Flight Software Branch

FSW Version Description Document

Core Flight Software System (CFS) Memory Manager (MM)

Build: 2.4.0.0

Release Date: 4/27/2015

1.0 FSW Version Description

1.1 purpose and summary

The purpose of this build is to continue to refine the cFS Memory Manager (MM) application product. This build provides minor bug fixes, user’s guide updates, and a few minor requirements updates. This document serves as the notification of the Build 2.4.0.0 release of the CFS MM application.

MM version 2.4.0.0 is compatible with cFE builds 6.3.1.0 and above and OSAL 3.4.0.0 and above. It is recommended to run this version of MM with the latest releases of the cFE and OSAL which were used in build testing the application.

1.2 new functionality/Features in this VERSION

Table 1.2-1 identifies new FSW functionality that has been implemented and is integrated into this FSW version. Requirement references are included.

Table 1.2-1 – New Functionality/Features in this Version

| No. | FSB DCR # (or N/A ) | Requirements | High Level Description of Functionality |
| --- | --- | --- | --- |
|  | N/A |  | None |

Table 1.2-2 identifies changes to FSW functionality from a previously delivered FSW version and the DCRs associated with these changes.

Table 1.2-3 – Changes to Previously Delivered Functionality

| No. | FSB DCR # (or N/A ) | Requirements | Functionality or Change Description |
| --- | --- | --- | --- |
| 1 | 18372 | MM8000 | Last commanded data value is reported in housekeeping telemetry. Data includes peek, poke, and fill pattern values. |
| 2 | 18915 | MM8000 | Housekeeping telemetry points containing information on last command are cleared on invalid commands. |
| 3 | 22108 | N/A | Error events issued on invalid PSP memory reads/writes. |

1.3 MISSING Planned FEATURES AND KNOWN PROBLEMS

Table 1.3-1 identifies the functions and known discrepancies that are absent from MM Build 2.4.0.0. Any workarounds that may apply are identified.

Information on currently open DCRs is available at http://tlserver3.gsfc.nasa.gov:7001/index.html. Note that this is a restricted website that requires a server account. Additional DCRs may have been submitted after preparation of this VDD. A CFS MM DCR report containing a listing of open DCRs is available on request for customers who do not have access to tlserver3. Please contact Susanne Strege, susie.strege@nasa.gov.

Table 1.3-1 – Functions absent from this Release

| No. | FSB DCR # (or N/A ) | Description | Reason for Absence | Affected Requirement or Component | Workaround | Planned Delivery |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | 22933 | Unit test coverage has fallen from 100% | Lower priority than other 6.4 issues | N/A | None | Not Determined |
| 2 | 22018 | Consider allowing files to be loaded to an address other than that specified in the file | Implementation is dependent on customer needs. Community input is needed. |  | None | Not Determined |
| 3 | 22013 | Add Trick Simulation Support | Implementation is dependent on customer needs. Community input is needed. | N/A | Add required ifdef statements to header files | Not Determined |
| 4 | 21214 | Add Cache Flushing Support | Implementation is dependent on customer needs. Community input is needed. | N/A | None | Not Determined |
| 5 | 20992 | Move MM file subtype from private header file to public platform configuration header file | Implementation is dependent on customer needs. Community input is needed. | N/A | None | Not Determined |
| 6 | 18527 | Add EEPROM write enable flag to housekeeping telemetry | Implementation is dependent on PSP | MM8000 | None | Not Determined |
| 7 | 18522 | Add support for reading/writing to registers and hardware I/O | Implementation is dependent on PSP memory type definitions | N/A | None | Not Determined |
| 8 | 13419 | Add command to get EEPROM write enable/disable status | Implementation is dependent on PSP | N/A | None | Not Determined |

1.4 Development Tool Versions Associated with this FSW Version

Table 1.4-1 identifies the versions of development tools used to generate this FSW version:

Table 1.4-1 – Development Tool Versions Associated with this FSW Version

| Tool Type. | Tool Name | Version Used |
| --- | --- | --- |
| RTOS | BVTed with VxWorks 6.4, however, OSAL provides ability to use multiple OSes | 6.4 |
| Compiler | GNU | 3.3.2 |
| cFE | Core Flight Executive | 6.4.1.0 |
| OSAL | Operating System Abstraction Layer | 4.1.1.0 |
| cFE-PSP | cFE Platform Specific Package | 1.2.0.0 |

2.0 Delivered products

Table 2-1 identifies the locations of FSW products relevant to this FSW Build. The version or date of the Build and where the product can be located are provided. Changes from a previous VDD are identified.

