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TO: X3T10 SCSI-3 Working Group

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RE: Enhanced Configuration ROM for SBP-2 Devices

If SBP-2 is to be able to support devices that implement a diversity of command sets, provision must be made within configuration ROM to describe the software interfaces to these command sets.

The attached document is a proposed replacement for clause 7.3, Unit directory, in Revision 1b of the SBP-2 working draft. The proposal adds new entry types to the unit directory that permit the specification of an organization responsible for both the definition of the command set and the command set version used by the unit. In addition a new entry is defined to permit the specification of logical unit characteristics.

The pages that follow reproduce the current clause 7.3 and show change bars for the proposed modifications.

7.3 Unit directory

Configuration ROM for SBP-2 units shall contain a unit directory in the format specified by this standard. The unit directory shall contain Unit_Spec_ID and Unit_SW_Version entries, as specified by ISO/IEC 13213:1994.

The SBP-2 unit directory shall additionally contain a Command_Set_Spec_ID, Command_Set_Version, Management_Agent and Unit_Characteristics entry and one or more Logical_Unit entries, as defined by this standard.

7.3.1 Unit_Spec_ID entry

The Unit_Spec_ID entry is an immediate entry in the SBP-2 unit directory that specifies the organization responsible for the architectural definition of the unit. Figure 45 shows the format of this entry.

most significant   least significant

12_{16}	$00\ 609E_{16}$

Figure 45   Unit_Spec_ID entry format

12_{16} is the concatenation of *key_type* and *key_value* for the Unit_Spec_ID entry.

$00\ 609E_{16}$ is the *unit_spec_ID* obtained from the IEEE/RAC. The value indicates that the X3 Secretariat is responsible for the software interface definition.

7.3.2 Unit_SW_Version entry

The Unit_SW_Version entry is an immediate entry in the SBP-2 unit directory that, in combination with the *unit_sw_version*, specifies the software interface of the unit. Figure 46 shows the format of this entry.

most significant   least significant

13_{16}	$01\ 0483_{16}$

Figure 46   Unit_SW_Version entry format

13_{16} is the concatenation of *key_type* and *key_value* for the Unit_SW_Version entry.

$01\ 0483_{16}$ is the *unit_sw_version* value that indicates that the unit conforms to this standard.

7.3.3 Command_Set_Spec_ID entry

The Command_Set_Spec_ID entry is an immediate entry in the SBP-2 unit directory that specifies the organization responsible for the command set definition for the unit. Figure 47 shows the format of this entry.
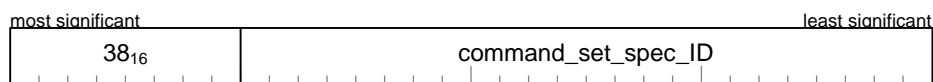
most significant   least significant

38_{16}	command_set_spec_ID

Figure 47   Command_Set_Spec_ID entry format

38_{16} is the concatenation of *key_type* and *key_value* for the Command_Set_Spec_ID entry.

The *command_set_spec_ID* is an organizationally unique identifier obtained from the IEEE/RAC. The organization to which this 24-bit identifier has been granted is responsible for the definition of the command set implemented by the unit.

7.3.4 Command_Set_Version entry

The Command_Set_Version entry is an immediate entry in the SBP-2 unit directory that, in combination with the *command_set_spec_ID*, specifies the command set implemented by the unit. Figure 48 shows the format of this entry.
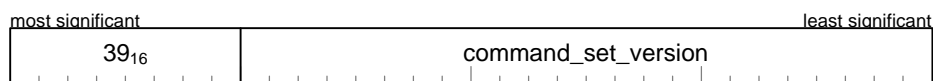
most significant	least significant
39_{16}	command_set_version

Figure 48   Command_Set_Version entry format

39_{16} is the concatenation of *key_type* and *key_value* for the Command_Set_Version entry.

The meaning of *command_set_version* shall be specified by the owner of *command_set_spec_ID*.

7.3.5 Management_Agent entry

The Management_Agent entry is an immediate entry in the SBP-2 unit directory that specifies the base address of the Unit's management agent CSR. Figure 49 shows the format of this entry.

most significant	least significant
$7A_{16}$	csr_offset

Figure 49   Management_Agent entry format

$7\underline{8}\underline{7A}_{16}$ is the concatenation of *key_type* and *key_value* for the Management_Agent entry.

