Draft Minutes
Automation/Drive Interface (ADI) Working Group
Ad Hoc Meeting
T10/03-117r0
10-11 March 2003 – Dallas, TX
1:00 PM – 6:00 PM (10 March)
9:00 AM – 6:00 PM (11 March)

1. Introductions: Group

   Paul Suhler called the teleconference to order at 1:30 PM CST on 10 March 2003 and thanked TI for hosting the meeting. A table at the end of these minutes lists the attendees.

2. Approval of the agenda: 03-116r1 Paul Suhler

   Paul Suhler requested approval of the agenda. Lee requested addition of discussion of drawings of model section. Lee requested addition of discussion of Interface Status log page. Kevin Butt requested addition of technical comments against ADT.

   Erich Oetting made a motioned for approval of 03-116r1 as modified. Kevin Butt seconded the motion. The group passed the motion by acclimation.

3. Approval of previous meeting minutes: Paul Suhler

   Paul Suhler requested comments for the minutes listed below.

14 January 2003 meeting	03-041r0
29 January 2003 teleconference	03-069r0
12 February 2003 teleconference	03-086r0
26 February 2003 teleconference	03-103r0

   Paul Entzel stated that action item q. marked as '*Closed*' in 03-103r0 should be '*Carryover*'. The secretary has added the action item back into the open list in these minutes and will revise 03-103r0 to r1 changing action item q. to '*Carryover*'.

   Michael made a motion for approval of 03-041r0, 03-069r0, and 03-086r0 as written and for 03-103r0 as revised. Paul Suhler seconded the motion. The group passed the motion by acclimation.

4. Call for Patents Paul Suhler

   Paul Suhler called for disclosure of any patents that may affect ADI in a T10 plenary meeting.

   Paul Suhler described the standard T10 process for patents. No discussion of a patent that affects a draft standard occurs provided the holder of the patent agrees to provide usage of the patented intellectual property either royalty free or on a reasonable basis. If the holder of a patent that affects a draft standard refuses to provide access to the patented intellectual property either royalty free or on a reasonable basis, discussion of the claims of the patent will occur as the material affected by the patent must be removed from the draft standard.

   Paul Suhler accepted an action item to find out when patent notification must be made for the draft standard to retain the standard patent statement.

5. Review of action items: Michael Banther
   a. Michael Banther to produce a proposal for device server interaction section in ADC document. *Carryover*, transferred to Rod Wideman.
   b. Lee Jesionowski to create a proposal for method to convey Interface Status changed. *Carryover*
   c. Paul Entzel to write up a proposal for the ADC model of TapeAlert. *Carryover*
   d. Paul Suhler to follow up with SNIA Interoperability Conformance Test Program (ICTP) Subcommittee regarding test/emulation tool. *Carryover*
   e. Paul Suhler will propose the Requested Recovery log page. *Closed*
   f. Michael Banther will revise 02-358r4. *Carryover*
   g. Paul Entzel will incorporate 02-358r4 as revised into ADT. *Carryover*
   h. Paul Entzel will investigate how SAS handles information units whose size when received doesn't match the standard's definition. *Closed* (they're silent on it).
   i. Rod Wideman will revise 03-042 with changes noted in discussion item c. of 03-103r0 (26 February teleconference minutes). *Closed*
   j. Rod Wideman will bring in a proposal to remove Hold Point from the VHF log page. *Closed*
   k. Rod Wideman will add editorial changes to INXTN and RRQST definitions to clarify that both cannot be on at the same time. *Closed*
   l. Paul Suhler will revise 03-077 to revision 3 based on discussion item d. of 03-103r0 (26 February teleconference minutes). *Closed*
   m. Paul Entzel will incorporate 03-080r2 into ADT. *Carryover*

6. Discussion items:
   a. Add Version field to Port Login IU in ADT 03-101r0 Paul Entzel

      Paul Entzel described the need for this change: difficulties exist in matching fields in a payload it the two participants adhere to different versions of the standard. Paul's proposal inserts two new bytes between existing bytes in the Port Login Information Unit. He asked the group by e-mail about inserting these fields. No one objected.

      Paul Entzel described the algorithm for changing the field values: the major field increments when the standard body releases the standard, minor field rolls with each ADT document revision when creating a draft standard.