Table 2-1 – Delivered Products and their Locations

| Software Element | Changed with this Version? | New Version or Date | Location |
| --- | --- | --- | --- |
| Executable for this build | Yes | 2.4.0.0 | Not applicable. Executables must be created for the specific mission/platform |
| Installation Procedures & Special Instructions **(See Section 3.0)** | No | 3.0 | See CFS Deployment Guide (tlserver3.gsfc.nasa.gov) |
| Source Code of this FSW Build | Yes | 2.4.0.0 | Tlserver3.gsfc.nasa.gov  MKS label MM-All-Build2.4.0.0-APR27\_2015 |
| FSW Build Plan | N/A | N/A | None |
| Annotated S/W Detailed Design Docs | No | N/A | fsb.gsfc.nasa.gov/CFS |
| Ground System T&C Database | No | N/A | Tlserver3.gsfc.nasa.gov |
| Ground System Scripts developed by FSB | No | N/A | Tlserver3.gsfc.nasa.gov |
| Simulator and Test Data Generator Software | No | N/A | None |
| Executable - Ground Tools associated with FSW (tools to build stored command loads, etc.) | No | N/A | None |
| Source Code - Ground Tools associated with FSW (tools to build stored command loads, etc.) | No | N/A | Perl scripts to generate ground database and build verification procedures from templates (see CFS Deployment Guide) |
| Unit Test Procedures | No | N/A | Tlserver3.gsfc.nasa.gov |
| Unit Test Data | No | N/A | Tlserver3.gsfc.nasa.gov |
| Unit Test Results | No | N/A | Tlserver3.gsfc.nasa.gov |
| FSW Make Files | No | N/A | Tlserver3.gsfc.nasa.gov |
| Linker & Compiler Configuration Files | No | N/A | Tlserver3.gsfc.nasa.gov |
| Requirements version (from MKS) | No | 1.3 | Tlserver3.gsfc.nasa.gov |

3.0 INSTALLATION PROCEDURES

Table 3-1 identifies the nominal FSW Installation Procedure(s) for this FSW Build onto the intended target system (including the commercial applications used and the configuration settings). The procedure version identifier, the date of the procedure and where it can be located are also provided.

[Add a line to this table for each target that has a unique installation procedure]

Table 3-1 FSW Installation Procedure(s)

| Destination  (Target System) | Filename | Version and Date | Location |
| --- | --- | --- | --- |
| N/A | See CFS Deployment Guide | Version 3.0 | Available with cFE open source release:  <http://sourceforge.net/projects/coreflightexec/>  and on Tlserver3.ndc.nasa.gov |

4.0 Configuration summary and version identification

MM Build 2.4.0.0 can be found on tlserver3.gsfc.nasa.gov. Verification of the version can be done by sending a MM Noop command which produces an event message containing the version. In addition, the initialization event message generated during the application startup provides the version.

5.0 Software CopyRight Notice

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ACS Attitude Control System

C&DH Command and Data Handling

cFE…………………………………………………………………………………………..……Core Flight Executive

CFS………………………………………………………………………………………Core Flight Software System

CM Configuration Management

COTS Commercial Off-The-Shelf

DCR Discrepancy/Change Request

ETU Engineering Test Unit

FSB Flight Software Branch

FSW Flight Software

MM…………………………………………………………………………………………………….Memory Manager

I&T Integration & Test

OSAL……………………………………………………………………………Operating System Abstraction Layer

RTOS Real-Time Operating System

T&C Telemetry and Command

URL Universal Resource Locator

VDD Version Description Document

ATTACHMENT 1 – CFS Memory Manager build 2.4.0.0 DCRs

| **April 27, 2015** | | | | | |
| --- | --- | --- | --- | --- | --- |
|  | | | | | |
| **ID** | **DCR\_Type** | **DCR\_Title** | **State** | **DCR\_Build Found** | **DCR\_Build Target** |
|  | | | | | |
|  | | | | | |
|  | | | | | |
| 17241 | Change Request | MM - CFS App Unit Test Makefiles path usage should be consistent | Closed | 2.2.0.0 | 2.4.0.0 |
| 18372 | Change Request | MM - Report Peek Value in HK Telemetry | Closed |  | 2.4.0.0 |
| 18557 | Change Request | GPM-IVV-1349 - MM - No requirement to cover EEPROM Write Disable Command | Closed | 2.3.0.0 | 2.4.0.0 |
| 18915 | Change Request | MM - Telemetry Points Not Cleared on Invalid Commands | Closed | 2.1.1.0 | 2.4.0.0 |
| 18930 | Defect | MM - Mnemonic Map File Does Not Match Mnemonics Defined in RDL Template | Closed | 2.1.1.0 | 2.4.0.0 |
| 19296 | Defect | MM Mission Configuration Header File Does Not Include cfe\_mission\_cfg.h | Closed | 2.3.0.0 | 2.4.0.0 |
| 21816 | Defect | MM Doxygen Users Guide States No Criticality Using Memory Commands | Closed | 2.1.1.0 | 2.4.0.0 |
| 22108 | Defect | MM Does Not Check PSP Return Codes When Performing Peeks/Pokes | Closed | 2.3.0.0 | 2.4.0.0 |
| 22139 | Change Request | MM: Remove statement for osapi-os-filesys.h from mm\_load.c | Closed |  | 2.4.0.0 |
| 22937 | Defect | MM - Fix Compiler Warnings | Closed | 2.3.0.0 | 2.4.0.0 |
| 22938 | Change Request | MM - Housekeeping Telemetry Point Updated to be Multipurpose | Closed | 2.3.0.0 | 2.4.0.0 |