

Draft Minutes  
Ad Hoc Meeting  
Automation/Drive Interface (ADI) Working Group  
Portland, Oregon  
T10/03-041r0  
January 14, 2003  
9:00 AM – 5:00 PM PST

1. Introductions: Group  
Intel hosted the meeting. Paul Suhler called the meeting to order at 9:00 AM. The attendees are listed at the end of these minutes.
  
2. Call for secretary: Paul Suhler  
Michael Banther volunteered to fill the permanent secretary role.
  
3. Approval of the agenda: 03-039r0 Paul Suhler  
The group approved the agenda with additions.
  
4. Approval of previous meeting minutes: Paul Suhler  
The group approved the previous meeting and conference call minutes listed below without changes.
  - a. 11/05/2002 meeting minutes 02-412r0
  - b. 11/20/2002 conference call minutes 02-494r0
  - c. 12/03/2002 conference call minutes 03-016r0
  - d. 12/19/2002 conference call minutes 03-026r0
  
5. Review of action items: Michael Banther
  - a. Find a permanent secretary for this committee. *Closed*
  - b. Michael Banther to produce a proposal for device server interaction section in ADC document. *Carryover*
  - c. Rod Wideman to create proposal to include sequence diagram in ADC for state transition table, verify adequate definition of terms. *Closed*
  - d. Rod Wideman to create possible VPD page that describes supported states and transitions. *Closed*
  - e. Lee Jesionowski to create a proposal for method to convey Interface Status changed. *Carryover*
  - f. Lee Jesionowski to work within IBM to find possible resolution for signal conflict on connector regarding wrap plug. *Closed – 10-pin connector*
  - g. Paul Entzel to write up a proposal for the ADC model of TapeAlert. *Carryover*
  - h. Paul Entzel will report the results of online query of what characters should and should not be used for start of frame and end of frame characters in the ADT frame format. *Closed*
  - i. Susan Gray will investigate whether we have a preference to an Attention signal or AER frame for asynchronous event reporting. *Carryover*
  - j. Paul Suhler to follow up with SNIA Interoperability Conformance Test Program (ICTP) Subcommittee regarding test/emulation tool. *Carryover*

- k. Rod Wideman and Paul Entzel to present comprehensive list as to what needs to be added to standards docs at the next plenary week meeting. *Closed*
- l. Paul Suhler to investigate usage/need of two stop bits in ADT. *Closed*
- m. Paul Suhler to investigate length of process involved for getting connector made standard by SFF Committee. Question is to how it might line up with timeline for ADT. *Closed*
- n. Michael Banther to create 02-358r4 to incorporate comments from meeting. *Closed*
- o. Rod Wideman to incorporate 02-489r0 as modified per comments into ADC. *Closed*

6. Discussion items:

- a. ADC status

Rod Wideman

Rod Wideman presented adc-r01 to the group.

General questions from Rod.

- Do new/modified definitions need proposal? Paul Suhler and Kevin Butt answered 'No'.
- What is the proper notation for the value of a single bit field? Erich Oetting and Paul Entzel answered 'one' or 'zero' as opposed to 1, 1b, 0, or 0b.

Results of discussion for Section 4.

The standard need not include the Data Buffering section (4.2.2). Rod Wideman agreed to remove it.

The group is unsure of the need for the Tagged command queuing section (4.2.3). We agreed to leave it in for future proposals.

The group discussed Progress indication (4.2.5). Paul Suhler questioned the purpose of this indicator, is it the percentage of tape unused? Erich Oetting pointed out Kevin Butt's proposal in the SSC-2 working group yesterday (03-010r0). Rod Wideman pointed out ADC's silence on the availability of an SSC device server over an ADT port, hence no guaranteed access to an SSC-2 progress indication. Paul Entzel stated that ADC may describe the usage philosophy of SSC versus ADC device servers but that any requirement for SSC device server availability over an ADT port belongs in the ADT standard. Lee Jesionowski pointed out that no mechanism exists for the automation to monitor the progress of a firmware upgrade in a data transfer device server. Lee suggested to either remove progress indication or leave it for future definition. Erich wanted to strike it. However Paul S. suggested we leave it; it may be needed to provide guidance to implementers. The group agreed with Paul suggestion.

