Minutes of X3T11 HIPPI SWG, and HNF - Technical Committee (TC)
February 6, 1996
San Diego, California

1. Opening remarks and introductions

The Chairman, Don Tolmie of Los Alamos National Laboratory, opened the Technical Committee portion of the HNF meeting by thanking Rich Bailly and Vitro Corporation for hosting this meeting. This group is constituted as both the HIPPI special working group (SWG) under X3T11, and the HIPPI Networking Forum (HNF) - Technical Committee (TC).

Don introduced James Hoffman, a Master's Degree candidate at the University of Arizona. James is doing his Master's thesis on HIPPI-6400 and the decisions made by the committee during its development. James can be reached at jrh@ece.arizona.edu. Don then led a round of introductions. The meeting attendees are listed at the end of these minutes.

2. Review / modify the draft agenda

A draft agenda was distributed before the meeting via e-mail and distributed at the meeting. No additional items were added. Don Tolmie agreed to take the meeting minutes. These minutes reflect the items on the approved agenda.

3. Review Minutes of Previous Meeting

The minutes of the X3T11 HIPPI SWG / HNF - TC meeting of December 4-5, 1995, in San Diego were reviewed. Roger Ronald of E-Systems moved, and Chris Olson of Loral seconded, to approve the minutes as written. Passed unanimously.

4. Review of old action items

The action items from the December, 1995, meeting were reviewed for the current status.

1. Michael McGowen of Essential Communications - Generate a HIPPI switch MIB. (Carryover)
2. Michael McGowen of Essential Communications - Update HIPPI-AC to work with HIPPI-SC and its recent changes. (Carryover)
3. John Renwick of NetStar - Issue a "last call for changes" for the IP over HIPPI RFC. Lacking substantive changes, further the processing towards an IETF standard. (Carryover)
4. Everyone to consider changes to HIPPI-SC, and submit drafts of their proposed changes. (Done, see item 8.1.)
5. John Renwick of NetStar - Draft text for HIPPI-SC address self-discovery in a host-to-host configuration without an intermediate switch. (Done, see item 8.1.)
6. Don Tolmie of Los Alamos - Integrate HIPPI-SC text and get the document ready for forwarding at the February meeting. (Done, see item 8.1.)
7. Don Tolmie of Los Alamos - Generate a draft SD-3 Project Proposal for a HIPPI-6400 project. (Done, see item 14.1.)
8. Don Tolmie of Los Alamos - Update HIPPI-Serial with the approved changes and get it ready to forward at the February meeting. (Done, see item 5.)
9. Don Tolmie of Los Alamos - Issue a "last call" for changes to HIPPI-ATM Rev 1.5x over e-mail, with a notice that we plan to forward at the February meeting unless substantive changes were requested. (Done, see item 10.)
10. Don Tolmie of Los Alamos - Flesh out the Los Alamos proposal for striping over multiple HIPPI channels. (Done, see item 11.)
11. Steve Quan of NASA Ames - Set up an e-mail reflector for a HIPPI Users Group. (Carryover)

5. HIPPI-Serial

5.1 Review Rev 2.1 and 2.2 changes

HIPPI-Serial Rev 2.2, and a change list, were distributed at the meeting, and are available via anonymous ftp from ftp.network.com/X3T11/hippi. The changes to Rev 2.0 to make Rev 2.2 were mainly clarifications, no technical changes were made. These changes were reviewed and accepted.

It was noted that AMCC no longer supports the XMUX and XDEMUX as standard parts, but will supply current customers. Hence, clause A.3 was removed from the document. Michael McGowen of Essential Communications has noted over e-mail that Essential developed XYLINX FPGAs that are functionally equivalent to the AMCC parts. The approach actually cost less than other alternatives, and they are quite pleased with it. Hence, alternatives to the AMCC parts are possible, and Michael said that in the interest of promoting the viability of HIPPI, Essential might consider sharing this design .

Some last minute wording to the second paragraph of clause 7.3.3 was reviewed. The text was drafted over e-mail by Ken Powell of Silicon Graphics, Eric Shieh of Essential, Jim Toy of Broadband Communications, and Don Tolmie. New pages that included this clause were distributed. After review, the revised clause 7.3.3 was accepted, and will be part of Rev 2.3.

Chris Olson of Loral asked if a serial version of HIPPI-6400 was planned, and how mapping between HIPPI-Serial and HIPPI-6400 would be done. Greg Chesson of Silicon Graphics replied that a serial version of HIPPI-6400 would be completely separate from the present HIPPI-Serial. Mappings between them would require some sort of translator or gateway.

