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CENIC News

President's Message

In October, the University of Southern California, a CENIC Charter Associate, hosted the fall Internet2 Member meeting in Los Angeles.

To facilitate this conference, a 10 Gbps connection was installed between the campus and Abilene via the CalREN hub. The Los Nettos network staff, led by Jim Pepin, spearheaded the installation assisted by CalREN Network Operation Center staff, Sheryl Thomson and Howard Carenza-Pack.

The 10 Gbps connection enabled USC to host an on-campus day during the conference that included numerous advanced application demonstrations. Representatives from California universities and K-12 were among those exhibiting their applications. Phillip Galvez, Caltech, showed a Virtual Rooms Videoconferencing Service; Fei Coa, USC, Medical Imaging; John Fleischman, Sacramento County Office of Education and partner Los Angeles Unified School District, English Language Instruction; Richard Weinberg, USC, Super High Definition Digital Video; and Alexander Sawchuk, USC, Remote Media Immersion.

There was also a multi-location music and dance performance demonstrating the capabilities of Internet2's Abilene. Performers from USC, University of Oklahoma, University of Illinois, Urbana-Champaign, Case Western Reserve University, California State University Hayward, UC Irvine and UC Santa Barbara participated.

The California Orthopaedics Research Network (CORN) was officially launched at the conference. A demonstration of a live surgical procedure on a hand was broadcast from a UCLA operating room to the conference site. From Stanford and the University of Wisconsin, La Crosse, interactive three-dimensional virtual reality images of a dissected hand were transmitted back over Abilene. Twenty-five UCLA medical students interacted from their campus. Ed Johansen, a volunteer, was instrumental in organizing CORN members including USC, UCLA, UCSD and Stanford. Participants in the demonstration included: Wayne Akeson, UCSD, Parvati Dev, Stanford, Neil Jones, UCLA, Anju Relan, UCLA, Chadwick Smith, USC, Randolph Stedman, UCLA and LuAnn Wilkerson, UCLA.

Several other individuals from CENIC Charter Associate Universities led or participated in conference sessions. Mark Crase, Mike Berman and Kent McKinney (CSU) co-hosted a Middleware briefing; Harvey Newman, Caltech, chaired the High Energy and Nuclear Physics Working group; Bill Jepson, UCLA, presented Virtual LA in the opening plenary session; John Silvester and Dave Reese of CENIC gave a report on CalREN; Joe Touch and Yu-Shun Wang, USC/ISI, presented a paper on Tools for Network; John McGee, USC, was on the NSF Middleware panel; John Callas, JPL, presented The Mars Exploration Rovers; David Gulmarez, Dale Harris and Steve Singer, Stanford, presented Applications for Medical Education and Surgical Tracing; John Fleischman, SCOE, Leann Parker, UCOP, Jim Kooler, Governor's Office and Sheryllyn Evans, CENIC participated in the Internet2 K-20 Initiative panel; David Wasley, UCOP, PKI BOF; David Wilson, UC Davis, Remote Instrumentation BOF; and, Ken Lindahl, UC Berkeley, co-chaired the Routing Open Working Group.

Representatives from institutions affiliated with CENIC are actively developing applications and middleware for the advanced networking capabilities of CalREN-HPR and I2's Abilene.

Source: Tom West, President, CENIC

DCP Project Update

The Digital California Project continues to show good progress. The 54th county, Trinity, has recently been connected to the network. Work to update last year's last mile connectivity study is underway, with first phase (connectivity) results expected to be available during the first quarter of 2003. A subsequent phase will involve estimating costs of connecting those schools without connectivity.

The DCP Program Steering Committee met earlier this month. The group reviewed and approved the DCP workplan for the year. A copy of the plan will be available in the DCP section of CENIC's web site by the end of December. The committee reviewed results of a survey of DCP Today subscribers. The survey was conducted to identify whether the publication should be continued (roughly 99% of the respondents said it should) and identified topics of most interest to the readership. Though major changes are not expected, DCP staff will be adjusting the content to respond to survey results.

Source: Jim Dolgonas, COO, CENIC

CalREN Optical Network Update

CENIC became the first GigaPOP with a 10Gig Ethernet connection to the Abilene backbone when the circuit was installed for the recent Fall Internet2 Members Meeting in Los Angeles. CENIC was also instrumental in helping to turn up two of the four 10Gbps wave services for the Distributed TeraGrid project with service now running between Argonne National Laboratories in Chicago and the San Diego Supercomputer Center.