      Paul Suhler asked if a minor roll with each document revision is too fine a level of discrimination; Kevin Butt responded that, based on implementation compliance with FCP, users will want this fine a level of discrimination. Lee Jesionowski wants a better name for 'released' standard. Lee suggested 'published'; Paul Suhler wondered if 'approved' was better. Erich Oetting stated that it's 'approved' when T10 releases it. Lee stated that if 'approved' is used we have to state what body approved it, T10, INCITS, ANSI, etc.

Erich Oetting suggested using the SPC-3 (r11) Version descriptor values for the minor revision field. Everyone agreed that this technique wasn't really useful. T10 assigns these values arbitrarily and the do not change uniformly upward with new revision.

Lee Jesionowski introduced the possibility of reducing the number of minor rolls by grouping up multiple document revisions for a single roll. Michael Banther stated that HP would support (i.e., release to the field) with the minor field equal to zero if possible. Paul Entzel and Lee agreed that their products will most likely behave this way as well. However Paul Entzel and Kevin Butt pointed out that a long development cycle for ADT-2 could result in release of a device with a non-zero minor level. Kevin specifically pointed out the situation with FCP where several different revisions are being used by released devices.

Kevin Butt asked if we should make the minor revision field smaller. The group agreed to make byte 2 reserved, move the major revision into bits 5 – 7 of byte 1, and move minor into bits 0 – 4 of byte 1.

Paul Suhler made a motion for incorporation of 03-101r0 as revised into ADT. Lee Jesionowski seconded the motion. The group passed the motion by acclimation.

b. Discussion of comments against ADT Kevin Butt

Given the definition in 3.1.6, Contingent Allegiance, Kevin Butt asked, are we working to SAM-2 or SAM-3? Paul Entzel pointed out that we will beat SAM-3 to publication by a year or more. A conversation from an earlier meeting included the comment that T10 prefers standards to reference published rather than draft standards. Paul Entzel stated that the specific definition Kevin has picked out will disappear for other reasons in the next revision, however that point doesn't answer the underlying question. Michael Banther pointed out that SAM-3 has more text than SAM-2 regarding multi-port devices and any device that complies with ADI will almost certainly be multi-port. The group agreed to use SAM-2 except in places where it specifically needs to reference SAM-3.

Kevin Butt brought up a timing concern with the Port Login process, sub-clause 6.5.3 step 1. He's worried about the receiving port knowing when to discard the frame and issue a NAK. Paul Entzel agreed to adopt Kevin's text.

In sub-clause 6.5.3 step 4, Kevin Butt wants to change the phrase 'Once negotiations have reached the point …' to 'If a port receives a Port Login IU with acceptable values …' He's worried about the case where negotiation cannot succeed due to incompatibility between the link parameters supported by each side. After a brief discussion the group agreed that we have ignored this possibility in past discussions. Paul Entzel attacked the problem by suggesting that we standardise the minimum values for each field in the Port Login IU. Lee Jesionowski augmented Paul's idea with a specified minimum version of major = 1, minor = 0. Paul Entzel went further by making support for Maximum ACK Offset equal one mandatory. Everyone in the group agreed with both of these ideas. After some more discussion the group also agreed with changing the text for Maximum Payload Size to a 'shall' statement with 270 byte support required.

Lee Jesionowski asked what events qualify as 'error conditions' in the statement for resetting the link speed to 9600 baud. Paul Entzel agreed that the standard is too vague in this area. Paul Suhler asked, after a port logout does the baud rate fall back of stay the same? After some discussion, the group agreed that fall back after port logout does not need to occur. Each port on the link could remember the negotiated baud rate after a port

logout and start the next port login at that rate. The text already describes how to fall back under error conditions including ones, such as mismatched baud rate, encountered during port login. The group agreed to add a cross reference in sub-clause 6.5.3 to the error recovery text. Although we had agreed that reverting to the default baud rate didn't need to occur after a port logout, some unease still remained. After further discussion, the group also agreed that, for simplicity, ports will revert to default parameter settings, including baud rate, on port logout.

Paul Entzel extended the line of reasoning by asking whether all port login IU's, not just ones after power-on or port logout, should be sent assuming the link was operating at the default Baud Rate, Maximum ACK Offset, and Maximum Payload Size. After some discussion we agreed that the sending of a Port Logins IU over an already logged-in port will occur using the currently negotiated parameters. This decision allows devices to increase the baud rate for situations such as firmware download without logging out and then back in. The group agreed to add text stating that, after power-up, a port will set its baud rate to the default value of 9600 baud.

Much discussion occurred regarding what frames a port can send during negotiation. Eventually the group agreed that we need to define when a port enters the port login process.

