To: T10 Technical Committee
From: Rob Elliott, HP (elliott@hp.com)
Date: 17 March 2007
Subject: 07-082r1 SAS-2 Fix target device name PIV bit

Revision history
Revision 0 (26 January 2007) First revision
Revision 1 (17 March 2007) Incorporated comment from March 2007 SAS protocol WG - the PROTOCOL
     IDENTIFIER field is reserved when the PIV bit is zero, so should be set to 0h as well.

Related documents
sas2r08 - Serial Attached SCSI - 2 (SAS-2) revision 8

Overview
In the Device Identification VPD page, if a SCSI target device has SCSI target ports of multiple protocols (e.g., one iSCSI target port, one FCP target port, and one SAS target port), SAM-4 allows each transport protocol to require reporting of a SCSI target device name using a unique format with the PROTOCOL IDENTIFIER VALUE (PIV) bit set to one.

Only one designator in the SCSI name string format is allowed to appear, however; multiple protocols are not allowed to each provide a SCSI name string, The SCSI name string format can contain "eui." or "naa." and thus contain the same value as a binary EUI-based or NAA identifier, so it is expected to be shared. However, the PIV bit needs to be set to zero (i.e., not protocol specific) in that case. Only a SCSI target device with only an iSCSI target port could set the PIV bit to one.

So, SAS-2's optional SCSI target device name in SCSI name string format needs to have the PIV bit set to 0, not 1.

Editorially, "identifier" needs to be changed to "designator" in several places to match a name change made from SPC-3 to SPC-4.

Suggested changes to SAS-2

10.2.11 SCSI vital product data (VPD)

In the Device Identification VPD page (83h) returned by the INQUIRY command (see SPC-4), each logical unit in a SAS target device shall include the ~~identification~~designation descriptors for the SCSI target port identifier (see 4.2.6) and the relative target port identifier (see SAM-4 and SPC-4) listed in table 1.

Table 1 — Device Identification VPD page ~~identification~~designation descriptors for the SAS target port

Field in ~~identification~~designation descriptor	~~Identification~~Designation descriptor	
	SCSI ~~t~~Target port identifier	Relative target port identifier
~~IDENTIFIER~~DESIGNATOR TYPE	3h (i.e., NAA)	4h (i.e., relative target port identifier)
ASSOCIATION	01b (i.e., SCSI target port)	01b (i.e., SCSI target port)
CODE SET	1h (i.e., binary)	1h (i.e., binary)
~~IDENTIFIER~~DESIGNATOR LENGTH	8	4
PIV (protocol identifier valid)	1	1
PROTOCOL IDENTIFIER	6h (i.e., SAS)	6h (i.e., SAS)
~~IDENTIFIER~~DESIGNATOR	SAS address [a] in NAA IEEE Registered format (see 4.2.2)	Relative port identifier [b] as described in SAM-4 and SPC-4

[a] The ~~IDENTIFIER~~DESIGNATOR field contains the SAS address of the SSP target port through which the INQUIRY command was received.
[b] The ~~IDENTIFIER~~DESIGNATOR field contains the relative port identifier of the SSP target port through which the INQUIRY command was received.

In the Device Identification VPD page (83h) returned by the INQUIRY command (see SPC-4), each logical unit in a SAS target device shall include ~~an identification~~a designation descriptor for the SAS target device

2

name (see 4.2.4) using NAA format and may include ~~an identification~~a designation descriptor for the SAS target device name using the SCSI name string format as listed in table 2.

Table 2 — Device Identification VPD page ~~identification~~designation descriptors for the SAS target device

Field in ~~identification~~designation descriptor	~~Identification~~Designation descriptor for SAS target device	
	NAA format (required)	**SCSI name string format (optional)**
~~IDENTIFIER~~DESIGNATOR TYPE	3h (i.e., NAA)	8h (i.e., SCSI name string)
ASSOCIATION	10b (i.e., SCSI target device)	10b (i.e., SCSI target device)
CODE SET	1h (i.e., binary)	3h (i.e., UTF-8)
~~IDENTIFIER~~DESIGNATOR LENGTH	8	24
PIV (protocol identifier valid)	1	~~1~~0
PROTOCOL IDENTIFIER	6h (i.e., SAS)	~~6h (i.e., SAS)~~0h [a]
~~IDENTIFIER~~DESIGNATOR	Device name of the SAS target device in NAA IEEE Registered format (see 4.2.2)	Device name of the SAS target device in SCSI name string format (e.g., "naa." followed by 16 hexadecimal digits followed by 4 ASCII null characters)
[a] The PROTOCOL IDENTIFIER field is reserved when the PIV bit is set to zero.		

Logical units may include ~~identification~~designation descriptors in addition to those required by this standard (e.g., SCSI target devices with SCSI target ports using other SCSI transport protocols may return additional SCSI target device names for those other SCSI transport protocols).