Paul Entzel stated that the standard needs an SSC – ADC device server interaction clause in the model section. The group agreed. Paul Suhler already has an action item (02-392) in this regard.

Lee Jesionowski pointed out the need for an SMC – ADC device server interaction clause as well since the bridging/pass-through functionality connects to an SMC device server. Michael Banther asked about the impact upon ADC of SMC device server intelligence in the target device's bridging functionality. Paul Entzel stated that ADT currently includes lots of bridging

intelligence, but needs a pure pass-through capability as well. Rod Wideman concluded that bridging/pass-through needs a complete conference call, or maybe a full day meeting to discuss. The group discussed the impact of bridging/pass-through on the schedule and agreed to revisit this subject at the end of the meeting.

#### Results of discussion for Section 5.

Paul Suhler and Rod Wideman stated their concern about widening the scope of ADC too much by bringing in non-SSC commands. However Kevin Butt pointed out that our project proposal states removable medium devices, and Paul Entzel gave the opinion that it's not a big deal if we modify the language to include other removable medium data transfer elements. Paul Suhler then proposed that Rod change the SSC-specific terminology to general removable medium data transfer device server and the group agreed.

Rod Wideman pointed out Note 1 of the Command table – does Read Position force a buffer flush? The group discussed this question. Kevin Butt searched SSC-2 and found the statement 'no medium movement shall occur as result of [a Read Position] command.' Rod will remove Note 1. Lee Jesionowski suggested adding an ADC log page to capture the same information as Read Position would return. Lee, Rod, and Kevin discussed the pros and cons of this idea. Rod will change the editor's note to possibly remove Read Position if the contents of log pages developed in future remove the need for it.

#### Results of discussion for Section 6.

Rod Wideman raised the issue that we may want to make some SSC log pages available through the ADC device server. Doing so will allow automation controllers to access information that they need without requiring the target device to provide access to the SSC device server through the ADI port. Rod also pointed out that we need more boilerplate to bring Log Page code table into compliance with other SCSI standards. Paul Entzel warned against overlapping ADC-native page codes with those of other device servers that we may want to provide cross-access to. Rod asked which log pages should be mandatory? We did not reach a conclusion on this question, but Rod will add a column to the table to indicate mandatory versus optional.

Rod Wideman led the group through a review of the Very High Frequency log page. The group discussed the editorial conventions for the VHF Data log parameter table and text. Kevin Butt asked why does the sentence regarding MAM state 'should' rather than 'shall'. Kevin Butt, Paul Suhler, and Rod will take this discussion off-line. Lee Jesionowski requested that Rod move to Initial and Small caps for acronyms where possible. Paul Entzel asked whether Rod was willing to field editorial requests outside of the meetings. Rod responded that he was. Rod raised the question, 'Is the interface status a log page or a mode page?' Lee responded that he owes Rod a proposal on this. Paul E. recommend using a log page to avoid the Unit Attentions that occur with mode page changes. The group agreed that it should be a log page. The group discussed the way to define log page parameters.

Rod Wideman led the group through a review of the TapeAlert Response log page. He's changed the name from 'High Frequency log page.' Rod has also changed the order of the bits. Paul Entzel and Kevin Butt stated that we agreed to match the SSC-2 MAM definition. Rod will check his ordering against SSC-2.

The group discussed the lack of content for the Requested Recovery log page. Lee Jesionowski will create a proposal.

Rod Wideman led the group through a review of the Mode parameters section (6.2).

Paul Entzel noted that we need a mode page code from CAP. The group discussed the sub-page descriptor. Paul E. noted that it provides a mechanism to set to device name, the LU name, and the port name.