Kevin Butt pointed out that the last sentence in step 4) of 6.5.3 is not testable because it requires each port to know the state of the other without describing how they acquire that knowledge. Paul Entzel agreed to change the text. He proposed some text; the group agreed to use it.

Kevin Butt continued his critique by pointing out that the automation device and the data transfer device behave differently during the port login process, hence the text needs two different state diagrams. All agreed to the benefits of a state diagram for the port login process. We will revisit this issue after the next revision.

Lee Jesionowski asked about the purpose and need for NAK status value 84h, 'Illegal operation in Special state.' Paul Entzel suggested changing the text to 'Illegal operation for current operating parameters' and the group agreed. The group also agreed to set aside some vendor unique NAK status values.

Michael Banther picked up where Lee had left off. He started with an inconsistency between sub-clauses 6.3 and 6.5.7 regarding the Frame Number. Paul Entzel agreed to change 6.3 to match 6.5.7.

Michael Banther described the short frame scenario and a problem with the receiver using the Payload Size count plus known frame overhead to detect the end of the frame. He described how bad things can happen if a port concludes that it has received a frame without actually receiving the EOF character. Paul Entzel agreed to add a statement in sub-clause 6.5.2.1 that the receiving port cannot acknowledge a frame unless the frame contains an SOF and EOF character.

Michael Banther pointed out the lack of normative text regarding the expected frame number. Paul Entzel agreed to add a frame numbering section in clause 4. This sub-clause will cover the initial expected frame number value and how the frame number changes under different conditions.

Michael Banther moved on to Pause frames stating that the current definition allows deadlock. Paul Entzel responded that the feature was originally restricted such that only an automation device could send a Pause. We discussed why we changed it to either device, but no one could remember the history sufficiently well and a quick peruse through the minutes did not provide any enlightenment. We then discussed if any reason exists to allow the drive to send Pause. Largely, this discussion focussed on Data In during bridging operation. Eventually we agreed to limit Pause to coming from the automation device only and Paul Suhler will add changes to bridging to handle the drive out-of-buffer condition when processing Data In.

Michael Banther brought up the idea of having a Pause IU suspend the acknowledgement time-out. After much debate Kevin Butt asked, what are the negative consequences of the drive timing out an ACK when paused? After more general debate, Michael agreed that no negative consequences exist, and he withdrew his suggestion.

Michael Banther pointed out the SAM-3 requirement for the transport to accommodate the Clear ACA and Clear Task Set task management functions. Paul Entzel agreed to add these task management functions to the supported list.

c. ADI Bridging 03-077r3 Paul Suhler

Paul Suhler walked the group through the revision changes: reworded device server model, not using split-frame Bridging Login IU, etc.

Review of ADC sub-clause 4.2.x ADI bridging operation:

Paul Entzel raised concern about commands that do not route through to the automation under any circumstances, e.g., Report LUNs and maybe others. He also raised concern about transport-level mode pages, the drive may need to sniff commands containing these pages because it has to action them rather than the automation. Michael Banther described HP's proprietary solution: passing the mode pages on to the automation and providing a SCSI path back from automation to drive to allow the automation to change the transport-level mode parameters. Paul Entzel pointed out that this approach will not work if the commands sent by the automation to the drive are subject to reservation conflicts.

Lee Jesionowski suggested limiting certain pages to LUN 0, e.g., Disconnect-Reconnect mode page. IBM does not support Disconnect-Reconnect on any LUN not equal to zero, and they have had no connectivity problem. Lee suggested limiting transport-level mode pages to non-LUN 0 LU's. The group generally agreed. Lee pointed out that the current text does not include this restriction.

Paul Suhler asked about mode pages 18h, LU Control, and 19h, Port Control. Michael Banther asked if the model of passing mode pages directed to non-zero logical units through to automation with automation forwarding to the drive's LUN 0 would work. Paul Entzel again pointed out that LUN 0 will be subject to reservation conflicts for certain commands. After a brief foray into asymmetric logical units that generally appalled Paul Entzel and Lee Jesionowski, the group returned to discussing Lee's proposal of not allowing transport-level mode and log pages on non-zero logical units.

