HIPPI NETWORKING FORUM
Meeting Minutes of the Technical Committee
August 16, 1994, Denver, Colorado

1. Opening remarks and introductions

The Director of the Technical Committee, Don Tolmie of Los Alamos National Lab, opened the meeting at 8:00 AM. Thanks were given to Bill Boas and Essential Communications for hosting this meeting. Introductions were made and the attendance was recorded as shown below. Mike Barron of Essential Communications graciously volunteered to act as Secretary. An agenda was presented and the discussion items were prioritized.

Attendees:

Name	Company	Phone	E-mail
Mike Barron	Essential Communications	505-823-0100	mbarron@esscom.com
Bill Baum	NetStar	303-220-0404	---------
Steve Campbell	Triplex Systems	410-290-7711	---------
Philip Cameron	Essential Communications	505-823-0119	pcameron@esscom.com
Joseph Godsil	NCSA	217-244-7715	jgodsil@ncsa.vivc.edu
Basil Irwin	NCAR	303-497-1261	irwin@ncar.ucar.edu
Jim MacDonald	University of Minnesota	612-625-5803	mac@ahperc.umn.edu
Michael McGowen	Essential Communications	505-823-0100	mikemc@esscom.com
John Merrill	NCAR	303-497-1273	jhm@ncar.ucar.edu
Chris Olson	Loral Defense Systems	602-925-7275	olson@master.lds-az.loral.com
John Renwick	NetStar	612-943-8990	jkr@netstar.com
Ted Sopher	Lawrence Berkeley Lab	510-486-4144	tgsopher@lbl.gov
Ted Schroeder	Essential Communications	408-268-2354	teds@netcom.com
Mel Sloan	Essential Communications	505-823-0100	mel@esscom.com
Don Tolmie	Los Alamos National Lab	505-667-5502	det@lanl.gov
Jim Toy	Broadband Communications	407-984-3671	5053081@mcimail.com
Von Welch	NCSA	217-244-3095	vwelch@ncsa.vivc.edu

2. Status of RFC 1374 ==

John Renwick had agreed to split up RFC 1374 into two new RFCs such that the IP and ARP sections can be handled independently through the standards process. John subsequently reported the following:

"IETF chair Steve Coya and the Area Director Steve Knowles recommended that RFC 1374 be replaced by two new RFCs: one describing IP over HIPPI, which can become a Draft Standard, and one describing ARP over HIPPI, to be an Informational RFC. This allows us to go forward with the standards process while not losing the ARP description. When there is sufficient interest in ARP over HIPPI, then that RFC can be made a Proposed Standard."

3. HIPPI MIB ==

John Renwick has submitted an Internet Draft defining a HIPPI MIB. It is based on previous work by Jeff Miller of NSC.

4. Longer HIPPI Cables ==

The original HIPPI-PH specification for 25 meter cables is over engineered. 50 meter cables appear to be pushing the limit, but generally have very few problems (no one has documented a problem due to cable length). In order to determine the correct maximum length to specify, some member of the HNF needs to produce a curve of signal amplitude versus cable length for review by the Technical Committee.

5. Connector Problems and Possible Improvements ==========================

The attendees identified HIPPI connector "problems" they have seen:

1. Bent pins
2. Cost
3. Cable pulls out of the backshell
4. Large size
5. Reliability
6. Hard to de-mate without bending the pins
7. Lack of slot on Jack screws
8. Poor shape for under-floor pulls
9. Electro-static buildup on new cables
10. Cables are too stiff
11. Jack screws strip off
12. Jack screw cover
13. Need connector/cable repair facility
14. Bit-Pattern dependent errors have been seen
15. Breakage of ribbon cable connectors
16. Longer travel for mating desired

Bob Whiteman and Charles Brill of AMP agreed to take these items to the AMP connector designers as feedback, and to look at possibilities for improvements in the connector design.

6. Proposal for Fast-HIPPI ==

Michael McGowen of Essential Communications presented a proposal for Fast-HIPPI. This proposal included additional functionality for both a 2x speed option and also auto-configuration of a HIPPI network.

The 2x speed option calls for data to be transmitted using a 50 MHz clock with a 4 ns maximum skew. The control signals stay on a 25 MHz clock for compatibility with existing HIPPI designs, thus requiring that the two clocks be synchronized. The 50 MHz clock is only used on the data after I-Field presentation and only when the I-Field specifies the 2x speed option. This option requires the use of the SD1 signal to supply a 50 MHz clock to the destination and the use of one of the Vendor Unique bits in the I-Field to designate the 2x speed option.

