

Purpose Define Filter Mask Setting for Disabling All Performance Entries

Description:

Defines the filter mask for disabling all performance entries. The value is a bit mask. For each bit, 0 means the corresponding entry is disabled and 1 means it is enabled.

Definition at line 527 of file default_cfe_es_internal_cfg.h.

12.78.2.67 CFE_PLATFORM_ES_PERF_TRIGMASK_ALL #define CFE_PLATFORM_ES_PERF_TRIGMASK_ALL ~CFE_PLATFORM_ES_PERF_TRIGMASK_ALL

Purpose Define Filter Trigger Setting for Enabling All Performance Entries

Description:

Defines the trigger mask for enabling all performance data entries. The value is a bit mask. For each bit, 0 means the trigger for the corresponding entry is disabled and 1 means it is enabled.

Definition at line 570 of file default_cfe_es_internal_cfg.h.

```
12.78.2.68 CFE_PLATFORM_ES_PERF_TRIGMASK_INIT #define CFE_PLATFORM_ES_PERF_TRIGMASK_←  
INIT CFE_PLATFORM_ES_PERF_TRIGMASK_NONE
```

Purpose Define Default Filter Trigger Setting for Performance Data Buffer

Description:

Defines the default trigger mask for the performance data buffer. The value is a 32-bit mask. For each bit, 0 means the trigger for the corresponding entry is disabled and 1 means it is enabled.

Definition at line 581 of file default_cfe_es_internal_cfg.h.

```
12.78.2.69 CFE_PLATFORM_ES_PERF_TRIGMASK_NONE #define CFE_PLATFORM_ES_PERF_TRIGMASK_←  
NONE 0
```

Purpose Define Default Filter Trigger Setting for Disabling All Performance Entries

Description:

Defines the default trigger mask for disabling all performance data entries. The value is a bit mask. For each bit, 0 means the trigger for the corresponding entry is disabled and 1 means it is enabled.

Definition at line 559 of file default_cfe_es_internal_cfg.h.

```
12.78.2.70 CFE_PLATFORM_ES_POOL_MAX_BUCKETS #define CFE_PLATFORM_ES_POOL_MAX_BUCKETS 17
```

Purpose Maximum number of block sizes in pool structures

Description:

The upper limit for the number of block sizes supported in the generic pool implementation, which in turn implements the memory pools and CDS.

Limits:

Must be at least one. No specific upper limit, but the number is anticipated to be reasonably small (i.e. tens, not hundreds). Large values have not been tested.

The ES and CDS block size lists must correlate with this value

Definition at line 694 of file default_cfe_es_internal_cfg.h.

```
12.78.2.71 CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING #define CFE_PLATFORM_ES_RAM_DISK_MOUNT_←  
_STRING "/ram"
```

Purpose Default virtual path for volatile storage

Description:

The `CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING` parameter is used to set the cFE mount path for the CFE RAM disk. This is a parameter for missions that do not want to use the default value of "/ram", or for missions that need to have a different value for different CPUs or Spacecraft. Note that the vxWorks OSAL cannot currently handle names that have more than one path separator in it. The names "/ram", "/ramdisk", "/disk123" will all work, but "/disks/ram" will not. Multiple separators can be used with the posix or RTEMS ports.

Definition at line 87 of file default_cfe_es_internal_cfg.h.

12.78.2.72 CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS #define CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS 4096

Purpose ES Ram Disk Number of Sectors

Description:

Defines the ram disk number of sectors. The ram disk is one of four memory areas that are preserved on a processor reset. NOTE: Changing this value changes memory allocation, and may require changes to platform specific values (in CFE_PSP) such as USER_RESERVED_MEM in VxWorks depending on the memory areas being used for preserved data and on OS specific behavior.

Limits

There is a lower limit of 128. There are no restrictions on the upper limit however, the maximum number of RAM sectors is system dependent and should be verified.

Definition at line 268 of file default_cfe_es_internal_cfg.h.

12.78.2.73 CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED #define CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED 30

Purpose Percentage of Ram Disk Reserved for Decompressing Apps

Description:

The [CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED](#) parameter is used to make sure that the Volatile (RAM) Disk has a defined amount of free space during a processor reset. The cFE uses the Volatile disk to decompress cFE applications during system startup. If this Volatile disk happens to get filled with logs and misc files, then a processor reset may not work, because there will be no room to decompress cFE apps. To solve that problem, this parameter sets the "Low Water Mark" for disk space on a Processor reset. It should be set to allow the largest cFE Application to be decompressed. During a Processor reset, if there is not sufficient space left on the disk, it will be re-formatted in order to clear up some space.

This feature can be turned OFF by setting the parameter to 0.

Limits

There is a lower limit of 0 and an upper limit of 75 on this configuration parameter. Units are percentage. A setting of zero will turn this feature off.

Definition at line 292 of file default_cfe_es_internal_cfg.h.

12.78.2.74 CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE #define CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE 512

Purpose ES Ram Disk Sector Size

Description:

Defines the ram disk sector size. The ram disk is 1 of 4 memory areas that are preserved on a processor reset. NOTE: Changing this value changes memory allocation, and may require changes to platform specific values (in CFE_PSP) such as USER_RESERVED_MEM in VxWorks depending on the memory areas being used for preserved data and on OS specific behavior.

Limits

There is a lower limit of 128. There are no restrictions on the upper limit however, the maximum RAM disk sector size is system dependent and should be verified.

Definition at line 250 of file default_cfe_es_internal_cfg.h.

12.78.2.75 CFE_PLATFORM_ES_START_TASK_PRIORITY #define CFE_PLATFORM_ES_START_TASK_PRIORITY 68**Purpose** Define ES Task Priority**Description:**

Defines the cFE_ES Task priority.

Limits

Not Applicable

Definition at line 44 of file default_cfe_es_internal_cfg.h.

12.78.2.76 CFE_PLATFORM_ES_START_TASK_STACK_SIZE #define CFE_PLATFORM_ES_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE**Purpose** Define ES Task Stack Size**Description:**

Defines the cFE_ES Task Stack Size

Limits

There is a lower limit of 2048 on this configuration parameter. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 59 of file default_cfe_es_internal_cfg.h.

12.78.2.77 CFE_PLATFORM_ES_STARTUP_SCRIPT_TIMEOUT_MSEC #define CFE_PLATFORM_ES_STARTUP_SCRIPT_TIMEOUT_MSEC 1000**Purpose** Startup script timeout**Description:**

The upper limit for the total amount of time that all apps listed in the CFE ES startup script may take to all become ready.

Unlike the "core" app timeout, this is a soft limit; if the allotted time is exceeded, it probably indicates an issue with one of the apps, but does not cause CFE ES to take any additional action other than logging the event to the syslog.

Units are in milliseconds

Limits:

Must be defined as an integer value that is greater than or equal to zero.

Definition at line 814 of file default_cfe_es_internal_cfg.h.

12.78.2.78 CFE_PLATFORM_ES_STARTUP_SYNC_POLL_MSEC #define CFE_PLATFORM_ES_STARTUP_SYNC_←
 POLL_MSEC 50

Purpose Poll timer for startup sync delay

Description:

During startup, some tasks may need to synchronize their own initialization with the initialization of other applications in the system.

CFE ES implements an API to accomplish this, that performs a task delay (sleep) while polling the overall system state until other tasks are ready.

This value controls the amount of time that the CFE_ES_ApplicationSyncDelay will sleep between each check of the system state. This should be large enough to allow other tasks to run, but not so large as to noticeably delay the startup completion.

Units are in milliseconds

Limits:

Must be defined as an integer value that is greater than or equal to zero.

Definition at line 796 of file default_cfe_es_internal_cfg.h.

12.78.2.79 CFE_PLATFORM_ES_SYSTEM_LOG_SIZE #define CFE_PLATFORM_ES_SYSTEM_LOG_SIZE 3072

Purpose Define Size of the cFE System Log.

Description:

Defines the size in bytes of the cFE system log. The system log holds variable length strings that are terminated by a linefeed and null character.

Limits

There is a lower limit of 512. There are no restrictions on the upper limit however, the maximum system log size is system dependent and should be verified.

Definition at line 159 of file default_cfe_es_internal_cfg.h.

12.78.2.80 CFE_PLATFORM_ES_USER_RESERVED_SIZE #define CFE_PLATFORM_ES_USER_RESERVED_←
 SIZE (1024 * 1024)

Purpose Define User Reserved Memory Size

Description:

User Reserved Memory Size. This is the size in bytes of the cFE User reserved Memory area. This is a block of memory that is available for cFE application use. The address is obtained by calling [CFE_PSP_GetUserReservedArea](#). The User Reserved Memory is one of four memory areas that are preserved during a processor reset. NOTE: Changing this value changes memory allocation, and may require changes to platform specific values (in CFE_PSP) such as USER_RESERVED_MEM in VxWorks depending on the memory areas being used for preserved data and on OS specific behavior.

Limits

There is a lower limit of 1024 and an upper limit of UINT_MAX (4 Gigabytes) on this configuration parameter.

Definition at line 329 of file default_cfe_es_internal_cfg.h.

```
12.78.2.81 CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE #define CFE_PLATFORM_ES_VOLATILE_STARTUP←
FILE "/ram/cfe_es_startup.scr"
```

Purpose ES Volatile Startup Filename

Description:

The value of this constant defines the path and name of the file that contains a list of modules that will be loaded and started by the cFE after the cFE finishes its startup sequence.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 376 of file default_cfe_es_internal_cfg.h.

12.79 cfe/modules/es/config/default_cfe_es_mission_cfg.h File Reference

```
#include "cfe_es_interface_cfg.h"
```

12.79.1 Detailed Description

CFE Executive Services (CFE_ES) Application Mission Configuration Header File

This is a compatibility header for the "mission_cfg.h" file that has traditionally provided public config definitions for each CFS app.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.80 cfe/modules/es/config/default_cfe_es_msg.h File Reference

```
#include "cfe_mission_cfg.h"
#include "cfe_es_fcncodes.h"
#include "cfe_es_msgdefs.h"
#include "cfe_es_msgstruct.h"
```

12.80.1 Detailed Description

Specification for the CFE Executive Services (CFE_ES) command and telemetry message data types.

This is a compatibility header for the "cfe_es_msg.h" file that has traditionally provided the message definitions for cFS apps.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.81 cfe/modules/es/config/default_cfe_es_msgdefs.h File Reference

```
#include "common_types.h"
#include "cfe_mission_cfg.h"
#include "cfe_es_extern_typedefs.h"
#include "cfe_es_fcncodes.h"
```

Data Structures

- struct [CFE_ES_RestartCmd_Payload](#)
Restart cFE Command Payload.
- struct [CFE_ES_FileNameCmd_Payload](#)
Generic file name command payload.
- struct [CFE_ES_OverWriteSysLogCmd_Payload](#)
Overwrite/Discard System Log Configuration Command Payload.
- struct [CFE_ES_StartAppCmd_Payload](#)
Start Application Command Payload.
- struct [CFE_ES_AppNameCmd_Payload](#)
Generic application name command payload.
- struct [CFE_ES_AppReloadCmd_Payload](#)
Reload Application Command Payload.
- struct [CFE_ES_SetMaxPRCountCmd_Payload](#)
Set Maximum Processor Reset Count Command Payload.
- struct [CFE_ES_DeleteCDSCmd_Payload](#)
Delete Critical Data Store Command Payload.
- struct [CFE_ES_StartPerfCmd_Payload](#)
Start Performance Analyzer Command Payload.
- struct [CFE_ES_StopPerfCmd_Payload](#)
Stop Performance Analyzer Command Payload.
- struct [CFE_ES_SetPerfFilterMaskCmd_Payload](#)
Set Performance Analyzer Filter Mask Command Payload.
- struct [CFE_ES_SetPerfTrigMaskCmd_Payload](#)
Set Performance Analyzer Trigger Mask Command Payload.
- struct [CFE_ES_SendMemPoolStatsCmd_Payload](#)
Send Memory Pool Statistics Command Payload.
- struct [CFE_ES_DumpCDSRegistryCmd_Payload](#)
Dump CDS Registry Command Payload.
- struct [CFE_ES_OneAppTlm_Payload](#)
- struct [CFE_ES_PoolStatsTlm_Payload](#)
- struct [CFE_ES_HousekeepingTlm_Payload](#)

Typedefs

- typedef struct [CFE_ES_RestartCmd_Payload](#) [CFE_ES_RestartCmd_Payload_t](#)
Restart cFE Command Payload.
- typedef struct [CFE_ES_FileNameCmd_Payload](#) [CFE_ES_FileNameCmd_Payload_t](#)
Generic file name command payload.
- typedef struct [CFE_ES_OverWriteSysLogCmd_Payload](#) [CFE_ES_OverWriteSysLogCmd_Payload_t](#)
Overwrite/Discard System Log Configuration Command Payload.
- typedef struct [CFE_ES_StartAppCmd_Payload](#) [CFE_ES_StartAppCmd_Payload_t](#)
Start Application Command Payload.
- typedef struct [CFE_ES_AppNameCmd_Payload](#) [CFE_ES_AppNameCmd_Payload_t](#)
Generic application name command payload.
- typedef struct [CFE_ES_AppReloadCmd_Payload](#) [CFE_ES_AppReloadCmd_Payload_t](#)
Reload Application Command Payload.

- **typedef struct CFE_ES_SetMaxPRCountCmd_Payload CFE_ES_SetMaxPRCountCmd_Payload_t**
Set Maximum Processor Reset Count Command Payload.
- **typedef struct CFE_ES_DeleteCDSCmd_Payload CFE_ES_DeleteCDSCmd_Payload_t**
Delete Critical Data Store Command Payload.
- **typedef uint32 CFE_ES_PerfMode_Enum_t**
- **typedef struct CFE_ES_StartPerfCmd_Payload CFE_ES_StartPerfCmd_Payload_t**
Start Performance Analyzer Command Payload.
- **typedef struct CFE_ES_StopPerfCmd_Payload CFE_ES_StopPerfCmd_Payload_t**
Stop Performance Analyzer Command Payload.
- **typedef struct CFE_ES_SetPerfFilterMaskCmd_Payload CFE_ES_SetPerfFilterMaskCmd_Payload_t**
Set Performance Analyzer Filter Mask Command Payload.
- **typedef struct CFE_ES_SetPerfTrigMaskCmd_Payload CFE_ES_SetPerfTrigMaskCmd_Payload_t**
Set Performance Analyzer Trigger Mask Command Payload.
- **typedef struct CFE_ES_SendMemPoolStatsCmd_Payload CFE_ES_SendMemPoolStatsCmd_Payload_t**
Send Memory Pool Statistics Command Payload.
- **typedef struct CFE_ES_DumpCDSRegistryCmd_Payload CFE_ES_DumpCDSRegistryCmd_Payload_t**
Dump CDS Registry Command Payload.
- **typedef struct CFE_ES_OneAppTlm_Payload CFE_ES_OneAppTlm_Payload_t**
- **typedef struct CFE_ES_PoolStatsTlm_Payload CFE_ES_PoolStatsTlm_Payload_t**
- **typedef struct CFE_ES_HousekeepingTlm_Payload CFE_ES_HousekeepingTlm_Payload_t**

Enumerations

- **enum CFE_ES_PerfMode { CFE_ES_PerfTrigger_START = 0 , CFE_ES_PerfTrigger_CENTER , CFE_ES_PerfTrigger_END }**
Labels for values to use in [CFE_ES_StartPerfCmd.Payload.TriggerMode](#).

12.81.1 Detailed Description

Specification for the CFE Executive Services (CFE_ES) command and telemetry message constant definitions. For CFE_ES this is only the function/command code definitions

12.81.2 Typedef Documentation

12.81.2.1 CFE_ES_AppNameCmd_Payload_t [typedef struct CFE_ES_AppNameCmd_Payload CFE_ES_AppNameCmd_Payload_t](#)

Generic application name command payload.

For command details, see [CFE_ES_STOP_APP_CC](#), [CFE_ES_RESTART_APP_CC](#), [CFE_ES_QUERY_ONE_CC](#)

12.81.2.2 CFE_ES_AppReloadCmd_Payload_t [typedef struct CFE_ES_AppReloadCmd_Payload CFE_ES_AppReloadCmd_Payload_t](#)

Reload Application Command Payload.

For command details, see [CFE_ES_RELOAD_APP_CC](#)

12.81.2.3 CFE_ES_DeleteCDSCmd_Payload_t [typedef struct CFE_ES_DeleteCDSCmd_Payload CFE_ES_DeleteCDSCmd_Payload_t](#)

Delete Critical Data Store Command Payload.

For command details, see [CFE_ES_DELETE_CDS_CC](#)

12.81.2.4 CFE_ES_DumpCDSRegistryCmd_Payload_t [typedef struct CFE_ES_DumpCDSRegistryCmd_Payload CFE_ES_DumpCDSRegistryCmd_Payload_t](#)

Dump CDS Registry Command Payload.

For command details, see [CFE_ES_DUMP_CDS_REGISTRY_CC](#)

12.81.2.5 CFE_ES_FileNameCmd_Payload_t `typedef struct CFE_ES_FileNameCmd_Payload CFE_ES_FileNameCmd_Payload_t`
Generic file name command payload.

This format is shared by several executive services commands. For command details, see [CFE_ES_QUERY_ALL_CC](#), [CFE_ES_QUERY_ALL_TASKS_CC](#), [CFE_ES_WRITE_SYS_LOG_CC](#), and [CFE_ES_WRITE_ER_LOG_CC](#)

12.81.2.6 CFE_ES_HousekeepingTlm_Payload_t `typedef struct CFE_ES_HousekeepingTlm_Payload CFE_ES_HousekeepingTlm_Payload_t`

Name Executive Services Housekeeping Packet

12.81.2.7 CFE_ES_OneAppTlm_Payload_t `typedef struct CFE_ES_OneAppTlm_Payload CFE_ES_OneAppTlm_Payload_t`

Name Single Application Information Packet

12.81.2.8 CFE_ES_OverWriteSysLogCmd_Payload_t `typedef struct CFE_ES_OverWriteSysLogCmd_Payload CFE_ES_OverWriteSysLogCmd_Payload_t`

Overwrite/Discard System Log Configuration Command Payload.

For command details, see [CFE_ES_OVER_WRITE_SYS_LOG_CC](#)

12.81.2.9 CFE_ES_PerfMode_Enum_t `typedef uint32 CFE_ES_PerfMode_Enum_t`

Definition at line 157 of file default_cfe_es_msgdefs.h.

12.81.2.10 CFE_ES_PoolStatsTlm_Payload_t `typedef struct CFE_ES_PoolStatsTlm_Payload CFE_ES_PoolStatsTlm_Payload_t`

Name Memory Pool Statistics Packet

12.81.2.11 CFE_ES_RestartCmd_Payload_t `typedef struct CFE_ES_RestartCmd_Payload CFE_ES_RestartCmd_Payload_t`
Restart cFE Command Payload.

For command details, see [CFE_ES_RESTART_CC](#)

12.81.2.12 CFE_ES_SendMemPoolStatsCmd_Payload_t `typedef struct CFE_ES_SendMemPoolStatsCmd_Payload CFE_ES_SendMemPoolStatsCmd_Payload_t`

Send Memory Pool Statistics Command Payload.

For command details, see [CFE_ES_SEND_MEM_POOL_STATS_CC](#)

12.81.2.13 CFE_ES_SetMaxPRCountCmd_Payload_t `typedef struct CFE_ES_SetMaxPRCountCmd_Payload CFE_ES_SetMaxPRCountCmd_Payload_t`

Set Maximum Processor Reset Count Command Payload.

For command details, see [CFE_ES_SET_MAX_PR_COUNT_CC](#)

12.81.2.14 CFE_ES_SetPerfFilterMaskCmd_Payload_t `typedef struct CFE_ES_SetPerfFilterMaskCmd_Payload CFE_ES_SetPerfFilterMaskCmd_Payload_t`

Set Performance Analyzer Filter Mask Command Payload.

For command details, see [CFE_ES_SET_PERF_FILTER_MASK_CC](#)

12.81.2.15 CFE_ES_SetPerfTrigMaskCmd_Payload_t `typedef struct CFE_ES_SetPerfTrigMaskCmd_Payload CFE_ES_SetPerfTrigMaskCmd_Payload_t`

Set Performance Analyzer Trigger Mask Command Payload.

For command details, see [CFE_ES_SET_PERF_TRIGGER_MASK_CC](#)

12.81.2.16 CFE_ES_StartAppCmd_Payload_t `typedef struct CFE_ES_StartAppCmd_Payload CFE_ES_StartAppCmd_Payload_t`

Start Application Command Payload.

For command details, see [CFE_ES_START_APP_CC](#)

12.81.2.17 CFE_ES_StartPerfCmd_Payload_t `typedef struct CFE_ES_StartPerfCmd_Payload CFE_ES_StartPerfCmd_Payload_t`

Start Performance Analyzer Command Payload.

For command details, see [CFE_ES_START_PERF_DATA_CC](#)

12.81.2.18 CFE_ES_StopPerfCmd_Payload_t `typedef struct CFE_ES_StopPerfCmd_Payload CFE_ES_StopPerfCmd_Payload_t`

Stop Performance Analyzer Command Payload.

For command details, see [CFE_ES_STOP_PERF_DATA_CC](#)

12.81.3 Enumeration Type Documentation

12.81.3.1 CFE_ES_PerfMode `enum CFE_ES_PerfMode`

Labels for values to use in `CFE_ES_StartPerfCmd_Payload.TriggerMode`.

See also

[CFE_ES_StartPerfCmd_Payload](#)

Enumerator

<code>CFE_ES_PerfTrigger_START</code>	
<code>CFE_ES_PerfTrigger_CENTER</code>	
<code>CFE_ES_PerfTrigger_END</code>	

Definition at line 150 of file default_cfe_es_msgdefs.h.

12.82 cfe/modules/es/config/default_cfe_es_msgids.h File Reference

```
#include "cfe_core_api_base_msgids.h"
#include "cfe_es_topicids.h"
```

Macros

- `#define CFE_ES_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_ES_CMD_TOPICID)`
/* 0x1806 */
- `#define CFE_ES_SEND_HK_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_ES_SEND_HK_TOPICID)`
/* 0x1808 */
- `#define CFE_ES_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_ES_HK_TLM_TOPICID)`
/* 0x0800 */
- `#define CFE_ES_APP_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_ES_APP_TLM_TOPICID)`
/* 0x080B */

- #define CFE_ES_MEMSTATS_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_ES_MEMSTATS_TLM_TOPICID)
/* 0x0810 */

12.82.1 Detailed Description

CFE Executive Services (CFE_ES) Application Message IDs

12.82.2 Macro Definition Documentation

- 12.82.2.1 CFE_ES_APP_TLM_MID** #define CFE_ES_APP_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_ES_APP_TOPICID)
/* 0x080B */

Definition at line 39 of file default_cfe_es_msgids.h.

- 12.82.2.2 CFE_ES_CMD_MID** #define CFE_ES_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_ES_CMD_TOPICID)
/* 0x1806 */

Definition at line 32 of file default_cfe_es_msgids.h.

- 12.82.2.3 CFE_ES_HK_TLM_MID** #define CFE_ES_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_ES_HK_TLM_TOPICID)
/* 0x0800 */

Definition at line 38 of file default_cfe_es_msgids.h.

- 12.82.2.4 CFE_ES_MEMSTATS_TLM_MID** #define CFE_ES_MEMSTATS_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_ES_MEMSTATS_TLM_TOPICID)
/* 0x0810 */

Definition at line 40 of file default_cfe_es_msgids.h.

- 12.82.2.5 CFE_ES_SEND_HK_MID** #define CFE_ES_SEND_HK_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_ES_SEND_HK_TOPICID)
/* 0x1808 */

Definition at line 33 of file default_cfe_es_msgids.h.

12.83 cfe/modules/es/config/default_cfe_es_msgstruct.h File Reference

```
#include "cfe_es_msgdefs.h"
#include "cfe_msg_hdr.h"
#include "cfe_mission_cfg.h"
```

Data Structures

- struct CFE_ES_NoopCmd
- struct CFE_ES_ResetCountersCmd
- struct CFE_ES_ClearSysLogCmd
- struct CFE_ES_ClearERLogCmd
- struct CFE_ES_ResetPRCountCmd
- struct CFE_ES_SendHkCmd
- struct CFE_ES_RestartCmd

Restart cFE Command.

- struct [CFE_ES_FileNameCmd](#)
Generic file name command.
- struct [CFE_ES_QueryAllCmd](#)
- struct [CFE_ES_QueryAllTasksCmd](#)
- struct [CFE_ES_WriteSysLogCmd](#)
- struct [CFE_ES_WriteERLogCmd](#)
- struct [CFE_ES_OverWriteSysLogCmd](#)
Overwrite/Discard System Log Configuration Command Payload.
- struct [CFE_ES_StartApp](#)
Start Application Command.
- struct [CFE_ES_StopAppCmd](#)
- struct [CFE_ES_RestartAppCmd](#)
- struct [CFE_ES_QueryOneCmd](#)
- struct [CFE_ES_ReloadAppCmd](#)
Reload Application Command.
- struct [CFE_ES_SetMaxPRCountCmd](#)
Set Maximum Processor Reset Count Command.
- struct [CFE_ES_DeleteCDSCmd](#)
Delete Critical Data Store Command.
- struct [CFE_ES_StartPerfDataCmd](#)
Start Performance Analyzer Command.
- struct [CFE_ES_StopPerfDataCmd](#)
Stop Performance Analyzer Command.
- struct [CFE_ES_SetPerfFilterMaskCmd](#)
Set Performance Analyzer Filter Mask Command.
- struct [CFE_ES_SetPerfTriggerMaskCmd](#)
Set Performance Analyzer Trigger Mask Command.
- struct [CFE_ES_SendMemPoolStatsCmd](#)
Send Memory Pool Statistics Command.
- struct [CFE_ES_DumpCDSRegistryCmd](#)
Dump CDS Registry Command.
- struct [CFE_ES_OneAppTIm](#)
- struct [CFE_ES_MemStatsTIm](#)
- struct [CFE_ES_HousekeepingTIm](#)

Typedefs

- typedef struct [CFE_ES_NoopCmd](#) [CFE_ES_NoopCmd_t](#)
- typedef struct [CFE_ES_ResetCountersCmd](#) [CFE_ES_ResetCountersCmd_t](#)
- typedef struct [CFE_ES_ClearSysLogCmd](#) [CFE_ES_ClearSysLogCmd_t](#)
- typedef struct [CFE_ES_ClearERLogCmd](#) [CFE_ES_ClearERLogCmd_t](#)
- typedef struct [CFE_ES_ResetPRCountCmd](#) [CFE_ES_ResetPRCountCmd_t](#)
- typedef struct [CFE_ES_SendHkCmd](#) [CFE_ES_SendHkCmd_t](#)
- typedef struct [CFE_ES_RestartCmd](#) [CFE_ES_RestartCmd_t](#)
Restart cFE Command.
- typedef struct [CFE_ES_FileNameCmd](#) [CFE_ES_FileNameCmd_t](#)
Generic file name command.
- typedef struct [CFE_ES_QueryAllCmd](#) [CFE_ES_QueryAllCmd_t](#)
- typedef struct [CFE_ES_QueryAllTasksCmd](#) [CFE_ES_QueryAllTasksCmd_t](#)

- `typedef struct CFE_ES_WriteSysLogCmd CFE_ES_WriteSysLogCmd_t`
- `typedef struct CFE_ES_WriteERLogCmd CFE_ES_WriteERLogCmd_t`
- `typedef struct CFE_ES_OverWriteSysLogCmd CFE_ES_OverWriteSysLogCmd_t`
Overwrite/Discard System Log Configuration Command Payload.
- `typedef struct CFE_ES_StartApp CFE_ES_StartAppCmd_t`
Start Application Command.
- `typedef struct CFE_ES_StopAppCmd CFE_ES_StopAppCmd_t`
- `typedef struct CFE_ES_RestartAppCmd CFE_ES_RestartAppCmd_t`
- `typedef struct CFE_ES_QueryOneCmd CFE_ES_QueryOneCmd_t`
- `typedef struct CFE_ES_ReloadAppCmd CFE_ES_ReloadAppCmd_t`
Reload Application Command.
- `typedef struct CFE_ES_SetMaxPRCountCmd CFE_ES_SetMaxPRCountCmd_t`
Set Maximum Processor Reset Count Command.
- `typedef struct CFE_ES_DeleteCDSCmd CFE_ES_DeleteCDSCmd_t`
Delete Critical Data Store Command.
- `typedef struct CFE_ES_StartPerfDataCmd CFE_ES_StartPerfDataCmd_t`
Start Performance Analyzer Command.
- `typedef struct CFE_ES_StopPerfDataCmd CFE_ES_StopPerfDataCmd_t`
Stop Performance Analyzer Command.
- `typedef struct CFE_ES_SetPerfFilterMaskCmd CFE_ES_SetPerfFilterMaskCmd_t`
Set Performance Analyzer Filter Mask Command.
- `typedef struct CFE_ES_SetPerfTriggerMaskCmd CFE_ES_SetPerfTriggerMaskCmd_t`
Set Performance Analyzer Trigger Mask Command.
- `typedef struct CFE_ES_SendMemPoolStatsCmd CFE_ES_SendMemPoolStatsCmd_t`
Send Memory Pool Statistics Command.
- `typedef struct CFE_ES_DumpCDSRegistryCmd CFE_ES_DumpCDSRegistryCmd_t`
Dump CDS Registry Command.
- `typedef struct CFE_ES_OneAppTlm CFE_ES_OneAppTlm_t`
- `typedef struct CFE_ES_MemStatsTlm CFE_ES_MemStatsTlm_t`
- `typedef struct CFE_ES_HousekeepingTlm CFE_ES_HousekeepingTlm_t`

12.83.1 Detailed Description

Purpose: cFE Executive Services (ES) Command and Telemetry packet definition file.

References: Flight Software Branch C Coding Standard Version 1.0a cFE Flight Software Application Developers Guide

Notes:

12.83.2 Typedef Documentation

12.83.2.1 `CFE_ES_ClearERLogCmd_t` `typedef struct CFE_ES_ClearERLogCmd CFE_ES_ClearERLogCmd_t`

12.83.2.2 `CFE_ES_ClearSysLogCmd_t` `typedef struct CFE_ES_ClearSysLogCmd CFE_ES_ClearSysLogCmd_t`

12.83.2.3 `CFE_ES_DeleteCDSCmd_t` `typedef struct CFE_ES_DeleteCDSCmd CFE_ES_DeleteCDSCmd_t`

Delete Critical Data Store Command.

12.83.2.4 CFE_ES_DumpCDSRegistryCmd_t `typedef struct CFE_ES_DumpCDSRegistryCmd CFE_ES_DumpCDSRegistryCmd_t`
Dump CDS Registry Command.

12.83.2.5 CFE_ES_FileNameCmd_t `typedef struct CFE_ES_FileNameCmd CFE_ES_FileNameCmd_t`
Generic file name command.

12.83.2.6 CFE_ES_HousekeepingTlm_t `typedef struct CFE_ES_HousekeepingTlm CFE_ES_HousekeepingTlm_t`

Name Executive Services Housekeeping Packet

12.83.2.7 CFE_ES_MemStatsTlm_t `typedef struct CFE_ES_MemStatsTlm CFE_ES_MemStatsTlm_t`

Name Memory Pool Statistics Packet

12.83.2.8 CFE_ES_NoopCmd_t `typedef struct CFE_ES_NoopCmd CFE_ES_NoopCmd_t`

12.83.2.9 CFE_ES_OneAppTlm_t `typedef struct CFE_ES_OneAppTlm CFE_ES_OneAppTlm_t`

Name Single Application Information Packet

12.83.2.10 CFE_ES_OverWriteSysLogCmd_t `typedef struct CFE_ES_OverWriteSysLogCmd CFE_ES_OverWriteSysLogCmd_t`
Overwrite/Discard System Log Configuration Command Payload.

12.83.2.11 CFE_ES_QueryAllCmd_t `typedef struct CFE_ES_QueryAllCmd CFE_ES_QueryAllCmd_t`

12.83.2.12 CFE_ES_QueryAllTasksCmd_t `typedef struct CFE_ES_QueryAllTasksCmd CFE_ES_QueryAllTasksCmd_t`

12.83.2.13 CFE_ES_QueryOneCmd_t `typedef struct CFE_ES_QueryOneCmd CFE_ES_QueryOneCmd_t`

12.83.2.14 CFE_ES_ReloadAppCmd_t `typedef struct CFE_ES_ReloadAppCmd CFE_ES_ReloadAppCmd_t`
Reload Application Command.

12.83.2.15 CFE_ES_ResetCountersCmd_t `typedef struct CFE_ES_ResetCountersCmd CFE_ES_ResetCountersCmd_t`

12.83.2.16 CFE_ES_ResetPRCountCmd_t `typedef struct CFE_ES_ResetPRCountCmd CFE_ES_ResetPRCountCmd_t`

12.83.2.17 CFE_ES_RestartAppCmd_t `typedef struct CFE_ES_RestartAppCmd CFE_ES_RestartAppCmd_t`

12.83.2.18 CFE_ES_RestartCmd_t `typedef struct CFE_ES_RestartCmd CFE_ES_RestartCmd_t`
Restart cFE Command.

12.83.2.19 CFE_ES_SendHkCmd_t `typedef struct CFE_ES_SendHkCmd CFE_ES_SendHkCmd_t`

12.83.2.20 CFE_ES_SendMemPoolStatsCmd_t `typedef struct CFE_ES_SendMemPoolStatsCmd CFE_ES_SendMemPoolStatsCmd_t`
Send Memory Pool Statistics Command.

12.83.2.21 CFE_ES_SetMaxPRCountCmd_t `typedef struct CFE_ES_SetMaxPRCountCmd CFE_ES_SetMaxPRCountCmd_t`
Set Maximum Processor Reset Count Command.

12.83.2.22 CFE_ES_SetPerfFilterMaskCmd_t `typedef struct CFE_ES_SetPerfFilterMaskCmd CFE_ES_SetPerfFilterMaskCmd_t`
Set Performance Analyzer Filter Mask Command.

12.83.2.23 CFE_ES_SetPerfTriggerMaskCmd_t `typedef struct CFE_ES_SetPerfTriggerMaskCmd CFE_ES_SetPerfTriggerMaskCmd_t`
Set Performance Analyzer Trigger Mask Command.

12.83.2.24 CFE_ES_StartAppCmd_t `typedef struct CFE_ES_StartApp CFE_ES_StartAppCmd_t`
Start Application Command.

12.83.2.25 CFE_ES_StartPerfDataCmd_t `typedef struct CFE_ES_StartPerfDataCmd CFE_ES_StartPerfDataCmd_t`
Start Performance Analyzer Command.

12.83.2.26 CFE_ES_StopAppCmd_t `typedef struct CFE_ES_StopAppCmd CFE_ES_StopAppCmd_t`

12.83.2.27 CFE_ES_StopPerfDataCmd_t `typedef struct CFE_ES_StopPerfDataCmd CFE_ES_StopPerfDataCmd_t`
Stop Performance Analyzer Command.

12.83.2.28 CFE_ES_WriteERLogCmd_t `typedef struct CFE_ES_WriteERLogCmd CFE_ES_WriteERLogCmd_t`

12.83.2.29 CFE_ES_WriteSysLogCmd_t `typedef struct CFE_ES_WriteSysLogCmd CFE_ES_WriteSysLogCmd_t`

12.84 cfe/modules/es/config/default_cfe_es_platform_cfg.h File Reference

```
#include "cfe_es_mission_cfg.h"
#include "cfe_es_internal_cfg.h"
```

12.84.1 Detailed Description

CFE Executive Services (CFE_ES) Application Platform Configuration Header File

This is a compatibility header for the "platform_cfg.h" file that has traditionally provided both public and private config definitions for each CFS app.

These definitions are now provided in two separate files, one for the public/mission scope and one for internal scope.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.85 cfe/modules/es/config/default_cfe_es_topicids.h File Reference

Macros

- #define CFE_MISSION_ES_CMD_TOPICID 6
- #define CFE_MISSION_ES_SEND_HK_TOPICID 8
- #define CFE_MISSION_ES_HK_TLM_TOPICID 0
- #define CFE_MISSION_ES_APP_TLM_TOPICID 11
- #define CFE_MISSION_ES_MEMSTATS_TLM_TOPICID 16

12.85.1 Detailed Description

CFE Executive Services (CFE_ES) Application Topic IDs

12.85.2 Macro Definition Documentation

12.85.2.1 CFE_MISSION_ES_APP_TLM_TOPICID #define CFE_MISSION_ES_APP_TLM_TOPICID 11
Definition at line 48 of file default_cfe_es_topicids.h.

12.85.2.2 CFE_MISSION_ES_CMD_TOPICID #define CFE_MISSION_ES_CMD_TOPICID 6

Purpose cFE Portable Message Numbers for Commands

Description:

Portable message numbers for the cFE ES command messages

Limits

Not Applicable

Definition at line 35 of file default_cfe_es_topicids.h.

12.85.2.3 CFE_MISSION_ES_HK_TLM_TOPICID #define CFE_MISSION_ES_HK_TLM_TOPICID 0

Purpose cFE Portable Message Numbers for Telemetry

Description:

Portable message numbers for the cFE ES telemetry messages

Limits

Not Applicable

Definition at line 47 of file default_cfe_es_topicids.h.

12.85.2.4 CFE_MISSION_ES_MEMSTATS_TLM_TOPICID #define CFE_MISSION_ES_MEMSTATS_TLM_TOPICID 16
Definition at line 49 of file default_cfe_es_topicids.h.

12.85.2.5 CFE_MISSION_ES_SEND_HK_TOPICID #define CFE_MISSION_ES_SEND_HK_TOPICID 8
Definition at line 36 of file default_cfe_es_topicids.h.

12.86 cfe/modules/es/fsw/inc/cfe_es_eventids.h File Reference

Macros

ES event IDs

- #define **CFE_ES_INIT_INF_EID** 1
ES Initialization Event ID.
- #define **CFE_ES_INITSTATS_INF_EID** 2
ES Initialization Statistics Information Event ID.
- #define **CFE_ES_NOOP_INF_EID** 3
ES No-op Command Success Event ID.
- #define **CFE_ES_RESET_INF_EID** 4
ES Reset Counters Command Success Event ID.
- #define **CFE_ES_START_INF_EID** 6
ES Start Application Command Success Event ID.
- #define **CFE_ES_STOP_DBG_EID** 7
ES Stop Application Command Request Success Event ID.
- #define **CFE_ES_STOP_INF_EID** 8
ES Stop Application Completed Event ID.
- #define **CFE_ES_RESTART_APP_DBG_EID** 9
ES Restart Application Command Request Success Event ID.
- #define **CFE_ES_RESTART_APP_INF_EID** 10
ES Restart Application Completed Event ID.
- #define **CFE_ES_RELOAD_APP_DBG_EID** 11
ES Reload Application Command Request Success Event ID.
- #define **CFE_ES_RELOAD_APP_INF_EID** 12
ES Reload Application Complete Event ID.
- #define **CFE_ES_EXIT_APP_INF_EID** 13
ES Nominal Exit Application Complete Event ID.
- #define **CFE_ES_ERREXIT_APP_INF_EID** 14
ES Error Exit Application Complete Event ID.
- #define **CFE_ES_ONE_APP_EID** 15
ES Query One Application Command Success Event ID.
- #define **CFE_ES_ALL_APPS_EID** 16
ES Query All Applications Command Success Event ID.
- #define **CFE_ES_SYSLOG1_INF_EID** 17
ES Clear System Log Command Success Event ID.
- #define **CFE_ES_SYSLOG2_EID** 18
ES Write System Log Command Success Event ID.
- #define **CFE_ES_ERLOG1_INF_EID** 19
ES Clear Exception Reset Log Command Success Event ID.

- #define `CFE_ES_ERLOG2_EID` 20
ES Write Exception Reset Log Complete Event ID.
- #define `CFE_ES_MID_ERR_EID` 21
ES Invalid Message ID Received Event ID.
- #define `CFE_ES_CC1_ERR_EID` 22
ES Invalid Command Code Received Event ID.
- #define `CFE_ES_LEN_ERR_EID` 23
ES Invalid Command Length Event ID.
- #define `CFE_ES_BOOT_ERR_EID` 24
ES Restart Command Invalid Restart Type Event ID.
- #define `CFE_ES_START_ERR_EID` 26
ES Start Application Command Application Creation Failed Event ID.
- #define `CFE_ES_START_INVALID_FILENAME_ERR_EID` 27
ES Start Application Command Invalid Filename Event ID.
- #define `CFE_ES_START_INVALID_ENTRY_POINT_ERR_EID` 28
ES Start Application Command Entry Point NULL Event ID.
- #define `CFE_ES_START_NULL_APP_NAME_ERR_EID` 29
ES Start Application Command App Name NULL Event ID.
- #define `CFE_ES_START_PRIORITY_ERR_EID` 31
ES Start Application Command Priority Too Large Event ID.
- #define `CFE_ES_START_EXC_ACTION_ERR_EID` 32
ES Start Application Command Exception Action Invalid Event ID.
- #define `CFE_ES_ERREXIT_APP_ERR_EID` 33
ES Error Exit Application Cleanup Failed Event ID.
- #define `CFE_ES_STOP_ERR1_EID` 35
ES Stop Application Command Request Failed Event ID.
- #define `CFE_ES_STOP_ERR2_EID` 36
ES Stop Application Command Get ApplID By Name Failed Event ID.
- #define `CFE_ES_STOP_ERR3_EID` 37
ES Stop Application Cleanup Failed Event ID.
- #define `CFE_ES_RESTART_APP_ERR1_EID` 38
ES Restart Application Command Request Failed Event ID.
- #define `CFE_ES_RESTART_APP_ERR2_EID` 39
ES Restart Application Command Get ApplID By Name Failed Event ID.
- #define `CFE_ES_RESTART_APP_ERR3_EID` 40
ES Restart Application Startup Failed Event ID.
- #define `CFE_ES_RESTART_APP_ERR4_EID` 41
ES Restart Application Cleanup Failed Event ID.
- #define `CFE_ES_RELOAD_APP_ERR1_EID` 42
ES Reload Application Command Request Failed Event ID.
- #define `CFE_ES_RELOAD_APP_ERR2_EID` 43
ES Reload Application Command Get ApplID By Name Failed Event ID.
- #define `CFE_ES_RELOAD_APP_ERR3_EID` 44
ES Reload Application Startup Failed Event ID.
- #define `CFE_ES_RELOAD_APP_ERR4_EID` 45
ES Reload Application Cleanup Failed Event ID.
- #define `CFE_ES_EXIT_APP_ERR_EID` 46
ES Exit Application Cleanup Failed Event ID.
- #define `CFE_ES_PCR_ERR1_EID` 47
ES Process Control Invalid Exception State Event ID.
- #define `CFE_ES_PCR_ERR2_EID` 48
ES Process Control Unknown State Event ID.
- #define `CFE_ES_ONE_ERR_EID` 49
ES Query One Application Data Command Transmit Message Failed Event ID.
- #define `CFE_ES_ONE_APPID_ERR_EID` 50

- #define **CFE_ES_OSCREATE_ERR_EID** 51
ES Query One Application Data Command Get AppID By Name Failed Event ID.
- #define **CFE_ES_WRHDR_ERR_EID** 52
ES Query All Application Data Command File Creation Failed Event ID.
- #define **CFE_ES_TASKWR_ERR_EID** 53
ES Query All Application Data Command File Write Header Failed Event ID.
- #define **CFE_ES_SYSLOG2_ERR_EID** 55
ES Write System Log Command Filename Parse or File Creation Failed Event ID.
- #define **CFE_ES_ERLOG2_ERR_EID** 56
ES Write Exception Reset Log Command Request or File Creation Failed Event ID.
- #define **CFE_ES_PERF_STARTCMD_EID** 57
ES Start Performance Analyzer Data Collection Command Success Event ID.
- #define **CFE_ES_PERF_STARTCMD_ERR_EID** 58
ES Start Performance Analyzer Data Collection Command Idle Check Failed Event ID.
- #define **CFE_ES_PERF_STARTCMD_TRIG_ERR_EID** 59
ES Start Performance Analyzer Data Collection Command Invalid Trigger Event ID.
- #define **CFE_ES_PERF_STOPCMD_EID** 60
ES Stop Performance Analyzer Data Collection Command Request Success Event ID.
- #define **CFE_ES_PERF_STOPCMD_ERR2_EID** 62
ES Stop Performance Analyzer Data Collection Command Request Idle Check Failed Event ID.
- #define **CFE_ES_PERF_FILTMSKCMD_EID** 63
ES Set Performance Analyzer Filter Mask Command Success Event ID.
- #define **CFE_ES_PERF_FILTMSKERR_EID** 64
ES Set Performance Analyzer Filter Mask Command Invalid Index Event ID.
- #define **CFE_ES_PERF_TRIGMSKCMD_EID** 65
ES Set Performance Analyzer Trigger Mask Command Success Event ID.
- #define **CFE_ES_PERF_TRIGMSKERR_EID** 66
ES Set Performance Analyzer Trigger Mask Command Invalid Mask Event ID.
- #define **CFE_ES_PERF_LOG_ERR_EID** 67
ES Stop Performance Analyzer Data Collection Command Filename Parse or File Create Failed Event ID.
- #define **CFE_ES_PERF_DATAWRITTEN_EID** 68
Performance Log Write Success Event ID.
- #define **CFE_ES_CDS_REGISTER_ERR_EID** 69
ES Register CDS API Failed Event ID.
- #define **CFE_ES_SYSLOGMODE_EID** 70
ES Set System Log Overwrite Mode Command Success Event ID.
- #define **CFE_ES_ERR_SYSLOGMODE_EID** 71
ES Set System Log Overwrite Mode Command Failed Event ID.
- #define **CFE_ES_RESET_PR_COUNT_EID** 72
ES Set Processor Reset Counter to Zero Command Success Event ID.
- #define **CFE_ES_SET_MAX_PR_COUNT_EID** 73
ES Set Maximum Processor Reset Limit Command Success Event ID.
- #define **CFE_ES_FILEWRITE_ERR_EID** 74
ES File Write Failed Event ID.
- #define **CFE_ES_CDS_DELETE_ERR_EID** 76
ES Delete CDS Command Delete Failed Event ID.
- #define **CFE_ES_CDS_NAME_ERR_EID** 77
ES Delete CDS Command Lookup CDS Failed Event ID.
- #define **CFE_ES_CDS_DELETED_INFO_EID** 78
ES Delete CDS Command Success Event ID.
- #define **CFE_ES_CDS_DELETE_TBL_ERR_EID** 79
ES Delete CDS Command For Critical Table Event ID.
- #define **CFE_ES_CDS_OWNER_ACTIVE_EID** 80
ES Delete CDS Command With Active Owner Event ID.

- #define [CFE_ES_TLM_POOL_STATS_INFO_EID](#) 81
ES Telemeter Memory Statistics Command Success Event ID.
- #define [CFE_ES_INVALID_POOL_HANDLE_ERR_EID](#) 82
ES Telemeter Memory Statistics Command Invalid Handle Event ID.
- #define [CFE_ES_CDS_REG_DUMP_INF_EID](#) 83
ES Write Critical Data Store Registry Command Success Event ID.
- #define [CFE_ES_CDS_DUMP_ERR_EID](#) 84
ES Write Critical Data Store Registry Command Record Write Failed Event ID.
- #define [CFE_ES_WRITE_CFE_HDR_ERR_EID](#) 85
ES Write Critical Data Store Registry Command Header Write Failed Event ID.
- #define [CFE_ES_CREATING_CDS_DUMP_ERR_EID](#) 86
ES Write Critical Data Store Registry Command Filename Parse or File Create Failed Event ID.
- #define [CFE_ES_TASKINFO_EID](#) 87
ES Write All Task Data Command Success Event ID.
- #define [CFE_ES_TASKINFO_OSCREATE_ERR_EID](#) 88
ES Write All Task Data Command Filename Parse or File Create Failed Event ID.
- #define [CFE_ES_TASKINFO_WRHDR_ERR_EID](#) 89
ES Write All Task Data Command Write Header Failed Event ID.
- #define [CFE_ES_TASKINFO_WR_ERR_EID](#) 90
ES Write All Task Data Command Write Data Failed Event ID.
- #define [CFE_ES_VERSION_INF_EID](#) 91
cFS Version Information Event ID
- #define [CFE_ES_BUILD_INF_EID](#) 92
cFS Build Information Event ID
- #define [CFE_ES_ERLOG_PENDING_ERR_EID](#) 93
ES Write Exception Reset Log Command Already In Progress Event ID.

12.86.1 Detailed Description

cFE Executive Services Event IDs

12.86.2 Macro Definition Documentation

12.86.2.1 CFE_ES_ALL_APPS_EID #define CFE_ES_ALL_APPS_EID 16
ES Query All Applications Command Success Event ID.

Type: DEBUG

Cause:

[ES Query All Applications Command](#) success.
Definition at line 206 of file cfe_es_eventids.h.

12.86.2.2 CFE_ES_BOOT_ERR_EID #define CFE_ES_BOOT_ERR_EID 24
ES Restart Command Invalid Restart Type Event ID.

Type: ERROR

Cause:

[ES cFE Restart Command](#) failure due to invalid restart type.

Definition at line 294 of file cfe_es_eventids.h.

12.86.2.3 CFE_ES_BUILD_INF_EID #define CFE_ES_BUILD_INF_EID 92
cFS Build Information Event ID

Type: INFORMATION

Cause:

ES Initialization complete and response to [ES NO-OP Command](#).

The Build field identifies the build date, time, hostname and user identifier of the build host machine for the current running binary. The first string is the build date/time, and the second string is formatted as "user@hostname"

This additionally reports the configuration name that was selected by the user, which may affect various platform/mission limits.

By default, if not specified/overridden, the default values of these variables will be: BUILDDATE ==> the output of "date +%Y%m%d%H%M" HOSTNAME ==> the output of "hostname" USER ==> the output of "whoami"

The values can be overridden by setting an environment variable with the names above to the value desired for the field when running "make".

Definition at line 1047 of file cfe_es_eventids.h.

12.86.2.4 CFE_ES_CC1_ERR_EID #define CFE_ES_CC1_ERR_EID 22
ES Invalid Command Code Received Event ID.

Type: ERROR

Cause:

Invalid command code for message ID [CFE_ES_CMD_MID](#) received on the ES message pipe.

Definition at line 272 of file cfe_es_eventids.h.

12.86.2.5 CFE_ES_CDS_DELETE_ERR_EID #define CFE_ES_CDS_DELETE_ERR_EID 76
ES Delete CDS Command Delete Failed Event ID.

Type: ERROR

Cause:

[ES Delete CDS Command](#) failed while deleting, see reported status code or system log for details.

Definition at line 834 of file cfe_es_eventids.h.

12.86.2.6 CFE_ES_CDS_DELETE_TBL_ERR_EID #define CFE_ES_CDS_DELETE_TBL_ERR_EID 79
ES Delete CDS Command For Critical Table Event ID.

Type: ERROR

Cause:

[Delete CDS Command](#) failure due to the specified CDS name being a critical table. Critical Table images can only be deleted via a Table Services command, [CFE_TBL_DELETE_CDS_CC](#).

Definition at line 871 of file cfe_es_eventids.h.

12.86.2.7 CFE_ES_CDS_DELETED_INFO_EID #define CFE_ES_CDS_DELETED_INFO_EID 78
ES Delete CDS Command Success Event ID.

Type: INFORMATION

Cause:

[ES Delete CDS Command](#) success.

Definition at line 857 of file cfe_es_eventids.h.

12.86.2.8 CFE_ES_CDS_DUMP_ERR_EID #define CFE_ES_CDS_DUMP_ERR_EID 84
ES Write Critical Data Store Registry Command Record Write Failed Event ID.

Type: ERROR

Cause:

[ES Write Critical Data Store Registry Command](#) failed to write CDS record.

Definition at line 929 of file cfe_es_eventids.h.

12.86.2.9 CFE_ES_CDS_NAME_ERR_EID #define CFE_ES_CDS_NAME_ERR_EID 77
ES Delete CDS Command Lookup CDS Failed Event ID.

Type: ERROR

Cause:

[ES Delete CDS Command](#) failed due to the specified CDS name not found in the CDS Registry.

Definition at line 846 of file cfe_es_eventids.h.

12.86.2.10 CFE_ES_CDS_OWNER_ACTIVE_EID #define CFE_ES_CDS_OWNER_ACTIVE_EID 80
ES Delete CDS Command With Active Owner Event ID.

Type: ERROR

Cause:

[ES Delete CDS Command](#) failure due to the specifies CDS name is registered to an active application.
Definition at line 883 of file cfe_es_eventids.h.

12.86.2.11 CFE_ES_CDS_REG_DUMP_INF_EID #define CFE_ES_CDS_REG_DUMP_INF_EID 83
ES Write Critical Data Store Registry Command Success Event ID.

Type: DEBUG

Cause:

[ES Write Critical Data Store Registry Command](#) success.
Definition at line 917 of file cfe_es_eventids.h.

12.86.2.12 CFE_ES_CDS_REGISTER_ERR_EID #define CFE_ES_CDS_REGISTER_ERR_EID 69
ES Register CDS API Failed Event ID.

Type: ERROR

Cause:

[CFE_ES_RegisterCDS](#) API failure, see reported status code or system log for details.
Definition at line 766 of file cfe_es_eventids.h.

12.86.2.13 CFE_ES_CREATING_CDS_DUMP_ERR_EID #define CFE_ES_CREATING_CDS_DUMP_ERR_EID 86
ES Write Critical Data Store Registry Command Filename Parse or File Create Failed Event ID.

Type: ERROR

Cause:

[ES Write Critical Data Store Registry Command](#) failed to parse filename or open/create the file. OVERLOADED
Definition at line 953 of file cfe_es_eventids.h.

12.86.2.14 CFE_ES_ERLOG1_INF_EID #define CFE_ES_ERLOG1_INF_EID 19
ES Clear Exception Reset Log Command Success Event ID.

Type: INFORMATION

Cause:

[ES Clear Exception Reset Log Command](#) success.
Definition at line 239 of file cfe_es_eventids.h.

12.86.2.15 CFE_ES_ERLOG2_EID #define CFE_ES_ERLOG2_EID 20
ES Write Exception Reset Log Complete Event ID.

Type: DEBUG

Cause:

Request to write the Exception Reset log successfully completed.
Definition at line 250 of file cfe_es_eventids.h.

12.86.2.16 CFE_ES_ERLOG2_ERR_EID #define CFE_ES_ERLOG2_ERR_EID 56
ES Write Exception Reset Log Command Request or File Creation Failed Event ID.

Type: ERROR

Cause:

[ES Write Exception Reset Log Command](#) request failed or file creation failed. OVERLOADED
Definition at line 626 of file cfe_es_eventids.h.

12.86.2.17 CFE_ES_ERLOG_PENDING_ERR_EID #define CFE_ES_ERLOG_PENDING_ERR_EID 93
ES Write Exception Reset Log Command Already In Progress Event ID.

Type: ERROR

Cause:

[ES Write Exception Reset Log Command](#) failure due to a write already being in progress.
Definition at line 1059 of file cfe_es_eventids.h.

12.86.2.18 CFE_ES_ERR_SYSLOGMODE_EID #define CFE_ES_ERR_SYSLOGMODE_EID 71
ES Set System Log Overwrite Mode Command Failed Event ID.

Type: ERROR

Cause:

[ES Set System Log Overwrite Mode Command](#) failed due to invalid mode requested.
Definition at line 789 of file cfe_es_eventids.h.

12.86.2.19 CFE_ES_ERREXIT_APP_ERR_EID #define CFE_ES_ERREXIT_APP_ERR_EID 33
ES Error Exit Application Cleanup Failed Event ID.

Type: ERROR

Cause:

Error request to exit an application failed during application cleanup. Application and related resources will be in undefined state.
Definition at line 379 of file cfe_es_eventids.h.

12.86.2.20 CFE_ES_ERREXIT_APP_INF_EID #define CFE_ES_ERREXIT_APP_INF_EID 14
ES Error Exit Application Complete Event ID.

Type: INFORMATION

Cause:

Error request to exit an application successfully completed. This event indicates the Application exited due to an error condition. The details of the error that occurred should be given by the Application through an event message, System Log entry, or both.

Definition at line 184 of file cfe_es_eventids.h.

12.86.2.21 CFE_ES_EXIT_APP_ERR_EID #define CFE_ES_EXIT_APP_ERR_EID 46
ES Exit Application Cleanup Failed Event ID.

Type: ERROR

Cause:

Nominal request to exit an application failed during application cleanup. Application and related resources will be in undefined state.

Definition at line 522 of file cfe_es_eventids.h.

12.86.2.22 CFE_ES_EXIT_APP_INF_EID #define CFE_ES_EXIT_APP_INF_EID 13
ES Nominal Exit Application Complete Event ID.

Type: INFORMATION

Cause:

Nominal request to exit an application successfully completed. This event indicates the Application exited due to a nominal exit condition.

Definition at line 170 of file cfe_es_eventids.h.

12.86.2.23 CFE_ES_FILEWRITE_ERR_EID #define CFE_ES_FILEWRITE_ERR_EID 74
ES File Write Failed Event ID.

Type: ERROR

Cause:

ES File Write failure writing data to file. OVERLOADED

Definition at line 822 of file cfe_es_eventids.h.

12.86.2.24 CFE_ES_INIT_INF_EID #define CFE_ES_INIT_INF_EID 1
ES Initialization Event ID.

Type: INFORMATION

Cause:

Executive Services Task initialization complete.

Definition at line 42 of file cfe_es_eventids.h.

12.86.2.25 CFE_ES_INITSTATS_INF_EID #define CFE_ES_INITSTATS_INF_EID 2
ES Initialization Statistics Information Event ID.

Type: INFORMATION

Cause:

Executive Services Task initialization complete.

Definition at line 53 of file cfe_es_eventids.h.

12.86.2.26 CFE_ES_INVALID_POOL_HANDLE_ERR_EID #define CFE_ES_INVALID_POOL_HANDLE_ERR_EID 82
ES Telemeter Memory Statistics Command Invalid Handle Event ID.

Type: ERROR

Cause:

[ES Telemeter Memory Statistics Command](#) failure due to an invalid memory handle.
Definition at line 906 of file cfe_es_eventids.h.

12.86.2.27 CFE_ES_LEN_ERR_EID #define CFE_ES_LEN_ERR_EID 23
ES Invalid Command Length Event ID.

Type: ERROR

Cause:

Invalid length for the command code in message ID [CFE_ES_CMD_MID](#) received on the ES message pipe.
Definition at line 283 of file cfe_es_eventids.h.

12.86.2.28 CFE_ES_MID_ERR_EID #define CFE_ES_MID_ERR_EID 21
ES Invalid Message ID Received Event ID.

Type: ERROR

Cause:

Invalid message ID received on the ES message pipe.
Definition at line 261 of file cfe_es_eventids.h.

12.86.2.29 CFE_ES_NOOP_INF_EID #define CFE_ES_NOOP_INF_EID 3
ES No-op Command Success Event ID.

Type: INFORMATION

Cause:

[ES No-op Command](#) success.
Definition at line 64 of file cfe_es_eventids.h.

12.86.2.30 CFE_ES_ONE_APP_EID #define CFE_ES_ONE_APP_EID 15
ES Query One Application Command Success Event ID.

Type: DEBUG

Cause:

[ES Query One Application Command](#) success.
Definition at line 195 of file cfe_es_eventids.h.

12.86.2.31 CFE_ES_ONE_APPID_ERR_EID #define CFE_ES_ONE_APPID_ERR_EID 50
ES Query One Application Data Command Get AppID By Name Failed Event ID.

Type: ERROR

Cause:

[ES Query One Application Data Command](#) failed to get application ID from application name. Message will not be sent.
Definition at line 569 of file cfe_es_eventids.h.

12.86.2.32 CFE_ES_ONE_ERR_EID #define CFE_ES_ONE_ERR_EID 49
ES Query One Application Data Command Transmit Message Failed Event ID.

Type: ERROR

Cause:

[ES Query One Application Data Command](#) failed during message transmission.
Definition at line 557 of file cfe_es_eventids.h.

12.86.2.33 CFE_ES_OSCREATE_ERR_EID #define CFE_ES_OSCREATE_ERR_EID 51
ES Query All Application Data Command File Creation Failed Event ID.

Type: ERROR

Cause:

[ES Query All Application Data Command](#) failed to create file.
Definition at line 580 of file cfe_es_eventids.h.

12.86.2.34 CFE_ES_PCR_ERR1_EID #define CFE_ES_PCR_ERR1_EID 47
ES Process Control Invalid Exception State Event ID.

Type: ERROR

Cause:

Invalid Exception state encountered when processing requests for application state changes. Exceptions are processed immediately, so this state should never occur during routine processing.

Definition at line 534 of file cfe_es_eventids.h.

12.86.2.35 CFE_ES_PCR_ERR2_EID #define CFE_ES_PCR_ERR2_EID 48
ES Process Control Unknown State Event ID.

Type: ERROR

Cause:

Unknown state encountered when processing requests for application state changes.

Definition at line 545 of file cfe_es_eventids.h.

12.86.2.36 CFE_ES_PERF_DATAWRITTEN_EID #define CFE_ES_PERF_DATAWRITTEN_EID 68
Performance Log Write Success Event ID.

Type: DEBUG

Cause:

Request to write the performance log successfully completed.

Definition at line 755 of file cfe_es_eventids.h.

12.86.2.37 CFE_ES_PERF_FILTMSKCMD_EID #define CFE_ES_PERF_FILTMSKCMD_EID 63
ES Set Performance Analyzer Filter Mask Command Success Event ID.

Type: DEBUG

Cause:

[ES Set Performance Analyzer Filter Mask Command](#) success.

Definition at line 697 of file cfe_es_eventids.h.

12.86.2.38 CFE_ES_PERF_FILTMSKERR_EID #define CFE_ES_PERF_FILTMSKERR_EID 64
ES Set Performance Analyzer Filter Mask Command Invalid Index Event ID.

Type: ERROR

Cause:

[ES Set Performance Analyzer Filter Mask Command](#) failed filter index range check.
Definition at line 709 of file cfe_es_eventids.h.

12.86.2.39 CFE_ES_PERF_LOG_ERR_EID #define CFE_ES_PERF_LOG_ERR_EID 67
ES Stop Performance Analyzer Data Collection Command Filename Parse or File Create Failed Event ID.

Type: ERROR

Cause:

[ES Stop Performance Analyzer Data Collection Command](#) failed either parsing the file name or during open/creation of the file. OVERLOADED
Definition at line 744 of file cfe_es_eventids.h.

12.86.2.40 CFE_ES_PERF_STARTCMD_EID #define CFE_ES_PERF_STARTCMD_EID 57
ES Start Performance Analyzer Data Collection Command Success Event ID.

Type: DEBUG

Cause:

[ES Start Performance Analyzer Data Collection Command](#) success.
Definition at line 637 of file cfe_es_eventids.h.

12.86.2.41 CFE_ES_PERF_STARTCMD_ERR_EID #define CFE_ES_PERF_STARTCMD_ERR_EID 58
ES Start Performance Analyzer Data Collection Command Idle Check Failed Event ID.

Type: ERROR

Cause:

[ES Start Performance Analyzer Data Collection Command](#) failed due to already being started.
Definition at line 649 of file cfe_es_eventids.h.

12.86.2.42 CFE_ES_PERF_STARTCMD_TRIG_ERR_EID #define CFE_ES_PERF_STARTCMD_TRIG_ERR_EID 59
ES Start Performance Analyzer Data Collection Command Invalid Trigger Event ID.

Type: ERROR

Cause:

[ES Start Performance Analyzer Data Collection Command](#) failed due to invalid trigger mode.
Definition at line 661 of file cfe_es_eventids.h.

12.86.2.43 CFE_ES_PERF_STOPCMD_EID #define CFE_ES_PERF_STOPCMD_EID 60
ES Stop Performance Analyzer Data Collection Command Request Success Event ID.

Type: DEBUG

Cause:

[ES Stop Performance Analyzer Data Collection Command](#) success. Note this event signifies the request to stop and write the performance data has been successfully submitted. The successful completion will generate a [CFE_ES_PERF_DATAWRITTEN_EID](#) event.

Definition at line 674 of file cfe_es_eventids.h.

12.86.2.44 CFE_ES_PERF_STOPCMD_ERR2_EID #define CFE_ES_PERF_STOPCMD_ERR2_EID 62
ES Stop Performance Analyzer Data Collection Command Request Idle Check Failed Event ID.

Type: ERROR

Cause:

[ES Stop Performance Analyzer Data Collection Command](#) failed due to a write already in progress.
Definition at line 686 of file cfe_es_eventids.h.

12.86.2.45 CFE_ES_PERF_TRIGMSKCMD_EID #define CFE_ES_PERF_TRIGMSKCMD_EID 65
ES Set Performance Analyzer Trigger Mask Command Success Event ID.

Type: DEBUG

Cause:

[ES Set Performance Analyzer Trigger Mask Command](#) success.
Definition at line 720 of file cfe_es_eventids.h.

12.86.2.46 CFE_ES_PERF_TRIGMSKERR_EID #define CFE_ES_PERF_TRIGMSKERR_EID 66
ES Set Performance Analyzer Trigger Mask Command Invalid Mask Event ID.

Type: ERROR

Cause:

[ES Set Performance Analyzer Trigger Mask Command](#) failed the mask range check.
Definition at line 732 of file cfe_es_eventids.h.

12.86.2.47 CFE_ES_RELOAD_APP_DBG_EID #define CFE_ES_RELOAD_APP_DBG_EID 11
ES Reload Application Command Request Success Event ID.

Type: DEBUG

Cause:

[ES Reload Application Command](#) success. Note this event signifies the request to reload the application has been successfully submitted. The successful completion will generate a [CFE_ES_RELOAD_APP_INF_EID](#) event.
Definition at line 147 of file cfe_es_eventids.h.

12.86.2.48 CFE_ES_RELOAD_APP_ERR1_EID #define CFE_ES_RELOAD_APP_ERR1_EID 42
ES Reload Application Command Request Failed Event ID.

Type: ERROR

Cause:

[ES Reload Application Command](#) request failed.
Definition at line 473 of file cfe_es_eventids.h.

12.86.2.49 CFE_ES_RELOAD_APP_ERR2_EID #define CFE_ES_RELOAD_APP_ERR2_EID 43
ES Reload Application Command Get AppID By Name Failed Event ID.

Type: ERROR

Cause:

[ES Reload Application Command](#) failed to get application ID from application name. The application will not be reloaded.
Definition at line 485 of file cfe_es_eventids.h.

12.86.2.50 CFE_ES_RELOAD_APP_ERR3_EID #define CFE_ES_RELOAD_APP_ERR3_EID 44
ES Reload Application Startup Failed Event ID.

Type: ERROR

Cause:

Request to reload an application failed during application startup. The application will not be reloaded.
Definition at line 497 of file cfe_es_eventids.h.

12.86.2.51 CFE_ES_RELOAD_APP_ERR4_EID #define CFE_ES_RELOAD_APP_ERR4_EID 45
ES Reload Application Cleanup Failed Event ID.

Type: ERROR

Cause:

Request to reload an application failed during application cleanup. The application will not be reloaded and will be in an undefined state along with its associated resources.
Definition at line 510 of file cfe_es_eventids.h.

12.86.2.52 CFE_ES_RELOAD_APP_INF_EID #define CFE_ES_RELOAD_APP_INF_EID 12
ES Reload Application Complete Event ID.

Type: INFORMATION

Cause:

Request to reload an application successfully completed.
Definition at line 158 of file cfe_es_eventids.h.

12.86.2.53 CFE_ES_RESET_INF_EID #define CFE_ES_RESET_INF_EID 4
ES Reset Counters Command Success Event ID.

Type: INFORMATION

Cause:

[ES Reset Counters Command](#) success.
Definition at line 75 of file cfe_es_eventids.h.

12.86.2.54 CFE_ES_RESET_PR_COUNT_EID #define CFE_ES_RESET_PR_COUNT_EID 72
ES Set Processor Reset Counter to Zero Command Success Event ID.

Type: INFORMATION

Cause:

[ES Set Processor Reset Counter to Zero Command](#) success.
Definition at line 800 of file cfe_es_eventids.h.

12.86.2.55 CFE_ES_RESTART_APP_DBG_EID #define CFE_ES_RESTART_APP_DBG_EID 9
ES Restart Application Command Request Success Event ID.

Type: DEBUG

Cause:

[ES Restart Application Command](#) success. Note this event signifies the request to restart the application has been successfully submitted. The successful completion will generate a [CFE_ES_RESTART_APP_INF_EID](#) event.
Definition at line 123 of file cfe_es_eventids.h.

12.86.2.56 CFE_ES_RESTART_APP_ERR1_EID #define CFE_ES_RESTART_APP_ERR1_EID 38
ES Restart Application Command Request Failed Event ID.

Type: ERROR

Cause:

[ES Restart Application Command](#) request failed.
Definition at line 425 of file cfe_es_eventids.h.

12.86.2.57 CFE_ES_RESTART_APP_ERR2_EID #define CFE_ES_RESTART_APP_ERR2_EID 39
ES Restart Application Command Get AppID By Name Failed Event ID.

Type: ERROR

Cause:

[ES Restart Application Command](#) failed to get application ID from application name. The application will not be restarted.
Definition at line 437 of file cfe_es_eventids.h.

12.86.2.58 CFE_ES_RESTART_APP_ERR3_EID #define CFE_ES_RESTART_APP_ERR3_EID 40
ES Restart Application Startup Failed Event ID.

Type: ERROR

Cause:

Request to restart an application failed during application startup. The application will not be restarted.
Definition at line 449 of file cfe_es_eventids.h.

12.86.2.59 CFE_ES_RESTART_APP_ERR4_EID #define CFE_ES_RESTART_APP_ERR4_EID 41
ES Restart Application Cleanup Failed Event ID.

Type: ERROR

Cause:

Request to restart an application failed during application cleanup. The application will not be restarted and will be in an undefined state along with its associated resources.
Definition at line 462 of file cfe_es_eventids.h.

12.86.2.60 CFE_ES_RESTART_APP_INF_EID #define CFE_ES_RESTART_APP_INF_EID 10
ES Restart Application Completed Event ID.

Type: INFORMATION

Cause:

Request to restart an application successfully completed.
Definition at line 134 of file cfe_es_eventids.h.

12.86.2.61 CFE_ES_SET_MAX_PR_COUNT_EID #define CFE_ES_SET_MAX_PR_COUNT_EID 73
ES Set Maximum Processor Reset Limit Command Success Event ID.

Type: INFORMATION

Cause:

[ES Set Maximum Processor Reset Limit Command](#) success.
Definition at line 811 of file cfe_es_eventids.h.

12.86.2.62 CFE_ES_START_ERR_EID #define CFE_ES_START_ERR_EID 26
ES Start Application Command Application Creation Failed Event ID.

Type: ERROR

Cause:

[ES Start Application Command](#) failure during application creation after successful parameter validation.
Definition at line 306 of file cfe_es_eventids.h.

12.86.2.63 CFE_ES_START_EXC_ACTION_ERR_EID #define CFE_ES_START_EXC_ACTION_ERR_EID 32
ES Start Application Command Exception Action Invalid Event ID.

Type: ERROR

Cause:

[ES Start Application Command](#) failure due to invalid application exception action.
Definition at line 367 of file cfe_es_eventids.h.

12.86.2.64 CFE_ES_START_INF_EID #define CFE_ES_START_INF_EID 6
ES Start Application Command Success Event ID.

Type: INFORMATION

Cause:

[ES Start Application Command](#) success.
Definition at line 86 of file cfe_es_eventids.h.

12.86.2.65 CFE_ES_START_INVALID_ENTRY_POINT_ERR_EID #define CFE_ES_START_INVALID_ENTRY_POINT_ERR_EID 28
ES Start Application Command Entry Point NULL Event ID.

Type: ERROR

Cause:

[ES Start Application Command](#) failure due to a NULL Application Entry Point.
Definition at line 330 of file cfe_es_eventids.h.

12.86.2.66 CFE_ES_START_INVALID_FILENAME_ERR_EID #define CFE_ES_START_INVALID_FILENAME_ERR_EID 27

ES Start Application Command Invalid Filename Event ID.

Type: ERROR

Cause:

[ES Start Application Command](#) failure due to invalid filename.

Definition at line 318 of file cfe_es_eventids.h.

12.86.2.67 CFE_ES_START_NULL_APP_NAME_ERR_EID #define CFE_ES_START_NULL_APP_NAME_ERR_EID 29

ES Start Application Command App Name NULL Event ID.

Type: ERROR

Cause:

[ES Start Application Command](#) failure due to NULL Application Name.

Definition at line 342 of file cfe_es_eventids.h.

12.86.2.68 CFE_ES_START_PRIORITY_ERR_EID #define CFE_ES_START_PRIORITY_ERR_EID 31

ES Start Application Command Priority Too Large Event ID.

Type: ERROR

Cause:

[ES Start Application Command](#) failure due to a requested application priority greater than the maximum priority allowed for tasks as defined by the OS Abstraction Layer (OS_MAX_PRIORITY).

Definition at line 355 of file cfe_es_eventids.h.

12.86.2.69 CFE_ES_STOP_DBG_EID #define CFE_ES_STOP_DBG_EID 7

ES Stop Application Command Request Success Event ID.

Type: DEBUG

Cause:

[ES Stop Application Command](#) success. Note this event signifies the request to delete the application has been successfully submitted. The successful completion will generate a [CFE_ES_STOP_INF_EID](#) event.

Definition at line 99 of file cfe_es_eventids.h.

12.86.2.70 CFE_ES_STOP_ERR1_EID #define CFE_ES_STOP_ERR1_EID 35
ES Stop Application Command Request Failed Event ID.

Type: ERROR

Cause:

[ES Stop Application Command](#) request failed.
Definition at line 390 of file cfe_es_eventids.h.

12.86.2.71 CFE_ES_STOP_ERR2_EID #define CFE_ES_STOP_ERR2_EID 36
ES Stop Application Command Get AppID By Name Failed Event ID.

Type: ERROR

Cause:

[ES Stop Application Command](#) failed to get application ID from application name. The application will not be deleted.
Definition at line 402 of file cfe_es_eventids.h.

12.86.2.72 CFE_ES_STOP_ERR3_EID #define CFE_ES_STOP_ERR3_EID 37
ES Stop Application Cleanup Failed Event ID.

Type: ERROR

Cause:

Request to delete an application failed during application cleanup. Application and related resources will be in undefined state.
Definition at line 414 of file cfe_es_eventids.h.

12.86.2.73 CFE_ES_STOP_INF_EID #define CFE_ES_STOP_INF_EID 8
ES Stop Application Completed Event ID.

Type: INFORMATION

Cause:

Request to delete an application successfully completed.
Definition at line 110 of file cfe_es_eventids.h.

12.86.2.74 CFE_ES_SYSLOG1_INF_EID #define CFE_ES_SYSLOG1_INF_EID 17
ES Clear System Log Command Success Event ID.

Type: INFORMATION

Cause:

[ES Clear System Log Command](#) success.
Definition at line 217 of file cfe_es_eventids.h.

12.86.2.75 CFE_ES_SYSLOG2_EID #define CFE_ES_SYSLOG2_EID 18
ES Write System Log Command Success Event ID.

Type: DEBUG

Cause:

[ES Write System Log Command](#) success.
Definition at line 228 of file cfe_es_eventids.h.

12.86.2.76 CFE_ES_SYSLOG2_ERR_EID #define CFE_ES_SYSLOG2_ERR_EID 55
ES Write System Log Command Filename Parse or File Creation Failed Event ID.

Type: ERROR

Cause:

[ES Write System Log Command](#) failed parsing file name or creating the file. OVERLOADED
Definition at line 614 of file cfe_es_eventids.h.

12.86.2.77 CFE_ES_SYSLOGMODE_EID #define CFE_ES_SYSLOGMODE_EID 70
ES Set System Log Overwrite Mode Command Success Event ID.

Type: DEBUG

Cause:

[ES Set System Log Overwrite Mode Command](#) success.
Definition at line 777 of file cfe_es_eventids.h.

12.86.2.78 CFE_ES_TASKINFO_EID #define CFE_ES_TASKINFO_EID 87
ES Write All Task Data Command Success Event ID.

Type: DEBUG

Cause:

[ES Write All Task Data Command](#) success.
Definition at line 964 of file cfe_es_eventids.h.

12.86.2.79 CFE_ES_TASKINFO_OSCREATE_ERR_EID #define CFE_ES_TASKINFO_OSCREATE_ERR_EID 88
ES Write All Task Data Command Filename Parse or File Create Failed Event ID.

Type: ERROR

Cause:

[ES Write All Task Data Command](#) failed to parse the filename or open/create the file.
Definition at line 976 of file cfe_es_eventids.h.

12.86.2.80 CFE_ES_TASKINFO_WR_ERR_EID #define CFE_ES_TASKINFO_WR_ERR_EID 90
ES Write All Task Data Command Write Data Failed Event ID.

Type: ERROR

Cause:

[ES Write All Task Data Command](#) failed to write task data to file.
Definition at line 1000 of file cfe_es_eventids.h.

12.86.2.81 CFE_ES_TASKINFO_WRHDR_ERR_EID #define CFE_ES_TASKINFO_WRHDR_ERR_EID 89
ES Write All Task Data Command Write Header Failed Event ID.

Type: ERROR

Cause:

[ES Write All Task Data Command](#) failed to write file header.
Definition at line 988 of file cfe_es_eventids.h.

12.86.2.82 CFE_ES_TASKWR_ERR_EID #define CFE_ES_TASKWR_ERR_EID 53
ES Query All Application Data Command File Write App Data Failed Event ID.

Type: ERROR

Cause:

[ES Query All Application Data Command](#) failed to write file application data.
Definition at line 602 of file cfe_es_eventids.h.

12.86.2.83 CFE_ES_TLM_POOL_STATS_INFO_EID #define CFE_ES_TLM_POOL_STATS_INFO_EID 81
ES Telemeter Memory Statistics Command Success Event ID.

Type: DEBUG

Cause:

[ES Telemeter Memory Statistics Command](#) success.
Definition at line 894 of file cfe_es_eventids.h.

12.86.2.84 CFE_ES_VERSION_INF_EID #define CFE_ES_VERSION_INF_EID 91
cFS Version Information Event ID

Type: INFORMATION

Cause:

ES Initialization complete and response to [ES NO-OP Command](#).
A separate version info event will be generated for every module which is statically linked into the CFE core executable (e.g. OSAL, PSP, MSG, SBR, etc).
The version information reported in this event is derived from the source revision control system at build time, as opposed to manually-assigned semantic version numbers. It is intended to uniquely identify the actual source code that is currently running, to the extent this is possible.
The Mission version information also identifies the build configuration name, if available.
Definition at line 1021 of file cfe_es_eventids.h.

12.86.2.85 CFE_ES_WRHDR_ERR_EID #define CFE_ES_WRHDR_ERR_EID 52
ES Query All Application Data Command File Write Header Failed Event ID.

Type: ERROR

Cause:

[ES Query All Application Data Command](#) failed to write file header.
Definition at line 591 of file cfe_es_eventids.h.

12.86.2.86 CFE_ES_WRITE_CFE_HDR_ERR_EID #define CFE_ES_WRITE_CFE_HDR_ERR_EID 85
ES Write Critical Data Store Registry Command Header Write Failed Event ID.

Type: ERROR

Cause:

ES Write Critical Data Store Registry Command failed to write header.
Definition at line 941 of file cfe_es_eventids.h.

12.87 cfe/modules/evs/config/default_cfe_evs_extern_typedefs.h File Reference

```
#include "common_types.h"
```

Typedefs

- **typedef uint8 CFE_EVS_MsgFormat_Enum_t**
Identifies format of log messages.
- **typedef uint8 CFE_EVS_LogMode_Enum_t**
Identifies handling of log messages after storage is filled.
- **typedef uint16 CFE_EVS_EventType_Enum_t**
Identifies type of event message.
- **typedef uint8 CFE_EVS_EventFilter_Enum_t**
Identifies event filter schemes.
- **typedef uint8 CFE_EVS_EventOutput_Enum_t**
Identifies event output port.

Enumerations

- enum **CFE_EVS_MsgFormat** { **CFE_EVS_MsgFormat_SHORT** = 0 , **CFE_EVS_MsgFormat_LONG** = 1 }
Label definitions associated with CFE_EVS_MsgFormat_Enum_t.
- enum **CFE_EVS_LogMode** { **CFE_EVS_LogMode_OVERWRITE** = 0 , **CFE_EVS_LogMode_DISCARD** = 1 }
Label definitions associated with CFE_EVS_LogMode_Enum_t.
- enum **CFE_EVS_EventType** { **CFE_EVS_EventType_DEBUG** = 1 , **CFE_EVS_EventType_INFORMATION** = 2 ,
CFE_EVS_EventType_ERROR = 3 , **CFE_EVS_EventType_CRITICAL** = 4 }
Label definitions associated with CFE_EVS_EventType_Enum_t.
- enum **CFE_EVS_EventFilter** { **CFE_EVS_EventFilter_BINARY** = 0 }
Label definitions associated with CFE_EVS_EventFilter_Enum_t.
- enum **CFE_EVS_EventOutput** { **CFE_EVS_EventOutput_PORT1** = 1 , **CFE_EVS_EventOutput_PORT2** = 2 ,
CFE_EVS_EventOutput_PORT3 = 3 , **CFE_EVS_EventOutput_PORT4** = 4 }
Label definitions associated with CFE_EVS_EventOutput_Enum_t.

12.87.1 Detailed Description

Declarations and prototypes for cfe_evs_extern_typedefs module

12.87.2 Typedef Documentation

12.87.2.1 CFE_EVS_EventFilter_Enum_t `typedef uint8 CFE_EVS_EventFilter_Enum_t`
Identifies event filter schemes.

See also

enum [CFE_EVS_EventFilter](#)

Definition at line 125 of file default_cfe_evs_extern_typedefs.h.

12.87.2.2 CFE_EVS_EventOutput_Enum_t `typedef uint8 CFE_EVS_EventOutput_Enum_t`
Identifies event output port.

See also

enum [CFE_EVS_EventOutput](#)

Definition at line 158 of file default_cfe_evs_extern_typedefs.h.

12.87.2.3 CFE_EVS_EventType_Enum_t `typedef uint16 CFE_EVS_EventType_Enum_t`
Identifies type of event message.

See also

enum [CFE_EVS_EventType](#)

Definition at line 107 of file default_cfe_evs_extern_typedefs.h.

12.87.2.4 CFE_EVS_LogMode_Enum_t `typedef uint8 CFE_EVS_LogMode_Enum_t`
Identifies handling of log messages after storage is filled.

See also

enum [CFE_EVS_LogMode](#)

Definition at line 74 of file default_cfe_evs_extern_typedefs.h.

12.87.2.5 CFE_EVS_MsgFormat_Enum_t `typedef uint8 CFE_EVS_MsgFormat_Enum_t`
Identifies format of log messages.

See also

enum [CFE_EVS_MsgFormat](#)

Definition at line 51 of file default_cfe_evs_extern_typedefs.h.

12.87.3 Enumeration Type Documentation

12.87.3.1 CFE_EVS_EventFilter `enum CFE_EVS_EventFilter`
Label definitions associated with CFE_EVS_EventFilter_Enum_t.

Enumerator

<code>CFE_EVS_EventFilter_BINARY</code>	Binary event filter.
---	----------------------

Definition at line 112 of file default_cfe_evs_extern_typedefs.h.

12.87.3.2 CFE_EVS_EventOutput enum [CFE_EVS_EventOutput](#)

Label definitions associated with CFE_EVS_EventOutput_Enum_t.

Enumerator

CFE_EVS_EventOutput_PORT1	Output Port 1.
CFE_EVS_EventOutput_PORT2	Output Port 2.
CFE_EVS_EventOutput_PORT3	Output Port 3.
CFE_EVS_EventOutput_PORT4	Output Port 4.

Definition at line 130 of file default_cfe_evs_extern_typedefs.h.

12.87.3.3 CFE_EVS_EventType enum [CFE_EVS_EventType](#)

Label definitions associated with CFE_EVS_EventType_Enum_t.

Enumerator

CFE_EVS_EventType_DEBUG	Events that are intended only for debugging, not nominal operations.
CFE_EVS_EventType_INFORMATION	Events that identify a state change or action that is not an error.
CFE_EVS_EventType_ERROR	Events that identify an error but are not catastrophic (e.g. - bad command).
CFE_EVS_EventType_CRITICAL	Events that identify errors that are unrecoverable autonomously.

Definition at line 79 of file default_cfe_evs_extern_typedefs.h.

12.87.3.4 CFE_EVS_LogMode enum [CFE_EVS_LogMode](#)

Label definitions associated with CFE_EVS_LogMode_Enum_t.

Enumerator

CFE_EVS_LogMode_OVERWRITE	Overwrite Log Mode.
CFE_EVS_LogMode_DISCARD	Discard Log Mode.

Definition at line 56 of file default_cfe_evs_extern_typedefs.h.

12.87.3.5 CFE_EVS_MsgFormat enum [CFE_EVS_MsgFormat](#)

Label definitions associated with CFE_EVS_MsgFormat_Enum_t.

Enumerator

CFE_EVS_MsgFormat_SHORT	Short Format Messages.
CFE_EVS_MsgFormat_LONG	Long Format Messages.

Definition at line 33 of file default_cfe_evs_extern_typedefs.h.

12.88 cfe/modules/evs/config/default_cfe_evs_fcncodes.h File Reference

Macros

Event Services Command Codes

- #define CFE_EVS_NOOP_CC 0
- #define CFE_EVS_RESET_COUNTERS_CC 1
- #define CFE_EVS_ENABLE_EVENT_TYPE_CC 2
- #define CFE_EVS_DISABLE_EVENT_TYPE_CC 3
- #define CFE_EVS_SET_EVENT_FORMAT_MODE_CC 4
- #define CFE_EVS_ENABLE_APP_EVENT_TYPE_CC 5
- #define CFE_EVS_DISABLE_APP_EVENT_TYPE_CC 6
- #define CFE_EVS_ENABLE_APP_EVENTS_CC 7
- #define CFE_EVS_DISABLE_APP_EVENTS_CC 8
- #define CFE_EVS_RESET_APP_COUNTER_CC 9
- #define CFE_EVS_SET_FILTER_CC 10
- #define CFE_EVS_ENABLE_PORTS_CC 11
- #define CFE_EVS_DISABLE_PORTS_CC 12
- #define CFE_EVS_RESET_FILTER_CC 13
- #define CFE_EVS_RESET_ALL_FILTERS_CC 14
- #define CFE_EVS_ADD_EVENT_FILTER_CC 15
- #define CFE_EVS_DELETE_EVENT_FILTER_CC 16
- #define CFE_EVS_WRITE_APP_DATA_FILE_CC 17
- #define CFE_EVS_WRITE_LOG_DATA_FILE_CC 18
- #define CFE_EVS_SET_LOG_MODE_CC 19
- #define CFE_EVS_CLEAR_LOG_CC 20

12.88.1 Detailed Description

Specification for the CFE Event Services (CFE_EVS) command function codes

Note

This file should be strictly limited to the command/function code (CC) macro definitions. Other definitions such as enums, typedefs, or other macros should be placed in the msgdefs.h or msg.h files.

12.88.2 Macro Definition Documentation

12.88.2.1 CFE_EVS_ADD_EVENT_FILTER_CC #define CFE_EVS_ADD_EVENT_FILTER_CC 15

Name Add Application Event Filter

Description

This command adds the given filter for the given application identifier and event identifier. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) \$sc_\$cpu_EVS_AddEvtFltr

Command Structure

[CFE_EVS_AddEventFilterCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_EVS_CMDPC` - command execution counter will increment
- The generation of `CFE_EVS_ADDFILTER_EID` debug event message

Error Conditions

This command may fail for the following reason(s):

- Application name is not valid or not registered with event services
- Specified event ID is already added to the application event filter
- Maximum number of event IDs already added to filter

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_EVS_CMDEC` - command error counter will increment
- An Error specific event message

Criticality

None.

See also

`CFE_EVS_SET_FILTER_CC`, `CFE_EVS_RESET_FILTER_CC`, `CFE_EVS_RESET_ALL_FILTERS_CC`,
`CFE_EVS_DELETE_EVENT_FILTER_CC`

Definition at line 693 of file default_cfe_evs_fcncodes.h.

12.88.2.2 CFE_EVS_CLEAR_LOG_CC #define CFE_EVS_CLEAR_LOG_CC 20

Name

Clear Event Log

Description

This command clears the contents of the local event log.

Command Mnemonic(s)

`$sc_$cpu_EVS_ClrLog`

Command Structure

`CFE_EVS_ClearLogCmd_t`

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_EVS_CMDPC` - command execution counter will increment
- `$sc_$cpu_EVS_LOGFULL` - The LogFullFlag in the Housekeeping telemetry will be cleared
- `$sc_$cpu_EVS_LOGOVERFLOWC` - The LogOverflowCounter in the Housekeeping telemetry will be reset to 0

Error Conditions

There are no error conditions for this command. If the Event Services receives the command, the log is cleared.

Criticality

Clearing the local event log is not particularly hazardous, as the result may be making available space to record valuable event data. However, inappropriately clearing the local event log could result in a loss of critical information. Note: the event log is a back-up log to the on-board recorder.

See also

[CFE_EVS_WRITE_LOG_DATA_FILE_CC](#), [CFE_EVS_SET_LOG_MODE_CC](#)

Definition at line 873 of file default_cfe_evs_fcncodes.h.

12.88.2.3 CFE_EVS_DELETE_EVENT_FILTER_CC #define CFE_EVS_DELETE_EVENT_FILTER_CC 16

Name Delete Application Event Filter

Description

This command removes the given filter for the given application identifier and event identifier. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) \$sc_\$cpu_EVS_DelEvtFltr

Command Structure

[CFE_EVS_DeleteEventFilterCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_EVS_CMDPC** - command execution counter will increment
- The generation of [CFE_EVS_DELFILTER_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- Application name is not valid or not registered with event services
- Specified event ID is not found in the application event filter

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_EVS_CMDEC** - command error counter will increment
- An Error specific event message

Criticality

None.

See also

[CFE_EVS_SET_FILTER_CC](#), [CFE_EVS_RESET_FILTER_CC](#), [CFE_EVS_RESET_ALL_FILTERS_CC](#),
[CFE_EVS_ADD_EVENT_FILTER_CC](#)

Definition at line 728 of file default_cfe_evs_fcncodes.h.

12.88.2.4 CFE_EVS_DISABLE_APP_EVENT_TYPE_CC #define CFE_EVS_DISABLE_APP_EVENT_TYPE_CC 6

Name Disable Application Event Type

Description

This command disables the command specified event type for the command specified application, preventing the application from sending event messages of the command specified event type through Event Service. An Event Type is defined to be a classification of an Event Message such as debug, informational, critical, and error. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) \$sc_\$cpu_EVS_DisAppEvtType, \$sc_\$cpu_EVS_DisAppEvtTypeMask

Command Structure

CFE_EVS_DisableAppEventTypeCmd_t The following bit positions apply to structure member named 'BitMask'. Bit 0 - Debug Bit 1 - Informational Bit 2 - Error Bit 3 - Critical A one in a bit position means the event type will be disabled (or filtered) for the specified application. A zero in a bit position means the filtering state is unchanged for the specified application.

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_EVS_CMDPC** - command execution counter will increment
- The generation of **CFE_EVS_DISAPPENTTYPE_EID** debug event message
- The clearing of the Event Type Active Flag in The Event Type Active Flag in EVS App Data File

Error Conditions

This command may fail for the following reason(s):

- BitMask field invalid - mask cannot be zero, and only bits 0-3 may be set
- Application name is not valid or not registered with event services

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_EVS_CMDEC** - command error counter will increment
- An Error specific event message

Criticality

Disabling an application's event type is not particularly hazardous, as the result may be shutting off unnecessary event messages and possible event flooding of the system. However, inappropriately disabling an application's event type could result in a loss of critical information and missed behavior for the ground system.

See also

[CFE_EVS_ENABLE_EVENT_TYPE_CC](#), [CFE_EVS_DISABLE_EVENT_TYPE_CC](#), [CFE_EVS_ENABLE_APP_EVENT_TYPE_CC](#),
[CFE_EVS_ENABLE_APP_EVENTS_CC](#), [CFE_EVS_DISABLE_APP_EVENTS_CC](#)

Definition at line 353 of file default_cfe_evs_fcncodes.h.

12.88.2.5 CFE_EVS_DISABLE_APP_EVENTS_CC #define CFE_EVS_DISABLE_APP_EVENTS_CC 8

Name Disable Event Services for an Application

Description

This command disables the command specified application from sending events through Event Service. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) \$sc_\$cpu_EVS_DisAppEvGen

Command Structure

[CFE_EVS_DisableAppEventsCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDPC](#) - command execution counter will increment
- The generation of [CFE_EVS_DISAPPEVT_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- Application name is not valid or not registered with event services

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDEC](#) - command error counter will increment
- An Error specific event message

Criticality

Disabling an application's events is not particularly hazardous, as the result may be shutting off unnecessary event messages and possible event flooding of the system. However, inappropriately disabling an application's events could result in a loss of critical information and missed behavior for the ground system.

See also

[CFE_EVS_ENABLE_EVENT_TYPE_CC](#), [CFE_EVS_DISABLE_EVENT_TYPE_CC](#), [CFE_EVS_ENABLE_APP_EVENT_TYPE_CC](#),
[CFE_EVS_DISABLE_APP_EVENT_TYPE_CC](#), [CFE_EVS_ENABLE_APP_EVENTS_CC](#)

Definition at line 431 of file default_cfe_evs_fcncodes.h.

12.88.2.6 CFE_EVS_DISABLE_EVENT_TYPE_CC #define CFE_EVS_DISABLE_EVENT_TYPE_CC 3

Name Disable Event Type

Description

This command disables the command specified Event Type preventing event messages of this type to be sent through Event Service. An Event Type is defined to be a classification of an Event Message such as debug, informational, error and critical. This command is a global disable of a particular event type, it applies to all applications.

Command Mnemonic(s) \$sc_\$cpu_EVS_DisEventType, \$sc_\$cpu_EVS_DisEventTypeMask

Command Structure

CFE_EVS_DisableEventTypeCmd_t The following bit positions apply to structure member named 'BitMask'. Bit 0 - Debug Bit 1 - Informational Bit 2 - Error Bit 3 - Critical A one in a bit position means the event type will be disabled (or filtered). A zero in a bit position means the filtering state is unchanged.

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_EVS_CMDPC** - command execution counter will increment
- The generation of **CFE_EVS_DISEVTTYPE_EID** debug message

Error Conditions

This command may fail for the following reason(s):

- BitMask field invalid - mask cannot be zero, and only bits 0-3 may be set

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_EVS_CMDEC** - command error counter will increment
- An Error specific event message

Criticality

Disabling an event type is not particularly hazardous, as the result may be shutting off unnecessary event messages and possible event flooding of the system. However, inappropriately disabling an event type could result in a loss of critical information and missed behavior for the ground system.

See also

[CFE_EVS_ENABLE_EVENT_TYPE_CC](#), [CFE_EVS_ENABLE_APP_EVENT_TYPE_CC](#), [CFE_EVS_DISABLE_APP_EVENT_TYPE_CC](#),
[CFE_EVS_ENABLE_APP_EVENTS_CC](#), [CFE_EVS_DISABLE_APP_EVENTS_CC](#)

Definition at line 201 of file default_cfe_evs_fcncodes.h.

12.88.2.7 CFE_EVS_DISABLE_PORTS_CC #define CFE_EVS_DISABLE_PORTS_CC 12

Name Disable Event Services Output Ports

Description

This command disables the specified port from outputting event messages.

Command Mnemonic(s) \$sc_\$cpu_EVS_DisPort, \$sc_\$cpu_EVS_DisPortMask

Command Structure

[CFE_EVS_DisablePortsCmd_t](#) The following bit positions apply to structure member named 'BitMask'. Bit 0 - Port 1 Bit 1 - Port 2 Bit 2 - Port 3 Bit 3 - Port 4 A one in a bit position means the port will be disabled. A zero in a bit position means the port state is unchanged.

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_EVS_CMDPC` - command execution counter will increment
- The generation of [CFE_EVS_DISPORT_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- BitMask field invalid - mask cannot be zero, and only bits 0-3 may be set

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_EVS_CMDEC` - command error counter will increment
- An Error specific event message

Criticality

None.

See also

[CFE_EVS_ENABLE_PORTS_CC](#)

Definition at line 587 of file default_cfe_evs_fcncodes.h.

12.88.2.8 CFE_EVS_ENABLE_APP_EVENT_TYPE_CC #define CFE_EVS_ENABLE_APP_EVENT_TYPE_CC 5

Name Enable Application Event Type

Description

This command enables the command specified event type for the command specified application, allowing the application to send event messages of the command specified event type through Event Service. An Event Type is defined to be a classification of an Event Message such as debug, informational, critical, and error. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) `$sc_$cpu_EVS_EnaAppEvtType`, `$sc_$cpu_EVS_EnaAppEvtTypeMask`

Command Structure

[CFE_EVS_EnableAppEventTypeCmd_t](#) The following bit positions apply to structure member named 'BitMask'. Bit 0 - Debug Bit 1 - Informational Bit 2 - Error Bit 3 - Critical A one in a bit position means the event type will be enabled (or unfiltered) for the specified application. A zero in a bit position means the filtering state is unchanged for the specified application.

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_EVS_CMDPC` - command execution counter will increment
- The generation of `CFE_EVS_ENAAPPEVTTYPE_EID` debug event message

Error Conditions

This command may fail for the following reason(s):

- BitMask field invalid - mask cannot be zero, and only bits 0-3 may be set
- Application name is not valid or not registered with event services

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_EVS_CMDEC` - command error counter will increment
- An Error specific event message

Criticality

Enabling an application event type is not particularly hazardous, as the result may be turning on necessary event messages and communication to the ground system. However, inappropriately enabling an application's event type could result in flooding of the ground system.

See also

`CFE_EVS_ENABLE_EVENT_TYPE_CC`, `CFE_EVS_DISABLE_EVENT_TYPE_CC`, `CFE_EVS_DISABLE_APP_EVENT_TYPE_CC`,
`CFE_EVS_ENABLE_APP_EVENTS_CC`, `CFE_EVS_DISABLE_APP_EVENTS_CC`

Definition at line 300 of file default_cfe_evs_fcncodes.h.

12.88.2.9 CFE_EVS_ENABLE_APP_EVENTS_CC #define CFE_EVS_ENABLE_APP_EVENTS_CC 7

Name Enable Event Services for an Application

Description

This command enables the command specified application to send events through the Event Service. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) \$sc_\$cpu_EVS_EnaAppEvGen

Command Structure

`CFE_EVS_EnableAppEventsCmd_t`

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_EVS_CMDPC` - command execution counter will increment
- The generation of `CFE_EVS_ENAAPPEVT_EID` debug event message
- The setting of the Active Flag in The Active Flag in EVS App Data File

Error Conditions

This command may fail for the following reason(s):

- Application name is not valid or not registered with event services

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_EVS_CMDEC** - command error counter will increment
- An Error specific event message

Criticality

Enabling an application events is not particularly hazardous, as the result may be turning on necessary event messages and communication to the ground system. However, inappropriately enabling an application's events could result in flooding of the ground system.

See also

[CFE_EVS_ENABLE_EVENT_TYPE_CC](#), [CFE_EVS_DISABLE_EVENT_TYPE_CC](#), [CFE_EVS_ENABLE_APP_EVENT_TYPE_CC](#),
[CFE_EVS_DISABLE_APP_EVENT_TYPE_CC](#), [CFE_EVS_DISABLE_APP_EVENTS_CC](#)

Definition at line 392 of file default_cfe_evs_fcncodes.h.

12.88.2.10 CFE_EVS_ENABLE_EVENT_TYPE_CC #define CFE_EVS_ENABLE_EVENT_TYPE_CC 2

Name Enable Event Type

Description

This command enables the command specified Event Type allowing event messages of this type to be sent through Event Service. An Event Type is defined to be a classification of an Event Message such as debug, informational, error and critical. This command is a global enable of a particular event type, it applies to all applications.

Command Mnemonic(s) \$sc_\$cpu_EVS_EnaEventType, \$sc_\$cpu_EVS_EnaEventTypeMask

Command Structure

[CFE_EVS_EnableEventTypeCmd_t](#) The following bit positions apply to structure member named 'BitMask'. Bit 0 - Debug Bit 1 - Informational Bit 2 - Error Bit 3 - Critical A one in a bit position means the event type will be enabled (or unfiltered). A zero in a bit position means the filtering state is unchanged.

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_EVS_CMDPC** - command execution counter will increment
- The generation of [CFE_EVS_ENAEVTTYPE_EID](#) debug message

Error Conditions

This command may fail for the following reason(s):

- BitMask field invalid - mask cannot be zero, and only bits 0-3 may be set

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_EVS_CMDEC` - command error counter will increment
- An Error specific event message

Criticality

Enabling an event type is not particularly hazardous, as the result may be turning on necessary event messages and communication to the ground system. However, inappropriately enabling an event type could result in flooding of the system.

See also

[CFE_EVS_DISABLE_EVENT_TYPE_CC](#), [CFE_EVS_ENABLE_APP_EVENT_TYPE_CC](#), [CFE_EVS_DISABLE_APP_EVENT_TYPE_CC](#), [CFE_EVS_ENABLE_APP_EVENTS_CC](#), [CFE_EVS_DISABLE_APP_EVENTS_CC](#)

Definition at line 152 of file default_cfe_evs_fcncodes.h.

12.88.2.11 CFE_EVS_ENABLE_PORTS_CC #define CFE_EVS_ENABLE_PORTS_CC 11

Name Enable Event Services Output Ports

Description

This command enables the command specified port to output event messages

Command Mnemonic(s) `$sc_$cpu_EVS_EnaPort`, `$sc_$cpu_EVS_EnaPortMask`

Command Structure

[CFE_EVS_EnablePortsCmd_t](#) The following bit positions apply to structure member named 'BitMask'. Bit 0 - Port 1 Bit 1 - Port 2 Bit 2 - Port 3 Bit 3 - Port 4 A one in a bit position means the port will be enabled. A zero in a bit position means the port state is unchanged.

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_EVS_CMDPC` - command execution counter will increment
- The generation of [CFE_EVS_ENAPORT_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- BitMask field invalid - mask cannot be zero, and only bits 0-3 may be set

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_EVS_CMDEC` - command error counter will increment
- An Error specific event message

Criticality

None.

See also

[CFE_EVS_DISABLE_PORTS_CC](#)

Definition at line 548 of file default_cfe_evs_fcncodes.h.

12.88.2.12 CFE_EVS_NOOP_CC #define CFE_EVS_NOOP_CC 0

Name Event Services No-Op

Description

This command performs no other function than to increment the command execution counter. The command may be used to verify general aliveness of the Event Services task.

Command Mnemonic(s) \$sc_\$cpu_EVS_NOOP

Command Structure

[CFE_EVS_NoopCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDPC](#) - command execution counter will increment
- The [CFE_EVS_NOOP_EID](#) informational event message will be generated

Error Conditions

There are no error conditions for this command. If the Event Services receives the command, the event is sent (although it may be filtered by EVS itself) and the counter is incremented unconditionally.

Criticality

None

See also

Definition at line 65 of file default_cfe_evs_fcncodes.h.

12.88.2.13 CFE_EVS_RESET_ALL_FILTERS_CC #define CFE_EVS_RESET_ALL_FILTERS_CC 14

Name Reset All Event Filters for an Application

Description

This command resets all of the command specified applications event filters. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) \$sc_\$cpu_EVS_RstAllFltrs

Command Structure

[CFE_EVS_ResetAllFiltersCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDPC](#) - command execution counter will increment
- The generation of [CFE_EVS_RSTALLFILTER_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- Application name is not valid or not registered with event services

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDEC](#) - command error counter will increment
- An Error specific event message

Criticality

None.

See also

[CFE_EVS_SET_FILTER_CC](#), [CFE_EVS_RESET_FILTER_CC](#), [CFE_EVS_ADD_EVENT_FILTER_CC](#), [CFE_EVS_DELETE_EVENT_FILTER_CC](#)

Definition at line 657 of file default_cfe_evs_fcncodes.h.

12.88.2.14 CFE_EVS_RESET_APP_COUNTER_CC #define CFE_EVS_RESET_APP_COUNTER_CC 9

Name Reset Application Event Counters

Description

This command sets the command specified application's event counter to zero. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) \$sc_\$cpu_EVS_RstAppCtrs

Command Structure

[CFE_EVS_ResetAppCounterCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_EVS_CMDPC** - command execution counter will increment
- The generation of [CFE_EVS_RSTEVTCNT_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- Application name is not valid or not registered with event services

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_EVS_CMDEC** - command error counter will increment
- An Error specific event message

Criticality

This command is not inherently dangerous. However, it is possible for ground systems and on-board safing procedures to be designed such that they react to changes in the counter value that is reset by this command.

See also

[CFE_EVS_RESET_COUNTERS_CC](#)

Definition at line 467 of file default_cfe_evs_fncodes.h.

12.88.2.15 CFE_EVS_RESET_COUNTERS_CC #define CFE_EVS_RESET_COUNTERS_CC 1

Name

Event Services Reset Counters

Description

This command resets the following counters within the Event Services housekeeping telemetry:

- Command Execution Counter (\$sc_\$cpu_EVS_CMDPC)
- Command Error Counter (\$sc_\$cpu_EVS_CMDEC)

Command Mnemonic(s)

\$sc_\$cpu_EVS_ResetCtrs

Command Structure

[CFE_EVS_ResetCountersCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_EVS_CMDPC** - command execution counter will be reset to 0
- **\$sc_\$cpu_EVS_CMDEC** - command error counter will be reset to 0
- The [CFE_EVS_RSTCNT_EID](#) debug event message will be generated

Error Conditions

There are no error conditions for this command. If the Event Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

This command is not inherently dangerous. However, it is possible for ground systems and on-board safing procedures to be designed such that they react to changes in the counter values that are reset by this command.

See also

[CFE_EVS_RESET_APP_COUNTER_CC](#)

Definition at line 104 of file default_cfe_evs_fcncodes.h.

12.88.2.16 CFE_EVS_RESET_FILTER_CC #define CFE_EVS_RESET_FILTER_CC 13

Name Reset an Event Filter for an Application

Description

This command resets the command specified application's event filter for the command specified event ID. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) \$sc_\$cpu_EVS_RstBinFltrCtr

Command Structure

[CFE_EVS_ResetFilterCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_EVS_CMDPC** - command execution counter will increment
- The generation of [CFE_EVS_RSTFILTER_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- Application name is not valid or not registered with event services
- Specified event ID is not found in the application event filter

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_EVS_CMDEC** - command error counter will increment
- An Error specific event message

Criticality

None.

See also

[CFE_EVS_SET_FILTER_CC](#), [CFE_EVS_RESET_ALL_FILTERS_CC](#), [CFE_EVS_ADD_EVENT_FILTER_CC](#),
[CFE_EVS_DELETE_EVENT_FILTER_CC](#)

Definition at line 623 of file default_cfe_evs_fcncodes.h.

12.88.2.17 CFE_EVS_SET_EVENT_FORMAT_MODE_CC #define CFE_EVS_SET_EVENT_FORMAT_MODE_CC 4

Name Set Event Format Mode

Description

This command sets the event format mode to the command specified value. The event format mode may be either short or long. A short event format detaches the Event Data from the event message and only includes the following information in the event packet: Processor ID, Application ID, Event ID, and Event Type. Refer to section 5.3.3.4 for a description of the Event Service event packet contents. Event Data is defined to be data describing an Event that is supplied to the cFE Event Service. ASCII text strings are used as the primary format for Event Data because heritage ground systems use string compares as the basis for their automated alert systems. Two systems, ANSR and SERS were looked at for interface definitions. The short event format is used to accommodate experiences with limited telemetry bandwidth. The long event format includes all event information included within the short format along with the Event Data.

Command Mnemonic(s) \$sc_\$cpu_EVS_SetEvtFmt

Command Structure

[CFE_EVS_SetEventFormatModeCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDPC](#) - command execution counter will increment
- The generation of [CFE_EVS_SETEVTFMTMOD_EID](#) debug message

Error Conditions

This command may fail for the following reason(s):

- Invalid MsgFormat mode selection

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDEC](#) - command error counter will increment
- An Error specific event message

Criticality

Setting the event format mode is not particularly hazardous, as the result may be saving necessary bandwidth. However, inappropriately setting the event format mode could result in a loss of information and missed behavior for the ground system

See also

Definition at line 248 of file default_cfe_evs_fcncodes.h.

12.88.2.18 CFE_EVS_SET_FILTER_CC #define CFE_EVS_SET_FILTER_CC 10**Name** Set Application Event Filter**Description**

This command sets the command specified application's event filter mask to the command specified value for the command specified event. Note: In order for this command to take effect, applications must be registered for Event Service.

Command Mnemonic(s) \$sc_\$cpu_EVS_SetBinFltrMask**Command Structure**[CFE_EVS_SetFilterCmd_t](#)**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDPC](#) - command execution counter will increment
- The generation of [CFE_EVS_SETFILTERMSK_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- Application name is not valid or not registered with event services
- Specified event ID is not found in the application event filter

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDEC](#) - command error counter will increment
- An Error specific event message

Criticality

Setting an application event filter mask is not particularly hazardous, as the result may be shutting off unnecessary event messages and possible event flooding of the system. However, inappropriately setting an application's event filter mask could result in a loss of critical information and missed behavior for the ground system or flooding of the ground system.

See also

[CFE_EVS_RESET_FILTER_CC](#), [CFE_EVS_RESET_ALL_FILTERS_CC](#), [CFE_EVS_ADD_EVENT_FILTER_CC](#),
[CFE_EVS_DELETE_EVENT_FILTER_CC](#)

Definition at line 509 of file default_cfe_evs_fcncodes.h.

12.88.2.19 CFE_EVS_SET_LOG_MODE_CC #define CFE_EVS_SET_LOG_MODE_CC 19**Name** Set Logging Mode**Description**

This command sets the logging mode to the command specified value.

Command Mnemonic(s) \$sc_\$cpu_EVS_SetLogMode**Command Structure**

[CFE_EVS_SetLogModeCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDPC](#) - command execution counter will increment
- The generation of [CFE_EVS_LOGMODE_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- Invalid LogMode selected - must be either [CFE_EVS_LogMode_OVERWRITE](#) or [CFE_EVS_LogMode_DISCARD](#)

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_EVS_CMDEC](#) - command error counter will increment
- An Error specific event message

Criticality

Setting the event logging mode is not particularly hazardous, as the result may be saving valuable event data. However, inappropriately setting the log mode could result in a loss of critical information. Note: the event log is a back-up log to the on-board recorder.

See also

[CFE_EVS_WRITE_LOG_DATA_FILE_CC](#), [CFE_EVS_CLEAR_LOG_CC](#)

Definition at line 838 of file default_cfe_evs_fcncodes.h.

12.88.2.20 CFE_EVS_WRITE_APP_DATA_FILE_CC #define CFE_EVS_WRITE_APP_DATA_FILE_CC 17**Name** Write Event Services Application Information to File**Description**

This command writes all application data to a file for all applications that have registered with the EVS. The application data includes the Application ID, Active Flag, Event Count, Event Types Active Flag, and Filter Data.

Command Mnemonic(s) \$sc_\$cpu_EVS_WriteAppData2File

Command Structure

[CFE_EVS_WriteAppDataFileCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_EVS_CMDPC** - command execution counter will increment
- The generation of [CFE_EVS_WRDAT_EID](#) debug event message
- The file specified in the command (or the default specified by the [CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE](#) configuration parameter) will be updated with the latest information.

Error Conditions

This command may fail for the following reason(s):

- The specified FileName cannot be parsed
- An Error occurs while trying to write to the file

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_EVS_CMDEC** - command error counter will increment
- An Error specific event message

Criticality

Writing a file is not particularly hazardous, but if proper file management is not taken, then the file system can fill up if this command is used repeatedly.

See also

[CFE_EVS_WRITE_LOG_DATA_FILE_CC](#), [CFE_EVS_SET_LOG_MODE_CC](#)

Definition at line 767 of file default_cfe_evs_fcncodes.h.

12.88.2.21 CFE_EVS_WRITE_LOG_DATA_FILE_CC #define CFE_EVS_WRITE_LOG_DATA_FILE_CC 18

Name Write Event Log to File

Description

This command requests the Event Service to generate a file containing the contents of the local event log.

Command Mnemonic(s) \$sc_\$cpu_EVS_WriteLog2File

Command Structure

[CFE_EVS_WriteLogFileCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_EVS_CMDPC** - command execution counter will increment
- The generation of [CFE_EVS_WRLOG_EID](#) debug event message

Error Conditions

This command may fail for the following reason(s):

- The specified FileName cannot be parsed
- An Error occurs while trying to write to the file

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_EVS_CMDEC` - command error counter will increment
- An Error specific event message

Criticality

Writing a file is not particularly hazardous, but if proper file management is not taken, then the file system can fill up if this command is used repeatedly.

See also

[CFE_EVS_WRITE_APP_DATA_FILE_CC](#), [CFE_EVS_SET_LOG_MODE_CC](#), [CFE_EVS_CLEAR_LOG_CC](#)

Definition at line 802 of file default_cfe_evs_fcncodes.h.

12.89 cfe/modules/evs/config/default_cfe_evs_interface_cfg.h File Reference

Macros

- `#define CFE_MISSION_EVS_MAX_MESSAGE_LENGTH 122`

12.89.1 Detailed Description

CFE Event Services (CFE_EVS) Application Public Definitions

This provides default values for configurable items that affect the interface(s) of this module. This includes the CMD/TLM message interface, tables definitions, and any other data products that serve to exchange information with other entities.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.89.2 Macro Definition Documentation

12.89.2.1 CFE_MISSION_EVS_MAX_MESSAGE_LENGTH `#define CFE_MISSION_EVS_MAX_MESSAGE_LENGTH 122`

Purpose Maximum Event Message Length

Description:

Indicates the maximum length (in characters) of the formatted text string portion of an event message

This length does not need to include an extra character for NULL termination.

Limits

Not Applicable

Definition at line 47 of file default_cfe_evs_interface_cfg.h.

12.90 cfe/modules/evs/config/default_cfe_evs_internal_cfg.h File Reference

Macros

- #define CFE_PLATFORM_EVS_START_TASK_PRIORITY 61
- #define CFE_PLATFORM_EVS_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
- #define CFE_PLATFORM_EVS_MAX_EVENT_FILTERS 8
- #define CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST 32
- #define CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC 15
- #define CFE_PLATFORM_EVS_DEFAULT_LOG_FILE "/ram/cfe_evs.log"
- #define CFE_PLATFORM_EVS_LOG_MAX 20
- #define CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE "/ram/cfe_evs_app.dat"
- #define CFE_PLATFORM_EVS_PORT_DEFAULT 0x0001
- #define CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG 0xE
- #define CFE_PLATFORM_EVS_DEFAULT_LOG_MODE 1
- #define CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE CFE_EVS_MsgFormat_LONG

12.90.1 Detailed Description

CFE Event Services (CFE_EVS) Application Private Config Definitions

This provides default values for configurable items that are internal to this module and do NOT affect the interface(s) of this module. Changes to items in this file only affect the local module and will be transparent to external entities that are using the public interface(s).

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.90.2 Macro Definition Documentation

12.90.2.1 CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC #define CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC 15

Purpose Sustained number of event messages per second per app before squelching

Description:

Sustained number of events that may be emitted per app per second.

Limits

This number must be less than or equal to [CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST](#). Values lower than 8 may cause functional and unit test failures.

Definition at line 96 of file `default_cfe_evs_internal_cfg.h`.

12.90.2.2 CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE #define CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE "/ram/cfe_evs_app.dat"

Purpose Default EVS Application Data Filename

Description:

The value of this constant defines the filename used to store the EVS Application Data(event counts/filtering information). This filename is used only when no filename is specified in the command to dump the event log.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 137 of file default_cfe_evs_internal_cfg.h.

12.90.2.3 CFE_PLATFORM_EVS_DEFAULT_LOG_FILE `#define CFE_PLATFORM_EVS_DEFAULT_LOG_FILE "/ram/cfe-evs.log"`

Purpose Default Event Log Filename**Description:**

The value of this constant defines the filename used to store the Event Services local event log. This filename is used only when no filename is specified in the command to dump the event log.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 110 of file default_cfe_evs_internal_cfg.h.

12.90.2.4 CFE_PLATFORM_EVS_DEFAULT_LOG_MODE `#define CFE_PLATFORM_EVS_DEFAULT_LOG_MODE 1`

Purpose Default EVS Local Event Log Mode**Description:**

Defines a state of overwrite(0) or discard(1) for the operation of the EVS local event log. The log may operate in either Overwrite mode = 0, where once the log becomes full the oldest event in the log will be overwritten, or Discard mode = 1, where once the log becomes full the contents of the log are preserved and the new event is discarded. Overwrite Mode = 0, Discard Mode = 1.

Limits

The valid settings are 0 or 1

Definition at line 184 of file default_cfe_evs_internal_cfg.h.

12.90.2.5 CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE `#define CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE CFE_EVS_MsgFormat_LONG`

Purpose Default EVS Message Format Mode**Description:**

Defines the default message format (long or short) for event messages being sent to the ground. Choose between [CFE_EVS_MsgFormat_LONG](#) or [CFE_EVS_MsgFormat_SHORT](#).

Limits

The valid settings are [CFE_EVS_MsgFormat_LONG](#) or [CFE_EVS_MsgFormat_SHORT](#)

Definition at line 197 of file default_cfe_evs_internal_cfg.h.

```
12.90.2.6 CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG #define CFE_PLATFORM_EVS_DEFAULT_TYPE_←
FLAG 0xE
```

Purpose Default EVS Event Type Filter Mask

Description:

Defines a state of on or off for all four event types. The term event 'type' refers to the criticality level and may be Debug, Informational, Error or Critical. Each event type has a bit position. (bit 0 = Debug, bit 1 = Info, bit 2 = Error, bit 3 = Critical). This is a global setting, meaning it applies to all applications. To filter an event type, set its bit to zero. For example, 0xE means Debug = OFF, Info = ON, Error = ON, Critical = ON

Limits

The valid settings are 0x0 to 0xF.

Definition at line 168 of file default_cfe_evs_internal_cfg.h.

```
12.90.2.7 CFE_PLATFORM_EVS_LOG_MAX #define CFE_PLATFORM_EVS_LOG_MAX 20
```

Purpose Maximum Number of Events in EVS Local Event Log

Description:

Dictates the EVS local event log capacity. Units are the number of events.

Limits

There are no restrictions on the lower and upper limits however, the maximum log size is system dependent and should be verified.

Definition at line 122 of file default_cfe_evs_internal_cfg.h.

```
12.90.2.8 CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST #define CFE_PLATFORM_EVS_MAX_APP_EVENT_←
BURST 32
```

Purpose Maximum number of event before squelching

Description:

Maximum number of events that may be emitted per app per second. Setting this to 0 will cause events to be unrestricted.

Limits

This number must be less than or equal to INT_MAX/1000

Definition at line 84 of file default_cfe_evs_internal_cfg.h.

12.90.2.9 CFE_PLATFORM_EVS_MAX_EVENT_FILTERS #define CFE_PLATFORM_EVS_MAX_EVENT_FILTERS 8

Purpose Define Maximum Number of Event Filters per Application

Description:

Maximum number of events that may be filtered per application.

Limits

There are no restrictions on the lower and upper limits however, the maximum number of event filters is system dependent and should be verified.

Definition at line 72 of file default_cfe_evs_internal_cfg.h.

12.90.2.10 CFE_PLATFORM_EVS_PORT_DEFAULT #define CFE_PLATFORM_EVS_PORT_DEFAULT 0x0001

Purpose Default EVS Output Port State

Description:

Defines the default port state (enabled or disabled) for the four output ports defined within the Event Service. Port 1 is usually the uart output terminal. To enable a port, set the proper bit to a 1. Bit 0 is port 1, bit 1 is port2 etc.

Limits

The valid settings are 0x0 to 0xF.

Definition at line 151 of file default_cfe_evs_internal_cfg.h.

12.90.2.11 CFE_PLATFORM_EVS_START_TASK_PRIORITY #define CFE_PLATFORM_EVS_START_TASK_PRIORITY 61

Purpose Define EVS Task Priority

Description:

Defines the cFE_EVS Task priority.

Limits

Not Applicable

Definition at line 44 of file default_cfe_evs_internal_cfg.h.

12.90.2.12 CFE_PLATFORM_EVS_START_TASK_STACK_SIZE #define CFE_PLATFORM_EVS_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

Purpose Define EVS Task Stack Size

Description:

Defines the cFE_EVS Task Stack Size

Limits

There is a lower limit of 2048 on this configuration parameter. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 59 of file default_cfe_evs_internal_cfg.h.

12.91 cfe/modules/evs/config/default_cfe_evs_mission_cfg.h File Reference

```
#include "cfe_evs_interface_cfg.h"
```

12.91.1 Detailed Description

CFE Event Services (CFE_EVS) Application Mission Configuration Header File

This is a compatibility header for the "mission_cfg.h" file that has traditionally provided public config definitions for each CFS app.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.92 cfe/modules/evs/config/default_cfe_evs_msg.h File Reference

```
#include "cfe_mission_cfg.h"
#include "cfe_evs_fcncodes.h"
#include "cfe_evs_msgdefs.h"
#include "cfe_evs_msgstruct.h"
```

12.92.1 Detailed Description

Specification for the CFE Event Services (CFE_EVS) command and telemetry message data types.

This is a compatibility header for the "cfe_evs_msg.h" file that has traditionally provided the message definitions for cFS apps.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.93 cfe/modules/evs/config/default_cfe_evs_msgdefs.h File Reference

```
#include "common_types.h"
#include "cfe_mission_cfg.h"
#include "cfe_es_extern_typedefs.h"
#include "cfe_evs_extern_typedefs.h"
#include "cfe_evs_fcncodes.h"
```

Data Structures

- struct [CFE_EVS_LogFileCmd_Payload](#)
Write Event Log to File Command Payload.
- struct [CFE_EVS_AppDataCmd_Payload](#)
Write Event Services Application Information to File Command Payload.
- struct [CFE_EVS_SetLogMode_Payload](#)
Set Log Mode Command Payload.
- struct [CFE_EVS_SetEventFormatCode_Payload](#)
Set Event Format Mode Command Payload.
- struct [CFE_EVS_BitMaskCmd_Payload](#)
Generic Bitmask Command Payload.

- struct [CFE_EVS_AppNameCmd_Payload](#)
Generic App Name Command Payload.
- struct [CFE_EVS_AppNameEventIDCmd_Payload](#)
Generic App Name and Event ID Command Payload.
- struct [CFE_EVS_AppNameBitMaskCmd_Payload](#)
Generic App Name and Bitmask Command Payload.
- struct [CFE_EVS_AppNameEventIDMaskCmd_Payload](#)
Generic App Name, Event ID, Mask Command Payload.
- struct [CFE_EVS_AppTlmData](#)
- struct [CFE_EVS_HousekeepingTlm_Payload](#)
- struct [CFE_EVS_PacketID](#)
- struct [CFE_EVS_LongEventTlm_Payload](#)
- struct [CFE_EVS_ShortEventTlm_Payload](#)

Macros

- #define [CFE_EVS_DEBUG_BIT](#) 0x0001
- #define [CFE_EVS_INFORMATION_BIT](#) 0x0002
- #define [CFE_EVS_ERROR_BIT](#) 0x0004
- #define [CFE_EVS_CRITICAL_BIT](#) 0x0008
- #define [CFE_EVS_PORT1_BIT](#) 0x0001
- #define [CFE_EVS_PORT2_BIT](#) 0x0002
- #define [CFE_EVS_PORT3_BIT](#) 0x0004
- #define [CFE_EVS_PORT4_BIT](#) 0x0008

Typedefs

- typedef struct [CFE_EVS_LogFileCmd_Payload](#) [CFE_EVS_LogFileCmd_Payload_t](#)
Write Event Log to File Command Payload.
- typedef struct [CFE_EVS_AppDataCmd_Payload](#) [CFE_EVS_AppDataCmd_Payload_t](#)
Write Event Services Application Information to File Command Payload.
- typedef struct [CFE_EVS_SetLogMode_Payload](#) [CFE_EVS_SetLogMode_Payload_t](#)
Set Log Mode Command Payload.
- typedef struct [CFE_EVS_SetEventFormatCode_Payload](#) [CFE_EVS_SetEventFormatMode_Payload_t](#)
Set Event Format Mode Command Payload.
- typedef struct [CFE_EVS_BitMaskCmd_Payload](#) [CFE_EVS_BitMaskCmd_Payload_t](#)
Generic Bitmask Command Payload.
- typedef struct [CFE_EVS_AppNameCmd_Payload](#) [CFE_EVS_AppNameCmd_Payload_t](#)
Generic App Name Command Payload.
- typedef struct [CFE_EVS_AppNameEventIDCmd_Payload](#) [CFE_EVS_AppNameEventIDCmd_Payload_t](#)
Generic App Name and Event ID Command Payload.
- typedef struct [CFE_EVS_AppNameBitMaskCmd_Payload](#) [CFE_EVS_AppNameBitMaskCmd_Payload_t](#)
Generic App Name and Bitmask Command Payload.
- typedef struct [CFE_EVS_AppNameEventIDMaskCmd_Payload](#) [CFE_EVS_AppNameEventIDMaskCmd_Payload_t](#)
Generic App Name, Event ID, Mask Command Payload.
- typedef struct [CFE_EVS_AppTlmData](#) [CFE_EVS_AppTlmData_t](#)
- typedef struct [CFE_EVS_HousekeepingTlm_Payload](#) [CFE_EVS_HousekeepingTlm_Payload_t](#)
- typedef struct [CFE_EVS_PacketID](#) [CFE_EVS_PacketID_t](#)
- typedef struct [CFE_EVS_LongEventTlm_Payload](#) [CFE_EVS_LongEventTlm_Payload_t](#)
- typedef struct [CFE_EVS_ShortEventTlm_Payload](#) [CFE_EVS_ShortEventTlm_Payload_t](#)

12.93.1 Detailed Description

Specification for the CFE Event Services (CFE_EVS) command and telemetry message constant definitions. For CFE_EVS this is only the function/command code definitions

12.93.2 Macro Definition Documentation

12.93.2.1 CFE_EVS_CRITICAL_BIT #define CFE_EVS_CRITICAL_BIT 0x0008

Definition at line 39 of file default_cfe_evs_msgdefs.h.

12.93.2.2 CFE_EVS_DEBUG_BIT #define CFE_EVS_DEBUG_BIT 0x0001

Definition at line 36 of file default_cfe_evs_msgdefs.h.

12.93.2.3 CFE_EVS_ERROR_BIT #define CFE_EVS_ERROR_BIT 0x0004

Definition at line 38 of file default_cfe_evs_msgdefs.h.

12.93.2.4 CFE_EVS_INFORMATION_BIT #define CFE_EVS_INFORMATION_BIT 0x0002

Definition at line 37 of file default_cfe_evs_msgdefs.h.

12.93.2.5 CFE_EVS_PORT1_BIT #define CFE_EVS_PORT1_BIT 0x0001

Definition at line 42 of file default_cfe_evs_msgdefs.h.

12.93.2.6 CFE_EVS_PORT2_BIT #define CFE_EVS_PORT2_BIT 0x0002

Definition at line 43 of file default_cfe_evs_msgdefs.h.

12.93.2.7 CFE_EVS_PORT3_BIT #define CFE_EVS_PORT3_BIT 0x0004

Definition at line 44 of file default_cfe_evs_msgdefs.h.

12.93.2.8 CFE_EVS_PORT4_BIT #define CFE_EVS_PORT4_BIT 0x0008

Definition at line 45 of file default_cfe_evs_msgdefs.h.

12.93.3 Typedef Documentation

12.93.3.1 CFE_EVS_AppDataCmd_Payload_t typedef struct CFE_EVS_AppDataCmd_Payload

Write Event Services Application Information to File Command Payload.

For command details, see [CFE_EVS_WRITE_APP_DATA_FILE_CC](#)

12.93.3.2 CFE_EVS_AppNameBitMaskCmd_Payload_t typedef struct CFE_EVS_AppNameBitMaskCmd_Payload

[CFE_EVS_AppNameBitMaskCmd_Payload_t](#)

Generic App Name and Bitmask Command Payload.

For command details, see [CFE_EVS_ENABLE_APP_EVENT_TYPE_CC](#) and/or [CFE_EVS_DISABLE_APP_EVENT_TYPE_CC](#)

12.93.3.3 CFE_EVS_AppNameCmd_Payload_t `typedef struct CFE_EVS_AppNameCmd_Payload CFE_EVS_AppNameCmd_Payload_t`
Generic App Name Command Payload.

For command details, see [CFE_EVS_ENABLE_APP_EVENTS_CC](#), [CFE_EVS_DISABLE_APP_EVENTS_CC](#),
[CFE_EVS_RESET_APP_COUNTER_CC](#) and/or [CFE_EVS_RESET_ALL_FILTERS_CC](#)

12.93.3.4 CFE_EVS_AppNameEventIDCmd_Payload_t `typedef struct CFE_EVS_AppNameEventIDCmd_Payload CFE_EVS_AppNameEventIDCmd_Payload_t`

Generic App Name and Event ID Command Payload.

For command details, see [CFE_EVS_RESET_FILTER_CC](#) and [CFE_EVS_DELETE_EVENT_FILTER_CC](#)

12.93.3.5 CFE_EVS_AppNameEventIDMaskCmd_Payload_t `typedef struct CFE_EVS_AppNameEventIDMaskCmd_Payload CFE_EVS_AppNameEventIDMaskCmd_Payload_t`

Generic App Name, Event ID, Mask Command Payload.

For command details, see [CFE_EVS_SET_FILTER_CC](#), [CFE_EVS_ADD_EVENT_FILTER_CC](#) and/or [CFE_EVS_DELETE_EVENT_FILTER_CC](#)

12.93.3.6 CFE_EVS_AppTlmData_t `typedef struct CFE_EVS_AppTlmData CFE_EVS_AppTlmData_t`

12.93.3.7 CFE_EVS_BitMaskCmd_Payload_t `typedef struct CFE_EVS_BitMaskCmd_Payload CFE_EVS_BitMaskCmd_Payload_t`
Generic Bitmask Command Payload.

For command details, see [CFE_EVS_ENABLE_EVENT_TYPE_CC](#), [CFE_EVS_DISABLE_EVENT_TYPE_CC](#),
[CFE_EVS_ENABLE_PORTS_CC](#) and/or [CFE_EVS_DISABLE_PORTS_CC](#)

12.93.3.8 CFE_EVS_HousekeepingTlm_Payload_t `typedef struct CFE_EVS_HousekeepingTlm_Payload CFE_EVS_HousekeepingTlm_Payload_t`

Name Event Services Housekeeping Telemetry Packet

12.93.3.9 CFE_EVS_LogFileCmd_Payload_t `typedef struct CFE_EVS_LogFileCmd_Payload CFE_EVS_LogFileCmd_Payload_t`
Write Event Log to File Command Payload.

For command details, see [CFE_EVS_WRITE_LOG_DATA_FILE_CC](#)

12.93.3.10 CFE_EVS_LongEventTlm_Payload_t `typedef struct CFE_EVS_LongEventTlm_Payload CFE_EVS_LongEventTlm_Payload_t`

Name Event Message Telemetry Packet (Long format)

12.93.3.11 CFE_EVS_PacketID_t `typedef struct CFE_EVS_PacketID CFE_EVS_PacketID_t`
Telemetry packet structures

12.93.3.12 CFE_EVS_SetEventFormatMode_Payload_t `typedef struct CFE_EVS_SetEventFormatCode_Payload CFE_EVS_SetEventFormatMode_Payload_t`

Set Event Format Mode Command Payload.

For command details, see [CFE_EVS_SET_EVENT_FORMAT_MODE_CC](#)

12.93.3.13 CFE_EVS_SetLogMode_Payload_t `typedef struct CFE_EVS_SetLogMode_Payload CFE_EVS_SetLogMode_Payload_t`
Set Log Mode Command Payload.

For command details, see [CFE_EVS_SET_LOG_MODE_CC](#)

12.93.3.14 CFE_EVS_ShortEventTlm_Payload_t `typedef struct CFE_EVS_ShortEventTlm_Payload CFE_EVS_ShortEventTlm_P`

Name Event Message Telemetry Packet (Short format)

12.94 cfe/modules/evs/config/default_cfe_evs_msgids.h File Reference

```
#include "cfe_core_api_base_msgids.h"
#include "cfe_evs_topicids.h"
```

Macros

- `#define CFE_EVS_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_EVS_CMD_TOPICID)
/* 0x1801 */`
- `#define CFE_EVS_SEND_HK_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_EVS_SEND_HK_TOPICID)
/* 0x1809 */`
- `#define CFE_EVS_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_EVS_HK_TLM_TOPICID)
/* 0x0801 */`
- `#define CFE_EVS_LONG_EVENT_MSG_MID`
- `#define CFE_EVS_SHORT_EVENT_MSG_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_EVS_SHORT_EVENT_MSG_MID)
/* 0x0809 */`

12.94.1 Detailed Description

CFE Event Services (CFE_EVS) Application Message IDs

12.94.2 Macro Definition Documentation

12.94.2.1 CFE_EVS_CMD_MID `#define CFE_EVS_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_EVS_CMD_TOPICID)
/* 0x1801 */`

Definition at line 32 of file default_cfe_evs_msgids.h.

12.94.2.2 CFE_EVS_HK_TLM_MID `#define CFE_EVS_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_EVS_HK_TLM_TOPICID)
/* 0x0801 */`

Definition at line 38 of file default_cfe_evs_msgids.h.

12.94.2.3 CFE_EVS_LONG_EVENT_MSG_MID `#define CFE_EVS_LONG_EVENT_MSG_MID`

Value:

```
CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_EVS_LONG_EVENT_MSG_TOPICID) /* 0x0808 \  
*/
```

Definition at line 39 of file default_cfe_evs_msgids.h.

12.94.2.4 CFE_EVS_SEND_HK_MID `#define CFE_EVS_SEND_HK_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_EVS_SEND_HK_TOPICID)
/* 0x1809 */`

Definition at line 33 of file default_cfe_evs_msgids.h.

12.94.2.5 CFE_EVS_SHORT_EVENT_MSG_MID `#define CFE_EVS_SHORT_EVENT_MSG_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_EVS_SHORT_EVENT_MSG_TOPICID)
/* 0x0809 */`

Definition at line 41 of file default_cfe_evs_msgids.h.

