The NSF-Sponsored Northeastern University Joulian Cluster

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Overview
This system has been constructed to provide a testbed to serve the following research projects:
1. Perform fundamental systems research, which will provide insight into how to measure, manage, and configure some critical features of clustered systems.
2. Validate the models and algorithms previously developed for user-perceived Quality-of-Service (QoS).
3. Address specific application areas such as Video-On-Demand (VOD) and collaborative work environments, considering the use of novel network storage architectures and middleware.
4. Develop compilation and programming tools to exploit the network-based computation and communication resources.

Architecture Overview

Basic Node (27 machines)
- DCG Computers 2 Unit Case
- Intel Night Shade N440BX Dual Motherboard with embedded Intel 82558 EtherExpress PRO+ 10/100 MB 100 baseTx
- embedded Cirrus Logic (GD5480) graphics with 2MB, and embedded UltraWide SCSI controller
- 350Mhz Intel Pentium II
- 256mb SDRAM, PC100, ECC, Registered
- 8.4Gb IBM UltraATA disk
- PCA-200EPC/OC3SC ForeRunner ATM PCI 155Mbs
- 1.44MB Floppy

RAID Host Node (4 machines)
- Same hardware as the basic node plus QLogic QLA2100 - 64-Bit PCI-to-Fibre Channel Adapter

Mega Node (1 machine)
- Intel SC450NX MP System
- 4 x 450Mhz Intel Pentium II Xeon
- 2GB RAM
- 5 x 18.2Gb IBM Ultrastar Ultra SCSI disk
- PCA-200EPC/OC3SC ForeRunner ATM PCI 155Mbs
- Kingston EtheRx PCI 10/100 Fast Ethernet Adapter
- 1.44MB Floppy
- Toshiba CD-ROM

**RAID Device (4 units)**
- InLine Fibre Channel MorStor TF200 with 9GB drives in a RAID 5 configuration with 1 hot spare.
- 3 x 6 Disk 36GB usable and 1 x 7 disk 45GB usable setups

**Network Infrastructure**
- Cisco 7204 Router with 4 x Ethernet, 2 x FastEthernet, and 1 x ATM OC3 MM
- 2 x Cisco Catalyst 8510 with 16 x ATM OC3 MM and 1 x ATM OC12 MM. One unit also has an extra 4 x ATM OC3 MM card in it 2 x Cisco Catalyst 2924 with 24 x 10T/100TX

**Joullian Cluster Software**

**LINUX**
The base system is SuSE 6.1
The kernel is 2.2.13 based
1. MPICH 1.2.0
2. MPICH 1.1.2
3. PVM 3.4.0
4. GCC 2.95.2
5. GCC 2.7.2.3
6. Blackdown's JDK 1.1.7
7. Blackdown's JDK 1.2
8. IBM's JDK 1.1.8

**Windows/NT**
The base system is Windows NT Workstation or Server 4.0.
It is currently at SP5.
1. IE 5 SP1M
2. MDAC 2.0
3. VNC

**BeOS**
The base system is BeOS 4.5
It is patched to 4.5.2
1. WON
2. Telnet

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