

HIGH SPEED CONNECTIVITY BETWEEN AN ID-1  
TAPE RECORDER AND HIGH PERFORMANCE  
COMPUTERS

THIC MEETING, JANUARY 22-24, 1996

DATATAPE Incorporated

Presented by  
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## Agenda

- ◆ Supercomputing '95 Overview
- ◆ Integration with the Silicon Graphics Challenge
- ◆ Integration with the Intel Paragon
- ◆ Integration with the Maximum Strategy Disk Array
- ◆ Future Considerations
- ◆ Summary

## Supercomputing '95 Overview

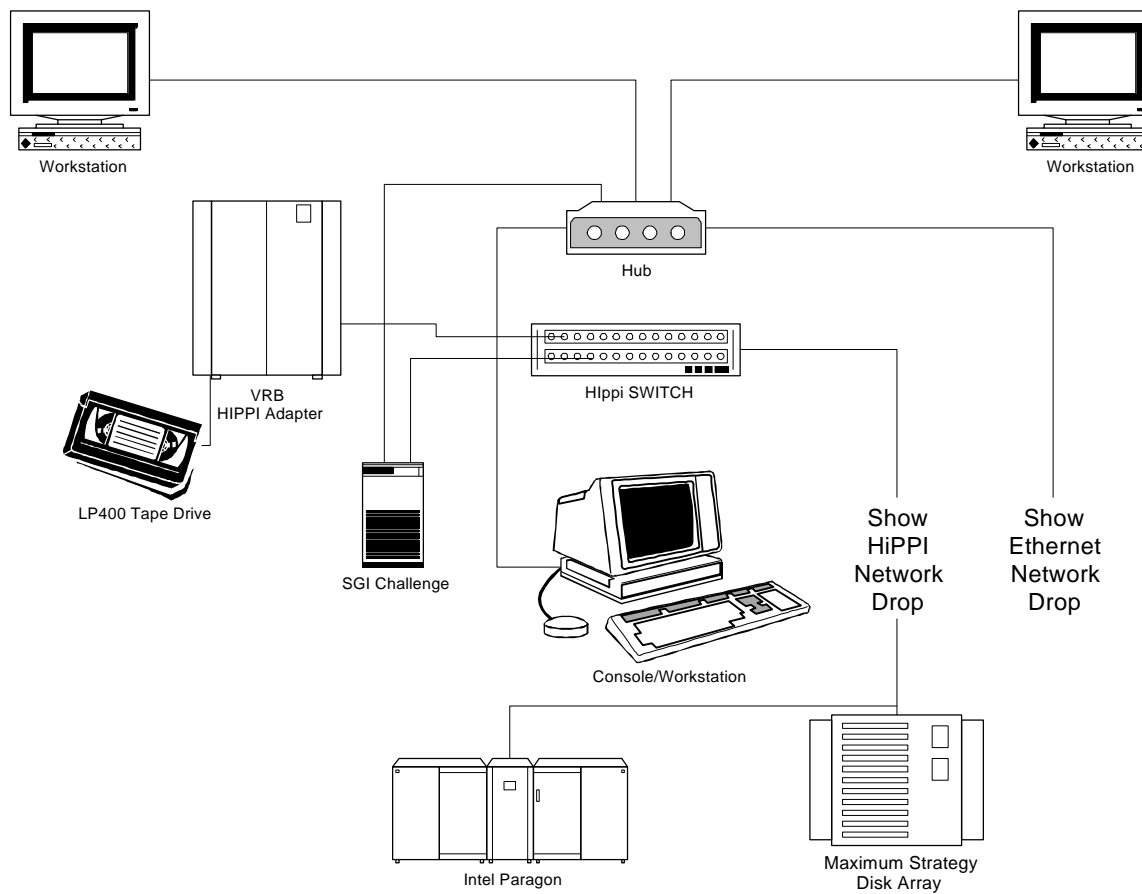
- ◆ Supercomputing '95: San Diego, December 4-8, 1995
- ◆ Participation from 65 Vendors and 41 Research Centers
- ◆ Wide array of state-of-the-art computer and peripheral equipment
- ◆ Approximately:
  - 5 Tape Recorder Vendors and Products
  - 5 Library Vendors

## Supercomputing '95 Overview

An ID-1 Tape Recorder (DATATAPE DCTR LP-400) was successfully connected to multiple vendors via the SC 95 HiPPI and Ethernet networks

- Silicon Graphics Challenge DM
- Intel Paragon
- Maximum Strategy Disk Array
- Caltech

# SC 95 block diagram



## SGI Challenge Integration

DATATAPE selected a Silicon Graphics Challenge DM as its initial integration platform

- ◆ SGI is a leader in high-speed computing, networking and data processing
- ◆ 1.2 GB/s internal bandwidth
- ◆ Hippi support, with highest available HiPPI data rate
- ◆ Other interfaces planned
- ◆ Strong third party Developer's Program and support
- ◆ Broad industry use over multiple applications
- ◆ Growth potential