12.95 cfe/modules/evs/config/default_cfe_evs_msgstruct.h File Reference

```
#include "common_types.h"
#include "cfe_evs_msgdefs.h"
#include "cfe_evs_extern_typedefs.h"
#include "cfe_msg_hdr.h"
```

Data Structures

- struct [CFE_EVS_NoopCmd](#)
- struct [CFE_EVS_ResetCountersCmd](#)
- struct [CFE_EVS_ClearLogCmd](#)
- struct [CFE_EVS_SendHkCmd](#)
- struct [CFE_EVS_WriteLogFileCmd](#)
Write Event Log to File Command.
- struct [CFE_EVS_WriteAppDataFileCmd](#)
Write Event Services Application Information to File Command.
- struct [CFE_EVS_SetLogModeCmd](#)
Set Log Mode Command.
- struct [CFE_EVS_SetEventFormatModeCmd](#)
Set Event Format Mode Command.
- struct [CFE_EVS_EnablePortsCmd](#)
- struct [CFE_EVS_DisablePortsCmd](#)
- struct [CFE_EVS_EnableEventTypeCmd](#)
- struct [CFE_EVS_DisableEventTypeCmd](#)
- struct [CFE_EVS_EnableAppEventsCmd](#)
- struct [CFE_EVS_DisableAppEventsCmd](#)
- struct [CFE_EVS_ResetAppCounterCmd](#)
- struct [CFE_EVS_ResetAllFiltersCmd](#)
- struct [CFE_EVS_ResetFilterCmd](#)
- struct [CFE_EVS_DeleteEventFilterCmd](#)
- struct [CFE_EVS_EnableAppEventTypeCmd](#)
- struct [CFE_EVS_DisableAppEventTypeCmd](#)
- struct [CFE_EVS_AddEventFilterCmd](#)
- struct [CFE_EVS_SetFilterCmd](#)
- struct [CFE_EVS_HousekeepingTlm](#)
- struct [CFE_EVS_LongEventTlm](#)
- struct [CFE_EVS_ShortEventTlm](#)

TypeDefs

- typedef struct [CFE_EVS_NoopCmd](#) CFE_EVS_NoopCmd_t
- typedef struct [CFE_EVS_ResetCountersCmd](#) CFE_EVS_ResetCountersCmd_t
- typedef struct [CFE_EVS_ClearLogCmd](#) CFE_EVS_ClearLogCmd_t
- typedef struct [CFE_EVS_SendHkCmd](#) CFE_EVS_SendHkCmd_t
- typedef struct [CFE_EVS_WriteLogFileCmd](#) CFE_EVS_WriteLogFileCmd_t
Write Event Log to File Command.
- typedef struct [CFE_EVS_WriteAppDataFileCmd](#) CFE_EVS_WriteAppDataFileCmd_t
Write Event Services Application Information to File Command.
- typedef struct [CFE_EVS_SetLogModeCmd](#) CFE_EVS_SetLogModeCmd_t

Set Log Mode Command.

- `typedef struct CFE_EVS_SetEventFormatModeCmd CFE_EVS_SetEventFormatModeCmd_t`
Set Event Format Mode Command.
- `typedef struct CFE_EVS_EnablePortsCmd CFE_EVS_EnablePortsCmd_t`
- `typedef struct CFE_EVS_DisablePortsCmd CFE_EVS_DisablePortsCmd_t`
- `typedef struct CFE_EVS_EnableEventTypeCmd CFE_EVS_EnableEventTypeCmd_t`
- `typedef struct CFE_EVS_DisableEventTypeCmd CFE_EVS_DisableEventTypeCmd_t`
- `typedef struct CFE_EVS_EnableAppEventsCmd CFE_EVS_EnableAppEventsCmd_t`
- `typedef struct CFE_EVS_DisableAppEventsCmd CFE_EVS_DisableAppEventsCmd_t`
- `typedef struct CFE_EVS_ResetAppCounterCmd CFE_EVS_ResetAppCounterCmd_t`
- `typedef struct CFE_EVS_ResetAllFiltersCmd CFE_EVS_ResetAllFiltersCmd_t`
- `typedef struct CFE_EVS_ResetFilterCmd CFE_EVS_ResetFilterCmd_t`
- `typedef struct CFE_EVS_DeleteEventFilterCmd CFE_EVS_DeleteEventFilterCmd_t`
- `typedef struct CFE_EVS_EnableAppEventTypeCmd CFE_EVS_EnableAppEventTypeCmd_t`
- `typedef struct CFE_EVS_DisableAppEventTypeCmd CFE_EVS_DisableAppEventTypeCmd_t`
- `typedef struct CFE_EVS_AddEventFilterCmd CFE_EVS_AddEventFilterCmd_t`
- `typedef struct CFE_EVS_SetFilterCmd CFE_EVS_SetFilterCmd_t`
- `typedef struct CFE_EVS_HousekeepingTlm CFE_EVS_HousekeepingTlm_t`
- `typedef struct CFE_EVS_LongEventTlm CFE_EVS_LongEventTlm_t`
- `typedef struct CFE_EVS_ShortEventTlm CFE_EVS_ShortEventTlm_t`

12.95.1 Detailed Description

Purpose: cFE Executive Services (EVS) Command and Telemetry packet definition file.

References: Flight Software Branch C Coding Standard Version 1.0a cFE Flight Software Application Developers Guide

Notes:

12.95.2 Typedef Documentation

12.95.2.1 CFE_EVS_AddEventFilterCmd_t `typedef struct CFE_EVS_AddEventFilterCmd CFE_EVS_AddEventFilterCmd_t`

12.95.2.2 CFE_EVS_ClearLogCmd_t `typedef struct CFE_EVS_ClearLogCmd CFE_EVS_ClearLogCmd_t`

12.95.2.3 CFE_EVS_DeleteEventFilterCmd_t `typedef struct CFE_EVS_DeleteEventFilterCmd CFE_EVS_DeleteEventFilterCmd_t`

12.95.2.4 CFE_EVS_DisableAppEventsCmd_t `typedef struct CFE_EVS_DisableAppEventsCmd CFE_EVS_DisableAppEventsCmd_t`

12.95.2.5 CFE_EVS_DisableAppEventTypeCmd_t `typedef struct CFE_EVS_DisableAppEventTypeCmd CFE_EVS_DisableAppEventTypeCmd_t`

12.95.2.6 CFE_EVS_DisableEventTypeCmd_t `typedef struct CFE_EVS_DisableEventTypeCmd CFE_EVS_DisableEventTypeCmd_t`

12.95.2.7 CFE_EVS_DisablePortsCmd_t `typedef struct CFE_EVS_DisablePortsCmd CFE_EVS_DisablePortsCmd_t`

12.95.2.8 CFE_EVS_EnableAppEventsCmd_t `typedef struct CFE_EVS_EnableAppEventsCmd CFE_EVS_EnableAppEventsCmd_t`

12.95.2.9 CFE_EVS_EnableAppEventTypeCmd_t `typedef struct CFE_EVS_EnableAppEventCmd CFE_EVS_EnableAppEventCmd_t`

12.95.2.10 CFE_EVS_EnableEventTypeCmd_t `typedef struct CFE_EVS_EnableEventTypeCmd CFE_EVS_EnableEventTypeCmd_t`

12.95.2.11 CFE_EVS_EnablePortsCmd_t `typedef struct CFE_EVS_EnablePortsCmd CFE_EVS_EnablePortsCmd_t`

12.95.2.12 CFE_EVS_HousekeepingTlm_t `typedef struct CFE_EVS_HousekeepingTlm CFE_EVS_HousekeepingTlm_t`

12.95.2.13 CFE_EVS_LongEventTlm_t `typedef struct CFE_EVS_LongEventTlm CFE_EVS_LongEventTlm_t`

12.95.2.14 CFE_EVS_NoopCmd_t `typedef struct CFE_EVS_NoopCmd CFE_EVS_NoopCmd_t`

12.95.2.15 CFE_EVS_ResetAllFiltersCmd_t `typedef struct CFE_EVS_ResetAllFiltersCmd CFE_EVS_ResetAllFiltersCmd_t`

12.95.2.16 CFE_EVS_ResetAppCounterCmd_t `typedef struct CFE_EVS_ResetAppCounterCmd CFE_EVS_ResetAppCounterCmd_t`

12.95.2.17 CFE_EVS_ResetCountersCmd_t `typedef struct CFE_EVS_ResetCountersCmd CFE_EVS_ResetCountersCmd_t`

12.95.2.18 CFE_EVS_ResetFilterCmd_t `typedef struct CFE_EVS_ResetFilterCmd CFE_EVS_ResetFilterCmd_t`

12.95.2.19 CFE_EVS_SendHkCmd_t `typedef struct CFE_EVS_SendHkCmd CFE_EVS_SendHkCmd_t`

12.95.2.20 CFE_EVS_SetEventFormatModeCmd_t `typedef struct CFE_EVS_SetEventFormatModeCmd CFE_EVS_SetEventFormatModeCmd_t`
Set Event Format Mode Command.

12.95.2.21 CFE_EVS_SetFilterCmd_t `typedef struct CFE_EVS_SetFilterCmd CFE_EVS_SetFilterCmd_t`

12.95.2.22 CFE_EVS_SetLogModeCmd_t `typedef struct CFE_EVS_SetLogModeCmd CFE_EVS_SetLogModeCmd_t`
Set Log Mode Command.

12.95.2.23 CFE_EVS_ShortEventTlm_t `typedef struct CFE_EVS_ShortEventTlm CFE_EVS_ShortEventTlm_t`

12.95.2.24 CFE_EVS_WriteAppDataFileCmd_t `typedef struct CFE_EVS_WriteAppDataFileCmd CFE_EVS_WriteAppDataFileCmd`
Write Event Services Application Information to File Command.

12.95.2.25 CFE_EVS_WriteLogFileCmd_t `typedef struct CFE_EVS_WriteLogFileCmd CFE_EVS_WriteLogFileCmd`
Write Event Log to File Command.

12.96 cfe/modules/evs/config/default_cfe_evs_platform_cfg.h File Reference

```
#include "cfe_evs_mission_cfg.h"
#include "cfe_evs_internal_cfg.h"
```

12.96.1 Detailed Description

CFE Event Services (CFE_EVS) Application Platform Configuration Header File

This is a compatibility header for the "platform_cfg.h" file that has traditionally provided both public and private config definitions for each CFS app.

These definitions are now provided in two separate files, one for the public/mission scope and one for internal scope.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.97 cfe/modules/evs/config/default_cfe_evs_topicids.h File Reference

Macros

- `#define CFE_MISSION_EVS_CMD_TOPICID 1`
- `#define CFE_MISSION_EVS_SEND_HK_TOPICID 9`
- `#define CFE_MISSION_EVS_HK_TLM_TOPICID 1`
- `#define CFE_MISSION_EVS_LONG_EVENT_MSG_TOPICID 8`
- `#define CFE_MISSION_EVS_SHORT_EVENT_MSG_TOPICID 9`

12.97.1 Detailed Description

CFE Event Services (CFE_EVS) Application Topic IDs

12.97.2 Macro Definition Documentation

12.97.2.1 CFE_MISSION_EVS_CMD_TOPICID `#define CFE_MISSION_EVS_CMD_TOPICID 1`

Purpose cFE Portable Message Numbers for Commands

Description:

Portable message numbers for the cFE EVS command messages

Limits

Not Applicable

Definition at line 35 of file default_cfe_evs_topicids.h.

12.97.2.2 CFE_MISSION_EVS_HK_TLM_TOPICID #define CFE_MISSION_EVS_HK_TLM_TOPICID 1

Purpose cFE Portable Message Numbers for Telemetry

Description:

Portable message numbers for the cFE EVS telemetry messages

Limits

Not Applicable

Definition at line 47 of file default_cfe_evs_topicids.h.

12.97.2.3 CFE_MISSION_EVS_LONG_EVENT_MSG_TOPICID #define CFE_MISSION_EVS_LONG_EVENT_MSG_TOPICID 8

Definition at line 48 of file default_cfe_evs_topicids.h.

12.97.2.4 CFE_MISSION_EVS_SEND_HK_TOPICID #define CFE_MISSION_EVS_SEND_HK_TOPICID 9

Definition at line 36 of file default_cfe_evs_topicids.h.

12.97.2.5 CFE_MISSION_EVS_SHORT_EVENT_MSG_TOPICID #define CFE_MISSION_EVS_SHORT_EVENT_MSG_TOPICID 9

Definition at line 49 of file default_cfe_evs_topicids.h.

12.98 cfe/modules/evs/fsw/inc/cfe_evs_eventids.h File Reference

Macros

EVS event IDs

- #define **CFE_EVS_NOOP_EID** 0
EVS No-op Command Success Event ID.
- #define **CFE_EVS_STARTUP_EID** 1
EVS Initialization Event ID.
- #define **CFE_EVS_ERR_WRLOGFILE_EID** 2
EVS Write Event Log Command File Write Entry Failed Event ID.
- #define **CFE_EVS_ERR_CRLOGFILE_EID** 3
EVS Write Event Log Command Filename Parse or File Create Failed Event ID.
- #define **CFE_EVS_ERR_MSGID_EID** 5
EVS Invalid Message ID Received Event ID.
- #define **CFE_EVS_ERR_EVTIDNOREGS_EID** 6
EVS Command Event Not Registered For Filtering Event ID.
- #define **CFE_EVS_ERR_APPNOREGS_EID** 7
EVS Command Application Not Registered With EVS Event ID.
- #define **CFE_EVS_ERR_ILLAPPIDRANGE_EID** 8
EVS Command Get Application Data Failure Event ID.
- #define **CFE_EVS_ERR_NOAPPIDFOUND_EID** 9
EVS Command Get Application ID Failure Event ID.
- #define **CFE_EVS_ERR_ILLEGALFMTMOD_EID** 10
EVS Set Event Format Command Invalid Format Event ID.
- #define **CFE_EVS_ERR_MAXREGSFILTER_EID** 11

- #define `CFE_EVS_ERR_WRDATFILE_EID` 12
EVS Add Filter Command Max Filters Exceeded Event ID.
- #define `CFE_EVS_ERR_CRDATFILE_EID` 13
EVS Write Application Data Command Write Data Failure Event ID.
- #define `CFE_EVS_WRITE_HEADER_ERR_EID` 14
EVS Write Application Data Command Filename Parse or File Create Failed Event ID.
- #define `CFE_EVS_ERR_CC_EID` 15
EVS Invalid Command Code Received Event ID.
- #define `CFE_EVS_RSTCNT_EID` 16
EVS Reset Counters Command Success Event ID.
- #define `CFE_EVS_SETFILTERMSK_EID` 17
EVS Set Filter Command Success Event ID.
- #define `CFE_EVS_ENAPORT_EID` 18
EVS Enable Ports Command Success Event ID.
- #define `CFE_EVS_DISPORT_EID` 19
EVS Disable Ports Command Success Event ID.
- #define `CFE_EVS_ENAEVTTYPE_EID` 20
EVS Enable Event Type Command Success Event ID.
- #define `CFE_EVS_DISEVTTYPE_EID` 21
EVS Disable Event Type Command Success Event ID.
- #define `CFE_EVS_SETEVTFMTMOD_EID` 22
EVS Set Event Format Mode Command Success Event ID.
- #define `CFE_EVS_ENAAPPEVTTYPE_EID` 23
EVS Enable App Event Type Command Success Event ID.
- #define `CFE_EVS_DISAPPENTTYPE_EID` 24
EVS Disable App Event Type Command Success Event ID.
- #define `CFE_EVS_ENAAPPEVNT_EID` 25
EVS Enable App Events Command Success Event ID.
- #define `CFE_EVS_DISAPPEVNT_EID` 26
EVS Disable App Events Command Success Event ID.
- #define `CFE_EVS_RSTEVTCNT_EID` 27
EVS Reset App Event Counter Command Success Event ID.
- #define `CFE_EVS_RSTFILTER_EID` 28
EVS Reset App Event Filter Command Success Event ID.
- #define `CFE_EVS_RSTALLFILTER_EID` 29
EVS Reset All Filters Command Success Event ID.
- #define `CFE_EVS_ADDFILTER_EID` 30
EVS Add Event Filter Command Success Event ID.
- #define `CFE_EVS_DELFILTER_EID` 31
EVS Delete Event Filter Command Success Event ID.
- #define `CFE_EVS_WRDAT_EID` 32
EVS Write Application Data Command Success Event ID.
- #define `CFE_EVS_WRLOG_EID` 33
EVS Write Event Log Command Success Event ID.
- #define `CFE_EVS_EVT_FILTERED_EID` 37
EVS Add Filter Command Duplicate Registration Event ID.
- #define `CFE_EVS_LOGMODE_EID` 38
EVS Set Log Mode Command Success Event ID.
- #define `CFE_EVS_ERR_LOGMODE_EID` 39
EVS Set Log Mode Command Invalid Mode Event ID.
- #define `CFE_EVS_ERR_INVALID_BITMASK_EID` 40
EVS Port Or Event Type Bitmask Invalid Event ID.
- #define `CFE_EVS_ERR_UNREGISTERED_EVS_APP` 41
EVS Send Event API App Not Registered With EVS Event ID.

- #define **CFE_EVS_FILTER_MAX_EID** 42
EVS Filter Max Count Reached Event ID.
- #define **CFE_EVS_LEN_ERR_EID** 43
EVS Invalid Command Length Event ID.
- #define **CFE_EVS_SQUELCHED_ERR_EID** 44
EVS Events Squelched Error Event ID.

12.98.1 Detailed Description

cFE Event Services Event IDs

12.98.2 Macro Definition Documentation

12.98.2.1 CFE_EVS_ADDFILTER_EID #define CFE_EVS_ADDFILTER_EID 30
EVS Add Event Filter Command Success Event ID.

Type: DEBUG

Cause:

[EVS Add Event Filter Command](#) success.
Definition at line 367 of file cfe_evs_eventids.h.

12.98.2.2 CFE_EVS_DELFILTER_EID #define CFE_EVS_DELFILTER_EID 31
EVS Delete Event Filter Command Success Event ID.

Type: DEBUG

Cause:

[EVS Delete Event Filter Command](#) success.
Definition at line 378 of file cfe_evs_eventids.h.

12.98.2.3 CFE_EVS_DISAPPENNTYPE_EID #define CFE_EVS_DISAPPENNTYPE_EID 24
EVS Disable App Event Type Command Success Event ID.

Type: DEBUG

Cause:

[EVS Disable App Event Type Command](#) success.
Definition at line 301 of file cfe_evs_eventids.h.

12.98.2.4 CFE_EVS_DISAPPEVT_EID #define CFE_EVS_DISAPPEVT_EID 26
EVS Disable App Events Command Success Event ID.

Type: DEBUG

Cause:

[EVS Disable App Events Command](#) success.
Definition at line 323 of file cfe_evs_eventids.h.

12.98.2.5 CFE_EVS_DISEVTTYPE_EID #define CFE_EVS_DISEVTTYPE_EID 21
EVS Disable Event Type Command Success Event ID.

Type: DEBUG

Cause:

[EVS Disable Event Type Command](#) success.
Definition at line 268 of file cfe_evs_eventids.h.

12.98.2.6 CFE_EVS_DISPORT_EID #define CFE_EVS_DISPORT_EID 19
EVS Disable Ports Command Success Event ID.

Type: DEBUG

Cause:

[EVS Disable Ports Command](#) success.
Definition at line 246 of file cfe_evs_eventids.h.

12.98.2.7 CFE_EVS_ENAAPPEVT_EID #define CFE_EVS_ENAAPPEVT_EID 25
EVS Enable App Events Command Success Event ID.

Type: DEBUG

Cause:

[EVS Enable App Events Command](#) success.
Definition at line 312 of file cfe_evs_eventids.h.

12.98.2.8 CFE_EVS_ENAAPPEVTTYPE_EID #define CFE_EVS_ENAAPPEVTTYPE_EID 23
EVS Enable App Event Type Command Success Event ID.

Type: DEBUG

Cause:

[EVS Enable App Event Type Command](#) success.
Definition at line 290 of file cfe_evs_eventids.h.

12.98.2.9 CFE_EVS_ENAEVTTYPE_EID #define CFE_EVS_ENAEVTTYPE_EID 20
EVS Enable Event Type Command Success Event ID.

Type: DEBUG

Cause:

[EVS Enable Event Type Command](#) success.
Definition at line 257 of file cfe_evs_eventids.h.

12.98.2.10 CFE_EVS_ENAPORT_EID #define CFE_EVS_ENAPORT_EID 18
EVS Enable Ports Command Success Event ID.

Type: DEBUG

Cause:

[EVS Enable Ports Command](#) success.
Definition at line 235 of file cfe_evs_eventids.h.

12.98.2.11 CFE_EVS_ERR_APPNOREGS_EID #define CFE_EVS_ERR_APPNOREGS_EID 7
EVS Command Application Not Registered With EVS Event ID.

Type: ERROR

Cause:

An EVS command handler failure due to the referenced application not being registered with EVS. OVERLOADED
Definition at line 110 of file cfe_evs_eventids.h.

12.98.2.12 CFE_EVS_ERR_CC_EID #define CFE_EVS_ERR_CC_EID 15
EVS Invalid Command Code Received Event ID.

Type: ERROR

Cause:

Invalid command code for message ID [CFE_EVS_CMD_MID](#) received on the EVS message pipe.
Definition at line 202 of file cfe_evs_eventids.h.

12.98.2.13 CFE_EVS_ERR_CRDATFILE_EID #define CFE_EVS_ERR_CRDATFILE_EID 13
EVS Write Application Data Command Filename Parse or File Create Failed Event ID.

Type: ERROR

Cause:

[Write Application Data Command](#) failed to parse the filename or open/create the file. OVERLOADED
Definition at line 180 of file cfe_evs_eventids.h.

12.98.2.14 CFE_EVS_ERR_CRLOGFILE_EID #define CFE_EVS_ERR_CRLOGFILE_EID 3
EVS Write Event Log Command Filename Parse or File Create Failed Event ID.

Type: ERROR

Cause:

[EVS Write Event Log Command](#) failure parsing the file name or during open/creation of the file. OVERLOADED
Definition at line 77 of file cfe_evs_eventids.h.

12.98.2.15 CFE_EVS_ERR_EVTIDNOREGS_EID #define CFE_EVS_ERR_EVTIDNOREGS_EID 6
EVS Command Event Not Registered For Filtering Event ID.

Type: ERROR

Cause:

An EVS command handler failure due to the event not being registered for filtering. OVERLOADED
Definition at line 99 of file cfe_evs_eventids.h.

12.98.2.16 CFE_EVS_ERR_ILLAPPIDRANGE_EID #define CFE_EVS_ERR_ILLAPPIDRANGE_EID 8
EVS Command Get Application Data Failure Event ID.

Type: ERROR

Cause:

An EVS command handler failure retrieving the application data. OVERLOADED
Definition at line 121 of file cfe_evs_eventids.h.

12.98.2.17 CFE_EVS_ERR_ILLEGALFMTMOD_EID #define CFE_EVS_ERR_ILLEGALFMTMOD_EID 10
EVS Set Event Format Command Invalid Format Event ID.

Type: ERROR

Cause:

[EVS Set Event Format Command](#) failure due to invalid format argument.
Definition at line 144 of file cfe_evs_eventids.h.

12.98.2.18 CFE_EVS_ERR_INVALID_BITMASK_EID #define CFE_EVS_ERR_INVALID_BITMASK_EID 40
EVS Port Or Event Type Bitmask Invalid Event ID.

Type: ERROR

Cause:

Invalid bitmask for EVS port or event type. OVERLOADED
Definition at line 446 of file cfe_evs_eventids.h.

12.98.2.19 CFE_EVS_ERR_LOGMODE_EID #define CFE_EVS_ERR_LOGMODE_EID 39
EVS Set Log Mode Command Invalid Mode Event ID.

Type: ERROR

Cause:

[EVS Set Log Mode Command](#) failure due to invalid log mode.
Definition at line 435 of file cfe_evs_eventids.h.

12.98.2.20 CFE_EVS_ERR_MAXREGSFILTER_EID #define CFE_EVS_ERR_MAXREGSFILTER_EID 11
EVS Add Filter Command Max Filters Exceeded Event ID.

Type: ERROR

Cause:

[EVS Add Filter Command](#) failure due to exceeding the maximum number of filters.
Definition at line 156 of file cfe_evs_eventids.h.

12.98.2.21 CFE_EVS_ERR_MSGID_EID #define CFE_EVS_ERR_MSGID_EID 5
EVS Invalid Message ID Received Event ID.

Type: ERROR

Cause:

Invalid message ID received on the EVS message pipe.
Definition at line 88 of file cfe_evs_eventids.h.

12.98.2.22 CFE_EVS_ERR_NOAPPIDFOUND_EID #define CFE_EVS_ERR_NOAPPIDFOUND_EID 9
EVS Command Get Application ID Failure Event ID.

Type: ERROR

Cause:

An EVS command handler failure retrieving the application ID. OVERLOADED
Definition at line 132 of file cfe_evs_eventids.h.

12.98.2.23 CFE_EVS_ERR_UNREGISTERED_EVS_APP #define CFE_EVS_ERR_UNREGISTERED_EVS_APP 41
EVS Send Event API App Not Registered With EVS Event ID.

Type: ERROR

Cause:

An EVS Send Event API called for application not registered with EVS.
Definition at line 457 of file cfe_evs_eventids.h.

12.98.2.24 CFE_EVS_ERR_WRDATFILE_EID #define CFE_EVS_ERR_WRDATFILE_EID 12
EVS Write Application Data Command Write Data Failure Event ID.

Type: ERROR

Cause:

[Write Application Data Command](#) failure to write application EVS data.
Definition at line 168 of file cfe_evs_eventids.h.

12.98.2.25 CFE_EVS_ERR_WRLlogfile_EID #define CFE_EVS_ERR_WRLlogfile_EID 2
EVS Write Event Log Command File Write Entry Failed Event ID.

Type: ERROR

Cause:

[EVS Write Event Log Command](#) failure writing data to the file.
Definition at line 65 of file cfe_evs_eventids.h.

12.98.2.26 CFE_EVS_EVT_FILTERED_EID #define CFE_EVS_EVT_FILTERED_EID 37
EVS Add Filter Command Duplicate Registration Event ID.

Type: ERROR

Cause:

[EVS Add Filter Command](#) failure due to event already being registered for filtering.
Definition at line 412 of file cfe_evs_eventids.h.

12.98.2.27 CFE_EVS_FILTER_MAX_EID #define CFE_EVS_FILTER_MAX_EID 42
EVS Filter Max Count Reached Event ID.

Type: INFORMATIONAL

Cause:

Filter count for the event reached CFE_EVS_MAX_FILTER_COUNT and is latched until filter is reset.
Definition at line 468 of file cfe_evs_eventids.h.

12.98.2.28 CFE_EVS_LEN_ERR_EID #define CFE_EVS_LEN_ERR_EID 43
EVS Invalid Command Length Event ID.

Type: ERROR

Cause:

Invalid length for the command code in message ID [CFE_EVS_CMD_MID](#) received on the EVS message pipe.
Definition at line 479 of file [cfe_evs_eventids.h](#).

12.98.2.29 CFE_EVS_LOGMODE_EID #define CFE_EVS_LOGMODE_EID 38
EVS Set Log Mode Command Success Event ID.

Type: DEBUG

Cause:

[EVS Set Log Mode Command](#) success.
Definition at line 423 of file [cfe_evs_eventids.h](#).

12.98.2.30 CFE_EVS_NOOP_EID #define CFE_EVS_NOOP_EID 0
EVS No-op Command Success Event ID.

Type: INFORMATION

Cause:

[EVS NO-OP command](#) success.
Definition at line 42 of file [cfe_evs_eventids.h](#).

12.98.2.31 CFE_EVS_RSTALLFILTER_EID #define CFE_EVS_RSTALLFILTER_EID 29
EVS Reset All Filters Command Success Event ID.

Type: DEBUG

Cause:

[EVS Reset All Filters Command](#) success.
Definition at line 356 of file [cfe_evs_eventids.h](#).

12.98.2.32 CFE_EVS_RSTCNT_EID #define CFE_EVS_RSTCNT_EID 16
EVS Reset Counters Command Success Event ID.

Type: DEBUG

Cause:

[EVS Reset Counters Command](#) success.
Definition at line 213 of file cfe_evs_eventids.h.

12.98.2.33 CFE_EVS_RSTEVTCNT_EID #define CFE_EVS_RSTEVTCNT_EID 27
EVS Reset App Event Counter Command Success Event ID.

Type: DEBUG

Cause:

[EVS Reset App Event Counter Command](#) success.
Definition at line 334 of file cfe_evs_eventids.h.

12.98.2.34 CFE_EVS_RSTFILTER_EID #define CFE_EVS_RSTFILTER_EID 28
EVS Reset App Event Filter Command Success Event ID.

Type: DEBUG

Cause:

[EVS Reset App Event Filter Command](#) success.
Definition at line 345 of file cfe_evs_eventids.h.

12.98.2.35 CFE_EVS_SETEVTFMTMOD_EID #define CFE_EVS_SETEVTFMTMOD_EID 22
EVS Set Event Format Mode Command Success Event ID.

Type: DEBUG

Cause:

[EVS Set Event Format Mode Command](#) success.
Definition at line 279 of file cfe_evs_eventids.h.

12.98.2.36 CFE_EVS_SETFILTERMSK_EID #define CFE_EVS_SETFILTERMSK_EID 17
EVS Set Filter Command Success Event ID.

Type: DEBUG

Cause:

[EVS Set Filter Command](#) success.

Definition at line 224 of file cfe_evs_eventids.h.

12.98.2.37 CFE_EVS_SQUELCHED_ERR_EID #define CFE_EVS_SQUELCHED_ERR_EID 44
EVS Events Squelched Error Event ID.

Type: ERROR

Cause:

Events generated in app at a rate in excess of [CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST](#) in one moment or [CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC](#) sustained

Definition at line 492 of file cfe_evs_eventids.h.

12.98.2.38 CFE_EVS_STARTUP_EID #define CFE_EVS_STARTUP_EID 1
EVS Initialization Event ID.

Type: INFORMATION

Cause:

Event Services Task initialization complete.

Definition at line 53 of file cfe_evs_eventids.h.

12.98.2.39 CFE_EVS_WRDAT_EID #define CFE_EVS_WRDAT_EID 32
EVS Write Application Data Command Success Event ID.

Type: DEBUG

Cause:

[EVS Write Application Data Command](#) success.

Definition at line 389 of file cfe_evs_eventids.h.

12.98.2.40 CFE_EVS_WRITE_HEADER_ERR_EID #define CFE_EVS_WRITE_HEADER_ERR_EID 14
EVS Write File Header to Log File Failure Event ID.

Type: ERROR

Cause:

Bytes written during Write File Header to Log File was not equal to the expected header size.
Definition at line 191 of file cfe_evs_eventids.h.

12.98.2.41 CFE_EVS_WRLOG_EID #define CFE_EVS_WRLOG_EID 33
EVS Write Event Log Command Success Event ID.

Type: DEBUG

Cause:

EVS Write Event Log Command success.
Definition at line 400 of file cfe_evs_eventids.h.

12.99 cfe/modules/fs/config/default_cfe_fs_extern_typedefs.h File Reference

```
#include "cfe_mission_cfg.h"
#include "cfe_fs_filedef.h"
```

12.99.1 Detailed Description

Declarations and prototypes for cfe_fs_extern_typedefs module

12.100 cfe/modules/fs/config/default_cfe_fs_filedef.h File Reference

```
#include "common_types.h"
#include "cfe_fs_interface_cfg.h"
```

Data Structures

- struct [CFE_FS_Header](#)

Standard cFE File header structure definition.

Typedefs

- typedef uint32 [CFE_FS_SubType_Enum_t](#)
Content descriptor for File Headers.
- typedef struct [CFE_FS_Header](#) [CFE_FS_Header_t](#)
Standard cFE File header structure definition.

Enumerations

- enum CFE_FS_SubType {
 CFE_FS_SubType_ES_ERLOG = 1 , CFE_FS_SubType_ES_SYSLOG = 2 , CFE_FS_SubType_ES_QUERYALL = 3 , CFE_FS_SubType_ES_PERFDATA = 4 ,
 CFE_FS_SubType_ES_CDS_REG = 6 , CFE_FS_SubType_TBL_REG = 9 , CFE_FS_SubType_TBL_IMG = 8 ,
 CFE_FS_SubType_EVS_APPDATA = 15 ,
 CFE_FS_SubType_EVS_EVENTLOG = 16 , CFE_FS_SubType_SB_PIPEDATA = 20 , CFE_FS_SubType_SB_ROUTEDATA = 21 , CFE_FS_SubType_SB_MAPDATA = 22 ,
 CFE_FS_SubType_ES_QUERYALLTASKS = 23 }

File subtypes used within cFE.

12.100.1 Detailed Description

Declarations and prototypes for cfe_fs_extern_typedefs module

12.100.2 Typedef Documentation

12.100.2.1 CFE_FS_Header_t `typedef struct CFE_FS_Header CFE_FS_Header_t`

Standard cFE File header structure definition.

12.100.2.2 CFE_FS_SubType_Enum_t `typedef uint32 CFE_FS_SubType_Enum_t`

Content descriptor for File Headers.

See also

enum CFE_FS_SubType

Definition at line 176 of file default_cfe_fs_filedef.h.

12.100.3 Enumeration Type Documentation

12.100.3.1 CFE_FS_SubType `enum CFE_FS_SubType`

File subtypes used within cFE.

This defines all the file subtypes used by cFE. Note apps can extend as needed but need to avoid conflicts (app context not currently included in the file header).

Enumerator

CFE_FS_SubType_ES_ERLOG	Executive Services Exception/Reset Log Type. Executive Services Exception/Reset Log File which is generated in response to a <code>\$sc_\$cpu_ES_WriteERLog2File</code> command.
CFE_FS_SubType_ES_SYSLOG	Executive Services System Log Type. Executive Services System Log File which is generated in response to a <code>\$sc_\$cpu_ES_WriteSysLog2File</code> command.
CFE_FS_SubType_ES_QUERYALL	Executive Services Information on All Applications File. Executive Services Information on All Applications File which is generated in response to a <code>\$sc_\$cpu_ES_WriteAppInfo2File</code> command.

Enumerator

CFE_FS_SubType_ES_PERFDATA	Executive Services Performance Data File. Executive Services Performance Analyzer Data File which is generated in response to a \$sc_\$cpu_ES_StopLAData command.
CFE_FS_SubType_ES_CDS_REG	Executive Services Critical Data Store Registry Dump File. Executive Services Critical Data Store Registry Dump File which is generated in response to a \$sc_\$cpu_ES_WriteCDS2File command.
CFE_FS_SubType_TBL_REG	Table Services Registry Dump File. Table Services Registry Dump File which is generated in response to a \$sc_\$cpu_TBL_WriteReg2File command.
CFE_FS_SubType_TBL_IMG	Table Services Table Image File. Table Services Table Image File which is generated either on the ground or in response to a \$sc_\$cpu_TBL_DUMP command.
CFE_FS_SubType_EVS_APPDATA	Event Services Application Data Dump File. Event Services Application Data Dump File which is generated in response to a \$sc_\$cpu_EVS_WriteAppData2File command.
CFE_FS_SubType_EVS_EVENTLOG	Event Services Local Event Log Dump File. Event Services Local Event Log Dump File which is generated in response to a \$sc_\$cpu_EVS_WriteLog2File command.
CFE_FS_SubType_SB_PIPE DATA	Software Bus Pipe Data Dump File. Software Bus Pipe Data Dump File which is generated in response to a \$sc_\$cpu_SB_WritePipe2File command.
CFE_FS_SubType_SB_ROUTEDATA	Software Bus Message Routing Data Dump File. Software Bus Message Routing Data Dump File which is generated in response to a \$sc_\$cpu_SB_WriteRouting2File command.
CFE_FS_SubType_SB_MAPDATA	Software Bus Message Mapping Data Dump File. Software Bus Message Mapping Data Dump File which is generated in response to a \$sc_\$cpu_SB_WriteMap2File command.
CFE_FS_SubType_ES_QUERYALLTASKS	Executive Services Query All Tasks Data File. Executive Services Query All Tasks Data File which is generated in response to a \$sc_\$cpu_ES_WriteTaskInfo2File command.

Definition at line 39 of file default_cfe_fs_filedef.h.

12.101 cfe/modules/fs/config/default_cfe_fs_interface_cfg.h File Reference

Macros

- #define [CFE_FS_HDR_DESC_MAX_LEN](#) 32
Max length of description field in a standard cFE File Header.
- #define [CFE_FS_FILE_CONTENT_ID](#) 0x63464531
Magic Number for cFE compliant files (= 'cFE1')

12.101.1 Detailed Description

Declarations and prototypes for cfe_fs_extern_typedefs module

12.101.2 Macro Definition Documentation

12.101.2.1 CFE_FS_FILE_CONTENT_ID #define CFE_FS_FILE_CONTENT_ID 0x63464531
Magic Number for cFE compliant files (= 'cFE1')
Definition at line 39 of file default_cfe_fs_interface_cfg.h.

12.101.2.2 CFE_FS_HDR_DESC_MAX_LEN #define CFE_FS_HDR_DESC_MAX_LEN 32
Max length of description field in a standard cFE File Header.
Definition at line 37 of file default_cfe_fs_interface_cfg.h.

12.102 cfe/modules/fs/config/default_cfe_fs_mission_cfg.h File Reference

```
#include "cfe_fs_interface_cfg.h"
```

12.102.1 Detailed Description

CFE File Services (CFE_FS) Application Mission Configuration Header File
This is a compatibility header for the "mission_cfg.h" file that has traditionally provided public config definitions for each CFS app.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.103 cfe/modules/msg/fsw/inc/ccsds_hdr.h File Reference

```
#include "common_types.h"
```

Data Structures

- struct [CCSDS_PrimaryHeader](#)
CCSDS packet primary header.
- struct [CCSDS_ExtendedHeader](#)
CCSDS packet extended header.

Typedefs

- typedef struct [CCSDS_PrimaryHeader](#) CCSDS_PrimaryHeader_t
CCSDS packet primary header.
- typedef struct [CCSDS_ExtendedHeader](#) CCSDS_ExtendedHeader_t
CCSDS packet extended header.

12.103.1 Detailed Description

Define CCSDS packet header types

- Avoid direct access for portability, use APIs
- Used to construct message structures

12.103.2 Typedef Documentation

12.103.2.1 CCSDS_ExtendedHeader_t `typedef struct CCSDS_ExtendedHeader CCSDS_ExtendedHeader_t`
CCSDS packet extended header.

12.103.2.2 CCSDS_PrimaryHeader_t `typedef struct CCSDS_PrimaryHeader CCSDS_PrimaryHeader_t`
CCSDS packet primary header.

12.104 cfe/modules/resourceid/fsw/inc/cfe_core_resourceid_basevalues.h File Reference

```
#include "cfe_resourceid_basevalue.h"
```

Enumerations

- enum {
`CFE_RESOURCEID_ES_TASKID_BASE_OFFSET = OS_OBJECT_TYPE_OS_TASK , CFE_RESOURCEID_ES_APPID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 1 , CFE_RESOURCEID_ES_LIBID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 2 , CFE_RESOURCEID_ES_COUNTID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 3 , CFE_RESOURCEID_ES_POOLID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 4 , CFE_RESOURCEID_ES_CDSBLOCKID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 5 , CFE_RESOURCEID_SB_PIPEID_RESOURCE_BASE_OFFSET = OS_OBJECT_TYPE_USER + 6 , CFE_RESOURCEID_CONFIGID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 7 , CFE_RESOURCEID_TBL_VALRESULTID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 8 , CFE_RESOURCEID_TBL_DUMPCTRLID_BASE_OFFSET = OS_OBJECT_TYPE_USER + 9 }`
}
- enum {
`CFE_ES_TASKID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_TASKID_BASE_OFFSET) , CFE_ES_APPID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_APPID_OFFSET) , CFE_ES_LIBID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_LIBID_OFFSET) , CFE_ES_COUNTID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_COUNTID_OFFSET) , CFE_ES_POOLID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_POOLID_OFFSET) , CFE_ES_CDSBLOCKID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_ES_CDSBLOCKID_OFFSET) , CFE_SB_PIPEID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_SB_PIPEID_OFFSET) , CFE_CONFIGID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_CONFIGID_OFFSET) , CFE_TBL_VALRESULTID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_TBL_VALRESULTID_OFFSET) , CFE_TBL_DUMPCTRLID_BASE = CFE_RESOURCEID_MAKE_BASE(CFE_RESOURCEID_TBL_DUMPCTRLID_OFFSET) }`
}

12.104.1 Detailed Description

Contains CFE internal prototypes and definitions related to resource management and related CFE resource IDs.
A CFE ES Resource ID is a common way to identify CFE-managed resources such as apps, tasks, counters, memory pools, CDS blocks, and other entities.

12.105 cfe/modules/resourceid/fsw/inc/cfe_resourceid_basevalue.h File Reference

```
#include "cfe_resourceid_typedef.h"  
#include "osapi-idmap.h"
```

Macros

- `#define CFE_RESOURCEID_SHIFT OS_OBJECT_TYPE_SHIFT`

- #define CFE_RESOURCEID_MAX OS_OBJECT_INDEX_MASK
 - #define CFE_RESOURCEID_MAKE_BASE(offset) (CFE_RESOURCEID_MARK | ((offset) << CFE_RESOURCEID_SHIFT))
- A macro to generate a CFE resource ID base value from an offset.*

12.105.1 Detailed Description

An implementation of CFE resource ID base values/limits that will be compatible with OSAL IDs. This is intended as a transitional tool to provide runtime value uniqueness, particularly when the "simple" (compatible) resource ID implementation is used. In this mode, compiler type checking is disabled, and so OSAL IDs can be silently interchanged with CFE IDs.

However, by ensuring uniqueness in the runtime values, any ID handling errors may at least be detectable at runtime. This still works fine with the "strict" resource ID option, but is less important as the compiler type checking should prevent this type of error before the code even runs.

The downside to this implementation is that it has a dependency on the OSAL ID structure.

12.105.2 Macro Definition Documentation

12.105.2.1 CFE_RESOURCEID_MAKE_BASE #define CFE_RESOURCEID_MAKE_BASE(offset) (CFE_RESOURCEID_MARK | ((offset) << CFE_RESOURCEID_SHIFT))

A macro to generate a CFE resource ID base value from an offset.

Each CFE ID range is effectively an extension of OSAL ID ranges by starting at OS_OBJECT_TYPE_USER.
Definition at line 73 of file cfe_resourceid_basevalue.h.

12.105.2.2 CFE_RESOURCEID_MAX #define CFE_RESOURCEID_MAX OS_OBJECT_INDEX_MASK

Definition at line 65 of file cfe_resourceid_basevalue.h.

12.105.2.3 CFE_RESOURCEID_SHIFT #define CFE_RESOURCEID_SHIFT OS_OBJECT_TYPE_SHIFT

Definition at line 64 of file cfe_resourceid_basevalue.h.

12.106 cfe/modules/sb/config/default_cfe_sb_extern_typedefs.h File Reference

```
#include "common_types.h"
#include "cfe_mission_cfg.h"
#include "cfe_resourceid_typedef.h"
```

Data Structures

- struct CFE_SB_MsgId_t
CFE_SB_MsgId_t type definition.
- struct CFE_SB_Qos_t
Quality Of Service Type Definition.

Macros

- #define CFE_SB_SUB_ENTRIES_PER_PKT 20
Configuration parameter used by SBN App.

Typedefs

- `typedef uint8 CFE_SB_QosPriority_Enum_t`
Selects the priority level for message routing.
- `typedef uint8 CFE_SB_QosReliability_Enum_t`
Selects the reliability level for message routing.
- `typedef uint16 CFE_SB_Routeld_Atom_t`
An integer type that should be used for indexing into the Routing Table.
- `typedef uint32 CFE_SB_MsgId_Atom_t`
CFE_SB_MsgId_Atom_t primitive type definition.
- `typedef CFE_RESOURCEID_BASE_TYPE CFE_SB_Pipeld_t`
CFE_SB_Pipeld_t to primitive type definition.

Enumerations

- enum `CFE_SB_QosPriority { CFE_SB_QosPriority_LOW = 0 , CFE_SB_QosPriority_HIGH = 1 }`
Label definitions associated with CFE_SB_QosPriority_Enum_t.
- enum `CFE_SB_QosReliability { CFE_SB_QosReliability_LOW = 0 , CFE_SB_QosReliability_HIGH = 1 }`
Label definitions associated with CFE_SB_QosReliability_Enum_t.

12.106.1 Detailed Description

Declarations and prototypes for cfe_sb_extern_typedefs module

12.106.2 Macro Definition Documentation

12.106.2.1 CFE_SB_SUB_ENTRIES_PER_PKT #define CFE_SB_SUB_ENTRIES_PER_PKT 20

Configuration parameter used by SBN App.

Definition at line 32 of file default_cfe_sb_extern_typedefs.h.

12.106.3 Typedef Documentation

12.106.3.1 CFE_SB_MsgId_Atom_t `typedef uint32 CFE_SB_MsgId_Atom_t`

CFE_SB_MsgId_Atom_t primitive type definition.

This is an integer type capable of holding any Message ID value Note: This value is limited via `CFE_PLATFORM_SB_HIGHEST_VALID_MSG_ID`

Definition at line 91 of file default_cfe_sb_extern_typedefs.h.

12.106.3.2 CFE_SB_Pipeld_t `typedef CFE_RESOURCEID_BASE_TYPE CFE_SB_PipeId_t`

CFE_SB_Pipeld_t to primitive type definition.

Software Bus pipe identifier used in many SB APIs, as well as SB Telemetry messages and data files.

Definition at line 114 of file default_cfe_sb_extern_typedefs.h.

12.106.3.3 CFE_SB_QosPriority_Enum_t `typedef uint8 CFE_SB_QosPriority_Enum_t`
Selects the priority level for message routing.

See also

enum [CFE_SB_QosPriority](#)

Definition at line 55 of file default_cfe_sb_extern_typedefs.h.

12.106.3.4 CFE_SB_QosReliability_Enum_t `typedef uint8 CFE_SB_QosReliability_Enum_t`
Selects the reliability level for message routing.

See also

enum [CFE_SB_QosReliability](#)

Definition at line 78 of file default_cfe_sb_extern_typedefs.h.

12.106.3.5 CFE_SB_RouteId_Atom_t `typedef uint16 CFE_SB_RouteId_Atom_t`

An integer type that should be used for indexing into the Routing Table.

Definition at line 83 of file default_cfe_sb_extern_typedefs.h.

12.106.4 Enumeration Type Documentation

12.106.4.1 CFE_SB_QosPriority `enum CFE_SB_QosPriority`

Label definitions associated with CFE_SB_QosPriority_Enum_t.

Enumerator

<code>CFE_SB_QosPriority_LOW</code>	Normal priority level.
<code>CFE_SB_QosPriority_HIGH</code>	High priority.

Definition at line 37 of file default_cfe_sb_extern_typedefs.h.

12.106.4.2 CFE_SB_QosReliability `enum CFE_SB_QosReliability`

Label definitions associated with CFE_SB_QosReliability_Enum_t.

Enumerator

<code>CFE_SB_QosReliability_LOW</code>	Normal (best-effort) reliability.
<code>CFE_SB_QosReliability_HIGH</code>	High reliability.

Definition at line 60 of file default_cfe_sb_extern_typedefs.h.

12.107 cfe/modules/sb/config/default_cfe_sb_fcncodes.h File Reference

Macros

- `#define CFE_SB_NOOP_CC 0`
- `#define CFE_SB_RESET_COUNTERS_CC 1`

- #define CFE_SB_SEND_SB_STATS_CC 2
- #define CFE_SB_WRITE_ROUTING_INFO_CC 3
- #define CFE_SB_ENABLE_ROUTE_CC 4
- #define CFE_SB_DISABLE_ROUTE_CC 5
- #define CFE_SB_WRITE_PIPE_INFO_CC 7
- #define CFE_SB_WRITE_MAP_INFO_CC 8
- #define CFE_SB_ENABLE_SUB_REPORTING_CC 9
- #define CFE_SB_DISABLE_SUB_REPORTING_CC 10
- #define CFE_SB_SEND_PREV_SUBS_CC 11

12.107.1 Detailed Description

Specification for the CFE Event Services (CFE_SB) command function codes

Note

This file should be strictly limited to the command/function code (CC) macro definitions. Other definitions such as enums, typedefs, or other macros should be placed in the msgdefs.h or msg.h files.

12.107.2 Macro Definition Documentation

12.107.2.1 CFE_SB_DISABLE_ROUTE_CC #define CFE_SB_DISABLE_ROUTE_CC 5

Name Disable Software Bus Route

Description

This command will disable a particular destination. The destination is specified in terms of MsgID and PipeID. The MsgId and PipeID are parameters in the command. All destinations are enabled by default.

Command Mnemonic(s) \$sc_\$cpu_SB_DisRoute

Command Structure

CFE_SB_DisableRouteCmd_t

Command Verification

Successful execution of this command may be verified with the following telemetry:

- \$sc_\$cpu_SB_CMDPC - command execution counter will increment
- View routing information CFE_SB_WRITE_ROUTING_INFO_CC to verify enable/disable state change
- The CFE_SB_DSBL RTE2_EID debug event message will be generated
- Destination will stop receiving messages

Error Conditions

This command may fail for the following reason(s):

- the MsgId or PipeId parameters do not pass validation
- the destination does not exist.

Evidence of failure may be found in the following telemetry:

- \$sc_\$cpu_SB_CMDEC - command error counter will increment
- A command specific error event message is issued for all error cases. See CFE_SB_DSBL RTE1_EID or CFE_SB_DSBL RTE3_EID

Criticality

This command is not intended to be used in nominal conditions. It is possible to get into a state where a destination cannot be re-enabled without resetting the processor. For instance, sending this command with [CFE_SB_CMD_MID](#) and the SB_Cmd_Pipe would inhibit any ground commanding to the software bus until the processor was reset. There are similar problems that may occur when using this command.

Definition at line 271 of file default_cfe_sb_fcncodes.h.

12.107.2.2 CFE_SB_DISABLE_SUB_REPORTING_CC #define CFE_SB_DISABLE_SUB_REPORTING_CC 10

Name Disable Subscription Reporting Command

Description

This command will disable subscription reporting and is intended to be used only by the CFS SBN (Software Bus Networking) Application. It is not intended to be sent from the ground or used by operations. When subscription reporting is enabled, SB will generate and send a software bus packet for each subscription received. The software bus packet that is sent contains the information received in the subscription API. This subscription report is needed by SBN if offboard routing is required.

Command Mnemonic(s) \$sc_\$cpu_SB_DisSubRptg

Command Structure

[CFE_SB_DisableSubReportingCmd_t](#)

Command Verification

Successful execution of this command will result in the suppression of packets (with the [CFE_SB_ONESUB_TLM_MID](#) MsgId) for each subscription received by SB through the subscription APIs.

Error Conditions

None

Criticality

None

See also

[CFE_SB_SingleSubscriptionTlm_t](#), [CFE_SB_ENABLE_SUB_REPORTING_CC](#), [CFE_SB_SEND_PREV_SUBS_CC](#)

Definition at line 428 of file default_cfe_sb_fcncodes.h.

12.107.2.3 CFE_SB_ENABLE_ROUTE_CC #define CFE_SB_ENABLE_ROUTE_CC 4

Name Enable Software Bus Route

Description

This command will enable a particular destination. The destination is specified in terms of MsgID and PipeID. The MsgId and PipeID are parameters in the command. All destinations are enabled by default. This command is needed only after a [CFE_SB_DISABLE_ROUTE_CC](#) command is used.

Command Mnemonic(s) [\\$sc_\\$cpu_SB_EnaRoute](#)

Command Structure

[CFE_SB_EnableRouteCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_SB_CMDPC](#) - command execution counter will increment
- View routing information [CFE_SB_WRITE_ROUTING_INFO_CC](#) to verify enable/disable state change
- The [CFE_SB_ENBL RTE2_EID](#) debug event message will be generated
- Destination will begin receiving messages

Error Conditions

This command may fail for the following reason(s):

- the MsgId or PipeId parameters do not pass validation
- the destination does not exist.

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_SB_CMDEC](#) - command error counter will increment
- A command specific error event message is issued for all error cases. See [CFE_SB_ENBL RTE1_EID](#) or [CFE_SB_ENBL RTE3_EID](#)

Criticality

This command is not inherently dangerous.

Definition at line 230 of file `default_cfe_sb_fcncodes.h`.

12.107.2.4 CFE_SB_ENABLE_SUB_REPORTING_CC #define CFE_SB_ENABLE_SUB_REPORTING_CC 9

Name Enable Subscription Reporting Command

Description

This command will enable subscription reporting and is intended to be used only by the CFS SBN (Software Bus Networking) Application. It is not intended to be sent from the ground or used by operations. When subscription reporting is enabled, SB will generate and send a software bus packet for each subscription received. The software bus packet that is sent contains the information received in the subscription API. This subscription report is needed by SBN if offboard routing is required.

Command Mnemonic(s) [\\$sc_\\$cpu_SB_EnaSubRptg](#)

Command Structure

[CFE_SB_EnableSubReportingCmd_t](#)

Command Verification

Successful execution of this command will result in the sending of a packet (with the [CFE_SB_ONESUB_TLM_MID](#) MsgId) for each subscription received by SB through the subscription APIs.

Error Conditions

None

Criticality

None

See also

[CFE_SB_SingleSubscriptionTlm_t](#), [CFE_SB_DISABLE_SUB_REPORTING_CC](#), [CFE_SB_SEND_PREV_SUBS_CC](#)

Definition at line 395 of file default_cfe_sb_fcncodes.h.

12.107.2.5 CFE_SB_NOOP_CC #define CFE_SB_NOOP_CC 0

Name Software Bus No-Op

Description

This command performs no other function than to increment the command execution counter. The command may be used to verify general aliveness of the Software Bus task.

Command Mnemonic(s) \$sc_\$cpu_SB_NOOP

Command Structure

[CFE_SB_NoopCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_SB_CMDPC](#) - command execution counter will increment
- The [CFE_SB_CMD0_RCVD_EID](#) informational event message will be generated

Error Conditions

There are no error conditions for this command. If the Software Bus receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

None

See also

Definition at line 66 of file default_cfe_sb_fcncodes.h.

12.107.2.6 CFE_SB_RESET_COUNTERS_CC #define CFE_SB_RESET_COUNTERS_CC 1**Name** Software Bus Reset Counters**Description**

This command resets the following counters within the Software Bus housekeeping telemetry:

- Command Execution Counter (\$sc_\$cpu_SB_CMDPC)
- Command Error Counter (\$sc_\$cpu_SB_CMDEC)
- No Subscribers Counter (\$sc_\$cpu_SB_NoSubEC)
- Duplicate Subscriptions Counter (\$sc_\$cpu_SB_DupSubCnt)
- Msg Send Error Counter (\$sc_\$cpu_SB_MsgSndEC)
- Msg Receive Error Counter (\$sc_\$cpu_SB_MsgRecEC)
- Internal Error Counter (\$sc_\$cpu_SB_InternalEC)
- Create Pipe Error Counter (\$sc_\$cpu_SB_NewPipeEC)
- Subscribe Error Counter (\$sc_\$cpu_SB_SubscrEC)
- Pipe Overflow Error Counter (\$sc_\$cpu_SB_PipeOvrEC)
- Msg Limit Error Counter (\$sc_\$cpu_SB_MsgLimEC)

Command Mnemonic(s) \$sc_\$cpu_SB_ResetCtrs**Command Structure**[CFE_SB_ResetCountersCmd_t](#)**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_SB_CMDPC** - command execution counter will be reset to 0
- All other counters listed in description will be reset to 0
- The [CFE_SB_CMD1_RCVD_EID](#) informational event message will be generated

Error Conditions

There are no error conditions for this command. If the Software Bus receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

This command is not inherently dangerous. However, it is possible for ground systems and on-board safing procedures to be designed such that they react to changes in the counter values that are reset by this command.

See also

Definition at line 113 of file default_cfe_sb_fcncodes.h.

12.107.2.7 CFE_SB_SEND_PREV_SUBS_CC #define CFE_SB_SEND_PREV_SUBS_CC 11**Name** Send Previous Subscriptions Command**This command generates a series of packets that contain information**

regarding all subscriptions previously received by SB. This command is intended to be used only by the CFS SBN(Software Bus Networking) Application. It is not intended to be sent from the ground or used by operations. When this command is received the software bus will generate and send a series of packets containing information about all subscription previously received.

Command Mnemonic(s) \$sc_\$cpu_SB_SendPrevSubs**Command Structure**[CFE_SB_SendPrevSubsCmd_t](#)**Command Verification**

Successful execution of this command will result in a series of packets (with the [CFE_SB_ALLSUBS_TLM_MID](#) MsgId) being sent on the software bus.

Error Conditions

None

Criticality

None

See also[CFE_SB_AllSubscriptionsTlm_t](#), [CFE_SB_ENABLE_SUB_REPORTING_CC](#), [CFE_SB_DISABLE_SUB_REPORTING_CC](#)

Definition at line 460 of file default_cfe_sb_fcncodes.h.

12.107.2.8 CFE_SB_SEND_SB_STATS_CC #define CFE_SB_SEND_SB_STATS_CC 2**Name** Send Software Bus Statistics**Description**

This command will cause the SB task to send a statistics packet containing current utilization figures and high water marks which may be useful for checking the margin of the SB platform configuration settings.

Command Mnemonic(s) \$sc_\$cpu_SB_DumpStats**Command Structure**[CFE_SB_SendSbStatsCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_SB_CMDPC** - command execution counter will increment
- Receipt of statistics packet with MsgId [CFE_SB_STATS_TLM_MID](#)
- The [CFE_SB SND STATS EID](#) debug event message will be generated

Error Conditions

There are no error conditions for this command. If the Software Bus receives the command, the debug event is sent and the counter is incremented unconditionally.

Criticality

This command is not inherently dangerous. It will create and send a message on the software bus. If performed repeatedly, it is possible that receiver pipes may overflow.

See also

Definition at line 147 of file default_cfe_sb_fcncodes.h.

12.107.2.9 CFE_SB_WRITE_MAP_INFO_CC #define CFE_SB_WRITE_MAP_INFO_CC 8

Name Write Map Info to a File

This command will create a file containing the software bus message

map information. The message map is a lookup table (an array of uint16s) that allows fast access to the correct routing table element during a software bus send operation. This is diagnostic information that may be needed due to the dynamic nature of the cFE software bus. An absolute path and filename may be specified in the command. If this command field contains an empty string (NULL terminator as the first character) the default file path and name is used. The default file path and name is defined in the platform configuration file as [CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME](#).

Command Mnemonic(s) \$sc_\$cpu_SB_WriteMap2File

Command Structure

[CFE_SB_WriteMapInfoCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_SB_CMDPC** - command execution counter will increment. NOTE: the command counter is incremented when the request is accepted, before writing the file, which is performed as a background task.
- The file specified in the command (or the default specified by the [CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME](#) configuration parameter) will be updated with the latest information.
- The [CFE_SB SND RTG EID](#) debug event message will be generated

Error Conditions

This command may fail for the following reason(s):

- A previous request to write a software bus information file has not yet completed
- The specified FileName cannot be parsed

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_SB_CMDEC** - command error counter will increment
- A command specific error event message is issued for all error cases. See [CFE_SB SND RTG_ERR1_EID](#) and [CFE_SB_FILEWRITE_ERR_EID](#)

Criticality

This command is not inherently dangerous. It will create a new file in the file system and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

Definition at line 362 of file default_cfe_sb_fcncodes.h.

12.107.2.10 CFE_SB_WRITE_PIPE_INFO_CC #define CFE_SB_WRITE_PIPE_INFO_CC 7

Name Write Pipe Info to a File

Description

This command will create a file containing the software bus pipe information. The pipe information contains information about every pipe that has been created through the [CFE_SB_CreatePipe](#) API. An absolute path and filename may be specified in the command. If this command field contains an empty string (NULL terminator as the first character) the default file path and name is used. The default file path and name is defined in the platform configuration file as [CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME](#).

Command Mnemonic(s) \$sc_\$cpu_SB_WritePipe2File

Command Structure

[CFE_SB_WritePipeInfoCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_SB_CMDPC** - command execution counter will increment. NOTE: the command counter is incremented when the request is accepted, before writing the file, which is performed as a background task.
- The file specified in the command (or the default specified by the [CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME](#) configuration parameter) will be updated with the latest information.
- The [CFE_SB SND RTG_EID](#) debug event message will be generated

Error Conditions

This command may fail for the following reason(s):

- A previous request to write a software bus information file has not yet completed
- The specified FileName cannot be parsed

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_SB_CMDEC** - command error counter will increment
- A command specific error event message is issued for all error cases. See [CFE_SB SND RTG_ERR1_EID](#) and [CFE_SB_FILEWRITE_ERR_EID](#)

Criticality

This command is not inherently dangerous. It will create a new file in the file system and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

Definition at line 316 of file default_cfe_sb_fcncodes.h.

12.107.2.11 CFE_SB_WRITE_ROUTING_INFO_CC #define CFE_SB_WRITE_ROUTING_INFO_CC 3

Name Write Software Bus Routing Info to a File

Description

This command will create a file containing the software bus routing information. The routing information contains information about every subscription that has been received through the SB subscription APIs. An absolute path and filename may be specified in the command. If this command field contains an empty string (NULL terminator as the first character) the default file path and name is used. The default file path and name is defined in the platform configuration file as [CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME](#).

Command Mnemonic(s) \$sc_\$cpu_SB_WriteRouting2File

Command Structure

[CFE_SB_WriteRoutingInfoCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_SB_CMDPC** - command execution counter will increment. NOTE: the command counter is incremented when the request is accepted, before writing the file, which is performed as a background task.
- The file specified in the command (or the default specified by the [CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME](#) configuration parameter) will be updated with the latest information.
- The [CFE_SB SND RTG_EID](#) debug event message will be generated

Error Conditions

This command may fail for the following reason(s):

- A previous request to write a software bus information file has not yet completed
- The specified FileName cannot be parsed

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_SB_CMDEC` - command error counter will increment
- A command specific error event message is issued for all error cases. See [CFE_SB SND RTG_ERR1_EID](#) and [CFE_SB_FILEWRITE_ERR_EID](#)

Criticality

This command is not inherently dangerous. It will create a new file in the file system and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

Definition at line 192 of file default_cfe_sb_fcncodes.h.

12.108 cfe/modules/sb/config/default_cfe_sb_interface_cfg.h File Reference

Macros

- `#define CFE_MISSION_SB_MAX_SB_MSG_SIZE 32768`
- `#define CFE_MISSION_SB_MAX_PIPES 64`

12.108.1 Detailed Description

CFE Software Bus (CFE_SB) Application Public Definitions

This provides default values for configurable items that affect the interface(s) of this module. This includes the CMD/TLM message interface, tables definitions, and any other data products that serve to exchange information with other entities.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.108.2 Macro Definition Documentation

12.108.2.1 CFE_MISSION_SB_MAX_PIPES `#define CFE_MISSION_SB_MAX_PIPES 64`

Purpose Maximum Number of pipes that SB command/telemetry messages may hold

Description:

Dictates the maximum number of unique Pipes the SB message definitions will hold.

This affects the layout of command/telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

Definition at line 67 of file default_cfe_sb_interface_cfg.h.

12.108.2.2 CFE_MISSION_SB_MAX_SB_MSG_SIZE #define CFE_MISSION_SB_MAX_SB_MSG_SIZE 32768

Purpose Maximum SB Message Size

Description:

The following definition dictates the maximum message size allowed on the software bus. SB checks the pkt length field in the header of all messages sent. If the pkt length field indicates the message is larger than this define, SB sends an event and rejects the send.

Limits

This parameter has a lower limit of 6 (CCSDS primary header size). There are no restrictions on the upper limit however, the maximum message size is system dependent and should be verified. Total message size values that are checked against this configuration are defined by a 16 bit data word.

Definition at line 50 of file default_cfe_sb_interface_cfg.h.

12.109 cfe/modules/sb/config/default_cfe_sb_internal_cfg.h File Reference

Macros

- #define CFE_PLATFORM_SB_MAX_MSG_IDS 256
- #define CFE_PLATFORM_SB_MAX_PIPES 64
- #define CFE_PLATFORM_SB_MAX_DEST_PER_PKT 16
- #define CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT 4
- #define CFE_PLATFORM_SB_BUF_MEMORY_BYTES 524288
- #define CFE_PLATFORM_SB_HIGHEST_VALID_MSGID 0x1FFF
- #define CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME "/ram/cfe_sb_route.dat"
- #define CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME "/ram/cfe_sb_pipe.dat"
- #define CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME "/ram/cfe_sb_msgmap.dat"
- #define CFE_PLATFORM_SB_FILTERED_EVENT1 CFE_SB_SEND_NO_SUBS_EID
- #define CFE_PLATFORM_SB_FILTER_MASK1 CFE_EVS_FIRST_4_STOP
- #define CFE_PLATFORM_SB_FILTERED_EVENT2 CFE_SB_DUP_SUBSCRIP_EID
- #define CFE_PLATFORM_SB_FILTER_MASK2 CFE_EVS_FIRST_4_STOP
- #define CFE_PLATFORM_SB_FILTERED_EVENT3 CFE_SB_MSGID_LIM_ERR_EID
- #define CFE_PLATFORM_SB_FILTER_MASK3 CFE_EVS_FIRST_16_STOP
- #define CFE_PLATFORM_SB_FILTERED_EVENT4 CFE_SB_Q_FULL_ERR_EID
- #define CFE_PLATFORM_SB_FILTER_MASK4 CFE_EVS_FIRST_16_STOP
- #define CFE_PLATFORM_SB_FILTERED_EVENT5 0
- #define CFE_PLATFORM_SB_FILTER_MASK5 CFE_EVS_NO_FILTER
- #define CFE_PLATFORM_SB_FILTERED_EVENT6 0
- #define CFE_PLATFORM_SB_FILTER_MASK6 CFE_EVS_NO_FILTER
- #define CFE_PLATFORM_SB_FILTERED_EVENT7 0
- #define CFE_PLATFORM_SB_FILTER_MASK7 CFE_EVS_NO_FILTER
- #define CFE_PLATFORM_SB_FILTERED_EVENT8 0
- #define CFE_PLATFORM_SB_FILTER_MASK8 CFE_EVS_NO_FILTER
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01 8
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_02 16
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_03 20
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_04 36
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_05 64
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_06 96

- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_07 128
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_08 160
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_09 256
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_10 512
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_11 1024
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_12 2048
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_13 4096
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_14 8192
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_15 16384
- #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_16 32768
- #define CFE_PLATFORM_SB_MAX_BLOCK_SIZE (CFE_MISSION_SB_MAX_SB_MSG_SIZE + 128)
- #define CFE_PLATFORM_SB_START_TASK_PRIORITY 64
- #define CFE_PLATFORM_SB_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

12.109.1 Detailed Description

CFE Software Bus (CFE_SB) Application Private Config Definitions

This provides default values for configurable items that are internal to this module and do NOT affect the interface(s) of this module. Changes to items in this file only affect the local module and will be transparent to external entities that are using the public interface(s).

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.109.2 Macro Definition Documentation

12.109.2.1 CFE_PLATFORM_SB_BUF_MEMORY_BYTES #define CFE_PLATFORM_SB_BUF_MEMORY_BYTES 524288

Purpose Size of the SB buffer memory pool

Description:

Dictates the size of the SB memory pool. For each message the SB sends, the SB dynamically allocates from this memory pool, the memory needed to process the message. The memory needed to process each message is msg size + msg descriptor(CFE_SB_BufferD_t). This memory pool is also used to allocate destination descriptors (CFE_SB_DestinationD_t) during the subscription process. To see the run-time, high-water mark and the current utilization figures regarding this parameter, send an SB command to 'Send Statistics Pkt'. Some memory statistics have been added to the SB housekeeping packet. NOTE: It is important to monitor these statistics to ensure the desired memory margin is met.

Limits

This parameter has a lower limit of 512 and an upper limit of UINT_MAX (4 Gigabytes).

Definition at line 123 of file default_cfe_sb_internal_cfg.h.

12.109.2.2 CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME #define CFE_PLATFORM_SB_DEFAULT_MAP_←
FILENAME "/ram/cfe_sb_msgmap.dat"

Purpose Default Message Map Filename

Description:

The value of this constant defines the filename used to store the software bus message map information. This filename is used only when no filename is specified in the command. The message map is a lookup table (array of 16bit words) that has an element for each possible MsgId value and holds the routing table index for that MsgId. The Msg Map provides fast access to the destinations of a message.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 193 of file default_cfe_sb_internal_cfg.h.

12.109.2.3 CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT #define CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT 4

Purpose Default Subscription Message Limit

Description:

Dictates the default Message Limit when using the [CFE_SB_Subscribe](#) API. This will limit the number of messages with a specific message ID that can be received through a subscription. This only changes the default; other message limits can be set on a per subscription basis using [CFE_SB_SubscribeEx](#).

Limits

This parameter has a lower limit of 4 and an upper limit of 65535.

Definition at line 101 of file default_cfe_sb_internal_cfg.h.

12.109.2.4 CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME #define CFE_PLATFORM_SB_DEFAULT_PIPE_←
FILENAME "/ram/cfe_sb_pipe.dat"

Purpose Default Pipe Information Filename

Description:

The value of this constant defines the filename used to store the software bus pipe information. This filename is used only when no filename is specified in the command.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 176 of file default_cfe_sb_internal_cfg.h.

12.109.2.5 CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME #define CFE_PLATFORM_SB_DEFAULT_←
ROUTING_FILENAME "/ram/cfe_sb_route.dat"

Purpose Default Routing Information Filename

Description:

The value of this constant defines the filename used to store the software bus routing information. This filename is used only when no filename is specified in the command.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 162 of file default_cfe_sb_internal_cfg.h.

12.109.2.6 CFE_PLATFORM_SB_FILTER_MASK1 #define CFE_PLATFORM_SB_FILTER_MASK1 CFE_EVS_FIRST_4_STOP
Definition at line 211 of file default_cfe_sb_internal_cfg.h.

12.109.2.7 CFE_PLATFORM_SB_FILTER_MASK2 #define CFE_PLATFORM_SB_FILTER_MASK2 CFE_EVS_FIRST_4_STOP
Definition at line 214 of file default_cfe_sb_internal_cfg.h.

12.109.2.8 CFE_PLATFORM_SB_FILTER_MASK3 #define CFE_PLATFORM_SB_FILTER_MASK3 CFE_EVS_FIRST_16_STOP
Definition at line 217 of file default_cfe_sb_internal_cfg.h.

12.109.2.9 CFE_PLATFORM_SB_FILTER_MASK4 #define CFE_PLATFORM_SB_FILTER_MASK4 CFE_EVS_FIRST_16_STOP
Definition at line 220 of file default_cfe_sb_internal_cfg.h.

12.109.2.10 CFE_PLATFORM_SB_FILTER_MASK5 #define CFE_PLATFORM_SB_FILTER_MASK5 CFE_EVS_NO_FILTER
Definition at line 223 of file default_cfe_sb_internal_cfg.h.

12.109.2.11 CFE_PLATFORM_SB_FILTER_MASK6 #define CFE_PLATFORM_SB_FILTER_MASK6 CFE_EVS_NO_FILTER
Definition at line 226 of file default_cfe_sb_internal_cfg.h.

12.109.2.12 CFE_PLATFORM_SB_FILTER_MASK7 #define CFE_PLATFORM_SB_FILTER_MASK7 CFE_EVS_NO_FILTER
Definition at line 229 of file default_cfe_sb_internal_cfg.h.

12.109.2.13 CFE_PLATFORM_SB_FILTER_MASK8 #define CFE_PLATFORM_SB_FILTER_MASK8 CFE_EVS_NO_FILTER
Definition at line 232 of file default_cfe_sb_internal_cfg.h.

12.109.2.14 CFE_PLATFORM_SB_FILTERED_EVENT1

```
#define CFE_PLATFORM_SB_FILTERED_EVENT1 CFE_SB_SEND_NO_SUBS_EID
```

Purpose SB Event Filtering

Description:

This group of configuration parameters dictates what SB events will be filtered through SB. The filtering will begin after the SB task initializes and stay in effect until a cmd to SB changes it. This allows the operator to set limits on the number of event messages that are sent during system initialization. NOTE: Set all unused event values and mask values to zero

Limits

This filtering applies only to SB events. These parameters have a lower limit of 0 and an upper limit of 65535.

Definition at line 210 of file default_cfe_sb_internal_cfg.h.

12.109.2.15 CFE_PLATFORM_SB_FILTERED_EVENT2

```
#define CFE_PLATFORM_SB_FILTERED_EVENT2 CFE_SB_DUP_SUBSCRIP_EID
```

Definition at line 213 of file default_cfe_sb_internal_cfg.h.

12.109.2.16 CFE_PLATFORM_SB_FILTERED_EVENT3

```
#define CFE_PLATFORM_SB_FILTERED_EVENT3 CFE_SB_MSGID_LIM_ERR_EID
```

Definition at line 216 of file default_cfe_sb_internal_cfg.h.

12.109.2.17 CFE_PLATFORM_SB_FILTERED_EVENT4

```
#define CFE_PLATFORM_SB_FILTERED_EVENT4 CFE_SB_Q_FULL_ERR_EID
```

Definition at line 219 of file default_cfe_sb_internal_cfg.h.

12.109.2.18 CFE_PLATFORM_SB_FILTERED_EVENT5

```
#define CFE_PLATFORM_SB_FILTERED_EVENT5 0
```

Definition at line 222 of file default_cfe_sb_internal_cfg.h.

12.109.2.19 CFE_PLATFORM_SB_FILTERED_EVENT6

```
#define CFE_PLATFORM_SB_FILTERED_EVENT6 0
```

Definition at line 225 of file default_cfe_sb_internal_cfg.h.

12.109.2.20 CFE_PLATFORM_SB_FILTERED_EVENT7

```
#define CFE_PLATFORM_SB_FILTERED_EVENT7 0
```

Definition at line 228 of file default_cfe_sb_internal_cfg.h.

12.109.2.21 CFE_PLATFORM_SB_FILTERED_EVENT8

```
#define CFE_PLATFORM_SB_FILTERED_EVENT8 0
```

Definition at line 231 of file default_cfe_sb_internal_cfg.h.

12.109.2.22 CFE_PLATFORM_SB_HIGHEST_VALID_MSGID

```
#define CFE_PLATFORM_SB_HIGHEST_VALID_
```

MSGID 0x1FFF

Purpose Highest Valid Message Id

Description:

The value of this constant dictates the range of valid message ID's, from 0 to CFE_PLATFORM_SB_HIGHEST_VALID_MSGID (inclusive).

Although this can be defined differently across platforms, each platform can only publish/subscribe to message ids within their allowable range. Typically this value is set the same across all mission platforms to avoid this complexity.

Limits

This parameter has a lower limit is 1, and an upper limit of 0xFFFFFFFF.

When using the direct message map implementation for software bus routing, this value is used to size the map where a value of 0xFFFF results in a 16 KBytes map and 0xFFFF is 128 KBytes.

When using the hash implementation for software bus routing, a multiple of the CFE_PLATFORM_SB_MAX_MSG_IDS is used to size the message map. In that case the range selected here does not impact message map memory use, so it's reasonable to use up to the full range supported by the message ID implementation.

Definition at line 148 of file default_cfe_sb_internal_cfg.h.

12.109.2.23 CFE_PLATFORM_SB_MAX_BLOCK_SIZE #define CFE_PLATFORM_SB_MAX_BLOCK_SIZE (CFE_MISSION_SB_MAX_SB_M
+ 128)

Definition at line 261 of file default_cfe_sb_internal_cfg.h.

12.109.2.24 CFE_PLATFORM_SB_MAX_DEST_PER_PKT #define CFE_PLATFORM_SB_MAX_DEST_PER_PKT 16

Purpose Maximum Number of unique local destinations a single MsgId can have

Description:

Dictates the maximum number of unique local destinations a single MsgId can have.

Limits

This parameter has a lower limit of 1. There are no restrictions on the upper limit however, the maximum number of destinations per packet is system dependent and should be verified. Destination number values that are checked against this configuration are defined by a 16 bit data word.

Definition at line 86 of file default_cfe_sb_internal_cfg.h.

12.109.2.25 CFE_PLATFORM_SB_MAX_MSG_IDS #define CFE_PLATFORM_SB_MAX_MSG_IDS 256

Purpose Maximum Number of Unique Message IDs SB Routing Table can hold

Description:

Dictates the maximum number of unique MsgIds the SB routing table will hold. This constant has a direct effect on the size of SB's tables and arrays. Keeping this count as low as possible will save memory. To see the run-time, high-water mark and the current utilization figures regarding this parameter, send an SB command to 'Send Statistics Pkt'.

Limits

This must be a power of two if software bus message routing hash implementation is being used. Lower than 64 will cause unit test failures, and telemetry reporting is impacted below 32. There is no hard upper limit, but impacts memory footprint. For software bus message routing search implementation the number of msg ids subscribed to impacts performance.

Definition at line 53 of file default_cfe_sb_internal_cfg.h.

12.109.2.26 CFE_PLATFORM_SB_MAX_PIPES #define CFE_PLATFORM_SB_MAX_PIPES 64

Purpose Maximum Number of Unique Pipes SB Routing Table can hold

Description:

Dictates the maximum number of unique Pipes the SB routing table will hold. This constant has a direct effect on the size of SB's tables and arrays. Keeping this count as low as possible will save memory. To see the run-time, high-water mark and the current utilization figures regarding this parameter, send an SB command to 'Send Statistics Pkt'.

Limits

This parameter has a lower limit of 1. This parameter must also be less than or equal to OS_MAX_QUEUES.

Definition at line 70 of file default_cfe_sb_internal_cfg.h.

12.109.2.27 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01 8

Purpose Define SB Memory Pool Block Sizes

Description:

Software Bus Memory Pool Block Sizes

Limits

These sizes MUST be increasing and MUST be an integral multiple of 4. The number of block sizes defined cannot exceed [CFE_PLATFORM_ES_POOL_MAX_BUCKETS](#)

Definition at line 245 of file default_cfe_sb_internal_cfg.h.

12.109.2.28 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_02 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_02 16

Definition at line 246 of file default_cfe_sb_internal_cfg.h.

12.109.2.29 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_03 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_03 20

Definition at line 247 of file default_cfe_sb_internal_cfg.h.

12.109.2.30 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_04 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_04 36

Definition at line 248 of file default_cfe_sb_internal_cfg.h.

12.109.2.31 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_05 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_05 64

Definition at line 249 of file default_cfe_sb_internal_cfg.h.

12.109.2.32 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_06 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_06 96

Definition at line 250 of file default_cfe_sb_internal_cfg.h.

12.109.2.33 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_07 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_07 128
07 128

Definition at line 251 of file default_cfe_sb_internal_cfg.h.

12.109.2.34 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_08 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_08 160
08 160

Definition at line 252 of file default_cfe_sb_internal_cfg.h.

12.109.2.35 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_09 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_09 256
09 256

Definition at line 253 of file default_cfe_sb_internal_cfg.h.

12.109.2.36 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_10 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_10 512
10 512

Definition at line 254 of file default_cfe_sb_internal_cfg.h.

12.109.2.37 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_11 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_11 1024
11 1024

Definition at line 255 of file default_cfe_sb_internal_cfg.h.

12.109.2.38 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_12 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_12 2048
12 2048

Definition at line 256 of file default_cfe_sb_internal_cfg.h.

12.109.2.39 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_13 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_13 4096
13 4096

Definition at line 257 of file default_cfe_sb_internal_cfg.h.

12.109.2.40 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_14 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_14 8192
14 8192

Definition at line 258 of file default_cfe_sb_internal_cfg.h.

12.109.2.41 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_15 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_15 16384
15 16384

Definition at line 259 of file default_cfe_sb_internal_cfg.h.

12.109.2.42 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_16 #define CFE_PLATFORM_SB_MEM_BLOCK_SIZE_16 32768
16 32768

Definition at line 260 of file default_cfe_sb_internal_cfg.h.

12.109.2.43 CFE_PLATFORM_SB_START_TASK_PRIORITY #define CFE_PLATFORM_SB_START_TASK_PRIORITY 64

Purpose Define SB Task Priority

Description:

Defines the cFE_SB Task priority.

Limits

Not Applicable

Definition at line 272 of file default_cfe_sb_internal_cfg.h.

12.109.2.44 CFE_PLATFORM_SB_START_TASK_STACK_SIZE #define CFE_PLATFORM_SB_START_TASK_←
STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

Purpose Define SB Task Stack Size

Description:

Defines the cFE_SB Task Stack Size

Limits

There is a lower limit of 2048 on this configuration parameter. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 287 of file default_cfe_sb_internal_cfg.h.

12.110 cfe/modules/sb/config/default_cfe_sb_mission_cfg.h File Reference

```
#include "cfe_sb_interface_cfg.h"
```

12.110.1 Detailed Description

CFE Event Services (CFE_SB) Application Mission Configuration Header File

This is a compatibility header for the "mission_cfg.h" file that has traditionally provided public config definitions for each CFS app.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.111 cfe/modules/sb/config/default_cfe_sb_msg.h File Reference

```
#include "cfe_mission_cfg.h"
#include "cfe_sb_fcncodes.h"
#include "cfe_sb_msgdefs.h"
#include "cfe_sb_msgstruct.h"
```

12.111.1 Detailed Description

Specification for the CFE Event Services (CFE_SB) command and telemetry message data types. This is a compatibility header for the "cfe_sb_msg.h" file that has traditionally provided the message definitions for cFS apps.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.112 cfe/modules/sb/config/default_cfe_sb_msgdefs.h File Reference

```
#include "common_types.h"
#include "cfe_mission_cfg.h"
#include "cfe_es_extern_typedefs.h"
#include "cfe_sb_extern_typedefs.h"
#include "cfe_sb_fcncodes.h"
```

Data Structures

- struct [CFE_SB_WriteFileInfoCmd_Payload](#)
Write File Info Command Payload.
- struct [CFE_SB_RouteCmd_Payload](#)
Enable/Disable Route Command Payload.
- struct [CFE_SB_HousekeepingTlm_Payload](#)
- struct [CFE_SB_PipeDepthStats](#)
SB Pipe Depth Statistics.
- struct [CFE_SB_PipeInfoEntry](#)
SB Pipe Information File Entry.
- struct [CFE_SB_StatsTlm_Payload](#)
- struct [CFE_SB_RoutingFileEntry](#)
SB Routing File Entry.
- struct [CFE_SB_MsgMapFileEntry](#)
SB Map File Entry.
- struct [CFE_SB_SingleSubscriptionTlm_Payload](#)
- struct [CFE_SB_SubEntries](#)
SB Previous Subscriptions Entry.
- struct [CFE_SB_AllSubscriptionsTlm_Payload](#)

Typedefs

- typedef struct [CFE_SB_WriteFileInfoCmd_Payload](#) [CFE_SB_WriteFileInfoCmd_Payload_t](#)
Write File Info Command Payload.
- typedef struct [CFE_SB_RouteCmd_Payload](#) [CFE_SB_RouteCmd_Payload_t](#)
Enable/Disable Route Command Payload.
- typedef struct [CFE_SB_HousekeepingTlm_Payload](#) [CFE_SB_HousekeepingTlm_Payload_t](#)
- typedef struct [CFE_SB_PipeDepthStats](#) [CFE_SB_PipeDepthStats_t](#)
SB Pipe Depth Statistics.
- typedef struct [CFE_SB_PipeInfoEntry](#) [CFE_SB_PipeInfoEntry_t](#)
SB Pipe Information File Entry.

- `typedef struct CFE_SB_StatsTlm_Payload CFE_SB_StatsTlm_Payload_t`
- `typedef struct CFE_SB_RoutingFileEntry CFE_SB_RoutingFileEntry_t`
SB Routing File Entry.
- `typedef struct CFE_SB_MsgMapFileEntry CFE_SB_MsgMapFileEntry_t`
SB Map File Entry.
- `typedef struct CFE_SB_SingleSubscriptionTlm_Payload CFE_SB_SingleSubscriptionTlm_Payload_t`
- `typedef struct CFE_SB_SubEntries CFE_SB_SubEntries_t`
SB Previous Subscriptions Entry.
- `typedef struct CFE_SB_AllSubscriptionsTlm_Payload CFE_SB_AllSubscriptionsTlm_Payload_t`

12.112.1 Detailed Description

Specification for the CFE Event Services (CFE_SB) command and telemetry message constant definitions. For CFE_SB this is only the function/command code definitions

12.112.2 Typedef Documentation

12.112.2.1 `CFE_SB_AllSubscriptionsTlm_Payload_t` `typedef struct CFE_SB_AllSubscriptionsTlm_Payload CFE_SB_AllSubscriptionsTlm_Payload_t`

Name SB Previous Subscriptions Packet

This structure defines the pkt(s) sent by SB that contains a list of all current subscriptions. This pkt is generated on cmd and intended to be used primarily by the Software Bus Networking Application (SBN). Typically, when the cmd is received there are more subscriptions than can fit in one pkt. The complete list of subscriptions is sent via a series of segmented pkts.

12.112.2.2 `CFE_SB_HousekeepingTlm_Payload_t` `typedef struct CFE_SB_HousekeepingTlm_Payload CFE_SB_HousekeepingTlm_Payload_t`

Name Software Bus task housekeeping Packet

12.112.2.3 `CFE_SB_MsgMapFileEntry_t` `typedef struct CFE_SB_MsgMapFileEntry CFE_SB_MsgMapFileEntry_t`

SB Map File Entry.

Structure of one element of the map information in response to `CFE_SB_WRITE_MAP_INFO_CC`

12.112.2.4 `CFE_SB_PipeDepthStats_t` `typedef struct CFE_SB_PipeDepthStats CFE_SB_PipeDepthStats_t`

SB Pipe Depth Statistics.

Used in SB Statistics Telemetry Packet `CFE_SB_StatsTlm_t`

12.112.2.5 `CFE_SB_PipeInfoEntry_t` `typedef struct CFE_SB_PipeInfoEntry CFE_SB_PipeInfoEntry_t`

SB Pipe Information File Entry.

This statistics structure is output as part of the CFE SB "Send Pipe Info" command (CFE_SB_SEND_PIPE_INFO_CC). Previous versions of CFE simply wrote the internal CFE_SB_PipeD_t object to the file, but this also contains information such as pointers which are not relevant outside the running CFE process.

By defining the pipe info structure separately, it also provides some independence, such that the internal CFE_SB_PipeD_t definition can evolve without changing the binary format of the information file.

12.112.2.6 CFE_SB_RouteCmd_Payload_t `typedef struct CFE_SB_RouteCmd_Payload CFE_SB_RouteCmd_Payload_t`
 Enable/Disable Route Command Payload.

This structure contains a definition used by two SB commands, 'Enable Route' [CFE_SB_ENABLE_ROUTE_CC](#) and 'Disable Route' [CFE_SB_DISABLE_ROUTE_CC](#). A route is the destination pipe for a particular message and is therefore defined as a MsgId and PipeId combination.

12.112.2.7 CFE_SB_RoutingFileEntry_t `typedef struct CFE_SB_RoutingFileEntry CFE_SB_RoutingFileEntry_t`
 SB Routing File Entry.

Structure of one element of the routing information in response to [CFE_SB_WRITE_ROUTING_INFO_CC](#)

12.112.2.8 CFE_SB_SingleSubscriptionTlm_Payload_t `typedef struct CFE_SB_SingleSubscriptionTlm_Payload CFE_SB_SingleSubscriptionTlm_Payload_t`

Name SB Subscription Report Packet

This structure defines the pkt sent by SB when a subscription or a request to unsubscribe is received while subscription reporting is enabled. By default subscription reporting is disabled. This feature is intended to be used primarily by Software Bus Networking Application (SBN)

See also

[CFE_SB_ENABLE_SUB_REPORTING_CC](#), [CFE_SB_DISABLE_SUB_REPORTING_CC](#)

12.112.2.9 CFE_SB_StatsTlm_Payload_t `typedef struct CFE_SB_StatsTlm_Payload CFE_SB_StatsTlm_Payload_t`

Name SB Statistics Telemetry Packet

SB Statistics packet sent in response to [CFE_SB_SEND_SB_STATS_CC](#)

12.112.2.10 CFE_SB_SubEntries_t `typedef struct CFE_SB_SubEntries CFE_SB_SubEntries_t`
 SB Previous Subscriptions Entry.

This structure defines an entry used in the `CFE_SB_PrevSubsPkt_t` Intended to be used primarily by Software Bus Networking Application (SBN)

Used in structure definition [CFE_SB_AllSubscriptionsTlm_t](#)

12.112.2.11 CFE_SB_WriteFileInfoCmd_Payload_t `typedef struct CFE_SB_WriteFileInfoCmd_Payload CFE_SB_WriteFileInfoCmd_Payload_t`

Write File Info Command Payload.

This structure contains a generic definition used by SB commands that write to a file

12.113 cfe/modules/sb/config/default_cfe_sb_msgids.h File Reference

```
#include "cfe_core_api_base_msgids.h"
#include "cfe_sb_topicids.h"
```

Macros

- #define `CFE_SB_CMD_MID` `CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_SB_CMD_TOPICID)`
`/* 0x1803 */`
- #define `CFE_SB_SEND_HK_MID` `CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_SB_SEND_HK_TOPICID)`
`/* 0x180B */`

- #define CFE_SB_SUB_RPT_CTRL_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_SB_SUB_RPT_CTRL_TOPICID)
/* 0x180E */
- #define CFE_SB_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_SB_HK_TLM_TOPICID)
/* 0x0803 */
- #define CFE_SB_STATS_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_SB_STATS_TLM_TOPICID)
/* 0x080A */
- #define CFE_SB_ALLSUBS_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_SB_ALLSUBS_TLM_TOPICID)
/* 0x080D */
- #define CFE_SB_ONESUB_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_SB_ONESUB_TLM_TOPICID)
/* 0x080E */

12.113.1 Detailed Description

CFE Event Services (CFE_SB) Application Message IDs

12.113.2 Macro Definition Documentation

12.113.2.1 CFE_SB_ALLSUBS_TLM_MID #define CFE_SB_ALLSUBS_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_SB_ALLSUBS_TLM_TOPICID)
/* 0x080D */
Definition at line 41 of file default_cfe_sb_msgids.h.

12.113.2.2 CFE_SB_CMD_MID #define CFE_SB_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_SB_CMD_TOPICID)
/* 0x1803 */
Definition at line 32 of file default_cfe_sb_msgids.h.

12.113.2.3 CFE_SB_HK_TLM_MID #define CFE_SB_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_SB_HK_TLM_TOPICID)
/* 0x0803 */
Definition at line 39 of file default_cfe_sb_msgids.h.

12.113.2.4 CFE_SB_ONESUB_TLM_MID #define CFE_SB_ONESUB_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_SB_ONESUB_TLM_TOPICID)
/* 0x080E */
Definition at line 42 of file default_cfe_sb_msgids.h.

12.113.2.5 CFE_SB_SEND_HK_MID #define CFE_SB_SEND_HK_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_SB_SEND_HK_TOPICID)
/* 0x180B */
Definition at line 33 of file default_cfe_sb_msgids.h.

12.113.2.6 CFE_SB_STATS_TLM_MID #define CFE_SB_STATS_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_SB_STATS_TLM_TOPICID)
/* 0x080A */
Definition at line 40 of file default_cfe_sb_msgids.h.

12.113.2.7 CFE_SB_SUB_RPT_CTRL_MID #define CFE_SB_SUB_RPT_CTRL_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_SB_SUB_RPT_CTRL_TOPICID)
/* 0x180E */
Definition at line 34 of file default_cfe_sb_msgids.h.

12.114 cfe/modules/sb/config/default_cfe_sb_msgstruct.h File Reference

```
#include "cfe_sb_msgdefs.h"
#include "cfe_msg_hdr.h"
```

Data Structures

- struct [CFE_SB_NoopCmd](#)
- struct [CFE_SB_ResetCountersCmd](#)
- struct [CFE_SB_EnableSubReportingCmd](#)
- struct [CFE_SB_DisableSubReportingCmd](#)
- struct [CFE_SB_SendSbStatsCmd](#)
- struct [CFE_SB_SendPrevSubsCmd](#)
- struct [CFE_SB_SendHkCmd](#)
- struct [CFE_SB_WriteRoutingInfoCmd](#)
- struct [CFE_SB_WritePipeInfoCmd](#)
- struct [CFE_SB_WriteMapInfoCmd](#)
- struct [CFE_SB_EnableRouteCmd](#)
- struct [CFE_SB_DisableRouteCmd](#)
- struct [CFE_SB_HousekeepingTlm](#)
- struct [CFE_SB_StatsTlm](#)
- struct [CFE_SB_SingleSubscriptionTlm](#)
- struct [CFE_SB_AllSubscriptionsTlm](#)

Typedefs

- typedef struct [CFE_SB_NoopCmd](#) CFE_SB_NoopCmd_t
- typedef struct [CFE_SB_ResetCountersCmd](#) CFE_SB_ResetCountersCmd_t
- typedef struct [CFE_SB_EnableSubReportingCmd](#) CFE_SB_EnableSubReportingCmd_t
- typedef struct [CFE_SB_DisableSubReportingCmd](#) CFE_SB_DisableSubReportingCmd_t
- typedef struct [CFE_SB_SendSbStatsCmd](#) CFE_SB_SendSbStatsCmd_t
- typedef struct [CFE_SB_SendPrevSubsCmd](#) CFE_SB_SendPrevSubsCmd_t
- typedef struct [CFE_SB_SendHkCmd](#) CFE_SB_SendHkCmd_t
- typedef struct [CFE_SB_WriteRoutingInfoCmd](#) CFE_SB_WriteRoutingInfoCmd_t
- typedef struct [CFE_SB_WritePipeInfoCmd](#) CFE_SB_WritePipeInfoCmd_t
- typedef struct [CFE_SB_WriteMapInfoCmd](#) CFE_SB_WriteMapInfoCmd_t
- typedef struct [CFE_SB_EnableRouteCmd](#) CFE_SB_EnableRouteCmd_t
- typedef struct [CFE_SB_DisableRouteCmd](#) CFE_SB_DisableRouteCmd_t
- typedef struct [CFE_SB_HousekeepingTlm](#) CFE_SB_HousekeepingTlm_t
- typedef struct [CFE_SB_StatsTlm](#) CFE_SB_StatsTlm_t
- typedef struct [CFE_SB_SingleSubscriptionTlm](#) CFE_SB_SingleSubscriptionTlm_t
- typedef struct [CFE_SB_AllSubscriptionsTlm](#) CFE_SB_AllSubscriptionsTlm_t

12.114.1 Detailed Description

Purpose: cFE Executive Services (SB) Command and Telemetry packet definition file.

References: Flight Software Branch C Coding Standard Version 1.0a cFE Flight Software Application Developers Guide

Notes:

12.114.2 Typedef Documentation

12.114.2.1 CFE_SB_AllSubscriptionsTlm_t `typedef struct CFE_SB_AllSubscriptionsTlm CFE_SB_AllSubscriptionsTlm_t`

12.114.2.2 CFE_SB_DisableRouteCmd_t `typedef struct CFE_SB_DisableRouteCmd CFE_SB_DisableRouteCmd_t`

12.114.2.3 CFE_SB_DisableSubReportingCmd_t `typedef struct CFE_SB_DisableSubReportingCmd CFE_SB_DisableSubReportin`

12.114.2.4 CFE_SB_EnableRouteCmd_t `typedef struct CFE_SB_EnableRouteCmd CFE_SB_EnableRouteCmd_t`

12.114.2.5 CFE_SB_EnableSubReportingCmd_t `typedef struct CFE_SB_EnableSubReportingCmd CFE_SB_EnableSubReportin`

12.114.2.6 CFE_SB_HousekeepingTlm_t `typedef struct CFE_SB_HousekeepingTlm CFE_SB_HousekeepingTlm_t`

12.114.2.7 CFE_SB_NoopCmd_t `typedef struct CFE_SB_NoopCmd CFE_SB_NoopCmd_t`

12.114.2.8 CFE_SB_ResetCountersCmd_t `typedef struct CFE_SB_ResetCountersCmd CFE_SB_ResetCountersCmd_t`

12.114.2.9 CFE_SB_SendHkCmd_t `typedef struct CFE_SB_SendHkCmd CFE_SB_SendHkCmd_t`

12.114.2.10 CFE_SB_SendPrevSubsCmd_t `typedef struct CFE_SB_SendPrevSubsCmd CFE_SB_SendPrevSubsCmd_t`

12.114.2.11 CFE_SB_SendSbStatsCmd_t `typedef struct CFE_SB_SendSbStatsCmd CFE_SB_SendSbStatsCmd_t`

12.114.2.12 CFE_SB_SingleSubscriptionTlm_t `typedef struct CFE_SB_SingleSubscriptionTlm CFE_SB_SingleSubscription`

12.114.2.13 CFE_SB_StatsTlm_t `typedef struct CFE_SB_StatsTlm CFE_SB_StatsTlm_t`

12.114.2.14 CFE_SB_WriteMapInfoCmd_t `typedef struct CFE_SB_WriteMapInfoCmd CFE_SB_WriteMapInfoCmd_t`

12.114.2.15 CFE_SB_WritePipeInfoCmd_t `typedef struct CFE_SB_WritePipeInfoCmd CFE_SB_WritePipeInfoCmd_t`

12.114.2.16 CFE_SB_WriteRoutingInfoCmd_t `typedef struct CFE_SB_WriteRoutingInfoCmd CFE_SB_WriteRoutingInfoCmd_t`

12.115 cfe/modules/sb/config/default_cfe_sb_platform_cfg.h File Reference

```
#include "cfe_sb_mission_cfg.h"
#include "cfe_sb_internal_cfg.h"
```

12.115.1 Detailed Description

CFE Software Bus (CFE_SB) Application Platform Configuration Header File

This is a compatibility header for the "platform_cfg.h" file that has traditionally provided both public and private config definitions for each CFS app.

These definitions are now provided in two separate files, one for the public/mission scope and one for internal scope.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.116 cfe/modules/sb/config/default_cfe_sb_topicids.h File Reference

Macros

- #define CFE_MISSION_SB_CMD_TOPICID 3
- #define CFE_MISSION_SB_SEND_HK_TOPICID 11
- #define CFE_MISSION_SB_SUB_RPT_CTRL_TOPICID 14
- #define CFE_MISSION_SB_HK_TLM_TOPICID 3
- #define CFE_MISSION_SB_STATS_TLM_TOPICID 10
- #define CFE_MISSION_SB_ALLSUBS_TLM_TOPICID 13
- #define CFE_MISSION_SB_ONESUB_TLM_TOPICID 14

12.116.1 Detailed Description

CFE Software Bus (CFE_SB) Application Topic IDs

12.116.2 Macro Definition Documentation

12.116.2.1 CFE_MISSION_SB_ALLSUBS_TLM_TOPICID #define CFE_MISSION_SB_ALLSUBS_TLM_TOPICID 13
Definition at line 50 of file default_cfe_sb_topicids.h.

12.116.2.2 CFE_MISSION_SB_CMD_TOPICID #define CFE_MISSION_SB_CMD_TOPICID 3

Purpose cFE Portable Message Numbers for Commands

Description:

Portable message numbers for the cFE command messages

Limits

Not Applicable

Definition at line 35 of file default_cfe_sb_topicids.h.

12.116.2.3 CFE_MISSION_SB_HK_TLM_TOPICID #define CFE_MISSION_SB_HK_TLM_TOPICID 3

Purpose cFE Portable Message Numbers for Telemetry

Description:

Portable message numbers for the cFE telemetry messages

Limits

Not Applicable

Definition at line 48 of file default_cfe_sb_topicids.h.

12.116.2.4 CFE_MISSION_SB_ONESUB_TLM_TOPICID #define CFE_MISSION_SB_ONESUB_TLM_TOPICID 14

Definition at line 51 of file default_cfe_sb_topicids.h.

12.116.2.5 CFE_MISSION_SB_SEND_HK_TOPICID #define CFE_MISSION_SB_SEND_HK_TOPICID 11

Definition at line 36 of file default_cfe_sb_topicids.h.

12.116.2.6 CFE_MISSION_SB_STATS_TLM_TOPICID #define CFE_MISSION_SB_STATS_TLM_TOPICID 10

Definition at line 49 of file default_cfe_sb_topicids.h.

12.116.2.7 CFE_MISSION_SB_SUB_RPT_CTRL_TOPICID #define CFE_MISSION_SB_SUB_RPT_CTRL_TOPICID 14

Definition at line 37 of file default_cfe_sb_topicids.h.

12.117 cfe/modules/sb/fsw/inc/cfe_sb_eventids.h File Reference

Macros

SB event IDs

- #define **CFE_SB_INIT_EID** 1
SB Initialization Event ID.
- #define **CFE_SB_CR_PIPE_BAD_ARG_EID** 2
SB Create Pipe API Bad Argument Event ID.
- #define **CFE_SB_MAX_PIPES_MET_EID** 3
SB Create Pipe API Max Pipes Exceeded Event ID.
- #define **CFE_SB_CR_PIPE_ERR_EID** 4
SB Create Pipe API Queue Create Failure Event ID.
- #define **CFE_SB_PIPE_ADDED_EID** 5
SB Create Pipe API Success Event ID.
- #define **CFE_SB_SUB_ARG_ERR_EID** 6
SB Subscribe API Bad Argument Event ID.
- #define **CFE_SB_DUP_SUBSCRIPTION_EID** 7
SB Subscribe API Duplicate MsgId Subscription Event ID.
- #define **CFE_SB_MAX_MSGS_MET_EID** 8
SB Subscribe API Max Subscriptions Exceeded Event ID.
- #define **CFE_SB_MAX_DESTS_MET_EID** 9
SB Subscribe API Max Destinations Exceeded Event ID.
- #define **CFE_SB_SUBSCRIPTION_RCVD_EID** 10

- #define **CFE_SB_UNSUB_ARG_ERR_EID** 11
SB Subscribe API Success Event ID.
- #define **CFE_SB_UNSUB_NO_SUBS_EID** 12
SB Unsubscribe API Bad Argument Event ID.
- #define **CFE_SB_SEND_BAD_ARG_EID** 13
SB Transmit API Bad Argument Event ID.
- #define **CFE_SB_SEND_NO_SUBS_EID** 14
SB Transmit API No MsgId Subscribers Event ID.
- #define **CFE_SB_MSG_TOO_BIG_EID** 15
SB Transmit API Message Size Limit Exceeded Event ID.
- #define **CFE_SB_GET_BUF_ERR_EID** 16
SB Transmit API Buffer Request Failure Event ID.
- #define **CFE_SB_MSGID_LIM_ERR_EID** 17
SB Transmit API MsgId Pipe Limit Exceeded Event ID.
- #define **CFE_SB_RCV_BAD_ARG_EID** 18
SB Receive Buffer API Bad Argument Event ID.
- #define **CFE_SB_BAD_PIPEID_EID** 19
SB Receive Buffer API Invalid Pipe Event ID.
- #define **CFE_SB_DEST_BLK_ERR_EID** 20
SB Subscribe API Get Destination Block Failure Event ID.
- #define **CFE_SB_SEND_INV_MSGID_EID** 21
SB Transmit API Invalid MsgId Event ID.
- #define **CFE_SB_SUBSCRIPTION_RPT_EID** 22
SB Subscription Report Sent Event ID.
- #define **CFE_SB_HASHCOLLISION_EID** 23
SB Subscribe API Message Table Hash Collision Event ID.
- #define **CFE_SB_Q_FULL_ERR_EID** 25
SB Transmit API Pipe Overflow Event ID.
- #define **CFE_SB_Q_WR_ERR_EID** 26
SB Transmit API Queue Write Failure Event ID.
- #define **CFE_SB_Q_RD_ERR_EID** 27
SB Transmit API Queue Read Failure Event ID.
- #define **CFE_SB_CMD0_RCVD_EID** 28
SB No-op Command Success Event ID.
- #define **CFE_SB_CMD1_RCVD_EID** 29
SB Reset Counters Command Success Event ID.
- #define **CFE_SB SND_STATS_EID** 32
SB Send Statistics Command Success Event ID.
- #define **CFE_SB_ENBL RTE1_EID** 33
SB Enable Route Command Invalid MsgId/PipeID Pair Event ID.
- #define **CFE_SB_ENBL RTE2_EID** 34
SB Enable Route Command Success Event ID.
- #define **CFE_SB_ENBL RTE3_EID** 35
SB Enable Route Command Invalid MsgId or Pipe Event ID.
- #define **CFE_SB_DSBL RTE1_EID** 36
SB Disable Route Command Invalid MsgId/PipeID Pair Event ID.
- #define **CFE_SB_DSBL RTE2_EID** 37
SB Disable Route Command Success Event ID.
- #define **CFE_SB_DSBL RTE3_EID** 38
SB Disable Route Command Invalid MsgId or Pipe Event ID.
- #define **CFE_SB SND RTG_EID** 39
SB File Write Success Event ID.
- #define **CFE_SB SND RTG_ERR1_EID** 40
SB File Write Create File Failure Event ID.

- #define `CFE_SB_BAD_CMD_CODE_EID` 42
SB Invalid Command Code Received Event ID.
- #define `CFE_SB_BAD_MSGID_EID` 43
SB Invalid Message ID Received Event ID.
- #define `CFE_SB_FULL_SUB_PKT_EID` 44
SB Send Previous Subscriptions Command Full Packet Sent Event ID.
- #define `CFE_SB_PART_SUB_PKT_EID` 45
SB Send Previous Subscriptions Command Partial Packet Sent Event ID.
- #define `CFE_SB_DEL_PIPE_ERR1_EID` 46
SB Pipe Delete API Bad Argument Event ID.
- #define `CFE_SB_PIPE_DELETED_EID` 47
SB Pipe Delete API Success Event ID.
- #define `CFE_SB_SUBSCRIPTION_REMOVED_EID` 48
SB Unsubscribe API Success Event ID.
- #define `CFE_SB_FILEWRITE_ERR_EID` 49
SB File Write Failed Event ID.
- #define `CFE_SB_SUB_INV_PIPE_EID` 50
SB Subscribe API Invalid Pipe Event ID.
- #define `CFE_SB_SUB_INV_CALLER_EID` 51
SB Subscribe API Not Owner Event ID.
- #define `CFE_SB_UNSUB_INV_PIPE_EID` 52
SB Unsubscribe API Invalid Pipe Event ID.
- #define `CFE_SB_UNSUB_INV_CALLER_EID` 53
SB Unsubscribe API Not Owner Event ID.
- #define `CFE_SB_DEL_PIPE_ERR2_EID` 54
SB Delete Pipe API Not Owner Event ID.
- #define `CFE_SB_SETPPIPEOPTS_ID_ERR_EID` 55
SB Set Pipe Opts API Invalid Pipe Event ID.
- #define `CFE_SB_SETPPIPEOPTS_OWNER_ERR_EID` 56
SB Set Pipe Opts API Not Owner Event ID.
- #define `CFE_SB_SETPPIPEOPTS_EID` 57
SB Set Pipe Opts API Success Event ID.
- #define `CFE_SB_GETPIPEOPTS_ID_ERR_EID` 58
SB Get Pipe Opts API Invalid Pipe Event ID.
- #define `CFE_SB_GETPIPEOPTS_PTR_ERR_EID` 59
SB Get Pipe Opts API Invalid Pointer Event ID.
- #define `CFE_SB_GETPIPEOPTS_EID` 60
SB Get Pipe Opts API Success Event ID.
- #define `CFE_SB_GETPIPENAME_EID` 62
SB Get Pipe Name API Success Event ID.
- #define `CFE_SB_GETPIPENAME_NULL_PTR_EID` 63
SB Get Pipe Name API Invalid Pointer Event ID.
- #define `CFE_SB_GETPIPENAME_ID_ERR_EID` 64
SB Get Pipe Name API Invalid Pipe or Resource Event ID.
- #define `CFE_SB_GETPIPEIDBYNAME_EID` 65
SB Get Pipe ID By Name API Success Event ID.
- #define `CFE_SB_GETPIPEIDBYNAME_NULL_ERR_EID` 66
SB Get Pipe ID By Name API Invalid Pointer Event ID.
- #define `CFE_SB_GETPIPEIDBYNAME_NAME_ERR_EID` 67
SB Get Pipe ID By Name API Name Not Found Or ID Not Matched Event ID.
- #define `CFE_SB_LEN_ERR_EID` 68
SB Invalid Command Length Event ID.
- #define `CFE_SB_CR_PIPE_NAME_TAKEN_EID` 69
SB Create Pipe API Name Taken Event ID.
- #define `CFE_SB_CR_PIPE_NO_FREE_EID` 70

- *SB Create Pipe API Queues Exhausted Event ID.*
- `#define CFE_SB_SEND_MESSAGE_INTEGRITY_FAIL_EID 71`
SB integrity actions on transmit message failure event.
- `#define CFE_SB_RCV_MESSAGE_INTEGRITY_FAIL_EID 72`
SB validation of received message failure event.

12.117.1 Detailed Description

cFE Software Bus Services Event IDs

12.117.2 Macro Definition Documentation

12.117.2.1 CFE_SB_BAD_CMD_CODE_EID `#define CFE_SB_BAD_CMD_CODE_EID 42`
SB Invalid Command Code Received Event ID.

Type: ERROR

Cause:

Invalid command code for message ID `CFE_SB_CMD_MID` or `CFE_SB_SUB_RPT_CTRL_MID` received on the SB message pipe. OVERLOADED
Definition at line 461 of file `cfe_sb_eventids.h`.

12.117.2.2 CFE_SB_BAD_MSGID_EID `#define CFE_SB_BAD_MSGID_EID 43`
SB Invalid Message ID Received Event ID.

Type: ERROR

Cause:

Invalid message ID received on the SB message pipe.
Definition at line 472 of file `cfe_sb_eventids.h`.

12.117.2.3 CFE_SB_BAD_PIPEID_EID `#define CFE_SB_BAD_PIPEID_EID 19`
SB Receive Buffer API Invalid Pipe Event ID.

Type: ERROR

Cause:

`CFE_SB_ReceiveBuffer` API failure due to an invalid Pipe ID.
Definition at line 244 of file `cfe_sb_eventids.h`.

12.117.2.4 CFE_SB_CMD0_RCVD_EID #define CFE_SB_CMD0_RCVD_EID 28
SB No-op Command Success Event ID.

Type: INFORMATION

Cause:

[SB NO-OP Command](#) success.

Definition at line 335 of file cfe_sb_eventids.h.

12.117.2.5 CFE_SB_CMD1_RCVD_EID #define CFE_SB_CMD1_RCVD_EID 29
SB Reset Counters Command Success Event ID.

Type: DEBUG

Cause:

[SB Reset Counters Command](#) success.

Definition at line 346 of file cfe_sb_eventids.h.

12.117.2.6 CFE_SB_CR_PIPE_BAD_ARG_EID #define CFE_SB_CR_PIPE_BAD_ARG_EID 2
SB Create Pipe API Bad Argument Event ID.

Type: ERROR

Cause:

[CFE_SB_CreatePipe](#) API failure due to a bad input argument.

Definition at line 53 of file cfe_sb_eventids.h.

12.117.2.7 CFE_SB_CR_PIPE_ERR_EID #define CFE_SB_CR_PIPE_ERR_EID 4
SB Create Pipe API Queue Create Failure Event ID.

Type: ERROR

Cause:

[CFE_SB_CreatePipe](#) API failure creating the queue.

Definition at line 75 of file cfe_sb_eventids.h.

12.117.2.8 CFE_SB_CR_PIPE_NAME_TAKEN_EID #define CFE_SB_CR_PIPE_NAME_TAKEN_EID 69
SB Create Pipe API Name Taken Event ID.

Type: ERROR

Cause:

[CFE_SB_CreatePipe](#) API failure due to pipe name taken.
Definition at line 750 of file cfe_sb_eventids.h.

12.117.2.9 CFE_SB_CR_PIPE_NO_FREE_EID #define CFE_SB_CR_PIPE_NO_FREE_EID 70
SB Create Pipe API Queues Exhausted Event ID.

Type: ERROR

Cause:

[CFE_SB_CreatePipe](#) API failure due to no free queues.
Definition at line 761 of file cfe_sb_eventids.h.

12.117.2.10 CFE_SB_DEL_PIPE_ERR1_EID #define CFE_SB_DEL_PIPE_ERR1_EID 46
SB Pipe Delete API Bad Argument Event ID.

Type: ERROR

Cause:

An SB Delete Pipe API failed due to an invalid input argument.
Definition at line 507 of file cfe_sb_eventids.h.

12.117.2.11 CFE_SB_DEL_PIPE_ERR2_EID #define CFE_SB_DEL_PIPE_ERR2_EID 54
SB Delete Pipe API Not Owner Event ID.

Type: ERROR

Cause:

An SB Delete Pipe API failed due to not being the pipe owner.
Definition at line 595 of file cfe_sb_eventids.h.

12.117.2.12 CFE_SB_DEST_BLK_ERR_EID #define CFE_SB_DEST_BLK_ERR_EID 20
SB Subscribe API Get Destination Block Failure Event ID.

Type: ERROR

Cause:

An SB Subscribe API call failed to get a destination block.
Definition at line 255 of file cfe_sb_eventids.h.

12.117.2.13 CFE_SB_DSBL RTE1_EID #define CFE_SB_DSBL RTE1_EID 36
SB Disable Route Command Invalid MsgId/PipeId Pair Event ID.

Type: ERROR

Cause:

[SB Disable Route Command](#) failure due to the Message ID not being subscribed to the pipe.
Definition at line 404 of file cfe_sb_eventids.h.

12.117.2.14 CFE_SB_DSBL RTE2_EID #define CFE_SB_DSBL RTE2_EID 37
SB Disable Route Command Success Event ID.

Type: DEBUG

Cause:

[SB Disable Route Command](#) success.
Definition at line 415 of file cfe_sb_eventids.h.

12.117.2.15 CFE_SB_DSBL RTE3_EID #define CFE_SB_DSBL RTE3_EID 38
SB Disable Route Command Invalid MsgId or Pipe Event ID.

Type: ERROR

Cause:

[SB Disable Route Command](#) failure due to an invalid MsgId or Pipe.
Definition at line 427 of file cfe_sb_eventids.h.

12.117.2.16 CFE_SB_DUP_SUBSCRIPT_EID #define CFE_SB_DUP_SUBSCRIPT_EID 7
SB Subscribe API Duplicate MsgId Subscription Event ID.

Type: INFORMATION

Cause:

An SB Subscribe API was called with a Message ID that was already subscribed on the pipe on the pipe.
Definition at line 109 of file cfe_sb_eventids.h.

12.117.2.17 CFE_SB_ENBL RTE1_EID #define CFE_SB_ENBL RTE1_EID 33
SB Enable Route Command Invalid MsgId/PipeID Pair Event ID.

Type: ERROR

Cause:

[SB Enable Route Command](#) failure due to the Message ID not being subscribed to the pipe.
Definition at line 369 of file cfe_sb_eventids.h.

12.117.2.18 CFE_SB_ENBL RTE2_EID #define CFE_SB_ENBL RTE2_EID 34
SB Enable Route Command Success Event ID.

Type: DEBUG

Cause:

[SB Enable Route Command](#) success.
Definition at line 380 of file cfe_sb_eventids.h.

12.117.2.19 CFE_SB_ENBL RTE3_EID #define CFE_SB_ENBL RTE3_EID 35
SB Enable Route Command Invalid MsgId or Pipe Event ID.

Type: ERROR

Cause:

[SB Enable Route Command](#) failure due to an invalid MsgId or Pipe.
Definition at line 392 of file cfe_sb_eventids.h.

12.117.2.20 CFE_SB_FILEWRITE_ERR_EID #define CFE_SB_FILEWRITE_ERR_EID 49
SB File Write Failed Event ID.

Type: ERROR

Cause:

An SB file write failure encountered when writing to the file.
Definition at line 540 of file cfe_sb_eventids.h.

12.117.2.21 CFE_SB_FULL_SUB_PKT_EID #define CFE_SB_FULL_SUB_PKT_EID 44
SB Send Previous Subscriptions Command Full Packet Sent Event ID.

Type: DEBUG

Cause:

[SB Send Previous Subscriptions Command](#) processing sent a full subscription packet.
Definition at line 484 of file cfe_sb_eventids.h.

12.117.2.22 CFE_SB_GET_BUF_ERR_EID #define CFE_SB_GET_BUF_ERR_EID 16
SB Transmit API Buffer Request Failure Event ID.

Type: ERROR

Cause:

An SB Transmit API call buffer request failed.
Definition at line 210 of file cfe_sb_eventids.h.

12.117.2.23 CFE_SB_GETPIPEIDBYNAME_EID #define CFE_SB_GETPIPEIDBYNAME_EID 65
SB Get Pipe ID By Name API Success Event ID.

Type: DEBUG

Cause:

[CFE_SB_GetPipeIdByName](#) success.
Definition at line 705 of file cfe_sb_eventids.h.

12.117.2.24 CFE_SB_GETPIPEIDBYNAME_NAME_ERR_EID #define CFE_SB_GETPIPEIDBYNAME_NAME_ERR_←
EID 67

SB Get Pipe ID By Name API Name Not Found Or ID Not Matched Event ID.

Type: ERROR

Cause:

[CFE_SB_GetPipeIdByName](#) failure due to name not found or ID mismatch. OVERLOADED
Definition at line 727 of file cfe_sb_eventids.h.

12.117.2.25 CFE_SB_GETPIPEIDBYNAME_NULL_ERR_EID #define CFE_SB_GETPIPEIDBYNAME_NULL_ERR_←
EID 66

SB Get Pipe ID By Name API Invalid Pointer Event ID.

Type: ERROR

Cause:

[CFE_SB_GetPipeIdByName](#) failure due to invalid pointer.
Definition at line 716 of file cfe_sb_eventids.h.

12.117.2.26 CFE_SB_GETPIPENAME_EID #define CFE_SB_GETPIPENAME_EID 62
SB Get Pipe Name API Success Event ID.

Type: DEBUG

Cause:

[CFE_SB_GetPipeName](#) success.
Definition at line 672 of file cfe_sb_eventids.h.

12.117.2.27 CFE_SB_GETPIPENAME_ID_ERR_EID #define CFE_SB_GETPIPENAME_ID_ERR_EID 64
SB Get Pipe Name API Invalid Pipe or Resource Event ID.

Type: ERROR

Cause:

[CFE_SB_GetPipeName](#) failure due to invalid pipe ID or failure in retrieving resource name. OVERLOADED
Definition at line 694 of file cfe_sb_eventids.h.

12.117.2.28 CFE_SB_GETPIPENAME_NULL_PTR_EID #define CFE_SB_GETPIPENAME_NULL_PTR_EID 63
SB Get Pipe Name API Invalid Pointer Event ID.

Type: ERROR

Cause:

[CFE_SB_GetPipeName](#) failure due to invalid pointer.
Definition at line 683 of file cfe_sb_eventids.h.

12.117.2.29 CFE_SB_GETPIPEOPTS_EID #define CFE_SB_GETPIPEOPTS_EID 60
SB Get Pipe Opt API Success Event ID.

Type: DEBUG

Cause:

[CFE_SB_GetPipeOpt](#) success.
Definition at line 661 of file cfe_sb_eventids.h.

12.117.2.30 CFE_SB_GETPIPEOPTS_ID_ERR_EID #define CFE_SB_GETPIPEOPTS_ID_ERR_EID 58
SB Get Pipe Opt API Invalid Pipe Event ID.

Type: ERROR

Cause:

[CFE_SB_GetPipeOpt](#) failure due to invalid pipe ID.
Definition at line 639 of file cfe_sb_eventids.h.

12.117.2.31 CFE_SB_GETPIPEOPTS_PTR_ERR_EID #define CFE_SB_GETPIPEOPTS_PTR_ERR_EID 59
SB Get Pipe Opt API Invalid Pointer Event ID.

Type: ERROR

Cause:

[CFE_SB_GetPipeOpt](#) failure due to invalid pointer.
Definition at line 650 of file cfe_sb_eventids.h.

12.117.2.32 CFE_SB_HASHCOLLISION_EID #define CFE_SB_HASHCOLLISION_EID 23
SB Subscribe API Message Table Hash Collision Event ID.

Type: DEBUG

Cause:

An SB Subscribe API call caused a message table hash collision, which will impact message transmission performance. This can be resolved by deconflicting MsgId values or increasing [CFE_PLATFORM_SB_MAX_MSG_IDS](#).
Definition at line 290 of file cfe_sb_eventids.h.

12.117.2.33 CFE_SB_INIT_EID #define CFE_SB_INIT_EID 1
SB Initialization Event ID.

Type: INFORMATION

Cause:

Software Bus Services Task initialization complete.
Definition at line 42 of file cfe_sb_eventids.h.

12.117.2.34 CFE_SB_LEN_ERR_EID #define CFE_SB_LEN_ERR_EID 68
SB Invalid Command Length Event ID.

Type: ERROR

Cause:

Invalid length for the command code in message ID [CFE_SB_CMD_MID](#) or [CFE_SB_SUB_RPT_CTRL_MID](#) received on the SB message pipe.
Definition at line 739 of file cfe_sb_eventids.h.

12.117.2.35 CFE_SB_MAX_DESTS_MET_EID #define CFE_SB_MAX_DESTS_MET_EID 9
SB Subscribe API Max Destinations Exceeded Event ID.

Type: ERROR

Cause:

An SB Subscribe API was called with a message id that already has the maximum allowed number of destinations.
Definition at line 133 of file cfe_sb_eventids.h.

12.117.2.36 CFE_SB_MAX_MSGS_MET_EID #define CFE_SB_MAX_MSGS_MET_EID 8
SB Subscribe API Max Subscriptions Exceeded Event ID.

Type: ERROR

Cause:

An SB Subscribe API was called on a pipe that already has the maximum allowed number of subscriptions.
Definition at line 121 of file cfe_sb_eventids.h.

12.117.2.37 CFE_SB_MAX_PIPES_MET_EID #define CFE_SB_MAX_PIPES_MET_EID 3
SB Create Pipe API Max Pipes Exceeded Event ID.

Type: ERROR

Cause:

[CFE_SB_CreatePipe](#) API failure to do maximum number of pipes being exceeded.
Definition at line 64 of file cfe_sb_eventids.h.

12.117.2.38 CFE_SB_MSG_TOO_BIG_EID #define CFE_SB_MSG_TOO_BIG_EID 15
SB Transmit API Message Size Limit Exceeded Event ID.

Type: ERROR

Cause:

An SB Transmit API was called with a message that is too big.
Definition at line 199 of file cfe_sb_eventids.h.

12.117.2.39 CFE_SB_MSGID_LIM_ERR_EID #define CFE_SB_MSGID_LIM_ERR_EID 17
SB Transmit API MsgId Pipe Limit Exceeded Event ID.

Type: ERROR

Cause:

An SB Transmit API call failed to deliver the MsgId to a pipe due to the limit for the number of messages with that MsgId for that pipe being exceeded.
Definition at line 222 of file cfe_sb_eventids.h.

12.117.2.40 CFE_SB_PART_SUB_PKT_EID #define CFE_SB_PART_SUB_PKT_EID 45
SB Send Previous Subscriptions Command Partial Packet Sent Event ID.

Type: DEBUG

Cause:

[SB Send Previous Subscriptions Command](#) processing sent a partial subscription packet.
Definition at line 496 of file cfe_sb_eventids.h.

12.117.2.41 CFE_SB_PIPE_ADDED_EID #define CFE_SB_PIPE_ADDED_EID 5
SB Create Pipe API Success Event ID.

Type: DEBUG

Cause:

[CFE_SB_CreatePipe](#) API successfully completed.
Definition at line 86 of file cfe_sb_eventids.h.

12.117.2.42 CFE_SB_PIPE_DELETED_EID #define CFE_SB_PIPE_DELETED_EID 47
SB Pipe Delete API Success Event ID.

Type: DEBUG

Cause:

An SB Delete Pipe API successfully completed.
Definition at line 518 of file cfe_sb_eventids.h.

12.117.2.43 CFE_SB_Q_FULL_ERR_EID #define CFE_SB_Q_FULL_ERR_EID 25
SB Transmit API Pipe Overflow Event ID.

Type: ERROR

Cause:

An SB Transmit API call failed to deliver the Message ID to a pipe due to the pipe queue being full.
Definition at line 302 of file cfe_sb_eventids.h.

12.117.2.44 CFE_SB_Q_RD_ERR_EID #define CFE_SB_Q_RD_ERR_EID 27
SB Transmit API Queue Read Failure Event ID.

Type: ERROR

Cause:

An SB Transmit API call failed due to a pipe queue read failure.
Definition at line 324 of file cfe_sb_eventids.h.

12.117.2.45 CFE_SB_Q_WR_ERR_EID #define CFE_SB_Q_WR_ERR_EID 26
SB Transmit API Queue Write Failure Event ID.

Type: ERROR

Cause:

An SB Transmit API call failed due to a pipe queue write failure.
Definition at line 313 of file cfe_sb_eventids.h.

12.117.2.46 CFE_SB_RCV_BAD_ARG_EID #define CFE_SB_RCV_BAD_ARG_EID 18
SB Receive Buffer API Bad Argument Event ID.

Type: ERROR

Cause:

[CFE_SB_ReceiveBuffer](#) API failure due to a bad input argument.
Definition at line 233 of file cfe_sb_eventids.h.

12.117.2.47 CFE_SB_RCV_MESSAGE_INTEGRITY_FAIL_EID #define CFE_SB_RCV_MESSAGE_INTEGRITY_FAIL_EID 72
SB validation of received message failure event.

Type: ERROR

Cause:

A CFE SB receive transaction has rejected a message due to failure of the associated message integrity action(s).
Definition at line 785 of file cfe_sb_eventids.h.

12.117.2.48 CFE_SB_SEND_BAD_ARG_EID #define CFE_SB_SEND_BAD_ARG_EID 13
SB Transmit API Bad Argument Event ID.

Type: ERROR

Cause:

An SB Transmit API failed due to an invalid input argument.
Definition at line 177 of file cfe_sb_eventids.h.

12.117.2.49 CFE_SB_SEND_INV_MSGID_EID #define CFE_SB_SEND_INV_MSGID_EID 21
SB Transmit API Invalid MsgId Event ID.

Type: ERROR

Cause:

An SB Transmit API was called with an invalid message ID.
Definition at line 266 of file cfe_sb_eventids.h.

12.117.2.50 CFE_SB_SEND_MESSAGE_INTEGRITY_FAIL_EID #define CFE_SB_SEND_MESSAGE_INTEGRITY_FAIL_EID 71
SB integrity actions on transmit message failure event.

Type: ERROR

Cause:

A CFE SB transmit transaction has rejected a message due to failure of the associated message integrity action(s).
Definition at line 773 of file cfe_sb_eventids.h.

12.117.2.51 CFE_SB_SEND_NO_SUBS_EID #define CFE_SB_SEND_NO_SUBS_EID 14
SB Transmit API No MsgId Subscribers Event ID.

Type: INFORMATION

Cause:

An SB Transmit API was called with a Message ID with no subscriptions.
Definition at line 188 of file cfe_sb_eventids.h.

12.117.2.52 CFE_SB_SETPipeOPTS_EID #define CFE_SB_SETPipeOPTS_EID 57
SB Set Pipe Opt API Success Event ID.

Type: DEBUG

Cause:

[CFE_SB_SetPipeOpt](#) success.

Definition at line 628 of file cfe_sb_eventids.h.

12.117.2.53 CFE_SB_SETPipeOPTS_ID_ERR_EID #define CFE_SB_SETPipeOPTS_ID_ERR_EID 55
SB Set Pipe Opt API Invalid Pipe Event ID.

Type: ERROR

Cause:

[CFE_SB_SetPipeOpt](#) API failure due to an invalid pipe ID

Definition at line 606 of file cfe_sb_eventids.h.

12.117.2.54 CFE_SB_SETPipeOPTS_OWNER_ERR_EID #define CFE_SB_SETPipeOPTS_OWNER_ERR_EID 56
SB Set Pipe Opt API Not Owner Event ID.

Type: ERROR

Cause:

[CFE_SB_SetPipeOpt](#) API failure due to not being the pipe owner.

Definition at line 617 of file cfe_sb_eventids.h.

12.117.2.55 CFE_SB_SND_RTG_EID #define CFE_SB_SND_RTG_EID 39
SB File Write Success Event ID.

Type: DEBUG

Cause:

An SB file write successfully completed. OVERLOADED

Definition at line 438 of file cfe_sb_eventids.h.

12.117.2.56 CFE_SB SND RTG_ERR1_EID #define CFE_SB SND RTG_ERR1_EID 40
SB File Write Create File Failure Event ID.

Type: ERROR

Cause:

An SB file write failure due to file creation error. OVERLOADED
Definition at line 449 of file cfe_sb_eventids.h.

12.117.2.57 CFE_SB SND STATS_EID #define CFE_SB SND STATS_EID 32
SB Send Statistics Command Success Event ID.

Type: DEBUG

Cause:

[SB Send Statistics Command](#) success.
Definition at line 357 of file cfe_sb_eventids.h.

12.117.2.58 CFE_SB SUB ARG_ERR_EID #define CFE_SB SUB ARG_ERR_EID 6
SB Subscribe API Bad Argument Event ID.

Type: ERROR

Cause:

An SB Subscribe API failed due to an invalid input argument.
Definition at line 97 of file cfe_sb_eventids.h.

12.117.2.59 CFE_SB SUB INV_CALLER_EID #define CFE_SB SUB INV_CALLER_EID 51
SB Subscribe API Not Owner Event ID.

Type: ERROR

Cause:

An SB Subscribe API failed due to not being the pipe owner.
Definition at line 562 of file cfe_sb_eventids.h.

12.117.2.60 CFE_SB_SUB_INV_PIPE_EID #define CFE_SB_SUB_INV_PIPE_EID 50
SB Subscribe API Invalid Pipe Event ID.

Type: ERROR

Cause:

An SB Subscribe API failed due to an invalid pipe ID.
Definition at line 551 of file cfe_sb_eventids.h.

12.117.2.61 CFE_SB_SUBSCRIPTION_RCVD_EID #define CFE_SB_SUBSCRIPTION_RCVD_EID 10
SB Subscribe API Success Event ID.

Type: DEBUG

Cause:

An SB Subscribe API completed successfully.
Definition at line 144 of file cfe_sb_eventids.h.

12.117.2.62 CFE_SB_SUBSCRIPTION_REMOVED_EID #define CFE_SB_SUBSCRIPTION_REMOVED_EID 48
SB Unsubscribe API Success Event ID.

Type: DEBUG

Cause:

An SB Unsubscribe API successfully completed.
Definition at line 529 of file cfe_sb_eventids.h.

12.117.2.63 CFE_SB_SUBSCRIPTION_RPT_EID #define CFE_SB_SUBSCRIPTION_RPT_EID 22
SB Subscription Report Sent Event ID.

Type: DEBUG

Cause:

SB Subscription Report sent in response to a successful subscription.
Definition at line 277 of file cfe_sb_eventids.h.

12.117.2.64 CFE_SB_UNSUB_ARG_ERR_EID #define CFE_SB_UNSUB_ARG_ERR_EID 11
SB Unsubscribe API Bad Argument Event ID.

Type: ERROR

Cause:

An SB Unsubscribe API failed due to an invalid input argument.

Definition at line 155 of file cfe_sb_eventids.h.

12.117.2.65 CFE_SB_UNSUB_INV_CALLER_EID #define CFE_SB_UNSUB_INV_CALLER_EID 53
SB Unsubscribe API Not Owner Event ID.

Type: ERROR

Cause:

An SB Unsubscribe API failed due to not being the pipe owner.

Definition at line 584 of file cfe_sb_eventids.h.

12.117.2.66 CFE_SB_UNSUB_INV_PIPE_EID #define CFE_SB_UNSUB_INV_PIPE_EID 52
SB Unsubscribe API Invalid Pipe Event ID.

Type: ERROR

Cause:

An SB Unsubscribe API failed due to an invalid pipe ID.

Definition at line 573 of file cfe_sb_eventids.h.

12.117.2.67 CFE_SB_UNSUB_NO_SUBS_EID #define CFE_SB_UNSUB_NO_SUBS_EID 12
SB Unsubscribe API No MsgId Subscription Event ID.

Type: INFORMATION

Cause:

An SB Unsubscribe API was called with a Message ID that wasn't subscribed on the pipe

Definition at line 166 of file cfe_sb_eventids.h.

12.118 cfe/modules/tbl/config/default_cfe_tbl_extern_typedefs.h File Reference

```
#include "common_types.h"
#include "cfe_es_extern_typedefs.h"
#include "cfe_mission_cfg.h"
```

Data Structures

- struct [CFE_TBL_File_Hdr](#)

The definition of the header fields that are included in CFE Table Data files.

TypeDefs

- typedef uint16 [CFE_TBL_BufferSelect_Enum_t](#)

Selects the buffer to operate on for validate or dump commands.

- typedef struct [CFE_TBL_File_Hdr](#) [CFE_TBL_File_Hdr_t](#)

The definition of the header fields that are included in CFE Table Data files.

Enumerations

- enum [CFE_TBL_BufferSelect](#) { [CFE_TBL_BufferSelect_INACTIVE](#) = 0 , [CFE_TBL_BufferSelect_ACTIVE](#) = 1 }

Label definitions associated with CFE_TBL_BufferSelect_Enum_t.

12.118.1 Detailed Description

Declarations and prototypes for cfe_tbl_extern_typedefs module

12.118.2 Typedef Documentation

12.118.2.1 [CFE_TBL_BufferSelect_Enum_t](#) typedef uint16 [CFE_TBL_BufferSelect_Enum_t](#)

Selects the buffer to operate on for validate or dump commands.

See also

enum [CFE_TBL_BufferSelect](#)

Definition at line 53 of file default_cfe_tbl_extern_typedefs.h.

12.118.2.2 [CFE_TBL_File_Hdr_t](#) typedef struct [CFE_TBL_File_Hdr](#) [CFE_TBL_File_Hdr_t](#)

The definition of the header fields that are included in CFE Table Data files.

This header follows the CFE_FS header and precedes the actual table data.

Note

The Offset and NumBytes fields in the table header are to 32 bits for backward compatibility with existing CFE versions. This means that even on 64-bit CPUs, individual table files will be limited to 4GiB in size.

12.118.3 Enumeration Type Documentation

12.118.3.1 [CFE_TBL_BufferSelect](#) enum [CFE_TBL_BufferSelect](#)

Label definitions associated with CFE_TBL_BufferSelect_Enum_t.

Enumerator

CFE_TBL_BufferSelect_INACTIVE	Select the Inactive buffer for validate or dump.
CFE_TBL_BufferSelect_ACTIVE	Select the Active buffer for validate or dump.

Definition at line 35 of file default_cfe_tbl_extern_typedefs.h.

12.119 cfe/modules/tbl/config/default_cfe_tbl_fcncodes.h File Reference

Macros**Table Services Command Codes**

- #define CFE_TBL_NOOP_CC 0
- #define CFE_TBL_RESET_COUNTERS_CC 1
- #define CFE_TBL_LOAD_CC 2
- #define CFE_TBL_DUMP_CC 3
- #define CFE_TBL_VALIDATE_CC 4
- #define CFE_TBL_ACTIVATE_CC 5
- #define CFE_TBL_DUMP_REGISTRY_CC 6
- #define CFE_TBL_SEND_REGISTRY_CC 7
- #define CFE_TBL_DELETE_CDS_CC 8
- #define CFE_TBL_ABORT_LOAD_CC 9

12.119.1 Detailed Description

Specification for the CFE Event Services (CFE_TBL) command function codes

Note

This file should be strictly limited to the command/function code (CC) macro definitions. Other definitions such as enums, typedefs, or other macros should be placed in the msgdefs.h or msg.h files.

