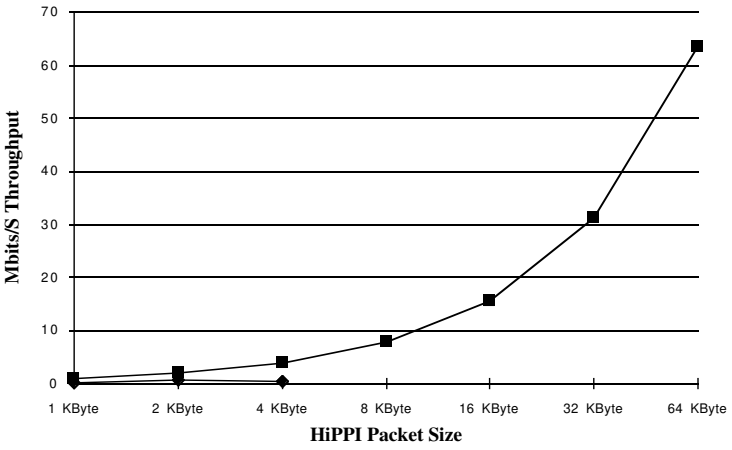
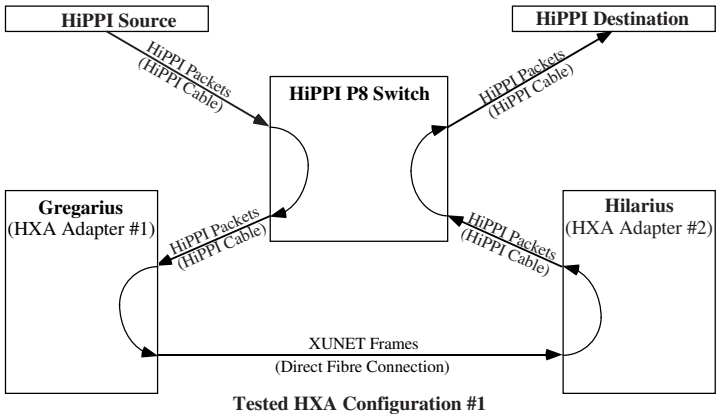
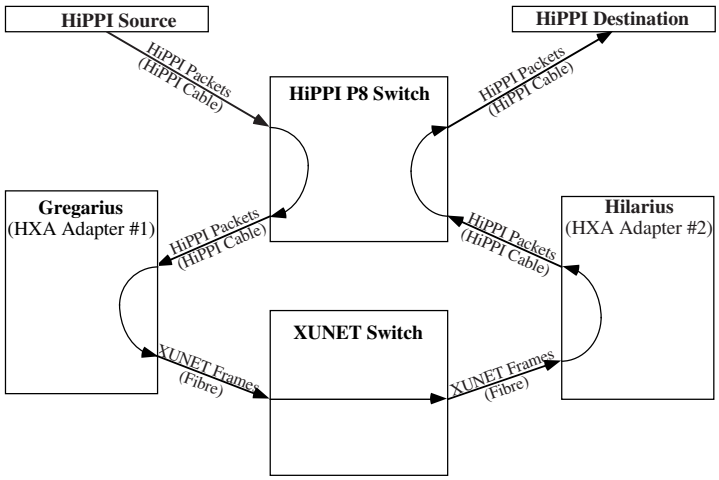
Figure 6: Current and Past HXA Throughput





Tested HXA Configuration #1



Tested HXA Configuration #2

(Figure not available in electronic form)