The group discussed a change to the Logical Unit Descriptors field in the Stream Device descriptor. Paul Entzel stated that this field should provide the LU name. Erich Oetting proposed changing the descriptors to an SMC style device identifier. Rod Wideman pointed out that a table at 6.2 to describe the mode page list is missing. Rod asked whether the three sub-pages in Table 8 should become separate mode pages. Lee Jesionowski responded, 'Is the port index unique to the whole device, to that port type, etc?' The group discussed these indices. Erich suggested using the relative port identifier in SPC, 8.6.4.6. We reached general agreement to adopt Erich's suggestion. Rod asked, 'Should the LU Index be unique across the device type?' Kevin Butt responded that we should use the same type of index as the port index. The group agreed to adopt Kevin's suggestion.

Rod Wideman discussed the Control Frame page. He pointed out that the original proposal had it as an Inquiry page. Over time, it crept into the log pages incorrectly. Rod has moved it to a VPD page. He then asked, 'Does the group still want this page?' The group discussed whether this information belongs in ADC or in ADT.

The group also discussed the VHF Polling Delay parameter: should it be negotiated, should it be available in the ADT out-of-band protocol, should it be moved to a mode page for encapsulated SCSI, should it be in the VHF log page as another parameter? Paul Entzel pointed out that if the VHF log page contains an n<sup>th</sup> parameter, the automation controller can retrieve it only when wanted. The group agreed to moving the VHF Polling Delay field to parameter 1 of the VHF log page.

The group discussed the four flags in the Control Frame VPD page. We reached agreement that the ADC and ADT bits provide no value since the initiator must already know this information in order to request the VPD page! We also agreed that the Legacy bit is useful but not appropriate at the ADC layer. We agreed that the initiator can get the information contained in the MCTGT bit by looking whether the ENABLE bit in the Medium changer descriptor of the mode page is changable or not. The group discussed the passing of individual descriptors or all descriptors in MODE SELECT commands and concluded that Rod Wideman should move the text describing the possibilities from just above Table 11, where it currently sits, further up in the document. As

none of the bits or fields in the Control Frame VPD page are needed, the group agreed to remove it.

The group engaged in much discussion about the mechanisms to retrieve identifiers and to set them through ADC. Sensing possibilities include: ADC-specific VPD page that returns data transfer device server VPD page 83h data, ADC mode page that returns a VPD page 83h identifier, ADC mode page that returns all VPD page 83h identifiers, placing a requirement in ADT that the target device must support the data transfer device server command set at least as far as the Inquiry command. The group agreed that the Logical Unit descriptors in the Streaming device descriptor will return all of the data transfer device server's Inquiry VPD page 83h information.

- b. ADC State Transition Table Informative                      03-042r0                      Rod Wideman

Rod Wideman asked the group if this information belonged in the device model clause. The group believes that it does.

Lee Jesionowski argued for Table 1 to show the superset of all possible combinations of state transitions. Rod Wideman has developed the table to be informative. After some discussion the group agreed to make Table 1 a normative list of all valid combinations and to add one or more example sequences as subsequent tables. As one possible example, remove states 5, 7, 9, and 11. Lee, Paul Entzel, and Paul Suhler want the In Transition bit off to mean that the state will not change until external stimulus occurs. The group agreed to this change.

The group also agreed to similar changes for Table 2, Unload: list all combinations plus two examples, unload to eject and unload to hold.

Much discussion of error case examples then ensued. As a result, Rod Wideman will change the RRQST bit definition such that the drive will set RRQST whenever an error occurs during a load or unload. The associated log page will include recovery sequences including 'don't know' and 'don't do anything'.

- c. ADC State Sequence Capabilities VPD Page                      03-043r0                      Rod Wideman  
Rod Wideman questioned where the sequence page should reside: VPD, mode, or log page. He would prefer a mode page. Based on discussion of 03-042r0, Rod would also like to alter the State Sequence Capabilities page such that it reports the sequence of states that the drive will pass through for the given sequence type (load or unload). As a consequence, the Can Transition bit would change back to In Transition.