12.119.2 Macro Definition Documentation

12.119.2.1 CFE_TBL_ABORT_LOAD_CC #define CFE_TBL_ABORT_LOAD_CC 9

Name Abort Table Load

Description

This command will cause Table Services to discard the contents of a table buffer that was previously loaded with the data in a file as specified by a Table Load command. For single buffered tables, the allocated shared working buffer is freed and becomes available for other Table Load commands.

Command Mnemonic(s) \$sc_\$cpu_TBL_LOADABORT

Command Structure

CFE_TBL_AbortLoadCmd_t

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TBL_CMDPC** - command execution counter will increment
- The [CFE_TBL_LOAD_ABORT_INF_EID](#) informational event message is generated
- If the load was aborted for a single buffered table, the **\$sc_\$cpu_TBL_NumFreeShrBuf** telemetry point should increment

Error Conditions

This command may fail for the following reason(s):

- The specified table name was not found in the table registry.
- The specified table did not have a load in progress to be aborted.

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_TBL_CMDEC** - command error counter will increment
- Error specific event message

Criticality

This command will cause the loss of data put into an inactive table buffer.

See also

[CFE_TBL_LOAD_CC](#), [CFE_TBL_DUMP_CC](#), [CFE_TBL_VALIDATE_CC](#), [CFE_TBL_ACTIVATE_CC](#)

Definition at line 461 of file default_cfe_tbl_fcncodes.h.

12.119.2.2 CFE_TBL_ACTIVATE_CC #define CFE_TBL_ACTIVATE_CC 5

Name

Activate Table

Description

This command will cause Table Services to notify a table's owner that an update is pending. The owning application will then update the contents of the active table buffer with the contents of the associated inactive table buffer at a time of their convenience.

Command Mnemonic(s)

\$sc_\$cpu_TBL_ACTIVATE

Command Structure

[CFE_TBL_ActivateCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TBL_CMDPC** - command execution counter will increment
- The [CFE_TBL_UPDATE_SUCCESS_INF_EID](#) informational event message will be generated

Error Conditions

This command may fail for the following reason(s):

- The specified table name was not found in the table registry.
- The table was registered as a "dump only" type and thus cannot be activated
- The table buffer has not been validated.

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_TBL_CMDEC** - command error counter will increment
- Command specific error event message are issued for all error cases

Criticality

This command will cause the contents of the specified table to be updated with the contents in the inactive table buffer.

See also

[CFE_TBL_LOAD_CC](#), [CFE_TBL_DUMP_CC](#), [CFE_TBL_VALIDATE_CC](#), [CFE_TBL_ABORT_LOAD_CC](#)

Definition at line 299 of file default_cfe_tbl_fcncodes.h.

12.119.2.3 CFE_TBL_DELETE_CDS_CC #define CFE_TBL_DELETE_CDS_CC 8

Name Delete Critical Table from Critical Data Store

Description

This command will delete the Critical Data Store (CDS) associated with the specified Critical Table. Note that any table still present in the Table Registry is unable to be deleted from the Critical Data Store. All Applications that are accessing the critical table must release and unregister their access before the CDS can be deleted.

Command Mnemonic(s) \$sc_\$cpu_TBL_DeleteCDS

Command Structure

[CFE_TBL_DeleteCDSCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TBL_CMDPC** - command execution counter will increment
- The [CFE_TBL_CDS_DELETED_INFO_EID](#) informational event message will be generated

Error Conditions

This command may fail for the following reason(s):

- The specified table name was not found in the critical data store registry
- The specified table name WAS found in the table registry (all registrations/sharing of the table must be unregistered before the table's CDS can be deleted)
- The table's owning application is still active

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_TBL_CMDEC** - command error counter will increment
- Error specific event message

Criticality

This command will cause the loss of the specified table's contents before the owning Application was terminated.

See also

[CFE_ES_DUMP_CDS_REGISTRY_CC](#), [CFE_ES_DELETE_CDS_CC](#)

Definition at line 422 of file default_cfe_tbl_fcncodes.h.

12.119.2.4 CFE_TBL_DUMP_CC #define CFE_TBL_DUMP_CC 3

Name Dump Table

Description

This command will cause the Table Services to put the contents of the specified table buffer into the command specified file.

Command Mnemonic(s) \$sc_\$cpu_TBL_DUMP

Command Structure

[CFE_TBL_DumpCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TBL_CMDPC** - command execution counter will increment
- Either the [CFE_TBL_OVERWRITE_DUMP_INF_EID](#) OR the [CFE_TBL_WRITE_DUMP_INF_EID](#) informational event message will be generated

Error Conditions

This command may fail for the following reason(s):

- A single buffered table's inactive buffer was requested to be dumped and no such buffer is currently allocated.
- Error occurred during write operation to file. Possible causes might be insufficient space in the file system or the filename or file path is improperly specified.
- The specified table name was not found in the table registry.

Evidence of failure may be found in the following telemetry:

- **\$sc_\$cpu_TBL_CMDEC** - command error counter will increment
- A command specific error event message is issued for all error cases

Criticality

This command is not inherently dangerous. It will create a new file in the file system and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

See also

[CFE_TBL_LOAD_CC](#), [CFE_TBL_VALIDATE_CC](#), [CFE_TBL_ACTIVATE_CC](#), [CFE_TBL_ABORT_LOAD_CC](#)

Definition at line 202 of file default_cfe_tbl_fcncodes.h.

12.119.2.5 CFE_TBL_DUMP_REGISTRY_CC #define CFE_TBL_DUMP_REGISTRY_CC 6**Name** Dump Table Registry**Description**

This command will cause Table Services to write some of the contents of the Table Registry to the command specified file. This allows the operator to see the current state and configuration of all tables that have been registered with the cFE.

Command Mnemonic(s) \$sc_\$cpu_TBL_WriteReg2File**Command Structure**[CFE_TBL_DumpRegistryCmd_t](#)**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TBL_CMDPC](#) - command execution counter will increment
- The generation of either [CFE_TBL_OVERWRITE_REG_DUMP_INF_EID](#) or [CFE_TBL_WRITE_REG_DUMP_INF_EID](#) debug event messages
- The specified file should appear (or be updated) at the specified location in the file system

Error Conditions

This command may fail for the following reason(s):

- A table registry dump is already in progress, not yet completed
- The specified DumpFilename could not be parsed
- Error occurred during write operation to file. Possible causes might be insufficient space in the file system or the filename or file path is improperly specified.

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_TBL_CMDEC](#) - command error counter will increment
- An Error specific event message

Criticality

This command is not inherently dangerous. It will create a new file in the file system and could, if performed repeatedly without sufficient file management by the operator, fill the file system.

See also[CFE_TBL_SEND_REGISTRY_CC](#)

Definition at line 343 of file default_cfe_tbl_fcncodes.h.

12.119.2.6 CFE_TBL_LOAD_CC #define CFE_TBL_LOAD_CC 2**Name** Load Table**Description**

This command loads the contents of the specified file into an inactive buffer for the table specified within the file.

Command Mnemonic(s) \$sc_\$cpu_TBL_Load**Command Structure**[CFE_TBL_LoadCmd_t](#)**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TBL_CMDPC](#) - command execution counter will increment
- The [CFE_TBL_FILE_LOADED_INF_EID](#) informational event message will be generated

Error Conditions

This command can fail for the following reasons:

- Table name found in table image file's table header is not found in table registry (ie - The table associated with the table image in the file has not been registered by an application).
- The table image file has an invalid or incorrect size. The size of the image file must match the size field within in the header, and must also match the expected size of the table indicated in the registry.
- No working buffers are available for the load. This would indicate that too many single-buffered table loads are in progress at the same time.
- An attempt is being made to load an uninitialized table with a file containing only a partial table image.
- The table image file was unable to be opened. Either the file does not exist at the specified location, the filename is in error, or the file system has been corrupted.

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_TBL_CMDEC](#) - command error counter will increment
- Command specific error event messages are issued for all error cases

Criticality

This command is not inherently dangerous. It is performing the first step of loading a table and can be aborted (using the Abort Table Load command described below) without affecting the contents of the active table image.

See also[CFE_TBL_DUMP_CC](#), [CFE_TBL_VALIDATE_CC](#), [CFE_TBL_ACTIVATE_CC](#), [CFE_TBL_ABORT_LOAD_CC](#)

Definition at line 159 of file default_cfe_tbl_fcncodes.h.

12.119.2.7 CFE_TBL_NOOP_CC #define CFE_TBL_NOOP_CC 0**Name** Table No-Op**Description**

This command performs no other function than to increment the command execution counter. The command may be used to verify general aliveness of the Table Services task.

Command Mnemonic(s) \$sc_\$cpu_TBL_NOOP**Command Structure**[CFE_TBL_NoopCmd_t](#)**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TBL_CMDPC](#) - command execution counter will increment
- The [CFE_TBL_NOOP_INF_EID](#) informational event message will be generated

Error Conditions

There are no error conditions for this command. If the Table Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

None

See also

Definition at line 68 of file default_cfe_tbl_fcncodes.h.

12.119.2.8 CFE_TBL_RESET_COUNTERS_CC #define CFE_TBL_RESET_COUNTERS_CC 1**Name** Table Reset Counters**Description**

This command resets the following counters within the Table Services housekeeping telemetry:

- Command Execution Counter (\$sc_\$cpu_TBL_CMDPC)
- Command Error Counter (\$sc_\$cpu_TBL_CMDEC)
- Successful Table Validations Counter (\$sc_\$cpu_TBL_ValSuccessCtr)
- Failed Table Validations Counter (\$sc_\$cpu_TBL_ValFailedCtr)
- Number of Table Validations Requested (\$sc_\$cpu_TBL_ValReqCtr)
- Number of completed table validations (\$sc_\$cpu_TBL_ValCompldCtr)

Command Mnemonic(s) \$sc_\$cpu_TBL_ResetCtrs

Command Structure

[CFE_TBL_ResetCountersCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [**\\$sc_\\$cpu_TBL_CMDPC**](#) - command execution counter will be reset to 0
- The [CFE_TBL_RESET_INF_EID](#) debug event message will be generated

Error Conditions

There are no error conditions for this command. If the Table Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

This command is not inherently dangerous. However, it is possible for ground systems and on-board safing procedures to be designed such that they react to changes in the counter values that are reset by this command.

See also

Definition at line 109 of file default_cfe_tbl_fcncodes.h.

12.119.2.9 CFE_TBL_SEND_REGISTRY_CC #define CFE_TBL_SEND_REGISTRY_CC 7

Name Telemeter One Table Registry Entry

Description

This command will cause Table Services to telemeter the contents of the Table Registry for the command specified table.

Command Mnemonic(s) \$sc_\$cpu_TBL_TLMReg

Command Structure

[CFE_TBL_SendRegistryCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [**\\$sc_\\$cpu_TBL_CMDPC**](#) - command execution counter will increment
- Receipt of a Table Registry Info Packet (see [CFE_TBL_TableRegistryTlm_t](#))
- The [CFE_TBL_TLM_REG_CMD_INF_EID](#) debug event message will be generated

Error Conditions

This command may fail for the following reason(s):

- The specified table name was not found in the table registry.

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_TBL_CMDEC` - command error counter will increment
- Error specific event message

Criticality

This command is not inherently dangerous. It will generate additional telemetry.

See also

[CFE_TBL_DUMP_REGISTRY_CC](#)

Definition at line 378 of file default_cfe_tbl_fcncodes.h.

12.119.2.10 CFE_TBL_VALIDATE_CC #define CFE_TBL_VALIDATE_CC 4

Name Validate Table

Description

This command will cause Table Services to calculate the Data Integrity Value for the specified table and to notify the owning application that the table's validation function should be executed. The results of both the Data Integrity Value computation and the validation function are reported in Table Services Housekeeping Telemetry.

Command Mnemonic(s) \$sc_\$cpu_TBL_VALIDATE

Command Structure

[CFE_TBL_ValidateCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_TBL_CMDPC` - command execution counter will increment
- `$sc_$cpu_TBL_ValReqCtr` - table validation request counter will increment
- `$sc_$cpu_TBL_LastValCRC` - calculated data integrity value will be updated
- The [CFE_TBL_VAL_REQ_MADE_INF_EID](#) debug event message (indicating the application is being notified of a validation request)

If the specified table has an associated validation function, then the following telemetry will also change:

- Either `$sc_$cpu_TBL_ValSuccessCtr` OR `$sc_$cpu_TBL_ValFailedCtr` will increment
- `$sc_$cpu_TBL_ValCompltdCtr` - table validations performed counter will increment
- `$sc_$cpu_TBL_LastVals` - table validation function return status will update
- The [CFE_TBL_VALIDATION_INF_EID](#) informational event message (indicating the validation function return status) will be generated

Error Conditions

This command may fail for the following reason(s):

- A single buffered table's inactive buffer was requested to be validated and no such buffer is currently allocated.
- Too many validations have been requested simultaneously. The operator must wait for one or more applications to perform their table validation functions before trying again.
- The specified table name was not found in the table registry.

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_TBL_CMDEC` - command error counter will increment
- Command specific error event message are issued for all error cases

Criticality

The success or failure of a table validation does not have any immediate impact on table contents. The results are sent to the operator in telemetry and the operator must determine whether the results are acceptable and send a command to activate the validated table image.

See also

[CFE_TBL_LOAD_CC](#), [CFE_TBL_DUMP_CC](#), [CFE_TBL_ACTIVATE_CC](#), [CFE_TBL_ABORT_LOAD_CC](#)

Definition at line 259 of file default_cfe_tbl_fcncodes.h.

12.120 cfe/modules/tbl/config/default_cfe_tbl_interface_cfg.h File Reference

Macros

- `#define CFE_MISSION_TBL_MAX_NAME_LENGTH 16`
- `#define CFE_MISSION_TBL_MAX_FULL_NAME_LEN (CFE_MISSION_TBL_MAX_NAME_LENGTH + CFE_MISSION_MAX_API_LEN + 4)`

12.120.1 Detailed Description

CFE Table Services (CFE_TBL) Application Public Definitions

This provides default values for configurable items that affect the interface(s) of this module. This includes the CMD/TLM message interface, tables definitions, and any other data products that serve to exchange information with other entities.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.120.2 Macro Definition Documentation

12.120.2.1 CFE_MISSION_TBL_MAX_FULL_NAME_LEN `#define CFE_MISSION_TBL_MAX_FULL_NAME_LEN (CFE_MISSION_TBL_MAX_NAME_LENGTH + CFE_MISSION_MAX_API_LEN + 4)`

Purpose Maximum Length of Full Table Name in messages

Description:

Indicates the maximum length (in characters) of the entire table name within software bus messages, in "App←Name.TableName" notation.

This affects the layout of command/telemetry messages but does not affect run time behavior or internal allocation.

Limits

All CPUs within the same SB domain (mission) must share the same definition Note this affects the size of messages, so it must not cause any message to exceed the max length.

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 69 of file default_cfe_tbl_interface_cfg.h.

12.120.2.2 CFE_MISSION_TBL_MAX_NAME_LENGTH #define CFE_MISSION_TBL_MAX_NAME_LENGTH 16**Purpose** Maximum Table Name Length**Description:**

Indicates the maximum length (in characters) of the table name ('TblName') portion of a Full Table Name of the following form: "ApplicationName.TblName"

This length does not need to include an extra character for NULL termination.

Limits

This value should be kept as a multiple of 4, to maintain alignment of any possible neighboring fields without implicit padding.

Definition at line 49 of file default_cfe_tbl_interface_cfg.h.

12.121 cfe/modules/tbl/config/default_cfe_tbl_internal_cfg.h File Reference**Macros**

- #define CFE_PLATFORM_TBL_START_TASK_PRIORITY 70
- #define CFE_PLATFORM_TBL_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
- #define CFE_PLATFORM_TBL_BUF_MEMORY_BYTES 524288
- #define CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE 16384
- #define CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE 16384
- #define CFE_PLATFORM_TBL_MAX_NUM_TABLES 128
- #define CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES 32
- #define CFE_PLATFORM_TBL_MAX_NUM_HANDLES 256
- #define CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS 4
- #define CFE_PLATFORM_TBL_MAX_NUM_VALIDATIONS 10
- #define CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE "/ram/cfe_tbl_reg.log"
- #define CFE_PLATFORM_TBL_VALID_SCID_COUNT 0
- #define CFE_PLATFORM_TBL_U32FROM4CHARS(_C1, _C2, _C3, _C4) ((uint32)(_C1) << 24 | (uint32)(_C2) << 16 | (uint32)(_C3) << 8 | (uint32)(_C4))
- #define CFE_PLATFORM_TBL_VALID_SCID_1 (0x42)
- #define CFE_PLATFORM_TBL_VALID_SCID_2 (CFE_PLATFORM_TBL_U32FROM4CHARS('a', 'b', 'c', 'd'))
- #define CFE_PLATFORM_TBL_VALID_PRID_COUNT 0
- #define CFE_PLATFORM_TBL_VALID_PRID_1 (1)
- #define CFE_PLATFORM_TBL_VALID_PRID_2 (CFE_PLATFORM_TBL_U32FROM4CHARS('a', 'b', 'c', 'd'))
- #define CFE_PLATFORM_TBL_VALID_PRID_3 0
- #define CFE_PLATFORM_TBL_VALID_PRID_4 0

12.121.1 Detailed Description

CFE Table Services (CFE_TBL) Application Private Config Definitions

This provides default values for configurable items that are internal to this module and do NOT affect the interface(s) of this module. Changes to items in this file only affect the local module and will be transparent to external entities that are using the public interface(s).

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.121.2 Macro Definition Documentation

12.121.2.1 CFE_PLATFORM_TBL_BUF_MEMORY_BYTES #define CFE_PLATFORM_TBL_BUF_MEMORY_BYTES 524288

Purpose Size of Table Services Table Memory Pool

Description:

Defines the TOTAL size of the memory pool that cFE Table Services allocates from the system. The size must be large enough to provide memory for each registered table, the inactive buffers for double buffered tables and for the shared inactive buffers for single buffered tables.

Limits

The cFE does not place a limit on the size of this parameter.

Definition at line 75 of file default_cfe_tbl_internal_cfg.h.

12.121.2.2 CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE #define CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE "/ram/cfe_tbl_reg.log"

Purpose Default Filename for a Table Registry Dump

Description:

Defines the file name used to store the table registry when no filename is specified in the dump registry command.

Limits

The length of each string, including the NULL terminator cannot exceed the [OS_MAX_PATH_LEN](#) value.

Definition at line 189 of file default_cfe_tbl_internal_cfg.h.

12.121.2.3 CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES #define CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES 32

Purpose Maximum Number of Critical Tables that can be Registered

Description:

Defines the maximum number of critical tables supported by this processor's Table Services.

Limits

This number must be less than 32767. It should be recognized that this parameter determines the size of the Critical Table Registry which is maintained in the Critical Data Store. An excessively high number will waste Critical Data Store memory. Therefore, this number must not exceed the value defined in CFE_PLATFORM_ES←_CDS_MAX_NUM_ENTRIES.

Definition at line 130 of file default_cfe_tbl_internal_cfg.h.

12.121.2.4 CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE #define CFE_PLATFORM_TBL_MAX_DBL_TABLE←_SIZE 16384

Purpose Maximum Size Allowed for a Double Buffered Table**Description:**

Defines the maximum allowed size (in bytes) of a double buffered table.

Limits

The cFE does not place a limit on the size of this parameter but it must be less than half of [CFE_PLATFORM_TBL_BUF_MEMORY_B](#)

Definition at line 87 of file default_cfe_tbl_internal_cfg.h.

12.121.2.5 CFE_PLATFORM_TBL_MAX_NUM_HANDLES #define CFE_PLATFORM_TBL_MAX_NUM_HANDLES 256

Purpose Maximum Number of Table Handles**Description:**

Defines the maximum number of Table Handles.

Limits

This number must be less than 32767. This number must be at least as big as the number of tables ([CFE_PLATFORM_TBL_MAX_NUM_TABLES](#)) and should be set higher if tables are shared between applications.

Definition at line 143 of file default_cfe_tbl_internal_cfg.h.

12.121.2.6 CFE_PLATFORM_TBL_MAX_NUM_TABLES #define CFE_PLATFORM_TBL_MAX_NUM_TABLES 128

Purpose Maximum Number of Tables Allowed to be Registered**Description:**

Defines the maximum number of tables supported by this processor's Table Services.

Limits

This number must be less than 32767. It should be recognized that this parameter determines the size of the Table Registry. An excessively high number will waste memory.

Definition at line 116 of file default_cfe_tbl_internal_cfg.h.

12.121.2.7 CFE_PLATFORM_TBL_MAX_NUM_VALIDATIONS #define CFE_PLATFORM_TBL_MAX_NUM_VALIDATIONS 10

Purpose Maximum Number of Simultaneous Table Validations

Description:

Defines the maximum number of pending validations that the Table Services can handle at any one time. When a table has a validation function, a validation request is made of the application to perform that validation. This number determines how many of those requests can be outstanding at any one time.

Limits

This number must be less than 32767. An excessively high number will degrade system performance and waste memory. A number less than 20 is suggested but not required.

Definition at line 176 of file default_cfe_tbl_internal_cfg.h.

12.121.2.8 CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS #define CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS 4

Purpose Maximum Number of Simultaneous Loads to Support

Description:

Defines the maximum number of single buffered tables that can be loaded simultaneously. This number is used to determine the number of shared buffers to allocate.

Limits

This number must be less than 32767. An excessively high number will degrade system performance and waste memory. A number less than 5 is suggested but not required.

Definition at line 158 of file default_cfe_tbl_internal_cfg.h.

12.121.2.9 CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE #define CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE 16384

Purpose Maximum Size Allowed for a Single Buffered Table

Description:

Defines the maximum allowed size (in bytes) of a single buffered table. **NOTE:** This size determines the size of all shared table buffers. Therefore, this size will be multiplied by [CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS](#) below when allocating memory for shared tables.

Limits

The cFE does not place a limit on the size of this parameter but it must be small enough to allow for [CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS](#) number of tables to fit into [CFE_PLATFORM_TBL_BUF_MEMORY_BYT](#)

Definition at line 103 of file default_cfe_tbl_internal_cfg.h.

12.121.2.10 CFE_PLATFORM_TBL_START_TASK_PRIORITY #define CFE_PLATFORM_TBL_START_TASK_PRIORITY 70

Purpose Define TBL Task Priority

Description:

Defines the cFE_TBL Task priority.

Limits

Not Applicable

Definition at line 44 of file default_cfe_tbl_internal_cfg.h.

12.121.2.11 CFE_PLATFORM_TBL_START_TASK_STACK_SIZE #define CFE_PLATFORM_TBL_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

Purpose Define TBL Task Stack Size

Description:

Defines the cFE_TBL Task Stack Size

Limits

There is a lower limit of 2048 on this configuration parameter. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 59 of file default_cfe_tbl_internal_cfg.h.

12.121.2.12 CFE_PLATFORM_TBL_U32FROM4CHARS #define CFE_PLATFORM_TBL_U32FROM4CHARS (_C1, _C2, _C3, _C4) ((uint32) (_C1) << 24 | (uint32) (_C2) << 16 | (uint32) (_C3) << 8 | (uint32) (_C4))

Definition at line 211 of file default_cfe_tbl_internal_cfg.h.

12.121.2.13 CFE_PLATFORM_TBL_VALID_PRID_1 #define CFE_PLATFORM_TBL_VALID_PRID_1 (1)

Purpose Processor ID values used for table load validation

Description:

Defines the processor ID values used for validating the processor ID field in the table file header. To be valid, the spacecraft ID specified in the table file header must match one of the values defined here.

Limits

This value can be any 32 bit unsigned integer.

Definition at line 260 of file default_cfe_tbl_internal_cfg.h.

12.121.2.14 CFE_PLATFORM_TBL_VALID_PRID_2 #define CFE_PLATFORM_TBL_VALID_PRID_2 (CFE_PLATFORM_TBL_U32FROM4CH
'b', 'c', 'd'))
Definition at line 261 of file default_cfe_tbl_internal_cfg.h.

12.121.2.15 CFE_PLATFORM_TBL_VALID_PRID_3 #define CFE_PLATFORM_TBL_VALID_PRID_3 0
Definition at line 262 of file default_cfe_tbl_internal_cfg.h.

12.121.2.16 CFE_PLATFORM_TBL_VALID_PRID_4 #define CFE_PLATFORM_TBL_VALID_PRID_4 0
Definition at line 263 of file default_cfe_tbl_internal_cfg.h.

12.121.2.17 CFE_PLATFORM_TBL_VALID_PRID_COUNT #define CFE_PLATFORM_TBL_VALID_PRID_COUNT 0

Purpose Number of Processor ID's specified for validation

Description:

Defines the number of specified processor ID values that are verified during table loads. If the number is zero then no validation of the processor ID field in the table file header is performed when tables are loaded. Non-zero values indicate how many values from the list of processor ID's defined below are compared to the processor ID field in the table file header. The ELF2CFETBL tool may be used to create table files with specified processor ID values.

Limits

This number must be greater than or equal to zero and less than or equal to 4.

Definition at line 246 of file default_cfe_tbl_internal_cfg.h.

12.121.2.18 CFE_PLATFORM_TBL_VALID_SCID_1 #define CFE_PLATFORM_TBL_VALID_SCID_1 (0x42)

Purpose Spacecraft ID values used for table load validation

Description:

Defines the spacecraft ID values used for validating the spacecraft ID field in the table file header. To be valid, the spacecraft ID specified in the table file header must match one of the values defined here.

Limits

This value can be any 32 bit unsigned integer.

Definition at line 226 of file default_cfe_tbl_internal_cfg.h.

12.121.2.19 CFE_PLATFORM_TBL_VALID_SCID_2 #define CFE_PLATFORM_TBL_VALID_SCID_2 (CFE_PLATFORM_TBL_U32FROM4CH
'b', 'c', 'd'))
Definition at line 227 of file default_cfe_tbl_internal_cfg.h.

12.121.2.20 CFE_PLATFORM_TBL_VALID_SCID_COUNT #define CFE_PLATFORM_TBL_VALID_SCID_COUNT 0

Purpose Number of Spacecraft ID's specified for validation

Description:

Defines the number of specified spacecraft ID values that are verified during table loads. If the number is zero then no validation of the spacecraft ID field in the table file header is performed when tables are loaded. Non-zero values indicate how many values from the list of spacecraft ID's defined below are compared to the spacecraft ID field in the table file header. The ELF2CFETBL tool may be used to create table files with specified spacecraft ID values.

Limits

This number must be greater than or equal to zero and less than or equal to 2.

Definition at line 208 of file default_cfe_tbl_internal_cfg.h.

12.122 cfe/modules/tbl/config/default_cfe_tbl_mission_cfg.h File Reference

```
#include "cfe_tbl_interface_cfg.h"
```

12.122.1 Detailed Description

CFE Event Services (CFE_TBL) Application Mission Configuration Header File

This is a compatibility header for the "mission_cfg.h" file that has traditionally provided public config definitions for each CFS app.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.123 cfe/modules/tbl/config/default_cfe_tbl_msg.h File Reference

```
#include "cfe_mission_cfg.h"
#include "cfe_tbl_fcncodes.h"
#include "cfe_tbl_msgdefs.h"
#include "cfe_tbl_msgstruct.h"
```

12.123.1 Detailed Description

Specification for the CFE Event Services (CFE_TBL) command and telemetry message data types.

This is a compatibility header for the "cfe_tbl_msg.h" file that has traditionally provided the message definitions for cFS apps.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.124 cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h File Reference

```
#include "common_types.h"
#include "cfe_mission_cfg.h"
#include "cfe_es_extern_typedefs.h"
#include "cfe_time_extern_typedefs.h"
#include "cfe_tbl_extern_typedefs.h"
#include "cfe_tbl_fcncodes.h"
```

Data Structures

- struct [CFE_TBL_LoadCmd_Payload](#)
Load Table Command Payload.
- struct [CFE_TBL_DumpCmd_Payload](#)
Dump Table Command Payload.
- struct [CFE_TBL_ValidateCmd_Payload](#)
Validate Table Command Payload.
- struct [CFE_TBL_ActivateCmd_Payload](#)
Activate Table Command Payload.
- struct [CFE_TBL_DumpRegistryCmd_Payload](#)
Dump Registry Command Payload.
- struct [CFE_TBL_SendRegistryCmd_Payload](#)
Send Table Registry Command Payload.
- struct [CFE_TBL_DelCDSCmd_Payload](#)
Delete Critical Table CDS Command Payload.
- struct [CFE_TBL_AbortLoadCmd_Payload](#)
Abort Load Command Payload.
- struct [CFE_TBL_NotifyCmd_Payload](#)
Table Management Notification Command Payload.
- struct [CFE_TBL_HousekeepingTlm_Payload](#)
- struct [CFE_TBL_TblRegPacket_Payload](#)

Typedefs

- typedef struct [CFE_TBL_LoadCmd_Payload](#) [CFE_TBL_LoadCmd_Payload_t](#)
Load Table Command Payload.
- typedef struct [CFE_TBL_DumpCmd_Payload](#) [CFE_TBL_DumpCmd_Payload_t](#)
Dump Table Command Payload.
- typedef struct [CFE_TBL_ValidateCmd_Payload](#) [CFE_TBL_ValidateCmd_Payload_t](#)
Validate Table Command Payload.
- typedef struct [CFE_TBL_ActivateCmd_Payload](#) [CFE_TBL_ActivateCmd_Payload_t](#)
Activate Table Command Payload.
- typedef struct [CFE_TBL_DumpRegistryCmd_Payload](#) [CFE_TBL_DumpRegistryCmd_Payload_t](#)
Dump Registry Command Payload.
- typedef struct [CFE_TBL_SendRegistryCmd_Payload](#) [CFE_TBL_SendRegistryCmd_Payload_t](#)
Send Table Registry Command Payload.
- typedef struct [CFE_TBL_DelCDSCmd_Payload](#) [CFE_TBL_DelCDSCmd_Payload_t](#)
Delete Critical Table CDS Command Payload.
- typedef struct [CFE_TBL_AbortLoadCmd_Payload](#) [CFE_TBL_AbortLoadCmd_Payload_t](#)

Abort Load Command Payload.

- **typedef struct CFE_TBL_NotifyCmd_Payload CFE_TBL_NotifyCmd_Payload_t**
Table Management Notification Command Payload.
- **typedef struct CFE_TBL_HousekeepingTlm_Payload CFE_TBL_HousekeepingTlm_Payload_t**
- **typedef struct CFE_TBL_TblRegPacket_Payload CFE_TBL_TblRegPacket_Payload_t**

12.124.1 Detailed Description

Specification for the CFE Event Services (CFE_TBL) command and telemetry message constant definitions.
For CFE_TBL this is only the function/command code definitions

12.124.2 Typedef Documentation

12.124.2.1 CFE_TBL_AbortLoadCmd_Payload_t `typedef struct CFE_TBL_AbortLoadCmd_Payload CFE_TBL_AbortLoadCmd_Payload`
Abort Load Command Payload.

For command details, see [CFE_TBL_ABORT_LOAD_CC](#)

12.124.2.2 CFE_TBL_ActivateCmd_Payload_t `typedef struct CFE_TBL_ActivateCmd_Payload CFE_TBL_ActivateCmd_Payload`
Activate Table Command Payload.

For command details, see [CFE_TBL_ACTIVATE_CC](#)

12.124.2.3 CFE_TBL_DelCDSCmd_Payload_t `typedef struct CFE_TBL_DelCDSCmd_Payload CFE_TBL_DelCDSCmd_Payload_t`
Delete Critical Table CDS Command Payload.

For command details, see [CFE_TBL_DELETE_CDS_CC](#)

12.124.2.4 CFE_TBL_DumpCmd_Payload_t `typedef struct CFE_TBL_DumpCmd_Payload CFE_TBL_DumpCmd_Payload_t`
Dump Table Command Payload.

For command details, see [CFE_TBL_DUMP_CC](#)

12.124.2.5 CFE_TBL_DumpRegistryCmd_Payload_t `typedef struct CFE_TBL_DumpRegistryCmd_Payload CFE_TBL_DumpRegistryCmd_Payload`
`CFE_TBL_DumpRegistryCmd_Payload_t`

Dump Registry Command Payload.

For command details, see [CFE_TBL_DUMP_REGISTRY_CC](#)

12.124.2.6 CFE_TBL_HousekeepingTlm_Payload_t `typedef struct CFE_TBL_HousekeepingTlm_Payload CFE_TBL_HousekeepingTlm_Payload`
`CFE_TBL_HousekeepingTlm_Payload_t`

Name Table Services Housekeeping Packet

12.124.2.7 CFE_TBL_LoadCmd_Payload_t `typedef struct CFE_TBL_LoadCmd_Payload CFE_TBL_LoadCmd_Payload_t`
Load Table Command Payload.

For command details, see [CFE_TBL_LOAD_CC](#)

12.124.2.8 CFE_TBL_NotifyCmd_Payload_t `typedef struct CFE_TBL_NotifyCmd_Payload CFE_TBL_NotifyCmd_Payload`
Table Management Notification Command Payload.

Description

Whenever an application that owns a table calls the [CFE_TBL_NotifyByMessage](#) API following the table registration, Table services will generate the following command message with the application specified message ID, command code and parameter whenever the table requires management (e.g. - loads and validations).

12.124.2.9 CFE_TBL_SendRegistryCmd_Payload_t [typedef struct CFE_TBL_SendRegistryCmd_Payload](#)

[CFE_TBL_SendRegistryCmd_Payload_t](#)

Send Table Registry Command Payload.

For command details, see [CFE_TBL_SEND_REGISTRY_CC](#)

12.124.2.10 CFE_TBL_TblRegPacket_Payload_t [typedef struct CFE_TBL_TblRegPacket_Payload](#) [CFE_TBL_TblRegPacket_Pay](#)

Name Table Registry Info Packet

12.124.2.11 CFE_TBL_ValidateCmd_Payload_t [typedef struct CFE_TBL_ValidateCmd_Payload](#) [CFE_TBL_ValidateCmd_Payloa](#)

Validate Table Command Payload.

For command details, see [CFE_TBL_VALIDATE_CC](#)

12.125 cfe/modules/tbl/config/default_cfe_tbl_msgids.h File Reference

```
#include "cfe_core_api_base_msgids.h"  
#include "cfe_tbl_topicids.h"
```

Macros

- `#define CFE_TBL_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TBL_CMD_TOPICID)
/* 0x1804 */`
- `#define CFE_TBL_SEND_HK_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TBL_SEND_HK_TOPICID)
/* 0x180C */`
- `#define CFE_TBL_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_TBL_HK_TLM_TOPICID)
/* 0x0804 */`
- `#define CFE_TBL_REG_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_TBL_REG_TLM_TOPICID)
/* 0x080C */`

12.125.1 Detailed Description

CFE Event Services (CFE_TBL) Application Message IDs

12.125.2 Macro Definition Documentation

12.125.2.1 CFE_TBL_CMD_MID [#define CFE_TBL_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV\(CFE_MISSION_TBL_CMD_TOPICI](#)

`/* 0x1804 */`

Definition at line 32 of file `default_cfe_tbl_msgids.h`.

12.125.2.2 CFE_TBL_HK_TLM_MID

```
#define CFE_TBL_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_TBL_HK_TLM)
```

```
/* 0x0804 */
```

Definition at line 38 of file default_cfe_tbl_msgids.h.

12.125.2.3 CFE_TBL_REG_TLM_MID

```
#define CFE_TBL_REG_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_TBL_REG)
```

```
/* 0x080C */
```

Definition at line 39 of file default_cfe_tbl_msgids.h.

12.125.2.4 CFE_TBL_SEND_HK_MID

```
#define CFE_TBL_SEND_HK_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TBL_SEND)
```

```
/* 0x180C */
```

Definition at line 33 of file default_cfe_tbl_msgids.h.

12.126 cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h File Reference

```
#include "cfe_tbl_msgdefs.h"
```

```
#include "cfe_msg_hdr.h"
```

Data Structures

- struct [CFE_TBL_NoopCmd](#)
- struct [CFE_TBL_ResetCountersCmd](#)
- struct [CFE_TBL_SendHkCmd](#)
- struct [CFE_TBL_LoadCmd](#)
Load Table Command.
- struct [CFE_TBL_DumpCmd](#)
- struct [CFE_TBL_ValidateCmd](#)
Validate Table Command.
- struct [CFE_TBL_ActivateCmd](#)
Activate Table Command.
- struct [CFE_TBL_DumpRegistryCmd](#)
Dump Registry Command.
- struct [CFE_TBL_SendRegistryCmd](#)
Send Table Registry Command.
- struct [CFE_TBL_DeleteCDSCmd](#)
Delete Critical Table CDS Command.
- struct [CFE_TBL_AbortLoadCmd](#)
Abort Load Command.
- struct [CFE_TBL_NotifyCmd](#)
- struct [CFE_TBL_HousekeepingTlm](#)
- struct [CFE_TBL_TableRegistryTlm](#)

Typedefs

- typedef struct [CFE_TBL_NoopCmd](#) [CFE_TBL_NoopCmd_t](#)
- typedef struct [CFE_TBL_ResetCountersCmd](#) [CFE_TBL_ResetCountersCmd_t](#)
- typedef struct [CFE_TBL_SendHkCmd](#) [CFE_TBL_SendHkCmd_t](#)
- typedef struct [CFE_TBL_LoadCmd](#) [CFE_TBL_LoadCmd_t](#)
Load Table Command.

- `typedef struct CFE_TBL_DumpCmd CFE_TBL_DumpCmd_t`
- `typedef struct CFE_TBL_ValidateCmd CFE_TBL_ValidateCmd_t`
Validate Table Command.
- `typedef struct CFE_TBL_ActivateCmd CFE_TBL_ActivateCmd_t`
Activate Table Command.
- `typedef struct CFE_TBL_DumpRegistryCmd CFE_TBL_DumpRegistryCmd_t`
Dump Registry Command.
- `typedef struct CFE_TBL_SendRegistryCmd CFE_TBL_SendRegistryCmd_t`
Send Table Registry Command.
- `typedef struct CFE_TBL_DeleteCDSCmd CFE_TBL_DeleteCDSCmd_t`
Delete Critical Table CDS Command.
- `typedef struct CFE_TBL_AbortLoadCmd CFE_TBL_AbortLoadCmd_t`
Abort Load Command.
- `typedef struct CFE_TBL_NotifyCmd CFE_TBL_NotifyCmd_t`
- `typedef struct CFE_TBL_HousekeepingTlm CFE_TBL_HousekeepingTlm_t`
- `typedef struct CFE_TBL_TableRegistryTlm CFE_TBL_TableRegistryTlm_t`

12.126.1 Detailed Description

Purpose: cFE Executive Services (TBL) Command and Telemetry packet definition file.

References: Flight Software Branch C Coding Standard Version 1.0a cFE Flight Software Application Developers Guide

Notes:

12.126.2 Typedef Documentation

12.126.2.1 CFE_TBL_AbortLoadCmd_t `typedef struct CFE_TBL_AbortLoadCmd CFE_TBL_AbortLoadCmd_t`
Abort Load Command.

12.126.2.2 CFE_TBL_ActivateCmd_t `typedef struct CFE_TBL_ActivateCmd CFE_TBL_ActivateCmd_t`
Activate Table Command.

12.126.2.3 CFE_TBL_DeleteCDSCmd_t `typedef struct CFE_TBL_DeleteCDSCmd CFE_TBL_DeleteCDSCmd_t`
Delete Critical Table CDS Command.

12.126.2.4 CFE_TBL_DumpCmd_t `typedef struct CFE_TBL_DumpCmd CFE_TBL_DumpCmd_t`
/brief Dump Table Command

12.126.2.5 CFE_TBL_DumpRegistryCmd_t `typedef struct CFE_TBL_DumpRegistryCmd CFE_TBL_DumpRegistryCmd_t`
Dump Registry Command.

12.126.2.6 CFE_TBL_HousekeepingTlm_t `typedef struct CFE_TBL_HousekeepingTlm CFE_TBL_HousekeepingTlm_t`

12.126.2.7 CFE_TBL_LoadCmd_t `typedef struct CFE_TBL_LoadCmd CFE_TBL_LoadCmd_t`
Load Table Command.

12.126.2.8 CFE_TBL_NoopCmd_t `typedef struct CFE_TBL_NoopCmd CFE_TBL_NoopCmd_t`

12.126.2.9 CFE_TBL_NotifyCmd_t `typedef struct CFE_TBL_NotifyCmd CFE_TBL_NotifyCmd_t`
/brief Table Management Notification Command

12.126.2.10 CFE_TBL_ResetCountersCmd_t `typedef struct CFE_TBL_ResetCountersCmd CFE_TBL_ResetCountersCmd_t`

12.126.2.11 CFE_TBL_SendHkCmd_t `typedef struct CFE_TBL_SendHkCmd CFE_TBL_SendHkCmd_t`

12.126.2.12 CFE_TBL_SendRegistryCmd_t `typedef struct CFE_TBL_SendRegistryCmd CFE_TBL_SendRegistryCmd_t`
Send Table Registry Command.

12.126.2.13 CFE_TBL_TableRegistryTlm_t `typedef struct CFE_TBL_TableRegistryTlm CFE_TBL_TableRegistryTlm_t`

12.126.2.14 CFE_TBL_ValidateCmd_t `typedef struct CFE_TBL_ValidateCmd CFE_TBL_ValidateCmd_t`
Validate Table Command.

12.127 cfe/modules/tbl/config/default_cfe_tbl_platform_cfg.h File Reference

```
#include "cfe_tbl_mission_cfg.h"
#include "cfe_tbl_internal_cfg.h"
```

12.127.1 Detailed Description

CFE Table Services (CFE_TBL) Application Platform Configuration Header File

This is a compatibility header for the "platform_cfg.h" file that has traditionally provided both public and private config definitions for each CFS app.

These definitions are now provided in two separate files, one for the public/mission scope and one for internal scope.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.128 cfe/modules/tbl/config/default_cfe_tbl_topicids.h File Reference

Macros

- `#define CFE_MISSION_TBL_CMD_TOPICID 4`
- `#define CFE_MISSION_TBL_SEND_HK_TOPICID 12`
- `#define CFE_MISSION_TBL_HK_TLM_TOPICID 4`
- `#define CFE_MISSION_TBL_REG_TLM_TOPICID 12`

12.128.1 Detailed Description

CFE Table Services (CFE_TBL) Application Topic IDs

12.128.2 Macro Definition Documentation

12.128.2.1 CFE_MISSION_TBL_CMD_TOPICID #define CFE_MISSION_TBL_CMD_TOPICID 4

Purpose cFE Portable Message Numbers for Commands

Description:

Portable message numbers for the cFE command messages

Limits

Not Applicable

Definition at line 35 of file default_cfe_tbl_topicids.h.

12.128.2.2 CFE_MISSION_TBL_HK_TLM_TOPICID #define CFE_MISSION_TBL_HK_TLM_TOPICID 4

Purpose cFE Portable Message Numbers for Telemetry

Description:

Portable message numbers for the cFE telemetry messages

Limits

Not Applicable

Definition at line 47 of file default_cfe_tbl_topicids.h.

12.128.2.3 CFE_MISSION_TBL_REG_TLM_TOPICID #define CFE_MISSION_TBL_REG_TLM_TOPICID 12

Definition at line 48 of file default_cfe_tbl_topicids.h.

12.128.2.4 CFE_MISSION_TBL_SEND_HK_TOPICID #define CFE_MISSION_TBL_SEND_HK_TOPICID 12

Definition at line 36 of file default_cfe_tbl_topicids.h.

12.129 cfe/modules/tbl/fsw/inc/cfe_tbl_eventids.h File Reference

Macros

TBL event IDs

- #define CFE_TBL_INIT_INF_EID 1
TB Initialization Event ID.
- #define CFE_TBL_NOOP_INF_EID 10
TBL No-op Command Success Event ID.
- #define CFE_TBL_RESET_INF_EID 11

- #define `CFE_TBL_LOADED_INF_EID` 12
TBL Reset Counters Command Success Event ID.
- #define `CFE_TBL_OVERWRITE_DUMP_INF_EID` 13
TBL Load Table Command Success Event ID.
- #define `CFE_TBL_WRITE_DUMP_INF_EID` 14
TBL Write Table To Existing File Success Event ID.
- #define `CFE_TBL_OVERWRITE_REG_DUMP_INF_EID` 15
TBL Write Table Registry To Existing File Success Event ID.
- #define `CFE_TBL_VAL_REQ_MADE_INF_EID` 16
TBL Validate Table Request Success Event ID.
- #define `CFE_TBL_LOAD_PEND_REQ_INF_EID` 17
TBL Load Table Pending Notification Success Event ID.
- #define `CFE_TBL_TLM_REG_CMD_INF_EID` 18
TBL Telemeter Table Registry Entry Command Success Event ID.
- #define `CFE_TBL_LOAD_ABORT_INF_EID` 21
TBL Abort Table Load Success Event ID.
- #define `CFE_TBL_WRITE_REG_DUMP_INF_EID` 22
TBL Write Table Registry To New File Success Event ID.
- #define `CFE_TBL_ASSUMED_VALID_INF_EID` 23
TBL Validate Table Valid Due To No Validation Function Event ID.
- #define `CFE_TBL_LOAD_SUCCESS_INF_EID` 35
TBL Load Table API Success Event ID.
- #define `CFE_TBL_VALIDATION_INF_EID` 36
TBL Validate Table Success Event ID.
- #define `CFE_TBL_UPDATE_SUCCESS_INF_EID` 37
TBL Update Table Success Event ID.
- #define `CFE_TBL_CDS_DELETED_INFO_EID` 38
TBL Delete Table CDS Command Success Event ID.
- #define `CFE_TBL_MID_ERR_EID` 50
TBL Invalid Message ID Received Event ID.
- #define `CFE_TBL_CC1_ERR_EID` 51
TBL Invalid Command Code Received Event ID.
- #define `CFE_TBL_LEN_ERR_EID` 52
TBL Invalid Command Length Event ID.
- #define `CFE_TBL_FILE_ACCESS_ERR_EID` 53
TBL Load Table File Open Failure Event ID.
- #define `CFE_TBL_FILE_STD_HDR_ERR_EID` 54
TBL Load Table File Read Standard Header Failure Event ID.
- #define `CFE_TBL_FILE_TBL_HDR_ERR_EID` 55
TBL Load Table File Read Table Header Failure Event ID.
- #define `CFE_TBL_FAIL_HK_SEND_ERR_EID` 56
TBL Send Housekeeping Command Transmit Failure Event ID.
- #define `CFE_TBL_NO SUCH_TABLE_ERR_EID` 57
TBL Table Name Not Found Event ID.
- #define `CFE_TBL_FILE_TYPE_ERR_EID` 58
TBL Load Table Invalid File Content ID Event ID.
- #define `CFE_TBL_FILE_SUBTYPE_ERR_EID` 59
TBL Load Table Invalid File Subtype Event ID.
- #define `CFE_TBL_NO_WORK_BUFFERS_ERR_EID` 60
TBL Load Or Dump Table No Working Buffers Available Event ID.
- #define `CFE_TBL_CREATING_DUMP_FILE_ERR_EID` 62
TBL Write File Creation Failure Event ID.
- #define `CFE_TBL_WRITE_CFE_HDR_ERR_EID` 63
TBL Write Standard File Header Failure Event ID.

- #define `CFE_TBL_WRITE_TBL_HDR_ERR_EID` 64
TBL Write Table File Header Failure Event ID.
- #define `CFE_TBL_WRITE_TBL_IMG_ERR_EID` 65
TBL Write Table File Data Failure Event ID.
- #define `CFE_TBL_NO_INACTIVE_BUFFER_ERR_EID` 66
TBL Validate Or Write Table Command No Inactive Buffer Event ID.
- #define `CFE_TBL_TOO_MANY_VALIDATIONS_ERR_EID` 67
TBL Validate Table Command Result Storage Exceeded Event ID.
- #define `CFE_TBL_WRITE_TBL_REG_ERR_EID` 68
TBL Write Table Registry File Data Failure Event ID.
- #define `CFE_TBL_LOAD_ABORT_ERR_EID` 69
TBL Abort Table Load No Load Started Event ID.
- #define `CFE_TBL_ACTIVATE_ERR_EID` 70
TBL Activate Table Command No Inactive Buffer Event ID.
- #define `CFE_TBL_FILE_INCOMPLETE_ERR_EID` 71
TBL Load Table Incomplete Load Event ID.
- #define `CFE_TBL_LOAD_EXCEEDS_SIZE_ERR_EID` 72
TBL Load Table File Exceeds Table Size Event ID.
- #define `CFE_TBL_ZERO_LENGTH_LOAD_ERR_EID` 73
TBL Load Table File Zero Length Event ID.
- #define `CFE_TBL_PARTIAL_LOAD_ERR_EID` 74
TBL Load Table Uninitialized Partial Load Event ID.
- #define `CFE_TBL_FILE_TOO_BIG_ERR_EID` 75
TBL Load Table File Excess Data Event ID.
- #define `CFE_TBL_TOO_MANY_DUMPS_ERR_EID` 76
TBL Write Table Command Dump Only Control Blocks Exceeded Event ID.
- #define `CFE_TBL_DUMP_PENDING_ERR_EID` 77
TBL Write Table Command Already In Progress Event ID.
- #define `CFE_TBL_ACTIVATE_DUMP_ONLY_ERR_EID` 78
TBL Activate Table Command For Dump Only Table Event ID.
- #define `CFE_TBL_LOADING_A_DUMP_ONLY_ERR_EID` 79
TBL Load Table For Dump Only Table Event ID.
- #define `CFE_TBL_ILLEGAL_BUFF_PARAM_ERR_EID` 80
TBL Validate Or Write Table Command Invalid Buffer Event ID.
- #define `CFE_TBL_UNVALIDATED_ERR_EID` 81
TBL Activate Table Command Inactive Image Not Validated Event ID.
- #define `CFE_TBL_IN_REGISTRY_ERR_EID` 82
TBL Delete Table CDS Command For Registered Table Event ID.
- #define `CFE_TBL_NOT_CRITICAL_TBL_ERR_EID` 83
TBL Delete Table CDS Command Invalid CDS Type Event ID.
- #define `CFE_TBL_NOT_IN_CRIT_REG_ERR_EID` 84
TBL Delete Table CDS Command Not In Critical Table Registry Event ID.
- #define `CFE_TBL_CDS_NOT_FOUND_ERR_EID` 85
TBL Delete Table CDS Command Not In CDS Registry Event ID.
- #define `CFE_TBL_CDS_DELETE_ERR_EID` 86
TBL Delete Table CDS Command Internal Error Event ID.
- #define `CFE_TBL_CDS_OWNER_ACTIVE_ERR_EID` 87
TBL Delete Table CDS Command App Active Event ID.
- #define `CFE_TBL_LOADING_PENDING_ERR_EID` 88
TBL Load Table Command Load Pending Event ID.
- #define `CFE_TBL_FAIL_NOTIFY_SEND_ERR_EID` 89
TBL Send Notification Transmit Failed Event ID.
- #define `CFE_TBL_REGISTER_ERR_EID` 90
TBL Register Table Failed Event ID.
- #define `CFE_TBL_SHARE_ERR_EID` 91

- `#define CFE_TBL_UNREGISTER_ERR_EID 92`
TBL Unregister Table Failed Event ID.
- `#define CFE_TBL_LOAD_VAL_ERR_EID 93`
TBL Validation Function Invalid Return Code Event ID.
- `#define CFE_TBL_LOAD_TYPE_ERR_EID 94`
TBL Load Table API Invalid Source Type Event ID.
- `#define CFE_TBL_UPDATE_ERR_EID 95`
TBL Update Table Failed Event ID.
- `#define CFE_TBL_VALIDATION_ERR_EID 96`
TBL Validate Table Validation Failed Event ID.
- `#define CFE_TBL_SPACECRAFT_ID_ERR_EID 97`
TBL Read Header Invalid Spacecraft ID Event ID.
- `#define CFE_TBL_PROCESSOR_ID_ERR_EID 98`
TBL Read Header Invalid Processor ID Event ID.
- `#define CFE_TBL_LOAD_IN_PROGRESS_ERR_EID 100`
TBL Load Table API Load Already In Progress Event ID.
- `#define CFE_TBL_LOAD_FILENAME_LONG_ERR_EID 101`
TBL Load Table Filename Too Long Event ID.
- `#define CFE_TBL_LOAD_TBLNAME_MISMATCH_ERR_EID 102`
TBL Load Table Name Mismatch Event ID.
- `#define CFE_TBL_HANDLE_ACCESS_ERR_EID 103`
TBL Load Table API Access Violation Event ID.

12.129.1 Detailed Description

cFE Table Services Event IDs

12.129.2 Macro Definition Documentation

12.129.2.1 CFE_TBL_ACTIVATE_DUMP_ONLY_ERR_EID `#define CFE_TBL_ACTIVATE_DUMP_ONLY_ERR_EID 78`
TBL Activate Table Command For Dump Only Table Event ID.

Type: ERROR

Cause:

[TBL Activate Table Command](#) failure due to table being dump only.
Definition at line 544 of file cfe_tbl_eventids.h.

12.129.2.2 CFE_TBL_ACTIVATE_ERR_EID `#define CFE_TBL_ACTIVATE_ERR_EID 70`
TBL Activate Table Command No Inactive Buffer Event ID.

Type: ERROR

Cause:

[TBL Activate Table Command](#) failure due to no associated inactive buffer.
Definition at line 450 of file cfe_tbl_eventids.h.

12.129.2.3 CFE_TBL_ASSUMED_VALID_INF_EID #define CFE_TBL_ASSUMED_VALID_INF_EID 23
TBL Validate Table Valid Due To No Validation Function Event ID.

Type: INFORMATION

Cause:

[TBL Validate Table Command](#) marking table as valid due to no validation function being registered.
Definition at line 180 of file cfe_tbl_eventids.h.

12.129.2.4 CFE_TBL_CC1_ERR_EID #define CFE_TBL_CC1_ERR_EID 51
TBL Invalid Command Code Received Event ID.

Type: ERROR

Cause:

Invalid command code for message ID [CFE_TBL_CMD_MID](#) received on the TBL message pipe.
Definition at line 246 of file cfe_tbl_eventids.h.

12.129.2.5 CFE_TBL_CDS_DELETE_ERR_EID #define CFE_TBL_CDS_DELETE_ERR_EID 86
TBL Delete Table CDS Command Internal Error Event ID.

Type: ERROR

Cause:

[TBL Delete Table CDS Command](#) failure due to an internal error. See the system log for more information.
Definition at line 640 of file cfe_tbl_eventids.h.

12.129.2.6 CFE_TBL_CDS_DELETED_INFO_EID #define CFE_TBL_CDS_DELETED_INFO_EID 38
TBL Delete Table CDS Command Success Event ID.

Type: INFORMATION

Cause:

[TBL Delete Table CDS Command](#) success.
Definition at line 224 of file cfe_tbl_eventids.h.

12.129.2.7 CFE_TBL_CDS_NOT_FOUND_ERR_EID #define CFE_TBL_CDS_NOT_FOUND_ERR_EID 85
TBL Delete Table CDS Command Not In CDS Registry Event ID.

Type: ERROR

Cause:

[TBL Delete Table CDS Command](#) failure due to the table name not found in the CDS registry.
Definition at line 628 of file cfe_tbl_eventids.h.

12.129.2.8 CFE_TBL_CDS_OWNER_ACTIVE_ERR_EID #define CFE_TBL_CDS_OWNER_ACTIVE_ERR_EID 87
TBL Delete Table CDS Command App Active Event ID.

Type: ERROR

Cause:

[TBL Delete Table CDS Command](#) failure due to the owning application being active.
Definition at line 652 of file cfe_tbl_eventids.h.

12.129.2.9 CFE_TBL_CREATING_DUMP_FILE_ERR_EID #define CFE_TBL_CREATING_DUMP_FILE_ERR_EID 62
TBL Write File Creation Failure Event ID.

Type: ERROR

Cause:

TBL Write Table or Table Registry File failed to create file. OVERLOADED
Definition at line 357 of file cfe_tbl_eventids.h.

12.129.2.10 CFE_TBL_DUMP_PENDING_ERR_EID #define CFE_TBL_DUMP_PENDING_ERR_EID 77
TBL Write Table Command Already In Progress Event ID.

Type: ERROR

Cause:

[TBL Write Table Command](#) failure due to a dump already in progress for the same table.
Definition at line 532 of file cfe_tbl_eventids.h.

12.129.2.11 CFE_TBL_FAIL_HK_SEND_ERR_EID #define CFE_TBL_FAIL_HK_SEND_ERR_EID 56
TBL Send Housekeeping Command Transmit Failure Event ID.

Type: ERROR

Cause:

[TBL Send Housekeeping Command](#) failure transmitting the housekeeping message.
Definition at line 302 of file cfe_tbl_eventids.h.

12.129.2.12 CFE_TBL_FAIL_NOTIFY_SEND_ERR_EID #define CFE_TBL_FAIL_NOTIFY_SEND_ERR_EID 89
TBL Send Notification Transmit Failed Event ID.

Type: ERROR

Cause:

TBL send notification transmit message failure.
Definition at line 674 of file cfe_tbl_eventids.h.

12.129.2.13 CFE_TBL_FILE_ACCESS_ERR_EID #define CFE_TBL_FILE_ACCESS_ERR_EID 53
TBL Load Table File Open Failure Event ID.

Type: ERROR

Cause:

Load Table failure opening the file. OVERLOADED
Definition at line 268 of file cfe_tbl_eventids.h.

12.129.2.14 CFE_TBL_FILE_INCOMPLETE_ERR_EID #define CFE_TBL_FILE_INCOMPLETE_ERR_EID 71
TBL Load Table Incomplete Load Event ID.

Type: ERROR

Cause:

TBL Load Table failure due to inability to read the size of data specified in the table header from file. OVERLOADED
Definition at line 462 of file cfe_tbl_eventids.h.

12.129.2.15 CFE_TBL_FILE_LOADED_INF_EID #define CFE_TBL_FILE_LOADED_INF_EID 12
TBL Load Table Command Success Event ID.

Type: INFORMATION

Cause:

[TBL Load Table Command](#) successfully loaded the new table data to the working buffer.
Definition at line 76 of file cfe_tbl_eventids.h.

12.129.2.16 CFE_TBL_FILE_STD_HDR_ERR_EID #define CFE_TBL_FILE_STD_HDR_ERR_EID 54
TBL Load Table File Read Standard Header Failure Event ID.

Type: ERROR

Cause:

Load Table failure reading the file standard header.
Definition at line 279 of file cfe_tbl_eventids.h.

12.129.2.17 CFE_TBL_FILE_SUBTYPE_ERR_EID #define CFE_TBL_FILE_SUBTYPE_ERR_EID 59
TBL Load Table Invalid File Subtype Event ID.

Type: ERROR

Cause:

TBL Load Table Failure due to invalid file subtype.
Definition at line 335 of file cfe_tbl_eventids.h.

12.129.2.18 CFE_TBL_FILE_TBL_HDR_ERR_EID #define CFE_TBL_FILE_TBL_HDR_ERR_EID 55
TBL Load Table File Read Table Header Failure Event ID.

Type: ERROR

Cause:

Load Table failure reading the file table header.
Definition at line 290 of file cfe_tbl_eventids.h.

12.129.2.19 CFE_TBL_FILE_TOO_BIG_ERR_EID #define CFE_TBL_FILE_TOO_BIG_ERR_EID 75
TBL Load Table File Excess Data Event ID.

Type: ERROR

Cause:

TBL Load Table failure due to the file header specified size of data being smaller than the actual data contained in the file. OVERLOADED

Definition at line 508 of file cfe_tbl_eventids.h.

12.129.2.20 CFE_TBL_FILE_TYPE_ERR_EID #define CFE_TBL_FILE_TYPE_ERR_EID 58
TBL Load Table Invalid File Content ID Event ID.

Type: ERROR

Cause:

TBL Load Table failure due to invalid file content ID.

Definition at line 324 of file cfe_tbl_eventids.h.

12.129.2.21 CFE_TBL_HANDLE_ACCESS_ERR_EID #define CFE_TBL_HANDLE_ACCESS_ERR_EID 103
TBL Load Table API Access Violation Event ID.

Type: ERROR

Cause:

[CFE_TBL_Load](#) API failure due to the application not owning the table.

Definition at line 817 of file cfe_tbl_eventids.h.

12.129.2.22 CFE_TBL_ILLEGAL_BUFF_PARAM_ERR_EID #define CFE_TBL_ILLEGAL_BUFF_PARAM_ERR_EID 80
TBL Validate Or Write Table Command Invalid Buffer Event ID.

Type: ERROR

Cause:

[TBL Validate Table Command](#) or [TBL Write Table Command](#) failure due to an invalid buffer selection. OVERLOADED
Definition at line 568 of file cfe_tbl_eventids.h.

12.129.2.23 CFE_TBL_IN_REGISTRY_ERR_EID #define CFE_TBL_IN_REGISTRY_ERR_EID 82
TBL Delete Table CDS Command For Registered Table Event ID.

Type: ERROR

Cause:

[TBL Delete Table CDS Command](#) failure due to the table being currently registered.
Definition at line 592 of file cfe_tbl_eventids.h.

12.129.2.24 CFE_TBL_INIT_INF_EID #define CFE_TBL_INIT_INF_EID 1
TB Initialization Event ID.

Type: INFORMATION

Cause:

Table Services Task initialization complete.
Definition at line 42 of file cfe_tbl_eventids.h.

12.129.2.25 CFE_TBL_LEN_ERR_EID #define CFE_TBL_LEN_ERR_EID 52
TBL Invalid Command Length Event ID.

Type: ERROR

Cause:

Invalid length for the message ID and command code received on the TBL message pipe.
Definition at line 257 of file cfe_tbl_eventids.h.

12.129.2.26 CFE_TBL_LOAD_ABORT_ERR_EID #define CFE_TBL_LOAD_ABORT_ERR_EID 69
TBL Abort Table Load No Load Started Event ID.

Type: ERROR

Cause:

[TBL Abort Table Load Command](#) failure due to no load in progress.
Definition at line 438 of file cfe_tbl_eventids.h.

12.129.2.27 CFE_TBL_LOAD_ABORT_INF_EID #define CFE_TBL_LOAD_ABORT_INF_EID 21
TBL Abort Table Load Success Event ID.

Type: INFORMATION

Cause:

[TBL Abort Table Load Command](#) success.

Definition at line 157 of file cfe_tbl_eventids.h.

12.129.2.28 CFE_TBL_LOAD_EXCEEDS_SIZE_ERR_EID #define CFE_TBL_LOAD_EXCEEDS_SIZE_ERR_EID 72
TBL Load Table File Exceeds Table Size Event ID.

Type: ERROR

Cause:

TBL Load Table failure due to the file header specified offset and/or size of data exceeding the table size. OVERLOADED
Definition at line 474 of file cfe_tbl_eventids.h.

12.129.2.29 CFE_TBL_LOAD_FILENAME_LONG_ERR_EID #define CFE_TBL_LOAD_FILENAME_LONG_ERR_EID 101
TBL Load Table Filename Too Long Event ID.

Type: ERROR

Cause:

Load table filename too long.

Definition at line 795 of file cfe_tbl_eventids.h.

12.129.2.30 CFE_TBL_LOAD_IN_PROGRESS_ERR_EID #define CFE_TBL_LOAD_IN_PROGRESS_ERR_EID 100
TBL Load Table API Load Already In Progress Event ID.

Type: ERROR

Cause:

[CFE_TBL_Load](#) API failure due to load already in progress.

Definition at line 784 of file cfe_tbl_eventids.h.

12.129.2.31 CFE_TBL_LOAD_PEND_REQ_INF_EID #define CFE_TBL_LOAD_PEND_REQ_INF_EID 17
TBL Load Table Pending Notification Success Event ID.

Type: DEBUG

Cause:

TBL load table pending notification successfully sent.
Definition at line 134 of file cfe_tbl_eventids.h.

12.129.2.32 CFE_TBL_LOAD_SUCCESS_INF_EID #define CFE_TBL_LOAD_SUCCESS_INF_EID 35
TBL Load Table API Success Event ID.

Type: DEBUG (the first time) and INFORMATION (normally)

Cause:

[CFE_TBL_Load](#) API success for dump only or normal table. OVERLOADED
Definition at line 191 of file cfe_tbl_eventids.h.

12.129.2.33 CFE_TBL_LOAD_TBLNAME_MISMATCH_ERR_EID #define CFE_TBL_LOAD_TBLNAME_MISMATCH←
_ERR_EID 102
TBL Load Table Name Mismatch Event ID.

Type: ERROR

Cause:

Load table name in the table file header does not match the specified table name.
Definition at line 806 of file cfe_tbl_eventids.h.

12.129.2.34 CFE_TBL_LOAD_TYPE_ERR_EID #define CFE_TBL_LOAD_TYPE_ERR_EID 94
TBL Load Table API Invalid Source Type Event ID.

Type: ERROR

Cause:

[CFE_TBL_Load](#) API valid due to invalid source type.
Definition at line 729 of file cfe_tbl_eventids.h.

12.129.2.35 CFE_TBL_LOAD_VAL_ERR_EID #define CFE_TBL_LOAD_VAL_ERR_EID 93
TBL Validation Function Invalid Return Code Event ID.

Type: ERROR

Cause:

Invalid table validation function return code.
Definition at line 718 of file cfe_tbl_eventids.h.

12.129.2.36 CFE_TBL_LOADING_A_DUMP_ONLY_ERR_EID #define CFE_TBL_LOADING_A_DUMP_ONLY_ERR_EID 79
TBL Load Table For Dump Only Table Event ID.

Type: ERROR

Cause:

TBL Load Table failure due to table being dump only. OVERLOADED
Definition at line 555 of file cfe_tbl_eventids.h.

12.129.2.37 CFE_TBL_LOADING_PENDING_ERR_EID #define CFE_TBL_LOADING_PENDING_ERR_EID 88
TBL Load Table Command Load Pending Event ID.

Type: ERROR

Cause:

[TBL Load Table Command](#) failed due to a load already pending.
Definition at line 663 of file cfe_tbl_eventids.h.

12.129.2.38 CFE_TBL_MID_ERR_EID #define CFE_TBL_MID_ERR_EID 50
TBL Invalid Message ID Received Event ID.

Type: ERROR

Cause:

Invalid message ID received on the TBL message pipe.
Definition at line 235 of file cfe_tbl_eventids.h.

12.129.2.39 CFE_TBL_NO_INACTIVE_BUFFER_ERR_EID #define CFE_TBL_NO_INACTIVE_BUFFER_ERR_EID 66
TBL Validate Or Write Table Command No Inactive Buffer Event ID.

Type: ERROR

Cause:

[TBL Validate Table Command](#) or [TBL Write Table Command](#) failure due to requesting non-existent inactive buffer.
OVERLOADED
Definition at line 403 of file cfe_tbl_eventids.h.

12.129.2.40 CFE_TBL_NO SUCH_TABLE_ERR_EID #define CFE_TBL_NO SUCH_TABLE_ERR_EID 57
TBL Table Name Not Found Event ID.

Type: ERROR

Cause:

TBL command handler unable to find table name. OVERLOADED
Definition at line 313 of file cfe_tbl_eventids.h.

12.129.2.41 CFE_TBL_NO_WORK_BUFFERS_ERR_EID #define CFE_TBL_NO_WORK_BUFFERS_ERR_EID 60
TBL Load Or Dump Table No Working Buffers Available Event ID.

Type: ERROR

Cause:

TBL Load or Dump failure due to no working buffers available or internal error. OVERLOADED
Definition at line 346 of file cfe_tbl_eventids.h.

12.129.2.42 CFE_TBL_NOOP_INF_EID #define CFE_TBL_NOOP_INF_EID 10
TBL No-op Command Success Event ID.

Type: INFORMATION

Cause:

[NO-OP TBL No-op Command](#) success.
Definition at line 53 of file cfe_tbl_eventids.h.

12.129.2.43 CFE_TBL_NOT_CRITICAL_TBL_ERR_EID #define CFE_TBL_NOT_CRITICAL_TBL_ERR_EID 83
TBL Delete Table CDS Command Invalid CDS Type Event ID.

Type: ERROR

Cause:

[TBL Delete Table CDS Command](#) failure due to CDS being in the table registry but not registered as a table within ES.
Definition at line 604 of file cfe_tbl_eventids.h.

12.129.2.44 CFE_TBL_NOT_IN_CRIT_REG_ERR_EID #define CFE_TBL_NOT_IN_CRIT_REG_ERR_EID 84
TBL Delete Table CDS Command Not In Critical Table Registry Event ID.

Type: ERROR

Cause:

[TBL Delete Table CDS Command](#) failure due to the table not being in the critical table registry.
Definition at line 616 of file cfe_tbl_eventids.h.

12.129.2.45 CFE_TBL_OVERWRITE_DUMP_INF_EID #define CFE_TBL_OVERWRITE_DUMP_INF_EID 13
TBL Write Table To Existing File Success Event ID.

Type: INFORMATION

Cause:

TBL write table to an existing file success.
Definition at line 87 of file cfe_tbl_eventids.h.

12.129.2.46 CFE_TBL_OVERWRITE_REG_DUMP_INF_EID #define CFE_TBL_OVERWRITE_REG_DUMP_INF_EID 15
TBL Write Table Registry To Existing File Success Event ID.

Type: DEBUG

Cause:

TBL Write Table Registry to an existing file completed successfully.
Definition at line 109 of file cfe_tbl_eventids.h.

12.129.2.47 CFE_TBL_PARTIAL_LOAD_ERR_EID #define CFE_TBL_PARTIAL_LOAD_ERR_EID 74
TBL Load Table Uninitialized Partial Load Event ID.

Type: ERROR

Cause:

TBL Load Table failure due to attempting a partial load to an uninitialized table. OVERLOADED
Definition at line 496 of file cfe_tbl_eventids.h.

12.129.2.48 CFE_TBL_PROCESSOR_ID_ERR_EID #define CFE_TBL_PROCESSOR_ID_ERR_EID 98
TBL Read Header Invalid Processor ID Event ID.

Type: ERROR

Cause:

Invalid processor ID in table file header.
Definition at line 773 of file cfe_tbl_eventids.h.

12.129.2.49 CFE_TBL_REGISTER_ERR_EID #define CFE_TBL_REGISTER_ERR_EID 90
TBL Register Table Failed Event ID.

Type: ERROR

Cause:

TBL table registration failure. See system log for more information.
Definition at line 685 of file cfe_tbl_eventids.h.

12.129.2.50 CFE_TBL_RESET_INF_EID #define CFE_TBL_RESET_INF_EID 11
TBL Reset Counters Command Success Event ID.

Type: DEBUG

Cause:

[TBL Reset Counters Command](#) success.
Definition at line 64 of file cfe_tbl_eventids.h.

12.129.2.51 CFE_TBL_SHARE_ERR_EID #define CFE_TBL_SHARE_ERR_EID 91
TBL Share Table Failed Event ID.

Type: ERROR

Cause:

TBL share table failure. See system log for more information.
Definition at line 696 of file cfe_tbl_eventids.h.

12.129.2.52 CFE_TBL_SPACECRAFT_ID_ERR_EID #define CFE_TBL_SPACECRAFT_ID_ERR_EID 97
TBL Read Header Invalid Spacecraft ID Event ID.

Type: ERROR

Cause:

Invalid spacecraft ID in table file header.
Definition at line 762 of file cfe_tbl_eventids.h.

12.129.2.53 CFE_TBL_TLM_REG_CMD_INF_EID #define CFE_TBL_TLM_REG_CMD_INF_EID 18
TBL Telemeter Table Registry Entry Command Success Event ID.

Type: DEBUG

Cause:

[TBL Telemeter Table Registry Entry command](#) successfully set the table registry index to telemeter in the next house-keeping packet.
Definition at line 146 of file cfe_tbl_eventids.h.

12.129.2.54 CFE_TBL_TOO_MANY_DUMPS_ERR_EID #define CFE_TBL_TOO_MANY_DUMPS_ERR_EID 76
TBL Write Table Command Dump Only Control Blocks Exceeded Event ID.

Type: ERROR

Cause:

[TBL Write Table Command](#) failure due to exceeding the allocated number of control blocks available to write a dump only table.
Definition at line 520 of file cfe_tbl_eventids.h.

12.129.2.55 CFE_TBL_TOO_MANY_VALIDATIONS_ERR_EID #define CFE_TBL_TOO_MANY_VALIDATIONS_ERR_EID 67

TBL Validate Table Command Result Storage Exceeded Event ID.

Type: ERROR

Cause:

[TBL Validate Table Command](#) failure due to exceeding result storage.

Definition at line 415 of file cfe_tbl_eventids.h.

12.129.2.56 CFE_TBL_UNREGISTER_ERR_EID #define CFE_TBL_UNREGISTER_ERR_EID 92

TBL Unregister Table Failed Event ID.

Type: ERROR

Cause:

TBL unregister table failure. See system log for more information.

Definition at line 707 of file cfe_tbl_eventids.h.

12.129.2.57 CFE_TBL_UNVALIDATED_ERR_EID #define CFE_TBL_UNVALIDATED_ERR_EID 81

TBL Activate Table Command Inactive Image Not Validated Event ID.

Type: ERROR

Cause:

[TBL Activate Table Command](#) failure due to the inactive image not being validated.

Definition at line 580 of file cfe_tbl_eventids.h.

12.129.2.58 CFE_TBL_UPDATE_ERR_EID #define CFE_TBL_UPDATE_ERR_EID 95

TBL Update Table Failed Event ID.

Type: ERROR

Cause:

TBL update table failure due to an internal error. OVERLOADED

Definition at line 740 of file cfe_tbl_eventids.h.

12.129.2.59 CFE_TBL_UPDATE_SUCCESS_INF_EID #define CFE_TBL_UPDATE_SUCCESS_INF_EID 37
TBL Update Table Success Event ID.

Type: INFORMATION

Cause:

Table update successfully completed.

Definition at line 213 of file cfe_tbl_eventids.h.

12.129.2.60 CFE_TBL_VAL_REQ_MADE_INF_EID #define CFE_TBL_VAL_REQ_MADE_INF_EID 16
TBL Validate Table Request Success Event ID.

Type: DEBUG

Cause:

[TBL Validate Table Command](#) success. Note this event signifies the request to validate the table has been successfully submitted. Completion will generate a [CFE_TBL_VALIDATION_INF_EID](#) or [CFE_TBL_VALIDATION_ERR_EID](#) event messages.

Definition at line 123 of file cfe_tbl_eventids.h.

12.129.2.61 CFE_TBL_VALIDATION_ERR_EID #define CFE_TBL_VALIDATION_ERR_EID 96
TBL Validate Table Validation Failed Event ID.

Type: ERROR

Cause:

TBL validate table function indicates validation failed. OVERLOADED

Definition at line 751 of file cfe_tbl_eventids.h.

12.129.2.62 CFE_TBL_VALIDATION_INF_EID #define CFE_TBL_VALIDATION_INF_EID 36
TBL Validate Table Success Event ID.

Type: INFORMATION

Cause:

Table active or inactive image successfully validated by the registered validation function. OVERLOADED

Definition at line 202 of file cfe_tbl_eventids.h.

12.129.2.63 CFE_TBL_WRITE_CFE_HDR_ERR_EID #define CFE_TBL_WRITE_CFE_HDR_ERR_EID 63
TBL Write Standard File Header Failure Event ID.

Type: ERROR

Cause:

TBL Write Table or Table Registry File failure writing the standard file header. OVERLOADED
Definition at line 368 of file cfe_tbl_eventids.h.

12.129.2.64 CFE_TBL_WRITE_DUMP_INF_EID #define CFE_TBL_WRITE_DUMP_INF_EID 14
TBL Write Table To New File Success Event ID.

Type: INFORMATION

Cause:

TBL write table to a new file success.
Definition at line 98 of file cfe_tbl_eventids.h.

12.129.2.65 CFE_TBL_WRITE_REG_DUMP_INF_EID #define CFE_TBL_WRITE_REG_DUMP_INF_EID 22
TBL Write Table Registry To New File Success Event ID.

Type: DEBUG

Cause:

TBL Write Table Registry to a new file completed successfully.
Definition at line 168 of file cfe_tbl_eventids.h.

12.129.2.66 CFE_TBL_WRITE_TBL_HDR_ERR_EID #define CFE_TBL_WRITE_TBL_HDR_ERR_EID 64
TBL Write Table File Header Failure Event ID.

Type: ERROR

Cause:

TBL Write Table failure writing the table image file header.
Definition at line 379 of file cfe_tbl_eventids.h.

12.129.2.67 CFE_TBL_WRITE_TBL_IMG_ERR_EID #define CFE_TBL_WRITE_TBL_IMG_ERR_EID 65
TBL Write Table File Data Failure Event ID.

Type: ERROR

Cause:

TBL Write Table failure writing the table data.
Definition at line 390 of file cfe_tbl_eventids.h.

12.129.2.68 CFE_TBL_WRITE_TBL_REG_ERR_EID #define CFE_TBL_WRITE_TBL_REG_ERR_EID 68
TBL Write Table Registry File Data Failure Event ID.

Type: ERROR

Cause:

TB Write Table Registry failure writing file data.
Definition at line 426 of file cfe_tbl_eventids.h.

12.129.2.69 CFE_TBL_ZERO_LENGTH_LOAD_ERR_EID #define CFE_TBL_ZERO_LENGTH_LOAD_ERR_EID 73
TBL Load Table File Zero Length Event ID.

Type: ERROR

Cause:

TBL Load Table failure due to the file header specified size of data being zero.
Definition at line 485 of file cfe_tbl_eventids.h.

12.130 cfe/modules/time/config/default_cfe_time_extern_typedefs.h File Reference

```
#include "common_types.h"
```

Data Structures

- struct [CFE_TIME_SysTime](#)

Data structure used to hold system time values.

Typedefs

- **typedef struct CFE_TIME_SysTime CFE_TIME_SysTime_t**
Data structure used to hold system time values.
- **typedef uint8 CFE_TIME_FlagBit_Enum_t**
Bit positions of the various clock state flags.
- **typedef int16 CFE_TIME_ClockState_Enum_t**
Enumerated types identifying the quality of the current time.
- **typedef uint8 CFE_TIME_SourceSelect_Enum_t**
Clock Source Selection Parameters.
- **typedef uint8 CFE_TIME_ToneSignalSelect_Enum_t**
Tone Signal Selection Parameters.
- **typedef uint8 CFE_TIME_AdjustDirection_Enum_t**
STCF adjustment direction (for both one-time and 1Hz adjustments)
- **typedef uint8 CFE_TIME_FlywheelState_Enum_t**
Fly-wheel status values.
- **typedef uint8 CFE_TIME_SetState_Enum_t**
Clock status values (has the clock been set to correct time)

Enumerations

- **enum CFE_TIME_FlagBit {**
CFE_TIME_FlagBit_CLKSET = 0 , CFE_TIME_FlagBit_FLYING = 1 , CFE_TIME_FlagBit_SRCINT = 2 ,
CFE_TIME_FlagBit_SIGPRI = 3 ,
CFE_TIME_FlagBit_SRVFLY = 4 , CFE_TIME_FlagBit_CMDFLY = 5 , CFE_TIME_FlagBit_ADDADJ = 6 ,
CFE_TIME_FlagBit_ADD1HZ = 7 ,
CFE_TIME_FlagBit_ADDTCL = 8 , CFE_TIME_FlagBit_SERVER = 9 , CFE_TIME_FlagBit_GDTONE = 10 }
Label definitions associated with CFE_TIME_FlagBit_Enum_t.
- **enum CFE_TIME_ClockState { CFE_TIME_ClockState_INVALID = -1 , CFE_TIME_ClockState_VALID = 0 ,**
CFE_TIME_ClockState_FLYWHEEL = 1 }
Label definitions associated with CFE_TIME_ClockState_Enum_t.
- **enum CFE_TIME_SourceSelect { CFE_TIME_SourceSelect_INTERNAL = 1 , CFE_TIME_SourceSelect_EXTERNAL = 2 }**
Label definitions associated with CFE_TIME_SourceSelect_Enum_t.
- **enum CFE_TIME_ToneSignalSelect { CFE_TIME_ToneSignalSelect_PRIMARY = 1 , CFE_TIME_ToneSignalSelect_REDUNDANT = 2 }**
Label definitions associated with CFE_TIME_ToneSignalSelect_Enum_t.
- **enum CFE_TIME_AdjustDirection { CFE_TIME_AdjustDirection_ADD = 1 , CFE_TIME_AdjustDirection_SUBTRACT = 2 }**
Label definitions associated with CFE_TIME_AdjustDirection_Enum_t.
- **enum CFE_TIME_FlywheelState { CFE_TIME_FlywheelState_NO_FLY = 0 , CFE_TIME_FlywheelState_IS_FLY = 1 }**
Label definitions associated with CFE_TIME_FlywheelState_Enum_t.
- **enum CFE_TIME_SetState { CFE_TIME_SetState_NOT_SET = 0 , CFE_TIME_SetState_WAS_SET = 1 }**
Label definitions associated with CFE_TIME_SetState_Enum_t.

12.130.1 Detailed Description

Declarations and prototypes for cfe_time_extern_typedefs module

12.130.2 Typedef Documentation

12.130.2.1 CFE_TIME_AdjustDirection_Enum_t `typedef uint8 CFE_TIME_AdjustDirection_Enum_t`
STCF adjustment direction (for both one-time and 1Hz adjustments)

See also

enum [CFE_TIME_AdjustDirection](#)

Definition at line 234 of file default_cfe_time_extern_typedefs.h.

12.130.2.2 CFE_TIME_ClockState_Enum_t `typedef int16 CFE_TIME_ClockState_Enum_t`
Enumerated types identifying the quality of the current time.

Description

The [CFE_TIME_ClockState_Enum_t](#) enumerations identify the three recognized states of the current time. If the clock has never been successfully synchronized with the primary onboard clock source, the time is considered to be [CFE_TIME_ClockState_INVALID](#). If the time is currently synchronized (i.e. - the primary synchronization mechanism has not been dropped for any significant amount of time), then the current time is considered to be [CFE_TIME_ClockState_VALID](#). If the time had, at some point in the past, been synchronized, but the synchronization with the primary onboard clock has since been lost, then the time is considered to be [CFE_TIME_ClockState_FLYWHEEL](#). Since different clocks drift at different rates from one another, the accuracy of the time while in [CFE_TIME_ClockState_FLYWHEEL](#) is dependent upon the time spent in that state.

See also

enum [CFE_TIME_ClockState](#)

Definition at line 165 of file default_cfe_time_extern_typedefs.h.

12.130.2.3 CFE_TIME_FlagBit_Enum_t `typedef uint8 CFE_TIME_FlagBit_Enum_t`
Bit positions of the various clock state flags.

See also

enum [CFE_TIME_FlagBit](#)

Definition at line 113 of file default_cfe_time_extern_typedefs.h.

12.130.2.4 CFE_TIME_FlywheelState_Enum_t `typedef uint8 CFE_TIME_FlywheelState_Enum_t`
Fly-wheel status values.

See also

enum [CFE_TIME_FlywheelState](#)

Definition at line 257 of file default_cfe_time_extern_typedefs.h.

12.130.2.5 CFE_TIME_SetState_Enum_t `typedef uint8 CFE_TIME_SetState_Enum_t`
Clock status values (has the clock been set to correct time)

See also

enum [CFE_TIME_SetState](#)

Definition at line 280 of file default_cfe_time_extern_typedefs.h.

12.130.2.6 CFE_TIME_SourceSelect_Enum_t `typedef uint8 CFE_TIME_SourceSelect_Enum_t`
Clock Source Selection Parameters.

See also

enum [CFE_TIME_SourceSelect](#)

Definition at line 188 of file default_cfe_time_extern_typedefs.h.

12.130.2.7 CFE_TIME_SysTime_t `typedef struct CFE_TIME_SysTime CFE_TIME_SysTime_t`
Data structure used to hold system time values.

Description

The `CFE_TIME_SysTime_t` data structure is used to hold time values. Time is referred to as the elapsed time (in seconds and subseconds) since a specified epoch time. The subseconds field contains the number of $2^{(-32)}$ second intervals that have elapsed since the epoch.

12.130.2.8 CFE_TIME_ToneSignalSelect_Enum_t `typedef uint8 CFE_TIME_ToneSignalSelect_Enum_t`
Tone Signal Selection Parameters.

See also

enum [CFE_TIME_ToneSignalSelect](#)

Definition at line 211 of file default_cfe_time_extern_typedefs.h.

12.130.3 Enumeration Type Documentation

12.130.3.1 CFE_TIME_AdjustDirection `enum CFE_TIME_AdjustDirection`
Label definitions associated with `CFE_TIME_AdjustDirection_Enum_t`.

Enumerator

<code>CFE_TIME_AdjustDirection_ADD</code>	Add time adjustment.
<code>CFE_TIME_AdjustDirection_SUBTRACT</code>	Subtract time adjustment.

Definition at line 216 of file default_cfe_time_extern_typedefs.h.

12.130.3.2 CFE_TIME_ClockState `enum CFE_TIME_ClockState`
Label definitions associated with `CFE_TIME_ClockState_Enum_t`.

Enumerator

CFE_TIME_ClockState_INVALID	The spacecraft time has not been set since the last clock reset. Times returned by clock routines have no relationship to any ground-based time reference.
CFE_TIME_ClockState_VALID	The spacecraft time has been set at least once since the last clock reset, and it is synchronized with the primary on-board time base. Times returned by clock routines can be trusted.
CFE_TIME_ClockState_FLYWHEEL	The spacecraft time has been set at least once since the last clock reset, but it is not currently synchronized with the primary on-board time base. Times returned by clock routines are a "best guess" based on a non-optimal oscillator.

Definition at line 118 of file default_cfe_time_extern_typedefs.h.

12.130.3.3 CFE_TIME_FlagBit enum [CFE_TIME_FlagBit](#)

Label definitions associated with CFE_TIME_FlagBit_Enum_t.

Enumerator

CFE_TIME_FlagBit_CLKSET	The spacecraft time has been set.
CFE_TIME_FlagBit_FLYING	This instance of Time Services is flywheeling.
CFE_TIME_FlagBit_SRCINT	The clock source is set to internal.
CFE_TIME_FlagBit_SIGPRI	The clock signal is set to primary.
CFE_TIME_FlagBit_SRVFLY	The Time Server is in flywheel mode.
CFE_TIME_FlagBit_CMDFLY	This instance of Time Services was commanded into flywheel mode.
CFE_TIME_FlagBit_ADDADJ	One time STCF Adjustment is to be done in positive direction.
CFE_TIME_FlagBit_ADD1HZ	1 Hz STCF Adjustment is to be done in a positive direction
CFE_TIME_FlagBit_ADDTCL	Time Client Latency is applied in a positive direction.
CFE_TIME_FlagBit_SERVER	This instance of Time Services is a Time Server.
CFE_TIME_FlagBit_GDTONE	The tone received is good compared to the last tone received.

Definition at line 50 of file default_cfe_time_extern_typedefs.h.

12.130.3.4 CFE_TIME_FlywheelState enum [CFE_TIME_FlywheelState](#)

Label definitions associated with CFE_TIME_FlywheelState_Enum_t.

Enumerator

CFE_TIME_FlywheelState_NO_FLY	Not in flywheel state.
CFE_TIME_FlywheelState_IS_FLY	In flywheel state.

Definition at line 239 of file default_cfe_time_extern_typedefs.h.

12.130.3.5 CFE_TIME_SetState enum [CFE_TIME_SetState](#)

Label definitions associated with CFE_TIME_SetState_Enum_t.

Enumerator

CFE_TIME_SetState_NOT_SET	Spacecraft time has not been set.
CFE_TIME_SetState_WAS_SET	Spacecraft time has been set.

Definition at line 262 of file default_cfe_time_extern_typedefs.h.

12.130.3.6 CFE_TIME_SourceSelect enum CFE_TIME_SourceSelect

Label definitions associated with CFE_TIME_SourceSelect_Enum_t.

Enumerator

CFE_TIME_SourceSelect_INTERNAL	Use Internal Source.
CFE_TIME_SourceSelect_EXTERNAL	Use External Source.

Definition at line 170 of file default_cfe_time_extern_typedefs.h.

12.130.3.7 CFE_TIME_ToneSignalSelect enum CFE_TIME_ToneSignalSelect

Label definitions associated with CFE_TIME_ToneSignalSelect_Enum_t.

Enumerator

CFE_TIME_ToneSignalSelect_PRIMARY	Primary Source.
CFE_TIME_ToneSignalSelect_REDUNDANT	Redundant Source.

Definition at line 193 of file default_cfe_time_extern_typedefs.h.

12.131 cfe/modules/time/config/default_cfe_time_fcncodes.h File Reference

Macros

Time Services Command Codes

- #define CFE_TIME_NOOP_CC 0 /* no-op command */
- #define CFE_TIME_RESET_COUNTERS_CC 1 /* reset counters */
- #define CFE_TIME_SEND_DIAGNOSTIC_CC 2 /* request diagnostic hk telemetry */
- #define CFE_TIME_SET_SOURCE_CC 3 /* set clock source (int vs ext) */
- #define CFE_TIME_SET_STATE_CC 4 /* set clock state */
- #define CFE_TIME_ADD_DELAY_CC 5 /* add tone delay value */
- #define CFE_TIME_SUB_DELAY_CC 6 /* sub tone delay value */
- #define CFE_TIME_SET_TIME_CC 7 /* set time */
- #define CFE_TIME_SET_MET_CC 8 /* set MET */
- #define CFE_TIME_SET_STCF_CC 9 /* set STCF */
- #define CFE_TIME_SET_LEAP_SECONDS_CC 10 /* set Leap Seconds */
- #define CFE_TIME_ADD_ADJUST_CC 11 /* add one time STCF adjustment */
- #define CFE_TIME_SUB_ADJUST_CC 12 /* subtract one time STCF adjustment */
- #define CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC 13 /* add 1Hz STCF adjustment */
- #define CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC 14 /* subtract 1Hz STCF adjustment */
- #define CFE_TIME_SET_SIGNAL_CC 15 /* set clock signal (pri vs red) */

12.131.1 Detailed Description

Specification for the CFE Time Services (CFE_TIME) command function codes

Note

This file should be strictly limited to the command/function code (CC) macro definitions. Other definitions such as enums, typedefs, or other macros should be placed in the msgdefs.h or msg.h files.

12.131.2 Macro Definition Documentation

12.131.2.1 CFE_TIME_ADD_ADJUST_CC #define CFE_TIME_ADD_ADJUST_CC 11 /* add one time STCF adjustment */

Name Add Delta to Spacecraft Time Correlation Factor

Description

This command adjusts the Spacecraft Time Correlation Factor (STCF) by adding the specified value. The new STCF takes effect immediately upon execution of this command.

Command Mnemonic(s) \$sc_\$cpu_TIME_AddSTCFAAdj

Command Structure

[CFE_TIME_AddAdjustCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDPC](#) - command execution counter will increment
- [\\$sc_\\$cpu_TIME_STCFSecs](#) - Housekeeping Telemetry point indicating new STCF seconds value
- [\\$sc_\\$cpu_TIME_STCFSubsecs](#) - Housekeeping Telemetry point indicating new STCF subseconds value
- The [CFE_TIME_DELTA_EID](#) informational event message will be generated

Error Conditions

- An invalid number of microseconds was specified (must be less than 1 million)
- Platform receiving the command is not a Time Server

Evidence of Failure may be found in the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDEC](#) - command error counter will increment
- Error specific event messages will be issued ([CFE_TIME_DELTA_ERR_EID](#) or [CFE_TIME_DELTA_CFG_EID](#))

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_ADD_ADJUST_CC](#), [CFE_TIME_SUB_ADJUST_CC](#), [CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC](#),
[CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC](#)

Definition at line 521 of file default_cfe_time_fcncodes.h.

12.131.2.2 CFE_TIME_ADD_DELAY_CC #define CFE_TIME_ADD_DELAY_CC 5 /* add tone delay value */

Name Add Time to Tone Time Delay

Description

This command is used to factor out a known, predictable latency between the Time Server and a particular Time Client. The correction is applied (added) to the current time calculation for Time Clients, so this command has no meaning for Time Servers. Each Time Client can have a unique latency setting. The latency value is a positive number of seconds and microseconds that represent the deviation from the time maintained by the Time Server.

Command Mnemonic(s) \$sc_\$cpu_TIME_AddClockLat

Command Structure

[CFE_TIME_AddDelayCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TIME_CMDPC** - command execution counter will increment
- **\$sc_\$cpu_TIME_DLAtentS**, **\$sc_\$cpu_TIME_DLAtentSs** - Housekeeping Telemetry point indicating command specified values
- **\$sc_\$cpu_TIME_DLAtentDir** - Diagnostic Telemetry point indicating commanded latency direction
- The [CFE_TIME_DELAY_EID](#) informational event message will be generated

Error Conditions

- An invalid number of microseconds was specified (must be less than 1 million)
- Platform receiving the command is not a Time Client

Evidence of Failure may be found in the following telemetry:

- **\$sc_\$cpu_TIME_CMDEC** - command error counter will increment
- Error specific event messages will be issued ([CFE_TIME_DELAY_CFG_EID](#) or [CFE_TIME_DELAY_ERR_EID](#))

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_SUB_DELAY_CC](#)

Definition at line 290 of file default_cfe_time_fcnccodes.h.

```
12.131.2.3 CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC #define CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC 13
/* add 1Hz STCF adjustment */
```

Name Add Delta to Spacecraft Time Correlation Factor each 1Hz

Description

This command has been updated to take actual sub-seconds ($1/2^{32}$ seconds) rather than micro-seconds as an input argument. This change occurred after the determination was made that one micro-second is too large an increment for a constant 1Hz adjustment.

This command continuously adjusts the Spacecraft Time Correlation Factor (STCF) every second, by adding the specified value. The adjustment to the STCF is applied in the Time Service local 1Hz interrupt handler. As the local 1Hz interrupt is not synchronized to the tone signal, one cannot say when the adjustment will occur, other than once a second, at about the same time relative to the tone.

There was some debate about whether the maximum 1Hz clock drift correction factor would ever need to exceed some small fraction of a second. But, the decision was made to provide the capability to make 1Hz adjustments greater than one second and leave it to the ground system to provide mission specific limits.

Command Mnemonic(s) \$sc_\$cpu_TIME_Add1HzSTCF

Command Structure

[CFE_TIME_AddOneHzAdjustmentCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDPC](#) - command execution counter will increment
- [\\$sc_\\$cpu_TIME_STCFSecs](#) - Housekeeping Telemetry point indicating new STCF seconds value
- [\\$sc_\\$cpu_TIME_STCFSubsecs](#) - Housekeeping Telemetry point indicating new STCF subseconds value
- The [CFE_TIME_ONEHZ_EID](#) informational event message will be generated

Error Conditions

- Platform receiving the command is not a Time Server

Evidence of Failure may be found in the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDEC](#) - command error counter will increment
- Error specific event message will be issued ([CFE_TIME_ONEHZ_CFG_EID](#))

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_ADD_ADJUST_CC](#), [CFE_TIME_SUB_ADJUST_CC](#), [CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC](#)

Definition at line 601 of file default_cfe_time_fcncodes.h.

12.131.2.4 CFE_TIME_NOOP_CC #define CFE_TIME_NOOP_CC 0 /* no-op command */**Name** Time No-Op**Description**

This command performs no other function than to increment the command execution counter. The command may be used to verify general aliveness of the Time Services task.

Command Mnemonic(s) \$sc_\$cpu_TIME_NOOP**Command Structure**[CFE_TIME_NoopCmd_t](#)**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDPC](#) - command execution counter will increment
- The [CFE_TIME_NOOP_EID](#) informational event message will be generated

Error Conditions

There are no error conditions for this command. If the Time Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is incremented unconditionally.

Criticality

None

See also

Definition at line 66 of file default_cfe_time_fcncodes.h.

12.131.2.5 CFE_TIME_RESET_COUNTERS_CC #define CFE_TIME_RESET_COUNTERS_CC 1 /* reset counters */**Name** Time Reset Counters**Description**

This command resets the following counters within the Time Services [Housekeeping Telemetry](#) :

- Command Execution Counter (\$sc_\$cpu_TIME_CMDPC)
- Command Error Counter (\$sc_\$cpu_TIME_CMDEC) This command also resets the following counters within the Time Services [Diagnostic Telemetry](#) :
 - Tone Signal Detected Software Bus Message Counter (\$sc_\$cpu_TIME_DTSDetCNT)
 - Time at the Tone Data Software Bus Message Counter (\$sc_\$cpu_TIME_DTatTCNT)
 - Tone Signal/Data Verify Counter (\$sc_\$cpu_TIME_DVerifyCNT)
 - Tone Signal/Data Error Counter (\$sc_\$cpu_TIME_DVerifyER)

- Tone Signal Interrupt Counter (\$sc_\$cpu_TIME_DTsISRCNT)
- Tone Signal Interrupt Error Counter (\$sc_\$cpu_TIME_DTsISRERR)
- Tone Signal Task Counter (\$sc_\$cpu_TIME_DTsTaskCNT)
- Local 1 Hz Interrupt Counter (\$sc_\$cpu_TIME_D1HzISRCNT)
- Local 1 Hz Task Counter (\$sc_\$cpu_TIME_D1HzTaskCNT)
- Reference Time Version Counter (\$sc_\$cpu_TIME_DVersionCNT)

Command Mnemonic(s) \$sc_\$cpu_TIME_ResetCtrs

Command Structure

[CFE_TIME_ResetCountersCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TIME_CMDPC** - command execution counter will reset to 0
- **\$sc_\$cpu_TIME_CMDEC** - command error counter will reset to 0
- The [CFE_TIME_RESET_EID](#) informational event message will be generated

Error Conditions

There are no error conditions for this command. If the Time Services receives the command, the event is sent (although it may be filtered by EVS) and the counter is reset unconditionally.

Criticality

None

See also

Definition at line 111 of file default_cfe_time_fcncodes.h.

12.131.2.6 CFE_TIME_SEND_DIAGNOSTIC_CC #define CFE_TIME_SEND_DIAGNOSTIC_CC 2 /* request diagnostic hk telemetry */

Name Request TIME Diagnostic Telemetry

Description

This command requests that the Time Service generate a message containing various data values not included in the normal Time Service housekeeping message. The command requests only a single copy of the diagnostic message. Refer to [CFE_TIME_DiagnosticTlm_t](#) for a description of the Time Service diagnostic message contents.

Command Mnemonic(s) \$sc_\$cpu_TIME_RequestDiag

Command Structure

[CFE_TIME_SendDiagnosticCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TIME_CMDPC** - command execution counter will increment
- Sequence Counter for **CFE_TIME_DiagnosticTlm_t** will increment
- The **CFE_TIME_DIAG_EID** debug event message will be generated

Error Conditions

There are no error conditions for this command. If the Time Services receives the command, the event and telemetry is sent (although one or both may be filtered by EVS and TO) and the counter is incremented unconditionally.

Criticality

None

See also

Definition at line 145 of file default_cfe_time_fcncodes.h.

12.131.2.7 CFE_TIME_SET_LEAP_SECONDS_CC #define CFE_TIME_SET_LEAP_SECONDS_CC 10 /* set Leap Seconds */

Name Set Leap Seconds

Description

This command sets the spacecraft Leap Seconds to the specified value. Leap Seconds may be positive or negative, and there is no limit to the value except, of course, the limit imposed by the 16 bit signed integer data type. The new Leap Seconds value takes effect immediately upon execution of this command.

Command Mnemonic(s) \$sc_\$cpu_TIME_SetClockLeap

Command Structure

[CFE_TIME_SetLeapSecondsCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TIME_CMDPC** - command execution counter will increment
- **\$sc_\$cpu_TIME_LeapSecs** - Housekeeping Telemetry point indicating new Leap seconds value
- The **CFE_TIME_LEAPS_EID** informational event message will be generated

Error Conditions

- Platform receiving the command is not a Time Server

Evidence of Failure may be found in the following telemetry:

- **\$sc_\$cpu_TIME_CMDEC** - command error counter will increment
- Error specific event messages will be issued (**CFE_TIME_LEAPS_CFG_EID**)

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_SET_TIME_CC](#), [CFE_TIME_SET_MET_CC](#), [CFE_TIME_SET_STCF_CC](#)

Definition at line 485 of file default_cfe_time_fcncodes.h.

12.131.2.8 CFE_TIME_SET_MET_CC #define CFE_TIME_SET_MET_CC 8 /* set MET */

Name Set Mission Elapsed Time

Description

This command sets the Mission Elapsed Timer (MET) to the specified value.

Note that the MET (as implemented for cFE Time Service) is a logical representation and not a physical timer. Thus, setting the MET is not dependent on whether the hardware supports a MET register that can be written to.

Note also that Time Service "assumes" that during normal operation, the MET is synchronized to the tone signal. Therefore, unless operating in FLYWHEEL mode, the sub-seconds portion of the MET will be set to zero at the next tone signal interrupt.

The new MET takes effect immediately upon execution of this command.

Command Mnemonic(s) \$sc_\$cpu_TIME_SetClockMET

Command Structure

[CFE_TIME_SetMETCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TIME_CMDPC** - command execution counter will increment
- **\$sc_\$cpu_TIME_METSecs** - Housekeeping Telemetry point indicating new MET seconds value
- **\$sc_\$cpu_TIME_METSubsecs** - Housekeeping Telemetry point indicating new MET subseconds value
- The [CFE_TIME_MET_EID](#) informational event message will be generated

Error Conditions

- An invalid number of microseconds was specified (must be less than 1 million)
- Platform receiving the command is not a Time Server

Evidence of Failure may be found in the following telemetry:

- **\$sc_\$cpu_TIME_CMDEC** - command error counter will increment
- Error specific event messages will be issued ([CFE_TIME_MET_CFG_EID](#) or [CFE_TIME_MET_ERR_EID](#))

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_SET_TIME_CC](#), [CFE_TIME_SET_STCF_CC](#), [CFE_TIME_SET_LEAP_SECONDS_CC](#)

Definition at line 413 of file default_cfe_time_fcncodes.h.

12.131.2.9 CFE_TIME_SET_SIGNAL_CC #define CFE_TIME_SET_SIGNAL_CC 15 /* set clock signal (pri vs red) */

Name Set Tone Signal Source

Description

This command selects the Time Service tone signal source. Although the list of potential tone signal sources is mission specific, a common choice is the selection of primary or redundant tone signal. The selection may be available to both the Time Server and Time Clients, depending on hardware configuration.

Notes:

- This command is only valid when the [CFE_PLATFORM_TIME_CFG_SIGNAL](#) configuration parameter in the `cfe_platform_cfg.h` file has been set to true.

Command Mnemonic(s) \$sc_\$cpu_TIME_SetSignal

Command Structure

[CFE_TIME_SetSignalCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_TIME_CMDPC` - command execution counter will increment
- `$sc_$cpu_TIME_DSignal` - Diagnostic Telemetry point will indicate the command specified value
- The [CFE_TIME_SIGNAL_EID](#) informational event message will be generated

Error Conditions

- Invalid Signal selection (a value other than [CFE_TIME_ToneSignalSelect_PRIMARY](#) or [CFE_TIME_ToneSignalSelect_REDUNDANT](#) was specified)
- Multiple Tone Signal Sources not available on this platform

Evidence of failure may be found in the following telemetry:

- `$sc_$cpu_TIME_CMDEC` - Command Error counter will increment
- Error specific event message (either [CFE_TIME_SIGNAL_CFG_EID](#) or [CFE_TIME_SIGNAL_ERR_EID](#))

Criticality

Although tone signal source selection is important, this command is not critical

See also

[CFE_TIME_SET_STATE_CC](#), [CFE_TIME_SET_SOURCE_CC](#)

Definition at line 691 of file default_cfe_time_fcncodes.h.

12.131.2.10 CFE_TIME_SET_SOURCE_CC #define CFE_TIME_SET_SOURCE_CC 3 /* set clock source (int vs ext) */

Name Set Time Source

Description

This command selects the Time Service clock source. Although the list of potential clock sources is mission specific and defined via configuration parameters, this command provides a common method for switching between the local processor clock and an external source for time data.

When commanded to accept external time data (GPS, MET, spacecraft time, etc.), the Time Server will enable input via an API function specific to the configuration definitions for the particular source. When commanded to use internal time data, the Time Server will ignore the external data. However, the Time Server will continue to use the API function as the trigger to generate a "time at the tone" command packet regardless of the internal/external command selection.

Notes:

- Operating in FLYWHEEL mode is not considered a choice related to clock source, but rather an element of the clock state. See below for a description of the [CFE_TIME_SET_STATE_CC](#) command.
- This command is only valid when the [CFE_PLATFORM_TIME_CFG_SOURCE](#) configuration parameter in the cfe_platform_cfg.h file has been set to true.

Command Mnemonic(s) \$sc_\$cpu_TIME_SetSource

Command Structure

[CFE_TIME_SetSourceCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDPC](#) - command execution counter will increment
- [\\$sc_\\$cpu_TIME_DSource](#) - Diagnostic Telemetry point will indicate the command specified value
- The [CFE_TIME_SOURCE_EID](#) informational event message will be generated

Error Conditions

- Invalid Source selection (a value other than [CFE_TIME_SourceSelect_INTERNAL](#) or [CFE_TIME_SourceSelect_EXTERNAL](#) was specified)
- Time source selection not allowed on this platform

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDEC](#) - Command Error counter will increment
- Error specific event message (either [CFE_TIME_SOURCE_CFG_EID](#) or [CFE_TIME_SOURCE_ERR_EID](#))

Criticality

Although clock source selection is important, this command is not critical.

See also

[CFE_TIME_SET_STATE_CC](#), [CFE_TIME_SET_SIGNAL_CC](#)

Definition at line 195 of file default_cfe_time_fcncodes.h.

12.131.2.11 CFE_TIME_SET_STATE_CC #define CFE_TIME_SET_STATE_CC 4 /* set clock state */**Name** Set Time State**Description**

This command indirectly affects the Time Service on-board determination of clock state. Clock state is a combination of factors, most significantly whether the spacecraft time has been accurately set, and whether Time Service is operating in FLYWHEEL mode.

This command may be used to notify the Time Server that spacecraft time is now correct, or that time is no longer correct. This information will be distributed to Time Clients, and in turn, to any interested sub-systems.

Also, this command may be used to force a Time Server or Time Client into FLYWHEEL mode. Use of FLYWHEEL mode is mainly for debug purposes although in extreme circumstances, it may be of value to force Time Service not to rely on normal time updates. Note that when commanded into FLYWHEEL mode, the Time Service will remain so until receipt of another "set state" command setting the state into a mode other than FLYWHEEL.

Note also that setting the clock state to VALID or INVALID on a Time Client that is currently getting time updates from the Time Server will have very limited effect. As soon as the Time Client receives the next time update, the VALID/INVALID selection will be set to that of the Time Server. However, setting a Time Client to FLYWHEEL cannot be overridden by the Time Server since the Time Client will ignore time updates from the Time Server while in FLYWHEEL mode.

Command Mnemonic(s) \$sc_\$cpu_TIME_SetState**Command Structure**[CFE_TIME_SetStateCmd_t](#)**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDPC](#) - command execution counter will increment
- [\\$sc_\\$cpu_TIME_StateFlg](#), [\\$sc_\\$cpu_TIME_FlagSet](#), [\\$sc_\\$cpu_TIME_FlagFly](#), [\\$sc_\\$cpu_TIME_FlagSrc](#), [\\$sc_\\$cpu_TIME_FlagPri](#), [\\$sc_\\$cpu_TIME_FlagSfly](#), [\\$sc_\\$cpu_TIME_FlagCfly](#), [\\$sc_\\$cpu_TIME_FlagAdjd](#), [\\$sc_\\$cpu_TIME_Flag1Hzd](#), [\\$sc_\\$cpu_TIME_FlagClat](#), [\\$sc_\\$cpu_TIME_FlagSorC](#), [\\$sc_\\$cpu_TIME_FlagNIU](#) - Housekeeping Telemetry point "may" indicate the command specified value (see above)
- The [CFE_TIME_STATE_EID](#) informational event message will be generated

Error Conditions

- Invalid State selection (a value other than [CFE_TIME_ClockState_INVALID](#), [CFE_TIME_ClockState_VALID](#) or [CFE_TIME_ClockState_FLYWHEEL](#) was specified)
- Time source selection not allowed on this platform

Evidence of failure may be found in the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDEC](#) - Command Error counter will increment
- Error specific event message ([CFE_TIME_STATE_ERR_EID](#))

Criticality

Setting Time Service into FLYWHEEL mode is not particularly hazardous, as the result may be that the calculation of spacecraft time is done using a less than optimal timer. However, inappropriately setting the clock state to VALID (indicating that spacecraft time is accurate) may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_SET_SOURCE_CC](#), [CFE_TIME_SET_SIGNAL_CC](#)

Definition at line 252 of file default_cfe_time_fcncodes.h.

12.131.2.12 CFE_TIME_SET_STCF_CC #define CFE_TIME_SET_STCF_CC 9 /* set STCF */

Name Set Spacecraft Time Correlation Factor

Description

This command sets the Spacecraft Time Correlation Factor (STCF) to the specified value. This command differs from the previously described SET CLOCK in the nature of the command argument. This command sets the STCF value directly, rather than extracting the STCF from a value representing the total of MET, STCF and optionally, Leap Seconds. The new STCF takes effect immediately upon execution of this command.

Command Mnemonic(s) \$sc_\$cpu_TIME_SetClockSTCF

Command Structure

[CFE_TIME_SetSTCFCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDPC](#) - command execution counter will increment
- [\\$sc_\\$cpu_TIME_STCFSecs](#) - Housekeeping Telemetry point indicating new STCF seconds value
- [\\$sc_\\$cpu_TIME_STCFSubsecs](#) - Housekeeping Telemetry point indicating new STCF subseconds value
- The [CFE_TIME_STCF_EID](#) informational event message will be generated

Error Conditions

- An invalid number of microseconds was specified (must be less than 1 million)
- Platform receiving the command is not a Time Server

Evidence of Failure may be found in the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDEC](#) - command error counter will increment
- Error specific event messages will be issued ([CFE_TIME_STCF_CFG_EID](#) or [CFE_TIME_STCF_ERR_EID](#))

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_SET_TIME_CC](#), [CFE_TIME_SET_MET_CC](#), [CFE_TIME_SET_LEAP_SECONDS_CC](#)

Definition at line 450 of file default_cfe_time_fcncodes.h.

12.131.2.13 CFE_TIME_SET_TIME_CC #define CFE_TIME_SET_TIME_CC 7 /* set time */**Name** Set Spacecraft Time**Description**

This command sets the spacecraft clock to a new value, regardless of the current setting (time jam). The new time value represents the desired offset from the mission-defined time epoch and takes effect immediately upon execution of this command. Time Service will calculate a new STCF value based on the current MET and the desired new time using one of the following:

If Time Service is configured to compute current time as TAI

- **STCF = (new time) - (current MET)**
- **(current time) = (current MET) + STCF**

If Time Service is configured to compute current time as UTC

- **STCF = ((new time) - (current MET)) + (Leap Seconds)**
- **(current time) = ((current MET) + STCF) - (Leap Seconds)**

Command Mnemonic(s) \$sc_\$cpu_TIME_SetClock**Command Structure**[CFE_TIME_SetTimeCmd_t](#)**Command Verification**

Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TIME_CMDPC** - command execution counter will increment
- **\$sc_\$cpu_TIME_STCFSecs** - Housekeeping Telemetry point indicating newly calculated STCF seconds value
- **\$sc_\$cpu_TIME_STCFSubsecs** - Housekeeping Telemetry point indicating newly calculated STCF subseconds value
- The [CFE_TIME_TIME_EID](#) informational event message will be generated

Error Conditions

- An invalid number of microseconds was specified (must be less than 1 million)
- Platform receiving the command is not a Time Server

Evidence of Failure may be found in the following telemetry:

- **\$sc_\$cpu_TIME_CMDEC** - command error counter will increment
- Error specific event messages will be issued ([CFE_TIME_TIME_CFG_EID](#) or [CFE_TIME_TIME_ERR_EID](#))

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also[CFE_TIME_SET_MET_CC](#), [CFE_TIME_SET_STCF_CC](#), [CFE_TIME_SET_LEAP_SECONDS_CC](#)

Definition at line 373 of file default_cfe_time_fcncodes.h.

12.131.2.14 CFE_TIME_SUB_ADJUST_CC #define CFE_TIME_SUB_ADJUST_CC 12 /* subtract one time STCF adjustment */

Name Subtract Delta from Spacecraft Time Correlation Factor

Description

This command adjusts the Spacecraft Time Correlation Factor (STCF) by subtracting the specified value. The new STCF takes effect immediately upon execution of this command.

Command Mnemonic(s) \$sc_\$cpu_TIME_SubSTCFAdj

Command Structure

[CFE_TIME_SubAdjustCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDPC](#) - command execution counter will increment
- [\\$sc_\\$cpu_TIME_STCFSecs](#) - Housekeeping Telemetry point indicating new STCF seconds value
- [\\$sc_\\$cpu_TIME_STCFSubsecs](#) - Housekeeping Telemetry point indicating new STCF subseconds value
- The [CFE_TIME_DELTA_EID](#) informational event message will be generated

Error Conditions

- An invalid number of microseconds was specified (must be less than 1 million)
- Platform receiving the command is not a Time Server

Evidence of Failure may be found in the following telemetry:

- [\\$sc_\\$cpu_TIME_CMDEC](#) - command error counter will increment
- Error specific event messages will be issued ([CFE_TIME_DELTA_ERR_EID](#) or [CFE_TIME_DELTA_CFG_EID](#))

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_ADD_ADJUST_CC](#), [CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC](#), [CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC](#)

Definition at line 555 of file default_cfe_time_fcncodes.h.

12.131.2.15 CFE_TIME_SUB_DELAY_CC #define CFE_TIME_SUB_DELAY_CC 6 /* sub tone delay value */

Name Subtract Time from Tone Time Delay

Description

This command is used to factor out a known, predictable latency between the Time Server and a particular Time Client. The correction is applied (subtracted) to the current time calculation for Time Clients, so this command has no meaning for Time Servers. Each Time Client can have a unique latency setting. The latency value is a positive number of seconds and microseconds that represent the deviation from the time maintained by the Time Server.

Note that it is unimaginable that the seconds value will ever be anything but zero.

Command Mnemonic(s)

`$sc_$cpu_TIME_SubClockLat`

Command Structure

[CFE_TIME_SubDelayCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry:

- `$sc_$cpu_TIME_CMDPC` - command execution counter will increment
- `$sc_$cpu_TIME_DLatentS`, `$sc_$cpu_TIME_DLlatentSs` - Housekeeping Telemetry point indicating command specified values
- `$sc_$cpu_TIME_DLlatentDir` - Diagnostic Telemetry point indicating commanded latency direction
- The [CFE_TIME_DELAY_EID](#) informational event message will be generated

Error Conditions

- An invalid number of microseconds was specified (must be less than 1 million)
- Platform receiving the command is not a Time Client

Evidence of Failure may be found in the following telemetry:

- `$sc_$cpu_TIME_CMDEC` - command error counter will increment
- Error specific event messages will be issued ([CFE_TIME_DELAY_CFG_EID](#) or [CFE_TIME_DELAY_ERR_EID](#))

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_ADD_DELAY_CC](#)

Definition at line 328 of file default_cfe_time_fcncodes.h.

12.131.2.16 CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC `#define CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC 14`
/* subtract 1Hz STCF adjustment */

Name Subtract Delta from Spacecraft Time Correlation Factor each 1Hz

Description

This command has been updated to take actual sub-seconds ($1/2^{32}$ seconds) rather than micro-seconds as an input argument. This change occurred after the determination was made that one micro-second is too large an increment for a constant 1Hz adjustment.

This command continuously adjusts the Spacecraft Time Correlation Factor (STCF) every second, by subtracting the specified value. The adjustment to the STCF is applied in the Time Service local 1Hz interrupt handler. As the local 1Hz interrupt is not synchronized to the tone signal, one cannot say when the adjustment will occur, other than once a second, at about the same time relative to the tone.

There was some debate about whether the maximum 1Hz clock drift correction factor would ever need to exceed some small fraction of a second. But, the decision was made to provide the capability to make 1Hz adjustments greater than one second and leave it to the ground system to provide mission specific limits.

Command Mnemonic(s)

\$sc_\$cpu_TIME_Sub1HzSTCF

Command Structure

[CFE_TIME_SubOneHzAdjustmentCmd_t](#)

Command Verification

Successful execution of this command may be verified with the following telemetry: Successful execution of this command may be verified with the following telemetry:

- **\$sc_\$cpu_TIME_CMDPC** - command execution counter will increment
- **\$sc_\$cpu_TIME_STCFSecs** - Housekeeping Telemetry point indicating new STCF seconds value
- **\$sc_\$cpu_TIME_STCFSubsecs** - Housekeeping Telemetry point indicating new STCF subseconds value
- The [CFE_TIME_ONEHZ_EID](#) informational event message will be generated

Error Conditions

- Platform receiving the command is not a Time Server

Evidence of Failure may be found in the following telemetry:

- **\$sc_\$cpu_TIME_CMDEC** - command error counter will increment
- Error specific event message will be issued ([CFE_TIME_ONEHZ_CFG_EID](#))

Criticality

Inappropriately setting the clock may result in other sub-systems performing incorrect time based calculations. The specific risk is dependent upon the behavior of those sub-systems.

See also

[CFE_TIME_ADD_ADJUST_CC](#), [CFE_TIME_SUB_ADJUST_CC](#), [CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC](#)

Definition at line 649 of file default_cfe_time_fcncodes.h.

12.132 cfe/modules/time/config/default_cfe_time_interface_cfg.h File Reference

Macros

- #define CFE_MISSION_TIME_CFG_DEFAULT_TAI true
- #define CFE_MISSION_TIME_CFG_DEFAULT_UTC false
- #define CFE_MISSION_TIME_CFG_FAKE_TONE true
- #define CFE_MISSION_TIME_AT_TONE_WAS true
- #define CFE_MISSION_TIME_AT_TONE_WILL_BE false
- #define CFE_MISSION_TIME_MIN_ELAPSED 0
- #define CFE_MISSION_TIME_MAX_ELAPSED 200000
- #define CFE_MISSION_TIME_DEF_MET_SECS 1000
- #define CFE_MISSION_TIME_DEF_MET_SUBS 0
- #define CFE_MISSION_TIME_DEF_STCF_SECS 1000000
- #define CFE_MISSION_TIME_DEF_STCF_SUBS 0
- #define CFE_MISSION_TIME_DEF_LEAPS 37
- #define CFE_MISSION_TIME_DEF_DELAY_SECS 0
- #define CFE_MISSION_TIME_DEF_DELAY_SUBS 1000
- #define CFE_MISSION_TIME_EPOCH_YEAR 1980
- #define CFE_MISSION_TIME_EPOCH_DAY 1
- #define CFE_MISSION_TIME_EPOCH_HOUR 0
- #define CFE_MISSION_TIME_EPOCH_MINUTE 0
- #define CFE_MISSION_TIME_EPOCH_SECOND 0
- #define CFE_MISSION_TIME_EPOCH_MICROS 0
- #define CFE_MISSION_TIME_FS_FACTOR 789004800

12.132.1 Detailed Description

CFE Time Services (CFE_TIME) Application Public Definitions

This provides default values for configurable items that affect the interface(s) of this module. This includes the CMD/TLM message interface, tables definitions, and any other data products that serve to exchange information with other entities.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.132.2 Macro Definition Documentation

12.132.2.1 CFE_MISSION_TIME_AT_TONE_WAS #define CFE_MISSION_TIME_AT_TONE_WAS true

Purpose Default Time and Tone Order

Description:

Time Services may be configured to expect the time at the tone data packet to either precede or follow the tone signal. If the time at the tone data packet follows the tone signal, then the data within the packet describes what the time "was" at the tone. If the time at the tone data packet precedes the tone signal, then the data within the packet describes what the time "will be" at the tone. One, and only one, of the following symbols must be set to true:

- CFE_MISSION_TIME_AT_TONE_WAS
- CFE_MISSION_TIME_AT_TONE_WILL_BE Note: If Time Services is defined as using a simulated tone signal (see CFE_MISSION_TIME_CFG_FAKE_TONE above), then the tone data packet must follow the tone signal.

Limits

Either CFE_MISSION_TIME_AT_TONE_WAS or CFE_MISSION_TIME_AT_TONE_WILL_BE must be set to true. They may not both be true and they may not both be false.

Definition at line 88 of file default_cfe_time_interface_cfg.h.

12.132.2.2 CFE_MISSION_TIME_AT_TONE_WILL_BE #define CFE_MISSION_TIME_AT_TONE_WILL_BE false
Definition at line 89 of file default_cfe_time_interface_cfg.h.

12.132.2.3 CFE_MISSION_TIME_CFG_DEFAULT_TAI #define CFE_MISSION_TIME_CFG_DEFAULT_TAI true

Purpose Default Time Format

Description:

The following definitions select either UTC or TAI as the default (mission specific) time format. Although it is possible for an application to request time in a specific format, most callers should use [CFE_TIME_GetTime\(\)](#), which returns time in the default format. This avoids having to modify each individual caller when the default choice is changed.

Limits

if CFE_MISSION_TIME_CFG_DEFAULT_TAI is defined as true then CFE_MISSION_TIME_CFG_DEFAULT_UTC must be defined as false. if CFE_MISSION_TIME_CFG_DEFAULT_TAI is defined as false then CFE_MISSION_TIME_CFG_DEFAULT_UTC must be defined as true.

Definition at line 52 of file default_cfe_time_interface_cfg.h.

12.132.2.4 CFE_MISSION_TIME_CFG_DEFAULT_UTC #define CFE_MISSION_TIME_CFG_DEFAULT_UTC false
Definition at line 53 of file default_cfe_time_interface_cfg.h.

12.132.2.5 CFE_MISSION_TIME_CFG_FAKE_TONE #define CFE_MISSION_TIME_CFG_FAKE_TONE true

Purpose Default Time Format

Description:

The following definition enables the use of a simulated time at the tone signal using a software bus message.

Limits

Not Applicable

Definition at line 65 of file default_cfe_time_interface_cfg.h.

12.132.2.6 CFE_MISSION_TIME_DEF_DELAY_SECS #define CFE_MISSION_TIME_DEF_DELAY_SECS 0
Definition at line 147 of file default_cfe_time_interface_cfg.h.

12.132.2.7 CFE_MISSION_TIME_DEF_DELAY_SUBS #define CFE_MISSION_TIME_DEF_DELAY_SUBS 1000
Definition at line 148 of file default_cfe_time_interface_cfg.h.

12.132.2.8 CFE_MISSION_TIME_DEF_LEAPS #define CFE_MISSION_TIME_DEF_LEAPS 37
Definition at line 145 of file default_cfe_time_interface_cfg.h.

12.132.2.9 CFE_MISSION_TIME_DEF_MET_SECS #define CFE_MISSION_TIME_DEF_MET_SECS 1000

Purpose Default Time Values

Description:

Default time values are provided to avoid problems due to time calculations performed after startup but before commands can be processed. For example, if the default time format is UTC then it is important that the sum of MET and STCF always exceed the value of Leap Seconds to prevent the UTC time calculation ($\text{time} = \text{MET} + \text{STCF} - \text{Leap Seconds}$) from resulting in a negative (very large) number.

Some past missions have also created known (albeit wrong) default timestamps. For example, assume the epoch is defined as Jan 1, 1970 and further assume the default time values are set to create a timestamp of Jan 1, 2000. Even though the year 2000 timestamps are wrong, it may be of value to keep the time within some sort of bounds acceptable to the software.

Note: Sub-second units are in micro-seconds (0 to 999,999) and all values must be defined

Limits

Not Applicable

Definition at line 139 of file default_cfe_time_interface_cfg.h.

12.132.2.10 CFE_MISSION_TIME_DEF_MET_SUBS #define CFE_MISSION_TIME_DEF_MET_SUBS 0
Definition at line 140 of file default_cfe_time_interface_cfg.h.

12.132.2.11 CFE_MISSION_TIME_DEF_STCF_SECS #define CFE_MISSION_TIME_DEF_STCF_SECS 1000000
Definition at line 142 of file default_cfe_time_interface_cfg.h.

12.132.2.12 CFE_MISSION_TIME_DEF_STCF_SUBS #define CFE_MISSION_TIME_DEF_STCF_SUBS 0
Definition at line 143 of file default_cfe_time_interface_cfg.h.

12.132.2.13 CFE_MISSION_TIME_EPOCH_DAY #define CFE_MISSION_TIME_EPOCH_DAY 1
Definition at line 166 of file default_cfe_time_interface_cfg.h.

12.132.2.14 CFE_MISSION_TIME_EPOCH_HOUR #define CFE_MISSION_TIME_EPOCH_HOUR 0
Definition at line 167 of file default_cfe_time_interface_cfg.h.

12.132.2.15 CFE_MISSION_TIME_EPOCH_MICROS #define CFE_MISSION_TIME_EPOCH_MICROS 0
Definition at line 170 of file default_cfe_time_interface_cfg.h.

12.132.2.16 CFE_MISSION_TIME_EPOCH_MINUTE #define CFE_MISSION_TIME_EPOCH_MINUTE 0
Definition at line 168 of file default_cfe_time_interface_cfg.h.

12.132.2.17 CFE_MISSION_TIME_EPOCH_SECOND #define CFE_MISSION_TIME_EPOCH_SECOND 0
Definition at line 169 of file default_cfe_time_interface_cfg.h.

12.132.2.18 CFE_MISSION_TIME_EPOCH_YEAR #define CFE_MISSION_TIME_EPOCH_YEAR 1980

Purpose Default EPOCH Values

Description:

Default ground time epoch values Note: these values are used only by the [CFE_TIME_Print\(\)](#) API function

Limits

Year - must be within 136 years Day - Jan 1 = 1, Feb 1 = 32, etc. Hour - 0 to 23 Minute - 0 to 59 Second - 0 to 59
Micros - 0 to 999999

Definition at line 165 of file default_cfe_time_interface_cfg.h.

12.132.2.19 CFE_MISSION_TIME_FS_FACTOR #define CFE_MISSION_TIME_FS_FACTOR 789004800

Purpose Time File System Factor

Description:

Define the s/c vs file system time conversion constant...

Note: this value is intended for use only by CFE TIME API functions to convert time values based on the ground system epoch (s/c time) to and from time values based on the file system epoch (fs time).

FS time = S/C time + factor S/C time = FS time - factor

Worksheet:

S/C epoch = Jan 1, 2005 (LRO ground system epoch) FS epoch = Jan 1, 1980 (vxWorks DOS file system epoch)

Delta = 25 years, 0 days, 0 hours, 0 minutes, 0 seconds

Leap years = 1980, 1984, 1988, 1992, 1996, 2000, 2004 (divisible by 4 – except if by 100 – unless also by 400)

1 year = 31,536,000 seconds 1 day = 86,400 seconds 1 hour = 3,600 seconds 1 minute = 60 seconds

25 years = 788,400,000 seconds 7 extra leap days = 604,800 seconds

total delta = 789,004,800 seconds

Limits

Not Applicable

Definition at line 208 of file default_cfe_time_interface_cfg.h.

12.132.2.20 CFE_MISSION_TIME_MAX_ELAPSED #define CFE_MISSION_TIME_MAX_ELAPSED 200000

Definition at line 114 of file default_cfe_time_interface_cfg.h.

12.132.2.21 CFE_MISSION_TIME_MIN_ELAPSED #define CFE_MISSION_TIME_MIN_ELAPSED 0

Purpose Min and Max Time Elapsed

Description:

Based on the definition of Time and Tone Order (CFE_MISSION_TIME_AT_TONE_WAS/WILL_BE) either the "time at the tone" signal or data packet will follow the other. This definition sets the valid window of time for the second of the pair to lag behind the first. Time Services will invalidate both the tone and packet if the second does not arrive within this window following the first.

For example, if the data packet follows the tone, it might be valid for the data packet to arrive between zero and 100,000 micro-seconds after the tone. But, if the tone follows the packet, it might be valid only if the packet arrived between 200,000 and 700,000 micro-seconds before the tone.

Note: units are in micro-seconds

Limits

0 to 999,999 decimal

Definition at line 113 of file default_cfe_time_interface_cfg.h.

12.133 cfe/modules/time/config/default_cfe_time_internal_cfg.h File Reference

Macros

- #define CFE_PLATFORM_TIME_CFG_SERVER true
- #define CFE_PLATFORM_TIME_CFG_CLIENT false
- #define CFE_PLATFORM_TIME_CFG_VIRTUAL true
- #define CFE_PLATFORM_TIME_CFG_SIGNAL false
- #define CFE_PLATFORM_TIME_CFG_SOURCE false
- #define CFE_PLATFORM_TIME_CFG_SRC_MET false
- #define CFE_PLATFORM_TIME_CFG_SRC_GPS false
- #define CFE_PLATFORM_TIME_CFG_SRC_TIME false
- #define CFE_PLATFORM_TIME_MAX_DELTA_SECS 0
- #define CFE_PLATFORM_TIME_MAX_DELTA_SUBS 500000
- #define CFE_PLATFORM_TIME_MAX_LOCAL_SECS 27
- #define CFE_PLATFORM_TIME_MAX_LOCAL_SUBS 0
- #define CFE_PLATFORM_TIME_CFG_TONE_LIMIT 20000
- #define CFE_PLATFORM_TIME_CFG_START_FLY 2
- #define CFE_PLATFORM_TIME_CFG_LATCH_FLY 8
- #define CFE_PLATFORM_TIME_START_TASK_PRIORITY 60
- #define CFE_PLATFORM_TIME_TONE_TASK_PRIORITY 25
- #define CFE_PLATFORM_TIME_ONEHZ_TASK_PRIORITY 25
- #define CFE_PLATFORM_TIME_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
- #define CFE_PLATFORM_TIME_TONE_TASK_STACK_SIZE 4096
- #define CFE_PLATFORM_TIME_ONEHZ_TASK_STACK_SIZE 8192

12.133.1 Detailed Description

CFE Time Service (CFE_TIME) Application Private Config Definitions

This provides default values for configurable items that are internal to this module and do NOT affect the interface(s) of this module. Changes to items in this file only affect the local module and will be transparent to external entities that are using the public interface(s).

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.133.2 Macro Definition Documentation

12.133.2.1 CFE_PLATFORM_TIME_CFG_CLIENT #define CFE_PLATFORM_TIME_CFG_CLIENT false
Definition at line 48 of file default_cfe_time_internal_cfg.h.

12.133.2.2 CFE_PLATFORM_TIME_CFG_LATCH_FLY #define CFE_PLATFORM_TIME_CFG_LATCH_FLY 8

Purpose Define Periodic Time to Update Local Clock Tone Latch

Description:

Define Periodic Time to Update Local Clock Tone Latch. Applies only when in flywheel mode. This define dictates the period at which the simulated 'last tone' time is updated. Units are seconds.

Limits

Not Applicable

Definition at line 205 of file default_cfe_time_internal_cfg.h.

12.133.2.3 CFE_PLATFORM_TIME_CFG_SERVER #define CFE_PLATFORM_TIME_CFG_SERVER true

Purpose Time Server or Time Client Selection

Description:

This configuration parameter selects whether the Time task functions as a time "server" or "client". A time server generates the "time at the tone" packet which is received by time clients.

Limits

Enable one, and only one by defining either CFE_PLATFORM_TIME_CFG_SERVER or CFE_PLATFORM_TIME_CFG_CLIENT AS true. The other must be defined as false.

Definition at line 47 of file default_cfe_time_internal_cfg.h.

12.133.2.4 CFE_PLATFORM_TIME_CFG_SIGNAL #define CFE_PLATFORM_TIME_CFG_SIGNAL false

Purpose Include or Exclude the Primary/Redundant Tone Selection Cmd

Description:

Depending on the specific hardware system configuration, it may be possible to switch between a primary and redundant tone signal. If supported by hardware, this definition will enable command interfaces to select the active tone signal. Both Time Clients and Time Servers support this feature. Note: Set the CFE_PLATFORM_TIME_CFG_SIGNAL define to true to enable tone signal commands.

Limits

Not Applicable

Definition at line 95 of file default_cfe_time_internal_cfg.h.

12.133.2.5 CFE_PLATFORM_TIME_CFG_SOURCE #define CFE_PLATFORM_TIME_CFG_SOURCE false

Purpose Include or Exclude the Internal/External Time Source Selection Cmd

Description:

By default, Time Servers maintain time using an internal MET which may be a h/w register or software counter, depending on available hardware. The following definition enables command interfaces to switch between an internal MET, or external time data received from one of several supported external time sources. Only a Time Server may be configured to use external time data. Note: Set the CFE_PLATFORM_TIME_CFG_SOURCE define to true to include the Time Source Selection Command (command allows selection between the internal or external time source). Then choose the external source with the CFE_TIME_CFG_SRC_??? define.

Limits

Only applies if [CFE_PLATFORM_TIME_CFG_SERVER](#) is set to true.

Definition at line 115 of file [default_cfe_time_internal_cfg.h](#).

12.133.2.6 CFE_PLATFORM_TIME_CFG_SRC_GPS #define CFE_PLATFORM_TIME_CFG_SRC_GPS false

Definition at line 132 of file [default_cfe_time_internal_cfg.h](#).

12.133.2.7 CFE_PLATFORM_TIME_CFG_SRC_MET #define CFE_PLATFORM_TIME_CFG_SRC_MET false

Purpose Choose the External Time Source for Server only

Description:

If [CFE_PLATFORM_TIME_CFG_SOURCE](#) is set to true, then one of the following external time source types must also be set to true. Do not set any of the external time source types to true unless [CFE_PLATFORM_TIME_CFG_SOURCE](#) is set to true.

Limits

1. If [CFE_PLATFORM_TIME_CFG_SOURCE](#) is set to true then one and only one of the following three external time sources can and must be set true: [CFE_PLATFORM_TIME_CFG_SRC_MET](#), [CFE_PLATFORM_TIME_CFG_SRC_GPS](#), [CFE_PLATFORM_TIME_CFG_SRC_TIME](#)
2. Only applies if [CFE_PLATFORM_TIME_CFG_SERVER](#) is set to true.

Definition at line 131 of file [default_cfe_time_internal_cfg.h](#).

12.133.2.8 CFE_PLATFORM_TIME_CFG_SRC_TIME #define CFE_PLATFORM_TIME_CFG_SRC_TIME false

Definition at line 133 of file [default_cfe_time_internal_cfg.h](#).

12.133.2.9 CFE_PLATFORM_TIME_CFG_START_FLY #define CFE_PLATFORM_TIME_CFG_START_FLY 2

Purpose Define Time to Start Flywheel Since Last Tone

Description:

Define time to enter flywheel mode (in seconds since last tone data update) Units are microseconds as measured with the local clock.

Limits

Not Applicable

Definition at line 192 of file default_cfe_time_internal_cfg.h.

12.133.2.10 CFE_PLATFORM_TIME_CFG_TONE_LIMIT `#define CFE_PLATFORM_TIME_CFG_TONE_LIMIT 20000`**Purpose** Define Timing Limits From One Tone To The Next**Description:**

Defines limits to the timing of the 1Hz tone signal. A tone signal is valid only if it arrives within one second (plus or minus the tone limit) from the previous tone signal.Units are microseconds as measured with the local clock.

Limits

Not Applicable

Definition at line 180 of file default_cfe_time_internal_cfg.h.

