To: T10 Technical Committee
From: Rob Elliott, HP (elliott@hp.com)
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Subject: 03-359r0 SPC-3 Disable implicit asymmetric access

Revision history
Revision 0 (20 October 2003) First revision

Related documents
spc3r15 - SCSI Primary Commands - 3 revision 15
03-343 SPC-3 Report supported asymmetric access states

Overview

Target devices supporting implicit asymmetric logical unit access might be able to disable implicit switching. A standard control for this is desirable.

Suggested changes

5.8.2 Explicit and implicit asymmetric logical unit access

Asymmetric logical unit access may be managed explicitly by an application client using the REPORT TARGET PORT GROUPS (see 6.24) and SET TARGET PORT GROUPS (see 6.28) commands.

Alternatively, asymmetric logical unit access may be managed implicitly by the SCSI target device based on the type of transactions being routed through each target port and the internal configuration capabilities of the target port group(s) through which the logical unit may be accessed. The logical units may attempt to maintain full performance across the target port groups that are busiest and that show the most reliable performance, allowing other target port groups to select a lower performance target port asymmetric access state.

If both explicit and implicit asymmetric logical unit access are implemented the precedence of one over the other is vendor specific.

5.8.3 Discovery of asymmetric logical unit access behavior

SCSI logical units with asymmetric logical unit access may be identified using the INQUIRY command. The value in the asymmetric logical units access (ALUA) field (see 6.4.2) indicates whether or not the logical unit supports asymmetric logical unit access and if so whether implicit or explicit management is supported.

5.8.6 Implicit asymmetric logical units access management

SCSI target devices with implicit asymmetric logical units access management are capable of setting the target port group asymmetric access state of each target port group using mechanisms other than the SET TARGET PORT GROUPS command.

All logical units that report in the standard INQUIRY data (see 6.4.2) that they support asymmetric logical units access and support implicit asymmetric logical unit access (i.e., the ALUA field contains 01b or 11b) shall:

a) Implement the INQUIRY command Device Identifier VPD page identifier types 4h (see 7.6.4.6) and 5h (see 7.6.4.7); and

b) Support the REPORT TARGET PORT GROUPS command as described in 6.24.

Logical units supporting implicit logical unit access should support the Extended Asymmetric Access mode page (see 7.8.4.x).

6.4.2 Standard INQUIRY data

The contents of the asymmetric logical unit access (ALUA) field (see table 78) indicate the support for asymmetric logical unit access (see 5.8).

Table 1 — ALUA field contents

Value	Description
00b	The SCSI target device does not support asymmetric logical unit access or supports a form of asymmetric access that is vendor specific. Neither the REPORT TARGET GROUPS nor the SET TARGET GROUPS commands is supported.
01b	Only implicit asymmetric logical unit access (see 5.8.6) is supported. The SCSI target device is capable of changing target port asymmetric access states without a SET TARGET PORT GROUPS command. The REPORT TARGET PORT GROUPS command is supported and the SET TARGET PORT GROUPS command is not supported.
10b	Only explicit asymmetric logical unit access (see 5.8.7) is supported. The SCSI target device only changes target port asymmetric access states as requested with the SET TARGET PORT GROUPS command. Both the REPORT TARGET PORT GROUPS command and the SET TARGET PORT GROUPS command are supported.
11b	Both explicit and implicit asymmetric logical unit access are supported. Both the REPORT TARGET PORT GROUPS command and the SET TARGET PORT GROUPS commands are supported.

7.4.8 Extended mode page

7.4.8.1 Extended mode page overview

The Extended mode page (see table 231) provides a means to specify subpages that are defined for all device types. Subpage code 00h is reserved, therefore all Extended mode pages use the sub_page format.

Table 2 — Extended mode page

Byte\Bit	7	6	5	4	3	2	1	0
0	PS	SPF (1b)	PAGE CODE (15h)					
1	SUBPAGE CODE (01h)							
2	(MSB)	PAGE LENGTH (n - 3)						
3								(LSB)
4	Subpage specific mode parameters							
n								

7.4.8.x Extended Asymmetric Access subpage [new]

The Extended Asymmetric Access subpage (see table 231) provides controls over SCSI task attributes (see SAM-3). The mode page policy for this subpage should be shared.

Table 3 — Extended Asymmetric Access subpage

Byte\Bit	7	6	5	4	3	2	1	0
0	PS	SPF (1b)	PAGE CODE (15h)					
1	SUBPAGE CODE (02h)							
2	(MSB)	PAGE LENGTH (12)						
3								(LSB)
4	Reserved							IMPSUP
5	Reserved							IMPEN
6	Reserved							
15								

An implicit asymmetric logical unit access supported (IMPSUP) bit set to one indicates that implicit asymmetric logical unit access, either vendor-specific or as defined in this standard, is supported by the logical unit. An IMPSUP bit set to zero indicates that implicit asymmetric logical unit access is not supported. The IMPSUP bit shall not be changeable and shall be set to one if the ALUA bit in Standard INQUIRY data is not set to 10b (i.e., explicit only).

An implicit asymmetric logical unit access enabled (IMPEN) bit set to one indicates that implicit asymmetric logical unit access is enabled. An ACAEN bit set to zero indicates that implicit asymmetric logical unit access is disabled.

If an application client attempts to set the IMPEN bit to one when the IMPSUP bit is set to zero, the device server shall reject the MODE SELECT command with CHECK CONDITION status with a sense key of ILLEGAL REQUEST and an additional sense code of INVALID FIELD IN PARAMETER LIST.