TO: T10 Membership
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SUBJECT: T10/03-008r1, ADC: Disabling and Enabling Ports

Summary of Changes

Rev. 1

The following changes are based upon the 14 January 2003 discussion in the ADI working group:

- Corrected "will"s to "shall"s.
- Made it mandatory for the device server to return status on the mode select disabling a port before disabling the port, when the command is received through the affected port.
- Corrected paragraph four from "enabled" to "re-enabled."
- Changed ASC/ASCQ for post re-enable Unit Attention to I_T NEXUS LOSS OCCURRED.

General

The Automation/Drive Interface allows an ADC device server to enable and disable the primary device interface ports, e.g., SCSI Parallel Interface or Fibre Channel Interface. As far as I can tell, this behavior has never been described in a SCSI standard, so there is no precedent to guide us.

Discussion

There are two cases to be considered when a port is enabled.

- If the port has not been previously enabled since the device was powered on, there will be no tasks in the device server. The first command (other than INQUIRY) will receive a status of Check Condition with sense data of UNIT ATTENTION / POWER ON, RESET, OR BUS DEVICE RESET OCCURRED.
- If the port had been previously enabled, commands received, and the port disabled, then the behavior on the next enable is non-trivial. This is not necessarily an obscure corner case which will never happen in the field; management software may well need to disable a port, change its configuration, and enable it.

There are a number of issues which must be addressed:

- When the port is disabled, should it respond to link-level events, like SCSI Bus Reset or LIP and LPE?
- In transports which support logins, are previous logins through the disabled port preserved when the port is enabled? If some parameters have been changed – e.g., Fibre Channel AL-PA – then the answer would be no.

- How are tasks from the disabled port that are present in the device server when the port is disabled to be handled? Options include aborting them or preserving them. When the port is enabled, is status to be reported? To use the FC-AL example, status could not be reported.
- Are application clients communicating with the device through other ports to be informed of changes to the disabled/enabled port? In particular, since the MODE SELECT command is used to enable or disable the port, should UNIT ATTENTION / MODE PARAMETERS CHANGED be reported?

Suggested Resolution

The most straightforward behavior would seem to be that, when a port is re-enabled, all of its device servers appear as though they had just powered on:

- If the transport supports logins, no previous logins are preserved.
- All previous tasks are aborted and no statuses are reported.
- The first command (other than INQUIRY) from each initiator will receive a status of Check Condition with sense data of UNIT ATTENTION / POWER ON, RESET, OR BUS DEVICE RESET OCCURRED.
- The device server is not reset, thus avoiding possible side effects like rewinding.
- Only device servers supporting the ADC device specific mode page will report UNIT ATTENTION / MODE PARAMETERS CHANGED.

Suggested Changes to ADC

The basic behavior should be defined in the model section (clause 4.2.x) and that clause referenced in the description of the ADC device specific mode page.

Add the following clause to the model description:

4.2.x Enabling and disabling primary ports

An ADC device server allows the primary service delivery ports to be disabled and enabled via MODE SELECT commands which modify the ADC device specific mode page.

When in the disabled state, the port shall not accept SCSI commands or task management requests and shall not respond to transport-level actions, such as SCSI Bus Reset or the Fibre Channel Loop Initialization or Loop Port Enable primitives.

When an enabled port is disabled, if the transport layer supports logins by other ports, then all logged-in ports shall be implicitly logged out. All tasks received via the disabled port shall be implicitly aborted. If the command disabling a port is received through the port being disabled, then the device server shall return status before disabling the port.

When a port is disabled and then re-enabled, the device servers it supports shall report UNIT ATTENTION / I_T NEXUS LOSS OCCURRED in response to the first command from each initiator communicating through that port.

The following text is a change to the parts of the clause on the ADC device specific mode page which describes the Port Enable (PE) field for Parallel SCSI and Fibre Channel. See 02-253r1 and 02-315r1, respectively:

x.x.x Parallel SCSI descriptor

The Port Enable (PE) bit is set to one to enable the port to respond to selections on the SCSI bus. When set to zero, the port shall not respond to or attempt selections or reselections on the SCSI bus and shall not respond to SCSI Bus Reset.

x.x.x Fibre Channel descriptor

The PORT ENABLE (PE) bit is set to one to enable the port. When it is set to zero, the port shall not enable its drivers and shall not respond to primitives, e.g., LIP and LPE .