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To: T10 Committee (SCSI)

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Subject: Discussion of editorial changes to Access Controls in 99-245r9

ABSTRACT:

The Access Controls proposal 99-245r9 approved at the T10 plenary meeting in May, 2000 required changes to SPC-3, SAM-2, FCP-2, SPI-4, SBC-2, MMC-3 and future RBC. This is an extensive list. It is possible to eliminate some of the changes to these documents and thereby reduce the editorial burden on so many editors as. This could be accomplished by incorporating some of the content intended for other documents into SPC-3. This document outlines one method for doing this.

1.0 Summary of editorial requirements of 99-245r9

The following summarizes the current editorial requirements of 99-245r9:

a) SPC-3: add the model clauses, the command clauses, access controls parameters clause, small changes to Reservation, EXTENDED COPY, INQUIRY and ASC/ASCQ clauses.

b) SAM-2: small changes to existing clauses defining relationship of access controls and task management.

c) SPI-4: specification of format for TransportID, volatility of enrollment (both additional clauses)

d) FCP-2: specification of format for TransportID (additional clause), volatility of enrollment (changes to existing clause and existing table)

e) SBC-2, MMC-3, future RBC: specification of DEVICE-TYPE SPECIFIC ADDITIONAL DATA in a LU Descriptor for block-type devices.

2.0 Summary of possible changes

The following summarizes the possible changes:

a) Move the specification of DEVICE-TYPE SPECIFIC ADDITIONAL DATA in a LU Descriptor from SBC-2, MMC-3, future RBC to a subclause of the ACCESS CONTROL IN, REPORT LU DESCRIPTORS service action clause, under a title which includes all these device types. See 3.1.

b) Move the specification of TransportIDs for SPI-4 and FCP-2 into separate subclauses of Access Controls parameters clause of SPC-3. See 3.2.

c) Clarify the “volatility of enrollment” specifications in the “Enrollment states” clause of SPC-3. See 3.3.

This would reduce the documents affected to:

a) SPC-3: as above with additional subclauses

b) SAM-2: as above

c) FCP-2: more details on volatility of enrollments (change to existing clauses and tables, specifically the changes specified in 99-245r9, clauses B2 and B3)

d) SPI-4, SBC-2, MMC-3, future RBC: no change required

3.0 Detailed description of possible changes

3.1 LU Descriptors from SBC-2, MMC-3, future RBC

Change structure and contents of clause 5.2.3.2 of 99-245r9 to the following:

5.2.3.2 REPORT LU DESCRIPTORS parameter data format

5.2.3.2.1 REPORT LU DESCRIPTORS parameter data, all devices

*(include text and tables that begin immediately after the current 5.2.3.2 clause title up to but **not** including the text which begins "The DEVICE-TYPE SPECIFIC ADDITIONAL DATA field", the last paragraph of clause 5.2.3.2 on page 37)*

(add the following text)

The DEVICE-TYPE SPECIFIC ADDITIONAL DATA field for certain block devices is specified in 5.2.3.2.2. If clause 5.2.3.2.2 does not apply, this field shall not be included in the LOGICAL UNIT DESCRIPTOR, unless otherwise specified in the device-type specific command set standard applicable to the logical unit referenced by the LOGICAL UNIT DESCRIPTOR.

5.2.3.2.2 DEVICE-TYPE SPECIFIC ADDITIONAL DATA for certain block devices

If the logical unit referenced by a Logical Unit Descriptor is a block device that

a) supports the READ CAPACITY command; and

b) the RMB bit in its Standard INQUIRY data indicates non-removable medium (RMB equal zero)

then the DEVICE-TYPE SPECIFIC ADDITIONAL DATA field in the Logical Unit Descriptor shall be twelve (12) bytes long. The data shall be the same as the data that would be returned for a successful READ CAPACITY command with LONGLBA bit set to one, and RELADR and PMI bits set to zero.

AUTHOR'S NOTE: *the above sentence could use a cross-reference to SBC-2 (or someplace where the READ CAPACITY command, with the LONGLBA changes, is defined). Or we could reproduce that table here (see Table 7 of T10/99-259r4).*

3.2 TransportID specifications for SPI-4 and FCP-2

AUTHOR'S NOTE: *cross-references to specific clauses here are to 99-245r9 unless otherwise qualified. All of the cross-references specified here are hard-coded and would need careful editing when incorporated into a complete document*.

