Minutes of X3T11 HIPPI SWG, and HNF - Technical Committee (TC)
December 6, 1994
San Jose, California

## 1. Opening remarks and introductions

The Chairman, Don Tolmie of Los Alamos National Laboratory, opened the meeting at 1:15 pm and thanked Ed Frymoyer and HP 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:

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| Charles Brill | AMP |
| Mark Bryers | Bryers Consulting |
| Phil Duclos | Cray Computer Corp. |
| Mark Kelley | Cray Research, Inc. |
| Roger Ronald | E-Systems |
| Michael McGowen | Essential Communications |
| Oscar Strohacker | IBM |
| Dennis Behrens | Loral Defense Systems |
| Chris Olson | Loral Defense Systems |
| Don Tolmie | Los Alamos National Lab |
| Pat Gilliland | Methode Electronics |
| Stephen Quan | NASA Ames Research - NAS |
| Susan Buchheit | Network Systems |
| Jim Hughes | Network Systems |
| Joe Parker | Optivision |
| Roger Cummings | StorageTek |

## 2. Selection of Secretary

Lacking other volunteers, Don Tolmie agreed to take the meeting minutes. These minutes reflect the items on the approved agenda.

## 3. Approval of the Agenda

The draft agenda distributed at the meeting was accepted. These minutes represent the approved agenda.

## 4. Review Minutes of Previous Meeting

The minutes of the HNF - TC meeting of October 11, 1994, in St. Petersburg Beach, Florida, were reviewed and accepted as written. Note that this meeting was just an HNF - TC meeting, not an X3T11 HIPPI SWG — the group was folded into X3T11 after the October HNF - TC meeting.

## 5. Review of old Action Items

These action items are from the October, 1994, HNF - TC meeting.

1. John Renwick of NetStar – Remind subscribers to the reflector that drafts of RFC 1374 exist for review, and that such review needs to happen fairly soon. (Done)
2. Don Tolmie of Los Alamos – Contact David Sears at HP to get the master copy of the Serial-HIPPI specification document, for modification by the HNF. (Done - Don now has master document.)
3. Don Tolmie of Los Alamos and Jim Toy of BCP – Draft words for a lock-out mechanism to the Serial-HIPPI remote loopback mode. (Done - see item 6.2 in these minutes.)
4. John Renwick of NetStar – Check on possible existing implementations of his proposals for address self discovery. (Carryover)
5. Michael McGowen of Essential Communications – Publish any alternative proposals for address self discovery on the reflector. (Carryover)
6. Don Tolmie of Los Alamos – Send notice of HIPPI-ATM Rev 1.3 to the reflector for review. (Done)
7. George Rossman of Avaika Networking – Republish proposed HIPPI-SC changes, to support broadcast, on the e-mail reflector. (Done)
8. Don Tolmie of Los Alamos – Draft a proposal for multiple-cable HIPPI (an extension to the current Double Wide variant). (Done - see item 10 in these minutes.)
9. Tom Lane of Network Systems – See if anyone at Network Systems Corporation is willing to volunteer a position paper on 8x/10x HIPPI. (Jim Hughes ??) (Done - Jim Hughes of Network Systems volunteered.)
10. Don Tolmie of Los Alamos – Look into more formal ways of documenting Serial-HIPPI. (Done - see item 6.3 of these minutes.)
11. Ted Schroeder of Essential Communications – Publish a HIPPI API proposal on the reflector. (Carryover)

## 6. Serial-HIPPI

### 6.1 Short-wavelength optics

Jim Toy of Broadband Systems reviewed what he had presented at the pervious meeting and stated that there hasn't been much change since then. He is proposing 780 nm lasers with -15 to -12 dBm transmit power. The receivers would operate with -20 dBm receive power. Distances were 300 meters with 62.5 micron fiber, and 500 meters with 50 micron fiber. The short-wave laser systems are using multi-mode fiber — it is too difficult to couple the laser to single-mode fiber. BCP is doing beta testing of short-wave systems now.

