Minutes of X3T11 HIPPI SWG, and HNF - Technical Committee (TC)
August 8, 1995
Tarrytown, New York

1. Opening remarks and introductions

The Chairman, Don Tolmie of Los Alamos National Laboratory, opened the meeting at 1 pm and thanked Bob Dugan and IBM 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 then lead a round of introductions.

The meeting attendees were:

Bob Kowalski	Cray Research
Michael McGowen	Essential Communications
Don Flanagan	HIPPI Networking Forum
Bob Demkowicz	IBM
Don Tolmie	Los Alamos National Lab
Tim Clay	Methode Electronics
Dick O'Connell	Myriad Logic
Dick Kachelmeyer	NetStar
John Renwick	NetStar
Clive Towndrow	PsiTech
John Dillon	Tri-Plex

Don Tolmie agreed to take the meeting minutes. These minutes reflect the items on the approved agenda.

2. Approval of the Agenda

A draft agenda was distributed before the meeting via e-mail. The following item was added to the agenda:

7.2 ARP-less operation

These minutes represent the approved agenda.

3. Review Minutes of Previous Meeting

The minutes of the X3T11 HIPPI SWG / HNF - TC meeting of June 13, 1995, in Rochester, Minnesota, were reviewed. The minutes were accepted as written.

Don Tolmie noted that previous meeting's minutes are available on the HNF WWW page at http://esscom.com/hnf/. They are also available in Postscript format via anonymous ftp from ftp.network.com/hippi/minutes.

4. Review of old Action Items

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

1. John Renwick of NetStar – Talk to Phil Cameron of Essential Communications about revising the HIPPI end-point MIB and then resubmitting it to IETF. (Carryover)
2. Michael McGowen of Essential Communications – Further the address self-discovery work based on John Renwick's proposal. (Done - See agenda item 8 of these minutes.)
3. Don Tolmie of Los Alamos – Flesh out the proposal for HIPPI-MP some more. (Done - See agenda item 11 in these minutes.)
4. Don Tolmie of Los Alamos - Propose wording for HIPPI-Serial conformance to HIPPI-PH electrical and timing specifications. (Done - See agenda item 5.2 in these minutes.)
5. Don Tolmie of Los Alamos - Follow up with Hewlett-Packard to obtain the ANSI patent statement for the 20b/24b coding used in HIPPI-Serial. (Done - See agenda item 5.3 in these minutes.)
6. Phil Cameron of Essential Communications - Consider the use of the Fore Systems API for ATM as the starting point for a standard HIPPI API. (Overcome by events, see item 9 in these minutes.)
7. Don Tolmie of Los Alamos - Check the minutes on ftp.network.com to make sure that the page headers are included. (Carryover)
8. John Renwick of NetStar - Make the derivative documents from RFC 1374 available on an ftp site. (Done - located at ftp.network.com/hippi)
9. John Renwick of NetStar - Update the HIPPI switch MIB. (Carryover)
10. Michael McGowen of Essential Communications - Draft address self-discovery proposal as a step-wise process. (Done - See agenda item 8 in these minutes.)
11. John Renwick of NetStar - Draft annex material for HIPPI-SC describing the intent of address self-discovery and how it works. (Done - See agenda item 8 in these minutes.)

12. Everyone to consider changes to HIPPI-SC, and submit drafts of their proposed changes. (Done - See agenda item 8 in these minutes.)
13. Don Tolmie of Los Alamos - Check with Ken Hardwick of Network Systems as to whether he wants to continue as Technical Editor of HIPPI-SC. (Done - See agenda item 8 in these minutes.)
14. Everyone - Get comments on proposed changes to HIPPI-ATM to Don Tolmie of Los Alamos for final review in August. (Done)

5. HIPPI-Serial

Revision 1.4 was distributed at the June meeting, has been available on ftp.network.com/hippi, and is still the current revision level.

