

Accredited Standards Committee  
X3, Information Processing Systems

Doc: X3T10.1/95a133R1  
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Project: X3T10.1/1051  
Ref Doc.: SSA-S2P rev 7  
Reply to: John Scheible

To: X3T10.1 Membership  
From: John Scheible

Subject: SCSI STATUS SMS enhancement

## BACKGROUND

This proposal supports Auto Sense and Asynchronous Event Reporting for SSA-S3P.

## PROPOSAL

Make the following changes (based on SSA-S2P rev 7) to SSA-S3P.

- 1) Add a RETURN CODE field to the SCSI STATUS SMS as shown on the next page, and change the references to ASYNC ALERTS using INVALID FIELD to use SCSI STATUS with an INVALID FIELD RETURN CODE field value.
- 2) Add a SENSE DATA field to the SCSI STATUS SMS as shown on the next page. Verify that the SENSE DATA field matches the SCSI-3 sense data format.
- 3) Move the SSA-SSP entitled ENABLE AER SMS to SSA-S3P.
- 4) Add a new SMS entitled AER SMS as defined in the following pages.
- 5) Add two rows to Table 4...  
ENABLE AER, 83h, 20h, APPLICATION, initiator, target  
AER, 83h, 21h, APPLICATION, target, initiator
- 6) Remove Annex A.

Sincerely,

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## 5.2 SCSI STATUS SMS

The SCSI STATUS SMS is sent from a target to an initiator to indicate that a command and any associated data transfer have been terminated or completed. The SCSI STATUS SMS is returned using the RETURN PATH ID field specified in the SCSI COMMAND SMS.

The SCSI STATUS SMS is returned for each SCSI COMMAND SMS unless the command is rejected (with an ASYNC ALERT SMS or an SCSI RESPONSE SMS) or the command is cleared by any of the following:

- a) ABORT TAG SMS
- b) ABORT SMS
- c) CLEAR QUEUE SMS
- d) DEVICE RESET SMS
- e) A Hard Reset condition (including a transport layer Total Reset or Absolute Reset frame).

The contents of the DATA field in the SCSI STATUS SMS are defined in Table 1.

Table 1 - SCSI STATUS SMS

Byte	Bit 7	6	5	4	3	2	1	Bit 0	
0	SMS CODE (83h)								
1	S3P CODE (11h)								
2	TAG								
3	TAG								
4	STATUS								
5	reserved=0000 0b						FLAG	LINK	
6	RETURN CODE								
7	reserved								
8	SENSE DATA								
...	SENSE DATA								
31	SENSE DATA								

The TAG field is a copy of the TAG field in the corresponding SCSI COMMAND SMS. It allows the initiator to associate the status with the correct I/O process.

The STATUS field contains status as defined by SCSI-3.

SSA-S3P uses a single S3P CODE value with imbedded FLAG and LINK bits, rather than create three different completion messages as parallel SCSI-2 did. The FLAG and LINK bits indicate different completion messages as shown in Table 2.

Table 2 - Meaning of Flag and Link bits

FLAG	LINK	Corresponding parallel SCSI-2 completion message
0	0	Command Complete
0	1	Linked Command Complete
1	0	reserved
1	1	Linked Command Complete with Flag

The RETURN CODE field indicates the result of the SCSI COMMAND SMS, and the values are shown in Table 3.

**Table 3 - RETURN CODE values for the SCSI STATUS SMS**

Value	Description
00h	THE SCSI COMMAND WAS PARSED SUCCESSFULLY.
01h-FEh	reserved
FFh	INVALID FIELD

The contents of the SENSE DATA field is defined in Table 4. If the STATUS field value is not CHECK CONDITION STATUS, then the SCSI STATUS SMS can be truncated to 8 bytes. If all of the Sense Data could be reported via the SCSI STATUS SMS (i.e. ADDITIONAL SENSE LENGTH field < 16), then the target may clear the sense data.

**Table 4 - SENSE DATA field**

Byte	Bit 7	6	5	4	3	2	1	Bit 0
8	VALID	ERROR CODE (70h OR 71h)						
9	SEGMENT NUMBER							
10	FILEMARK	OEM	ILI	reserved	SENSE KEY			
11	INFORMATION							
12	INFORMATION							
13	INFORMATION							
14	INFORMATION							
15	ADDITIONAL SENSE LENGTH (N-7)							
16	COMMAND SPECIFIC INFORMATION							
17	COMMAND SPECIFIC INFORMATION							
18	COMMAND SPECIFIC INFORMATION							
19	COMMAND SPECIFIC INFORMATION							
20	ADDITIONAL SENSE CODE							
21	ADDITIONAL SENSE QUALIFIER							
22	FIELD REPLACEABLE UNIT							
23	SKSV	SENSE KEY SPECIFIC						
24	SENSE KEY SPECIFIC							
25	SENSE KEY SPECIFIC							
26	ADDITIONAL SENSE BYTES							
27	ADDITIONAL SENSE BYTES							
28	ADDITIONAL SENSE BYTES							
29	ADDITIONAL SENSE BYTES							
30	ADDITIONAL SENSE BYTES							
31	ADDITIONAL SENSE BYTES							

### 5.n ENABLE AER SMS

The ENABLE AER SMS is sent from an initiator to a target to enable Asynchronous Event Reporting by supplying a TAG and RETURN PATH ID field to be used by the target for any future AER REPORT SMS. The target shall respond with a SCSI RESPONSE SMS using the TAG value specified in the ENABLE AER SMS.

The contents of the DATA field in the ENABLE AER SMS are defined in Table 5.

Table 5 - ENABLE AER SMS

Byte	Bit 7	6	5	4	3	2	1	Bit 0
0	SMS CODE (83h)							
1	S3P CODE (20h)							
2	TAG							
3	TAG							
4	RETURN PATH ID							
5	RETURN PATH ID							
6	RETURN PATH ID							
7	RETURN PATH ID							
8	LUN							
9	reserved							
10	AER TAG							
11	AER TAG							

The TAG field is used to associate the AER SMS with a particular target.

The RETURN PATH ID field identifies the logical path that shall be used by the target to return the associated AER SMS.

### 5.n AER SMS

The AER SMS is sent from a target to an initiator to indicate an Asynchronous Event Report. The initiator responds with a SCSI RESPONSE SMS using the TAG value specified in the AER SMS. If all of the Sense Data could be reported via the AER SMS (i.e. ADDITIONAL SENSE LENGTH field < 16), then the receipt of the associated SCSI RESPONSE SMS clears the AER sense data in the target..

The contents of the DATA field in the AER SMS are defined in Table 6

Table 6 - AER SMS

Byte	Bit 7	6	5	4	3	2	1	Bit 0
0	SMS CODE (83h)							
1	S3P CODE (21h)							
2	TAG							
3	TAG							
4	reserved							
5	reserved							
6	reserved							
7	reserved							
8	SENSE DATA							
...	SENSE DATA							
31	SENSE DATA							

The TAG field is a copy of the AER TAG field in the corresponding ENABLE AER SMS, and identifies the target.

The contents of the SENSE DATA field is defined in Table 4.