Accredited Standards Committee
X3, Information Processing Systems

Doc: X3T10.1/95a204R1
Date: December 7, 1995

Project:
Ref Doc.:
Reply to: Charles Monia

To: X3T10.1 Membership
From: Charles Monia

Subject:

BACKGROUND

The strategies for using multiple paths between an I_T nexus are complex as are the rules for handling the permitted cases (see clauses 8.4 and 8.5 in S2P, rev 5 for example). The purpose of this proposal is to simplify multi-path usage by reducing the allowable cases to a useful subset that retains the performance benefits and is correctly specified in the draft standard.

PROPOSAL

Replace the following definition:

==========

3.1.1. path: The links and intermediate nodes used to transfer a frame from the source to the destination.

==========

Proposed definition:

==========

3.1.1. path: A full-duplex conduit for the ordered delivery of SMS and data frames between an initiator-target pair. Physically, a path consists of the links and intermediate nodes used to transfer a frame from the source to the destination.

==========

Replace clause 8.4 with the following:

Begin new clause 8.4.

==========

8.4 Multiple paths

As seen by S2P, a path is a conduit for the ordered delivery of SMS and data frames between an initiator-target pair (an I_T nexus). For a specific I_T nexus, a path is uniquely identified by the RETURN PATH ID field in the SCSI COMMAND and task management SMSs. Ordered delivery means that, for a given path, data frames and SMSs are received in the order they were sent. SSA allows an I_T nexus to be connected through multiple paths but does not guarantee that frame order is preserved among paths. As a result, the following conditions apply to the use of multiple paths between an I_T nexus:

1) For a particular I/O process, all SMS and data frames shall use the same path.
2) Different I/O processes for the same I_T nexus may use different paths but delivery order is not guaranteed. The arrival order for frames sent along different paths may be different than the order in which they were sent.
3) To insure that all in-flight commands are aborted, the DEVICE RESET, CLEAR TASK SET, ABORT and ABORT TAG SMSs shall be sent over each different path that was used to start I/O processes.

==========

End new clause 8.4

Delete clause 8.5, Alternative Paths.

Modify the first paragraph of clause 6.8 as follows:

Current wording

==========

6.8 ABORT TAG SMS

The ABORT TAG SMS is sent from an initiator to a target to abort a particular I/O process. Other I/O processes are not affected. If the initiator is using multiple paths to the target, the aborted I/O process may have been initiated over a different path (see 8.4 for a warning about using multiple paths).

==========

End current wording

Proposed new wording

==========

6.8 ABORT TAG SMS

The ABORT TAG SMS is sent from an initiator to a target to abort a particular I/O process. Other I/O processes are not affected. The ABORT TAG SMS shall be sent over the path currently being used by the I/O process (see 8.4).

==========

end new wording

Modify the first paragraph of clause 6/9 as follows:

Current wording

==========

6.9 ABORT SMS

The ABORT SMS is sent from an initiator to a target to abort all I/O processes from that initiator for a selected Logical Unit or Target Routine. I/O processes from other initiators are not affected. If the initiator is using multiple paths to the target, the aborted I/O process may have been initiated over a different path (see 8.4 for a warning about using multiple paths).

==========

End current wording

Proposed new wording

==========

6.9 ABORT SMS

The ABORT SMS is sent from an initiator to a target to abort all I/O processes from that initiator for a selected Logical Unit or Target Routine. I/O processes from other initiators are not affected. If the initiator is using multiple paths to the target, the initiator shall issue an ABORT SMS over each different path used by I/O processes for the I_T_L nexus (see 8.4).

==========

End new wording.

Modify the first paragraph of clause 6.10 as follows:

Begin current wording

==========

6.10 CLEAR QUEUE SMS

The CLEAR QUEUE SMS is sent from an initiator to a target to abort all I/O processes from all initiators for a selected Logical Unit or Target Routine.

==========

End current wording

Begin proposed new wording

==========

6.10 CLEAR QUEUE SMS

The CLEAR QUEUE SMS is sent from an initiator to a target to abort all I/O processes from all initiators for a selected Logical Unit or Target Routine. If the initiator is using multiple paths to the target, the initiator shall issue a CLEAR QUEUE SMS over each different path used by I/O processes for the I_T_L nexus (see 8.4).

==========

End new wording

Modify the first paragraph of clause 6.11 as follows:

Begin current wording

==========

6.11 DEVICE RESET SMS

The DEVICE RESET SMS is sent from an initiator to a target to abort all I/O processes for all initiators on all Logical Units and all Target Routines.....

==========

End current wording

Begin proposed new wording

==========

6.11 DEVICE RESET SMS

The DEVICE RESET SMS is sent from an initiator to a target to abort all I/O processes for all initiators on all Logical Units and all Target Routines. If the initiator is using multiple paths to the target, the initiator shall issue a DEVICE RESET SMS over each different path used by I/O processes for the I_T nexus (see 8.4). .....

==========

End new wording.

Sincerely,

Charles Monia
Voice: (508) 841-6757
FAX: (508) 841-6100
Email: monia@shr.dec.com