5.1 ST connector for long-wavelength optics

Recent e-mail concerning the choice of the recommended connector for long-wavelength optics was received. Brian Falk of NetStar raised the question of changing the recommended connector from ST to SC based on the poor availability of long-wave optics parts with ST connectors. Arie van Praag of CERN reported much greater connector losses, even to the point of not working at 10 km, for ST connectors, and recommended changing to SC connectors. Steve Joiner of HP, Bob Snively of Sun, and Joe Parker of Optivision, all supported Arie's choice of SC connectors. Jim Toy of BCP did not have a problem with specifying the SC connector as the recommended connector as long as we did not delete the ST or FC/PC connectors as optional connectors.

Michael McGowen of Essential Communications moved, and Bob Demkowicz of IBM seconded, to change the recommended connectors for both long and short wavelengths to duplex SC connectors. Passed unanimously.

Also within clause 9.3 of HIPPI-Serial are requirements that a maximum of 8 connectors are allowed between an optical transmitter and optical receiver in a maximum length link. It was felt that specifying the maximum number of connectors was not a reasonable thing, and the existing specification for maximum optical loss was the only necessary requirement, and that the number of connectors should be a recommendation rather than a requirement.

Michael McGowen of Essential Communications moved, and Bob Demkowicz of IBM seconded, to change the maximum number of connectors from a requirement to a recommendation. Passed unanimously.

5.2 Suggested changes for HIPPI-Serial Rev 1.4

Don Tolmie reviewed some suggested changes that he has collected from various people. Other suggested changes were also made. The suggested changes were accepted without objections. Clause 5.8 and annexes A.7 and C, describing the relationships between HIPPI-Serial and HIPPI-PH had been especially called out for review. No changes were suggested, and the existing text was accepted as written.

With no further changes anticipated, the question of whether the document was sufficiently stable to forward was discussed. This project had originally been proposed to produce an X3 Technical Report, and it was later requested that it be changed to produce an ANSI standard. The status of this change request was unknown, but the time seemed right to forward the document.

Dick Kachelmeyer of NetStar moved, and Michael McGowen of Essential Communications seconded, that HIPPI-Serial Rev 1.5, containing the revisions approved at this meeting, be forwarded to X3T11 for an X3T11 forwarding letter ballot. Passed unanimously.

5.3 Hewlett-Packard patent release for 20b/24b coding

Don Tolmie reported that through the good offices of Ron Whitetree of Hewlett-Packard he has obtained an ANSI patent release for the 20b/24b coding scheme as used in the G-Link chip and specified in HIPPI-Serial. A copy has also been sent to Roger Cummings, X3T11 Chairman, who in turn has forwarded it to ANSI.

6. IETF related items

6.1 RFC 1374

John Renwick of NetStar reported that RFC 1374 had been broken into two RFC drafts, but they have expired with time. These drafts proposed limiting the possible options to make interoperability more likely. John had requested comments, but none have been received yet. John made the drafts available via ftp in an effort to revive this work and push it along. John is also considering adding Inverse ARP to the RFC, i.e., capability of a server to ask an end node what its IP address is. Michael McGowen noted that Essential Communications has implemented ARP.

6.2 HIPPI MIB

John Renwick of NetStar reported that there was nothing new with the HIPPI endpoint MIB.

7. Network Management

7.1 HIPPI-SCAuto

Michael McGowen of Essential Communications reported that there are no changes since the last draft. Many of the concepts proposed for HIPPI-SCAuto are now being rolled into HIPPI-SC, and the two should operate hand-in-hand. HIPPI-SCAuto addresses switch-to-switch communications, and should be processed as an ANSI standard. Don Tolmie took an action item to draft an SD-3 Project Proposal for generating a HIPPI-AC standard. Michael McGowen will be the document Technical Editor.

It was agreed that the name should be changed from HIPPI-SCAuto to HIPPI-AC (for auto configuration). Michael McGowen took an action item to update the HIPPI-AC document based on the recent changes to HIPPI-SC.

7.2 ARP-less operation

John Renwick proposed a method for logical address assignment that mapped logical addresses to IP addresses. It required little or no software development in the vendor's kernels. It could coexist with ARP implementations, but depended upon the network IP addresses being allocated such that no two had the same lowest 11 bits. John felt that there was a good possibility of implementing it so that it was usable at Supercomputing'95, whereas it would be almost a certainty that ARP would not be universally available.

