ENDL
TEXAS

Date: 17 October 2005
To: T10 Technical Committee
From: Ralph O. Weber
Subject: SAT comparison of SCSI and ATA queuing

The 05-108r3 command queuing overview fails to compare SCSI and ATA queuing. Instead, it discusses only SCSI command queuing.

r1 Revised as per inputs from

Referencing SAT r05, modify as follows:

6.2 Queued commands

6.2.1 ~~Overview~~ Comparison of SCSI and ATA queuing

~~SCSI provides for various modes of command queuing via task tags and ORDERED, SIMPLE, HEAD OF QUEUE, and ACA task attributes. SCSI devices do not return the maximum number of commands that may be queued, but return a status of BUSY or TASK SET FULL when a command is received and the queue has no space to process another command. SATA NCQ supports up to 32 commands queued at a time. The SATL has the option of mapping SCSI queued commands directly to SATA native queued commands and/or queuing commands internally.~~

Some differences between SCSI and ATA queuing methods are shown in table x.

Table x — Comparison of SCSI and ATA queuing methods

Feature	SCSI	ATA NCQ	ATA TCQ
Ordering	Specified by task attributes (e.g. SIMPLE, ORDERED) associated with each command	Always at the discretion of the device	Always at the discretion of the device
Queue Depth	Indeterminate	Fixed at 1 to 32 commands as reported by the IDEN-TIFY DEVICE command	Fixed at 1 to 32 commands as reported by the IDENTIFY DEVICE command
Queue Full Reporting	TASK SET FULL status	Treated as an error	Treated as an error
Queue Full Management	Device manages and indicates via TASK SET FULL status	Host manages	Host manages
Queued Commands	Queuing is applicable to all commands	Limited to READ FPDMA QUEUED and WRITE FPDMA QUEUED commands	Limited to READ DMA QUEUED, READ DMA QUEUED EXT, WRITE DMA QUEUED, WRITE DMA QUEUED EXT and WRITE DMA QUEUED FUA EXT commands
Handling of Non-Queued Commands	All commands are queued commands	Receipt of any command other than an NCQ queued command is treated as an error	Except for NOP with a non-zero subcommand, receipt of any command other than a TCQ queued command is treated as an error
Error Handling	Controlled with mode parameters	Any error aborts all queued commands	Any error aborts all queued commands