To: T10 Technical Committee
From: Rob Elliott, HP (elliott@hp.com)
Date: 10 May 2007
Subject: 07-224r1 SAM-4 Include deferred errors in QUERY UNIT ATTENTION

Revision history
Revision 0 (4 May 2007) First revision
Revision 1 (10 May 2007) Incorporated comments from May 2007 CAP WG

Related documents
sam4r10 - SCSI Architecture Model - 4 (SAM-4) revision 10
spc4r10 - SCSI Primary Commands - 4 (SPC-4) revision 10
07-144 - FCP-4 QUERY UNIT ATTENTION task management function (Rob Elliott, HP), included in sam4r10

Overview
Kevin Butt (IBM) noted that deferred errors (a background error reported with CHECK CONDITION status with a sense key of DEFERRED ERROR on some subsequent command) are a lot like unit attention conditions, and asked whether the new QUERY UNIT ATTENTION task management function should report those as well as unit attention conditions. This seems appropriate.

This entails adding the sense key value to the Additional Response Information. The UA DEPTH field is moved left into byte 0 bits 5:4 so the SENSE KEY field can occupy bits 3:0, paralleling its location in the sense data (see SPC-4).

Suggested changes to SAM-4

7.10 QUAERY UNIT ATTENTION

Request:

> **Service Response = QUERY UNIT ATTENTION (IN (I_T_L Nexus), OUT ([Additional Response Information))**

Description:

A SCSI transport protocol may or may not support QUERY UNIT ATTENTION. A SCSI transport protocol supporting QUERY UNIT ATTENTION may or may not require logical units accessible through SCSI target ports using that transport protocol to support QUERY UNIT ATTENTION.

The task manager in the specified logical unit shall return a service response as follows:

a)   if there is a unit attention condition (see 5.8.7) or deferred error (see 3.1.9) pending for the specified I_T nexus, FUNCTION SUCCEEDED; and
b)   if there is no unit attention condition or deferred error pending for the specified I_T nexus, FUNCTION COMPLETE.

If the service response is not FUNCTION SUCCEEDED, the task manager shall set the Additional Response Information argument to 000000h.

If the service response is FUNCTION SUCCEEDED, the task manager shall set the Additional Response Information argument as defined in table 1.

Table 1 — Additional Response Information argument for QUERY UNIT ATTENTION

Byte\Bit	7	6	5	4	3	2	1	0
0	Reserved						UA DEPTH	
0	Reserved		UADE DEPTH		SENSE KEY			
1	ADDITIONAL SENSE CODE							
2	ADDITIONAL SENSE CODE QUALIFIER							

The UADE DEPTH field indicates the number of pending unit attention conditions or deferred errors and is defined in table 2.

Table 2 — UADE DEPTH field

Code	Description
00b	~~Unknown number of unit attention conditions are pending~~ The combined number of unit attention condition(s) and deferred error(s) is unknown
01b	~~Exactly one unit attention condition is pending~~ The combined number of unit attention condition(s) and deferred error(s) is one
10b	~~More than one unit attention condition is pending~~ The combined number of unit attention condition(s) and deferred error(s) is greater than one
11b	Reserved

The ADDITIONAL SENSE CODE field indicates the value of the SENSE KEY field that would be returned in the sense data for the highest-priority unit attention condition or deferred error that is pending (see SPC-4).

The ADDITIONAL SENSE CODE field indicates the value of the ADDITIONAL SENSE CODE field that would be returned in the sense data for the highest-priority unit attention condition or deferred error that is pending (see SPC-4).

The ADDITIONAL SENSE CODE QUALIFIER field indicates the value of the ADDITIONAL SENSE CODE QUALIFIER field that would be returned in the sense data for the highest-priority unit attention condition or deferred error that is pending (see SPC-4).