All backbone fiber segments have been turned over to CENIC. Last mile fiber is in place to UCLA; this fiber will be employed to interconnect the current CalREN network infrastructure to the new facilities being developed.

Construction has begun on the last mile fiber at four additional CalREN sites -- UCD, UCR, UCSB and Caltech. Fiber is already available to Stanford and to USC.

As an extension of last mile construction, CENIC is also managing metropolitan fiber construction at San Luis Obispo and Sacramento. Construction to connect the UC Davis Medical Center to the CalREN Sacramento hub site is under way; the San Luis Obispo contract will be awarded this month.

Metropolitan wave division multiplexing (WDM) equipment to light Southern California last mile and metro fiber has been ordered, with installation planned for December. CENIC's other optical network infrastructure and campus last mile plans are in various stages of final planning and initial implementation.

Source: Greg Scott, CENIC, Director, Infrastructure Initiatives and Edwin Smith, Network Implementation Project Manager

Position Announcements: Telecommunications Optical Engineer and Network Engineers

a) TELECOMMUNICATIONS OPTICAL ENGINEER

CENIC is recruiting for the position of Telecommunications Optical Engineer. The position includes working with the CENIC Technology Advisory Council and other groups to ensure the successful planning, development and implementation of new advanced network services and infrastructure; communicating network configuration and design information to the CENIC NOC and monitoring the NOC's implementation for accuracy and compliance with CENIC's standards; and preparing and submitting written and oral progress reports, as requested.

For more information, visit http://128.200.152.71/iase/ASEPage_JobListMenu.asp, select "Information Technology Positions", select "CENIC Telecom. Optical Engineer".

b) NETWORK ENGINEERS

The Corporation for Education Network Initiatives in California (CENIC) is seeking two Network Engineers to provide implementation and engineering support of CENIC's advanced services network, including the CalREN-XD (Experimental Development), CalREN-HPR (High Performance Research), and CalREN-DC (Digital California) networks.

Reporting to the Director of Network Engineering and Design, the Network Engineer's scope of responsibilities includes but is not limited to the following functions: technical network design, including equipment configuration and routing design; network performance and measurement; problem troubleshooting and resolution, including interaction with carriers, vendors, and the CENIC NOC; and project management.

For more information, visit <http://www.cenic.org/about/jobs.htm>.

Source: Brian Court, CENIC, Director, Network Design and Engineering

NGI Roundtable Workshop Call for Abstracts

CENIC is now accepting presentation abstracts for the NGI Roundtable Workshop: Killer Apps – Proving the Need for One Gigabit. The workshop, highlighting current and potential applications made possible through a ubiquitous gigabit Internet, will take place on February 25, 2003 at UCSD's San Diego Supercomputer Center.

CENIC's Next Generation Internet (NGI) Roundtable addresses critical technical, policy, financial and organization challenges facing the delivery of one gigabit broadband to all Californians by 2010. The Killer Apps workshop will bring together the interests of research, education, commerce, state and local government and the general public to explore the applications made possible with the implementation of robust end-to-end broadband capabilities to every education institution, business and home in California.

Proposals from individuals and companies with applications that will be enhanced by or require ubiquitous broadband deployment will be considered. Application areas of interest include, but are not limited to, medicine/healthcare, education, security, government, entertainment, communication, and science.

For more submission information, see <http://www.cenic.org/Workshops/NGI/25February03/CallforAbstracts.html>

Source: Molly Petrick, NGI Roundtable Director

Last Mile K-12 Connectivity Report

The Last Mile K-12 Connectivity Report examines the status of last mile connectivity in California's K-12 educational system as of Fall 2001, and offers recommendations for future connectivity. The full report is available on the CENIC web site at http://www.cenic.org/DCP/Last_Mile.pdf.

National Networking News

NSF Fiscal Year 2003 Budget

Before the Congress recessed to allow Members to return to their Districts in advance of national elections, it passed one appropriations bill -- the FY-2003 Department of Defense budget -- and a Continuing Resolution (CR) to fund 11 federal agencies through November 22. The CR provides funding at the FY-2002 levels, and does not support any new programs or initiatives.

