

Draft Minutes
Automation/Drive Interface (ADI) Working Group
Ad Hoc Teleconference
T10/04-051r0
26 January 2004
8:00 AM – 10:00 AM PDT

Conference Call Information:

Hosted by: Hewlett Packard
U.S. Toll Free: (866) 276-8920
U.K. Toll Free: (0800) 073-8926
Pass code: 319549

Non-U.S./U.K. participants, please call the U.S. toll-free number.

1. Introductions: Group

Paul Suhler called the meeting to order at 8:03 AM PDT. He thanked Hewlett Packard for hosting the meeting. A table of the attendees appears at the end of these minutes.

2. Approval of the agenda: 04-052r0 Paul Suhler

Paul Suhler discussed the order of the discussion items. He requested additions or changes. No one responded.

Michael Banther made a motion for acceptance of the modified agenda. Susan Gray seconded the motion. In the absence of objections or abstentions, the group passed the motion unanimously.

3. Comments on previous meeting minutes: Paul Suhler

12-13 January 2004 meeting 04-034r0

Paul Suhler requested comments for the minutes of the 12-13 January 2004 meeting – 04-034r0. No one responded with comments.

4. Review of action items: Michael Banther

- a. Susan Gray will generate a proposal for link services error recovery. *Carryover*
- b. Rod Wideman will post 03-385r1. *Carryover*
- c. Rod Wideman will send an e-mail to the T10 reflector that tags possibly controversial technical comments in 03-385r1. *Carryover*
- d. Paul Entzel will incorporate the proposals contained in discussion item (b) of 04-034r0 into ADT. *Closed*
- e. Paul Entzel will incorporate the proposal contained in unscheduled business item (a) of 04-034r0 into ADT. *Closed*
- f. Susan Gray will revise 04-014r1 per discussion item (c) of 04-034r0. *Closed*
- g. Paul Entzel will incorporate 04-014r1 as revised into ADT. *Carryover*

- h. Ralph Weber will send the SAM-3 state diagram conventions figure to Paul Entzel.
Closed
 - i. Kevin Butt will generate a proposal to address the problem described in unscheduled business item (b) of 04-034r0. *Carryover*
 - j. Kevin Butt will post the revised 04-009r0 to the T10 web site. *Closed*
 - k. Paul Entzel will incorporate 04-009r0 as revised into ADT. *Closed*
 - l. Paul Entzel will revise 04-033r0 per discussion item (f) of 04-034r0. *Closed*
 - m. Paul Entzel will incorporate 04-033r0 as revised into ADT. *Closed*
 - n. Michael Banther will generate a proposal to deal with how a port responds if it receives a SCSI Data IU when it expects a SCSI Transfer Ready IU and vice versa (see discussion item [g] of 04-034r0). *Carryover*
 - o. Paul Entzel will generate a proposal to deal with recoverable transport layer errors with PR equal zero, e.g., out of resources (see discussion item [g] of 04-034r0). *Carryover*
 - p. Paul Entzel will incorporate the proposal described in discussion item (g) of 04-034r0 into ADT. *Closed*
 - q. Paul Entzel will incorporate the proposal described in discussion item (d) of 04-034r0 into ADT. *Closed*
 - r. Susan Gray will revise 03-369r1 per discussion item (d) of 04-034r0. *Carryover*

5. Discussion items:

- a. ADT State Machine 03-369r2 Susan Gray

Susan Gray introduced the state machine conventions. We discussed the need to have messages to the next lower layer or back up to the upper layer. Paul Suhler argued that signals that don't cause a change of state, we shouldn't show. In general, the group agreed.

Susan Gray moved on to start the discussion of the Port state machine. Kevin Butt asked where the Port Login IU that causes the transition to P1 is. Susan replied that she's considering changing the Login Process Started transition from the Link Negotiation state machine to a Port Login IU from the wire (and hence changing this signal to green).

We debated whether the Negotiation state machine is a sub-state machine or a peer to the Port state machine. Kevin Butt argued that it's a sub-state of P1. Michael Banther described the possibility of having the Negotiation state machine as a peer. Kevin raised the point of wanting to have link re-negotiation without closing the exchange. We debated the implications of this capability and concluded that transition from P2 to P1 does not necessarily imply resetting the Next Frame to Send counter and the Expected Frame Number counter. We eventually settled on having the Negotiation state machine as a sub-state machine to P1: Login.

