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Minutes of the SBP-3 Working Group meeting, March 12-13, 2002
Crowne Plaza Suites, Dallas

Attendees:

Eric Anderson	Apple	ewa@apple.com
Firooz Farhoomand	Panasonic	firoozf@ix.netcom.com
Lee Farrell	Canon	lfarrell@cissc.canon.com
John Fuller	Sony	jfuller@computer.org
Andy Green	Oxford Semiconductor	andy.green@oxsemi.com
Peter Johansson	Congruent Software	Pjohansson@ACM.org

The following agenda was presented by Johansson. In the minutes that follow, the start of discussion of items listed below is denoted by the index number listed within square brackets, such as [4.1]. Note that these references do not always appear in order, and may not signify the conclusion of discussion of a previous agenda item.

1. Introductions and procedures
1.1 T10 Membership and voting
1.2 Document naming conventions
1.3 Two-week rule
1.4 Meeting fees
1.5 Approval of prior minutes
2. Call for patents
3. Informal liaison
3.1 IEEE P1394.1 [Johansson]
3.2 IEEE P1394.3 [Johansson]
4. Prior action items
4.1 Request AV/C expert to define track metadata [Fuller]
4.2 Operational description of login (bus reset) [Johansson]
4.3 Incorporate 01-304r0 into working draft [Johansson]
5. Review of changes in working draft
6. Old business
6.1 AVD Commands
7. New business

7.1 Review reflector traffic
7.2 FAST_START stabilization
7.3 Bridge-aware SBP-3 target operations
7.4 Update status_FIFO address based on RECONNECT request
7.5 Processor model and messages for extent manager
7.6 Dynamic LUNs
8. Meeting schedule
9. Review of action items
10. Adjournment

[1] Johansson called the meeting to order and updated the agenda, as reflected above.

[1.3] Johansson briefly reviewed the two-week rule, explaining that it did not prevent the discussion of documents posted less than two weeks before a meeting.

[1.5] The minutes from November 6 (Monterey) were not yet available for approval.

The minutes from January 21 (Waikoloa) were not yet available for approval.

[2] Johansson reviewed general T10 policies and procedures. In general, attendance and participation at T10 ad hoc meetings (such as this one) is open to both visitors and T10 members. When formal votes are taken, either in an ad hoc meeting or in the T10 plenary, one vote is permitted each organization, to be cast by its principal representative or designated alternative. A two-week rule is in effect: No matter may be voted on unless notice was given at least two weeks prior. Documents to be voted on must have been posted two weeks prior to the vote. The two-week rule can be waived if nobody objects. Announcements of new documents and meetings must be posted to the T10 email reflector; all other business can be conducted on the working group reflector.

The following paragraph about ANSI/T10 patent policy is copied from past T10 Plenary minutes:

A document is available from ANSI, "Procedures for the Development and Coordination of American National Standards", at no charge. This document is also on the web at http://www.ncits.org/help/ansi_sdo.html. Section 1.2.11 contains the ANSI patent policy. Amy Marasco manages patent issues for ANSI and can be contacted at amarasco@ansi.org or 212-642-4954. Gene Milligan prepared a useful "Handy dandy Technical Committee's Patents Guide", which is available at ftp://ftp.t10.org/t10/document.99/99-291r0.pdf.

[3.1] Johansson reported that the IEEE 1394.1 BRC was actively working by email, and had scheduled their next meeting for May in Zurich. Johansson said the BRC plans to complete its work in 2002.

[3.2] Johansson noted that activity in IEEE 1394.3 has been light, but the standard will soon be ready for a recirculation ballot.

[3.3] Johansson noted that IEEE 1212-2001 has been approved by RevCom and is moving towards publication.

[4.1] Fuller reported that all the known experts on AV/C who could define track metadata had become unavailable.

[4.2] Johansson noted that he had prepared document 02-069 to address bus resets, which would be discussed under new business.

  ftp://ftp.t10.org/t10/document.02/02-069r0.pdf

[4.3] Johansson reported that document 01-304r0 had been mostly incorporated into the "f" version of the SBP-3 draft, but a few items required further attention.

[5] Johansson led a review of changes in SBP-3 draft "f".

  ftp://ftp.t10.org/t10/drafts/sbp3/sbp3r01f.pdf

The group made various minor edits to improve clarity, without changing functionality.

