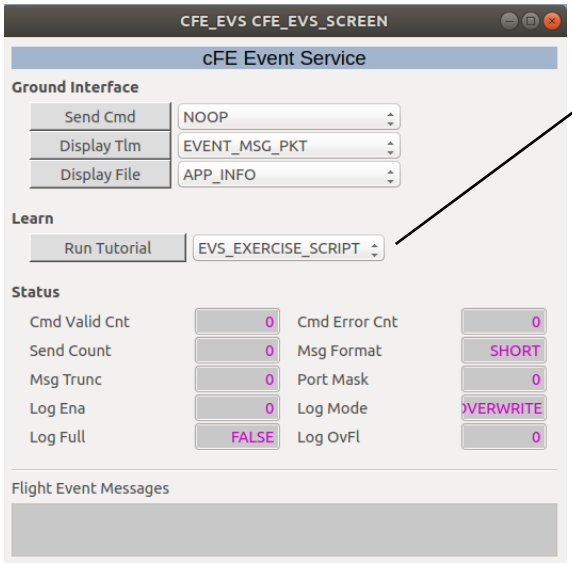
OpenSatKit (OSK)

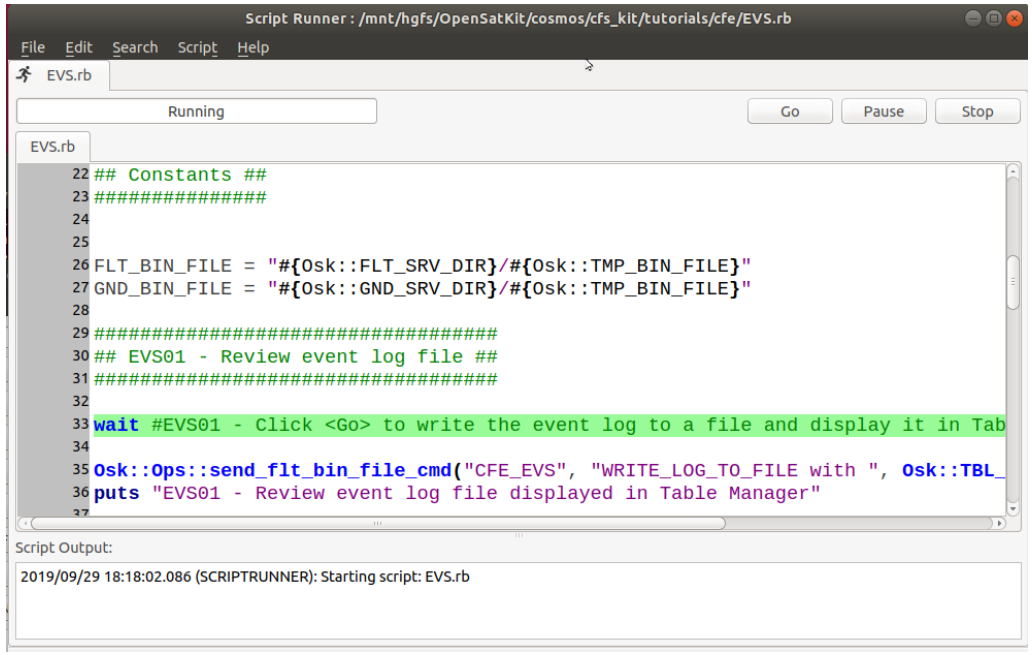
cFE Service Training Exercises

September 19, 2019

Introduction

- **This slide deck contains exercises for the cFE service training module**
- **See OSK Training Intro for a complete overview of OSK's training features**
- **Launch an exercise from each service's page as shown below for event services**
  - Exercises are managed by a Ruby script that is run in Script Runner





Exercises

Executive Service Exercises

- **ES01 – Review the cfe_es-startup.scr file**
  - Note Memory Dwell (MD) priority and stack size
- **ES02 – Review the system log file**
  - File size limited by CFE_ES_SYTEM_LOG_SIZE defined in cfs/osk_defs/cpu1_platform_cfg.h
- **ES03 – Review the Exception-Reset log file**
  - Uses Table Manager to view the log
- **ES04 – Review the Critical Data Store Registry**
  - Uses Table Manager to view the registry
- **ES05 – Run the App Management Demo**
  - Runs built in demo
- **ES06 – Run the Performance Analyzer Demo**

Performance Monitor Demo Scenario

- **Log three markers**
  - 26: Memory Dwell execution
  - 44: File Manager Application
    - Pends for ground command and responds to housekeeping telemetry requests
  - 26: File Manager Child Task
    - Implements FM directory commands
- **Configure Memory Dwell as the trigger**
  - Memory Dwell configured to execute at 1Hz
- **Data collection scenario**
  - Start data collection
  - Wait 4 seconds
  - Issue FM command to send a directory in a telemetry packet
  - Wait 4 seconds
  - Issue FM command to write a directory to a file
  - Wait 4 seconds
  - Issue FM command to send a directory in a telemetry packet
  - Wait 4 seconds
  - Stop data collection

Time Service Exercises

- **TIME01 – Review default time configuration using “cFE Service” screen**
  - Information comes from housekeeping packet
  - Send commands to reconfigure time
- **TIME02 – Review diagnostic telemetry packet**

- **TIME03 – Demonstrate 1Hz adjustment**
  - Hokey demo that plots an incrementing 1Hz STCF adjustment

Event Service Exercises

- **EVS01 - Browse Event Log**
  - Captured startup messages, note SB no subscriber message
- **EVS02 - Browse Event Application Registry/Status**
  - `"EVS Port1 42/1/CFE_SB 14: No subscribers for MsgId 0x808, sender xxx"`
  - `APP1_NAME: CFE_SB`
  - `APP1_ENA_BITMASK: 0x0E  # (3..0) => (Critical, Error, Info, Debug)`
  - `APP1_FLTR1_EVENT_ID: 14  # CFE_SB_SEND_NO_SUBS_EID defined in cfe_sb_events.h`
  - `APP1_FLTR1_BITMASK: 0xFFFC  # Send 4 then stop`
  - `APP1_FLTR1_COUNT: xx  # What does this value tell you?`
- **Configure type**
  - Enable/disable EVS debug messages and notice response

Software Bus Exercises

- **SB01 - Review Pipe Definition File**
  - Should be no overflow errors
  - Pipe IDs helpful if you ever need to issue route enable/disable commands
- **SB02 – Request SB Statistics telemetry packet**
  - Peak in use can help tune pipe depths

Table Service Exercises

- **TBL01 - Browse Existing Table Registry**
  - Memory Dwell (MD) app is used for the load/dump exercises
  - ENTRY7: Memory Dwell Table #1
- **TBL02 – Jam MD table #1**
  - MD table defines locations to be telemetered
- **TBL03 – Load/Dump Tables**
  - Try various load/dump scenarios