

Draft Minutes
Automation/Drive Interface (ADI) Working Group
Ad Hoc Meeting
T10/03-236r0
7-8 July 2003
1:00 PM – 6:00 PM (7 July)
9:00 AM – 6:00 PM (8 July)

1. Introductions: Group

Paul Suhler called the meeting to order at 9:12 AM on 8 July 2003. He thanked LSI for hosting the meeting and for providing decent sized coffee cups. A table of the attendees appears at the end of these minutes.

2. Approval of the agenda: 03-235r0 Paul Suhler

Paul Suhler discussed the order of the discussion items. He added a discussion of the IBM Patent statement as discussion item (a).

Paul Suhler made a motion for acceptance of the modified agenda. Rod Wideman seconded the motion. The group passed the motion by acclamation.

3. Approval of previous meeting minutes: Paul Suhler

5-6 May 2003 meeting	03-171r1
19 May 2003 teleconference	03-196r1
2 June 2003 teleconference	03-206r0
16 June 2003 teleconference	03-218r0
30 June 2003 teleconference	03-225r0

Paul Suhler requested comments for the minutes of the 5-6 May 2003 meeting, 03-171r1, the 19 May 2003 teleconference, 03-196r1, the 2 June 2003 teleconference, 03-206r0, the 16 June 2003 teleconference, 03-218r0, and the 30 June 2003 teleconference, 03-225r0. No comments were forthcoming.

Paul Suhler made a motion for acceptance of the minutes. Paul Entzel seconded the motion. The group passed the motion by acclamation.

4. Review of action items: Michael Banther

- a. Bob Griswold to follow up with SNIA Interoperability Conformance Test Program (ICTP) Subcommittee regarding test/emulation tool. *Carryover*
- b. Paul Entzel will write an appendix to ADT to describe an example login. *Carryover*
- c. Paul Entzel will incorporate 03-208r0 into ADT. *Carryover*
- d. Rod Wideman will incorporate 03-212 as revised into ADC. *Carryover*

- e. Michael Banther will propose a protection feature for firmware upgrades. *Closed*, 03-239r0.
- f. Paul Suhler will revise 03-202r0 based on discussion item (a) of 03-225r0. *Closed*, 03-202r1.
- g. Lee Jesionowski will revise 03-220r0 based on discussion item (b) of 03-225r0. *Closed*, 03-220r1.
- h. Susan Gray will revise 03-221r0 based on discussion item (c) of 03-225r0. *Closed*, 03-225r1.

5. Discussion items:

- a. IBM Patent Statement 03-241r0 Lee Jesionowski

Lee Jesionowski presented the recently released IBM patent statement for ADI. He described it as the generic patent statement IBM uses. Lee asked whether, as a courtesy, we wanted the patent numbers. Paul Suhler asked that Lee provide them after Lee stated that at least two applications could be affected.

Rod Wideman showed the group 99-291r0 which provides some guidance on the patent statement that we should include in the draft standards. He plans to modify the existing statement in the front matter using the statement on 99-291r0 as a replacement.

- b. Clean Protect 03-204r2 Michael Banther

Michael Banther started by stating that he had taken a careful look at moving the CLEAN bit from the LOAD UNLOAD command to the NOTIFY DATA TRANSFER DEVICE command. He wanted to explore whether it would or would not work if placed there. Michael made some observations of the consequences of such a move.

He pointed out that all existing notifications are for something that has changed (past events). In contrast, the CLEAN bit signals a temporary configuration change for a future event. If placed in NDTD, the text will need to define the lifetime of its effect. Any definition of persistence until reception of some future command doesn't work because SCSI doesn't guarantee that tasks execute in same order as issued by the application client. Hence to define persistence until a future command, the text will have to explicitly state something about command ordering in the task set in order to produce consistent behavior from the application client's point-of-view. Both persistence until the next command (any) or persistence until the next LOAD UNLOAD command suffer from this problem. The group discussed what was the desired ordering and how to enforce it (align to initiator or other command).

Michael presented a third option, have the override persist until the device detects the necessary resources to perform the cleaning operation or until the next cleaning operation completes. Rod Wideman raised another variation, until the next load operation of any type of cartridge. These options create a "one-shot" behavior for the bit. However, the latter one limits the ability to pre-stage a cleaning allowance.

