

1394 PWG Minutes
August 17-18, 1998

1.

Shigeru Ueda	Canon
Osamu Hirata	Canon (CBM)
Jim Schwerin	Canon (CBM)
Lee Farrell	Canon Information Systems
Greg LeClair*	Epson
Kazuo Nomura	Epson
Brian Batchelder	Hewlett Packard
Alan Berkema	Hewlett Packard
Scott Bonar	Hewlett Packard
Greg Shue	Hewlett Packard
Jerry Thrasher	Lexmark
Don Wright	Lexmark
Anthony Fung	ST Microelectronics
Harry Hvostov	ST Microelectronics

Don Wright provided the details for the next PWG meeting:

Savannah Marriott Riverfront
Savannah, GA 31401
100 General McIntosh Blvd.
Savannah, GA
912 233-7722
September 28-October 2
\$165 room rate

He announced the draft meeting schedule for 1999, indicating that it would be discussed further at the PWG Plenary meeting on Wednesday:

- . Jan 18-22 Maui (Joint PWG/PWG-C)
 - Jan 27-29 1394TA Maui
- . Mar 1-5 Miami
- . Apr 12-16 New Orleans
 - Apr. 4-9 Comdex Tokyo
- . May 24-28 Philadelphia
 - May 11-14 WWW8 Toronto
 - May 10-11 W3C AC Meeting
 - May 31-Jun 4 N+I Tokyo
 - Jun 22-24 PC-Expo NYC
- . Jul 5-9 Copenhagen, Denmark (other European site?)
 - Jul 12-16 IETF Oslo
 - Jul 14-16 Comdex Canada
- . Aug 16-20 Alaska
- . Sep 27-Oct 1 Denver
- . Nov 2-6 San Juan, Puerto Rico
 - Nov 8-12 IETF Wash DC
 - Nov 15-19 Comdex
- . Dec 13-17 Los Angeles

1394 PWG Meeting, August 17-18, 1998

Greg LeClair presented the proposed agenda topics:

- . GAP Control
- . Recovery
- . Command Set
- . Open Profile Issues

3.

Ueda-san presented a few slides on the `_gap control_` method used to maintain coordination and recovery of command processing between the Initiator and Target.

He believes that the `_enforced sequential command tag_` approach is inefficient for command set recovery, because there can be overhead introduced even in normal operation situations. To avoid the

inefficiency two rules are proposed:

- . Target determines whether the command is ahead or behind current position based on the sign of the distance between them.
- . Initiator is responsible to keep the actual sequence of tasks in the task list to be recognized correctly by the target.

Shimura-san has distributed a description of the proposal via e-mail.

Ueda provided example cases illustrating different situations that may occur in an error recovery situation.

There was some discussion about the process of aborting a task by using a `_dummy orb_`. Greg Shue explained the Abort Task Set management function. He feels that the Abort Task command can possibly cause problems. The issue about aborting a task is that there is no guarantee that the Initiator will actually respond to the Abort Task request.

Greg Shue asked Ueda-san what the `_normal condition_` would be that would cause inefficient operation. Ueda gave the example of a paper-jam or out-of-paper condition. After a bit of discussion, there is still unresolved disagreement about how frequently this situation will really occur and therefore how much efficiency is really gained by the proposal.

ISSUE: Once a Target's fetch agent has transitioned to a dead state, how long will it wait for an Initiator to do error recovery before it takes action on its own? How long do we stay in a dead state? This issue is currently felt to be beyond the scope of the specification because it is application specific. If it needs to be resolved at a higher level, we may need to provide a mechanism to achieve it.

4.

Recovery

Ueda-san also gave a presentation on the Error recovery model used in Canon's SHPT proposal. A few optimization methods were proposed:

- . use same physical memory for application buffers and transport buffers
- . use same size buffer as 1394 transaction for error recovery

1394 PWG Meeting, August 17-18, 1998

- . sender can directly write data to buffer in receiver specifying the 1394 address

For error recovery, the Initiator must keep the contents of the data buffers associated with the ORBs in the linked list, and the Target must guarantee not to execute any data and command twice. [The slide in Ueda's presentation was missing the word `_not_`.]

The Initiator must guarantee that the contents of the data buffer will not change over a Bus Reset.

Ueda proposes that a special value of 0 for `Max_T2I_DATA_SIZE` should indicate that the Target does not need to guarantee to hold and re-send data. (The Initiator will guarantee to maintain the contents over a Bus Reset.)

Greg Shue pointed out that the value of zero is already used to indicate that no data will be transferred in that direction. He suggested that another (new) parameter could be defined to indicate the capability proposed by Ueda.

Greg agreed that the capability to indicate to a Target that the Initiator will retain the data contents of a data block and its Sequence ID over a Bus Reset was a reasonable feature. However, discussion of the method for indicating this feature was deferred until the Command Set topic was addressed.