12.133.2.11 CFE_PLATFORM_TIME_CFG_VIRTUAL `#define CFE_PLATFORM_TIME_CFG_VIRTUAL true`**Purpose** Time Tone In Big-Endian Order**Description:**

If this configuration parameter is defined, the CFE time server will publish time tones with payloads in big-endian order, and time clients will expect the tones to be in big-endian order. This is useful for mixed-endian environments. This will become obsolete once EDS is available and the CFE time tone message is defined.

Purpose Local MET or Virtual MET Selection for Time Servers**Description:**

Depending on the specific hardware system configuration, it may be possible for Time Servers to read the "local" MET from a h/w register rather than having to track the MET as the count of tone signal interrupts (virtual MET)

Time Clients must be defined as using a virtual MET. Also, a Time Server cannot be defined as having both a h/w MET and an external time source (they both cannot synchronize to the same tone).

Note: "disable" this define (set to false) only for Time Servers with local hardware that supports a h/w MET that is synchronized to the tone signal !!!

Limits

Only applies if [CFE_PLATFORM_TIME_CFG_SERVER](#) is set to true.

Definition at line 80 of file default_cfe_time_internal_cfg.h.

12.133.2.12 CFE_PLATFORM_TIME_MAX_DELTA_SECS #define CFE_PLATFORM_TIME_MAX_DELTA_SECS 0

Purpose Define the Max Delta Limits for Time Servers using an Ext Time Source

Description:

If **CFE_PLATFORM_TIME_CFG_SOURCE** is set to true and one of the external time sources is also set to true, then the delta time limits for range checking is used.

When a new time value is received from an external source, the value is compared against the "expected" time value. If the delta exceeds the following defined amount, then the new time data will be ignored. This range checking is only performed after the clock state has been commanded to "valid". Until then, external time data is accepted unconditionally.

Limits

Applies only if both **CFE_PLATFORM_TIME_CFG_SERVER** and **CFE_PLATFORM_TIME_CFG_SOURCE** are set to true.

Definition at line 152 of file default_cfe_time_internal_cfg.h.

12.133.2.13 CFE_PLATFORM_TIME_MAX_DELTA_SUBS #define CFE_PLATFORM_TIME_MAX_DELTA_SUBS 500000

Definition at line 153 of file default_cfe_time_internal_cfg.h.

12.133.2.14 CFE_PLATFORM_TIME_MAX_LOCAL_SECS #define CFE_PLATFORM_TIME_MAX_LOCAL_SECS 27

Purpose Define the Local Clock Rollover Value in seconds and subseconds

Description:

Specifies the capability of the local clock. Indicates the time at which the local clock rolls over.

Limits

Not Applicable

Definition at line 165 of file default_cfe_time_internal_cfg.h.

12.133.2.15 CFE_PLATFORM_TIME_MAX_LOCAL_SUBS #define CFE_PLATFORM_TIME_MAX_LOCAL_SUBS 0

Definition at line 166 of file default_cfe_time_internal_cfg.h.

12.133.2.16 CFE_PLATFORM_TIME_ONEHZ_TASK_PRIORITY #define CFE_PLATFORM_TIME_ONEHZ_TASK_PRIORITY

PRIORITY 25

Definition at line 222 of file default_cfe_time_internal_cfg.h.

12.133.2.17 CFE_PLATFORM_TIME_ONEHZ_TASK_STACK_SIZE #define CFE_PLATFORM_TIME_ONEHZ_TASK_STACK_SIZE

_STACK_SIZE 8192

Definition at line 241 of file default_cfe_time_internal_cfg.h.

12.133.2.18 CFE_PLATFORM_TIME_START_TASK_PRIORITY #define CFE_PLATFORM_TIME_START_TASK_PRIORITY 60

Purpose Define TIME Task Priorities

Description:

Defines the cFE_TIME Task priority. Defines the cFE_TIME Tone Task priority. Defines the cFE_TIME 1HZ Task priority.

Limits

There is a lower limit of zero and an upper limit of 255 on these configuration parameters. Remember that the meaning of each task priority is inverted – a "lower" number has a "higher" priority.

Definition at line 220 of file default_cfe_time_internal_cfg.h.

12.133.2.19 CFE_PLATFORM_TIME_START_TASK_STACK_SIZE #define CFE_PLATFORM_TIME_START_TASK_STACK_SIZE CFE_PLATFORM_ES_DEFAULT_STACK_SIZE

Purpose Define TIME Task Stack Sizes

Description:

Defines the cFE_TIME Main Task Stack Size Defines the cFE_TIME Tone Task Stack Size Defines the cFE_TIME 1HZ Task Stack Size

Limits

There is a lower limit of 2048 on these configuration parameters. There are no restrictions on the upper limit however, the maximum stack size is system dependent and should be verified. Most operating systems provide tools for measuring the amount of stack used by a task during operation. It is always a good idea to verify that no more than 1/2 of the stack is used.

Definition at line 239 of file default_cfe_time_internal_cfg.h.

12.133.2.20 CFE_PLATFORM_TIME_TONE_TASK_PRIORITY #define CFE_PLATFORM_TIME_TONE_TASK_PRIORITY 25

Definition at line 221 of file default_cfe_time_internal_cfg.h.

12.133.2.21 CFE_PLATFORM_TIME_TONE_TASK_STACK_SIZE #define CFE_PLATFORM_TIME_TONE_TASK_STACK_SIZE 4096

Definition at line 240 of file default_cfe_time_internal_cfg.h.

12.134 cfe/modules/time/config/default_cfe_time_mission_cfg.h File Reference

```
#include "cfe_time_interface_cfg.h"
```

12.134.1 Detailed Description

CFE Time Services (CFE_TIME) Application Mission Configuration Header File

This is a compatibility header for the "mission_cfg.h" file that has traditionally provided public config definitions for each CFS app.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.135 cfe/modules/time/config/default_cfe_time_msg.h File Reference

```
#include "cfe_mission_cfg.h"
#include "cfe_time_fcncodes.h"
#include "cfe_time_msgdefs.h"
#include "cfe_time_msgstruct.h"
```

12.135.1 Detailed Description

Specification for the CFE Time Services (CFE_TIME) command and telemetry message data types.

This is a compatibility header for the "cfe_time_msg.h" file that has traditionally provided the message definitions for cFS apps.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.136 cfe/modules/time/config/default_cfe_time_msgdefs.h File Reference

```
#include "common_types.h"
#include "cfe_mission_cfg.h"
#include "cfe_time_extern_typedefs.h"
#include "cfe_time_fcncodes.h"
```

Data Structures

- struct [CFE_TIME_LeapsCmd_Payload](#)
Set leap seconds command payload.
- struct [CFE_TIME_StateCmd_Payload](#)
Set clock state command payload.
- struct [CFE_TIME_SourceCmd_Payload](#)
Set time data source command payload.
- struct [CFE_TIME_SignalCmd_Payload](#)
Set tone signal source command payload.
- struct [CFE_TIME_TimeCmd_Payload](#)
Generic seconds, microseconds command payload.
- struct [CFE_TIME_OneHzAdjustmentCmd_Payload](#)
Generic seconds, subseconds command payload.
- struct [CFE_TIME_ToneDataCmd_Payload](#)
Time at tone data command payload.
- struct [CFE_TIME_HousekeepingTlm_Payload](#)
- struct [CFE_TIME_DiagnosticTlm_Payload](#)

Macros

- #define CFE_TIME_FLAG_CLKSET 0x8000
The spacecraft time has been set.
- #define CFE_TIME_FLAG_FLYING 0x4000
This instance of Time Services is flywheeling.
- #define CFE_TIME_FLAG_SRCINT 0x2000
The clock source is set to "internal".
- #define CFE_TIME_FLAG_SIGPRI 0x1000
The clock signal is set to "primary".
- #define CFE_TIME_FLAG_SRVFLY 0x0800
The Time Server is in flywheel mode.
- #define CFE_TIME_FLAG_CMDFLY 0x0400
This instance of Time Services was commanded into flywheel mode.
- #define CFE_TIME_FLAG_ADDADJ 0x0200
One time STCF Adjustment is to be done in positive direction.
- #define CFE_TIME_FLAG_ADD1HZ 0x0100
1 Hz STCF Adjustment is to be done in a positive direction
- #define CFE_TIME_FLAG_ADDTCL 0x0080
Time Client Latency is applied in a positive direction.
- #define CFE_TIME_FLAG_SERVER 0x0040
This instance of Time Services is a Time Server.
- #define CFE_TIME_FLAG_GDTONE 0x0020
The tone received is good compared to the last tone received.
- #define CFE_TIME_FLAG_REFERR 0x0010
GetReference read error, will be set if unable to get a consistent ref value.
- #define CFE_TIME_FLAG_UNUSED 0x000F
Reserved flags - should be zero.

Typedefs

- typedef struct CFE_TIME_LeapsCmd_Payload CFE_TIME_LeapsCmd_Payload_t
Set leap seconds command payload.
- typedef struct CFE_TIME_StateCmd_Payload CFE_TIME_StateCmd_Payload_t
Set clock state command payload.
- typedef struct CFE_TIME_SourceCmd_Payload CFE_TIME_SourceCmd_Payload_t
Set time data source command payload.
- typedef struct CFE_TIME_SignalCmd_Payload CFE_TIME_SignalCmd_Payload_t
Set tone signal source command payload.
- typedef struct CFE_TIME_TimeCmd_Payload CFE_TIME_TimeCmd_Payload_t
Generic seconds, microseconds command payload.
- typedef struct CFE_TIME_OneHzAdjustmentCmd_Payload CFE_TIME_OneHzAdjustmentCmd_Payload_t
Generic seconds, subseconds command payload.
- typedef struct CFE_TIME_ToneDataCmd_Payload CFE_TIME_ToneDataCmd_Payload_t
Time at tone data command payload.
- typedef struct CFE_TIME_HousekeepingTlm_Payload CFE_TIME_HousekeepingTlm_Payload_t
- typedef struct CFE_TIME_DiagnosticTlm_Payload CFE_TIME_DiagnosticTlm_Payload_t

12.136.1 Detailed Description

Specification for the CFE Time Services (CFE_TIME) command and telemetry message constant definitions. For CFE_TIME this is only the function/command code definitions

12.136.2 Typedef Documentation

12.136.2.1 **CFE_TIME_DiagnosticTlm_Payload_t** `typedef struct CFE_TIME_DiagnosticTlm_Payload CFE_TIME_DiagnosticTlm_Payload_t`

Name Time Services Diagnostics Packet

12.136.2.2 **CFE_TIME_HousekeepingTlm_Payload_t** `typedef struct CFE_TIME_HousekeepingTlm_Payload CFE_TIME_HousekeepingTlm_Payload_t`

Name Time Services Housekeeping Packet

12.136.2.3 **CFE_TIME_LeapsCmd_Payload_t** `typedef struct CFE_TIME_LeapsCmd_Payload CFE_TIME_LeapsCmd_Payload_t` Set leap seconds command payload.

12.136.2.4 **CFE_TIME_OneHzAdjustmentCmd_Payload_t** `typedef struct CFE_TIME_OneHzAdjustmentCmd_Payload CFE_TIME_OneHzAdjustmentCmd_Payload_t` Generic seconds, subseconds command payload.

12.136.2.5 **CFE_TIME_SignalCmd_Payload_t** `typedef struct CFE_TIME_SignalCmd_Payload CFE_TIME_SignalCmd_Payload_t` Set tone signal source command payload.

12.136.2.6 **CFE_TIME_SourceCmd_Payload_t** `typedef struct CFE_TIME_SourceCmd_Payload CFE_TIME_SourceCmd_Payload_t` Set time data source command payload.

12.136.2.7 **CFE_TIME_StateCmd_Payload_t** `typedef struct CFE_TIME_StateCmd_Payload CFE_TIME_StateCmd_Payload_t` Set clock state command payload.

12.136.2.8 **CFE_TIME_TimeCmd_Payload_t** `typedef struct CFE_TIME_TimeCmd_Payload CFE_TIME_TimeCmd_Payload_t` Generic seconds, microseconds command payload.

12.136.2.9 **CFE_TIME_ToneDataCmd_Payload_t** `typedef struct CFE_TIME_ToneDataCmd_Payload CFE_TIME_ToneDataCmd_Payload_t` Time at tone data command payload.

12.137 cfe/modules/time/config/default_cfe_time_msgids.h File Reference

```
#include "cfe_core_api_base_msgids.h"
#include "cfe_time_topicids.h"
```

Macros

- #define CFE_TIME_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_CMD_TOPICID)
/* 0x1805 */
- #define CFE_TIME_SEND_HK_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_SEND_HK_TOPICID)
/* 0x180D */
- #define CFE_TIME_TONE_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_TONE_CMD_TOPICID)
/* 0x1810 */
- #define CFE_TIME_ONEHZ_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_ONEHZ_CMD_TOPICID)
/* 0x1811 */
- #define CFE_TIME_DATA_CMD_MID CFE_GLOBAL_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_DATA_CMD_TOPICID)
/* 0x1860 */
- #define CFE_TIME_SEND_CMD_MID CFE_GLOBAL_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_SEND_CMD_TOPICID)
/* 0x1862 */
- #define CFE_TIME_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_TIME_HK_TLM_TOPICID)
/* 0x0805 */
- #define CFE_TIME_DIAG_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_TIME_DIAG_TLM_TOPICID)
/* 0x0806 */
- #define CFE_TIME_1HZ_CMD_MID CFE_TIME_ONEHZ_CMD_MID

12.137.1 Detailed Description

CFE Time Services (CFE_TIME) Application Message IDs

12.137.2 Macro Definition Documentation

12.137.2.1 CFE_TIME_1HZ_CMD_MID #define CFE_TIME_1HZ_CMD_MID CFE_TIME_ONEHZ_CMD_MID
Definition at line 55 of file default_cfe_time_msgids.h.

12.137.2.2 CFE_TIME_CMD_MID #define CFE_TIME_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_CMD_TOPICID)
/* 0x1805 */
Definition at line 32 of file default_cfe_time_msgids.h.

12.137.2.3 CFE_TIME_DATA_CMD_MID #define CFE_TIME_DATA_CMD_MID CFE_GLOBAL_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_DATA_CMD_TOPICID)
/* 0x1860 */
Definition at line 40 of file default_cfe_time_msgids.h.

12.137.2.4 CFE_TIME_DIAG_TLM_MID #define CFE_TIME_DIAG_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_TIME_DIAG_TLM_TOPICID)
/* 0x0806 */
Definition at line 47 of file default_cfe_time_msgids.h.

12.137.2.5 CFE_TIME_HK_TLM_MID #define CFE_TIME_HK_TLM_MID CFE_PLATFORM_TLM_TOPICID_TO_MIDV(CFE_MISSION_TIME_HK_TLM_TOPICID)
/* 0x0805 */
Definition at line 46 of file default_cfe_time_msgids.h.

12.137.2.6 CFE_TIME_ONEHZ_CMD_MID #define CFE_TIME_ONEHZ_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_MID)
/* 0x1811 */
Definition at line 35 of file default_cfe_time_msgids.h.

12.137.2.7 CFE_TIME_SEND_CMD_MID #define CFE_TIME_SEND_CMD_MID CFE_GLOBAL_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_MID)
/* 0x1862 */
Definition at line 41 of file default_cfe_time_msgids.h.

12.137.2.8 CFE_TIME_SEND_HK_MID #define CFE_TIME_SEND_HK_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_MID)
/* 0x180D */
Definition at line 33 of file default_cfe_time_msgids.h.

12.137.2.9 CFE_TIME_TONE_CMD_MID #define CFE_TIME_TONE_CMD_MID CFE_PLATFORM_CMD_TOPICID_TO_MIDV(CFE_MISSION_TIME_MID)
/* 0x1810 */
Definition at line 34 of file default_cfe_time_msgids.h.

12.138 cfe/modules/time/config/default_cfe_time_msgstruct.h File Reference

```
#include "cfe_time_msgdefs.h"
#include "cfe_msg_hdr.h"
```

Data Structures

- struct [CFE_TIME_NoopCmd](#)
- struct [CFE_TIME_ResetCountersCmd](#)
- struct [CFE_TIME_SendDiagnosticCmd](#)
- struct [CFE_TIME_OneHzCmd](#)
- struct [CFE_TIME_ToneSignalCmd](#)
- struct [CFE_TIME_FakeToneCmd](#)
- struct [CFE_TIME_SendHkCmd](#)
- struct [CFE_TIME_SetLeapSecondsCmd](#)
 - Set leap seconds command.*
- struct [CFE_TIME_SetStateCmd](#)
 - Set clock state command.*
- struct [CFE_TIME_SetSourceCmd](#)
 - Set time data source command.*
- struct [CFE_TIME_SetSignalCmd](#)
 - Set tone signal source command.*
- struct [CFE_TIME_AddDelayCmd](#)
- struct [CFE_TIME_SubDelayCmd](#)
- struct [CFE_TIME_SetMETCCmd](#)
- struct [CFE_TIME_SetSTCFCmd](#)
- struct [CFE_TIME_AddAdjustCmd](#)
- struct [CFE_TIME_SubAdjustCmd](#)
- struct [CFE_TIME_SetTimeCmd](#)
- struct [CFE_TIME_AddOneHzAdjustmentCmd](#)
- struct [CFE_TIME_SubOneHzAdjustmentCmd](#)

- struct [CFE_TIME_ToneDataCmd](#)
Time at tone data command.
- struct [CFE_TIME_HousekeepingTlm](#)
- struct [CFE_TIME_DiagnosticTlm](#)

Typedefs

- typedef struct [CFE_TIME_NoopCmd](#) CFE_TIME_NoopCmd_t
- typedef struct [CFE_TIME_ResetCountersCmd](#) CFE_TIME_ResetCountersCmd_t
- typedef struct [CFE_TIME_SendDiagnosticCmd](#) CFE_TIME_SendDiagnosticCmd_t
- typedef struct [CFE_TIME_OneHzCmd](#) CFE_TIME_OneHzCmd_t
- typedef struct [CFE_TIME_ToneSignalCmd](#) CFE_TIME_ToneSignalCmd_t
- typedef struct [CFE_TIME_FakeToneCmd](#) CFE_TIME_FakeToneCmd_t
- typedef struct [CFE_TIME_SendHkCmd](#) CFE_TIME_SendHkCmd_t
- typedef struct [CFE_TIME_SetLeapSecondsCmd](#) CFE_TIME_SetLeapSecondsCmd_t
Set leap seconds command.
- typedef struct [CFE_TIME_SetStateCmd](#) CFE_TIME_SetStateCmd_t
Set clock state command.
- typedef struct [CFE_TIME_SetSourceCmd](#) CFE_TIME_SetSourceCmd_t
Set time data source command.
- typedef struct [CFE_TIME_SetSignalCmd](#) CFE_TIME_SetSignalCmd_t
Set tone signal source command.
- typedef struct [CFE_TIME_AddDelayCmd](#) CFE_TIME_AddDelayCmd_t
- typedef struct [CFE_TIME_SubDelayCmd](#) CFE_TIME_SubDelayCmd_t
- typedef struct [CFE_TIME_SetMETCmd](#) CFE_TIME_SetMETCmd_t
- typedef struct [CFE_TIME_SetSTCFCmd](#) CFE_TIME_SetSTCFCmd_t
- typedef struct [CFE_TIME_AddAdjustCmd](#) CFE_TIME_AddAdjustCmd_t
- typedef struct [CFE_TIME_SubAdjustCmd](#) CFE_TIME_SubAdjustCmd_t
- typedef struct [CFE_TIME_SetTimeCmd](#) CFE_TIME_SetTimeCmd_t
- typedef struct [CFE_TIME_AddOneHzAdjustmentCmd](#) CFE_TIME_AddOneHzAdjustmentCmd_t
- typedef struct [CFE_TIME_SubOneHzAdjustmentCmd](#) CFE_TIME_SubOneHzAdjustmentCmd_t
- typedef struct [CFE_TIME_ToneDataCmd](#) CFE_TIME_ToneDataCmd_t
Time at tone data command.
- typedef struct [CFE_TIME_HousekeepingTlm](#) CFE_TIME_HousekeepingTlm_t
- typedef struct [CFE_TIME_DiagnosticTlm](#) CFE_TIME_DiagnosticTlm_t

12.138.1 Detailed Description

Purpose: cFE Executive Services (TIME) Command and Telemetry packet definition file.

References: Flight Software Branch C Coding Standard Version 1.0a cFE Flight Software Application Developers Guide
Notes:

12.138.2 Typedef Documentation

12.138.2.1 CFE_TIME_AddAdjustCmd_t [typedef struct CFE_TIME_AddAdjustCmd](#) CFE_TIME_AddAdjustCmd_t

12.138.2.2 CFE_TIME_AddDelayCmd_t [typedef struct CFE_TIME_AddDelayCmd](#) CFE_TIME_AddDelayCmd_t

12.138.2.3 CFE_TIME_AddOneHzAdjustmentCmd_t `typedef struct CFE_TIME_AddOneHzAdjustmentCmd CFE_TIME_AddOneHzAdjustmentCmd_t`

12.138.2.4 CFE_TIME_DiagnosticTlm_t `typedef struct CFE_TIME_DiagnosticTlm CFE_TIME_DiagnosticTlm_t`

12.138.2.5 CFE_TIME_FakeToneCmd_t `typedef struct CFE_TIME_FakeToneCmd CFE_TIME_FakeToneCmd_t`

12.138.2.6 CFE_TIME_HousekeepingTlm_t `typedef struct CFE_TIME_HousekeepingTlm CFE_TIME_HousekeepingTlm_t`

12.138.2.7 CFE_TIME_NoopCmd_t `typedef struct CFE_TIME_NoopCmd CFE_TIME_NoopCmd_t`

12.138.2.8 CFE_TIME_OneHzCmd_t `typedef struct CFE_TIME_OneHzCmd CFE_TIME_OneHzCmd_t`

12.138.2.9 CFE_TIME_ResetCountersCmd_t `typedef struct CFE_TIME_ResetCountersCmd CFE_TIME_ResetCountersCmd_t`

12.138.2.10 CFE_TIME_SendDiagnosticCmd_t `typedef struct CFE_TIME_SendDiagnosticCmd CFE_TIME_SendDiagnosticCmd_t`

12.138.2.11 CFE_TIME_SendHkCmd_t `typedef struct CFE_TIME_SendHkCmd CFE_TIME_SendHkCmd_t`

12.138.2.12 CFE_TIME_SetLeapSecondsCmd_t `typedef struct CFE_TIME_SetLeapSecondsCmd CFE_TIME_SetLeapSecondsCmd_t`
Set leap seconds command.

12.138.2.13 CFE_TIME_SetMETCmd_t `typedef struct CFE_TIME_SetMETCmd CFE_TIME_SetMETCmd_t`

12.138.2.14 CFE_TIME_SetSignalCmd_t `typedef struct CFE_TIME_SetSignalCmd CFE_TIME_SetSignalCmd_t`
Set tone signal source command.

12.138.2.15 CFE_TIME_SetSourceCmd_t `typedef struct CFE_TIME_SetSourceCmd CFE_TIME_SetSourceCmd_t`
Set time data source command.

12.138.2.16 CFE_TIME_SetStateCmd_t `typedef struct CFE_TIME_SetStateCmd CFE_TIME_SetStateCmd_t`
Set clock state command.

12.138.2.17 CFE_TIME_SetSTCFCmd_t `typedef struct CFE_TIME_SetSTCFCmd CFE_TIME_SetSTCFCmd_t`

12.138.2.18 CFE_TIME_SetTimeCmd_t `typedef struct CFE_TIME_SetTimeCmd CFE_TIME_SetTimeCmd_t`

12.138.2.19 CFE_TIME_SubAdjustCmd_t `typedef struct CFE_TIME_SubAdjustCmd CFE_TIME_SubAdjustCmd_t`

12.138.2.20 CFE_TIME_SubDelayCmd_t `typedef struct CFE_TIME_SubDelayCmd CFE_TIME_SubDelayCmd_t`

12.138.2.21 CFE_TIME_SubOneHzAdjustmentCmd_t `typedef struct CFE_TIME_SubOneHzAdjustmentCmd CFE_TIME_SubOneHzAdjustmentCmd_t`

12.138.2.22 CFE_TIME_ToneDataCmd_t `typedef struct CFE_TIME_ToneDataCmd CFE_TIME_ToneDataCmd_t`
Time at tone data command.

12.138.2.23 CFE_TIME_ToneSignalCmd_t `typedef struct CFE_TIME_ToneSignalCmd CFE_TIME_ToneSignalCmd_t`

12.139 cfe/modules/time/config/default_cfe_time_platform_cfg.h File Reference

```
#include "cfe_time_mission_cfg.h"
#include "cfe_time_internal_cfg.h"
```

12.139.1 Detailed Description

CFE Time Services (CFE_TIME) Application Platform Configuration Header File

This is a compatibility header for the "platform_cfg.h" file that has traditionally provided both public and private config definitions for each CFS app.

These definitions are now provided in two separate files, one for the public/mission scope and one for internal scope.

Note

This file may be overridden/superceded by mission-provided definitions either by overriding this header or by generating definitions from a command/data dictionary tool.

12.140 cfe/modules/time/config/default_cfe_time_topicids.h File Reference

Macros

- `#define CFE_MISSION_TIME_CMD_TOPICID 5`
- `#define CFE_MISSION_TIME_SEND_HK_TOPICID 13`
- `#define CFE_MISSION_TIME_TONE_CMD_TOPICID 16`
- `#define CFE_MISSION_TIME_ONEHZ_CMD_TOPICID 17`
- `#define CFE_MISSION_TIME_DATA_CMD_TOPICID 0`
- `#define CFE_MISSION_TIME_SEND_CMD_TOPICID 2`
- `#define CFE_MISSION_TIME_HK_TLM_TOPICID 5`
- `#define CFE_MISSION_TIME_DIAG_TLM_TOPICID 6`

12.140.1 Detailed Description

CFE Time Services (CFE_TIME) Application Topic IDs

12.140.2 Macro Definition Documentation

12.140.2.1 CFE_MISSION_TIME_CMD_TOPICID #define CFE_MISSION_TIME_CMD_TOPICID 5

Purpose cFE Portable Message Numbers for Commands

Description:

Portable message numbers for the cFE command messages

Limits

Not Applicable

Definition at line 35 of file default_cfe_time_topicids.h.

12.140.2.2 CFE_MISSION_TIME_DATA_CMD_TOPICID #define CFE_MISSION_TIME_DATA_CMD_TOPICID 0

Purpose cFE Portable Message Numbers for Global Messages

Description:

Portable message numbers for the cFE global messages

Limits

Not Applicable

Definition at line 49 of file default_cfe_time_topicids.h.

12.140.2.3 CFE_MISSION_TIME_DIAG_TLM_TOPICID #define CFE_MISSION_TIME_DIAG_TLM_TOPICID 6

Definition at line 62 of file default_cfe_time_topicids.h.

12.140.2.4 CFE_MISSION_TIME_HK_TLM_TOPICID #define CFE_MISSION_TIME_HK_TLM_TOPICID 5

Purpose cFE Portable Message Numbers for Telemetry

Description:

Portable message numbers for the cFE telemetry messages

Limits

Not Applicable

Definition at line 61 of file default_cfe_time_topicids.h.

12.140.2.5 CFE_MISSION_TIME_ONEHZ_CMD_TOPICID #define CFE_MISSION_TIME_ONEHZ_CMD_TOPICID 17

Definition at line 38 of file default_cfe_time_topicids.h.

12.140.2.6 CFE_MISSION_TIME_SEND_CMD_TOPICID #define CFE_MISSION_TIME_SEND_CMD_TOPICID 2
Definition at line 50 of file default_cfe_time_topicids.h.

12.140.2.7 CFE_MISSION_TIME_SEND_HK_TOPICID #define CFE_MISSION_TIME_SEND_HK_TOPICID 13
Definition at line 36 of file default_cfe_time_topicids.h.

12.140.2.8 CFE_MISSION_TIME_TONE_CMD_TOPICID #define CFE_MISSION_TIME_TONE_CMD_TOPICID 16
Definition at line 37 of file default_cfe_time_topicids.h.

12.141 cfe/modules/time/fsw/inc/cfe_time_eventids.h File Reference

Macros

TIME event IDs

- #define [CFE_TIME_INIT_EID](#) 1
TIME Initialization Event ID.
- #define [CFE_TIME_NOOP_EID](#) 4
TIME No-op Command Success Event ID.
- #define [CFE_TIME_RESET_EID](#) 5
TIME Reset Counters Command Success Event ID.
- #define [CFE_TIME_DIAG_EID](#) 6
TIME Request Diagnostics Command Success Event ID.
- #define [CFE_TIME_STATE_EID](#) 7
TIME Set Time State Command Success Event ID.
- #define [CFE_TIME_SOURCE_EID](#) 8
TIME Set Time Source Command Success Event ID.
- #define [CFE_TIME_SIGNAL_EID](#) 9
TIME Set Tone Source Command Success Event ID.
- #define [CFE_TIME_DELAY_EID](#) 11
TIME Add or Subtract Delay Command Success Event ID.
- #define [CFE_TIME_TIME_EID](#) 12
TIME Set Time Command Success Event ID.
- #define [CFE_TIME_MET_EID](#) 13
TIME Set Mission Elapsed Time Command Success Event ID.
- #define [CFE_TIME_STCF_EID](#) 14
TIME Set Spacecraft Time Correlation Factor Command Success Event ID.
- #define [CFE_TIME_DELTA_EID](#) 15
TIME Add or Subtract Single STCF Adjustment Command Success Event ID.
- #define [CFE_TIME_ONEHZ_EID](#) 16
TIME Add or Subtract STCF Adjustment Each Second Command Success Event ID.
- #define [CFE_TIME_LEAPS_EID](#) 17
TIME Set Leap Seconds Command Success Event ID.
- #define [CFE_TIME_FLY_ON_EID](#) 20
TIME Entered FLYWHEEL Mode Event ID.
- #define [CFE_TIME_FLY_OFF_EID](#) 21
TIME Exited FLYWHEEL Mode Event ID.
- #define [CFE_TIME_ID_ERR_EID](#) 26
TIME Invalid Message ID Received Event ID.
- #define [CFE_TIME_CC_ERR_EID](#) 27
TIME Invalid Command Code Received Event ID.
- #define [CFE_TIME_STATE_ERR_EID](#) 30
TIME Set Clock State Command Invalid State Event ID.

- #define `CFE_TIME_SOURCE_ERR_EID` 31
TIME Set Clock Source Command Invalid Source Event ID.
- #define `CFE_TIME_SIGNAL_ERR_EID` 32
TIME Set Clock Tone Source Command Invalid Source Event ID.
- #define `CFE_TIME_DELAY_ERR_EID` 33
TIME Add or Subtract Tone Delay Command Invalid Time Value Event ID.
- #define `CFE_TIME_TIME_ERR_EID` 34
TIME Set Spacecraft Time Command Invalid Time Value Event ID.
- #define `CFE_TIME_MET_ERR_EID` 35
TIME Set Mission Elapsed Time Command Invalid Time Value Event ID.
- #define `CFE_TIME_STCF_ERR_EID` 36
TIME Set Spacecraft Time Correlation Factor Command Invalid Time Value Event ID.
- #define `CFE_TIME_DELTA_ERR_EID` 37
TIME Add or Subtract Single STCF Adjustment Command Invalid Time Value Event ID.
- #define `CFE_TIME_SOURCE_CFG_EID` 40
TIME Set Clock Source Command Incompatible Mode Event ID.
- #define `CFE_TIME_SIGNAL_CFG_EID` 41
TIME Set Clock Signal Command Incompatible Mode Event ID.
- #define `CFE_TIME_DELAY_CFG_EID` 42
TIME Add or Subtract Tone Delay Command Incompatible Mode Event ID.
- #define `CFE_TIME_TIME_CFG_EID` 43
TIME Set Spacecraft Time Command Incompatible Mode Event ID.
- #define `CFE_TIME_MET_CFG_EID` 44
TIME Set Mission Elapsed Time Command Incompatible Mode Event ID.
- #define `CFE_TIME_STCF_CFG_EID` 45
TIME Set Spacecraft Time Correlation Factor Command Incompatible Mode Event ID.
- #define `CFE_TIME_LEAPS_CFG_EID` 46
TIME Set Leap Seconds Command Incompatible Mode Event ID.
- #define `CFE_TIME_DELTA_CFG_EID` 47
TIME Add or Subtract Single STCF Adjustment Command Incompatible Mode Event ID.
- #define `CFE_TIME_ONEHZ_CFG_EID` 48
TIME Add or Subtract STCF Adjustment Each Second Command Incompatible Mode Event ID.
- #define `CFE_TIME_LEN_ERR_EID` 49
TIME Invalid Command Length Event ID.

12.141.1 Detailed Description

cFE Time Services Event IDs

12.141.2 Macro Definition Documentation

12.141.2.1 CFE_TIME_CC_ERR_EID #define `CFE_TIME_CC_ERR_EID` 27
TIME Invalid Command Code Received Event ID.

Type: ERROR

Cause:

Invalid command code for message ID `CFE_TIME_CMD_MID` received on the TIME message pipe.
Definition at line 232 of file `cfe_time_eventids.h`.

12.141.2.2 CFE_TIME_DELAY_CFG_EID #define CFE_TIME_DELAY_CFG_EID 42
TIME Add or Subtract Tone Delay Command Incompatible Mode Event ID.

Type: ERROR

Cause:

[TIME Add Tone Delay Command](#) OR [TIME Subtract Tone Delay Command](#) failure due to being in an incompatible mode.

Definition at line 364 of file cfe_time_eventids.h.

12.141.2.3 CFE_TIME_DELAY_EID #define CFE_TIME_DELAY_EID 11
TIME Add or Subtract Delay Command Success Event ID.

Type: INFORMATION

Cause:

[TIME Add Time Delay Command](#) OR a [Subtract Time Delay Command](#) success.

Definition at line 120 of file cfe_time_eventids.h.

12.141.2.4 CFE_TIME_DELAY_ERR_EID #define CFE_TIME_DELAY_ERR_EID 33
TIME Add or Subtract Tone Delay Command Invalid Time Value Event ID.

Type: ERROR

Cause:

[TIME Add Tone Delay Command](#) OR [TIME Subtract Tone Delay Command](#) failure due to an invalid time value.

Definition at line 278 of file cfe_time_eventids.h.

12.141.2.5 CFE_TIME_DELTA_CFG_EID #define CFE_TIME_DELTA_CFG_EID 47
TIME Add or Subtract Single STCF Adjustment Command Incompatible Mode Event ID.

Type: ERROR

Cause:

[TIME Add Single STCF Adjustment Command](#) OR [TIME Subtract Single STCF Adjustment Command](#) failure due to being in an incompatible mode.

Definition at line 425 of file cfe_time_eventids.h.

12.141.2.6 CFE_TIME_DELTA_EID #define CFE_TIME_DELTA_EID 15
TIME Add or Subtract Single STCF Adjustment Command Success Event ID.

Type: INFORMATION

Cause:

TIME Add Single STCF Adjustment Command OR TIME Subtract Single STCF Adjustment Command success.
Definition at line 165 of file cfe_time_eventids.h.

12.141.2.7 CFE_TIME_DELTA_ERR_EID #define CFE_TIME_DELTA_ERR_EID 37
TIME Add or Subtract Single STCF Adjustment Command Invalid Time Value Event ID.

Type: ERROR

Cause:

TIME Add Single STCF Adjustment Command OR TIME Subtract Single STCF Adjustment Command failure due to
an invalid time value.
Definition at line 327 of file cfe_time_eventids.h.

12.141.2.8 CFE_TIME_DIAG_EID #define CFE_TIME_DIAG_EID 6
TIME Request Diagnostics Command Success Event ID.

Type: DEBUG

Cause:

TIME Request Diagnostics Command success.
Definition at line 75 of file cfe_time_eventids.h.

12.141.2.9 CFE_TIME_FLY_OFF_EID #define CFE_TIME_FLY_OFF_EID 21
TIME Exited FLYWHEEL Mode Event ID.

Type: INFORMATION

Cause:

TIME Exited FLYWHEEL Mode.
Definition at line 210 of file cfe_time_eventids.h.

12.141.2.10 CFE_TIME_FLY_ON_EID #define CFE_TIME_FLY_ON_EID 20
TIME Entered FLYWHEEL Mode Event ID.

Type: INFORMATION

Cause:

TIME Entered FLYWHEEL Mode.
Definition at line 199 of file cfe_time_eventids.h.

12.141.2.11 CFE_TIME_ID_ERR_EID #define CFE_TIME_ID_ERR_EID 26
TIME Invalid Message ID Received Event ID.

Type: ERROR

Cause:

Invalid message ID received on the TIME message pipe.
Definition at line 221 of file cfe_time_eventids.h.

12.141.2.12 CFE_TIME_INIT_EID #define CFE_TIME_INIT_EID 1
TIME Initialization Event ID.

Type: INFORMATION

Cause:

Time Services Task Initialization complete.
Definition at line 42 of file cfe_time_eventids.h.

12.141.2.13 CFE_TIME_LEAPS_CFG_EID #define CFE_TIME_LEAPS_CFG_EID 46
TIME Set Leap Seconds Command Incompatible Mode Event ID.

Type: ERROR

Cause:

[TIME Set Leap Seconds Command](#) failure due to being in an incompatible mode.
Definition at line 412 of file cfe_time_eventids.h.

12.141.2.14 CFE_TIME_LEAPS_EID #define CFE_TIME_LEAPS_EID 17
TIME Set Leap Seconds Command Success Event ID.

Type: INFORMATION

Cause:

[TIME Set Leap Seconds Command](#) success.
Definition at line 188 of file cfe_time_eventids.h.

12.141.2.15 CFE_TIME_LEN_ERR_EID #define CFE_TIME_LEN_ERR_EID 49
TIME Invalid Command Length Event ID.

Type: ERROR

Cause:

Invalid length for the command code in message ID [CFE_TIME_CMD_MID](#) received on the TIME message pipe.
Definition at line 450 of file cfe_time_eventids.h.

12.141.2.16 CFE_TIME_MET_CFG_EID #define CFE_TIME_MET_CFG_EID 44
TIME Set Mission Elapsed Time Command Incompatible Mode Event ID.

Type: ERROR

Cause:

[TIME Set Mission Elapsed Time Command](#) failure due to being in an incompatible mode.
Definition at line 388 of file cfe_time_eventids.h.

12.141.2.17 CFE_TIME_MET_EID #define CFE_TIME_MET_EID 13
TIME Set Mission Elapsed Time Command Success Event ID.

Type: INFORMATION

Cause:

[TIME Set Mission Elapsed Time Command](#) success.
Definition at line 142 of file cfe_time_eventids.h.

12.141.2.18 CFE_TIME_MET_ERR_EID #define CFE_TIME_MET_ERR_EID 35
TIME Set Mission Elapsed Time Command Invalid Time Value Event ID.

Type: ERROR

Cause:

[TIME Set Mission Elapsed Time Command](#) failure due to an invalid time value.
Definition at line 302 of file cfe_time_eventids.h.

12.141.2.19 CFE_TIME_NOOP_EID #define CFE_TIME_NOOP_EID 4
TIME No-op Command Success Event ID.

Type: INFORMATION

Cause:

[TIME NO-OP Command](#) success.
Definition at line 53 of file cfe_time_eventids.h.

12.141.2.20 CFE_TIME_ONEHZ_CFG_EID #define CFE_TIME_ONEHZ_CFG_EID 48
TIME Add or Subtract STCF Adjustment Each Second Command Incompatible Mode Event ID.

Type: ERROR

Cause:

[TIME Add STCF Adjustment Each Second Command](#) OR [TIME Subtract STCF Adjustment Each Second Command](#) failure due to being in an incompatible mode.
Definition at line 438 of file cfe_time_eventids.h.

12.141.2.21 CFE_TIME_ONEHZ_EID #define CFE_TIME_ONEHZ_EID 16
TIME Add or Subtract STCF Adjustment Each Second Command Success Event ID.

Type: INFORMATION

Cause:

[TIME Add STCF Adjustment Each Second Command](#) OR [TIME Subtract STCF Adjustment Each Second Command](#) success.
Definition at line 177 of file cfe_time_eventids.h.

12.141.2.22 CFE_TIME_RESET_EID #define CFE_TIME_RESET_EID 5
TIME Reset Counters Command Success Event ID.

Type: DEBUG

Cause:

[TIME Reset Counters Command](#) success.
Definition at line 64 of file cfe_time_eventids.h.

12.141.2.23 CFE_TIME_SIGNAL_CFG_EID #define CFE_TIME_SIGNAL_CFG_EID 41
TIME Set Clock Signal Command Incompatible Mode Event ID.

Type: ERROR

Cause:

[TIME Set Clock Signal Command](#) failure due to being in an incompatible mode.
Definition at line 351 of file cfe_time_eventids.h.

12.141.2.24 CFE_TIME_SIGNAL_EID #define CFE_TIME_SIGNAL_EID 9
TIME Set Tone Source Command Success Event ID.

Type: INFORMATION

Cause:

[TIME Set Clock Tone Source Command](#) success.
Definition at line 108 of file cfe_time_eventids.h.

12.141.2.25 CFE_TIME_SIGNAL_ERR_EID #define CFE_TIME_SIGNAL_ERR_EID 32
TIME Set Clock Tone Source Command Invalid Source Event ID.

Type: ERROR

Cause:

[Set Clock Tone Source Command](#) failed due to invalid source requested.
Definition at line 265 of file cfe_time_eventids.h.

12.141.2.26 CFE_TIME_SOURCE_CFG_EID #define CFE_TIME_SOURCE_CFG_EID 40
TIME Set Clock Source Command Incompatible Mode Event ID.

Type: ERROR

Cause:

[TIME Set Clock Source Command](#) failure due to being in an incompatible mode.
Definition at line 339 of file cfe_time_eventids.h.

12.141.2.27 CFE_TIME_SOURCE_EID #define CFE_TIME_SOURCE_EID 8
TIME Set Time Source Command Success Event ID.

Type: INFORMATION

Cause:

[TIME Set Time Source Command](#) success.
Definition at line 97 of file cfe_time_eventids.h.

12.141.2.28 CFE_TIME_SOURCE_ERR_EID #define CFE_TIME_SOURCE_ERR_EID 31
TIME Set Clock Source Command Invalid Source Event ID.

Type: ERROR

Cause:

[TIME Set Clock Source Command](#) failed due to invalid source requested.
Definition at line 254 of file cfe_time_eventids.h.

12.141.2.29 CFE_TIME_STATE_EID #define CFE_TIME_STATE_EID 7
TIME Set Time State Command Success Event ID.

Type: INFORMATION

Cause:

[TIME Set Time State Command](#) success.
Definition at line 86 of file cfe_time_eventids.h.

12.141.2.30 CFE_TIME_STATE_ERR_EID #define CFE_TIME_STATE_ERR_EID 30
TIME Set Clock State Command Invalid State Event ID.

Type: ERROR

Cause:

[TIME Set Clock State Command](#) failed due to invalid state requested.
Definition at line 243 of file cfe_time_eventids.h.

12.141.2.31 CFE_TIME_STCF_CFG_EID #define CFE_TIME_STCF_CFG_EID 45
TIME Set Spacecraft Time Correlation Factor Command Incompatible Mode Event ID.

Type: ERROR

Cause:

[TIME Set Spacecraft Time Correlation Factor Command](#) failure due to being in an incompatible mode.
Definition at line 400 of file cfe_time_eventids.h.

12.141.2.32 CFE_TIME_STCF_EID #define CFE_TIME_STCF_EID 14
TIME Set Spacecraft Time Correlation Factor Command Success Event ID.

Type: INFORMATION

Cause:

[TIME Set Spacecraft Time Correlation Factor Command](#) success.
Definition at line 153 of file cfe_time_eventids.h.

12.141.2.33 CFE_TIME_STCF_ERR_EID #define CFE_TIME_STCF_ERR_EID 36
TIME Set Spacecraft Time Correlation Factor Command Invalid Time Value Event ID.

Type: ERROR

Cause:

[TIME Set Spacecraft Time Correlation Factor Command](#) failure due to an invalid time value.
Definition at line 314 of file cfe_time_eventids.h.

12.141.2.34 CFE_TIME_TIME_CFG_EID #define CFE_TIME_TIME_CFG_EID 43
TIME Set Spacecraft Time Command Incompatible Mode Event ID.

Type: ERROR

Cause:

[TIME Set Spacecraft Time Command](#) failure due to being in an incompatible mode.
Definition at line 376 of file cfe_time_eventids.h.

12.141.2.35 CFE_TIME_TIME_EID #define CFE_TIME_TIME_EID 12
TIME Set Time Command Success Event ID.

Type: INFORMATION

Cause:

[TIME Set Time Command](#) success.
Definition at line 131 of file cfe_time_eventids.h.

12.141.2.36 CFE_TIME_TIME_ERR_EID #define CFE_TIME_TIME_ERR_EID 34
TIME Set Spacecraft Time Command Invalid Time Value Event ID.

Type: ERROR

Cause:

[TIME Set Spacecraft Time Command](#) failure due to an invalid time value.
Definition at line 290 of file cfe_time_eventids.h.

12.142 osal/docs/src/osal_frontpage.dox File Reference

12.143 osal/docs/src/osal_fs.dox File Reference

12.144 osal/docs/src/osal_timer.dox File Reference

12.145 osal/src/os/inc/common_types.h File Reference

```
#include <stdint.h>
#include <stddef.h>
#include <stdbool.h>
```

Macros

- `#define CompileTimeAssert(Condition, Message) typedef char Message[(Condition) ? 1 : -1]`
- `#define _EXTENSION_`
- `#define OS_USED`
- `#define OS_PRINTF(n, m)`
- `#define OSAL_SIZE_C(X) ((size_t)(X))`
- `#define OSAL_BLOCKCOUNT_C(X) ((osal_blockcount_t)(X))`
- `#define OSAL_INDEX_C(X) ((osal_index_t)(X))`
- `#define OSAL_OBJTYPE_C(X) ((osal_objtype_t)(X))`
- `#define OSAL_STATUS_C(X) ((osal_status_t)(X))`

Typedefs

- `typedef int8_t int8`
- `typedef int16_t int16`
- `typedef int32_t int32`
- `typedef int64_t int64`
- `typedef uint8_t uint8`
- `typedef uint16_t uint16`
- `typedef uint32_t uint32`
- `typedef uint64_t uint64`
- `typedef intptr_t intptr`
- `typedef uintptr_t cpuaddr`
- `typedef size_t cpusize`
- `typedef ptrdiff_t cpudiff`
- `typedef uint32 osal_id_t`
- `typedef size_t osal_blockcount_t`
- `typedef uint32 osal_index_t`
- `typedef uint32 osal_objtype_t`
- `typedef int32 osal_status_t`
- `typedef void(* OS_ArgCallback_t) (osal_id_t object_id, void *arg)`

General purpose OSAL callback function.

Functions

- `CompileTimeAssert (sizeof(uint8)==1, TypeUint8WrongSize)`
- `CompileTimeAssert (sizeof(uint16)==2, TypeUint16WrongSize)`
- `CompileTimeAssert (sizeof(uint32)==4, TypeUint32WrongSize)`
- `CompileTimeAssert (sizeof(uint64)==8, TypeUint64WrongSize)`
- `CompileTimeAssert (sizeof(int8)==1, Typeint8WrongSize)`
- `CompileTimeAssert (sizeof(int16)==2, Typeint16WrongSize)`
- `CompileTimeAssert (sizeof(int32)==4, Typeint32WrongSize)`
- `CompileTimeAssert (sizeof(int64)==8, Typeint64WrongSize)`
- `CompileTimeAssert (sizeof(cpuaddr) >=sizeof(void *), TypePtrWrongSize)`

12.145.1 Detailed Description

Purpose: Unit specification for common types.

Design Notes: Assumes make file has defined processor family

12.145.2 Macro Definition Documentation

12.145.2.1 **_EXTENSION_** #define _EXTENSION_

Definition at line 65 of file common_types.h.

12.145.2.2 **CompileTimeAssert** #define CompileTimeAssert(

Condition,

Message) typedef char Message[(*Condition*) ? 1 : -1]

Definition at line 48 of file common_types.h.

12.145.2.3 **OS_PRINTF** #define OS_PRINTF(

n,

m)

Definition at line 67 of file common_types.h.

12.145.2.4 **OS_USED** #define OS_USED

Definition at line 66 of file common_types.h.

12.145.2.5 **OSAL_BLOCKCOUNT_C** #define OSAL_BLOCKCOUNT_C(

X) ((*osal_blockcount_t*)(*X*))

Definition at line 172 of file common_types.h.

12.145.2.6 **OSAL_INDEX_C** #define OSAL_INDEX_C(

X) ((*osal_index_t*)(*X*))

Definition at line 173 of file common_types.h.

12.145.2.7 **OSAL_OBJTYPE_C** #define OSAL_OBJTYPE_C(

X) ((*osal_objtype_t*)(*X*))

Definition at line 174 of file common_types.h.

12.145.2.8 **OSAL_SIZE_C** #define OSAL_SIZE_C(

X) ((*size_t*)(*X*))

Definition at line 171 of file common_types.h.

12.145.2.9 **OSAL_STATUS_C** #define OSAL_STATUS_C(

X) ((*osal_status_t*)(*X*))

Definition at line 175 of file common_types.h.

12.145.3 Typedef Documentation

12.145.3.1 cpuaddr `typedef uintptr_t cpuaddr`

Definition at line 88 of file common_types.h.

12.145.3.2 cpudiff `typedef ptrdiff_t cpudiff`

Definition at line 90 of file common_types.h.

12.145.3.3 cpusize `typedef size_t cpusize`

Definition at line 89 of file common_types.h.

12.145.3.4 int16 `typedef int16_t int16`

Definition at line 80 of file common_types.h.

12.145.3.5 int32 `typedef int32_t int32`

Definition at line 81 of file common_types.h.

12.145.3.6 int64 `typedef int64_t int64`

Definition at line 82 of file common_types.h.

12.145.3.7 int8 `typedef int8_t int8`

Definition at line 79 of file common_types.h.

12.145.3.8 intptr `typedef intptr_t intptr`

Definition at line 87 of file common_types.h.

12.145.3.9 OS_ArgCallback_t `typedef void(* OS_ArgCallback_t) (osal_id_t object_id, void *arg)`

General purpose OSAL callback function.

This may be used by multiple APIS

Definition at line 143 of file common_types.h.

12.145.3.10 osal_blockcount_t `typedef size_t osal_blockcount_t`

A type used to represent a number of blocks or buffers

This is used with file system and queue implementations.

Definition at line 116 of file common_types.h.

12.145.3.11 osal_id_t `typedef uint32 osal_id_t`

A type to be used for OSAL resource identifiers. This typedef is backward compatible with the IDs from older versions of OSAL

Definition at line 108 of file common_types.h.

12.145.3.12 osal_index_t `typedef uint32 osal_index_t`

A type used to represent an index into a table structure

This is used when referring directly to a table index as opposed to an object ID. It is primarily intended for internal use, but is also output from public APIs such as [OS_ObjectIdToArrayIndex\(\)](#).

Definition at line 126 of file common_types.h.

12.145.3.13 osal_objtype_t `typedef uint32 osal_objtype_t`

A type used to represent the runtime type or category of an OSAL object

Definition at line 131 of file common_types.h.

12.145.3.14 osal_status_t `typedef int32 osal_status_t`

The preferred type to represent OSAL status codes defined in [osapi-error.h](#)

Definition at line 136 of file common_types.h.

12.145.3.15 uint16 `typedef uint16_t uint16`

Definition at line 84 of file common_types.h.

12.145.3.16 uint32 `typedef uint32_t uint32`

Definition at line 85 of file common_types.h.

12.145.3.17 uint64 `typedef uint64_t uint64`

Definition at line 86 of file common_types.h.

12.145.3.18 uint8 `typedef uint8_t uint8`

Definition at line 83 of file common_types.h.

12.145.4 Function Documentation

12.145.4.1 CompileTimeAssert() [1/9] `CompileTimeAssert (`

```
    sizeof(cpuaddr) >=sizeof(void *) ,  
    TypePtrWrongSize )
```

12.145.4.2 CompileTimeAssert() [2/9] `CompileTimeAssert (`

```
    sizeof(int16) = 2,  
    Typeint16WrongSize )
```

12.145.4.3 CompileTimeAssert() [3/9] `CompileTimeAssert (`

```
    sizeof(int32) = 4,  
    Typeint32WrongSize )
```

12.145.4.4 CompileTimeAssert() [4/9] `CompileTimeAssert (`
 `sizeof(int64) = =8,`
 `Typeint64WrongSize)`

12.145.4.5 CompileTimeAssert() [5/9] `CompileTimeAssert (`
 `sizeof(int8) = =1,`
 `Typeint8WrongSize)`

12.145.4.6 CompileTimeAssert() [6/9] `CompileTimeAssert (`
 `sizeof(uint16) = =2,`
 `TypeUint16WrongSize)`

12.145.4.7 CompileTimeAssert() [7/9] `CompileTimeAssert (`
 `sizeof(uint32) = =4,`
 `TypeUint32WrongSize)`

12.145.4.8 CompileTimeAssert() [8/9] `CompileTimeAssert (`
 `sizeof(uint64) = =8,`
 `TypeUint64WrongSize)`

12.145.4.9 CompileTimeAssert() [9/9] `CompileTimeAssert (`
 `sizeof(uint8) = =1,`
 `TypeUint8WrongSize)`

12.146 osal/src/os/inc/osapi-binsem.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct `OS_bin_sem_prop_t`
OSAL binary semaphore properties.

Macros

- #define `OS_SEM_FULL` 1
Semaphore full state.
- #define `OS_SEM_EMPTY` 0
Semaphore empty state.

Functions

- int32 `OS_BinSemCreate (osal_id_t *sem_id, const char *sem_name, uint32 sem_initial_value, uint32 options)`
Creates a binary semaphore.
- int32 `OS_BinSemFlush (osal_id_t sem_id)`

Unblock all tasks pending on the specified semaphore.

- `int32 OS_BinSemGive (osal_id_t sem_id)`
Increment the semaphore value.
- `int32 OS_BinSemTake (osal_id_t sem_id)`
Decrement the semaphore value.
- `int32 OS_BinSemTimedWait (osal_id_t sem_id, uint32 msecs)`
Decrement the semaphore value with a timeout.
- `int32 OS_BinSemDelete (osal_id_t sem_id)`
Deletes the specified Binary Semaphore.
- `int32 OS_BinSemGetIdByName (osal_id_t *sem_id, const char *sem_name)`
Find an existing semaphore ID by name.
- `int32 OS_BinSemGetInfo (osal_id_t sem_id, OS_bin_sem_prop_t *bin_prop)`
Fill a property object buffer with details regarding the resource.

12.146.1 Detailed Description

Declarations and prototypes for binary semaphores

12.147 osal/src/os/inc/osapi-bsp.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Functions

- `void OS_BSP_SetResourceTypeConfig (uint32 ResourceType, uint32 ConfigOptionValue)`
- `uint32 OS_BSP_GetResourceTypeConfig (uint32 ResourceType)`
- `uint32 OS_BSP_GetArgC (void)`
- `char *const * OS_BSP_GetArgV (void)`
- `void OS_BSP_SetExitCode (int32 code)`

12.147.1 Detailed Description

Declarations and prototypes for OSAL BSP

12.148 osal/src/os/inc/osapi-clock.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- `struct OS_time_t`
OSAL time interval structure.

Macros

- `#define OS_TIME_MAX ((OS_time_t){INT64_MAX})`
The maximum value for `OS_time_t`.
- `#define OS_TIME_ZERO ((OS_time_t){0})`
The zero value for `OS_time_t`.
- `#define OS_TIME_MIN ((OS_time_t){INT64_MIN})`
The minimum value for `OS_time_t`.

Enumerations

- `enum { OS_TIME_TICK_RESOLUTION_NS = 100, OS_TIME_TICKS_PER_SECOND = 1000000000 / OS_TIME_TICK_RESOLUTION_NS, OS_TIME_TICKS_PER_MSEC = 1000000 / OS_TIME_TICK_RESOLUTION_NS, OS_TIME_TICKS_PER_USEC = 1000 / OS_TIME_TICK_RESOLUTION_NS }`
Multippliers/divisors to convert ticks into standardized units.

Functions

- `int32 OS_GetLocalTime (OS_time_t *time_struct)`
Get the local time.
- `int32 OS_SetLocalTime (const OS_time_t *time_struct)`
Set the local time.
- `OS_time_t OS_TimeFromRelativeMilliseconds (int32 relative_msec)`
Gets an absolute time value relative to the current time.
- `int32 OS_TimeToRelativeMilliseconds (OS_time_t time)`
Gets a relative time value from an absolute time.
- `static int64 OS_TimeGetTotalSeconds (OS_time_t tm)`
Get interval from an `OS_time_t` object normalized to whole number of seconds.
- `static OS_time_t OS_TimeFromTotalSeconds (int64 tm)`
Get an `OS_time_t` interval object from an integer number of seconds.
- `static int64 OS_TimeGetTotalMilliseconds (OS_time_t tm)`
Get interval from an `OS_time_t` object normalized to millisecond units.
- `static OS_time_t OS_TimeFromTotalMilliseconds (int64 tm)`
Get an `OS_time_t` interval object from a integer number of milliseconds.
- `static int64 OS_TimeGetTotalMicroseconds (OS_time_t tm)`
Get interval from an `OS_time_t` object normalized to microsecond units.
- `static OS_time_t OS_TimeFromTotalMicroseconds (int64 tm)`
Get an `OS_time_t` interval object from a integer number of microseconds.
- `static int64 OS_TimeGetTotalNanoseconds (OS_time_t tm)`
Get interval from an `OS_time_t` object normalized to nanosecond units.
- `static OS_time_t OS_TimeFromTotalNanoseconds (int64 tm)`
Get an `OS_time_t` interval object from a integer number of nanoseconds.
- `static int64 OS_TimeGetFractionalPart (OS_time_t tm)`
Get subseconds portion (fractional part only) from an `OS_time_t` object.
- `static uint32 OS_TimeGetSubsecondsPart (OS_time_t tm)`
Get 32-bit normalized subseconds (fractional part only) from an `OS_time_t` object.
- `static uint32 OS_TimeGetMillisecondsPart (OS_time_t tm)`
Get milliseconds portion (fractional part only) from an `OS_time_t` object.
- `static uint32 OS_TimeGetMicrosecondsPart (OS_time_t tm)`

Get microseconds portion (fractional part only) from an `OS_time_t` object.

- static `uint32 OS_TimeGetNanosecondsPart (OS_time_t tm)`
Get nanoseconds portion (fractional part only) from an `OS_time_t` object.
- static `OS_time_t OS_TimeAssembleFromNanoseconds (int64 seconds, uint32 nanoseconds)`
Assemble/Convert a number of seconds + nanoseconds into an `OS_time_t` interval.
- static `OS_time_t OS_TimeAssembleFromMicroseconds (int64 seconds, uint32 microseconds)`
Assemble/Convert a number of seconds + microseconds into an `OS_time_t` interval.
- static `OS_time_t OS_TimeAssembleFromMilliseconds (int64 seconds, uint32 milliseconds)`
Assemble/Convert a number of seconds + milliseconds into an `OS_time_t` interval.
- static `OS_time_t OS_TimeAssembleFromSubseconds (int64 seconds, uint32 subseconds)`
Assemble/Convert a number of seconds + subseconds into an `OS_time_t` interval.
- static `OS_time_t OS_TimeAdd (OS_time_t time1, OS_time_t time2)`
Computes the sum of two time intervals.
- static `OS_time_t OS_TimeSubtract (OS_time_t time1, OS_time_t time2)`
Computes the difference between two time intervals.
- static `bool OS_TimeEqual (OS_time_t time1, OS_time_t time2)`
Checks if two time values are equal.
- static `int8_t OS_TimeGetSign (OS_time_t time)`
Checks the sign of the time value.
- static `int8_t OS_TimeCompare (OS_time_t time1, OS_time_t time2)`
Compares two time values.

12.148.1 Detailed Description

Declarations and prototypes for osapi-clock module

12.148.2 Macro Definition Documentation

12.148.2.1 OS_TIME_MAX `#define OS_TIME_MAX ((OS_time_t) {INT64_MAX})`

The maximum value for `OS_time_t`.

This is the largest positive (future) time that is representable in an `OS_time_t` value.

Definition at line 56 of file osapi-clock.h.

12.148.2.2 OS_TIME_MIN `#define OS_TIME_MIN ((OS_time_t) {INT64_MIN})`

The minimum value for `OS_time_t`.

This is the largest negative (past) time that is representable in an `OS_time_t` value.

Definition at line 71 of file osapi-clock.h.

12.148.2.3 OS_TIME_ZERO `#define OS_TIME_ZERO ((OS_time_t) {0})`

The zero value for `OS_time_t`.

This is a reasonable initializer/placeholder value for an `OS_time_t`

Definition at line 63 of file osapi-clock.h.

12.148.3 Enumeration Type Documentation

12.148.3.1 anonymous enum anonymous enum

Multipliers/divisors to convert ticks into standardized units.

Various fixed conversion factor constants used by the conversion routines

A 100ns tick time allows max intervals of about +/- 14000 years in a 64-bit signed integer value.

Note

Applications should not directly use these values, but rather use conversion routines below to obtain standardized units (seconds/microseconds/etc).

Enumerator

OS_TIME_TICK_RESOLUTION_NS	
OS_TIME TICKS_PER_SECOND	
OS_TIME TICKS_PER_MSEC	
OS_TIME TICKS_PER_USEC	

Definition at line 84 of file osapi-clock.h.

12.149 osal/src/os/inc/osapi-common.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

TypeDefs

- **typedef int32(* OS_EventHandler_t)** (*OS_Event_t* event, *osal_id_t* object_id, void *data)
A callback routine for event handling.

Enumerations

- **enum OS_Event_t {**
OS_EVENT_RESERVED = 0 , *OS_EVENT_RESOURCE_ALLOCATED* , *OS_EVENT_RESOURCE_CREATED*
, OS_EVENT_RESOURCE_DELETED ,
OS_EVENT_TASK_STARTUP , *OS_EVENT_MAX* **}**
A set of events that can be used with BSP event callback routines.

Functions

- **void OS_Application_Startup (void)**
Application startup.
- **void OS_Application_Run (void)**
Application run.
- **int32 OS_API_Init (void)**
Initialization of API.
- **void OS_API_Teardown (void)**
Teardown/de-initialization of OSAL API.
- **void OS_IdleLoop (void)**
Background thread implementation - waits forever for events to occur.
- **void OS_DeleteAllObjects (void)**
delete all resources created in OSAL.

- void [OS_ApplicationShutdown](#) (uint8 flag)
Initiate orderly shutdown.
- void [OS_ApplicationExit](#) (int32 Status)
Exit/Abort the application.
- int32 [OS_RegisterEventHandler](#) (OS_EventHandler_t handler)
Callback routine registration.
- size_t [OS_strlen](#) (const char *s, size_t maxlen)
get string length

12.149.1 Detailed Description

Declarations and prototypes for general OSAL functions that are not part of a subsystem

12.149.2 Typedef Documentation

12.149.2.1 OS_EventHandler_t `typedef int32(* OS_EventHandler_t) (OS_Event_t event, osal_id_t object_id, void *data)`
A callback routine for event handling.

Parameters

in	<i>event</i>	The event that occurred
in	<i>object_id</i>	The associated object_id, or 0 if not associated with an object
in, out	<i>data</i>	An abstract data/context object associated with the event, or NULL.

Returns

status Execution status, see [OSAL Return Code Defines](#).

Definition at line 98 of file osapi-common.h.

12.149.3 Enumeration Type Documentation

12.149.3.1 OS_Event_t `enum OS_Event_t`

A set of events that can be used with BSP event callback routines.

Enumerator

OS_EVENT_RESERVED	no-op/reserved event id value
OS_EVENT_RESOURCE_ALLOCATED	resource/id has been newly allocated but not yet created. This event is invoked from WITHIN the locked region, in the context of the task which is allocating the resource. If the handler returns non-success, the error will be returned to the caller and the creation process is aborted.
OS_EVENT_RESOURCE_CREATED	resource/id has been fully created/finalized. Invoked outside locked region, in the context of the task which created the resource. Data object is not used, passed as NULL. Return value is ignored - this is for information purposes only.

Enumerator

OS_EVENT_RESOURCE_DELETED	resource/id has been deleted. Invoked outside locked region, in the context of the task which deleted the resource. Data object is not used, passed as NULL. Return value is ignored - this is for information purposes only.
OS_EVENT_TASK_STARTUP	New task is starting. Invoked outside locked region, in the context of the task which is currently starting, before the entry point is called. Data object is not used, passed as NULL. If the handler returns non-success, task startup is aborted and the entry point is not called.
OS_EVENT_MAX	placeholder for end of enum, not used

Definition at line 34 of file osapi-common.h.

12.150 osal/src/os/inc/osapi-condvar.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
#include "osapi-clock.h"
```

Data Structures

- struct [OS_condvar_prop_t](#)
OSAL condition variable properties.

Functions

- [int32 OS_CondVarCreate \(osal_id_t *var_id, const char *var_name, uint32 options\)](#)
Creates a condition variable resource.
- [int32 OS_CondVarLock \(osal_id_t var_id\)](#)
Locks/Acquires the underlying mutex associated with a condition variable.
- [int32 OS_CondVarUnlock \(osal_id_t var_id\)](#)
Unlocks/Releases the underlying mutex associated with a condition variable.
- [int32 OS_CondVarSignal \(osal_id_t var_id\)](#)
Signals the condition variable resource referenced by var_id.
- [int32 OS_CondVarBroadcast \(osal_id_t var_id\)](#)
Broadcasts the condition variable resource referenced by var_id.
- [int32 OS_CondVarWait \(osal_id_t var_id\)](#)
Waits on the condition variable object referenced by var_id.
- [int32 OS_CondVarTimedWait \(osal_id_t var_id, const OS_time_t *abs_wakeup_time\)](#)
Time-limited wait on the condition variable object referenced by var_id.
- [int32 OS_CondVarDelete \(osal_id_t var_id\)](#)
Deletes the specified condition variable.
- [int32 OS_CondVarGetIdByName \(osal_id_t *var_id, const char *var_name\)](#)
Find an existing condition variable ID by name.
- [int32 OS_CondVarGetInfo \(osal_id_t var_id, OS_condvar_prop_t *condvar_prop\)](#)
Fill a property object buffer with details regarding the resource.

12.150.1 Detailed Description

Declarations and prototypes for condition variables

12.151 osal/src/os/inc/osapi-constants.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Macros

- `#define OS_PEND (-1)`
- `#define OS_CHECK (0)`
- `#define OS_OBJECT_ID_UNDEFINED ((osal_id_t) {0})`
Initializer for the osal_id_t type which will not match any valid value.
- `#define OS_OBJECT_CREATOR_ANY OS_OBJECT_ID_UNDEFINED`
Constant that may be passed to `OS_ForEachObject()`/`OS_ForEachObjectType()` to match any creator (i.e. get all objects)
- `#define OS_MAX_LOCAL_PATH_LEN (OS_MAX_PATH_LEN + OS_FS_PHYS_NAME_LEN)`
Maximum length of a local/native path name string.

12.151.1 Detailed Description

General constants for OSAL that are shared across subsystems

12.151.2 Macro Definition Documentation

12.151.2.1 OS_CHECK `#define OS_CHECK (0)`

Definition at line 35 of file osapi-constants.h.

12.151.2.2 OS_MAX_LOCAL_PATH_LEN `#define OS_MAX_LOCAL_PATH_LEN (OS_MAX_PATH_LEN + OS_FS_PHYS_NAME_LEN)`

Maximum length of a local/native path name string.

This is a concatenation of the OSAL virtual path with the system mount point or device name

Definition at line 54 of file osapi-constants.h.

12.151.2.3 OS_OBJECT_CREATOR_ANY `#define OS_OBJECT_CREATOR_ANY OS_OBJECT_ID_UNDEFINED`

Constant that may be passed to `OS_ForEachObject()`/`OS_ForEachObjectType()` to match any creator (i.e. get all objects)

Definition at line 46 of file osapi-constants.h.

12.151.2.4 OS_OBJECT_ID_UNDEFINED `#define OS_OBJECT_ID_UNDEFINED ((osal_id_t) {0})`

Initializer for the osal_id_t type which will not match any valid value.

Definition at line 40 of file osapi-constants.h.

12.151.2.5 OS_PEND `#define OS_PEND (-1)`

Definition at line 34 of file osapi-constants.h.

12.152 osal/src/os/inc/osapi-countsem.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct [OS_count_sem_prop_t](#)
OSAL counting semaphore properties.

Functions

- [int32 OS_CountSemCreate \(osal_id_t *sem_id, const char *sem_name, uint32 sem_initial_value, uint32 options\)](#)
Creates a counting semaphore.
- [int32 OS_CountSemGive \(osal_id_t sem_id\)](#)
Increment the semaphore value.
- [int32 OS_CountSemTake \(osal_id_t sem_id\)](#)
Decrement the semaphore value.
- [int32 OS_CountSemTimedWait \(osal_id_t sem_id, uint32 msecs\)](#)
Decrement the semaphore value with timeout.
- [int32 OS_CountSemDelete \(osal_id_t sem_id\)](#)
Deletes the specified counting Semaphore.
- [int32 OS_CountSemGetIdByName \(osal_id_t *sem_id, const char *sem_name\)](#)
Find an existing semaphore ID by name.
- [int32 OS_CountSemGetInfo \(osal_id_t sem_id, OS_count_sem_prop_t *count_prop\)](#)
Fill a property object buffer with details regarding the resource.

12.152.1 Detailed Description

Declarations and prototypes for counting semaphores

12.153 osal/src/os/inc/osapi-dir.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct [os_dirent_t](#)
Directory entry.

Macros

- [#define OS_DIRENT_NAME\(x\) \(\(x\).FileName\)](#)
Access filename part of the dirent structure.

Functions

- `int32 OS_DirectoryOpen (osal_id_t *dir_id, const char *path)`
Opens a directory.
- `int32 OS_DirectoryClose (osal_id_t dir_id)`
Closes an open directory.
- `int32 OS_DirectoryRewind (osal_id_t dir_id)`
Rewinds an open directory.
- `int32 OS_DirectoryRead (osal_id_t dir_id, os_dirent_t *dirent)`
Reads the next name in the directory.
- `int32 OS_mkdir (const char *path, uint32 access)`
Makes a new directory.
- `int32 OS_rmdir (const char *path)`
Removes a directory from the file system.

12.153.1 Detailed Description

Declarations and prototypes for directories

12.153.2 Macro Definition Documentation

12.153.2.1 OS_DIRENTRY_NAME `#define OS_DIRENTRY_NAME (` `x) ((x).FileName)`

Access filename part of the dirent structure.

Definition at line 38 of file osapi-dir.h.

12.154 osal/src/os/inc/osapi-error.h File Reference

```
#include "common_types.h"
```

Macros

- `#define OS_ERROR_NAME_LENGTH 35`
Error string name length.
- `#define OS_STATUS_STRING_LENGTH 12`
Status converted to string length limit.
- `#define OS_SUCCESS (0)`
Successful execution.
- `#define OS_ERROR (-1)`
Failed execution.
- `#define OS_INVALID_POINTER (-2)`
Invalid pointer.
- `#define OS_ERROR_ADDRESS_MISALIGNED (-3)`
Address misalignment.
- `#define OS_ERROR_TIMEOUT (-4)`
Error timeout.
- `#define OS_INVALID_INT_NUM (-5)`
Invalid Interrupt number.

- #define **OS_SEM_FAILURE** (-6)
Semaphore failure.
- #define **OS_SEM_TIMEOUT** (-7)
Semaphore timeout.
- #define **OS_QUEUE_EMPTY** (-8)
Queue empty.
- #define **OS_QUEUE_FULL** (-9)
Queue full.
- #define **OS_QUEUE_TIMEOUT** (-10)
Queue timeout.
- #define **OS_QUEUE_INVALID_SIZE** (-11)
Queue invalid size.
- #define **OS_QUEUE_ID_ERROR** (-12)
Queue ID error.
- #define **OS_ERR_NAME_TOO_LONG** (-13)
*name length including null terminator greater than **OS_MAX_API_NAME***
- #define **OS_ERR_NO_FREE_IDS** (-14)
No free IDs.
- #define **OS_ERR_NAME_TAKEN** (-15)
Name taken.
- #define **OS_ERR_INVALID_ID** (-16)
Invalid ID.
- #define **OS_ERR_NAME_NOT_FOUND** (-17)
Name not found.
- #define **OS_ERR_SEM_NOT_FULL** (-18)
Semaphore not full.
- #define **OS_ERR_INVALID_PRIORITY** (-19)
Invalid priority.
- #define **OS_INVALID_SEM_VALUE** (-20)
Invalid semaphore value.
- #define **OS_ERR_FILE** (-27)
File error.
- #define **OS_ERR_NOT_IMPLEMENTED** (-28)
Not implemented.
- #define **OS_TIMER_ERR_INVALID_ARGS** (-29)
Timer invalid arguments.
- #define **OS_TIMER_ERR_TIMER_ID** (-30)
Timer ID error.
- #define **OS_TIMER_ERR_UNAVAILABLE** (-31)
Timer unavailable.
- #define **OS_TIMER_ERR_INTERNAL** (-32)
Timer internal error.
- #define **OS_ERR_OBJECT_IN_USE** (-33)
Object in use.
- #define **OS_ERR_BAD_ADDRESS** (-34)
Bad address.
- #define **OS_ERR_INCORRECT_OBJ_STATE** (-35)

Incorrect object state.

- #define OS_ERR_INCORRECT_OBJ_TYPE (-36)

Incorrect object type.

- #define OS_ERR_STREAM_DISCONNECTED (-37)

Stream disconnected.

- #define OS_ERR_OPERATION_NOT_SUPPORTED (-38)

Requested operation not support on supplied object(s)

- #define OS_ERR_INVALID_SIZE (-40)

Invalid Size.

- #define OS_ERR_OUTPUT_TOO_LARGE (-41)

Size of output exceeds limit

- #define OS_ERR_INVALID_ARGUMENT (-42)

Invalid argument value (other than ID or size)

- #define OS_FS_ERR_PATH_TOO_LONG (-103)

FS path too long.

- #define OS_FS_ERR_NAME_TOO_LONG (-104)

FS name too long.

- #define OS_FS_ERR_DRIVE_NOT_CREATED (-106)

FS drive not created.

- #define OS_FS_ERR_DEVICE_NOT_FREE (-107)

FS device not free.

- #define OS_FS_ERR_PATH_INVALID (-108)

FS path invalid.

Typedefs

- typedef char os_err_name_t[OS_ERROR_NAME_LENGTH]

For the OS_GetErrorName() function, to ensure everyone is making an array of the same length.

- typedef char os_status_string_t[OS_STATUS_STRING_LENGTH]

For the OS_StatusToString() function, to ensure everyone is making an array of the same length.

Functions

- static long OS_StatusToInteger (osal_status_t Status)

Convert a status code to a native "long" type.

- int32 OS_GetErrorName (int32 error_num, os_err_name_t *err_name)

Convert an error number to a string.

- char * OS_StatusToString (osal_status_t status, os_status_string_t *status_string)

Convert status to a string.

12.154.1 Detailed Description

OSAL error code definitions

12.154.2 Macro Definition Documentation

12.154.2.1 OS_ERROR_NAME_LENGTH #define OS_ERROR_NAME_LENGTH 35

Error string name length.

The sizes of strings in OSAL functions are built with this limit in mind. Always check the uses of `os_err_name_t` when changing this value.

Definition at line 35 of file osapi-error.h.

12.154.2.2 OS_STATUS_STRING_LENGTH #define OS_STATUS_STRING_LENGTH 12

Status converted to string length limit.

Used for sizing `os_status_string_t` intended for use in printing `osal_status_t` values. Sized to fit `LONG_MIN` including NULL termination.

Definition at line 55 of file osapi-error.h.

12.154.3 Typedef Documentation**12.154.3.1 os_err_name_t typedef char os_err_name_t[OS_ERROR_NAME_LENGTH]**

For the `OS_GetErrorName()` function, to ensure everyone is making an array of the same length.

Implementation note for developers:

The sizes of strings in OSAL functions are built with this `OS_ERROR_NAME_LENGTH` limit in mind. Always check the uses of `os_err_name_t` when changing this value.

Definition at line 47 of file osapi-error.h.

12.154.3.2 os_status_string_t typedef char os_status_string_t[OS_STATUS_STRING_LENGTH]

For the `OS_StatusToString()` function, to ensure everyone is making an array of the same length.

Definition at line 61 of file osapi-error.h.

12.155 osal/src/os/inc/osapi-file.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
#include "osapi-clock.h"
```

Data Structures

- struct `OS_file_prop_t`

OSAL file properties.

- struct `os_fstat_t`

File system status.

Macros

- #define `OS_READ_ONLY` 0
- #define `OS_WRITE_ONLY` 1
- #define `OS_READ_WRITE` 2
- #define `OS_SEEK_SET` 0
- #define `OS_SEEK_CUR` 1
- #define `OS_SEEK_END` 2
- #define `OS_FILESTAT_MODE`(x) ((x). FileModeBits)

Access file stat mode bits.

- #define OS_FILESTAT_ISDIR(x) ((x). FileModeBits & OS_FILESTAT_MODE_DIR)
File stat is directory logical.
- #define OS_FILESTAT_EXEC(x) ((x). FileModeBits & OS_FILESTAT_MODE_EXEC)
File stat is executable logical.
- #define OS_FILESTAT_WRITE(x) ((x). FileModeBits & OS_FILESTAT_MODE_WRITE)
File stat is write enabled logical.
- #define OS_FILESTAT_READ(x) ((x). FileModeBits & OS_FILESTAT_MODE_READ)
File stat is read enabled logical.
- #define OS_FILESTAT_SIZE(x) ((x).FileSize)
Access file stat size field.
- #define OS_FILESTAT_TIME(x) (OS_TimeGetTotalSeconds((x).FileTime))
Access file stat time field as a whole number of seconds.

Enumerations

- enum { OS_FILESTAT_MODE_EXEC = 0x00001 , OS_FILESTAT_MODE_WRITE = 0x00002 , OS_FILESTAT_MODE_READ = 0x00004 , OS_FILESTAT_MODE_DIR = 0x10000 }
File stat mode bits.
- enum OS_file_flag_t { OS_FILE_FLAG_NONE = 0x00 , OS_FILE_FLAG_CREATE = 0x01 , OS_FILE_FLAG_TRUNCATE = 0x02 }
Flags that can be used with opening of a file (bitmask)

Functions

- int32 OS_OpenCreate (osal_id_t *filedes, const char *path, int32 flags, int32 access_mode)
Open or create a file.
- int32 OS_close (osal_id_t filedes)
Closes an open file handle.
- int32 OS_read (osal_id_t filedes, void *buffer, size_t nbytes)
Read from a file handle.
- int32 OS_write (osal_id_t filedes, const void *buffer, size_t nbytes)
Write to a file handle.
- int32 OS_TimedReadAbs (osal_id_t filedes, void *buffer, size_t nbytes, OS_time_t abstime)
File/Stream input read with a timeout.
- int32 OS_TimedRead (osal_id_t filedes, void *buffer, size_t nbytes, int32 timeout)
File/Stream input read with a timeout.
- int32 OS_TimedWriteAbs (osal_id_t filedes, const void *buffer, size_t nbytes, OS_time_t abstime)
File/Stream output write with a timeout.
- int32 OS_TimedWrite (osal_id_t filedes, const void *buffer, size_t nbytes, int32 timeout)
File/Stream output write with a timeout.
- int32 OS_chmod (const char *path, uint32 access_mode)
Changes the permissions of a file.
- int32 OS_stat (const char *path, os_fstat_t *filestats)
Obtain information about a file or directory.
- int32 OS_lseek (osal_id_t filedes, int32 offset, uint32 whence)
Seeks to the specified position of an open file.
- int32 OS_remove (const char *path)
Removes a file from the file system.

- `int32 OS_rename (const char *old_filename, const char *new_filename)`
Renames a file.
- `int32 OS_cp (const char *src, const char *dest)`
Copies a single file from src to dest.
- `int32 OS_mv (const char *src, const char *dest)`
Move a single file from src to dest.
- `int32 OS_FDGetInfo (osal_id_t filedes, OS_file_prop_t *fd_prop)`
Obtain information about an open file.
- `int32 OS_FileOpenCheck (const char *Filename)`
Checks to see if a file is open.
- `int32 OS_CloseAllFiles (void)`
Close all open files.
- `int32 OS_CloseFileByName (const char *Filename)`
Close a file by filename.

12.155.1 Detailed Description

Declarations and prototypes for file objects

12.155.2 Macro Definition Documentation

12.155.2.1 OS_FILESTAT_EXEC `#define OS_FILESTAT_EXEC (`
`x) ((x). FileModeBits & OS_FILESTAT_MODE_EXEC)`

File stat is executable logical.

Definition at line 92 of file osapi-file.h.

12.155.2.2 OS_FILESTAT_ISDIR `#define OS_FILESTAT_ISDIR (`
`x) ((x). FileModeBits & OS_FILESTAT_MODE_DIR)`

File stat is directory logical.

Definition at line 90 of file osapi-file.h.

12.155.2.3 OS_FILESTAT_MODE `#define OS_FILESTAT_MODE (`
`x) ((x). FileModeBits)`

Access file stat mode bits.

Definition at line 88 of file osapi-file.h.

12.155.2.4 OS_FILESTAT_READ `#define OS_FILESTAT_READ (`
`x) ((x). FileModeBits & OS_FILESTAT_MODE_READ)`

File stat is read enabled logical.

Definition at line 96 of file osapi-file.h.

12.155.2.5 OS_FILESTAT_SIZE `#define OS_FILESTAT_SIZE (`
`x) ((x).FileSize)`

Access file stat size field.

Definition at line 98 of file osapi-file.h.

12.155.2.6 OS_FILESTAT_TIME #define OS_FILESTAT_TIME (x) (OS_TimeGetTotalSeconds((x).FileTime))

Access file stat time field as a whole number of seconds.

Definition at line 100 of file osapi-file.h.

12.155.2.7 OS_FILESTAT_WRITE #define OS_FILESTAT_WRITE ((x). FileModeBits & OS_FILESTAT_MODE_WRITE)

File stat is write enabled logical.

Definition at line 94 of file osapi-file.h.

12.155.3 Enumeration Type Documentation

12.155.3.1 anonymous enum anonymous enum

File stat mode bits.

We must also define replacements for the stat structure's mode bits. This is currently just a small subset since the OSAL just presents a very simplified view of the filesystem to the upper layers. And since not all OS'es are POSIX, the more POSIX-specific bits are not relevant anyway.

Enumerator

OS_FILESTAT_MODE_EXEC
OS_FILESTAT_MODE_WRITE
OS_FILESTAT_MODE_READ
OS_FILESTAT_MODE_DIR

Definition at line 79 of file osapi-file.h.

12.155.3.2 OS_file_flag_t enum OS_file_flag_t

Flags that can be used with opening of a file (bitmask)

Enumerator

OS_FILE_FLAG_NONE
OS_FILE_FLAG_CREATE
OS_FILE_FLAG_TRUNCATE

Definition at line 105 of file osapi-file.h.

12.156 osal/src/os/inc/osapi-filesystem.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct [os_fsinfo_t](#)

OSAL file system info.

- struct [OS_statvfs_t](#)

Macros

- #define [OS_CHK_ONLY](#) 0
- #define [OS_REPAIR](#) 1

Functions

- [int32 OS_FileSysAddFixedMap \(osal_id_t *filesystems_id, const char *phys_path, const char *virt_path\)](#)
Create a fixed mapping between an existing directory and a virtual OSAL mount point.
- [int32 OS_mkfs \(char *address, const char *devname, const char *volname, size_t blocksize, osal_blockcount_t numblocks\)](#)
Makes a file system on the target.
- [int32 OS_mount \(const char *devname, const char *mountpoint\)](#)
Mounts a file system.
- [int32 OS_initfs \(char *address, const char *devname, const char *volname, size_t blocksize, osal_blockcount_t numblocks\)](#)
Initializes an existing file system.
- [int32 OS_rmfs \(const char *devname\)](#)
Removes a file system.
- [int32 OS_unmount \(const char *mountpoint\)](#)
Unmounts a mounted file system.
- [int32 OS_FileSysStatVolume \(const char *name, OS_statvfs_t *statbuf\)](#)
Obtains information about size and free space in a volume.
- [int32 OS_chkfs \(const char *name, bool repair\)](#)
Checks the health of a file system and repairs it if necessary.
- [int32 OS_FS_GetPhysDriveName \(char *PhysDriveName, const char *MountPoint\)](#)
Obtains the physical drive name associated with a mount point.
- [int32 OS_TranslatePath \(const char *VirtualPath, char *LocalPath\)](#)
Translates an OSAL Virtual file system path to a host Local path.
- [int32 OS_GetFsInfo \(os_fsinfo_t *filesystems_info\)](#)
Returns information about the file system.

12.156.1 Detailed Description

Declarations and prototypes for file systems

12.156.2 Macro Definition Documentation

12.156.2.1 OS_CHK_ONLY #define OS_CHK_ONLY 0
Unused, API takes bool
Definition at line 31 of file osapi-filesystems.h.

12.156.2.2 OS_REPAIR #define OS_REPAIR 1
Unused, API takes bool
Definition at line 32 of file osapi-filesystems.h.

12.157 osal/src/os/inc/osapi-heap.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct `OS_heap_prop_t`

OSAL heap properties.

Functions

- `int32 OS_HeapGetInfo (OS_heap_prop_t *heap_prop)`

Return current info on the heap.

12.157.1 Detailed Description

Declarations and prototypes for heap functions

12.158 osal/src/os/inc/osapi-idmap.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Macros

- `#define OS_OBJECT_INDEX_MASK 0xFFFF`
Object index mask.
- `#define OS_OBJECT_TYPE_SHIFT 16`
Object type shift.
- `#define OS_OBJECT_TYPE_UNDEFINED 0x00`
Object type undefined.
- `#define OS_OBJECT_TYPE_OS_TASK 0x01`
Object task type.
- `#define OS_OBJECT_TYPE_OS_QUEUE 0x02`
Object queue type.
- `#define OS_OBJECT_TYPE_OS_COUNTSEM 0x03`
Object counting semaphore type.
- `#define OS_OBJECT_TYPE_OS_BINSEM 0x04`
Object binary semaphore type.
- `#define OS_OBJECT_TYPE_OS_MUTEX 0x05`
Object mutex type.
- `#define OS_OBJECT_TYPE_OS_STREAM 0x06`
Object stream type.
- `#define OS_OBJECT_TYPE_OS_DIR 0x07`
Object directory type.
- `#define OS_OBJECT_TYPE_OS_TIMEBASE 0x08`
Object timebase type.
- `#define OS_OBJECT_TYPE_OS_TIMECB 0x09`

- `#define OS_OBJECT_TYPE_OS_MODULE 0x0A`
Object module type.
- `#define OS_OBJECT_TYPE_OS_FILESYS 0x0B`
Object file system type.
- `#define OS_OBJECT_TYPE_OS_CONSOLE 0x0C`
Object console type.
- `#define OS_OBJECT_TYPE_OS_CONDVAR 0x0D`
Object condition variable type.
- `#define OS_OBJECT_TYPE_USER 0x10`
Object user type.

Functions

- `static unsigned long OS_ObjectIdToInteger (osal_id_t object_id)`
Obtain an integer value corresponding to an object ID.
- `static osal_id_t OS_ObjectIdFromInteger (unsigned long value)`
Obtain an osal ID corresponding to an integer value.
- `static bool OS_ObjectIdEqual (osal_id_t object_id1, osal_id_t object_id2)`
Check two OSAL object ID values for equality.
- `static bool OS_ObjectIdDefined (osal_id_t object_id)`
Check if an object ID is defined.
- `int32 OS_GetResourceName (osal_id_t object_id, char *buffer, size_t buffer_size)`
Obtain the name of an object given an arbitrary object ID.
- `osal_objtype_t OS_IdentifyObject (osal_id_t object_id)`
Obtain the type of an object given an arbitrary object ID.
- `int32 OS_ConvertToArrayIndex (osal_id_t object_id, osal_index_t *ArrayIndex)`
Converts an abstract ID into a number suitable for use as an array index.
- `int32 OS_ObjectIdToArrayIndex (osal_objtype_t idtype, osal_id_t object_id, osal_index_t *ArrayIndex)`
Converts an abstract ID into a number suitable for use as an array index.
- `void OS_ForEachObject (osal_id_t creator_id, OS_ArgCallback_t callback_ptr, void *callback_arg)`
call the supplied callback function for all valid object IDs
- `void OS_ForEachObjectOfType (osal_objtype_t objtype, osal_id_t creator_id, OS_ArgCallback_t callback_ptr, void *callback_arg)`
call the supplied callback function for valid object IDs of a specific type

12.158.1 Detailed Description

Declarations and prototypes for object IDs

12.158.2 Macro Definition Documentation

12.158.2.1 OS_OBJECT_INDEX_MASK `#define OS_OBJECT_INDEX_MASK 0xFFFF`
 Object index mask.
 Definition at line 32 of file osapi-idmap.h.

12.158.2.2 OS_OBJECT_TYPE_SHIFT #define OS_OBJECT_TYPE_SHIFT 16
Object type shift.
Definition at line 33 of file osapi-idmap.h.

12.159 osal/src/os/inc/osapi-macros.h File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "osconfig.h"
#include "common_types.h"
#include "osapi-printf.h"
```

Macros

- #define **BUGREPORT**(...) OS_printf(__VA_ARGS__)
- #define **BUGCHECK**(cond, errcode)
Basic Bug-Checking macro.
- #define **ARGCHECK**(cond, errcode)
Generic argument checking macro for non-critical values.
- #define **LENGTHCHECK**(str, len, errcode) **ARGCHECK**(memchr(str, '\0', len), errcode)
String length limit check macro.
- #define **BUGCHECK_VOID**(cond) **BUGCHECK**(cond,)
Bug-Check macro for void functions.

12.159.1 Detailed Description

Macro definitions that are used across all OSAL subsystems

12.159.2 Macro Definition Documentation

12.159.2.1 ARGCHECK #define ARGCHECK(
 cond,
 errcode)

Value:

```
if (! (cond)) \
{ \
    return errcode; \
}
```

Generic argument checking macro for non-critical values.

This macro checks a conditional that is expected to be true, and return a value if it evaluates false.

ARGCHECK can be used to check for out of range or other invalid argument conditions which may (validly) occur at runtime and do not necessarily indicate bugs in the application.

These argument checks are NOT considered fatal errors. The application continues to run normally. This does not report the error on the console.

As such, ARGCHECK actions are always compiled in - not selectable at compile-time.

See also

[BUGCHECK](#) for checking critical values that indicate bugs

Definition at line 131 of file osapi-macros.h.

```
12.159.2.2 BUGCHECK #define BUGCHECK(
    cond,
    errcode )
```

Value:

```
if (! (cond))
{
    BUGREPORT("\n**BUG** %s():%d:check \'%s\' FAILED --> %s\n\n", __func__, __LINE__, #cond, #errcode); \
    return errcode;
}
```

Basic Bug-Checking macro.

This macro checks a conditional, and if it is FALSE, then it generates a report - which may in turn contain additional actions.

BUGCHECK should only be used for conditions which are critical and must always be true. If such a condition is ever false then it indicates a bug in the application which must be resolved. It may or may not be possible to continue operation if a bugcheck fails.

See also

[ARGCHECK](#) for checking non-critical values

Definition at line 105 of file osapi-macros.h.

```
12.159.2.3 BUGCHECK_VOID #define BUGCHECK_VOID(
    cond ) BUGCHECK(cond, )
```

Bug-Check macro for void functions.

The basic BUGCHECK macro returns a value, which needs to be empty for functions that do not have a return value. In this case the second argument (errcode) is intentionally left blank.

Definition at line 155 of file osapi-macros.h.

```
12.159.2.4 BUGREPORT #define BUGREPORT(
    ... ) OS_printf(__VA_ARGS__)
```

Definition at line 88 of file osapi-macros.h.

```
12.159.2.5 LENGTHCHECK #define LENGTHCHECK(
    str,
    len,
    errcode ) ARGCHECK(memchr(str, '\0', len), errcode)
```

String length limit check macro.

This macro is a specialized version of ARGCHECK that confirms a string will fit into a buffer of the specified length, and return an error code if it will not.

Note

this uses ARGCHECK, thus treating a string too long as a normal runtime (i.e. non-bug) error condition with a typical error return to the caller.

Definition at line 146 of file osapi-macros.h.

12.160 osal/src/os/inc/osapi-module.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct [OS_module_address_t](#)
OSAL module address properties.
- struct [OS_module_prop_t](#)
OSAL module properties.
- struct [OS_static_symbol_record_t](#)
Associates a single symbol name with a memory address.

Macros

- `#define OS_MODULE_FLAG_GLOBAL_SYMBOLS 0x00`
Requests [OS_ModuleLoad\(\)](#) to add the symbols to the global symbol table.
- `#define OS_MODULE_FLAG_LOCAL_SYMBOLS 0x01`
Requests [OS_ModuleLoad\(\)](#) to keep the symbols local/private to this module.

Functions

- `int32 OS_SymbolLookup (cpuaddr *symbol_address, const char *symbol_name)`
Find the Address of a Symbol.
- `int32 OS_ModuleSymbolLookup (osal_id_t module_id, cpuaddr *symbol_address, const char *symbol_name)`
Find the Address of a Symbol within a module.
- `int32 OS_SymbolTableDump (const char *filename, size_t size_limit)`
Dumps the system symbol table to a file.
- `int32 OS_ModuleLoad (osal_id_t *module_id, const char *module_name, const char *filename, uint32 flags)`
Loads an object file.
- `int32 OS_ModuleUnload (osal_id_t module_id)`
Unloads the module file.
- `int32 OS_ModuleInfo (osal_id_t module_id, OS_module_prop_t *module_info)`
Obtain information about a module.

12.160.1 Detailed Description

Declarations and prototypes for module subsystem

12.160.2 Macro Definition Documentation

12.160.2.1 OS_MODULE_FLAG_GLOBAL_SYMBOLS `#define OS_MODULE_FLAG_GLOBAL_SYMBOLS 0x00`

Requests [OS_ModuleLoad\(\)](#) to add the symbols to the global symbol table.

When supplied as the "flags" argument to [OS_ModuleLoad\(\)](#), this indicates that the symbols in the loaded module should be added to the global symbol table. This will make symbols in this library available for use when resolving symbols in future module loads.

This is the default mode of operation for [OS_ModuleLoad\(\)](#).

Note

On some operating systems, use of this option may make it difficult to unload the module in the future, if the symbols are in use by other entities.

Definition at line 49 of file osapi-module.h.

12.160.2.2 OS_MODULE_FLAG_LOCAL_SYMBOLS #define OS_MODULE_FLAG_LOCAL_SYMBOLS 0x01

Requests [OS_ModuleLoad\(\)](#) to keep the symbols local/private to this module.

When supplied as the "flags" argument to [OS_ModuleLoad\(\)](#), this indicates that the symbols in the loaded module should NOT be added to the global symbol table. This means the symbols in the loaded library will not be available for use by other modules.

Use this option is recommended for cases where no other entities will need to reference symbols within this module. This helps ensure that the module can be more safely unloaded in the future, by preventing other modules from binding to it. It also helps reduce the likelihood of symbol name conflicts among modules.

Note

To look up symbols within a module loaded with this flag, use [OS_SymbolLookupInModule\(\)](#) instead of [OS_SymbolLookup\(\)](#). Also note that references obtained using this method are not tracked by the OS; the application must ensure that all references obtained in this manner have been cleaned up/released before unloading the module.

Definition at line 71 of file osapi-module.h.

12.161 osal/src/os/inc/osapi-mutex.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct [OS_mut_sem_prop_t](#)

OSAL mutex properties.

Functions

- [int32 OS_MutSemCreate \(osal_id_t *sem_id, const char *sem_name, uint32 options\)](#)
Creates a mutex semaphore.
- [int32 OS_MutSemGive \(osal_id_t sem_id\)](#)
Releases the mutex object referenced by sem_id.
- [int32 OS_MutSemTake \(osal_id_t sem_id\)](#)
Acquire the mutex object referenced by sem_id.
- [int32 OS_MutSemDelete \(osal_id_t sem_id\)](#)
Deletes the specified Mutex Semaphore.
- [int32 OS_MutSemGetIdByName \(osal_id_t *sem_id, const char *sem_name\)](#)
Find an existing mutex ID by name.
- [int32 OS_MutSemGetInfo \(osal_id_t sem_id, OS_mut_sem_prop_t *mut_prop\)](#)
Fill a property object buffer with details regarding the resource.

12.161.1 Detailed Description

Declarations and prototypes for mutexes

12.162 osal/src/os/inc/osapi-network.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Functions

- `int32 OS_NetworkGetID (void)`
Gets the network ID of the local machine.
- `int32 OS_NetworkGetHostName (char *host_name, size_t name_len)`
Gets the local machine network host name.

12.162.1 Detailed Description

Declarations and prototypes for network subsystem

12.163 osal/src/os/inc/osapi-printf.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Functions

- `void OS_printf (const char *string,...) OS_PRINTF(1)`
Abstraction for the system printf() call.
- `void void OS_printf_disable (void)`
This function disables the output from OS_printf.
- `void OS_printf_enable (void)`
This function enables the output from OS_printf.

12.163.1 Detailed Description

Declarations and prototypes for printf/console output

12.164 osal/src/os/inc/osapi-queue.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- `struct OS_queue_prop_t`
OSAL queue properties.

Functions

- `int32 OS_QueueCreate (osal_id_t *queue_id, const char *queue_name, osal_blockcount_t queue_depth, size_t data_size, uint32 flags)`
Create a message queue.
- `int32 OS_QueueDelete (osal_id_t queue_id)`
Deletes the specified message queue.
- `int32 OS_QueueGet (osal_id_t queue_id, void *data, size_t size, size_t *size_copied, int32 timeout)`
Receive a message on a message queue.
- `int32 OS_QueuePut (osal_id_t queue_id, const void *data, size_t size, uint32 flags)`
Put a message on a message queue.

- int32 OS_QueueGetIdByName ([osal_id_t](#) *queue_id, const char *queue_name)
Find an existing queue ID by name.
- int32 OS_QueueGetInfo ([osal_id_t](#) queue_id, [OS_queue_prop_t](#) *queue_prop)
Fill a property object buffer with details regarding the resource.

12.164.1 Detailed Description

Declarations and prototypes for queue subsystem

12.165 osal/src/os/inc/osapi-select.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
#include "osapi-clock.h"
```

Data Structures

- struct [OS_FdSet](#)
An abstract structure capable of holding several OSAL IDs.

Enumerations

- enum [OS_StreamState_t](#) {
 [OS_STREAM_STATE_BOUND](#) = 0x01 , [OS_STREAM_STATE_CONNECTED](#) = 0x02 , [OS_STREAM_STATE_READABLE](#) = 0x04 , [OS_STREAM_STATE_WRITABLE](#) = 0x08 ,
 [OS_STREAM_STATE_LISTENING](#) = 0x10 }
- For the [OS_SelectSingle\(\)](#) function's in/out StateFlags parameter, the state(s) of the stream and the result of the select is a combination of one or more of these states.*

Functions

- int32 OS_SelectMultipleAbs ([OS_FdSet](#) *ReadSet, [OS_FdSet](#) *WriteSet, [OS_time_t](#) abs_timeout)
Wait for events across multiple file handles.
- int32 OS_SelectMultiple ([OS_FdSet](#) *ReadSet, [OS_FdSet](#) *WriteSet, int32 msecs)
Wait for events across multiple file handles.
- int32 OS_SelectSingleAbs ([osal_id_t](#) objid, uint32 *StateFlags, [OS_time_t](#) abs_timeout)
Wait for events on a single file handle.
- int32 OS_SelectSingle ([osal_id_t](#) objid, uint32 *StateFlags, int32 msecs)
Wait for events on a single file handle.
- int32 OS_SelectFdZero ([OS_FdSet](#) *Set)
Clear a FdSet structure.
- int32 OS_SelectFdAdd ([OS_FdSet](#) *Set, [osal_id_t](#) objid)
Add an ID to an FdSet structure.
- int32 OS_SelectFdClear ([OS_FdSet](#) *Set, [osal_id_t](#) objid)
Clear an ID from an FdSet structure.
- bool OS_SelectFdIsSet (const [OS_FdSet](#) *Set, [osal_id_t](#) objid)
Check if an FdSet structure contains a given ID.

12.165.1 Detailed Description

Declarations and prototypes for select abstraction

12.165.2 Enumeration Type Documentation

12.165.2.1 OS_StreamState_t enum OS_StreamState_t

For the [OS_SelectSingle\(\)](#) function's in/out StateFlags parameter, the state(s) of the stream and the result of the select is a combination of one or more of these states.

See also

[OS_SelectSingle\(\)](#)

Enumerator

OS_STREAM_STATE_BOUND	whether the stream is bound
OS_STREAM_STATE_CONNECTED	whether the stream is connected
OS_STREAM_STATE_READABLE	whether the stream is readable
OS_STREAM_STATE_WRITABLE	whether the stream is writable
OS_STREAM_STATE_LISTENING	whether the stream is listening

Definition at line 56 of file osapi-select.h.

12.166 osal/src/os/inc/osapi-shell.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Functions

- `int32 OS_ShellOutputToFile (const char *Cmd, osal_id_t filedes)`
Executes the command and sends output to a file.

12.166.1 Detailed Description

Declarations and prototypes for shell abstraction

12.167 osal/src/os/inc/osapi-sockets.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
#include "osapi-clock.h"
```

Data Structures

- union [OS_SockAddrData_t](#)
Storage buffer for generic network address.
- struct [OS_SockAddr_t](#)
Encapsulates a generic network address.

- struct `OS_socket_prop_t`
Encapsulates socket properties.

Macros

- `#define OS SOCKADDR_MAX_LEN 28`

Enumerations

- enum `OS_SocketDomain_t`{ `OS_SocketDomain_INVALID` , `OS_SocketDomain_INET` , `OS_SocketDomain_INET6` , `OS_SocketDomain_MAX` }
Socket domain.
- enum `OS_SocketType_t`{ `OS_SocketType_INVALID` , `OS_SocketType_DATAGRAM` , `OS_SocketType_STREAM` , `OS_SocketType_MAX` }
Socket type.
- enum `OS_SocketShutdownMode_t`{ `OS_SocketShutdownMode_NONE` = 0 , `OS_SocketShutdownMode_SHUT_READ` = 1 , `OS_SocketShutdownMode_SHUT_WRITE` = 2 , `OS_SocketShutdownMode_SHUT_RDWR` = 3 }
Shutdown Mode.

Functions

- `int32 OS_SocketAddrInit (OS_SockAddr_t *Addr, OS_SocketDomain_t Domain)`
Initialize a socket address structure to hold an address of the given family.
- `int32 OS_SocketAddrToString (char *buffer, size_t buflen, const OS_SockAddr_t *Addr)`
Get a string representation of a network host address.
- `int32 OS_SocketAddrFromString (OS_SockAddr_t *Addr, const char *string)`
Set a network host address from a string representation.
- `int32 OS_SocketAddrGetPort (uint16 *PortNum, const OS_SockAddr_t *Addr)`
Get the port number of a network address.
- `int32 OS_SocketAddrSetPort (OS_SockAddr_t *Addr, uint16 PortNum)`
Set the port number of a network address.
- `int32 OS_SocketOpen (osal_id_t *sock_id, OS_SocketDomain_t Domain, OS_SocketType_t Type)`
Opens a socket.
- `int32 OS_SocketBind (osal_id_t sock_id, const OS_SockAddr_t *Addr)`
Binds a socket to a given local address and enter listening (server) mode.
- `int32 OS_SocketListen (osal_id_t sock_id)`
Places the specified socket into a listening state.
- `int32 OS_SocketBindAddress (osal_id_t sock_id, const OS_SockAddr_t *Addr)`
Binds a socket to a given local address.
- `int32 OS_SocketConnectAbs (osal_id_t sock_id, const OS_SockAddr_t *Addr, OS_time_t abs_timeout)`
Connects a socket to a given remote address.
- `int32 OS_SocketConnect (osal_id_t sock_id, const OS_SockAddr_t *Addr, int32 timeout)`
Connects a socket to a given remote address.
- `int32 OS_SocketShutdown (osal_id_t sock_id, OS_SocketShutdownMode_t Mode)`
Implement graceful shutdown of a stream socket.
- `int32 OS_SocketAcceptAbs (osal_id_t sock_id, osal_id_t *connsock_id, OS_SockAddr_t *Addr, OS_time_t abs_timeout)`
Waits for and accept the next incoming connection on the given socket.
- `int32 OS_SocketAccept (osal_id_t sock_id, osal_id_t *connsock_id, OS_SockAddr_t *Addr, int32 timeout)`

Waits for and accept the next incoming connection on the given socket.

- `int32 OS_SocketRecvFromAbs (osal_id_t sock_id, void *buffer, size_t buflen, OS_SockAddr_t *RemoteAddr, OS_time_t abs_timeout)`

Reads data from a message-oriented (datagram) socket.

- `int32 OS_SocketRecvFrom (osal_id_t sock_id, void *buffer, size_t buflen, OS_SockAddr_t *RemoteAddr, int32 timeout)`

Reads data from a message-oriented (datagram) socket.

- `int32 OS_SocketSendTo (osal_id_t sock_id, const void *buffer, size_t buflen, const OS_SockAddr_t *RemoteAddr)`

Sends data to a message-oriented (datagram) socket.

- `int32 OS_SocketGetIdByName (osal_id_t *sock_id, const char *sock_name)`

Gets an OSAL ID from a given name.

- `int32 OS_SocketGetInfo (osal_id_t sock_id, OS_socket_prop_t *sock_prop)`

Gets information about an OSAL Socket ID.

12.167.1 Detailed Description

Declarations and prototypes for sockets abstraction

12.167.2 Macro Definition Documentation

12.167.2.1 OS SOCKADDR_MAX_LEN #define OS SOCKADDR_MAX_LEN 28

Definition at line 46 of file osapi-sockets.h.

12.167.3 Enumeration Type Documentation

12.167.3.1 OS_SocketDomain_t enum OS_SocketDomain_t

Socket domain.

Enumerator

<code>OS_SocketDomain_INVALID</code>	Invalid.
<code>OS_SocketDomain_INET</code>	IPv4 address family, most commonly used)
<code>OS_SocketDomain_INET6</code>	IPv6 address family, depends on OS/network stack support.
<code>OS_SocketDomain_MAX</code>	Maximum.

Definition at line 61 of file osapi-sockets.h.

12.167.3.2 OS_SocketShutdownMode_t enum OS_SocketShutdownMode_t

Shutdown Mode.

Enumerator

<code>OS_SocketShutdownMode_NONE</code>	Reserved value, no effect.
<code>OS_SocketShutdownMode_SHUT_READ</code>	Disable future reading.
<code>OS_SocketShutdownMode_SHUT_WRITE</code>	Disable future writing.
<code>OS_SocketShutdownMode_SHUT_RDWR</code>	Disable future reading or writing.

Definition at line 80 of file osapi-sockets.h.

12.167.3.3 OS_SocketType_t enum OS_SocketType_t

Socket type.

Enumerator

OS_SocketType_INVALID	Invalid.
OS_SocketType_DATAGRAM	A connectionless, message-oriented socket.
OS_SocketType_STREAM	A stream-oriented socket with the concept of a connection.
OS_SocketType_MAX	Maximum.

Definition at line 70 of file osapi-sockets.h.

12.168 osal/src/os/inc/osapi-task.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct OS_task_prop_t

OSAL task properties.

Macros

- #define OS_MAX_TASK_PRIORITY 255
Upper limit for OSAL task priorities.
- #define OS_FP_ENABLED 1
Floating point enabled state for a task.
- #define OSAL_PRIORITY_C(X) ((osal_priority_t){X})
- #define OSAL_STACKPTR_C(X) ((osal_stackptr_t){X})
- #define OSAL_TASK_STACK_ALLOCATE OSAL_STACKPTR_C(NULL)

Typedefs

- typedef uint8_t osal_priority_t
Type to be used for OSAL task priorities.
- typedef void * osal_stackptr_t
Type to be used for OSAL stack pointer.
- typedef void osal_task
For task entry point.

Functions

- typedef osal_task ((*osal_task_entry))(void)
For task entry point.
- int32 OS_TaskCreate (osal_id_t *task_id, const char *task_name, osal_task_entry function_pointer, osal_stackptr_t stack_pointer, size_t stack_size, osal_priority_t priority, uint32 flags)

Creates a task and starts running it.

- `int32 OS_TaskDelete (osal_id_t task_id)`

Deletes the specified Task.

- `void OS_TaskExit (void)`

Exits the calling task.

- `int32 OS_TaskInstallDeleteHandler (osal_task_entry function_pointer)`

Installs a handler for when the task is deleted.

- `int32 OS_TaskDelay (uint32 millisecond)`

Delay a task for specified amount of milliseconds.

- `int32 OS_TaskSetPriority (osal_id_t task_id, osal_priority_t new_priority)`

Sets the given task to a new priority.

- `osal_id_t OS_TaskGetId (void)`

Obtain the task id of the calling task.

- `int32 OS_TaskGetIdByName (osal_id_t *task_id, const char *task_name)`

Find an existing task ID by name.

- `int32 OS_TaskGetInfo (osal_id_t task_id, OS_task_prop_t *task_prop)`

Fill a property object buffer with details regarding the resource.

- `int32 OS_TaskFindIdBySystemData (osal_id_t *task_id, const void *sysdata, size_t sysdata_size)`

Reverse-lookup the OSAL task ID from an operating system ID.

12.168.1 Detailed Description

Declarations and prototypes for task abstraction

12.168.2 Macro Definition Documentation

12.168.2.1 OS_FP_ENABLED `#define OS_FP_ENABLED 1`

Floating point enabled state for a task.

Definition at line 35 of file osapi-task.h.

12.168.2.2 OS_MAX_TASK_PRIORITY `#define OS_MAX_TASK_PRIORITY 255`

Upper limit for OSAL task priorities.

Definition at line 32 of file osapi-task.h.

12.168.2.3 OSAL_PRIORITY_C `#define OSAL_PRIORITY_C(`

`X) ((osal_priority_t) {X})`

Definition at line 46 of file osapi-task.h.

12.168.2.4 OSAL_STACKPTR_C `#define OSAL_STACKPTR_C(`

`X) ((osal_stackptr_t) {X})`

Definition at line 53 of file osapi-task.h.

12.168.2.5 OSAL_TASK_STACK_ALLOCATE `#define OSAL_TASK_STACK_ALLOCATE OSAL_STACKPTR_C(NULL)`

Definition at line 54 of file osapi-task.h.

12.168.3 Typedef Documentation

12.168.3.1 `osal_priority_t` `typedef uint8_t osal_priority_t`

Type to be used for OSAL task priorities.

OSAL priorities are in reverse order, and range from 0 (highest; will preempt all other tasks) to 255 (lowest; will not preempt any other task).

Definition at line 44 of file osapi-task.h.

12.168.3.2 `osal_stackptr_t` `typedef void* osal_stackptr_t`

Type to be used for OSAL stack pointer.

Definition at line 51 of file osapi-task.h.

12.168.3.3 `osal_task` `typedef void osal_task`

For task entry point.

Definition at line 68 of file osapi-task.h.

12.168.4 Function Documentation

12.168.4.1 `osal_task()` `typedef osal_task (` `(*) (void) osal_task_entry)`

For task entry point.

12.169 osal/src/os/inc/osapi-timebase.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct `OS_timebase_prop_t`

Time base properties.

TypeDefs

- `typedef uint32(* OS_TimerSync_t) (osal_id_t timer_id)`
Timer sync.

Functions

- `int32 OS_TimeBaseCreate (osal_id_t *timebase_id, const char *timebase_name, OS_TimerSync_t external_sync)`
Create an abstract Time Base resource.
- `int32 OS_TimeBaseSet (osal_id_t timebase_id, uint32 start_time, uint32 interval_time)`
Sets the tick period for simulated time base objects.
- `int32 OS_TimeBaseDelete (osal_id_t timebase_id)`
Deletes a time base object.

- `int32 OS_TimeBaseGetIdByName (osal_id_t *timebase_id, const char *timebase_name)`
Find the ID of an existing time base resource.
- `int32 OS_TimeBaseGetInfo (osal_id_t timebase_id, OS_timebase_prop_t *timebase_prop)`
Obtain information about a timebase resource.
- `int32 OS_TimeBaseGetFreeRun (osal_id_t timebase_id, uint32 *freerun_val)`
Read the value of the timebase free run counter.

12.169.1 Detailed Description

Declarations and prototypes for timebase abstraction

12.169.2 Typedef Documentation

12.169.2.1 `OS_TimerSync_t` `typedef uint32 (* OS_TimerSync_t) (osal_id_t timer_id)`

Timer sync.

Definition at line 34 of file osapi-timebase.h.

12.170 osal/src/os/inc/osapi-timer.h File Reference

```
#include "osconfig.h"
#include "common_types.h"
```

Data Structures

- struct `OS_timer_prop_t`
Timer properties.

TypeDefs

- `typedef void(* OS_TimerCallback_t) (osal_id_t timer_id)`
Timer callback.

Functions

- `int32 OS_TimerCreate (osal_id_t *timer_id, const char *timer_name, uint32 *clock_accuracy, OS_TimerCallback_t callback_ptr)`
Create a timer object.
- `int32 OS_TimerAdd (osal_id_t *timer_id, const char *timer_name, osal_id_t timebase_id, OS_ArgCallback_t callback_ptr, void *callback_arg)`
Add a timer object based on an existing TimeBase resource.
- `int32 OS_TimerSet (osal_id_t timer_id, uint32 start_time, uint32 interval_time)`
Configures a periodic or one shot timer.
- `int32 OS_TimerDelete (osal_id_t timer_id)`
Deletes a timer resource.
- `int32 OS_TimerGetIdByName (osal_id_t *timer_id, const char *timer_name)`
Locate an existing timer resource by name.
- `int32 OS_TimerGetInfo (osal_id_t timer_id, OS_timer_prop_t *timer_prop)`
Gets information about an existing timer.

12.170.1 Detailed Description

Declarations and prototypes for timer abstraction (app callbacks)

12.170.2 Typedef Documentation

12.170.2.1 OS_TimerCallback_t `typedef void(* OS_TimerCallback_t) (osal_id_t timer_id)`

Timer callback.

Definition at line 34 of file osapi-timer.h.

12.171 osal/src/os/inc/osapi-version.h File Reference

```
#include "common_types.h"
```

Macros

- `#define OS_BUILD_NUMBER 123`
: Development: Release name for current development cycle.
- `#define OS_BUILD_BASELINE "equuleus-rc1"`
: Development: Code name for the current build
- `#define OS_BUILD_DEV_CYCLE "equuleus-rc2"`
: Development: Release name for current development cycle.
- `#define OS_BUILD_CODENAME "Equuleus"`
: Development: Code name for the current build
- `#define OS_MAJOR_VERSION 5`
Major version number.
- `#define OS_MINOR_VERSION 0`
Minor version number.
- `#define OS_REVISION 0`
Revision version number. Value of 99 indicates a development version.
- `#define OS_LAST_OFFICIAL "v5.0.0"`
Last official release.
- `#define OS_MISSION_REV 0xFF`
Mission revision.
- `#define OS_STR_HELPER(x) #x`
Helper function to concatenate strings from integer.
- `#define OS_STR(x) OS_STR_HELPER(x)`
Helper function to concatenate strings from integer.
- `#define OS_VERSION OS_BUILD_BASELINE "+dev" OS_STR(OS_BUILD_NUMBER)`
Development Build Version Number.
- `#define OSAL_API_VERSION ((OS_MAJOR_VERSION * 10000) + (OS_MINOR_VERSION * 100) + OS_REVISION)`
Combines the revision components into a single value.
- `#define OS_CFG_MAX_VERSION_STR_LEN 256`
Max Version String length.

Functions

- `const char * OS_GetVersionString (void)`
- `const char * OS_GetVersionCodeName (void)`
- `void OS_GetVersionNumber (uint8 VersionNumbers[4])`
Obtain the OSAL numeric version number.
- `uint32 OS_GetBuildNumber (void)`
Obtain the OSAL library numeric build number.

12.171.1 Detailed Description

Provide version identifiers for Operating System Abstraction Layer

Note

OSAL follows the same version semantics as cFS, which in turn is based on the Semantic Versioning 2.0 Specification. For more information, see the documentation provided with cFE.

12.171.2 Macro Definition Documentation

12.171.2.1 OS_BUILD_BASELINE `#define OS_BUILD_BASELINE "equuleus-rc1"`
Definition at line 38 of file osapi-version.h.

12.171.2.2 OS_BUILD_CODENAME `#define OS_BUILD_CODENAME "Equuleus"`
: Development: Code name for the current build
Definition at line 40 of file osapi-version.h.

12.171.2.3 OS_BUILD_DEV_CYCLE `#define OS_BUILD_DEV_CYCLE "equuleus-rc2"`
Development: Release name for current development cycle.
Definition at line 39 of file osapi-version.h.

12.171.2.4 OS_BUILD_NUMBER `#define OS_BUILD_NUMBER 123`
Definition at line 37 of file osapi-version.h.

12.171.2.5 OS_CFG_MAX_VERSION_STR_LEN `#define OS_CFG_MAX_VERSION_STR_LEN 256`
Max Version String length.
Maximum length that an OSAL version string can be.
Definition at line 154 of file osapi-version.h.

12.171.2.6 OS_LAST_OFFICIAL `#define OS_LAST_OFFICIAL "v5.0.0"`
Last official release.
Definition at line 52 of file osapi-version.h.

12.171.2.7 OS_MAJOR_VERSION `#define OS_MAJOR_VERSION 5`
Major version number.
Definition at line 45 of file osapi-version.h.

12.171.2.8 OS_MINOR_VERSION `#define OS_MINOR_VERSION 0`
Minor version number.
Definition at line 46 of file osapi-version.h.

12.171.2.9 OS_MISSION_REV `#define OS_MISSION_REV 0xFF`
Mission revision.
Reserved for mission use to denote patches/customizations as needed. Values 1-254 are reserved for mission use to denote patches/customizations as needed. NOTE: Reserving 0 and 0xFF for cFS open-source development use (pending resolution of nasa/cFS#440)
Definition at line 61 of file osapi-version.h.

12.171.2.10 OS_REVISION `#define OS_REVISION 0`
Revision version number. Value of 99 indicates a development version.
Definition at line 47 of file osapi-version.h.

12.171.2.11 OS_STR `#define OS_STR(`
`x) OS_STR_HELPER(x)`
Helper function to concatenate strings from integer.
Definition at line 67 of file osapi-version.h.

12.171.2.12 OS_STR_HELPER `#define OS_STR_HELPER(`
`x) #x`
Helper function to concatenate strings from integer.
Definition at line 66 of file osapi-version.h.

12.171.2.13 OS_VERSION `#define OS_VERSION OS_BUILD_BASELINE "+dev" OS_STR(OS_BUILD_NUMBER)`
Development Build Version Number.
Baseline git tag + Number of commits since baseline.
Definition at line 72 of file osapi-version.h.

12.171.2.14 OSAL_API_VERSION `#define OSAL_API_VERSION ((OS_MAJOR_VERSION * 10000) + (OS_MINOR_VERSION * 100) + OS_REVISION)`
Combines the revision components into a single value.
Applications can check against this number
e.g. "#if OSAL_API_VERSION >= 40100" would check if some feature added in OSAL 4.1 is present.
Definition at line 79 of file osapi-version.h.

12.171.3 Function Documentation

12.171.3.1 OS_GetBuildNumber() `uint32 OS_GetBuildNumber (`
 `void)`

Obtain the OSAL library numeric build number.

The build number is a monotonically increasing number that (coarsely) reflects the number of commits/changes that have been merged since the epoch release. During development cycles this number should increase after each subsequent merge/modification.

Like other version information, this is a fixed number assigned at compile time.

Returns

The OSAL library build number

12.171.3.2 OS_GetVersionCodeName() `const char* OS_GetVersionCodeName (`
 `void)`

Gets the OSAL version code name

All NASA CFE/CFS components (including CFE framework, OSAL and PSP) that work together will share the same code name.

Returns

OSAL code name. This is a fixed value string and is never NULL.

12.171.3.3 OS_GetVersionNumber() `void OS_GetVersionNumber (`
 `uint8 VersionNumbers[4])`

Obtain the OSAL numeric version number.

This retrieves the numeric OSAL version identifier as an array of 4 uint8 values.

The array of numeric values is in order of precedence: [0] = Major Number [1] = Minor Number [2] = Revision Number [3] = Mission Revision

The "Mission Revision" (last output) also indicates whether this is an official release, a patched release, or a development version. 0 indicates an official release 1-254 local patch level (reserved for mission use) 255 indicates a development build

Parameters

<code>out</code>	<code>VersionNumbers</code>	A fixed-size array to be filled with the version numbers
------------------	-----------------------------	--

12.171.3.4 OS_GetVersionString() `const char* OS_GetVersionString (`
 `void)`

Gets the OSAL version/baseline ID as a string

This returns the content of the `OS_VERSION` macro defined above, and is specifically just the baseline and development build ID (if applicable), without any extra info.

Returns

Basic version identifier. This is a fixed value string and is never NULL.

12.172 osal/src/os/inc/osapi.h File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <stdarg.h>
```

```
#include "common_types.h"
#include "osapi-version.h"
#include "osconfig.h"
#include "osapi-binsem.h"
#include "osapi-clock.h"
#include "osapi-common.h"
#include "osapi-condvar.h"
#include "osapi-constants.h"
#include "osapi-countsem.h"
#include "osapi-dir.h"
#include "osapi-error.h"
#include "osapi-file.h"
#include "osapi-fs.h"
#include "osapi-heap.h"
#include "osapi-macros.h"
#include "osapi-idmap.h"
#include "osapi-module.h"
#include "osapi-mutex.h"
#include "osapi-network.h"
#include "osapi-printf.h"
#include "osapi-queue.h"
#include "osapi-select.h"
#include "osapi-shell.h"
#include "osapi-sockets.h"
#include "osapi-task.h"
#include "osapi-timebase.h"
#include "osapi-timer.h"
#include "osapi-bsp.h"
```

12.172.1 Detailed Description

Purpose: Contains functions prototype definitions and variables declarations for the OS Abstraction Layer, Core OS module

12.173 psp/fsw/inc/cfe_psp.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_cache_api.h"
#include "cfe_psp_cds_api.h"
#include "cfe_psp_eepromaccess_api.h"
#include "cfe_psp_error.h"
#include "cfe_psp_exception_api.h"
#include "cfe_psp_id_api.h"
#include "cfe_psp_memaccess_api.h"
#include "cfe_psp_memrange_api.h"
#include "cfe_psp_port_api.h"
#include "cfe_psp_ssr_api.h"
#include "cfe_psp_timetick_api.h"
#include "cfe_psp_version_api.h"
#include "cfe_psp_watchdog_api.h"
```

Functions

- void **CFE_PSP_Main** (void)
PSP Entry Point to initialize the OSAL and start up the cFE.

12.173.1 Function Documentation

12.173.1.1 CFE_PSP_Main() void CFE_PSP_Main (void)

PSP Entry Point to initialize the OSAL and start up the cFE.

This is the entry point that the real-time OS calls to start our software. This routine will do any BSP/OS-specific setup, then call the entry point of the flight software (i.e. the cFE main entry point).

Note

The flight software (i.e. cFE) should not call this routine.

12.174 psp/fsw/inc/cfe_psp_cache_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_error.h"
```

Functions

- void **CFE_PSP_FlushCaches** (**uint32** type, void *address, **uint32** size)
This is a BSP-specific cache flush routine.

12.174.1 Function Documentation

12.174.1.1 CFE_PSP_FlushCaches() void CFE_PSP_FlushCaches (

```
    uint32 type,
    void * address,
    uint32 size )
```

This is a BSP-specific cache flush routine.

Provides a common interface to flush the processor caches. This routine is in the BSP because it is sometimes implemented in hardware and sometimes taken care of by the RTOS.

Parameters

in	type	
in	address	
in	size	

12.175 psp/fsw/inc/cfe_psp_cds_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
```

```
#include "cfe_psp_error.h"
```

Functions

- `int32 CFE_PSP_GetCDSSize (uint32 *SizeOfCDS)`
Fetches the size of the OS Critical Data Store area.
- `int32 CFE_PSP_WriteToCDS (const void *PtrToDataToWrite, uint32 CDSOffset, uint32 NumBytes)`
Writes to the CDS Block.
- `int32 CFE_PSP_ReadFromCDS (void *PtrToDataFromRead, uint32 CDSOffset, uint32 NumBytes)`
Reads from the CDS Block.

12.175.1 Function Documentation

12.175.1.1 CFE_PSP_GetCDSSize() `int32 CFE_PSP_GetCDSSize (` `uint32 * SizeOfCDS)`

Fetches the size of the OS Critical Data Store area.

Parameters

<code>out</code>	<code>SizeOfCDS</code>	Pointer to the variable that will store the size of the CDS
------------------	------------------------	---

Returns

0 (OS_SUCCESS or CFE_PSP_SUCCESS) on success, -1 (OS_ERROR or CFE_PSP_ERROR) on error

12.175.1.2 CFE_PSP_ReadFromCDS() `int32 CFE_PSP_ReadFromCDS (` `void * PtrToDataFromRead,` `uint32 CDSOffset,` `uint32 NumBytes)`

Reads from the CDS Block.

Parameters

<code>out</code>	<code>PtrToDataFromRead</code>	Pointer to the location that will store the data to be read from the CDS
<code>in</code>	<code>CDSOffset</code>	CDS offset
<code>in</code>	<code>NumBytes</code>	Number of bytes to read

Returns

0 (OS_SUCCESS or CFE_PSP_SUCCESS) on success, -1 (OS_ERROR or CFE_PSP_ERROR) on error

12.175.1.3 CFE_PSP_WriteToCDS() `int32 CFE_PSP_WriteToCDS (` `const void * PtrToDataToWrite,` `uint32 CDSOffset,` `uint32 NumBytes)`

Writes to the CDS Block.

Parameters

in	<i>PtrToDataToWrite</i>	Pointer to the data that will be written to the CDS
in	<i>CDSOffset</i>	CDS offset
in	<i>NumBytes</i>	Number of bytes to write

Returns

0 (OS_SUCCESS or CFE_PSP_SUCCESS) on success, -1 (OS_ERROR or CFE_PSP_ERROR) on error

12.176 psp/fsw/inc/cfe_psp_eepromaccess_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_error.h"
```

Functions

- **int32 CFE_PSP_EepromWrite8 (cpuaddr MemoryAddress, uint8 ByteValue)**
Write one byte (ByteValue) to EEPROM address MemoryAddress.
- **int32 CFE_PSP_EepromWrite16 (cpuaddr MemoryAddress, uint16 uint16Value)**
Write two bytes (uint16Value) to EEPROM address MemoryAddress.
- **int32 CFE_PSP_EepromWrite32 (cpuaddr MemoryAddress, uint32 uint32Value)**
Write four bytes (uint32Value) to EEPROM address MemoryAddress.
- **int32 CFE_PSP_EepromWriteEnable (uint32 Bank)**
Enable the EEPROM for write operation.
- **int32 CFE_PSP_EepromWriteDisable (uint32 Bank)**
Disable the EEPROM from write operation.
- **int32 CFE_PSP_EepromPowerUp (uint32 Bank)**
Power up the EEPROM.
- **int32 CFE_PSP_EepromPowerDown (uint32 Bank)**
Power down the EEPROM.

12.176.1 Function Documentation

12.176.1.1 CFE_PSP_EepromPowerDown() `int32 CFE_PSP_EepromPowerDown (` `uint32 Bank)`

Power down the EEPROM.

Parameters

in	<i>Bank</i>	The bank of EEPROM to power down
----	-------------	----------------------------------

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.176.1.2 CFE_PSP_EepromPowerUp() `int32 CFE_PSP_EepromPowerUp (uint32 Bank)`

Power up the EEPROM.

Parameters

in	<i>Bank</i>	The bank of EEPROM to power up
----	-------------	--------------------------------

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.176.1.3 CFE_PSP_EepromWrite16() `int32 CFE_PSP_EepromWrite16 (cpuaddr MemoryAddress, uint16 uint16Value)`

Write two bytes (*uint16Value*) to EEPROM address *MemoryAddress*.

Parameters

out	<i>MemoryAddress</i>	Memory address to write to
in	<i>uint16Value</i>	Value to write to memory

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_TIMEOUT</i>	write operation did not go through after a specific timeout.
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.176.1.4 CFE_PSP_EepromWrite32() `int32 CFE_PSP_EepromWrite32 (cpuaddr MemoryAddress, uint32 uint32Value)`

Write four bytes (*uint32Value*) to EEPROM address *MemoryAddress*.

Parameters

out	<i>MemoryAddress</i>	Memory address to write to
in	<i>uint32Value</i>	Value to write to memory

Return values

<i>CFE_PSP_SUCCESS</i>	on success
------------------------	------------

Return values

<i>CFE_PSP_ERROR_TIMEOUT</i>	write operation did not go through after a specific timeout.
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.176.1.5 CFE_PSP_EepromWrite8() `int32 CFE_PSP_EepromWrite8 (`
`cpuaddr MemoryAddress,`
`uint8 ByteValue)`

Write one byte (ByteValue) to EEPROM address MemoryAddress.

Parameters

<i>out</i>	<i>MemoryAddress</i>	Memory address to write to
<i>in</i>	<i>ByteValue</i>	Value to write to memory

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_TIMEOUT</i>	write operation did not go through after a specific timeout.
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.176.1.6 CFE_PSP_EepromWriteDisable() `int32 CFE_PSP_EepromWriteDisable (`
`uint32 Bank)`

Disable the EEPROM from write operation.

Parameters

<i>in</i>	<i>Bank</i>	The bank of EEPROM to disable
-----------	-------------	-------------------------------

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.176.1.7 CFE_PSP_EepromWriteEnable() `int32 CFE_PSP_EepromWriteEnable (`
`uint32 Bank)`

Enable the EEPROM for write operation.

Parameters

<i>in</i>	<i>Bank</i>	The bank of EEPROM to enable
-----------	-------------	------------------------------

Return values

<code>CFE_PSP_SUCCESS</code>	on success
<code>CFE_PSP_ERROR_NOT_IMPLEMENTED</code>	if not implemented

12.177 psp/fsw/inc/cfe_psp_error.h File Reference

cFE PSP Error header

```
#include "common_types.h"
```

Macros

- `#define CFE_PSP_STATUS_C(X) ((CFE_PSP_Status_t)(X))`
PSP Status macro for literal.
- `#define CFE_PSP_STATUS_STRING_LENGTH 12`
PSP Status converted to string length limit.
- `#define CFE_PSP_SUCCESS (CFE_PSP_STATUS_C(0))`
- `#define CFE_PSP_ERROR (CFE_PSP_STATUS_C(-1))`
- `#define CFE_PSP_INVALID_POINTER (CFE_PSP_STATUS_C(-2))`
- `#define CFE_PSP_ERROR_ADDRESS_MISALIGNED (CFE_PSP_STATUS_C(-3))`
- `#define CFE_PSP_ERROR_TIMEOUT (CFE_PSP_STATUS_C(-4))`
- `#define CFE_PSP_INVALID_INT_NUM (CFE_PSP_STATUS_C(-5))`
- `#define CFE_PSP_INVALID_MEM_ADDR (CFE_PSP_STATUS_C(-21))`
- `#define CFE_PSP_INVALID_MEM_TYPE (CFE_PSP_STATUS_C(-22))`
- `#define CFE_PSP_INVALID_MEM_RANGE (CFE_PSP_STATUS_C(-23))`
- `#define CFE_PSP_INVALID_MEM_WORDSIZE (CFE_PSP_STATUS_C(-24))`
- `#define CFE_PSP_INVALID_MEM_SIZE (CFE_PSP_STATUS_C(-25))`
- `#define CFE_PSP_INVALID_MEM_ATTR (CFE_PSP_STATUS_C(-26))`
- `#define CFE_PSP_ERROR_NOT_IMPLEMENTED (CFE_PSP_STATUS_C(-27))`
- `#define CFE_PSP_INVALID_MODULE_NAME (CFE_PSP_STATUS_C(-28))`
- `#define CFE_PSP_INVALID_MODULE_ID (CFE_PSP_STATUS_C(-29))`
- `#define CFE_PSP_NO_EXCEPTION_DATA (CFE_PSP_STATUS_C(-30))`

Typedefs

- `typedef int32 CFE_PSP_Status_t`
PSP Status type for readability and potentially type safety.
- `typedef char CFE_PSP_StatusString_t[CFE_PSP_STATUS_STRING_LENGTH]`
For the `CFE_PSP_StatusToString()` function, to ensure everyone is making an array of the same length.

Functions

- `char * CFE_PSP_StatusToString (CFE_PSP_Status_t status, CFE_PSP_StatusString_t *status_string)`
Convert status to a string.

12.177.1 Detailed Description

cFE PSP Error header

12.177.2 Macro Definition Documentation

12.177.2.1 CFE_PSP_ERROR #define CFE_PSP_ERROR (CFE_PSP_STATUS_C(-1))

Definition at line 67 of file cfe_psp_error.h.

12.177.2.2 CFE_PSP_ERROR_ADDRESS_MISALIGNED #define CFE_PSP_ERROR_ADDRESS_MISALIGNED (CFE_PSP_STATUS_C(-3))

Definition at line 69 of file cfe_psp_error.h.

12.177.2.3 CFE_PSP_ERROR_NOT_IMPLEMENTED #define CFE_PSP_ERROR_NOT_IMPLEMENTED (CFE_PSP_STATUS_C(-27))

Definition at line 78 of file cfe_psp_error.h.

12.177.2.4 CFE_PSP_ERROR_TIMEOUT #define CFE_PSP_ERROR_TIMEOUT (CFE_PSP_STATUS_C(-4))

Definition at line 70 of file cfe_psp_error.h.

12.177.2.5 CFE_PSP_INVALID_INT_NUM #define CFE_PSP_INVALID_INT_NUM (CFE_PSP_STATUS_C(-5))

Definition at line 71 of file cfe_psp_error.h.

12.177.2.6 CFE_PSP_INVALID_MEM_ADDR #define CFE_PSP_INVALID_MEM_ADDR (CFE_PSP_STATUS_C(-21))

Definition at line 72 of file cfe_psp_error.h.

12.177.2.7 CFE_PSP_INVALID_MEM_ATTR #define CFE_PSP_INVALID_MEM_ATTR (CFE_PSP_STATUS_C(-26))

Definition at line 77 of file cfe_psp_error.h.

12.177.2.8 CFE_PSP_INVALID_MEM_RANGE #define CFE_PSP_INVALID_MEM_RANGE (CFE_PSP_STATUS_C(-23))

Definition at line 74 of file cfe_psp_error.h.

12.177.2.9 CFE_PSP_INVALID_MEM_SIZE #define CFE_PSP_INVALID_MEM_SIZE (CFE_PSP_STATUS_C(-25))

Definition at line 76 of file cfe_psp_error.h.

12.177.2.10 CFE_PSP_INVALID_MEM_TYPE #define CFE_PSP_INVALID_MEM_TYPE (CFE_PSP_STATUS_C(-22))

Definition at line 73 of file cfe_psp_error.h.

