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To: T10 Technical Committee
From: Bill Galloway
Subj: Packetized cleanup and improvements

1) The treatment of data pointers in Packetized is inconsistent between reads and writes. Currently the data pointer is saved at the end of every "write" packet but only saved at the end of a good "read" packet. This complicates the design of the initiator. Reads and writes should be treated the same and the data pointer should be saved at the end of every data packet. Very few systems allow the target to retry data but in those that do, the target could use MODIFY DATA POINTERS for recovery on both commands.

11.4.1 SPI information unit sequences
Change fifth paragraph…

When a data transfer agreement is in effect that enables information unit transfers there is no option equivalent to the 'disconnect without sending a SAVE DATA POINTERS message' ~~option for write operations. During a read operation the initiator should create an attention condition on a parity error or CRC error and not move the data pointers. This allows a target to do a RESTORE POINTERS message and retry the last SPI information unit. On a write, SPI protocol does not allow the target to inform the initiator if the data was properly received, therefore, the initiator shall assume the data was properly received and save the data pointers as soon as the last CRC byte is sent~~. The initiator shall save the data pointers as soon as the last byte of the CRC is transferred. The save shall occur even if the initiator detects an error on the data information unit. If a target retries a~~n write~~ operation it shall send a MODIFY DATA POINTERS message then request that the SPI information unit be ~~sent~~ transferred again.

11.4.4 SPI data information unit
Remove second paragraph…

~~The receipt of an error free (i.e., no CRC error) SPI data information unit by an initiator shall cause the initiator to save the data pointers. The sending by an initiator to a target of the last byte of the CRC of a SPI data information unit shall cause the initiator to save the data pointers.~~

2) Zero length data transfers should be prohibited (same reasons as 99-123r0).

TABLE 39 – TYPE
Change table entry…

Codes	Type	Description
04h	Data	Sent by a target to indicate a SPI data information unit ~~may~~ shall immediately follow this SPI L_Q information unit. ~~A length of zero in the DATA LENGTH field shall indicate no SPI data information unit shall follow the SPI L_Q in-formation unit~~. The DATA LENGTH field shall not be set to zero.

3) The status information unit description should be changed to allow only one way to specify there is no sense information or no packetized failure information.

11.4.5 SPI status information unit
Change second paragraph from…

If a task completes successfully, the target shall set the DATA LENGTH field in the SPI L_Q information unit (see 11.4.3) to zero to indicate a status of GOOD.

To…

If a task completes with a GOOD status, a SNSVALID bit of zero, and a RSPVALID bit of zero then the target shall set the DATA LENGTH field in the SPI L_Q information unit (see 11.4.3) to zero.

Change third - sixth paragraphs from…

A sense data valid bit (SNSVALID) of zero indicates the sense data list length shall be ignored and no sense data is provided. A SNSVALID bit of one indicates the SENSE DATA LIST LENGTH field specifies the number of bytes in the SENSE DATA field.

If the SNSVALID bit is one, the SENSE DATA LIST LENGTH field contains the length in bytes of the SENSE DATA field. If there is no sense data, the SENSE DATA LIST LENGTH field shall be set to zero. The SENSE DATA LIST LENGTH field shall only contain even lengths (i.e., 0,2,4, etc.) and shall not be set to a value greater than 252.

A packetized failures valid bit (RSPVALID) of zero indicates the packetized failures list length shall be ignored and no packetized failure information is provided. A RSPVALID bit of one indicates the PACKETIZED FAILURES LIST LENGTH field specifies the number of bytes in the PACKETIZED FAILURES field.

If the RSPVALID bit is one, the PACKETIZED FAILURES LIST LENGTH field contains the length in bytes of the PACKETIZED FAILURES field. If there is no packetized failure information, the PACKETIZED FAILURES LIST LENGTH field shall be set to zero. The PACKETIZED FAILURES LIST LENGTH field shall only contain lengths of 0 or 4. Other values and lengths are reserved for future standardization.

To…

If sense data is provided, the sense data valid bit (SNSVALID) shall be set to one and the SENSE DATA LIST LENGTH field shall specify the number of bytes in the SENSE DATA field. The SENSE DATA LIST LENGTH field shall only contain even lengths (i.e., 2,4,6 etc.) and shall not be set to a value greater than 252.

If no sense data is provided, the sense data valid bit (SNSVALID) shall be set to zero. The initiator shall ignore the SENSE DATA LIST LENGTH field and shall assume a length of zero.

If packetized failure data is provided, the packetized failures valid bit (RSPVALID) shall be set to one and the PACKETIZED FAILURES LIST LENGTH field shall specify the number of bytes in the PACKETIZED FAILURES field. The PACKETIZED FAILURES LIST LENGTH field shall only contain a length of 4. Other lengths are reserved for future standardization.

If no packetized failure data is provided, the packetized failures valid bit (RSPVALID) shall be set to zero. The initiator shall ignore the PACKETIZED FAILURES LIST LENGTH field and shall assume a length of zero.