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To: T10 Committee (SCSI)

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Subject: SAM-3: Status Precedence Problem

1 Overview

In section 5.3.2 Status precedence the highest priority condition to be reported are the reset type unit attention conditions and the second priority is an ACA ACTIVE status. This ordering is flawed as an ACA ACTIVE status should have the highest precedence.

The way it is currently defined can cause two or more initiators to receive a CHECK CONDITION status on their first attempt to send a command to a target with a unit attention condition active. This occurs under the following conditions:

1) A target is reset, powered on, or some other condition occurs that causes a unit attention condition defined in step 1 of section 5.3.2 of SAM-3;
2) All commands have NACA =1;
3) An initiator (A) has commands queued at in target;
4) A command from initiator (A) receives a CHECK CONDITION;
5) An initiator (B) attempts to send a command; and then
6) Initiator (B) has to received a CHECK CONDITION (per the rules in section 5.3.2 of SAM-3);

At this point initiator (A) should be allowed to send ACA tasks and initiator (B) should be allowed to send ACA tasks but that is illegal as there can only by one ACA condition at a time at the target. As a result there is no way to not violate the standard.

What should happen is:

1) A target is reset, powered on, or some other condition occurs that causes a unit attention condition defined in step 1 of section 5.3.2 of SAM-3;
2) All commands have NACA =1;
3) An initiator (A) has commands queued at in target;
4) A command from initiator (A) receives a CHECK CONDITION;
5) An initiator (B) attempts to send a command; and then
6) Initiator (B) receives an ACA ACTIVE status;

To make this change the following changes should be made to SAM-3.

1.0.1 Status precedence

If a device server detects that more than one of the following conditions applies to a completed task, it shall select the condition to report based on the following precedence:

1) An ACA ACTIVE status; A CHECK CONDITION status for any of the following unit attention conditions (i.e., with a sense key of UNIT ATTENTION and an additional sense code of):
   A) POWER ON, RESET, OR BUS DEVICE RESET OCCURRED;
   B) POWER ON OCCURRED;
   C) SCSI BUS RESET OCCURRED;
   D) BUS DEVICE RESET FUNCTION OCCURRED;
   E) DEVICE INTERNAL RESET; or
   F) I_T NEXUS LOSS OCCURRED;
2) An ACA ACTIVE status ; A CHECK CONDITION status for any of the following unit attention conditions (i.e., with a sense key of UNIT ATTENTION and an additional sense code of): POWER ON, RESET, OR BUS DEVICE RESET OCCURRED;
   A) POWER ON OCCURRED;
   B) SCSI BUS RESET OCCURRED;
   C) BUS DEVICE RESET FUNCTION OCCURRED;

      D) DEVICE INTERNAL RESET; or
      E) I_T NEXUS LOSS OCCURRED;
3) A RESERVATION CONFLICT status;
    and
4) A status of:
     A) CHECK CONDITION status, for any reason not listed in 1);
     B) GOOD status;
     C) CONDITION MET status;
     D) INTERMEDIATE status;
     E) INTERMEDIATE-CONDITION MET status; or
     F) TASK ABORTED status.

> NOTE 1 - The names of the unit attention conditions listed in the subclause (e.g., SCSI BUS RESET OCCURRED) are based on usage in previous versions of this standard. The use of these unit attention condition names is not to be interpreted as a description of how the unit attention conditions are represented by any given SCSI transport protocol.

A device server may report the following status codes with any level of precedence:

a) BUSY status;
b) TASK SET FULL status; or
c) CHECK CONDITION status for a sense key of ILLEGAL REQUEST.