

Minutes of T11.1 HIPPI Ad Hoc Working Group  
October 6-7, 1998  
Ft. Lauderdale, FL

### 1. Opening remarks and introductions

The Vice Chairman, Roger Ronald of PMR, opened this meeting at 9:00 AM and thanked Norm Harris and Adaptec for hosting this meeting. This group is constituted as both the HIPPI Working Group under T11.1, and the HIPPI Networking Forum (HNF) - Technical Committee (TC). Roger lead a round of introductions. The list of attendees is at the end of these minutes. Roger volunteered to produce these minutes.

### 2. Review / modify the draft agenda

Draft agendas were distributed via e-mail before the meeting. Items added were:

Item 9: SCSI over ST

These minutes reflect the approved agenda.

### 3. Review minutes of previous meeting

The minutes of the September 1-2, 1998, HIPPI Ad Hoc Working Meeting in Richardson, TX, were reviewed. Jeff Young moved and Don Woelz seconded, to approve the September 1-2, 1998 working meeting minutes as written. Motion passed unanimously.

### 4. Review old action items

The action items from the September meeting were reviewed.

1. Everyone to consider development and documentation of HIPPI-6400 MIBs. (Carryover)
2. Jean-Michel Pittet to update "ARP and IP Broadcast over HIPPI-800" Rev 01 with the changes agreed to at the September meeting. (Done)
3. Jean-Michel Pittet to update "IP and ARP over HIPPI-6400 (GSN)" Rev 00 with the changes agreed to at the September meeting. (Done)

4. Jean-Michel Pittet to request another HIPPI-800 Hardware Type from IANA. (Carryover)
5. Don Woelz to provide a paragraph for the "IP and ARP over HIPPI-6400 (GSN)" document that ties the HIPPI-6400 and GSN names together. (Done, but not yet included in the document by Jean Michael)
6. Marck Doppke to process the HIPPI-800 switch MIB through the IETF. (Carryover)
7. Greg Chesson to draft an IEEE tutorial on HIPPI-6400 ULA usage and the ULAs special to HIPPI-6400. (Carryover)
8. Greg Chesson to provide revised HIPPI-6400-PH tables 3 and 4 reflecting the bit/pin mapping used in the SuMAC. (Done)
9. Greg Chesson to check to see if the SuMAC bit/pin mapping affects the CRC protection. (Carryover)
10. Jean-Michel Pittet to check the RFC numbers and titles for the RFCs referenced in HIPPI-LE. (Carryover)
11. Don Tolmie to update HIPPI-LE Rev 3.5 with the changes agreed to at the September meeting. (Done)
12. Greg Chesson and Jeffrey Chung to consider developing "reason codes" to explain why a particular ST Operation was rejected. (Carryover)
13. Bob Willard to write up something on big/little endian issues for inclusion in the ST document. (Carryover)
14. Greg Chesson to collect information for an "ST FAQ" html document. (In process)
15. Jim Pinkerton to draft a timestamp option for the optional payload for inclusion in the next ST revision. (Carryover)
16. Jim Pinkerton to propose changes to the FSMs and associated text to reflect the duplicate operation requirements in clause 10.5. (Carryover)
17. Don Tolmie to update ST Rev 2.2 with the changes agreed to at the September meeting. (Done)

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18. Don Tolmie to move the ST over FC mapping information from the ST document to a placeholder document. (Done)
  19. Michael McGowen to develop "profile type" information for an ST over FC mapping placeholder document. (Carryover)
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20. Michael McGowen to collect, tabulate, and document everyone's requirements for HIPPI-800 and HIPPI-6400 translation environments. (Carryover)
  21. Greg Chesson to provide November meeting announcement material to Don Tolmie for posting on the web site. (Carryover)

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## **5. HIPPI-6400-PH (ref: Rev 2.3)**

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### **5.1 Testing status**

Further testing of the SuMAC and 40 meter cables has proved HIPPI-6400 runs at full rate with no retransmissions.