After much discussion, the group agreed that no need exists for this page. The state transition tables, including a normative reference of all of the valid combinations of state bits, addresses the existing problem of knowing how to sort out good from bad bit combinations. The addition of the Recovery Requested concept precludes the need to have error states detected via state sequences self-described by the drive. We considered the value of indicating time-outs for transition fields.

We agree that these time-outs only cover code bugs in the drive where the drive never leaves a transitioning state. Hence no operative need exists for them.

- d. ADC Clause 4.2.1 rewrite 02-392r0 Paul Suhler

The group reviewed the proposal. Rod Wideman moved that 02-392r0 be incorporated into ADC. Paul Suhler seconded the motion. The group passed the motion by acclamation.

- e. ADC: Disabling a Port 03-008r0 Paul Suhler

Paul Suhler questioned whether and existing SCSI standard describes this behavior. Kevin Butt stated that disabling a port should cause a nexus loss for all outstanding nexii that includes the target port. The group agreed with Kevin. Rather than describing the effects of disabling a port, ADC will point to the appropriate transport protocol standards for the effects of a nexus loss.

The group engaged in much discussion about whether a data transfer device can complete outstanding tasks associated with a port before disabling that port. The general consensus emerged that nothing in the SCSI standards prohibits a device from this type of behavior. Hence no need exists for additional text.

Paul Suhler moved for incorporation of 03-008 into ADC as revised. Kevin Butt seconded the motion. The group approved the motion by acclamation.

- f. Automation Fault Logging

Paul Suhler walked the group through the proposal. Rod Wideman believes that this log page should be a vendor unique addition to ADC. Lee Jesionowski stated that the information contained in the log doesn't add value because drive and library vendors want to minimize the number of drives pulled from libraries and this page is specifically for use in diagnosing the problem after the drive has been removed. Paul S. has agreed to abandon the proposal.

- g. ADT status ADT-r01 Paul Entzel

Due to the lack of remaining time in the meeting, Paul Entzel declined to take the group through a detailed review of the draft standard. However he pointed out that the major change in Rev 01a is the renaming of the payload type field to frame type.

- h. SOF/EOF/ESC characters SOF.pdf Paul Entzel

Paul Entzel reviewed the list of acceptable values for SOF, EOF, and ESC. Michael Banther had previously suggested the XOR of the ASCII encoding for 'ACI' for SOF. He fessed up to accidentally using the wrong letters and to botching the XOR operation on them. Subsequently, various attendees demonstrated their skill at XOR'ing various three-letter acronyms together. Eventually, the group agreed to SOF = 41h, EOF = 44h, ESC = 48h.

i. Port Login PC and ACCEPT fields

Paul Entzel reviewed the fact that the PC and Accept bit of the Port Login frame always share inverse values. Paul E. would like to consolidate these two bits into a single bit. The group agreed to eliminate the PC bit and move the Accept bit up to the MS bit.

Rod Wideman would like the OR operation in 6.2 2<sup>nd</sup> paragraph to change to XOR. Paul Entzel agreed.

Rod Wideman would like to know the purpose of the Special bit. Paul Entzel explained that Quantum uses it for firmware upgrade. After some discussion about the appropriateness of this bit in the standard, Paul E. agreed to change the Special bit to a two-bit Vendor Specific field and to remove the associated definition.

Rod Wideman asked for clarification to the Port Login step description. Paul Entzel agreed to provide one.

