

Other High Performance Computers

- **RCF** - Our 32-processor SGI Origin 300 is our flagship machine.
- **Sandhills** - Also known as “the old Prairiefire,” Sandhills is our 24-node dual processor AMD cluster.
- **Bugeater** - Our original cluster, is an eight node dual processor Intel based pile of machines.

Access Grid

An Access Grid “node” is a conference room or small auditorium provisioned with the equipment to participate in a group-to-group, multipoint video conference. A second Access Grid “node” is currently under construction in the Miller & Paine Building and will soon be available for use.



For information on high-performance computing please contact:

- Dr. David Swanson, Coordinator and a CSE Research Assistant Professor, may be reached concerning general questions or code development and porting issues at:
472-5006 or dswanson@rcf.unl.edu
- Makoto Furukawa, full-time System Administrator, may be reached concerning technical and user account issues at:
472-1648 or furukawa@phase1a.unl.edu
- Lai Lim, Access Grid Node Operator, may be reached concerning event coordination or general information at:
472-3892 or llim@cse.unl.edu

PrairieFire was paid for with NSF/EPSCoR grant money, with additional UNL funding contributed by UNL Information Services, the Center for Communication and Information Science, the Department of Computer Science and Engineering, and the University Foundation.

Miller & Paine Building, Suite 304
13th and ‘O’ Street
Lincoln, NE 68588

UNIVERSITY OF
Nebraska
Lincoln

UNIVERSITY OF NEBRASKA-
LINCOLN

Department of Computer Science & Engineering
115 Ferguson Hall
Lincoln, NE 68588-0115

Phone: 402-472-2401
Fax: 402-472-7767
Email: info@cse.unl.edu

An equal opportunity educator and employer with a comprehensive plan for diversity

High Performance Computing

UNIVERSITY OF NEBRASKA-LINCOLN

Department of Computer Science
and Engineering



PrairieFire Statistics

- PrairieFire is a 128-node Beowulf cluster.
- PrairieFire was constructed in 2002.
- The peak performance reaches 512 GFlops, and in benchmark tests it scores a number of 483.4 GFlops.
- It is one of the most powerful supercomputers in the world, ranking 139th in the November 2002 TOP500 list, which places it 12th among American Academic Institutions.

Technical Statistics

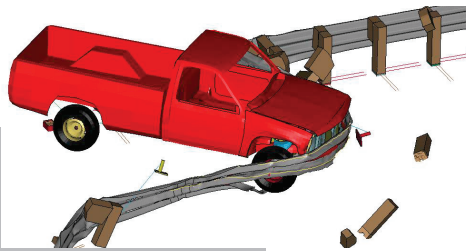
- 256 AthlonMP 1.8 GHz (2200+) Processors (2 per node)
- 160 GB Memory
- 2560 GB IDE disk
- 1140 GB SCSI RAID
- Interconnections with Myrinet 2000 and Fast Ethernet
- Linux Operating system
- MPICH-GM Communications software
- 5.143 Gflops /Node Peak Performance

Current Research Examples

PrairieFire currently hosts 64 accounts from 8 departments and 2 colleges across campus. As a result of its capabilities, PrairieFire has been used for a variety of research. Its computing power allows intensive mathematical problems to be calculated in minutes rather than days.

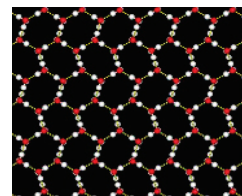
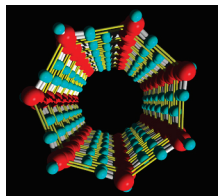
• The Midwest Guardrail System:

John Reid, Associate Professor of Mechanical Engineering, and his colleagues at the Midwest Roadside Safety Facility (MwRSF) spend a significant amount of time simulating real world crash events. The picture below illustrates a short-radius guardrail system currently under development. PrairieFire allows the researchers at MwRSF to evaluate many iterations before expensive crash testing is performed. Other systems recently developed by the MwRSF include the SAFER Barrier, currently being installed at IRL and NASCAR racetracks.



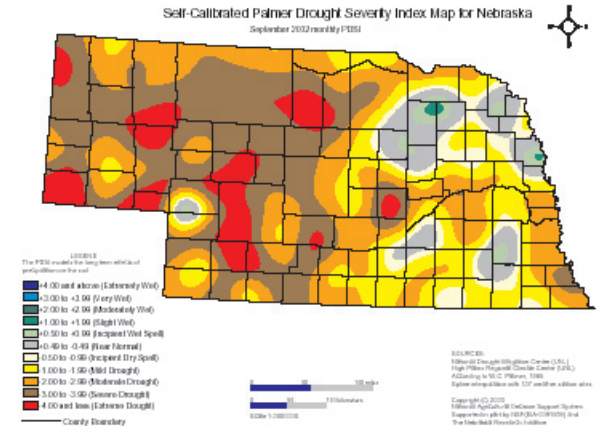
• 1-D and 2-D Crystalline Ice Structures:

Xiao Zeng, Professor of Chemistry, and his co-workers modeled four new kinds of crystalline ice using large-scale computer simulations. Illustrated below is a One-Dimensional Ice on the left and a 2-D "Nebraska Ice" on the right. This research has been published in *Nature*.



• National Agricultural Decision Support System:

Steve Goddard, Associate Professor of Computer Science, leads the National Agricultural Decision Support system (NADSS) project with initial focus on drought risk management. PrairieFire allows for the interactive creation of high spatial and temporal resolution maps, such as the Palmer Drought Severity Index for Nebraska shown below. For more information on NADSS visit <http://nadss.unl.edu>



Application for Account

To apply for an individual account, see <http://rcf.unl.edu/newuser/>

The account application form includes information frequently requested by the University and various funding agencies. Please complete the form to the best of your knowledge. You will be required to enter a research group from a pull-down menu. If your group is not included in the pull-down menu or you have other questions related to the application, contact information is listed on the back of this brochure. After your application is processed, you will receive an email containing either your user name and password, or requesting more information.