

Accredited Standards Committee*
X3, Information Processing Systems

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Reply to: G. Milligan

To: Membership of X3T10

From: Lamers/Milligan

Subject: Minutes of X3T10 ATA -3 Working Group #2 November 30, 1994

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1. Opening Remarks

Gene Milligan convened the meeting at 9:30 am. He thanked Tom Hanan of Western Digital for hosting the meeting. He also requested that Larry Lamers take the minutes and thanked him for accepting the request.

As is customary, the people attending introduced themselves. A copy of the attendance list was circulated for attendance and corrections.

It was stated that the meeting had been authorized by X3T10 and would be conducted under the X3 rules. Ad hoc meetings take no final actions, but prepare recommendations for approval by the X3T10 task group. The voting rules for the meeting are those of the parent committee, X3T10. For the ad hoc, other than straw votes, the voting rules are: one vote per participating company.

The minutes of this meeting will be posted to the X3T10 BBS and the ATA Reflector and will be included in the next X3T10 committee mailing.

2. Attendance and Membership, Introductions

Attendance at working group meetings does not count toward minimum attendance requirements for X3T10 membership. Working group meetings are open to any person or company to attend and to express their opinion on the subjects being discussed.

The following people attended the meeting.

Name	Company	Email Address
Lawrence J. Lamers	Adaptec	ljlammers@aol.com
Kevin James	AMD	kevin.james@amd.com
Phil Chan	CMD	phil@cmd.com
Lane Lee	Conner	lane.lee@conner.com
Hale Landis	Consultant	landis@sugs.tware.com
K. C. So	Cypress Semiconductor	kcs@cypress.com
Dal Allan	ENDL	dal_allan@mcimail.com
Jeff Epstein	Future Domain	jeffe@fdc.mhs.compuserve.com
Dan Colegrove	IBM	colegrove@vnet.ibm.com
Brad Hosler	Intel	bwh@salem.intel.com
Pete McLean	Maxtor	pete_mclean@maxtor.com
Ron Roberts	Apple	rkroberts@aol.com
Steve Timm	Microsoft	stevetim@microsoft.com
Robbie Shergill	National Semiconductor	rss@berlioz.nsc.com
Chris D'Iorio	NEC	cd-iorio@nectech.com
Hide Suzuki	NEC	hideaki=suzuki@nectech.com
Curtis E. Stevens	Phoenix Technologies	curtis_stevens@bannet.ptltd.com
Dave Tang	Quantum	dtang@qntm.com
Farbod Falakfarsa	Quantum	
Ed Hoskins	Seagate	ed_hoskins@notes.seagate.com
Gene Milligan	Seagate	gene_milligan@notes.seagate.com
Ron Werbow	Seagate	ron_werbow@notes.seagate.com
John Masiewicz	Seagate Technology	masiewicz@notes.seagate.com
Yas Hashimoto	Toshiba	408-451-6960
Devon Worrell	Western Digital	worrell@dt.wdc.com
Tom Hanan	Western Digital	t_hanan@dt.wdc.com

3. Approval of Agenda

The agenda was approved as amended and as reflected by these minutes.

4. Document Distribution

94-053r3	Reset Pulse Duration
94-027r3	Error Detection Using Data CRC
94-048r1	Error Detection Using Parity
94-239r2	Presentation on WD Enhanced IDE 95

95-102r0	Proposal for Enhanced IDE 95 Features
Landis	Reflector messages
McLean	Reflector messages

5. Review of Action Items

- 1) Gene Milligan to investigate the appropriateness of command queuing in the ATA-3 project proposal. Complete.
Gene stated that it is not specifically included or excluded. He recommended that X3T10 establish an explicit position to define: command overlap; command overlap and queuing; or neither. The X3T10 instruction should include, if something is to be defined, whether the(se) definition(s) should be included in ATA-3, published as separate standards, or as technical reports. The intent is to discuss this at the 1/12/94 meeting to develop a recommendation for the plenary.
- 2) Larry Lamers to get document numbers for later inclusion in next minutes. Complete.
- 3) All participants are requested to post existing proposals for ATA-3 on the ATA reflector. Continued.
- 4) All participants to submit ATA-3 proposals for consideration in preliminary concept form by 11/10 and final form by January 12, 1995. Continued.

6. Old Business

6.1 WD Update [Worrell] (94-239r2)

Devon Worrell presented the Western Digital proposal for Enhanced IDE 95.
See 94-239r2.

Features:

- add service and DMA ready bits to status register
- uses ATAPI interrupt reason register
- two added IDE commands - READ OVERLAPPED and WRITE OVERLAPPED
- setting DMA or PIO operation requires a write to the features register prior to these commands
- uses an open collector shared interrupt that is pulsed (not level sensitive)

Issues:

- enabling shared interrupts is a concern
- in ATAPI the release function could use hardware acceleration, a timeout for polling is needed

6.2 Conner Introduction [Lee] (94-218r0)

Lane Lee presented the Conner Command Queuing Proposal.

Features:

- using precomp register to transfer queue tag
- addition of host acknowledge, disconnect, command complete and data phase bits
- command codes included for each type of queue tag (but supports consensus for simple tags only)
- use of multiple block mode for PIO to limit number of interrupts
- proposal should work with existing host hardware
- arbitration using PDIAG and DASP
- the drive needs to drive IRQ when not selected.
- once in data phase the drive owns the task file

Issues:

- on DMA the amount of data transferred needs to be determined since the drive can disconnect at any point
- potential fairness issue with the way arbitration is specified

Several people present voiced support for overlapped operations, but questioned the need for command queuing.

