

To: T10 Technical Committee
From: Pak Seto (Pak-Lung.Seto@Intel.com), Intel Corporation
Bob Sheffield (Robert.L.Sheffield@Intel.com), Intel Corporation
Date: 24 October 2002
Subject: T10/02-432r0, SAS Target Connection Link Rate Handling

Revision History

Revision 0 (24 October 2002) first revision

Related Documents

SAS-r02b – Serial Attached SCSI revision 2b.

Overview

In SAS-r02b the description of how a target should manage connection link rate is missing (separate proposals describe how the initiator and expander manage mixed connection link rates).

Since SMP support is optional for the target and most targets (e.g. disks) do not support SMP, the target must depend on the “link rate” value in the OPEN Address Frame received from the initiator to establish the “rate matching” value used when sending data back to the initiator within the same connection or in a future connection.

If a link reset or CHANGE notification is received by the target, the target can no longer assume the saved “link rate” value is still valid for a particular initiator because a new “end-to-end link rate” may be established between the initiator and target after a link reset or CHANGE event.

Suggested Changes

A target end device shall save the end-to-end link rate value from the OPEN Address Frame sent by the initiator each time the initiator establishes a connection with the target. The target shall specify the saved end-to-end link rate in the OPEN Address Frame whenever the target requests a connection back to the initiator. During any connection with the initiator (whether originated by the target or initiator), the target shall use the saved end-to-end link rate to determine the number of ALIGNS to insert, if any, when transmitting frames; and the number of ALIGNS to delete, if any, when receiving frames. The target is not required to support SMP to discover the “end-to-end link rate” between the initiator and the target.

If a link reset or CHANGE event affects any link within the SAS domain, the target must assume the saved end-to-end link rates for all initiators are invalid. A new “end-to-end link rate” may or may not be established between the initiator and the target after the link reset or CHANGE event.

If the target receives OPEN_REJECT (LINK RATE TOO HIGH) in response to the OPEN Address Frame sent by the target, and the link rate is greater than 1.5 Gbps, the target may retry the connection request specifying a lower link rate in the OPEN Address Frame. If the connection request is granted, the target shall save the requested end-to-end link rate.