Flight Software Branch

FSW Version Description Document

Core Flight Software System (cFS) CheCKSUM

Build: 2.3.1.0

Release Date: 03/03/2015

1.0 FSW Version Description

1.1 purpose and summary

The purpose of this build is to continue to refine the CFS Checksum (CS) application product. This build provides various bug fixes. This document serves as the notification of the Build 2.3.1.0 release of the CFS CS application. The CS Build 2.3.1 release contains the changes associated with Builds 2.3.0.0 and 2.3.1.0. The 2.3.1.0 revision includes bug fixes found during CS Build 2.3.0.0 Build Verification Testing.

CS version 2.3.1.0 is compatible with cFE builds 6.3.1.0 and above and OSAL 3.4.0.0 and above.

1.2 new/Changed functionality 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 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 1.2-2 – Changes to Previously Delivered Functionality

| No. | FSB DCR # (or N/A ) | Requirements | Functionality or Change Description |
| --- | --- | --- | --- |
| 1 | 22265 | CS5000.2 | CS will now recalculate the baseline CRC of a CS Table after a Table modification or Table load. |
| 2 | 22897 | CS5005.1 | Issuing a RecomputeTableName command on the DefTablesTables will not result in a miscompare error. |

1.3 MISSING Planned FEATURES AND KNOWN PROBLEMS

Table 1.3-1 identifies the functions and known discrepancies that are absent from SC 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 SC 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 | 14847 | Request to provide a CRC for each bank of EEPROM in HK telemetry | Implementation is dependent on customer needs. | CS9000 | Information is available via table dump | Not Determined |
| 2 | 14873 | Add command to checksum a user specified area of memory | Implementation is dependent on customer needs. | N/A | Information can be obtained updating the Memory Definition Table | Not Determined |
| 3 | 15552 | The cs\_platform\_cfg.h file contains inconsistent doxygen comments | Lower priority than other 2.3 issues | User’s Guide | None | Not Determined |
| 4 | 18500 | No HK telemetry available to indicate a one shot or recomputed is in progress | Implementation is dependent on customer needs. | CS9000 | None | Not Determined |
| 5 | 18560 | GPM-IVV-1356 - CS - Missing requirement to test for invalid non-volatile memory segments | Lower priority than other 2.3 issues | N/A | None | Not Determined |
| 6 | 18564 | GPM-IVV-1355 - CS - Missing requirement for event message that reports new non-volatile memory checksum result | Lower priority than other 2.3 issues | N/A | None | Not Determined |
| 7 | 18568 | GPM-IVV-1352 - CS - Missing requirement for Get Entry ID Memory Command | Lower priority than other 2.3 issues | N/A | None | Not Determined |
| 8 | 18746 | CS Requirements Specify Unconditional Enabling of Checksumming Following Processor Reset | Lower priority than other 2.3 issues | CS9002, CS9003, CS9004, CS9005, CS9006 | None | Not Determined |
| 9 | 19197 | CS - Does Not Allow Missions to Configure Checksum Regions Following a Reset | Implementation is dependent on customer needs. Community input is needed. | N/A | None | Not Determined |
| 10 | 20991 | Request to add overall tables, application, and memory checksums to HK telemetry. | Implementation is dependent on customer needs. Community input is needed. | CS9000 | None | Not Determined |
| 11 | 21997 | A "Recompute EEPROM" Command May Result in a Checksum Error in the EEPROM Table | Lower priority than other 2.3 issues | CS2006 | None | Not Determined |
| 12 | 22005 | Add Trick Simulation Support (JSC Request) | Implementation is dependent on customer needs. Community input is needed. | N/A | Add required ifdef statements to header files | Not Determined |
| 13 | 22840 | Allow One Shot Command to Operate at a Different Rate than the Configured Background Checksum Rate (MMS Request) | Implementation is dependent on customer needs. Community input is needed. | CS8002 | 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 |
| cFE-PSP | cFE Platform Support Package | 1.2.0.0 |
| OSAL | Operating System Abstraction Layer | 4.1.1 |

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 | 2.3.1.0 | Not application. 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 | 2.3.1.0 | Tlserver3.gsfc.nasa.gov  MKS label CS-All-Build2.3.1.0 |
| 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 | Yes | 2.3.0.0 | 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 |  | Perl scripts to generate ground database and build verification procedures from templates (see cFS Deployment Guide) |
| Unit Test Procedures | No | 2.3.1.0 | Tlserver3.gsfc.nasa.gov |
| Unit Test Data | No | 2.3.1.0 | Tlserver3.gsfc.nasa.gov |
| Unit Test Results | No | 2.3.1.0 | Tlserver3.gsfc.nasa.gov |
| FSW Make Files | Yes | 2.3.1.0 | Tlserver3.gsfc.nasa.gov |
| Linker & Compiler Configuration Files | No | N/A | Tlserver3.gsfc.nasa.gov |
| Requirements version (from MKS) | No | 1.2 | MKS label – version 1.2 |

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

CS Build 2.3.1.0 can be found on tlserver3.gsfc.nasa.gov. Verification of the version can be done by sending a CS 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

**Copyright © 2007-2014** United States Government as represented by the Administrator of the National Aeronautics and Space Administration. All Other Rights Reserved.

Acronyms

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

CS………………………………………………………………………………………………………...……Checksum

DCR Discrepancy/Change Request

ETU Engineering Test Unit

FSB Flight Software Branch

FSW Flight Software

I&T Integration & Test

HK Housekeeping

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 Checksum build 2.3.0.0 and 2.3.1.0 DCRs

| **Feb 2, 2015** | | | | | |
| --- | --- | --- | --- | --- | --- |
|  | | | | | |
| **ID** | **DCR\_Type** | **DCR\_Title** | **State** | **DCR\_Build Found** | **DCR\_Build Target** |
|  | | | | | |
|  | | | | | |
|  | | | | | |
| 22265 | Change Request | CS does not recalculate the baseline CRC of a CS Table after a Table modification or Table load | Test Completed | 2.2.0.0 | 2.3.0.0 |
| 22897 | Defect | Issuing a RecomputeTableName command on the DefTablesTable causes a miscompare error to occur | Test Completed | 2.3.0.0 | 2.3.1.0 |
| 22898 | Defect | Possible race condition when processing last portion of checksum area | Test Completed | 2.3.0.0 | 2.3.1.0 |
| 22906 | Defect | Resolve Doxygen User’s Guide compiler warnings | Ready for Closure | 2.3.0.0 | 2.3.1.0 |
| 22907 | Defect | Fix Compiler Warning | Ready for Closure | 2.3.0 | 2.3.1 |
| 22908 | Change Request | Add Open Source Agreement and Copyright Information to All Source Code Files | Ready for Closure |  | 2.3.1 |