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NCAR – National Center For Atmospheric Research

Address:

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Description

The Scientific Computing Division (SCD) of the National Center for Atmospheric Research (NCAR) provides supercomputing resources and services that support research in the atmospheric, oceanographic, and related sciences. We emphasize facilities for the development and execution of large models and for the archival and manipulation of large datasets.

Computer Hardware

- CRAY Y-MP8/864 with 8 processors; CRAY Y-MP2D with 2 processors
- 64 Mwords of main memory for the Y-MP8, 16 Mwords for the Y-MP2
- 48 Mword maximum memory per job for batch; 16 Mwords for interactive
- 6.0-ns clock for both Crays; a measured peak rate of over 1 Gflops has been achieved with a multitasked ocean model
- Vector processing hardware for both Crays
- 256 Mword SSD for Y-MP8 (1000 Mbyte/sec channel), 128 Mword SSD for Y-MP2
- 78 Gbytes of local storage for the Y-MP8, 20 Gbytes of local storage for the Y-MP2
- Unix front end
- NCAR Mass Storage System (MSS) is a hierarchical file storage system with no limit per user. The MSS has a 120 Gbyte disk farm and 115,000 IBM 3480/3490 cartridges. It features a StorageTek 4400 Automated Cartridge System capable of holding 6,000 cartridges, or a terabyte of information. Currently, MSS stores 29 terabytes of data. Extremely high data transfer to the Crays; accessible from front end
- Connection Machine 2 (8,000 processors and floating- point hardware)
- Gateway for NCAR's Internet Remote Job Entry System (IRJE). Allows users to create and submit Cray jobs from their local hosts connected to the Internet. Output is automatically shipped back to the remote host

Application Libraries

Application libraries and documentation are available via the Distributed Software Libraries (dsl) utility. To access dsl, telnet to dsl.ucar.edu and log in as dsl. When prompted for the password, type software.

ALFPACK	AMOSLIB*	ECMFFT	EDA
EISPACK	EISPKD	FISHPAK	FITPACK*
FUNPACK	IMSL*	CRAYFISH*	LINPACK
FFTPACK	MINPACK	MUDPACK*	NAG*
ODEPACK	SPHERE	SLATEC	SSDLIN
STARPAC*	NCARM	NCARO	

*Documentation only available for these libraries over the dsl utility.

Graphics

NCAR Graphics, Version 3.1

Training

- UNICOS Orientation Class: One-day class to introduce Unix/UNICOS programming tools and the NCAR computing environment.
- Unix Basics Class: Two-day introduction to the basics of Unix
- Remote site visits are granted to sites with a significant number of users
- User conference held every two years to update users on new developments and new directions in computing at NCAR
- Site liaison workshops held biennially: intensive, in-depth presentations on specific aspects of the NCAR computing facility
- NCAR Graphics on and off-site workshops and Fortran optimization workshops

Collaborative Research

- Real-time computing during field programs
- Classroom grants of computer time
- Computer Hardware, Advanced Mathematics, and Model
- Model Evaluation Consortium for Climate Assessment (MECCA). MECCA is evaluating the reliability of current global climate simulation models.

Documentation

- Documentation available via anonymous FTP to ftp.ucar.edu. Listing is in /docs/README file.
- User Documentation Catalog containing references both to SCD-supported and vendor documentation. Available online via anonymous FTP to ftp.ucar.edu with the filename /docs/catalog/userdoc.catalog
- Online documentation available for most of the utilities in the supported libraries via dsl
- Scientific Computing Division (SCD) hardcopy documentation available free except for the Graphics manual
- NCAR UNICOS Primer: contains necessary basic information to begin computing at NCAR. Uses step- by-step examples to create, submit, and receive output from the Crays

- Daily Bulletin: Online source of up-to-date information on the computing systems
- Newsletter: SCD Computing News (free)
- Annual planning report: Supercomputing: The View From NCAR
- NCAR Annual Report
- NCAR Annual Scientific Report

Consulting

- Phone, 8-5 MST weekdays; walk-in consulting available for visitors and local users. Extended consulting available by appointment
- Email consulting available from Internet, BITNET, and Omnet
- Specialized consulting for software libraries, networking and data communications, optimization, multitasking, Cray I/O optimization, segmentation (overlaying) of large applications, math algorithms, NCAR Graphics, IBM PC/AT and Macintosh terminal emulators, and Unix and UNICOS operating systems
- Visitor facilities include access 24 hrs/day, 7 days/week, SUN Workstations, IBM PCs, and Macintoshes for terminal or standalone use, Canon microfilm/fiche reader/printers, community telephone for business use, documentation library (including vendor documentation)

Graphics Support

- Text and Graphics System for both on-site and off-site users, providing 16-mm film, 35-mm color slides, 4x5" color film, microfiche, b&w hardcopy, and videotape (VHS, SVHS, Umatic-SP).
- Xerox 4050 laser printers for paper graphical output
- Color hardcopy output is planned soon
- CGM metafile support
- Remote graphics support includes an NCAR Graphics translator (ctrans) on the front end
- Output mailed to users at remote sites

Strengths and Limitations

Strengths

- High-performance vector processing
- Extensive user support services
- SSD for large I/O applications
- Extensive data archives for atmospheric and oceanographic research
- High-volume, fast access mass storage system
- Extremely high volume graphics output capabilities
- Video support and 16-mm movie making
- Remote job entry system

Limitations

- Few applications outside atmospheric sciences
- Limited memory

Administrative

- Allocations are open to university researchers with NSF grants in atmospheric, oceanographic, and related sciences; grant requests are reviewed by a peer review board composed of NCAR staff and university researchers
- Allocations are also available to government agencies on a cost-recovery basis

Network Access

NCAR has access to several national networks using the TCP/IP protocol, including NSFNET (backbone node) and NASA's Science Network.

Who Can Use The Center

SCD's computing resources are available to scientists and researchers with NSF projects in the atmospheric, oceano- graphic, and related sciences. Accounts must be approved through SCD. Once approved, resources are allocated. Time on the Y-MP8/864 is available to government agencies on a cost-recovery basis. Users with NSF grants should contact John Adams, NCAR/SCD, P.O. Box 3000, Boulder CO 80303, for an application form.