Kevin Butt suggested having the text disallow any 'port-specific' mode and log pages and port-specific descriptors in VPD: mode pages 02h and 19h, log page 18h, and port-specific descriptors in VPD page 83h. Susan Gray brought up the question of SPI-

specific fields in the standard Inquiry data. Everyone agreed that these fields present a unique problem. Lee Jesionowski suggested that the local device server will have to sniff the Inquiry for just this reason. Some discussion ensued about whether the text should remain silent but we agreed that everything except handling the SPI-specific Inquiry fields does belong in the text. Whether the SPI-specific Inquiry fields require specification in the text remains an open issue. Susan has some concerns in this area about each device assuming that the other will take care of these fields.

Review of ADC sub-clause 4.2.x.1 Hosted bridging operation:

We moved on to a discussion of the hosted bridging model. Kevin Butt pointed out that the text calls out Reserve/Release which SPC-3 obsoletes. Lee Jesionowski responded that the entire text should point to SPC-2 as a base with SPC-3 only referenced when needed. Rod Wideman asked for the reason for Table x – 'Commands for remote SMC device servers in hosted bridging'. Paul Suhler replied that he had asked himself the same question. After some discussion, he agreed to remove it.

Review of ADC sub-clause 4.2.x.1 Passthrough bridging operation:

Paul Suhler walked the group through the Pass-through bridging operation section of the model. He asked whether this section needs text on sniffing. Paul Suhler and Paul Entzel agreed that caching (the next text section) implies sniffing. Lee Jesionowski asked to change the last sentence in 4.2.x.2, '… as required by SPC-3 and SMC-2' to '… as required by the SCSI Medium Changer device type.'

Review of ADC sub-clause 6.2.2.3.3 Medium Changer descriptor parameters:

The group discussed the paragraph that describes behaviour when bridging becomes un-enabled. Kevin Butt suggested changing the detail so that it calls this situation an I_T nexus loss and references the appropriate transport layers. Paul Suhler agreed.

Review of ADT clause 4:

Lee Jesionowski suggested replacing the Enabled, HBM, and PBM bits with an HBE bit and a PBE bit. The group agreed that this simplification preserves functionality. Paul Suhler agreed to make the change.

Paul Suhler walked the group through the rest of the ADT changes. We talked about the requirement for a 515 byte frame size to support bridging. Michael Banther stated that HP opposed a frame size greater than 512 bytes as they have already started designing with that limitation. Paul Suhler replied that we can reduce the required frame size to around 490 bytes by limiting the initiator identifier in some reasonable ways.

Regarding Bridging login, Lee Jesionowski pointed out that the text seems to say that the data transfer device must set the PBM and Enabled fields. In reality, the only requirement is for the automation device to have set these bits. Paul Suhler agreed that the text is confusing, and he will change it.

Paul Entzel asked about the effect a Port Login has on a logged in bridge. The text already says that a Port Logout implicitly terminates logged in bridges. Rod Wideman wants to maintain bridging across communication failures. Much debate occurred about whether a Port Login causes an implicit loss of bridging logins. Paul Entzel suggested altering the Port Login IU to add an 'abort open exchanges' bit. When coming up from scratch, the Port Login initiator aborts open exchanges; when simply re-negotiating baud

rate, the initiator leaves open exchanges intact. This change will affect the requirement for closing down logged in bridges. Lee Jesionowski wondered whether we should add a new IU instead of having a bit in the Port Login IU. Paul Entzel and Paul Suhler pointed out that adding a new IU will require duplicating lots of text. Paul Entzel agreed to add an Abort Open Exchanges bit to the Port Login IU. Rod expressed concern for the implications associated with this change and asked for a separate proposal to cover it.

Paul Suhler discussed the Accept bit in the Bridging Login IU. Susan Gray asked if the drive has to respond to the first Bridging Login IU with the Accept bit set during a negotiation by sending a Bridging Login IU with the Accept bit set. The group debated the issue and agreed that the behaviour of this bit differs significantly from the Accept bit in the Port Login IU. Kevin Butt suggested changing the name to avoid confusion.

Someone suggested adding a response IU rather than the recipient returning the Bridging Login IU. Michael Banther agreed that this was a good idea. Rod Wideman suggested combining the Port Logout IU and the Bridging Logout IU. However Paul Entzel requested moving the Bridging Login and Logout into the encapsulated SCSI protocol (hence out of the Link Services protocol). Paul Suhler agreed with Paul Entzel's suggestion. The group agreed to have a bridging request with two service actions, login and logout, and a bridging response that confirms whether the automation accepted that request or not. Lee suggested changing the name from 'bridging' to 'pass-through' as the request/response applies to pass-through operation only. The group agreed and Paul Suhler will update the proposal accordingly.

