NERDC Staffer Pitches In at SuperComputing Conference
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It took 82 miles of fiber, 60 hours of set-up time, and $25 million dollars worth of equipment. Over a six-day period in November 2000, it absorbed the attention of some of the world's leading research scientists and technology experts, representing universities, government laboratories, and industries from all over the globe. It was SuperComputing 2000, a trade show for burgeoning supercomputing technologies, and in the middle of it all was SCinet and NERDC Systems Programmer Greg Goddard. The SCinet network supports the conference and makes it (for the duration of the show) one of the most intense networks on the planet.

Goddard began attending the annual show as a student volunteer in 1998, when he traveled to Orlando to donate his time and gain experience as he completed his degree at UF. This year, for his third show, he was in Dallas as a full-time volunteer member of the SCinet network monitoring team, which handles the networking setup and monitoring for the SuperComputing show. This year's show was also Goddard's first since he became a full-time NERDC staff member, marking UF's first official involvement in the show.

"This was my first year doing network monitoring at the conference," said Goddard. "High-bandwidth applications were being tested that were designed to push the network equipment to the limit, and our group was there to guide the process and watch for problems."

Goddard is used to network monitoring here at NERDC, but keeping an eye on the SCinet network is a much larger project. "Monitoring UF's bandwidth is much easier to deal with than measuring the bandwidth of the SCinet network," he says with a laugh. UF's bandwidth is easier to monitor because its capacity is an order of magnitude smaller than the SCinet-245 (total) Mbps (megabits per second) at UF, vs. 9 to 10 Gbps (gigabits per second) at SCinet.

Goddard shows some of the networking equipment that he helped to set up and monitor at SuperComputing 2000.
Qwest Communications International, which provided backbone connections for the show, also sponsored a new competition this year called the SC2000 Network Challenge for Bandwidth-Intensive Applications. An eight-member panel of international experts judged the entries, and peak performance figures of more than a gigabit of data per second were recorded for two of the applications. The SCinet team, including Goddard, measured this traffic as it moved in and out of exhibit areas, with the total aggregate rate exceeding five gigabits per second throughout the hour-long challenge. This is about 100,000 times more data than a typical residential connection can handle.

To give you an idea of the connectivity provided by SCinet, the SuperComputing 2000 conference provides this comparison with typical Internet connections. A person who uses a dial-up ISP at home typically connects, at best, at 56 kilobits per second (Kbps), or 56,000 bps. A DSL line will usually speed things up to 256 Kbps (or perhaps 640 Kbps in some areas). A DS-3 connection, such as those serving many universities, offers speeds up to 45 megabits (45 million bits) per second. SCinet's three OC-48 (for Optical Carrier) lines each had a capacity of 2.5 gigabits (2.5 billion) per second. Combined with three OC-12 lines (each at 622 million bits per second), SCinet offered a combined peak speed of 9.4 gigabits per second.

Such high speed capability isn't just for show-many of the participants at the SC conference are suppliers or users of the world's most powerful computers, and the ability to quickly and reliably move large amounts of data across networks is essential to advancing scientific research in the United States and around the world.

Goddard will get plenty of use out of the experience he gained at this show. At UF, as the technology moves toward higher bandwidth capabilities, network monitoring is becoming increasingly important. Goddard's work on one of the fastest networks on the planet will prove invaluable in his everyday work at NERDC.
SC2000 was sponsored by the Institute of Electrical and Electronics Engineers Computer Society and the Association for Computing Machinery's Special Interest Group on Computer Architecture. The SC conference consists of several parallel programs: the commercial and research exhibits by the world's top computer and network vendors, three days of technical presentations, two days of specialized tutorials, and a weeklong education program for teachers from around the country. Next year's conference, SC2001, will be held November 10-16, 2001, in Denver, Colorado.

Interested in becoming involved in future conferences? Contact Goddard at gregg@nersp.cns.ufl.edu. For more information about the SuperComputing conferences and SCinet, go to the following sites:

www.supercomp.org
www.sc2001.org
www.sc2000.org
www.sc2000.org/scinet

Millions of dollars in equipment were donated by vendors to comprise SCinet, a network capable of transferring up to 9.4 Gigabits of data per second.

Your Comments are Welcome

We welcome your comments and suggestions on this and all UFIT documentation. Please send your comments to:

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