12.177.2.11 CFE_PSP_INVALID_MEM_WORDSIZE #define CFE_PSP_INVALID_MEM_WORDSIZE (CFE_PSP_STATUS_C(-24))

Definition at line 75 of file cfe_psp_error.h.

12.177.2.12 CFE_PSP_INVALID_MODULE_ID #define CFE_PSP_INVALID_MODULE_ID (CFE_PSP_STATUS_C(-29))

Definition at line 80 of file cfe_psp_error.h.

12.177.2.13 CFE_PSP_INVALID_MODULE_NAME #define CFE_PSP_INVALID_MODULE_NAME (CFE_PSP_STATUS_C (-28))
Definition at line 79 of file cfe_psp_error.h.

12.177.2.14 CFE_PSP_INVALID_POINTER #define CFE_PSP_INVALID_POINTER (CFE_PSP_STATUS_C (-2))
Definition at line 68 of file cfe_psp_error.h.

12.177.2.15 CFE_PSP_NO_EXCEPTION_DATA #define CFE_PSP_NO_EXCEPTION_DATA (CFE_PSP_STATUS_C (-30))
Definition at line 81 of file cfe_psp_error.h.

12.177.2.16 CFE_PSP_STATUS_C #define CFE_PSP_STATUS_C (

X) ((CFE_PSP_Status_t) (X))

PSP Status macro for literal.

Definition at line 37 of file cfe_psp_error.h.

12.177.2.17 CFE_PSP_STATUS_STRING_LENGTH #define CFE_PSP_STATUS_STRING_LENGTH 12

PSP Status converted to string length limit.

Used for sizing CFE_PSP_StatusString_t intended for use in printing CFE_PSP_Status_t values Sized for Id (LONG←_MIN) including NULL

Definition at line 45 of file cfe_psp_error.h.

12.177.2.18 CFE_PSP_SUCCESS #define CFE_PSP_SUCCESS (CFE_PSP_STATUS_C (0))

Definition at line 66 of file cfe_psp_error.h.

12.177.3 Typedef Documentation

12.177.3.1 CFE_PSP_Status_t typedef int32 CFE_PSP_Status_t

PSP Status type for readability and potentially type safety.

Definition at line 32 of file cfe_psp_error.h.

12.177.3.2 CFE_PSP_StatusString_t typedef char CFE_PSP_StatusString_t[CFE_PSP_STATUS_STRING_LENGTH]

For the CFE_PSP_StatusToString() function, to ensure everyone is making an array of the same length.

Definition at line 51 of file cfe_psp_error.h.

12.177.4 Function Documentation

12.177.4.1 CFE_PSP_StatusToString() char* CFE_PSP_StatusToString (

CFE_PSP_Status_t status,

CFE_PSP_StatusString_t * status_string)

Convert status to a string.

Parameters

in	status	Status value to convert
----	--------	-------------------------

Parameters

out	<i>status_string</i>	Buffer to store status converted to string
-----	----------------------	--

Returns

Passed in string pointer

12.178 psp/fsw/inc/cfe_psp_exception_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_error.h"
```

Functions

- void [CFE_PSP_AttachExceptions](#) (void)
Sets up the exception environment for the chosen platform.
- void [CFE_PSP_SetDefaultExceptionEnvironment](#) (void)
Defines the CPU and FPU exceptions that are enabled for each cFE Task/App.
- uint32 [CFE_PSP_Exception_GetCount](#) (void)
Returns the unread exception count.
- int32 [CFE_PSP_Exception_GetSummary](#) (uint32 *ContextLogId, [osal_id_t](#) *TaskId, char *ReasonBuf, uint32 ReasonSize)
Retrieves a summary of an exception log entry.
- int32 [CFE_PSP_Exception_CopyContext](#) (uint32 ContextLogId, void *ContextBuf, uint32 ContextSize)
Retrieves exception log entry context information.

12.178.1 Function Documentation

12.178.1.1 CFE_PSP_AttachExceptions()

```
void CFE_PSP_AttachExceptions (
    void )
```

Sets up the exception environment for the chosen platform.

On a board, this can be configured to look at a debug flag or switch in order to keep the standard OS exception handlers, rather than restarting the system.

12.178.1.2 CFE_PSP_Exception_CopyContext()

```
int32 CFE_PSP_Exception_CopyContext (
    uint32 ContextLogId,
    void * ContextBuf,
    uint32 ContextSize )
```

Retrieves exception log entry context information.

Parameters

in	<i>ContextLogId</i>	ID of the exception log entry to copy
out	<i>ContextBuf</i>	Pointer to the buffer where the context information is to be copied to
in	<i>ContextSize</i>	Maximum size of context information data to copy

Returns

Size of the copied data

Return values

<code>CFE_PSP_NO_EXCEPTION_DATA</code>	if data has expired from the memory log
--	---

12.178.1.3 CFE_PSP_Exception_GetCount() `uint32 CFE_PSP_Exception_GetCount (void)`

Returns the unread exception count.

Returns

The unread exception count

12.178.1.4 CFE_PSP_Exception_GetSummary() `int32 CFE_PSP_Exception_GetSummary (uint32 * ContextLogId, osal_id_t * TaskId, char * ReasonBuf, uint32 ReasonSize)`

Retrieves a summary of an exception log entry.

Note

This function returns `CFE_PSP_SUCCESS` to indicate that an entry was popped from the queue. This doesn't necessarily mean that the output fields have valid data, but it does mean they are initialized to something.

Parameters

<code>in</code>	<code>ContextLogId</code>	ID of the exception log entry to get a summary for
<code>in,out</code>	<code>TaskId</code>	Pointer to the TaskID buffer
<code>out</code>	<code>ReasonBuf</code>	Pointer to the buffer that will store the exception summary string
<code>in</code>	<code>ReasonSize</code>	Maximum size of the summary string to retrieve

Return values

<code>CFE_PSP_SUCCESS</code>	on success (see note above)
<code>CFE_PSP_NO_EXCEPTION_DATA</code>	if no context available for reading

12.178.1.5 CFE_PSP_SetDefaultExceptionEnvironment() `void CFE_PSP_SetDefaultExceptionEnvironment (void)`

Defines the CPU and FPU exceptions that are enabled for each cFE Task/App.

This function sets a default exception environment that can be used

Note

The exception environment is local to each task. Therefore, this must be Called for each task that wants to do floating point and catch exceptions.

12.179 psp/fsw/inc/cfe_psp_id_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_error.h"
```

Functions

- `uint32 CFE_PSP_GetProcessorId (void)`
Returns the CPU ID as defined by the specific board and BSP.
- `uint32 CFE_PSP_GetSpacecraftId (void)`
Returns the Spacecraft ID (if any)
- `const char * CFE_PSP_GetProcessorName (void)`
Returns the processor name.

12.179.1 Function Documentation

12.179.1.1 CFE_PSP_GetProcessorId() `uint32 CFE_PSP_GetProcessorId (` `void)`

Returns the CPU ID as defined by the specific board and BSP.

Returns

The processor ID

12.179.1.2 CFE_PSP_GetProcessorName() `const char* CFE_PSP_GetProcessorName (` `void)`

Returns the processor name.

Returns

The processor name

12.179.1.3 CFE_PSP_GetSpacecraftId() `uint32 CFE_PSP_GetSpacecraftId (` `void)`

Returns the Spacecraft ID (if any)

Returns

The Spacecraft ID

12.180 psp/fsw/inc/cfe_psp_memaccess_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_error.h"
```

Functions

- `int32 CFE_PSP_MemRead8 (cpuaddr MemoryAddress, uint8 *ByteValue)`
Read one byte of memory.
- `int32 CFE_PSP_MemWrite8 (cpuaddr MemoryAddress, uint8 ByteValue)`
Write one byte of memory.
- `int32 CFE_PSP_MemRead16 (cpuaddr MemoryAddress, uint16 *uint16Value)`
Read 2 bytes of memory.
- `int32 CFE_PSP_MemWrite16 (cpuaddr MemoryAddress, uint16 uint16Value)`
Write 2 bytes of memory.
- `int32 CFE_PSP_MemRead32 (cpuaddr MemoryAddress, uint32 *uint32Value)`
Read 4 bytes of memory.
- `int32 CFE_PSP_MemWrite32 (cpuaddr MemoryAddress, uint32 uint32Value)`
Write 4 bytes of memory.
- `int32 CFE_PSP_MemCpy (void *dest, const void *src, uint32 n)`
Copy 'n' bytes from 'src' to 'dest'.
- `int32 CFE_PSP_MemSet (void *dest, uint8 value, uint32 n)`
Copy 'n' bytes of value 'value' to 'dest'.

12.180.1 Function Documentation

12.180.1.1 CFE_PSP_MemCpy() `int32 CFE_PSP_MemCpy (`
`void * dest,`
`const void * src,`
`uint32 n)`

Copy 'n' bytes from 'src' to 'dest'.

Copies 'n' bytes from memory address pointed to by 'src' to memory address pointed to by 'dest'.

Note

For now we are using the standard C library call 'memcpy' but if we find we need to make it more efficient then we'll implement it in assembly.

Parameters

<code>out</code>	<code>dest</code>	Pointer to the destination address to copy to
<code>in</code>	<code>src</code>	Pointer to the address to copy from
<code>in</code>	<code>n</code>	Number of bytes to copy

Returns

Always returns CFE_PSP_SUCCESS

12.180.1.2 CFE_PSP_MemRead16() `int32 CFE_PSP_MemRead16 (`
`cpuaddr MemoryAddress,`
`uint16 * uint16Value)`

Read 2 bytes of memory.

Parameters

in	<i>MemoryAddress</i>	Address to be read
out	<i>uint16Value</i>	The address content will be copied to the location pointed to by this argument

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.180.1.3 CFE_PSP_MemRead32() *int32 CFE_PSP_MemRead32 (*

cpuaddr MemoryAddress,
*uint32 * uint32Value)*

Read 4 bytes of memory.

Parameters

in	<i>MemoryAddress</i>	Address to be read
out	<i>uint32Value</i>	The address content will be copied to the location pointed to by this argument

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.180.1.4 CFE_PSP_MemRead8() *int32 CFE_PSP_MemRead8 (*

cpuaddr MemoryAddress,
*uint8 * ByteValue)*

Read one byte of memory.

Parameters

in	<i>MemoryAddress</i>	Address to be read
out	<i>ByteValue</i>	The address content will be copied to the location pointed to by this argument

Returns

Always returns CFE_PSP_SUCCESS (if implemented)

Return values

<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented
--------------------------------------	--------------------

```
12.180.1.5 CFE_PSP_MemSet() int32 CFE_PSP_MemSet (
    void * dest,
    uint8 value,
    uint32 n )
```

Copy 'n' bytes of value 'value' to 'dest'.

Copies 'n' number of bytes of value 'value' to memory address pointed to by 'dest'.

Note

For now we are using the standard C library call 'memset' but if we find we need to make it more efficient then we'll implement it in assembly.

Parameters

out	<i>dest</i>	Pointer to the destination address to copy to
in	<i>value</i>	Value to set
in	<i>n</i>	Number of bytes to copy

Returns

Always returns CFE_PSP_SUCCESS

```
12.180.1.6 CFE_PSP_MemWrite16() int32 CFE_PSP_MemWrite16 (
    cpuaddr MemoryAddress,
    uint16 uint16Value )
```

Write 2 bytes of memory.

Parameters

out	<i>MemoryAddress</i>	Address to be written to
in	<i>uint16Value</i>	The content pointed to by this argument will be copied to the address

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

```
12.180.1.7 CFE_PSP_MemWrite32() int32 CFE_PSP_MemWrite32 (
    cpuaddr MemoryAddress,
    uint32 uint32Value )
```

Write 4 bytes of memory.

Parameters

out	<i>MemoryAddress</i>	Address to be written to
-----	----------------------	--------------------------

Parameters

in	<i>uint32Value</i>	The content pointed to by this argument will be copied to the address
----	--------------------	---

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.180.1.8 CFE_PSP_MemWrite8() `int32 CFE_PSP_MemWrite8 (`
 `cpuaddr MemoryAddress,`
 `uint8 ByteValue)`

Write one byte of memory.

Parameters

out	<i>MemoryAddress</i>	Address to be written to
in	<i>ByteValue</i>	The content pointed to by this argument will be copied to the address

Returns

Always returns CFE_PSP_SUCCESS (if implemented)

Return values

<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented
--------------------------------------	--------------------

12.181 psp/fsw/inc/cfe_psp_memrange_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_error.h"
```

Macros

- #define CFE_PSP_MEM_RAM 1
- #define CFE_PSP_MEM_EEPROM 2
- #define CFE_PSP_MEM_ANY 3
- #define CFE_PSP_MEM_INVALID 4
- #define CFE_PSP_MEM_ATTR_WRITE 0x01
- #define CFE_PSP_MEM_ATTR_READ 0x02
- #define CFE_PSP_MEM_ATTR_READWRITE 0x03
- #define CFE_PSP_MEM_SIZE_BYTE 0x01
- #define CFE_PSP_MEM_SIZE_WORD 0x02
- #define CFE_PSP_MEM_SIZE_DWORD 0x04

Functions

- `int32 CFE_PSP_GetResetArea (cpuaddr *PtrToResetArea, uint32 *SizeOfResetArea)`
Returns the location and size of the ES Reset information area.
- `int32 CFE_PSP.GetUserReservedArea (cpuaddr *PtrToUserArea, uint32 *SizeOfUserArea)`
Returns the location and size of the memory used for the cFE user-reserved area.
- `int32 CFE_PSP_GetVolatileDiskMem (cpuaddr *PtrToVolDisk, uint32 *SizeOfVolDisk)`
Returns the location and size of the memory used for the cFE volatile disk.
- `int32 CFE_PSP_GetKernelTextSegmentInfo (cpuaddr *PtrToKernelSegment, uint32 *SizeOfKernelSegment)`
Returns the location and size of the kernel memory.
- `int32 CFE_PSP_GetCFETextSegmentInfo (cpuaddr *PtrToCFESEGMENT, uint32 *SizeOfCFESEGMENT)`
Returns the location and size of the kernel memory.
- `int32 CFE_PSP_MemValidateRange (cpuaddr Address, size_t Size, uint32 MemoryType)`
Validates the memory range and type using the global CFE_PSP_MemoryTable.
- `uint32 CFE_PSP_MemRanges (void)`
Returns the number of memory ranges in the CFE_PSP_MemoryTable.
- `int32 CFE_PSP_MemRangeSet (uint32 RangeNum, uint32 MemoryType, cpuaddr StartAddr, size_t Size, size_t WordSize, uint32 Attributes)`
Populates one of the records in the CFE_PSP_MemoryTable.
- `int32 CFE_PSP_MemRangeGet (uint32 RangeNum, uint32 *MemoryType, cpuaddr *StartAddr, size_t *Size, size_t *WordSize, uint32 *Attributes)`
Retrieves one of the records in the CFE_PSP_MemoryTable.

12.181.1 Macro Definition Documentation

12.181.1.1 CFE_PSP_MEM_ANY #define CFE_PSP_MEM_ANY 3
Definition at line 53 of file cfe_psp_memrange_api.h.

12.181.1.2 CFE_PSP_MEM_ATTR_READ #define CFE_PSP_MEM_ATTR_READ 0x02
Definition at line 60 of file cfe_psp_memrange_api.h.

12.181.1.3 CFE_PSP_MEM_ATTR_READWRITE #define CFE_PSP_MEM_ATTR_READWRITE 0x03
Definition at line 61 of file cfe_psp_memrange_api.h.

12.181.1.4 CFE_PSP_MEM_ATTR_WRITE #define CFE_PSP_MEM_ATTR_WRITE 0x01
Definition at line 59 of file cfe_psp_memrange_api.h.

12.181.1.5 CFE_PSP_MEM_EEPROM #define CFE_PSP_MEM_EEPROM 2
Definition at line 52 of file cfe_psp_memrange_api.h.

12.181.1.6 CFE_PSP_MEM_INVALID #define CFE_PSP_MEM_INVALID 4
Definition at line 54 of file cfe_psp_memrange_api.h.

12.181.1.7 CFE_PSP_MEM_RAM #define CFE_PSP_MEM_RAM 1
Definition at line 51 of file cfe_psp_memrange_api.h.

12.181.1.8 CFE_PSP_MEM_SIZE_BYTE #define CFE_PSP_MEM_SIZE_BYTE 0x01
Definition at line 66 of file cfe_psp_memrange_api.h.

12.181.1.9 CFE_PSP_MEM_SIZE_DWORD #define CFE_PSP_MEM_SIZE_DWORD 0x04
Definition at line 68 of file cfe_psp_memrange_api.h.

12.181.1.10 CFE_PSP_MEM_SIZE_WORD #define CFE_PSP_MEM_SIZE_WORD 0x02
Definition at line 67 of file cfe_psp_memrange_api.h.

12.181.2 Function Documentation

12.181.2.1 CFE_PSP_GetCFETextSegmentInfo() int32 CFE_PSP_GetCFETextSegmentInfo (cpuaddr * PtrToCFEsegment,
 uint32 * SizeOfCFEsegment)

Returns the location and size of the kernel memory.

This function returns the start and end address of the CFE text segment. It may not be implemented on all architectures.

Parameters

out	<i>PtrToCFEsegment</i>	Pointer to the variable that will store the location of the cFE text segment
out	<i>SizeOfCFEsegment</i>	Pointer to the variable that will store the size of the cFE text segment

Returns

0 (OS_SUCCESS or CFE_PSP_SUCCESS) on success, -1 (OS_ERROR or CFE_PSP_ERROR) on error

12.181.2.2 CFE_PSP_GetKernelTextSegmentInfo() int32 CFE_PSP_GetKernelTextSegmentInfo (cpuaddr * PtrToKernelSegment,
 uint32 * SizeOfKernelSegment)

Returns the location and size of the kernel memory.

This function returns the start and end address of the kernel text segment. It may not be implemented on all architectures.

Parameters

out	<i>PtrToKernelSegment</i>	Pointer to the variable that will store the location of the kernel text segment
out	<i>SizeOfKernelSegment</i>	Pointer to the variable that will store the size of the kernel text segment

Returns

0 (OS_SUCCESS or CFE_PSP_SUCCESS) on success, -1 (OS_ERROR or CFE_PSP_ERROR) on error or CFE_PSP_ERROR_NOT_IMPLEMENTED if not implemented

12.181.2.3 CFE_PSP_GetResetArea() `int32 CFE_PSP_GetResetArea (`
 `cpuaddr * PtrToResetArea,`
 `uint32 * SizeOfResetArea)`

Returns the location and size of the ES Reset information area.

This area is preserved during a processor reset and is used to store the ER Log, System Log and reset-related variables

Parameters

<code>out</code>	<code>PtrToResetArea</code>	Pointer to the variable that will store the location of the reset area
<code>out</code>	<code>SizeOfResetArea</code>	Pointer to the variable that will store the reset area size

Returns

0 (OS_SUCCESS or CFE_PSP_SUCCESS) on success, -1 (OS_ERROR or CFE_PSP_ERROR) on error

12.181.2.4 CFE_PSP.GetUserReservedArea() `int32 CFE_PSP.GetUserReservedArea (`
 `cpuaddr * PtrToUserArea,`
 `uint32 * SizeOfUserArea)`

Returns the location and size of the memory used for the cFE user-reserved area.

Parameters

<code>out</code>	<code>PtrToUserArea</code>	Pointer to the variable that will store the location of the user-reserved area
<code>out</code>	<code>SizeOfUserArea</code>	Pointer to the variable that will store the size of the user-reserved area

Returns

0 (OS_SUCCESS or CFE_PSP_SUCCESS) on success, -1 (OS_ERROR or CFE_PSP_ERROR) on error

12.181.2.5 CFE_PSP_GetVolatileDiskMem() `int32 CFE_PSP_GetVolatileDiskMem (`
 `cpuaddr * PtrToVolDisk,`
 `uint32 * SizeOfVolDisk)`

Returns the location and size of the memory used for the cFE volatile disk.

Parameters

<code>out</code>	<code>PtrToVolDisk</code>	Pointer to the variable that will store the location of the cFE volatile disk
<code>out</code>	<code>SizeOfVolDisk</code>	Pointer to the variable that will store the size of the cFE volatile disk

Returns

0 (OS_SUCCESS or CFE_PSP_SUCCESS) on success, -1 (OS_ERROR or CFE_PSP_ERROR) on error

```
12.181.2.6 CFE_PSP_MemRangeGet() int32 CFE_PSP_MemRangeGet (
    uint32 RangeNum,
    uint32 * MemoryType,
    cpuaddr * StartAddr,
    size_t * Size,
    size_t * WordSize,
    uint32 * Attributes )
```

Retrieves one of the records in the CFE_PSP_MemoryTable.

Note

Because the table is fixed size, the entries are accessed by using the integer index.

Parameters

in	<i>RangeNum</i>	A 32-bit integer (starting with 0) specifying the MemoryTable entry.
out	<i>MemoryType</i>	A pointer to the 32-bit integer where the Memory Type is stored. Any defined CFE_PSP_MEM_* enumeration can be specified
out	<i>StartAddr</i>	Pointer to the 32-bit integer where the 32-bit starting address of the memory range is stored.
out	<i>Size</i>	A pointer to the 32-bit integer where the 32-bit size of the memory range is stored.
out	<i>WordSize</i>	A pointer to the 32-bit integer where the minimum addressable size of the range: (CFE_PSP_MEM_SIZE_BYTE, CFE_PSP_MEM_SIZE_WORD, CFE_PSP_MEM_SIZE_DWORD)
out	<i>Attributes</i>	The attributes of the Memory Range: (CFE_PSP_MEM_ATTR_WRITE, CFE_PSP_MEM_ATTR_READ, CFE_PSP_MEM_ATTR_READWRITE)

Return values

<i>CFE_PSP_SUCCESS</i>	Memory range returned successfully.
<i>CFE_PSP_INVALID_POINTER</i>	Parameter error
<i>CFE_PSP_INVALID_MEM_RANGE</i>	The index into the table is invalid

12.181.2.7 CFE_PSP_MemRanges() uint32 CFE_PSP_MemRanges (
 void)

Returns the number of memory ranges in the CFE_PSP_MemoryTable.

Returns

Positive integer number of entries in the memory range table

12.181.2.8 CFE_PSP_MemRangeSet() int32 CFE_PSP_MemRangeSet (
 uint32 RangeNum,
 uint32 MemoryType,
 cpuaddr StartAddr,
 size_t Size,
 size_t WordSize,
 uint32 Attributes)

Populates one of the records in the CFE_PSP_MemoryTable.

Note

Because the table is fixed size, the entries are set by using the integer index. No validation is done with the address or size.

Parameters

in	<i>RangeNum</i>	A 32-bit integer (starting with 0) specifying the MemoryTable entry.
in	<i>MemoryType</i>	The memory type to validate, including but not limited to: CFE_PSP_MEM_RAM, CFE_PSP_MEM_EEPROM, or CFE_PSP_MEM_ANY Any defined CFE_PSP_MEM_* enumeration can be specified
in	<i>StartAddr</i>	A 32-bit starting address of the memory range
in	<i>Size</i>	A 32-bit size of the memory range (Address + Size = End Address)
in	<i>WordSize</i>	The minimum addressable size of the range: (CFE_PSP_MEM_SIZE_BYTE, CFE_PSP_MEM_SIZE_WORD, CFE_PSP_MEM_SIZE_DWORD)
in	<i>Attributes</i>	The attributes of the Memory Range: (CFE_PSP_MEM_ATTR_WRITE, CFE_PSP_MEM_ATTR_READ, CFE_PSP_MEM_ATTR_READWRITE)

Return values

<i>CFE_PSP_SUCCESS</i>	Memory range set successfully.
<i>CFE_PSP_INVALID_MEM_RANGE</i>	The index into the table is invalid
<i>CFE_PSP_INVALID_MEM_ADDR</i>	Starting address is not valid
<i>CFE_PSP_INVALID_MEM_TYPE</i>	Memory type associated with the range does not match the passed-in type.
<i>CFE_PSP_INVALID_MEM_WORDSIZE</i>	The WordSize parameter is not one of the predefined types.
<i>CFE_PSP_INVALID_MEM_ATTR</i>	The Attributes parameter is not one of the predefined types.
<i>OP_INVALID_MEM_SIZE</i>	The Memory range associated with the address is not large enough to contain Address + Size.

12.181.2.9 CFE_PSP_MemValidateRange() `int32 CFE_PSP_MemValidateRange (`

```
    cpuaddr Address,
    size_t Size,
    uint32 MemoryType )
```

Validates the memory range and type using the global CFE_PSP_MemoryTable.

Parameters

in	<i>Address</i>	A 32-bit starting address of the memory range
in	<i>Size</i>	A 32-bit size of the memory range (Address + Size = End Address)
in	<i>MemoryType</i>	The memory type to validate, including but not limited to: CFE_PSP_MEM_RAM, CFE_PSP_MEM_EEPROM, or CFE_PSP_MEM_ANY Any defined CFE_PSP_MEM_* enumeration can be specified

Return values

<i>CFE_PSP_SUCCESS</i>	Memory range and type information is valid and can be used.
------------------------	---

Return values

<code>CFE_PSP_INVALID_MEM_ADDR</code>	Starting address is not valid
<code>CFE_PSP_INVALID_MEM_TYPE</code>	Memory type associated with the range does not match the passed-in type.
<code>CFE_PSP_INVALID_MEM_RANGE</code>	The Memory range associated with the address is not large enough to contain Address + Size.

12.182 psp/fsw/inc/cfe_psp_port_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_error.h"
```

Functions

- `int32 CFE_PSP_PortRead8 (cpuaddr PortAddress, uint8 *ByteValue)`
Read one byte of memory.
- `int32 CFE_PSP_PortWrite8 (cpuaddr PortAddress, uint8 ByteValue)`
Write one byte of memory.
- `int32 CFE_PSP_PortRead16 (cpuaddr PortAddress, uint16 *uint16Value)`
Read 2 bytes of memory.
- `int32 CFE_PSP_PortWrite16 (cpuaddr PortAddress, uint16 uint16Value)`
Write 2 bytes of memory.
- `int32 CFE_PSP_PortRead32 (cpuaddr PortAddress, uint32 *uint32Value)`
Read 4 bytes of memory.
- `int32 CFE_PSP_PortWrite32 (cpuaddr PortAddress, uint32 uint32Value)`
Write 4 bytes of memory.

12.182.1 Function Documentation

12.182.1.1 CFE_PSP_PortRead16() `int32 CFE_PSP_PortRead16 (`
`cpuaddr PortAddress,`
`uint16 * uint16Value)`

Read 2 bytes of memory.

Parameters

<code>in</code>	<code>PortAddress</code>	Address to be read
<code>out</code>	<code>uint16Value</code>	The address content will be copied to the location pointed to by this argument

Return values

<code>CFE_PSP_SUCCESS</code>	on success
<code>CFE_PSP_ERROR_ADDRESS_MISALIGNED</code>	if the address is not aligned to a 16-bit addressing scheme.
<code>CFE_PSP_ERROR_NOT_IMPLEMENTED</code>	if not implemented

```
12.182.1.2 CFE_PSP_PortRead32() int32 CFE_PSP_PortRead32 (
    cpuaddr PortAddress,
    uint32 * uint32Value )
```

Read 4 bytes of memory.

Parameters

in	<i>PortAddress</i>	Address to be read
out	<i>uint32Value</i>	The address content will be copied to the location pointed to by this argument

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

```
12.182.1.3 CFE_PSP_PortRead8() int32 CFE_PSP_PortRead8 (
    cpuaddr PortAddress,
    uint8 * ByteValue )
```

Read one byte of memory.

Parameters

in	<i>PortAddress</i>	Address to be read
out	<i>ByteValue</i>	The address content will be copied to the location pointed to by this argument

Returns

Always returns CFE_PSP_SUCCESS (if implemented)

Return values

<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented
--------------------------------------	--------------------

```
12.182.1.4 CFE_PSP_PortWrite16() int32 CFE_PSP_PortWrite16 (
    cpuaddr PortAddress,
    uint16 uint16Value )
```

Write 2 bytes of memory.

Parameters

out	<i>PortAddress</i>	Address to be written to
in	<i>uint16Value</i>	the content pointed to by this argument will be copied to the address

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.182.1.5 CFE_PSP_PortWrite32() `int32 CFE_PSP_PortWrite32 (`
 `cpuaddr PortAddress,`
 `uint32 uint32Value)`

Write 4 bytes of memory.

Parameters

<i>out</i>	<i>PortAddress</i>	Address to be written to
<i>in</i>	<i>uint32Value</i>	The content pointed to by this argument will be copied to the address

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR_ADDRESS_MISALIGNED</i>	if the address is not aligned to a 16-bit addressing scheme.
<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented

12.182.1.6 CFE_PSP_PortWrite8() `int32 CFE_PSP_PortWrite8 (`
 `cpuaddr PortAddress,`
 `uint8 ByteValue)`

Write one byte of memory.

Parameters

<i>out</i>	<i>PortAddress</i>	Address to be written to
<i>in</i>	<i>ByteValue</i>	The content pointed to by this argument will be copied to the address

Returns

Always returns CFE_PSP_SUCCESS (if implemented)

Return values

<i>CFE_PSP_ERROR_NOT_IMPLEMENTED</i>	if not implemented
--------------------------------------	--------------------

12.183 psp/fsw/inc/cfe_psp_ssr_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
```

```
#include "cfe_psp_error.h"
```

Functions

- int32 CFE_PSP_InitSSR (uint32 bus, uint32 device, char *DeviceName)

Initializes the Solid State recorder memory for a particular platform.

12.183.1 Function Documentation

12.183.1.1 CFE_PSP_InitSSR() int32 CFE_PSP_InitSSR (

```
    uint32 bus,
    uint32 device,
    char * DeviceName )
```

Initializes the Solid State recorder memory for a particular platform.

Note

For the MCP750, this simply initializes the Hard Disk device.

Parameters

in	<i>bus</i>	
in	<i>device</i>	
in	<i>DeviceName</i>	

Return values

<i>CFE_PSP_SUCCESS</i>	on success
<i>CFE_PSP_ERROR</i>	on error

12.184 psp/fsw/inc/cfe_psp_timertick_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_error.h"
```

Macros

- #define CFE_PSP_SOFT_TIMEBASE_NAME "cFS-Master"

The name of the software/RTOS timebase for general system timers.

Functions

- void CFE_PSP_GetTime (OS_time_t *LocalTime)

Sample/Read a monotonic platform clock with normalization.

- uint32 CFE_PSP_GetTimerTicksPerSecond (void)

- uint32 CFE_PSP_GetTimerLow32Rollover (void)

- void [CFE_PSP_Get_Timebase](#) (uint32 *Tbu, uint32 *Tbl)

Sample/Read a monotonic platform clock without normalization.

12.184.1 Macro Definition Documentation

12.184.1.1 CFE_PSP_SOFT_TIMEBASE_NAME #define CFE_PSP_SOFT_TIMEBASE_NAME "cFS-Master"

The name of the software/RTOS timebase for general system timers.

This name may be referred to by CFE TIME and/or SCH when setting up its own timers.

Definition at line 53 of file cfe_psp_timertick_api.h.

12.184.2 Function Documentation

12.184.2.1 CFE_PSP_Get_Timebase() void CFE_PSP_Get_Timebase (

```
    uint32 * Tbu,
    uint32 * Tbl )
```

Sample/Read a monotonic platform clock without normalization.

Provides a common interface to system timebase. This routine is in the BSP because it is sometimes implemented in hardware and sometimes taken care of by the RTOS.

This is defined as a free-running, monotonically-increasing tick counter. The epoch is not defined, but typically is the system boot time, and the value increases indefinitely as the system runs. The tick period/rate is also not defined.

Rollover events - where the range of representable values is exceeded - are theoretically possible, but would take many years of continuous uptime to occur (typically hundreds of years, if not thousands). System designers should ensure that the actual tick rate and resulting timebase range is sufficiently large to ensure that rollover is not a concern.

Note

This is a "raw" value from the underlying platform with minimal/no conversions or normalization applied. Neither the epoch nor the resolution of this tick counter is specified, and it may vary from platform to platform. Use the [CFE_PSP_GetTime\(\)](#) function to sample the timebase and also convert the units into a normalized/more consistent form.

See also

[CFE_PSP_GetTime\(\)](#)

Parameters

out	Tbu	Buffer to hold the upper 32 bits of a 64-bit tick counter
out	Tbl	Buffer to hold the lower 32 bits of a 64-bit tick counter

12.184.2.2 CFE_PSP_GetTime() void CFE_PSP_GetTime (

```
    OS_time_t * LocalTime )
```

Sample/Read a monotonic platform clock with normalization.

Outputs an [OS_time_t](#) value indicating the time elapsed since an epoch. The epoch is not defined, but typically represents the system boot time. The value increases continuously over time and cannot be reset by software.

This is similar to the [CFE_PSP_Get_Timebase\(\)](#), but additionally it normalizes the output value to an [OS_time_t](#), thereby providing consistent units to the calling application. Any OSAL-provided routine that accepts [OS_time_t](#) inputs may be

used to convert this value into other standardized time units.

Note

This should refer to the same time domain as [CFE_PSP_Get_Timebase\(\)](#), the primary difference being the format and units of the output value.

See also

[CFE_PSP_Get_Timebase\(\)](#)

Parameters

<code>out</code>	<code>LocalTime</code>	Value of PSP tick counter as OS_time_t
------------------	------------------------	--

12.184.2.3 CFE_PSP_GetTimerLow32Rollover() `uint32 CFE_PSP_GetTimerLow32Rollover (void)`

Provides the number that the least significant 32 bits of the 64-bit time stamp returned by CFE_PSP_Get_Timebase rolls over. If the lower 32 bits rolls at 1 second, then the CFE_PSP_TIMER_LOW32_ROLLOVER will be 1000000. If the lower 32 bits rolls at its maximum value (2^{32}) then CFE_PSP_TIMER_LOW32_ROLLOVER will be 0.

Returns

The number that the least significant 32 bits of the 64-bit time stamp returned by CFE_PSP_Get_Timebase rolls over.

12.184.2.4 CFE_PSP_GetTimerTicksPerSecond() `uint32 CFE_PSP_GetTimerTicksPerSecond (void)`

Provides the resolution of the least significant 32 bits of the 64-bit time stamp returned by CFE_PSP_Get_Timebase in timer ticks per second. The timer resolution for accuracy should not be any slower than 1000000 ticks per second or 1 us (microsecond) per tick

Returns

The number of timer ticks per second of the time stamp returned by CFE_PSP_Get_Timebase

12.185 psp/fsw/inc/cfe_psp_version_api.h File Reference

```
#include "common_types.h"
#include "osapi.h"
#include "cfe_psp_error.h"
```

Functions

- const char * [CFE_PSP_GetVersionString](#) (void)

Obtain the PSP version/baseline identifier string.
- const char * [CFE_PSP_GetVersionCodeName](#) (void)

Obtain the version code name.
- void [CFE_PSP_GetVersionNumber](#) (uint8 VersionNumbers[4])

Retrieves the numeric PSP version identifier as an array of uint8 values.
- uint32 [CFE_PSP_GetBuildNumber](#) (void)

Obtain the PSP library numeric build number.

12.185.1 Function Documentation

12.185.1.1 CFE_PSP_GetBuildNumber() `uint32 CFE_PSP_GetBuildNumber (void)`

Obtain the PSP library numeric build number.

The build number is a monotonically increasing number that (coarsely) reflects the number of commits/changes that have been merged since the epoch release. During development cycles this number should increase after each subsequent merge/modification.

Like other version information, this is a fixed number assigned at compile time.

Returns

The OSAL library build number

12.185.1.2 CFE_PSP_GetVersionCodeName() `const char* CFE_PSP_GetVersionCodeName (void)`

Obtain the version code name.

This retrieves the PSP code name. This is a compatibility indicator for the overall NASA cFS ecosystem. All modular components which are intended to interoperate should report the same code name.

Returns

Code name. This is a fixed string and cannot be NULL.

12.185.1.3 CFE_PSP_GetVersionNumber() `void CFE_PSP_GetVersionNumber (uint8 VersionNumbers[4])`

Retrieves the numeric PSP version identifier as an array of uint8 values.

The array of numeric values is in order of precedence: [0] = Major Number [1] = Minor Number [2] = Revision Number [3] = Mission Revision

The "Mission Revision" (last output) also indicates whether this is an official release, a patched release, or a development version. 0 indicates an official release 1-254 local patch level (reserved for mission use) 255 indicates a development build

Parameters

<code>out</code>	<code>VersionNumbers</code>	A fixed-size array to be filled with the version numbers
------------------	-----------------------------	--

12.185.1.4 CFE_PSP_GetVersionString() `const char* CFE_PSP_GetVersionString (void)`

Obtain the PSP version/baseline identifier string.

This retrieves the PSP version identifier string without extra info

Returns

Version string. This is a fixed string and cannot be NULL.

12.186 psp/fsw/inc/cfe_psp_watchdog_api.h File Reference

```
#include "common_types.h"
```

```
#include "osapi.h"
#include "cfe_psp_error.h"
```

Macros

Definitions for PSP PANIC types

- #define CFE_PSP_PANIC_STARTUP 1
- #define CFE_PSP_PANIC_VOLATILE_DISK 2
- #define CFE_PSP_PANIC_MEMORY_ALLOC 3
- #define CFE_PSP_PANIC_NONVOL_DISK 4
- #define CFE_PSP_PANIC_STARTUP_SEM 5
- #define CFE_PSP_PANIC_CORE_APP 6
- #define CFE_PSP_PANIC_GENERAL_FAILURE 7

Reset Types

- #define CFE_PSP_RST_TYPE_PROCESSOR 1
- #define CFE_PSP_RST_TYPE_POWERON 2
- #define CFE_PSP_RST_TYPE_MAX 3

Reset Sub-Types

- #define CFE_PSP_RST_SUBTYPE_POWER_CYCLE 1
Reset caused by power having been removed and restored.
- #define CFE_PSP_RST_SUBTYPE_PUSH_BUTTON 2
Reset caused by reset button on the board.
- #define CFE_PSP_RST_SUBTYPE_HW_SPECIAL_COMMAND 3
Reset was caused by a reset line having been stimulated by a hardware special command.
- #define CFE_PSP_RST_SUBTYPE_HW_WATCHDOG 4
Reset was caused by a watchdog timer expiring.
- #define CFE_PSP_RST_SUBTYPE_RESET_COMMAND 5
Reset was caused by cFE ES processing a [Reset Command](#).
- #define CFE_PSP_RST_SUBTYPE_EXCEPTION 6
Reset was caused by a Processor Exception.
- #define CFE_PSP_RST_SUBTYPE_UNDEFINED_RESET 7
Reset was caused in an unknown manner.
- #define CFE_PSP_RST_SUBTYPE_HWDEBUG_RESET 8
Reset was caused by a JTAG or BDM connection.
- #define CFE_PSP_RST_SUBTYPE_BANKSWITCH_RESET 9
Reset reverted to a cFE POWERON due to a boot bank switch.
- #define CFE_PSP_RST_SUBTYPE_MAX 10
Placeholder to indicate 1+ the maximum value that the PSP will ever use.

Functions

- void [CFE_PSP_Restart](#) (uint32 resetType)
Entry point back to the BSP to restart the processor.
- uint32 [CFE_PSP_GetRestartType](#) (uint32 *restartSubType)
Returns the last reset type.
- void [CFE_PSP_WatchdogInit](#) (void)
Configures the watchdog timer.
- void [CFE_PSP_WatchdogEnable](#) (void)
Enables the watchdog timer.

- void **CFE_PSP_WatchdogDisable** (void)
Disables the watchdog timer.
- void **CFE_PSP_WatchdogService** (void)
Services the watchdog timer according to the value set in WatchDogSet.
- uint32 **CFE_PSP_WatchdogGet** (void)
Gets the watchdog time in milliseconds.
- void **CFE_PSP_WatchdogSet** (uint32 WatchdogValue)
Sets the watchdog time in milliseconds.
- void **CFE_PSP_Panic** (int32 ErrorCode)
Aborts the cFE startup.

12.186.1 Macro Definition Documentation

12.186.1.1 CFE_PSP_PANIC_CORE_APP #define CFE_PSP_PANIC_CORE_APP 6
Definition at line 59 of file cfe_psp_watchdog_api.h.

12.186.1.2 CFE_PSP_PANIC_GENERAL_FAILURE #define CFE_PSP_PANIC_GENERAL_FAILURE 7
Definition at line 60 of file cfe_psp_watchdog_api.h.

12.186.1.3 CFE_PSP_PANIC_MEMORY_ALLOC #define CFE_PSP_PANIC_MEMORY_ALLOC 3
Definition at line 56 of file cfe_psp_watchdog_api.h.

12.186.1.4 CFE_PSP_PANIC_NONVOL_DISK #define CFE_PSP_PANIC_NONVOL_DISK 4
Definition at line 57 of file cfe_psp_watchdog_api.h.

12.186.1.5 CFE_PSP_PANIC_STARTUP #define CFE_PSP_PANIC_STARTUP 1
Definition at line 54 of file cfe_psp_watchdog_api.h.

12.186.1.6 CFE_PSP_PANIC_STARTUP_SEM #define CFE_PSP_PANIC_STARTUP_SEM 5
Definition at line 58 of file cfe_psp_watchdog_api.h.

12.186.1.7 CFE_PSP_PANIC_VOLATILE_DISK #define CFE_PSP_PANIC_VOLATILE_DISK 2
Definition at line 55 of file cfe_psp_watchdog_api.h.

12.186.1.8 CFE_PSP_RST_SUBTYPE_BANKSWITCH_RESET #define CFE_PSP_RST_SUBTYPE_BANKSWITCH_RESET 9
Reset reverted to a cFE POWERON due to a boot bank switch.
Definition at line 96 of file cfe_psp_watchdog_api.h.

12.186.1.9 CFE_PSP_RST_SUBTYPE_EXCEPTION #define CFE_PSP_RST_SUBTYPE_EXCEPTION 6

Reset was caused by a Processor Exception.

Definition at line 90 of file cfe_psp_watchdog_api.h.

12.186.1.10 CFE_PSP_RST_SUBTYPE_HW_SPECIAL_COMMAND #define CFE_PSP_RST_SUBTYPE_HW_SPECIAL_COMMAND 3

Reset was caused by a reset line having been stimulated by a hardware special command.
Definition at line 84 of file cfe_psp_watchdog_api.h.

12.186.1.11 CFE_PSP_RST_SUBTYPE_HW_WATCHDOG #define CFE_PSP_RST_SUBTYPE_HW_WATCHDOG 4

Reset was caused by a watchdog timer expiring.

Definition at line 86 of file cfe_psp_watchdog_api.h.

12.186.1.12 CFE_PSP_RST_SUBTYPE_HWDEBUG_RESET #define CFE_PSP_RST_SUBTYPE_HWDEBUG_RESET 8

Reset was caused by a JTAG or BDM connection.

Definition at line 94 of file cfe_psp_watchdog_api.h.

12.186.1.13 CFE_PSP_RST_SUBTYPE_MAX #define CFE_PSP_RST_SUBTYPE_MAX 10

Placeholder to indicate 1+ the maximum value that the PSP will ever use.

Definition at line 98 of file cfe_psp_watchdog_api.h.

12.186.1.14 CFE_PSP_RST_SUBTYPE_POWER_CYCLE #define CFE_PSP_RST_SUBTYPE_POWER_CYCLE 1

Reset caused by power having been removed and restored.

Definition at line 80 of file cfe_psp_watchdog_api.h.

12.186.1.15 CFE_PSP_RST_SUBTYPE_PUSH_BUTTON #define CFE_PSP_RST_SUBTYPE_PUSH_BUTTON 2

Reset caused by reset button on the board.

Definition at line 82 of file cfe_psp_watchdog_api.h.

12.186.1.16 CFE_PSP_RST_SUBTYPE_RESET_COMMAND #define CFE_PSP_RST_SUBTYPE_RESET_COMMAND 5

Reset was caused by cFE ES processing a [Reset Command](#).

Definition at line 88 of file cfe_psp_watchdog_api.h.

12.186.1.17 CFE_PSP_RST_SUBTYPE_UNDEFINED_RESET #define CFE_PSP_RST_SUBTYPE_UNDEFINED_RESET 7

Reset was caused in an unknown manner.

Definition at line 92 of file cfe_psp_watchdog_api.h.

12.186.1.18 CFE_PSP_RST_TYPE_MAX #define CFE_PSP_RST_TYPE_MAX 3

Placeholder to indicate 1+ the maximum value that the PSP will ever use.

Definition at line 70 of file cfe_psp_watchdog_api.h.

12.186.1.19 CFE_PSP_RST_TYPE_POWERON #define CFE_PSP_RST_TYPE_POWERON 2
All memory has been cleared
Definition at line 69 of file cfe_psp_watchdog_api.h.

12.186.1.20 CFE_PSP_RST_TYPE_PROCESSOR #define CFE_PSP_RST_TYPE_PROCESSOR 1
Volatile disk, CDS and User Reserved memory may be valid
Definition at line 68 of file cfe_psp_watchdog_api.h.

12.186.2 Function Documentation

12.186.2.1 CFE_PSP_GetRestartType() uint32 CFE_PSP_GetRestartType (uint32 * restartSubType)

Returns the last reset type.

Note

If a pointer to a valid memory space is passed in, it returns the reset sub-type in that memory. Right now the reset types are application-specific. For the cFE they are defined in the [cfe_es.h](#) file.

Parameters

<i>restartSubType</i>	
-----------------------	--

12.186.2.2 CFE_PSP_Panic() void CFE_PSP_Panic (int32 ErrorCode)

Aborts the cFE startup.

Provides a common interface to abort the cFE startup process and return back to the OS.

Note

This is called by the cFE Core startup code when it needs to abort the cFE startup. This should not be called by applications.

Parameters

in	<i>ErrorCode</i>	Reason for exiting
----	------------------	--------------------

12.186.2.3 CFE_PSP_Restart() void CFE_PSP_Restart (uint32 resetType)

Entry point back to the BSP to restart the processor.

The flight software calls this routine to restart the processor.

Parameters

in	<i>resetType</i>	Type of reset
----	------------------	---------------

```
12.186.2.4 CFE_PSP_WatchdogDisable() void CFE_PSP_WatchdogDisable (
    void )
```

Disables the watchdog timer.

```
12.186.2.5 CFE_PSP_WatchdogEnable() void CFE_PSP_WatchdogEnable (
    void )
```

Enables the watchdog timer.

```
12.186.2.6 CFE_PSP_WatchdogGet() uint32 CFE_PSP_WatchdogGet (
    void )
```

Gets the watchdog time in milliseconds.

Returns

The current watchdog value

```
12.186.2.7 CFE_PSP_WatchdogInit() void CFE_PSP_WatchdogInit (
    void )
```

Configures the watchdog timer.

To set up the timer resolution and/or other settings custom to this platform.

```
12.186.2.8 CFE_PSP_WatchdogService() void CFE_PSP_WatchdogService (
    void )
```

Services the watchdog timer according to the value set in WatchDogSet.

Load the watchdog timer with a count that corresponds to the millisecond time given in the parameter.

Note

Currently an ExpireTime value of zero will result in the minimum reset time of 4.5 seconds. All other ExpireTime values will result in a reset time of 5.5 seconds.