Paul Entzel described the operation of a Port Login IU. The Port state machine receives the IU. If it's not in P1, then it transitions to P1, instantiates a Negotiation sub-state machine in N0: Idle, and sends a Login IU Received signal to the Negotiation sub-state machine. If it's in P1 already, it simply sends the Login IU Received signal to the Negotiation sub-state machine.

Paul Entzel, Susan Gray, and Paul Suhler described operation when the Port state machine receives an Initiate Login signal from the upper layer. The interaction is as described above except that the Port state machine sends an Initiate Login signal to the Negotiation sub-state machine.

Paul Suhler asked if we need to specify two different types of Initiate Login messages, one for using current operating parameters and one for using default operating parameters. Paul Entzel replied that the difference doesn't affect the operation of the state machines; hence no need exists for different messages.

Kevin Butt asked if the diagrams need to show how AOE equal zero affects the state machines. Paul Entzel argued strongly that he doesn't want to include information in the state machine diagrams that doesn't affect the operation of the machines. After some discussion, Paul agreed that AOE may affect the operation of the T and R state machines.

Much debate followed. Paul Suhler described the new state labels for the Negotiating sub-state machine. Susan Gray noted missing transitions back to N1: Negotiating in the case of reception of a NAK.

Michael Banther raised a concern about the source of the Initiate Login and Login IU Received signals. This query led us back to the Port state machine. Eventually we agreed that the P0:P1 transition will carry information that allows the P1 state to decide which message it sends to the Negotiation sub-state machine.

We discussed the error conditions that cause a re-start of negotiation and the state transitions associated with this case.

Susan Gray moved us on to the Transmit Error Recovery state machine. Paul Suhler asked if we're going to capture timeouts on multiple outstanding IU's. We discussed Kevin Butt's outstanding action item to propose the ACK/NAK handling with multiple outstanding IU's when one returns NAK with PR equal to one. However we did agree that the arrows showing traffic from the wire will move up to the Port state machine and the Port state machine will send messages to the T sub-state machine.

Finally Susan Gray described the R sub-state machine. Paul Entzel questioned if the hard reset event needs to appear here since its receipt by the Port state machine causes a transition to P0: Idle which in turn destroys the sub-state machine. He noted that the same comment applies to the T sub-state machine.

Susan Gray will continue revision based on comments received.

6. Unscheduled business:

- #### a. Recoverable transport layer errors with PR equal zero

Paul Entzel described his idea for recoverable transport layer errors that result in a NAK with PR equal to zero. What should a transmitting port do if it has sent two frames, the first comes back with Out Of Resources (for instance) and the second one comes back with an ACK.? How do the two sides get back in sync such that the receiver receives and positively acknowledges frames in the original order that the transmitter sent them? Paul wants to solve this problem by turning Out Of Resources into a recoverable error on the receiver's part. He intends to follow the same tack for Maximum ACK Offset Exceeded.

b. XON/XOFF

Susan Gray

Susan Gray described the desire of some Quantum engineers to include XON/XOFF processing. The group did not discuss this item further due to lack of time.

7. Next meeting requirements:

Paul Suhler

The group will hold a teleconference on 9 February 2004, from 8:00 to 10:00 PST, hosted by ADIC.

The group will hold a teleconference on 23 February 2004, from 8:00 to 10:00 PST, hosted by Quantum.

The group will hold a meeting 8-9 March 2004 during T10 plenary week in Dana Point, CA. The meeting will begin on the 8th at 9:00 AM and conclude at 7:00 PM PST. The meeting will reconvene on the 9th at 9:00 AM and adjourn at 11:00 AM PST.

8. Review new action items:

Michael Banther

a. Michael Banther will investigate and if necessary generate a proposal to state the behaviour of a port upon detection of a non-recoverable (retryable) error.

9. Adjournment:

Group

Susan Gray made a motion for adjournment. Kevin Butt seconded the motion. The group passed the motion unanimously. Paul Suhler adjourned the group at 10:06 AM PDT.

Attendees:

Name	Organization	E-mail
Paul Suhler	Certance	paul.a.suhler@certance.com
Michael Banther	HP	michael.banther@hp.com
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Paul Entzel	Quantum	paul.entzel@quantum.com
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