Draft Meeting Minutes
Automation/Drive Interface (ADI) Working Group
Ad Hoc Conference Call
April 15, 2002
8:30 am – 10:30 am PDT

1   Roll call

The following people indicated their presence:

- Michael Banther

- Joe Breher

- Paul Entzel

- Kevin Gingerich

- Susan Grey

- Paul Suhler

- Tuong Vu

- Rod Wideman

2   Approval of Agenda

Paul Suhler called the group's attention to the proposed agenda, document 02-135r0. He asked if there were any requested additions or deletions. It was pointed out that some items could not be meaningfully covered due to the absence of their proposed presenters.

2.1   Review of action items

a) Paul Entzel to disclose Quantum's physical layer specification. – *complete - 02-133r0*

b) Joe Breher to investigate whether he is able to disclose Exabyte's physical layer specification, and to disclose it to the group if able to. - *carryover*

c) Erich Oetting to investigate whether he is able to disclose StorageTek's tape to library interface specification, and to disclose it to the group if able to. – *carryover – not present*

d) Michael Banther to generate a straw man summary of the various vendors' physical layers. – *carryover – awaiting input*

e) Bob Griswold to take concepts developed at the meeting as a straw man, and use them to develop an initial specification proposal for ADT. – *carryover – not present*

f) Michael Banther to define minimal set of control commands, and status items, as per autoloader. - *carryover*

g) Lee Jesionowski to develop straw man interface status page. – *carryover – not present*

h) Lee Jesionowski to scrutinize TapeAlert mechanism, and begin developing usage and persistence rules, and error reporting, and additional data items for ADI. – *carryover – not present*

i) Paul Suhler to generate and post 106r1, incorporating discussion. – *complete – discussion on agenda*

j) Bob Griswold to take "Why do well known logical units require that all their commands be mandatory?" to CAP. - *complete – discussion on agenda*

k) Bob Griswold to take "Can we resurrect standard Inquiry data device-type modifier field?" to CAP. - *complete – discussion on agenda*

l) Michael Banther to contact T10 chair for proper handling of patent disclosure. - *carryover*

m) Paul Suhler to schedule teleconference. - *complete*

n) Bob Griswold to ask plenary for permission to schedule teleconference for week of April 17 th. - *complete*

o) Rod Wideman to update the command proposal as 097r1. - *carryover*

3 Discussion Items

3.1 Answers to questions for CAP WG

The group discussed Bob Griswold's doc 02-116r1. The main point is that CAP will award ADI with a new device type for inclusion in next rev of SPC-3. They have awarded value12h.

3.2 Revised command proposal

Rod Wideman discussed his doc 02-097r1. This is not yet on T10.org

Kept the Very High Frequency frame. To this frame has been added Write Protected. The last byte is set of error bits – tape alert, interface, persistent error, error change.

No definition of interface status frame at this point.

The doc has been revised to eliminate those frames agreed to at the last meeting.

At this point, we are probably not ready to include a state machine definition of a generic drive's loading/threading model. We should probably get this draft out first. We can define this state machine in the ADC doc.

Probably should carry a proposal to SSC group when we know what Commands and pages we want.

Rod agreed to have charts to guide us through discussion at next meeting.

3.3 Minimal commands and status for autoloaders

Michael Banther indicated that this is not ready for presentation.

3.4 Review of SCSI device model

The question was asked: Should there by a separate Device Server with 0x12 device type, which to send ADI commands?

All agreed that from a standards standpoint, there is no architectural problem with having two device servers controlling one physical device.

The group concurred that implementing a second device server, of device type ADI, is an accurate model.

3.5 Straw man interface page

In Lee Jesionowski's absence, the group touched on this subject.

The question was raised: is there any value in SAS as the Physical layer? (Banther)

Group – We should should probably think about it.

Suhler – Would this incur a cost problem?

Breher – Rumored to be same physical as SATA.

Entzel – Regardless of any possible SAS implementation, we still need a RS-422 solution

Banther – We should liaise with SAS to ensure we don't preclude an SAS implementation.

SAS is a closed consortium at this point in time. Who participates in the SAS development? Seagate does (Suhler)

A project proposal will be before T10 in May

The SAS meetings overlap the ADI meetings – would be problematic for any liaison.

Banther - will be liaison for the next meeting

Suhler - will find out what he can about SAS

SAS Still confidential

Rod Wideman raised the question: Is this implementable in drives? Is this a reasonable request? The group consensus is yes.

Banther – task management may be the stickiest area – the additional device server within the physical device is inherently a three body problem.