5.2 Vote to forward for first public review

HIPPI-Serial Rev 1.5 passed an X3T11 letter ballot with 2 NO's, from Ed Grivna of Cypress Semiconductor, and Roger Cummings of StorageTek. Their comments were considered, and changes were made to the document as a result. Responses to Grivna and Cummings were generated, and have been accepted by them. The next step in moving the document along the standards track is to forward it to X3T11 for further processing. Since X3T11 has already letter balloted the document, an X3T11 meeting vote will be sufficient to forward the document to OMC for a check against our SD-3 Project Proposal, and then to X3 for a first public review (four month public review).

Don Tolmie of Los Alamos moved, and John Renwick of NetStar seconded, that HIPPI-Serial 2.3 be forwarded to X3T11 for further processing. Motion passed: 9 for, and 0 opposed.

Steve Joiner of Hewlett-Packard pointed out that HIPPI-Serial contained some optical parameters that are inconsistent with Fibre Channel and industry practice; they may have been in the original Serial-HIPPI document. For example, the center wavelength for short-wavelength lasers is stated as 760 to 870 nm while common practice is 760 to 860 nm. Receivers have trouble at low temperatures with 870 nm. Tom Lindsay of Western Digital noted that the rise time are specified at 10% to 90%; most people use 20% to 80% today. It was felt that we should resolve these issues before forwarding the document for first public review.

Don Tolmie of Los Alamos moved, and John Renwick of NetStar seconded, to reconsider the motion to forward HIPPI-Serial. Motion to forward HIPPI-Serial was then defeated by a unanimous vote.

The people participating in the Fibre Channel media level work were encouraged to provide updates for the places where they saw problems. Don Tolmie took an action item to integrate the proposed changes and have an updated document prepared for hopefully final approval at the April meeting.

6. IETF related items

6.1 IP over HIPPI, RFC 1374

Nothing new. John Renwick of NetStar still has an action item to issue a "last call" for changes. Lacking substantive comments, John is tasked with furthering the processing within IETF. The next IETF step is for the document to receive an RFC number (different from 1374), and process the document as an IETF Draft Standard.

6.2 ARP over HIPPI

Interoperability testing at the Supercomputing'95 show did not occur due to ARP server problems. John Renwick of NetStar took an action item to talk to Phil Cameron of Essential to check the status and see if we can get the document moving.

6.3 HIPPI end-point MIB

Mark Kelley of Cray Research said that he is implementing the MIB, but not done yet. Based on his experience, we will consider document modifications before further processing in IETF.

6.4 HIPPI switch MIB

Michael McGowen of Essential Communications has the action item to develop this document. Since Michael was not present, nothing new was reported.

7. HIPPI-AC

7.1 HIPPI-AC SD-3 project proposal status

Don Tolmie reported that this SD-3 project proposal should have been acted on by OMC, but according to Roger Cummings, X3T11 chairman, it seems to be lost in OMC. Roger will see if he can track it down, or re-submit.

7.2 HIPPI-AC document status

The document is in development within Essential Communications, and was not available at the meeting.

8. HIPPI-SC

8.1 Distribution and review of HIPPI-SC Rev 3.0

Don Tolmie distributed copies of HIPPI-SC Rev 3.0 and a change list. Both are also available via anonymous ftp from ftp.network.com/X3T11/hippi. New text in B.3.5.3 was drafted by John Renwick and Don Tolmie for address self-discovery when two hosts are directly connected without an intermediate switch. At the request of Ken Powell of Silicon Graphics, a warning was added in B.4 about differences in CLOCK rates. The changes were reviewed, and approved. Roger Ronald of E-Systems suggested changing “specifies” to “specified” in one of the bullets in the Introduction.

8.2 Vote to forward for X3T11 letter ballot

Don Tolmie of Los Alamos moved, and John Renwick of NetStar seconded, to forward HIPPI-SC Rev 3.0 to X3T11 for a X3T11 letter ballot. Motion passed: 9 for, 0 opposed.

Don Tolmie took an action item to add the list of X3T11 members, and request an X3T11 letter ballot on HIPPI-SC Rev 3.0.

9. HIPPI API

9.1 Status of current work

Steve Poole of Performance Group previously offered to work on an expanded API, both for a driver level, and at a higher level. Ken Morris of Essential Communications will be the document editor with Steve Poole as the technical lead. Neither was present at the meeting, and there was nothing to report.