Several people stated that having a "one-shot" based on next load operation is closer to the operational model of wanting to stage the notification coincident with the next load. The discussion then went back to the point that the LOAD UNLOAD command is explicitly tied to only that medium. Hence placing CLEAN there closes down other combinations.

The group explored the various windows and effects that occur if CLEAN resides in NDTD, from the time of issuing NDTD to the time of an actual load. If NDTD is sent with CLEAN on, the start of next load sequence clears it. What happens when NDTD with CLEAN on is sent, followed by another NDTD with it off? The group agreed that credit remains until the start of the next load sequence. Also another NDTD sent with CLEAN on prior to the next load sequence does not accumulate an additional cleaning credit. The start of the next load sequence from any source would clear any existing credit.

Receipt of NDTD with CLEAN on would require that the DTD not contain a medium. The group agreed that the MPRSNT field in the VHF data defines what it means to not contain a medium.

Paul Entzel stated that, for all of this discussion, he still did not like moving CLEAN to the NDTD command. He requested that we look at the mode pages changes in the proposal.

Paul Entzel pointed out that some verbiage still describes the effect of the CP bit in terms of loading cleaning media. He prefers to describe managing the cleaning operation instead.

The group discussed how to notify the application client upon load of cleaning media with CP set. We agreed that we need a new ASC/ASCQ that conveys that cleaning is prohibited. Paul Entzel agreed to raise a proposal in CAP to obtain the ASC/ASCQ. The group moved on to discuss the future impact if SSC-x incorporates Clean Protection.

The group turned to a discussion of subsequent medium access command responses after an auto-load. As a result we agreed to state that the device shall not perform the cleaning operation rather than enumerating all failure conditions. Michael Banther agreed to change the text of the mode page only as described in the paragraphs above.

With that Paul Entzel made a motion for inclusion of 204r2 as modified into ADC. Michael Banther seconded the motion. Lee Jesionowski requested further discussion of the CLEAN bit.

The discussion ensued regarding potential inconsistencies with firmware update, the device behavior regarding media already loaded at hold points, and differences with auto-load disabled or enabled. For instance, what is the behavior for a Load command with CLEAN set when issued with a medium of indeterminate type located at a hold point? The group agreed that the DTD may have to move the media to execute the command.

Susan Gray pointed out that the proposed text for the LOAD UNLOAD command makes no reference to the CP bit. Hence the current wording does not cover the case of CP off although the intent is to not require that CLEAN be on for a cleaning operation with cleaning media to occur. Since a reference to the Mode page is needed, a model section describing the feature is probably appropriate.

With no end in sight on the debate about the best location for the CLEAN bit, Lee Jesionowski suggested modifying the proposal to only include the mode page CP bit. Such a change would allow for progress and a crude override capability, while the discussion could continue on the temporary override method and development of a model section. A letter ballot comment stating that a temporary override method is needed will be sufficient to trigger a new proposal to cover the placement of the CLEAN bit.

Michael Banther agreed to modify the proposal to include only the CP bit in mode page.

Paul Suhler called for vote on inclusion of 03-204r2 as modified into ADC. In the absence of any objections, the group passed the motion unanimously.

- c. ADT Minimum Voltages 03-237r0 Michael Banther
Michael Banther described the proposal to the group. It addresses the potential problem of someone attempting to use very negative voltages by adding minimum voltage level to Sense and Signal definitions.

Lee Jesionowski offered additional discussion about the current limit. He would like the minimum moved from -100 μA to -150 μA for legacy support. Michael questioned whether Lee's concern is for Sense connections only or for both Sense and Signal connections. The group examined the text from Lee's electrical engineer and discovered that it had to do with presence detection, hence it applied to Sense connections only. Michael agreed to incorporate Lee's request into this proposal.

Michael Banther made a motion to accept 03-237r0 as modified into ADT. Lee Jesionowski seconded the motion. In the absence of objections, the group passed the motion unanimously.

- d. ADI ADC Device Server Interaction 03-217r0 Rod Wideman

Rod Wideman recapped the proposal and suggested that we use Paul Entzel's comments as a basis for discussion.

