

Core Flight Software System (cFS)

Stored command (SC) Application

Build: 2.5.0.0

FSW Version Description Document

Release Date: 10/31/2016

1.0 FSW Version Description

1.1 purpose and summary

The purpose of this build is to continue to refine the CFS Stored Command (SC) application product. This build provides minor bug fixes, enhancements to the unit tests, and resolves the compatibility issues with cFE build 6.5.0. This document serves as the notification of the Build 2.5.0.0 release of the CFS SC application.

SC version 2.5.0.0 is compatible with cFE builds 6.5.0.0 and above and OSAL 4.2.0.0 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 and Trac Ticket numbers associated with these changes. See attachment 1 for a full listing of the DCRs and Trac Tickets included in this release

Table 1.2-2 – Changes to Previously Delivered Functionality

| No. | FSB DCR # (or N/A ) | Requirements | Functionality or Change Description |
| --- | --- | --- | --- |
| 1 | #23/4246 | SC4001.3.1 | Fixed incorrect send event call for the SC\_RTS\_DIST\_ERR\_EID. Call was being made with an insufficient number of parameters. |
| 2 | 4243 | N/A | SC increments ground command error counter when internal command to report housekeeping has an invalid packet length. SC was updated to increment AppData.CmdErrCtr only for ground commands (SC\_CMD\_MID). |
| 3 | 4245 | N/A | In sc\_cmds.c, in the function SC\_ProcessAtpCmd, AbortATS is set to TRUE without setting TempAtsChar to anything, which causes it to use its initialized value of ' ', causing a meaningless message to be printed: "ATS   Aborted". Corrected code to prevent meaningless event message. |

1.3 MISSING Planned FEATURES AND KNOWN PROBLEMS

Table 1.3-1 identifies the functions and known discrepancies that are absent from SC Build 2.5.0.0. Any workarounds that may apply are identified.

Information on currently open DCRs is available at <http://tlserver3.gsfc.nasa.gov:7001/index.html>. Information on currently open Trac tickets is available at https://babelfish.arc.nasa.gov/trac/cfs\_apps/report/1. Note that these are restricted websites that requires a server account. Additional DCRs and/or Trac Tickets may have been submitted after preparation of this VDD. A cFS SC DCR report containing a listing of open DCRs and Trac tickets is available on request for customers who do not have access to the restricted servers. Please contact Susanne Strege, [susie.strege@nasa.gov](mailto:susie.strege@nasa.gov).

Table 1.3-1 – Functions absent from this Release

| No. | FSB DCR # | Description | Reason for Absence | Affected Requirement or Component | Workaround | Planned Delivery |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | 3854 | ATS and RTS status information is not saved across a reset. | Lower priority than other 2.5 issues | SC9002 | None | Not Determined |
| 2 | 4092 | Startup time with a large number of RTS tables can be extensive. The startup time on MMS with 320 RTS tables is nearly 2 minutes. | Lower priority than other 2.5 issues | N/A | None | Not Determined |
| 3 | 4120 | SC - 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 |
| 4 | 4139 | SC does not allow duplicate command numbers in an ATS. | Implementation is dependent on customer needs. | SC2001 | None | Not Determined |
| 5 | 4161 | Add ATS filename to housekeeping telemetry | Lower priority than other 2.5 issues | SC8000 | 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 6.9, however, OSAL provides ability to use multiple OSes | 6.9 |
| Compiler | GNU | 3.3.2 |
| cFE | Core Flight Executive | 6.5.0.0 |
| cFE-PSP | cFE Platform Support Package | 1.3.0.0 |
| OSAL | Operating System Abstraction Layer | 4.2.0 |

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 | 2.5.0.0 | Not applicable. Executables must be created for the specific mission/platform |
| Installation Procedures & Special Instructions **(See Section 3.0)** | No | 3.1 | See Deployment Guide    babelfish.arc.nasa.gov (in git system TOOLS master branchs)  and  <http://sourceforge.net/projects/coreflightexec> |
| Source Code of this FSW Build | Yes | 2.5.0.0 | Tlserver3.gsfc.nasa.gov. MKS label SC-ALL-Build2.5.0.0-OCT31-2016  babelfish.arc.nasa.gov (in git system sc\_app\_master branch)  and  http://sourceforge.net/projects/cfs\_sc |
| 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  babelfish.arc.nasa.gov (in git system sc\_app\_master branch)  and  http://sourceforge.net/projects/cfs\_sc |
| Ground System Scripts developed by FSB | No | N/A | Tlserver3.gsfc.nasa.gov  babelfish.arc.nasa.gov (in git system sc\_app\_master branch)  and  http://sourceforge.net/projects/cfs\_sc |
| 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 | Yes | N/A | Tlserver3.gsfc.nasa.gov. MKS label SC-ALL-Build2.5.0.0-OCT31-2016  babelfish.arc.nasa.gov (in git system sc\_app\_master branch)  and  http://sourceforge.net/projects/cfs\_sc |
| Unit Test Data | Yes | N/A | Tlserver3.gsfc.nasa.gov. MKS label SC-ALL-Build2.5.0.0-OCT31-2016  babelfish.arc.nasa.gov (in git system sc\_app\_master branch)  and  http://sourceforge.net/projects/cfs\_sc |
| Unit Test Results | Yes | N/A | Tlserver3.gsfc.nasa.gov. MKS label SC-ALL-Build2.5.0.0-OCT31-2016  babelfish.arc.nasa.gov (in git system sc\_app\_master branch)  and  http://sourceforge.net/projects/cfs\_sc |
| FSW Make Files | No | N/A | Tlserver3.gsfc.nasa.gov. MKS label SC-ALL-Build2.5.0.0-OCT31-2016  babelfish.arc.nasa.gov (in git system sc\_app\_master branch)  and  http://sourceforge.net/projects/cfs\_sc |
| Linker & Compiler Configuration Files | No | N/A | Tlserver3.gsfc.nasa.gov. MKS label SC-ALL-Build2.5.0.0-OCT31-2016  babelfish.arc.nasa.gov (in git system sc\_app\_master branch)  and  http://sourceforge.net/projects/cfs\_sc |
| Requirements version (from MKS) | No | 1.5 | Tlserver3.gsfc.nasa.gov. MKS label SC-ALL-Build2.5.0.0-OCT31-2016  babelfish.arc.nasa.gov (in git system sc\_app\_master branch)  and  http://sourceforge.net/projects/cfs\_sc |

