

To: T10 Technical Committee
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Subject: T10/02-431r0, SAS Initiator Connection Link Rate Handling

Revision History

Revision 0 (24 October 2002) first revision

Related Documents

SAS-r02b – Serial Attached SCSI revision 2b.

Overview

An initiator is required to discover all pathways available for connecting to targets in the SAS domain, and to discover the negotiated link rates of all links along each of those pathways. For each pathway to each target, the initiator must determine the lowest negotiated link rate along that pathway and recognize that link rate as the highest end-to-end link rate supported through the pathway. When issuing an OPEN Address Frame to establish a connection to a target, the initiator may specify a requested CONNECTION LINK RATE equal to the end-to-end link rate of any pathway to the target. Normally the initiator would specify the highest end-to-end link rate among the available pathways.

To promote effective utilization all the links within a wide links group at maximum performance, this proposal describes the method whereby the initiator may request the higher negotiated link rate of a wide links group as the end to end link rate when making connection request, and proposes use of the OPEN_REJECT (LINK RATE TOO HIGH) from the expander to signal the initiator to retry connection request specifying a lower end-to-end link rate if no link with higher link rate is currently available.

Suggested Changes

A new primitive OPEN_REJECT (LINK RATE TOO HIGH) K28.5, D29.7, D02.0, D30.0 is used to signal the OPEN Address Frame originator that the link rate field specified in the OPEN Address Frame is higher than the negotiated link rate supported by the link. OPEN_REJECT (LINK RATE TOO HIGH) is not the same as OPEN_REJECT (LINK RATE NOT SUPPORTED). LINK RATE TOO HIGH simply indicates that a pathway supporting the requested end-to-end link rate is not currently available, but that a pathway supporting a lower end-to-end link rate may be available. Furthermore, a pathway with the requested end-to-end link rate may become available when current connections are closed.

If a wide links group has one or more links has the lowest negotiated link rate on the pathway between the initiator and the target, then the Initiator may use the

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higher negotiated link rate within that wide links group in the OPEN Address Frame to request connection to the target.

If the initiator receives an OPEN_REJECT (LINK RATE TOO HIGH) in response to the open request and the requested link rate is greater than 1.5 Gbps, the initiator may retry the connection request specifying a lower end-to-end link rate.