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To: T10 Committee (SCSI)

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Subject: Command Classification

1 Overview

The following proposed wording represents changes to SCSI Block Commands - 2 (SBC-2) to enable the transmission of grouping or classification information on a per-command basis.

This proposal standardizes a function that allows application clients to group commands so that device servers can collect information about each group of command. A application client can then, in turn, read the information collected by the device server and use that information to do things like work load balancing. Generally the collection of this information is done using out-of-band methods (i.e., the information is not transmitted across using any SCSI protocols).

An example of how grouping or classification could be used would be if two applications were using a subsystem; one application primary streamed data and another primary does random access of data to a logical unit. If the streaming application groups all it's commands with one value (e.g., x) and the random application group all it's commands with another value (e.g., y) then a group x defined to hold performance metrics would collect all the performance metrics for the streamed commands together and a group y defined to also hold performance metrics would collect all the performance metrics for the random commands together. The result would be two sets of performance metrics (x and y). A management application could then read the performance metrics and determine if the performance of a specific group is acceptable.

This proposal does not attempt to define the groups. At this time it is not clear what the groups will be. Even after they have been defined it is not clear wether that is something that should be defined as an in-band, out-band, or set at the factory feature. If it is decided to be in-band a mode page can be defined at a latter date with no effects that would relate to this proposal.

SBC-2 additions

1.1 Affected commands

It is proposed that a 7-bit field (CLASSIFY) be added to at least the following commands:

a) READ (10)
b) READ (12)
c) READ (16)
d) VERIFY (10)
e) VERIFY (12)
f) VERIFY (16)
g) WRITE (10)
h) WRITE (12)
i) WRITE (16)
j) WRITE AND VERIFY (10)
k) WRITE AND VERIFY (12)
l) WRITE AND VERIFY (16)

In addition the CLASSIFY field should be added to the following commands:

a) PRE-FETCH (10)
b) PRE-FETCH (16)
c) SEEK (10)
d) SYNCHRONIZE CACHE (10)
e) SYNCHRONIZE CACHE (16)
f) WRITE SAME (10)
g) WRITE SAME (16)

h) XDREAD (10)
i) XDREAD (32)
j) XDWRITE (10)
k) XDWRITE (32)
l) XDWRITEREAD (10)
m) XDWRITEREAD (32)
n) XPWRITE (10)
o) XPWRITE (32)

The CLASSIFY field would be in bits 6-0 in byte 6 of 10-byte commands, byte 10 of 12-byte commands, byte 14 of 16-byte commands, byte 6 of 32-byte commands and byte 6 for variable length commands.

1.1.1 READ (10) command

The READ (10) command (see table 1) requests that the device server transfer data to the application client. The most recent data value written in the addressed logical block shall be returned.

Table 1 — READ (10) command

Byte\Bit	7	6	5	4	3	2	1	0
0	OPERATION CODE (28h)							
1	Reserved			DPO	FUA	Reserved		RELADR
2	(MSB)							
3								
4				LOGICAL BLOCK ADDRESS				
5								(LSB)
6	Reserved				GROUP NUMBER			
7	(MSB)							
8				TRANSFER LENGTH				(LSB)
9	CONTROL							

The GROUP NUMBER field specifies the group into which attributes associated with the task should be collected (i.e., information about tasks with the same group number value are collected into the specified group). The definition of the attributes and the groups is outside the scope of this standard. A group number value of zero indicates any attributes associated with the task shall not be placed into any group.