This proposal had been presented via e-mail, and got no responses. After considerable discussion at the meeting, it was decided that we should be pushing ARP, which is well known and built into most operating systems. Promoting something else, even if simpler or shorter lived, would possibly fragment the user and vendor community and send exactly the wrong message. Hence, this ARP-less proposal was abandoned.

8. HIPPI-SC

8.1 Distribution and review of HIPPI-SC Rev 2.8

Don Tolmie reported that he had talked to Ken Hardwick of Network Systems about the Technical Editor job. Ken was the original editor, but has not been actively participating in the committee recently. He and Don felt that it would be better for Don to take over as Technical Editor for the current proposed changes.

Don distributed draft revision 2.8 which contained changes for (1) editorial changes suggested during ISO review, (2) added logical address self-discovery proposals from John Renwick or NetStar and Michael McGowen of Essential Communications, and (3) clarified the relationship to HIPPI-PH and HIPPI-Serial.

Some comments relative to rev 2.8 included the following: It would be easier to read if all of the addresses were shown in hexadecimal rather than binary. The new text in 4.4 about a switch automatically providing a mapping should be qualified so that this does not invalidate existing implementations. The pseudo-code in B.3 should use Camp-on, and include a timeout check. Most of the editorial changes were accepted. Don will update the document with the changes to date; more changes are expected, e.g., to support some of the HIPPI-SCAuto features.

9. HIPPI API

9.1 Copyright release from SGI

Ken Powell of Silicon Graphics obtained the copyright release of SGI's HIPPI API for use as a starting point for a generic HIPPI API and made the original FrameMaker documents available.

9.2 Plans for API document

The HIPPI-API document will be processed as an internal HNF document, much like the Fibre Channel "profile" documents. Michael McGowen reported that Ted Schroeder of Essential Communications will work on it.

10. HIPPI-ATM

10.1 Status of HIPPI-ATM implementations vis-a-vis Rev 1.5x

Several vendors are implementing HIPPI-ATM according to Rev 1.5x. The small ATM PDU size may cause performance problems in the NetStar implementation, but it is too soon to say.

10.2 "Granularity" change for Burst Length

There were no additional changes proposed beyond what Don Tolmie proposed at the previous meeting. It is too soon to see if a change in the ATM PDU granularity would be feasible or worth the effort. We will wait for implementation experience before pursuing it any further.

10.3 Are we ready to forward HIPPI-ATM ?

It was agreed to hold the HIPPI-ATM document in abeyance, delaying forwarding the document until implementations can be tested against each other.

11. Higher speeds by using multiple HIPPI-FP lower layers

Clive Towndrow of PsiTech presented a striping proposal that striped each nth 64-bit word of a higher-layer PDU across a different HIPPI physical layer. Different I-Field values were used to select (1) a single path, (2) over two physical paths, (3) over four physical paths, etc. The number of paths was intended to grow in powers of 2. Clive proposed running the D1_Area data over a single path, and then striping the D2_Area data over the multiple paths. PsiTech is implementing this system now.

Don Tolmie of Los Alamos presented an alternative proposal that striped contiguous words of a higher layer PDU in chunks, with each chunk going over a separate HIPPI physical layer. Don's proposal included an intermediate layer, called HIPPI-MP (for multiple path), that added an 8-byte header. HIPPI-MP sat above HIPPI-FP and below the upper layer protocol.

It was felt that it would be easier to expand the Los Alamos proposal to larger number of physical paths. The PsiTech proposal would probably require less buffering in the interfaces, but would also require special hardware to implement. The Los Alamos proposal could be implemented in software, and use existing hardware. The additional HIPPI-MP header used by the Los Alamos proposal allowed easy detection of lost chunks, and easy insertion for delayed chunks. Further work will be done to refine the proposals, possibly merging them to build on the strengths of each.

12. Speeds in the 8x to 10x range

Don Tolmie reported that Los Alamos hosted a "Future Directions of High-Performance Networks" workshop in Albuquerque on June 19-20. The Los Alamos goal was to facilitate interconnections between the heterogeneous MPP's, SMP's and other high end platforms. The conclusion that Don came away with was that LANs in the GByte/s range are needed today, and LANs in the 100 GByte/s range will be needed in the near future. There was a lot of interest in realizing these same speeds over WAN distances, but current telco pricing may prohibit it. There may be some proposals made for a 10x HIPPI-speed interface at the December HNF meeting.