Project proposal on T10 for SAS – 02-098 to be presented by John Lohmeyer at next T10 plenary.

3.6 TapeAlert, usage & persistence rules, etc.

In Lee Jesionowski's absence, the group touched on this subject.

Wideman – The media changer should not consume data intended for the 'host' initiator.

Banther – TapeAlert distributed at the last meeting is the latest version – will post to T10 website.

Breher – SSC(-x) agreed to take over the development of TapeAlert

Entzel – SSC to address TapeAlert in upcoming meeting

Wideman – we may need to make proposal to SSC covering TapeAlert, taking advantage of data consolidation concepts.

Perhaps each of the TapeAlert flags should be saved for each initiator.

3.7 ADI SCSI command set

Paul Suhler presented his doc 02-106r1.

Covers all commands in SPC-3, SSC-2 – whether they are useful for ADI, whether they honor reservations, and whether they are Mandatory, Optional, or outside this specification.

Entzel – Some commands should be directed to the ADI LU, others only directed to SSC LU.

Breher – does not SPC make reservations (for example) mandatory?

Entzel – no, only mandatory command is TUR

Suhler – should we define by reference to other standards when possible? Seems that the consensus is yes, by reference whenever possible.

Suhler – should this carry its own LUN? Group – yes, it must

Wideman – should the visibility of both LUNs be configurable? Group – no standards restriction on which LUs are visible from which ports.

Banther – Do TapeAlert log pages get consumed globally, or per initiator?

Breher – should be maintained per initiator

Entzel – should make TapeAlert flags separate for each LU

Group - Some question as to whether TapeAlert flags are currently maintained by initiator

Suhler – Should develop a table as to what is visible from each interface

Question – how do these various docs get incorporated into ADC? Submit finished proposals to Bob Griswold.

Need we be thinking about a reduced command set? Each optional item can lead to interoperability problems.

Entzel – Polling frame may be problematic if we try to layer on other protocols.

May be able to map to Log Page

Breher – perhaps we should revisit decision to supply any commands outside of encapsulated SCSI? VHF frame may be requested several times a second (Wideman) Queuing would provide low latency to accommodate this (Banther)

Suhler – Perhaps we should restate this as "is it practical to pull all commands into encapsulated SCSI?" Would require at least 16 bytes for returning small frame – this could be 20ms on a 9600 baud link.

Group – We should address the possibility of making all traffic within encapsulated SCSI at the next meeting.

Banther – There is existence proof of supporting multiple command protocols over the same transport.

Wideman – Legacy control, legacy debug, LUN passthrough, encapsulated SCSI, and ADI drive polling frames can all coexist.

Breher - The drive can be queried as to which protocol(s) it supports, the client uses whatever mechanism it desires.

Wideman – Any benefit in negotiation for supported protocols? Would this save memory?

Group – probably not.

It was pointed out that last meeting, we decided that the VHF Polling frame, TapeAlert frame, Control frame can be outside encapsulated SCSI – others are not. We are now revisiting this.

Entzel – make sure anything we can do outside of encapsulated SCSI, we can also do inside encapsulated SCSI.

Group – agreed.

4   Unscheduled business

4.1   ADP

Michael Banther discussed his item to develop a summary of the various vendor's physical layers. So far he has received a couple of Physical layer specs, awaiting others. The following have been posted:

Seagate – 02-002r0

Quantum – 02-133r0

Sony – 02-140r0

4.2   Agenda for Nashua

Straw man of Interface Page – Lee Jesionowski

Status of skeleton standards – Bob Griswold

Updated document on polling frames – Rod Wideman

Updated document on SCSI command support – Paul Suhler

Comparison of existing physical layers – Michael Banther

Mapping of polling frames onto SCSI – Rod Wideman

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c) Michael Banther to generate a straw man summary of the various vendors' physical layers.

d) Bob Griswold to take concepts developed at the meeting as a straw man, and use them to develop an initial specification proposal for ADT.

e) Michael Banther to define minimal set of control commands, and status items, as per autoloader.

f) Lee Jesionowski to develop straw man interface status page.

g) Lee Jesionowski to scrutinize TapeAlert mechanism, and begin developing usage and persistence rules, and error reporting, and additional data items for ADI

h) Michael Banther to contact T10 chair for proper handling of patent disclosure.

i) Rod Wideman to update the command proposal as 097r1.

j) Paul Suhler to update 106r2, splitting the command table into two tables – one for SSC, one for ADI.

k) Rod Wideman to present summary of data mapping into encapsulated SCSI.

6 Adjournment