Rod Wideman brought up the naming issue of data transfer device (DTD) versus data transfer element device (DTE). Rod moved to DTE based on SMC terminology. Lee Jesionowski doesn't like DTE because it refers to an addressable location within a medium changer. Rod doesn't want to have to use the phrase 'data transfer device device server'. We agreed to pick up this thread of discussion under discussion item g.

Kevin Butt asked about the purpose and meaning of the I_T Nexus Identifier in the bridging login. He had to read through the text several times to understand its purpose and use. He asked for clarification in the descriptive text, i.e., that this field is used only between the drive and automation.

The case against pass-through bridging:

The group vectored off into a discussion on whether we should even support pass-through bridging, and if we do, is it a light-weight, form of hosted bridging. Lee Jesionowski suggested putting pass-through off until ADI-2. We eventually agreed that the difference between pass-through and hosted bridging lies in whether the automation needs visibility to the identity of the initiator or not. In pass-through bridging it does; in hosted bridging it doesn't. After much discussion, the group agreed to remove pass-through bridging from ADI and take it up again in ADI-2. Paul Suhler agreed to raise an ADI-2 Pending Issues proposal with the first issue being a pointer to these minutes and 03-077r3. The new proposal will allow us to keep pass-through bridging in mind for ADI-2.

Data caching:

The discussion moved on to caching data. Lee Jesionowski described the IBM proprietary solution to Unit Attention: a message for Ready to Not Ready Transition that allows vendor specific ASC/ASCQ, and a generic broadcast Unit Attention message. He

suggested a mechanism in the SCSI Response IU to cover the Unit Attention generated by Mode Select commands.

We discussed and eventually agreed to create a new Response Code value for the SCSI Response IU. A SCSI Response IU with the Response Code field equal to this new value means that the SCSI Autosense Data fields in the IU contain sense data destined for all initiators (other than the one that sent the command generating the response) as a Unit Attention. For this Response Code, the SCSI Status field must equal Good.

Rod Wideman pointed out that the initiator seen by the remote (automation) device server is the bridging manager in the DTD. The remote device server needs to know that initiators exist beyond the bridging manager. Rod also described the complexities of a medium changer using multiple drives in hosted bridging mode:

- The drive through which a remote device server received a command that raises Unit Attention can inform the drive to post the UA to other initiators through the SCSI Response IU.
- However the remote device server also has to use the generic broadcast Unit Attention message method to inform other drives to post Unit Attention to all of their initiators.

We debated the IU that carries Unit Attention information destined for all initiators and the refreshing of cached data. We agreed to change the Automation AER IU name to something like DTD AER IU, to change the payload to include ASC/ASCQ for broadcasting Unit Attention to all initiators or to report changes to Ready state, and to change the payload to add Broadcast Unit Attention, Ready State Changed, Mode Page Changed, and Inquiry Data Changed (standard or VPD) bits.

Paul Suhler will revise 03-077 based on this discussion.

d. ADC Data Transfer Device Status Masking 03-087r0 Paul Suhler

Paul Suhler described the reason for this proposal: an initiator polling the drive during load retries doesn't see sense data cycling through a sequence of values whilst the automation and the drive work through the retry sequence. This command allows the drive to report the same sense throughout the load retries.

Paul Suhler walked the group through the text of the proposal. He pointed out that the last bullet in the Usage section is incorrect, the automation will issue a MASK UNMASK SENSE with the Mask Bit = 0 at the end of any load whether successful or not.

Lee Jesionowski suggested that the automation could see the same SK/ASC/ASCQ as the primary host since the automation will use the VHF data to monitor the load. He also suggested using a timer in the drive to always report the masked sense to the host until a load succeeds. With this method, the drive does not need a separate command to know when to start with the masked reporting. Erich Oetting supported Lee and stated that he doesn't like the idea of having to issue these extra commands for every load. Susan Gray likewise concurred. Kevin Butt asked whether the feature applied to auto-load; Paul Suhler stated that it did not as currently defined. They then agreed that it does apply to loads from a library. Michael Banther raised concerns about locking the drive into a specific SK/ASC/ASCQ. The debate returned to whether to use a command to start masking or have the drive do it automatically.