--> ACTION ITEM (John Renwick of NetStar): Inform Penny Quest of Cray that the HNF would like information and/or a demonstration of their double speed HIPPI implementation (if it exists).

The auto-configuration feature boils down to the question of logical address self-discovery. The Fast-HIPPI proposal suggests the use of the DS1 signal to differentiate links connected to a switch. The proposal also suggests a special use of the I-Field Path Selection bits = 10. This value would notify a switch that it should connect back to this port with the logical address of the port placed in the I-Field. Please refer to the proposal for more information.

NetStar currently replaces a source logical address of 1111 1111 1111 (an undefined, reserved value) with that port's logical address while connecting to the destination logical address output port. This technique might serve as a complement or replacement to the proposed use of the Path Selection bits.

The consensus was that this proposal should be split into three issues:

1. 2x speed HIPPI
2. Formalizing self-address discovery
3. ISIS: router-to-router communications protocol definitions.

We're trying to create a HIPPI LAN with:

- auto-configure / reconfigure
- expandability
- transparent to hosts

This requires hosts to implement ARP, which is generally not happening today.

--> ACTION ITEM (Michael McGowen): Send out Fast-HIPPI proposal via email for discussion.

--> ACTION ITEM (Michael McGowen): Start email discussion of self-discovery mechanisms.

--> ACTION ITEM (John Renwick): Propose a change to the Switch Control (SC) for dealing with special I-Field logical address values (such as 1111 1111 1111).

--> ACTION ITEM (Michael McGowen): Produce a strawman ISIS proposal, including an initial description of multiple levels of service compliance.

7. Serial-HIPPI ==

Jim Toy presented slides describing Short Wavelength Serial-HIPPI, with references to the Serial-HIPPI Specification (Rev 1.2). Of particular interest is the choice to use a lower optical power, thus eliminating a safety concern with respect to agency certification (as opposed to the Fibre Channel spec). Another item is choice of a 62.5 micron core diameter and the consequent impact on the maximum fiber length. 62.5 micron fiber is commonly found in building wiring, while 50 micron gives longer distances with short-wavelength lasers.

--> ACTION ITEM (Don Tolmie, Jim Toy): Obtain the FC-O optical specs, and investigate the impact of differences between Fibre Channel approach and the Short Wavelength Serial-HIPPI proposal.

--> ACTION ITEM (Jim Toy): Produce an alternative specification for 50 micron fiber, and compare resulting maximum length with 62.5 micron spec.

8. HIPPI-ATM ===

Don Tolmie presented Rev 1.2 of the proposed draft for HIPPI-ATM, and distributed a list of changes from Revs 1.0 and 1.1. A number of sections of the document were explained and discussed, resulting in the following action items:

--> ACTION ITEM (Michael McGowen): Find someone familiar with LAN emulation to review this document (hopefully BJ Kowalski) to see if HIPPI-ATM is really LAN emulation.

--> ACTION ITEM (Don Tolmie): Get a discussion going on the HIPPI reflector about this document.

As a related topic, Don Tolmie distributed a summary of issues related to "Checksums and Tunneling", a recent discussion over the HIPPI and Fibre Channel reflectors. The basic question is whether or not X3T11 should specify additional checksums for HIPPI and Fibre Channel (FC) when those systems are tunneling through other media, e.g., ATM? The consensus opinion of the Technical Committee was "NO", no other end-to-end checksums are required.

9. Organization of Technical Issues ======================================

The current list of technical issues was organized into topic groups for future discussion. The new topic groups are shown below. Topic leaders are shown next to each topic if applicable.

1. Enhanced Physical Characteristics
    - Higher Speed Physical Layer (Michael McGowen)
    - Improved Connectors (Jim Toy, Charles Brill)
    - Longer Cables (Michael McGowen)
2. Short-wave optics for Serial-HIPPI (Jim Toy)
3. Network Architecture
    - RFC 1374 to standard status (John Renwick)
    - HIPPI MIB (John Renwick)
    - Network Management / ISIS (Michael McGowen)
    - HIPPI-SC extension for Broadcast (George Rossman)
    - LAN Emulation (BJ Kowalski)
    - HIPPI API (Ted Schroeder)
4. HIPPI-ATM draft standard (Don Tolmie)

Adding SCSI-GPP over HIPPI was dropped due to lack of interest.

10. Wrap-Up ==

The Technical Committee Meeting adjourned at noon, and Don Tolmie presented a short summary at the plenary Wrap-Up that followed. The next meeting will be held from 2 PM to 8 PM on October 11th, in the Tampa, FL, area. A meeting announcement will be issued.