The *csr_offset* field shall contain the quadlet offset, from the base address of initial register space, FFFF F000 0000_{16}, to the base address of the MANAGEMENT_AGENT register for the unit. All SBP-2 unit CSR's shall be located at or above address FFFF F001 0000_{16}; therefore the value of *csr_offset* shall not be less than 4000_{16}.

7.3.6 Unit_Characteristics entry

The Unit_Characteristics entry is an immediate entry in the SBP-2 unit directory that specifies characteristics of the unit implementation. Figure 50 shows the format of this entry.
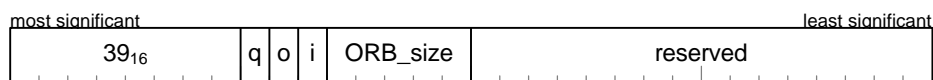
most significant				least significant
39_{16}	q	o	i ORB_size	reserved

Figure 50   Unit_Characteristics entry format

$39\underline{3B}_{16}$ is the concatenation of *key_type* and *key_value* for the Unit_Characteristics entry.

The *q* bit shall specify the task management (queuing) model implemented by the unit. If *q* is clear, the unit implements the basic task management model defined by this standard in 10.2. Otherwise the unit implements the full task management model.

The *ordered* bit (abbreviated as *o* in the figure above) specifies the implicit task attribute implemented by the SBP-2 unit. If the unit implements SIMPLE tasks, only, the *ordered* bit shall be clear. Otherwise, if the unit implements ORDERED tasks, only, the *ordered* bit shall be set. When *ordered* is set, the unit shall both execute tasks in order and report their completion status in the same order.

The *isochronous* bit (abbreviated as *i* in the figure above) specifies whether or not the SBP-2 unit supports isochronous operations. When *isochronous* is set, isochronous login requests, stream CDB requests and stream control requests shall all be supported. If the *isochronous* bit is set, the *irmc*, *cmc* and *isc* bits in the bus information block shall also be set, as described in 7.1.

The *ORB_size* field shall specify, in quadlets, the fetch size used by the SBP-2 unit to obtain ORB's from initiator memory. The initiator shall allocate, on a quadlet aligned boundary, at least this much memory for each ORB signaled to the target.

The *extended_request* bit (abbreviated as *x* in the figure above) specifies the ORB fetch size implemented by the unit. When *extended_request* is clear, the unit fetches 32 bytes when an ORB is referenced. If *extended_request* is set, the unit fetches 64 bytes, regardless of the actual size of the ORB referenced.

The *ejectable* bit (abbreviated as *e* in the figure above) shall specify whether or not the unit medium is removable. When *ejectable* is set it indicates that the medium is removable.

The *multiple_lu* bit (abbreviated as *m* in the figure above) encodes information about the number of logical units implemented by the SBP-2 unit. If the unit implements one logical unit with a logical unit number of zero, *multiple_lu* shall be clear.

The *device_type* field indicates the peripheral device type implemented by the SBP-2 unit. The *device_type* field shall be valid only if the *multiple_lu* bit is clear. When *device_type* is valid, it shall contain a value as specified by SPC for the peripheral device type returned in INQUIRY data. When the *multiple_lu* bit is set, *device_type* shall be $1F_{16}$.

7.3.7 Logical_Unit entry

The Logical_Unit entry is an immediate entry in the SBP-2 unit directory that specifies characteristics of logical units implemented by the SBP-2 device. There shall be at least one Logical_Unit entry in the unit directory for logical unit zero. Additional Logical_Unit entries are optional and may be used by SBP-2 devices that implement multiple logical units. Figure 51 shows the format of this entry.
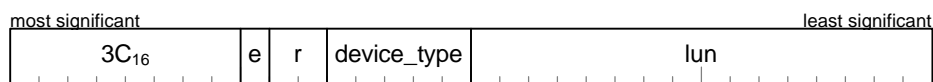
most significant   least significant

$3C_{16}$	e	r	device_type	lun

Figure 51   Logical_Unit entry format

$3C_{16}$ is the concatenation of *key_type* and *key_value* for the Logical_Unit entry.

The *ejectable* bit (abbreviated as *e* in the figure above) shall specify whether or not the unit medium is removable. When *ejectable* is set it indicates that the medium is removable.

The *device_type* field indicates the peripheral device type implemented by the logical unit. This field shall contain a value as specified by SPC for Peripheral Device Type.

The *lun* field shall identify the logical unit to which the information in the Logical_Unit entry applies.