

To: T10 Technical Committee
 From: Rob Elliott, Compaq Computer Corporation (Robert.Elliott@compaq.com)
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 Subject: Making Target Reset optional in SAM-2

Revision History

Revision 0: first revision

Related Documents

SAM-2 revision 14

Overview

The target reset task management function is inappropriate for modern interconnects and devices. Applications talk to logical units independently. A target reset allows an application to disrupt logical units with which it is not communicating. This complicates sharing of logical units on multi-LUN targets. If one operating system is using LUN 0 and another is using LUN 1, a TARGET RESET issued by either disrupts the other.

There have been numerous workarounds developed. The TASK ABORTED status helps notify the disrupted operating system that its tasks were aborted. Some targets violate the rule that a TARGET RESET resets all logical units, instead only resetting those that were logged into the initiator issuing the TARGET RESET.

One option is to obsolete TARGET RESET in SAM-2 so future protocol standards like SRP and iSCSI can drop support for it. Since SAM-2 doesn't define any value that means TARGET RESET there is nothing to mark obsolete. All text referring to it could be removed to have the desired effect.

However, existing standards like SPI-3 and FCP-2 refer to SAM-2 for definition of TARGET RESET. If it is not present, this reference won't make sense. Therefore, this proposal suggests leaving it defined but letting protocols decide whether it is mandatory, rather than requiring it in all targets.

This may discourage new software from using it, and still allows old software to use it on existing protocols.

A bridge between an initiator on a protocol supporting it to a target on a protocol that does not will have to map a TARGET RESET into multiple LOGICAL UNIT RESETs for all the logical units exposed to the initiator.

Proposed changes

[All references to "target reset" in SAM-2 revision 14 are shown to provide context.]

[Wording will have to change once the "target port" terminology is accepted]

1.1 Requirements precedence

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Generic requirements are transformed to implementation requirements by an implementation standard. An example of a generic requirement is the target hard reset behavior specified in 5.7.6.

3.1.38 hard reset: A target response to a reset event or a TARGET RESET task management function in which the target performs the operations described in 5.7.6.

3.1.80 reset event: A protocol-specific event which may trigger a hard reset response from an SCSI device as described in 5.7.6.

5.4 Task and Command lifetimes

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The application client assumes that the task exists from the time the **Send SCSI Command** protocol service request is invoked until it receives one of the following target responses:

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f) A service response of FUNCTION COMPLETE in response to a TARGET RESET.

The following initiator actions affect the task(s) created by the initiator that takes the action and/or task(s) created by another initiator:

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e) A target reset (see 5.7.6).

5.5.2 When an initiator aborts its own tasks

When an initiator acts to cause its own task(s) to be aborted, no notification that the task(s) have been aborted shall be returned to the initiator other than the completion response for the command or task management function action that caused the task(s) to be aborted and notification(s) associated with related effects of the action (e.g., a target reset unit attention condition).

5.7.6 Target hard reset

A target hard reset is a target response to a TARGET RESET task management request (see 6.6), or a *target* reset event within the service delivery subsystem. The definition of target reset events is protocol and interconnect specific.

Each SCSI protocol standard *that supports TARGET RESET task management requests or defines target reset events* shall specify the response to a target reset event including the conditions under which a target hard reset shall be executed.

To execute a *target* hard reset a target shall initiate a logical unit reset for all attached logical units as described in 5.7.7.

5.7.7 Logical Unit reset

A logical unit reset is a response to a LOGICAL UNIT RESET task management request (see 6.5), or some other logical unit reset event, such as a target hard reset (see 5.7.6). The definition of such events may be device-specific or dependent on the protocol and interconnect. Each appropriate SCSI standard shall specify the conditions under which a logical unit reset shall be executed.

6 Task Management Functions

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TARGET RESET (IN (I_T Nexus)) - Reset the target device and abort all tasks in all task sets (see 5.7.6). ~~All target devices shall support this function.~~ *Each protocol standard shall specify whether all target devices are required to support this function.*

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NOTE 10 The TARGET RESET, CLEAR TASK SET, ABORT TASK and ABORT TASK SET functions provide a means to abort one or more tasks prior to normal completion.

6.6 TARGET RESET

Function Call:

Service Response = TARGET RESET (IN (I_T Nexus))

Description:

This function shall be supported by all target devices *on protocols that require it.*

Before returning a FUNCTION COMPLETE response the target shall perform the target hard reset functions specified in 5.7.6. A unit attention condition for all initiators shall be created on each logical unit as specified in 5.7.5.