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To: T10 Committee (SCSI)

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Subject: Access Controls TransportIDs for SBP, SRP and iSCSI

1.0 Introduction

The iSCSI protocol being defined and standardized in IETF IPS working group is nearing completion. The SRP protocol is being defined in the SRP working group of T10 and is also nearing completion. Among the many "t's" that need to get crossed to finish this work is the specification for the two protocols of the TransportID used in SCSI Access Controls (approved for inclusion in SPC-3; see T10/99-245r9, T10/00-261r0, T10/00-287r1, T10/00-381r0, T10/01-026r1 for the related documents). The aim of this proposal is to cross that one "t". In brief, the TransportIDs for SRP and iSCSI are defined. We also include a specification for the SBP TransportIDs.

The other major item in this proposal is two swap the protocol identifier values for SPI and FCP in TransportIDs. The purpose of this is to conform to already defined protocol identifier values (see Table 165 of SPC-3 rev 19).

2.0 Detailed description of proposed changes

2.1 Changes to SPC-3 (rev 19) References clause

Add to 2.2 Approved references

> ANSI NCITS.325:1999 Serial Bus Protocol - 2 (SBP-2)
> ANSI NCITS.366:2000 SCSI Parallel Interface - 3 (SPI-3)

Add to 2.3 References under development:

> SCSI RDMA Protocol (SRP) [T10/1415-D]
> Serial Bus Protocol - 3 (SBP-3) [T10/1467-D]
> Internet SCSI (iSCSI) [IETF ips]

2.2 Changes in the "4.3 Access Identifiers" clause

Change the paragraphs quoted here as indicated:

> Use of the TransportID is protocol and interconnect-specific. The description of the TransportID and its inclusion in parameter data for SCSI over Fibre Channel (FCP), parallel SCSI (SPI), IEEE 1394 (SBP), and for SCSI over Fibre Channel (FCP), SCSI over RDMA Protocol (SRP) and Internet SCSI (iSCSI) initiators is given in 7.1.3 through 7.1.7 and 7.1.4, respectively. Other protocol standards may specify the description and use of the TransportID. A protocol specification for a

TransportID shall only include ~~address~~ identifying objects that persist across ~~common~~ reset events in the service delivery subsystem. <u>The length of a TransportID shall be at least 24 bytes long and shall be a multiple of 4 bytes long.</u> Additionally, a TransportID ~~shall be no more than twenty-four (24) bytes long and~~ shall have in its first byte a value which uniquely identifies the transport protocol (see 7.1.1).

At any given time, an initiator may be identified or associated with at most one TransportID and with at most one AccessID. Multiple initiators may be associated with the same AccessID<u> or with the same TransportID</u>.

2.3 Changes in the "5.2.2.2.2 REPORT ACL parameter data Granted and Granted All page formats" clause

Delete the following text:

~~NOTE All currently defined Identifier Types require the Identifier Length field be set to 24 (see Table 33).~~

2.4 Changes in the "5.2.4.2 REPORT ACCESS CONTROLS LOG parameter data format for Key Overrides" clause

Change Table 17 (of T10/99-245r9) to the following:

Table 17. Key Overrides Log Page(s) data format

Byte	Bit							
	7	6	5	4	3	2	1	0
0	MSB							
1			TRANSPORTID ADDITIONAL LENGTH (m-24)					LSB
2	Reserved							
3	Reserved							SUCCESS
4	MSB							
7				TIME STAMP				LSB
8								
m+7				TRANSPORTID				
m+8	MSB							
m+9				INITIAL OVERRIDE LOCKOUT TIMER				LSB
m+10	MSB							
m+11				OVERRIDE LOCKOUT TIMER				LSB

Add the following text immediately after the table.

The TRANSPORTID ADDITIONAL LENGTH field indicates the additional length of the TRANSPORTID field beyond the minimum length of 24.

This change converts bytes0-1 from reserved to an additional length field for the TransportID field and modifies the byte positions accordingly.