Anderson noted that for clarity for new readers, an explanation of the scope of ORB execution might be helpful - showing for example that status is sent once per the execution of each ORB, but ORBs can be reissued with no legacy baggage - the point being that the Target must re-fetch page tables, etc., even if it "recognizes" an old ORB. Johansson noted that understanding of the 1394 memory model is important and could be given brief mention, noting as an example that the memory model allows the target to fetch an ORB piecemeal, at will, etc.

The group reviewed Johansson's addition of new text regarding Instance Directories from last meeting.

Anderson noted that some of the fields in figure D-1 were unspecified (page_size) or fixed-value. Anderson added that in the same figure, rq_fmt was clearly shown to be 1, and suggested that all fields with fixed values (or no such

fields) should be so indicated, to avoid confusion. This led to discussion of what meaning, if any, page_size had. Careful study of 5.1.2.1 revealed an implication that a non-zero page_size should control data access even in the absence of a page table. The group agreed that further clarity was needed on this point, and Johansson volunteered to survey the mailing list before incorporating new text. Johansson also filled in all of the constant fields in the figure.

The group cleaned up the AV/C encapsulation to cover the situation in which interim status will not fit in the response buffer. The group agreed that in such a case (or any time interim status is not stored) the entire response buffer can be used for the final response.

The group discussed how a Target could or should report that a response buffer given to it was too small to hold the ensuing response. The group decided to add a note explaining that 1024 bytes would always be adequate, to help implementers avoid the problem.

Farrell noted a lack of clarity regarding how the final and interim responses are stored within the response buffer. Farrell noted the wording "preceded/followed", intended to refer to time, could be misunderstood to incorrectly describe the location within the buffer.

[7.1] Johansson led a review of recent reflector traffic.

Johansson took an action item to check that IEEE 1394.1 incorporates the suggestion regarding BUSY_TIMEOUT that the retry count should be unchanged by a bus reset.

Johansson reviewed past email asking if SBP should specify a standard way to report actual transfer length performed by an ORB. In discussion, the group felt that no change to SBP was needed, because existing protocols had demonstrated that the status block could be used, when needed, to return length information, and future protocols could do so as appropriate.

Johansson moved to present the following portions of SBP-3 revision 1f regarding FAST START for stabilization at the T10 Plenary three days later:
  5.2.3
  6.4.6
  7.7.11
  9.1.5
Anderson seconded.
Motion passed with none opposed.

Johansson reviewed document 02-069:

ftp://ftp.t10.org/t10/document.02/02-069r0.pdf

Anderson pointed out that Annex E of SBP-3 revision 1f was out of date, and needed to be updated as per section 7.7.3, and to change the version (key 13) back to the old value.

Discussion revealed that error handling for the receipt of off-bus or bridge-aware requests by a target that did not support bridge aware operation was unclear. A proposed solution was to define a new 1394 acknowledgement value (perhaps 0xA) and response code (also 0xA) to indicate that a bridge-aware request was rejected as an inappropriate off-bus request by the destination device. However, the group agreed to use the existing 1394 ack_type_error and resp_type_error instead.

Discussion revealed that no requirement existed for the Target to refrain from sending responses to management ORBs after the mgt_ORB_timeout period has elapsed. Johansson said he would add appropriate text in 7.7.9.

The group held a lengthy discussion of remote timeouts and node handle requests. Fuller pointed out that a provided hint should never be invalid. Anderson noted that the name "hint" might create a false implication that Initiators did not need to carefully observe bridge awareness rules when providing a hint. Johansson and Fuller agreed to remove the optional all-ones non-hint and the name "hint".

The group next discussed this question: Should a net update force an abort task set, or should the Target clean up bridge issues and then continue with any existing task set?

The group considered eliminating node handles completely, but on reflection realized that their greatest benefit would likely be to Initiators and Targets on a single local bus, who could continue operations across bus reset with no task set aborts, by using node handles.

This discussion continued with the observation that an SBP reconnect reestablishes the node handle of the Initiator, so revalidation of other node handles (likely using DEP) would be used only with third-party ("distributed") buffers. Anderson asked if this mechanism would be expensive but rarely used. Fuller observed that DEP was unreliable because it used broadcast mechanisms. Anderson expressed concern that a DEP solution that was both resource intensive and unreliable might not be worth the effort in Targets.