Change the clause 4.3 of 99-245r9 to:

4.3 Access Identifiers

Initiators are identified in ACL entries on the basis of one or more of three types of access identifiers:

a) **AccessID**, as enrolled (see 4.4.1) by an initiator using the ACCESS CONTROL OUT command with ACCESS ID ENROLL service action (see 6.2.4);

b) **TransportID**, protocol and interconnect-specific;

c) vendor-specific identifiers.

An AccessID shall be sixteen (16) bytes. AccessIDs are included in parameter data as specified in 7.1.2.

Use of the TransportID is protocol and interconnect-specific. The description of the TransportID and its inclusion in parameter data for parallel SCSI and for FCP initiators is given in 7.1.3 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 objects that persist across common reset events in the service delivery subsystem. Additionally, a TransportID shall be no more than twenty-four (24) bytes long.

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.

Change the structure and the contents of clause 7.1 of 99-245r9 to the following:

7.1 Access Identifiers

7.1.1 Access Identifier types and lengths

Access identifiers are used in conjunction with access controls (see 4.0 and specifically 4.3) to identify an initiator or initiators for the purpose of granting, revoking or reporting on access rights. Access identifiers are specified in parameter data

with an IDENTIFIER TYPE code and ACCESS IDENTIFIER field as defined in Table 33, as well as with a length field.

TABLE 33: IDENTIFIER TYPE and ACCESS IDENTIFIER values.

Code	Description	Length (bytes)
00h	AccessID	24
01h	TransportID	24
02h-7Fh	Reserved	n/a
80h-FFh	Vendor-specific	VS

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 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 may specify the structure of the TransportID and its description within the ACCESS IDENTIFIER field.

7.1.2 AccessIDs

The format of the AccessID within the ACCESS IDENTIFIER field in parameter data is described in Table 34. There are sixteen (16) bytes of significant data in this structure.

Table 34. AccessID data structure

	Bit							
Byte	7	6	5	4	3	2	1	0
0	MSB							
15	ACCESSID							LSB
16								
23	RESERVED							

7.1.3 TransportIDs for initiators using a parallel SCSI bus

The format of the TransportID within the ACCESS IDENTIFIER field in parameter data for the parallel interface is described in Table 35.

Table 35. TransportID for SPI.

	Bit							
Byte	7	6	5	4	3	2	1	0
0								
1	RESERVED							
2	MSB							
3	SCSI ADDRESS							LSB
4								
23	RESERVED							

The SCSI ADDRESS field indicates the SCSI address of the initiator.

AUTHOR'S NOTE: *The SCSI Address is defined in the glossary of SPI-4 (rev 00) in item SPI-3.1.82*.

7.1.4 TransportIDs for initiators using SCSI over Fibre Channel

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	RESERVED						PN_VAL	NN_VAL
1 7	RESERVED							
8 15	MSB WWPORTNAME							LSB
16 23	MSB WWNODENAME							LSB

A PN_VAL bit of one indicates that the WWPORTNAME field is valid. Similarly, the NN_VAL bit of one indicate that the WWNODENAME field is valid. A value of zero for any of these bits indicate that the corresponding field is invalid and shall be ignored. At least one of these validity bits must be set to one. If not, then the TransportID is invalid.

If both WWN fields are valid but are inconsistent, that is, they do not correspond to a device in the fabric, then the TransportID is invalid.

3.3 Volatility of enrollments (SPI-4 and FCP-2)

For parallel SCSI, the description in 4.4.1.4 concerning "any event in the service delivery subsystem" and the description in 4.8 concerning the effects of other reset events (task management or power-cycles) is complete and requires no additional clauses or language in SPI-4. (However, the language in 4.4.1.4 may need to be "hardened".)

For FCP-2, these clauses only partially describe the conditions when an enrollment should be transitioned from "enrolled" to "pending-enrolled". Consequently, the proposed changes to FCP-2 in 99-245r9, clause B2 and B3, are still required.