```
12.186.2.9 CFE_PSP_WatchdogSet() void CFE_PSP_WatchdogSet (
    uint32 WatchdogValue )
```

Sets the watchdog time in milliseconds.

Parameters

in	<i>WatchdogValue</i>	New watchdog value to set
----	----------------------	---------------------------

Index

EXTENSION
 common_types.h, 1352

accuracy
 OS_timebase_prop_t, 733
 OS_timer_prop_t, 734

ActiveBuffer
 CFE_TBL_HousekeepingTlm_Payload, 635

ActiveBufferAddr
 CFE_TBL_TblRegPacket_Payload, 646

ActiveTableFlag
 CFE_TBL_DumpCmd_Payload, 629
 CFE_TBL_ValidateCmd_Payload, 649

ActualLength
 OS_SockAddr_t, 728

ActualType
 CFE_Config_ValueEntry, 525

addr
 OS_module_prop_t, 726

AddrData
 OS_SockAddr_t, 728

Address
 OS_static_symbol_record_t, 730

AddressesAreValid
 CFE_ES_AppInfo, 527

AlignPtr
 OS_SockAddrData_t, 729

AlignU32
 OS_SockAddrData_t, 729

AppData
 CFE_EVS_HousekeepingTlm_Payload, 582

AppDataFilename
 CFE_EVS_AppDataCmd_Payload, 570

AppEnableStatus
 CFE_EVS_AppTlmData, 573

AppEntryPoint
 CFE_ES_StartAppCmd_Payload, 563

AppFileName
 CFE_ES_AppReloadCmd_Payload, 530
 CFE_ES_StartAppCmd_Payload, 563

AppID
 CFE_EVS_AppTlmData, 573

AppId
 CFE_ES_TaskInfo, 567
 CFE_SB_PipeInfoEntry, 611

AppInfo
 CFE_ES_OneAppTlm_Payload, 549

Application
 CFE_ES_AppNameCmd_Payload, 530
 CFE_ES_AppReloadCmd_Payload, 530
 CFE_ES_SendMemPoolStatsCmd_Payload, 558

 CFE_ES_StartAppCmd_Payload, 563

ApplicationID
 CFE_FS_Header, 598

AppMessageSentCounter
 CFE_EVS_AppTlmData, 573

AppMessageSquelchedCounter
 CFE_EVS_AppTlmData, 574

AppName
 CFE_ES_TaskInfo, 567
 CFE_EVS_AppNameBitMaskCmd_Payload, 571
 CFE_EVS_AppNameCmd_Payload, 571
 CFE_EVS_AppNameEventIDCmd_Payload, 572
 CFE_EVS_AppNameEventIDMaskCmd_Payload,
 572

 CFE_EVS_PacketID, 588

CFE_SB_PipeInfoEntry, 611
CFE_SB_RoutingFileEntry, 614
FM_OpenFilesEntry_t, 711

apps/fm/docs/dox_src/cfs_fm.dox, 734

apps/fm/fsw/inc/fm_events.h, 734

apps/fm/fsw/inc/fm_extern_typedefs.h, 744

apps/fm/fsw/inc/fm_msg.h, 745

apps/fm/fsw/inc/fm_msgdefs.h, 748

apps/fm/fsw/inc/fm_msgids.h, 749

apps/fm/fsw/inc/fm_perfids.h, 749

apps/fm/fsw/inc/fm_platform_cfg.h, 750

apps/fm/fsw/src/fm_app.c, 751

apps/fm/fsw/src/fm_app.h, 756

apps/fm/fsw/src/fm_child.c, 761

apps/fm/fsw/src/fm_child.h, 787

apps/fm/fsw/src/fm_cmd_utils.c, 813

apps/fm/fsw/src/fm_cmd_utils.h, 833

apps/fm/fsw/src/fm_cmds.c, 850

apps/fm/fsw/src/fm_cmds.h, 871

apps/fm/fsw/src/fm_compression.h, 892

apps/fm/fsw/src/fm_compression_fslib.c, 894

apps/fm/fsw/src/fm_compression_none.c, 896

apps/fm/fsw/src/fm_compression_zlib.c, 898

apps/fm/fsw/src/fm_dispatch.c, 900

apps/fm/fsw/src/fm_dispatch.h, 913

apps/fm/fsw/src/fm_tbl.c, 926

apps/fm/fsw/src/fm_tbl.h, 930

apps/fm/fsw/src/fm_verify.h, 934

apps/fm/fsw/src/fm_version.h, 934

apps/fm/fsw/tables/fm_monitor.c, 934

ARGCHECK
 osapi-macros.h, 1374

AsInteger
 CFE_Config_ValueBuffer, 525

AsPointer
 CFE_Config_ValueBuffer, 525

AtToneDelay
 CFE_TIME_DiagnosticTlm_Payload, 654

AtToneLatch
 CFE_TIME_DiagnosticTlm_Payload, 654

AtToneLeapSeconds
 CFE_TIME_DiagnosticTlm_Payload, 654
 CFE_TIME_ToneDataCmd_Payload, 677

AtToneMET
 CFE_TIME_DiagnosticTlm_Payload, 654
 CFE_TIME_ToneDataCmd_Payload, 677

AtToneState
 CFE_TIME_ToneDataCmd_Payload, 677

AtToneSTCF
 CFE_TIME_DiagnosticTlm_Payload, 654
 CFE_TIME_ToneDataCmd_Payload, 677

BitMask
 CFE_EVS_AppNameBitMaskCmd_Payload, 571
 CFE_EVS_BitMaskCmd_Payload, 575

block_size
 OS_statvfs_t, 731

Blocks
 FM_MonitorReportEntry_t, 706

blocks_free
 OS_statvfs_t, 731

BlockSize
 CFE_ES_BlockStats, 531

BlockStats
 CFE_ES_MemPoolStats, 546

BootSource
 CFE_ES_HousekeepingTlm_Payload, 539

bss_address
 OS_module_address_t, 725

bss_size
 OS_module_address_t, 725

BSSAddress
 CFE_ES_AppInfo, 527

BSSSize
 CFE_ES_AppInfo, 527

Buffer
 OS_SockAddrData_t, 729

BUGCHECK
 osapi-macros.h, 1374

BUGCHECK_VOID
 osapi-macros.h, 1375

BUGREPORT
 osapi-macros.h, 1375

buildosal_public_apiincosconfig.h, 935

ByteAlign4
 CFE_TBL_TblRegPacket_Payload, 646

ByteAlignPad1
 CFE_TBL_HousekeepingTlm_Payload, 635

ByteAlignSpare
 CFE_ES_CDSRegDumpRec, 532

Bytes
 FM_MonitorReportEntry_t, 707

CCSDS_ExtendedHeader, 522
 Subsystem, 522
 SystemId, 522

CCSDS_ExtendedHeader_t
 ccsds_hdr.h, 1205

ccsds_hdr.h
 CCSDS_ExtendedHeader_t, 1205
 CCSDS_PrimaryHeader_t, 1206

CCSDS_PrimaryHeader, 523
 Length, 523
 Sequence, 523
 StreamId, 523

CCSDS_PrimaryHeader_t
 ccsds_hdr.h, 1206

CdsName
 CFE_ES_DeleteCDSCmd_Payload, 534

cFE Access Table Content APIs, 375
 CFE_TBL_GetAddress, 375
 CFE_TBL_GetAddresses, 376
 CFE_TBL_ReleaseAddress, 377
 CFE_TBL_ReleaseAddresses, 378

cFE Application Behavior APIs, 266
 CFE_ES_ExitApp, 267
 CFE_ES_IncrementTaskCounter, 267
 CFE_ESRunLoop, 267
 CFE_ES_WaitForStartupSync, 268
 CFE_ES_WaitForSystemState, 269

cFE Application Control APIs, 264
 CFE_ES_DeleteApp, 264
 CFE_ES_ReloadApp, 265
 CFE_ES_RestartApp, 265

cFE Child Task APIs, 278
 CFE_ES_CreateChildTask, 278
 CFE_ES_DeleteChildTask, 279
 CFE_ES_ExitChildTask, 280
 CFE_ES_GetTaskIDByName, 280
 CFE_ES_GetTaskName, 281

cFE Clock State Flag Defines, 400
 CFE_TIME_FLAG_ADD1HZ, 400
 CFE_TIME_FLAG_ADDADJ, 401
 CFE_TIME_FLAG_ADDTCL, 401
 CFE_TIME_FLAG_CLKSET, 401
 CFE_TIME_FLAG_CMDFLY, 401
 CFE_TIME_FLAG_FLYING, 401
 CFE_TIME_FLAG_GDTONE, 401
 CFE_TIME_FLAG_REFERR, 401
 CFE_TIME_FLAG_SERVER, 401
 CFE_TIME_FLAG_SIGPRI, 401
 CFE_TIME_FLAG_SRCINT, 401
 CFE_TIME_FLAG_SRVFLY, 402
 CFE_TIME_FLAG_UNUSED, 402

cFE Critical Data Store APIs, 284
 CFE_ES_CopyToCDS, 284
 CFE_ES_GetCDSBlockIDByName, 285
 CFE_ES_GetCDSBlockName, 285
 CFE_ES_RegisterCDS, 286
 CFE_ES_RestoreFromCDS, 287

cFE Entry/Exit APIs, 262
 CFE_ES_Main, 262
 CFE_ES_ResetCFE, 263

cFE External Time Source APIs, 393
 CFE_TIME_ExternalGPS, 393
 CFE_TIME_ExternalMET, 394
 CFE_TIME_ExternalTime, 395
 CFE_TIME_ExternalTone, 395
 CFE_TIME_RegisterSynchCallback, 396
 CFE_TIME_UnregisterSynchCallback, 397

cFE File Header Management APIs, 309
 CFE_FS_InitHeader, 309
 CFE_FS_ReadHeader, 309
 CFE_FS_SetTimestamp, 310
 CFE_FS_WriteHeader, 311

cFE File Utility APIs, 312
 CFE_FS_BackgroundFileDumpIsPending, 313
 CFE_FS_BackgroundFileDumpRequest, 313
 CFE_FS_ExtractFilenameFromPath, 315
 CFE_FS_GetDefaultExtension, 315
 CFE_FS_GetDefaultMountPoint, 316
 CFE_FS_ParseInputFileName, 316
 CFE_FS_ParseInputFileNameEx, 317

cFE Generic Counter APIs, 297
 CFE_ES_DeleteGenCounter, 297
 CFE_ES_GetGenCount, 298
 CFE_ES_GetGenCounterIDByName, 298
 CFE_ES_GetGenCounterName, 299
 CFE_ES_IncrementGenCounter, 300
 CFE_ES_RegisterGenCounter, 300
 CFE_ES_SetGenCount, 301

cFE Generic Message APIs, 318
 CFE_MSG_Init, 318

cFE Get Current Time APIs, 384
 CFE_TIME_GetMET, 384
 CFE_TIME_GetMETseconds, 384
 CFE_TIME_GetMETsubsecs, 385
 CFE_TIME_GetTAI, 385
 CFE_TIME_GetTime, 386
 CFE_TIME_GetUTC, 386

cFE Get Table Information APIs, 379
 CFE_TBL_GetInfo, 379
 CFE_TBL_GetStatus, 380
 CFE_TBL_NotifyByMessage, 381

cFE Get Time Information APIs, 387
 CFE_TIME_GetClockInfo, 387
 CFE_TIME_GetClockState, 387
 CFE_TIME_GetLeapSeconds, 388

CFE_TIME_GetSTCF, 388

cFE Information APIs, 270
 CFE_ES_GetAppID, 270
 CFE_ES_GetAppIDByName, 271
 CFE_ES_GetAppInfo, 272
 CFE_ES_GetAppName, 272
 CFE_ES_GetLibIDByName, 273
 CFE_ES_GetLibInfo, 274
 CFE_ES_GetLibName, 274
 CFE_ES_GetModuleInfo, 275
 CFE_ES_GetResetType, 276
 CFE_ES_GetTaskID, 276
 CFE_ES_GetTaskInfo, 277

cFE Manage Table Content APIs, 369
 CFE_TBL_DumpToBuffer, 369
 CFE_TBL_Load, 370
 CFE_TBL_Manage, 372
 CFE_TBL_Modified, 372
 CFE_TBL_Update, 373
 CFE_TBL_Validate, 374

cFE Memory Manager APIs, 288
 CFE_ES_GetMemPoolStats, 288
 CFE_ES_GetPoolBuf, 289
 CFE_ES_GetPoolBufInfo, 290
 CFE_ES_PoolCreate, 291
 CFE_ES_PoolCreateEx, 291
 CFE_ES_PoolCreateNoSem, 293
 CFE_ES_PoolDelete, 293
 CFE_ES_PutPoolBuf, 294

cFE Message Characteristics APIs, 355
 CFE_SB_GetUserData, 355
 CFE_SB_GetUserDataLength, 356
 CFE_SB_MessageStringGet, 356
 CFE_SB_MessageStringSet, 357
 CFE_SB_SetUserDataLength, 358
 CFE_SB_TimeStampMsg, 358

cFE Message Extended Header APIs, 327
 CFE_MSG_GetEDSVersion, 327
 CFE_MSG_GetEndian, 328
 CFE_MSG_GetPlaybackFlag, 328
 CFE_MSG_GetSubsystem, 329
 CFE_MSG_GetSystem, 329
 CFE_MSG_SetEDSVersion, 330
 CFE_MSG_SetEndian, 330
 CFE_MSG_SetPlaybackFlag, 331
 CFE_MSG_SetSubsystem, 331
 CFE_MSG_SetSystem, 332

cFE Message ID APIs, 359
 CFE_SB_CmdTopicIdToMsgId, 359
 CFE_SB_GlobalCmdTopicIdToMsgId, 360
 CFE_SB_GlobalTlmTopicIdToMsgId, 360
 CFE_SB_IsValidMsgId, 361
 CFE_SB_LocalCmdTopicIdToMsgId, 361
 CFE_SB_LocalTlmTopicIdToMsgId, 362

CFE_SB_MsgId_Equal, 362
 CFE_SB_MsgIdToValue, 363
 CFE_SB_TlmTopicIdToMsgId, 363
 CFE_SB_ValueToMsgId, 363
 cFE Message Id APIs, 337
 CFE_MSG_GetMsgId, 337
 CFE_MSG.GetTypeFromMsgId, 338
 CFE_MSG_SetMsgId, 338
 cFE Message Integrity APIs, 339
 CFE_MSG_OriginationAction, 339
 CFE_MSG_VerificationAction, 340
 cFE Message Primary Header APIs, 319
 CFE_MSG_GetApId, 319
 CFE_MSG_GetHasSecondaryHeader, 320
 CFE_MSG_GetHeaderVersion, 320
 CFE_MSG_GetNextSequenceCount, 321
 CFE_MSG_GetSegmentationFlag, 321
 CFE_MSG_GetSequenceCount, 322
 CFE_MSG.GetSize, 322
 CFE_MSG.GetType, 323
 CFE_MSG_SetApId, 323
 CFE_MSG_SetHasSecondaryHeader, 324
 CFE_MSG_SetHeaderVersion, 324
 CFE_MSG_SetSegmentationFlag, 325
 CFE_MSG_SetSequenceCount, 325
 CFE_MSG_SetSize, 326
 CFE_MSG_SetType, 326
 cFE Message Secondary Header APIs, 333
 CFE_MSG_GenerateChecksum, 333
 CFE_MSG_GetFcnCode, 334
 CFE_MSG_GetMsgTime, 334
 CFE_MSG_SetFcnCode, 335
 CFE_MSG_SetMsgTime, 335
 CFE_MSG_ValidateChecksum, 336
 cFE Message Subscription Control APIs, 346
 CFE_SB_Subscribe, 346
 CFE_SB_SubscribeEx, 347
 CFE_SB_SubscribeLocal, 348
 CFE_SB_Unsubscribe, 349
 CFE_SB_UnsubscribeLocal, 349
 cFE Miscellaneous APIs, 282
 CFE_ES_BackgroundWakeup, 282
 CFE_ES_CalculateCRC, 282
 CFE_ES_ProcessAsyncEvent, 283
 CFE_ES_WriteToSysLog, 283
 cFE Miscellaneous Time APIs, 397
 CFE_TIME_Local1HzISR, 397
 CFE_TIME_Print, 398
 cFE Performance Monitor APIs, 295
 CFE_ES_PerfLogAdd, 296
 CFE_ES_PerfLogEntry, 295
 CFE_ES_PerfLogExit, 296
 cFE Pipe Management APIs, 341
 CFE_SB_CreatePipe, 341
 CFE_SB_DeletePipe, 342
 CFE_SB_GetPipeIdByName, 343
 CFE_SB_GetPipeName, 343
 CFE_SB_GetPipeOpts, 344
 CFE_SB_PipeId_ToIndex, 345
 CFE_SB_SetPipeOpts, 345
 cFE Registration APIs, 302, 364
 CFE_EVS_Register, 302
 CFE_TBL_Register, 365
 CFE_TBL_Share, 367
 CFE_TBL_Unregister, 368
 cFE Reset Event Filter APIs, 307
 CFE_EVS_ResetAllFilters, 307
 CFE_EVS_ResetFilter, 308
 cFE Resource ID APIs, 260
 CFE_ES_AppID_ToIndex, 260
 CFE_ES_CounterID_ToIndex, 260
 CFE_ES_LibID_ToIndex, 261
 CFE_ES_TaskID_ToIndex, 262
 cFE Resource ID base values, 399
 CFE_CONFIGID_BASE, 400
 CFE_ES_APPID_BASE, 400
 CFE_ES_CDSBLOCKID_BASE, 400
 CFE_ES_COUNTID_BASE, 400
 CFE_ES_LIBID_BASE, 400
 CFE_ES_POOLID_BASE, 400
 CFE_ES_TASKID_BASE, 400
 CFE_RESOURCEID_CONFIGID_BASE_OFFSET,
 399
 CFE_RESOURCEID_ES_APPID_BASE_OFFSET,
 399
 CFE_RESOURCEID_ES_CDSBLOCKID_BASE_OFFSET,
 399
 CFE_RESOURCEID_ES_COUNTID_BASE_OFFSET,
 399
 CFE_RESOURCEID_ES_LIBID_BASE_OFFSET,
 399
 CFE_RESOURCEID_ES_POOLID_BASE_OFFSET,
 399
 CFE_RESOURCEID_ES_TASKID_BASE_OFFSET,
 399
 CFE_RESOURCEID_SB_PIPEID_RESOURCE_BASE_OFFSET,
 399
 CFE_RESOURCEID_TBL_DUMPCTRLID_BASE_OFFSET,
 399
 CFE_RESOURCEID_TBL_VALRESULTID_BASE_OFFSET,
 399
 CFE_SB_PIPEID_BASE, 400
 CFE_TBL_DUMPCTRLID_BASE, 400
 CFE_TBL_VALRESULTID_BASE, 400
 cFE Return Code Defines, 237
 CFE_ES_APP_CLEANUP_ERR, 243
 CFE_ES_BAD_ARGUMENT, 243
 CFE_ES_BIN_SEM_DELETE_ERR, 243

CFE_ES_BUFFER_NOT_IN_POOL, 243
CFE_ES_CDS_ACCESS_ERROR, 243
CFE_ES_CDS_ALREADY_EXISTS, 243
CFE_ES_CDS_BLOCK_CRC_ERR, 244
CFE_ES_CDS_INSUFFICIENT_MEMORY, 244
CFE_ES_CDS_INVALID, 244
CFE_ES_CDS_INVALID_NAME, 244
CFE_ES_CDS_INVALID_SIZE, 244
CFE_ES_CDS_OWNER_ACTIVE_ERR, 244
CFE_ES_CDS_WRONG_TYPE_ERR, 244
CFE_ES_COUNT_SEM_DELETE_ERR, 244
CFE_ES_ERR_APP_CREATE, 245
CFE_ES_ERR_APP_REGISTER, 245
CFE_ES_ERR_CHILD_TASK_CREATE, 245
CFE_ES_ERR_CHILD_TASK_DELETE, 245
CFE_ES_ERR_CHILD_TASK_DELETE_MAIN_TASK,
 245
CFE_ES_ERR_CHILD_TASK_REGISTER, 245
CFE_ES_ERR_DUPLICATE_NAME, 245
CFE_ES_ERR_LOAD_LIB, 245
CFE_ES_ERR_MEM_BLOCK_SIZE, 246
CFE_ES_ERR_NAME_NOT_FOUND, 246
CFE_ES_ERR_RESOURCEID_NOT_VALID, 246
CFE_ES_ERR_SYS_LOG_FULL, 246
CFE_ES_ERR_SYS_LOG_TRUNCATED, 246
CFE_ES_FILE_CLOSE_ERR, 246
CFE_ES_FILE_IO_ERR, 246
CFE_ES_LIB_ALREADY_LOADED, 246
CFE_ES_MUT_SEM_DELETE_ERR, 246
CFE_ES_NO_RESOURCE_IDS_AVAILABLE, 247
CFE_ES_NOT_IMPLEMENTED, 247
CFE_ES_OPERATION_TIMED_OUT, 247
CFE_ES_POOL_BLOCK_INVALID, 247
CFE_ES_QUEUE_DELETE_ERR, 247
CFE_ES_RST_ACCESS_ERR, 247
CFE_ES_TASK_DELETE_ERR, 247
CFE_ES_TIMER_DELETE_ERR, 247
CFE_EVS_APP_FILTER_OVERLOAD, 248
CFE_EVS_APP_ILLEGAL_APP_ID, 248
CFE_EVS_APP_NOT_REGISTERED, 248
CFE_EVS_APP_SQUELCHED, 248
CFE_EVS_EVT_NOT_REGISTERED, 248
CFE_EVS_FILE_WRITE_ERROR, 248
CFE_EVS_INVALID_PARAMETER, 248
CFE_EVS_NOT_IMPLEMENTED, 248
CFE_EVS_RESET_AREA_POINTER, 249
CFE_EVS_UNKNOWN_FILTER, 249
CFE_FS_BAD_ARGUMENT, 249
CFE_FS_FNAME_TOO_LONG, 249
CFE_FS_INVALID_PATH, 249
CFE_FS_NOT_IMPLEMENTED, 249
CFE_SB_BAD_ARGUMENT, 249
CFE_SB_BUF_ALOC_ERR, 249
CFE_SB_BUFFER_INVALID, 250
CFE_SB_INTERNAL_ERR, 250
CFE_SB_MAX_DESTS_MET, 250
CFE_SB_MAX_MSGS_MET, 250
CFE_SB_MAX_PIPES_MET, 250
CFE_SB_MSG_TOO_BIG, 250
CFE_SB_NO_MESSAGE, 250
CFE_SB_NOT_IMPLEMENTED, 251
CFE_SB_PIPE_CR_ERR, 251
CFE_SB_PIPE_RD_ERR, 251
CFE_SB_TIME_OUT, 251
CFE_SB_WRONG_MSG_TYPE, 251
CFE_STATUS_BAD_COMMAND_CODE, 251
CFE_STATUS_EXTERNAL_RESOURCE_FAIL, 251
CFE_STATUS_INCORRECT_STATE, 252
CFE_STATUS_NO_COUNTER_INCREMENT, 252
CFE_STATUS_NOT_IMPLEMENTED, 252
CFE_STATUS_RANGE_ERROR, 252
CFE_STATUS_REQUEST_ALREADY_PENDING,
 252
CFE_STATUS_UNKNOWN_MSG_ID, 252
CFE_STATUS_VALIDATION_FAILURE, 252
CFE_STATUS_WRONG_MSG_LENGTH, 252
CFE_SUCCESS, 253
CFE_TBL_BAD_ARGUMENT, 253
CFE_TBL_ERR_ACCESS, 253
CFE_TBL_ERR_BAD_CONTENT_ID, 253
CFE_TBL_ERR_BAD_PROCESSOR_ID, 253
CFE_TBL_ERR_BAD_SPACECRAFT_ID, 253
CFE_TBL_ERR_BAD_SUBTYPE_ID, 253
CFE_TBL_ERR_DUMP_ONLY, 253
CFE_TBL_ERR_DUPLICATE_DIFF_SIZE, 254
CFE_TBL_ERR_DUPLICATE_NOT_OWNED, 254
CFE_TBL_ERR_FILE_FOR_WRONG_TABLE, 254
CFE_TBL_ERR_FILE_SIZE_INCONSISTENT, 254
CFE_TBL_ERR_FILE_TOO_LARGE, 254
CFE_TBL_ERR_FILENAME_TOO_LONG, 254
CFE_TBL_ERR_HANDLES_FULL, 254
CFE_TBL_ERR_ILLEGAL_SRC_TYPE, 254
CFE_TBL_ERR_INVALID_HANDLE, 255
CFE_TBL_ERR_INVALID_NAME, 255
CFE_TBL_ERR_INVALID_OPTIONS, 255
CFE_TBL_ERR_INVALID_SIZE, 255
CFE_TBL_ERR_LOAD_IN_PROGRESS, 255
CFE_TBL_ERR_LOAD_INCOMPLETE, 255
CFE_TBL_ERR_NEVER_LOADED, 256
CFE_TBL_ERR_NO_ACCESS, 256
CFE_TBL_ERR_NO_BUFFER_AVAIL, 256
CFE_TBL_ERR_NO_STD_HEADER, 256
CFE_TBL_ERR_NO_TBL_HEADER, 256
CFE_TBL_ERR_PARTIAL_LOAD, 256
CFE_TBL_ERR_REGISTRY_FULL, 256
CFE_TBL_ERR_SHORT_FILE, 256
CFE_TBL_ERR_UNREGISTERED, 257
CFE_TBL_INFO_DUMP_PENDING, 257

CFE_TBL_INFO_NO_UPDATE_PENDING, 257
 CFE_TBL_INFO_NO_VALIDATION_PENDING, 257
 CFE_TBL_INFO_RECOVERED_TBL, 257
 CFE_TBL_INFO_TABLE_LOCKED, 257
 CFE_TBL_INFO_UPDATE_PENDING, 257
 CFE_TBL_INFO_UPDATED, 257
 CFE_TBL_INFO_VALIDATION_PENDING, 258
 CFE_TBL_MESSAGE_ERROR, 258
 CFE_TBL_NOT_IMPLEMENTED, 258
 CFE_TBL_WARN_DUPLICATE, 258
 CFE_TBL_WARN_NOT_CRITICAL, 258
 CFE_TBL_WARN_PARTIAL_LOAD, 258
 CFE_TBL_WARN_SHORT_FILE, 258
 CFE_TIME_BAD_ARGUMENT, 259
 CFE_TIME_CALLBACK_NOT_REGISTERED, 259
 CFE_TIME_INTERNAL_ONLY, 259
 CFE_TIME_NOT_IMPLEMENTED, 259
 CFE_TIME_OUT_OF_RANGE, 259
 CFE_TIME_TOO_MANY_SYNCH_CALLBACKS, 259

cFE SB Pipe options, 364
 CFE_SB_PIPEOPTS_IGNOREMINE, 364

cFE Send Event APIs, 303
 CFE_EVS_SendEvent, 303
 CFE_EVS_SendEventWithApplID, 305
 CFE_EVS_SendTimedEvent, 306

cFE Send/Receive Message APIs, 350
 CFE_SB_ReceiveBuffer, 350
 CFE_SB_TransmitMsg, 351

cFE Table Type Defines, 382
 CFE_TBL_OPT_BUFFER_MSK, 382
 CFE_TBL_OPT_CRITICAL, 382
 CFE_TBL_OPT_CRITICAL_MSK, 382
 CFE_TBL_OPT_DBL_BUFFER, 383
 CFE_TBL_OPT_DEFAULT, 383
 CFE_TBL_OPT_DUMP_ONLY, 383
 CFE_TBL_OPT_LD_DMP_MSK, 383
 CFE_TBL_OPT_LOAD_DUMP, 383
 CFE_TBL_OPT_NOT_CRITICAL, 383
 CFE_TBL_OPT_NOT_USR_DEF, 383
 CFE_TBL_OPT_SNGL_BUFFER, 383
 CFE_TBL_OPT_USR_DEF_ADDR, 383
 CFE_TBL_OPT_USR_DEF_MSK, 383

cFE Time Arithmetic APIs, 389
 CFE_TIME_Add, 389
 CFE_TIME_Compare, 390
 CFE_TIME_Subtract, 390

cFE Time Conversion APIs, 391
 CFE_TIME_MET2SCTime, 391
 CFE_TIME_Micro2SubSecs, 392
 CFE_TIME_Sub2MicroSecs, 392

cFE Zero Copy APIs, 352
 CFE_SB_AllocateMessageBuffer, 353
 CFE_SB_ReleaseMessageBuffer, 353

CFE_SB_TransmitBuffer, 354
 cfe/cmake/sample_defs/example_mission_cfg.h, 941
 cfe/cmake/sample_defs/example_platform_cfg.h, 952
 cfe/cmake/sample_defs/sample_perfids.h, 995
 cfe/docs/src/cfe_api.dox, 998
 cfe/docs/src/cfe_es.dox, 998
 cfe/docs/src/cfe_evs.dox, 998
 cfe/docs/src/cfe_frontpage.dox, 998
 cfe/docs/src/cfe_glossary.dox, 998
 cfe/docs/src/cfe_sb.dox, 998
 cfe/docs/src/cfe_tbl.dox, 998
 cfe/docs/src/cfe_time.dox, 998
 cfe/docs/src/cfe_xref.dox, 998
 cfe/docs/src/cfs_versions.dox, 998
 cfe/modules/config/fsw/inc/cfe_config_external.h, 998
 cfe/modules/config/fsw/inc/cfe_config_init.h, 998
 cfe/modules/config/fsw/inc/cfe_config_lookup.h, 999
 cfe/modules/config/fsw/inc/cfe_config_nametable.h, 999
 cfe/modules/config/fsw/inc/cfe_config_set.h, 1000
 cfe/modules/config/fsw/inc/cfe_config_table.h, 1001
 cfe/modules/core_api/config/default_cfe_core_api_base_msgids.h, 1002
 cfe/modules/core_api/config/default_cfe_core_api_interface_cfg.h, 1004
 cfe/modules/core_api/config/default_cfe_mission_cfg.h, 1006
 cfe/modules/core_api/config/default_cfe_msgids.h, 1006
 cfe/modules/core_api/fsw/inc/cfe.h, 1006
 cfe/modules/core_api/fsw/inc/cfe_config.h, 1007
 cfe/modules/core_api/fsw/inc/cfe_config_api_typedefs.h, 1011
 cfe/modules/core_api/fsw/inc/cfe_endian.h, 1012
 cfe/modules/core_api/fsw/inc/cfe_error.h, 1012
 cfe/modules/core_api/fsw/inc/cfe_es.h, 1021
 cfe/modules/core_api/fsw/inc/cfe_es_api_typedefs.h, 1024
 cfe/modules/core_api/fsw/inc/cfe_evs.h, 1029
 cfe/modules/core_api/fsw/inc/cfe_evs_api_typedefs.h, 1031
 cfe/modules/core_api/fsw/inc/cfe_fs.h, 1033
 cfe/modules/core_api/fsw/inc/cfe_fs_api_typedefs.h, 1034
 cfe/modules/core_api/fsw/inc/cfe_msg.h, 1037
 cfe/modules/core_api/fsw/inc/cfe_msg_api_typedefs.h, 1040
 cfe/modules/core_api/fsw/inc/cfe_resourceid.h, 1044
 cfe/modules/core_api/fsw/inc/cfe_resourceid_api_typedefs.h, 1049
 cfe/modules/core_api/fsw/inc/cfe_sb.h, 1050
 cfe/modules/core_api/fsw/inc/cfe_sb_api_typedefs.h, 1053
 cfe/modules/core_api/fsw/inc/cfe_tbl.h, 1056
 cfe/modules/core_api/fsw/inc/cfe_tbl_api_typedefs.h, 1057
 cfe/modules/core_api/fsw/inc/cfe_tbl_filedef.h, 1059

cfe/modules/core_api/fsw/inc/cfe_time.h, 1061
cfe/modules/core_api/fsw/inc/cfe_time_api_typedefs.h,
 1063
cfe/modules/core_api/fsw/inc/cfe_version.h, 1064
cfe/modules/es/config/default_cfe_es_extern_typedefs.h,
 1066
cfe/modules/es/config/default_cfe_es_fcncodes.h, 1075
cfe/modules/es/config/default_cfe_es_interface_cfg.h,
 1096
cfe/modules/es/config/default_cfe_es_internal_cfg.h,
 1099
cfe/modules/es/config/default_cfe_es_mission_cfg.h,
 1119
cfe/modules/es/config/default_cfe_es_msg.h, 1119
cfe/modules/es/config/default_cfe_es_msgdefs.h, 1119
cfe/modules/es/config/default_cfe_es_msgids.h, 1123
cfe/modules/es/config/default_cfe_es_msgstruct.h, 1124
cfe/modules/es/config/default_cfe_es_platform_cfg.h,
 1128
cfe/modules/es/config/default_cfe_es_topicids.h, 1129
cfe/modules/es/fsw/inc/cfe_es_eventids.h, 1130
cfe/modules/evs/config/default_cfe_evs_extern_typedefs.h,
 1155
cfe/modules/evs/config/default_cfe_evs_fcncodes.h, 1158
cfe/modules/evs/config/default_cfe_evs_interface_cfg.h,
 1176
cfe/modules/evs/config/default_cfe_evs_internal_cfg.h,
 1177
cfe/modules/evs/config/default_cfe_evs_mission_cfg.h,
 1181
cfe/modules/evs/config/default_cfe_evs_msg.h, 1181
cfe/modules/evs/config/default_cfe_evs_msgdefs.h, 1181
cfe/modules/evs/config/default_cfe_evs_msgids.h, 1185
cfe/modules/evs/config/default_cfe_evs_msgstruct.h,
 1186
cfe/modules/evs/config/default_cfe_evs_platform_cfg.h,
 1189
cfe/modules/evs/config/default_cfe_evs_topicids.h, 1189
cfe/modules/evs/fsw/inc/cfe_evs_eventids.h, 1190
cfe/modules/fs/config/default_cfe_fs_extern_typedefs.h,
 1202
cfe/modules/fs/config/default_cfe_fs_filedef.h, 1202
cfe/modules/fs/config/default_cfe_fs_interface_cfg.h, 1204
cfe/modules/fs/config/default_cfe_fs_mission_cfg.h, 1205
cfe/modules/msg/fsw/inc/ccsds_hdr.h, 1205
cfe/modules/resourceid/fsw/inc/cfe_core_resourceid_basevalues.h,
 1206
cfe/modules/resourceid/fsw/inc/cfe_resourceid_basevalue.h,
 1206
cfe/modules/sb/config/default_cfe_sb_extern_typedefs.h,
 1207
cfe/modules/sb/config/default_cfe_sb_fcncodes.h, 1209
cfe/modules/sb/config/default_cfe_sb_interface_cfg.h,
 1219
cfe/modules/sb/config/default_cfe_sb_internal_cfg.h,
 1220
cfe/modules/sb/config/default_cfe_sb_mission_cfg.h,
 1228
cfe/modules/sb/config/default_cfe_sb_msg.h, 1228
cfe/modules/sb/config/default_cfe_sb_msgdefs.h, 1229
cfe/modules/sb/config/default_cfe_sb_msgids.h, 1231
cfe/modules/sb/config/default_cfe_sb_msgstruct.h, 1233
cfe/modules/sb/config/default_cfe_sb_platform_cfg.h,
 1235
cfe/modules/sb/config/default_cfe_sb_topicids.h, 1235
cfe/modules/sb/fsw/inc/cfe_sb_eventids.h, 1236
cfe/modules/tbl/config/default_cfe_tbl_extern_typedefs.h,
 1256
cfe/modules/tbl/config/default_cfe_tbl_fcncodes.h, 1257
cfe/modules/tbl/config/default_cfe_tbl_interface_cfg.h,
 1266
cfe/modules/tbl/config/default_cfe_tbl_internal_cfg.h, 1267
cfe/modules/tbl/config/default_cfe_tbl_mission_cfg.h,
 1273
cfe/modules/tbl/config/default_cfe_tbl_msg.h, 1273
cfe/modules/tbl/config/default_cfe_tbl_msgdefs.h, 1274
cfe/modules/tbl/config/default_cfe_tbl_msgids.h, 1276
cfe/modules/tbl/config/default_cfe_tbl_msgstruct.h, 1277
cfe/modules/tbl/config/default_cfe_tbl_platform_cfg.h,
 1279
cfe/modules/tbl/config/default_cfe_tbl_topicids.h, 1279
cfe/modules/tbl/fsw/inc/cfe_tbl_eventids.h, 1280
cfe/modules/time/config/default_cfe_time_extern_typedefs.h,
 1300
cfe/modules/time/config/default_cfe_time_fcncodes.h,
 1305
cfe/modules/time/config/default_cfe_time_interface_cfg.h,
 1321
cfe/modules/time/config/default_cfe_time_internal_cfg.h,
 1325
cfe/modules/time/config/default_cfe_time_mission_cfg.h,
 1330
cfe/modules/time/config/default_cfe_time_msg.h, 1331
cfe/modules/time/config/default_cfe_time_msgdefs.h,
 1331
cfe/modules/time/config/default_cfe_time_msgids.h, 1333
cfe/modules/time/config/default_cfe_time_msgstruct.h,
 1335
cfe/modules/time/config/default_cfe_time_platform_cfg.h,
 1338
cfe/modules/time/config/default_cfe_time_topicids.h, 1338
cfe/modules/time/fsw/inc/cfe_time_eventids.h, 1340
CFE_BIT
 cfe_sb.h, 1052
CFE_BUILD_BASELINE
 cfe_version.h, 1065
CFE_BUILD_CODENAME
 cfe_version.h, 1065

CFE_BUILD_DEV_CYCLE
 cfe_version.h, 1065
CFE_BUILD_NUMBER
 cfe_version.h, 1065
CFE_CFG_MAX_VERSION_STR_LEN
 cfe_version.h, 1065
CFE_CLR
 cfe_sb.h, 1052
cfe_config.h
 CFE_Config_GetArrayValue, 1007
 CFE_Config_GetIdByName, 1008
 CFE_Config_getName, 1008
 CFE_Config_GetObjPointer, 1009
 CFE_Config_getString, 1009
 CFE_Config_getValue, 1009
 CFE_Config_getVersionString, 1010
 CFE_Config_IterateAll, 1010
cfe_config_api_typedefs.h
 CFE_Config_ArrayValue_t, 1011
 CFE_Config_Callback_t, 1011
 CFE_CONFIGID_C, 1011
 CFE_ConfigId_t, 1012
 CFE_CONFIGID_UNDEFINED, 1011
CFE_Config_ArrayValue, 523
 ElementPtr, 524
 NumElements, 524
CFE_Config_ArrayValue_t
 cfe_config_api_typedefs.h, 1011
CFE_Config_Callback_t
 cfe_config_api_typedefs.h, 1011
cfe_config_external.h
 CFE_Config_SetupPlatformConfigInfo, 998
CFE_Config_GetArrayValue
 cfe_config.h, 1007
CFE_Config_GetIdByName
 cfe_config.h, 1008
CFE_Config_getName
 cfe_config.h, 1008
CFE_Config_GetObjPointer
 cfe_config.h, 1009
CFE_Config_getString
 cfe_config.h, 1009
CFE_Config_getValue
 cfe_config.h, 1009
CFE_Config_getVersionString
 cfe_config.h, 1010
CFE_Config_IdNameEntry, 524
 Name, 524
CFE_Config_IdNameEntry_t
 cfe_config_nametable.h, 1000
CFE_Config_Init
 cfe_config_init.h, 999
cfe_config_init.h
 CFE_Config_Init, 999
CFE_Config_SetupBasicBuildInfo, 999
CFE_Config_IterateAll
 cfe_config.h, 1010
CFE_Config_LocateConfigRecordByID
 cfe_config_lookup.h, 999
cfe_config_lookup.h
 CFE_Config_LocateConfigRecordByID, 999
cfe_config_nametable.h
 CFE_Config_IdNameEntry_t, 1000
 CFE_CONFIGID_NAMETABLE, 1000
cfe_config_set.h
 CFE_Config_SetArrayValue, 1000
 CFE_Config_SetObjPointer, 1000
 CFE_Config_SetString, 1000
 CFE_Config_SetValue, 1000
CFE_Config_SetArrayValue
 cfe_config_set.h, 1000
CFE_Config_SetObjPointer
 cfe_config_set.h, 1000
CFE_Config_SetString
 cfe_config_set.h, 1000
CFE_Config_SetupBasicBuildInfo
 cfe_config_init.h, 999
CFE_Config_SetupPlatformConfigInfo
 cfe_config_external.h, 998
CFE_Config_SetValue
 cfe_config_set.h, 1000
cfe_config_table.h
 CFE_Config_ValueBuffer_t, 1001
 CFE_Config_ValueEntry_t, 1001
 CFE_ConfigType, 1001
 CFE_ConfigType_ARRAY, 1001
 CFE_ConfigType_POINTER, 1001
 CFE_ConfigType_STRING, 1001
 CFE_ConfigType_t, 1001
 CFE_ConfigType_UNDEFINED, 1001
 CFE_ConfigType_VALUE, 1001
CFE_Config_ValueBuffer, 524
 AsInteger, 525
 AsPointer, 525
CFE_Config_ValueBuffer_t
 cfe_config_table.h, 1001
CFE_Config_ValueEntry, 525
 ActualType, 525
 Datum, 525
CFE_Config_ValueEntry_t
 cfe_config_table.h, 1001
CFE_CONFIGID_BASE
 cFE Resource ID base values, 400
CFE_CONFIGID_C
 cfe_config_api_typedefs.h, 1011
CFE_CONFIGID_NAMETABLE
 cfe_config_nametable.h, 1000
CFE_ConfigId_t

cfe_config_api_typedefs.h, 1012
CFE_CONFIGID_UNDEFINED
 cfe_config_api_typedefs.h, 1011
CFE_ConfigType
 cfe_config_table.h, 1001
CFE_ConfigType_ARRAY
 cfe_config_table.h, 1001
CFE_ConfigType_POINTER
 cfe_config_table.h, 1001
CFE_ConfigType_STRING
 cfe_config_table.h, 1001
CFE_ConfigType_t
 cfe_config_table.h, 1001
CFE_ConfigType_UNDEFINED
 cfe_config_table.h, 1001
CFE_ConfigType_VALUE
 cfe_config_table.h, 1001
CFE_CPU1_CMD_MID_BASE
 default_cfe_core_api_base_msgids.h, 1002
CFE_CPU1_TLM_MID_BASE
 default_cfe_core_api_base_msgids.h, 1002
cfe_endian.h
 CFE_MAKE_BIG16, 1012
 CFE_MAKE_BIG32, 1012
cfe_error.h
 CFE_ES_StatusToString, 1020
 CFE_EVENTS_SERVICE, 1019
 CFE_EXECUTIVE_SERVICE, 1019
 CFE_FILE_SERVICE, 1019
 CFE_GENERIC_SERVICE, 1019
 CFE_SERVICE_BITMASK, 1019
 CFE_SEVERITY_BITMASK, 1019
 CFE_SEVERITY_ERROR, 1019
 CFE_SEVERITY_INFO, 1019
 CFE_SEVERITY_SUCCESS, 1020
 CFE_SOFTWARE_BUS_SERVICE, 1020
 CFE_STATUS_C, 1020
 CFE_STATUS_STRING_LENGTH, 1020
 CFE_Status_t, 1020
 CFE_StatusString_t, 1020
 CFE_TABLE_SERVICE, 1020
 CFE_TIME_SERVICE, 1020
cfe_es.h
 CFE_ES_DBIT, 1024
 CFE_ES_DTEST, 1024
 CFE_ES_TEST_LONG_MASK, 1024
 OS_PRINTF, 1024
 CFE_ES_ALL_APPS_EID
 cfe_es_eventids.h, 1133
cfe_es_api_typedefs.h
 CFE_ES_APP_RESTART, 1026
 CFE_ES_APPID_C, 1026
 CFE_ES_APPID_UNDEFINED, 1026
 CFE_ES_CDS_BAD_HANDLE, 1026
 CFE_ES_CDHANDLE_C, 1026
 CFE_ES_ChildTaskMainFuncPtr_t, 1028
 CFE_ES_COUNTERID_C, 1026
 CFE_ES_COUNTERID_UNDEFINED, 1026
 CFE_ES_CrcType_16_ARC, 1029
 CFE_ES_CrcType_CRC_16, 1029
 CFE_ES_CrcType_CRC_32, 1029
 CFE_ES_CrcType_CRC_8, 1029
 CFE_ES_CrcType_Enum, 1029
 CFE_ES_CrcType_Enum_t, 1028
 CFE_ES_CrcType_MAX, 1029
 CFE_ES_CrcType_NONE, 1029
 CFE_ES_LIBID_C, 1026
 CFE_ES_LIBID_UNDEFINED, 1027
 CFE_ES_LibraryEntryFuncPtr_t, 1028
 CFE_ES_MEMHANDLE_C, 1027
 CFE_ES_MEMHANDLE_UNDEFINED, 1027
 CFE_ES_MEMPOOLBUF_C, 1027
 CFE_ES_MemPoolBuf_t, 1028
 CFE_ES_NO_MUTEX, 1027
 CFE_ES_PoolAlign_t, 1028
 CFE_ES_StackPointer_t, 1029
 CFE_ES_STATIC_POOL_TYPE, 1027
 CFE_ES_TASK_STACK_ALLOCATE, 1027
 CFE_ES_TaskEntryFuncPtr_t, 1029
 CFE_ES_TASKID_C, 1028
 CFE_ES_TASKID_UNDEFINED, 1028
 CFE_ES_USE_MUTEX, 1028
 CFE_ES_APP_CLEANUP_ERR
 cFE Return Code Defines, 243
 CFE_ES_APP_RESTART
 cfe_es_api_typedefs.h, 1026
 CFE_ES_APP_TLM_MID
 default_cfe_es_msgids.h, 1124
 CFE_ES_APPID_BASE
 cFE Resource ID base values, 400
 CFE_ES_APPID_C
 cfe_es_api_typedefs.h, 1026
 CFE_ES_AppId_t
 default_cfe_es_extern_typedefs.h, 1069
 CFE_ES_AppID_ToIndex
 cFE Resource ID APIs, 260
 CFE_ES_APPID_UNDEFINED
 cfe_es_api_typedefs.h, 1026
 CFE_ES_AppInfo, 525
 AddressesAreValid, 527
 BSSAddress, 527
 BSSSize, 527
 CodeAddress, 527
 CodeSize, 527
 DataAddress, 527
 DataSize, 527
 EntryPoint, 527
 ExceptionAction, 528

ExecutionCounter, [528](#)
 FileName, [528](#)
 MainTaskId, [528](#)
 MainTaskName, [528](#)
 Name, [528](#)
 NumOfChildTasks, [528](#)
 Priority, [529](#)
 ResourceId, [529](#)
 StackSize, [529](#)
 StartAddress, [529](#)
 Type, [529](#)
CFE_ES_AppInfo_t
 default_cfe_es_extern_typedefs.h, [1069](#)
CFE_ES_AppNameCmd_Payload, [529](#)
 Application, [530](#)
CFE_ES_AppNameCmd_Payload_t
 default_cfe_es_msgdefs.h, [1121](#)
CFE_ES_AppReloadCmd_Payload, [530](#)
 AppFileName, [530](#)
 Application, [530](#)
CFE_ES_AppReloadCmd_Payload_t
 default_cfe_es_msgdefs.h, [1121](#)
CFE_ES_AppState
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppState_EARLY_INIT
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppState_Enum_t
 default_cfe_es_extern_typedefs.h, [1070](#)
CFE_ES_AppState_LATE_INIT
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppState_MAX
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppState_RUNNING
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppState_STOPPED
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppState_UNDEFINED
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppState_WAITING
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppType
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppType_CORE
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppType_Enum_t
 default_cfe_es_extern_typedefs.h, [1070](#)
CFE_ES_AppType_EXTERNAL
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_AppType_LIBRARY
 default_cfe_es_extern_typedefs.h, [1073](#)
CFE_ES_BackgroundWakeup
 cFE Miscellaneous APIs, [282](#)
CFE_ES_BAD_ARGUMENT
 cFE Return Code Defines, [243](#)
CFE_ES_BIN_SEM_DELETE_ERR
 cFE Return Code Defines, [243](#)
CFE_ES_BlockStats, [531](#)
 BlockSize, [531](#)
 NumCreated, [531](#)
 NumFree, [531](#)
CFE_ES_BlockStats_t
 default_cfe_es_extern_typedefs.h, [1070](#)
CFE_ES_BOOT_ERR_EID
 cfe_es_eventids.h, [1133](#)
CFE_ES_BUFFER_NOT_IN_POOL
 cFE Return Code Defines, [243](#)
CFE_ES_BUILD_INF_EID
 cfe_es_eventids.h, [1134](#)
CFE_ES_CalculateCRC
 cFE Miscellaneous APIs, [282](#)
CFE_ES_CC1_ERR_EID
 cfe_es_eventids.h, [1134](#)
CFE_ES_CDS_ACCESS_ERROR
 cFE Return Code Defines, [243](#)
CFE_ES_CDS_ALREADY_EXISTS
 cFE Return Code Defines, [243](#)
CFE_ES_CDS_BAD_HANDLE
 cfe_es_api_typedefs.h, [1026](#)
CFE_ES_CDS_BLOCK_CRC_ERR
 cFE Return Code Defines, [244](#)
CFE_ES_CDS_DELETE_ERR_EID
 cfe_es_eventids.h, [1134](#)
CFE_ES_CDS_DELETE_TBL_ERR_EID
 cfe_es_eventids.h, [1134](#)
CFE_ES_CDS_DELETED_INFO_EID
 cfe_es_eventids.h, [1135](#)
CFE_ES_CDS_DUMP_ERR_EID
 cfe_es_eventids.h, [1135](#)
CFE_ES_CDS_INSUFFICIENT_MEMORY
 cFE Return Code Defines, [244](#)
CFE_ES_CDS_INVALID
 cFE Return Code Defines, [244](#)
CFE_ES_CDS_INVALID_NAME
 cFE Return Code Defines, [244](#)
CFE_ES_CDS_INVALID_SIZE
 cFE Return Code Defines, [244](#)
CFE_ES_CDS_NAME_ERR_EID
 cfe_es_eventids.h, [1135](#)
CFE_ES_CDS_OWNER_ACTIVE_EID
 cfe_es_eventids.h, [1135](#)
CFE_ES_CDS_OWNER_ACTIVE_ERR
 cFE Return Code Defines, [244](#)
CFE_ES_CDS_REG_DUMP_INF_EID
 cfe_es_eventids.h, [1136](#)
CFE_ES_CDS_REGISTER_ERR_EID
 cfe_es_eventids.h, [1136](#)
CFE_ES_CDS_WRONG_TYPE_ERR
 cFE Return Code Defines, [244](#)

CFE_ES_CDSBLOCKID_BASE
 cFE Resource ID base values, 400

CFE_ES_CDSHANDLE_C
 cfe_es_api_typedefs.h, 1026

CFE_ES_CDSHandle_t
 default_cfe_es_extern_typedefs.h, 1070

CFE_ES_CDSRegDumpRec, 531
 ByteAlignSpare, 532
 Handle, 532
 Name, 532
 Size, 532
 Table, 532

CFE_ES_CDSRegDumpRec_t
 default_cfe_es_extern_typedefs.h, 1070

CFE_ES_ChildTaskMainFuncPtr_t
 cfe_es_api_typedefs.h, 1028

CFE_ES_CLEAR_ER_LOG_CC
 default_cfe_es_fcncodes.h, 1076

CFE_ES_CLEAR_SYS_LOG_CC
 default_cfe_es_fcncodes.h, 1076

CFE_ES_ClearERLogCmd, 532
 CommandHeader, 533

CFE_ES_ClearERLogCmd_t
 default_cfe_es_msgstruct.h, 1126

CFE_ES_ClearSysLogCmd, 533
 CommandHeader, 533

CFE_ES_ClearSysLogCmd_t
 default_cfe_es_msgstruct.h, 1126

CFE_ES_CMD_MID
 default_cfe_es_msgids.h, 1124

CFE_ES_CopyToCDS
 cFE Critical Data Store APIs, 284

CFE_ES_COUNT_SEM_DELETE_ERR
 cFE Return Code Defines, 244

CFE_ES_COUNTERID_C
 cfe_es_api_typedefs.h, 1026

CFE_ES_CounterId_t
 default_cfe_es_extern_typedefs.h, 1070

CFE_ES_CounterID_TolIndex
 cFE Resource ID APIs, 260

CFE_ES_COUNTERID_UNDEFINED
 cfe_es_api_typedefs.h, 1026

CFE_ES_COUNTID_BASE
 cFE Resource ID base values, 400

CFE_ES_CrcType_16_ARC
 cfe_es_api_typedefs.h, 1029

CFE_ES_CrcType_CRC_16
 cfe_es_api_typedefs.h, 1029

CFE_ES_CrcType_CRC_32
 cfe_es_api_typedefs.h, 1029

CFE_ES_CrcType_CRC_8
 cfe_es_api_typedefs.h, 1029

CFE_ES_CrcType_Enum
 cfe_es_api_typedefs.h, 1029

CFE_ES_CrcType_Enum_t
 cfe_es_api_typedefs.h, 1028

CFE_ES_CrcType_MAX
 cfe_es_api_typedefs.h, 1029

CFE_ES_CrcType_NONE
 cfe_es_api_typedefs.h, 1029

CFE_ES_CreateChildTask
 cFE Child Task APIs, 278

CFE_ES_CREATING_CDS_DUMP_ERR_EID
 cfe_es_eventids.h, 1136

CFE_ES_DBIT
 cfe_es.h, 1024

CFE_ES_DELETE_CDS_CC
 default_cfe_es_fcncodes.h, 1077

CFE_ES_DeleteApp
 cFE Application Control APIs, 264

CFE_ES_DeleteCDSCmd, 533
 CommandHeader, 534
 Payload, 534

CFE_ES_DeleteCDSCmd_Payload, 534
 CdsName, 534

CFE_ES_DeleteCDSCmd_Payload_t
 default_cfe_es_msgdefs.h, 1121

CFE_ES_DeleteCDSCmd_t
 default_cfe_es_msgstruct.h, 1126

CFE_ES_DeleteChildTask
 cFE Child Task APIs, 279

CFE_ES_DeleteGenCounter
 cFE Generic Counter APIs, 297

CFE_ES_DTEST
 cfe_es.h, 1024

CFE_ES_DUMP_CDS_REGISTRY_CC
 default_cfe_es_fcncodes.h, 1078

CFE_ES_DumpCDSRegistryCmd, 534
 CommandHeader, 535
 Payload, 535

CFE_ES_DumpCDSRegistryCmd_Payload, 535
 DumpFilename, 535

CFE_ES_DumpCDSRegistryCmd_Payload_t
 default_cfe_es_msgdefs.h, 1121

CFE_ES_DumpCDSRegistryCmd_t
 default_cfe_es_msgstruct.h, 1126

CFE_ES_ERLOG1_INF_EID
 cfe_es_eventids.h, 1136

CFE_ES_ERLOG2_EID
 cfe_es_eventids.h, 1137

CFE_ES_ERLOG2_ERR_EID
 cfe_es_eventids.h, 1137

CFE_ES_ERLOG_PENDING_ERR_EID
 cfe_es_eventids.h, 1137

CFE_ES_ERR_APP_CREATE
 cFE Return Code Defines, 245

CFE_ES_ERR_APP_REGISTER
 cFE Return Code Defines, 245

CFE_ES_ERR_CHILD_TASK_CREATE
 cFE Return Code Defines, [245](#)

CFE_ES_ERR_CHILD_TASK_DELETE
 cFE Return Code Defines, [245](#)

CFE_ES_ERR_CHILD_TASK_DELETE_MAIN_TASK
 cFE Return Code Defines, [245](#)

CFE_ES_ERR_CHILD_TASK_REGISTER
 cFE Return Code Defines, [245](#)

CFE_ES_ERR_DUPLICATE_NAME
 cFE Return Code Defines, [245](#)

CFE_ES_ERR_LOAD_LIB
 cFE Return Code Defines, [245](#)

CFE_ES_ERR_MEM_BLOCK_SIZE
 cFE Return Code Defines, [246](#)

CFE_ES_ERR_NAME_NOT_FOUND
 cFE Return Code Defines, [246](#)

CFE_ES_ERR_RESOURCEID_NOT_VALID
 cFE Return Code Defines, [246](#)

CFE_ES_ERR_SYS_LOG_FULL
 cFE Return Code Defines, [246](#)

CFE_ES_ERR_SYS_LOG_TRUNCATED
 cFE Return Code Defines, [246](#)

CFE_ES_ERR_SYSLOGMODE_EID
 cfe_es_eventids.h, [1137](#)

CFE_ES_ERREXIT_APP_ERR_EID
 cfe_es_eventids.h, [1138](#)

CFE_ES_ERREXIT_APP_INF_EID
 cfe_es_eventids.h, [1138](#)

cfe_es_eventids.h
 CFE_ES_ALL_APPS_EID, [1133](#)
 CFE_ES_BOOT_ERR_EID, [1133](#)
 CFE_ES_BUILD_INF_EID, [1134](#)
 CFE_ES_CC1_ERR_EID, [1134](#)
 CFE_ES_CDS_DELETE_ERR_EID, [1134](#)
 CFE_ES_CDS_DELETE_TBL_ERR_EID, [1134](#)
 CFE_ES_CDS_DELETED_INFO_EID, [1135](#)
 CFE_ES_CDS_DUMP_ERR_EID, [1135](#)
 CFE_ES_CDS_NAME_ERR_EID, [1135](#)
 CFE_ES_CDS_OWNER_ACTIVE_EID, [1135](#)
 CFE_ES_CDS_REG_DUMP_INF_EID, [1136](#)
 CFE_ES_CDS_REGISTER_ERR_EID, [1136](#)
 CFE_ES_CREATING_CDS_DUMP_ERR_EID, [1136](#)
 CFE_ES_ERLOG1_INF_EID, [1136](#)
 CFE_ES_ERLOG2_EID, [1137](#)
 CFE_ES_ERLOG2_ERR_EID, [1137](#)
 CFE_ES_ERLOG_PENDING_ERR_EID, [1137](#)
 CFE_ES_ERR_SYSLOGMODE_EID, [1137](#)
 CFE_ES_ERREXIT_APP_ERR_EID, [1138](#)
 CFE_ES_ERREXIT_APP_INF_EID, [1138](#)
 CFE_ES_EXIT_APP_ERR_EID, [1138](#)
 CFE_ES_EXIT_APP_INF_EID, [1138](#)
 CFE_ES_FILEWRITE_ERR_EID, [1139](#)
 CFE_ES_INIT_INF_EID, [1139](#)
 CFE_ES_INITSTATS_INF_EID, [1139](#)

CFE_ES_INVALID_POOL_HANDLE_ERR_EID, [1139](#)

CFE_ES_LEN_ERR_EID, [1140](#)

CFE_ES_MID_ERR_EID, [1140](#)

CFE_ES_NOOP_INF_EID, [1140](#)

CFE_ES_ONE_APP_EID, [1140](#)

CFE_ES_ONE_APPID_ERR_EID, [1141](#)

CFE_ES_ONE_ERR_EID, [1141](#)

CFE_ES_OSCREATE_ERR_EID, [1141](#)

CFE_ES_PCR_ERR1_EID, [1141](#)

CFE_ES_PCR_ERR2_EID, [1142](#)

CFE_ES_PERF_DATAWRITTEN_EID, [1142](#)

CFE_ES_PERF_FILTMSKCMD_EID, [1142](#)

CFE_ES_PERF_FILTMSKERR_EID, [1142](#)

CFE_ES_PERF_LOG_ERR_EID, [1143](#)

CFE_ES_PERF_STARTCMD_EID, [1143](#)

CFE_ES_PERF_STARTCMD_ERR_EID, [1143](#)

CFE_ES_PERF_STARTCMD_TRIG_ERR_EID, [1143](#)

CFE_ES_PERF_STOPCMD_EID, [1144](#)

CFE_ES_PERF_STOPCMD_ERR2_EID, [1144](#)

CFE_ES_PERF_TRIGMSKCMD_EID, [1144](#)

CFE_ES_PERF_TRIGMSKERR_EID, [1144](#)

CFE_ES_RELOAD_APP_DBG_EID, [1145](#)

CFE_ES_RELOAD_APP_ERR1_EID, [1145](#)

CFE_ES_RELOAD_APP_ERR2_EID, [1145](#)

CFE_ES_RELOAD_APP_ERR3_EID, [1145](#)

CFE_ES_RELOAD_APP_ERR4_EID, [1146](#)

CFE_ES_RELOAD_APP_INF_EID, [1146](#)

CFE_ES_RESET_INF_EID, [1146](#)

CFE_ES_RESET_PR_COUNT_EID, [1146](#)

CFE_ES_RESTART_APP_DBG_EID, [1147](#)

CFE_ES_RESTART_APP_ERR1_EID, [1147](#)

CFE_ES_RESTART_APP_ERR2_EID, [1147](#)

CFE_ES_RESTART_APP_ERR3_EID, [1147](#)

CFE_ES_RESTART_APP_ERR4_EID, [1148](#)

CFE_ES_RESTART_APP_INF_EID, [1148](#)

CFE_ES_SET_MAX_PR_COUNT_EID, [1148](#)

CFE_ES_START_ERR_EID, [1148](#)

CFE_ES_START_EXC_ACTION_ERR_EID, [1149](#)

CFE_ES_START_INF_EID, [1149](#)

CFE_ES_START_INVALID_ENTRY_POINT_ERR_EID, [1149](#)

CFE_ES_START_INVALID_FILENAME_ERR_EID, [1149](#)

CFE_ES_START_NULL_APP_NAME_ERR_EID, [1150](#)

CFE_ES_START_PRIORITY_ERR_EID, [1150](#)

CFE_ES_STOP_DBG_EID, [1150](#)

CFE_ES_STOP_ERR1_EID, [1150](#)

CFE_ES_STOP_ERR2_EID, [1151](#)

CFE_ES_STOP_ERR3_EID, [1151](#)

CFE_ES_STOP_INF_EID, [1151](#)

CFE_ES_SYSLOG1_INF_EID, [1151](#)

CFE_ES_SYSLOG2_EID, 1152
CFE_ES_SYSLOG2_ERR_EID, 1152
CFE_ES_SYSLOGMODE_EID, 1152
CFE_ES_TASKINFO_EID, 1152
CFE_ES_TASKINFO_OSCREATE_ERR_EID, 1153
CFE_ES_TASKINFO_WR_ERR_EID, 1153
CFE_ES_TASKINFO_WRHDR_ERR_EID, 1153
CFE_ES_TASKWR_ERR_EID, 1153
CFE_ES_TLM_POOL_STATS_INFO_EID, 1154
CFE_ES_VERSION_INF_EID, 1154
CFE_ES_WRHDR_ERR_EID, 1154
CFE_ES_WRITE_CFE_HDR_ERR_EID, 1154
CFE_ES_ExceptionAction
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_ExceptionAction_Enum_t
 default_cfe_es_extern_typedefs.h, 1071
CFE_ES_ExceptionAction_PROC_RESTART
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_ExceptionAction_RESTART_APP
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_EXIT_APP_ERR_EID
 cfe_es_eventids.h, 1138
CFE_ES_EXIT_APP_INF_EID
 cfe_es_eventids.h, 1138
CFE_ES_ExitApp
 cFE Application Behavior APIs, 267
CFE_ES_ExitChildTask
 cFE Child Task APIs, 280
CFE_ES_FILE_CLOSE_ERR
 cFE Return Code Defines, 246
CFE_ES_FILE_IO_ERR
 cFE Return Code Defines, 246
CFE_ES_FileNameCmd, 536
 CommandHeader, 536
 Payload, 536
CFE_ES_FileNameCmd_Payload, 536
 FileName, 536
CFE_ES_FileNameCmd_Payload_t
 default_cfe_es_msgdefs.h, 1121
CFE_ES_FileNameCmd_t
 default_cfe_es_msgstruct.h, 1127
CFE_ES_FILEWRITE_ERR_EID
 cfe_es_eventids.h, 1139
CFE_ES_GetAppID
 cFE Information APIs, 270
CFE_ES_GetAppIDByName
 cFE Information APIs, 271
CFE_ES_GetAppInfo
 cFE Information APIs, 272
CFE_ES_GetAppName
 cFE Information APIs, 272
CFE_ES_GetCDSBlockIDByName
 cFE Critical Data Store APIs, 285
CFE_ES_GetCDSBlockName
 cFE Critical Data Store APIs, 285
CFE_ES_GetGenCount
 cFE Generic Counter APIs, 298
CFE_ES_GetGenCounterIDByName
 cFE Generic Counter APIs, 298
CFE_ES_GetGenCounterName
 cFE Generic Counter APIs, 299
CFE_ES_GetLibIDByName
 cFE Information APIs, 273
CFE_ES_GetLibInfo
 cFE Information APIs, 274
CFE_ES_GetLibName
 cFE Information APIs, 274
CFE_ES_GetMemPoolStats
 cFE Memory Manager APIs, 288
CFE_ES_GetModuleInfo
 cFE Information APIs, 275
CFE_ES_GetPoolBuf
 cFE Memory Manager APIs, 289
CFE_ES_GetPoolBufInfo
 cFE Memory Manager APIs, 290
CFE_ES_GetResetType
 cFE Information APIs, 276
CFE_ES_GetTaskID
 cFE Information APIs, 276
CFE_ES_GetTaskIDByName
 cFE Child Task APIs, 280
CFE_ES_GetTaskInfo
 cFE Information APIs, 277
CFE_ES_GetTaskName
 cFE Child Task APIs, 281
CFE_ES_HK_TLM_MID
 default_cfe_es_msgids.h, 1124
CFE_ES_HousekeepingTlm, 537
 Payload, 537
 TelemetryHeader, 537
CFE_ES_HousekeepingTlm_Payload, 537
 BootSource, 539
 CFECoreChecksum, 539
 CFEMajorVersion, 540
 CFEMinorVersion, 540
 CFEMissionRevision, 540
 CFERevision, 540
 CommandCounter, 540
 CommandErrorCounter, 540
 ERLogEntries, 540
 ERLogIndex, 541
 HeapBlocksFree, 541
 HeapBytesFree, 541
 HeapMaxBlockSize, 541
 MaxProcessorResets, 541
 OSALMajorVersion, 541
 OSALMinorVersion, 541
 OSALMissionRevision, 542

OSALRevision, 542
 PerfDataCount, 542
 PerfDataEnd, 542
 PerfDataStart, 542
 PerfDataToWrite, 542
 PerfFilterMask, 542
 PerfMode, 543
 PerfState, 543
 PerfTriggerCount, 543
 PerfTriggerMask, 543
 ProcessorResets, 543
 PSPMajorVersion, 543
 PSPMinorVersion, 543
 PSPMissionRevision, 544
 PSPRevision, 544
 RegisteredCoreApps, 544
 RegisteredExternalApps, 544
 RegisteredLibs, 544
 RegisteredTasks, 544
 ResetSubtype, 544
 ResetType, 545
 SysLogBytesUsed, 545
 SysLogEntries, 545
 SysLogMode, 545
 SysLogSize, 545
CFE_ES_HousekeepingTlm_Payload_t
 default_cfe_es_msgdefs.h, 1122
CFE_ES_HousekeepingTlm_t
 default_cfe_es_msgstruct.h, 1127
CFE_ES_IncrementGenCounter
 cFE Generic Counter APIs, 300
CFE_ES_IncrementTaskCounter
 cFE Application Behavior APIs, 267
CFE_ES_INIT_INF_EID
 cfe_es_eventids.h, 1139
CFE_ES_INITSTATS_INF_EID
 cfe_es_eventids.h, 1139
CFE_ES_INVALID_POOL_HANDLE_ERR_EID
 cfe_es_eventids.h, 1139
CFE_ES_LEN_ERR_EID
 cfe_es_eventids.h, 1140
CFE_ES_LIB_ALREADY_LOADED
 cFE Return Code Defines, 246
CFE_ES_LIBID_BASE
 cFE Resource ID base values, 400
CFE_ES_LIBID_C
 cfe_es_api_typedefs.h, 1026
CFE_ES_LibId_t
 default_cfe_es_extern_typedefs.h, 1071
CFE_ES_LibID_ToIndex
 cFE Resource ID APIs, 261
CFE_ES_LIBID_UNDEFINED
 cfe_es_api_typedefs.h, 1027
CFE_ES_LibraryEntryFuncPtr_t
 cfe_es_api_typedefs.h, 1028
CFE_ES_LogEntryType
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_LogEntryType_APPLICATION
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_LogEntryType_CORE
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_LogEntryType_Enum_t
 default_cfe_es_extern_typedefs.h, 1071
CFE_ES_LogMode
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_LogMode_DISCARD
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_LogMode_Enum_t
 default_cfe_es_extern_typedefs.h, 1071
CFE_ES_LogMode_OVERWRITE
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_Main
 cFE Entry/Exit APIs, 262
CFE_ES_MEMADDRESS_C
 default_cfe_es_extern_typedefs.h, 1069
CFE_ES_MemAddress_t
 default_cfe_es_extern_typedefs.h, 1071
CFE_ES_MEMADDRESS_TO_PTR
 default_cfe_es_extern_typedefs.h, 1069
CFE_ES_MEMHANDLE_C
 cfe_es_api_typedefs.h, 1027
CFE_ES_MemHandle_t
 default_cfe_es_extern_typedefs.h, 1071
CFE_ES_MEMHANDLE_UNDEFINED
 cfe_es_api_typedefs.h, 1027
CFE_ES_MEMOFFSET_C
 default_cfe_es_extern_typedefs.h, 1069
CFE_ES_MemOffset_t
 default_cfe_es_extern_typedefs.h, 1072
CFE_ES_MEMOFFSET_TO_SIZE_T
 default_cfe_es_extern_typedefs.h, 1069
CFE_ES_MEMPOOLBUF_C
 cfe_es_api_typedefs.h, 1027
CFE_ES_MemPoolBuf_t
 cfe_es_api_typedefs.h, 1028
CFE_ES_MemPoolStats, 545
 BlockStats, 546
 CheckErrCtr, 546
 NumBlocksRequested, 546
 NumFreeBytes, 546
 PoolSize, 547
CFE_ES_MemPoolStats_t
 default_cfe_es_extern_typedefs.h, 1072
CFE_ES_MEMSTATS_TLM_MID
 default_cfe_es_msgids.h, 1124
CFE_ES_MemStatsTlm, 547
 Payload, 547
 TelemetryHeader, 547

CFE_ES_MemStatsTIm_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_MID_ERR_EID
 cfe_es_eventids.h, 1140

CFE_ES_MUT_SEM_DELETE_ERR
 cFE Return Code Defines, 246

CFE_ES_NO_MUTEX
 cfe_es_api_typedefs.h, 1027

CFE_ES_NO_RESOURCE_IDS_AVAILABLE
 cFE Return Code Defines, 247

CFE_ES_NOOP_CC
 default_cfe_es_fcncodes.h, 1079

CFE_ES_NOOP_INF_EID
 cfe_es_eventids.h, 1140

CFE_ES_NoopCmd, 547
 CommandHeader, 548

CFE_ES_NoopCmd_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_NOT_IMPLEMENTED
 cFE Return Code Defines, 247

CFE_ES_ONE_APP_EID
 cfe_es_eventids.h, 1140

CFE_ES_ONE_APPID_ERR_EID
 cfe_es_eventids.h, 1141

CFE_ES_ONE_ERR_EID
 cfe_es_eventids.h, 1141

CFE_ES_OneAppTIm, 548
 Payload, 548
 TelemetryHeader, 548

CFE_ES_OneAppTIm_Payload, 549
 ApplInfo, 549

CFE_ES_OneAppTIm_Payload_t
 default_cfe_es_msgdefs.h, 1122

CFE_ES_OneAppTIm_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_OPERATION_TIMED_OUT
 cFE Return Code Defines, 247

CFE_ES_OSCREATE_ERR_EID
 cfe_es_eventids.h, 1141

CFE_ES_OVER_WRITE_SYS_LOG_CC
 default_cfe_es_fcncodes.h, 1080

CFE_ES_OverWriteSysLogCmd, 549
 CommandHeader, 549
 Payload, 549

CFE_ES_OverWriteSysLogCmd_Payload, 550
 Mode, 550

CFE_ES_OverWriteSysLogCmd_Payload_t
 default_cfe_es_msgdefs.h, 1122

CFE_ES_OverWriteSysLogCmd_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_PCR_ERR1_EID
 cfe_es_eventids.h, 1141

CFE_ES_PCR_ERR2_EID
 cfe_es_eventids.h, 1142

CFE_ES_PERF_DATAWRITTEN_EID
 cfe_es_eventids.h, 1142

CFE_ES_PERF_FILTMSKCMD_EID
 cfe_es_eventids.h, 1142

CFE_ES_PERF_FILTMSKERR_EID
 cfe_es_eventids.h, 1142

CFE_ES_PERF_LOG_ERR_EID
 cfe_es_eventids.h, 1143

CFE_ES_PERF_STARTCMD_EID
 cfe_es_eventids.h, 1143

CFE_ES_PERF_STARTCMD_ERR_EID
 cfe_es_eventids.h, 1143

CFE_ES_PERF_STARTCMD_TRIG_ERR_EID
 cfe_es_eventids.h, 1143

CFE_ES_PERF_STOPCMD_EID
 cfe_es_eventids.h, 1144

CFE_ES_PERF_STOPCMD_ERR2_EID
 cfe_es_eventids.h, 1144

CFE_ES_PERF_TRIGMSKCMD_EID
 cfe_es_eventids.h, 1144

CFE_ES_PERF_TRIGMSKERR_EID
 cfe_es_eventids.h, 1144

CFE_ES_PerfLogAdd
 cFE Performance Monitor APIs, 296

CFE_ES_PerfLogEntry
 cFE Performance Monitor APIs, 295

CFE_ES_PerfLogExit
 cFE Performance Monitor APIs, 296

CFE_ES_PerfMode
 default_cfe_es_msgdefs.h, 1123

CFE_ES_PerfMode_Enum_t
 default_cfe_es_msgdefs.h, 1122

CFE_ES_PerfTrigger_CENTER
 default_cfe_es_msgdefs.h, 1123

CFE_ES_PerfTrigger_END
 default_cfe_es_msgdefs.h, 1123

CFE_ES_PerfTrigger_START
 default_cfe_es_msgdefs.h, 1123

CFE_ES_POOL_BLOCK_INVALID
 cFE Return Code Defines, 247

CFE_ES_PoolAlign, 550
 LongDouble, 551
 LongInt, 551
 Ptr, 551

CFE_ES_PoolAlign_t
 cfe_es_api_typedefs.h, 1028

CFE_ES_PoolCreate
 cFE Memory Manager APIs, 291

CFE_ES_PoolCreateEx
 cFE Memory Manager APIs, 291

CFE_ES_PoolCreateNoSem
 cFE Memory Manager APIs, 293

CFE_ES_PoolDelete
 cFE Memory Manager APIs, 293

CFE_ES_POOLID_BASE
 cFE Resource ID base values, 400

CFE_ES_PoolStatsTlm_Payload, 551
 PoolHandle, 551
 PoolStats, 551

CFE_ES_PoolStatsTlm_Payload_t
 default_cfe_es_msgdefs.h, 1122

CFE_ES_ProcessAsyncEvent
 cFE Miscellaneous APIs, 283

CFE_ES_PutPoolBuf
 cFE Memory Manager APIs, 294

CFE_ES_QUERY_ALL_CC
 default_cfe_es_fcncodes.h, 1080

CFE_ES_QUERY_ALL_TASKS_CC
 default_cfe_es_fcncodes.h, 1081

CFE_ES_QUERY_ONE_CC
 default_cfe_es_fcncodes.h, 1082

CFE_ES_QueryAllCmd, 552
 CommandHeader, 552
 Payload, 552

CFE_ES_QueryAllCmd_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_QueryAllTasksCmd, 552
 CommandHeader, 553
 Payload, 553

CFE_ES_QueryAllTasksCmd_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_QueryOneCmd, 553
 CommandHeader, 553
 Payload, 553

CFE_ES_QueryOneCmd_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_QUEUE_DELETE_ERR
 cFE Return Code Defines, 247

CFE_ES_RegisterCDS
 cFE Critical Data Store APIs, 286

CFE_ES_RegisterGenCounter
 cFE Generic Counter APIs, 300

CFE_ES_RELOAD_APP_CC
 default_cfe_es_fcncodes.h, 1083

CFE_ES_RELOAD_APP_DBG_EID
 cfe_es_eventids.h, 1145

CFE_ES_RELOAD_APP_ERR1_EID
 cfe_es_eventids.h, 1145

CFE_ES_RELOAD_APP_ERR2_EID
 cfe_es_eventids.h, 1145

CFE_ES_RELOAD_APP_ERR3_EID
 cfe_es_eventids.h, 1145

CFE_ES_RELOAD_APP_ERR4_EID
 cfe_es_eventids.h, 1146

CFE_ES_RELOAD_APP_INF_EID
 cfe_es_eventids.h, 1146

CFE_ES_ReloadApp
 cFE Application Control APIs, 265

CFE_ES_ReloadAppCmd, 553
 CommandHeader, 554
 Payload, 554

CFE_ES_ReloadAppCmd_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_RESET_COUNTERS_CC
 default_cfe_es_fcncodes.h, 1084

CFE_ES_RESET_INF_EID
 cfe_es_eventids.h, 1146

CFE_ES_RESET_PR_COUNT_CC
 default_cfe_es_fcncodes.h, 1085

CFE_ES_RESET_PR_COUNT_EID
 cfe_es_eventids.h, 1146

CFE_ES_ResetCFE
 cFE Entry/Exit APIs, 263

CFE_ES_ResetCountersCmd, 554
 CommandHeader, 554

CFE_ES_ResetCountersCmd_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_ResetPRCountCmd, 554
 CommandHeader, 555

CFE_ES_ResetPRCountCmd_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_RESTART_APP_CC
 default_cfe_es_fcncodes.h, 1085

CFE_ES_RESTART_APP_DBG_EID
 cfe_es_eventids.h, 1147

CFE_ES_RESTART_APP_ERR1_EID
 cfe_es_eventids.h, 1147

CFE_ES_RESTART_APP_ERR2_EID
 cfe_es_eventids.h, 1147

CFE_ES_RESTART_APP_ERR3_EID
 cfe_es_eventids.h, 1147

CFE_ES_RESTART_APP_ERR4_EID
 cfe_es_eventids.h, 1148

CFE_ES_RESTART_APP_INF_EID
 cfe_es_eventids.h, 1148

CFE_ES_RESTART_CC
 default_cfe_es_fcncodes.h, 1086

CFE_ES_RestartApp
 cFE Application Control APIs, 265

CFE_ES_RestartAppCmd, 555
 CommandHeader, 555
 Payload, 555

CFE_ES_RestartAppCmd_t
 default_cfe_es_msgstruct.h, 1127

CFE_ES_RestartCmd, 555
 CommandHeader, 556
 Payload, 556

CFE_ES_RestartCmd_Payload, 556
 RestartType, 556

CFE_ES_RestartCmd_Payload_t
 default_cfe_es_msgdefs.h, 1122

CFE_ES_RestartCmd_t

default_cfe_es_msgstruct.h, 1128
CFE_ES_RestoreFromCDS
 cFE Critical Data Store APIs, 287
CFE_ES_RST_ACCESS_ERR
 cFE Return Code Defines, 247
CFE_ES_RunLoop
 cFE Application Behavior APIs, 267
CFE_ES_RunStatus
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_APP_ERROR
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_APP_EXIT
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_APP_RUN
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_CORE_APP_INIT_ERROR
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_CORE_APP_RUNTIME_ERROR
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_Enum_t
 default_cfe_es_extern_typedefs.h, 1072
CFE_ES_RunStatus_MAX
 default_cfe_es_extern_typedefs.h, 1075
CFE_ES_RunStatus_SYS_DELETE
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_SYS_EXCEPTION
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_SYS_RELOAD
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_SYS_RESTART
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_RunStatus_UNDEFINED
 default_cfe_es_extern_typedefs.h, 1074
CFE_ES_SEND_HK_MID
 default_cfe_es_msgids.h, 1124
CFE_ES_SEND_MEM_POOL_STATS_CC
 default_cfe_es_fcncodes.h, 1087
CFE_ES_SendHkCmd, 557
 CommandHeader, 557
CFE_ES_SendHkCmd_t
 default_cfe_es_msgstruct.h, 1128
CFE_ES_SendMemPoolStatsCmd, 557
 CommandHeader, 557
 Payload, 557
CFE_ES_SendMemPoolStatsCmd_Payload, 558
 Application, 558
 PoolHandle, 558
CFE_ES_SendMemPoolStatsCmd_Payload_t
 default_cfe_es_msgdefs.h, 1122
CFE_ES_SendMemPoolStatsCmd_t
 default_cfe_es_msgstruct.h, 1128
CFE_ES_SET_MAX_PR_COUNT_CC
 default_cfe_es_fcncodes.h, 1088
CFE_ES_SET_MAX_PR_COUNT_EID
 cfe_es_eventids.h, 1148
CFE_ES_SET_PERF_FILTER_MASK_CC
 default_cfe_es_fcncodes.h, 1089
CFE_ES_SET_PERF_TRIGGER_MASK_CC
 default_cfe_es_fcncodes.h, 1090
CFE_ES_SetGenCount
 cFE Generic Counter APIs, 301
CFE_ES_SetMaxPRCountCmd, 558
 CommandHeader, 559
 Payload, 559
CFE_ES_SetMaxPRCountCmd_Payload, 559
 MaxPRCount, 559
CFE_ES_SetMaxPRCountCmd_Payload_t
 default_cfe_es_msgdefs.h, 1122
CFE_ES_SetMaxPRCountCmd_t
 default_cfe_es_msgstruct.h, 1128
CFE_ES_SetPerfFilterMaskCmd, 559
 CommandHeader, 560
 Payload, 560
CFE_ES_SetPerfFilterMaskCmd_Payload, 560
 FilterMask, 560
 FilterMaskNum, 560
CFE_ES_SetPerfFilterMaskCmd_Payload_t
 default_cfe_es_msgdefs.h, 1122
CFE_ES_SetPerfFilterMaskCmd_t
 default_cfe_es_msgstruct.h, 1128
CFE_ES_SetPerfTriggerMaskCmd, 561
 CommandHeader, 561
 Payload, 561
CFE_ES_SetPerfTriggerMaskCmd_t
 default_cfe_es_msgstruct.h, 1128
CFE_ES_SetPerfTrigMaskCmd_Payload, 561
 TriggerMask, 561
 TriggerMaskNum, 562
CFE_ES_SetPerfTrigMaskCmd_Payload_t
 default_cfe_es_msgdefs.h, 1122
CFE_ES_StackPointer_t
 cfe_es_api_typedefs.h, 1029
CFE_ES_START_APP_CC
 default_cfe_es_fcncodes.h, 1090
CFE_ES_START_ERR_EID
 cfe_es_eventids.h, 1148
CFE_ES_START_EXC_ACTION_ERR_EID
 cfe_es_eventids.h, 1149
CFE_ES_START_INF_EID
 cfe_es_eventids.h, 1149
CFE_ES_START_INVALID_ENTRY_POINT_ERR_EID
 cfe_es_eventids.h, 1149
CFE_ES_START_INVALID_FILENAME_ERR_EID
 cfe_es_eventids.h, 1149
CFE_ES_START_NULL_APP_NAME_ERR_EID
 cfe_es_eventids.h, 1150
CFE_ES_START_PERF_DATA_CC
 default_cfe_es_fcncodes.h, 1091

CFE_ES_START_PRIORITY_ERR_EID
 cfe_es_eventids.h, 1150

CFE_ES_StartApp, 562
 CommandHeader, 562
 Payload, 562

CFE_ES_StartAppCmd_Payload, 562
 AppEntryPoint, 563
 AppFileName, 563
 Application, 563
 ExceptionAction, 563
 Priority, 563
 StackSize, 563

CFE_ES_StartAppCmd_Payload_t
 default_cfe_es_msgdefs.h, 1123

CFE_ES_StartAppCmd_t
 default_cfe_es_msgstruct.h, 1128

CFE_ES_StartPerfCmd_Payload, 564
 TriggerMode, 564

CFE_ES_StartPerfCmd_Payload_t
 default_cfe_es_msgdefs.h, 1123

CFE_ES_StartPerfDataCmd, 564
 CommandHeader, 564
 Payload, 565

CFE_ES_StartPerfDataCmd_t
 default_cfe_es_msgstruct.h, 1128

CFE_ES_STATIC_POOL_TYPE
 cfe_es_api_typedefs.h, 1027

CFE_ES_StatusToString
 cfe_error.h, 1020

CFE_ES_STOP_APP_CC
 default_cfe_es_fcncodes.h, 1092

CFE_ES_STOP_DBG_EID
 cfe_es_eventids.h, 1150

CFE_ES_STOP_ERR1_EID
 cfe_es_eventids.h, 1150

CFE_ES_STOP_ERR2_EID
 cfe_es_eventids.h, 1151

CFE_ES_STOP_ERR3_EID
 cfe_es_eventids.h, 1151

CFE_ES_STOP_INF_EID
 cfe_es_eventids.h, 1151

CFE_ES_STOP_PERF_DATA_CC
 default_cfe_es_fcncodes.h, 1093

CFE_ES_StopAppCmd, 565
 CommandHeader, 565
 Payload, 565

CFE_ES_StopAppCmd_t
 default_cfe_es_msgstruct.h, 1128

CFE_ES_StopPerfCmd_Payload, 565
 DataFileName, 566

CFE_ES_StopPerfCmd_Payload_t
 default_cfe_es_msgdefs.h, 1123

CFE_ES_StopPerfDataCmd, 566
 CommandHeader, 566

Payload, 566

CFE_ES_StopPerfDataCmd_t
 default_cfe_es_msgstruct.h, 1128

CFE_ES_SYSLOG1_INF_EID
 cfe_es_eventids.h, 1151

CFE_ES_SYSLOG2_EID
 cfe_es_eventids.h, 1152

CFE_ES_SYSLOG2_ERR_EID
 cfe_es_eventids.h, 1152

CFE_ES_SYSLOGMODE_EID
 cfe_es_eventids.h, 1152

CFE_ES_SystemState
 default_cfe_es_extern_typedefs.h, 1075

CFE_ES_SystemState_APPS_INIT
 default_cfe_es_extern_typedefs.h, 1075

CFE_ES_SystemState_CORE_READY
 default_cfe_es_extern_typedefs.h, 1075

CFE_ES_SystemState_CORE_STARTUP
 default_cfe_es_extern_typedefs.h, 1075

CFE_ES_SystemState_EARLY_INIT
 default_cfe_es_extern_typedefs.h, 1075

CFE_ES_SystemState_Enum_t
 default_cfe_es_extern_typedefs.h, 1072

CFE_ES_SystemState_MAX
 default_cfe_es_extern_typedefs.h, 1075

CFE_ES_SystemState_OPERATIONAL
 default_cfe_es_extern_typedefs.h, 1075

CFE_ES_SystemState_SHUTDOWN
 default_cfe_es_extern_typedefs.h, 1075

CFE_ES_SystemState_UNDEFINED
 default_cfe_es_extern_typedefs.h, 1075

CFE_ES_TASK_DELETE_ERR
 cFE Return Code Defines, 247

CFE_ES_TASK_STACK_ALLOCATE
 cfe_es_api_typedefs.h, 1027

CFE_ES_TaskEntryFuncPtr_t
 cfe_es_api_typedefs.h, 1029

CFE_ES_TASKID_BASE
 cFE Resource ID base values, 400

CFE_ES_TASKID_C
 cfe_es_api_typedefs.h, 1028

CFE_ES_TaskId_t
 default_cfe_es_extern_typedefs.h, 1072

CFE_ES_TaskID_ToIndex
 cFE Resource ID APIs, 262

CFE_ES_TASKID_UNDEFINED
 cfe_es_api_typedefs.h, 1028

CFE_ES_TaskInfo, 566
 AppId, 567
 AppName, 567
 ExecutionCounter, 567
 Priority, 567
 Spare, 567
 StackSize, 568

TaskId, 568
 TaskName, 568
CFE_ES_TASKINFO_EID
 cfe_es_eventids.h, 1152
CFE_ES_TASKINFO_OSCREATE_ERR_EID
 cfe_es_eventids.h, 1153
CFE_ES_TaskInfo_t
 default_cfe_es_extern_typedefs.h, 1072
CFE_ES_TASKINFO_WR_ERR_EID
 cfe_es_eventids.h, 1153
CFE_ES_TASKINFO_WRHDR_ERR_EID
 cfe_es_eventids.h, 1153
CFE_ES_TaskPriority_Atom_t
 default_cfe_es_extern_typedefs.h, 1073
CFE_ES_TASKWR_ERR_EID
 cfe_es_eventids.h, 1153
CFE_ES_TEST_LONG_MASK
 cfe_es.h, 1024
CFE_ES_TIMER_DELETE_ERR
 cFE Return Code Defines, 247
CFE_ES_TLM_POOL_STATS_INFO_EID
 cfe_es_eventids.h, 1154
CFE_ES_USE_MUTEX
 cfe_es_api_typedefs.h, 1028
CFE_ES_VERSION_INF_EID
 cfe_es_eventids.h, 1154
CFE_ES_WaitForStartupSync
 cFE Application Behavior APIs, 268
CFE_ES_WaitForSystemState
 cFE Application Behavior APIs, 269
CFE_ES_WRHDR_ERR_EID
 cfe_es_eventids.h, 1154
CFE_ES_WRITE_CFE_HDR_ERR_EID
 cfe_es_eventids.h, 1154
CFE_ES_WRITE_ER_LOG_CC
 default_cfe_es_fcncodes.h, 1094
CFE_ES_WRITE_SYS_LOG_CC
 default_cfe_es_fcncodes.h, 1095
CFE_ES_WriteERLogCmd, 568
 CommandHeader, 568
 Payload, 568
CFE_ES_WriteERLogCmd_t
 default_cfe_es_msgstruct.h, 1128
CFE_ES_WriteSysLogCmd, 569
 CommandHeader, 569
 Payload, 569
CFE_ES_WriteSysLogCmd_t
 default_cfe_es_msgstruct.h, 1128
CFE_ES_WriteToSysLog
 cFE Miscellaneous APIs, 283
CFE_EVENTS_SERVICE
 cfe_error.h, 1019
cfe_evs.h
 CFE_EVS_Send, 1030
 CFE_EVS_SendCrit, 1030
 CFE_EVS_SendDbg, 1031
 CFE_EVS_SendErr, 1031
 CFE_EVS_SendInfo, 1031
CFE_EVS_ADD_EVENT_FILTER_CC
 default_cfe_evs_fcncodes.h, 1158
CFE_EVS_AddEventFilterCmd, 569
 CommandHeader, 569
 Payload, 569
CFE_EVS_AddEventFilterCmd_t
 default_cfe_evs_msgstruct.h, 1187
CFE_EVS_ADDFILTER_EID
 cfe_evs_eventids.h, 1192
cfe_evs_api_typedefs.h
 CFE_EVS_BinFilter_t, 1033
 CFE_EVS_EVERY_FOURTH_ONE, 1032
 CFE_EVS_EVERY_OTHER_ONE, 1032
 CFE_EVS_EVERY_OTHER_TWO, 1032
 CFE_EVS_FIRST_16_STOP, 1032
 CFE_EVS_FIRST_32_STOP, 1032
 CFE_EVS_FIRST_4_STOP, 1032
 CFE_EVS_FIRST_64_STOP, 1032
 CFE_EVS_FIRST_8_STOP, 1033
 CFE_EVS_FIRST_ONE_STOP, 1033
 CFE_EVS_FIRST_TWO_STOP, 1033
 CFE_EVS_NO_FILTER, 1033
CFE_EVS_APP_FILTER_OVERLOAD
 cFE Return Code Defines, 248
CFE_EVS_APP_ILLEGAL_APP_ID
 cFE Return Code Defines, 248
CFE_EVS_APP_NOT_REGISTERED
 cFE Return Code Defines, 248
CFE_EVS_APP_SQUELCHED
 cFE Return Code Defines, 248
CFE_EVS_AppDataCmd_Payload, 570
 AppDataFilename, 570
CFE_EVS_AppDataCmd_Payload_t
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_AppNameBitMaskCmd_Payload, 570
 AppName, 571
 BitMask, 571
 Spare, 571
CFE_EVS_AppNameBitMaskCmd_Payload_t
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_AppNameCmd_Payload, 571
 AppName, 571
CFE_EVS_AppNameCmd_Payload_t
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_AppNameEventIDCmd_Payload, 571
 AppName, 572
 EventID, 572
CFE_EVS_AppNameEventIDCmd_Payload_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_AppNameEventIDMaskCmd_Payload, 572

AppName, 572
EventID, 573
Mask, 573
CFE_EVS_AppNameEventIDMaskCmd_Payload_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_AppTlmData, 573
 AppEnableStatus, 573
 AppID, 573
 AppMessageSentCounter, 573
 AppMessageSquelchedCounter, 574
CFE_EVS_AppTlmData_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_BinFilter, 574
 EventID, 574
 Mask, 574
CFE_EVS_BinFilter_t
 cfe_evs_api_typedefs.h, 1033
CFE_EVS_BitMaskCmd_Payload, 574
 BitMask, 575
 Spare, 575
CFE_EVS_BitMaskCmd_Payload_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_CLEAR_LOG_CC
 default_cfe_evs_fcncodes.h, 1159
CFE_EVS_ClearLogCmd, 575
 CommandHeader, 575
CFE_EVS_ClearLogCmd_t
 default_cfe_evs_msgstruct.h, 1187
CFE_EVS_CMD_MID
 default_cfe_evs_msgids.h, 1185
CFE_EVS_CRITICAL_BIT
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_DEBUG_BIT
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_DELETE_EVENT_FILTER_CC
 default_cfe_evs_fcncodes.h, 1160
CFE_EVS_DeleteEventFilterCmd, 576
 CommandHeader, 576
 Payload, 576
CFE_EVS_DeleteEventFilterCmd_t
 default_cfe_evs_msgstruct.h, 1187
CFE_EVS_DELFILTER_EID
 cfe_evs_eventids.h, 1192
CFE_EVS_DISABLE_APP_EVENT_TYPE_CC
 default_cfe_evs_fcncodes.h, 1160
CFE_EVS_DISABLE_APP_EVENTS_CC
 default_cfe_evs_fcncodes.h, 1161
CFE_EVS_DISABLE_EVENT_TYPE_CC
 default_cfe_evs_fcncodes.h, 1162
CFE_EVS_DISABLE_PORTS_CC
 default_cfe_evs_fcncodes.h, 1163
CFE_EVS_DisableAppEventsCmd, 576
 CommandHeader, 576
 Payload, 576
CFE_EVS_DisableAppEventsCmd_t
 default_cfe_evs_msgstruct.h, 1187
CFE_EVS_DisableAppEventCmd, 577
 CommandHeader, 577
 Payload, 577
CFE_EVS_DisableAppEventTypeCmd_t
 default_cfe_evs_msgstruct.h, 1187
CFE_EVS_DisableEventTypeCmd, 577
 CommandHeader, 578
 Payload, 578
CFE_EVS_DisableEventTypeCmd_t
 default_cfe_evs_msgstruct.h, 1187
CFE_EVS_DisablePortsCmd, 578
 CommandHeader, 578
 Payload, 578
CFE_EVS_DisablePortsCmd_t
 default_cfe_evs_msgstruct.h, 1187
CFE_EVS_DISAPPENTTYPE_EID
 cfe_evs_eventids.h, 1192
CFE_EVS_DISAPPEVT_EID
 cfe_evs_eventids.h, 1192
CFE_EVS_DISEVTTYPE_EID
 cfe_evs_eventids.h, 1193
CFE_EVS_DISPORT_EID
 cfe_evs_eventids.h, 1193
CFE_EVS_ENAAPPEVT_EID
 cfe_evs_eventids.h, 1193
CFE_EVS_ENAAPPEVTTYPE_EID
 cfe_evs_eventids.h, 1193
CFE_EVS_ENABLE_APP_EVENT_TYPE_CC
 default_cfe_evs_fcncodes.h, 1164
CFE_EVS_ENABLE_APP_EVENTS_CC
 default_cfe_evs_fcncodes.h, 1165
CFE_EVS_ENABLE_EVENT_TYPE_CC
 default_cfe_evs_fcncodes.h, 1166
CFE_EVS_ENABLE_PORTS_CC
 default_cfe_evs_fcncodes.h, 1167
CFE_EVS_EnableAppEventsCmd, 578
 CommandHeader, 579
 Payload, 579
CFE_EVS_EnableAppEventsCmd_t
 default_cfe_evs_msgstruct.h, 1187
CFE_EVS_EnableAppEventTypeCmd, 579
 CommandHeader, 579
 Payload, 579
CFE_EVS_EnableAppEventTypeCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_EnableEventTypeCmd, 580
 CommandHeader, 580
 Payload, 580
CFE_EVS_EnableEventTypeCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_EnablePortsCmd, 580
 CommandHeader, 581

Payload, 581
CFE_EVS_EnablePortsCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_ENAEVTTYPE_EID
 cfe_evs_eventids.h, 1194
CFE_EVS_ENAPORT_EID
 cfe_evs_eventids.h, 1194
CFE_EVS_ERR_APPNOREGS_EID
 cfe_evs_eventids.h, 1194
CFE_EVS_ERR_CC_EID
 cfe_evs_eventids.h, 1194
CFE_EVS_ERR_CRDATFILE_EID
 cfe_evs_eventids.h, 1195
CFE_EVS_ERR_CRLOGFILE_EID
 cfe_evs_eventids.h, 1195
CFE_EVS_ERR_EVTIDNOREGS_EID
 cfe_evs_eventids.h, 1195
CFE_EVS_ERR_ILLAPPIDRANGE_EID
 cfe_evs_eventids.h, 1195
CFE_EVS_ERR_ILLEGALFMTMOD_EID
 cfe_evs_eventids.h, 1196
CFE_EVS_ERR_INVALID_BITMASK_EID
 cfe_evs_eventids.h, 1196
CFE_EVS_ERR_LOGMODE_EID
 cfe_evs_eventids.h, 1196
CFE_EVS_ERR_MAXREGSFILTER_EID
 cfe_evs_eventids.h, 1196
CFE_EVS_ERR_MSGID_EID
 cfe_evs_eventids.h, 1197
CFE_EVS_ERR_NOAPPIDFOUND_EID
 cfe_evs_eventids.h, 1197
CFE_EVS_ERR_UNREGISTERED_EVS_APP
 cfe_evs_eventids.h, 1197
CFE_EVS_ERR_WRDATFILE_EID
 cfe_evs_eventids.h, 1197
CFE_EVS_ERR_WRLOGFILE_EID
 cfe_evs_eventids.h, 1198
CFE_EVS_ERROR_BIT
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_EventFilter
 default_cfe_evs_extern_typedefs.h, 1156
CFE_EVS_EventFilter_BINARY
 default_cfe_evs_extern_typedefs.h, 1156
CFE_EVS_EventFilter_Enum_t
 default_cfe_evs_extern_typedefs.h, 1155
cfe_evs_eventids.h
 CFE_EVS_ADDFILTER_EID, 1192
 CFE_EVS_DELFILTER_EID, 1192
 CFE_EVS_DISAPPENTTYPE_EID, 1192
 CFE_EVS_DISAPPEVT_EID, 1192
 CFE_EVS_DISEVTTYPE_EID, 1193
 CFE_EVS_DISPRT_EID, 1193
 CFE_EVS_ENAAPPEVT_EID, 1193
 CFE_EVS_ENAAPPEVTTYPE_EID, 1193
CFE_EVS_ENAEVTTYPE_EID, 1194
CFE_EVS_ENAPORT_EID, 1194
CFE_EVS_ERR_APPNOREGS_EID, 1194
CFE_EVS_ERR_CC_EID, 1194
CFE_EVS_ERR_CRDATFILE_EID, 1195
CFE_EVS_ERR_CRLOGFILE_EID, 1195
CFE_EVS_ERR_EVTIDNOREGS_EID, 1195
CFE_EVS_ERR_ILLAPPIDRANGE_EID, 1195
CFE_EVS_ERR_ILLEGALFMTMOD_EID, 1196
CFE_EVS_ERR_INVALID_BITMASK_EID, 1196
CFE_EVS_ERR_LOGMODE_EID, 1196
CFE_EVS_ERR_MAXREGSFILTER_EID, 1196
CFE_EVS_ERR_MSGID_EID, 1197
CFE_EVS_ERR_NOAPPIDFOUND_EID, 1197
CFE_EVS_ERR_UNREGISTERED_EVS_APP, 1197
CFE_EVS_ERR_WRDATFILE_EID, 1197
CFE_EVS_ERR_WRLOGFILE_EID, 1198
CFE_EVS_EVT_FILTERED_EID, 1198
CFE_EVS_FILTER_MAX_EID, 1198
CFE_EVS_LEN_ERR_EID, 1198
CFE_EVS_LOGMODE_EID, 1199
CFE_EVS_NOOP_EID, 1199
CFE_EVS_RSTALLFILTER_EID, 1199
CFE_EVS_RSTCNT_EID, 1199
CFE_EVS_RSTEVCNT_EID, 1200
CFE_EVS_RSTFILTER_EID, 1200
CFE_EVS_SETEVTFMTMOD_EID, 1200
CFE_EVS_SETFILTERMSK_EID, 1200
CFE_EVS_SQUELCHED_ERR_EID, 1201
CFE_EVS_STARTUP_EID, 1201
CFE_EVS_WRDAT_EID, 1201
CFE_EVS_WRITE_HEADER_ERR_EID, 1201
CFE_EVS_WRLOG_EID, 1202
CFE_EVS_EventOutput
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EventOutput_Enum_t
 default_cfe_evs_extern_typedefs.h, 1156
CFE_EVS_EventOutput_PORT1
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EventOutput_PORT2
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EventOutput_PORT3
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EventOutput_PORT4
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EventType
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EventType_CRITICAL
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EventType_DEBUG
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EventType_Enum_t
 default_cfe_evs_extern_typedefs.h, 1156

CFE_EVS_EventType_ERROR
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EventType_INFORMATION
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_EVERY_FOURTH_ONE
 cfe_evs_api_typedefs.h, 1032
CFE_EVS_EVERY_OTHER_ONE
 cfe_evs_api_typedefs.h, 1032
CFE_EVS_EVERY_OTHER_TWO
 cfe_evs_api_typedefs.h, 1032
CFE_EVS_EVT_FILTERED_EID
 cfe_evs_eventids.h, 1198
CFE_EVS_EVT_NOT_REGISTERED
 cFE Return Code Defines, 248
CFE_EVS_FILE_WRITE_ERROR
 cFE Return Code Defines, 248
CFE_EVS_FILTER_MAX_EID
 cfe_evs_eventids.h, 1198
CFE_EVS_FIRST_16_STOP
 cfe_evs_api_typedefs.h, 1032
CFE_EVS_FIRST_32_STOP
 cfe_evs_api_typedefs.h, 1032
CFE_EVS_FIRST_4_STOP
 cfe_evs_api_typedefs.h, 1032
CFE_EVS_FIRST_64_STOP
 cfe_evs_api_typedefs.h, 1032
CFE_EVS_FIRST_8_STOP
 cfe_evs_api_typedefs.h, 1033
CFE_EVS_FIRST_ONE_STOP
 cfe_evs_api_typedefs.h, 1033
CFE_EVS_FIRST_TWO_STOP
 cfe_evs_api_typedefs.h, 1033
CFE_EVS_HK_TLM_MID
 default_cfe_evs_msgids.h, 1185
CFE_EVS_HousekeepingTlm, 581
 Payload, 581
 TelemetryHeader, 581
CFE_EVS_HousekeepingTlm_Payload, 581
 AppData, 582
 CommandCounter, 582
 CommandErrorCounter, 583
 LogEnabled, 583
 LogFullFlag, 583
 LogMode, 583
 LogOverflowCounter, 583
 MessageFormatMode, 583
 MessageSendCounter, 583
 MessageTruncCounter, 584
 OutputPort, 584
 Spare1, 584
 Spare2, 584
 Spare3, 584
 UnregisteredAppCounter, 584
CFE_EVS_HousekeepingTlm_Payload_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_HousekeepingTlm_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_INFORMATION_BIT
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_INVALID_PARAMETER
 cFE Return Code Defines, 248
CFE_EVS_LEN_ERR_EID
 cfe_evs_eventids.h, 1198
CFE_EVS_LogFileCmd_Payload, 585
 LogFilename, 585
CFE_EVS_LogFileCmd_Payload_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_LogMode
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_LogMode_DISCARD
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_LOGMODE_EID
 cfe_evs_eventids.h, 1199
CFE_EVS_LogMode_Enum_t
 default_cfe_evs_extern_typedefs.h, 1156
CFE_EVS_LogMode_OVERWRITE
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_LONG_EVENT_MSG_MID
 default_cfe_evs_msgids.h, 1185
CFE_EVS_LongEventTlm, 585
 Payload, 585
 TelemetryHeader, 585
CFE_EVS_LongEventTlm_Payload, 586
 Message, 586
 PacketID, 586
 Spare1, 586
 Spare2, 586
CFE_EVS_LongEventTlm_Payload_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_LongEventTlm_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_MsgFormat
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_MsgFormat_Enum_t
 default_cfe_evs_extern_typedefs.h, 1156
CFE_EVS_MsgFormat_LONG
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_MsgFormat_SHORT
 default_cfe_evs_extern_typedefs.h, 1157
CFE_EVS_NO_FILTER
 cfe_evs_api_typedefs.h, 1033
CFE_EVS_NOOP_CC
 default_cfe_evs_fcncodes.h, 1168
CFE_EVS_NOOP_EID
 cfe_evs_eventids.h, 1199
CFE_EVS_NoopCmd, 587
 CommandHeader, 587
CFE_EVS_NoopCmd_t

default_cfe_evs_msgstruct.h, 1188
CFE_EVS_NOT_IMPLEMENTED
 cFE Return Code Defines, 248
CFE_EVS_PacketID, 587
 AppName, 588
 EventID, 588
 EventType, 588
 ProcessorID, 588
 SpacecraftID, 588
CFE_EVS_PacketID_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_PORT1_BIT
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_PORT2_BIT
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_PORT3_BIT
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_PORT4_BIT
 default_cfe_evs_msgdefs.h, 1183
CFE_EVS_Register
 cFE Registration APIs, 302
CFE_EVS_RESET_ALL_FILTERS_CC
 default_cfe_evs_fcncodes.h, 1168
CFE_EVS_RESET_APP_COUNTER_CC
 default_cfe_evs_fcncodes.h, 1169
CFE_EVS_RESET_AREA_POINTER
 cFE Return Code Defines, 249
CFE_EVS_RESET_COUNTERS_CC
 default_cfe_evs_fcncodes.h, 1170
CFE_EVS_RESET_FILTER_CC
 default_cfe_evs_fcncodes.h, 1171
CFE_EVS_ResetAllFilters
 cFE Reset Event Filter APIs, 307
CFE_EVS_ResetAllFiltersCmd, 588
 CommandHeader, 589
 Payload, 589
CFE_EVS_ResetAllFiltersCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_ResetAppCounterCmd, 589
 CommandHeader, 589
 Payload, 589
CFE_EVS_ResetAppCounterCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_ResetCountersCmd, 589
 CommandHeader, 590
CFE_EVS_ResetCountersCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_ResetFilter
 cFE Reset Event Filter APIs, 308
CFE_EVS_ResetFilterCmd, 590
 CommandHeader, 590
 Payload, 590
CFE_EVS_ResetFilterCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_RSTALLFILTER_EID
 cfe_evs_eventids.h, 1199
CFE_EVS_RSTCNT_EID
 cfe_evs_eventids.h, 1199
CFE_EVS_RSTEVTCNT_EID
 cfe_evs_eventids.h, 1200
CFE_EVS_RSTFILTER_EID
 cfe_evs_eventids.h, 1200
CFE_EVS_Send
 cfe_evs.h, 1030
CFE_EVS_SEND_HK_MID
 default_cfe_evs_msgids.h, 1185
CFE_EVS_SendCrit
 cfe_evs.h, 1030
CFE_EVS_SendDbg
 cfe_evs.h, 1031
CFE_EVS_SendErr
 cfe_evs.h, 1031
CFE_EVS_SendEvent
 cFE Send Event APIs, 303
CFE_EVS_SendEventWithAppID
 cFE Send Event APIs, 305
CFE_EVS_SendHkCmd, 590
 CommandHeader, 591
CFE_EVS_SendHkCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_SendInfo
 cfe_evs.h, 1031
CFE_EVS_SendTimedEvent
 cFE Send Event APIs, 306
CFE_EVS_SET_EVENT_FORMAT_MODE_CC
 default_cfe_evs_fcncodes.h, 1171
CFE_EVS_SET_FILTER_CC
 default_cfe_evs_fcncodes.h, 1172
CFE_EVS_SET_LOG_MODE_CC
 default_cfe_evs_fcncodes.h, 1173
CFE_EVS_SetEventFormatCode_Payload, 591
 MsgFormat, 591
 Spare, 591
CFE_EVS_SetEventFormatMode_Payload_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_SetEventFormatModeCmd, 592
 CommandHeader, 592
 Payload, 592
CFE_EVS_SetEventFormatModeCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_SETEVTFMTMOD_EID
 cfe_evs_eventids.h, 1200
CFE_EVS_SetFilterCmd, 592
 CommandHeader, 592
 Payload, 593
CFE_EVS_SetFilterCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_SETFILTERMSK_EID

cfe_evs_eventids.h, 1200
CFE_EVS_SetLogMode_Payload, 593
 LogMode, 593
 Spare, 593
CFE_EVS_SetLogMode_Payload_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_SetLogModeCmd, 593
 CommandHeader, 594
 Payload, 594
CFE_EVS_SetLogModeCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_SHORT_EVENT_MSG_MID
 default_cfe_evs_msgids.h, 1185
CFE_EVS_ShortEventTlm, 594
 Payload, 594
 TelemetryHeader, 594
CFE_EVS_ShortEventTlm_Payload, 595
 PacketID, 595
CFE_EVS_ShortEventTlm_Payload_t
 default_cfe_evs_msgdefs.h, 1184
CFE_EVS_ShortEventTlm_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_SQUELCHED_ERR_EID
 cfe_evs_eventids.h, 1201
CFE_EVS_STARTUP_EID
 cfe_evs_eventids.h, 1201
CFE_EVS_UNKNOWN_FILTER
 cFE Return Code Defines, 249
CFE_EVS_WRDAT_EID
 cfe_evs_eventids.h, 1201
CFE_EVS_WRITE_APP_DATA_FILE_CC
 default_cfe_evs_fcncodes.h, 1174
CFE_EVS_WRITE_HEADER_ERR_EID
 cfe_evs_eventids.h, 1201
CFE_EVS_WRITE_LOG_DATA_FILE_CC
 default_cfe_evs_fcncodes.h, 1175
CFE_EVS_WriteAppDataFileCmd, 595
 CommandHeader, 595
 Payload, 596
CFE_EVS_WriteAppDataFileCmd_t
 default_cfe_evs_msgstruct.h, 1188
CFE_EVS_WriteLogDataFileCmd, 596
 CommandHeader, 596
 Payload, 596
CFE_EVS_WriteLogDataFileCmd_t
 default_cfe_evs_msgstruct.h, 1189
CFE_EVS_WRLOG_EID
 cfe_evs_eventids.h, 1202
CFE_EXECUTIVE_SERVICE
 cfe_error.h, 1019
CFE_FILE_SERVICE
 cfe_error.h, 1019
cfe_fs_api_typedefs.h

CFE_FS_FileCategory_BINARY_DATA_DUMP, 1037
 CFE_FS_FileCategory_DYNAMIC_MODULE, 1037
 CFE_FS_FileCategory_MAX, 1037
 CFE_FS_FileCategory_SCRIPT, 1037
 CFE_FS_FileCategory_t, 1037
 CFE_FS_FileCategory_TEMP, 1037
 CFE_FS_FileCategory_TEXT_LOG, 1037
 CFE_FS_FileCategory_UNKNOWN, 1037
 CFE_FS_FileWriteEvent_COMPLETE, 1037
 CFE_FS_FileWriteEvent_CREATE_ERROR, 1037
 CFE_FS_FileWriteEvent_HEADER_WRITE_ERROR, 1037
 CFE_FS_FileWriteEvent_MAX, 1037
 CFE_FS_FileWriteEvent_RECORD_WRITE_ERROR, 1037
 CFE_FS_FileWriteEvent_t, 1037
 CFE_FS_FileWriteEvent_UNDEFINED, 1037
 CFE_FS_FileWriteGetData_t, 1035
 CFE_FS_FileWriteMetaData_t, 1035
 CFE_FS_FileWriteOnEvent_t, 1035
CFE_FS_BackgroundFileDumpIsPending
 cFE File Utility APIs, 313
CFE_FS_BackgroundFileDumpRequest
 cFE File Utility APIs, 313
CFE_FS_BAD_ARGUMENT
 cFE Return Code Defines, 249
CFE_FS_ExtractFilenameFromPath
 cFE File Utility APIs, 315
CFE_FS_FILE_CONTENT_ID
 default_cfe_fs_interface_cfg.h, 1204
 example_mission_cfg.h, 942
CFE_FS_FileCategory_BINARY_DATA_DUMP
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileCategory_DYNAMIC_MODULE
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileCategory_MAX
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileCategory_SCRIPT
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileCategory_t
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileCategory_TEMP
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileCategory_TEXT_LOG
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileCategory_UNKNOWN
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileWriteEvent_COMPLETE
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileWriteEvent_CREATE_ERROR
 cfe_fs_api_typedefs.h, 1037
CFE_FS_FileWriteEvent_HEADER_WRITE_ERROR
 cfe_fs_api_typedefs.h, 1037

CFE_FS_FileWriteEvent_MAX
 cfe_fs_api_typedefs.h, 1037

CFE_FS_FileWriteEvent_RECORD_WRITE_ERROR
 cfe_fs_api_typedefs.h, 1037

CFE_FS_FileWriteEvent_t
 cfe_fs_api_typedefs.h, 1037

CFE_FS_FileWriteEvent_UNDEFINED
 cfe_fs_api_typedefs.h, 1037

CFE_FS_FileWriteGetData_t
 cfe_fs_api_typedefs.h, 1035

CFE_FS_FileWriteMetaData, 596
 Description, 597
 FileName, 597
 FileSubType, 597
 GetData, 597
 IsPending, 597
 OnEvent, 597

CFE_FS_FileWriteMetaData_t
 cfe_fs_api_typedefs.h, 1035

CFE_FS_FileWriteOnEvent_t
 cfe_fs_api_typedefs.h, 1035

CFE_FS_FNAME_TOO_LONG
 cFE Return Code Defines, 249

CFE_FS_GetDefaultExtension
 cFE File Utility APIs, 315

CFE_FS_GetDefaultMountPoint
 cFE File Utility APIs, 316

CFE_FS_HDR_DESC_MAX_LEN
 default_cfe_fs_interface_cfg.h, 1205
 example_mission_cfg.h, 942

CFE_FS_Header, 598
 ApplicationID, 598
 ContentType, 598
 Description, 598
 Length, 598
 ProcessorID, 599
 SpacecraftID, 599
 SubType, 599
 TimeSeconds, 599
 TimeSubSeconds, 599

CFE_FS_Header_t
 default_cfe_fs_filedef.h, 1203

CFE_FS_InitHeader
 cFE File Header Management APIs, 309

CFE_FS_INVALID_PATH
 cFE Return Code Defines, 249

CFE_FS_NOT_IMPLEMENTED
 cFE Return Code Defines, 249

CFE_FS_ParseInputFileName
 cFE File Utility APIs, 316

CFE_FS_ParseInputFileNameEx
 cFE File Utility APIs, 317

CFE_FS_ReadHeader
 cFE File Header Management APIs, 309

CFE_FS_SetTimestamp
 cFE File Header Management APIs, 310

CFE_FS_SubType
 default_cfe_fs_filedef.h, 1203

CFE_FS_SubType_Enum_t
 default_cfe_fs_filedef.h, 1203

CFE_FS_SubType_ES_CDS_REG
 default_cfe_fs_filedef.h, 1204

CFE_FS_SubType_ES_ERLOG
 default_cfe_fs_filedef.h, 1203

CFE_FS_SubType_ES_PERFDATA
 default_cfe_fs_filedef.h, 1204

CFE_FS_SubType_ES_QUERYALL
 default_cfe_fs_filedef.h, 1203

CFE_FS_SubType_ES_QUERYALLTASKS
 default_cfe_fs_filedef.h, 1204

CFE_FS_SubType_ES_SYSLOG
 default_cfe_fs_filedef.h, 1203

CFE_FS_SubType_EVS_APPDATA
 default_cfe_fs_filedef.h, 1204

CFE_FS_SubType_EVS_EVENTLOG
 default_cfe_fs_filedef.h, 1204

CFE_FS_SubType_SB_MAPDATA
 default_cfe_fs_filedef.h, 1204

CFE_FS_SubType_SB_PIPEDATA
 default_cfe_fs_filedef.h, 1204

CFE_FS_SubType_SB_ROUTEDATA
 default_cfe_fs_filedef.h, 1204

CFE_FS_SubType_TBL_IMG
 default_cfe_fs_filedef.h, 1204

CFE_FS_SubType_TBL_REG
 default_cfe_fs_filedef.h, 1204

CFE_FS_WriteHeader
 cFE File Header Management APIs, 311

CFE_GENERIC_SERVICE
 cfe_error.h, 1019

CFE_GLOBAL_CMD_MID_BASE
 default_cfe_core_api_base_msgids.h, 1002

CFE_GLOBAL_CMD_TOPICID_TO_MIDV
 default_cfe_core_api_base_msgids.h, 1003

CFE_GLOBAL_TLM_MID_BASE
 default_cfe_core_api_base_msgids.h, 1003

CFE_GLOBAL_TLM_TOPICID_TO_MIDV
 default_cfe_core_api_base_msgids.h, 1003

CFE_LAST_OFFICIAL
 cfe_version.h, 1065

CFE_MAJOR_VERSION
 cfe_version.h, 1066

CFE_MAKE_BIG16
 cfe_endian.h, 1012

CFE_MAKE_BIG32
 cfe_endian.h, 1012

CFE_MINOR_VERSION
 cfe_version.h, 1066

CFE_MISSION_ES_APP_TLM_TOPICID
 default_cfe_es_topicids.h, 1129

CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN
 default_cfe_es_interface_cfg.h, 1097
 example_mission_cfg.h, 942

CFE_MISSION_ES_CDS_MAX_NAME_LENGTH
 default_cfe_es_interface_cfg.h, 1097
 example_mission_cfg.h, 943

CFE_MISSION_ES_CMD_TOPICID
 default_cfe_es_topicids.h, 1129

CFE_MISSION_ES_CRC_16
 default_cfe_es_interface_cfg.h, 1097
 example_mission_cfg.h, 943

CFE_MISSION_ES_CRC_32
 default_cfe_es_interface_cfg.h, 1097
 example_mission_cfg.h, 943

CFE_MISSION_ES_CRC_8
 default_cfe_es_interface_cfg.h, 1098
 example_mission_cfg.h, 943

CFE_MISSION_ES_DEFAULT_CRC
 default_cfe_es_interface_cfg.h, 1098
 example_mission_cfg.h, 943

CFE_MISSION_ES_HK_TLM_TOPICID
 default_cfe_es_topicids.h, 1129

CFE_MISSION_ES_MAIN_PERF_ID
 sample_perfids.h, 996

CFE_MISSION_ES_MAX_APPLICATIONS
 default_cfe_es_interface_cfg.h, 1098
 example_mission_cfg.h, 944

CFE_MISSION_ES_MEMSTATS_TLM_TOPICID
 default_cfe_es_topicids.h, 1130

CFE_MISSION_ES_PERF_EXIT_BIT
 sample_perfids.h, 996

CFE_MISSION_ES_PERF_MAX_IDS
 default_cfe_es_interface_cfg.h, 1098
 example_mission_cfg.h, 944

CFE_MISSION_ES_POOL_MAX_BUCKETS
 default_cfe_es_interface_cfg.h, 1098
 example_mission_cfg.h, 944

CFE_MISSION_ES_SEND_HK_TOPICID
 default_cfe_es_topicids.h, 1130

CFE_MISSION_EVS_CMD_TOPICID
 default_cfe_evs_topicids.h, 1189

CFE_MISSION_EVS_HK_TLM_TOPICID
 default_cfe_evs_topicids.h, 1189

CFE_MISSION_EVS_LONG_EVENT_MSG_TOPICID
 default_cfe_evs_topicids.h, 1190

CFE_MISSION_EVS_MAIN_PERF_ID
 sample_perfids.h, 996

CFE_MISSION_EVS_MAX_MESSAGE_LENGTH
 default_cfe_evs_interface_cfg.h, 1176
 example_mission_cfg.h, 944

CFE_MISSION_EVS_SEND_HK_TOPICID
 default_cfe_evs_topicids.h, 1190

CFE_MISSION_EVS_SHORT_EVENT_MSG_TOPICID
 default_cfe_evs_topicids.h, 1190

CFE_MISSION_MAX_API_LEN
 default_cfe_core_api_interface_cfg.h, 1004
 example_mission_cfg.h, 945

CFE_MISSION_MAX_FILE_LEN
 default_cfe_core_api_interface_cfg.h, 1004
 example_mission_cfg.h, 945

CFE_MISSION_MAX_NUM_FILES
 default_cfe_core_api_interface_cfg.h, 1005
 example_mission_cfg.h, 946

CFE_MISSION_MAX_PATH_LEN
 default_cfe_core_api_interface_cfg.h, 1005
 example_mission_cfg.h, 946

CFE_MISSION_REV
 cfe_version.h, 1066

CFE_MISSION_SB_ALLSUBS_TLM_TOPICID
 default_cfe_sb_topicids.h, 1235

CFE_MISSION_SB_CMD_TOPICID
 default_cfe_sb_topicids.h, 1235

CFE_MISSION_SB_HK_TLM_TOPICID
 default_cfe_sb_topicids.h, 1235

CFE_MISSION_SB_MAIN_PERF_ID
 sample_perfids.h, 996

CFE_MISSION_SB_MAX_PIPES
 default_cfe_sb_interface_cfg.h, 1219
 example_mission_cfg.h, 946

CFE_MISSION_SB_MAX_SB_MSG_SIZE
 default_cfe_sb_interface_cfg.h, 1219
 example_mission_cfg.h, 947

CFE_MISSION_SB_MSG_LIM_PERF_ID
 sample_perfids.h, 997

CFE_MISSION_SB_ONESUB_TLM_TOPICID
 default_cfe_sb_topicids.h, 1236

CFE_MISSION_SB_PIPE_OFLOW_PERF_ID
 sample_perfids.h, 997

CFE_MISSION_SB_SEND_HK_TOPICID
 default_cfe_sb_topicids.h, 1236

CFE_MISSION_SB_STATS_TLM_TOPICID
 default_cfe_sb_topicids.h, 1236

CFE_MISSION_SB_SUB_RPT_CTRL_TOPICID
 default_cfe_sb_topicids.h, 1236

CFE_MISSION_TBL_CMD_TOPICID
 default_cfe_tbl_topicids.h, 1280

CFE_MISSION_TBL_HK_TLM_TOPICID
 default_cfe_tbl_topicids.h, 1280

CFE_MISSION_TBL_MAIN_PERF_ID
 sample_perfids.h, 997

CFE_MISSION_TBL_MAX_FULL_NAME_LEN
 default_cfe_tbl_interface_cfg.h, 1266
 example_mission_cfg.h, 947

CFE_MISSION_TBL_MAX_NAME_LENGTH
 default_cfe_tbl_interface_cfg.h, 1267
 example_mission_cfg.h, 947

CFE_MISSION_TBL_REG_TLM_TOPICID
 default_cfe_tbl_topicids.h, 1280

CFE_MISSION_TBL_SEND_HK_TOPICID
 default_cfe_tbl_topicids.h, 1280

CFE_MISSION_TIME_AT_TONE_WAS
 default_cfe_time_interface_cfg.h, 1321
 example_mission_cfg.h, 948

CFE_MISSION_TIME_AT_TONE_WILL_BE
 default_cfe_time_interface_cfg.h, 1322
 example_mission_cfg.h, 948

CFE_MISSION_TIME_CFG_DEFAULT_TAI
 default_cfe_time_interface_cfg.h, 1322
 example_mission_cfg.h, 948

CFE_MISSION_TIME_CFG_DEFAULT_UTC
 default_cfe_time_interface_cfg.h, 1322
 example_mission_cfg.h, 949

CFE_MISSION_TIME_CFG_FAKE_TONE
 default_cfe_time_interface_cfg.h, 1322
 example_mission_cfg.h, 949

CFE_MISSION_TIME_CMD_TOPICID
 default_cfe_time_topicids.h, 1339

CFE_MISSION_TIME_DATA_CMD_TOPICID
 default_cfe_time_topicids.h, 1339

CFE_MISSION_TIME_DEF_DELAY_SECS
 default_cfe_time_interface_cfg.h, 1322
 example_mission_cfg.h, 949

CFE_MISSION_TIME_DEF_DELAY_SUBS
 default_cfe_time_interface_cfg.h, 1322
 example_mission_cfg.h, 949

CFE_MISSION_TIME_DEF_LEAPS
 default_cfe_time_interface_cfg.h, 1323
 example_mission_cfg.h, 949

CFE_MISSION_TIME_DEF_MET_SECS
 default_cfe_time_interface_cfg.h, 1323
 example_mission_cfg.h, 949

CFE_MISSION_TIME_DEF_MET_SUBS
 default_cfe_time_interface_cfg.h, 1323
 example_mission_cfg.h, 950

CFE_MISSION_TIME_DEF_STCF_SECS
 default_cfe_time_interface_cfg.h, 1323
 example_mission_cfg.h, 950

CFE_MISSION_TIME_DEF_STCF_SUBS
 default_cfe_time_interface_cfg.h, 1323
 example_mission_cfg.h, 950

CFE_MISSION_TIME_DIAG_TLM_TOPICID
 default_cfe_time_topicids.h, 1339

CFE_MISSION_TIME_EPOCH_DAY
 default_cfe_time_interface_cfg.h, 1323
 example_mission_cfg.h, 950

CFE_MISSION_TIME_EPOCH_HOUR
 default_cfe_time_interface_cfg.h, 1323
 example_mission_cfg.h, 950

CFE_MISSION_TIME_EPOCH_MICROS
 default_cfe_time_interface_cfg.h, 1323

 example_mission_cfg.h, 950

CFE_MISSION_TIME_EPOCH_MINUTE
 default_cfe_time_interface_cfg.h, 1324
 example_mission_cfg.h, 950

CFE_MISSION_TIME_EPOCH_SECOND
 default_cfe_time_interface_cfg.h, 1324
 example_mission_cfg.h, 950

CFE_MISSION_TIME_EPOCH_YEAR
 default_cfe_time_interface_cfg.h, 1324
 example_mission_cfg.h, 950

CFE_MISSION_TIME_FS_FACTOR
 default_cfe_time_interface_cfg.h, 1324
 example_mission_cfg.h, 951

CFE_MISSION_TIME_HK_TLM_TOPICID
 default_cfe_time_topicids.h, 1339

CFE_MISSION_TIME_LOCAL1HZISR_PERF_ID
 sample_perfids.h, 997

CFE_MISSION_TIME_LOCAL1HZTASK_PERF_ID
 sample_perfids.h, 997

CFE_MISSION_TIME_MAIN_PERF_ID
 sample_perfids.h, 997

CFE_MISSION_TIME_MAX_ELAPSED
 default_cfe_time_interface_cfg.h, 1324
 example_mission_cfg.h, 951

CFE_MISSION_TIME_MIN_ELAPSED
 default_cfe_time_interface_cfg.h, 1324
 example_mission_cfg.h, 951

CFE_MISSION_TIME_ONEHZ_CMD_TOPICID
 default_cfe_time_topicids.h, 1339

CFE_MISSION_TIME_SEND_CMD_TOPICID
 default_cfe_time_topicids.h, 1339

CFE_MISSION_TIME_SEND_HK_TOPICID
 default_cfe_time_topicids.h, 1340

CFE_MISSION_TIME_SENDMET_PERF_ID
 sample_perfids.h, 997

CFE_MISSION_TIME_TONE1HZISR_PERF_ID
 sample_perfids.h, 997

CFE_MISSION_TIME_TONE1HZTASK_PERF_ID
 sample_perfids.h, 997

CFE_MISSION_TIME_TONE_CMD_TOPICID
 default_cfe_time_topicids.h, 1340

cfe_msg_api_typedefs.h

- CFE_MSG_Apld_t, 1041
- CFE_MSG_BAD_ARGUMENT, 1041
- CFE_MSG_Checksum_t, 1042
- CFE_MSG_CommandHeader_t, 1042
- CFE_MSG_EDSVersion_t, 1042
- CFE_MSG_Endian, 1043
- CFE_MSG_Endian_Big, 1043
- CFE_MSG_Endian_Invalid, 1043
- CFE_MSG_Endian_Little, 1043
- CFE_MSG_Endian_t, 1042
- CFE_MSG_FcnCode_t, 1042
- CFE_MSG_HeaderVersion_t, 1042

CFE_MSG_Message_t, 1042
 CFE_MSG_NOT_IMPLEMENTED, 1041
 CFE_MSG_PlaybackFlag, 1043
 CFE_MSG_PlaybackFlag_t, 1042
 CFE_MSG_PlayFlag_Invalid, 1043
 CFE_MSG_PlayFlag_Original, 1043
 CFE_MSG_PlayFlag_Playback, 1043
 CFE_MSG_SegFlag_Continue, 1044
 CFE_MSG_SegFlag_First, 1044
 CFE_MSG_SegFlag_Invalid, 1044
 CFE_MSG_SegFlag_Last, 1044
 CFE_MSG_SegFlag_Unsegmented, 1044
 CFE_MSG_SegmentationFlag, 1043
 CFE_MSG_SegmentationFlag_t, 1042
 CFE_MSG_SequenceCount_t, 1042
 CFE_MSG_Size_t, 1042
 CFE_MSG_Subsystem_t, 1043
 CFE_MSG_System_t, 1043
 CFE_MSG_TelemetryHeader_t, 1043
 CFE_MSG_Type, 1044
 CFE_MSG_Type_Cmd, 1044
 CFE_MSG_Type_Invalid, 1044
 CFE_MSG_Type_t, 1043
 CFE_MSG_Type_Tlm, 1044
 CFE_MSG_WRONG_MSG_TYPE, 1041
 CFE_MSG_Apld_t
 cfe_msg_api_typedefs.h, 1041
 CFE_MSG_BAD_ARGUMENT
 cfe_msg_api_typedefs.h, 1041
 CFE_MSG_Checksum_t
 cfe_msg_api_typedefs.h, 1042
 CFE_MSG_CommandHeader_t
 cfe_msg_api_typedefs.h, 1042
 CFE_MSG_EDSVersion_t
 cfe_msg_api_typedefs.h, 1042
 CFE_MSG_Endian
 cfe_msg_api_typedefs.h, 1043
 CFE_MSG_Endian_Big
 cfe_msg_api_typedefs.h, 1043
 CFE_MSG_Endian_Invalid
 cfe_msg_api_typedefs.h, 1043
 CFE_MSG_Endian_Little
 cfe_msg_api_typedefs.h, 1043
 CFE_MSG_Endian_t
 cfe_msg_api_typedefs.h, 1042
 CFE_MSG_FcnCode_t
 cfe_msg_api_typedefs.h, 1042
 CFE_MSG_GenerateChecksum
 CFE Message Secondary Header APIs, 333
 CFE_MSG_GetApld
 CFE Message Primary Header APIs, 319
 CFE_MSG_GetEDSVersion
 CFE Message Extended Header APIs, 327
 CFE_MSG_GetEndian
 CFE Message Extended Header APIs, 328
 CFE_MSG_GetFcnCode
 CFE Message Secondary Header APIs, 334
 CFE_MSG_GetHasSecondaryHeader
 CFE Message Primary Header APIs, 320
 CFE_MSG_GetHeaderVersion
 CFE Message Primary Header APIs, 320
 CFE_MSG_GetMsgId
 CFE Message Id APIs, 337
 CFE_MSG_GetMsgTime
 CFE Message Secondary Header APIs, 334
 CFE_MSG_GetNextSequenceCount
 CFE Message Primary Header APIs, 321
 CFE_MSG_GetPlaybackFlag
 CFE Message Extended Header APIs, 328
 CFE_MSG_GetSegmentationFlag
 CFE Message Primary Header APIs, 321
 CFE_MSG_GetSequenceCount
 CFE Message Primary Header APIs, 322
 CFE_MSG.GetSize
 CFE Message Primary Header APIs, 322
 CFE_MSG_GetSubsystem
 CFE Message Extended Header APIs, 329
 CFE_MSG_GetSystem
 CFE Message Extended Header APIs, 329
 CFE_MSG.GetType
 CFE Message Primary Header APIs, 323
 CFE_MSG.GetTypeFromMsgId
 CFE Message Id APIs, 338
 CFE_MSG_HeaderVersion_t
 cfe_msg_api_typedefs.h, 1042
 CFE_MSG_Init
 CFE Generic Message APIs, 318
 CFE_MSG_Message_t
 cfe_msg_api_typedefs.h, 1042
 CFE_MSG_NOT_IMPLEMENTED
 cfe_msg_api_typedefs.h, 1041
 CFE_MSG_OriginationAction
 CFE Message Integrity APIs, 339
 CFE_MSG_PlaybackFlag
 cfe_msg_api_typedefs.h, 1043
 CFE_MSG_PlaybackFlag_t
 cfe_msg_api_typedefs.h, 1042
 CFE_MSG_PlayFlag_Invalid
 cfe_msg_api_typedefs.h, 1043
 CFE_MSG_PlayFlag_Original
 cfe_msg_api_typedefs.h, 1043
 CFE_MSG_PlayFlag_Playback
 cfe_msg_api_typedefs.h, 1043
 CFE_MSG_SegFlag_Continue
 cfe_msg_api_typedefs.h, 1044
 CFE_MSG_SegFlag_First
 cfe_msg_api_typedefs.h, 1044
 CFE_MSG_SegFlag_Invalid

cfe_msg_api_typedefs.h, 1044
CFE_MSG_SegFlag_Last
 cfe_msg_api_typedefs.h, 1044
CFE_MSG_SegFlag_Unsegmented
 cfe_msg_api_typedefs.h, 1044
CFE_MSG_SegmentationFlag
 cfe_msg_api_typedefs.h, 1043
CFE_MSG_SegmentationFlag_t
 cfe_msg_api_typedefs.h, 1042
CFE_MSG_SequenceCount_t
 cfe_msg_api_typedefs.h, 1042
CFE_MSG_SetApId
 cFE Message Primary Header APIs, 323
CFE_MSG_SetEDSVersion
 cFE Message Extended Header APIs, 330
CFE_MSG_SetEndian
 cFE Message Extended Header APIs, 330
CFE_MSG_SetFcnCode
 cFE Message Secondary Header APIs, 335
CFE_MSG_SetHasSecondaryHeader
 cFE Message Primary Header APIs, 324
CFE_MSG_SetHeaderVersion
 cFE Message Primary Header APIs, 324
CFE_MSG_SetMsgId
 cFE Message Id APIs, 338
CFE_MSG_SetMsgTime
 cFE Message Secondary Header APIs, 335
CFE_MSG_SetPlaybackFlag
 cFE Message Extended Header APIs, 331
CFE_MSG_SetSegmentationFlag
 cFE Message Primary Header APIs, 325
CFE_MSG_SetSequenceCount
 cFE Message Primary Header APIs, 325
CFE_MSG_SetSize
 cFE Message Primary Header APIs, 326
CFE_MSG_SetSubsystem
 cFE Message Extended Header APIs, 331
CFE_MSG_SetSystem
 cFE Message Extended Header APIs, 332
CFE_MSG_SetType
 cFE Message Primary Header APIs, 326
CFE_MSG_Size_t
 cfe_msg_api_typedefs.h, 1042
CFE_MSG_Subsystem_t
 cfe_msg_api_typedefs.h, 1043
CFE_MSG_System_t
 cfe_msg_api_typedefs.h, 1043
CFE_MSG_TelemetryHeader_t
 cfe_msg_api_typedefs.h, 1043
CFE_MSG_Type
 cfe_msg_api_typedefs.h, 1044
CFE_MSG_Type_Cmd
 cfe_msg_api_typedefs.h, 1044
CFE_MSG_Type_Invalid
 cfe_msg_api_typedefs.h, 1044
CFE_MSG_Type_t
 cfe_msg_api_typedefs.h, 1043
CFE_MSG_Type_Tlm
 cfe_msg_api_typedefs.h, 1044
CFE_MSG_ValidateChecksum
 cFE Message Secondary Header APIs, 336
CFE_MSG_VerificationAction
 cFE Message Integrity APIs, 340
CFE_MSG_WRONG_MSG_TYPE
 cfe_msg_api_typedefs.h, 1041
CFE_PLATFORM_CMD_TOPICID_TO_MIDV
 default_cfe_core_api_base_msgids.h, 1003
CFE_PLATFORM_CORE_MAX_STARTUP_MSEC
 example_platform_cfg.h, 956
CFE_PLATFORM_ENDIAN
 example_platform_cfg.h, 956
CFE_PLATFORM_ES_APP_KILL_TIMEOUT
 default_cfe_es_internal_cfg.h, 1101
 example_platform_cfg.h, 956
CFE_PLATFORM_ES_APP_SCAN_RATE
 default_cfe_es_internal_cfg.h, 1101
 example_platform_cfg.h, 957
CFE_PLATFORM_ES_CDS_MAX_BLOCK_SIZE
 default_cfe_es_internal_cfg.h, 1102
 example_platform_cfg.h, 957
CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES
 default_cfe_es_internal_cfg.h, 1102
 example_platform_cfg.h, 957
CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01
 default_cfe_es_internal_cfg.h, 1102
 example_platform_cfg.h, 958
CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_02
 default_cfe_es_internal_cfg.h, 1102
 example_platform_cfg.h, 958
CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_03
 default_cfe_es_internal_cfg.h, 1102
 example_platform_cfg.h, 958
CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_04
 default_cfe_es_internal_cfg.h, 1102
 example_platform_cfg.h, 958
CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_05
 default_cfe_es_internal_cfg.h, 1103
 example_platform_cfg.h, 958
CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_06
 default_cfe_es_internal_cfg.h, 1103
 example_platform_cfg.h, 958
CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_07
 default_cfe_es_internal_cfg.h, 1103
 example_platform_cfg.h, 959
CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_08
 default_cfe_es_internal_cfg.h, 1103
 example_platform_cfg.h, 959
CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_09

default_cfe_es_internal_cfg.h, 1103
example_platform_cfg.h, 959

CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_10
default_cfe_es_internal_cfg.h, 1103
example_platform_cfg.h, 959

CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_11
default_cfe_es_internal_cfg.h, 1103
example_platform_cfg.h, 959

CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_12
default_cfe_es_internal_cfg.h, 1103
example_platform_cfg.h, 959

CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_13
default_cfe_es_internal_cfg.h, 1103
example_platform_cfg.h, 959

CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_14
default_cfe_es_internal_cfg.h, 1103
example_platform_cfg.h, 959

CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_15
default_cfe_es_internal_cfg.h, 1104
example_platform_cfg.h, 959

CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_16
default_cfe_es_internal_cfg.h, 1104
example_platform_cfg.h, 959

CFE_PLATFORM_ES_CDS_SIZE
default_cfe_es_internal_cfg.h, 1104
example_platform_cfg.h, 960

CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE
default_cfe_es_internal_cfg.h, 1104
example_platform_cfg.h, 960

CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMP_FILE
default_cfe_es_internal_cfg.h, 1104
example_platform_cfg.h, 960

CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE
default_cfe_es_internal_cfg.h, 1105
example_platform_cfg.h, 960

CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME
default_cfe_es_internal_cfg.h, 1105
example_platform_cfg.h, 961

CFE_PLATFORM_ES_DEFAULT_POR_SYSLOG_MODE
default_cfe_es_internal_cfg.h, 1105
example_platform_cfg.h, 961

CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE
default_cfe_es_internal_cfg.h, 1106
example_platform_cfg.h, 961

CFE_PLATFORM_ES_DEFAULT_STACK_SIZE
default_cfe_es_internal_cfg.h, 1106
example_platform_cfg.h, 962

CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE
default_cfe_es_internal_cfg.h, 1106
example_platform_cfg.h, 962

CFE_PLATFORM_ES_DEFAULT_TASK_LOG_FILE
default_cfe_es_internal_cfg.h, 1107
example_platform_cfg.h, 962

CFE_PLATFORM_ES_ER_LOG_ENTRIES

default_cfe_es_internal_cfg.h, 1107
example_platform_cfg.h, 963

CFE_PLATFORM_ES_ER_LOG_MAX_CONTEXT_SIZE
default_cfe_es_internal_cfg.h, 1107
example_platform_cfg.h, 963

CFE_PLATFORM_ES_MAX_APPLICATIONS
default_cfe_es_internal_cfg.h, 1108
example_platform_cfg.h, 963

CFE_PLATFORM_ES_MAX_BLOCK_SIZE
default_cfe_es_internal_cfg.h, 1108
example_platform_cfg.h, 964

CFE_PLATFORM_ES_MAX_GEN_COUNTERS
default_cfe_es_internal_cfg.h, 1108
example_platform_cfg.h, 964

CFE_PLATFORM_ES_MAX_LIBRARIES
default_cfe_es_internal_cfg.h, 1108
example_platform_cfg.h, 964

CFE_PLATFORM_ES_MAX_MEMORY_POOLS
default_cfe_es_internal_cfg.h, 1109
example_platform_cfg.h, 964

CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS
default_cfe_es_internal_cfg.h, 1109
example_platform_cfg.h, 965

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01
default_cfe_es_internal_cfg.h, 1109
example_platform_cfg.h, 965

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_02
default_cfe_es_internal_cfg.h, 1110
example_platform_cfg.h, 965

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_03
default_cfe_es_internal_cfg.h, 1110
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_04
default_cfe_es_internal_cfg.h, 1110
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_05
default_cfe_es_internal_cfg.h, 1110
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_06
default_cfe_es_internal_cfg.h, 1110
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_07
default_cfe_es_internal_cfg.h, 1110
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_08
default_cfe_es_internal_cfg.h, 1110
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_09
default_cfe_es_internal_cfg.h, 1110
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_10
default_cfe_es_internal_cfg.h, 1110
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_11

default_cfe_es_internal_cfg.h, 1111
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_12
default_cfe_es_internal_cfg.h, 1111
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_13
default_cfe_es_internal_cfg.h, 1111
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_14
default_cfe_es_internal_cfg.h, 1111
example_platform_cfg.h, 966

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_15
default_cfe_es_internal_cfg.h, 1111
example_platform_cfg.h, 967

CFE_PLATFORM_ES_MEM_BLOCK_SIZE_16
default_cfe_es_internal_cfg.h, 1111
example_platform_cfg.h, 967

CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN
default_cfe_es_internal_cfg.h, 1111
example_platform_cfg.h, 967

CFE_PLATFORM_ES_NONVOL_DISK_MOUNT_STRING
default_cfe_es_internal_cfg.h, 1111
example_platform_cfg.h, 967

CFE_PLATFORM_ES_NONVOL_STARTUP_FILE
default_cfe_es_internal_cfg.h, 1112
example_platform_cfg.h, 967

CFE_PLATFORM_ES_OBJECT_TABLE_SIZE
default_cfe_es_internal_cfg.h, 1112
example_platform_cfg.h, 968

CFE_PLATFORM_ES_PERF_CHILD_MS_DELAY
default_cfe_es_internal_cfg.h, 1112
example_platform_cfg.h, 968

CFE_PLATFORM_ES_PERF_CHILD_PRIORITY
default_cfe_es_internal_cfg.h, 1112
example_platform_cfg.h, 968

CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE
default_cfe_es_internal_cfg.h, 1113
example_platform_cfg.h, 968

CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE
default_cfe_es_internal_cfg.h, 1113
example_platform_cfg.h, 969

CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS
default_cfe_es_internal_cfg.h, 1113
example_platform_cfg.h, 969

CFE_PLATFORM_ES_PERF_FILTMASK_ALL
default_cfe_es_internal_cfg.h, 1114
example_platform_cfg.h, 969

CFE_PLATFORM_ES_PERF_FILTMASK_INIT
default_cfe_es_internal_cfg.h, 1114
example_platform_cfg.h, 969

CFE_PLATFORM_ES_PERF_FILTMASK_NONE
default_cfe_es_internal_cfg.h, 1114
example_platform_cfg.h, 970

CFE_PLATFORM_ES_PERF_TRIGMASK_ALL
default_cfe_es_internal_cfg.h, 1114
example_platform_cfg.h, 970

CFE_PLATFORM_ES_PERF_TRIGMASK_INIT
default_cfe_es_internal_cfg.h, 1114
example_platform_cfg.h, 970

CFE_PLATFORM_ES_PERF_TRIGMASK_NONE
default_cfe_es_internal_cfg.h, 1115
example_platform_cfg.h, 970

CFE_PLATFORM_ES_POOL_MAX_BUCKETS
default_cfe_es_internal_cfg.h, 1115
example_platform_cfg.h, 970

CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING
default_cfe_es_internal_cfg.h, 1115
example_platform_cfg.h, 971

CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS
default_cfe_es_internal_cfg.h, 1115
example_platform_cfg.h, 971

CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED
default_cfe_es_internal_cfg.h, 1116
example_platform_cfg.h, 971

CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE
default_cfe_es_internal_cfg.h, 1116
example_platform_cfg.h, 972

CFE_PLATFORM_ES_START_TASK_PRIORITY
default_cfe_es_internal_cfg.h, 1117
example_platform_cfg.h, 972

CFE_PLATFORM_ES_START_TASK_STACK_SIZE
default_cfe_es_internal_cfg.h, 1117
example_platform_cfg.h, 972

CFE_PLATFORM_ES_STARTUP_SCRIPT_TIMEOUT_MSEC
default_cfe_es_internal_cfg.h, 1117
example_platform_cfg.h, 973

CFE_PLATFORM_ES_STARTUP_SYNC_POLL_MSEC
default_cfe_es_internal_cfg.h, 1117
example_platform_cfg.h, 973

CFE_PLATFORM_ES_SYSTEM_LOG_SIZE
default_cfe_es_internal_cfg.h, 1118
example_platform_cfg.h, 973

CFE_PLATFORM_ES_USER_RESERVED_SIZE
default_cfe_es_internal_cfg.h, 1118
example_platform_cfg.h, 974

CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE
default_cfe_es_internal_cfg.h, 1118
example_platform_cfg.h, 974

CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC
default_cfe_evs_internal_cfg.h, 1177
example_platform_cfg.h, 974

CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE
default_cfe_evs_internal_cfg.h, 1177
example_platform_cfg.h, 975

CFE_PLATFORM_EVS_DEFAULT_LOG_FILE
default_cfe_evs_internal_cfg.h, 1178
example_platform_cfg.h, 975

CFE_PLATFORM_EVS_DEFAULT_LOG_MODE

default_cfe_evs_internal_cfg.h, 1178
example_platform_cfg.h, 975

CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE CFE_PLATFORM_SB_FILTER_MASK6
default_cfe_evs_internal_cfg.h, 1178
example_platform_cfg.h, 976

CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG
default_cfe_evs_internal_cfg.h, 1178
example_platform_cfg.h, 976

CFE_PLATFORM_EVS_LOG_MAX
default_cfe_evs_internal_cfg.h, 1179
example_platform_cfg.h, 976

CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST
default_cfe_evs_internal_cfg.h, 1179
example_platform_cfg.h, 977

CFE_PLATFORM_EVS_MAX_EVENT_FILTERS
default_cfe_evs_internal_cfg.h, 1179
example_platform_cfg.h, 977

CFE_PLATFORM_EVS_PORT_DEFAULT
default_cfe_evs_internal_cfg.h, 1180
example_platform_cfg.h, 977

CFE_PLATFORM_EVS_START_TASK_PRIORITY
default_cfe_evs_internal_cfg.h, 1180
example_platform_cfg.h, 977

CFE_PLATFORM_EVS_START_TASK_STACK_SIZE
default_cfe_evs_internal_cfg.h, 1180
example_platform_cfg.h, 978

CFE_PLATFORM_SB_BUF_MEMORY_BYTES
default_cfe_sb_internal_cfg.h, 1221
example_platform_cfg.h, 978

CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME
default_cfe_sb_internal_cfg.h, 1221
example_platform_cfg.h, 978

CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT
default_cfe_sb_internal_cfg.h, 1222
example_platform_cfg.h, 979

CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME
default_cfe_sb_internal_cfg.h, 1222
example_platform_cfg.h, 979

CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME
default_cfe_sb_internal_cfg.h, 1222
example_platform_cfg.h, 979

CFE_PLATFORM_SB_FILTER_MASK1
default_cfe_sb_internal_cfg.h, 1223
example_platform_cfg.h, 980

CFE_PLATFORM_SB_FILTER_MASK2
default_cfe_sb_internal_cfg.h, 1223
example_platform_cfg.h, 980

CFE_PLATFORM_SB_FILTER_MASK3
default_cfe_sb_internal_cfg.h, 1223
example_platform_cfg.h, 980

CFE_PLATFORM_SB_FILTER_MASK4
default_cfe_sb_internal_cfg.h, 1223
example_platform_cfg.h, 980

CFE_PLATFORM_SB_FILTER_MASK5

default_cfe_sb_internal_cfg.h, 1223
example_platform_cfg.h, 980

CFE_PLATFORM_SB_FILTERED_EVENT1
default_cfe_sb_internal_cfg.h, 1223
example_platform_cfg.h, 980

CFE_PLATFORM_SB_FILTERED_EVENT2
default_cfe_sb_internal_cfg.h, 1224
example_platform_cfg.h, 981

CFE_PLATFORM_SB_FILTERED_EVENT3
default_cfe_sb_internal_cfg.h, 1224
example_platform_cfg.h, 981

CFE_PLATFORM_SB_FILTERED_EVENT4
default_cfe_sb_internal_cfg.h, 1224
example_platform_cfg.h, 981

CFE_PLATFORM_SB_FILTERED_EVENT5
default_cfe_sb_internal_cfg.h, 1224
example_platform_cfg.h, 981

CFE_PLATFORM_SB_FILTERED_EVENT6
default_cfe_sb_internal_cfg.h, 1224
example_platform_cfg.h, 981

CFE_PLATFORM_SB_FILTERED_EVENT7
default_cfe_sb_internal_cfg.h, 1224
example_platform_cfg.h, 981

CFE_PLATFORM_SB_FILTERED_EVENT8
default_cfe_sb_internal_cfg.h, 1224
example_platform_cfg.h, 981

CFE_PLATFORM_SB_HIGHEST_VALID_MSGID
default_cfe_sb_internal_cfg.h, 1224
example_platform_cfg.h, 981

CFE_PLATFORM_SB_MAX_BLOCK_SIZE
default_cfe_sb_internal_cfg.h, 1225
example_platform_cfg.h, 982

CFE_PLATFORM_SB_MAX_DEST_PER_PKT
default_cfe_sb_internal_cfg.h, 1225
example_platform_cfg.h, 982

CFE_PLATFORM_SB_MAX_MSG_IDS
default_cfe_sb_internal_cfg.h, 1225
example_platform_cfg.h, 982

CFE_PLATFORM_SB_MAX_PIPES
default_cfe_sb_internal_cfg.h, 1225
example_platform_cfg.h, 982

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01
default_cfe_sb_internal_cfg.h, 1226
example_platform_cfg.h, 983

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_02

default_cfe_sb_internal_cfg.h, 1226
example_platform_cfg.h, 983

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_03
default_cfe_sb_internal_cfg.h, 1226
example_platform_cfg.h, 983

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_04
default_cfe_sb_internal_cfg.h, 1226
example_platform_cfg.h, 983

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_05
default_cfe_sb_internal_cfg.h, 1226
example_platform_cfg.h, 983

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_06
default_cfe_sb_internal_cfg.h, 1226
example_platform_cfg.h, 983

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_07
default_cfe_sb_internal_cfg.h, 1226
example_platform_cfg.h, 983

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_08
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_09
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_10
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_11
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_12
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_13
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_14
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_15
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_MEM_BLOCK_SIZE_16
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_START_TASK_PRIORITY
default_cfe_sb_internal_cfg.h, 1227
example_platform_cfg.h, 984

CFE_PLATFORM_SB_START_TASK_STACK_SIZE
default_cfe_sb_internal_cfg.h, 1228
example_platform_cfg.h, 985

CFE_PLATFORM_TBL_BUF_MEMORY_BYTES
default_cfe_tbl_internal_cfg.h, 1268
example_platform_cfg.h, 985

CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE
default_cfe_tbl_internal_cfg.h, 1268
example_platform_cfg.h, 985

CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES
default_cfe_tbl_internal_cfg.h, 1268
example_platform_cfg.h, 986

CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE
default_cfe_tbl_internal_cfg.h, 1269
example_platform_cfg.h, 986

CFE_PLATFORM_TBL_MAX_NUM_HANDLES
default_cfe_tbl_internal_cfg.h, 1269
example_platform_cfg.h, 986

CFE_PLATFORM_TBL_MAX_NUM_TABLES
default_cfe_tbl_internal_cfg.h, 1269
example_platform_cfg.h, 987

CFE_PLATFORM_TBL_MAX_NUM_VALIDATIONS
default_cfe_tbl_internal_cfg.h, 1269
example_platform_cfg.h, 987

CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS
default_cfe_tbl_internal_cfg.h, 1270
example_platform_cfg.h, 987

CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE
default_cfe_tbl_internal_cfg.h, 1270
example_platform_cfg.h, 988

CFE_PLATFORM_TBL_START_TASK_PRIORITY
default_cfe_tbl_internal_cfg.h, 1270
example_platform_cfg.h, 988

CFE_PLATFORM_TBL_START_TASK_STACK_SIZE
default_cfe_tbl_internal_cfg.h, 1271
example_platform_cfg.h, 988

CFE_PLATFORM_TBL_U32FROM4CHARS
default_cfe_tbl_internal_cfg.h, 1271
example_platform_cfg.h, 989

CFE_PLATFORM_TBL_VALID_PRID_1
default_cfe_tbl_internal_cfg.h, 1271
example_platform_cfg.h, 989

CFE_PLATFORM_TBL_VALID_PRID_2
default_cfe_tbl_internal_cfg.h, 1271
example_platform_cfg.h, 989

CFE_PLATFORM_TBL_VALID_PRID_3
default_cfe_tbl_internal_cfg.h, 1272
example_platform_cfg.h, 989

CFE_PLATFORM_TBL_VALID_PRID_4
default_cfe_tbl_internal_cfg.h, 1272
example_platform_cfg.h, 989

CFE_PLATFORM_TBL_VALID_PRID_COUNT
default_cfe_tbl_internal_cfg.h, 1272
example_platform_cfg.h, 989

CFE_PLATFORM_TBL_VALID_SCID_1
default_cfe_tbl_internal_cfg.h, 1272
example_platform_cfg.h, 990

CFE_PLATFORM_TBL_VALID_SCID_2
default_cfe_tbl_internal_cfg.h, 1272
example_platform_cfg.h, 990

CFE_PLATFORM_TBL_VALID_SCID_COUNT

default_cfe_tbl_internal_cfg.h, 1272
 example_platform_cfg.h, 990
CFE_PLATFORM_TIME_CFG_CLIENT
 default_cfe_time_internal_cfg.h, 1326
 example_platform_cfg.h, 990
CFE_PLATFORM_TIME_CFG_LATCH_FLY
 default_cfe_time_internal_cfg.h, 1326
 example_platform_cfg.h, 991
CFE_PLATFORM_TIME_CFG_SERVER
 default_cfe_time_internal_cfg.h, 1326
 example_platform_cfg.h, 991
CFE_PLATFORM_TIME_CFG_SIGNAL
 default_cfe_time_internal_cfg.h, 1326
 example_platform_cfg.h, 991
CFE_PLATFORM_TIME_CFG_SOURCE
 default_cfe_time_internal_cfg.h, 1326
 example_platform_cfg.h, 991
CFE_PLATFORM_TIME_CFG_SRC_GPS
 default_cfe_time_internal_cfg.h, 1327
 example_platform_cfg.h, 992
CFE_PLATFORM_TIME_CFG_SRC_MET
 default_cfe_time_internal_cfg.h, 1327
 example_platform_cfg.h, 992
CFE_PLATFORM_TIME_CFG_SRC_TIME
 default_cfe_time_internal_cfg.h, 1327
 example_platform_cfg.h, 992
CFE_PLATFORM_TIME_CFG_START_FLY
 default_cfe_time_internal_cfg.h, 1327
 example_platform_cfg.h, 992
CFE_PLATFORM_TIME_CFG_TONE_LIMIT