Sections 8.3 and 8.4 were clarified regarding local and global node IDs, and the DEP requirement was removed.

Fuller asked if bridge-aware login is possible if there are no bridges on the bus. Fuller noted that if such logins were possible, that no specified process or event causes reconnects and/or task set aborts in such a case, even if devices are removed from the bus. Johansson said this would be addressed in 8.4.

Fuller said that bridge-aware login should be possible on a local bus with no bridge present. Anderson and Johansson concluded that in the absence of a bridge, no global node IDs would exist, so if an Initiator used only local node IDs to request a bridge-aware login, the Target would be able to grant one.

Fuller and Johansson then concluded that if an Initiator is removed from a bridge-free bus, a Target with a bridge-aware login from that Initiator would need to start the reconnect process.

Anderson asked if an operating system could pretend to be a bridge (with no devices on the other side) in order to provide local bridge services to an otherwise bridgeless bus. Discussion showed that normal 1394 OHCI controllers would not have the special packet receiving ability required of an alpha portal/bridge.

Green noted that if an Initiator vanishes without a Net Update, any login it holds will never expire. A review of the minutes showed that this problem was discussed in August 2001 in Cupertino, without resolution.

Fuller observed that the problem applies only when a possibly orphaned Target receives a login request and it's existing task set is empty - because an active task set implies that the first Initiator is still around and the login is still valid.

Johansson pointed out that even if the Target is required to confirm that the Initiator is present on the bus, presence does not prove that the Initiator still believes it has a login - the Initiator may have timed out long ago, in response to observing that it had been disconnected.

Anderson suggested 1394.1 could use a "net refresh" message, with less impact than a net update. The message would tell nodes that long-term relationships between nodes on different buses would need to be reconfirmed. This message would start the reconnect process on both Targets and Initiators, causing all orphaned logins to expire, but would not interrupt any active transactions. Targets and Initiators with active task sets might be able to ignore the message.

Fuller suggested that bridge-aware Initiators could be required to perform some kind of heartbeat operation when they had no active task - such as writing the doorbell.

Further discussion by the group found that a heartbeat had advantages over an "are you there" message, and over a "net refresh" message. With a heartbeat, many cases of vanished Initiators would clear up long before a second Initiator contacts the Target for a login. After a lengthy discussion the group concluded to set the heartbeat interval equal to the reconnect interval. When the Target goes idle, or is idle and receives a heartbeat, the heartbeat timer starts. If the heartbeat timer expires, reconnect starts. The Heartbeat register is a new location in the fetch agent.

Fuller suggested allowing a reconnect to specify a new status FIFO to replace the active status FIFO. Green suggested that reconnect hold could also be updated. Anderson suggested that the Login ORB already had all this information, so rather than souping up reconnect, the group should just add a bit to Login to request a re-login. Discussion further revealed that the bit was unnecessary, because ordinary login could simply be allowed to succeed if the Initiator already had a login. It was also pointed out that reconnect was confusing if used in cases where the reconnect timer was not already running. General consensus emerged to make login usable for this purpose, rather than modifying reconnect. Johansson suggested changing LUN to Login ID and adding a "u" bit to indicate "update". Anderson agreed that using login ID would leave the door open to multiple logins per initiator, even though SBP did not presently permit this. Fuller noted that some changes would be problematic, such as converting a non-exclusive login to exclusive. Johansson and Anderson agreed that the exclusive and aware bits should be ignored in an update login request, but password (if any) must be checked, and EUI-64 must be verified against the existing login. This plan was simplified to mean that the "u" bit causes an immediate logout, followed by a new login with the new parameters, except LUN is replaced with the old login ID.

Adjourned.

General information and document index

The SBP-3 email reflector SBP3@isg.apple.com can be accessed as follows:

  Subscribing:
  email requests@isg.apple.com w/subject "subscribe sbp3"

Help?:
email requests@isg.apple.com w/subject "help"

An automated system had been created for the allocation of T10 document numbers, and the subsequent submission of documents for posting:

  http://www.t10.org/members/ad.htm

The following documents have been posted pertaining to SBP-3:

00-328   Eric Anderson
          Fast Start proposal (PowerPoint slides)
          ftp://ftp.t10.org/t10/document.00/00-328r0.pdf