6.3 Quantum Update If Any [McGrath] (94-)

Dave Tang said there is no update since the Palm Springs presentation (see 94-237).

6.4 Discussion of Proposals

The question arose on how to reach conclusion on a specification for overlapped commands given the urgency of the situation. A need was expressed by the host side people present to have products with this function implemented and available by the middle of 1995. Dal Allan summarized the need with editing principally by Brad Hosler, Curtis Stevens, and Phil Chan as follows:

- 1) Overlapped commands on ATAPI with ATA-2 disk drives on the same cable decision and sufficient definition by February, 1995.
- 2) Overlapped I/O between two overlapping devices.
- 3) Independent queuing in drives so that they can share the same cable with overlap to an ATAPI device.

Brad Hosler stated that by far, the number one priority was for number one. This item was a kickoff for the 1/12/94 agenda item to establish a specific position by X3T10 on command overlap and queuing in ATA.

6.5 Secure Mode [McLean] (X3T10/94-087r1)

Pete McLean reported that he had received feedback on his six questions as follows:

Should extent locking capability be included? Yes.

What granularity should be used? Sector boundary.

Dan Colegrove will describe the IBM Think Pad implementation of security in an email to illustrate the use of the secure mode. Essentially it is two 32-byte passwords and an initialization command to re-format the drive if the passwords are lost.

6.6 >16.6 MB/s DMA transfer rates

Will there be a mode 3 DMA? Tom stated that Joe Chen was prepared to re-issue a proposal on 22 MB/s .

6.7 Reset Pulse Width [Kalish] (94-053r3)

There were no reflector comments received. This topic will be voted on for a recommendation for inclusion in ATA-3 at the January Meeting.

6.8 Check Power Mode [McLean] (94-154r0)

Pete stated that no comments were received. This topic will be voted on for a recommendation for inclusion in ATA-3 at the January Meeting.

6.9 PFA Reporting [Colegrove]

Dan Colegrove stated that a bit will be proposed to indicate predictive failures. A bit in IDENTIFY DRIVE data to indicate this capability. The re-use of 'vendor-specific' needs the addition of a revision level string in the IDENTIFY DRIVE data.

6.10 Error Detection [Kalish] (94-027r3, 048r1)

There was little support for this from this group. A vote will be taken on whether or not error detection will be part of the ATA-3 development effort at the January meeting.

6.11 Reduced Command Set [Landis/Hanan]

Hale said his proposal would postulate the use of a single drive in a simple system that reduces the firmware. These drives are used in dedicated applications (i.e., test equipment, game machines, etc.) that do not need the complexity. The Chair concluded from his description that his proposal would be given room on an agenda when requested, but most likely should be a project unto itself.

Tom Hanan and Devon Worrell indicated that the reduced command set they listed at Palm Springs was actually going to be an ATAPI set and they had decided not to propose this for ATA-3.

6.12 3.3 Volt Signal Definition [Hanan]

This will be deferred to ATA-4.

6.13 Additional DMA Commands [Landis]

The aim is have a DMA only data transfer system. These are for the commands that are not read or write but transfer data. The Chair reminded Hale of the 1/12/94 deadline.

7. New Business

7.1 DSC Bit [Landis]

Hale Landis commented on the drive seek complete bit (DSC). He recommends that it should be a copy of the drive ready bit. The problem is the coordination of the ATA-2 document with the intended use in ATA-3. The ATA-3 group had no objection to his proposal for this bit in ATA-2.

7.2 Version Indication

Discussion of what proposals were going into ATA-2, ATA-3, and perhaps ATA-4 led to a discussion of the fact that Gene Milligan had proposed a set of procedures for X3T10 which required the inclusion of a version capability. Gene agreed to submit a proposal for this capability in ATA-3.

8. Call for Patents

Gene Milligan requested that anyone aware of any patents required for the proposals be disclosed early in accordance with the ANSI patent policy.

Prior minutes have already identified some patents and those have letters offering access to licenses. Gene asked if the PFA proposal would require any IBM patents and Dan Colegrove agreed to pursue that possibility.

9. Liaison Reports

9.1 ATA-2

None.

9.2 ATAPI

Tom Hanan reported that a number of editorial refinements in SFF 8029 were concluded. A SFF 8020 revision 2.0 that includes the SFF 8029 errata document is being prepared. Some global changes in style will also be made. The host related issues will continue to be dealt with in SFF. A series of documents will be developed to address these issues. The enhancements in the QIC 157 document will be incorporated in one of these new series of documents.

10. Action Items

- 1) All participants are requested to post existing proposals for ATA-3 on the ATA reflector.
- 2) All participants to submit ATA-3 proposals for consideration in preliminary concept form by 11/10 and final form by January 12, 1995.
- 3) Prepare and submit version indication proposal - Milligan

11. Meeting Schedule

January 12, 1995 at Stateline, NV. Host: Silicon Systems.
February 16, 1995 - Host TBD
March 9, 1995 at Newport Beach, CA. Host: Qlogic Corp.
April 13, 1995 - Host TBD
May 11, 1995 at Harrisburg, CA. Host: AMP, Inc.
June 22, 1995 - Host TBD

12. Adjournment

The meeting adjourned at 5:00 PM on November 30, 1994.