Much discussion occurred about whether the contents of the page-tables for the buffer could be relied upon after a Bus Reset. Generally, people feel that the Target should re-read the page table (in case the pointers to the data contents have changed.)

5.Command Set

Greg Shue has issued revision 0d of the PWG 1394 Transport Command Set Proposal. He led the group in a page-by-page review of the latest revision, asking for comments.

Ueda-san commented that the Open and Close Transport commands are not symmetrical. The Transport_Open command is issued for both queues, but the Transport_Close is issued for only one queue at a time. Greg explained that the reason for this was to allow the Initiator to indicate that no more writing to the write queue will occur, but reading will continue on the read queue.

The group discussed whether or not Greg's reason was a valid situation. After not being able to identify a specific situation to justify the capability, the group agreed to change the Transport_Close to apply to both queues. However, Greg noted that once a Close is done to both queues, there is nothing that can be done next_except a Logout. Therefore, he suggests that the Transport_Close command is redundant to the Logout command. (Although unsolicited status could be generated before a Logout, it was not felt that this was a reasonable event.) If Transport_Close is eliminated (because it is redundant to Logout), this would also create an asymmetrical situation for Transport_Open.

The Get_Transport_Capabilities command was discussed. Brian noted that when a Target responds with certain transport capabilities, it must reserve those capabilities for the duration of that Login.

Greg LeClair suggested that we should keep the Close command to allow some kind of acknowledgment of the Close command. Using Logout does not provide any chance for a reply.

After much discussion about the above issues, no consensus was reached, and the topic was deferred.

ISSUES:

- . Should we have a Transport_Close command of any type_either applicable to a single queue or both queues?
- . What behavior should occur after a Close and after/during an Open?
- . If we eliminate the Transport Close command, should the Open command be renamed?

ISSUE: What should be done about the following case? An initiator opens a connection, carries on a conversation, closes both queues for communication, and then does a TARGET RESET? Presumably, this would allow another TRANSPORT_OPEN to be issued without having the initiator Logout, though it would affect all other initiators logged in to that target by generating a UNIT ATTENTION condition. Because we must support TARGET RESET to be SBP-2 compliant, this situation must be supported as well.

ISSUE: Should we support ABORT TASK?

Greg Shue points out that the Target has the option to ignore the ABORT TASK command_once it has fetched the ORB.

Greg LeClair claims that if an Initiator Aborts a task, it must Abort all the remaining ORBs in that queue, and must resubmit them with the same sequence IDs.

ISSUE: What do we do if the Target responds to an Abort Task with _I completed the ORB_ (instead of acknowledging it as a Dummy ORB?) This condition might cause the Target to process data that shouldn't have been. This can cause problems for a printer data stream.

CONCLUSION: The PWG Profile will state that the client SHALL NOT issue an Abort Task (because we cannot guarantee the execution of an Abort Task request, and this might cause unpredictable behavior.) [It was also noted that Microsoft does not support the Abort Task capability.] Greg LeClair suggests that any desire to abort a large print job should be handled at a higher level_perhaps on a job cancel basis.

ISSUE: Abort Task Set is used by a _soon-to-be_ commercially available O/S in response to a timeout condition. The group needs to examine and understand what the condition details are.

The group agreed to add a new parameter to indicate that the Initiator will maintain data buffer content integrity across Bus Resets (to address the proposal made by Ueda-san earlier.)

1394 PWG Meeting, August 17-18, 1998

ISSUE: The Profile document should include an explicit statement on the padding order and the placement of data bytes less than a full quadlet (e.g. a diagram showing a five-byte data value.)

MOTION: At the end of the page-by-page review, Alan Berkema made a motion to include the latest revision of the Command Set document into the Profile document. Greg Shue seconded the motion.

Ueda-san requested that additional evaluation and changes to the Command Set information should still be possible. Greg LeClair (and others) agreed that comments and changes are still possible, but that the motion is primarily a convenience to the Profile editor_and an acknowledgment that the Command Set information is _relatively stable_.

VOTE: The motion passed unanimously. Alan Berkema will incorporate the material into the next revision of the Profile document.

ISSUE: How do we pass down Sockets implementation information into the Command Set? No resolution was reached on this issue.

6. Config ROM Review and IEEE 1212r

Greg LeClair briefly reviewed the latest activity in 1212r and referenced his CSR and Config ROM proposal that is posted.

According to Greg, the FDS proposal and other discovery concepts have been _stabilized_ at the Bath meeting last month. (Greg noted that this doesn't necessarily mean that it can't become unstable in the future.) The group believes that there should be a class registry monitored and maintained by the 1212r group.

Next meetings for 1212r are planned for September 9-10 in Chicago and October 15-16 in Maui.