The group discussed the text in the second paragraph pertaining to reservation conflicts and suggested some editorial changes. Michael Banther and Kevin Butt raised the question of the current text's silence on reservation conflicts between the bridging device server and the RMC or ADC device servers. Paul Entzel pointed out that SAM covers this ground already. However Kevin argued that this area is important enough that we need some text to cover the avoidance of reservation conflicts between all of the device servers. A long period of word-smithing followed, during which the group hammered out text to resolve Kevin's issue.

The group then turned to the subject of ADC mode parameters overriding RMC mode parameters. We agreed to retain explicit overriding of RMC parameters by ADC parameters rather than switching to an implicit method. We also discussed reflecting ADC parameter values in RMC parameters and making the RMC parameters unchangeable. The group concluded that such a change is desirable, but it will break backup applications because such applications will see a mode parameter changed Unit Attention when the application has a reservation on the RMC logical unit. Hence we decided to not change the corresponding RMC mode parameter when an ADC mode parameter changes value.

The group moved on to the paragraph discussing Ready state. Paul Suhler pointed out that, although ADC claims that it doesn't support a Not Ready state, in fact stating that TEST UNIT READY reports the state of the removable medium defines Ready and Not Ready for the ADC device server. The discussion moved on to the notes in the Command Summary table (Table 5 in adcr04) which also discuss Ready state. Lee Jesionowski suggested defining ADC Ready state as MAM accessible. Paul Suhler asked what 'Ready' information is most useful to the automation application client. Lee Jesionowski raised two possibilities: mirror the Ready state of the removable medium, or always return Ready (Good status). The group agreed with Lee's first option.

Michael Banther brought up a concern, first raised by e-mail, regarding whether a Prevent Allow Medium Removal command with PREVENT equal 01b or 11b affects LOAD

UNLOAD commands issued to the ADC device server. Lee Jesionowski stated that it shouldn't, and the group agreed.

Lee Jesionowski questioned whether the CP bit (see 03-204r2) has an interaction with the RMC device server. He pointed out that the symptom of a cleaning complete would not show up for the RMC device server if it attempted a cleaning operation with CP equal 1b. By changing some text, we picked up that possibility.

Kevin Butt introduced a question about LUN assignment to the various device servers. After a small discussion, the group agreed that, although a good discussion, it didn't belong to this proposal. We also agreed to leave LUN assignment as is.

Paul Suhler made a motion for acceptance of 03-217r0 as revised into ADC. Paul Entzel seconded the motion. In the absence of objections, the group passed the motion unanimously.

e. ADC Informative Annex: Data Transfer Device Configuration Example

03-202r1

Paul Suhler

Paul Suhler reviewed the changes to the proposal. We debated the list of commands in Table A.1, specifically the obtaining of saved and changeable mode parameters, and Paul Suhler made a few changes.

The group then reviewed sub-clause A4.

Susan Gray, Paul Entzel and Lee Jesionowski pointed out that the Block Descriptor Length should equal zero, not 64h.

Kevin Butt asked if relative target port numbers start at zero or one. Paul Entzel pointed out that ADC doesn't state, but Paul Suhler found text in SPC that reserves zero. Rod Wideman added text to ADC to make zero reserved there as well.

Remaining with ADC, the group debated whether we should move the ADDITIONAL DESCRIPTOR LENGTH field of the RMC Device Descriptor below the LOGICAL UNIT NUMBER field and/or whether the ADDITIONAL DESCRIPTOR LENGTH field includes the LOGICAL UNIT NUMBER field if we do not swap their positions. The group agreed to leave the order of the fields as current and include the LOGICAL UNIT NUMBER field in the value of the ADDITIONAL DESCRIPTOR LENGTH.

For the Medium Changer Device Descriptor, we decided to change the example to enable the bridged logical unit. Kevin Butt asked what the device server should do with the value of the LOGICAL UNIT NUMBER field if the application client doesn't enable the logical unit. We agreed to have the ADC device server should ignore value in this circumstance. We debated the value or lack of having the Logical Unit Descriptor Header separate from the Descriptor Parameters for each Logical Unit type. Rod Wideman agreed to make changes.

