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TO: X3T10 Committee (SCSI)

SUBJECT: SSC SET CAPACITY command (new)

The SBC standard has selected a method for assigning a capacity less than or equal to the maximum physical capacity of the peripheral device. SSC has a means to partition a volume in to logical volumes, but at the present time, there is no means to select less than the total capacity of the volume in which to make partitions.

For some applications, and also for media and mechanical testing, it is desirable to have a method to select a capacity less than the total. The means discussed at the SSC working group in May, 1996, was to select a fine granularity percentage of the possible capacity. It was felt that this function should not be requested through the MODE SELECT command as partitions are today. The recommendation of the SSC working group was to define a new command for this purpose.

This proposal provides initial text for a SET CAPACITY command for the SSC command standard. This command may have applicability to other device classes. The operation code was selected to not conflict with other command sets, based on SPC, revision 9, table B.2.

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Attachment of 2 pages is part of this document

SSC 5.2.x

The optional SET CAPACITY command (see table 1-1) causes the available medium for a volume to be set to a proportion of the total capacity of a volume. Any excess space is unavailable on the volume after successful completion of this command until the volume capacity is reset by a new SET CAPACITY command or until after the volume is physically erased. The method for recording the available capacity and other marks needed to manage the resulting capacity for volume interchange may be specified in an interchange standard or may be vendor specific.

This operation shall only be attempted when the logical position is at BOP0. All partition information, if any is removed and only partition 0 remains after successful completion of this command. The resulting position shall be at BOP0.

Table 1-1 SET CAPACITY command

Bit	7	6	5	4	3	2	1	0
0	Operation code (1Fh)							
1	Reserved							Immed
2	Reserved							
3	Capacity proportion value							
:								
4	—							—
5	Control							

If a reservation exists, a reservation conflict shall occur when a SET CAPACITY command is received from an initiator other than the one holding the logical unit reservation.

An immediate (Immed) field of zero indicates that the device server shall not return status until the set capacity operation has completed. An Immed field set to one indicates that the device server shall return status as soon as the command descriptor block of the SET CAPACITY command has been validated. If CHECK CONDITION status is returned for a SET CAPACITY command with an Immed field set to one, the set capacity operation shall not be performed.

The Capacity proportion value field may have any value in the range 0-65535. The Capacity proportion value is the numerator to a fraction where the denominator is 65535. This algorithm provides fine granularity for selecting the available capacity of a volume. If the device server cannot support the precise granularity specified by the Capacity proportion value field, the device server shall round up the new available capacity to the next highest proportion that it does support. This rounding operation shall not be considered an error and shall not be reported.

Note: Tape capacity is an approximate value at any time since defects are recovered by using the available capacity of the volume for error recovery. Partitioning and environmental changes may also affect available capacity.

If a valid SET CAPACITY command is received for a volume that is write protected (i.e., WP field of mode header is set to 1b for a MODE SENSE command), the device server shall return CHECK CONDITION status and set the sense key to DATA PROTECT. The additional sense information shall be set to a value appropriate for the condition.

If a valid SET CAPACITY command is received and the logical position of the device server is not at BOP0, the device server shall return CHECK CONDITION status. The sense key shall be set to DATA PROTECT and the additional sense information shall be set to SEQUENTIAL POSITIONING ERROR.

If the immediate function is used, an initiator not subject to a reservation conflict may receive a deferred error indication on any subsequent command. While the device server is performing the immediate set capacity operation, an initiator may test the progress of the operation by interpreting the progress indication information of the REQUEST SENSE command. While performing an immediate operation for this command, the device server shall report a sense key value of NO SENSE and additional sense information of OPERATION IN PROGRESS. The sense-key specific function for progress indication shall be used by the device server when preparing sense data for the REQUEST SENSE command (see SPC).