Accredited Standards Committee
X3, Information Processing Systems

To: X3T10.1 Membership
From: John Scheible

Subject: <u>SSA-S3P changes for SMS validation</u>

<u>BACKGROUND</u>

Richard Rolls (IBM) found a problem in the sequence of events regarding SMS Validation. He noticed that:

a) 7.2.1 step d) onwards requires the target to know whether or not an initiator has an outstanding Task Management Funtion or a Buffer Full Confition. This requires a valid RETURN PATH ID, but this is not valuated until 7.2.3 step a).

b) 7.2.1 step d) onwards requires the target to possibly send a SCSU RESPONSE SMS or SCSI STATUS SMS. Again, this requires validation of the RETURN PATH ID which is not validated until 7.2.3 step a).

<u>PROPOSAL</u>

Richard suggested moving 7.2.3 step a) (RETURN PATH ID validation) to preceed 7.2.1 step d). This is shown as follows:

7.1 Summary of SSA-S3P SMSs

Table 1 shows a summary of all SSA-S3P SMSs.

Table 1 - Summary of SSA-S3P SMSs

SMS name	Byte 0	Byte 1	SMS FRAME TYPE	Node type support	
	SMS CODE	S3P CODE		Sent by	Received by
SCSI RESPONSE	83h	03h	APPLICATION	target	initiator
SCSI COMMAND	83h	10h	APPLICATION	initiator	target
SCSI STATUS	83h	11h	APPLICATION	target	initiator
CONFIRM STATUS	83h	12h	APPLICATION	initiator	target
ENABLE AER	83h	20h	APPLICATION	initiator	target
AER	83h	21h	APPLICATION	target	initiator
ABORT TASK	83h	30h	APPLICATION	initiator	target
ABORT TASK SET	83h	31h	APPLICATION	initiator	target
CLEAR TASK SET	83h	32h	APPLICATION	initiator	target
TARGET RESET	83h	33h	APPLICATION	initiator	target
CLEAR ACA	83h	34h	APPLICATION	initiator	target
LOGICAL UNIT RESET	83h	35h	APPLICATION	initiator	target

7.2 SMS validation

Prior to the SSA-S3P protocol layer receiving an SMS, the transport layer has validated the SMS CODE field to be 83h. Each SMS then undergoes three levels of validation as described in the following three sub clauses.

7.2.1 SMS code validation

After the transport layer checks the SMS for validity, the SSA-S3P layer shall perform validity checks on byte 1, the S3P CODE, in the following order. If the Asynchronous Alert process is invoked then the SMS is terminated without any other response. The SMS code validity check process is as follows in order:

a) If the S3P CODE is not a value supported in Table 1, then invoke the Asynchronous Alert process with an UNKNOWN SMS ALERT CODE field (see SSA-TL2 for a description of ASYNC ALERT SMS format).

b) If the S3P CODE is supported in Table 1, but the node does not match the corresponding type (initiator or target), then invoke the Asynchronous Alert process with an UNKNOWN SMS ALERT CODE field.

c) If Table 1 matches the S3P CODE of the SMS, but the FRAME TYPE field does not have a value of APPLICATION then invoke the Asynchronous Alert process with an SMS UNKNOWN ALERT CODE field.

d) <u>If the RETURN PATH ID field is unknown, then invoke the Asynchronous Alert process with an UNKNOWN RETURN PATH OR RETURN PATH ID ALERT CODE field value.</u>

e) If the S3P CODE corresponds to the ABORT TASK SET, ABORT TASK, CLEAR TASK SET, TARGET RESET, or CLEAR ACA CONDITION SMS, and one of these SMSs is already outstanding in the destination node from this Initiator, then generate an SCSI RESPONSE SMS with an OVERLAPPED SMSs ATTEMPTED RETURN CODE value.

f) If the SMS is an SCSI COMMAND SMS, then destination node shall perform the following functions:

1) If the destination node has no room to store the SMS and the destination node has not discarded the previous SCSI COMMAND SMS from this Initiator, then the destination node shall discard the SMS and generate an SCSI STATUS SMS indicating TASK SET FULL status.

2) If the destination node has discarded the previous SCSI COMMAND SMS from this Initiator and the SMS has the RESUME bit cleared, the destination node shall discard the SCSI COMMAND SMS even if room to store the SMS has become available. The destination node shall not generate an SCSI STATUS or SCSI RESPONSE SMS to the discarded SCSI COMMAND SMS.

3) If the destination node has no room to store the SMS, the destination node has discarded the previous SCSI COMMAND SMS from this Initiator, and the SMS has the RESUME bit set, the destination node shall discard the SMS and generate an SCSI STATUS SMS indicating a STATUS value of TASK SET FULL.

4) If the destination node has not discarded the previous SCSI COMMAND SMS from this Initiator and the SCSI COMMAND SMS has the RESUME bit set, the destination node shall discard the SMS and generate an SCSI RESPONSE SMS with a RETURN CODE value of INVALID FIELD.

5) If the destination node has room to store the SMS, the destination node has discarded the previous SCSI COMMAND SMS from this Initiator, and the SMS has the RESUME bit set, the destination node shall continue SMS validation processing as defined in sub-clauses 7.2.2 and 7.2.3.

7.2.2 SMS length validation

If the SMS length is shorter than that specified, then invoke the Asynchronous Alert process with an SMS TOO SHORT ALERT CODE field. If the Asynchronous Alert process is invoked the original SMS is terminated, without generating an SCSI STATUS or SCSI RESPONSE SMS.

7.2.3 SMS field validation

Each SMS listed in Table 1 shall perform the following SMS field validations in the order shown. If the Asynchronous Alert process is invoked then the SMS is then terminated, without any other response.

a) ~~If the RETURN PATH ID field is unknown, then invoke the Asynchronous Alert process with an UNKNOWN RETURN PATH OR RETURN PATH ID ALERT CODE field value.~~

a) If the initiator receives an SCSI RESPONSE or SCSI STATUS SMS with an invalid TAG field, then generate an ASYNC ALERT with an SMS UNEXPECTED ALERT CODE field value.

b) If any reserved field is non-zero or valid field contains a reserved code value, then generate an SCSI RESPONSE SMS with a RETURN CODE value of INVALID FIELD. There is one exception to this case,

where any improper field values within the CDB or LUN fields of the SCSI COMMAND SMS shall reply with an SCSI STATUS SMS with STATUS field value of CHECK CONDITION STATUS and sense data as defined in parallel SCSI-3.

Sincerely,

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