Having leapt those hurdles, Paul Entzel pointed out that having the ADC device server ignore the LOGICAL UNIT NUMBER field if the ENABLE bit equals zero is a technical change. We agreed to capture the proposal in these minutes. The proposal appears in the subsequent paragraph. We discussed whether the LUN defined by the LU descriptors applied to only the primary port or to both the primary and ADT ports. Erich Oetting and Kevin Butt reassured the group that SAM allows different LUNs for a given logical unit

depending on the target port receiving the task. Rod Wideman asked why we don't simply require an unchangeable LUN parameter. Lee Jesionowski and Paul Entzel pointed out that an unchangeable LUN parameter will result in sparse LUN assignment and that some applications will not handle that situation.

Kevin Butt, Lee Jesionowski, and Rod Wideman proposed text for ADC stating that the LOGICAL UNIT NUMBER field, 'has no affect if the ENABLE field is set to zero.' Lee Jesionowski, Paul Entzel, and Rod Wideman also proposed adding, 'The ADC device server shall return a CHECK CONDITION to a MODE SELECT command with more than one descriptor with the ENABLE field set to one and having the same value in the LOGICAL UNIT NUMBER field. The sense key shall be set to ILLEGAL REQUEST and the additional sense code shall be set to INVALID FIELD IN PARAMETER LIST.'

Kevin Butt made a motion for incorporation of the text changes described in the preceding paragraph into ADC. Rod Wideman seconded the motion. The group passed the motion by acclamation.

We returned to 03-202r1 and immediately veered off to ADC again based on an examination of the Logical Unit Device Descriptor and Identification Descriptor example in the informative annex. The group agreed that the field name MLUN no longer applies because the field affects more than the LUN. We changed the field name to MLUD. We also agreed to change the Identification Descriptors example to a type 2 or 3 identifier with ASSOCIATION equal zero. A long discussion ensued regarding the identifiers reported and modified via the Logical Unit Device Descriptor. After much discussion we agreed that the existing text restricting identifiers to those with ASSOCIATION equal zero was the desired restriction.

Lee Jesionowski spotted an inaccuracy in the example of the Automation Drive Device Descriptor (already renamed to ADC Device Descriptor in ADC by an editorial change). The text states that the DTD assigned LUN 2 to the device sever when it should have stated that 2 is the value of the LOGICAL UNIT INDEX. Paul Suhler agreed with Lee, and he will change the example accordingly. Paul Suhler also caught and made a few other editorial changes.

Paul Suhler made a motion for inclusion of 03-202r1 as modified into ADC. Paul Entzel seconded the motion. In the absence of objections, the motion passed unanimously.

- f. Log Parameters for DTD Primary Port Status 03-220r1 Lee Jesionowski

Lee Jesionowski described the changes in this proposal from the last revision.

For the Fibre Channel Status Data, the group agreed to change CURRENT ADDRESS and associated text to N_PORT_ID. We also agreed that for LNPC equal zero, all parameters except SIGNAL and CONFLICT are undefined.

For the Parallel SCSI Status Data, we agreed to generalise the table-specific references to SPI-4.

Lee Jesionowski moved for inclusion of 03-220r1 as revised into ADC. Paul Suhler seconded the motion. In the absence of objections, the group passed the motion unanimously.

- g. ADI Reset Definitions 03-221r1 Susan Gray

Susan Gray described the changes since the last revision.

Michael Banther asked why a logical unit reset of the RMC device server clears the ADC Tape Alert state flags. Paul Entzel replied that the Tape Alert state flags reflect the state of the RMC device server and of the underlying physical device. Hence a logical unit reset to the RMC device server should clear the ADC Tape Alert flags.

The group pointed out some editorial changes needed.

Paul Suhler made a motion for inclusion of 03-221r1 as revised into ADC and ADT. Erich Oetting seconded the motion. The group passed the motion by acclamation.

- h. Host Initiated Unload Susan Gray

Susan Gray described the problem of insufficient data in the VHF data when operating in sequential mode. The group agreed that a problem exists. Susan Gray will prepare a proposal.

- i. Read/Write Diagnostics Susan Gray

Susan Gray described the desire for the capability of the automation to perform read/write diagnostic tests in a tape drive. We agreed that we should standardise this capability in ADC-2.

- j. LIV/RHA discussion Rod Wideman

Rod Wideman described the issue. He believes that a hole exists in the discussion of the LIV and RHA fields in the Fibre Channel descriptor of the DTD Primary Port sub-page of the ADC Device Configuration mode page. We agreed to discuss this issue at the next teleconference.