13. Other items

None

14. Future meeting schedule

The next meeting of the X3T11 HIPPI SWG / HNF Technical Committee, will be Tuesday, October 3, 1995, 9 AM to 5 PM, at the Crowne Plaza Toronto Centre, 225 Front Street West, Toronto, Ontario, Canada, M5V 2X3, phone (800) 422-7969 or (416) 597-1400. Refer to "Hewlett-Packard" meeting when making your reservations to get the group rate of $120 single, $125 double, plus tax ($1.00 U.S. = approx. $1.40 Canadian). The cutoff date for reservations is September 2.

This meeting in Tarrytown was held as a joint meeting rather than our previous practice of splitting into Technical Committee and Marketing Committee meetings in the afternoon. It was felt that the combined was beneficial, and this model will be used for the Toronto meeting as well.

The December 1995 meetings will be held in conjunction with Supercomputing'95 in San Diego, Dal Allan of ENDL is making the arrangements. The date will be either Monday, December 4, or Tuesday, December 5. Stay tuned for up-dates. The main topic for the Technical Committee will be to hear some proposals for higher speed interfaces.

1996 meetings are currently scheduled for:

```
Feb 6    San Diego, CA        Vitro
Apr 10   Palm Beach, CA       Western Digital
June 11  Santa Fe, NM         Los Alamos
Aug 6    Boulder, CO area     StorageTek
Oct 8    St. Petersburg Beach, FL     AMP
Dec 3    ??                   ??
```

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
Aug 11–15
Oct 6–10  Tucson, AZ        FSI
Dec 1–5
```

15. Review action items

1. John Renwick of NetStar – Talk to Phil Cameron of Essential Communications about revising the HIPPI end-point MIB and then resubmitting it to IETF.
2. Don Tolmie of Los Alamos - Check the minutes on ftp.network.com to make sure that the page headers are included.
3. John Renwick of NetStar - Update the HIPPI switch MIB.
4. Everyone to consider changes to HIPPI-SC, and submit drafts of their proposed changes.
5. Don Tolmie of Los Alamos - Update HIPPI-Serial to Rev 1.5 with the changes approved at the August meeting.
6. Don Tolmie of Los Alamos - Forward HIPPI-Serial Rev 1.5 to X3T11 and request an X3T11 letter ballot addressing forwarding HIPPI-Serial for further processing.
7. Michael McGowen of Essential Communications - Update HIPPI-AC to work with HIPPI-SC and its recent changes.
8. Don Tolmie of Los Alamos - Work with John Renwick of NetStar and Michael McGowen of Essential Communications to update HIPPI-SC with the changes approved at the August meeting.
9. Don Tolmie of Los Alamos - Draft an SD-3 Project Proposal for developing a HIPPI-AC standard.

17. Adjourn to the HNF plenary meeting

No wrap-up was required since the meeting was not split into the Technical Committee and Marketing Committee. The meeting adjourned at 4:30 pm.

Notes from X3T11 Plenary following the HNF-TC

The X3T11 Plenary meet the next day, i.e., August 9. HIPPI related items are reported here for your convenience, the definitive record is the X3T11 minutes.

The amendment to HIPPI-FP has been languishing in the X3 Secretariat's office, but will be released for an X3 Letter Ballot next week. Upon completing the letter ballot, it should be ready for publication.

At their last meeting, OMC did not address X3T11's request to convert out SD-3 project proposal for HIPPI-Serial from producing a Technical Report to producing a Standard. Roger Cummings, X3T11 Chair, ruled that we will process it as a standard until told otherwise. X3T11 will conduct an X3T11 letter ballot on forwarding HIPPI-Serial to OMC for a compliance check and then to X3 for first public review. The X3T11 letter ballot should close before the October HNF and X3T11 meetings.

HIPPI-FC, the mapping of upper-layer Fiber Channel protocols to use HIPPI-FP as a lower layer, is out for first public review as X3.283-199x, with the public review closing on September 19.