After some debate, the group concluded that the Mask Unmask approach was unnecessarily complex and that Paul Suhler should modify the proposal. As modified the feature will automatically start masking the sense data upon a load and will include a command sent by the automation when it decides that no further load recovery would take place. Successful completion of the load or receipt of this new command will cause the drive to cease masking the sense data. We also agreed that unanswered questions remain regarding whether the drive needs a mode page to control the masking feature and whether the standard needs to mention a time-out for the drive reverting to unmasked behaviour or not.

e. ADC Recovery Requested Log Page 03-095r0 Paul Suhler

Paul Suhler described the proposed Recovery Requested log page. He pointed out the difference between 'Recovery not required' and 'No recovery action defined'. The device reports the former when someone requests the page with the RRqst bit off and reports the latter if RRqst is on but the device doesn't know what the automation should do. Lee Jesionowski suggested changing 'Recovery not required' to 'Recovery not requested'.

Rod Wideman requested changing the page to variable length so that the drive can report a sequence of actions in a single response. Paul Suhler then asked whether a sequence implies the need for a scripting language to handle exception cases. Lee Jesionowski and Rod both responded that the page should update as exceptions occur, hence no need for scripting. Lee pointed out that he wants multiple parameters to give the automation several options rather than a sequence of actions. We agreed that moving to the 'several options' approach requires self containment of each Recovery Action in the sense that each action has to contain all information for a sequence.

Rod Wideman pointed out the need for changes to the RRqst text if we change to the 'several options' approach. Paul Suhler will propose additions to the RRqst text to describe the events that clear the bit.

Paul Suhler asked for a sense of the structure of the page given the preceding discussion. He proposed a variable length page with each entry being a self-contained Recovery Action and the order of the list will reflect the preferred actions from the drive's point of view. The first parameter will be the most preferred action and the last parameter will be the least preferred action. No one objected.

Paul Suhler asked about the words for Recovery Action 09h, are the words right? Lee Jesionowski wants the wording of the action to reflect the need for a service call. Lee asked whether we need an additional action for intervention by an unskilled operator. After some discussion we agreed that the text does not need such an action. Michael Banther requested an addition of action described as 'Issue UNLOAD command, remove and quarantine medium.'

Paul Entzel brought up the possibility of a dropped leader pin. He doesn't want the automation, after removing the cartridge, to insert another cartridge because, in the Quantum product, the drive cannot unload the new cartridge. Rod Wideman proposed turning RAA off in this case. The group agreed.

Paul Suhler will revise 03-095 based on this discussion.

f. Connector status Paul Suhler

Paul Suhler had no update on this issue as he hasn't been able to get in touch with the SFF representative.

g. ADC State Transition Table Informative 03-042r2 Rod Wideman

Rod Wideman described the changes that he has made in the latest revision. He has modified the tables to resolve states that previously had '(0 or 1)' values into separate states.

Susan Gray asked if these tables provide a complete list of valid states. Rod pointed out that a sentence exists to allow other, exceptional, states. Michael Banther argued that we should replace 'valid states' with 'nominal states' since the tables do not list all possible states. Kevin Butt asked to change the 'normative' in the table titles to 'nominal' as well.

Lee Jesionowski asked for changes to state h. in table 3 and provided Rod with suggested text.

Rod Wideman made a motion to incorporate 03-042r2 as revised into ADC. Paul Suhler seconded the motion. Paul Suhler asked for any further discussion to which Paul Entzel replied 'about time'. The group passed the motion by acclimation.

h. ADC Additional Referenced Log and VPD Pages 03-107r0 Rod Wideman

Rod Wideman walked the group through the proposal. Paul Suhler reminded Rod of our decision to reference SPC-2 where possible (see discussion item c). Lee Jesionowski mentioned that we would have to use SPC-3 in a specific case here. Lee clarified with Rod that the VPD pages apply to the ADC device server. He then asked, why include the Unit Serial number page? Discussion ensued as to the relationship between the SSC VPD pages and the corresponding ADC VPD pages. Lee suggested that we stay with the mode page as the method to report the SSC device server's Unit Serial number. We agreed that ADC VPD page 83h is for the ADC device server; it may not match the SSC device server's VPD page 83h. Paul Suhler asked if we even need the table in Rod's proposal, isn't it there by reference from SPC? Paul Entzel pointed out that we should state in the text that the ADC VPD page 83h values may not match the DTD VPD page 83h values to avoid confusion.