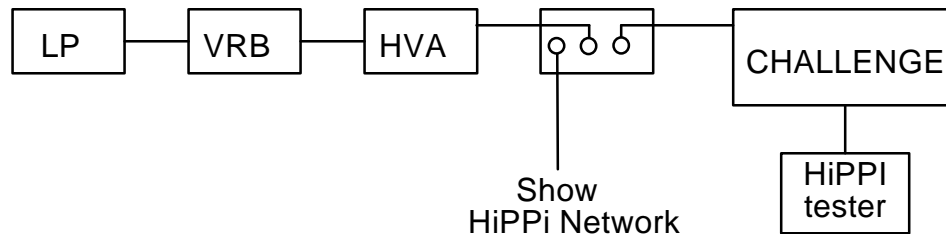
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## SGI Challenge Integration

### System Components:

- SGI Challenge DM
- DATATAPE LP-400
- Variable Rate Buffer (VRB)
- HiPPI/VRB Adapter (HVA)
- Local HiPPI Switch
- Show HiPPI Network
- HiPPI Tester



## SGI Challenge Integration

### Performance:

- HiPPI Connected
- Data is received by the Challenge, processed, and passed to the recorder
- Data record: stream transfer from the HiPPI tester to the Challenge to the recorder
- Data playback: stream transfer from the recorder to the Challenge to the HiPPI tester
- 45 MB/s sustained data transfer via the Challenge
- 50 MB/s burst transfer to/from the recorder



## Intel Paragon Integration

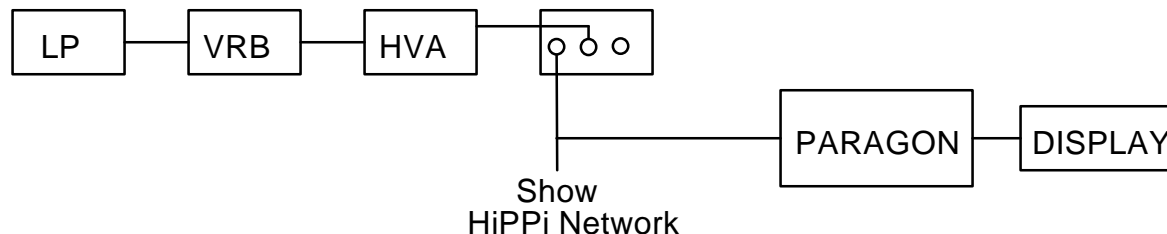
Two recorder systems have been deployed at Caltech, where an Intel Paragon supercomputer is used for data analysis:

- ◆ Radio Telescope project, part of the Grand Challenge Applications Program funded by the National Science Foundation
  - Collecting and analyzing Pulsar data
  - Analysis of 10 TB of data is ongoing
- ◆ Synthetic Aperture Radar (SAR) data
  - Data recorded on space shuttle
  - High speed playback allows for much quicker data processing and dissemination

## Intel Paragon Integration

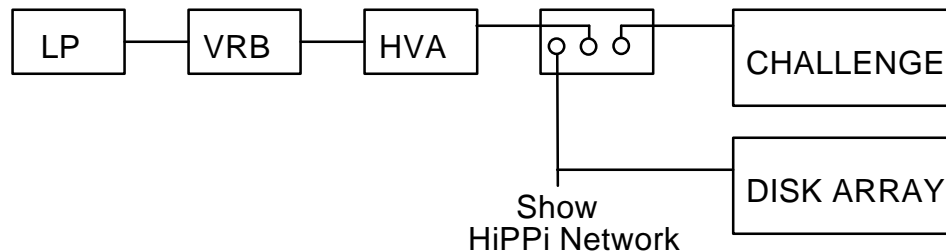
Connectivity to the Paragon was demonstrated at SC 95

- Raw SAR Imagery data stored on tape
- SAR data transferred via show HiPPI network
- Processed and displayed in real time as the data was received by the Paragon



## Maximum Strategy Integration

- ◆ HiPPI attached high-speed storage server disk array
  - Capable of transfer rates in excess of 150 MB/s
- ◆ Data transfer was demonstrated between the disk array and the LP-400 via the HiPPI network
  - A 1+ GB text file was backed up from the disk array to tape, and then restored from tape to disk



## Future Considerations

- ◆ Other Platforms/Controllers
  - Cray, Convex, DEC, Sun, Encore
- ◆ Other Interfaces
  - ATM, Fibre Channel, SCSI-3, SSA
- ◆ Enhancements
  - Stripe across multiple recorders
  - Replace HVA/VRB with a single integrated control unit
  - Expanded API for other applications to interface to the tape drive
  - Device drivers to appear as a standard tape drive

## Future Considerations

- ◆ Applications to include
  - Backup/restore
  - Archive
  - Data warehousing
  - Mass storage
- ◆ For Industries such as
  - Entertainment
  - National Security Image Archive
  - Astronomy
  - Earth Science
  - Petroleum Exploration
  - Medical
  - High Energy Physics

## Summary

### Connectivity of an ID-1 Tape Recorder to High Performance Computers and Peripherals

- ID-1 digital tape recorder
- HiPPI connected
- SGI Challenge
- Intel Paragon
- Maximum Strategy Storage Server
- High transfer rates (up to 50 MB/s)