Depending upon the outcome of the election, an additional CR may fund the federal government through December 2003. It is also possible that several Agency budgets could be bundled and passed rather than a single omnibus appropriations bill. And, there's even been talk about a CR through the end of FY-2003.

The House and the Senate have passed separate versions of the appropriations bills for the National Science Foundation. The House bill would increase the foundation's budget by 12.8%, while the Senate bill calls for an 11.8% increase. At this time, it is unclear whether or not a conference will be held after Nov.22nd. Recommendations made in one House that are not addressed in the other House or Conference stand. Therefore, if a conference occurs, the Conferees will consider several new Information Technology initiatives recommended by the Senate in the NSF's Research and Related Activities account.

In particular, the Senate recommended \$90M above the budget request for the Computer and Information Science and Engineering Directorate, including \$25M for cybersecurity research and \$15M for advanced broadband research to support universal availability of broadband in the U.S. as recommended in the National Academy of Science report "Broadband: Bringing Home the Bits."

In addition, the Senate recently passed S. 2182, the Cybersecurity R&D Act allocating \$903 million over five years to the NSF and NIST to bolster security of the nations' public and private computer networks. The bill would establish NSF as the lead agency for improving basic research in cybersecurity and create at NIST a Computer System Security and Privacy Advisory Board. The bill now moves to the House, and is expected to be signed by the President.

Source: Julie Van Fleet

New Software System Detects Cyberattacks

An early version of a new software system developed by University at Buffalo researchers that detects cyberattacks while they are in progress by drawing highly personalized profiles of users has proven successful 94 percent of the time in simulated attacks. The "user-level anomaly detection system" was described at the military communications conference known as MILCOM 2002.

"We have developed a new paradigm, proactively encapsulating user intent where you basically generate a profile for every single user in the system where security is a major concern," said Shambhu Upadhyaya, Ph.D., associate professor of computer science and engineering at UB and co-author of the paper.

Upadhyaya directs UB's Center of Excellence in Information Systems Assurance Research and Education, one of 36 in the U.S. chosen by the National Security Agency to develop new programs to conduct research and train students to protect the nation's information technology systems from cyberterrorism.

The UB system generates a user profile according to data about standard operations and commands that each user follows to carry out specific tasks.

The system is designed to detect significant deviations from procedures followed by normal users.

While some commercially available computer security packages already feature user-profiling, Upadhyaya noted that they are based on "low-level" methods -- meaning they seek out deviations on the basis of huge amounts of data, so they end up creating many false alarms.

The key to the UB system's success and its "scalable" feature is that its monitoring system operates at a high level, examining commands that users execute to perform certain operations. This is in contrast to the low-level monitoring that many existing packages perform, which examine commands as basic as the ones and zeroes of which email messages are composed.

"Our system is looking for a sequence of operations that falls within certain 'normal' parameters," he explained.

"For example, if you want to make a document, you do certain things in a certain order, you create the document, you use a word processing program, you may run Spellcheck. Our system knows what to look for in the normal sequence that is necessary to accomplish this job. Any deviations from that are assumed to be potential cyberattacks."

Source: HPCwire

"Activecampus" Applies Wireless to Classroom and Campus Experience

Researchers Developing Mobile System Infrastructure Researchers at UCSD launched an ambitious project, called "ActiveCampus," to test whether wireless technology can be used to enhance the classroom and campus experience for students and professors alike. Free personal digital assistants (PDAs) and wireless cards, provided by Cal-(IT)² industry partner Hewlett-Packard, were distributed to more than 400 freshmen in computer science and computer engineering. This project is part of Cal-(IT)²'s technology-driven Ubiquitous Connectivity living lab.

For more information, visit <http://www.calit2.net/research/activeCampus/1-29-02.html>

Source: Cal-(IT)² Communiqué

About CENIC

CENIC is a not-for-profit corporation formed by the California Institute of Technology, the California State University, Stanford University, the University of California, and the University of Southern California to facilitate and coordinate the deployment, development, and operation of a set of seamless and robust advanced network services. The CENIC Associates program offers qualified companies the opportunity to collaborate with CENIC in pursuit of the goal of providing the most advanced network services for research and education. Cisco Systems, SBC, and the University and Community College System of Nevada are CENIC's Partner Associates.

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