2.5 Changes in the "5.2.4.3 REPORT ACCESS CONTROLS LOG parameter data format for Invalid Keys" clause

Change Table 19 (of T10/99-245r9) to the following:

Table 19. Invalid Keys Log Page(s) data format

Byte	Bit							
	7	6	5	4	3	2	1	0
0	MSB							
1			TRANSPORTID ADDITIONAL LENGTH (m-24)					LSB
2				OPCODE				
3		Reserved			SERVICE ACTION			
4	MSB							
7				TIME STAMP				LSB
8								
m+7				TRANSPORTID				
m+8	MSB							
m+15				INVALID KEY				LSB

Add the following text immediately after the table.

> The TRANSPORTID ADDITIONAL LENGTH field indicates the additional length of the TRANSPORTID field beyond the minimum length of 24.

This change converts bytes0-1 from reserved to an additional length field for the Trans-portID field and modifies the byte positions accordingly.

2.6 Changes in the "5.2.4.4 REPORT ACCESS CONTROLS LOG parameter data format for ACL LUN Conflicts" clause

Change Table 21 (of T10/99-245r9) to the following:

Table 21. ACL LUN Conflicts Log Page(s) data format

Byte	Bit							
	7	6	5	4	3	2	1	0
0	MSB							
1			TRANSPORTID ADDITIONAL LENGTH (m-24)					LSB
2								
3				Reserved				
4	MSB							
7				TIME STAMP				LSB
8								
m+7				TRANSPORTID				
m+8	MSB							
m+31				ACCESSID				LSB

Add the following text immediately after the table.

The TRANSPORTID ADDITIONAL LENGTH field indicates the additional length of the TRANSPORTID field beyond the minimum length of 24.

This change converts bytes0-1 from reserved to an additional length field for the TransportID field and modifies the byte positions accordingly.

2.7 Changes in the "6.2.2.2.2 MANAGE ACL parameter data Grant/Revoke and Grant All page formats" clause

Delete the following text:

NOTE All currently defined Identifier Types require the Identifier Length field be set to 24 (see Table 33).

2.8 Changes in the "7.1 Access Identifiers" clause

The "Access Identifiers" clause requires changes. The most recent version of that clause is in T10/00-287r1 and is written as proposed clause 7.1 for SPC-3.

Amend Table 33 of T10/00-287r1 by changing the length entry for the TransportID to "24 or up to 260 (note 1)" and add a note1 that says "The iSCSI protocol has variable length names (see 7.1.6). All other protocols define the TransportID as 24 bytes long."

Change the paragraph immediately following Table 33 as indicated:

The specification of the AccessID within the ACCESS IDENTIFIER field is given in 7.1.2. The specification of the TransportID within the ACCESS IDENTIFIER field for FCP, SPI, SBP, SRP and iSCSI is given in 7.1.3 through 7.1.7 parallel SCSI initiators is given in 7.1.3 and for initiators using the SCSI over Fibre Channel protocol in 7.1.4. Other SCSI protocol standards my specify the structure of the TransportID and its description within the ACCESS IDENTIFIER field.

Remove Table 34 and change the paragraph preceding that table as follows:

The TransportID format shall have a value in byte 0 that uniquely identifies the transport protocol. Table 34 specifies the value for the parallel SCSI and SCSI over Fibre Channel protocols. Table 165 *(of SPC-2 rev 19)* specifies the value of the protocol identifier to be used in byte 0 for all values between 0h and Fh inclusive. All other values are reserved.

Modify clauses 7.1.3 and 7.1.4 as indicated. These are the original clauses for SPI and FCP (as extracted from the approved documents T10/00-261r1, T10/00-287r1, T10/00-381r0 and T10/01-026r1) with the following changes. The value of the protocol identifier in byte 0 is changed for each protocol (to conform to the value from Table 165 (of SPC-2 rev 19). The two clauses are swapped (7.1.3 used to be for SPI and 7.1.4 use to be for FCP) so that they are ordered by the value of the protocol identifier.