Michael Banther brought up the asymmetric logical unit access again. He argued strongly that we should accept this idea and not continue down the path of defining duplicate log and VPD pages. Rod Wideman responded that the intent of the separate ADC log pages was to provide a mechanism for access without going to the DTD device server. After much discussion, the group agreed that the proposal is unnecessary given the asymmetric logical unit requirement. Rod will remove table 31 in sub-clause 6.3.1 of ADC and will add a sentence that the device identification page in ADC may or may not have the same values as the same page in the DTD. Paul Entzel will add something in the ADT model section to reflect DTD logical unit access from the ADT port.

i. ADC Modify VHF Fields 03-113r0 Rod Wideman

Rod Wideman described the changes to the VHF fields contained in this proposal. It corresponds to the changes in 03-042r2.

Michael Banther made a motion for incorporation into ADC. Rod Wideman seconded the motion. The group passed the motion by acclimation.

j. ADC Device Statistics Log Page 03-106r0 Rod Wideman

Rod Wideman described the purpose of this proposal. He referenced 02-180 which attempted to list all of the data that automation might want to have access to. Most of those items have found a place to live; this log page collects the remainder.

Kevin Butt asked, why use a fixed parameter length; why not allow the device to decide the length for each parameter? Paul Entzel and Paul Suhler agreed. Rod Wideman agreed to make this change.

Lee Jesionowski asked if we even needed to include table n+2. Rod replied 'no', although he could reference SPC, he likes having all of the information on a page in one place.

Kevin Butt warned about using the word 'cumulative' stating that we would have to define this term if used. We agreed to change 'total cumulative' to 'lifetime' and to make the parameters not changeable. We discussed whether any parameter codes should be mandatory and agreed that none should be so.

Michael Banther discussed adding new parameters. Kevin Butt, Lee Jesionowski, and Rod Wideman all asked for any parameters proposed that change on a load/unload basis be specified as since last load rather than since last unload.

Kevin Butt asked if we need descriptions of each parameter and pointed to the meters of tape processed as a good example. Rod acknowledged Kevin's concern.

Paul Entzel made a motion of 03-106r0 as revised for inclusion into ADC. Paul Suhler seconded the motion. The group approved the motion by acclimation.

k. Discussion of Drawings in ADC model section Paul Suhler

We reviewed the Device Server Overview figure (figure 2) and the Automation and Data Transfer Element Relationship figure (figure 3).

Lee Jesionowski asked Paul Suhler to make the nomenclature identical for identical elements. Paul Entzel and Erich Oetting pointed out that the primary port will not be specified as a SCSI port in the ADC model section; it could be any type of port. Paul Entzel suggested that the term 'primary port' might be appropriate in this context. Lee pointed out that we will need definitions for the terms used. He also pointed out that we're using the term 'Service Delivery Port' in several places where we mean primary port(s), and he asked for consistency. Lee objected to using 'primary port' off of the Medium Changer Logical Unit in figure 3. He suggested using 'Medium Changer port'. Kevin Butt flagged the need to add a parenthetical optional to the Medium Changer port since a medium changer will not have a port if it uses bridging through a data transfer device. He also pointed out that the Data Transfer Elements may have multiple primary ports. Michael Banther requested changing 'port' to 'port(s)' for DTD ports in figure 3.

Paul Suhler asked if we need a bridging figure. Michael Banther replied that we do.

Paul Suhler will update the drawings.

l. Interface Status log page Lee Jesionowski

Rod Wideman described the background for this discussion item. A discussion has occurred via e-mail about adding parameters to the existing TapeAlert log page to cover the interface status. To keep the interface status parameters index-able by relative target port, the parameters for relative target port 0 will start at code 100h, the parameters for relative target port 1 will start at code 200h, and so on. Rod picked the TapeAlert page so that we can combine the TapeAlert Changed and the Interface Status Changed bits in the VHF log page and because Interface status and Tape Alerts fall roughly into the same category of information from an automation point of view.

Lee Jesionowski presented the interface status parameters that he would like to add: Offline, Hard AL_PA, AL_PA Conflict, Light Detected, and Loop Initialized.

We discussed how to make the parameters flexible enough to support different port types: FC, SAS, etc. We agreed to include a port type field in the first byte of the parameter with the remainder of the parameter structure varying by type.

Lee Jesionowski and Rod Wideman debated whether we should combine VHF, TapeAlert, and Interface Status Changed all into one page. Such a change will not affect the data returned by the ADT Fast Access protocol. Lee asked if adding TapeAlert to another log page would cause a problem due to the unique nature of this page. Paul Entzel elaborated that having TapeAlert in with other parameters may cause a problem with inadvertent resetting of TapeAlert flags. We agreed to leave TapeAlert parameters in a separate page.

