

Memo to: John Lohmeyer
Chairman, X3T9.2

Memo from: Robert Snively
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Subject: Proposal to provide function of EXTENDED IDENTIFY

Sun Microsystems has identified a need for SCSI devices to specify a large number of paths in the CDB, rather than embedding the information in the data packet. High performance multi-tasking processors like the Sun workstations and compute servers have the ability to manipulate and generate multiple streams of data for presentation by a single target. Such devices may manipulate or create continuous streams of data for independent data paths. An example of such a device might be a telemetry controller, a multi-channel audio data system, or a multi-channel robotic controller. The devices that have been identified to date operate very effectively using the Communication Device model described in the SCSI-2 specification. The EXTENDED IDENTIFY message previously could have provided this functionality, but the message has correctly been removed from the SCSI-2 standard because of problems with interactions with tagged queuing and error management.

The original Communications Device model assumed that the device would be a packet switching model with addressing and path control information contained in the data packet itself. By providing addressing of several data paths within the CDB, a first level of channel management could conveniently be performed without requiring any interpretation of the data stream itself. This would easily meet the requirements identified by Sun and would provide a simple substitute for the EXTENDED IDENTIFY function.

The following changes to the specification, referenced against revision 8, would be required to include the function.

a) Paragraph 3, Section 17.1, Page 17-1

Replace the following sentences:

The contents and meaning of the data is not defined by this standard. A communications device may or may not have the capability of acting as an initiator.

With the following sentences:

The contents and meaning of the data is not defined by this standard. The bytes in the data packets may or may not contain addressing, path selection, and path control information. Auxiliary path selection information is optionally provided by the "Path Selection Identifier" found in the ten and twelve byte versions of the SEND MESSAGE and GET MESSAGE commands.

b) Tables 17-3, 17-4, 17-6, and 17-7 are modified as follows:

Bytes 2,3,4, and 5 are defined as Path Selection Identifier. Byte 2 bit 7 is the most significant bit, while Byte 5, bit 0 is the least significant bit.

c) The following sentence are added to the descriptive paragraph in section 17.2.2 and 17.2.3

The data transferred from the target to the initiator belongs to the logical group or stream of data identified by the Path Selection Identifier field. SCSI-1 communication devices use the default Path Selection Identifier of 00h, since all data packets transferred belong to the same logical stream of data.

d) The following paragraph replaces the second descriptive paragraph in section 17.2.5 and 17.2.6.

The data transferred from the initiator to the target belongs to the logical group or stream of data identified by the Path Selection Identifier field. SCSI-1 communication devices use the default Path Selection Identifier of 00h, since all data packets transferred belong to the same logical stream of data. The Transfer Length Field is described in section 17.2.4

These changes should provide the required capability with no complicating modifications to the message system while maintaining full compatibility with earlier devices. Commands other than SEND MESSAGE and GET MESSAGE do not need the extra level of addressing, since they reference the peripheral controller itself. Thus, there is no concept of a path being ready" independently of the Target and LUN being "ready".

The changes, being simple and fully back compatible, should be included in the SCSI-2 specification.

Thank you for your consideration of these problems.

Sincerely

Robert Snively
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