Jim noted that the ATM Forum was also considering short-wave optics. A Honeywell proposal is very similar to what BCP is doing. Feedback from the ATM Forum was that they felt that the receiver was too sensitive. Hewlett-Packard is proposing 980 nm surface emitters that they felt would eventually be cost competitive with the 780 nm CD lasers. Jim said that the ATM Forum was lukewarm on short-wave optics, feeling that 1300 nm devices were becoming more cost competitive.

A major goal of these systems, and in Jim Toy's proposal, is to lower the transmitted power to a level that would meet ISO Class I laser safety requirements without Open Fiber Control (OFC) circuitry. Jim felt that OFC is a marginal solution for laser safety, and adds cost and complexity. Laser safety is not an issue with 1300 nm lasers. Ron Soderstrom of IBM Rochester is scheduled to talk about this same subject for Fibre Channel at the X3T11 Plenary tomorrow.

Jim Hughes of Network Systems proposed that Serial-HIPPI wait for the ATM Forum to make their choice, and then use the same. Jim Toy agreed. The volumes for ATM would probably be large, and we should take advantage of it.

Pat Gilliland of Methode made a presentation. He suggested that we specify a broad range of short-wave transmit parameters meeting the ISO Class 1 Laser Safety requirements, rather than discrete dB levels and wavelengths. He said that a common receiver can be used with transmitter wavelengths of 720 to 900 nm. He noted that the safety requirements include the parameter: (wavelength - 700 nm). Hence, longer wavelength lasers can use higher powers before running into safety problems. Methode has been able to hold their transmitted power levels to ± 1 dB, but this is not a general industry capability now.

### 6.2 Remote loopback wording changes

Don Tolmie presented a proposed change to Serial-HIPPI, section 5.2.1, concerning remote loopback. The change is to prevent both ends from going into remote loopback, creating an oscillator. The following sentence is proposed to be added as the next to last sentence of the paragraph starting RL:

> When an end initiates remote loopback, it shall not go into remote loopback upon receiving RL = 1.

### 6.3 Serial-HIPPI as an ANSI Technical Report

Don Tolmie reported that a previous attempt to make Serial-HIPPI an ANSI X3 standard was rejected by X3T11. Subsequent X3T11 events opened the door to making Serial-HIPPI an ANSI X3 Technical Report. Don prepared an SD-3 Project Proposal for this task — it will be discussed at the HNF Plenary meeting immediately following this meeting. (NOTE - Notes at the end of these minutes report that both the HNF Plenary and X3T11 Plenary accepted the SD-3 for further processing.)

## 7. Network Management

### 7.1 RFC 1374

John Renwick of NetStar was not at the meeting, but sent the following report: Lack of time has prevented further work on RFC 1374. There was quite a round of discussion recently, including a proposal that John thinks belongs in a new Internet Draft if someone wants to do it (Michael McGowen's idea of rejecting a connection when you can't keep up with the input flow).

John's suggestion to ban (1) leading short bursts, (2) D1 Fill, and (3) D2 Offset, from IP over HIPPI was overwhelmingly supported on the e-mail list, and he would like to work this into the next version of the IP over HIPPI draft. This will break one implementation that John knows of, and he does not know how many copies of that implementation have been sold or are in use. John asked the implementor if he would object to our making this change, and has not heard a response is the several weeks since. The technical committee should discuss this and decide if that's what we really want to do. John also needs to do some cleanup on the two drafts, because the split left some dangling references.

### 7.2 HIPPI MIB

John Renwick of NetStar was not at the meeting, but sent the following report: John is not satisfied with what the current MIB contents. He also thinks that we need an additional MIB for HIPPI-SC switches.

### 7.3 Address self-discovery

John Renwick of NetStar was not at the meeting, but sent the following report: John's proposals for a loopback logical address and substitution for the unknown logical address 0xfff are still open. This needs to be resolved.

### 7.4 ISIS protocol

Michael McGowen of Essential Communications presented HIPPI-SCauto, Rev 00.04. He structured it to look similar to HIPPI-SC. Michael was considering how you dead-start a system, and later work with switches coming on-line or dropping out. The preference is to send the management information in-band, but systems with long-lived connections may need out-of-bands control. The document should soon be available via anonymous ftp from the hippi directory of ftp.network.com.

