
GPC 4 Failure on FD07 Dump Analysis Status

FSW

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GPC Dump Analysis Status

- **Data dump analysis identified three serious off-nominal signatures**
 - FCOS CPU Store Protect Error
 - PC 1 Timer Interrupt
 - Fail-to-Sync due to GPC 4 failure to arrive at the common set sync point
- **Preliminary observations based on dump analysis**
 - Standard SM processes were executing as expected prior to the failure
 - Store protect error appears to have occurred due to an incorrect store address
 - Address is composed of a base address plus an offset
 - Base address register bits were all zeros (not possible during normal operations)
 - Computed store address resulted in an attempt to write into store protected memory, generating the Store Protect Error
 - System Software responded by terminating the routine requesting the memory write (FIO SVCP) and waiting for the next scheduled task to run (per design)
 - Prematurely terminating system software set up the conditions that could lead to a PC 1 Timer Interrupt and eventual Fail-to-Sync

GPC Dump Analysis Status (cont'd)

- **The type of sync point where the failure occurred rules out several hardware failure types**
 - Power failure, power transient, hard fail from RUN to HALT or failures that would cause unexpected External 0 or External 1 Interrupts, for example
- **No evidence from analysis that this is a software problem**
 - FIOSVCP is a System Software I/O Support routine that normally executes continuously (at least once every 40 ms) in all running PASS GPCs
 - Analysis of key parameters reflect normal operation prior to the store protect error
 - Given the anomalous base address, the resulting effects leading to the Fail-to-Sync are expected operation of the PASS
- **Available data likely to be inadequate to definitively prove what happened**
 - The snapshot of data in this dump does not appear to provide the history required to identify a root cause in this case
 - Investigation is continuing but is unlikely to identify a root cause prior to the point at which a program decision on entry is required