Alan Berkema asked if the Config ROM document is ready to be included into the Profile document. The group decided that we should wait until the document is updated to reflect the most recent 1212r activity and reviewed by the group.

7. PWG Profile Document

Alan Berkema led the group in a page-by-page review of the latest Profile document.

It was suggested that a re-write of the Purpose section be considered and proposed on the e-mail reflector for review. A few individuals felt that the current description is not as accurate as it could be. There was a question on how specific we should be in terms of addressing specific device classes. Should we really attempt to address all imaging devices_or consider separate documents for each device class? It was suggested that the current document be considered as a sample template for other imaging devices_but that it focus only on the printer class.

1394 PWG Meeting, August 17-18, 1998

The definition of Queue should be changed to reflect a sequence of ORBs_not just a collection.

The Config ROM block diagram (Figure 2) should be updated for accuracy. It was noted that Section 7 will eventually be replaced by Greg LeClair's document on Config ROM. The group then reviewed the Config ROM document contents, identifying several edits that Greg will include in the next revision.

There was a long discussion about the section on Device Discovery (in the Config ROM document.) A concern was raised about whether a Bus Reset should be generated every time the device configuration changes_and a corresponding change to the values of the Config ROM is possible. (This could certainly lead to excessive bandwidth problems.) It was suggested that the Profile document should inform an implementor that any change in the Config ROM values shall not be made until the next Bus Reset. However, it should be worded in such a manner that does not encourage Bus Resets unnecessarily.

Section 9 of the Profile document will be re-worded so that it does not say every command will have the ORB notify bit set to zero. Not every ORB needs to have its notify bit set.

Sections 10 and 11 will get replaced by the Command Set description content.

Figure 4 in Section 11.2 _ There was some concern that the diagram might be confusing because it has too much detail. Isoda-san was volunteered to change his Whole Model diagram into an editable Word format or PowerPoint format. The group would like the diagram replaced by a sequence of (four?) drawings_each one showing a progression of detail in the communication flow between the client and server: client/server, 1394 PWG, SBP-2 cloud, and SBP-2 details.

Section 11.3 will be removed.

It was suggested that Section 12 should include a reference to maintaining fairness of access when supporting multiple Logins.

Sections 13, 15, 18, 19, 20, and 21 will be replaced/superseded by the Command Set description content.

The list of Issues contained in the Profile document (Sections 23-27) were very briefly reviewed and evaluated.

The group decided that Unsolicited Status Register service will not be provided to a higher layer. Therefore no policy is needed.

The Profile document will include a list of timers that should be

defined. The discussions identified three timers: Reconnect timer, Management Command response timer, and the timer used by the Initiator to issue an Abort Task Set due to Target inactivity. Alan will start a discussion via e-mail to identify any other timers that might be necessary.

ACTION: Brian volunteered to write up a description clarifying the differences between datagram- and datastream-based services.

1394 PWG Meeting, August 17-18, 1998

ACTION: Alan said that he will update and issue a new version of the Profile by September 10.

ACTION: Greg LeClair will maintain a prioritized `_List of Active Issues_` for tracking and reference within the group.

ISSUE: The Profile document should include an explicit statement on the padding order and the placement of data bytes less than a full quadlet (e.g. a diagram showing a five-byte data value.)

8. Greg Shue believes that we are ready to (begin to) create a set of scenarios for testing interoperability. It was suggested that we should plan to discuss possible scenarios at the next meeting.

Greg LeClair asked if any companies might be ready with a prototype for interoperability testing before December. Epson, HP, and Canon all indicated that they might have something.

9. OUI Issues

Greg LeClair discussed the issue of Organizationally Unique Identifiers (OUI):

- . Do we need to have an OUI for the 1394 PWG Profile?
 - . `Cmd_Set_Spec_ID` in the Unit Directory
 - . possibly needed for ``Printer'` value of the `Function_Class` entry in Instance Directory (formerly FDS)
 - . useful as a `Spec_ID` for other locations
- . Options:
 - . select a standards body and get a RAC assigned OUI
 - . buy OUI as 1394 PWG
 - _ maintenance and administration problems?

Greg asked: `_Would the individual companies represented at the 1394 PWG group be willing to contribute $$$ to pay for an OUI?_` If the group does buy one, how will it (and sub-identifiers) be administered, maintained, and managed?

It was suggested that we obtain an OUI from the 1394 TA. However, they will not give one out until we have a completed document_and we agree to abide by their by-laws.

MOTION: Brian Batchelder made a motion that the 1394 PWG members request that the PWG organization purchase an Organizationally Unique Identifier (OUI) from the IEEE RAC. This OUI will be maintained and administered by that organization.

VOTE: The motion passed unanimously.

Meeting adjourned.