

T10/99-197r0

To: T10 Technical Committee
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Subject: REPORT LUNS and small allocation lengths

Since introduced in SPC, device servers have been instructed to return a CHECK CONDITION if they encounter an allocation length less than 16 bytes in a REPORT LUNS command. This contradicts the convention for all other commands, which instruct the device server to accept short allocation lengths and simply truncate the data returned. In particular, a zero byte allocation length never causes an error; it can be used to determine whether or not a command is supported.

I recommend relaxing the REPORT LUNS rule to match the other commands, allowing any allocation width. It is the application client's responsibility to provide enough space.

(Excerpts from SPC-2 revision 10.)

The generic description of CDB formats includes this text, which directly contradicts the REPORT LUNS behavior:

4.2.5 Allocation length (page 14; PDF page 34)

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.

Suggested changes to REPORT LUNS:

7.19 REPORT LUNS command (page 86; PDF page 109)

The allocation length ~~shall~~ should be at least 16 bytes. ~~If the allocation length is less than 16 bytes, the device server shall return CHECK CONDITION status. The sense key shall be set to ILLEGAL REQUEST and the additional sense data shall be set to INVALID FIELD IN CDB.~~

If the allocation length is not sufficient to contain the entire logical unit inventory, the device server shall report as many logical unit number values as fit in the specified allocation length. This shall not be considered an error.

NOTE 1: devices compliant with previous versions of this standard return CHECK CONDITION status with sense key ILLEGAL REQUEST and additional sense data set to INVALID FIELD IN CDB when the allocation length is less than 16 bytes.

The REPORT LUNS command shall return CHECK CONDITION status only when the device server is unable to return the requested report of the logical unit inventory.

Sample text from PERSISTENT RESERVE IN, describing how a typical command handles short allocation lengths:

7.11 PERSISTENT RESERVE IN command

The actual length of the PERSISTENT RESERVE IN parameter data is available in a parameter data field. The ALLOCATION LENGTH field in the CDB indicates how much space has been reserved for the returned parameter list. If the length is not sufficient to contain the entire parameter list, the first portion of the list shall be returned. This shall not be considered an error. If the remainder of the list is required, the application client should send a new PERSISTENT RESERVE IN command with a ALLOCATION LENGTH field large enough to contain the entire list.

READ BUFFER recommends but does not require an allocation length of 4:

7.14.4 Descriptor mode (0011b)

The allocation length should be set to four or greater. The device server shall transfer the lesser of the allocation length or four bytes of READ BUFFER descriptor.