Testing at Raytheon with the new and improved Berg cables indicated that 40 meter operation works over extended test periods without any errors or retransmission. This is a major milestone for HIPPI-6400 and vindicates the electrical design.

Genroco also noted that they now had a PCI (believed to be 4x) HIPPI-6400 NIC running in the lab.

### **5.2 Review proposed document changes**

At the September meeting Greg Chesson dropped the bombshell about the pin assignments in the document not matching their SuMAC implementation. At that meeting we agreed to change the document, but will allow the present document to complete processing as an American National Standard before making the changes. Based on information provided by Greg, Don Tolmie created replacement pages 24 and 25, and placed them on the web site. The plan is to prepare a project proposal to amend the HIPPI-6400-PH standard (when it is approved) by replacing these pages.

The changes were looked over during this meeting, but there was a complete absence of anyone familiar with the pin assignments. Thus, this item will be

carried over to the next meeting where SGI should have some MAC level experts in attendance.

Greg also had an action item to see if the bit/pin mapping would affect our CRC protection. This action is also carried over to the next meeting. Greg did not attend this meeting due to airplane delays caused by storms.

Don Tolmie reported that as far as the Los Alamos HIPPI-6400 Tester project was concerned, this was the straw that broke the camel's back. Correcting the pinout problem would require at least a redesign of some FPGAs and a re-spin of a PC board. The tester also pretty much missed its window of opportunity. Hence, the Los Alamos HIPPI-6400 Tester project has been canceled, and they are now considering transferring some of the technology to a tester/analyzer for Scheduled Transfer

### **5.3 Final processing**

Don Tolmie reported that he had seen final approval of HIPPI-6400-PH on the agenda for the September 23-25 NCITS meeting. Ed Grivna provided information that HIPPI-6400-PH had passed the NCITS management review at that meeting.

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## **6. HIPPI-6400-SC (reference Rev 2.5)**

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### **6.1 Public Review status**

The second public review runs from September 25 to November 24. No comments against the document were suggested at this meeting.

If anyone is interested in making comments, they should do it through the NCITS web page at <http://www.ncits.org/prsweb.htm>.

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## **7. Scheduled Transfer (reference Rev 2.3)**

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### **7.1 Review general document changes**

Since Don was not present at this meeting, the change list in the front of the document was used to detail the changes made. The changes were mostly accepted as written. Additional changes were made in a few places.

Don had added bookmarks to the PDF file, essentially giving each Table of Contents entry a bookmark that quickly took you to that page of the document. The meeting attendees appreciated this feature and stated that all editors should do this when possible.

Suggested changes included:

- 1) Paragraphs around the changes on page 11 were reordered for clarity.
- 2) Jeff Young did not like the format of the equation on page 12 and it was suggested that this should be rewritten as a separate standalone equation (as opposed to being part of the text)
- 3) A sentence on page 26 was deleted since it asked for implementors to achieve a goal, while simultaneously spelling out exactly what was required.
- 4) Sean Rieb of Tera Computer wanted Annex A to make clear that HIPPI-1600 was also usable as a lower layer and not just HIPPI-800. The choice of wording implied only HIPPI-800 was OK.
- 5) It was stated that 802/5 was incorrect and that the proper number was 802.5. However, the usage seemed internally consistent and driven by the context. Therefore the meeting participants agreed to bring this to the editor's attention and to let him make the appropriate decision.

A large portion of the changes had to do with changing F-id and G-id to F\_num and G\_num respectively, and shuffling the Block specifications in 6.2. These changes proved non-controversial and were all accepted.

The changes in 10.5 about Duplicated operations were reviewed and accepted with only a few minor rewording changes.

## **7.2 Annex A.5, ST over Fibre Channel removal**

As agreed to at the September meeting, Don removed clause A.5 about ST over Fibre Channel. The material is in a separate placeholder document being kept for possible future usage. It appears as if this specification was before its time, and may well change when actual implementations are created. It is anticipated that any further work on this subject will be done in T11.4 rather than T11.1.