 default_cfe_time_internal_cfg.h, 1328
 example_platform_cfg.h, 993
CFE_PLATFORM_TIME_CFG_VIRTUAL
 default_cfe_time_internal_cfg.h, 1328
 example_platform_cfg.h, 993
CFE_PLATFORM_TIME_MAX_DELTA_SECS
 default_cfe_time_internal_cfg.h, 1328
 example_platform_cfg.h, 993
CFE_PLATFORM_TIME_MAX_DELTA_SUBS
 default_cfe_time_internal_cfg.h, 1329
 example_platform_cfg.h, 994
CFE_PLATFORM_TIME_MAX_LOCAL_SECS
 default_cfe_time_internal_cfg.h, 1329
 example_platform_cfg.h, 994
CFE_PLATFORM_TIME_MAX_LOCAL_SUBS
 default_cfe_time_internal_cfg.h, 1329
 example_platform_cfg.h, 994
CFE_PLATFORM_TIME_ONEHZ_TASK_PRIORITY
 default_cfe_time_internal_cfg.h, 1329
 example_platform_cfg.h, 994
CFE_PLATFORM_TIME_ONEHZ_TASK_STACK_SIZE
 default_cfe_time_internal_cfg.h, 1329
 example_platform_cfg.h, 994
CFE_PLATFORM_TIME_START_TASK_PRIORITY
 default_cfe_time_internal_cfg.h, 1329
 example_platform_cfg.h, 994
CFE_PLATFORM_TIME_START_TASK_STACK_SIZE
 default_cfe_time_internal_cfg.h, 1330
 example_platform_cfg.h, 995
CFE_PLATFORM_TIME_TONE_TASK_PRIORITY
 default_cfe_time_internal_cfg.h, 1330
 example_platform_cfg.h, 995
CFE_PLATFORM_TIME_TONE_TASK_STACK_SIZE
 default_cfe_time_internal_cfg.h, 1330
 example_platform_cfg.h, 995
CFE_PLATFORM_TLM_TOPICID_TO_MIDV
 default_cfe_core_api_base_msgids.h, 1003
cfe_psp.h
 CFE_PSP_Main, 1392
CFE_PSP_AttachExceptions
 cfe_psp_exception_api.h, 1400
cfe_psp_cache_api.h
 CFE_PSP_FlushCaches, 1392
cfe_psp_cds_api.h
 CFE_PSP_GetCDSSize, 1393
 CFE_PSP_ReadFromCDS, 1393
 CFE_PSP_WriteToCDS, 1393
cfe_psp_eepromaccess_api.h
 CFE_PSP_EepromPowerDown, 1394
 CFE_PSP_EepromPowerUp, 1395
 CFE_PSP_EepromWrite16, 1395
 CFE_PSP_EepromWrite32, 1395
 CFE_PSP_EepromWrite8, 1396
 CFE_PSP_EepromWriteDisable, 1396
 CFE_PSP_EepromWriteEnable, 1396
CFE_PSP_EepromPowerDown
 cfe_psp_eepromaccess_api.h, 1394
CFE_PSP_EepromPowerUp
 cfe_psp_eepromaccess_api.h, 1395
CFE_PSP_EepromWrite16
 cfe_psp_eepromaccess_api.h, 1395
CFE_PSP_EepromWrite32
 cfe_psp_eepromaccess_api.h, 1395
CFE_PSP_EepromWrite8
 cfe_psp_eepromaccess_api.h, 1396
CFE_PSP_EepromWriteDisable
 cfe_psp_eepromaccess_api.h, 1396
CFE_PSP_EepromWriteEnable
 cfe_psp_eepromaccess_api.h, 1396
CFE_PSP_ERROR
 cfe_psp_error.h, 1398
cfe_psp_error.h
 CFE_PSP_ERROR, 1398
 CFE_PSP_ERROR_ADDRESS_MISALIGNED,
 1398
 CFE_PSP_ERROR_NOT_IMPLEMENTED, 1398
 CFE_PSP_ERROR_TIMEOUT, 1398
 CFE_PSP_INVALID_INT_NUM, 1398

CFE_PSP_INVALID_MEM_ADDR, 1398
CFE_PSP_INVALID_MEM_ATTR, 1398
CFE_PSP_INVALID_MEM_RANGE, 1398
CFE_PSP_INVALID_MEM_SIZE, 1398
CFE_PSP_INVALID_MEM_TYPE, 1398
CFE_PSP_INVALID_MEM_WORDSIZE, 1398
CFE_PSP_INVALID_MODULE_ID, 1398
CFE_PSP_INVALID_MODULE_NAME, 1398
CFE_PSP_INVALID_POINTER, 1399
CFE_PSP_NO_EXCEPTION_DATA, 1399
CFE_PSP_STATUS_C, 1399
CFE_PSP_STATUS_STRING_LENGTH, 1399
CFE_PSP_Status_t, 1399
CFE_PSP_StatusString_t, 1399
CFE_PSP_StatusToString, 1399
CFE_PSP_SUCCESS, 1399
CFE_PSP_ERROR_ADDRESS_MISALIGNED
 cfe_psp_error.h, 1398
CFE_PSP_ERROR_NOT_IMPLEMENTED
 cfe_psp_error.h, 1398
CFE_PSP_ERROR_TIMEOUT
 cfe_psp_error.h, 1398
cfe_psp_exception_api.h
 CFE_PSP_AttachExceptions, 1400
 CFE_PSP_Exception_CopyContext, 1400
 CFE_PSP_Exception_GetCount, 1401
 CFE_PSP_Exception_GetSummary, 1401
 CFE_PSP_SetDefaultExceptionEnvironment, 1401
CFE_PSP_Exception_CopyContext
 cfe_psp_exception_api.h, 1400
CFE_PSP_Exception_GetCount
 cfe_psp_exception_api.h, 1401
CFE_PSP_Exception_GetSummary
 cfe_psp_exception_api.h, 1401
CFE_PSP_FlushCaches
 cfe_psp_cache_api.h, 1392
CFE_PSP_Get_Timebase
 cfe_psp_timertick_api.h, 1416
CFE_PSP_GetBuildNumber
 cfe_psp_version_api.h, 1418
CFE_PSP_GetCDSSize
 cfe_psp_cds_api.h, 1393
CFE_PSP_GetCFETextSegmentInfo
 cfe_psp_memrange_api.h, 1408
CFE_PSP_GetKernelTextSegmentInfo
 cfe_psp_memrange_api.h, 1408
CFE_PSP_GetProcessorId
 cfe_psp_id_api.h, 1402
CFE_PSP_GetProcessorName
 cfe_psp_id_api.h, 1402
CFE_PSP_GetResetArea
 cfe_psp_memrange_api.h, 1409
CFE_PSP_GetRestartType
 cfe_psp_watchdog_api.h, 1422
CFE_PSP_GetSpacecraftId
 cfe_psp_id_api.h, 1402
CFE_PSP_GetTime
 cfe_psp_timertick_api.h, 1416
CFE_PSP_GetTimerLow32Rollover
 cfe_psp_timertick_api.h, 1417
CFE_PSP_GetTimerTicksPerSecond
 cfe_psp_timertick_api.h, 1417
CFE_PSP GetUserReservedArea
 cfe_psp_memrange_api.h, 1409
CFE_PSP_GetVersionCodeName
 cfe_psp_version_api.h, 1418
CFE_PSP_GetVersionNumber
 cfe_psp_version_api.h, 1418
CFE_PSP_GetVersionString
 cfe_psp_version_api.h, 1418
CFE_PSP_GetVolatileDiskMem
 cfe_psp_memrange_api.h, 1409
cfe_psp_id_api.h
 CFE_PSP_GetProcessorId, 1402
 CFE_PSP_GetProcessorName, 1402
 CFE_PSP_GetSpacecraftId, 1402
CFE_PSP_InitSSR
 cfe_psp_ssr_api.h, 1415
CFE_PSP_INVALID_INT_NUM
 cfe_psp_error.h, 1398
CFE_PSP_INVALID_MEM_ADDR
 cfe_psp_error.h, 1398
CFE_PSP_INVALID_MEM_ATTR
 cfe_psp_error.h, 1398
CFE_PSP_INVALID_MEM_RANGE
 cfe_psp_error.h, 1398
CFE_PSP_INVALID_MEM_SIZE
 cfe_psp_error.h, 1398
CFE_PSP_INVALID_MEM_TYPE
 cfe_psp_error.h, 1398
CFE_PSP_INVALID_MEM_WORDSIZE
 cfe_psp_error.h, 1398
CFE_PSP_INVALID_MODULE_ID
 cfe_psp_error.h, 1398
CFE_PSP_INVALID_MODULE_NAME
 cfe_psp_error.h, 1398
CFE_PSP_INVALID_POINTER
 cfe_psp_error.h, 1399
CFE_PSP_Main
 cfe_psp.h, 1392
CFE_PSP_MEM_ANY
 cfe_psp_memrange_api.h, 1407
CFE_PSP_MEM_ATTR_READ
 cfe_psp_memrange_api.h, 1407
CFE_PSP_MEM_ATTR_READWRITE
 cfe_psp_memrange_api.h, 1407
CFE_PSP_MEM_ATTR_WRITE
 cfe_psp_memrange_api.h, 1407

CFE_PSP_MEM_EEPROM
 cfe_psp_memrange_api.h, 1407

CFE_PSP_MEM_INVALID
 cfe_psp_memrange_api.h, 1407

CFE_PSP_MEM_RAM
 cfe_psp_memrange_api.h, 1407

CFE_PSP_MEM_SIZE_BYTE
 cfe_psp_memrange_api.h, 1408

CFE_PSP_MEM_SIZE_DWORD
 cfe_psp_memrange_api.h, 1408

CFE_PSP_MEM_SIZE_WORD
 cfe_psp_memrange_api.h, 1408

cfe_psp_memaccess_api.h
 CFE_PSP_MemCpy, 1403
 CFE_PSP_MemRead16, 1403
 CFE_PSP_MemRead32, 1404
 CFE_PSP_MemRead8, 1404
 CFE_PSP_MemSet, 1405
 CFE_PSP_MemWrite16, 1405
 CFE_PSP_MemWrite32, 1405
 CFE_PSP_MemWrite8, 1406

CFE_PSP_MemCpy
 cfe_psp_memaccess_api.h, 1403

cfe_psp_memrange_api.h
 CFE_PSP_GetCFETextSegmentInfo, 1408
 CFE_PSP_GetKernelTextSegmentInfo, 1408
 CFE_PSP_GetResetArea, 1409
 CFE_PSP GetUserReservedArea, 1409
 CFE_PSP_GetVolatileDiskMem, 1409
 CFE_PSP_MEM_ANY, 1407
 CFE_PSP_MEM_ATTR_READ, 1407
 CFE_PSP_MEM_ATTR_READWRITE, 1407
 CFE_PSP_MEM_ATTR_WRITE, 1407
 CFE_PSP_MEM_EEPROM, 1407
 CFE_PSP_MEM_INVALID, 1407
 CFE_PSP_MEM_RAM, 1407
 CFE_PSP_MEM_SIZE_BYTE, 1408
 CFE_PSP_MEM_SIZE_DWORD, 1408
 CFE_PSP_MEM_SIZE_WORD, 1408
 CFE_PSP_MemRangeGet, 1409
 CFE_PSP_MemRanges, 1410
 CFE_PSP_MemRangeSet, 1410
 CFE_PSP_MemValidateRange, 1411

CFE_PSP_MemRangeGet
 cfe_psp_memrange_api.h, 1409

CFE_PSP_MemRanges
 cfe_psp_memrange_api.h, 1410

CFE_PSP_MemRangeSet
 cfe_psp_memrange_api.h, 1410

CFE_PSP_MemRead16
 cfe_psp_memaccess_api.h, 1403

CFE_PSP_MemRead32
 cfe_psp_memaccess_api.h, 1404

CFE_PSP_MemRead8
 cfe_psp_memaccess_api.h, 1404

 cfe_psp_memaccess_api.h, 1404

CFE_PSP_MemSet
 cfe_psp_memaccess_api.h, 1405

CFE_PSP_MemValidateRange
 cfe_psp_memrange_api.h, 1411

CFE_PSP_MemWrite16
 cfe_psp_memaccess_api.h, 1405

CFE_PSP_MemWrite32
 cfe_psp_memaccess_api.h, 1405

CFE_PSP_MemWrite8
 cfe_psp_memaccess_api.h, 1406

CFE_PSP_NO_EXCEPTION_DATA
 cfe_psp_error.h, 1399

CFE_PSP_Panic
 cfe_psp_watchdog_api.h, 1422

CFE_PSP_PANIC_CORE_APP
 cfe_psp_watchdog_api.h, 1420

CFE_PSP_PANIC_GENERAL_FAILURE
 cfe_psp_watchdog_api.h, 1420

CFE_PSP_PANIC_MEMORY_ALLOC
 cfe_psp_watchdog_api.h, 1420

CFE_PSP_PANIC_NONVOL_DISK
 cfe_psp_watchdog_api.h, 1420

CFE_PSP_PANIC_STARTUP
 cfe_psp_watchdog_api.h, 1420

CFE_PSP_PANIC_STARTUP_SEM
 cfe_psp_watchdog_api.h, 1420

CFE_PSP_PANIC_VOLATILE_DISK
 cfe_psp_watchdog_api.h, 1420

cfe_psp_port_api.h
 CFE_PSP_PortRead16, 1412
 CFE_PSP_PortRead32, 1413
 CFE_PSP_PortRead8, 1413
 CFE_PSP_PortWrite16, 1413
 CFE_PSP_PortWrite32, 1414
 CFE_PSP_PortWrite8, 1414

CFE_PSP_PortRead16
 cfe_psp_port_api.h, 1412

CFE_PSP_PortRead32
 cfe_psp_port_api.h, 1413

CFE_PSP_PortRead8
 cfe_psp_port_api.h, 1413

CFE_PSP_PortWrite16
 cfe_psp_port_api.h, 1413

CFE_PSP_PortWrite32
 cfe_psp_port_api.h, 1414

CFE_PSP_PortWrite8
 cfe_psp_port_api.h, 1414

CFE_PSP_ReadFromCDS
 cfe_psp_cds_api.h, 1393

CFE_PSP_Restart
 cfe_psp_watchdog_api.h, 1422

CFE_PSP_RST_SUBTYPE_BANKSWITCH_RESET
 cfe_psp_watchdog_api.h, 1420

CFE_PSP_RST_SUBTYPE_EXCEPTION
 cfe_psp_watchdog_api.h, 1420

CFE_PSP_RST_SUBTYPE_HW_SPECIAL_COMMAND
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_SUBTYPE_HW_WATCHDOG
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_SUBTYPE_HWDEBUG_RESET
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_SUBTYPE_MAX
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_SUBTYPE_POWER_CYCLE
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_SUBTYPE_PUSH_BUTTON
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_SUBTYPE_RESET_COMMAND
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_SUBTYPE_UNDEFINED_RESET
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_TYPE_MAX
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_TYPE_POWERON
 cfe_psp_watchdog_api.h, 1421

CFE_PSP_RST_TYPE_PROCESSOR
 cfe_psp_watchdog_api.h, 1422

CFE_PSP_SetDefaultExceptionEnvironment
 cfe_psp_exception_api.h, 1401

CFE_PSP_SOFT_TIMEBASE_NAME
 cfe_psp_timertick_api.h, 1416

cfe_psp_ssr_api.h
 CFE_PSP_InitSSR, 1415

CFE_PSP_STATUS_C
 cfe_psp_error.h, 1399

CFE_PSP_STATUS_STRING_LENGTH
 cfe_psp_error.h, 1399

CFE_PSP_Status_t
 cfe_psp_error.h, 1399

CFE_PSP_StatusString_t
 cfe_psp_error.h, 1399

CFE_PSP_StatusToString
 cfe_psp_error.h, 1399

CFE_PSP_SUCCESS
 cfe_psp_error.h, 1399

cfe_psp_timertick_api.h
 CFE_PSP_Get_Timebase, 1416
 CFE_PSP_GetTime, 1416
 CFE_PSP_GetTimerLow32Rollover, 1417
 CFE_PSP_GetTimerTicksPerSecond, 1417
 CFE_PSP_SOFT_TIMEBASE_NAME, 1416

cfe_psp_version_api.h
 CFE_PSP_GetBuildNumber, 1418
 CFE_PSP_GetVersionCodeName, 1418
 CFE_PSP_GetVersionNumber, 1418
 CFE_PSP_GetVersionString, 1418

cfe_psp_watchdog_api.h

CFE_PSP_GetRestartType, 1422

CFE_PSP_Panic, 1422

CFE_PSP_PANIC_CORE_APP, 1420

CFE_PSP_PANIC_GENERAL_FAILURE, 1420

CFE_PSP_PANIC_MEMORY_ALLOC, 1420

CFE_PSP_PANIC_NONVOL_DISK, 1420

CFE_PSP_PANIC_STARTUP, 1420

CFE_PSP_PANIC_STARTUP_SEM, 1420

CFE_PSP_PANIC_VOLATILE_DISK, 1420

CFE_PSP_Restart, 1422

CFE_PSP_RST_SUBTYPE_BANKSWITCH_RESET, 1420

CFE_PSP_RST_SUBTYPE_EXCEPTION, 1420

CFE_PSP_RST_SUBTYPE_HW_SPECIAL_COMMAND, 1421

CFE_PSP_RST_SUBTYPE_HW_WATCHDOG, 1421

CFE_PSP_RST_SUBTYPE_HWDEBUG_RESET, 1421

CFE_PSP_RST_SUBTYPE_MAX, 1421

CFE_PSP_RST_SUBTYPE_POWER_CYCLE, 1421

CFE_PSP_RST_SUBTYPE_PUSH_BUTTON, 1421

CFE_PSP_RST_SUBTYPE_RESET_COMMAND, 1421

CFE_PSP_RST_SUBTYPE_UNDEFINED_RESET, 1421

CFE_PSP_RST_TYPE_MAX, 1421

CFE_PSP_RST_TYPE_POWERON, 1421

CFE_PSP_RST_TYPE_PROCESSOR, 1422

CFE_PSP_WatchdogDisable, 1423

CFE_PSP_WatchdogEnable, 1423

CFE_PSP_WatchdogGet, 1423

CFE_PSP_WatchdogInit, 1423

CFE_PSP_WatchdogService, 1423

CFE_PSP_WatchdogSet, 1423

CFE_PSP_WatchdogDisable
 cfe_psp_watchdog_api.h, 1423

CFE_PSP_WatchdogEnable
 cfe_psp_watchdog_api.h, 1423

CFE_PSP_WatchdogGet
 cfe_psp_watchdog_api.h, 1423

CFE_PSP_WatchdogInit
 cfe_psp_watchdog_api.h, 1423

CFE_PSP_WatchdogService
 cfe_psp_watchdog_api.h, 1423

CFE_PSP_WatchdogSet
 cfe_psp_watchdog_api.h, 1423

CFE_PSP_WriteToCDS
 cfe_psp_cds_api.h, 1393

cfe_resourceid.h
 CFE_Resourceld_Equal, 1046
 CFE_Resourceld_FindNext, 1046
 CFE_Resourceld_FromInteger, 1047
 CFE_Resourceld_GetBase, 1047

CFE_Resourceld_GetSerial, 1047
 CFE_Resourceld_IsDefined, 1048
 CFE_RESOURCEID_TEST_DEFINED, 1045
 CFE_RESOURCEID_TEST_EQUAL, 1045
 CFE_RESOURCEID_TO ULONG, 1045
 CFE_Resourceld_ToIndex, 1048
 CFE_Resourceld_ToInteger, 1049
 cfe_resourceid_api_typedefs.h
 CFE_RESOURCEID_RESERVED, 1050
 CFE_RESOURCEID_UNDEFINED, 1050
 cfe_resourceid_basevalue.h
 CFE_RESOURCEID_MAKE_BASE, 1207
 CFE_RESOURCEID_MAX, 1207
 CFE_RESOURCEID_SHIFT, 1207
 CFE_RESOURCEID_CONFIGID_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_Resourceld_Equal
 cfe_resourceid.h, 1046
 CFE_RESOURCEID_ES_APPID_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_RESOURCEID_ES_CDSBLOCKID_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_RESOURCEID_ES_COUNTID_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_RESOURCEID_ES_LIBID_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_RESOURCEID_ES_POOLID_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_RESOURCEID_ES_TASKID_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_Resourceld_FindNext
 cfe_resourceid.h, 1046
 CFE_Resourceld_FromInteger
 cfe_resourceid.h, 1047
 CFE_Resourceld_GetBase
 cfe_resourceid.h, 1047
 CFE_Resourceld_GetSerial
 cfe_resourceid.h, 1047
 CFE_Resourceld_IsDefined
 cfe_resourceid.h, 1048
 CFE_RESOURCEID_MAKE_BASE
 cfe_resourceid_basevalue.h, 1207
 CFE_RESOURCEID_MAX
 cfe_resourceid_basevalue.h, 1207
 CFE_RESOURCEID_RESERVED
 cfe_resourceid_api_typedefs.h, 1050
 CFE_RESOURCEID_SB_PIPEID_RESOURCE_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_RESOURCEID_SHIFT
 cfe_resourceid_basevalue.h, 1207
 CFE_RESOURCEID_TBL_DUMPCTRLID_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_RESOURCEID_TBL_VALRESULTID_BASE_OFFSET
 cFE Resource ID base values, 399
 CFE_RESOURCEID_TEST_DEFINED
 cfe_resourceid.h, 1045
 CFE_RESOURCEID_TEST_EQUAL
 cfe_resourceid.h, 1045
 CFE_RESOURCEID_TO ULONG
 cfe_resourceid.h, 1045
 CFE_Resourceld_ToIndex
 cfe_resourceid.h, 1048
 CFE_Resourceld_ToInteger
 cfe_resourceid.h, 1049
 CFE_RESOURCEID_UNDEFINED
 cfe_resourceid_api_typedefs.h, 1050
 CFE_REVISION
 cfe_version.h, 1066
 cfe_sb.h
 CFE_BIT, 1052
 CFE_CLR, 1052
 CFE_SET, 1052
 CFE_TST, 1052
 CFE_SB_AllocateMessageBuffer
 cFE Zero Copy APIs, 353
 CFE_SB_ALLSUBS_TLM_MID
 default_cfe_sb_msgids.h, 1232
 CFE_SB_AllSubscriptionsTlm, 599
 Payload, 599
 TelemetryHeader, 600
 CFE_SB_AllSubscriptionsTlm_Payload, 600
 Entries, 600
 Entry, 600
 PktSegment, 600
 TotalSegments, 601
 CFE_SB_AllSubscriptionsTlm_Payload_t
 default_cfe_sb_msgdefs.h, 1230
 CFE_SB_AllSubscriptionsTlm_t
 default_cfe_sb_msgstruct.h, 1233
 cfe_sb_api_typedefs.h
 CFE_SB_Buffer_t, 1056
 CFE_SB_DEFAULT_QOS, 1054
 CFE_SB_INVALID_MSG_ID, 1054
 CFE_SB_INVALID_PIPE, 1054
 CFE_SB_MSGID_C, 1054
 CFE_SB_MSGID_RESERVED, 1054
 CFE_SB_MSGID_UNWRAP_VALUE, 1055
 CFE_SB_MSGID_WRAP_VALUE, 1055
 CFE_SB_PEND_FOREVER, 1055
 CFE_SB_PIPEID_C, 1055
 CFE_SB_POLL, 1055
 CFE_SB_SUBSCRIPTION, 1055
 CFE_SB_UNSUBSCRIPTION, 1056
 CFE_SB_BAD_ARGUMENT
 cFE Return Code Defines, 249
 CFE_SB_BAD_CMD_CODE_EID
 cfe_sb_eventids.h, 1239
 CFE_SB_BAD_MSGID_EID

cfe_sb_eventids.h, 1239
CFE_SB_BAD_PIPEID_EID
 cfe_sb_eventids.h, 1239
CFE_SB_BUF_ALOC_ERR
 cFE Return Code Defines, 249
CFE_SB_BUFFER_INVALID
 cFE Return Code Defines, 250
CFE_SB_Buffer_t
 cfe_sb_api_typedefs.h, 1056
CFE_SB_CMD0_RCVD_EID
 cfe_sb_eventids.h, 1239
CFE_SB_CMD1_RCVD_EID
 cfe_sb_eventids.h, 1240
CFE_SB_CMD_MID
 default_cfe_sb_msgids.h, 1232
CFE_SB_CmdTopicIdToMsgId
 cFE Message ID APIs, 359
CFE_SB_CR_PIPE_BAD_ARG_EID
 cfe_sb_eventids.h, 1240
CFE_SB_CR_PIPE_ERR_EID
 cfe_sb_eventids.h, 1240
CFE_SB_CR_PIPE_NAME_TAKEN_EID
 cfe_sb_eventids.h, 1240
CFE_SB_CR_PIPE_NO_FREE_EID
 cfe_sb_eventids.h, 1241
CFE_SB_CreatePipe
 cFE Pipe Management APIs, 341
CFE_SB_DEFAULT_QOS
 cfe_sb_api_typedefs.h, 1054
CFE_SB_DEL_PIPE_ERR1_EID
 cfe_sb_eventids.h, 1241
CFE_SB_DEL_PIPE_ERR2_EID
 cfe_sb_eventids.h, 1241
CFE_SB_DeletePipe
 cFE Pipe Management APIs, 342
CFE_SB_DEST_BLK_ERR_EID
 cfe_sb_eventids.h, 1241
CFE_SB_DISABLE_ROUTE_CC
 default_cfe_sb_fcncodes.h, 1210
CFE_SB_DISABLE_SUB_REPORTING_CC
 default_cfe_sb_fcncodes.h, 1211
CFE_SB_DisableRouteCmd, 601
 CommandHeader, 601
 Payload, 601
CFE_SB_DisableRouteCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_DisableSubReportingCmd, 601
 CommandHeader, 602
CFE_SB_DisableSubReportingCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_DSBL RTE1_EID
 cfe_sb_eventids.h, 1242
CFE_SB_DSBL RTE2_EID
 cfe_sb_eventids.h, 1242
CFE_SB_DSBL RTE3_EID
 cfe_sb_eventids.h, 1242
CFE_SB_DUP_SUBSCRIPT_EID
 cfe_sb_eventids.h, 1242
CFE_SB_ENABLE_ROUTE_CC
 default_cfe_sb_fcncodes.h, 1211
CFE_SB_ENABLE_SUB_REPORTING_CC
 default_cfe_sb_fcncodes.h, 1212
CFE_SB_EnableRouteCmd, 602
 CommandHeader, 602
 Payload, 602
CFE_SB_EnableRouteCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_EnableSubReportingCmd, 602
 CommandHeader, 603
CFE_SB_EnableSubReportingCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_ENBL RTE1_EID
 cfe_sb_eventids.h, 1243
CFE_SB_ENBL RTE2_EID
 cfe_sb_eventids.h, 1243
CFE_SB_ENBL RTE3_EID
 cfe_sb_eventids.h, 1243
cfe_sb_eventids.h
 CFE_SB_BAD_CMD_CODE_EID, 1239
 CFE_SB_BAD_MSGID_EID, 1239
 CFE_SB_BAD_PIPEID_EID, 1239
 CFE_SB_CMD0_RCVD_EID, 1239
 CFE_SB_CMD1_RCVD_EID, 1240
 CFE_SB_CR_PIPE_BAD_ARG_EID, 1240
 CFE_SB_CR_PIPE_ERR_EID, 1240
 CFE_SB_CR_PIPE_NAME_TAKEN_EID, 1240
 CFE_SB_CR_PIPE_NO_FREE_EID, 1241
 CFE_SB_DEL_PIPE_ERR1_EID, 1241
 CFE_SB_DEL_PIPE_ERR2_EID, 1241
 CFE_SB_DEST_BLK_ERR_EID, 1241
 CFE_SB_DSBL RTE1_EID, 1242
 CFE_SB_DSBL RTE2_EID, 1242
 CFE_SB_DSBL RTE3_EID, 1242
 CFE_SB_DUP_SUBSCRIPT_EID, 1242
 CFE_SB_ENBL RTE1_EID, 1243
 CFE_SB_ENBL RTE2_EID, 1243
 CFE_SB_ENBL RTE3_EID, 1243
 CFE_SB_FILEWRITE_ERR_EID, 1243
 CFE_SB_FULL_SUB_PKT_EID, 1244
 CFE_SB_GET_BUF_ERR_EID, 1244
 CFE_SB_GETPIPEIDBYNAME_EID, 1244
 CFE_SB_GETPIPEIDBYNAME_NAME_ERR_EID,
 1244
 CFE_SB_GETPIPEIDBYNAME_NULL_ERR_EID,
 1245
 CFE_SB_GETPIPENAME_EID, 1245
 CFE_SB_GETPIPENAME_ID_ERR_EID, 1245
 CFE_SB_GETPIPENAME NULL_PTR_EID, 1245

CFE_SB_GETPIPEOPTS_EID, 1246
 CFE_SB_GETPIPEOPTS_ID_ERR_EID, 1246
 CFE_SB_GETPIPEOPTS_PTR_ERR_EID, 1246
 CFE_SB_HASHCOLLISION_EID, 1246
 CFE_SB_INIT_EID, 1247
 CFE_SB_LEN_ERR_EID, 1247
 CFE_SB_MAX_DESTS_MET_EID, 1247
 CFE_SB_MAX_MSGS_MET_EID, 1247
 CFE_SB_MAX_PIPES_MET_EID, 1248
 CFE_SB_MSG_TOO_BIG_EID, 1248
 CFE_SB_MSGID_LIM_ERR_EID, 1248
 CFE_SB_PART_SUB_PKT_EID, 1248
 CFE_SB_PIPE_ADDED_EID, 1249
 CFE_SB_PIPE_DELETED_EID, 1249
 CFE_SB_Q_FULL_ERR_EID, 1249
 CFE_SB_Q_RD_ERR_EID, 1249
 CFE_SB_Q_WR_ERR_EID, 1250
 CFE_SB_RCV_BAD_ARG_EID, 1250
 CFE_SB_RCV_MESSAGE_INTEGRITY_FAIL_EID, 1250
 CFE_SB_SEND_BAD_ARG_EID, 1250
 CFE_SB_SEND_INV_MSGID_EID, 1251
 CFE_SB_SEND_MESSAGE_INTEGRITY_FAIL_EID, 1251
 CFE_SB_SEND_NO_SUBS_EID, 1251
 CFE_SB_SETPipeOPTS_EID, 1251
 CFE_SB_SETPipeOPTS_ID_ERR_EID, 1252
 CFE_SB_SETPipeOPTS_OWNER_ERR_EID, 1252
 CFE_SB SND RTG_EID, 1252
 CFE_SB SND RTG_ERR1_EID, 1252
 CFE_SB SND STATS_EID, 1253
 CFE_SB SUB ARG_ERR_EID, 1253
 CFE_SB SUB INV CALLER_EID, 1253
 CFE_SB SUB INV PIPE_EID, 1253
 CFE_SB_SUBSCRIPTION_RXVD_EID, 1254
 CFE_SB_SUBSCRIPTION_REMOVED_EID, 1254
 CFE_SB_SUBSCRIPTION_RPT_EID, 1254
 CFE_SB_UNSUB_ARG_ERR_EID, 1254
 CFE_SB_UNSUB_INV_CALLER_EID, 1255
 CFE_SB_UNSUB_INV_PIPE_EID, 1255
 CFE_SB_UNSUB_NO_SUBS_EID, 1255
 CFE_SB_FILEWRITE_ERR_EID
 cfe_sb_eventids.h, 1243
 CFE_SB_FULL_SUB_PKT_EID
 cfe_sb_eventids.h, 1244
 CFE_SB_GET_BUF_ERR_EID
 cfe_sb_eventids.h, 1244
 CFE_SB_GetPipeIdByName
 CFE Pipe Management APIs, 343
 CFE_SB_GETPIPEIDBYNAME_EID
 cfe_sb_eventids.h, 1244
 CFE_SB_GETPIPEIDBYNAME_NAME_ERR_EID
 cfe_sb_eventids.h, 1244
 CFE_SB_GETPIPEIDBYNAME_NULL_ERR_EID
 cfe_sb_eventids.h, 1245
 CFE_SB_GetPipeName
 CFE Pipe Management APIs, 343
 CFE_SB_GETPIPENAME_EID
 cfe_sb_eventids.h, 1245
 CFE_SB_GETPIPENAME_ID_ERR_EID
 cfe_sb_eventids.h, 1245
 CFE_SB_GETPIPENAME_NULL_PTR_EID
 cfe_sb_eventids.h, 1245
 CFE_SB_GetPipeOpts
 CFE Pipe Management APIs, 344
 CFE_SB_GETPIPEOPTS_EID
 cfe_sb_eventids.h, 1246
 CFE_SB_GETPIPEOPTS_ID_ERR_EID
 cfe_sb_eventids.h, 1246
 CFE_SB_GETPIPEOPTS_PTR_ERR_EID
 cfe_sb_eventids.h, 1246
 CFE_SB_GetUserData
 CFE Message Characteristics APIs, 355
 CFE_SB_GetUserDataLength
 CFE Message Characteristics APIs, 356
 CFE_SB_GlobalCmdTopicIdToMsgId
 CFE Message ID APIs, 360
 CFE_SB_GlobalTlmTopicIdToMsgId
 CFE Message ID APIs, 360
 CFE_SB_HASHCOLLISION_EID
 cfe_sb_eventids.h, 1246
 CFE_SB_HK_TLM_MID
 default_cfe_sb_msgids.h, 1232
 CFE_SB_HousekeepingTlm, 603
 Payload, 603
 TelemetryHeader, 603
 CFE_SB_HousekeepingTlm_Payload, 603
 CommandCounter, 604
 CommandErrorCounter, 604
 CreatePipeErrorCounter, 604
 DuplicateSubscriptionsCounter, 605
 GetPipeIdByNameErrorCounter, 605
 InternalErrorCounter, 605
 MemInUse, 605
 MemPoolHandle, 605
 MsgLimitErrorCounter, 605
 MsgReceiveErrorCounter, 605
 MsgSendErrorCounter, 606
 NoSubscribersCounter, 606
 PipeOptsErrorCounter, 606
 PipeOverflowErrorCounter, 606
 Spare2Align, 606
 SubscribeErrorCounter, 606
 UnmarkedMem, 606
 CFE_SB_HousekeepingTlm_Payload_t
 default_cfe_sb_msgdefs.h, 1230
 CFE_SB_HousekeepingTlm_t
 default_cfe_sb_msgstruct.h, 1234

CFE_SB_INIT_EID
 cfe_sb_eventids.h, 1247

CFE_SB_INTERNAL_ERR
 cFE Return Code Defines, 250

CFE_SB_INVALID_MSG_ID
 cfe_sb_api_typedefs.h, 1054

CFE_SB_INVALID_PIPE
 cfe_sb_api_typedefs.h, 1054

CFE_SB_IsValidMsgId
 cFE Message ID APIs, 361

CFE_SB_LEN_ERR_EID
 cfe_sb_eventids.h, 1247

CFE_SB_LocalCmdTopicIdToMsgId
 cFE Message ID APIs, 361

CFE_SB_LocalTlmTopicIdToMsgId
 cFE Message ID APIs, 362

CFE_SB_MAX_DESTS_MET
 cFE Return Code Defines, 250

CFE_SB_MAX_DESTS_MET_EID
 cfe_sb_eventids.h, 1247

CFE_SB_MAX_MSGS_MET
 cFE Return Code Defines, 250

CFE_SB_MAX_MSGS_MET_EID
 cfe_sb_eventids.h, 1247

CFE_SB_MAX_PIPES_MET
 cFE Return Code Defines, 250

CFE_SB_MAX_PIPES_MET_EID
 cfe_sb_eventids.h, 1248

CFE_SB_MessageStringGet
 cFE Message Characteristics APIs, 356

CFE_SB_MessageStringSet
 cFE Message Characteristics APIs, 357

CFE_SB_Msg, 607

- LongDouble, 607
- LongInt, 607
- Msg, 607

CFE_SB_MSG_TOO_BIG
 cFE Return Code Defines, 250

CFE_SB_MSG_TOO_BIG_EID
 cfe_sb_eventids.h, 1248

CFE_SB_MsgId_Atom_t
 default_cfe_sb_extern_typedefs.h, 1208

CFE_SB_MSGID_C
 cfe_sb_api_typedefs.h, 1054

CFE_SB_MsgId_Equal
 cFE Message ID APIs, 362

CFE_SB_MSGID_LIM_ERR_EID
 cfe_sb_eventids.h, 1248

CFE_SB_MSGID_RESERVED
 cfe_sb_api_typedefs.h, 1054

CFE_SB_MsgId_t, 608

- Value, 608

CFE_SB_MSGID_UNWRAP_VALUE
 cfe_sb_api_typedefs.h, 1055

CFE_SB_MSGID_WRAP_VALUE
 cfe_sb_api_typedefs.h, 1055

CFE_SB_MsgIdToValue
 cFE Message ID APIs, 363

CFE_SB_MsgMapFileEntry, 608

- Index, 608
- MsgId, 609

CFE_SB_MsgMapFileEntry_t
 default_cfe_sb_msgdefs.h, 1230

CFE_SB_NO_MESSAGE
 cFE Return Code Defines, 250

CFE_SB_NOOP_CC
 default_cfe_sb_fcncodes.h, 1213

CFE_SB_NoopCmd, 609

- CommandHeader, 609

CFE_SB_NoopCmd_t
 default_cfe_sb_msgstruct.h, 1234

CFE_SB_NOT_IMPLEMENTED
 cFE Return Code Defines, 251

CFE_SB_ONESUB_TLM_MID
 default_cfe_sb_msgids.h, 1232

CFE_SB_PART_SUB_PKT_EID
 cfe_sb_eventids.h, 1248

CFE_SB_PEND_FOREVER
 cfe_sb_api_typedefs.h, 1055

CFE_SB_PIPE_ADDED_EID
 cfe_sb_eventids.h, 1249

CFE_SB_PIPE_CR_ERR
 cFE Return Code Defines, 251

CFE_SB_PIPE_DELETED_EID
 cfe_sb_eventids.h, 1249

CFE_SB_PIPE_RD_ERR
 cFE Return Code Defines, 251

CFE_SB_PipeDepthStats, 609

- CurrentQueueDepth, 610
- MaxQueueDepth, 610
- PeakQueueDepth, 610
- Pipeld, 610
- Spare, 610

CFE_SB_PipeDepthStats_t
 default_cfe_sb_msgdefs.h, 1230

CFE_SB_PIPEID_BASE
 cFE Resource ID base values, 400

CFE_SB_PIPEID_C
 cfe_sb_api_typedefs.h, 1055

CFE_SB_Pipeld_t
 default_cfe_sb_extern_typedefs.h, 1208

CFE_SB_Pipeld_ToIndex
 cFE Pipe Management APIs, 345

CFE_SB_PipeInfoEntry, 610

- AppId, 611
- AppName, 611
- CurrentQueueDepth, 611
- MaxQueueDepth, 611

Opts, 611
 PeakQueueDepth, 611
 Pipeld, 612
 PipeName, 612
 SendErrors, 612
 Spare, 612
CFE_SB_PipeInfoEntry_t
 default_cfe_sb_msgdefs.h, 1230
CFE_SB_PIPEOPTS_IGNOREMINE
 cFE SB Pipe options, 364
CFE_SB_POLL
 cfe_sb_api_typedefs.h, 1055
CFE_SB_Q_FULL_ERR_EID
 cfe_sb_eventids.h, 1249
CFE_SB_Q_RD_ERR_EID
 cfe_sb_eventids.h, 1249
CFE_SB_Q_WR_ERR_EID
 cfe_sb_eventids.h, 1250
CFE_SB_Qos_t, 612
 Priority, 612
 Reliability, 612
CFE_SB_QosPriority
 default_cfe_sb_extern_typedefs.h, 1209
CFE_SB_QosPriority_Enum_t
 default_cfe_sb_extern_typedefs.h, 1208
CFE_SB_QosPriority_HIGH
 default_cfe_sb_extern_typedefs.h, 1209
CFE_SB_QosPriority_LOW
 default_cfe_sb_extern_typedefs.h, 1209
CFE_SB_QosReliability
 default_cfe_sb_extern_typedefs.h, 1209
CFE_SB_QosReliability_Enum_t
 default_cfe_sb_extern_typedefs.h, 1209
CFE_SB_QosReliability_HIGH
 default_cfe_sb_extern_typedefs.h, 1209
CFE_SB_QosReliability_LOW
 default_cfe_sb_extern_typedefs.h, 1209
CFE_SB_RCV_BAD_ARG_EID
 cfe_sb_eventids.h, 1250
CFE_SB_RCV_MESSAGE_INTEGRITY_FAIL_EID
 cfe_sb_eventids.h, 1250
CFE_SB_ReceiveBuffer
 cFE Send/Receive Message APIs, 350
CFE_SB_ReleaseMessageBuffer
 cFE Zero Copy APIs, 353
CFE_SB_RESET_COUNTERS_CC
 default_cfe_sb_fcncodes.h, 1213
CFE_SB_ResetCountersCmd, 613
 CommandHeader, 613
CFE_SB_ResetCountersCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_RouteCmd_Payload, 613
 MsgId, 613
 Pipe, 614
 Spare, 614
CFE_SB_RouteCmd_Payload_t
 default_cfe_sb_msgdefs.h, 1230
CFE_SB_Routeld_Atom_t
 default_cfe_sb_extern_typedefs.h, 1209
CFE_SB_RoutingFileEntry, 614
 AppName, 614
 MsgCnt, 614
 MsgId, 615
 Pipeld, 615
 PipeName, 615
 State, 615
CFE_SB_RoutingFileEntry_t
 default_cfe_sb_msgdefs.h, 1231
CFE_SB_SEND_BAD_ARG_EID
 cfe_sb_eventids.h, 1250
CFE_SB_SEND_HK_MID
 default_cfe_sb_msgids.h, 1232
CFE_SB_SEND_INV_MSGID_EID
 cfe_sb_eventids.h, 1251
CFE_SB_SEND_MESSAGE_INTEGRITY_FAIL_EID
 cfe_sb_eventids.h, 1251
CFE_SB_SEND_NO_SUBS_EID
 cfe_sb_eventids.h, 1251
CFE_SB_SEND_PREV_SUBS_CC
 default_cfe_sb_fcncodes.h, 1214
CFE_SB_SEND_SB_STATS_CC
 default_cfe_sb_fcncodes.h, 1215
CFE_SB_SendHkCmd, 615
 CommandHeader, 615
CFE_SB_SendHkCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_SendPrevSubsCmd, 615
 CommandHeader, 616
CFE_SB_SendPrevSubsCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_SendSbStatsCmd, 616
 CommandHeader, 616
CFE_SB_SendSbStatsCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_SetPipeOpts
 cFE Pipe Management APIs, 345
CFE_SB_SETPIPEOPTS_EID
 cfe_sb_eventids.h, 1251
CFE_SB_SETPIPEOPTS_ID_ERR_EID
 cfe_sb_eventids.h, 1252
CFE_SB_SETPIPEOPTS_OWNER_ERR_EID
 cfe_sb_eventids.h, 1252
CFE_SB_SetUserDataLength
 cFE Message Characteristics APIs, 358
CFE_SB_SingleSubscriptionTlm, 616
 Payload, 617
 TelemetryHeader, 617
CFE_SB_SingleSubscriptionTlm_Payload, 617

MsgId, 617
Pipe, 617
Qos, 618
SubType, 618
CFE_SB_SingleSubscriptionTlm_Payload_t
 default_cfe_sb_msgdefs.h, 1231
CFE_SB_SingleSubscriptionTlm_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB SND RTG EID
 cfe_sb_eventids.h, 1252
CFE_SB SND RTG_ERR1 EID
 cfe_sb_eventids.h, 1252
CFE_SB SND STATS EID
 cfe_sb_eventids.h, 1253
CFE_SB STATS TLM MID
 default_cfe_sb_msgids.h, 1232
CFE_SB_StatsTlm, 618
 Payload, 618
 TelemetryHeader, 618
CFE_SB_StatsTlm_Payload, 618
 MaxMemAllowed, 619
 MaxMsgIdsAllowed, 619
 MaxPipeDepthAllowed, 620
 MaxPipesAllowed, 620
 MaxSubscriptionsAllowed, 620
 MemInUse, 620
 MsgIdsInUse, 620
 PeakMemInUse, 620
 PeakMsgIdsInUse, 620
 PeakPipesInUse, 621
 PeakSBBuffersInUse, 621
 PeakSubscriptionsInUse, 621
 PipeDepthStats, 621
 PipesInUse, 621
 SBBuffersInUse, 621
 SubscriptionsInUse, 621
CFE_SB_StatsTlm_Payload_t
 default_cfe_sb_msgdefs.h, 1231
CFE_SB_StatsTlm_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_SUB_ARG_ERR_EID
 cfe_sb_eventids.h, 1253
CFE_SB_SUB_ENTRIES_PER_PKT
 default_cfe_sb_extern_typedefs.h, 1208
CFE_SB_SUB_INV_CALLER_EID
 cfe_sb_eventids.h, 1253
CFE_SB_SUB_INV_PIPE_EID
 cfe_sb_eventids.h, 1253
CFE_SB_SUB_RPT_CTRL_MID
 default_cfe_sb_msgids.h, 1232
CFE_SB_SubEntries, 622
 MsgId, 622
 Pipe, 622
 Qos, 622
CFE_SB_SubEntries_t
 default_cfe_sb_msgdefs.h, 1231
CFE_SB_Subscribe
 cFE Message Subscription Control APIs, 346
CFE_SB_SubscribeEx
 cFE Message Subscription Control APIs, 347
CFE_SB_SubscribeLocal
 cFE Message Subscription Control APIs, 348
CFE_SB_SUBSCRIPTION
 cfe_sb_api_typedefs.h, 1055
CFE_SB_SUBSCRIPTION_RCVD_EID
 cfe_sb_eventids.h, 1254
CFE_SB_SUBSCRIPTION_REMOVED_EID
 cfe_sb_eventids.h, 1254
CFE_SB_SUBSCRIPTION_RPT_EID
 cfe_sb_eventids.h, 1254
CFE_SB_TIME_OUT
 cFE Return Code Defines, 251
CFE_SB_TimeStampMsg
 cFE Message Characteristics APIs, 358
CFE_SB_TlmTopicIdToMsgId
 cFE Message ID APIs, 363
CFE_SB_TransmitBuffer
 cFE Zero Copy APIs, 354
CFE_SB_TransmitMsg
 cFE Send/Receive Message APIs, 351
CFE_SB_UNSUB_ARG_ERR_EID
 cfe_sb_eventids.h, 1254
CFE_SB_UNSUB_INV_CALLER_EID
 cfe_sb_eventids.h, 1255
CFE_SB_UNSUB_INV_PIPE_EID
 cfe_sb_eventids.h, 1255
CFE_SB_UNSUB_NO_SUBS_EID
 cfe_sb_eventids.h, 1255
CFE_SB_Unsubscribe
 cFE Message Subscription Control APIs, 349
CFE_SB_UnsubscribeLocal
 cFE Message Subscription Control APIs, 349
CFE_SB_UNSUBSCRIPTION
 cfe_sb_api_typedefs.h, 1056
CFE_SB_ValueToMsgId
 cFE Message ID APIs, 363
CFE_SB_WRITE_MAP_INFO_CC
 default_cfe_sb_fcncodes.h, 1216
CFE_SB_WRITE_PIPE_INFO_CC
 default_cfe_sb_fcncodes.h, 1217
CFE_SB_WRITE_ROUTING_INFO_CC
 default_cfe_sb_fcncodes.h, 1218
CFE_SB_WriteFileInfoCmd_Payload, 623
 Filename, 623
CFE_SB_WriteFileInfoCmd_Payload_t
 default_cfe_sb_msgdefs.h, 1231
CFE_SB_WriteMapInfoCmd, 623
 CommandHeader, 623

Payload, 623
CFE_SB_WriteMapInfoCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_WritePipeInfoCmd, 624
 CommandHeader, 624
 Payload, 624
CFE_SB_WritePipeInfoCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_WriteRoutingInfoCmd, 624
 CommandHeader, 625
 Payload, 625
CFE_SB_WriteRoutingInfoCmd_t
 default_cfe_sb_msgstruct.h, 1234
CFE_SB_WRONG_MSG_TYPE
 cFE Return Code Defines, 251
CFE_SERVICE_BITMASK
 cfe_error.h, 1019
CFE_SET
 cfe_sb.h, 1052
CFE_SEVERITY_BITMASK
 cfe_error.h, 1019
CFE_SEVERITY_ERROR
 cfe_error.h, 1019
CFE_SEVERITY_INFO
 cfe_error.h, 1019
CFE_SEVERITY_SUCCESS
 cfe_error.h, 1020
CFE_SOFTWARE_BUS_SERVICE
 cfe_error.h, 1020
CFE_SRC_VERSION
 cfe_version.h, 1066
CFE_STATUS_BAD_COMMAND_CODE
 cFE Return Code Defines, 251
CFE_STATUS_C
 cfe_error.h, 1020
CFE_STATUS_EXTERNAL_RESOURCE_FAIL
 cFE Return Code Defines, 251
CFE_STATUS_INCORRECT_STATE
 cFE Return Code Defines, 252
CFE_STATUS_NO_COUNTER_INCREMENT
 cFE Return Code Defines, 252
CFE_STATUS_NOT_IMPLEMENTED
 cFE Return Code Defines, 252
CFE_STATUS_RANGE_ERROR
 cFE Return Code Defines, 252
CFE_STATUS_REQUEST_ALREADY_PENDING
 cFE Return Code Defines, 252
CFE_STATUS_STRING_LENGTH
 cfe_error.h, 1020
CFE_Status_t
 cfe_error.h, 1020
CFE_STATUS_UNKNOWN_MSG_ID
 cFE Return Code Defines, 252
CFE_STATUS_VALIDATION_FAILURE
 cFE Return Code Defines, 252
CFE_STATUS_WRONG_MSG_LENGTH
 cFE Return Code Defines, 252
CFE_StatusString_t
 cfe_error.h, 1020
CFE_STR
 cfe_version.h, 1066
CFE_STR_HELPER
 cfe_version.h, 1066
CFE_SUCCESS
 cFE Return Code Defines, 253
CFE_TABLE_SERVICE
 cfe_error.h, 1020
CFE_TBL_ABORT_LOAD_CC
 default_cfe_tbl_fcncodes.h, 1257
CFE_TBL_abortLoadCmd, 625
 CommandHeader, 625
 Payload, 625
CFE_TBL_abortLoadCmd_Payload, 625
 TableName, 626
CFE_TBL_abortLoadCmd_Payload_t
 default_cfe_tbl_msgdefs.h, 1275
CFE_TBL_abortLoadCmd_t
 default_cfe_tbl_msgstruct.h, 1278
CFE_TBL_ACTIVATE_CC
 default_cfe_tbl_fcncodes.h, 1258
CFE_TBL_ACTIVATE_DUMP_ONLY_ERR_EID
 cfe_tbl_eventids.h, 1283
CFE_TBL_ACTIVATE_ERR_EID
 cfe_tbl_eventids.h, 1283
CFE_TBL_ActivateCmd, 626
 CommandHeader, 626
 Payload, 626
CFE_TBL_ActivateCmd_Payload, 627
 TableName, 627
CFE_TBL_ActivateCmd_Payload_t
 default_cfe_tbl_msgdefs.h, 1275
CFE_TBL_ActivateCmd_t
 default_cfe_tbl_msgstruct.h, 1278
cfe_tbl_api_typedefs.h
 CFE_TBL_BAD_TABLE_HANDLE, 1058
 CFE_TBL_CallbackFuncPtr_t, 1059
 CFE_TBL_Handle_t, 1059
 CFE_TBL_Info_t, 1059
 CFE_TBL_MAX_FULL_NAME_LEN, 1058
 CFE_TBL_SRC_ADDRESS, 1059
 CFE_TBL_SRC_FILE, 1059
 CFE_TBL_SrcEnum, 1059
 CFE_TBL_SrcEnum_t, 1059
CFE_TBL_ASSUMED_VALID_INF_EID
 cfe_tbl_eventids.h, 1283
CFE_TBL_BAD_ARGUMENT
 cFE Return Code Defines, 253
CFE_TBL_BAD_TABLE_HANDLE

cfe_tbl_api_typedefs.h, 1058
CFE_TBL_BufferSelect
 default_cfe_tbl_extern_typedefs.h, 1256
CFE_TBL_BufferSelect_ACTIVE
 default_cfe_tbl_extern_typedefs.h, 1257
CFE_TBL_BufferSelect_Enum_t
 default_cfe_tbl_extern_typedefs.h, 1256
CFE_TBL_BufferSelect_INACTIVE
 default_cfe_tbl_extern_typedefs.h, 1257
CFE_TBL_CallbackFuncPtr_t
 cfe_tbl_api_typedefs.h, 1059
CFE_TBL_CC1_ERR_EID
 cfe_tbl_eventids.h, 1284
CFE_TBL_CDS_DELETE_ERR_EID
 cfe_tbl_eventids.h, 1284
CFE_TBL_CDS_DELETED_INFO_EID
 cfe_tbl_eventids.h, 1284
CFE_TBL_CDS_NOT_FOUND_ERR_EID
 cfe_tbl_eventids.h, 1284
CFE_TBL_CDS_OWNER_ACTIVE_ERR_EID
 cfe_tbl_eventids.h, 1285
CFE_TBL_CMD_MID
 default_cfe_tbl_msgids.h, 1276
CFE_TBL_CREATING_DUMP_FILE_ERR_EID
 cfe_tbl_eventids.h, 1285
CFE_TBL_DeleteCDSCmd_Payload, 627
 TableName, 627
CFE_TBL_DeleteCDSCmd_Payload_t
 default_cfe_tbl_msgdefs.h, 1275
CFE_TBL_DELETE_CDS_CC
 default_cfe_tbl_fcncodes.h, 1259
CFE_TBL_DeleteCDSCmd, 628
 CommandHeader, 628
 Payload, 628
CFE_TBL_DeleteCDSCmd_t
 default_cfe_tbl_msgstruct.h, 1278
CFE_TBL_DUMP_CC
 default_cfe_tbl_fcncodes.h, 1260
CFE_TBL_DUMP_PENDING_ERR_EID
 cfe_tbl_eventids.h, 1285
CFE_TBL_DUMP_REGISTRY_CC
 default_cfe_tbl_fcncodes.h, 1260
CFE_TBL_DumpCmd, 628
 CommandHeader, 628
 Payload, 629
CFE_TBL_DumpCmd_Payload, 629
 ActiveTableFlag, 629
 DumpFilename, 629
 TableName, 629
CFE_TBL_DumpCmd_Payload_t
 default_cfe_tbl_msgdefs.h, 1275
CFE_TBL_DumpCmd_t
 default_cfe_tbl_msgstruct.h, 1278
CFE_TBL_DUMPCTRLID_BASE
 cFE Resource ID base values, 400
CFE_TBL_DumpRegistryCmd, 630
 CommandHeader, 630
 Payload, 630
CFE_TBL_DumpRegistryCmd_Payload, 630
 DumpFilename, 631
CFE_TBL_DumpRegistryCmd_Payload_t
 default_cfe_tbl_msgdefs.h, 1275
CFE_TBL_DumpRegistryCmd_t
 default_cfe_tbl_msgstruct.h, 1278
CFE_TBL_DumpToBuffer
 cFE Manage Table Content APIs, 369
CFE_TBL_ERR_ACCESS
 cFE Return Code Defines, 253
CFE_TBL_ERR_BAD_CONTENT_ID
 cFE Return Code Defines, 253
CFE_TBL_ERR_BAD_PROCESSOR_ID
 cFE Return Code Defines, 253
CFE_TBL_ERR_BAD_SPACECRAFT_ID
 cFE Return Code Defines, 253
CFE_TBL_ERR_BAD_SUBTYPE_ID
 cFE Return Code Defines, 253
CFE_TBL_ERR_DUMP_ONLY
 cFE Return Code Defines, 253
CFE_TBL_ERR_DUPLICATE_DIFF_SIZE
 cFE Return Code Defines, 254
CFE_TBL_ERR_DUPLICATE_NOT OWNED
 cFE Return Code Defines, 254
CFE_TBL_ERR_FILE_FOR_WRONG_TABLE
 cFE Return Code Defines, 254
CFE_TBL_ERR_FILE_SIZE_INCONSISTENT
 cFE Return Code Defines, 254
CFE_TBL_ERR_FILE_TOO_LARGE
 cFE Return Code Defines, 254
CFE_TBL_ERR_FILENAME_TOO_LONG
 cFE Return Code Defines, 254
CFE_TBL_ERR_HANDLES_FULL
 cFE Return Code Defines, 254
CFE_TBL_ERR_ILLEGAL_SRC_TYPE
 cFE Return Code Defines, 254
CFE_TBL_ERR_INVALID_HANDLE
 cFE Return Code Defines, 255
CFE_TBL_ERR_INVALID_NAME
 cFE Return Code Defines, 255
CFE_TBL_ERR_INVALID_OPTIONS
 cFE Return Code Defines, 255
CFE_TBL_ERR_INVALID_SIZE
 cFE Return Code Defines, 255
CFE_TBL_ERR_LOAD_IN_PROGRESS
 cFE Return Code Defines, 255
CFE_TBL_ERR_LOAD_INCOMPLETE
 cFE Return Code Defines, 255
CFE_TBL_ERR_NEVER_LOADED
 cFE Return Code Defines, 256

CFE_TBL_ERR_NO_ACCESS
 cFE Return Code Defines, [256](#)

CFE_TBL_ERR_NO_BUFFER_AVAIL
 cFE Return Code Defines, [256](#)

CFE_TBL_ERR_NO_STD_HEADER
 cFE Return Code Defines, [256](#)

CFE_TBL_ERR_NO_TBL_HEADER
 cFE Return Code Defines, [256](#)

CFE_TBL_ERR_PARTIAL_LOAD
 cFE Return Code Defines, [256](#)

CFE_TBL_ERR_REGISTRY_FULL
 cFE Return Code Defines, [256](#)

CFE_TBL_ERR_SHORT_FILE
 cFE Return Code Defines, [256](#)

CFE_TBL_ERR_UNREGISTERED
 cFE Return Code Defines, [257](#)

cfe_tbl_eventids.h
 CFE_TBL_ACTIVATE_DUMP_ONLY_ERR_EID, [1283](#)
 CFE_TBL_ACTIVATE_ERR_EID, [1283](#)
 CFE_TBL_ASSUMED_VALID_INF_EID, [1283](#)
 CFE_TBL_CC1_ERR_EID, [1284](#)
 CFE_TBL_CDS_DELETE_ERR_EID, [1284](#)
 CFE_TBL_CDS_DELETED_INFO_EID, [1284](#)
 CFE_TBL_CDS_NOT_FOUND_ERR_EID, [1284](#)
 CFE_TBL_CDS_OWNER_ACTIVE_ERR_EID, [1285](#)
 CFE_TBL_CREATING_DUMP_FILE_ERR_EID, [1285](#)
 CFE_TBL_DUMP_PENDING_ERR_EID, [1285](#)
 CFE_TBL_FAIL_HK_SEND_ERR_EID, [1285](#)
 CFE_TBL_FAIL_NOTIFY_SEND_ERR_EID, [1286](#)
 CFE_TBL_FILE_ACCESS_ERR_EID, [1286](#)
 CFE_TBL_FILE_INCOMPLETE_ERR_EID, [1286](#)
 CFE_TBL_FILE_LOADED_INF_EID, [1286](#)
 CFE_TBL_FILE_STD_HDR_ERR_EID, [1287](#)
 CFE_TBL_FILE_SUBTYPE_ERR_EID, [1287](#)
 CFE_TBL_FILE_TBL_HDR_ERR_EID, [1287](#)
 CFE_TBL_FILE_TOO_BIG_ERR_EID, [1287](#)
 CFE_TBL_FILE_TYPE_ERR_EID, [1288](#)
 CFE_TBL_HANDLE_ACCESS_ERR_EID, [1288](#)
 CFE_TBL_ILLEGAL_BUFF_PARAM_ERR_EID, [1288](#)
 CFE_TBL_IN_REGISTRY_ERR_EID, [1288](#)
 CFE_TBL_INIT_INF_EID, [1289](#)
 CFE_TBL_LEN_ERR_EID, [1289](#)
 CFE_TBL_LOAD_ABORT_ERR_EID, [1289](#)
 CFE_TBL_LOAD_ABORT_INF_EID, [1289](#)
 CFE_TBL_LOAD_EXCEEDS_SIZE_ERR_EID, [1290](#)
 CFE_TBL_LOAD_FILENAME_LONG_ERR_EID, [1290](#)
 CFE_TBL_LOAD_IN_PROGRESS_ERR_EID, [1290](#)
 CFE_TBL_LOAD_PEND_REQ_INF_EID, [1290](#)
 CFE_TBL_LOAD_SUCCESS_INF_EID, [1291](#)

CFE_TBL_LOAD_TBLNAME_MISMATCH_ERR_EID, [1291](#)

CFE_TBL_LOAD_TYPE_ERR_EID, [1291](#)

CFE_TBL_LOAD_VAL_ERR_EID, [1291](#)

CFE_TBL_LOADING_A_DUMP_ONLY_ERR_EID, [1292](#)

CFE_TBL_LOADING_PENDING_ERR_EID, [1292](#)

CFE_TBL_MID_ERR_EID, [1292](#)

CFE_TBL_NO_INACTIVE_BUFFER_ERR_EID, [1292](#)

CFE_TBL_NO_SUCH_TABLE_ERR_EID, [1293](#)

CFE_TBL_NO_WORK_BUFFERS_ERR_EID, [1293](#)

CFE_TBL_NOOP_INF_EID, [1293](#)

CFE_TBL_NOT_CRITICAL_TBL_ERR_EID, [1293](#)

CFE_TBL_NOT_IN_CRIT_REG_ERR_EID, [1294](#)

CFE_TBL_OVERWRITE_DUMP_INF_EID, [1294](#)

CFE_TBL_OVERWRITE_REG_DUMP_INF_EID, [1294](#)

CFE_TBL_PARTIAL_LOAD_ERR_EID, [1294](#)

CFE_TBL_PROCESSOR_ID_ERR_EID, [1295](#)

CFE_TBL_REGISTER_ERR_EID, [1295](#)

CFE_TBL_RESET_INF_EID, [1295](#)

CFE_TBL_SHARE_ERR_EID, [1295](#)

CFE_TBL_SPACECRAFT_ID_ERR_EID, [1296](#)

CFE_TBL_TLM_REG_CMD_INF_EID, [1296](#)

CFE_TBL_TOO_MANY_DUMPS_ERR_EID, [1296](#)

CFE_TBL_TOO_MANY_VALIDATIONS_ERR_EID, [1296](#)

CFE_TBL_UNREGISTER_ERR_EID, [1297](#)

CFE_TBL_UNVALIDATED_ERR_EID, [1297](#)

CFE_TBL_UPDATE_ERR_EID, [1297](#)

CFE_TBL_UPDATE_SUCCESS_INF_EID, [1297](#)

CFE_TBL_VAL_REQ_MADE_INF_EID, [1298](#)

CFE_TBL_VALIDATION_ERR_EID, [1298](#)

CFE_TBL_VALIDATION_INF_EID, [1298](#)

CFE_TBL_WRITE_CFE_HDR_ERR_EID, [1298](#)

CFE_TBL_WRITE_DUMP_INF_EID, [1299](#)

CFE_TBL_WRITE_REG_DUMP_INF_EID, [1299](#)

CFE_TBL_WRITE_TBL_HDR_ERR_EID, [1299](#)

CFE_TBL_WRITE_TBL_IMG_ERR_EID, [1299](#)

CFE_TBL_WRITE_TBL_REG_ERR_EID, [1300](#)

CFE_TBL_ZERO_LENGTH_LOAD_ERR_EID, [1300](#)

CFE_TBL_FAIL_HK_SEND_ERR_EID
 cfe_tbl_eventids.h, [1285](#)

CFE_TBL_FAIL_NOTIFY_SEND_ERR_EID
 cfe_tbl_eventids.h, [1286](#)

CFE_TBL_FILE_ACCESS_ERR_EID
 cfe_tbl_eventids.h, [1286](#)

CFE_TBL_File_Hdr, [631](#)
 NumBytes, [631](#)
 Offset, [631](#)
 Reserved, [631](#)
 TableName, [631](#)

CFE_TBL_File_Hdr_t

default_cfe_tbl_extern_typedefs.h, 1256
CFE_TBL_FILE_INCOMPLETE_ERR_EID
 cfe_tbl_eventids.h, 1286
CFE_TBL_FILE_LOADED_INF_EID
 cfe_tbl_eventids.h, 1286
CFE_TBL_FILE_STD_HDR_ERR_EID
 cfe_tbl_eventids.h, 1287
CFE_TBL_FILE_SUBTYPE_ERR_EID
 cfe_tbl_eventids.h, 1287
CFE_TBL_FILE_TBL_HDR_ERR_EID
 cfe_tbl_eventids.h, 1287
CFE_TBL_FILE_TOO_BIG_ERR_EID
 cfe_tbl_eventids.h, 1287
CFE_TBL_FILE_TYPE_ERR_EID
 cfe_tbl_eventids.h, 1288
CFE_TBL_FILEDEF
 cfe_tbl_filedef.h, 1060
CFE_TBL_FileDef, 632
 Description, 632
 fm_monitor.c, 935
 ObjectName, 632
 ObjectSize, 633
 TableName, 633
 TgtFilename, 633
cfe_tbl_filedef.h
 CFE_TBL_FILEDEF, 1060
 CFE_TBL_FileDef_t, 1061
CFE_TBL_FileDef_t
 cfe_tbl_filedef.h, 1061
CFE_TBL_GetAddress
 cFE Access Table Content APIs, 375
CFE_TBL_GetAddresses
 cFE Access Table Content APIs, 376
CFE_TBL_GetInfo
 cFE Get Table Information APIs, 379
CFE_TBL_GetStatus
 cFE Get Table Information APIs, 380
CFE_TBL_HANDLE_ACCESS_ERR_EID
 cfe_tbl_eventids.h, 1288
CFE_TBL_Handle_t
 cfe_tbl_api_typedefs.h, 1059
CFE_TBL_HK_TLM_MID
 default_cfe_tbl_msgids.h, 1276
CFE_TBL_HousekeepingTlm, 633
 Payload, 633
 TelemetryHeader, 633
CFE_TBL_HousekeepingTlm_Payload, 634
 ActiveBuffer, 635
 ByteAlignPad1, 635
 CommandCounter, 635
 CommandErrorCounter, 635
 FailedValCounter, 635
 LastFileDumped, 635
 LastFileLoaded, 636
 LastTableLoaded, 636
 LastUpdatedTable, 636
 LastUpdateTime, 636
 LastValCrc, 636
 LastValStatus, 636
 LastValTableName, 636
 MemPoolHandle, 637
 NumFreeSharedBufs, 637
 NumLoadPending, 637
 NumTables, 637
 NumValRequests, 637
 SuccessValCounter, 637
 ValidationCounter, 637
CFE_TBL_HousekeepingTlm_Payload_t
 default_cfe_tbl_msgdefs.h, 1275
CFE_TBL_HousekeepingTlm_t
 default_cfe_tbl_msgstruct.h, 1278
CFE_TBL_ILLEGAL_BUFF_PARAM_ERR_EID
 cfe_tbl_eventids.h, 1288
CFE_TBL_IN_REGISTRY_ERR_EID
 cfe_tbl_eventids.h, 1288
CFE_TBL_Info, 638
 Crc, 638
 Critical, 638
 DoubleBuffered, 639
 DumpOnly, 639
 FileTime, 639
 LastFileLoaded, 639
 NumUsers, 639
 Size, 639
 TableLoadedOnce, 639
 TimeOfLastUpdate, 639
 UserDefAddr, 639
CFE_TBL_INFO_DUMP_PENDING
 cFE Return Code Defines, 257
CFE_TBL_INFO_NO_UPDATE_PENDING
 cFE Return Code Defines, 257
CFE_TBL_INFO_NO_VALIDATION_PENDING
 cFE Return Code Defines, 257
CFE_TBL_INFO_RECOVERED_TBL
 cFE Return Code Defines, 257
CFE_TBL_Info_t
 cfe_tbl_api_typedefs.h, 1059
CFE_TBL_INFO_TABLE_LOCKED
 cFE Return Code Defines, 257
CFE_TBL_INFO_UPDATE_PENDING
 cFE Return Code Defines, 257
CFE_TBL_INFO_UPDATED
 cFE Return Code Defines, 257
CFE_TBL_INFO_VALIDATION_PENDING
 cFE Return Code Defines, 258
CFE_TBL_INIT_INF_EID
 cfe_tbl_eventids.h, 1289
CFE_TBL_LEN_ERR_EID

cfe_tbl_eventids.h, 1289
CFE_TBL_Load
 cFE Manage Table Content APIs, 370
CFE_TBL_LOAD_ABORT_ERR_EID
 cfe_tbl_eventids.h, 1289
CFE_TBL_LOAD_ABORT_INF_EID
 cfe_tbl_eventids.h, 1289
CFE_TBL_LOAD_CC
 default_cfe_tbl_fcncodes.h, 1261
CFE_TBL_LOAD_EXCEEDS_SIZE_ERR_EID
 cfe_tbl_eventids.h, 1290
CFE_TBL_LOAD_FILENAME_LONG_ERR_EID
 cfe_tbl_eventids.h, 1290
CFE_TBL_LOAD_IN_PROGRESS_ERR_EID
 cfe_tbl_eventids.h, 1290
CFE_TBL_LOAD_PEND_REQ_INF_EID
 cfe_tbl_eventids.h, 1290
CFE_TBL_LOAD_SUCCESS_INF_EID
 cfe_tbl_eventids.h, 1291
CFE_TBL_LOAD_TBLNAME_MISMATCH_ERR_EID
 cfe_tbl_eventids.h, 1291
CFE_TBL_LOAD_TYPE_ERR_EID
 cfe_tbl_eventids.h, 1291
CFE_TBL_LOAD_VAL_ERR_EID
 cfe_tbl_eventids.h, 1291
CFE_TBL_LoadCmd, 640
 CommandHeader, 640
 Payload, 640
CFE_TBL_LoadCmd_Payload, 640
 LoadFilename, 640
CFE_TBL_LoadCmd_Payload_t
 default_cfe_tbl_msgdefs.h, 1275
CFE_TBL_LoadCmd_t
 default_cfe_tbl_msgstruct.h, 1278
CFE_TBL_LOADING_A_DUMP_ONLY_ERR_EID
 cfe_tbl_eventids.h, 1292
CFE_TBL_LOADING_PENDING_ERR_EID
 cfe_tbl_eventids.h, 1292
CFE_TBL_Manage
 cFE Manage Table Content APIs, 372
CFE_TBL_MAX_FULL_NAME_LEN
 cfe_tbl_api_typedefs.h, 1058
CFE_TBL_MESSAGE_ERROR
 cFE Return Code Defines, 258
CFE_TBL_MID_ERR_EID
 cfe_tbl_eventids.h, 1292
CFE_TBL_Modified
 cFE Manage Table Content APIs, 372
CFE_TBL_NO_INACTIVE_BUFFER_ERR_EID
 cfe_tbl_eventids.h, 1292
CFE_TBL_NO_SUCH_TABLE_ERR_EID
 cfe_tbl_eventids.h, 1293
CFE_TBL_NO_WORK_BUFFERS_ERR_EID
 cfe_tbl_eventids.h, 1293
CFE_TBL_NOOP_CC
 default_cfe_tbl_fcncodes.h, 1262
CFE_TBL_NOOP_INF_EID
 cfe_tbl_eventids.h, 1293
CFE_TBL_NoopCmd, 641
 CommandHeader, 641
CFE_TBL_NoopCmd_t
 default_cfe_tbl_msgstruct.h, 1279
CFE_TBL_NOT_CRITICAL_TBL_ERR_EID
 cfe_tbl_eventids.h, 1293
CFE_TBL_NOT_IMPLEMENTED
 cFE Return Code Defines, 258
CFE_TBL_NOT_IN_CRIT_REG_ERR_EID
 cfe_tbl_eventids.h, 1294
CFE_TBL_NotifyByMessage
 cFE Get Table Information APIs, 381
CFE_TBL_NotifyCmd, 641
 CommandHeader, 641
 Payload, 641
CFE_TBL_NotifyCmd_Payload, 642
 Parameter, 642
CFE_TBL_NotifyCmd_Payload_t
 default_cfe_tbl_msgdefs.h, 1275
CFE_TBL_NotifyCmd_t
 default_cfe_tbl_msgstruct.h, 1279
CFE_TBL_OPT_BUFFER_MSK
 cFE Table Type Defines, 382
CFE_TBL_OPT_CRITICAL
 cFE Table Type Defines, 382
CFE_TBL_OPT_CRITICAL_MSK
 cFE Table Type Defines, 382
CFE_TBL_OPT_DBL_BUFFER
 cFE Table Type Defines, 383
CFE_TBL_OPT_DEFAULT
 cFE Table Type Defines, 383
CFE_TBL_OPT_DUMP_ONLY
 cFE Table Type Defines, 383
CFE_TBL_OPT_LD_DMP_MSK
 cFE Table Type Defines, 383
CFE_TBL_OPT_LOAD_DUMP
 cFE Table Type Defines, 383
CFE_TBL_OPT_NOT_CRITICAL
 cFE Table Type Defines, 383
CFE_TBL_OPT_NOT_USR_DEF
 cFE Table Type Defines, 383
CFE_TBL_OPT_SNGL_BUFFER
 cFE Table Type Defines, 383
CFE_TBL_OPT_USR_DEF_ADDR
 cFE Table Type Defines, 383
CFE_TBL_OPT_USR_DEF_MSK
 cFE Table Type Defines, 383
CFE_TBL_OVERWRITE_DUMP_INF_EID
 cfe_tbl_eventids.h, 1294
CFE_TBL_OVERWRITE_REG_DUMP_INF_EID

cfe_tbl_eventids.h, 1294
CFE_TBL_PARTIAL_LOAD_ERR_EID
 cfe_tbl_eventids.h, 1294
CFE_TBL_PROCESSOR_ID_ERR_EID
 cfe_tbl_eventids.h, 1295
CFE_TBL_REG_TLM_MID
 default_cfe_tbl_msgids.h, 1277
CFE_TBL_Register
 cFE Registration APIs, 365
CFE_TBL_REGISTER_ERR_EID
 cfe_tbl_eventids.h, 1295
CFE_TBL_ReleaseAddress
 cFE Access Table Content APIs, 377
CFE_TBL_ReleaseAddresses
 cFE Access Table Content APIs, 378
CFE_TBL_RESET_COUNTERS_CC
 default_cfe_tbl_fcncodes.h, 1263
CFE_TBL_RESET_INF_EID
 cfe_tbl_eventids.h, 1295
CFE_TBL_ResetCountersCmd, 642
 CommandHeader, 642
CFE_TBL_ResetCountersCmd_t
 default_cfe_tbl_msgstruct.h, 1279
CFE_TBL_SEND_HK_MID
 default_cfe_tbl_msgids.h, 1277
CFE_TBL_SEND_REGISTRY_CC
 default_cfe_tbl_fcncodes.h, 1264
CFE_TBL_SendHkCmd, 643
 CommandHeader, 643
CFE_TBL_SendHkCmd_t
 default_cfe_tbl_msgstruct.h, 1279
CFE_TBL_SendRegistryCmd, 643
 CommandHeader, 643
 Payload, 644
CFE_TBL_SendRegistryCmd_Payload, 644
 TableName, 644
CFE_TBL_SendRegistryCmd_Payload_t
 default_cfe_tbl_msgdefs.h, 1276
CFE_TBL_SendRegistryCmd_t
 default_cfe_tbl_msgstruct.h, 1279
CFE_TBL_Share
 cFE Registration APIs, 367
CFE_TBL_SHARE_ERR_EID
 cfe_tbl_eventids.h, 1295
CFE_TBL_SPACECRAFT_ID_ERR_EID
 cfe_tbl_eventids.h, 1296
CFE_TBL_SRC_ADDRESS
 cfe_tbl_api_typedefs.h, 1059
CFE_TBL_SRC_FILE
 cfe_tbl_api_typedefs.h, 1059
CFE_TBL_SrcEnum
 cfe_tbl_api_typedefs.h, 1059
CFE_TBL_SrcEnum_t
 cfe_tbl_api_typedefs.h, 1059
CFE_TBL_TableRegistryTlm, 644
 Payload, 645
 TelemetryHeader, 645
CFE_TBL_TableRegistryTlm_t
 default_cfe_tbl_msgstruct.h, 1279
CFE_TBL_TblRegPacket_Payload, 645
 ActiveBufferAddr, 646
 ByteAlign4, 646
 Crc, 646
 Critical, 646
 DoubleBuffered, 646
 DumpOnly, 646
 FileTime, 647
 InactiveBufferAddr, 647
 LastFileLoaded, 647
 LoadPending, 647
 Name, 647
 OwnerAppName, 647
 Size, 647
 TableLoadedOnce, 648
 TimeOfLastUpdate, 648
 ValidationFuncPtr, 648
CFE_TBL_TblRegPacket_Payload_t
 default_cfe_tbl_msgdefs.h, 1276
CFE_TBL_TLM_REG_CMD_INF_EID
 cfe_tbl_eventids.h, 1296
CFE_TBL_TOO_MANY_DUMPS_ERR_EID
 cfe_tbl_eventids.h, 1296
CFE_TBL_TOO_MANY_VALIDATIONS_ERR_EID
 cfe_tbl_eventids.h, 1296
CFE_TBL_Unregister
 cFE Registration APIs, 368
CFE_TBL_UNREGISTER_ERR_EID
 cfe_tbl_eventids.h, 1297
CFE_TBL_UNVALIDATED_ERR_EID
 cfe_tbl_eventids.h, 1297
CFE_TBL_Update
 cFE Manage Table Content APIs, 373
CFE_TBL_UPDATE_ERR_EID
 cfe_tbl_eventids.h, 1297
CFE_TBL_UPDATE_SUCCESS_INF_EID
 cfe_tbl_eventids.h, 1297
CFE_TBL_VAL_REQ_MADE_INF_EID
 cfe_tbl_eventids.h, 1298
CFE_TBL_Validate
 cFE Manage Table Content APIs, 374
CFE_TBL_VALIDATE_CC
 default_cfe_tbl_fcncodes.h, 1265
CFE_TBL_ValidateCmd, 648
 CommandHeader, 648
 Payload, 649
CFE_TBL_ValidateCmd_Payload, 649
 ActiveTableFlag, 649
 TableName, 649

CFE_TBL_ValidateCmd_Payload_t
 default_cfe_tbl_msgdefs.h, 1276

CFE_TBL_ValidateCmd_t
 default_cfe_tbl_msgstruct.h, 1279

CFE_TBL_VALIDATION_ERR_EID
 cfe_tbl_eventids.h, 1298

CFE_TBL_VALIDATION_INF_EID
 cfe_tbl_eventids.h, 1298

CFE_TBL_VALRESULTID_BASE
 cFE Resource ID base values, 400

CFE_TBL_WARN_DUPLICATE
 cFE Return Code Defines, 258

CFE_TBL_WARN_NOT_CRITICAL
 cFE Return Code Defines, 258

CFE_TBL_WARN_PARTIAL_LOAD
 cFE Return Code Defines, 258

CFE_TBL_WARN_SHORT_FILE
 cFE Return Code Defines, 258

CFE_TBL_WRITE_CFE_HDR_ERR_EID
 cfe_tbl_eventids.h, 1298

CFE_TBL_WRITE_DUMP_INF_EID
 cfe_tbl_eventids.h, 1299

CFE_TBL_WRITE_REG_DUMP_INF_EID
 cfe_tbl_eventids.h, 1299

CFE_TBL_WRITE_TBL_HDR_ERR_EID
 cfe_tbl_eventids.h, 1299

CFE_TBL_WRITE_TBL_IMG_ERR_EID
 cfe_tbl_eventids.h, 1299

CFE_TBL_WRITE_TBL_REG_ERR_EID
 cfe_tbl_eventids.h, 1300

CFE_TBL_ZERO_LENGTH_LOAD_ERR_EID
 cfe_tbl_eventids.h, 1300

cfe_time.h
 CFE_TIME_Copy, 1062

CFE_TIME_1HZ_CMD_MID
 default_cfe_time_msgids.h, 1334

CFE_TIME_A_GT_B
 cfe_time_api_typedefs.h, 1064

CFE_TIME_A_LT_B
 cfe_time_api_typedefs.h, 1064

CFE_TIME_Add
 cFE Time Arithmetic APIs, 389

CFE_TIME_ADD_ADJUST_CC
 default_cfe_time_fcncodes.h, 1306

CFE_TIME_ADD_DELAY_CC
 default_cfe_time_fcncodes.h, 1306

CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC
 default_cfe_time_fcncodes.h, 1307

CFE_TIME_AddAdjustCmd, 649
 CommandHeader, 650
 Payload, 650

CFE_TIME_AddAdjustCmd_t
 default_cfe_time_msgstruct.h, 1336

CFE_TIME_AddDelayCmd, 650
 CommandHeader, 650
 Payload, 650

CFE_TIME_AddDelayCmd_t
 default_cfe_time_msgstruct.h, 1336

CFE_TIME_AddOneHzAdjustmentCmd, 651
 CommandHeader, 651
 Payload, 651

CFE_TIME_AddOneHzAdjustmentCmd_t
 default_cfe_time_msgstruct.h, 1336

CFE_TIME_AdjustDirection
 default_cfe_time_extern_typedefs.h, 1303

CFE_TIME_AdjustDirection_ADD
 default_cfe_time_extern_typedefs.h, 1303

CFE_TIME_AdjustDirection_Enum_t
 default_cfe_time_extern_typedefs.h, 1302

CFE_TIME_AdjustDirection_SUBTRACT
 default_cfe_time_extern_typedefs.h, 1303

cfe_time_api_typedefs.h
 CFE_TIME_A_GT_B, 1064
 CFE_TIME_A_LT_B, 1064
 CFE_TIME_Compare, 1064
 CFE_TIME_Compare_t, 1063
 CFE_TIME_EQUAL, 1064
 CFE_TIME_PRINTED_STRING_SIZE, 1063
 CFE_TIME_SynchCallbackPtr_t, 1064
 CFE_TIME_ZERO_VALUE, 1063

CFE_TIME_BAD_ARGUMENT
 cFE Return Code Defines, 259

CFE_TIME_CALLBACK_NOT_REGISTERED
 cFE Return Code Defines, 259

CFE_TIME_CC_ERR_EID
 cfe_time_eventids.h, 1341

CFE_TIME_ClockState
 default_cfe_time_extern_typedefs.h, 1303

CFE_TIME_ClockState_Enum_t
 default_cfe_time_extern_typedefs.h, 1302

CFE_TIME_ClockState_FLYWHEEL
 default_cfe_time_extern_typedefs.h, 1304

CFE_TIME_ClockState_INVALID
 default_cfe_time_extern_typedefs.h, 1304

CFE_TIME_ClockState_VALID
 default_cfe_time_extern_typedefs.h, 1304

CFE_TIME_CMD_MID
 default_cfe_time_msgids.h, 1334

CFE_TIME_Compare
 cFE Time Arithmetic APIs, 390
 cfe_time_api_typedefs.h, 1064

CFE_TIME_Compare_t
 cfe_time_api_typedefs.h, 1063

CFE_TIME_Copy
 cfe_time.h, 1062

CFE_TIME_DATA_CMD_MID
 default_cfe_time_msgids.h, 1334

CFE_TIME_DELAY_CFG_EID

cfe_time_eventids.h, 1341
CFE_TIME_DELAY_EID
 cfe_time_eventids.h, 1342
CFE_TIME_DELAY_ERR_EID
 cfe_time_eventids.h, 1342
CFE_TIME_DELTA_CFG_EID
 cfe_time_eventids.h, 1342
CFE_TIME_DELTA_EID
 cfe_time_eventids.h, 1342
CFE_TIME_DELTA_ERR_EID
 cfe_time_eventids.h, 1343
CFE_TIME_DIAG_EID
 cfe_time_eventids.h, 1343
CFE_TIME_DIAG_TLM_MID
 default_cfe_time_msgids.h, 1334
CFE_TIME_DiagnosticTlm, 651
 Payload, 652
 TelemetryHeader, 652
CFE_TIME_DiagnosticTlm_Payload, 652
 AtToneDelay, 654
 AtToneLatch, 654
 AtToneLeapSeconds, 654
 AtToneMET, 654
 AtToneSTCF, 654
 ClockFlyState, 655
 ClockSetState, 655
 ClockSignal, 655
 ClockSource, 655
 ClockStateAPI, 655
 ClockStateFlags, 655
 CurrentLatch, 655
 CurrentMET, 656
 CurrentTAI, 656
 CurrentUTC, 656
 DataStoreStatus, 656
 DelayDirection, 656
 Forced2Fly, 656
 LocallntCounter, 656
 LocalTaskCounter, 657
 MaxElapsed, 657
 MaxLocalClock, 657
 MinElapsed, 657
 OneHzAdjust, 657
 OneHzDirection, 657
 OneTimeAdjust, 657
 OneTimeDirection, 658
 ServerFlyState, 658
 TimeSinceTone, 658
 ToneDataCounter, 658
 ToneDataLatch, 658
 ToneIntCounter, 658
 ToneIntErrorCounter, 658
 ToneMatchCounter, 659
 ToneMatchErrorCounter, 659
 ToneOverLimit, 659
 ToneSignalCounter, 659
 ToneSignalLatch, 659
 ToneTaskCounter, 659
 ToneUnderLimit, 659
 VersionCounter, 660
 VirtualMET, 660
CFE_TIME_DiagnosticTlm_Payload_t
 default_cfe_time_msgdefs.h, 1333
CFE_TIME_DiagnosticTlm_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_EQUAL
 cfe_time_api_typedefs.h, 1064
cfe_time_eventids.h
 CFE_TIME_CC_ERR_EID, 1341
 CFE_TIME_DELAY_CFG_EID, 1341
 CFE_TIME_DELAY_EID, 1342
 CFE_TIME_DELAY_ERR_EID, 1342
 CFE_TIME_DELTA_CFG_EID, 1342
 CFE_TIME_DELTA_EID, 1342
 CFE_TIME_DELTA_ERR_EID, 1343
 CFE_TIME_DIAG_EID, 1343
 CFE_TIME_FLY_OFF_EID, 1343
 CFE_TIME_FLY_ON_EID, 1343
 CFE_TIME_ID_ERR_EID, 1344
 CFE_TIME_INIT_EID, 1344
 CFE_TIME_LEAPS_CFG_EID, 1344
 CFE_TIME_LEAPS_EID, 1344
 CFE_TIME_LEN_ERR_EID, 1345
 CFE_TIME_MET_CFG_EID, 1345
 CFE_TIME_MET_EID, 1345
 CFE_TIME_MET_ERR_EID, 1345
 CFE_TIME_NOOP_EID, 1346
 CFE_TIME_ONEHZ_CFG_EID, 1346
 CFE_TIME_ONEHZ_EID, 1346
 CFE_TIME_RESET_EID, 1346
 CFE_TIME_SIGNAL_CFG_EID, 1347
 CFE_TIME_SIGNAL_EID, 1347
 CFE_TIME_SIGNAL_ERR_EID, 1347
 CFE_TIME_SOURCE_CFG_EID, 1347
 CFE_TIME_SOURCE_EID, 1348
 CFE_TIME_SOURCE_ERR_EID, 1348
 CFE_TIME_STATE_EID, 1348
 CFE_TIME_STATE_ERR_EID, 1348
 CFE_TIME_STCF_CFG_EID, 1349
 CFE_TIME_STCF_EID, 1349
 CFE_TIME_STCF_ERR_EID, 1349
 CFE_TIME_TIME_CFG_EID, 1349
 CFE_TIME_TIME_EID, 1350
 CFE_TIME_TIME_ERR_EID, 1350
 CFE_TIME_ExternalGPS
 cFE External Time Source APIs, 393
 CFE_TIME_ExternalMET
 cFE External Time Source APIs, 394

CFE_TIME_ExternalTime
 cFE External Time Source APIs, [395](#)
CFE_TIME_ExternalTone
 cFE External Time Source APIs, [395](#)
CFE_TIME_FakeToneCmd, 660
 CommandHeader, [660](#)
CFE_TIME_FakeToneCmd_t
 default_cfe_time_msgstruct.h, [1337](#)
CFE_TIME_FLAG_ADD1HZ
 cFE Clock State Flag Defines, [400](#)
CFE_TIME_FLAG_ADDADJ
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_ADDTCL
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_CLKSET
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_CMDFLY
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_FLYING
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_GDTONE
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_REFERR
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_SERVER
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_SIGPRI
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_SRCINT
 cFE Clock State Flag Defines, [401](#)
CFE_TIME_FLAG_SRVFLY
 cFE Clock State Flag Defines, [402](#)
CFE_TIME_FLAG_UNUSED
 cFE Clock State Flag Defines, [402](#)
CFE_TIME_FlagBit
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_ADD1HZ
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_ADDADJ
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_ADDTCL
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_CLKSET
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_CMDFLY
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_Enum_t
 default_cfe_time_extern_typedefs.h, [1302](#)
CFE_TIME_FlagBit_FLYING
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_GDTONE
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_SERVER
 default_cfe_time_extern_typedefs.h, [1304](#)

CFE_TIME_FlagBit_SIGPRI
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_SRCINT
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlagBit_SRVFLY
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FLY_OFF_EID
 cfe_time_eventids.h, [1343](#)
CFE_TIME_FLY_ON_EID
 cfe_time_eventids.h, [1343](#)
CFE_TIME_FlywheelState
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlywheelState_Enum_t
 default_cfe_time_extern_typedefs.h, [1302](#)
CFE_TIME_FlywheelState_IS_FLY
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_FlywheelState_NO_FLY
 default_cfe_time_extern_typedefs.h, [1304](#)
CFE_TIME_GetClockInfo
 cFE Get Time Information APIs, [387](#)
CFE_TIME_GetClockState
 cFE Get Time Information APIs, [387](#)
CFE_TIME_GetLeapSeconds
 cFE Get Time Information APIs, [388](#)
CFE_TIME_GetMET
 cFE Get Current Time APIs, [384](#)
CFE_TIME_GetMETseconds
 cFE Get Current Time APIs, [384](#)
CFE_TIME_GetMETsubsecs
 cFE Get Current Time APIs, [385](#)
CFE_TIME_GetSTCF
 cFE Get Time Information APIs, [388](#)
CFE_TIME_GetTAI
 cFE Get Current Time APIs, [385](#)
CFE_TIME_GetTime
 cFE Get Current Time APIs, [386](#)
CFE_TIME_GetUTC
 cFE Get Current Time APIs, [386](#)
CFE_TIME_HK_TLM_MID
 default_cfe_time_msgids.h, [1334](#)
CFE_TIME_HousekeepingTlm, 660
 Payload, [661](#)
 TelemetryHeader, [661](#)
CFE_TIME_HousekeepingTlm_Payload, 661
 ClockStateAPI, [662](#)
 ClockStateFlags, [662](#)
 CommandCounter, [662](#)
 CommandErrorCounter, [662](#)
 LeapSeconds, [662](#)
 Seconds1HzAdj, [663](#)
 SecondsDelay, [663](#)
 SecondsMET, [663](#)
 SecondsSTCF, [663](#)
 Subsecs1HzAdj, [663](#)

SubsecsDelay, 663
SubsecsMET, 663
SubsecsSTCF, 664
CFE_TIME_HousekeepingTlm_Payload_t
 default_cfe_time_msgdefs.h, 1333
CFE_TIME_HousekeepingTlm_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_ID_ERR_EID
 cfe_time_eventids.h, 1344
CFE_TIME_INIT_EID
 cfe_time_eventids.h, 1344
CFE_TIME_INTERNAL_ONLY
 cFE Return Code Defines, 259
CFE_TIME_LEAPS_CFG_EID
 cfe_time_eventids.h, 1344
CFE_TIME_LEAPS_EID
 cfe_time_eventids.h, 1344
CFE_TIME_LeapsCmd_Payload, 664
 LeapSeconds, 664
CFE_TIME_LeapsCmd_Payload_t
 default_cfe_time_msgdefs.h, 1333
CFE_TIME_LEN_ERR_EID
 cfe_time_eventids.h, 1345
CFE_TIME_Local1HzISR
 cFE Miscellaneous Time APIs, 397
CFE_TIME_MET2SCTime
 cFE Time Conversion APIs, 391
CFE_TIME_MET_CFG_EID
 cfe_time_eventids.h, 1345
CFE_TIME_MET_EID
 cfe_time_eventids.h, 1345
CFE_TIME_MET_ERR_EID
 cfe_time_eventids.h, 1345
CFE_TIME_Micro2SubSecs
 cFE Time Conversion APIs, 392
CFE_TIME_NOOP_CC
 default_cfe_time_fcncodes.h, 1308
CFE_TIME_NOOP_EID
 cfe_time_eventids.h, 1346
CFE_TIME_NoopCmd, 664
 CommandHeader, 665
CFE_TIME_NoopCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_NOT_IMPLEMENTED
 cFE Return Code Defines, 259
CFE_TIME_ONEHZ_CFG_EID
 cfe_time_eventids.h, 1346
CFE_TIME_ONEHZ_CMD_MID
 default_cfe_time_msgids.h, 1334
CFE_TIME_ONEHZ_EID
 cfe_time_eventids.h, 1346
CFE_TIME_OneHzAdjustmentCmd_Payload, 665
 Seconds, 665
 Subseconds, 665
CFE_TIME_OneHzAdjustmentCmd_Payload_t
 default_cfe_time_msgdefs.h, 1333
CFE_TIME_OneHzCmd, 665
 CommandHeader, 665
CFE_TIME_OneHzCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_OUT_OF_RANGE
 cFE Return Code Defines, 259
CFE_TIME_Print
 cFE Miscellaneous Time APIs, 398
CFE_TIME_PRINTED_STRING_SIZE
 cfe_time_api_typedefs.h, 1063
CFE_TIME_RegisterSyncCallback
 cFE External Time Source APIs, 396
CFE_TIME_RESET_COUNTERS_CC
 default_cfe_time_fcncodes.h, 1309
CFE_TIME_RESET_EID
 cfe_time_eventids.h, 1346
CFE_TIME_ResetCountersCmd, 666
 CommandHeader, 666
CFE_TIME_ResetCountersCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SEND_CMD_MID
 default_cfe_time_msgids.h, 1335
CFE_TIME_SEND_DIAGNOSTIC_CC
 default_cfe_time_fcncodes.h, 1310
CFE_TIME_SEND_HK_MID
 default_cfe_time_msgids.h, 1335
CFE_TIME_SendDiagnosticCmd, 666
 CommandHeader, 666
CFE_TIME_SendDiagnosticCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SendHkCmd, 667
 CommandHeader, 667
CFE_TIME_SendHkCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SERVICE
 cfe_error.h, 1020
CFE_TIME_SET_LEAP_SECONDS_CC
 default_cfe_time_fcncodes.h, 1311
CFE_TIME_SET_MET_CC
 default_cfe_time_fcncodes.h, 1312
CFE_TIME_SET_SIGNAL_CC
 default_cfe_time_fcncodes.h, 1313
CFE_TIME_SET_SOURCE_CC
 default_cfe_time_fcncodes.h, 1313
CFE_TIME_SET_STATE_CC
 default_cfe_time_fcncodes.h, 1314
CFE_TIME_SET_STCF_CC
 default_cfe_time_fcncodes.h, 1316
CFE_TIME_SET_TIME_CC
 default_cfe_time_fcncodes.h, 1316
CFE_TIME_SetLeapSecondsCmd, 667
 CommandHeader, 667

Payload, 667
CFE_TIME_SetLeapSecondsCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SetMETCmd, 668
 CommandHeader, 668
 Payload, 668
CFE_TIME_SetMETCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SetSignalCmd, 668
 CommandHeader, 668
 Payload, 669
CFE_TIME_SetSignalCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SetSourceCmd, 669
 CommandHeader, 669
 Payload, 669
CFE_TIME_SetSourceCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SetState
 default_cfe_time_extern_typedefs.h, 1304
CFE_TIME_SetState_Enum_t
 default_cfe_time_extern_typedefs.h, 1302
CFE_TIME_SetState_NOT_SET
 default_cfe_time_extern_typedefs.h, 1305
CFE_TIME_SetState_WAS_SET
 default_cfe_time_extern_typedefs.h, 1305
CFE_TIME_SetStateCmd, 669
 CommandHeader, 670
 Payload, 670
CFE_TIME_SetStateCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SetSTCFCmd, 670
 CommandHeader, 670
 Payload, 670
CFE_TIME_SetSTCFCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SetTimeCmd, 671
 CommandHeader, 671
 Payload, 671
CFE_TIME_SetTimeCmd_t
 default_cfe_time_msgstruct.h, 1337
CFE_TIME_SIGNAL_CFG_EID
 cfe_time_eventids.h, 1347
CFE_TIME_SIGNAL_EID
 cfe_time_eventids.h, 1347
CFE_TIME_SIGNAL_ERR_EID
 cfe_time_eventids.h, 1347
CFE_TIME_SignalCmd_Payload, 671
 ToneSource, 672
CFE_TIME_SignalCmd_Payload_t
 default_cfe_time_msgdefs.h, 1333
CFE_TIME_SOURCE_CFG_EID
 cfe_time_eventids.h, 1347
CFE_TIME_SOURCE_EID
 cfe_time_eventids.h, 1348
CFE_TIME_SOURCE_ERR_EID
 cfe_time_eventids.h, 1348
CFE_TIME_SourceCmd_Payload, 672
 TimeSource, 672
CFE_TIME_SourceCmd_Payload_t
 default_cfe_time_msgdefs.h, 1333
CFE_TIME_SourceSelect
 default_cfe_time_extern_typedefs.h, 1305
CFE_TIME_SourceSelect_Enum_t
 default_cfe_time_extern_typedefs.h, 1303
CFE_TIME_SourceSelect_EXTERNAL
 default_cfe_time_extern_typedefs.h, 1305
CFE_TIME_SourceSelect_INTERNAL
 default_cfe_time_extern_typedefs.h, 1305
CFE_TIME_STATE_EID
 cfe_time_eventids.h, 1348
CFE_TIME_STATE_ERR_EID
 cfe_time_eventids.h, 1348
CFE_TIME_StateCmd_Payload, 672
 ClockState, 673
CFE_TIME_StateCmd_Payload_t
 default_cfe_time_msgdefs.h, 1333
CFE_TIME_STCF_CFG_EID
 cfe_time_eventids.h, 1349
CFE_TIME_STCF_EID
 cfe_time_eventids.h, 1349
CFE_TIME_STCF_ERR_EID
 cfe_time_eventids.h, 1349
CFE_TIME_Sub2MicroSecs
 cFE Time Conversion APIs, 392
CFE_TIME_SUB_ADJUST_CC
 default_cfe_time_fcncodes.h, 1317
CFE_TIME_SUB_DELAY_CC
 default_cfe_time_fcncodes.h, 1318
CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC
 default_cfe_time_fcncodes.h, 1319
CFE_TIME_SubAdjustCmd, 673
 CommandHeader, 673
 Payload, 673
CFE_TIME_SubAdjustCmd_t
 default_cfe_time_msgstruct.h, 1338
CFE_TIME_SubDelayCmd, 673
 CommandHeader, 674
 Payload, 674
CFE_TIME_SubDelayCmd_t
 default_cfe_time_msgstruct.h, 1338
CFE_TIME_SubOneHzAdjustmentCmd, 674
 CommandHeader, 674
 Payload, 674
CFE_TIME_SubOneHzAdjustmentCmd_t
 default_cfe_time_msgstruct.h, 1338
CFE_TIME_Subtract
 cFE Time Arithmetic APIs, 390

CFE_TIME_SynchCallbackPtr_t
 cfe_time_api_typedefs.h, 1064

CFE_TIME_SysTime, 675
 Seconds, 675
 Subseconds, 675

CFE_TIME_SysTime_t
 default_cfe_time_extern_typedefs.h, 1303

CFE_TIME_TIME_CFG_EID
 cfe_time_eventids.h, 1349

CFE_TIME_TIME_EID
 cfe_time_eventids.h, 1350

CFE_TIME_TIME_ERR_EID
 cfe_time_eventids.h, 1350

CFE_TIME_TimeCmd_Payload, 675
 MicroSeconds, 676
 Seconds, 676

CFE_TIME_TimeCmd_Payload_t
 default_cfe_time_msgdefs.h, 1333

CFE_TIME_TONE_CMD_MID
 default_cfe_time_msgids.h, 1335

CFE_TIME_ToneDataCmd, 676
 CommandHeader, 676
 Payload, 676

CFE_TIME_ToneDataCmd_Payload, 677
 AtToneLeapSeconds, 677
 AtToneMET, 677
 AtToneState, 677
 AtToneSTCF, 677

CFE_TIME_ToneDataCmd_Payload_t
 default_cfe_time_msgdefs.h, 1333

CFE_TIME_ToneDataCmd_t
 default_cfe_time_msgstruct.h, 1338

CFE_TIME_ToneSignalCmd, 677
 CommandHeader, 678

CFE_TIME_ToneSignalCmd_t
 default_cfe_time_msgstruct.h, 1338

CFE_TIME_ToneSignalSelect
 default_cfe_time_extern_typedefs.h, 1305

CFE_TIME_ToneSignalSelect_Enum_t
 default_cfe_time_extern_typedefs.h, 1303

CFE_TIME_ToneSignalSelect_PRIMARY
 default_cfe_time_extern_typedefs.h, 1305

CFE_TIME_ToneSignalSelect_REDUNDANT
 default_cfe_time_extern_typedefs.h, 1305

CFE_TIME_TOO_MANY_SYNCH_CALLBACKS
 cFE Return Code Defines, 259

CFE_TIME_UnregisterSynchCallback
 cFE External Time Source APIs, 397

CFE_TIME_ZERO_VALUE
 cfe_time_api_typedefs.h, 1063

CFE_TST
 cfe_sb.h, 1052

cfe_version.h
 CFE_BUILD_BASELINE, 1065

CFE_BUILD_CODENAME, 1065

CFE_BUILD_DEV_CYCLE, 1065

CFE_BUILD_NUMBER, 1065

CFE_CFG_MAX_VERSION_STR_LEN, 1065

CFE_LAST_OFFICIAL, 1065

CFE_MAJOR_VERSION, 1066

CFE_MINOR_VERSION, 1066

CFE_MISSION_REV, 1066

CFE_REVISION, 1066

CFE_SRC_VERSION, 1066

CFE_STR, 1066

CFE_STR_HELPER, 1066

CFECoreChecksum

 CFE_ES_HousekeepingTlm_Payload, 539

CFEMajorVersion

 CFE_ES_HousekeepingTlm_Payload, 540

CFEMinorVersion

 CFE_ES_HousekeepingTlm_Payload, 540

CFEMissionRevision

 CFE_ES_HousekeepingTlm_Payload, 540

CFERevision

 CFE_ES_HousekeepingTlm_Payload, 540

CFS File Manager Command Codes, 207

 FM_CONCAT_FILES_CC, 208

 FM_COPY_FILE_CC, 209

 FM_CREATE_DIRECTORY_CC, 211

 FM_DECOMPRESS_FILE_CC, 212

 FM_DELETE_ALL_FILES_CC, 213

 FM_DELETE_DIRECTORY_CC, 214

 FM_DELETE_FILE_CC, 215

 FM_GET_DIR_LIST_FILE_CC, 216

 FM_GET_DIR_LIST_PKT_CC, 218

 FM_GET_FILE_INFO_CC, 219

 FM_GET_OPEN_FILES_CC, 221

 FM_MONITOR_FILESYSTEM_SPACE_CC, 221

 FM_MOVE_FILE_CC, 222

 FM_NOOP_CC, 223

 FM_RENAME_FILE_CC, 224

 FM_RESET_COUNTERS_CC, 225

 FM_SET_PERMISSIONS_CC, 226

 FM_SET_TABLE_STATE_CC, 227

CFS File Manager Command Message IDs, 228

 FM_CMD_MID, 228

 FM_SEND_HK_MID, 228

CFS File Manager Command Structures, 205

CFS File Manager Event IDs, 126

 FM_CC_ERR_EID, 136

 FM_CHILD_BROKEN_EID_OFFSET, 136

 FM_CHILD_DISABLED_EID_OFFSET, 136

 FM_CHILD_EXE_ERR_EID, 137

 FM_CHILD_INIT_CREATE_ERR_EID, 137

 FM_CHILD_INIT_EID, 137

 FM_CHILD_INIT_QSEM_ERR_EID, 137

 FM_CHILD_INIT_SEM_ERR_EID, 138

FM_CHILD_NUM_OFFSETS, 138
 FM_CHILD_Q_FULL_EID_OFFSET, 138
 FM_CHILD_TERM_EMPTYQ_ERR_EID, 138
 FM_CHILD_TERM_QIDX_ERR_EID, 138
 FM_CHILD_TERM_SEM_ERR_EID, 139
 FM_CONCAT_CHILD_BASE_EID, 139
 FM_CONCAT_CHILD_BROKEN_ERR_EID, 139
 FM_CONCAT_CHILD_DISABLED_ERR_EID, 140
 FM_CONCAT_CHILD_FULL_ERR_EID, 140
 FM_CONCAT_CMD_INF_EID, 140
 FM_CONCAT_OPEN_SRC2_ERR_EID, 141
 FM_CONCAT_OPEN_TGT_ERR_EID, 141
 FM_CONCAT_OSCPY_ERR_EID, 141
 FM_CONCAT_OSRD_ERR_EID, 142
 FM_CONCAT_OSWR_ERR_EID, 142
 FM_CONCAT_PKT_ERR_EID, 142
 FM_CONCAT_SRC1_BASE_EID, 142
 FM_CONCAT_SRC1_DNE_ERR_EID, 143
 FM_CONCAT_SRC1_INVALID_ERR_EID, 143
 FM_CONCAT_SRC1_ISDIR_ERR_EID, 143
 FM_CONCAT_SRC1_OPEN_ERR_EID, 144
 FM_CONCAT_SRC2_BASE_EID, 144
 FM_CONCAT_SRC2_DNE_ERR_EID, 144
 FM_CONCAT_SRC2_INVALID_ERR_EID, 145
 FM_CONCAT_SRC2_ISDIR_ERR_EID, 145
 FM_CONCAT_SRC2_OPEN_ERR_EID, 145
 FM_CONCAT_TGT_BASE_EID, 145
 FM_CONCAT_TGT_EXIST_ERR_EID, 146
 FM_CONCAT_TGT_INVALID_ERR_EID, 146
 FM_CONCAT_TGT_ISDIR_ERR_EID, 146
 FM_COPY_CHILD_BASE_EID, 147
 FM_COPY_CHILD_BROKEN_ERR_EID, 147
 FM_COPY_CHILD_DISABLED_ERR_EID, 147
 FM_COPY_CHILD_FULL_ERR_EID, 148
 FM_COPY_CMD_INF_EID, 148
 FM_COPY_OS_ERR_EID, 148
 FM_COPY_OVR_ERR_EID, 149
 FM_COPY_PKT_ERR_EID, 149
 FM_COPY_SRC_BASE_EID, 149
 FM_COPY_SRC_DNE_ERR_EID, 149
 FM_COPY_SRC_INVALID_ERR_EID, 150
 FM_COPY_SRC_ISDIR_ERR_EID, 150
 FM_COPY_TGT_BASE_EID, 150
 FM_COPY_TGT_EXIST_ERR_EID, 151
 FM_COPY_TGT_INVALID_ERR_EID, 151
 FM_COPY_TGT_ISDIR_ERR_EID, 151
 FM_COPY_TGT_ISOPEN_ERR_EID, 151
 FM_CR_PIPE_ERR_EID, 152
 FM_CREATE_DIR_CHILD_BASE_EID, 152
 FM_CREATE_DIR_CHILD_BROKEN_ERR_EID, 152
 FM_CREATE_DIR_CHILD_DISABLED_ERR_EID, 153
 FM_CREATE_DIR_CHILD_FULL_ERR_EID, 153

FM_CREATE_DIR_CMD_INF_EID, 153
 FM_CREATE_DIR_OS_ERR_EID, 154
 FM_CREATE_DIR_PKT_ERR_EID, 154
 FM_CREATE_DIR_SRC_BASE_EID, 154
 FM_CREATE_DIR_SRC_DNE_ERR_EID, 154
 FM_CREATE_DIR_SRC_INVALID_ERR_EID, 155
 FM_CREATE_DIR_SRC_ISDIR_ERR_EID, 155
 FM_DECOM_CFE_ERR_EID, 155
 FM_DECOM_CHILD_BASE_EID, 156
 FM_DECOM_CHILD_BROKEN_ERR_EID, 156
 FM_DECOM_CHILD_DISABLED_ERR_EID, 156
 FM_DECOM_CHILD_FULL_ERR_EID, 157
 FM_DECOM_CMD_INF_EID, 157
 FM_DECOM_PKT_ERR_EID, 157
 FM_DECOM_SRC_BASE_EID, 158
 FM_DECOM_SRC_DNE_ERR_EID, 158
 FM_DECOM_SRC_INVALID_ERR_EID, 158
 FM_DECOM_SRC_ISDIR_ERR_EID, 158
 FM_DECOM_SRC_OPEN_ERR_EID, 159
 FM_DECOM_TGT_BASE_EID, 159
 FM_DECOM_TGT_EXIST_ERR_EID, 159
 FM_DECOM_TGT_INVALID_ERR_EID, 160
 FM_DECOM_TGT_ISDIR_ERR_EID, 160
 FM_DELETE_ALL_CHILD_BASE_EID, 160
 FM_DELETE_ALL_CHILD_BROKEN_ERR_EID, 161
 FM_DELETE_ALL_CHILD_DISABLED_ERR_EID, 161
 FM_DELETE_ALL_CHILD_FULL_ERR_EID, 161
 FM_DELETE_ALL_CMD_INF_EID, 162
 FM_DELETE_ALL_FILES_ND_WARNING_EID, 162
 FM_DELETE_ALL_OS_ERR_EID, 162
 FM_DELETE_ALL_PKT_ERR_EID, 162
 FM_DELETE_ALL_SKIP_WARNING_EID, 163
 FM_DELETE_ALL_SRC_BASE_EID, 163
 FM_DELETE_ALL_SRC_DNE_ERR_EID, 163
 FM_DELETE_ALL_SRC_FILE_ERR_EID, 164
 FM_DELETE_ALL_SRC_INVALID_ERR_EID, 164
 FM_DELETE_CHILD_BASE_EID, 164
 FM_DELETE_CHILD_BROKEN_ERR_EID, 164
 FM_DELETE_CHILD_DISABLED_ERR_EID, 165
 FM_DELETE_CHILD_FULL_ERR_EID, 165
 FM_DELETE_CMD_INF_EID, 165
 FM_DELETE_DIR_CHILD_BASE_EID, 166
 FM_DELETE_DIR_CHILD_BROKEN_ERR_EID, 166
 FM_DELETE_DIR_CHILD_DISABLED_ERR_EID, 166
 FM_DELETE_DIR_CHILD_FULL_ERR_EID, 167
 FM_DELETE_DIR_CMD_INF_EID, 167
 FM_DELETE_DIR_EMPTY_ERR_EID, 167
 FM_DELETE_DIR_PKT_ERR_EID, 168
 FM_DELETE_DIR_SRC_BASE_EID, 168
 FM_DELETE_DIR_SRC_DNE_ERR_EID, 168

FM_DELETE_DIR_SRC_INVALID_ERR_EID, 169
FM_DELETE_OPENDIR_OS_ERR_EID, 169
FM_DELETE_OS_ERR_EID, 169
FM_DELETE_PKT_ERR_EID, 169
FM_DELETE_RMDIR_OS_ERR_EID, 170
FM_DELETE_SRC_BASE_EID, 170
FM_DELETE_SRC_DNE_ERR_EID, 170
FM_DELETE_SRC_INVALID_ERR_EID, 171
FM_DELETE_SRC_ISDIR_ERR_EID, 171
FM_DELETE_SRC_OPEN_ERR_EID, 171
FM_DIRECTORY_ESTIMATE_ERR_EID, 171
FM_EXIT_ERR_EID, 172
FM_FILE_INFO_CHILD_BASE_EID, 172
FM_FILE_INFO_CHILD_BROKEN_ERR_EID, 172
FM_FILE_INFO_CHILD_DISABLED_EID, 173
FM_FILE_INFO_CHILD_FULL_ERR_EID, 173
FM_FNAME_DNE_EID_OFFSET, 173
FM_FNAME_EXIST_EID_OFFSET, 173
FM_FNAME_INVALID_EID_OFFSET, 174
FM_FNAME_ISCLOSED_EID_OFFSET, 174
FM_FNAME_ISDIR_EID_OFFSET, 174
FM_FNAME_ISFILE_EID_OFFSET, 174
FM_FNAME_ISOPEN_EID_OFFSET, 174
FM_FNAME_NUM_OFFSETS, 174
FM_GET_DIR_FILE_CHILD_BASE_EID, 174
FM_GET_DIR_FILE_CHILD_BROKEN_ERR_EID,
 174
FM_GET_DIR_FILE_CHILD_DISABLED_ERR_EID,
 175
FM_GET_DIR_FILE_CHILD_FULL_ERR_EID, 175
FM_GET_DIR_FILE_CMD_INF_EID, 175
FM_GET_DIR_FILE_OSCREAT_ERR_EID, 176
FM_GET_DIR_FILE_OSOPENDIR_ERR_EID, 176
FM_GET_DIR_FILE_PKT_ERR_EID, 176
FM_GET_DIR_FILE_SRC_BASE_EID, 177
FM_GET_DIR_FILE_SRC_DNE_ERR_EID, 177
FM_GET_DIR_FILE_SRC_INVALID_ERR_EID, 177
FM_GET_DIR_FILE_SRC_ISDIR_ERR_EID, 178
FM_GET_DIR_FILE_TGT_BASE_EID, 178
FM_GET_DIR_FILE_TGT_INVALID_ERR_EID, 178
FM_GET_DIR_FILE_TGT_ISDIR_ERR_EID, 178
FM_GET_DIR_FILE_UPSTATS_ERR_EID, 179
FM_GET_DIR_FILE_WARNING_EID, 179
FM_GET_DIR_FILE_WRBLANK_ERR_EID, 179
FM_GET_DIR_FILE_WRENTRY_ERR_EID, 180
FM_GET_DIR_FILE_WRHDR_ERR_EID, 180
FM_GET_DIR_PKT_CHILD_BASE_EID, 180
FM_GET_DIR_PKT_CHILD_BROKEN_ERR_EID,
 181
FM_GET_DIR_PKT_CHILD_DISABLED_ERR_EID,
 181
FM_GET_DIR_PKT_CHILD_FULL_ERR_EID, 181
FM_GET_DIR_PKT_CMD_INF_EID, 182
FM_GET_DIR_PKT_OS_ERR_EID, 182
FM_GET_DIR_PKT_PKT_ERR_EID, 182
FM_GET_DIR_PKT_SRC_BASE_EID, 183
FM_GET_DIR_PKT_SRC_DNE_ERR_EID, 183
FM_GET_DIR_PKT_SRC_INVALID_ERR_EID, 183
FM_GET_DIR_PKT_SRC_ISDIR_ERR_EID, 184
FM_GET_DIR_PKT_WARNING_EID, 184
FM_GET_FILE_INFO_CMD_INF_EID, 184
FM_GET_FILE_INFO_OPEN_ERR_EID, 184
FM_GET_FILE_INFO_PKT_ERR_EID, 185
FM_GET_FILE_INFO_READ_WARNING_EID, 185
FM_GET_FILE_INFO_SRC_ERR_EID, 185
FM_GET_FILE_INFO_STATE_WARNING_EID, 185
FM_GET_FILE_INFO_TYPE_WARNING_EID, 186
FM_GET_FREE_SPACE_PKT_ERR_EID, 186
FM_GET_FREE_SPACE_TBL_ERR_EID, 186
FM_GET_OPEN_FILES_CMD_INF_EID, 187
FM_GET_OPEN_FILES_PKT_ERR_EID, 187
FM_HKREQ_LEN_ERR_EID, 187
FM_INIT_INF_EID, 187
FM_MID_ERR_EID, 188
FM_MONITOR_FILESYSTEM_SPACE_CMD_INF_EID,
 188
FM_MOVE_CHILD_BASE_EID, 188
FM_MOVE_CHILD_BROKEN_ERR_EID, 188
FM_MOVE_CHILD_DISABLED_EID, 189
FM_MOVE_CHILD_FULL_ERR_EID, 189
FM_MOVE_CMD_INF_EID, 189
FM_MOVE_OS_ERR_EID, 190
FM_MOVE_OVR_ERR_EID, 190
FM_MOVE_PKT_ERR_EID, 190
FM_MOVE_SRC_BASE_EID, 190
FM_MOVE_SRC_DNE_ERR_EID, 191
FM_MOVE_SRC_INVALID_ERR_EID, 191
FM_MOVE_SRC_ISDIR_ERR_EID, 191
FM_MOVE_TGT_BASE_EID, 192
FM_MOVE_TGT_EXIST_ERR_EID, 192
FM_MOVE_TGT_INVALID_ERR_EID, 192
FM_MOVE_TGT_ISDIR_ERR_EID, 192
FM_MOVE_TGT_ISOPEN_ERR_EID, 193
FM_NOOP_INF_EID, 193
FM_NOOP_PKT_ERR_EID, 193
FM_OS_SYS_STAT_ERR_EID, 193
FM_RENAME_CHILD_BASE_EID, 194
FM_RENAME_CHILD_BROKEN_ERR_EID, 194
FM_RENAME_CHILD_DISABLED_ERR_EID, 194
FM_RENAME_CHILD_FULL_ERR_EID, 195
FM_RENAME_CMD_INF_EID, 195
FM_RENAME_OS_ERR_EID, 195
FM_RENAME_OVR_ERR_EID, 196
FM_RENAME_PKT_ERR_EID, 196
FM_RENAME_SRC_BASE_EID, 196
FM_RENAME_SRC_DNE_ERR_EID, 197
FM_RENAME_SRC_INVALID_ERR_EID, 197
FM_RENAME_SRC_ISDIR_ERR_EID, 197

FM_RENAME_TGT_BASE_EID, 197
 FM_RENAME_TGT_EXIST_ERR_EID, 198
 FM_RENAME_TGT_INVALID_ERR_EID, 198
 FM_RENAME_TGT_ISDIR_ERR_EID, 198
 FM_RENAME_TGT_ISOPEN_ERR_EID, 199
 FM_RESET_INF_EID, 199
 FM_RESET_PKT_ERR_EID, 199
 FM_SB_RECEIVE_ERR_EID, 199
 FM_SB_RECEIVE_NULL_PTR_ERR_EID, 200
 FM_SET_PERM_CMD_INF_EID, 200
 FM_SET_PERM_ERR_EID, 200
 FM_SET_PERM_OS_ERR_EID, 200
 FM_SET_TABLE_STATE_ARG_IDX_ERR_EID, 201
 FM_SET_TABLE_STATE_ARG_STATE_ERR_EID, 201
 FM_SET_TABLE_STATE_CMD_EID, 201
 FM_SET_TABLE_STATE_PKT_ERR_EID, 201
 FM_SET_TABLE_STATE_TBL_ERR_EID, 202
 FM_SET_TABLE_STATE_UNUSED_ERR_EID, 202
 FM_STARTUP_EVENTS_ERR_EID, 202
 FM_STARTUP_SUBSCRIB_GCMD_ERR_EID, 202
 FM_STARTUP_SUBSCRIB_HK_ERR_EID, 203
 FM_STARTUP_TABLE_INIT_ERR_EID, 203
 FM_TABLE_VERIFY_BAD_STATE_ERR_EID, 203
 FM_TABLE_VERIFY_EID, 204
 FM_TABLE_VERIFY_EMPTY_ERR_EID, 204
 FM_TABLE_VERIFY_NULL_PTR_ERR_EID, 204
 FM_TABLE_VERIFY_TOOLONG_ERR_EID, 205
 CFS File Manager Mission Configuration, 229
 FM_APPMAIN_PERF_ID, 229
 FM_CHILD_TASK_PERF_ID, 229
 CFS File Manager Platform Configuration, 229
 FM_APP_NAME, 230
 FM_APP_PIPE_DEPTH, 230
 FM_APP_PIPE_NAME, 231
 FM_CHILD_FILE_BLOCK_SIZE, 231
 FM_CHILD_FILE_LOOP_COUNT, 231
 FM_CHILD_FILE_SLEEP_MS, 232
 FM_CHILD_QUEUE_DEPTH, 232
 FM_CHILD_SEM_NAME, 232
 FM_CHILD_STAT_SLEEP_FILECOUNT, 232
 FM_CHILD_STAT_SLEEP_MS, 232
 FM_CHILD_TASK_NAME, 233
 FM_CHILD_TASK_PRIORITY, 233
 FM_CHILD_TASK_STACK_SIZE, 234
 FM_DIR_LIST_FILE_DEFNAME, 234
 FM_DIR_LIST_FILE_ENTRIES, 234
 FM_DIR_LIST_FILE_SUBTYPE, 234
 FM_DIR_LIST_PKT_ENTRIES, 235
 FM_MISSION_REV, 235
 FM_TABLE_CFE_NAME, 235
 FM_TABLE_DEF_DESC, 235
 FM_TABLE_DEF_NAME, 236
 FM_TABLE_ENTRY_COUNT, 236
 FM_TABLE_FILENAME, 236
 FM_TABLE_VALIDATION_ERR, 236
 CFS File Manager Telemetry, 207
 CFS File Manager Telemetry Message IDs, 228
 FM_DIR_LIST_TLM_MID, 228
 FM_FILE_INFO_TLM_MID, 228
 FM_FREE_SPACE_TLM_MID, 228
 FM_HK_TLM_MID, 228
 FM_OPEN_FILES_TLM_MID, 228
 CFS File Manager Version, 237
 FM_MAJOR_VERSION, 237
 FM_MINOR_VERSION, 237
 FM_REVISION, 237
 CheckErrCtr
 CFE_ES_MemPoolStats, 546
 ChildBuffer
 FM_GlobalData_t, 699
 ChildCmdCounter
 FM_GlobalData_t, 699
 FM_HousekeepingPkt_Payload_t, 704
 ChildCmdErrCounter
 FM_GlobalData_t, 699
 FM_HousekeepingPkt_Payload_t, 704
 ChildCmdWarnCounter
 FM_GlobalData_t, 699
 FM_HousekeepingPkt_Payload_t, 704
 ChildCurrentCC
 FM_GlobalData_t, 699
 FM_HousekeepingPkt_Payload_t, 704
 ChildPreviousCC
 FM_GlobalData_t, 700
 FM_HousekeepingPkt_Payload_t, 704
 ChildQueue
 FM_GlobalData_t, 700
 ChildQueueCount
 FM_GlobalData_t, 700
 FM_HousekeepingPkt_Payload_t, 704
 ChildQueueCountSem
 FM_GlobalData_t, 700
 ChildReadIndex
 FM_GlobalData_t, 700
 ChildSemaphore
 FM_GlobalData_t, 700
 ChildTaskID
 FM_GlobalData_t, 700
 ChildWriteIndex
 FM_GlobalData_t, 701
 ClockFlyState
 CFE_TIME_DiagnosticTlm_Payload, 655
 ClockSetState
 CFE_TIME_DiagnosticTlm_Payload, 655
 ClockSignal
 CFE_TIME_DiagnosticTlm_Payload, 655
 ClockSource

CFE_TIME_DiagnosticTlm_Payload, 655
ClockState
 CFE_TIME_StateCmd_Payload, 673
ClockStateAPI
 CFE_TIME_DiagnosticTlm_Payload, 655
 CFE_TIME_HousekeepingTlm_Payload, 662
ClockStateFlags
 CFE_TIME_DiagnosticTlm_Payload, 655
 CFE_TIME_HousekeepingTlm_Payload, 662
CmdPipe
 FM_GlobalData_t, 701
code_address
 OS_module_address_t, 725
code_size
 OS_module_address_t, 725
CodeAddress
 CFE_ES_AppInfo, 527
CodeSize
 CFE_ES_AppInfo, 527
CommandCode
 FM_ChildQueueEntry_t, 679
CommandCounter
 CFE_ES_HousekeepingTlm_Payload, 540
 CFE_EVS_HousekeepingTlm_Payload, 582
 CFE_SB_HousekeepingTlm_Payload, 604
 CFE_TBL_HousekeepingTlm_Payload, 635
 CFE_TIME_HousekeepingTlm_Payload, 662
 FM_GlobalData_t, 701
 FM_HousekeepingPkt_Payload_t, 704
CommandErrCounter
 FM_GlobalData_t, 701
 FM_HousekeepingPkt_Payload_t, 704
CommandErrorCounter
 CFE_ES_HousekeepingTlm_Payload, 540
 CFE_EVS_HousekeepingTlm_Payload, 583
 CFE_SB_HousekeepingTlm_Payload, 604
 CFE_TBL_HousekeepingTlm_Payload, 635
 CFE_TIME_HousekeepingTlm_Payload, 662
CommandHeader
 CFE_ES_ClearERLogCmd, 533
 CFE_ES_ClearSysLogCmd, 533
 CFE_ES_DeleteCDSCmd, 534
 CFE_ES_DumpCDSRegistryCmd, 535
 CFE_ES_FileNameCmd, 536
 CFE_ES_NoopCmd, 548
 CFE_ES_OverWriteSysLogCmd, 549
 CFE_ES_QueryAllCmd, 552
 CFE_ES_QueryAllTasksCmd, 553
 CFE_ES_QueryOneCmd, 553
 CFE_ES_ReloadAppCmd, 554
 CFE_ES_ResetCountersCmd, 554
 CFE_ES_ResetPRCountCmd, 555
 CFE_ES_RestartAppCmd, 555
 CFE_ES_RestartCmd, 556
CFE_ES_SendHkCmd, 557
CFE_ES_SendMemPoolStatsCmd, 557
CFE_ES_SetMaxPRCountCmd, 559
CFE_ES_SetPerfFilterMaskCmd, 560
CFE_ES_SetPerfTriggerMaskCmd, 561
CFE_ES_StartApp, 562
CFE_ES_StartPerfDataCmd, 564
CFE_ES_StopAppCmd, 565
CFE_ES_StopPerfDataCmd, 566
CFE_ES_WriteERLogCmd, 568
CFE_ES_WriteSysLogCmd, 569
CFE_EVS_AddEventFilterCmd, 569
CFE_EVS_ClearLogCmd, 575
CFE_EVS_DeleteEventFilterCmd, 576
CFE_EVS_DisableAppEventsCmd, 576
CFE_EVS_DisableAppEventTypeCmd, 577
CFE_EVS_DisableEventTypeCmd, 578
CFE_EVS_DisablePortsCmd, 578
CFE_EVS_EnableAppEventsCmd, 579
CFE_EVS_EnableAppEventTypeCmd, 579
CFE_EVS_EnableEventTypeCmd, 580
CFE_EVS_EnablePortsCmd, 581
CFE_EVS_NoopCmd, 587
CFE_EVS_ResetAllFiltersCmd, 589
CFE_EVS_ResetAppCounterCmd, 589
CFE_EVS_ResetCountersCmd, 590
CFE_EVS_ResetFilterCmd, 590
CFE_EVS_SendHkCmd, 591
CFE_EVS_SetEventFormatModeCmd, 592
CFE_EVS_SetFilterCmd, 592
CFE_EVS_SetLogModeCmd, 594
CFE_EVS_WriteAppDataFileCmd, 595
CFE_EVS_WriteLogFileCmd, 596
CFE_SB_DisableRouteCmd, 601
CFE_SB_DisableSubReportingCmd, 602
CFE_SB_EnableRouteCmd, 602
CFE_SB_EnableSubReportingCmd, 603
CFE_SB_NoopCmd, 609
CFE_SB_ResetCountersCmd, 613
CFE_SB_SendHkCmd, 615
CFE_SB_SendPrevSubsCmd, 616
CFE_SB_SendSbStatsCmd, 616
CFE_SB_WriteMapInfoCmd, 623
CFE_SB_WritePipeInfoCmd, 624
CFE_SB_WriteRoutingInfoCmd, 625
CFE_TBL_AbortLoadCmd, 625
CFE_TBL_ActivateCmd, 626
CFE_TBL_DeleteCDSCmd, 628
CFE_TBL_DumpCmd, 628
CFE_TBL_DumpRegistryCmd, 630
CFE_TBL_LoadCmd, 640
CFE_TBL_NoopCmd, 641
CFE_TBL_NotifyCmd, 641
CFE_TBL_ResetCountersCmd, 642

CFE_TBL_SendHkCmd, 643
 CFE_TBL_SendRegistryCmd, 643
 CFE_TBL_ValidateCmd, 648
 CFE_TIME_AddAdjustCmd, 650
 CFE_TIME_AddDelayCmd, 650
 CFE_TIME_AddOneHzAdjustmentCmd, 651
 CFE_TIME_FakeToneCmd, 660
 CFE_TIME_NoopCmd, 665
 CFE_TIME_OneHzCmd, 665
 CFE_TIME_ResetCountersCmd, 666
 CFE_TIME_SendDiagnosticCmd, 666
 CFE_TIME_SendHkCmd, 667
 CFE_TIME_SetLeapSecondsCmd, 667
 CFE_TIME_SetMETCmd, 668
 CFE_TIME_SetSignalCmd, 668
 CFE_TIME_SetSourceCmd, 669
 CFE_TIME_SetStateCmd, 670
 CFE_TIME_SetSTCFCmd, 670
 CFE_TIME_SetTimeCmd, 671
 CFE_TIME_SubAdjustCmd, 673
 CFE_TIME_SubDelayCmd, 674
 CFE_TIME_SubOneHzAdjustmentCmd, 674
 CFE_TIME_ToneDataCmd, 676
 CFE_TIME_ToneSignalCmd, 678
 FM_ConcatFilesCmd_t, 681
 FM_CopyFileCmd_t, 681
 FM_CreateDirectoryCmd_t, 682
 FM_DecompressFileCmd_t, 683
 FM_DeleteAllFilesCmd_t, 684
 FM_DeleteDirectoryCmd_t, 684
 FM_DeleteFileCmd_t, 685
 FM_GetDirListFileCmd_t, 695
 FM_GetDirListPktCmd_t, 696
 FM_GetFileInfoCmd_t, 696
 FM_GetOpenFilesCmd_t, 697
 FM_MonitorFilesystemSpaceCmd_t, 706
 FM_MoveFileCmd_t, 710
 FM_NoopCmd_t, 710
 FM_RenameFileCmd_t, 714
 FM_ResetCountersCmd_t, 714
 FM_SendHkCmd_t, 715
 FM_SetPermissionsCmd_t, 715
 FM_SetTableStateCmd_t, 716
 common_types.h
 EXTENSION, 1352
 CompileTimeAssert, 1352, 1354, 1355
 cpuaddr, 1352
 cpudiff, 1353
 cpusize, 1353
 int16, 1353
 int32, 1353
 int64, 1353
 int8, 1353
 intptr, 1353
 OS_ArgCallback_t, 1353
 OS_PRINTF, 1352
 OS_USED, 1352
 OSAL_BLOCKCOUNT_C, 1352
 osal_blockcount_t, 1353
 osal_id_t, 1353
 OSAL_INDEX_C, 1352
 osal_index_t, 1353
 OSAL_OBJTYPE_C, 1352
 osal_objtype_t, 1354
 OSAL_SIZE_C, 1352
 OSAL_STATUS_C, 1352
 osal_status_t, 1354
 uint16, 1354
 uint32, 1354
 uint64, 1354
 uint8, 1354
 CompileTimeAssert
 common_types.h, 1352, 1354, 1355
 CompressorStatePtr
 FM_GlobalData_t, 701
 ContentType
 CFE_FS_Header, 598
 cpuaddr
 common_types.h, 1352
 cpudiff
 common_types.h, 1353
 cpusize
 common_types.h, 1353
 CRC
 FM_FileInfoPkt_Payload_t, 690
 Crc
 CFE_TBL_Info, 638
 CFE_TBL_TblRegPacket_Payload, 646
 CRC_Computed
 FM_FileInfoPkt_Payload_t, 690
 CreatePipeErrorCounter
 CFE_SB_HousekeepingTlm_Payload, 604
 creator
 OS_bin_sem_prop_t, 719
 OS_condvar_prop_t, 720
 OS_count_sem_prop_t, 720
 OS_mut_sem_prop_t, 727
 OS_queue_prop_t, 727
 OS_socket_prop_t, 729
 OS_task_prop_t, 731
 OS_timebase_prop_t, 733
 OS_timer_prop_t, 734
 Critical
 CFE_TBL_Info, 638
 CFE_TBL_TblRegPacket_Payload, 646
 CurrentLatch
 CFE_TIME_DiagnosticTlm_Payload, 655
 CurrentMET

CFE_TIME_DiagnosticTlm_Payload, 656
CurrentQueueDepth
 CFE_SB_PipeDepthStats, 610
 CFE_SB_PipeInfoEntry, 611
CurrentTAI
 CFE_TIME_DiagnosticTlm_Payload, 656
CurrentUTC
 CFE_TIME_DiagnosticTlm_Payload, 656

data_address
 OS_module_address_t, 725
data_size
 OS_module_address_t, 725
DataAddress
 CFE_ES_AppInfo, 527
DataFileName
 CFE_ES_StopPerfCmd_Payload, 566
DataSize
 CFE_ES_AppInfo, 527
DataStoreStatus
 CFE_TIME_DiagnosticTlm_Payload, 656
Datum
 CFE_Config_ValueEntry, 525
DecompressorStatePtr
 FM_GlobalData_t, 701
default_cfe_core_api_base_msgids.h
 CFE_CPU1_CMD_MID_BASE, 1002
 CFE_CPU1_TLM_MID_BASE, 1002
 CFE_GLOBAL_CMD_MID_BASE, 1002
 CFE_GLOBAL_CMD_TOPICID_TO_MIDV, 1003
 CFE_GLOBAL_TLM_MID_BASE, 1003
 CFE_GLOBAL_TLM_TOPICID_TO_MIDV, 1003
 CFE_PLATFORM_CMD_TOPICID_TO_MIDV, 1003
 CFE_PLATFORM_TLM_TOPICID_TO_MIDV, 1003
default_cfe_core_api_interface_cfg.h
 CFE_MISSION_MAX_API_LEN, 1004
 CFE_MISSION_MAX_FILE_LEN, 1004
 CFE_MISSION_MAX_NUM_FILES, 1005
 CFE_MISSION_MAX_PATH_LEN, 1005
default_cfe_es_extern_typedefs.h
 CFE_ES_AppId_t, 1069
 CFE_ES_AppInfo_t, 1069
 CFE_ES_AppState, 1073
 CFE_ES_AppState_EARLY_INIT, 1073
 CFE_ES_AppState_Enum_t, 1070
 CFE_ES_AppState_LATE_INIT, 1073
 CFE_ES_AppState_MAX, 1073
 CFE_ES_AppState_RUNNING, 1073
 CFE_ES_AppState_STOPPED, 1073
 CFE_ES_AppState_UNDEFINED, 1073
 CFE_ES_AppState_WAITING, 1073
 CFE_ES_AppType, 1073
 CFE_ES_AppType_CORE, 1073
 CFE_ES_AppType_Enum_t, 1070

CFE_ES_AppType_EXTERNAL, 1073
CFE_ES_AppType_LIBRARY, 1073
CFE_ES_BlockStats_t, 1070
CFE_ES_CDSHandle_t, 1070
CFE_ES_CDSRegDumpRec_t, 1070
CFE_ES_CounterId_t, 1070
CFE_ES_ExceptionAction, 1074
CFE_ES_ExceptionAction_Enum_t, 1071
CFE_ES_ExceptionAction_PROC_RESTART, 1074
CFE_ES_ExceptionAction_RESTART_APP, 1074
CFE_ES_Libld_t, 1071
CFE_ES_LogEntryType, 1074
CFE_ES_LogEntryType_APPLICATION, 1074
CFE_ES_LogEntryType_CORE, 1074
CFE_ES_LogEntryType_Enum_t, 1071
CFE_ES_LogMode, 1074
CFE_ES_LogMode_DISCARD, 1074
CFE_ES_LogMode_Enum_t, 1071
CFE_ES_LogMode_OVERWRITE, 1074
CFE_ES_MEMADDRESS_C, 1069
CFE_ES_MemAddress_t, 1071
CFE_ES_MEMADDRESS_TO_PTR, 1069
CFE_ES_MemHandle_t, 1071
CFE_ES_MEMOFFSET_C, 1069
CFE_ES_MemOffset_t, 1072
CFE_ES_MEMOFFSET_TO_SIZE, 1069
CFE_ES_MemPoolStats_t, 1072
CFE_ES_RunStatus, 1074
CFE_ES_RunStatus_APP_ERROR, 1074
CFE_ES_RunStatus_APP_EXIT, 1074
CFE_ES_RunStatus_APP_RUN, 1074
CFE_ES_RunStatus_CORE_APP_INIT_ERROR, 1074
CFE_ES_RunStatus_CORE_APP_RUNTIME_ERROR, 1074
CFE_ES_RunStatus_Enum_t, 1072
CFE_ES_RunStatus_MAX, 1075
CFE_ES_RunStatus_SYS_DELETE, 1074
CFE_ES_RunStatus_SYS_EXCEPTION, 1074
CFE_ES_RunStatus_SYS_RELOAD, 1074
CFE_ES_RunStatus_SYS_RESTART, 1074
CFE_ES_RunStatus_UNDEFINED, 1074
CFE_ES_SystemState, 1075
CFE_ES_SystemState_APPS_INIT, 1075
CFE_ES_SystemState_CORE_READY, 1075
CFE_ES_SystemState_CORE_STARTUP, 1075
CFE_ES_SystemState_EARLY_INIT, 1075
CFE_ES_SystemState_Enum_t, 1072
CFE_ES_SystemState_MAX, 1075
CFE_ES_SystemState_OPERATIONAL, 1075
CFE_ES_SystemState_SHUTDOWN, 1075
CFE_ES_SystemState_UNDEFINED, 1075
CFE_ES_TaskId_t, 1072
CFE_ES_TaskInfo_t, 1072

CFE_ES_TaskPriority_Atom_t, 1073
 default_cfe_es_fcncodes.h
 CFE_ES_CLEAR_ER_LOG_CC, 1076
 CFE_ES_CLEAR_SYS_LOG_CC, 1076
 CFE_ES_DELETE_CDS_CC, 1077
 CFE_ES_DUMP_CDS_REGISTRY_CC, 1078
 CFE_ES_NOOP_CC, 1079
 CFE_ES_OVER_WRITE_SYS_LOG_CC, 1080
 CFE_ES_QUERY_ALL_CC, 1080
 CFE_ES_QUERY_ALL_TASKS_CC, 1081
 CFE_ES_QUERY_ONE_CC, 1082
 CFE_ES_RELOAD_APP_CC, 1083
 CFE_ES_RESET_COUNTERS_CC, 1084
 CFE_ES_RESET_PR_COUNT_CC, 1085
 CFE_ES_RESTART_APP_CC, 1085
 CFE_ES_RESTART_CC, 1086
 CFE_ES_SEND_MEM_POOL_STATS_CC, 1087
 CFE_ES_SET_MAX_PR_COUNT_CC, 1088
 CFE_ES_SET_PERF_FILTER_MASK_CC, 1089
 CFE_ES_SET_PERF_TRIGGER_MASK_CC, 1090
 CFE_ES_START_APP_CC, 1090
 CFE_ES_START_PERF_DATA_CC, 1091
 CFE_ES_STOP_APP_CC, 1092
 CFE_ES_STOP_PERF_DATA_CC, 1093
 CFE_ES_WRITE_ER_LOG_CC, 1094
 CFE_ES_WRITE_SYS_LOG_CC, 1095
 default_cfe_es_interface_cfg.h
 CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN,
 1097
 CFE_MISSION_ES_CDS_MAX_NAME_LENGTH,
 1097
 CFE_MISSION_ES_CRC_16, 1097
 CFE_MISSION_ES_CRC_32, 1097
 CFE_MISSION_ES_CRC_8, 1098
 CFE_MISSION_ES_DEFAULT_CRC, 1098
 CFE_MISSION_ES_MAX_APPLICATIONS, 1098
 CFE_MISSION_ES_PERF_MAX_IDS, 1098
 CFE_MISSION_ES_POOL_MAX_BUCKETS, 1098
 default_cfe_es_internal_cfg.h
 CFE_PLATFORM_ES_APP_KILL_TIMEOUT, 1101
 CFE_PLATFORM_ES_APP_SCAN_RATE, 1101
 CFE_PLATFORM_ES_CDS_MAX_BLOCK_SIZE,
 1102
 CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES,
 1102
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01,
 1102
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_02,
 1102
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_03,
 1102
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_04,
 1102
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_05,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_06,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_07,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_08,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_09,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_10,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_11,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_12,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_13,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_14,
 1103
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_15,
 1104
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_16,
 1104
 CFE_PLATFORM_ES_CDS_SIZE, 1104
 CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE,
 1104
 CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMP_FILE,
 1104
 CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE,
 1105
 CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME,
 1105
 CFE_PLATFORM_ES_DEFAULT_POR_SYSLOG_MODE,
 1105
 CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE,
 1106
 CFE_PLATFORM_ES_DEFAULT_STACK_SIZE,
 1106
 CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE,
 1106
 CFE_PLATFORM_ES_DEFAULT_TASK_LOG_FILE,
 1107
 CFE_PLATFORM_ES_ER_LOG_ENTRIES, 1107
 CFE_PLATFORM_ES_ER_LOG_MAX_CONTEXT_SIZE,
 1107
 CFE_PLATFORM_ES_MAX_APPLICATIONS, 1108
 CFE_PLATFORM_ES_MAX_BLOCK_SIZE, 1108
 CFE_PLATFORM_ES_MAX_GEN_COUNTERS,
 1108
 CFE_PLATFORM_ES_MAX_LIBRARIES, 1108
 CFE_PLATFORM_ES_MAX_MEMORY_POOLS,
 1109
 CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS,

1109
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01,
1109
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_02,
1110
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_03,
1110
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_04,
1110
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_05,
1110
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_06,
1110
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_07,
1110
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_08,
1110
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_09,
1110
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_10,
1110
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_11,
1111
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_12,
1111
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_13,
1111
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_14,
1111
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_15,
1111
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_16,
1111
CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN,
1111
CFE_PLATFORM_ES_NONVOL_DISK_MOUNT_STRING,
1111
CFE_PLATFORM_ES_NONVOL_STARTUP_FILE,
1112
CFE_PLATFORM_ES_OBJECT_TABLE_SIZE, 1112
CFE_PLATFORM_ES_PERF_CHILD_MS_DELAY,
1112
CFE_PLATFORM_ES_PERF_CHILD_PRIORITY,
1112
CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE,
1113
CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE,
1113
CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS,
1113
CFE_PLATFORM_ES_PERF_FILTMASK_ALL, 1114
CFE_PLATFORM_ES_PERF_FILTMASK_INIT,
1114
CFE_PLATFORM_ES_PERF_FILTMASK_NONE,
1114
CFE_PLATFORM_ES_PERF_TRIGMASK_ALL,
1114
CFE_PLATFORM_ES_PERF_TRIGMASK_INIT,
1114
CFE_PLATFORM_ES_PERF_TRIGMASK_NONE,
1115
CFE_PLATFORM_ES_POOL_MAX_BUCKETS,
1115
CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING,
1115
CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS,
1115
CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED,
1116
CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE,
1116
CFE_PLATFORM_ES_START_TASK_PRIORITY,
1117
CFE_PLATFORM_ES_START_TASK_STACK_SIZE,
1117
CFE_PLATFORM_ES_STARTUP_SCRIPT_TIMEOUT_MSEC,
1117
CFE_PLATFORM_ES_STARTUP_SYNC_POLL_MSEC,
1117
CFE_PLATFORM_ES_SYSTEM_LOG_SIZE, 1118
CFE_PLATFORM_ES_USER_RESERVED_SIZE,
1118
CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE,
1118
default_cfe_es_msgdefs.h
CFE_ES_AppNameCmd_Payload_t, 1121
CFE_ES_AppReloadCmd_Payload_t, 1121
CFE_ES_DeleteCDSCmd_Payload_t, 1121
CFE_ES_DumpCDSRegistryCmd_Payload_t, 1121
CFE_ES_FileNameCmd_Payload_t, 1121
CFE_ES_HousekeepingTlm_Payload_t, 1122
CFE_ES_OneAppTlm_Payload_t, 1122
CFE_ES_OverWriteSysLogCmd_Payload_t, 1122
CFE_ES_PerfMode, 1123
CFE_ES_PerfMode_Elem_t, 1122
CFE_ES_PerfTrigger_CENTER, 1123
CFE_ES_PerfTrigger_END, 1123
CFE_ES_PerfTrigger_START, 1123
CFE_ES_PoolStatsTlm_Payload_t, 1122
CFE_ES_RestartCmd_Payload_t, 1122
CFE_ES_SendMemPoolStatsCmd_Payload_t, 1122
CFE_ES_SetMaxPRCountCmd_Payload_t, 1122
CFE_ES_SetPerfFilterMaskCmd_Payload_t, 1122
CFE_ES_SetPerfTrigMaskCmd_Payload_t, 1122
CFE_ES_StartAppCmd_Payload_t, 1123
CFE_ES_StartPerfCmd_Payload_t, 1123
CFE_ES_StopPerfCmd_Payload_t, 1123
default_cfe_es_msgids.h

CFE_ES_APP_TLM_MID, 1124
 CFE_ES_CMD_MID, 1124
 CFE_ES_HK_TLM_MID, 1124
 CFE_ES_MEMSTATS_TLM_MID, 1124
 CFE_ES_SEND_HK_MID, 1124
default_cfe_es_msgstruct.h
 CFE_ES_ClearERLogCmd_t, 1126
 CFE_ES_ClearSysLogCmd_t, 1126
 CFE_ES_DeleteCDSCmd_t, 1126
 CFE_ES_DumpCDSRegistryCmd_t, 1126
 CFE_ES_FileNameCmd_t, 1127
 CFE_ES_HousekeepingTlm_t, 1127
 CFE_ES_MemStatsTlm_t, 1127
 CFE_ES_NoopCmd_t, 1127
 CFE_ES_OneAppTlm_t, 1127
 CFE_ES_OverWriteSysLogCmd_t, 1127
 CFE_ES_QueryAllCmd_t, 1127
 CFE_ES_QueryAllTasksCmd_t, 1127
 CFE_ES_QueryOneCmd_t, 1127
 CFE_ES_ReloadAppCmd_t, 1127
 CFE_ES_ResetCountersCmd_t, 1127
 CFE_ES_ResetPRCountCmd_t, 1127
 CFE_ES_RestartAppCmd_t, 1127
 CFE_ES_RestartCmd_t, 1128
 CFE_ES_SendHkCmd_t, 1128
 CFE_ES_SendMemPoolStatsCmd_t, 1128
 CFE_ES_SetMaxPRCountCmd_t, 1128
 CFE_ES_SetPerfFilterMaskCmd_t, 1128
 CFE_ES_SetPerfTriggerMaskCmd_t, 1128
 CFE_ES_StartAppCmd_t, 1128
 CFE_ES_StartPerfDataCmd_t, 1128
 CFE_ES_StopAppCmd_t, 1128
 CFE_ES_StopPerfDataCmd_t, 1128
 CFE_ES_WriteERLogCmd_t, 1128
 CFE_ES_WriteSysLogCmd_t, 1128
default_cfe_es_topicids.h
 CFE_MISSION_ES_APP_TLM_TOPICID, 1129
 CFE_MISSION_ES_CMD_TOPICID, 1129
 CFE_MISSION_ES_HK_TLM_TOPICID, 1129
 CFE_MISSION_ES_MEMSTATS_TLM_TOPICID, 1130
 CFE_MISSION_ES_SEND_HK_TOPICID, 1130
default_cfe_evs_extern_typedefs.h
 CFE_EVS_EventFilter, 1156
 CFE_EVS_EventFilter_BINARY, 1156
 CFE_EVS_EventFilter_Enum_t, 1155
 CFE_EVS_EventOutput, 1157
 CFE_EVS_EventOutput_Enum_t, 1156
 CFE_EVS_EventOutput_PORT1, 1157
 CFE_EVS_EventOutput_PORT2, 1157
 CFE_EVS_EventOutput_PORT3, 1157
 CFE_EVS_EventOutput_PORT4, 1157
 CFE_EVS_EventType, 1157
 CFE_EVS_EventType_CRITICAL, 1157

 CFE_EVS_EventType_DEBUG, 1157
 CFE_EVS_EventType_Enum_t, 1156
 CFE_EVS_EventType_ERROR, 1157
 CFE_EVS_EventType_INFORMATION, 1157
 CFE_EVS_LogMode, 1157
 CFE_EVS_LogMode_DISCARD, 1157
 CFE_EVS_LogMode_Enum_t, 1156
 CFE_EVS_LogMode_OVERWRITE, 1157
 CFE_EVS_MsgFormat, 1157
 CFE_EVS_MsgFormat_Enum_t, 1156
 CFE_EVS_MsgFormat_LONG, 1157
 CFE_EVS_MsgFormat_SHORT, 1157
default_cfe_evs_fcncodes.h
 CFE_EVS_ADD_EVENT_FILTER_CC, 1158
 CFE_EVS_CLEAR_LOG_CC, 1159
 CFE_EVS_DELETE_EVENT_FILTER_CC, 1160
 CFE_EVS_DISABLE_APP_EVENT_TYPE_CC, 1160
 CFE_EVS_DISABLE_APP_EVENTS_CC, 1161
 CFE_EVS_DISABLE_EVENT_TYPE_CC, 1162
 CFE_EVS_DISABLE_PORTS_CC, 1163
 CFE_EVS_ENABLE_APP_EVENT_TYPE_CC, 1164
 CFE_EVS_ENABLE_APP_EVENTS_CC, 1165
 CFE_EVS_ENABLE_EVENT_TYPE_CC, 1166
 CFE_EVS_ENABLE_PORTS_CC, 1167
 CFE_EVS_NOOP_CC, 1168
 CFE_EVS_RESET_ALL_FILTERS_CC, 1168
 CFE_EVS_RESET_APP_COUNTER_CC, 1169
 CFE_EVS_RESET_COUNTERS_CC, 1170
 CFE_EVS_RESET_FILTER_CC, 1171
 CFE_EVS_SET_EVENT_FORMAT_MODE_CC, 1171
 CFE_EVS_SET_FILTER_CC, 1172
 CFE_EVS_SET_LOG_MODE_CC, 1173
 CFE_EVS_WRITE_APP_DATA_FILE_CC, 1174
 CFE_EVS_WRITE_LOG_DATA_FILE_CC, 1175
default_cfe_evs_interface_cfg.h
 CFE_MISSION_EVS_MAX_MESSAGE_LENGTH, 1176
default_cfe_evs_internal_cfg.h
 CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC, 1177
 CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE, 1177
 CFE_PLATFORM_EVS_DEFAULT_LOG_FILE, 1178
 CFE_PLATFORM_EVS_DEFAULT_LOG_MODE, 1178
 CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE, 1178
 CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG, 1178
 CFE_PLATFORM_EVS_LOG_MAX, 1179
 CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST, 1179

CFE_PLATFORM_EVS_MAX_EVENT_FILTERS, 1179
CFE_PLATFORM_EVS_PORT_DEFAULT, 1180
CFE_PLATFORM_EVS_START_TASK_PRIORITY, 1180
CFE_PLATFORM_EVS_START_TASK_STACK_SIZE, 1180
default_cfe_evs_msgdefs.h
CFE_EVS_AppDataCmd_Payload_t, 1183
CFE_EVS_AppNameBitMaskCmd_Payload_t, 1183
CFE_EVS_AppNameCmd_Payload_t, 1183
CFE_EVS_AppNameEventIDCmd_Payload_t, 1184
CFE_EVS_AppNameEventIDMaskCmd_Payload_t, 1184
CFE_EVS_AppTlmData_t, 1184
CFE_EVS_BitMaskCmd_Payload_t, 1184
CFE_EVS_CRITICAL_BIT, 1183
CFE_EVS_DEBUG_BIT, 1183
CFE_EVS_ERROR_BIT, 1183
CFE_EVS_HousekeepingTlm_Payload_t, 1184
CFE_EVS_INFORMATION_BIT, 1183
CFE_EVS_LogFileCmd_Payload_t, 1184
CFE_EVS_LongEventTlm_Payload_t, 1184
CFE_EVS_PacketID_t, 1184
CFE_EVS_PORT1_BIT, 1183
CFE_EVS_PORT2_BIT, 1183
CFE_EVS_PORT3_BIT, 1183
CFE_EVS_PORT4_BIT, 1183
CFE_EVS_SetEventFormatMode_Payload_t, 1184
CFE_EVS_SetLogMode_Payload_t, 1184
CFE_EVS_ShortEventTlm_Payload_t, 1184
default_cfe_evs_msgids.h
CFE_EVS_CMD_MID, 1185
CFE_EVS_HK_TLM_MID, 1185
CFE_EVS_LONG_EVENT_MSG_MID, 1185
CFE_EVS_SEND_HK_MID, 1185
CFE_EVS_SHORT_EVENT_MSG_MID, 1185
default_cfe_evs_msgstruct.h
CFE_EVS_AddEventFilterCmd_t, 1187
CFE_EVS_ClearLogCmd_t, 1187
CFE_EVS_DeleteEventFilterCmd_t, 1187
CFE_EVS_DisableAppEventsCmd_t, 1187
CFE_EVS_DisableAppEventTypeCmd_t, 1187
CFE_EVS_DisableEventTypeCmd_t, 1187
CFE_EVS_DisablePortsCmd_t, 1187
CFE_EVS_EnableAppEventsCmd_t, 1187
CFE_EVS_EnableAppEventTypeCmd_t, 1188
CFE_EVS_EnableEventTypeCmd_t, 1188
CFE_EVS_EnablePortsCmd_t, 1188
CFE_EVS_HousekeepingTlm_t, 1188
CFE_EVS_LongEventTlm_t, 1188
CFE_EVS_NoopCmd_t, 1188
CFE_EVS_ResetAllFiltersCmd_t, 1188
CFE_EVS_ResetAppCounterCmd_t, 1188
CFE_EVS_ResetCountersCmd_t, 1188
CFE_EVS_ResetFilterCmd_t, 1188
CFE_EVS_SendHkCmd_t, 1188
CFE_EVS_SetEventFormatModeCmd_t, 1188
CFE_EVS_SetFilterCmd_t, 1188
CFE_EVS_SetLogModeCmd_t, 1188
CFE_EVS_ShortEventTlm_t, 1188
CFE_EVS_WriteAppDataFileCmd_t, 1188
CFE_EVS_WriteLogFileCmd_t, 1189
default_cfe_evs_topicids.h
CFE_MISSION_EVS_CMD_TOPICID, 1189
CFE_MISSION_EVS_HK_TLM_TOPICID, 1189
CFE_MISSION_EVS_LONG_EVENT_MSG_TOPICID, 1190
CFE_MISSION_EVS_SEND_HK_TOPICID, 1190
CFE_MISSION_EVS_SHORT_EVENT_MSG_TOPICID, 1190
default_cfe_fs_filedef.h
CFE_FS_Header_t, 1203
CFE_FS_SubType, 1203
CFE_FS_SubType_Enum_t, 1203
CFE_FS_SubType_ES_CDS_REG, 1204
CFE_FS_SubType_ES_ERLOG, 1203
CFE_FS_SubType_ES_PERFDATA, 1204
CFE_FS_SubType_ES_QUERYALL, 1203
CFE_FS_SubType_ES_QUERYALLTASKS, 1204
CFE_FS_SubType_ES_SYSLOG, 1203
CFE_FS_SubType_EVS_APPDATA, 1204
CFE_FS_SubType_EVS_EVENTLOG, 1204
CFE_FS_SubType_SB_MAPDATA, 1204
CFE_FS_SubType_SB_PIPEADATA, 1204
CFE_FS_SubType_SB_ROUTEDATA, 1204
CFE_FS_SubType_TBL_IMG, 1204
CFE_FS_SubType_TBL_REG, 1204
default_cfe_fs_interface_cfg.h
CFE_FS_FILE_CONTENT_ID, 1204
CFE_FS_HDR_DESC_MAX_LEN, 1205
default_cfe_sb_extern_typedefs.h
CFE_SB_MsgId_Atom_t, 1208
CFE_SB_Pipeld_t, 1208
CFE_SB_QosPriority, 1209
CFE_SB_QosPriority_Enum_t, 1208
CFE_SB_QosPriority_HIGH, 1209
CFE_SB_QosPriority_LOW, 1209
CFE_SB_QosReliability, 1209
CFE_SB_QosReliability_Enum_t, 1209
CFE_SB_QosReliability_HIGH, 1209
CFE_SB_QosReliability_LOW, 1209
CFE_SB_Routeld_Atom_t, 1209
CFE_SB_SUB_ENTRIES_PER_PKT, 1208
default_cfe_sb_foncodes.h
CFE_SB_DISABLE_ROUTE_CC, 1210
CFE_SB_DISABLE_SUB_REPORTING_CC, 1211
CFE_SB_ENABLE_ROUTE_CC, 1211

CFE_SB_ENABLE_SUB_REPORTING_CC, [1212](#)
 CFE_SB_NOOP_CC, [1213](#)
 CFE_SB_RESET_COUNTERS_CC, [1213](#)
 CFE_SB_SEND_PREV_SUBS_CC, [1214](#)
 CFE_SB_SEND_SB_STATS_CC, [1215](#)
 CFE_SB_WRITE_MAP_INFO_CC, [1216](#)
 CFE_SB_WRITE_PIPE_INFO_CC, [1217](#)
 CFE_SB_WRITE_ROUTING_INFO_CC, [1218](#)
 default_cfe_sb_interface_cfg.h
 CFE_MISSION_SB_MAX_PIPES, [1219](#)
 CFE_MISSION_SB_MAX_SB_MSG_SIZE, [1219](#)
 default_cfe_sb_internal_cfg.h
 CFE_PLATFORM_SB_BUF_MEMORY_BYTES,
 [1221](#)
 CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME,
 [1221](#)
 CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT, [1222](#)
 CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME,
 [1222](#)
 CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME,
 [1222](#)
 CFE_PLATFORM_SB_FILTER_MASK1, [1223](#)
 CFE_PLATFORM_SB_FILTER_MASK2, [1223](#)
 CFE_PLATFORM_SB_FILTER_MASK3, [1223](#)
 CFE_PLATFORM_SB_FILTER_MASK4, [1223](#)
 CFE_PLATFORM_SB_FILTER_MASK5, [1223](#)
 CFE_PLATFORM_SB_FILTER_MASK6, [1223](#)
 CFE_PLATFORM_SB_FILTER_MASK7, [1223](#)
 CFE_PLATFORM_SB_FILTER_MASK8, [1223](#)
 CFE_PLATFORM_SB_FILTERED_EVENT1, [1223](#)
 CFE_PLATFORM_SB_FILTERED_EVENT2, [1224](#)
 CFE_PLATFORM_SB_FILTERED_EVENT3, [1224](#)
 CFE_PLATFORM_SB_FILTERED_EVENT4, [1224](#)
 CFE_PLATFORM_SB_FILTERED_EVENT5, [1224](#)
 CFE_PLATFORM_SB_FILTERED_EVENT6, [1224](#)
 CFE_PLATFORM_SB_FILTERED_EVENT7, [1224](#)
 CFE_PLATFORM_SB_FILTERED_EVENT8, [1224](#)
 CFE_PLATFORM_SB_HIGHEST_VALID_MSGID,
 [1224](#)
 CFE_PLATFORM_SB_MAX_BLOCK_SIZE, [1225](#)
 CFE_PLATFORM_SB_MAX_DEST_PER_PKT,
 [1225](#)
 CFE_PLATFORM_SB_MAX_MSG_IDS, [1225](#)
 CFE_PLATFORM_SB_MAX_PIPES, [1225](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01,
 [1226](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_02,
 [1226](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_03,
 [1226](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_04,
 [1226](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_05,
 [1226](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_06,
 [1226](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_07,
 [1226](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_08,
 [1227](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_09,
 [1227](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_10,
 [1227](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_11,
 [1227](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_12,
 [1227](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_13,
 [1227](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_14,
 [1227](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_15,
 [1227](#)
 CFE_PLATFORM_SB_MEM_BLOCK_SIZE_16,
 [1227](#)
 CFE_PLATFORM_SB_START_TASK_PRIORITY,
 [1227](#)
 CFE_PLATFORM_SB_START_TASK_STACK_SIZE,
 [1228](#)
 default_cfe_sb_msgdefs.h
 CFE_SB_AllSubscriptionsTlm_Payload_t, [1230](#)
 CFE_SB_HousekeepingTlm_Payload_t, [1230](#)
 CFE_SB_MsgMapFileEntry_t, [1230](#)
 CFE_SB_PipeDepthStats_t, [1230](#)
 CFE_SB_PipeInfoEntry_t, [1230](#)
 CFE_SB_RouteCmd_Payload_t, [1230](#)
 CFE_SB_RoutingFileEntry_t, [1231](#)
 CFE_SB_SingleSubscriptionTlm_Payload_t, [1231](#)
 CFE_SB_StatsTlm_Payload_t, [1231](#)
 CFE_SB_SubEntries_t, [1231](#)
 CFE_SB_WriteFileInfoCmd_Payload_t, [1231](#)
 default_cfe_sb_msgids.h
 CFE_SB_ALLSUBS_TLM_MID, [1232](#)
 CFE_SB_CMD_MID, [1232](#)
 CFE_SB_HK_TLM_MID, [1232](#)
 CFE_SB_ONESUB_TLM_MID, [1232](#)
 CFE_SB_SEND_HK_MID, [1232](#)
 CFE_SB_STATS_TLM_MID, [1232](#)
 CFE_SB_SUB_RPT_CTRL_MID, [1232](#)
 default_cfe_sb_msgstruct.h
 CFE_SB_AllSubscriptionsTlm_t, [1233](#)
 CFE_SB_DisableRouteCmd_t, [1234](#)
 CFE_SB_DisableSubReportingCmd_t, [1234](#)
 CFE_SB_EnableRouteCmd_t, [1234](#)
 CFE_SB_EnableSubReportingCmd_t, [1234](#)
 CFE_SB_HousekeepingTlm_t, [1234](#)
 CFE_SB_NoopCmd_t, [1234](#)

CFE_SB_ResetCountersCmd_t, 1234
CFE_SB_SendHkCmd_t, 1234
CFE_SB_SendPrevSubsCmd_t, 1234
CFE_SB_SendSbStatsCmd_t, 1234
CFE_SB_SingleSubscriptionTlm_t, 1234
CFE_SB_StatsTlm_t, 1234
CFE_SB_WriteMapInfoCmd_t, 1234
CFE_SB_WritePipeInfoCmd_t, 1234
CFE_SB_WriteRoutingInfoCmd_t, 1234
default_cfe_sb_topicids.h
 CFE_MISSION_SB_ALLSUBS_TLM_TOPICID, 1235
 CFE_MISSION_SB_CMD_TOPICID, 1235
 CFE_MISSION_SB_HK_TLM_TOPICID, 1235
 CFE_MISSION_SB_ONESUB_TLM_TOPICID, 1236
 CFE_MISSION_SB_SEND_HK_TOPICID, 1236
 CFE_MISSION_SB_STATS_TLM_TOPICID, 1236
 CFE_MISSION_SB_SUB_RPT_CTRL_TOPICID, 1236
default_cfe_tbl_extern_typedefs.h
 CFE_TBL_BufferSelect, 1256
 CFE_TBL_BufferSelect_ACTIVE, 1257
 CFE_TBL_BufferSelect_Enum_t, 1256
 CFE_TBL_BufferSelect_INACTIVE, 1257
 CFE_TBL_File_Hdr_t, 1256
default_cfe_tbl_fcncodes.h
 CFE_TBL_ABORT_LOAD_CC, 1257
 CFE_TBL_ACTIVATE_CC, 1258
 CFE_TBL_DELETE_CDS_CC, 1259
 CFE_TBL_DUMP_CC, 1260
 CFE_TBL_DUMP_REGISTRY_CC, 1260
 CFE_TBL_LOAD_CC, 1261
 CFE_TBL_NOOP_CC, 1262
 CFE_TBL_RESET_COUNTERS_CC, 1263
 CFE_TBL_SEND_REGISTRY_CC, 1264
 CFE_TBL_VALIDATE_CC, 1265
default_cfe_tbl_interface_cfg.h
 CFE_MISSION_TBL_MAX_FULL_NAME_LEN, 1266
 CFE_MISSION_TBL_MAX_NAME_LENGTH, 1267
default_cfe_tbl_internal_cfg.h
 CFE_PLATFORM_TBL_BUF_MEMORY_BYTES, 1268
 CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE, 1268
 CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES, 1268
 CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE, 1269
 CFE_PLATFORM_TBL_MAX_NUM_HANDLES, 1269
 CFE_PLATFORM_TBL_MAX_NUM_TABLES, 1269
 CFE_PLATFORM_TBL_MAX_NUM_VALIDATIONS, 1269
CFE_PLATFORM_TBL_MAX_SIMULTANEOUS LOADS, 1270
CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE, 1270
CFE_PLATFORM_TBL_START_TASK_PRIORITY, 1270
CFE_PLATFORM_TBL_START_TASK_STACK_SIZE, 1271
CFE_PLATFORM_TBL_U32FROM4CHARS, 1271
CFE_PLATFORM_TBL_VALID_PRID_1, 1271
CFE_PLATFORM_TBL_VALID_PRID_2, 1271
CFE_PLATFORM_TBL_VALID_PRID_3, 1272
CFE_PLATFORM_TBL_VALID_PRID_4, 1272
CFE_PLATFORM_TBL_VALID_PRID_COUNT, 1272
CFE_PLATFORM_TBL_VALID_SCID_1, 1272
CFE_PLATFORM_TBL_VALID_SCID_2, 1272
CFE_PLATFORM_TBL_VALID_SCID_COUNT, 1272
default_cfe_tbl_msgdefs.h
 CFE_TBL_AbortLoadCmd_Payload_t, 1275
 CFE_TBL_ActivateCmd_Payload_t, 1275
 CFE_TBL_DeleteCDSCmd_Payload_t, 1275
 CFE_TBL_DumpCmd_Payload_t, 1275
 CFE_TBL_DumpRegistryCmd_Payload_t, 1275
 CFE_TBL_HousekeepingTlm_Payload_t, 1275
 CFE_TBL_LoadCmd_Payload_t, 1275
 CFE_TBL_NotifyCmd_Payload_t, 1275
 CFE_TBL_SendRegistryCmd_Payload_t, 1276
 CFE_TBL_TblRegPacket_Payload_t, 1276
 CFE_TBL_ValidateCmd_Payload_t, 1276
default_cfe_tbl_msgids.h
 CFE_TBL_CMD_MID, 1276
 CFE_TBL_HK_TLM_MID, 1276
 CFE_TBL_REG_TLM_MID, 1277
 CFE_TBL_SEND_HK_MID, 1277
default_cfe_tbl_msgstruct.h
 CFE_TBL_AbortLoadCmd_t, 1278
 CFE_TBL_ActivateCmd_t, 1278
 CFE_TBL_DeleteCDSCmd_t, 1278
 CFE_TBL_DumpCmd_t, 1278
 CFE_TBL_DumpRegistryCmd_t, 1278
 CFE_TBL_HousekeepingTlm_t, 1278
 CFE_TBL_LoadCmd_t, 1278
 CFE_TBL_NoopCmd_t, 1279
 CFE_TBL_NotifyCmd_t, 1279
 CFE_TBL_ResetCountersCmd_t, 1279
 CFE_TBL_SendHkCmd_t, 1279
 CFE_TBL_SendRegistryCmd_t, 1279
 CFE_TBL_TableRegistryTlm_t, 1279
 CFE_TBL_ValidateCmd_t, 1279
default_cfe_tbl_topicids.h
 CFE_MISSION_TBL_CMD_TOPICID, 1280
 CFE_MISSION_TBL_HK_TLM_TOPICID, 1280
 CFE_MISSION_TBL_REG_TLM_TOPICID, 1280
 CFE_MISSION_TBL_SEND_HK_TOPICID, 1280

default_cfe_time_extern_typedefs.h
 CFE_TIME_AdjustDirection, 1303
 CFE_TIME_AdjustDirection_ADD, 1303
 CFE_TIME_AdjustDirection_Enum_t, 1302
 CFE_TIME_AdjustDirection_SUBTRACT, 1303
 CFE_TIME_ClockState, 1303
 CFE_TIME_ClockState_Enum_t, 1302
 CFE_TIME_ClockState_FLYWHEEL, 1304
 CFE_TIME_ClockState_INVALID, 1304
 CFE_TIME_ClockState_VALID, 1304
 CFE_TIME_FlagBit, 1304
 CFE_TIME_FlagBit_ADD1HZ, 1304
 CFE_TIME_FlagBit_ADDADJ, 1304
 CFE_TIME_FlagBit_ADDTCL, 1304
 CFE_TIME_FlagBit_CLKSET, 1304
 CFE_TIME_FlagBit_CMDFLY, 1304
 CFE_TIME_FlagBit_Enum_t, 1302
 CFE_TIME_FlagBit_FLYING, 1304
 CFE_TIME_FlagBit_GDTONE, 1304
 CFE_TIME_FlagBit_SERVER, 1304
 CFE_TIME_FlagBit_SIGPRI, 1304
 CFE_TIME_FlagBit_SRCINT, 1304
 CFE_TIME_FlagBit_SRVFLY, 1304
 CFE_TIME_FlywheelState, 1304
 CFE_TIME_FlywheelState_Enum_t, 1302
 CFE_TIME_FlywheelState_IS_FLY, 1304
 CFE_TIME_FlywheelState_NO_FLY, 1304
 CFE_TIME_SetState, 1304
 CFE_TIME_SetState_Enum_t, 1302
 CFE_TIME_SetState_NOT_SET, 1305
 CFE_TIME_SetState_WAS_SET, 1305
 CFE_TIME_SourceSelect, 1305
 CFE_TIME_SourceSelect_Enum_t, 1303
 CFE_TIME_SourceSelect_EXTERNAL, 1305
 CFE_TIME_SourceSelect_INTERNAL, 1305
 CFE_TIME_SysTime_t, 1303
 CFE_TIME_ToneSignalSelect, 1305
 CFE_TIME_ToneSignalSelect_Enum_t, 1303
 CFE_TIME_ToneSignalSelect_PRIMARY, 1305
 CFE_TIME_ToneSignalSelect_REDUNDANT, 1305

default_cfe_time_fcncodes.h
 CFE_TIME_ADD_ADJUST_CC, 1306
 CFE_TIME_ADD_DELAY_CC, 1306
 CFE_TIME_ADD_ONE_HZ_ADJUSTMENT_CC, 1307
 CFE_TIME_NOOP_CC, 1308
 CFE_TIME_RESET_COUNTERS_CC, 1309
 CFE_TIME_SEND_DIAGNOSTIC_CC, 1310
 CFE_TIME_SET_LEAP_SECONDS_CC, 1311
 CFE_TIME_SET_MET_CC, 1312
 CFE_TIME_SET_SIGNAL_CC, 1313
 CFE_TIME_SET_SOURCE_CC, 1313
 CFE_TIME_SET_STATE_CC, 1314
 CFE_TIME_SET_STCF_CC, 1316

CFE_TIME_SET_TIME_CC, 1316
 CFE_TIME_SUB_ADJUST_CC, 1317
 CFE_TIME_SUB_DELAY_CC, 1318
 CFE_TIME_SUB_ONE_HZ_ADJUSTMENT_CC, 1319

default_cfe_time_interface_cfg.h
 CFE_MISSION_TIME_AT_TONE_WAS, 1321
 CFE_MISSION_TIME_AT_TONE_WILL_BE, 1322
 CFE_MISSION_TIME_CFG_DEFAULT_TAI, 1322
 CFE_MISSION_TIME_CFG_DEFAULT_UTC, 1322
 CFE_MISSION_TIME_CFG_FAKE_TONE, 1322
 CFE_MISSION_TIME_DEF_DELAY_SECS, 1322
 CFE_MISSION_TIME_DEF_DELAY_SUBS, 1322
 CFE_MISSION_TIME_DEF_LEAPS, 1323
 CFE_MISSION_TIME_DEF_MET_SECS, 1323
 CFE_MISSION_TIME_DEF_MET_SUBS, 1323
 CFE_MISSION_TIME_DEF_STCF_SECS, 1323
 CFE_MISSION_TIME_DEF_STCF_SUBS, 1323