10. HIPPI-ATM

10.1 Vote to forward HIPPI-ATM Rev 1.5x for X3T11 letter ballot

HIPPI-ATM Rev 1.5x has been stable since February 1995, and implementations are working in the field.

Roger Cummings, the X3T11 chairman, requested that we change the revision number to something other than "x". Everyone agreed to change the revision number to 1.6, with no changes in the document.

John Renwick of NetStar moved, and Steve Quan of NASA Ames seconded, to forward HIPPI-ATM Rev 1.6 to X3T11 for an X3T11 letter ballot. Motion passed: 10 for, 0 opposed.

Don Tolmie took an action item to add the list of X3T11 members, and request an X3T11 letter ballot on HIPPI-ATM Rev 1.6.

11. HIPPI-MP

HIPPI-MP, which stands for "Multiple Path", is intended to provide higher speed transfers by striping, using current HIPPI interfaces and switches.

11.1 Distribute and review HIPPI-MP Rev 0.0

Don Tolmie distributed copies of the first draft of HIPPI-MP, and gave a brief overview of its contents. Detailed review will be held at later meetings after people have had a chance to read it. A few corrections to the figures were noted, e.g., the size of the D1_Area should change from 0 - 1016 bytes to 8 - 1016 bytes, and the Fill fields should have the contents set to zero. It was noted that this protocol may also be useful for connecting devices with multiple HIPPI-800’s to HIPPI-6400 equipment.

The fact that no changes to present HIPPI-800 hardware was seen as a big plus. Don Tolmie asked if there was a significant need for HIPPI-MP, and Roger Ronald answered that it would be a small market but a good transition to HIPPI-6400. It was noted that the document does not specify how paths are set up, and it was felt that the number of installations needing this could live with manual setup, and additional work to provide automatic setup was not worth the effort.

John Renwick of NetStar questioned the need for the "Present" bit, and was told that it was not set by the ULP, hence was not needed at this level. Greg Chesson of Silicon Graphics questioned how IP checksums would be handled, and was told that they would be transported transparently with the rest of the data.

11.2 Distribute and review SD-3 Project Proposal

Don Tolmie distributed a draft SD-3 Project Proposal for HIPPI-MP. The draft was reviewed, and some changes made.

Chris Olson of Loral moved, and Greg Chesson of Silicon Graphics seconded, to forward the revised SD-3 Project Proposal for HIPPI-MP to X3T11 for further processing. Motion passed: 9 for, 0 opposed.

Don Tolmie took an action item to update the SD-3 Project Proposal for HIPPI-MP and forward it to X3T11 for further processing.

12. HIPPI-FP

12.1 New ULP-id for HIPPI-FP

With work on HIPPI-MP proceeding, a ULP-id for -MP is needed in -FP. A similar action occurred when an amendment to HIPPI-FP was done to fix a few problems and straighten out the ULP-ids. This amendment is in the final phase of ANSI approval. Don Tolmie took an action item to draft another amendment to HIPPI-FP to include a ULP-id for HIPPI-MP. A call for other suggested changes to HIPPI-FP was issued.

John Renwick suggested that the Offset parameter was a pain to implement, and few if any people were using it. Don Tolmie took an action item to issue a call over e-mail that the Offset parameter would be removed unless support for it was shown.

13. HIPPI-PH Reaffirmation

13.1 Call for changes to HIPPI-PH

A notice from X3 was distributed. It said that HIPPI-PH is reaching its 5-year anniversary and we need to take one the following actions: (1) reaffirm ANSI X3.183-1991, HIPPI-PH, without changes, or (2) start a project for a revision or amendment, or (3) withdraw it as an ANSI standard. If we want to start making changes, we need to get going now. Everyone was charged with looking over HIPPI-PH with an eye towards possible changes. We will vote at the April meeting whether to reaffirm or revise.

14. HIPPI-6400

14.1 Distribute and review SD-3 Project Proposal

This project proposes to develop a new physical level interface with a data rate of 6400 Mbit/s, i.e., 8 x HIPPI-800. Don Tolmie distributed a draft SD-3 Project Proposal for HIPPI-6400. The draft was reviewed, and some changes made. Wally St.John of Los Alamos suggested that we call it HIPPI-6400-PH to be in line with the existing HIPPI documents. It was noted that additional HIPPI-6400 projects for -FP and -SC equivalents may be needed – they may be new documents or possibly revisions of the present -FP and -SC documents. It was felt that HIPPI-6400-FP and -SC should be developed in parallel with HIPPI-6400-PH; this was a mistake in the development of the original HIPPI.

