

To: T10 SAS Protocol Working Group

From: Brian Day, LSI Logic

Subject: SAS 2 : Transitions from SL_CC1:ArbSel

Revision History

Revision 0 - Initial draft (Feb 14, 2006)

Related Documents

sas2r02 - Serial Attached SCSI - 2 Draft revision 02

Overview

Section 7.8.1 states that "Address frames shall not be terminated early".

However, not all of the transitions from the SL_CC1:ArbSel state of the SL_CC state machine are qualified by having fully transmitted the OPEN address frame.

Proposed Changes

7.14.4.3 SL_CC1:ArbSel state

7.14.4.3.1 State description

This state is used to make a connection request.

Upon entry into this state, this state shall:

- 1) request an OPEN address frame be transmitted by sending a Transmit SOAF/Data Dwords/EOAF message to the SL transmitter with the dwords containing the OPEN address frame with its fields set to the arguments received with the Open Connection request;
- 2) initialize and start the Open Timeout timer; and
- 3) request idle dwords be transmitted by repeatedly sending Transmit Idle Dword messages to the SL transmitter.

This state shall ignore OPEN_REJECT Received and OPEN_ACCEPT Received messages from the time a Transmit SOAF/Data Dwords/EOAF message is sent to the SL transmitter until an SOAF/Data Dwords/EOAF Transmitted message is received from the SL transmitter.

If a BROADCAST Received (Change) message is received this state shall send a Change Received confirmation to the management layer.

If an AIP Received message is received after requesting the OPEN address frame be transmitted, this state shall reinitialize and restart the Open Timeout timer. The state machine shall not enforce a limit on the number of AIPs received.

If this state receives an OPEN_REJECT Received (No Destination) message after transmitting the OPEN address frame, this state shall send an Open Failed (No Destination) confirmation to the port layer.

If this state receives an OPEN_REJECT Received (Bad Destination) message after transmitting the OPEN address frame, this state shall send an Open Failed (Bad Destination) confirmation to the port layer.

If this state receives an OPEN_REJECT Received (Wrong Destination) message after transmitting the OPEN address frame, this state shall send an Open Failed (Wrong Destination) confirmation to the port layer.

If this state receives an OPEN_REJECT Received (STP Resources Busy) message after transmitting the OPEN address frame, this state shall send an Open Failed (STP Resources Busy) confirmation to the port layer.

If this state receives an OPEN_REJECT Received (Connection Rate Not Supported) message after transmitting the OPEN address frame, this state shall send an Open Failed (Connection Rate Not Supported) confirmation to the port layer.

If this state receives an OPEN_REJECT Received (Protocol Not Supported) message after transmitting the OPEN address frame, this state shall send an Open Failed (Protocol Not Supported) confirmation to the port layer.

If this state receives an OPEN_REJECT Received (Retry) message after transmitting the OPEN address frame, this state shall send an Open Failed (Retry) confirmation to the port layer.

If this state receives an OPEN_REJECT Received (Pathway Blocked) message after transmitting the OPEN address frame, this state shall send an Open Failed (Pathway Blocked) confirmation to the port layer.

7.14.4.3.2 Transition SL_CC1:ArbSel to SL_CC0:Idle

This transition shall occur after sending an Open Failed confirmation.

7.14.4.3.3 Transition SL_CC1:ArbSel to SL_CC2:Selected

This transition shall occur after transmitting the OPEN address frame if:

- a) one or more AIP Received messages have been received before an OPEN Address Frame Received message is received (i.e., the incoming OPEN address frame overrides the outgoing OPEN address frame); or
- b) no AIP Received messages have been received before an OPEN Address Frame Received message is received, and the arbitration fairness rules (see 7.12.3) indicate the received OPEN address frame overrides the outgoing OPEN address frame.

The arbitration fairness comparison shall compare:

- a) the value of the arbitration wait time argument in the Open Connection request for the outgoing OPEN address frame; and
- b) the value of the ARBITRATION WAIT TIME field received in the incoming OPEN address frame.

7.14.4.3.4 Transition SL_CC1:ArbSel to SL_CC3:Connected

This transition shall occur if this state receives an OPEN_ACCEPT Received message after transmitting the OPEN address frame.

If the PROTOCOL field in the transmitted OPEN address frame was set to STP, then this state shall send a Connection Opened (STP, Source Opened) confirmation to the port layer before the transition. This transition shall include an Open STP Connection argument. At this point an STP connection has been opened between the source phy and the destination phy.

If the PROTOCOL field in the transmitted OPEN address frame was set to SSP, then this state shall send a Connection Opened (SSP, Source Opened) confirmation to the port layer before the transition. This transition shall include an Open SSP Connection argument. At this point an SSP connection has been opened between the source phy and the destination phy.

If the PROTOCOL field in the transmitted OPEN address frame was set to SMP, then this state shall send a Connection Opened (SMP, Source Opened) confirmation to the port layer before the transition. This transition shall include an Open SMP Connection argument. At this point an SMP connection has been opened between the source phy and the destination phy.

7.14.4.3.5 Transition SL_CC1:ArbSel to SL_CC5:BreakWait

This transition shall occur [after transmitting the OPEN address frame](#) if a BREAK Received message has not been received and after:

- a) a Stop Arb request is received and after sending an Open Failed (Port Layer Request) confirmation to the port layer; or
- b) there is no response to the OPEN address frame before the Open Timeout timer expires and after sending an Open Failed (Open Timeout Occurred) confirmation to the port layer.

7.14.4.3.6 Transition SL_CC1:ArbSel to SL_CC6:Break

This transition shall occur after:

- a) receiving a BREAK Received message; ~~and~~
- b) [transmitting the OPEN address frame; and](#)
- c) sending an Open Failed (Break Received) confirmation to the port layer.