Rod Wideman questioned the lack of specification for Exchange ID sequencing. Paul Entzel stated that he intends the standard to remain silent to allow maximum flexibility on the use of Exchange ID. Rod requested that the Port Login description for resetting the Frame number match up with one of the endpoints from the range of Frame numbers (0 to 7). Paul E. responded that in the past, we had reserved Frame number zero for a special purpose and that the need for this special value had been superseded. Paul E. will change the description of Port Login such that the Frame number resets to zero.

j. ADP Signal Descriptions Proposal

02-358r4

Michael Banther

No discussion due to lack of time.

k. Frame types

See comments for ADT Status.

l. Requirement for two stop bits

Paul Suhler

Reif Heck reported that StorageTek libraries can operate with one stop bit.

m. SCSI Command/Response frame contents

Lee Jesionowski would like to rename the SCSI Command frame payload to 'SCSI Request' or 'SCSI Task Request' and rename the Task Management field to 'Task Request Type' or 'Request Type'.

Lee Jesionowski and Rod Wideman raised an objection to the definition for the value 00h of the Task Management Function values (table 9). Michael Banther suggested using the corresponding text from SPI-5. Paul Entzel agreed and changed the text.

Out of chaos, the group agreed to change the term 'payload' to 'information unit'. The group agreed to change 'SCSI Command frame' to 'SCSI Request Information Unit'. The group made these changes for clarification and alignment with other SCSI standards.

Much discussion occurred regarding the list in 6.5.5 Port logout. We agreed to remove element b) disable surrogate mode. Paul Suhler will cover this ground in the ADC model section.

n. Asynchronous Event Reporting

Previously Kevin Butt had some concerns with our name for this feature because of AEN obsolescence in SAM-3/SPC-4. After some discussion, we agreed that the difference in names satisfied these concerns. The group discussed adding AER configuration to the Port login frame. Rod Wideman pointed out that it shouldn't be in Port login because that ties the transport to the VHF frame when the transport could be used for some other purpose without using VHF frames. The group agreed to keep the AER Control frame separate.

The group agreed that all AER control fields shall reset to their default values at the beginning of the Port login process.

o. Test/emulation tools status

No update.

p. ADT Connector Status

Paul Suhler

Paul Suhler will propose the 10-pin Molex and JST connectors he has identified to SFF.

7. Unscheduled business:

There was no unscheduled business.

8. Next meeting requirements:

Paul Suhler

The group will hold teleconferences on 29 January 2003, 12 February 2003, and 26 February 2003. All of these teleconferences will start at 8:00 AM PST and finish at 10:00 AM PST.

The next meeting will occur during the normal plenary week on 10-11 March 2003. Paul Suhler will attempt to reserve Monday afternoon for the meeting, for a total of one and a half days.

9. Review new action items:

Michael Banther

- a. Rod Wideman will add ADC device server interaction sub-clause, but no content, in clause 4.
- b. Paul Suhler will proposal a bridging function.
- c. Rod Wideman will review SSC log pages for applicability to ADC and bring in a proposal.
- d. Lee Jesionowski will propose the Requested Recovery log page.



- e. Rod Wideman will review SSC and SPC VPD pages for inclusion in ADC and bring in a proposal.
- f. Rod Wideman will revise 03-042 based on group comments.
- g. Paul Suhler will provide a diagram of the relationship between the ADC device server, data transfer device server, and application client(s).
- h. Rod Wideman will incorporate 02-392r0 into ADC.
- i. Paul Suhler will revise 03-008.
- j. Rod Wideman will incorporate 03-008 as revised into ADC.
- k. Erich Oetting will evaluate the current ACK and NAK frames to check if byte stuffing can occur in them.
- l. Erich Oetting will propose a Checksum field.
- m. Paul Suhler will post schedule for teleconferences to T10 reflector.
- n. Paul Suhler will talk to John Lohmeyer about next meeting requirements in the T10 plenary week. We want to grab SSC-2 afternoon time.
- o. Rod Wideman will post ADC draft incorporating all accepted proposals to the T10 document archive.

## 10. Adjournment:

Group

The meeting was adjourned at 6:00 PM PST.

## Attendees:

Name	Organization	email
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