00-371   Peter Johansson
          Minutes of SBP-3 Study Group September 19, 2000
          ftp://ftp.t10.org/t10/document.00/00-371r0.pdf

00-388   Peter Johansson
          SBP-3 Project Proposal
          ftp://ftp.t10.org/t10/document.00/00-388r0.pdf

01-057   Eric Anderson
          Fast Start Proposal
          ftp://ftp.t10.org/t10/document.01/01-057r0.pdf

01-060   Eric Anderson
          Minutes of SBP-3 Working Group January 24-25, 2001
          ftp://ftp.t10.org/t10/document.01/01-060r0.pdf

01-067   Lance Flake
          RBC Access For AV/C Data Interchange
          ftp://ftp.t10.org/t10/document.01/01-067r0.pdf
          ftp://ftp.t10.org/t10/document.01/01-067r1.pdf

01-070   Peter Johansson
          Bridge-aware targets and node handles
          ftp://ftp.t10.org/t10/document.01/01-070r0.pdf

01-101   Eric Anderson
          Minutes of SBP-3 Working Group March 6-7, 2001
          ftp://ftp.t10.org/t10/document.01/01-101r0.pdf

01-102   Scott Smyers
Proposal for modifications to SBP3 and RBC
ftp://ftp.t10.org/t10/document.01/01-102r0.pdf

01-103   Firooz Farhoomand
Using SBP-3 for DVD playback
ftp://ftp.t10.org/t10/document.01/01-103r0.pdf

01-137   Peter Johansson
Stream command block ORB
ftp://ftp.t10.org/t10/document.01/01-137r0.pdf

01-138   Peter Johansson
Bi-directional ORBs (PowerPoint slides)
ftp://ftp.t10.org/t10/document.01/01-138r0.pdf

01-139   Eric Anderson
Minutes of SBP-3 Working Group April 26-27, 2001
ftp://ftp.t10.org/t10/document.01/01-139r0.pdf

01-179   Andy Green
Proposal to modify isochronous recording format
ftp://ftp.t10.org/t10/document.01/01-179r0.pdf

01-180   Peter Johansson
RBC-2 commands for extent management
ftp://ftp.t10.org/t10/document.01/01-180r1.pdf

01-187   Eric Anderson
Minutes of SBP-3 Working Group June 5-6, 2001
ftp://ftp.t10.org/t10/document.01/01-187r0.pdf

01-200   Peter Johansson
Distributed Buffers
ftp://ftp.t10.org/t10/document.01/01-200r0.pdf

01-223   Eric Anderson
Minutes of SBP-3 Working Group July 17-18, 2001
ftp://ftp.t10.org/t10/document.01/01-223r0.pdf

01-248   Peter Johansson
MP-friendly Fast-Start
ftp://ftp.t10.org/t10/document.01/01-248r1.pdf

01-265   Eric Anderson
           Minutes of SBP-3 Working Group August 22-23, 2001
           ftp://ftp.t10.org/t10/document.01/01-265r0.pdf

01-287   Peter Johansson
           Bare-bones Isochronous
           ftp://ftp.t10.org/t10/document.01/01-287r0.pdf

01-304   John Fuller
           SBP3 Changes
           ftp://ftp.t10.org/t10/document.01/01-304r0.pdf

01-318   Rob Elliott
           Elimination of SCSI-2 from SAM-2 SPC-3
           ftp://ftp.t10.org/t10/document.01/01-318r0.pdf

01-330   Peter Johansson
           Minutes of SBP-3 Working Group October 3-4, 2001
           ftp://ftp.t10.org/t10/document.01/01-330r0.pdf

01-332   Scott Smyers
           Isochronous SBP-3
           ftp://ftp.t10.org/t10/document.01/01-332r0.pdf

02-069   Peter Johansson
           Bridge-aware SBP-3 target operations
           ftp://ftp.t10.org/t10/document.02/02-069r0.pdf

02-206   Eric Anderson
           Minutes of SBP-3 Working Group January 21-22, 2002
           ftp://ftp.t10.org/t10/document.02/02-206r0.pdf

02-207   Eric Anderson
           Minutes of SBP-3 Working Group March 12-13, 2002
           ftp://ftp.t10.org/t10/document.02/02-207r0.pdf

Latest draft SBP-3 document:

           ftp://ftp.t10.org/t10/drafts/sbp3/sbp3r01f.pdf

[end]