## **7.3 Duplicated operations notation in FSMs**

At the September meeting Jim Pinkerton noted that the FSMs did not cover all of the Duplicated operations specifications recently added in clause 10.5. He was unsure how best to add them to the FSMs, and took an action item to investigate it.

This item will be carried to the next meeting since Jim did not attend this month.

## **7.4 Timestamp optional payload**

Jim Pinkerton has an action item for this function that will also be carried over to next month.

## **7.5 Big/little endian text**

Bob Willard has an action item to draft text defining the implications of this Flag bit during a Virtual Connection setup. This action item will carry over to next month.

## **7.6 C code tiling example**

At the September meeting Ian Philp distributed copies of his draft C code, where it was suggested that Ian include examples for each of the cases shown in figure 10 of ST Rev 2.2. Ian completed the examples and now has examples covering all of the cases shown in the ST document. Rev 1.0 of the C code was available on the web site in both text and PDF formats.

## **7.7 Other proposed changes**

No other changes were proposed in the ST document.

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## **8. HIPPI-LE (reference Rev 3.5)**

### **8.1 Review document changes**

The changes in HIPPI-LE Rev 3.6 resulted from the September meeting where most of the ARP text had been removed. In addition, Don removed both the Introduction and Alphabetical Index since in his eyes they were of minimal value in the new document. Acronyms and abbreviations were added.

Aside from a change in a note number in the change comments (not really part of the document) and a directive to the editor to review whether the acronyms definitions were properly capitalized, there were no changes.

We are now waiting for Jean-Michel's "ARP and IP Broadcast over HIPPI-800" to be assigned an RFC number so that we can include this number in the document before forwarding HIPPI-LE.

## **8.2 Other proposed changes**

No other changes were proposed at this meeting.

## **9. ST-API Mappings**

At the September meeting, interest in SCSI over ST was expressed. A white paper was presented by Genroco detailing a Fiber Channel bridge to HIPPI-6400 for carrying SCSI information.

This document was reviewed during the meeting with a read through of most sections. A copy of the document is available on the web site.

## **10. Other HIPPI items**

### **10.1 ARP and IP Broadcast over HIPPI-800**

#### **10.1.1 IETF processing status**

At the September meeting it was agreed to process the RFC as an individual submission rather than forming an IETF Working Group. Jean-Michel has an e-mail request ready to go to IANA to request a new hardware type for HIPPI-6400. However, this did not make it out over the previous month.

#### **10.1.2 Document review**

Jean-Michel Pittet presented his IP/ARP/IP broadcast/bridge documents at this meeting. These documents, along with much discussion constituted the largest set of work during this meeting.

The IP and ARP over HIPPI-800 document was reviewed and generally found to be acceptable. There were a number of editorial comments. One specific concern was that HIPPI-1600 should be allowed and that the document did not cover its use.

The section of the document added to specify how bridging functions did not proceed smoothly. This portion of this document had a number of points that one or more participants objected to:

- 1) Bridging, as described, was only allowed between a single broadcast network and a HIPPI-800 network. There was no provision to allow multiple broadcast networks to attach to a single HIPPI-800 network.
- 2) Bridging, as described, relies on manual configuration both at the bridge and at the HARP server.
- 3) It was unclear that bridging should be included in a IP/ARP RFC.
- 4) It was unclear that including the bridging topic would still allow a reasonable timeline for finishing the RFC.

### **10.2 HIPPI end-point MIB**

Don has a copy of the 1995 document which he put on his web page. It is an Internet Draft by John Renwick that expired in March 1996, and has been removed from the IETF Internet Draft repositories. If we want to pursue this MIB further then we need a champion for it. Nothing new at this meeting.

