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FROM: Peter Johansson

TO: X3T10 SCSI-3 Plenary

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RE: New Task Management Models for SAM

At the May X3T10 SCSI-3 Working Group meeting in Ft. Lauderdale Florida, Jim McGrath and I introduced and discussed proposed simplifications to the SAM task management (queuing) model. The Working Group was asked for a straw poll to endorse the concepts and the straw poll passed 17:1. This proposal is the result of additional work to refine these ideas and present them in a concrete form for approval by the SCSI-3 Working Group.

These ideas were discussed in the SCSI-3 Working Group in Colorado Springs and received substantial support.

The essence of the proposal is to modify SAM-2 to permit two levels of task management complexity: basic[1] and full. The salient features of each of these schemes is summarized in the table below.

Model	Task attributes	Task management functions	Control byte NACA	Control mode page Queue algorithm modifier	QErr	DQue
Basic	SIMPLE	ABORT TASK ABORT TASK SET TARGET RESET	0 (SCSI-2 contingent allegiance)	1 (unrestricted reordering)	1	0
Full	SIMPLE ORDERED HEAD OF QUEUE ACA	ABORT TASK ABORT TASK SET CLEAR ACA CLEAR TASK SET TARGET RESET TERMINATE TASK	—	—	—	—

I have consulted SAM Revision 18 and confess I am uncertain of the best way to express these changes within the current framework of SAM. If the SCSI-3 Working Group endorses the technical details of this proposal, I suggest that I coordinate with both the SAM and SPC editors to arrive at the appropriate language to express the changes.

Once SAM is modified to permit the two different task management models, a mechanism is needed for devices to report which model they implement. Consensus emerged in the SCSI-3 Working Group in Colorado Springs that INQUIRY data is the most suitable location to report task management model variants.

The following text and tables are extracted from SPC Revision 9b and show (underlined) the addition of a new field, BQue model. The definition of another field that has a bearing on this discussion, CmdQue, is reproduced for ease of reference.

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[1] In Ft. Lauderdale, the new model was referred to as "simple task management." Since this name causes some confusion with the SIMPLE task attribute, I suggest that the model be renamed to "basic."

Table 19 – Standard INQUIRY data format

Bit Byte	7	6	5	4	3	2	1	0
0	Peripheral qualifier			Peripheral device type				
1	RMB	Reserved						
2	ISO / IEC version		ECMA version			ANSI version		
3	AERC	TrmTsk	NormACA	Reserved	Response data format			
4	Additional length (n - 4)							
5	Reserved							
6	BQue	EncServ	VS	MultiP	MChngr	ACKREQQ	Addr32	Addr16
7	RelAdr	WBus32	WBus16	Sync	Linked	TranDis	CmdQue	VS
8	(MSB)	Other INQUIRY data as specified by SPC						
n								(LSB)

The value of the basic queuing (BQue) bit is meaningful only if the CmdQue bit has a value of one. A BQue value of one indicates that the device supports, for this logical unit, the basic task management model defined by SAM. A value of zero indicates the device server supports the full task management model defined by SAM.

A command queuing (CmdQue) bit of one indicates that the device supports tagged tasks (command queuing) for this logical unit (see SAM). A value of zero indicates the device server does not support tagged tasks for this logical unit.

Because SBP-2 makes use of the Basic task management model and because disk drive vendors wish to use the Basic task management model in the parallel SCSI environment, I propose that these changes be promptly stabilized in SAM-2 and SPC (not deferred to the not yet authorized SPC-2). Since Full queuing model support is preserved, I suggest that the addition of a subset of the queuing model is not a destabilizing change and deserves the Plenary's support.