Roger Ronald of E-Systems moved, and Greg Chesson of Silicon Graphics seconded, to forward the revised SD-3 Project Proposal for HIPPI-6400 to X3T11 for further processing. Motion passed: 13 for, 0 opposed.

Don Tolmie took an action item to update the SD-3 Project Proposal for HIPPI-6400-PH and forward it to X3T11 for further processing.

14.2 Distribute and review first draft of HIPPI-6400

Don Tolmie, the Technical Editor, distributed his first draft of HIPPI-6400, based on his best guess on how current implementations of the basis for HIPPI-6400 worked. Lots of open issues were identified in the document. The review started with the System overview section to bring everyone up to speed, and then focused on the open issues identified by Don. The review continued until 9 in the evening. Don took an action item to update the document to reflect the decisions made in this meeting. Open issue items will remain, and be added, to the document as we progress, rather than keeping a separate open issues list.

The VC messages were assigned as: VC0 = connection-less, ≤ 2048 bytes; VC1 and VC2 = connection-less, ≤ 128 KBytes, VC3 = connection oriented, unlimited size.

There are no NAKs, just the absence of ACKs. The credit update parameter could use fewer bits but was left at 6 bits to avoid having "Reserved" bits. IDLE micro-packets will use incrementing TSEQ numbers so that they can be retransmitted if needed – necessary since they can carry credit updates.

Greg Chesson of Silicon Graphics described the dynamic skew compensation circuitry that they were using, and said that it could compensate for up to 10 bits of differential skew. The initial adjustment will be made at initialization time, and then updates will occur periodically. The updates may be able to use the IDLE micro-packets, or may need some other mechanism.

The media level issues relate to the capabilities of the skew compensation circuitry, and the media folks were asked if our goals were reasonable – the response was that they seemed reasonable but would require considerable work. A difference from the Fibre Channel work is that HIPPI-6400-PH uses parallel transmission rather than serial, and hence differential skew is a new problem.

15. Other items

None

16. Future meeting schedule

16.1 Interim HIPPI-6400 meetings

With the anticipated heavy workload for HIPPI-6400 the possibility of interim meetings was discussed. A March meeting in conjunction with X3T10 was a possibility. They are meeting at the Hyatt Islandia, March 11-14 and have a meeting room set aside for HIPPI on Wednesday and Thursday 13-14. Discussion revolved around whether we should join the X3T10 meetings in the off-months, their locations, and the amount of travel required for the attendees. It was decided to decline the X3T10 invitation and have the meetings closer to the homes of the principal attendees.

1996 interim meetings to consider just HIPPI-6400 issues are scheduled for the following dates. These meetings are currently planned to run from 1PM - 9PM on the first day, and 8AM - 2PM on the second. It was agreed that physical layer issues will be covered during the even months, trying to get as many of the FC-0 folks to participate as possible. A meeting notice with details of the March meeting will be posted soon on the e-mail reflector.

Mar 12-13	Mountain View, CA	SGI
May 8-9	Dallas, TX	E-Systems
Jul 10-11	Mountain View, CA	SGI
Sep 11-12	Albuquerque, NM	LANL
Nov 6-7	Phoenix, AZ	Loral

16.2 April 1996, Palm Springs, CA

A meeting to consider just HIPPI-6400 issues will be held Tuesday, April 9 from 1PM to 9PM. The meeting will continue the next day, 9AM - 8PM beginning with the normally scheduled HIPPI related issues and the HNF plenary. The location is the Hyatt Regency Suites Palm Springs, 285 North Palm Canyon Drive, Palm Springs, CA 92262, phone (619) 322-9000 or 800-233-1234. The rate is $114 which includes tax and parking. The closing data for reservations is March 18 and the group name and host is Western Digital.

Other 1996 meetings, considering all HIPPI issues and including an HNF plenary, are currently scheduled for the following dates and locations. Note that these meetings are on Tuesday, they may be expanded to include a meeting for just HIPPI-6400 issues on Monday.

June 11	Santa Fe, NM	Los Alamos
Aug 6	Honolulu, Hawaii	Hitachi
Oct 8	St. Petersburg Beach, FL	AMP
Dec 3	Rochester, MN	IBM

The 1997 meeting dates selected by X3T11, and the preliminary hosts, are listed below. Other hosts are being solicited.