### **10.3 HIPPI switch MIB**

Marck Doppke of Essential Communications has a draft document out for comment. Michael McGowen previously offered Marck's services for processing the HIPPI-800 switch MIB through IETF, and Marck has acknowledged this assignment. Nothing new at this meeting

### **10.4 HIPPI-6400 MIB**

Von Welch of NCSA has a draft document, based on HIPPI-6400-PH Rev 1.4, out for comment. Von was not at this meeting and nothing new was reported. The action items associated with this item were moved from Von to the group as a whole to act as a placeholder until a champion can be identified for this work.

### **10.5 IP and ARP over HIPPI-6400 RFC**

A reading of the document was completed and a few changes were made. However, this document essentially followed the HIPPI-800 document (leaving out the controversy over bridging). Therefore, things went fairly quickly and smoothly.

The only hot topic of debate resolved around whether a single ULA could be used on more than one adapter (in some cases supporting redundancy or parallel links to a fabric) or whether the RFC needed to use a "MUST" to specify only a single location for each ULA. Jean-Michel got an action item to investigate standard networking requirements; as Tera, Compaq, Sun, and Raytheon all seemed to have configurations that used the same ULA in multiple places.

**10.6 Tutorial for HIPPI-6400 ULA use**

Greg Chesson has obtained the format material from Bob Snively of Sun. Drafting of the actual text is pending.

**11. Future meeting schedule**

**11.1 Interim meeting, November 17-18, 1998**

The next interim working meeting will be hosted by Greg Chesson at the SGI facility in Mountain View, CA. A meeting announcement will be available soon on our web page. (Greg has an action item to send the information to Don for posting on the web page).

Tuesday - November 17 : 1 PM - 9 PM  
 Wednesday - November 18 : 8 AM - 6 PM

**11.2 Plenary week, December 15-16, 1998**

The December Plenary week location is the Doubletree Hotel at Randolph Park, Tucson, AZ. The cutoff date for group reservations at the \$110 rate is November 12. See the meeting notice on the HIPPI Standards Activities web page for details. The HIPPI meetings during this week include:

Tuesday 12/15	9 AM - 6 PM	HIPPI ad hoc
Tuesday 12/15	6 PM - 9 PM	HIPPI-6400-OPT
Wednesday 12/16	9 PM - 6 PM	HIPPI ad hoc
Wednesday 12/16	6 PM - 8 PM	T11.1 Plenary

**11.3 Future meeting dates and locations**

The T11.1 ( i.e., HIPPI), Plenary meeting will be on Wednesday evening of the T11 Plenary week, following the HIPPI working meetings.

Note that T11 schedules the plenary meetings and that the 1999 Plenary meeting schedule is firm.

**1998**

Nov 17-18 Interim	Mountain View, CA	SGI
Dec 14-18 Plenary	Tucson	FSI

The year 2000 meeting locations and hosts marked with (?) are tentative at this time. Note that the HIPPI and T11.1 meeting days are not specified within the Plenary weeks.

An interim meeting was planned for January 12-13, 1999. Essential will host at the airport Radisson hotel in Albuquerque.

PMR (Roger Ronald) made an offer to host an interim meeting in March (probably the 9<sup>th</sup> and 10<sup>th</sup>) in Richardson (aka North Dallas) Texas. This was a pre-emptive offer, designed to keep Genroco from freezing us with a meeting in the Wisconsin area too early in the year. Roger also suggested that if Genroco is still interested in hosting a meeting, May would be a great time.

**1999**

Jan 12-13 Interim	Albuquerque	Essential
Feb 8-12 Plenary	Huntington Beach, CA	Qlogic
Mar 9-10 Interim	Richardson, Texas	PMR
Apr 12-16 Plenary	Palm Springs, CA	Brocade
Jun 7-11 Plenary	Minneapolis, MN	Ancor
Aug 2-6 Plenary	Minneapolis, MN	ENDL
Oct 4-8 Plenary	Ft. Lauderdale, FL(?)	Adaptec (?)
Dec 6-10 Plenary	Reno, NV	Solution