Add clauses 7.1.5, 7.1.6, and 7.1.7 as specified here.

7.1.3 TransportIDs for initiators using FCP

The format of the TransportID within the ACCESS IDENTIFIER field in parameter data for the FCP protocol is described in Table 36.

Table 36. TransportID for FCP.

Byte	Bit							
	7	6	5	4	3	2	1	0
0	PROTOCOL IDENTIFIER (00h)							
1	Reserved							
7								
8	MSB							
15	WWPORTNAME							LSB
16	Reserved							
23								

The WWPORTNAME field is the Worldwide_Name of the Fibre Channel port (see FCP-2).

7.1.4 TransportIDs for initiators using SPI

The format of the TransportID within the ACCESS IDENTIFIER field in parameter data for the parallel interface is described in Table 37.

Table 37. TransportID for SPI.

Byte	Bit							
	7	6	5	4	3	2	1	0
0	PROTOCOL IDENTIFIER (01h)							
1	Reserved							
2	MSB							
3	SCSI ADDRESS							LSB
4	MSB							
7	RELATIVE PORT IDENTIFIER							LSB
8	Reserved							
23								

The SCSI ADDRESS field indicates the SCSI address of the initiator (see SPI-4).

The RELATIVE PORT IDENTIFIER shall indicate the four-byte binary number identifying a specific port in the device (*see Table 175 of SPC-2 rev 19*). The relative port identifies a SCSI domain in which the SCSI ADDRESS is a unique identifier of a SCSI device.   If the RELATIVE PORT IDENTIFIER does not reference a port in the device, the TransportID is invalid.

7.1.5 TransportIDs for initiators using SBP

The format of the TransportID within the ACCESS IDENTIFIER field in parameter data for SBP is described in Table 38.

Table 38. TransportID for SBP.

Byte	Bit							
	7	6	5	4	3	2	1	0
0	PROTOCOL IDENTIFIER (03h)							
1	Reserved							
7								
8	MSB							
15			INITIATOR EUI 64 (16 BYTES)					LSB
16	Reserved							
23								

The INITIATOR EUI 64 field indicates the node unique ID (EUI-64) for an SBP initiator port (see SBP-2).

7.1.6 TransportIDs for initiators using SRP

The format of the TransportID within the ACCESS IDENTIFIER field in parameter data for SRP is described in Table 39.

Table 39. TransportID for SRP.

Byte	Bit							
	7	6	5	4	3	2	1	0
0	PROTOCOL IDENTIFIER (04h)							
1	Reserved							
7								
8	INITIATOR PORT IDENTIFIER (16 BYTES)							
23								

The INITIATOR PORT IDENTIFIER field indicates the identifier for an SRP initiator port (see SRP).

7.1.7 TransportIDs for initiators using iSCSI

The format of the TransportID within the ACCESS IDENTIFIER field in parameter data for iSCSI is described in Table 40.

Table 40. TransportID for iSCSI.

Byte	Bit							
	7	6	5	4	3	2	1	0
0	PROTOCOL IDENTIFIER (05h)							
1	Reserved							
3								
4	ISCSI NAME							
n								
n+1	NULL (00h)							
n+2	PAD (if needed)							
m-1								

The ISCSI NAME field indicates the iSCSI Name of an iSCSI Initiator Node (see iSCSI). The ISCSI NAME field shall not include a byte set to 00h.

A NULL (00h) byte shall terminate the iSCSI Name.

Zero to three bytes set to zero shall be appended in the PAD field so that the total length of the data structure (m) is a multiple of 4. The PAD field shall be ignored.

This format is variable length. The actual length may be determined by searching for the null termination byte (NULL field) because that is the first zero byte after byte offset 4. The maximum length of the TransportID is 260 bytes because the iSCSI Name value does not exceed a total of 255 bytes.