

To: T10 Technical Committee  
 From: Rob Elliott, HP (elliott@hp.com)  
 Date: 31 October 2003  
 Subject: 03-368r0 SAM-3 SPC-3 Status precedence

### **Revision history**

Revision 0 (31 October 2003) First revision

### **Related documents**

sam3r09 - SCSI Architecture Model - 3 revision 9  
 spc3r15 - SCSI Primary Commands - 3 revision 15  
 02-155r6 - Response to T10 letter ballot comments on SAM-2 (Compaq 33 comment)

### **Overview**

During SAM-2 letter ballot comment resolution, the status precedence (section 5.3.2) was modified to allow power on unit attentions to be reported ahead of RESERVATION CONFLICTs. A few more changes are necessary to reflect real implementations.

1. The BUSY and TASK SET FULL statuses should be highest priority of all, since they reject a command outright without looking at it.
2. The CHECK CONDITION status with ILLEGAL REQUEST sense key should be allowed (but not mandated) to be returned with higher priority than RESERVATION CONFLICT status. Some reasons a CHECK CONDITION status ILLEGAL REQUEST sense key might be returned ahead of RESERVATION CONFLICT (with the additional sense code noted):
  - a) invalid logical unit number (LOGICAL UNIT NOT SUPPORTED);
  - b) invalid task attribute (INVALID MESSAGE ERROR);
  - c) unsupported value in the OPERATION CODE field (INVALID COMMAND OPERATION CODE);
  - d) unsupported value in the SERVICE ACTION field (INVALID FIELD IN CDB);
  - e) unsupported value in the NACA bit in the control byte (INVALID FIELD IN CDB);
  - f) a variable length CDB with a problem in its ADDITIONAL CDB LENGTH field (INVALID FIELD IN CDB);
  - g) a CDB that is the wrong size for the operation code (e.g. a START STOP UNIT CDB which doesn't even have a START bit);

Other checks that are related to actually processing the command might return ILLEGAL REQUEST with lower priority than RESERVATION CONFLICT (e.g., parameter data problems), so this status/sense key combination also needs to be allowed at a lower priority.

3. A priority between ACA ACTIVE and RESERVATION CONFLICT should be selected. Both conditions could apply simultaneously.
4. The reason of "invalid task attribute" is missing from the list of ILLEGAL REQUEST causes in SPC-3 (it is not covered by the existing items).

### **Suggested changes to SAM-3**

#### **5.3.2 Status precedence**

If more than one condition applies to a completed task, the precedence for deciding the condition to be reported shall be:

- 1) [Reporting a BUSY or TASK SET FULL status;](#)
- 2) [Optionally reporting a CHECK CONDITION status with a sense key of ILLEGAL REQUEST;](#)
- 3) Reporting 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;

- F) TRANSCEIVER MODE CHANGED TO SINGLE-ENDED;
- G) TRANSCEIVER MODE CHANGED TO LVD; or
- H) I\_T NEXUS LOSS OCCURRED;

- 4) Reporting an ~~BUSY, RESERVATION CONFLICT~~, ACA ACTIVE ~~or TASK SET FULL~~ status; and
- 5) [Reporting a RESERVATION CONFLICT status](#);
- 6) Reporting any other 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.

### **Suggested changes to SPC-3**

#### **4.5.6 Sense key and sense code definitions**

The sense keys are defined in table 27.

**Table 27 — Sense key descriptions (part 1 of 2)**

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5h ILLEGAL REQUEST: Indicates that:

- a) The command was addressed to an incorrect logical unit number (see SAM-3);
- b) [The command had an invalid task attribute \(see SAM-3\)](#);
- c) The command was addressed to a logical unit whose current configuration prohibits processing the command;
- d) There was an illegal parameter in the CDB; or
- e) There was an illegal parameter in the additional parameters supplied as data for some commands (e.g., PERSISTENT RESERVE OUT).

If the device server detects an invalid parameter in the CDB, then it shall terminate the command without altering the medium. If the device server detects an invalid parameter in the additional parameters supplied as data, then the device server may have already altered the medium.