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To: T10 Committee (SCSI)

From: George Penokie (IBM)

Subject: List Lengths that exceed maximum Allocation Length

Overview

Within the SBC and SPC-2 standards it is unclear as to how to handle the case where the amount of information to be returned in a parameter list exceeds the maximum possible allocation length for the received command. This may occur in during READ DEFECT DATA (10), MODE SENSE (6), or MODE SENSE (10) commands. Relevant sections from the standards are:

From SPC-2:

Section 4.2.5 Allocation length

"The ALLOCATION LENGTH field specifies the maximum number of bytes that an application client has allocated for returned data. An allocation length of zero indicates that no data shall be transferred. This condition shall not be considered as an error. The device server shall terminate transfers to the Data-In Buffer when allocation length bytes have been transferred or when all available data have been transferred, whichever is less. The allocation length is used to limit the maximum amount of data (e.g., sense data, mode data, log data, diagnostic data, etc.) returned to an application client. If the information being transferred to the Data-In Buffer includes fields containing counts of the number of bytes in some or all of the data, the contents of these fields shall not be altered to reflect the truncation, if any, that results from an insufficient allocation length value, unless the standard that describes the Data-In Buffer format specifically states otherwise."

Section 7.10 MODE SENSE (6), second paragraph under table 67:

"A page code of 3Fh indicates that all mode pages implemented by the target shall be returned to the application client. If the mode parameter list exceeds 256 bytes for a MODE SENSE(6) command or 65 536 bytes for a MODE SENSE(10) command, the device server shall return CHECK CONDITION status and the sense key shall be set to ILLEGAL REQUEST and the additional sense code set to INVALID FIELD IN CDB."

From SBC:

Section 6.1.7 READ DEFECT DATA (10) command, 7th paragraph under table 19 (pdf page 60):

"If the ALLOCATION LENGTH is insufficient to transfer all of the defect descriptors, the DEFECT LIST LENGTH shall not be adjusted to reflect the truncation and the device server shall not create a CHECK CONDITION status. The application client is responsible for comparing the DEFECT LIST LENGTH and the ALLOCATION LENGTH to determine that a partial list was received.

Note 11 - The application client may determine the length of the defect list by sending the READ DEFECT DATA (10) command with an ALLOCATION LENGTH of four. The device server returns the defect list header that contains the length of the defect list."

The above make it unclear and gives conflicting advice on how to deal with the case where the amount of information to be returned in a parameter list exceeds the maximum possible allocation length for the READ DEFECT DATA (10) command. Does the target check condition the command and not return any parameter list information as described in Mode Sense or does it returned up to the allocation length then check condition the READ DEFECT DATA (10) command with an ASC of PARTIAL DEFECT LIST TRANSFER (1Fh 00h) or does it return as much of the defect list as possible and return GOOD status as indicated in the READ DEFECT LIST (10) commands description.

Proposed solution

The READ DEFECT DATA (12) command description is to be moved from the Commands for optical memory block devices section to the Commands for direct-access block devices section.

The following changes be made to the READ DEFECT DATA (10) command.

If the allocation length insufficient to transfer all of the defect descriptors <u>and the defect list length is less than FFFFh</u> the defect list length shall not be adjusted to reflect the truncation and the device server shall not create a CHECK CONDITION status. The application client is responsible for comparing the defect list length and the allocation length to determine that a partial list was received.

<u>If the allocation length is less than FFFFh and the defect list contains more information than is possible to represent in the defect list length the device server shall place a value of FFFFh in the DEFECT LIST LENGTH field. and shall not create a CHECK CONDITION status. The application client is responsible for determining the defect list is too large to be returned using the READ DEFECT DATA (10) command and that a partial list was received.</u>

Note 11 - The application client may determine the length of the defect list by sending the READ DEFECT DATA (10) command with an ALLOCATION LENGTH of four. The device server returns the defect list header that contains the length of the defect list.

<u>If an allocation length of FFFFh is insufficient to transfer all of the defect descriptors, the defect list length shall be set to FFFFh. The device server shall return as much of the defect list as possible, and shall create a CHECK CONDITION status with a sense key of ILLEGAL REQUEST and an additional sense code of PARTIAL DEFECT LIST TRANSFER.</u>