Feb 3-7	??	??
Apr 7-11	Palm Springs, CA	Western Digital
Jun 9-13	Seattle, WA (?)	Boeing (?)
Aug 11-15	Honolulu, Hawaii ?	Hitachi (?)
Oct 6-10	Tucson, AZ (?)	FSI (?)
Dec 1-5	??	??

17. Review action items

1. Michael McGowen of Essential Communications - Generate a HIPPI switch MIB.
2. Michael McGowen of Essential Communications - Update HIPPI-AC to work with HIPPI-SC and its recent changes.
3. John Renwick of NetStar - Issue a "last call for changes" for the IP over HIPPI RFC. Lacking substantive changes, further the processing towards an IETF standard.
4. John Renwick of NetStar - Check status of ARP over HIPPI RFC with Phil Cameron of Essential and see if we can get the document moving.
5. Steve Quan of NASA Ames - Set up an e-mail reflector for a HIPPI Users Group.
6. Everyone - Do a last check on HIPPI-Serial, especially the optical parameters. Forward any recommended changes to Don Tolmie.

7. Don Tolmie - Collect proposed changes to HIPPI-Serial Rev 2.2, integrate, and have a clean document ready for final vote at the April meeting.
8. Don Tolmie of Los Alamos - Add the list of X3T11 members, and request that X3T11 conduct a letter ballot on HIPPI-SC Rev 3.0.
9. Don Tolmie of Los Alamos - Add the list of X3T11 members, and request that X3T11 conduct a letter ballot on HIPPI-ATM Rev 1.6.
10. Chairman - Update the SD-3 Project Proposal for HIPPI-MP and forward it to X3T11 for further processing.
11. Chairman - Update the SD-3 Project Proposal for HIPPI-6400-PH and forward it to X3T11 for further processing.
12. Don Tolmie of Los Alamos - Draft an amendment to HIPPI-FP to include a ULP-id for HIPPI-MP.
13. Everyone - Suggest changes to HIPPI-FP and bring in proposals for them.
14. Chairman - Put out a call over e-mail for proposed changes to HIPPI-FP. Include the question of whether the “Offset” parameter is used/needed.
15. Everyone - Consider changes to HIPPI-PH and be ready to vote at the April meeting whether to reaffirm without changes, or to revise the document.
16. Chairman - Put out a call over e-mail for proposed changes to HIPPI-PH.
17. Don Tolmie of Los Alamos - Update HIPPI-6400 Rev 0.0 to reflect the decisions of the February meeting.

18. Adjournment

The meeting adjourned at 9 PM.

Notes from X3T11 Plenary following the HNF-TC

The X3T11 Plenary meet the next day, i.e., February 7. HIPPI related items are reported here for your convenience, the definitive record is the X3T11 minutes.

The HIPPI-ATM and HIPPI-SC documents will go out for an X3T11 letter ballot, closing before April 11. The SD-3 Project Proposals for HIPPI-MP and HIPPI-6400-PH, including our revisions, will be in the X3T11 mailing, and will be voted on at the April 11, X3T11 plenary meeting, not a letter ballot as we had previously thought. The SD-3 Project Proposal for HIPPI-AC, along with some other X3T11 documents, have been lost in OMC, and Roger Cummings, X3T11 chairman, will track them down or resubmit.

Attendance

Michael Griffin	3M Co.
Kon Leong	Avaika Networks
Mark Kelley	Cray Research
Derek Robb	Cray Research
Bill Boas	Essential Communications
Roger Ronald	E-Systems
Mark Donhowe	Gore
Francois Gaullier	Hewlett-Packard
Steve Joiner	Hewlett-Packard OCD
Christie Rice	Honeywell
Ezra Jalleta	Hughes Information Tech.
Kenneth Jackson	IBM
Chris Olson	Loral Defense Systems
James Hoffman	Los Alamos National Lab
Wally St.John	Los Alamos National Lab
Don Tolmie	Los Alamos National Lab
Ed Calkins	Maximum Strategy
Tim Clay	Methode Electronics
Stephen Quan	NASA Ames Research Center
John Renwick	NetStar
Joe Parker	Optivision
Clive Towndrow	PsiTech Inc.
Art Beckman	Silicon Graphics
Greg Chesson	Silicon Graphics
Don Knssel	US Connector
Alan Iguchi	Vixel Corp.
David Lewis	Vixel Corp.
Tom Lindsay	Western Digital