When asked what the next step would be, Michael said that he was soliciting comments. He felt that he and others should start implementing as soon as possible to test out the ideas to make sure they are correct and complete. He solicited help from other HIPPI switch vendors. Michael would like to standardize a basic command set, probably done as a meta-language that could be agreed upon by everyone.

## 8. Review HIPPI-ATM changes

Don Tolmie of Los Alamos reviewed the changes between HIPPI-ATM revisions 1.2 and 1.4. The ability to set a HIPPI-level remote loopback has been deleted in favor of using ATM OAM cells instead. The possibility of deleting striping across multiple ATM circuits was discussed, and rejected. Don noted that the document still needs work in the area of how ATM circuits are controlled, especially for the striped mode. Editor's comments are included in the document as place holders so this will not be forgotten. Rev 1.4 was accepted as the current working document, and is available via ftp in the hippi directory of ftp.network.com.

## 9. Modify HIPPI-SC to support broadcast

No one from Avaika Networking was at the meeting to further this proposal. Several attendees felt that the current proposal needed more work, and there may be some major holes in it.

## 10. HIPPI-PH

### 10.1 Higher Speeds as multiple 800 Mbit/s cables

Don Tolmie of Los Alamos presented HIPPI-PH Rev 8.3 which included support for speeds as multiples of 800 Mbit/s. The higher speeds were obtained by using more cables, essentially making the DATA BUS wider. The extra cables had data, parity, and a CLOCK signal, no other control signals were included. The desirability of adding other control signals to the extra cables was discussed, and rejected. Phil Duclos of Cray Computer felt that using multiple cables would be the cheapest way to increase the speed. It was questioned how many wider systems would actually be built. Problems with ganging multiple paths through a switch was also raised — there are no bits available in HIPPI-SC to control this.

Chris Olson of Loral proposed striping multiple 800 Mbit/s HIPPI-PH's, at the HIPPI-FP level or above, as a better solution. Stephen Quan of NASA Ames said that they presently stripe by using TCP/IP as the intermediate layer for segmentation and reassembly. A more general solution operating at the HIPPI-FP level was desired; TCP/IP, while useful, is not the whole world. Proposals for this striping function were solicited and will be considered at future meetings. The original proposal using more cables was withdrawn in favor of the striping approach, and HIPPI-PH Rev 8.3 will be removed from ftp.network.com.

### 10.2 Project Proposal for HIPPI-PH Revision

The SD-3 Project Proposal for a revision to HIPPI-PH supporting higher speeds by using more cables was also withdrawn.

### 10.3 CONNECT-READY problem

An interoperability problem showed up at the November Supercomputing'94 show in Washington, DC. It involved going through both fiber repeaters and switches, either alone seemed to be OK. The problem was traced to having the READY signal come before, or concurrent with, the CONNECT signal.

It was pointed out that HIPPI-PH specifies that HIPPI Destinations must provide at least four clock periods between asserting CONNECT and asserting READY. In the other direction, an intermediate device, e.g., repeater or switch, may swallow a clock period between bursts. It was also noted that there is no specific requirement in any of the HIPPI documents that an intermediate HIPPI device must act as a HIPPI Source or Destination. A complicating factor is that there is not a clock signal that goes along with the reverse-direction CONNECT and READY signals, hence they are asynchronous with respect to the CLOCK signal in the receiver, and suffer from asynchronous boundary conditions and meta-stable states. No specific conclusions were reached at the meeting. The possibility of adding an Errata to HIPPI-PH to clarify the situation may be desirable.

## 11. Speeds in the 8x to 10x range

Jim Hughes of Network Systems presented a proposal based on using fiber ribbon cable and some Bull chips. He pointed out that it was based on existing technology. Packaging, and cost effectiveness were major points. Sharing the ASIC development work would make it realizable for more than a single vendor.

The serial streams used a variant of RS-232 with start and stop bits. The coding was very simple, allowing multiple transmitters and receivers on a single CMOS chip. Roger Cummings of StorageTek pointed out that this signaling was being standardized as IEEE P1355.