Figures 3 and 5. HiPPI Framing

Figure 2: How XUNET Frame Size Limitations Affect Max Possible HiPPI Throughput

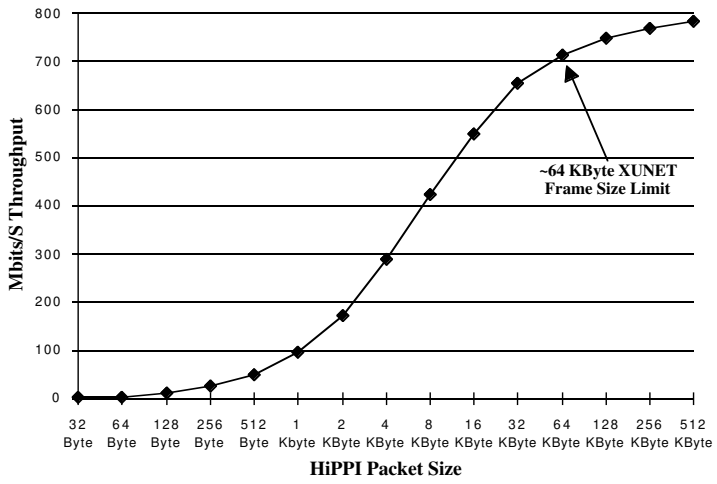
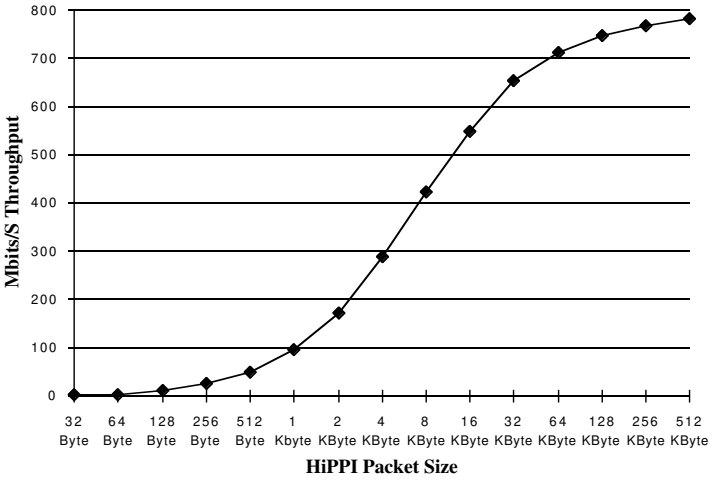


Figure 1: Best Measured HiPPI Throughput by Packet Size



II. Status and Results

B. What's Left?

a. Hardware

- Still two major bugs
- Tuning for Increased Performance

b. Software

- Fold together Raw and LE software in order to be able to support both based on encapsulated IP.
- Tuning for Increased Performance

C. Performance

- Figure 6. Current Tested HiPPI Performance
- Expect to reach approximately 150MBits/S sustained throughput

II. Status and Results

A. Status of HXA Project

1. Hardware Status

a. HiPPI Destination Difficulties

- When sending packets at artificially high rates via HAPPI tester HXA would reject request for new connections until it had processed current Packet. Eventually switch would stop attempting to send packets after large number of rejects. Solution is to enable CAMP ON on HXA HiPPI destination.

b. Line Card (XUNET Side of HXA) Difficulties

- Line Card is able to 'double buffer' (ie, burst two cells) but hardware & software design is currently not taking advantage of this. Have a solution but need time to implement and test it.

2. Software Status

a. Raw HiPPI Transfer

- Figure 3. Raw HiPPI Framing
- Software is complete and in use for debugging on an ongoing basis.
- Figure 4. Tested RAW HiPPI Configurations

b. LE HiPPI Transfer

- Figure 5. LE HiPPI Framing
- Software is complete but untested and not supported at level we desire.

I. Motivation

B. Extending HiPPI via XUNET; Resulting Limitations

1. Virtually Unlimited XUNET Reach

- XUNET Spans from coast to coast

2. High Enough Bandwidth to Support HiPPI Applications

- XUNET Bandwidth is on the order of HiPPI Bandwidth

3. 2^{16}-1 Bytes (~64 KByte) Frame Size

- Limitation due to XUNET Frame Size Limits
- Figure 2. Ideally able to achieve 89% of HiPPI Throughput Specification

I. Motivation

A. Uses and Limitations of Hippi

1. 800 MBit/Second Networking Technology

- Supercomputers Exchanging Data
- High Speed File Service

2. 25M Maximum Single Cable Length

- Cables very fragile - only suitable for use in controlled environments

3. Maximum of Six Switches → 175M Max Distance

4. Routers Available for Greater Reach

- Still LAN Distances at Best

5. Connection Oriented

- Significant Penalty for Small Packets Due to Connection Time Overhead
- Figure 1. HAPPI Tester Results

HiPPI to XUNET Adapter:

Motivation and Status Report

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