

To: T10 Technical Committee
 From: Rob Elliott, Compaq Computer Corporation (Robert.Elliott@compaq.com)
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 Subject: SPC-2 FIRST BURST SIZE definition

Revision History

Revision 0: first revision

Related Documents

fcp2r05
 spc2r18b

Overview

On the IETF IP Storage email reflector, Mallikarjun Chadalapaka from Hewlett-Packard (cbm@rose.hp.com) noticed a discrepancy between the SPC-2 and FCP-2 definitions of the FIRST BURST SIZE field in the Disconnect-reconnect mode page. A related discrepancy in the definitions of interconnect tenancy also becomes apparent.

1. FIRST BURST SIZE definition

SPC-2 revision 18 page 206 (PDF page 234), Section 8.7.3 Disconnect-reconnect page:

The FIRST BURST SIZE field indicates the maximum amount of data that a target may transfer for a command during the same interconnect tenancy in which it receives the command. This value is expressed in increments of 512 bytes (e.g., a value of one means 512 bytes, two means 1024 bytes, etc.). A value of zero indicates that there is no first burst size limit.

FCP-2 revision 5 page 57 (PDF page 71), Section 10.2.11 FIRST BURST SIZE:

When write transfer ready is disabled, the FIRST BURST SIZE field indicates the maximum amount of data that shall be transmitted in the first FCP_DATA IU sent from the initiator to the target. If all data is transmitted in the first IU, no subsequent FCP_XFER_RDY IUs shall be transmitted by the target. If the maximum amount of data has been transmitted, but more data remains to be transferred, the target shall request that data with subsequent FCP_XFER_RDY IUs.

When write transfer ready is enabled, the FIRST BURST SIZE field is ignored and permission to transmit data from the initiator to the target is managed using FCP_XFER_RDY IUs. For data transmissions from the target to the initiator, the FIRST BURST SIZE field is ignored.

The FIRST BURST SIZE field value is expressed in increments of 512 bytes (e.g., a value of 1 means 512 bytes, two means 1024 bytes). A value of 0 indicates that there is no first burst size limit. The FIRST BURST SIZE field shall be implemented by all FCP devices that support the disabling of write transfer ready. The application client and device server may use the value of this parameter to adjust internal maximum buffering requirements.

SPC-2 defines FIRST BURST SIZE as the amount of data a target may transfer, while FCP-2 defines it as the amount of data an initiator may transfer. SPC-2's wording can be rationalized in a parallel SCSI bus where the target controls data transfers in both directions – interpret the phrase as “that a target may request to be transferred.” It doesn't fit well with serial, packetized interconnects.

In FCP-2, the field is not limited to transports with interconnect tenancy (see definitions below), so that reference should be removed.

No other T10 protocol standard currently uses this field. iSCSI plans to use it in the same manner as Fibre Channel. It seems reasonable to change SPC-2 to clearly accommodate FCP-2 and iSCSI.

2. Interconnect tenancy definition

SPC-2 revision 18b page 204 (PDF page 232) Section 8.3.7 Disconnect-reconnect mode page:

An interconnect tenancy is a period of time during which a target device owns or may access the interconnect. For example, on arbitrated interconnects, a tenancy typically begins when a device successfully arbitrates for the interconnect and ends when the device releases the interconnect for use by other devices. Data and other information transfers take place during interconnect tenancies.

FCP-2 revision 5 page 55 (PDF page 69) Section 10.2.1 Overview and format of Disconnect-reconnect)

An interconnect tenancy is the period of time when an FCP device owns or may access a shared Fibre Channel interconnect. For example, on FC-AL-2 loops or Fibre Channel Class 1 connections, a tenancy typically begins when an FCP device successfully opens the connection and ends when the FCP device releases the connection for use by other device pairs. Data and other information transfers take place during interconnect tenancies. Point-to-point or fabric-attached Class 2 or Class 3 links and many other configurations do not have a concept of interconnect tenancy and may perform transfers at any time.

In FCP-2 a tenancy is owned by either a target or initiator, not just a target. The SPC-2 definition should allow this.

Suggested changes

Rewrite the SPC-2 FIRST BURST SIZE paragraph to clarify that the initiator is sending the data and remove the interconnect tenancy reference:

The FIRST BURST SIZE field indicates the maximum amount of data *that may be transferred to the target for a command along with the command.*~~that a target may transfer for a command during the same interconnect tenancy in which it receives the command.~~ This value is expressed in increments of 512 bytes (e.g., a value of one means 512 bytes, two means 1024 bytes, etc.). A value of zero indicates that there is no first burst size limit.

Rewrite the SPC-2 interconnect tenancy definition:

An interconnect tenancy is a period of time during which a ~~target-SCSI~~ device owns or may access the interconnect. For example, on arbitrated interconnects, a tenancy typically begins when a device successfully arbitrates for the interconnect and ends when the ~~SCSI~~ device releases the interconnect for use by other devices. Data and other information transfers take place during interconnect tenancies.