To: T10 Technical Committee
From: Rob Elliott, HP (elliott@hp.com)
Date: 22 October 2002
Subject: 02-396r2 SAS Device Identification VPD page requirements

Revision History
Revision 0 (1 October 2002) First revision
Revision 1 (19 October 2002) Incorporated comments from 15 October 2002 SAS protocol call.
Revision 2 (22 October 2002) Incorporated comments from 22 October 2002 SAS protocol call. This proposal now requests a target device name be defined too.

Related Documents
sas-r02 - Serial Attached SCSI revision 2
spc3r09 - SCSI Primary Commands 3 revision 9
02-254r3 - WWNs for W-LUNs (George Penokie)

Overview
SAS should be very specific in requirements for INQUIRY vital product data (VPD) to improve interoperability and ensure the Protocol Specific mode page and log page data can be interpreted correctly.

Also, the SAS WG voted to define a target device name (to go with 02-254) reported in VPD. Initiator device names are still undefined.

Suggested Changes
4.1 Names and identifiers
4.2 Names and identifiers overview

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Table 1 shows the definition of names and identifiers for SAS.

Table 1 — Names and identifiers

Object	SAS implementation
Port identifier	SAS address
Port name	Not defined
Target device name	~~Not defined~~SAS target device name
Initiator device name	Not defined
Phy identifier	Phy identifier

Editor's Note 1: All remaining text is new

4.2.x Target device name

Each target device shall include a SAS target device name.

Table 2 defines the SAS target device name format. SAS target device names shall be compatible with the NAA (Name Address Authority) IEEE Registered format identification descriptor defined in SPC-3.

Table 2 — Target device name format

Bit Byte	7	6	5	4	3	2	1	0
0	NAA (5h)				(MSB)			
1				IEEE COMPANY ID				
2								
3			(LSB)		(MSB)			
4								
5				VENDOR-SPECIFIC IDENTIFIER				
6								
7								(LSB)

The NAA field contains 5h.

The IEEE COMPANY ID field contains a 24-bit canonical form company identifier assigned by the IEEE. Information about IEEE company identifiers may be obtained from the http://standards.ieee.org/regauth/oui web site.

The VENDOR-SPECIFIC IDENTIFIER contains a 36-bit numeric value that is uniquely assigned by the organization associated with the IEEE COMPANY IDENTIFIER.

The SAS target device name shall be worldwide unique. A SAS target device name of 00000000_00000000h indicates an invalid SAS target device name.

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10 Application layer

10.1 SCSI application layer

10.1.3 SCSI commands

10.1.3.1 INQUIRY command

Each logical unit in a SAS SSP target device shall include the identification descriptors listed in table 3 in the Device Identification vital product data (VPD) page (83h) returned by the INQUIRY command (see SPC-3).

Table 3 — Device Identification VPD page required identification descriptors

Field in identification descriptor	Identification descriptor			
	Logical unit name	**Target port identifier**	**Relative target port identifier**	**Target device name**
IDENTIFIER TYPE	NAA (3h)	NAA (3h)	Relative target port identifier (4h)	NAA (3h)
ASSOCIATION	Logical unit (0h)	Target port (1h)	Target port (1h)	Target device (2h)
CODE SET	Binary (1h)	Binary (1h)	Binary (1h)	Binary (1h)
IDENTIFIER LENGTH	8 [a] or 16 [b]	8	4	8
PROTOCOL IDENTIFIER	N/A	N/A	N/A	SAS (6h)
IDENTIFIER	NAA IEEE Registered format [a] or NAA IEEE Registered Extended format [b]	NAA IEEE Registered format [a] [c]	Target ports shall be numbered sequentially starting with 1h.	NAA IEEE Registered format [a]

[a] The IDENTIFIER field contains an NAA field set to IEEE Registered (5h); the IDENTIFIER LENGTH field is set to 8.

[b] The IDENTIFIER field contains an NAA field set to IEEE Registered Extended (6h); the IDENTIFIER LENGTH field is set to 16.

[c] The IDENTIFIER field contains the SAS address of the target port being used to run the INQUIRY command.

The target device shall use different identifiers for each logical unit name, each target port identifier, and the target device name.

Logical units may include additional identification descriptors than those required by this standard.

Editor's Note 2: 02-254 makes the ASSOCIATION field a 2-bit field to allow a target device to be identified with 2h and adds a PROTOCOL IDENTIFIER field to the identification descriptor for that association type.