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.

Table 3-1 FSW Installation Procedure(s)

| Destination  (Target System) | Filename | Version and Date | Location |
| --- | --- | --- | --- |
| N/A | See CFS Deployment Guide | Version 3.1 | Available with cFE open source release:  <http://sourceforge.net/projects/coreflightexec/>  babelfish.arc.nasa.gov (in git system TOOLS master branch)  and on Tlserver3.ndc.nasa.gov |

4.0 Configuration summary and version identification

SC Build 2.5.0.0 can be found on tlserver3.gsfc.nasa.gov, sourceforge, and babelfish.arc.nasa.gov (in git system sc\_app\_master branch). Verification of the version can be done by sending a SC 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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Acronyms

ACS Attitude Control System

C&DH Command and Data Handling

CDS…………………………………………………………………………………………..……Critical Data Store

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

I&T Integration & Test

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

RTOS Real-Time Operating System

SC………………………………………………………………………………………………...…...Stored Command

T&C Telemetry and Command

URL Universal Resource Locator

VDD Version Description Document

ATTACHMENT 1 – CFS Stored Command build 2.5.0.0 DCRs/Trac Tickets

Trac ticket references are proceeded with a ‘#’ character.

|  | | | |
| --- | --- | --- | --- |
| **No.** | **DCR/Trac Ticket #** | **Description** | **Type** | | **Priority** | **State** | **Date Reported** | **Build Target** |
| 1 | #16 | Update SC app for recent CFE update | defect | | major | Test Complete | 5/18/2015 | 2.5.0.0 |
| 2 | #23/4246 | SC - Fix incorrect CFE\_SendEvent call. The SC app makes a CFE\_SendEvent call with an insufficient number of parameters. | defect | | minor | Test Complete | 6/29/2015 | 2.5.0.0 |
| 3 | #31 | SC: Fix compiler errors/warnings when using strict settings. When using strict compiler settings the SC application fails to build due to mismatches between the format string and parameters of printf-like functions. | defect | | minor | Test Complete | 6/29/2015 | 2.5.0.0 |
| 4 | 5079 | Replace old unit tests with new UT-Assert tests | enhancement | | major | Test Complete | 8/10/2015 | 2.5.0.0 |
| 5 | 145681 | Function Prototype Needs to be Moved to .h File With All Other Prototypes. In a much earlier DCR, all function prototypes were supposed to be moved from the .c file to the .h file. One of them was apparently missed: SC\_ProcessCommand. This should be moved to where all the others are. | enhancement | | minor | Test Complete | 6/22/2016 | 2.5.0.0 |
| 6 | 145833 | UT-Assert unit test code walkthrough updates | enhancement | | minor | Test Complete | 9/9/2016 | 2.5.0.0 |
| 7 | 145832 | Fix format warnings from calls to CFE\_EVS\_SendEvent | defect | | minor | Test Complete | 9/9/2016 | 2.5.0.0 |
| 8 | 4245 | Incorrect message on ATS abort. In sc\_cmds.c, in the function SC\_ProcessAtpCmd, AbortATS is set to TRUE without setting TempAtsChar to anything, which causes it to use its initialized value of ' ', causing a meaningless message to be printed: "ATS Aborted". Corrected code to prevent meaningless event message. | defect | | moderate | Test Complete | 6/9/2015 | 2.5.0.0 |
| 9 | 4243 | SC increments ground command error counter when internal command to report housekeeping has an invalid packet length. SC was updated to increment AppData.CmdErrCtr only for ground commands (SC\_CMD\_MID). | defect | | moderate | Test Complete | 5/8/2015 | 2.5.0.0 |
| 10 | 145914 | sc\_loads.c : SC\_Insert has index out of bound conditions possible | defect | | minor | Test Complete | 10/19/16 | 2.5.0.0 |
| 11 | 6323 | Move function prototypes to header files | enhancement | | minor | Test Complete | 8/18/2015 | 2.5.0.0 |