Date: June 19, 1998
To: T10 Committee
From: Gerry Houlder, Seagate Technology
Subj: Considerations for mode pages common to several LUNs

This proposal is an artifact of a previous proposal that created Mode Page 19h. This mode page is described in documents 96-195r4 and 98-106r1. Discussion of these proposals brought out the fact that mode pages are associated with Logical Unit Numbers (LUNs), not targets. However the interface functions controlled by mode page 19h are actually associated with the target in this case. It is undesirable (and not feasible) to have different settings for different LUNs, so a practical implementation will use the same mode page for all attached LUNs.

The existing wording for MODE SELECT command doesn't describe how to report unit attention for a page that is common across multiple LUNs. The existing wording from SPC-2 reads as follows:

If a target supports saved pages, it may save only one copy of the page for each logical unit and have it apply to all initiators, or it may save separate copies for each initiator for each logical unit. Multiple port implementations may save one copy per logical unit and have it apply to all initiators on all ports or save a separate copy per logical unit for each initiator on each port. If separate copies are saved, the target shall maintain separate current values for each combination of initiator and logical unit that it detects. Pages that are common to all initiators are not required to have multiple copies.

If an application client sends a MODE SELECT command that changes any parameters applying to other initiators, the device server shall generate a unit attention condition for all initiators except the one that issued the MODE SELECT command (see SAM). The device server shall set the additional sense code to MODE PARAMETERS CHANGED.

I propose adding wording to specifically mention that a mode page may be common across multiple LUNs. When the page is changed by an initiator, the device server for other LUNs that use the same page will not generate unit attention for that initiator. I believe the extra unit attentions for this case are unnecessary and don't serve a useful purpose. This is similar to the behavior of a target with a single LUN.

If the mode page is common across multiple LUNs and is also common across all initiators, then the device server shall generate one unit attention for each of the other initiators when they access that target. The other initiators will receive unit attention the first time they access any LUN on that target and won't receive additional unit attentions when they access another LUN on that target. Again, this is like the behavior of a target with a single LUN.

My proposed additional wording to describe this case is on the next page.

Addition to SPC-2:

The underlined text must be added. Deleted text is shown with strike-through.

If a target supports saved pages, it may
(a)   save ~~only~~ one common copy of the page for each logical unit and have it apply to all initiators,
(b)   ~~or it may~~ save separate copies for each initiator for each logical unit,
(c)   save one common copy of the page for all attached logical units and have it apply to all initiators,
(d)   save separate copies for each initiator and each copy is common to all logical units,.

A target may save some pages that use a common copy for all initiators and some pages that have a separate copy for each initiator. Multiple port implementations that do options (a) or (c) shall apply the common copy of the mode page to all initiators on all ports. Multiple port implementations that do options (b) or (d) shall save separate copies for each initiator on each port.
~~Multiple port implementations may save one copy per logical unit and have it apply to all initiators on all ports or save a separate copy per logical unit for each initiator on each port. If separate copies are saved, the target shall maintain separate current values for each combination of initiator and logical unit that it detects. Pages that are common to all initiators are not required to have multiple copies.~~

If an application client sends a MODE SELECT command that changes any parameters applying to other initiators, the device server shall generate a unit attention condition for all initiators except the one that issued the MODE SELECT command (see SAM). If a mode page is common across all attached LUNs, the device server shall generate a unit attention for the first access to any attached LUN; subsequent accesses to other attached LUNs by the same initiator shall not result in additional unit attention conditions. The device server shall set the additional sense ~~code~~ bytes to MODE PARAMETERS CHANGED.