## 12. Other items

None presented.

## 13. Check status and work on if time available

### 13.1 HIPPI API

No work was done on this item at this meeting,. It was pointed out several times that a HIPPI Application Program Interface (API) was mentioned severl times as being very desirable at the HIPPI Users Group meeting at the November Supercomputing'94 Conference in Washington, DC.

### 13.2 LAN emulation for HIPPI

Nothing presented.

### 13.3 HIPPI-SCSI

Nothing presented.

## 14. Prepare report for plenary

A summary report of this meeting was prepared and given orally to the HNF Plenary by Don Tolmie.

## 15. Future meeting schedule

The next meeting of the HNF Technical Committee, X3T11 HIPPI SWG, will be February 7, 1995, 1 PM to 5 PM at the Hyatt Hotel, 1000 Boulevard of the Arts, Sarasota, Florida 34236, phone (813) 366-9000 or (800) 233-1234. AMP is the host. Refer to the "ANSI" group when making your reservations to get the group rate of $119 for a standard guest room.

Future 1995 meetings are scheduled for:

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| April 4 | Monterey, CA | National Semi |
| June 13 | Rochester, MN | IBM |
| Aug 8 | Weschester, NY | IBM |
| Oct 10 | Toronto, Canada | HP-Canada |
| Dec 5 | San Diego | ?? |

1996 meetings are currently scheduled for:

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|---|---|---|
| Feb 6 | ?? | ?? |
| Apr 10 | Irvine, CA | Western Digital |
| June 11 | Santa Fe, NM | Los Alamos |
| Aug 6 | ?? | ?? |
| Oct 8 | St. Petersburg Beach, FL | AMP |
| Dec 3 | San Diego, CA | ?? |

## 16. Review action items

1. John Renwick of NetStar – Check on possible existing implementations of his proposals for address self discovery.
2. Michael McGowen of Essential Communications – Publish any alternative proposals for address self discovery on the reflector.
3. Ted Schroeder of Essential Communications – Publish a HIPPI API proposal on the reflector.
4. Jim Toy of BCP – Draft words for Serial-HIPPI to address short-wave optics, and cleanup of the overhead bits based on implementation experience. For presentation at next meeting.

5. Pat Gilliland of Methode - Draft words for short-wave optics for inclusion in Serial-HIPPI.
6. Chris Olsen of Loral – Look into the possibility of making Serial-HIPPI a MIL standard.
7. Michael McGowen of Essential Communications to make HIPPI-SCauto available via ftp from ftp.network.com.

## 17. Adjourn to the HNF plenary meeting

The meeting was adjourned at 5:00 pm. An HNF Plenary meeting immediately followed.

## Notes from HNF Plenary following the HNF-TC

Don Tolmie noted that a previous attempt to process Serial-HIPPI as an ANSI standard was soundly defeated in X3T11. He felt that recent events in X3T11 had paved the way to introduce Serial-HIPPI as an X3 Technical Report. Don showed a cover page from a Technical Report, and noted the sentences reading:

> As a by-product of the standards development process and the resources of knowledge devoted to it, X3 from time to time produces Technical Reports. Such Technical Reports are not standards, nor are they intended to be used as such.

By a unanimous vote, the HNF Plenary approved the SD-3 Project Proposal for work on HIPPI-Serial as an ANSI X3 Technical Report. Don Tolmie was tasked with proposing this SD-3 Project Proposal at the X3T11 Plenary on the following day.

## Notes from X3T11 Plenary following the HNF-TC

The Amendment to HIPPI-FP (mainly for registering more ULP-id's) is in the last stages of approval at ANSI.

An SD-3 Project Proposal for an Amendment to the existing HIPPI-SC standard was in the X3T11 mailing. An X3T11 roll-call vote on forwarding the SD-3 was approved b y 38 for, 0 opposed, and 16 absent.

The SD-3 Project Proposal for an ANSI X3 Technical Report for HIPPI-Serial was approved for forwarding by an X3T11 roll-call vote of 40 for, 0 opposed, and 14 absent.