Lee Jesionowski will work on an existing action item to bring in a proposal to combine VHF and Interface Status log parameters into a single page.

7. Unscheduled business:

a. Editors notes in ADC Rod Wideman

The group discussed the correct listing of standards in sub-clauses 2.2, ‘Approved references’, and 2.3, ‘References under development’.

The group discussed the need for text in the model section. Paul Suhler agreed to provide some explanatory text.

The group discussed the editor’s note under 4.2.2, ‘ADC device server and DTE device server interaction’. Rod Wideman agreed to develop this text if he can acquire a list scoping the section. The group identified the following:

- The raising of Unit Attention on the ADC device server due to a Not Ready to Ready transition in the DTD device server,
- The raising of Unit Attention on the ADC device server due to an Eject Button activation,
- The lack of reservation interaction between the ADC and DTD device servers,
- How ADC mode page parameter changes affect DTD mode parameters, the DTD task set, and the DTD device server behaviour,

- The effects on a device server of a LOAD UNLOAD command executed by another device server, and
- The fact that the interaction effects of tagged queuing in DTD and ADC task sets are vendor specific.

The group discussed the editor's note under 4.2.3, 'Tagged command queuing'. No one could find any reason to keep either this note or this sub-clause as the ADC protocol places no special constraints or extensions on tagged command queuing.

The group discussed the editor's note under 4.2.5, 'Progress indication'. We agreed to remove it from ADC and include it in the ADI-2 tracking proposal.

The group discussed the editor's note under 4.2.6, 'Tape alert client indication'. Paul Entzel agreed to look at it and come to the next teleconference with either a proposal or a decision to drop the sub-clause.

We discussed the inclusion of the READ POSITION command in table 2, clause 5 of ADC. The group agreed to remove this command from the table.

The group agreed to delete editor's note 10 as proposals 03-106 and 03-107 have resolved it.

The group agreed that proposal 03-095 covers editor's note 11. The group agreed that the editor's note will change to reference Lee Jesionowski's pending proposal.

The group agreed that Rod Wideman already has an action item that covers editor's note 13.

8. Next meeting requirements: Paul Suhler

The group will hold ad-hoc teleconferences on:

- 26 March 2003 – hosted by IBM tentatively,
- 9 April 2003 – hosted by Crossroad Systems tentatively, and
- 23 April 2003 – hosted by ADIC.

Each meeting will start 8:00 AM PST and finish at 10:00 AM PST.

The group will hold a meeting 5-6 May 2003 during T10 plenary week in Nashua, NH. The meeting will begin on the 5th immediately after the T10 SSC-2 Working Group meeting finishes. The meeting time on the 6th will occupy the entire day, concluding at 6:00 PM EST.

9. Review new action items: Michael Banther

a. Paul Suhler will find out when any patent notification must be made in terms of the ability of the draft standard to contain the standard patent statement.
b. Paul Entzel will revise 03-101 as described in discussion item a.
c. Paul Entzel will incorporate 03-101r0 as revised into ADT.
d. Paul Suhler will add a First Burst field to the SCSI Request IU and an Xfer Ready for Data In to 03-077.

e. Paul Suhler will revise 03-087 as described in discussion item d.

f. Paul Suhler will search for a bridging tech report (see George Penokie – MSC Management Server Commands) to investigate the method recommended to handle transport-level mode pages.

g. Paul Entzel will propose an Abort Open Exchanges bit to the Port Login IU.

h. Paul Suhler will raise an ADI-2 tracking proposal and add ADC Progress Indication to it.

i. Paul Suhler will revise 03-095 per discussion item e.

j. Paul Suhler will modify the drawings for ADC and provide descriptive text.

k. Rod Wideman will incorporate 03-042r2 as modified into ADC.

l. Rod Wideman will incorporate 03-106r0 as modified into ADC.

m. Rod Wideman will incorporate 03-113r0 into ADC.

n. All will review nomenclature and propose changes, specifically port references and device server references.

o. Paul Suhler will announce the schedule of teleconferences in March and April and the next meeting in May.

p. Rod Wideman will remove the READ POSITION command from table 2 of ADC r01.

10. Adjournment: Group

Kevin Butt made a motion for adjournment. Rod Wideman seconded the motion. The group passed the motion by acclimation. Paul Suhler adjourned the meeting at 5:51 PM CST on 11 March 2003.

Attendees:

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