 CFE_MISSION_TIME_EPOCH_DAY, 1323
 CFE_MISSION_TIME_EPOCH_HOUR, 1323
 CFE_MISSION_TIME_EPOCH_MICROS, 1323
 CFE_MISSION_TIME_EPOCH_MINUTE, 1324
 CFE_MISSION_TIME_EPOCH_SECOND, 1324
 CFE_MISSION_TIME_EPOCH_YEAR, 1324
 CFE_MISSION_TIME_FS_FACTOR, 1324
 CFE_MISSION_TIME_MAX_ELAPSED, 1324
 CFE_MISSION_TIME_MIN_ELAPSED, 1324

default_cfe_time_internal_cfg.h
 CFE_PLATFORM_TIME_CFG_CLIENT, 1326
 CFE_PLATFORM_TIME_CFG_LATCH_FLY, 1326
 CFE_PLATFORM_TIME_CFG_SERVER, 1326
 CFE_PLATFORM_TIME_CFG_SIGNAL, 1326
 CFE_PLATFORM_TIME_CFG_SOURCE, 1326
 CFE_PLATFORM_TIME_CFG_SRC_GPS, 1327
 CFE_PLATFORM_TIME_CFG_SRC_MET, 1327
 CFE_PLATFORM_TIME_CFG_SRC_TIME, 1327
 CFE_PLATFORM_TIME_CFG_START_FLY, 1327
 CFE_PLATFORM_TIME_CFG_TONE_LIMIT, 1328
 CFE_PLATFORM_TIME_CFG_VIRTUAL, 1328
 CFE_PLATFORM_TIME_MAX_DELTA_SECS, 1328
 CFE_PLATFORM_TIME_MAX_DELTA_SUBS, 1329
 CFE_PLATFORM_TIME_MAX_LOCAL_SECS, 1329
 CFE_PLATFORM_TIME_MAX_LOCAL_SUBS, 1329
 CFE_PLATFORM_TIME_ONEHZ_TASK_PRIORITY, 1329
 CFE_PLATFORM_TIME_ONEHZ_TASK_STACK_SIZE, 1329
 CFE_PLATFORM_TIME_START_TASK_PRIORITY, 1329
 CFE_PLATFORM_TIME_START_TASK_STACK_SIZE, 1330
 CFE_PLATFORM_TIME_TONE_TASK_PRIORITY, 1330

CFE_PLATFORM_TIME_TONE_TASK_STACK_SIZE,
1330

default_cfe_time_msgdefs.h

- CFE_TIME_DiagnosticTlm_Payload_t, 1333
- CFE_TIME_HousekeepingTlm_Payload_t, 1333
- CFE_TIME_LeapsCmd_Payload_t, 1333
- CFE_TIME_OneHzAdjustmentCmd_Payload_t, 1333
- CFE_TIME_SignalCmd_Payload_t, 1333
- CFE_TIME_SourceCmd_Payload_t, 1333
- CFE_TIME_StateCmd_Payload_t, 1333
- CFE_TIME_TimeCmd_Payload_t, 1333
- CFE_TIME_ToneDataCmd_Payload_t, 1333

default_cfe_time_msgids.h

- CFE_TIME_1HZ_CMD_MID, 1334
- CFE_TIME_CMD_MID, 1334
- CFE_TIME_DATA_CMD_MID, 1334
- CFE_TIME_DIAG_TLM_MID, 1334
- CFE_TIME_HK_TLM_MID, 1334
- CFE_TIME_ONEHZ_CMD_MID, 1334
- CFE_TIME_SEND_CMD_MID, 1335
- CFE_TIME_SEND_HK_MID, 1335
- CFE_TIME_TONE_CMD_MID, 1335

default_cfe_time_msgstruct.h

- CFE_TIME_AddAdjustCmd_t, 1336
- CFE_TIME_AddDelayCmd_t, 1336
- CFE_TIME_AddOneHzAdjustmentCmd_t, 1336
- CFE_TIME_DiagnosticTlm_t, 1337
- CFE_TIME_FakeToneCmd_t, 1337
- CFE_TIME_HousekeepingTlm_t, 1337
- CFE_TIME_NoopCmd_t, 1337
- CFE_TIME_OneHzCmd_t, 1337
- CFE_TIME_ResetCountersCmd_t, 1337
- CFE_TIME_SendDiagnosticCmd_t, 1337
- CFE_TIME_SendHkCmd_t, 1337
- CFE_TIME_SetLeapSecondsCmd_t, 1337
- CFE_TIME_SetMETCCmd_t, 1337
- CFE_TIME_SetSignalCmd_t, 1337
- CFE_TIME_SetSourceCmd_t, 1337
- CFE_TIME_SetStateCmd_t, 1337
- CFE_TIME_SetSTCFCmd_t, 1337
- CFE_TIME_SetTimeCmd_t, 1337
- CFE_TIME_SubAdjustCmd_t, 1338
- CFE_TIME_SubDelayCmd_t, 1338
- CFE_TIME_SubOneHzAdjustmentCmd_t, 1338
- CFE_TIME_ToneDataCmd_t, 1338
- CFE_TIME_ToneSignalCmd_t, 1338

default_cfe_time_topicids.h

- CFE_MISSION_TIME_CMD_TOPICID, 1339
- CFE_MISSION_TIME_DATA_CMD_TOPICID, 1339
- CFE_MISSION_TIME_DIAG_TLM_TOPICID, 1339
- CFE_MISSION_TIME_HK_TLM_TOPICID, 1339
- CFE_MISSION_TIME_ONEHZ_CMD_TOPICID,
1339
- CFE_MISSION_TIME_SEND_CMD_TOPICID, 1339

CFE_MISSION_TIME_SEND_HK_TOPICID, 1340

CFE_MISSION_TIME_TONE_CMD_TOPICID, 1340

DelayDirection

- CFE_TIME_DiagnosticTlm_Payload, 656

Description

- CFE_FS_FileWriteMetaData, 597
- CFE_FS_Header, 598
- CFE_TBL_FileDef, 632

Directory

- FM_DirectoryName_Payload_t, 686
- FM_GetDirectoryToFile_Payload_t, 693
- FM_GetDirectoryToPkt_Payload_t, 694

DirEntries

- FM_DirListFileStats_t, 687

DirListFileStats

- FM_GlobalData_t, 701

DirListOffset

- FM_ChildQueueEntry_t, 679
- FM_GetDirectoryToPkt_Payload_t, 694

DirListPkt

- FM_GlobalData_t, 701

DirName

- FM_DirListFileStats_t, 687
- FM_DirListPkt_Payload_t, 688

DoubleBuffered

- CFE_TBL_Info, 639
- CFE_TBL_TblRegPacket_Payload, 646

DumpFilename

- CFE_ES_DumpCDSRegistryCmd_Payload, 535
- CFE_TBL_DumpCmd_Payload, 629
- CFE_TBL_DumpRegistryCmd_Payload, 631

DumpOnly

- CFE_TBL_Info, 639
- CFE_TBL_TblRegPacket_Payload, 646

DuplicateSubscriptionsCounter

- CFE_SB_HousekeepingTlm_Payload, 605

ElementPtr

- CFE_Config_ArrayValue, 524

Enabled

- FM_MonitorTableEntry_t, 709

Entries

- CFE_SB_AllSubscriptionsTlm_Payload, 600
- FM_MonitorTable_t, 708

Entry

- CFE_SB_AllSubscriptionsTlm_Payload, 600

entry_point

- OS_module_prop_t, 726

EntryName

- FM_DirListEntry_t, 686

EntryPoint

- CFE_ES_AppInfo, 527

EntrySize

- FM_DirListEntry_t, 686

ERLogEntries
 CFE_ES_HousekeepingTlm_Payload, 540

ERLogIndex
 CFE_ES_HousekeepingTlm_Payload, 541

EventID
 CFE_EVS_AppNameEventIDCmd_Payload, 572
 CFE_EVS_AppNameEventIDMaskCmd_Payload,
 573
 CFE_EVS_BinFilter, 574
 CFE_EVS_PacketID, 588

EventType
 CFE_EVS_PacketID, 588

example_mission_cfg.h
 CFE_FS_FILE_CONTENT_ID, 942
 CFE_FS_HDR_DESC_MAX_LEN, 942
 CFE_MISSION_ES_CDS_MAX_FULL_NAME_LEN,
 942
 CFE_MISSION_ES_CDS_MAX_NAME_LENGTH,
 943
 CFE_MISSION_ES_CRC_16, 943
 CFE_MISSION_ES_CRC_32, 943
 CFE_MISSION_ES_CRC_8, 943
 CFE_MISSION_ES_DEFAULT_CRC, 943
 CFE_MISSION_ES_MAX_APPLICATIONS, 944
 CFE_MISSION_ES_PERF_MAX_IDS, 944
 CFE_MISSION_ES_POOL_MAX_BUCKETS, 944
 CFE_MISSION_EVS_MAX_MESSAGE_LENGTH,
 944
 CFE_MISSION_MAX_API_LEN, 945
 CFE_MISSION_MAX_FILE_LEN, 945
 CFE_MISSION_MAX_NUM_FILES, 946
 CFE_MISSION_MAX_PATH_LEN, 946
 CFE_MISSION_SB_MAX_PIPES, 946
 CFE_MISSION_SB_MAX_SB_MSG_SIZE, 947
 CFE_MISSION_TBL_MAX_FULL_NAME_LEN, 947
 CFE_MISSION_TBL_MAX_NAME_LENGTH, 947
 CFE_MISSION_TIME_AT_TONE_WAS, 948
 CFE_MISSION_TIME_AT_TONE_WILL_BE, 948
 CFE_MISSION_TIME_CFG_DEFAULT_TAI, 948
 CFE_MISSION_TIME_CFG_DEFAULT_UTC, 949
 CFE_MISSION_TIME_CFG_FAKE_TONE, 949
 CFE_MISSION_TIME_DEF_DELAY_SECS, 949
 CFE_MISSION_TIME_DEF_DELAY_SUBS, 949
 CFE_MISSION_TIME_DEF_LEAPS, 949
 CFE_MISSION_TIME_DEF_MET_SECS, 949
 CFE_MISSION_TIME_DEF_MET_SUBS, 950
 CFE_MISSION_TIME_DEF_STCF_SECS, 950
 CFE_MISSION_TIME_DEF_STCF_SUBS, 950
 CFE_MISSION_TIME_EPOCH_DAY, 950
 CFE_MISSION_TIME_EPOCH_HOUR, 950
 CFE_MISSION_TIME_EPOCH_MICROS, 950
 CFE_MISSION_TIME_EPOCH_MINUTE, 950
 CFE_MISSION_TIME_EPOCH_SECOND, 950
 CFE_MISSION_TIME_EPOCH_YEAR, 950

CFE_MISSION_TIME_FS_FACTOR, 951
 CFE_MISSION_TIME_MAX_ELAPSED, 951
 CFE_MISSION_TIME_MIN_ELAPSED, 951

example_platform_cfg.h
 CFE_PLATFORM_CORE_MAX_STARTUP_MSEC,
 956
 CFE_PLATFORM_ENDIAN, 956
 CFE_PLATFORM_ES_APP_KILL_TIMEOUT, 956
 CFE_PLATFORM_ES_APP_SCAN_RATE, 957
 CFE_PLATFORM_ES_CDS_MAX_BLOCK_SIZE,
 957
 CFE_PLATFORM_ES_CDS_MAX_NUM_ENTRIES,
 957
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_01,
 958
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_02,
 958
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_03,
 958
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_04,
 958
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_05,
 958
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_06,
 958
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_07,
 959
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_08,
 959
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_09,
 959
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_10,
 959
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_11,
 959
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_12,
 959
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_13,
 959
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_14,
 959
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_15,
 959
 CFE_PLATFORM_ES_CDS_MEM_BLOCK_SIZE_16,
 959
 CFE_PLATFORM_ES_CDS_SIZE, 960
 CFE_PLATFORM_ES_DEFAULT_APP_LOG_FILE,
 960
 CFE_PLATFORM_ES_DEFAULT_CDS_REG_DUMP_FILE,
 960
 CFE_PLATFORM_ES_DEFAULT_ER_LOG_FILE,
 960
 CFE_PLATFORM_ES_DEFAULT_PERF_DUMP_FILENAME,
 961

CFE_PLATFORM_ES_DEFAULT_POR_SYSLOG_MODE, 961
CFE_PLATFORM_ES_DEFAULT_PR_SYSLOG_MODE, 961
CFE_PLATFORM_ES_DEFAULT_STACK_SIZE, 962
CFE_PLATFORM_ES_DEFAULT_SYSLOG_FILE, 962
CFE_PLATFORM_ES_DEFAULT_TASK_LOG_FILE, 962
CFE_PLATFORM_ES_ER_LOG_ENTRIES, 963
CFE_PLATFORM_ES_ER_LOG_MAX_CONTEXT_SIZE, 963
CFE_PLATFORM_ES_MAX_APPLICATIONS, 963
CFE_PLATFORM_ES_MAX_BLOCK_SIZE, 964
CFE_PLATFORM_ES_MAX_GEN_COUNTERS, 964
CFE_PLATFORM_ES_MAX_LIBRARIES, 964
CFE_PLATFORM_ES_MAX_MEMORY_POOLS, 964
CFE_PLATFORM_ES_MAX_PROCESSOR_RESETS, 965
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_01, 965
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_02, 965
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_03, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_04, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_05, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_06, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_07, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_08, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_09, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_10, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_11, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_12, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_13, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_14, 966
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_15, 967
CFE_PLATFORM_ES_MEM_BLOCK_SIZE_16, 967
CFE_PLATFORM_ES_MEMPOOL_ALIGN_SIZE_MIN, 967
CFE_PLATFORM_ES_NONVOL_DISK_MOUNT_STRING, 967
CFE_PLATFORM_ES_NONVOL_STARTUP_FILE, 967
CFE_PLATFORM_ES_OBJECT_TABLE_SIZE, 968
CFE_PLATFORM_ES_PERF_CHILD_MS_DELAY, 968
CFE_PLATFORM_ES_PERF_CHILD_PRIORITY, 968
CFE_PLATFORM_ES_PERF_CHILD_STACK_SIZE, 968
CFE_PLATFORM_ES_PERF_DATA_BUFFER_SIZE, 969
CFE_PLATFORM_ES_PERF_ENTRIES_BTWN_DLYS, 969
CFE_PLATFORM_ES_PERF_FILTMASK_ALL, 969
CFE_PLATFORM_ES_PERF_FILTMASK_INIT, 969
CFE_PLATFORM_ES_PERF_FILTMASK_NONE, 970
CFE_PLATFORM_ES_PERF_TRIGMASK_ALL, 970
CFE_PLATFORM_ES_PERF_TRIGMASK_INIT, 970
CFE_PLATFORM_ES_PERF_TRIGMASK_NONE, 970
CFE_PLATFORM_ES_POOL_MAX_BUCKETS, 970
CFE_PLATFORM_ES_RAM_DISK_MOUNT_STRING, 971
CFE_PLATFORM_ES_RAM_DISK_NUM_SECTORS, 971
CFE_PLATFORM_ES_RAM_DISK_PERCENT_RESERVED, 971
CFE_PLATFORM_ES_RAM_DISK_SECTOR_SIZE, 972
CFE_PLATFORM_ES_START_TASK_PRIORITY, 972
CFE_PLATFORM_ES_START_TASK_STACK_SIZE, 972
CFE_PLATFORM_ES_STARTUP_SCRIPT_TIMEOUT_MSEC, 973
CFE_PLATFORM_ES_STARTUP_SYNC_POLL_MSEC, 973
CFE_PLATFORM_ES_SYSTEM_LOG_SIZE, 973
CFE_PLATFORM_ES_USER_RESERVED_SIZE, 974
CFE_PLATFORM_ES_VOLATILE_STARTUP_FILE, 974
CFE_PLATFORM_EVS_APP_EVENTS_PER_SEC, 974
CFE_PLATFORM_EVS_DEFAULT_APP_DATA_FILE, 975
CFE_PLATFORM_EVS_DEFAULT_LOG_FILE, 975
CFE_PLATFORM_EVS_DEFAULT_LOG_MODE, 975
CFE_PLATFORM_EVS_DEFAULT_MSG_FORMAT_MODE, 976
CFE_PLATFORM_EVS_DEFAULT_TYPE_FLAG, 976
CFE_PLATFORM_EVS_LOG_MAX, 976
CFE_PLATFORM_EVS_MAX_APP_EVENT_BURST, 977
CFE_PLATFORM_EVS_MAX_EVENT_FILTERS, 977
CFE_PLATFORM_EVS_PORT_DEFAULT, 977
CFE_PLATFORM_EVS_START_TASK_PRIORITY, 977
CFE_PLATFORM_EVS_START_TASK_STACK_SIZE, 978
CFE_PLATFORM_SB_BUF_MEMORY_BYTES, 978
CFE_PLATFORM_SB_DEFAULT_MAP_FILENAME, 978

CFE_PLATFORM_SB_DEFAULT_MSG_LIMIT, [979](#)
CFE_PLATFORM_SB_DEFAULT_PIPE_FILENAME,
 [979](#)
CFE_PLATFORM_SB_DEFAULT_ROUTING_FILENAME,
 [979](#)
CFE_PLATFORM_SB_FILTER_MASK1, [980](#)
CFE_PLATFORM_SB_FILTER_MASK2, [980](#)
CFE_PLATFORM_SB_FILTER_MASK3, [980](#)
CFE_PLATFORM_SB_FILTER_MASK4, [980](#)
CFE_PLATFORM_SB_FILTER_MASK5, [980](#)
CFE_PLATFORM_SB_FILTER_MASK6, [980](#)
CFE_PLATFORM_SB_FILTER_MASK7, [980](#)
CFE_PLATFORM_SB_FILTER_MASK8, [980](#)
CFE_PLATFORM_SB_FILTERED_EVENT1, [980](#)
CFE_PLATFORM_SB_FILTERED_EVENT2, [981](#)
CFE_PLATFORM_SB_FILTERED_EVENT3, [981](#)
CFE_PLATFORM_SB_FILTERED_EVENT4, [981](#)
CFE_PLATFORM_SB_FILTERED_EVENT5, [981](#)
CFE_PLATFORM_SB_FILTERED_EVENT6, [981](#)
CFE_PLATFORM_SB_FILTERED_EVENT7, [981](#)
CFE_PLATFORM_SB_FILTERED_EVENT8, [981](#)
CFE_PLATFORM_SB_HIGHEST_VALID_MSGID,
 [981](#)
CFE_PLATFORM_SB_MAX_BLOCK_SIZE, [982](#)
CFE_PLATFORM_SB_MAX_DEST_PER_PKT, [982](#)
CFE_PLATFORM_SB_MAX_MSG_IDS, [982](#)
CFE_PLATFORM_SB_MAX_PIPES, [982](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_01, [983](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_02, [983](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_03, [983](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_04, [983](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_05, [983](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_06, [983](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_07, [983](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_08, [984](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_09, [984](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_10, [984](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_11, [984](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_12, [984](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_13, [984](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_14, [984](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_15, [984](#)
CFE_PLATFORM_SB_MEM_BLOCK_SIZE_16, [984](#)
CFE_PLATFORM_SB_START_TASK_PRIORITY,
 [984](#)
CFE_PLATFORM_SB_START_TASK_STACK_SIZE,
 [985](#)
CFE_PLATFORM_TBL_BUF_MEMORY_BYTES,
 [985](#)
CFE_PLATFORM_TBL_DEFAULT_REG_DUMP_FILE,
 [985](#)
CFE_PLATFORM_TBL_MAX_CRITICAL_TABLES,
 [986](#)

CFE_PLATFORM_TBL_MAX_DBL_TABLE_SIZE,
 [986](#)
CFE_PLATFORM_TBL_MAX_NUM_HANDLES, [986](#)
CFE_PLATFORM_TBL_MAX_NUM_TABLES, [987](#)
CFE_PLATFORM_TBL_MAX_NUM_VALIFICATIONS,
 [987](#)
CFE_PLATFORM_TBL_MAX_SIMULTANEOUS_LOADS,
 [987](#)
CFE_PLATFORM_TBL_MAX_SNGL_TABLE_SIZE,
 [988](#)
CFE_PLATFORM_TBL_START_TASK_PRIORITY,
 [988](#)
CFE_PLATFORM_TBL_START_TASK_STACK_SIZE,
 [988](#)
CFE_PLATFORM_TBL_U32FROM4CHARS, [989](#)
CFE_PLATFORM_TBL_VALID_PRID_1, [989](#)
CFE_PLATFORM_TBL_VALID_PRID_2, [989](#)
CFE_PLATFORM_TBL_VALID_PRID_3, [989](#)
CFE_PLATFORM_TBL_VALID_PRID_4, [989](#)
CFE_PLATFORM_TBL_VALID_PRID_COUNT, [989](#)
CFE_PLATFORM_TBL_VALID_SCID_1, [990](#)
CFE_PLATFORM_TBL_VALID_SCID_2, [990](#)
CFE_PLATFORM_TBL_VALID_SCID_COUNT, [990](#)
CFE_PLATFORM_TIME_CFG_CLIENT, [990](#)
CFE_PLATFORM_TIME_CFG_LATCH_FLY, [991](#)
CFE_PLATFORM_TIME_CFG_SERVER, [991](#)
CFE_PLATFORM_TIME_CFG_SIGNAL, [991](#)
CFE_PLATFORM_TIME_CFG_SOURCE, [991](#)
CFE_PLATFORM_TIME_CFG_SRC_GPS, [992](#)
CFE_PLATFORM_TIME_CFG_SRC_MET, [992](#)
CFE_PLATFORM_TIME_CFG_SRC_TIME, [992](#)
CFE_PLATFORM_TIME_CFG_START_FLY, [992](#)
CFE_PLATFORM_TIME_CFG_TONE_LIMIT, [993](#)
CFE_PLATFORM_TIME_CFG_VIRTUAL, [993](#)
CFE_PLATFORM_TIME_MAX_DELTA_SECS, [993](#)
CFE_PLATFORM_TIME_MAX_DELTA_SUBS, [994](#)
CFE_PLATFORM_TIME_MAX_LOCAL_SECS, [994](#)
CFE_PLATFORM_TIME_MAX_LOCAL_SUBS, [994](#)
CFE_PLATFORM_TIME_ONEHZ_TASK_PRIORITY,
 [994](#)
CFE_PLATFORM_TIME_ONEHZ_TASK_STACK_SIZE,
 [994](#)
CFE_PLATFORM_TIME_START_TASK_PRIORITY,
 [994](#)
CFE_PLATFORM_TIME_START_TASK_STACK_SIZE,
 [995](#)
CFE_PLATFORM_TIME_TONE_TASK_PRIORITY,
 [995](#)
CFE_PLATFORM_TIME_TONE_TASK_STACK_SIZE,
 [995](#)

ExceptionAction
 CFE_ES_AppInfo, [528](#)
 CFE_ES_StartAppCmd_Payload, [563](#)

ExecutionCounter

CFE_ES_AppInfo, 528
CFE_ES_TaskInfo, 567

FailedValCounter
 CFE_TBL_HousekeepingTlm_Payload, 635

FileEntries
 FM_DirListFileStats_t, 687

FileInfoCRC
 FM_ChildQueueEntry_t, 679
 FM_FilenameAndCRC_Payload_t, 692

FileInfoPkt
 FM_GlobalData_t, 702

FileInfoSize
 FM_ChildQueueEntry_t, 679

FileInfoState
 FM_ChildQueueEntry_t, 679

FileInfoTime
 FM_ChildQueueEntry_t, 679

FilesOpen
 fm_cmd_utils.c, 832

FileList
 FM_DirListPkt_Payload_t, 688

FileModeBits
 os_fstat_t, 724

FileName
 CFE_ES_AppInfo, 528
 CFE_ES_FileNameCmd_Payload, 536
 CFE_FS_FileWriteMetaData, 597
 FM_FilenameAndMode_Payload_t, 693
 os_dirent_t, 721

Filename
 CFE_SB_WriteFileInfoCmd_Payload, 623
 FM_FileInfoPkt_Payload_t, 690
 FM_FilenameAndCRC_Payload_t, 692
 FM_GetDirectoryToFile_Payload_t, 693
 FM_SingleFilename_Payload_t, 716

filename
 OS_module_prop_t, 726

FileSize
 FM_FileInfoPkt_Payload_t, 690
 os_fstat_t, 724

FileStatMode
 FM_GlobalData_t, 702

FileStatSize
 FM_GlobalData_t, 702

FileStatTime
 FM_GlobalData_t, 702

FileStatus
 FM_FileInfoPkt_Payload_t, 690

FileSubType
 CFE_FS_FileWriteMetaData, 597

FileSys
 FM_MonitorReportPkt_Payload_t, 707

FileTime

CFE_TBL_Info, 639
CFE_TBL_TblRegPacket_Payload, 647
os_fstat_t, 724

FilterMask
 CFE_ES_SetPerfFilterMaskCmd_Payload, 560

FilterMaskNum
 CFE_ES_SetPerfFilterMaskCmd_Payload, 560

FirstFile
 FM_DirListPkt_Payload_t, 688

flags
 OS_module_address_t, 725

FM_AcquireTablePointers
 fm_tbl.c, 926
 fm_tbl.h, 930

fm_app.c
 FM_AppInit, 751
 FM_AppMain, 753
 FM_GlobalData, 755
 FM_SendHkCmd, 754

fm_app.h
 FM_AppInit, 757
 FM_AppMain, 758
 FM_GlobalData, 761
 FM_SB_TIMEOUT, 756
 FM_SendHkCmd, 759

FM_APP_NAME
 CFS File Manager Platform Configuration, 230

FM_APP_PIPE_DEPTH
 CFS File Manager Platform Configuration, 230

FM_APP_PIPE_NAME
 CFS File Manager Platform Configuration, 231

FM_AppPathSep
 fm_cmd_utils.c, 815
 fm_cmd_utils.h, 834

FM_AppInit
 fm_app.c, 751
 fm_app.h, 757

FM_AppMain
 fm_app.c, 753
 fm_app.h, 758

FM_APPMAIN_PERF_ID
 CFS File Manager Mission Configuration, 229

FM_CC_ERR_EID
 CFS File Manager Event IDs, 136

fm_child.c
 FM_ChildConcatFilesCmd, 763
 FM_ChildCopyCmd, 764
 FM_ChildCreateDirectoryCmd, 765
 FM_ChildDecompressFileCmd, 766
 FM_ChildDeleteAllFilesCmd, 767
 FM_ChildDeleteCmd, 768
 FM_ChildDeleteDirectoryCmd, 769
 FM_ChildDirListFileCmd, 770
 FM_ChildDirListFileInit, 771

FM_ChildDirListFileLoop, [772](#)
FM_ChildDirListPktCmd, [773](#)
FM_ChildFileInfoCmd, [775](#)
FM_ChildInit, [776](#)
FM_ChildLoop, [778](#)
FM_ChildMoveCmd, [779](#)
FM_ChildProcess, [780](#)
FM_ChildRenameCmd, [782](#)
FM_ChildSetPermissionsCmd, [783](#)
FM_ChildSizeMode, [784](#)
FM_ChildSleepStat, [785](#)
FM_ChildTask, [786](#)
FM_QUEUE_SEM_NAME, [762](#)
OS_DIRENTRY_NAME, [762](#)

fm_child.h
FM_ChildConcatFilesCmd, [789](#)
FM_ChildCopyCmd, [790](#)
FM_ChildCreateDirectoryCmd, [791](#)
FM_ChildDecompressFileCmd, [792](#)
FM_ChildDeleteAllFilesCmd, [793](#)
FM_ChildDeleteCmd, [794](#)
FM_ChildDeleteDirectoryCmd, [795](#)
FM_ChildDirListFileCmd, [796](#)
FM_ChildDirListFileInit, [797](#)
FM_ChildDirListFileLoop, [798](#)
FM_ChildDirListPktCmd, [799](#)
FM_ChildFileInfoCmd, [801](#)
FM_ChildInit, [802](#)
FM_ChildLoop, [804](#)
FM_ChildMoveCmd, [805](#)
FM_ChildProcess, [806](#)
FM_ChildRenameCmd, [808](#)
FM_ChildSetPermissionsCmd, [809](#)
FM_ChildSizeMode, [810](#)
FM_ChildSleepStat, [811](#)
FM_ChildTask, [812](#)

FM_CHILD_BROKEN_EID_OFFSET
CFS File Manager Event IDs, [136](#)

FM_CHILD_DISABLED_EID_OFFSET
CFS File Manager Event IDs, [136](#)

FM_CHILD_EXE_ERR_EID
CFS File Manager Event IDs, [137](#)

FM_CHILD_FILE_BLOCK_SIZE
CFS File Manager Platform Configuration, [231](#)

FM_CHILD_FILE_LOOP_COUNT
CFS File Manager Platform Configuration, [231](#)

FM_CHILD_FILE_SLEEP_MS
CFS File Manager Platform Configuration, [232](#)

FM_CHILD_INIT_CREATE_ERR_EID
CFS File Manager Event IDs, [137](#)

FM_CHILD_INIT_EID
CFS File Manager Event IDs, [137](#)

FM_CHILD_INIT_QSEM_ERR_EID
CFS File Manager Event IDs, [137](#)

FM_CHILD_INIT_SEM_ERR_EID
CFS File Manager Event IDs, [138](#)

FM_CHILD_NUM_OFFSETS
CFS File Manager Event IDs, [138](#)

FM_CHILD_Q_FULL_EID_OFFSET
CFS File Manager Event IDs, [138](#)

FM_CHILD_QUEUE_DEPTH
CFS File Manager Platform Configuration, [232](#)

FM_CHILD_SEM_NAME
CFS File Manager Platform Configuration, [232](#)

FM_CHILD_STAT_SLEEP_FILECOUNT
CFS File Manager Platform Configuration, [232](#)

FM_CHILD_STAT_SLEEP_MS
CFS File Manager Platform Configuration, [232](#)

FM_CHILD_TASK_NAME
CFS File Manager Platform Configuration, [233](#)

FM_CHILD_TASK_PERF_ID
CFS File Manager Mission Configuration, [229](#)

FM_CHILD_TASK_PRIORITY
CFS File Manager Platform Configuration, [233](#)

FM_CHILD_TASK_STACK_SIZE
CFS File Manager Platform Configuration, [234](#)

FM_CHILD_TERM_EMPTYQ_ERR_EID
CFS File Manager Event IDs, [138](#)

FM_CHILD_TERM_QIDX_ERR_EID
CFS File Manager Event IDs, [138](#)

FM_CHILD_TERM_SEM_ERR_EID
CFS File Manager Event IDs, [139](#)

FM_ChildConcatFilesCmd
 fm_child.c, [763](#)
 fm_child.h, [789](#)

FM_ChildCopyCmd
 fm_child.c, [764](#)
 fm_child.h, [790](#)

FM_ChildCreateDirectoryCmd
 fm_child.c, [765](#)
 fm_child.h, [791](#)

FM_ChildDecompressFileCmd
 fm_child.c, [766](#)
 fm_child.h, [792](#)

FM_ChildDeleteAllFilesCmd
 fm_child.c, [767](#)
 fm_child.h, [793](#)

FM_ChildDeleteCmd
 fm_child.c, [768](#)
 fm_child.h, [794](#)

FM_ChildDeleteDirectoryCmd
 fm_child.c, [769](#)
 fm_child.h, [795](#)

FM_ChildDirListFileCmd
 fm_child.c, [770](#)
 fm_child.h, [796](#)

FM_ChildDirListFileInit
 fm_child.c, [771](#)

fm_child.h, 797
FM_ChildDirListFileLoop
 fm_child.c, 772
 fm_child.h, 798
FM_ChildDirListPktCmd
 fm_child.c, 773
 fm_child.h, 799
FM_ChildFileInfoCmd
 fm_child.c, 775
 fm_child.h, 801
FM_ChildInit
 fm_child.c, 776
 fm_child.h, 802
FM_ChildLoop
 fm_child.c, 778
 fm_child.h, 804
FM_ChildMoveCmd
 fm_child.c, 779
 fm_child.h, 805
FM_ChildProcess
 fm_child.c, 780
 fm_child.h, 806
FM_ChildQueueEntry_t, 678
 CommandCode, 679
 DirListOffset, 679
 FileInfoCRC, 679
 FileInfoSize, 679
 FileInfoState, 679
 FileInfoTime, 679
 GetSizeTimeMode, 679
 Mode, 680
 Padding1, 680
 Padding2, 680
 Source1, 680
 Source2, 680
 Target, 680
FM_ChildRenameCmd
 fm_child.c, 782
 fm_child.h, 808
FM_ChildSetPermissionsCmd
 fm_child.c, 783
 fm_child.h, 809
FM_ChildSizeTimeMode
 fm_child.c, 784
 fm_child.h, 810
FM_ChildSleepStat
 fm_child.c, 785
 fm_child.h, 811
FM_ChildTask
 fm_child.c, 786
 fm_child.h, 812
FM_CMD_MID
 CFS File Manager Command Message IDs, 228
fm_cmd_utils.c
 FileIsOpen, 832
 FM_AppendPathSep, 815
 FM_GetDirectorySpaceEstimate, 815
 FM_GetFilenameState, 817
 FM_GetOpenFilesData, 818
 FM_GetVolumeFreeSpace, 819
 FM_InvokeChildTask, 820
 FM_VerifyChildTask, 821
 FM_VerifyDirExists, 822
 FM_VerifyDirNotExist, 823
 FM_VerifyFileClosed, 824
 FM_VerifyFileExists, 825
 FM_VerifyFileNotExist, 826
 FM_VerifyFileNotOpen, 827
 FM_VerifyFileState, 828
 FM_VerifyNameValid, 829
 FM_VerifyOverwrite, 830
 LoadOpenFileData, 831
 OpenFileCount, 832
 SearchOpenFileData, 832
fm_cmd_utils.h
 FM_AppendPathSep, 834
 FM_DIR_EXISTS, 834
 FM_DIR_NOEXIST, 834
 FM_FILE_CLOSED, 834
 FM_FILE_EXISTS, 834
 FM_FILE_NOEXIST, 834
 FM_FILE_NOTOPEN, 834
 FM_File_States, 834
 FM_GetDirectorySpaceEstimate, 835
 FM_GetFilenameState, 836
 FM_GetOpenFilesData, 837
 FM_GetVolumeFreeSpace, 838
 FM_InvokeChildTask, 839
 FM_VerifyChildTask, 840
 FM_VerifyDirExists, 841
 FM_VerifyDirNotExist, 842
 FM_VerifyFileClosed, 843
 FM_VerifyFileExists, 844
 FM_VerifyFileNotExist, 845
 FM_VerifyFileNotOpen, 846
 FM_VerifyFileState, 847
 FM_VerifyNameValid, 848
 FM_VerifyOverwrite, 849
fm_cmds.c
 FM_ConcatFilesCmd, 852
 FM_CopyFileCmd, 853
 FM_CreateDirectoryCmd, 854
 FM_DecompressFileCmd, 855
 FM_DeleteAllFilesCmd, 856
 FM_DeleteDirectoryCmd, 857
 FM_DeleteFileCmd, 858
 FM_GET_CMD_PAYLOAD, 851
 FM_GetDirListFileCmd, 859

FM_GetDirListPktCmd, 860
 FM_GetFileInfoCmd, 861
 FM_GetOpenFilesCmd, 863
 FM_MonitorFilesystemSpaceCmd, 864
 FM_MoveFileCmd, 865
 FM_NoopCmd, 866
 FM_RenameFileCmd, 867
 FM_ResetCountersCmd, 868
 FM_SetPermissionsCmd, 869
 FM_SetTableStateCmd, 870

fm_cmds.h

 FM_ConcatFilesCmd, 872
 FM_CopyFileCmd, 873
 FM_CreateDirectoryCmd, 874
 FM_DecompressFileCmd, 875
 FM_DeleteAllFilesCmd, 876
 FM_DeleteDirectoryCmd, 878
 FM_DeleteFileCmd, 879
 FM_GetDirListFileCmd, 880
 FM_GetDirListPktCmd, 881
 FM_GetFileInfoCmd, 882
 FM_GetOpenFilesCmd, 883
 FM_MonitorFilesystemSpaceCmd, 884
 FM_MoveFileCmd, 886
 FM_NoopCmd, 887
 FM_RenameFileCmd, 888
 FM_ResetCountersCmd, 889
 FM_SetPermissionsCmd, 890
 FM_SetTableStateCmd, 891

FM_Compress_Impl

 fm_compression.h, 893
 fm_compression_fslib.c, 895
 fm_compression_none.c, 897
 fm_compression_zlib.c, 899

fm_compression.h

 FM_Compress_Impl, 893
 FM_CompressionService_Init, 893
 FM_Compressor_State_t, 892
 FM-Decompress_Impl, 894
 FM-Decompressor_State_t, 893

fm_compression_fslib.c

 FM_Compress_Impl, 895
 FM_CompressionService_Init, 895
 FM-Decompress_Impl, 896
 FM_FSLIB_DecompressState, 896

fm_compression_none.c

 FM_Compress_Impl, 897
 FM_CompressionService_Init, 897
 FM-Decompress_Impl, 898

fm_compression_zlib.c

 FM_Compress_Impl, 899
 FM_CompressionService_Init, 899
 FM-Decompress_Impl, 899

FM_CompressionService_Init

 fm_compression.h, 893
 fm_compression_fslib.c, 895
 fm_compression_none.c, 897
 fm_compression_zlib.c, 899

FM_Compressor_State_t

 fm_compression.h, 892

FM_CONCAT_CHILD_BASE_EID

 CFS File Manager Event IDs, 139

FM_CONCAT_CHILD_BROKEN_ERR_EID

 CFS File Manager Event IDs, 139

FM_CONCAT_CHILD_DISABLED_ERR_EID

 CFS File Manager Event IDs, 140

FM_CONCAT_CHILD_FULL_ERR_EID

 CFS File Manager Event IDs, 140

FM_CONCAT_CMD_INF_EID

 CFS File Manager Event IDs, 140

FM_CONCAT_FILES_CC

 CFS File Manager Command Codes, 208

FM_CONCAT_OPEN_SRC2_ERR_EID

 CFS File Manager Event IDs, 141

FM_CONCAT_OPEN_TGT_ERR_EID

 CFS File Manager Event IDs, 141

FM_CONCAT_OSCPY_ERR_EID

 CFS File Manager Event IDs, 141

FM_CONCAT_OSRD_ERR_EID

 CFS File Manager Event IDs, 142

FM_CONCAT_OSWR_ERR_EID

 CFS File Manager Event IDs, 142

FM_CONCAT_PKT_ERR_EID

 CFS File Manager Event IDs, 142

FM_CONCAT_SRC1_BASE_EID

 CFS File Manager Event IDs, 142

FM_CONCAT_SRC1_DNE_ERR_EID

 CFS File Manager Event IDs, 143

FM_CONCAT_SRC1_INVALID_ERR_EID

 CFS File Manager Event IDs, 143

FM_CONCAT_SRC1_ISDIR_ERR_EID

 CFS File Manager Event IDs, 143

FM_CONCAT_SRC1_OPEN_ERR_EID

 CFS File Manager Event IDs, 144

FM_CONCAT_SRC2_BASE_EID

 CFS File Manager Event IDs, 144

FM_CONCAT_SRC2_DNE_ERR_EID

 CFS File Manager Event IDs, 144

FM_CONCAT_SRC2_INVALID_ERR_EID

 CFS File Manager Event IDs, 145

FM_CONCAT_SRC2_ISDIR_ERR_EID

 CFS File Manager Event IDs, 145

FM_CONCAT_SRC2_OPEN_ERR_EID

 CFS File Manager Event IDs, 145

FM_CONCAT_TGT_BASE_EID

 CFS File Manager Event IDs, 145

FM_CONCAT_TGT_EXIST_ERR_EID

 CFS File Manager Event IDs, 146

FM_CONCAT_TGT_INVALID_ERR_EID
 CFS File Manager Event IDs, [146](#)

FM_CONCAT_TGT_ISDIR_ERR_EID
 CFS File Manager Event IDs, [146](#)

FM_ConcatFilesCmd
 fm_cmds.c, [852](#)
 fm_cmds.h, [872](#)

FM_ConcatFilesCmd_t, [681](#)
 CommandHeader, [681](#)
 Payload, [681](#)

FM_ConcatFilesVerifyDispatch
 fm_dispatch.c, [901](#)
 fm_dispatch.h, [914](#)

FM_COPY_CHILD_BASE_EID
 CFS File Manager Event IDs, [147](#)

FM_COPY_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, [147](#)

FM_COPY_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, [147](#)

FM_COPY_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, [148](#)

FM_COPY_CMD_INF_EID
 CFS File Manager Event IDs, [148](#)

FM_COPY_FILE_CC
 CFS File Manager Command Codes, [209](#)

FM_COPY_OS_ERR_EID
 CFS File Manager Event IDs, [148](#)

FM_COPY_OVR_ERR_EID
 CFS File Manager Event IDs, [149](#)

FM_COPY_PKT_ERR_EID
 CFS File Manager Event IDs, [149](#)

FM_COPY_SRC_BASE_EID
 CFS File Manager Event IDs, [149](#)

FM_COPY_SRC_DNE_ERR_EID
 CFS File Manager Event IDs, [149](#)

FM_COPY_SRC_INVALID_ERR_EID
 CFS File Manager Event IDs, [150](#)

FM_COPY_SRC_ISDIR_ERR_EID
 CFS File Manager Event IDs, [150](#)

FM_COPY_TGT_BASE_EID
 CFS File Manager Event IDs, [150](#)

FM_COPY_TGT_EXIST_ERR_EID
 CFS File Manager Event IDs, [151](#)

FM_COPY_TGT_INVALID_ERR_EID
 CFS File Manager Event IDs, [151](#)

FM_COPY_TGT_ISDIR_ERR_EID
 CFS File Manager Event IDs, [151](#)

FM_COPY_TGT_ISOPEN_ERR_EID
 CFS File Manager Event IDs, [151](#)

FM_CopyFileCmd
 fm_cmds.c, [853](#)
 fm_cmds.h, [873](#)

FM_CopyFileCmd_t, [681](#)
 CommandHeader, [681](#)

Payload, [682](#)

FM_CopyFileVerifyDispatch
 fm_dispatch.c, [901](#)
 fm_dispatch.h, [914](#)

FM_DECOM_PIPE_ERR_EID
 CFS File Manager Event IDs, [152](#)

FM_CREATE_DIR_CHILD_BASE_EID
 CFS File Manager Event IDs, [152](#)

FM_CREATE_DIR_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, [152](#)

FM_CREATE_DIR_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, [153](#)

FM_CREATE_DIR_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, [153](#)

FM_CREATE_DIR_CMD_INF_EID
 CFS File Manager Event IDs, [153](#)

FM_CREATE_DIR_OS_ERR_EID
 CFS File Manager Event IDs, [154](#)

FM_CREATE_DIR_PKT_ERR_EID
 CFS File Manager Event IDs, [154](#)

FM_CREATE_DIR_SRC_BASE_EID
 CFS File Manager Event IDs, [154](#)

FM_CREATE_DIR_SRC_DNE_ERR_EID
 CFS File Manager Event IDs, [154](#)

FM_CREATE_DIR_SRC_INVALID_ERR_EID
 CFS File Manager Event IDs, [155](#)

FM_CREATE_DIR_SRC_ISDIR_ERR_EID
 CFS File Manager Event IDs, [155](#)

FM_CREATE_DIRECTORY_CC
 CFS File Manager Command Codes, [211](#)

FM_CreateDirectoryCmd
 fm_cmds.c, [854](#)
 fm_cmds.h, [874](#)

FM_CreateDirectoryCmd_t, [682](#)
 CommandHeader, [682](#)
 Payload, [682](#)

FM_CreateDirectoryVerifyDispatch
 fm_dispatch.c, [902](#)
 fm_dispatch.h, [914](#)

FM_DECOM_CFE_ERR_EID
 CFS File Manager Event IDs, [155](#)

FM_DECOM_CHILD_BASE_EID
 CFS File Manager Event IDs, [156](#)

FM_DECOM_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, [156](#)

FM_DECOM_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, [156](#)

FM_DECOM_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, [157](#)

FM_DECOM_CMD_INF_EID
 CFS File Manager Event IDs, [157](#)

FM_DECOM_PKT_ERR_EID
 CFS File Manager Event IDs, [157](#)

FM_DECOM_SRC_BASE_EID

CFS File Manager Event IDs, 158
FM_DECOM_SRC_DNE_ERR_EID
 CFS File Manager Event IDs, 158
FM_DECOM_SRC_INVALID_ERR_EID
 CFS File Manager Event IDs, 158
FM_DECOM_SRC_ISDIR_ERR_EID
 CFS File Manager Event IDs, 158
FM_DECOM_SRC_OPEN_ERR_EID
 CFS File Manager Event IDs, 159
FM_DECOM_TGT_BASE_EID
 CFS File Manager Event IDs, 159
FM_DECOM_TGT_EXIST_ERR_EID
 CFS File Manager Event IDs, 159
FM_DECOM_TGT_INVALID_ERR_EID
 CFS File Manager Event IDs, 160
FM_DECOM_TGT_ISDIR_ERR_EID
 CFS File Manager Event IDs, 160
FM_DECOMPRESS_FILE_CC
 CFS File Manager Command Codes, 212
FM_Decompress_Impl
 fm_compression.h, 894
 fm_compression_fslib.c, 896
 fm_compression_none.c, 898
 fm_compression_zlib.c, 899
FM_DecompressFileCmd
 fm_cmds.c, 855
 fm_cmds.h, 875
FM_DecompressFileCmd_t, 682
 CommandHeader, 683
 Payload, 683
FM_DecompressFileVerifyDispatch
 fm_dispatch.c, 902
 fm_dispatch.h, 915
FM_Decompressor_State, 683
 LibState, 683
FM_Decompressor_State_t
 fm_compression.h, 893
FM_DELETE_ALL_CHILD_BASE_EID
 CFS File Manager Event IDs, 160
FM_DELETE_ALL_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, 161
FM_DELETE_ALL_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, 161
FM_DELETE_ALL_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, 161
FM_DELETE_ALL_CMD_INF_EID
 CFS File Manager Event IDs, 162
FM_DELETE_ALL_FILES_CC
 CFS File Manager Command Codes, 213
FM_DELETE_ALL_FILES_ND_WARNING_EID
 CFS File Manager Event IDs, 162
FM_DELETE_ALL_OS_ERR_EID
 CFS File Manager Event IDs, 162
FM_DELETE_ALL_PKT_ERR_EID

CFS File Manager Event IDs, 162
FM_DELETE_ALL_SKIP_WARNING_EID
 CFS File Manager Event IDs, 163
FM_DELETE_ALL_SRC_BASE_EID
 CFS File Manager Event IDs, 163
FM_DELETE_ALL_SRC_DNE_ERR_EID
 CFS File Manager Event IDs, 163
FM_DELETE_ALL_SRC_FILE_ERR_EID
 CFS File Manager Event IDs, 164
FM_DELETE_ALL_SRC_INVALID_ERR_EID
 CFS File Manager Event IDs, 164
FM_DELETE_CHILD_BASE_EID
 CFS File Manager Event IDs, 164
FM_DELETE_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, 164
FM_DELETE_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, 165
FM_DELETE_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, 165
FM_DELETE_CMD_INF_EID
 CFS File Manager Event IDs, 165
FM_DELETE_DIR_CHILD_BASE_EID
 CFS File Manager Event IDs, 166
FM_DELETE_DIR_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, 166
FM_DELETE_DIR_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, 166
FM_DELETE_DIR_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, 167
FM_DELETE_DIR_CMD_INF_EID
 CFS File Manager Event IDs, 167
FM_DELETE_DIR_EMPTY_ERR_EID
 CFS File Manager Event IDs, 167
FM_DELETE_DIR_PKT_ERR_EID
 CFS File Manager Event IDs, 168
FM_DELETE_DIR_SRC_BASE_EID
 CFS File Manager Event IDs, 168
FM_DELETE_DIR_SRC_DNE_ERR_EID
 CFS File Manager Event IDs, 168
FM_DELETE_DIR_SRC_INVALID_ERR_EID
 CFS File Manager Event IDs, 169
FM_DELETE_DIRECTORY_CC
 CFS File Manager Command Codes, 214
FM_DELETE_FILE_CC
 CFS File Manager Command Codes, 215
FM_DELETE_OPENDIR_OS_ERR_EID
 CFS File Manager Event IDs, 169
FM_DELETE_OS_ERR_EID
 CFS File Manager Event IDs, 169
FM_DELETE_PKT_ERR_EID
 CFS File Manager Event IDs, 169
FM_DELETE_RMDIR_OS_ERR_EID
 CFS File Manager Event IDs, 170
FM_DELETE_SRC_BASE_EID

CFS File Manager Event IDs, 170
FM_DELETE_SRC_DNE_ERR_EID
 CFS File Manager Event IDs, 170
FM_DELETE_SRC_INVALID_ERR_EID
 CFS File Manager Event IDs, 171
FM_DELETE_SRC_ISDIR_ERR_EID
 CFS File Manager Event IDs, 171
FM_DELETE_SRC_OPEN_ERR_EID
 CFS File Manager Event IDs, 171
FM_DeleteAllFilesCmd
 fm_cmds.c, 856
 fm_cmds.h, 876
FM_DeleteAllFilesCmd_t, 684
 CommandHeader, 684
 Payload, 684
FM_DeleteAllFilesVerifyDispatch
 fm_dispatch.c, 903
 fm_dispatch.h, 915
FM_DeleteDirectoryCmd
 fm_cmds.c, 857
 fm_cmds.h, 878
FM_DeleteDirectoryCmd_t, 684
 CommandHeader, 684
 Payload, 685
FM_DeleteDirectoryVerifyDispatch
 fm_dispatch.c, 903
 fm_dispatch.h, 916
FM_DeleteFileCmd
 fm_cmds.c, 858
 fm_cmds.h, 879
FM_DeleteFileCmd_t, 685
 CommandHeader, 685
 Payload, 685
FM_DeleteFileVerifyDispatch
 fm_dispatch.c, 904
 fm_dispatch.h, 916
FM_DIR_EXISTS
 fm_cmd_utils.h, 834
FM_DIR_LIST_FILE_DEFNAME
 CFS File Manager Platform Configuration, 234
FM_DIR_LIST_FILE_ENTRIES
 CFS File Manager Platform Configuration, 234
FM_DIR_LIST_FILE_SUBTYPE
 CFS File Manager Platform Configuration, 234
FM_DIR_LIST_PKT_ENTRIES
 CFS File Manager Platform Configuration, 235
FM_DIR_LIST_TLM_MID
 CFS File Manager Telemetry Message IDs, 228
FM_DIR_NOEXIST
 fm_cmd_utils.h, 834
FM_DIRECTORY_ESTIMATE_ERR_EID
 CFS File Manager Event IDs, 171
FM_DirectoryName_Payload_t, 685
 Directory, 686
FM_DirListEntry_t, 686
 EntryName, 686
 EntrySize, 686
 Mode, 686
 ModifyTime, 687
FM_DirListFileStats_t, 687
 DirEntries, 687
 DirName, 687
 FileEntries, 687
FM_DirListPkt_Payload_t, 688
 DirName, 688
 FileList, 688
 FirstFile, 688
 PacketFiles, 688
 TotalFiles, 689
FM_DirListPkt_t, 689
 Payload, 689
 TelemetryHeader, 689
fm_dispatch.c
 FM_ConcatFilesVerifyDispatch, 901
 FM_CopyFileVerifyDispatch, 901
 FM_CreateDirectoryVerifyDispatch, 902
 FM_DecompressFileVerifyDispatch, 902
 FM_DeleteAllFilesVerifyDispatch, 903
 FM_DeleteDirectoryVerifyDispatch, 903
 FM_DeleteFileVerifyDispatch, 904
 FM_GetDirListFileVerifyDispatch, 904
 FM_GetDirListPktVerifyDispatch, 905
 FM_GetFileInfoVerifyDispatch, 905
 FM_GetOpenFilesVerifyDispatch, 905
 FM_IsValidCmdPktLength, 906
 FM_MonitorFilesystemSpaceVerifyDispatch, 907
 FM_MoveFileVerifyDispatch, 907
 FM_NoopVerifyDispatch, 908
 FM_ProcessCmd, 908
 FM_ProcessPkt, 909
 FM_RenameFileVerifyDispatch, 911
 FM_ResetCountersVerifyDispatch, 911
 FM_SendHkVerifyDispatch, 911
 FM_SetPermissionsVerifyDispatch, 912
 FM_SetTableStateVerifyDispatch, 912
fm_dispatch.h
 FM_ConcatFilesVerifyDispatch, 914
 FM_CopyFileVerifyDispatch, 914
 FM_CreateDirectoryVerifyDispatch, 914
 FM_DecompressFileVerifyDispatch, 915
 FM_DeleteAllFilesVerifyDispatch, 915
 FM_DeleteDirectoryVerifyDispatch, 916
 FM_DeleteFileVerifyDispatch, 916
 FM_GetDirListFileVerifyDispatch, 917
 FM_GetDirListPktVerifyDispatch, 917
 FM_GetFileInfoVerifyDispatch, 918
 FM_GetOpenFilesVerifyDispatch, 918
 FM_IsValidCmdPktLength, 919

FM_MonitorFilesystemSpaceVerifyDispatch, 920
 FM_MoveFileVerifyDispatch, 920
 FM_NoopVerifyDispatch, 921
 FM_ProcessCmd, 921
 FM_ProcessPkt, 922
 FM_RenameFileVerifyDispatch, 924
 FM_ResetCountersVerifyDispatch, 924
 FM_SendHkVerifyDispatch, 924
 FM_SetPermissionsVerifyDispatch, 925
 FM_SetTableStateVerifyDispatch, 925
FM_EXIT_ERR_EID
 CFS File Manager Event IDs, 172
fm_extern_typedefs.h
 FM_IGNORE_CRC, 745
 FM_NAME_IS_DIRECTORY, 745
 FM_NAME_IS_FILE_CLOSED, 745
 FM_NAME_IS_FILE_OPEN, 745
 FM_NAME_IS_INVALID, 745
 FM_NAME_IS_NOT_IN_USE, 745
 FM_PARENT_DIRECTORY, 745
 FM_TABLE_ENTRY_DISABLED, 745
 FM_TABLE_ENTRY_ENABLED, 745
 FM_THIS_DIRECTORY, 745
FM_FILE_CLOSED
fm_cmd_utils.h, 834
FM_FILE_EXISTS
fm_cmd_utils.h, 834
FM_FILE_INFO_CHILD_BASE_EID
 CFS File Manager Event IDs, 172
FM_FILE_INFO_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, 172
FM_FILE_INFO_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, 173
FM_FILE_INFO_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, 173
FM_FILE_INFO_TLM_MID
 CFS File Manager Telemetry Message IDs, 228
FM_FILE_NOEXIST
fm_cmd_utils.h, 834
FM_FILE_NOTOPEN
fm_cmd_utils.h, 834
FM_File_States
fm_cmd_utils.h, 834
FM_FileInfoPkt_Payload_t, 689
 CRC, 690
 CRC_Computed, 690
 Filename, 690
 FileSize, 690
 FileStatus, 690
 LastModifiedTime, 691
 Mode, 691
 Spare, 691
FM_FileInfoPkt_t, 691
 Payload, 691
TelemetryHeader, 691
FM_FilenameAndCRC_Payload_t, 692
 FileInfoCRC, 692
 Filename, 692
FM_FilenameAndMode_Payload_t, 692
 FileName, 693
 Mode, 693
FM_FNAME_DNE_EID_OFFSET
 CFS File Manager Event IDs, 173
FM_FNAME_EXIST_EID_OFFSET
 CFS File Manager Event IDs, 173
FM_FNAME_INVALID_EID_OFFSET
 CFS File Manager Event IDs, 174
FM_FNAME_ISCLOSED_EID_OFFSET
 CFS File Manager Event IDs, 174
FM_FNAME_ISDIR_EID_OFFSET
 CFS File Manager Event IDs, 174
FM_FNAME_ISFILE_EID_OFFSET
 CFS File Manager Event IDs, 174
FM_FNAME_ISOPEN_EID_OFFSET
 CFS File Manager Event IDs, 174
FM_FNAME_NUM_OFFSETS
 CFS File Manager Event IDs, 174
FM_FREE_SPACE_TLM_MID
 CFS File Manager Telemetry Message IDs, 228
FM_FSLIB_DecompressState
fm_compression_fslib.c, 896
FM_GET_CMD_PAYLOAD
fm_cmds.c, 851
FM_GET_DIR_FILE_CHILD_BASE_EID
 CFS File Manager Event IDs, 174
FM_GET_DIR_FILE_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, 174
FM_GET_DIR_FILE_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, 175
FM_GET_DIR_FILE_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, 175
FM_GET_DIR_FILE_CMD_INF_EID
 CFS File Manager Event IDs, 175
FM_GET_DIR_FILE_OSCREAT_ERR_EID
 CFS File Manager Event IDs, 176
FM_GET_DIR_FILE_OSOPENDIR_ERR_EID
 CFS File Manager Event IDs, 176
FM_GET_DIR_FILE_PKT_ERR_EID
 CFS File Manager Event IDs, 176
FM_GET_DIR_FILE_SRC_BASE_EID
 CFS File Manager Event IDs, 177
FM_GET_DIR_FILE_SRC_DNE_ERR_EID
 CFS File Manager Event IDs, 177
FM_GET_DIR_FILE_SRC_INVALID_ERR_EID
 CFS File Manager Event IDs, 177
FM_GET_DIR_FILE_SRC_ISDIR_ERR_EID
 CFS File Manager Event IDs, 178
FM_GET_DIR_FILE_TGT_BASE_EID

CFS File Manager Event IDs, 178
FM_GET_DIR_FILE_TGT_INVALID_ERR_EID
 CFS File Manager Event IDs, 178
FM_GET_DIR_FILE_TGT_ISDIR_ERR_EID
 CFS File Manager Event IDs, 178
FM_GET_DIR_FILE_UPSTATS_ERR_EID
 CFS File Manager Event IDs, 179
FM_GET_DIR_FILE_WARNING_EID
 CFS File Manager Event IDs, 179
FM_GET_DIR_FILE_WRBLANK_ERR_EID
 CFS File Manager Event IDs, 179
FM_GET_DIR_FILE_WRENTRY_ERR_EID
 CFS File Manager Event IDs, 180
FM_GET_DIR_FILE_WRHDR_ERR_EID
 CFS File Manager Event IDs, 180
FM_GET_DIR_LIST_FILE_CC
 CFS File Manager Command Codes, 216
FM_GET_DIR_LIST_PKT_CC
 CFS File Manager Command Codes, 218
FM_GET_DIR_PKT_CHILD_BASE_EID
 CFS File Manager Event IDs, 180
FM_GET_DIR_PKT_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, 181
FM_GET_DIR_PKT_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, 181
FM_GET_DIR_PKT_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, 181
FM_GET_DIR_PKT_CMD_INF_EID
 CFS File Manager Event IDs, 182
FM_GET_DIR_PKT_OS_ERR_EID
 CFS File Manager Event IDs, 182
FM_GET_DIR_PKT_PKT_ERR_EID
 CFS File Manager Event IDs, 182
FM_GET_DIR_PKT_SRC_BASE_EID
 CFS File Manager Event IDs, 183
FM_GET_DIR_PKT_SRC_DNE_ERR_EID
 CFS File Manager Event IDs, 183
FM_GET_DIR_PKT_SRC_INVALID_ERR_EID
 CFS File Manager Event IDs, 183
FM_GET_DIR_PKT_SRC_ISDIR_ERR_EID
 CFS File Manager Event IDs, 184
FM_GET_DIR_PKT_WARNING_EID
 CFS File Manager Event IDs, 184
FM_GET_FILE_INFO_CC
 CFS File Manager Command Codes, 219
FM_GET_FILE_INFO_CMD_INF_EID
 CFS File Manager Event IDs, 184
FM_GET_FILE_INFO_OPEN_ERR_EID
 CFS File Manager Event IDs, 184
FM_GET_FILE_INFO_PKT_ERR_EID
 CFS File Manager Event IDs, 185
FM_GET_FILE_INFO_READ_WARNING_EID
 CFS File Manager Event IDs, 185
FM_GET_FILE_INFO_SRC_ERR_EID
 CFS File Manager Event IDs, 185
FM_GET_FILE_INFO_STATE_WARNING_EID
 CFS File Manager Event IDs, 185
FM_GET_FILE_INFO_TYPE_WARNING_EID
 CFS File Manager Event IDs, 186
FM_GET_FREE_SPACE_PKT_ERR_EID
 CFS File Manager Event IDs, 186
FM_GET_FREE_SPACE_TBL_ERR_EID
 CFS File Manager Event IDs, 186
FM_GET_OPEN_FILES_CC
 CFS File Manager Command Codes, 221
FM_GET_OPEN_FILES_CMD_INF_EID
 CFS File Manager Event IDs, 187
FM_GET_OPEN_FILES_PKT_ERR_EID
 CFS File Manager Event IDs, 187
FM_GetDirectorySpaceEstimate
 fm_cmds_utils.c, 815
 fm_cmds_utils.h, 835
FM_GetDirectoryToFile_Payload_t, 693
 Directory, 693
 Filename, 693
 GetSizeTimeMode, 694
 Spare01, 694
FM_GetDirectoryToPkt_Payload_t, 694
 Directory, 694
 DirListOffset, 694
 GetSizeTimeMode, 695
 Spare01, 695
FM_GetDirListFileCmd
 fm_cmds.c, 859
 fm_cmds.h, 880
FM_GetDirListFileCmd_t, 695
 CommandHeader, 695
 Payload, 695
FM_GetDirListFileVerifyDispatch
 fm_dispatch.c, 904
 fm_dispatch.h, 917
FM_GetDirListPktCmd
 fm_cmds.c, 860
 fm_cmds.h, 881
FM_GetDirListPktCmd_t, 696
 CommandHeader, 696
 Payload, 696
FM_GetDirListPktVerifyDispatch
 fm_dispatch.c, 905
 fm_dispatch.h, 917
FM_GetFileInfoCmd
 fm_cmds.c, 861
 fm_cmds.h, 882
FM_GetFileInfoCmd_t, 696
 CommandHeader, 696
 Payload, 697
FM_GetFileInfoVerifyDispatch
 fm_dispatch.c, 905

fm_dispatch.h, 918
FM_GetFilenameState
 fm_cmd_utils.c, 817
 fm_cmd_utils.h, 836
FM_GetOpenFilesCmd
 fm_cmds.c, 863
 fm_cmds.h, 883
FM_GetOpenFilesCmd_t, 697
 CommandHeader, 697
FM_GetOpenFilesData
 fm_cmd_utils.c, 818
 fm_cmd_utils.h, 837
FM_GetOpenFilesVerifyDispatch
 fm_dispatch.c, 905
 fm_dispatch.h, 918
FM_GetVolumeFreeSpace
 fm_cmd_utils.c, 819
 fm_cmd_utils.h, 838
FM_GlobalData
 fm_app.c, 755
 fm_app.h, 761
FM_GlobalData_t, 697
 ChildBuffer, 699
 ChildCmdCounter, 699
 ChildCmdErrCounter, 699
 ChildCmdWarnCounter, 699
 ChildCurrentCC, 699
 ChildPreviousCC, 700
 ChildQueue, 700
 ChildQueueCount, 700
 ChildQueueCountSem, 700
 ChildReadIndex, 700
 ChildSemaphore, 700
 ChildTaskID, 700
 ChildWriteIndex, 701
 CmdPipe, 701
 CommandCounter, 701
 CommandErrCounter, 701
 CompressorStatePtr, 701
 DecompressorStatePtr, 701
 DirListFileStats, 701
 DirListPkt, 701
 FileInfoPkt, 702
 FileStatMode, 702
 FileStatSize, 702
 FileStatTime, 702
 HousekeepingPkt, 702
 MonitorReportPkt, 702
 MonitorTableHandle, 702
 MonitorTablePtr, 702
 OpenFilesPkt, 703
 Spare8a, 703
 Spare8b, 703
FM_HK_TLM_MID
 CFS File Manager Telemetry Message IDs, 228
FM_HKREQ_LEN_ERR_EID
 CFS File Manager Event IDs, 187
FM_HousekeepingPkt_Payload_t, 703
 ChildCmdCounter, 704
 ChildCmdErrCounter, 704
 ChildCmdWarnCounter, 704
 ChildCurrentCC, 704
 ChildPreviousCC, 704
 ChildQueueCount, 704
 CommandCounter, 704
 CommandErrCounter, 704
 NumOpenFiles, 705
 Spare, 705
FM_HousekeepingPkt_t, 705
 Payload, 705
 TelemetryHeader, 705
FM_IGNORE_CRC
 fm_extern_typedefs.h, 745
FM_INIT_INF_EID
 CFS File Manager Event IDs, 187
FM_InvokeChildTask
 fm_cmd_utils.c, 820
 fm_cmd_utils.h, 839
FM_IsValidCmdPktLength
 fm_dispatch.c, 906
 fm_dispatch.h, 919
FM_MAJOR_VERSION
 CFS File Manager Version, 237
FM_MID_ERR_EID
 CFS File Manager Event IDs, 188
FM_MINOR_VERSION
 CFS File Manager Version, 237
FM_MISSION_REV
 CFS File Manager Platform Configuration, 235
fm_monitor.c
 CFE_TBL_FileDef, 935
 FM_MonitorTable, 935
FM_MONITOR_FILESYSTEM_SPACE_CC
 CFS File Manager Command Codes, 221
FM_MONITOR_FILESYSTEM_SPACE_CMD_INF_EID
 CFS File Manager Event IDs, 188
FM_MonitorFilesystemSpaceCmd
 fm_cmds.c, 864
 fm_cmds.h, 884
FM_MonitorFilesystemSpaceCmd_t, 706
 CommandHeader, 706
FM_MonitorFilesystemSpaceVerifyDispatch
 fm_dispatch.c, 907
 fm_dispatch.h, 920
FM_MonitorReportEntry_t, 706
 Blocks, 706
 Bytes, 707
 Name, 707

Padding, 707
ReportType, 707
FM_MonitorReportPkt_Payload_t, 707
FileSys, 707
FM_MonitorReportPkt_t, 708
Payload, 708
TelemetryHeader, 708
FM_MonitorTable
 fm_monitor.c, 935
FM_MonitorTable_t, 708
Entries, 708
FM_MonitorTableEntry_t, 709
 Enabled, 709
 Name, 709
 Type, 709
FM_MonitorTableEntry_Type_DIRECTORY_ESTIMATE
 fm_msg.h, 748
FM_MonitorTableEntry_Type_t
 fm_msg.h, 748
FM_MonitorTableEntry_Type_UNUSED
 fm_msg.h, 748
FM_MonitorTableEntry_Type_VOLUME_FREE_SPACE
 fm_msg.h, 748
FM_MOVE_CHILD_BASE_EID
 CFS File Manager Event IDs, 188
FM_MOVE_CHILD_BROKEN_ERR_EID
 CFS File Manager Event IDs, 188
FM_MOVE_CHILD_DISABLED_ERR_EID
 CFS File Manager Event IDs, 189
FM_MOVE_CHILD_FULL_ERR_EID
 CFS File Manager Event IDs, 189
FM_MOVE_CMD_INF_EID
 CFS File Manager Event IDs, 189
FM_MOVE_FILE_CC
 CFS File Manager Command Codes, 222
FM_MOVE_OS_ERR_EID
 CFS File Manager Event IDs, 190
FM_MOVE_OVR_ERR_EID
 CFS File Manager Event IDs, 190
FM_MOVE_PKT_ERR_EID
 CFS File Manager Event IDs, 190
FM_MOVE_SRC_BASE_EID
 CFS File Manager Event IDs, 190
FM_MOVE_SRC_DNE_ERR_EID
 CFS File Manager Event IDs, 191
FM_MOVE_SRC_INVALID_ERR_EID
 CFS File Manager Event IDs, 191
FM_MOVE_SRC_ISDIR_ERR_EID
 CFS File Manager Event IDs, 191
FM_MOVE_TGT_BASE_EID
 CFS File Manager Event IDs, 192
FM_MOVE_TGT_EXIST_ERR_EID
 CFS File Manager Event IDs, 192
FM_MOVE_TGT_INVALID_ERR_EID
 CFS File Manager Event IDs, 192
CFS File Manager Event IDs, 192
FM_MOVEFILECMD
 fm_cmds.c, 865
 fm_cmds.h, 886
FM_MoveFileCmd_t, 709
CommandHeader, 710
Payload, 710
FM_MoveFileVerifyDispatch
 fm_dispatch.c, 907
 fm_dispatch.h, 920
fm_msg.h
 FM_MonitorTableEntry_Type_DIRECTORY_ESTIMATE,
 748
 FM_MonitorTableEntry_Type_t, 748
 FM_MonitorTableEntry_Type_UNUSED, 748
 FM_MonitorTableEntry_Type_VOLUME_FREE_SPACE,
 748
FM_NAME_IS_DIRECTORY
 fm_extern_typedefs.h, 745
FM_NAME_IS_FILE_CLOSED
 fm_extern_typedefs.h, 745
FM_NAME_IS_FILE_OPEN
 fm_extern_typedefs.h, 745
FM_NAME_IS_INVALID
 fm_extern_typedefs.h, 745
FM_NAME_IS_NOT_IN_USE
 fm_extern_typedefs.h, 745
FM_NOOP_CC
 CFS File Manager Command Codes, 223
FM_NOOP_INF_EID
 CFS File Manager Event IDs, 193
FM_NOOP_PKT_ERR_EID
 CFS File Manager Event IDs, 193
FM_NoopCmd
 fm_cmds.c, 866
 fm_cmds.h, 887
FM_NoopCmd_t, 710
CommandHeader, 710
FM_NoopVerifyDispatch
 fm_dispatch.c, 908
 fm_dispatch.h, 921
FM_OPEN_FILES_TLM_MID
 CFS File Manager Telemetry Message IDs, 228
FM_OpenFilesEntry_t, 711
 AppName, 711
 LogicalName, 711
FM_OpenFilesPkt_Payload_t, 711
 NumOpenFiles, 711
 OpenFilesList, 712
FM_OpenFilesPkt_t, 712

Payload, 712
TelemetryHeader, 712
FM_OS_SYS_STAT_ERR_EID
CFS File Manager Event IDs, 193
FM_OvwSourceTargetFilename_Payload_t, 712
Overwrite, 713
Source, 713
Target, 713
FM_PARENT_DIRECTORY
fm_extern_typedefs.h, 745
FM_ProcessCmd
fm_dispatch.c, 908
fm_dispatch.h, 921
FM_ProcessPkt
fm_dispatch.c, 909
fm_dispatch.h, 922
FM_QUEUE_SEM_NAME
fm_child.c, 762
FM_ReleaseTablePointers
fm_tbl.c, 927
fm_tbl.h, 931
FM_RENAME_CHILD_BASE_EID
CFS File Manager Event IDs, 194
FM_RENAME_CHILD_BROKEN_ERR_EID
CFS File Manager Event IDs, 194
FM_RENAME_CHILD_DISABLED_ERR_EID
CFS File Manager Event IDs, 194
FM_RENAME_CHILD_FULL_ERR_EID
CFS File Manager Event IDs, 195
FM_RENAME_CMD_INF_EID
CFS File Manager Event IDs, 195
FM_RENAME_FILE_CC
CFS File Manager Command Codes, 224
FM_RENAME_OS_ERR_EID
CFS File Manager Event IDs, 195
FM_RENAME_OVR_ERR_EID
CFS File Manager Event IDs, 196
FM_RENAME_PKT_ERR_EID
CFS File Manager Event IDs, 196
FM_RENAME_SRC_BASE_EID
CFS File Manager Event IDs, 196
FM_RENAME_SRC_DNE_ERR_EID
CFS File Manager Event IDs, 197
FM_RENAME_SRC_INVALID_ERR_EID
CFS File Manager Event IDs, 197
FM_RENAME_SRC_ISDIR_ERR_EID
CFS File Manager Event IDs, 197
FM_RENAME_TGT_BASE_EID
CFS File Manager Event IDs, 197
FM_RENAME_TGT_EXIST_ERR_EID
CFS File Manager Event IDs, 198
FM_RENAME_TGT_INVALID_ERR_EID
CFS File Manager Event IDs, 198
FM_RENAME_TGT_ISDIR_ERR_EID

CFS File Manager Event IDs, 198
CFS File Manager Event IDs, 199
FM_RenameFileCmd
fm_cmds.c, 867
fm_cmds.h, 888
FM_RenameFileCmd_t, 713
CommandHeader, 714
Payload, 714
FM_RenameFileVerifyDispatch
fm_dispatch.c, 911
fm_dispatch.h, 924
FM_RESET_COUNTERS_CC
CFS File Manager Command Codes, 225
FM_RESET_INF_EID
CFS File Manager Event IDs, 199
FM_RESET_PKT_ERR_EID
CFS File Manager Event IDs, 199
FM_ResetCountersCmd
fm_cmds.c, 868
fm_cmds.h, 889
FM_ResetCountersCmd_t, 714
CommandHeader, 714
FM_ResetCountersVerifyDispatch
fm_dispatch.c, 911
fm_dispatch.h, 924
FM_REVISION
CFS File Manager Version, 237
FM_SB_RECEIVE_ERR_EID
CFS File Manager Event IDs, 199
FM_SB_RECEIVE_NULL_PTR_ERR_EID
CFS File Manager Event IDs, 200
FM_SB_TIMEOUT
fm_app.h, 756
FM_SEND_HK_MID
CFS File Manager Command Message IDs, 228
FM_SendHkCmd
fm_app.c, 754
fm_app.h, 759
FM_SendHkCmd_t, 714
CommandHeader, 715
FM_SendHkVerifyDispatch
fm_dispatch.c, 911
fm_dispatch.h, 924
FM_SET_PERM_CMD_INF_EID
CFS File Manager Event IDs, 200
FM_SET_PERM_ERR_EID
CFS File Manager Event IDs, 200
FM_SET_PERM_OS_ERR_EID
CFS File Manager Event IDs, 200
FM_SET_PERMISSIONS_CC
CFS File Manager Command Codes, 226
FM_SET_TABLE_STATE_ARG_IDX_ERR_EID
CFS File Manager Event IDs, 201

FM_SET_TABLE_STATE_ARG_STATE_ERR_EID
 CFS File Manager Event IDs, [201](#)

FM_SET_TABLE_STATE_CC
 CFS File Manager Command Codes, [227](#)

FM_SET_TABLE_STATE_CMD_EID
 CFS File Manager Event IDs, [201](#)

FM_SET_TABLE_STATE_PKT_ERR_EID
 CFS File Manager Event IDs, [201](#)

FM_SET_TABLE_STATE_TBL_ERR_EID
 CFS File Manager Event IDs, [202](#)

FM_SET_TABLE_STATE_UNUSED_ERR_EID
 CFS File Manager Event IDs, [202](#)

FM_SetPermissionsCmd
 fm_cmds.c, [869](#)
 fm_cmds.h, [890](#)

FM_SetPermissionsCmd_t, [715](#)
 CommandHeader, [715](#)
 Payload, [715](#)

FM_SetPermissionsVerifyDispatch
 fm_dispatch.c, [912](#)
 fm_dispatch.h, [925](#)

FM_SetTableStateCmd
 fm_cmds.c, [870](#)
 fm_cmds.h, [891](#)

FM_SetTableStateCmd_t, [716](#)
 CommandHeader, [716](#)
 Payload, [716](#)

FM_SetTableStateVerifyDispatch
 fm_dispatch.c, [912](#)
 fm_dispatch.h, [925](#)

FM_SingleFilename_Payload_t, [716](#)
 Filename, [716](#)

FM_SourceTargetFileName_Payload_t, [717](#)
 Source, [717](#)
 Target, [717](#)

FM_STARTUP_EVENTS_ERR_EID
 CFS File Manager Event IDs, [202](#)

FM_STARTUP_SUBSCRIB_GCMD_ERR_EID
 CFS File Manager Event IDs, [202](#)

FM_STARTUP_SUBSCRIB_HK_ERR_EID
 CFS File Manager Event IDs, [203](#)

FM_STARTUP_TABLE_INIT_ERR_EID
 CFS File Manager Event IDs, [203](#)

FM_TABLE_CFE_NAME
 CFS File Manager Platform Configuration, [235](#)

FM_TABLE_DEF_DESC
 CFS File Manager Platform Configuration, [235](#)

FM_TABLE_DEF_NAME
 CFS File Manager Platform Configuration, [236](#)

FM_TABLE_ENTRY_COUNT
 CFS File Manager Platform Configuration, [236](#)

FM_TABLE_ENTRY_DISABLED
 fm_extern_typedefs.h, [745](#)

FM_TABLE_ENTRY_ENABLED
 fm_extern_typedefs.h, [745](#)

FM_TABLE_FILENAME
 CFS File Manager Platform Configuration, [236](#)

FM_TABLE_VALIDATION_ERR
 CFS File Manager Platform Configuration, [236](#)

FM_TABLE_VERIFY_BAD_STATE_ERR_EID
 CFS File Manager Event IDs, [203](#)

FM_TABLE_VERIFY_EID
 CFS File Manager Event IDs, [204](#)

FM_TABLE_VERIFY_EMPTY_ERR_EID
 CFS File Manager Event IDs, [204](#)

FM_TABLE_VERIFY_NULL_PTR_ERR_EID
 CFS File Manager Event IDs, [204](#)

FM_TABLE_VERIFY_TOOLONG_ERR_EID
 CFS File Manager Event IDs, [205](#)

FM_TableIndexAndState_Payload_t, [717](#)
 TableEntryIndex, [718](#)
 TableEntryState, [718](#)

FM_TableInit
 fm_tbl.c, [928](#)
 fm_tbl.h, [932](#)

fm_tbl.c
 FM_AcquireTablePointers, [926](#)
 FM_ReleaseTablePointers, [927](#)
 FM_TableInit, [928](#)
 FM_ValidateTable, [929](#)

fm_tbl.h
 FM_AcquireTablePointers, [930](#)
 FM_ReleaseTablePointers, [931](#)
 FM_TableInit, [932](#)
 FM_ValidateTable, [933](#)

FM_THIS_DIRECTORY
 fm_extern_typedefs.h, [745](#)

FM_TwoSourceOneTarget_Payload_t, [718](#)
 Source1, [718](#)
 Source2, [718](#)
 Target, [719](#)

FM_ValidateTable
 fm_tbl.c, [929](#)
 fm_tbl.h, [933](#)

FM_VerifyChildTask
 fm_cmd_utils.c, [821](#)
 fm_cmd_utils.h, [840](#)

FM_VerifyDirExists
 fm_cmd_utils.c, [822](#)
 fm_cmd_utils.h, [841](#)

FM_VerifyDirNotExist
 fm_cmd_utils.c, [823](#)
 fm_cmd_utils.h, [842](#)

FM_VerifyFileClosed
 fm_cmd_utils.c, [824](#)
 fm_cmd_utils.h, [843](#)

FM_VerifyFileExists
 fm_cmd_utils.c, [825](#)

fm_cmd_utils.h, 844
FM_VerifyFileNotExist
 fm_cmd_utils.c, 826
 fm_cmd_utils.h, 845
FM_VerifyFileNotOpen
 fm_cmd_utils.c, 827
 fm_cmd_utils.h, 846
FM_VerifyFileState
 fm_cmd_utils.c, 828
 fm_cmd_utils.h, 847
FM_VerifyNameValid
 fm_cmd_utils.c, 829
 fm_cmd_utils.h, 848
FM_VerifyOverwrite
 fm_cmd_utils.c, 830
 fm_cmd_utils.h, 849
Forced2Fly
 CFE_TIME_DiagnosticTlm_Payload, 656
free_blocks
 OS_heap_prop_t, 724
free_bytes
 OS_heap_prop_t, 724
FreeFds
 os_fsinfo_t, 723
freerun_time
 OS_timebase_prop_t, 733
FreeVolumes
 os_fsinfo_t, 723

GetData
 CFE_FS_FileWriteMetaData, 597
GetPipeIdByNameErrorCounter
 CFE_SB_HousekeepingTlm_Payload, 605
GetSizeTimeMode
 FM_ChildQueueEntry_t, 679
 FM_GetDirectoryToFile_Payload_t, 694
 FM_GetDirectoryToPkt_Payload_t, 695

Handle
 CFE_ES_CDSRegDumpRec, 532
HeapBlocksFree
 CFE_ES_HousekeepingTlm_Payload, 541
HeapBytesFree
 CFE_ES_HousekeepingTlm_Payload, 541
HeapMaxBlockSize
 CFE_ES_HousekeepingTlm_Payload, 541
host_module_id
 OS_module_prop_t, 726
HousekeepingPkt
 FM_GlobalData_t, 702

InactiveBufferAddr
 CFE_TBL_TblRegPacket_Payload, 647
Index
 CFE_SB_MsgMapFileEntry, 608

 int16
 common_types.h, 1353
 int32
 common_types.h, 1353
 int64
 common_types.h, 1353
 int8
 common_types.h, 1353
InternalErrorCounter
 CFE_SB_HousekeepingTlm_Payload, 605
interval_time
 OS_timer_prop_t, 734
intptr
 common_types.h, 1353
IsPending
 CFE_FS_FileWriteMetaData, 597
IsValid
 OS_file_prop_t, 722

largest_free_block
 OS_heap_prop_t, 724
LastFileDumped
 CFE_TBL_HousekeepingTlm_Payload, 635
LastFileLoaded
 CFE_TBL_HousekeepingTlm_Payload, 636
 CFE_TBL_Info, 639
 CFE_TBL_TblRegPacket_Payload, 647
LastModifiedTime
 FM_FileInfoPkt_Payload_t, 691
LastTableLoaded
 CFE_TBL_HousekeepingTlm_Payload, 636
LastUpdatedTable
 CFE_TBL_HousekeepingTlm_Payload, 636
LastUpdateTime
 CFE_TBL_HousekeepingTlm_Payload, 636
LastValCrc
 CFE_TBL_HousekeepingTlm_Payload, 636
LastValStatus
 CFE_TBL_HousekeepingTlm_Payload, 636
LastValTableName
 CFE_TBL_HousekeepingTlm_Payload, 636
LeapSeconds
 CFE_TIME_HousekeepingTlm_Payload, 662
 CFE_TIME_LeapsCmd_Payload, 664
Length
 CCSDS_PrimaryHeader, 523
 CFE_FS_Header, 598
LENGTHCHECK
 osapi-macros.h, 1375
LibState
 FM.Decompressor.State, 683
LoadFilename
 CFE_TBL_LoadCmd_Payload, 640
LoadOpenFileData

fm_cmd_utils.c, 831
LoadPending
 CFE_TBL_TblRegPacket_Payload, 647
LocalIntCounter
 CFE_TIME_DiagnosticTlm_Payload, 656
LocalTaskCounter
 CFE_TIME_DiagnosticTlm_Payload, 657
LogEnabled
 CFE_EVS_HousekeepingTlm_Payload, 583
LogFileFilename
 CFE_EVS_LogFileCmd_Payload, 585
LogFullFlag
 CFE_EVS_HousekeepingTlm_Payload, 583
LogicalName
 FM_OpenFilesEntry_t, 711
LogMode
 CFE_EVS_HousekeepingTlm_Payload, 583
 CFE_EVS_SetLogMode_Payload, 593
LogOverflowCounter
 CFE_EVS_HousekeepingTlm_Payload, 583
LongDouble
 CFE_ES_PoolAlign, 551
 CFE_SB_Msg, 607
LongInt
 CFE_ES_PoolAlign, 551
 CFE_SB_Msg, 607
MainTaskId
 CFE_ES_AppInfo, 528
MainTaskName
 CFE_ES_AppInfo, 528
Mask
 CFE_EVS_AppNameEventIDMaskCmd_Payload,
 573
 CFE_EVS_BinFilter, 574
MaxElapsed
 CFE_TIME_DiagnosticTlm_Payload, 657
MaxFds
 os_fsinfo_t, 723
MaxLocalClock
 CFE_TIME_DiagnosticTlm_Payload, 657
MaxMemAllowed
 CFE_SB_StatsTlm_Payload, 619
MaxMsgIdsAllowed
 CFE_SB_StatsTlm_Payload, 619
MaxPipeDepthAllowed
 CFE_SB_StatsTlm_Payload, 620
MaxPipesAllowed
 CFE_SB_StatsTlm_Payload, 620
MaxPRCount
 CFE_ES_SetMaxPRCountCmd_Payload, 559
MaxProcessorResets
 CFE_ES_HousekeepingTlm_Payload, 541
MaxQueueDepth
 CFE_SB_StatsTlm_Payload, 620
 CFE_SB_PipeDepthStats, 610
 CFE_SB_PipeInfoEntry, 611
MaxSubscriptionsAllowed
 CFE_SB_StatsTlm_Payload, 620
MaxVolumes
 os_fsinfo_t, 723
MemInUse
 CFE_SB_HousekeepingTlm_Payload, 605
 CFE_SB_StatsTlm_Payload, 620
MemPoolHandle
 CFE_SB_HousekeepingTlm_Payload, 605
 CFE_TBL_HousekeepingTlm_Payload, 637
Message
 CFE_EVS_LongEventTlm_Payload, 586
MessageFormatMode
 CFE_EVS_HousekeepingTlm_Payload, 583
MessageSendCounter
 CFE_EVS_HousekeepingTlm_Payload, 583
MessageTruncCounter
 CFE_EVS_HousekeepingTlm_Payload, 584
MicroSeconds
 CFE_TIME_TimeCmd_Payload, 676
MinElapsed
 CFE_TIME_DiagnosticTlm_Payload, 657
Mode
 CFE_ES_OverWriteSysLogCmd_Payload, 550
 FM_ChildQueueEntry_t, 680
 FM_DirListEntry_t, 686
 FM_FileInfoPkt_Payload_t, 691
 FM_FilenameAndMode_Payload_t, 693
ModifyTime
 FM_DirListEntry_t, 687
Module
 OS_static_symbol_record_t, 730
MonitorReportPkt
 FM_GlobalData_t, 702
MonitorTableHandle
 FM_GlobalData_t, 702
MonitorTablePtr
 FM_GlobalData_t, 702
Msg
 CFE_SB_Msg, 607
MsgCnt
 CFE_SB_RoutingFileEntry, 614
MsgFormat
 CFE_EVS_SetEventFormatCode_Payload, 591
MsgId
 CFE_SB_MsgMapFileEntry, 609
 CFE_SB_RouteCmd_Payload, 613
 CFE_SB_RoutingFileEntry, 615
 CFE_SB_SingleSubscriptionTlm_Payload, 617
 CFE_SB_SubEntries, 622
MsgIdsInUse
 CFE_SB_StatsTlm_Payload, 620

MsgLimitErrorCounter
 CFE_SB_HousekeepingTlm_Payload, 605

MsgReceiveErrorCounter
 CFE_SB_HousekeepingTlm_Payload, 605

MsgSendErrorCounter
 CFE_SB_HousekeepingTlm_Payload, 606

Name
 CFE_Config_IdNameEntry, 524
 CFE_ES_AppInfo, 528
 CFE_ES_CDSRegDumpRec, 532
 CFE_TBL_TblRegPacket_Payload, 647
 FM_MonitorReportEntry_t, 707
 FM_MonitorTableEntry_t, 709
 OS_static_symbol_record_t, 730

name
 OS_bin_sem_prop_t, 719
 OS_condvar_prop_t, 720
 OS_count_sem_prop_t, 720
 OS_module_prop_t, 726
 OS_mut_sem_prop_t, 727
 OS_queue_prop_t, 727
 OS_socket_prop_t, 729
 OS_task_prop_t, 731
 OS_timebase_prop_t, 733
 OS_timer_prop_t, 734

nominal_interval_time
 OS_timebase_prop_t, 733

NoSubscribersCounter
 CFE_SB_HousekeepingTlm_Payload, 606

NumBlocksRequested
 CFE_ES_MemPoolStats, 546

NumBytes
 CFE_TBL_File_Hdr, 631

NumCreated
 CFE_ES_BlockStats, 531

NumElements
 CFE_Config_ArrayValue, 524

NumFree
 CFE_ES_BlockStats, 531

NumFreeBytes
 CFE_ES_MemPoolStats, 546

NumFreeSharedBufs
 CFE_TBL_HousekeepingTlm_Payload, 637

NumLoadPending
 CFE_TBL_HousekeepingTlm_Payload, 637

NumOfChildTasks
 CFE_ES_AppInfo, 528

NumOpenFiles
 FM_HousekeepingPkt_Payload_t, 705
 FM_OpenFilesPkt_Payload_t, 711

NumTables
 CFE_TBL_HousekeepingTlm_Payload, 637

NumUsers

 CFE_TBL_Info, 639

NumValRequests
 CFE_TBL_HousekeepingTlm_Payload, 637

object_ids
 OS_FdSet, 721

ObjectName
 CFE_TBL_FileDef, 632

ObjectSize
 CFE_TBL_FileDef, 633

Offset
 CFE_TBL_File_Hdr, 631

OneHzAdjust
 CFE_TIME_DiagnosticTlm_Payload, 657

OneHzDirection
 CFE_TIME_DiagnosticTlm_Payload, 657

OneTimeAdjust
 CFE_TIME_DiagnosticTlm_Payload, 657

OneTimeDirection
 CFE_TIME_DiagnosticTlm_Payload, 658

OnEvent
 CFE_FS_FileWriteMetaData, 597

OpenFileCount
 fm_cmd_utils.c, 832

OpenFilesList
 FM_OpenFilesPkt_Payload_t, 712

OpenFilesPkt
 FM_GlobalData_t, 703

Opts
 CFE_SB_PipeInfoEntry, 611

OS_ADD_TASK_FLAGS
 osconfig.h, 936

OS_API_Init
 OSAL Core Operation APIs, 422

OS_API_Teardown
 OSAL Core Operation APIs, 422

OS_Application_Run
 OSAL Core Operation APIs, 422

OS_Application_Startup
 OSAL Core Operation APIs, 422

OS_ApplicationExit
 OSAL Core Operation APIs, 422

OS_ApplicationShutdown
 OSAL Core Operation APIs, 423

OS_ArgCallback_t
 common_types.h, 1353

OS_bin_sem_prop_t, 719
 creator, 719
 name, 719
 value, 719

OS_BinSemCreate
 OSAL Binary Semaphore APIs, 403

OS_BinSemDelete
 OSAL Binary Semaphore APIs, 403

OS_BinSemFlush
 OSAL Binary Semaphore APIs, [404](#)
OS_BinSemGetIdByName
 OSAL Binary Semaphore APIs, [404](#)
OS_BinSemGetInfo
 OSAL Binary Semaphore APIs, [405](#)
OS_BinSemGive
 OSAL Binary Semaphore APIs, [405](#)
OS_BinSemTake
 OSAL Binary Semaphore APIs, [406](#)
OS_BinSemTimedWait
 OSAL Binary Semaphore APIs, [406](#)
OS_BSP_GetArgC
 OSAL BSP low level access APIs, [407](#)
OS_BSP_GetArgV
 OSAL BSP low level access APIs, [407](#)
OS_BSP_GetResourceTypeConfig
 OSAL BSP low level access APIs, [407](#)
OS_BSP_SetExitCode
 OSAL BSP low level access APIs, [407](#)
OS_BSP_SetResourceTypeConfig
 OSAL BSP low level access APIs, [407](#)
OS_BUFFER_MSG_DEPTH
 osconfig.h, [936](#)
OS_BUFFER_SIZE
 osconfig.h, [937](#)
OS_BUILD_BASELINE
 osapi-version.h, [1388](#)
OS_BUILD_CODENAME
 osapi-version.h, [1388](#)
OS_BUILD_DEV_CYCLE
 osapi-version.h, [1388](#)
OS_BUILD_NUMBER
 osapi-version.h, [1388](#)
OS_CFG_MAX_VERSION_STR_LEN
 osapi-version.h, [1388](#)
OS_CHECK
 osapi-constants.h, [1362](#)
OS_CHK_ONLY
 osapi-fs.h, [1371](#)
OS_chkfs
 OSAL File System Level APIs, [460](#)
OS_chmod
 OSAL Standard File APIs, [448](#)
OS_close
 OSAL Standard File APIs, [448](#)
OS_CloseAllFiles
 OSAL Standard File APIs, [449](#)
OS_CloseFileByName
 OSAL Standard File APIs, [449](#)
OS_condvar_prop_t, [719](#)
 creator, [720](#)
 name, [720](#)
OS_CondVarBroadcast
 OSAL Condition Variable APIs, [425](#)
OS_CondVarCreate
 OSAL Condition Variable APIs, [425](#)
OS_CondVarDelete
 OSAL Condition Variable APIs, [426](#)
OS_CondVarGetIdByName
 OSAL Condition Variable APIs, [427](#)
OS_CondVarGetInfo
 OSAL Condition Variable APIs, [427](#)
OS_CondVarLock
 OSAL Condition Variable APIs, [428](#)
OS_CondVarSignal
 OSAL Condition Variable APIs, [428](#)
OS_CondVarTimedWait
 OSAL Condition Variable APIs, [428](#)
OS_CondVarUnlock
 OSAL Condition Variable APIs, [429](#)
OS_CondVarWait
 OSAL Condition Variable APIs, [429](#)
OS_ConvertToArrayIndex
 OSAL Object ID Utility APIs, [470](#)
OS_count_sem_prop_t, [720](#)
 creator, [720](#)
 name, [720](#)
 value, [720](#)
OS_CountSemCreate
 OSAL Counting Semaphore APIs, [430](#)
OS_CountSemDelete
 OSAL Counting Semaphore APIs, [431](#)
OS_CountSemGetIdByName
 OSAL Counting Semaphore APIs, [432](#)
OS_CountSemGetInfo
 OSAL Counting Semaphore APIs, [432](#)
OS_CountSemGive
 OSAL Counting Semaphore APIs, [433](#)
OS_CountSemTake
 OSAL Counting Semaphore APIs, [433](#)
OS_CountSemTimedWait
 OSAL Counting Semaphore APIs, [434](#)
OS_cp
 OSAL Standard File APIs, [449](#)
OS_DeleteAllObjects
 OSAL Core Operation APIs, [423](#)
OS_DirectoryClose
 OSAL Directory APIs, [435](#)
OS_DirectoryOpen
 OSAL Directory APIs, [435](#)
OS_DirectoryRead
 OSAL Directory APIs, [436](#)
OS_DirectoryRewind
 OSAL Directory APIs, [436](#)
os_dirent_t, [721](#)
 FileName, [721](#)
OS_DIRENTRY_NAME

fm_child.c, [762](#)
osapi-dir.h, [1364](#)

OS_ERR_BAD_ADDRESS
 OSAL Return Code Defines, [440](#)

OS_ERR_FILE
 OSAL Return Code Defines, [440](#)

OS_ERR_INCORRECT_OBJ_STATE
 OSAL Return Code Defines, [440](#)

OS_ERR_INCORRECT_OBJ_TYPE
 OSAL Return Code Defines, [440](#)

OS_ERR_INVALID_ARGUMENT
 OSAL Return Code Defines, [440](#)

OS_ERR_INVALID_ID
 OSAL Return Code Defines, [441](#)

OS_ERR_INVALID_PRIORITY
 OSAL Return Code Defines, [441](#)

OS_ERR_INVALID_SIZE
 OSAL Return Code Defines, [441](#)

OS_ERR_NAME_NOT_FOUND
 OSAL Return Code Defines, [441](#)

os_err_name_t
 osapi-error.h, [1367](#)

OS_ERR_NAME_TAKEN
 OSAL Return Code Defines, [441](#)

OS_ERR_NAME_TOO_LONG
 OSAL Return Code Defines, [441](#)

OS_ERR_NO_FREE_IDS
 OSAL Return Code Defines, [441](#)

OS_ERR_NOT_IMPLEMENTED
 OSAL Return Code Defines, [441](#)

OS_ERR_OBJECT_IN_USE
 OSAL Return Code Defines, [441](#)

OS_ERR_OPERATION_NOT_SUPPORTED
 OSAL Return Code Defines, [441](#)

OS_ERR_OUTPUT_TOO_LARGE
 OSAL Return Code Defines, [442](#)

OS_ERR_SEM_NOT_FULL
 OSAL Return Code Defines, [442](#)

OS_ERR_STREAM_DISCONNECTED
 OSAL Return Code Defines, [442](#)

OS_ERROR
 OSAL Return Code Defines, [442](#)

OS_ERROR_ADDRESS_MISALIGNED
 OSAL Return Code Defines, [442](#)

OS_ERROR_NAME_LENGTH
 osapi-error.h, [1366](#)

OS_ERROR_TIMEOUT
 OSAL Return Code Defines, [442](#)

OS_EVENT_MAX
 osapi-common.h, [1361](#)

OS_EVENT_RESERVED
 osapi-common.h, [1360](#)

OS_EVENT_RESOURCE_ALLOCATED
 osapi-common.h, [1360](#)

OS_EVENT_RESOURCE_CREATED
 osapi-common.h, [1360](#)

OS_EVENT_RESOURCE_DELETED
 osapi-common.h, [1361](#)

OS_Event_t
 osapi-common.h, [1360](#)

OS_EVENT_TASK_STARTUP
 osapi-common.h, [1361](#)

OS_EventHandler_t
 osapi-common.h, [1360](#)

OS_FDGetInfo
 OSAL Standard File APIs, [450](#)

OS_FdSet, [721](#)
 object_ids, [721](#)

OS_FILE_FLAG_CREATE
 osapi-file.h, [1370](#)

OS_FILE_FLAG_NONE
 osapi-file.h, [1370](#)

OS_file_flag_t
 osapi-file.h, [1370](#)

OS_FILE_FLAG_TRUNCATE
 osapi-file.h, [1370](#)

OS_file_prop_t, [722](#)
 IsValid, [722](#)
 Path, [722](#)
 User, [722](#)

OS_FileOpenCheck
 OSAL Standard File APIs, [450](#)

OS_FILESTAT_EXEC
 osapi-file.h, [1369](#)

OS_FILESTAT_ISDIR
 osapi-file.h, [1369](#)

OS_FILESTAT_MODE
 osapi-file.h, [1369](#)

OS_FILESTAT_MODE_DIR
 osapi-file.h, [1370](#)

OS_FILESTAT_MODE_EXEC
 osapi-file.h, [1370](#)

OS_FILESTAT_MODE_READ
 osapi-file.h, [1370](#)

OS_FILESTAT_MODE_WRITE
 osapi-file.h, [1370](#)

OS_FILESTAT_READ
 osapi-file.h, [1369](#)

OS_FILESTAT_SIZE
 osapi-file.h, [1369](#)

OS_FILESTAT_TIME
 osapi-file.h, [1369](#)

OS_FILESTAT_WRITE
 osapi-file.h, [1370](#)

OS_FileSysAddFixedMap
 OSAL File System Level APIs, [460](#)

OS_FileSysStatVolume
 OSAL File System Level APIs, [461](#)

OS_ForeachObject
 OSAL Object ID Utility APIs, 470

OS_ForeachObjectType
 OSAL Object ID Utility APIs, 471

OS_FP_ENABLED
 osapi-task.h, 1384

OS_FS_DEV_NAME_LEN
 osconfig.h, 937

OS_FS_ERR_DEVICE_NOT_FREE
 OSAL Return Code Defines, 442

OS_FS_ERR_DRIVE_NOT_CREATED
 OSAL Return Code Defines, 442

OS_FS_ERR_NAME_TOO_LONG
 OSAL Return Code Defines, 442

OS_FS_ERR_PATH_INVALID
 OSAL Return Code Defines, 442

OS_FS_ERR_PATH_TOO_LONG
 OSAL Return Code Defines, 443

OS_FS_GetPhysDriveName
 OSAL File System Level APIs, 462

OS_FS_PHYS_NAME_LEN
 osconfig.h, 937

OS_FS_VOL_NAME_LEN
 osconfig.h, 937

os_fsinfo_t, 722

- FreeFds, 723
- FreeVolumes, 723
- MaxFds, 723
- MaxVolumes, 723

os_fstat_t, 723

- FileModeBits, 724
- FileSize, 724
- FileTime, 724

OS_GetBuildNumber
 osapi-version.h, 1389

OS_GetErrorName
 OSAL Error Info APIs, 444

OS_GetFsInfo
 OSAL File System Level APIs, 462

OS_GetLocalTime
 OSAL Real Time Clock APIs, 409

OS_GetResourceName
 OSAL Object ID Utility APIs, 471

OS_GetVersionCodeName
 osapi-version.h, 1390

OS_GetVersionNumber
 osapi-version.h, 1390

OS_GetVersionString
 osapi-version.h, 1390

OS_heap_prop_t, 724

- free_blocks, 724
- free_bytes, 724
- largest_free_block, 724

OS_HeapGetInfo

OSAL Heap APIs, 466

OS_IdentifyObject
 OSAL Object ID Utility APIs, 472

OS_IdleLoop
 OSAL Core Operation APIs, 423

OS_inits
 OSAL File System Level APIs, 463

OS_INVALID_INT_NUM
 OSAL Return Code Defines, 443

OS_INVALID_POINTER
 OSAL Return Code Defines, 443

OS_INVALID_SEM_VALUE
 OSAL Return Code Defines, 443

OS_LAST_OFFICIAL
 osapi-version.h, 1388

OS_Iseek
 OSAL Standard File APIs, 451

OS_MAJOR_VERSION
 osapi-version.h, 1388

OS_MAX_API_NAME
 osconfig.h, 937

OS_MAX_BIN_SEMAPHORES
 osconfig.h, 937

OS_MAX_CMD_LEN
 osconfig.h, 937

OS_MAX_CONDVARS
 osconfig.h, 937

OS_MAX_CONSOLES
 osconfig.h, 938

OS_MAX_COUNT_SEMAPHORES
 osconfig.h, 938

OS_MAX_FILE_NAME
 osconfig.h, 938

OS_MAX_FILE_SYSTEMS
 osconfig.h, 938

OS_MAX_LOCAL_PATH_LEN
 osapi-constants.h, 1362

OS_MAX_MODULES
 osconfig.h, 938

OS_MAX_MUTEXES
 osconfig.h, 938

OS_MAX_NUM_OPEN_DIRS
 osconfig.h, 938

OS_MAX_NUM_OPEN_FILES
 osconfig.h, 938

OS_MAX_PATH_LEN
 osconfig.h, 939

OS_MAX_QUEUES
 osconfig.h, 939

OS_MAX_SYM_LEN
 osconfig.h, 939

OS_MAX_TASK_PRIORITY
 osapi-task.h, 1384

OS_MAX_TASKS

osconfig.h, 939
OS_MAX_TIMEBASES
 osconfig.h, 939
OS_MAX_TIMERS
 osconfig.h, 939
OS_MINOR_VERSION
 osapi-version.h, 1389
OS_MISSION_REV
 osapi-version.h, 1389
OS_mkdir
 OSAL Directory APIs, 437
OS_mkfs
 OSAL File System Level APIs, 463
OS_module_address_t, 725
 bss_address, 725
 bss_size, 725
 code_address, 725
 code_size, 725
 data_address, 725
 data_size, 725
 flags, 725
 valid, 725
OS_MODULE_FILE_EXTENSION
 osconfig.h, 939
OS_MODULE_FLAG_GLOBAL_SYMBOLS
 osapi-module.h, 1376
OS_MODULE_FLAG_LOCAL_SYMBOLS
 osapi-module.h, 1376
OS_module_prop_t, 726
 addr, 726
 entry_point, 726
 filename, 726
 host_module_id, 726
 name, 726
OS_ModuleInfo
 OSAL Dynamic Loader and Symbol APIs, 475
OS_ModuleLoad
 OSAL Dynamic Loader and Symbol APIs, 475
OS_ModuleSymbolLookup
 OSAL Dynamic Loader and Symbol APIs, 476
OS_ModuleUnload
 OSAL Dynamic Loader and Symbol APIs, 476
OS_mount
 OSAL File System Level APIs, 464
OS_mut_sem_prop_t, 726
 creator, 727
 name, 727
OS_MutSemCreate
 OSAL Mutex APIs, 478
OS_MutSemDelete
 OSAL Mutex APIs, 479
OS_MutSemGetIdByName
 OSAL Mutex APIs, 479
OS_MutSemGetInfo
 OSAL Mutex APIs, 480
OS_MutSemGive
 OSAL Mutex APIs, 480
OS_MutSemTake
 OSAL Mutex APIs, 481
OS_mv
 OSAL Standard File APIs, 451
OS_NetworkGetHostName
 OSAL Network ID APIs, 482
OS_NetworkGetID
 OSAL Network ID APIs, 482
OS_OBJECT_CREATOR_ANY
 osapi-constants.h, 1362
OS_OBJECT_ID_UNDEFINED
 osapi-constants.h, 1362
OS_OBJECT_INDEX_MASK
 osapi-idmap.h, 1373
OS_OBJECT_TYPE_OS_BINSEM
 OSAL Object Type Defines, 468
OS_OBJECT_TYPE_OS_CONDVAR
 OSAL Object Type Defines, 468
OS_OBJECT_TYPE_OS_CONSOLE
 OSAL Object Type Defines, 468
OS_OBJECT_TYPE_OS_COUNTSEM
 OSAL Object Type Defines, 468
OS_OBJECT_TYPE_OS_DIR
 OSAL Object Type Defines, 468
OS_OBJECT_TYPE_OS_FILESYS
 OSAL Object Type Defines, 468
OS_OBJECT_TYPE_OS_MODULE
 OSAL Object Type Defines, 468
OS_OBJECT_TYPE_OS_MUTEX
 OSAL Object Type Defines, 468
OS_OBJECT_TYPE_OS_QUEUE
 OSAL Object Type Defines, 468
OS_OBJECT_TYPE_OS_STREAM
 OSAL Object Type Defines, 469
OS_OBJECT_TYPE_OS_TASK
 OSAL Object Type Defines, 469
OS_OBJECT_TYPE_OS_TIMEBASE
 OSAL Object Type Defines, 469
OS_OBJECT_TYPE_OS_TIMECB
 OSAL Object Type Defines, 469
OS_OBJECT_TYPE_SHIFT
 osapi-idmap.h, 1373
OS_OBJECT_TYPE_UNDEFINED
 OSAL Object Type Defines, 469
OS_OBJECT_TYPE_USER
 OSAL Object Type Defines, 469
OS_ObjectIdDefined
 OSAL Object ID Utility APIs, 472
OS_ObjectIdEqual
 OSAL Object ID Utility APIs, 472
OS_ObjectIdFromInteger

OSAL Object ID Utility APIs, 473
OS_ObjectIdToArrayIndex
 OSAL Object ID Utility APIs, 473
OS_ObjectIdToInteger
 OSAL Object ID Utility APIs, 474
OS_OpenCreate
 OSAL Standard File APIs, 452
OS_PEND
 osapi-constants.h, 1362
OS_PRINTF
 cfe_es.h, 1024
 common_types.h, 1352
OS_printf
 OSAL Printf APIs, 483
OS_PRINTF_CONSOLE_NAME
 osconfig.h, 940
OS_printf_disable
 OSAL Printf APIs, 483
OS_printf_enable
 OSAL Printf APIs, 483
OS_QUEUE_EMPTY
 OSAL Return Code Defines, 443
OS_QUEUE_FULL
 OSAL Return Code Defines, 443
OS_QUEUE_ID_ERROR
 OSAL Return Code Defines, 443
OS_QUEUE_INVALID_SIZE
 OSAL Return Code Defines, 443
OS_QUEUE_MAX_DEPTH
 osconfig.h, 940
OS_queue_prop_t, 727
 creator, 727
 name, 727
OS_QUEUE_TIMEOUT
 OSAL Return Code Defines, 443
OS_QueueCreate
 OSAL Message Queue APIs, 484
OS_QueueDelete
 OSAL Message Queue APIs, 484
OS_QueueGet
 OSAL Message Queue APIs, 485
OS_QueueGetByName
 OSAL Message Queue APIs, 486
OS_QueueGetInfo
 OSAL Message Queue APIs, 486
OS_QueuePut
 OSAL Message Queue APIs, 487
OS_read
 OSAL Standard File APIs, 453
OS_READ_ONLY
 OSAL File Access Option Defines, 446
OS_READ_WRITE
 OSAL File Access Option Defines, 446
OS_RegisterEventHandler
 OSAL Core Operation APIs, 423
OS_remove
 OSAL Standard File APIs, 453
OS_rename
 OSAL Standard File APIs, 454
OS_REPAIR
 osapi-filesystem.h, 1371
OS_REVISION
 osapi-version.h, 1389
OS_rmdir
 OSAL Directory APIs, 437
OS_rmfs
 OSAL File System Level APIs, 465
OS_SEEK_CUR
 OSAL Reference Point For Seek Offset Defines, 446
OS_SEEK_END
 OSAL Reference Point For Seek Offset Defines, 446
OS_SEEK_SET
 OSAL Reference Point For Seek Offset Defines, 446
OS_SelectFdAdd
 OSAL Select APIs, 488
OS_SelectFdClear
 OSAL Select APIs, 488
OS_SelectFdIsSet
 OSAL Select APIs, 489
OS_SelectFdZero
 OSAL Select APIs, 489
OS_SelectMultiple
 OSAL Select APIs, 490
OS_SelectMultipleAbs
 OSAL Select APIs, 490
OS_SelectSingle
 OSAL Select APIs, 491
OS_SelectSingleAbs
 OSAL Select APIs, 492
OS_SEM_EMPTY
 OSAL Semaphore State Defines, 402
OS_SEM_FAILURE
 OSAL Return Code Defines, 443
OS_SEM_FULL
 OSAL Semaphore State Defines, 402
OS_SEM_TIMEOUT
 OSAL Return Code Defines, 444
OS_SetLocalTime
 OSAL Real Time Clock APIs, 409
OS_SHELL_CMD_INPUT_FILE_NAME
 osconfig.h, 940
OS_ShellOutputToFile
 OSAL Shell APIs, 493
OS SOCKADDR_MAX_LEN
 osapi-sockets.h, 1382
 osconfig.h, 940
OS_SockAddr_t, 728
 ActualLength, 728

AddrData, 728
OS_SockAddrData_t, 728
 AlignPtr, 729
 AlignU32, 729
 Buffer, 729
OS_socket_prop_t, 729
 creator, 729
 name, 729
OS_SocketAccept
 OSAL Socket Management APIs, 498
OS_SocketAcceptAbs
 OSAL Socket Management APIs, 499
OS_SocketAddrFromString
 OSAL Socket Address APIs, 494
OS_SocketAddrGetPort
 OSAL Socket Address APIs, 495
OS_SocketAddrInit
 OSAL Socket Address APIs, 495
OS_SocketAddrSetPort
 OSAL Socket Address APIs, 496
OS_SocketAddrToString
 OSAL Socket Address APIs, 496
OS_SocketBind
 OSAL Socket Management APIs, 500
OS_SocketBindAddress
 OSAL Socket Management APIs, 500
OS_SocketConnect
 OSAL Socket Management APIs, 501
OS_SocketConnectAbs
 OSAL Socket Management APIs, 501
OS_SocketDomain_INET
 osapi-sockets.h, 1382
OS_SocketDomain_INET6
 osapi-sockets.h, 1382
OS_SocketDomain_INVALID
 osapi-sockets.h, 1382
OS_SocketDomain_MAX
 osapi-sockets.h, 1382
OS_SocketDomain_t
 osapi-sockets.h, 1382
OS_SocketGetIdByName
 OSAL Socket Management APIs, 502
OS_SocketGetInfo
 OSAL Socket Management APIs, 503
OS_SocketListen
 OSAL Socket Management APIs, 503
OS_SocketOpen
 OSAL Socket Management APIs, 504
OS_SocketRecvFrom
 OSAL Socket Management APIs, 504
OS_SocketRecvFromAbs
 OSAL Socket Management APIs, 505
OS_SocketSendTo
 OSAL Socket Management APIs, 506

OS_SocketShutdown
 OSAL Socket Management APIs, 506
OS_SocketShutdownMode_NONE
 osapi-sockets.h, 1382
OS_SocketShutdownMode_SHUT_READ
 osapi-sockets.h, 1382
OS_SocketShutdownMode_SHUT_READWRITE
 osapi-sockets.h, 1382
OS_SocketShutdownMode_SHUT_WRITE
 osapi-sockets.h, 1382
OS_SocketShutdownMode_t
 osapi-sockets.h, 1382
OS_SocketType_DATAGRAM
 osapi-sockets.h, 1383
OS_SocketType_INVALID
 osapi-sockets.h, 1383
OS_SocketType_MAX
 osapi-sockets.h, 1383
OS_SocketType_STREAM
 osapi-sockets.h, 1383
OS_SocketType_t
 osapi-sockets.h, 1383
OS_stat
 OSAL Standard File APIs, 455
OS_static_symbol_record_t, 730
 Address, 730
 Module, 730
 Name, 730
OS_STATUS_STRING_LENGTH
 osapi-error.h, 1367
os_status_string_t
 osapi-error.h, 1367
OS_StatusToInteger
 OSAL Error Info APIs, 445
OS_StatusToString
 OSAL Error Info APIs, 445
OS_statvfs_t, 730
 block_size, 731
 blocks_free, 731
 total_blocks, 731
OS_STR
 osapi-version.h, 1389
OS_STR_HELPER
 osapi-version.h, 1389
OS_STREAM_STATE_BOUND
 osapi-select.h, 1380
OS_STREAM_STATE_CONNECTED
 osapi-select.h, 1380
OS_STREAM_STATE_LISTENING
 osapi-select.h, 1380
OS_STREAM_STATE_READABLE
 osapi-select.h, 1380
OS_STREAM_STATE_WRITABLE
 osapi-select.h, 1380

OS_StreamState_t
 osapi-select.h, 1380

OS_strlen
 OSAL Core Operation APIs, 424

OS_SUCCESS
 OSAL Return Code Defines, 444

OS_SymbolLookup
 OSAL Dynamic Loader and Symbol APIs, 477

OS_SymbolTableDump
 OSAL Dynamic Loader and Symbol APIs, 477

OS_task_prop_t, 731
 creator, 731
 name, 731
 priority, 731
 stack_size, 732

OS_TaskCreate
 OSAL Task APIs, 507

OS_TaskDelay
 OSAL Task APIs, 508

OS_TaskDelete
 OSAL Task APIs, 509

OS_TaskExit
 OSAL Task APIs, 509

OS_TaskFindIdBySystemData
 OSAL Task APIs, 509

OS_TaskGetId
 OSAL Task APIs, 510

OS_TaskGetIdByName
 OSAL Task APIs, 510

OS_TaskGetInfo
 OSAL Task APIs, 511

OS_TaskInstallDeleteHandler
 OSAL Task APIs, 511

OS_TaskSetPriority
 OSAL Task APIs, 511

OS_TIME_MAX
 osapi-clock.h, 1358

OS_TIME_MIN
 osapi-clock.h, 1358

OS_time_t, 732
 ticks, 732

OS_TIME_TICK_RESOLUTION_NS
 osapi-clock.h, 1359

OS_TIME TICKS_PER_MSEC
 osapi-clock.h, 1359

OS_TIME TICKS_PER_SECOND
 osapi-clock.h, 1359

OS_TIME TICKS_PER_USEC
 osapi-clock.h, 1359

OS_TIME_ZERO
 osapi-clock.h, 1358

OS_TimeAdd
 OSAL Real Time Clock APIs, 410

OS_TimeAssembleFromMicroseconds
 OSAL Real Time Clock APIs, 410

OS_TimeAssembleFromMilliseconds
 OSAL Real Time Clock APIs, 410

OS_TimeAssembleFromNanoseconds
 OSAL Real Time Clock APIs, 411

OS_TimeAssembleFromSubseconds
 OSAL Real Time Clock APIs, 411

OS_timebase_prop_t, 732
 accuracy, 733
 creator, 733
 freerun_time, 733
 name, 733
 nominal_interval_time, 733

OS_TimeBaseCreate
 OSAL Time Base APIs, 512

OS_TimeBaseDelete
 OSAL Time Base APIs, 513

OS_TimeBaseGetFreeRun
 OSAL Time Base APIs, 514

OS_TimeBaseGetIdByName
 OSAL Time Base APIs, 515

OS_TimeBaseGetInfo
 OSAL Time Base APIs, 515

OS_TimeBaseSet
 OSAL Time Base APIs, 516

OS_TimeCompare
 OSAL Real Time Clock APIs, 412

OS_TimedRead
 OSAL Standard File APIs, 455

OS_TimedReadAbs
 OSAL Standard File APIs, 456

OS_TimedWrite
 OSAL Standard File APIs, 457

OS_TimedWriteAbs
 OSAL Standard File APIs, 458

OS_TimeEqual
 OSAL Real Time Clock APIs, 413

OS_TimeFromRelativeMilliseconds
 OSAL Real Time Clock APIs, 413

OS_TimeFromTotalMicroseconds
 OSAL Real Time Clock APIs, 414

OS_TimeFromTotalMilliseconds
 OSAL Real Time Clock APIs, 414

OS_TimeFromTotalNanoseconds
 OSAL Real Time Clock APIs, 414

OS_TimeFromTotalSeconds
 OSAL Real Time Clock APIs, 415

OS_TimeGetFractionalPart
 OSAL Real Time Clock APIs, 415

OS_TimeGetMicrosecondsPart
 OSAL Real Time Clock APIs, 416

OS_TimeGetMillisecondsPart
 OSAL Real Time Clock APIs, 416

OS_TimeGetNanosecondsPart

OSAL Real Time Clock APIs, 417
OS_TimeGetSign
 OSAL Real Time Clock APIs, 417
OS_TimeGetSubsecondsPart
 OSAL Real Time Clock APIs, 418
OS_TimeGetTotalMicroseconds
 OSAL Real Time Clock APIs, 418
OS_TimeGetTotalMilliseconds
 OSAL Real Time Clock APIs, 419
OS_TimeGetTotalNanoseconds
 OSAL Real Time Clock APIs, 419
OS_TimeGetTotalSeconds
 OSAL Real Time Clock APIs, 420
OS_TIMER_ERR_INTERNAL
 OSAL Return Code Defines, 444
OS_TIMER_ERR_INVALID_ARGS
 OSAL Return Code Defines, 444
OS_TIMER_ERR_TIMER_ID
 OSAL Return Code Defines, 444
OS_TIMER_ERR_UNAVAILABLE
 OSAL Return Code Defines, 444
OS_timer_prop_t, 733
 accuracy, 734
 creator, 734
 interval_time, 734
 name, 734
 start_time, 734
OS_TimerAdd
 OSAL Timer APIs, 517
OS_TimerCallback_t
 osapi-timer.h, 1387
OS_TimerCreate
 OSAL Timer APIs, 518
OS_TimerDelete
 OSAL Timer APIs, 519
OS_TimerGetIdByName
 OSAL Timer APIs, 520
OS_TimerGetInfo
 OSAL Timer APIs, 520
OS_TimerSet
 OSAL Timer APIs, 521
OS_TimerSync_t
 osapi-timebase.h, 1386
OS_TimeSubtract
 OSAL Real Time Clock APIs, 420
OS_TimeToRelativeMilliseconds
 OSAL Real Time Clock APIs, 420
OS_TranslatePath
 OSAL File System Level APIs, 465
OS_unmount
 OSAL File System Level APIs, 466
OS_USED
 common_types.h, 1352
OS_UTILITYTASK_PRIORITY
 osconfig.h, 940
OS_UTILITYTASK_STACK_SIZE
 osconfig.h, 940
OS_VERSION
 osapi-version.h, 1389
OS_write
 OSAL Standard File APIs, 458
OS_WRITE_ONLY
 OSAL File Access Option Defines, 446
OSAL Binary Semaphore APIs, 402
 OS_BinSemCreate, 403
 OS_BinSemDelete, 403
 OS_BinSemFlush, 404
 OS_BinSemGetIdByName, 404
 OS_BinSemGetInfo, 405
 OS_BinSemGive, 405
 OS_BinSemTake, 406
 OS_BinSemTimedWait, 406
OSAL BSP low level access APIs, 407
 OS_BSP_GetArgC, 407
 OS_BSP_GetArgV, 407
 OS_BSP_GetResourceTypeConfig, 407
 OS_BSP_SetExitCode, 407
 OS_BSP_SetResourceTypeConfig, 407
OSAL Condition Variable APIs, 424
 OS_CondVarBroadcast, 425
 OS_CondVarCreate, 425
 OS_CondVarDelete, 426
 OS_CondVarGetIdByName, 427
 OS_CondVarGetInfo, 427
 OS_CondVarLock, 428
 OS_CondVarSignal, 428
 OS_CondVarTimedWait, 428
 OS_CondVarUnlock, 429
 OS_CondVarWait, 429
OSAL Core Operation APIs, 421
 OS_API_Init, 422
 OS_API_Teardown, 422
 OS_Application_Run, 422
 OS_Application_Startup, 422
 OS_ApplicationExit, 422
 OS_ApplicationShutdown, 423
 OS_DeleteAllObjects, 423
 OS_IdleLoop, 423
 OS_RegisterEventHandler, 423
 OS_strnlen, 424
OSAL Counting Semaphore APIs, 430
 OS_CountSemCreate, 430
 OS_CountSemDelete, 431
 OS_CountSemGetIdByName, 432
 OS_CountSemGetInfo, 432
 OS_CountSemGive, 433
 OS_CountSemTake, 433
 OS_CountSemTimedWait, 434

OSAL Directory APIs, 434
 OS_DirectoryClose, 435
 OS_DirectoryOpen, 435
 OS_DirectoryRead, 436
 OS_DirectoryRewind, 436
 OS_mkdir, 437
 OS_rmdir, 437

OSAL Dynamic Loader and Symbol APIs, 474
 OS_ModuleInfo, 475
 OS_ModuleLoad, 475
 OS_ModuleSymbolLookup, 476
 OS_ModuleUnload, 476
 OS_SymbolLookup, 477
 OS_SymbolTableDump, 477

OSAL Error Info APIs, 444
 OS_GetErrorName, 444
 OS_StatusToInteger, 445
 OS_StatusToString, 445

OSAL File Access Option Defines, 446
 OS_READ_ONLY, 446
 OS_READ_WRITE, 446
 OS_WRITE_ONLY, 446

OSAL File System Level APIs, 459
 OS_chkfs, 460
 OS_FileSysAddFixedMap, 460
 OS_FileSysStatVolume, 461
 OS_FS_GetPhysDriveName, 462
 OS_GetFsInfo, 462
 OS_initfs, 463
 OS_mkfs, 463
 OS_mount, 464
 OS_rmfs, 465
 OS_TranslatePath, 465
 OS_unmount, 466

OSAL Heap APIs, 466
 OS_HeapGetInfo, 466

OSAL Message Queue APIs, 483
 OS_QueueCreate, 484
 OS_QueueDelete, 484
 OS_QueueGet, 485
 OS_QueueGetIdByName, 486
 OS_QueueGetInfo, 486
 OS_QueuePut, 487

OSAL Mutex APIs, 478
 OS_MutSemCreate, 478
 OS_MutSemDelete, 479
 OS_MutSemGetIdByName, 479
 OS_MutSemGetInfo, 480
 OS_MutSemGive, 480
 OS_MutSemTake, 481

OSAL Network ID APIs, 481
 OS_NetworkGetHostName, 482
 OS_NetworkGetID, 482

OSAL Object ID Utility APIs, 469
 OS_ConvertToArrayIndex, 470
 OS_ForEachObject, 470
 OS_ForEachObjectType, 471
 OS_GetResourceName, 471
 OS_IdentifyObject, 472
 OS_ObjectIdDefined, 472
 OS_ObjectIdEqual, 472
 OS_ObjectIdFromInteger, 473
 OS_ObjectIdToArrayIndex, 473
 OS_ObjectIdToInteger, 474

OSAL Object Type Defines, 467
 OS_OBJECT_TYPE_OS_BINSEM, 468
 OS_OBJECT_TYPE_OS_CONDVAR, 468
 OS_OBJECT_TYPE_OS_CONSOLE, 468
 OS_OBJECT_TYPE_OS_COUNTSEM, 468
 OS_OBJECT_TYPE_OS_DIR, 468
 OS_OBJECT_TYPE_OS_FILESYS, 468
 OS_OBJECT_TYPE_OS_MODULE, 468
 OS_OBJECT_TYPE_OS_MUTEX, 468
 OS_OBJECT_TYPE_OS_QUEUE, 468
 OS_OBJECT_TYPE_OS_STREAM, 469
 OS_OBJECT_TYPE_OS_TASK, 469
 OS_OBJECT_TYPE_OS_TIMEBASE, 469
 OS_OBJECT_TYPE_OS_TIMECB, 469
 OS_OBJECT_TYPE_UNDEFINED, 469
 OS_OBJECT_TYPE_USER, 469

OSAL Printf APIs, 482
 OS_printf, 483
 OS_printf_disable, 483
 OS_printf_enable, 483

OSAL Real Time Clock APIs, 408
 OS_GetLocalTime, 409
 OS_SetLocalTime, 409
 OS_TimeAdd, 410
 OS_TimeAssembleFromMicroseconds, 410
 OS_TimeAssembleFromMilliseconds, 410
 OS_TimeAssembleFromNanoseconds, 411
 OS_TimeAssembleFromSubseconds, 411
 OS_TimeCompare, 412
 OS_TimeEqual, 413
 OS_TimeFromRelativeMilliseconds, 413
 OS_TimeFromTotalMicroseconds, 414
 OS_TimeFromTotalMilliseconds, 414
 OS_TimeFromTotalNanoseconds, 414
 OS_TimeFromTotalSeconds, 415
 OS_TimeGetFractionalPart, 415
 OS_TimeGetMicrosecondsPart, 416
 OS_TimeGetMillisecondsPart, 416
 OS_TimeGetNanosecondsPart, 417
 OS_TimeGetSign, 417
 OS_TimeGetSubsecondsPart, 418
 OS_TimeGetTotalMicroseconds, 418
 OS_TimeGetTotalMilliseconds, 419
 OS_TimeGetTotalNanoseconds, 419

OS_TimeGetTotalSeconds, 420
 OS_TimeSubtract, 420
 OS_TimeToRelativeMilliseconds, 420
 OSAL Reference Point For Seek Offset Defines, 446
 OS_SEEK_CUR, 446
 OS_SEEK_END, 446
 OS_SEEK_SET, 446
 OSAL Return Code Defines, 438
 OS_ERR_BAD_ADDRESS, 440
 OS_ERR_FILE, 440
 OS_ERR_INCORRECT_OBJ_STATE, 440
 OS_ERR_INCORRECT_OBJ_TYPE, 440
 OS_ERR_INVALID_ARGUMENT, 440
 OS_ERR_INVALID_ID, 441
 OS_ERR_INVALID_PRIORITY, 441
 OS_ERR_INVALID_SIZE, 441
 OS_ERR_NAME_NOT_FOUND, 441
 OS_ERR_NAME_TAKEN, 441
 OS_ERR_NAME_TOO_LONG, 441
 OS_ERR_NO_FREE_IDS, 441
 OS_ERR_NOT_IMPLEMENTED, 441
 OS_ERR_OBJECT_IN_USE, 441
 OS_ERR_OPERATION_NOT_SUPPORTED, 441
 OS_ERR_OUTPUT_TOO_LARGE, 442
 OS_ERR_SEM_NOT_FULL, 442
 OS_ERR_STREAM_DISCONNECTED, 442
 OS_ERROR, 442
 OS_ERROR_ADDRESS_MISALIGNED, 442
 OS_ERROR_TIMEOUT, 442
 OS_FS_ERR_DEVICE_NOT_FREE, 442
 OS_FS_ERR_DRIVE_NOT_CREATED, 442
 OS_FS_ERR_NAME_TOO_LONG, 442
 OS_FS_ERR_PATH_INVALID, 442
 OS_FS_ERR_PATH_TOO_LONG, 443
 OS_INVALID_INT_NUM, 443
 OS_INVALID_POINTER, 443
 OS_INVALID_SEM_VALUE, 443
 OS_QUEUE_EMPTY, 443
 OS_QUEUE_FULL, 443
 OS_QUEUE_ID_ERROR, 443
 OS_QUEUE_INVALID_SIZE, 443
 OS_QUEUE_TIMEOUT, 443
 OS_SEM_FAILURE, 443
 OS_SEM_TIMEOUT, 444
 OS_SUCCESS, 444
 OS_TIMER_ERR_INTERNAL, 444
 OS_TIMER_ERR_INVALID_ARGS, 444
 OS_TIMER_ERR_TIMER_ID, 444
 OS_TIMER_ERR_UNAVAILABLE, 444
 OSAL Select APIs, 487
 OS_SelectFdAdd, 488
 OS_SelectFdClear, 488
 OS_SelectFdIsSet, 489
 OS_SelectFdZero, 489
 OS_SelectMultiple, 490
 OS_SelectMultipleAbs, 490
 OS_SelectSingle, 491
 OS_SelectSingleAbs, 492
 OSAL Semaphore State Defines, 402
 OS_SEM_EMPTY, 402
 OS_SEM_FULL, 402
 OSAL Shell APIs, 493
 OS_ShellOutputToFile, 493
 OSAL Socket Address APIs, 494
 OS_SocketAddrFromString, 494
 OS_SocketAddrGetPort, 495
 OS_SocketAddrInit, 495
 OS_SocketAddrSetPort, 496
 OS_SocketAddrToString, 496
 OSAL Socket Management APIs, 497
 OS_SocketAccept, 498
 OS_SocketAcceptAbs, 499
 OS_SocketBind, 500
 OS_SocketBindAddress, 500
 OS_SocketConnect, 501
 OS_SocketConnectAbs, 501
 OS_SocketGetIdByName, 502
 OS_SocketGetInfo, 503
 OS_SocketListen, 503
 OS_SocketOpen, 504
 OS_SocketRecvFrom, 504
 OS_SocketRecvFromAbs, 505
 OS_SocketSendTo, 506
 OS_SocketShutdown, 506
 OSAL Standard File APIs, 447
 OS_chmod, 448
 OS_close, 448
 OS_CloseAllFiles, 449
 OS_CloseFileByName, 449
 OS_cp, 449
 OS_FDGetInfo, 450
 OS_FileOpenCheck, 450
 OS_lseek, 451
 OS_mv, 451
 OS_OpenCreate, 452
 OS_read, 453
 OS_remove, 453
 OS_rename, 454
 OS_stat, 455
 OS_TimedRead, 455
 OS_TimedReadAbs, 456
 OS_TimedWrite, 457
 OS_TimedWriteAbs, 458
 OS_write, 458
 OSAL Task APIs, 507
 OS_TaskCreate, 507
 OS_TaskDelay, 508
 OS_TaskDelete, 509

OS_TaskExit, 509
OS_TaskFindIdBySystemData, 509
OS_TaskGetId, 510
OS_TaskGetIdByName, 510
OS_TaskGetInfo, 511
OS_TaskInstallDeleteHandler, 511
OS_TaskSetPriority, 511
OSAL Time Base APIs, 512
 OS_TimeBaseCreate, 512
 OS_TimeBaseDelete, 513
 OS_TimeBaseGetFreeRun, 514
 OS_TimeBaseGetIdByName, 515
 OS_TimeBaseGetInfo, 515
 OS_TimeBaseSet, 516
OSAL Timer APIs, 517
 OS_TimerAdd, 517
 OS_TimerCreate, 518
 OS_TimerDelete, 519
 OS_TimerGetIdByName, 520
 OS_TimerGetInfo, 520
 OS_TimerSet, 521
osal/docs/src/osal_frontpage.dox, 1350
osal/docs/src/osal_fs.dox, 1350
osal/docs/src/osal_timer.dox, 1350
osal/src/os/inc/common_types.h, 1350
osal/src/os/inc/osapi-binsem.h, 1355
osal/src/os/inc/osapi-bsp.h, 1356
osal/src/os/inc/osapi-clock.h, 1356
osal/src/os/inc/osapi-common.h, 1359
osal/src/os/inc/osapi-condvar.h, 1361
osal/src/os/inc/osapi-constants.h, 1362
osal/src/os/inc/osapi-countsem.h, 1363
osal/src/os/inc/osapi-dir.h, 1363
osal/src/os/inc/osapi-error.h, 1364
osal/src/os/inc/osapi-file.h, 1367
osal/src/os/inc/osapi-filesystems.h, 1370
osal/src/os/inc/osapi-heap.h, 1372
osal/src/os/inc/osapi-idmap.h, 1372
osal/src/os/inc/osapi-macros.h, 1374
osal/src/os/inc/osapi-module.h, 1375
osal/src/os/inc/osapi-mutex.h, 1377
osal/src/os/inc/osapi-network.h, 1377
osal/src/os/inc/osapi-printf.h, 1378
osal/src/os/inc/osapi-queue.h, 1378
osal/src/os/inc/osapi-select.h, 1379
osal/src/os/inc/osapi-shell.h, 1380
osal/src/os/inc/osapi-sockets.h, 1380
osal/src/os/inc/osapi-task.h, 1383
osal/src/os/inc/osapi-timebase.h, 1385
osal/src/os/inc/osapi-timer.h, 1386
osal/src/os/inc/osapi-version.h, 1387
osal/src/os/inc/osapi.h, 1390
OSAL_API_VERSION
 osapi-version.h, 1389
OSAL_BLOCKCOUNT_C
 common_types.h, 1352
osal_blockcount_t
 common_types.h, 1353
OSAL_CONFIG_CONSOLE_ASYNC
 osconfig.h, 940
OSAL_CONFIG_INCLUDE_DYNAMIC_LOADER
 osconfig.h, 941
OSAL_CONFIG_INCLUDE_NETWORK
 osconfig.h, 941
OSAL_CONFIG_INCLUDE_STATIC_LOADER
 osconfig.h, 941
osal_id_t
 common_types.h, 1353
OSAL_INDEX_C
 common_types.h, 1352
osal_index_t
 common_types.h, 1353
OSAL_OBJTYPE_C
 common_types.h, 1352
osal_objtype_t
 common_types.h, 1354
OSAL_PRIORITY_C
 osapi-task.h, 1384
osal_priority_t
 osapi-task.h, 1385
OSAL_SIZE_C
 common_types.h, 1352
OSAL_STACKPTR_C
 osapi-task.h, 1384
osal_stackptr_t
 osapi-task.h, 1385
OSAL_STATUS_C
 common_types.h, 1352
osal_status_t
 common_types.h, 1354
osal_task
 osapi-task.h, 1385
OSAL_TASK_STACK_ALLOCATE
 osapi-task.h, 1384
OSALMajorVersion
 CFE_ES_HousekeepingTlm_Payload, 541
OSALMinorVersion
 CFE_ES_HousekeepingTlm_Payload, 541
OSALMissionRevision
 CFE_ES_HousekeepingTlm_Payload, 542
OSALRevision
 CFE_ES_HousekeepingTlm_Payload, 542
osapi-clock.h
 OS_TIME_MAX, 1358
 OS_TIME_MIN, 1358
 OS_TIME_TICK_RESOLUTION_NS, 1359
 OS_TIME_TICKS_PER_MSEC, 1359
 OS_TIME_TICKS_PER_SECOND, 1359

OS_TIME_TICKS_PER_USEC, [1359](#)
 OS_TIME_ZERO, [1358](#)

osapi-common.h
 OS_EVENT_MAX, [1361](#)
 OS_EVENT_RESERVED, [1360](#)
 OS_EVENT_RESOURCE_ALLOCATED, [1360](#)
 OS_EVENT_RESOURCE_CREATED, [1360](#)
 OS_EVENT_RESOURCE_DELETED, [1361](#)
 OS_Event_t, [1360](#)
 OS_EVENT_TASK_STARTUP, [1361](#)
 OS_EventHandler_t, [1360](#)

osapi-constants.h
 OS_CHECK, [1362](#)
 OS_MAX_LOCAL_PATH_LEN, [1362](#)
 OS_OBJECT_CREATOR_ANY, [1362](#)
 OS_OBJECT_ID_UNDEFINED, [1362](#)
 OS_PEND, [1362](#)

osapi-dir.h
 OS_DIRENTRY_NAME, [1364](#)

osapi-error.h
 os_err_name_t, [1367](#)
 OS_ERROR_NAME_LENGTH, [1366](#)
 OS_STATUS_STRING_LENGTH, [1367](#)
 os_status_string_t, [1367](#)

osapi-file.h
 OS_FILE_FLAG_CREATE, [1370](#)
 OS_FILE_FLAG_NONE, [1370](#)
 OS_file_flag_t, [1370](#)
 OS_FILE_FLAG_TRUNCATE, [1370](#)
 OS_FILESTAT_EXEC, [1369](#)
 OS_FILESTAT_ISDIR, [1369](#)
 OS_FILESTAT_MODE, [1369](#)
 OS_FILESTAT_MODE_DIR, [1370](#)
 OS_FILESTAT_MODE_EXEC, [1370](#)
 OS_FILESTAT_MODE_READ, [1370](#)
 OS_FILESTAT_MODE_WRITE, [1370](#)
 OS_FILESTAT_READ, [1369](#)
 OS_FILESTAT_SIZE, [1369](#)
 OS_FILESTAT_TIME, [1369](#)
 OS_FILESTAT_WRITE, [1370](#)

osapi-filesystem.h
 OS_CHK_ONLY, [1371](#)
 OS_REPAIR, [1371](#)

osapi-idmap.h
 OS_OBJECT_INDEX_MASK, [1373](#)
 OS_OBJECT_TYPE_SHIFT, [1373](#)

osapi-macros.h
 ARGCHECK, [1374](#)
 BUGCHECK, [1374](#)
 BUGCHECK_VOID, [1375](#)
 BUGREPORT, [1375](#)
 LENGTHCHECK, [1375](#)

osapi-module.h
 OS_MODULE_FLAG_GLOBAL_SYMBOLS, [1376](#)

OS_MODULE_FLAG_LOCAL_SYMBOLS, [1376](#)

osapi-select.h
 OS_STREAM_STATE_BOUND, [1380](#)
 OS_STREAM_STATE_CONNECTED, [1380](#)
 OS_STREAM_STATE_LISTENING, [1380](#)
 OS_STREAM_STATE_READABLE, [1380](#)
 OS_STREAM_STATE_WRITABLE, [1380](#)
 OS_StreamState_t, [1380](#)

osapi-sockets.h
 OS_SOCKADDR_MAX_LEN, [1382](#)
 OS_SocketDomain_INET, [1382](#)
 OS_SocketDomain_INET6, [1382](#)
 OS_SocketDomain_INVALID, [1382](#)
 OS_SocketDomain_MAX, [1382](#)
 OS_SocketDomain_t, [1382](#)
 OS_SocketShutdownMode_NONE, [1382](#)
 OS_SocketShutdownMode_SHUT_READ, [1382](#)
 OS_SocketShutdownMode_SHUT_READWRITE, [1382](#)
 OS_SocketShutdownMode_SHUT_WRITE, [1382](#)
 OS_SocketShutdownMode_t, [1382](#)
 OS_SocketType_DATAGRAM, [1383](#)
 OS_SocketType_INVALID, [1383](#)
 OS_SocketType_MAX, [1383](#)
 OS_SocketType_STREAM, [1383](#)
 OS_SocketType_t, [1383](#)

osapi-task.h
 OS_FP_ENABLED, [1384](#)
 OS_MAX_TASK_PRIORITY, [1384](#)
 OSAL_PRIORITY_C, [1384](#)
 osal_priority_t, [1385](#)
 OSAL_STACKPTR_C, [1384](#)
 osal_stackptr_t, [1385](#)
 osal_task, [1385](#)
 OSAL_TASK_STACK_ALLOCATE, [1384](#)

osapi-timebase.h
 OS_TimerSync_t, [1386](#)

osapi-timer.h
 OS_TimerCallback_t, [1387](#)

osapi-version.h
 OS_BUILD_BASELINE, [1388](#)
 OS_BUILD_CODENAME, [1388](#)
 OS_BUILD_DEV_CYCLE, [1388](#)
 OS_BUILD_NUMBER, [1388](#)
 OS_CFG_MAX_VERSION_STR_LEN, [1388](#)
 OS_GetBuildNumber, [1389](#)
 OS_GetVersionCodeName, [1390](#)
 OS_GetVersionNumber, [1390](#)
 OS_GetVersionString, [1390](#)
 OS_LAST_OFFICIAL, [1388](#)
 OS_MAJOR_VERSION, [1388](#)
 OS_MINOR_VERSION, [1389](#)
 OS_MISSION_REV, [1389](#)
 OS_REVISION, [1389](#)

OS_STR, 1389
OS_STR_HELPER, 1389
OS_VERSION, 1389
OSAL_API_VERSION, 1389
osconfig.h
 OS_ADD_TASK_FLAGS, 936
 OS_BUFFER_MSG_DEPTH, 936
 OS_BUFFER_SIZE, 937
 OS_FS_DEV_NAME_LEN, 937
 OS_FS_PHYS_NAME_LEN, 937
 OS_FS_VOL_NAME_LEN, 937
 OS_MAX_API_NAME, 937
 OS_MAX_BIN_SEMAPHORES, 937
 OS_MAX_CMD_LEN, 937
 OS_MAX_CONDVARS, 937
 OS_MAX_CONSOLES, 938
 OS_MAX_COUNT_SEMAPHORES, 938
 OS_MAX_FILE_NAME, 938
 OS_MAX_FILE_SYSTEMS, 938
 OS_MAX_MODULES, 938
 OS_MAX_MUTEXES, 938
 OS_MAX_NUM_OPEN_DIRS, 938
 OS_MAX_NUM_OPEN_FILES, 938
 OS_MAX_PATH_LEN, 939
 OS_MAX_QUEUES, 939
 OS_MAX_SYM_LEN, 939
 OS_MAX_TASKS, 939
 OS_MAX_TIMEBASES, 939
 OS_MAX_TIMERS, 939
 OS_MODULE_FILE_EXTENSION, 939
 OS_PRINTF_CONSOLE_NAME, 940
 OS_QUEUE_MAX_DEPTH, 940
 OS_SHELL_CMD_INPUT_FILE_NAME, 940
 OS SOCKADDR_MAX_LEN, 940
 OS UTILITYTASK_PRIORITY, 940
 OS UTILITYTASK_STACK_SIZE, 940
 OSAL_CONFIG_CONSOLE_ASYNC, 940
 OSAL_CONFIG_INCLUDE_DYNAMIC_LOADER, 941
 OSAL_CONFIG_INCLUDE_NETWORK, 941
 OSAL_CONFIG_INCLUDE_STATIC_LOADER, 941
OutputPort
 CFE_EVS_HousekeepingTlm_Payload, 584
Overwrite
 FM_OvwSourceTargetFilename_Payload_t, 713
OwnerAppName
 CFE_TBL_TblRegPacket_Payload, 647
PacketFiles
 FM_DirListPkt_Payload_t, 688
PacketID
 CFE_EVS_LongEventTlm_Payload, 586
 CFE_EVS_ShortEventTlm_Payload, 595
Padding
 FM_MonitorReportEntry_t, 707
Padding1
 FM_ChildQueueEntry_t, 680
Padding2
 FM_ChildQueueEntry_t, 680
Parameter
 CFE_TBL_NotifyCmd_Payload, 642
Path
 OS_file_prop_t, 722
Payload
 CFE_ES_DeleteCDSCmd, 534
 CFE_ES_DumpCDSRegistryCmd, 535
 CFE_ES_FileNameCmd, 536
 CFE_ES_HousekeepingTlm, 537
 CFE_ES_MemStatsTlm, 547
 CFE_ES_OneAppTlm, 548
 CFE_ES_OverWriteSysLogCmd, 549
 CFE_ES_QueryAllCmd, 552
 CFE_ES_QueryAllTasksCmd, 553
 CFE_ES_QueryOneCmd, 553
 CFE_ES_ReloadAppCmd, 554
 CFE_ES_RestartAppCmd, 555
 CFE_ES_RestartCmd, 556
 CFE_ES_SendMemPoolStatsCmd, 557
 CFE_ES_SetMaxPRCountCmd, 559
 CFE_ES_SetPerfFilterMaskCmd, 560
 CFE_ES_SetPerfTriggerMaskCmd, 561
 CFE_ES_StartApp, 562
 CFE_ES_StartPerfDataCmd, 565
 CFE_ES_StopAppCmd, 565
 CFE_ES_StopPerfDataCmd, 566
 CFE_ES_WriteERLogCmd, 568
 CFE_ES_WriteSysLogCmd, 569
 CFE_EVS_AddEventFilterCmd, 569
 CFE_EVS_DeleteEventFilterCmd, 576
 CFE_EVS_DisableAppEventsCmd, 576
 CFE_EVS_DisableAppEventTypeCmd, 577
 CFE_EVS_DisableEventEventTypeCmd, 578
 CFE_EVS_DisablePortsCmd, 578
 CFE_EVS_EnableAppEventsCmd, 579
 CFE_EVS_EnableAppEventTypeCmd, 579
 CFE_EVS_EnableEventCmd, 580
 CFE_EVS_EnablePortsCmd, 581
 CFE_EVS_HousekeepingTlm, 581
 CFE_EVS_LongEventTlm, 585
 CFE_EVS_ResetAllFiltersCmd, 589
 CFE_EVS_ResetAppCounterCmd, 589
 CFE_EVS_ResetFilterCmd, 590
 CFE_EVS_SetEventFormatModeCmd, 592
 CFE_EVS_SetFilterCmd, 593
 CFE_EVS_SetLogModeCmd, 594
 CFE_EVS_ShortEventTlm, 594
 CFE_EVS_WriteAppDataFileCmd, 596
 CFE_EVS_WriteLogDataFileCmd, 596

CFE_SB_AllSubscriptionsTlm, 599
 CFE_SB_DisableRouteCmd, 601
 CFE_SB_EnableRouteCmd, 602
 CFE_SB_HousekeepingTlm, 603
 CFE_SB_SingleSubscriptionTlm, 617
 CFE_SB_StatsTlm, 618
 CFE_SB_WriteMapInfoCmd, 623
 CFE_SB_WritePipeInfoCmd, 624
 CFE_SB_WriteRoutingInfoCmd, 625
 CFE_TBL_AbortLoadCmd, 625
 CFE_TBL_ActivateCmd, 626
 CFE_TBL_DeleteCDSCmd, 628
 CFE_TBL_DumpCmd, 629
 CFE_TBL_DumpRegistryCmd, 630
 CFE_TBL_HousekeepingTlm, 633
 CFE_TBL_LoadCmd, 640
 CFE_TBL_NotifyCmd, 641
 CFE_TBL_SendRegistryCmd, 644
 CFE_TBL_TableRegistryTlm, 645
 CFE_TBL_ValidateCmd, 649
 CFE_TIME_AddAdjustCmd, 650
 CFE_TIME_AddDelayCmd, 650
 CFE_TIME_AddOneHzAdjustmentCmd, 651
 CFE_TIME_DiagnosticTlm, 652
 CFE_TIME_HousekeepingTlm, 661
 CFE_TIME_SetLeapSecondsCmd, 667
 CFE_TIME_SetMETCmd, 668
 CFE_TIME_SetSignalCmd, 669
 CFE_TIME_SetSourceCmd, 669
 CFE_TIME_SetStateCmd, 670
 CFE_TIME_SetSTCFCmd, 670
 CFE_TIME_SetTimeCmd, 671
 CFE_TIME_SubAdjustCmd, 673
 CFE_TIME_SubDelayCmd, 674
 CFE_TIME_SubOneHzAdjustmentCmd, 674
 CFE_TIME_ToneDataCmd, 676
 FM_ConcatFilesCmd_t, 681
 FM_CopyFileCmd_t, 682
 FM_CreateDirectoryCmd_t, 682
 FM_DecompressFileCmd_t, 683
 FM_DeleteAllFilesCmd_t, 684
 FM_DeleteDirectoryCmd_t, 685
 FM_DeleteFileCmd_t, 685
 FM_DirListPkt_t, 689
 FM_FileInfoPkt_t, 691
 FM_GetDirListFileCmd_t, 695
 FM_GetDirListPktCmd_t, 696
 FM_GetFileInfoCmd_t, 697
 FM_HousekeepingPkt_t, 705
 FM_MonitorReportPkt_t, 708
 FM_MoveFileCmd_t, 710
 FM_OpenFilesPkt_t, 712
 FM_RenameFileCmd_t, 714
 FM_SetPermissionsCmd_t, 715
 FM_SetTableStateCmd_t, 716
 PeakMemInUse
 CFE_SB_StatsTlm_Payload, 620
 PeakMsgIdsInUse
 CFE_SB_StatsTlm_Payload, 620
 PeakPipesInUse
 CFE_SB_StatsTlm_Payload, 621
 PeakQueueDepth
 CFE_SB_PipeDepthStats, 610
 CFE_SB_PipeInfoEntry, 611
 PeakSBBuffersInUse
 CFE_SB_StatsTlm_Payload, 621
 PeakSubscriptionsInUse
 CFE_SB_StatsTlm_Payload, 621
 PerfDataCount
 CFE_ES_HousekeepingTlm_Payload, 542
 PerfDataEnd
 CFE_ES_HousekeepingTlm_Payload, 542
 PerfDataStart
 CFE_ES_HousekeepingTlm_Payload, 542
 PerfDataToWrite
 CFE_ES_HousekeepingTlm_Payload, 542
 PerfFilterMask
 CFE_ES_HousekeepingTlm_Payload, 542
 PerfMode
 CFE_ES_HousekeepingTlm_Payload, 543
 PerfState
 CFE_ES_HousekeepingTlm_Payload, 543
 PerfTriggerCount
 CFE_ES_HousekeepingTlm_Payload, 543
 PerfTriggerMask
 CFE_ES_HousekeepingTlm_Payload, 543
 Pipe
 CFE_SB_RouteCmd_Payload, 614
 CFE_SB_SingleSubscriptionTlm_Payload, 617
 CFE_SB_SubEntries, 622
 PipeDepthStats
 CFE_SB_StatsTlm_Payload, 621
 PipelId
 CFE_SB_PipeDepthStats, 610
 CFE_SB_PipeInfoEntry, 612
 CFE_SB_RoutingFileEntry, 615
 PipeName
 CFE_SB_PipeInfoEntry, 612
 CFE_SB_RoutingFileEntry, 615
 PipeOptsErrorCounter
 CFE_SB_HousekeepingTlm_Payload, 606
 PipeOverflowErrorCounter
 CFE_SB_HousekeepingTlm_Payload, 606
 PipesInUse
 CFE_SB_StatsTlm_Payload, 621
 PktSegment
 CFE_SB_AllSubscriptionsTlm_Payload, 600
 PoolHandle

CFE_ES_PoolStatsTlm_Payload, 551
CFE_ES_SendMemPoolStatsCmd_Payload, 558
PoolSize
 CFE_ES_MemPoolStats, 547
PoolStats
 CFE_ES_PoolStatsTlm_Payload, 551
Priority
 CFE_ES_AppInfo, 529
 CFE_ES_StartAppCmd_Payload, 563
 CFE_ES_TaskInfo, 567
 CFE_SB_Qos_t, 612
priority
 OS_task_prop_t, 731
ProcessorID
 CFE_EVS_PacketID, 588
 CFE_FS_Header, 599
ProcessorResets
 CFE_ES_HousekeepingTlm_Payload, 543
psp/fsw/inc/cfe_psp.h, 1391
psp/fsw/inc/cfe_psp_cache_api.h, 1392
psp/fsw/inc/cfe_psp_cds_api.h, 1392
psp/fsw/inc/cfe_psp_eepromaccess_api.h, 1394
psp/fsw/inc/cfe_psp_error.h, 1397
psp/fsw/inc/cfe_psp_exception_api.h, 1400
psp/fsw/inc/cfe_psp_id_api.h, 1402
psp/fsw/inc/cfe_psp_memaccess_api.h, 1402
psp/fsw/inc/cfe_psp_memrange_api.h, 1406
psp/fsw/inc/cfe_psp_port_api.h, 1412
psp/fsw/inc/cfe_psp_ssri.h, 1414
psp/fsw/inc/cfe_psp_timertick_api.h, 1415
psp/fsw/inc/cfe_psp_version_api.h, 1417
psp/fsw/inc/cfe_psp_watchdog_api.h, 1418
PSPMajorVersion
 CFE_ES_HousekeepingTlm_Payload, 543
PSPMinorVersion
 CFE_ES_HousekeepingTlm_Payload, 543
PSPMissionRevision
 CFE_ES_HousekeepingTlm_Payload, 544
PSPRevision
 CFE_ES_HousekeepingTlm_Payload, 544
Ptr
 CFE_ES_PoolAlign, 551
Qos
 CFE_SB_SingleSubscriptionTlm_Payload, 618
 CFE_SB_SubEntries, 622
RegisteredCoreApps
 CFE_ES_HousekeepingTlm_Payload, 544
RegisteredExternalApps
 CFE_ES_HousekeepingTlm_Payload, 544
RegisteredLibs
 CFE_ES_HousekeepingTlm_Payload, 544
RegisteredTasks
 CFE_ES_HousekeepingTlm_Payload, 544
Reliability
 CFE_SB_Qos_t, 612
ReportType
 FM_MonitorReportEntry_t, 707
Reserved
 CFE_TBL_File_Hdr, 631
ResetSubtype
 CFE_ES_HousekeepingTlm_Payload, 544
ResetType
 CFE_ES_HousekeepingTlm_Payload, 545
ResourceID
 CFE_ES_AppInfo, 529
RestartType
 CFE_ES_RestartCmd_Payload, 556
sample_perfids.h
 CFE_MISSION_ES_MAIN_PERF_ID, 996
 CFE_MISSION_ES_PERF_EXIT_BIT, 996
 CFE_MISSION_EVS_MAIN_PERF_ID, 996
 CFE_MISSION_SB_MAIN_PERF_ID, 996
 CFE_MISSION_SB_MSG_LIM_PERF_ID, 997
 CFE_MISSION_SB_PIPE_OFLOW_PERF_ID, 997
 CFE_MISSION_TBL_MAIN_PERF_ID, 997
 CFE_MISSION_TIME_LOCAL1HZISR_PERF_ID,
 997
 CFE_MISSION_TIME_LOCAL1HZTASK_PERF_ID,
 997
 CFE_MISSION_TIME_MAIN_PERF_ID, 997
 CFE_MISSION_TIME_SENDMET_PERF_ID, 997
 CFE_MISSION_TIME_TONE1HZISR_PERF_ID,
 997
 CFE_MISSION_TIME_TONE1HZTASK_PERF_ID,
 997
SBBuffersInUse
 CFE_SB_StatsTlm_Payload, 621
SearchOpenFileData
 fm_cmd_utils.c, 832
Seconds
 CFE_TIME_OneHzAdjustmentCmd_Payload, 665
 CFE_TIME_SysTime, 675
 CFE_TIME_TimeCmd_Payload, 676
Seconds1HzAdj
 CFE_TIME_HousekeepingTlm_Payload, 663
SecondsDelay
 CFE_TIME_HousekeepingTlm_Payload, 663
SecondsMET
 CFE_TIME_HousekeepingTlm_Payload, 663
SecondsSTCF
 CFE_TIME_HousekeepingTlm_Payload, 663
SendErrors
 CFE_SB_PipeInfoEntry, 612
Sequence
 CCSDS_PrimaryHeader, 523
ServerFlyState

CFE_TIME_DiagnosticTlm_Payload, [658](#)
Size
 CFE_ES_CDSRegDumpRec, [532](#)
 CFE_TBL_Info, [639](#)
 CFE_TBL_TblRegPacket_Payload, [647](#)
Source
 FM_OvwSourceTargetFilename_Payload_t, [713](#)
 FM_SourceTargetFileName_Payload_t, [717](#)
Source1
 FM_ChildQueueEntry_t, [680](#)
 FM_TwoSourceOneTarget_Payload_t, [718](#)
Source2
 FM_ChildQueueEntry_t, [680](#)
 FM_TwoSourceOneTarget_Payload_t, [718](#)
SpacecraftID
 CFE_EVS_PacketID, [588](#)
 CFE_FS_Header, [599](#)
Spare
 CFE_ES_TaskInfo, [567](#)
 CFE_EVS_AppNameBitMaskCmd_Payload, [571](#)
 CFE_EVS_BitMaskCmd_Payload, [575](#)
 CFE_EVS_SetEventFormatCode_Payload, [591](#)
 CFE_EVS_SetLogMode_Payload, [593](#)
 CFE_SB_PipeDepthStats, [610](#)
 CFE_SB_PipeInfoEntry, [612](#)
 CFE_SB_RouteCmd_Payload, [614](#)
 FM_FileInfoPkt_Payload_t, [691](#)
 FM_HousekeepingPkt_Payload_t, [705](#)
Spare01
 FM_GetDirectoryToFile_Payload_t, [694](#)
 FM_GetDirectoryToPkt_Payload_t, [695](#)
Spare1
 CFE_EVS_HousekeepingTlm_Payload, [584](#)
 CFE_EVS_LongEventTlm_Payload, [586](#)
Spare2
 CFE_EVS_HousekeepingTlm_Payload, [584](#)
 CFE_EVS_LongEventTlm_Payload, [586](#)
Spare2Align
 CFE_SB_HousekeepingTlm_Payload, [606](#)
Spare3
 CFE_EVS_HousekeepingTlm_Payload, [584](#)
Spare8a
 FM_GlobalData_t, [703](#)
Spare8b
 FM_GlobalData_t, [703](#)
stack_size
 OS_task_prop_t, [732](#)
StackSize
 CFE_ES_AppInfo, [529](#)
 CFE_ES_StartAppCmd_Payload, [563](#)
 CFE_ES_TaskInfo, [568](#)
start_time
 OS_timer_prop_t, [734](#)
StartAddress
 CFE_ES_AppInfo, [529](#)
 CFE_ES_StartAppCmd_Payload, [626](#)
 CFE_ES_TaskInfo, [523](#)
State
 CFE_SB_RoutingFileEntry, [615](#)
StreamId
 CCSDS_PrimaryHeader, [523](#)
SubscribeErrorCounter
 CFE_SB_HousekeepingTlm_Payload, [606](#)
SubscriptionsInUse
 CFE_SB_StatsTlm_Payload, [621](#)
Subseconds
 CFE_TIME_OneHzAdjustmentCmd_Payload, [665](#)
 CFE_TIME_SysTime, [675](#)
Subsecs1HzAdj
 CFE_TIME_HousekeepingTlm_Payload, [663](#)
SubsecsDelay
 CFE_TIME_HousekeepingTlm_Payload, [663](#)
SubsecsMET
 CFE_TIME_HousekeepingTlm_Payload, [663](#)
SubsecsSTCF
 CFE_TIME_HousekeepingTlm_Payload, [664](#)
Subsystem
 CCSDS_ExtendedHeader, [522](#)
SubType
 CFE_FS_Header, [599](#)
 CFE_SB_SingleSubscriptionTlm_Payload, [618](#)
SuccessValCounter
 CFE_TBL_HousekeepingTlm_Payload, [637](#)
SysLogBytesUsed
 CFE_ES_HousekeepingTlm_Payload, [545](#)
SysLogEntries
 CFE_ES_HousekeepingTlm_Payload, [545](#)
SysLogMode
 CFE_ES_HousekeepingTlm_Payload, [545](#)
SysLogSize
 CFE_ES_HousekeepingTlm_Payload, [545](#)
SystemId
 CCSDS_ExtendedHeader, [522](#)
Table
 CFE_ES_CDSRegDumpRec, [532](#)
TableEntryIndex
 FM_TableIndexAndState_Payload_t, [718](#)
TableEntryState
 FM_TableIndexAndState_Payload_t, [718](#)
TableLoadedOnce
 CFE_TBL_Info, [639](#)
 CFE_TBL_TblRegPacket_Payload, [648](#)
TableName
 CFE_TBL_AbortLoadCmd_Payload, [626](#)
 CFE_TBL_ActivateCmd_Payload, [627](#)
 CFE_TBL_DelCDSCmd_Payload, [627](#)
 CFE_TBL_DumpCmd_Payload, [629](#)
 CFE_TBL_File_Hdr, [631](#)
 CFE_TBL_FileDef, [633](#)

CFE_TBL_SendRegistryCmd_Payload, 644
CFE_TBL_ValidateCmd_Payload, 649

Target
 FM_ChildQueueEntry_t, 680
 FM_OvwSourceTargetFilename_Payload_t, 713
 FM_SourceTargetFileName_Payload_t, 717
 FM_TwoSourceOneTarget_Payload_t, 719

TaskId
 CFE_ES_TaskInfo, 568

TaskName
 CFE_ES_TaskInfo, 568

TelemetryHeader
 CFE_ES_HousekeepingTlm, 537
 CFE_ES_MemStatsTlm, 547
 CFE_ES_OneAppTlm, 548
 CFE_EVS_HousekeepingTlm, 581
 CFE_EVS_LongEventTlm, 585
 CFE_EVS_ShortEventTlm, 594
 CFE_SB_AllSubscriptionsTlm, 600
 CFE_SB_HousekeepingTlm, 603
 CFE_SB_SingleSubscriptionTlm, 617
 CFE_SB_StatsTlm, 618
 CFE_TBL_HousekeepingTlm, 633
 CFE_TBL_TableRegistryTlm, 645
 CFE_TIME_DiagnosticTlm, 652
 CFE_TIME_HousekeepingTlm, 661
 FM_DirListPkt_t, 689
 FM_FileInfoPkt_t, 691
 FM_HousekeepingPkt_t, 705
 FM_MonitorReportPkt_t, 708
 FM_OpenFilesPkt_t, 712

TgtFilename
 CFE_TBL_FileDef, 633

ticks
 OS_time_t, 732

TimeOfLastUpdate
 CFE_TBL_Info, 639
 CFE_TBL_TblRegPacket_Payload, 648

TimeSeconds
 CFE_FS_Header, 599

TimeSinceTone
 CFE_TIME_DiagnosticTlm_Payload, 658

TimeSource
 CFE_TIME_SourceCmd_Payload, 672

TimeSubSeconds
 CFE_FS_Header, 599

ToneDataCounter
 CFE_TIME_DiagnosticTlm_Payload, 658

ToneDataLatch
 CFE_TIME_DiagnosticTlm_Payload, 658

ToneIntCounter
 CFE_TIME_DiagnosticTlm_Payload, 658

ToneIntErrorCounter
 CFE_TIME_DiagnosticTlm_Payload, 658

ToneMatchCounter
 CFE_TIME_DiagnosticTlm_Payload, 659

ToneMatchErrorCounter
 CFE_TIME_DiagnosticTlm_Payload, 659

ToneOverLimit
 CFE_TIME_DiagnosticTlm_Payload, 659

ToneSignalCounter
 CFE_TIME_DiagnosticTlm_Payload, 659

ToneSignalLatch
 CFE_TIME_DiagnosticTlm_Payload, 659

ToneSource
 CFE_TIME_SignalCmd_Payload, 672

ToneTaskCounter
 CFE_TIME_DiagnosticTlm_Payload, 659

ToneUnderLimit
 CFE_TIME_DiagnosticTlm_Payload, 659

total_blocks
 OS_statvfs_t, 731

TotalFiles
 FM_DirListPkt_Payload_t, 689

TotalSegments
 CFE_SB_AllSubscriptionsTlm_Payload, 601

TriggerMask
 CFE_ES_SetPerfTrigMaskCmd_Payload, 561

TriggerMaskNum
 CFE_ES_SetPerfTrigMaskCmd_Payload, 562

TriggerMode
 CFE_ES_StartPerfCmd_Payload, 564

Type
 CFE_ES_AppInfo, 529
 FM_MonitorTableEntry_t, 709

uint16
 common_types.h, 1354

uint32
 common_types.h, 1354

uint64
 common_types.h, 1354

uint8
 common_types.h, 1354

UnmarkedMem
 CFE_SB_HousekeepingTlm_Payload, 606

UnregisteredAppCounter
 CFE_EVS_HousekeepingTlm_Payload, 584

User
 OS_file_prop_t, 722

UserDefAddr
 CFE_TBL_Info, 639

valid
 OS_module_address_t, 725

ValidationCounter
 CFE_TBL_HousekeepingTlm_Payload, 637

ValidationFuncPtr
 CFE_TBL_TblRegPacket_Payload, 648

Value

CFE_SB_MsgId_t, [608](#)

value

OS_bin_sem_prop_t, [719](#)

OS_count_sem_prop_t, [720](#)

VersionCounter

CFE_TIME_DiagnosticTlm_Payload, [660](#)

VirtualMET

CFE_TIME_DiagnosticTlm_Payload, [660](#)