- k. ADC Meaning of Test Unit Ready Group

The discussion of ADI ADC Device Server Interaction (03-217r0) included this discussion item. That discussion resolved the outstanding question of the meaning of Test Unit Ready for the ADC device server. The ADC Ready state is identical to the Ready state of the removable medium.

- l. ADC Order of Length and LUN fields, Rev 4 Table 34 Rod Wideman

The discussion of ADC Informative Annex: Data Transfer Device Configuration Example (03-202r1) included this discussion item. That discussion resolved Rod Wideman's outstanding question of the best ordering for the Length and LUN fields. We agreed to leave them as currently ordered.

- m. ADC Mode parameter operation per SPC Group

Lee Jesionowski noted that the RMC Logical Unit descriptor parameters include a non-selectable field, the Current Density field, in a mode page. Lee thinks that it should move to a Log page because it reports a current value. Paul Entzel thinks that it should remain as is citing the improvement that this provides over SSC.

We ran out of time before finishing this topic. The group agreed to include it in the next teleconference.

- n. ADC Upgrade Protection 03-239r0 Michael Banther

We did not discuss this item due to lack of time. We agreed to cover this item during a subsequent teleconference or meeting.

- o. Schedule for completion of ADC and ADT draft standards Paul Suhler

We did not discuss this item due to lack of time. We agreed to cover this item during a subsequent teleconference or meeting.

6. Unscheduled business:

- a. Lack of Cleaning Expired bit in VHF data

Susan Gray described the issue. The VHF data contains bits indicating Clean Requested and Clean Required. It does not include a bit to indicate that a cleaning operation failed due to an expired cleaning cartridge. We agreed to address this issue in ADC-2.

- b. Library firmware upload from tape

Susan Gray described the issue. No mechanism currently exists to allow retrieval by the automation controller of micro-code from a removable medium loaded in a DTD. We agreed to address this issue in ADC-2.

- c. Completion of firmware upgrade

Susan Gray described the issue. At present no consistent mechanism exists for the automation controller to detect that a micro-code upgrade to a DTD has completed. We agreed to discuss this issue at a subsequent teleconference or meeting.

7. Next meeting requirements: Paul Suhler

The group will hold an ad-hoc teleconference on 21 July 2003 starting at 8:00 AM PDT and finishing at 10:00 AM PDT.

The group will hold a meeting 8-9 September 2003 during T10 plenary week in Seattle, WA. The meeting will begin on the 8th immediately after the T10 SMC-2 Working Group meeting finishes. The meeting time on the 9th will occupy the entire day, concluding at 6:00 PM MDT.

8. Review new action items: Michael Banther

- a. Michael Banther to modify 204r2 as discussed and provide to Rod Wideman for inclusion into ADC.
- b. Rod Wideman to incorporate 204r2 as revised into ADC.
- c. Michael Banther to modify 237r0 as discussed and provide to Paul Entzel for inclusion into ADT.
- d. Paul Entzel to incorporate 237r0 as revised into ADT.
- e. Rod Wideman will revise 03-217r0 per discussion item (d).
- f. Rod Wideman will incorporate 03-217r0 as revised into ADC.
- g. Rod Wideman will incorporate the proposal embedded in discussion item (e) into ADC.

- h. Paul Suhler will revise 03-202r1 per discussion item (e).
- i. Rod Wideman will incorporate 03-202r1 as revised into ADC.
- j. Lee Jesionowski will revise 03-220r1 per discussion item (f).
- k. Rod Wideman will incorporate 03-220r1 as revised into ADC.
- l. Susan Gray will revise 03-221r1 per discussion item (g).
- m. Paul Entzel will incorporate 03-221r1 as revised into ADT.
- n. Rod Wideman will incorporate 03-221r1 as revised into ADC.
- o. Susan Gray will prepare a proposal to add a bit to the VHF data for sequential mode operation.
- p. Paul Suhler will update the ADC-2 pending issues list to include automation initiated/mediated DTD diagnostics.
- q. Paul Suhler will update the ADC-2 pending issues list to include automation firmware update from tape via a read buffer command.

9. Adjournment:

Group

Kevin Butt made a motion for adjournment. Susan Gray seconded the motion. The group passed the motion by acclamation. Paul Suhler adjourned the group at 6:26 PM on 8 July 2003.

Attendees:

Name	Organization	E-mail
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