**2000 (dates approved, locations and hosts open)**

Feb 7-11 Plenary	Huntington Beach, CA	Qlogic
Apr 3-7 Plenary	Palm Springs, CA	Brocade
Jun 5-9 Plenary	Boise, ID (?)	HP
Aug 7-11 Plenary	Munich, GER (?)	Siemens
	Berlin, GER (?)	
Oct 2-6 Plenary	Manchester, NH (?)	Hitachi
	Portland, ME (?)	
Dec 4-8 Plenary	Reno, NV (?)	Solution
	Austin, TX (?)	Crossroads

**12. Review action items**

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*(The action items are grouped by project or category to hopefully make them easier to find.)*

1. Everyone to consider development and documentation of HIPPI-6400 MIBs.
  2. Jean-Michel Pittet to update "ARP and IP Broadcast over HIPPI-800" Rev 01 with the changes agreed to at the October meeting.
  3. Jean-Michel Pittet to update "IP and ARP over HIPPI-6400 (GSN)" Rev 00 with the changes agreed to at the October meeting.
  4. Jean-Michel Pittet to request another HIPPI-800 Hardware Type from IANA.
  5. Jean-Michel Pittet to use the paragraph for the "IP and ARP over HIPPI-6400 (GSN)" document that ties the HIPPI-6400 and GSN names together (provided by Don Woelz)
  6. Sean Rieb to provide 1600/800 input so that IP and ARP RFCs include both speeds.
  7. Jean-Michel Pittet to look for evidence that using the same ULA on two or more adapters (same host system) is wrong and illegal.
  8. Don Woelz to document the assignment of a ULA for the HARP server made during the meeting for inclusion in Jean-Michel's documents.
  9. Jeff Young to research how to use ATM beyond LAN emulation (i.e. specify QOS parameters).
  10. Marck Doppke to process the HIPPI-800 switch MIB through the IETF.
  11. Greg Chesson to draft an IEEE tutorial on HIPPI-6400 ULA usage and the ULAs special to HIPPI-6400.
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12. Greg Chesson to check to see if the SuMAC bit/pin mapping affects the CRC protection.
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13. Jean-Michel Pittet to check the RFC numbers and titles for the RFCs referenced in HIPPI-LE.
  14. Don Tolmie to check HIPPI-LE Rev 3.6 for acronym definition capitalizations flagged at the October meeting and to update if needed.
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15. Greg Chesson and Jeffrey Chung to consider developing "reason codes" to explain why a particular ST Operation was rejected.
  16. Bob Willard to write up something on big/little endian issues for inclusion in the ST document.
  17. Greg Chesson to collect information for an "ST FAQ" html document.
  18. Jim Pinkerton to draft a timestamp option for the optional payload for inclusion in the next ST revision.
  19. Jim Pinkerton to propose changes to the FSMs and associated text to reflect the duplicate operation requirements in clause 10.5.
  20. Don Tolmie to resolve the use of 802/5 versus 802.5.
  21. Don Tolmie to update ST Rev 2.3 with the changes agreed to at the October meeting.
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22. Michael McGowen to develop "profile type" information for an ST over FC mapping placeholder document.
  23. Michael McGowen to collect, tabulate, and document everyone's requirements for HIPPI-800 and HIPPI-6400 translation environments.
  24. Greg Chesson to provide November meeting announcement material to Don Tolmie for posting on the web site.
  25. Vasu Kengeri to provide an electronic version of the January meeting announcement.

**13. Adjournment**

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The meeting adjourned at 5:30 PM on October 7.

**Attendance**

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Don Johnson	Compaq Computer Corp	281-518-2720	don.johnson@compaq.com
David Hyer	Compaq Computer Corp.	978-493-6139	david.hyer@digital.com
Bob Willard	Compaq Computer Corp.	978-493-5482	bob.willard@digital.com
Vasu Kengeri	Essential / ODS	505-344-0080 x331	vasu@esscom.com
Donald Woelz	Genroco, Inc.	414-644-2505	don@genroco.com
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Jean-Michel Pittet	Silicon Graphics	650-933-6149	jmp@sgi.com
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