To: INCITS Technical Committee T10
From: Fred Knight, Network Appliance
Email: knight@netapp.com
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Subject: SAM4 – UA Precedence update

1. ***Revision history***
   Revision 0 (15 October 2007) First revision

2. ***Related documents***
   sam4r12 – SCSI Architecture Model - 4

3. ***Overview***
   During testing, when the last logical unit was deleted from an array controller, a condition was observed in a host where the ILLEGAL REQUEST (LOGICAL UNIT NOT SUPPORTED) condition was ignored and retried. The host was waiting to receive the REPORTED LUNS DATA HAS CHANGED – UA, but since there was only 1 LUN, and that LUN had been removed, there were no remaining LUNs to deliver that UA.

   The Status Precedence section of SAM (5.3.3) states that the ILLEGAL REQUEST status may be returned with any precedence. However, if there is an I_T event pending (such as REPORTED LUNS DATA HAS CHANGED), then that UA should be reported with a higher precedence than LOGICAL UNIT NOT SUPPORTED.

   SAM currently allows either behavior (the ILLEGAL REQUEST or the REPORTED LUNS DATA HAS CHANGED) may be delivered first.

   This proposal adds such a “should” statement to encourage delivery of the REPORTED LUNS DATA HAS CHANGED prior to the ILLEGAL REQUEST when such a condition exists.

   <Red Text> indicates changes. <Blue Text> indicates text of interest for this particular case.

Proposal:

5.8.4 Incorrect logical unit selection

The SCSI target device's response to a command addressed to an incorrect logical unit number is described in this subclause.

In response to a REQUEST SENSE command, a REPORT LUNS command, or an INQUIRY command the SCSI target device shall respond as defined in SPC-4.

Any command except REQUEST SENSE, REPORT LUNS, or INQUIRY:

a) Shall be terminated with CHECK CONDITION status, with the sense key set to ILLEGAL REQUEST, and with the additional sense code set to LOGICAL UNIT NOT SUPPORTED, if:
   A) The SCSI target device is not capable of supporting the logical unit (e.g., some SCSI target devices support only one peripheral device); or
   B) The SCSI target device supports the logical unit, but the peripheral device is not currently connected to the SCSI target device;

   or

b) Is responded to in a vendor specific manner, if:
   A) The SCSI target device supports the logical unit and the peripheral device is connected, but the peripheral device is not operational; or
   B) The SCSI target device supports the logical unit but is incapable of determining if the peripheral device is connected or is not operational because the peripheral device is not ready.

<...>

5.3.3 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;
2) A CHECK CONDITION status for any of the following unit attention conditions (i.e., with a sense key set to UNIT ATTENTION and one of the following additional sense codes):
   A) POWER ON, RESET, OR BUS DEVICE RESET OCCURRED;
   B) POWER ON OCCURRED;
   C) SCSI BUS RESET OCCURRED;
   D) MICROCODE HAS BEEN CHANGED;
   E) BUS DEVICE RESET FUNCTION OCCURRED;
   F) DEVICE INTERNAL RESET; or
   G) I_T NEXUS LOSS OCCURRED;
3) A RESERVATION CONFLICT status;
   and
4) A status of:
   A) CHECK CONDITION, for any reason not listed in 2);
   B) GOOD;
   C) CONDITION MET; or
   D) TASK ABORTED.

NOTE 7 - The names of the unit attention conditions listed in this 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 with a sense key set to ILLEGAL REQUEST.

A pending I_T nexus unit attention (e.g. REPORTED LUNS DATA HAS CHANGED) should be reported with a higher precedence than ILLEGAL REQUEST when an incorrect LUN is addressed (see 5.8.4).