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FROM: Peter Johansson
 TO: T10 SCSI-3 *ad hoc* Working Group
 DATE: September 17, 1997
 RE: SPC-2 Changes for new RBC device type

Close on the heels of the productive discussion on Wednesday, September 10, in Nashua, here are the recommended changes to SPC-2.

New peripheral device type

Add a definition of peripheral device type 0Eh with a document acronym of RBC and a description of "Simplified direct-access device (e.g., magnetic disk)" to the "Peripheral device type" table under INQUIRY data. The corresponding title for the document associated with revised T10 Project 1240D would be SCSI-3 Reduced Block Commands (RBC). Also add the acronym to the glossary.

Start a competition for a better name and acronym.

Command optionality

In the table "Commands for all device types" change the type designations of REQUEST SENSE and SENSE DIAGNOSTIC from mandatory (M) to optional (O).

A note should be added to the table or the accompanying text as follows:

[2] The necessity for the REQUEST SENSE command is tied to the transport protocol, FCP, SBP-2 or SIP. If REQUEST SENSE is optional, the transport protocol shall specify equivalent mandatory functionality, e.g., autosense.

I favor this change over device type specific (Z) since editorial revisions of existing command set documents would be necessary if their device types were implemented on newer transports such as SBP-2. The modification suggested above localizes the editorial changes to the transport protocol documents.

In addition, the specification of SEND DIAGNOSTIC requires minor edits:

The SEND DIAGNOSTIC command requests the device server to perform diagnostic operations on the target, on the logical unit, or on both. ~~The only mandatory implementation of this command is~~ [Targets that support this command shall implement](#) the self-test feature with a parameter list length of zero. Except when the SelfTest bit is one, this command is usually followed by a RECEIVE DIAGNOSTIC RESULTS command.

New ASC/ASCQ for MODE SENSE errors

Ralph Weber had suggested that new tables for both of these commands are in order to specify the expected additional sense codes and qualifiers expected in case of error. For example, the RBC devices don't implement changeable values pages. It might be useful to have new codes that differentiate the three cases of NO CHANGEABLE PARAMETERS, ALL PARAMETERS CHANGEABLE and IT'S HARD TO SAY. There may be others...

If you assume the creation of the preceding additional sense code qualifiers, new text might be added after the "Page control field" table:

If an application client issues a MODE SENSE command with a page control value not implemented by the target, the device server shall return CHECK CONDITION status and shall set the sense key to ILLEGAL REQUEST and the additional sense code to INVALID FIELD IN CDB. If the MODE SENSE page control field specified changeable values, the additional sense code qualifier may indicate that all, none or some of the mode parameters are changeable.

Equivalence of current and saved mode pages

Under the description of MODE SENSE I propose an additional note to follow the "Page control field" table:

NOTE *nm* Some devices implement no distinction between current and saved mode parameters and report identical values in response to a page control field of either 00b or 11b. See also the description of the save pages (SP) bit in the MODE SELECT command.

I would add complementary text to the MODE SELECT command and modify the description of the save pages bit:

A save pages (SP) bit of zero indicates the device server shall perform the specified MODE SELECT operation, and shall not save any pages. An SP bit of one indicates that the device server shall perform the specified MODE SELECT operation, and shall save to a non-volatile vendor-specific location all the savable pages including any sent in the Data-Out Buffer. The SP bit is optional, even when mode pages are supported by the target. Pages that are saved are identified by the parameter savable bit that is returned in the page header by the MODE SENSE command (see 8.3). If the PS bit is set in the MODE SENSE data then the page shall be savable by issuing a MODE SELECT command with the SP bit set. If the target does not implement saved pages and the SP bit is set to one, the command shall be terminated with CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST, and the additional sense code set to INVALID FIELD IN CDB. If the target implements no distinction between current and saved pages and the SP bit is zero the target shall behave as if the SP bit is one. Upon successful command completion the target shall report CHECK CONDITION status; the sense key shall be set to RECOVERED ERROR and the additional sense code set to MODE PARAMETERS SAVED.

Move START/STOP UNIT into SPC-2

This command has generic applicability beyond disks and it is coupled to a useful description of power states. I suggest that this command be transplanted from SBC (with suitable edits to remove references to rotating medium) and be placed in SPC-2 as an optional (O) command.