



## LEADING THE WAY TO TOMORROW'S INTERNET


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**Volume 9, Issue 6**  
**July 1, 2006**

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#### CENIC News

##### President's Message: 2005-06 Year in Review

This past year at CENIC has been one of continued network expansion, in bandwidth and connections both within California and beyond, and as we arrive at the end of the 2005-06 fiscal year, I'm delighted to share with you some of our accomplishments.

In July 2005, CENIC provided UC's newest campus in Merced with fiber paths to CalREN-DC, and this year we delivered a second, Gigabit Ethernet, connection from the Merced campus to the HPR hub sites in Sacramento and Riverside. The Naval Postgraduate School in Monterey has recently become the newest CalREN Associate and was recently connected at Gigabit speeds to the HPR network.

We welcomed the University of Arizona and Arizona State University to the CENIC and CalREN family this year, completing multi-Gigabit connections for both institutions to the CalREN-HPR network. The Nevada System of Higher Education also received Gigabit connectivity to both CalREN-DC and CalREN-HPR, a boost from their previous OC-3 (155 Mb/s) connection speed.

Thanks to the California State University's Campus Access Infrastructure Initiative, which seeks to provide diverse Gigabit connectivity over CENIC-managed fiber or carrier-provided circuits to all Cal State University sites, CENIC installed dual, diverse Gigabit connectivity from the CalREN backbone to CSU's Northridge, Chico, San Jose, San Francisco, Fullerton, and Dominguez Hills campuses. San Diego State is due to receive its second Gigabit circuit in early July. CENIC also provided Fresno, Stanislaus, Sonoma, Humboldt, Bakersfield, and the California Maritime Academy with dual connectivity (including one Gigabit fiber connection), and testing, construction, site visits, or planning are underway for the other CSU campuses, the Moss Landing Marine Laboratories in Monterey, and the Stockton Multi-Campus Regional Center.

CENIC also completed the migration of California's community colleges to CalREN Video Services. With this, all community college campuses are now using the H.323 IP-based video protocol. Data services for Las Positas, Columbia, and Mission Colleges have all been upgraded to DS-3 connectivity, with Palo Verde's DS-3 on target for July. Palomar College became the fourth community college campus to receive Gigabit connectivity, to serve both the campus and CCCSAT (the California Community Colleges Satellite Network) in providing instructional and educational materials to the entire community college system. Other campuses received assistance from CENIC in relocating their telecommunications connections, and CENIC continues to work with the Community Colleges Chancellor's Office to monitor bandwidth utilization and

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propose cost effective solutions that will provide increased bandwidth to several large districts with high utilization rates.

The second phase of the project to bring high-speed connectivity to the Coachella Valley also passed a significant milestone this year. With this project, CENIC created a new fiber loop to the greater Coachella Valley area from Riverside and south from Palm Desert into Imperial County. The first phase was completed in 2005, and with this year's completion of the second phase, the CalREN backbone now extends from Palm Desert through Yuma, AZ and El Centro, CA, returning to San Diego. Thanks to this connectivity, CalREN now features a fully diverse Gigabit network from Riverside to San Diego to provide services to the fast-growing Coachella Valley region.

Of further interest to all our Associate segments are commodity peering improvements; more and more commodity traffic is being exchanged with network peers rather than transit providers, creating an average savings of \$57,000 per month. We reached a major milestone last fall in sending more traffic through the fixed cost, relatively inexpensive commodity peering equipment rather than via the comparatively expensive usage-sensitive commodity transit connections.

Our international connectivity has grown as well. This fall, a pilot program to create a bi-national high school for Hispanic students in highly mobile families will begin, thanks to an agreement between UC College Prep Online, the Imperial County Office of Education, their partners, and Mexico's Colegio de Bachilleres. The Gigabit connection between CalREN and Mexico's CUDI network which became operational on July 1 of 2005 is the foundation for making this program possible. The Central and South American network redCLARA also received a separate 1 Gigabit connection to CalREN. A Gigabit connection between CalREN and the Canadian high-performance network CANet4 was also installed this year as a cooperative effort involving the Canadian Networking organization, CANARIE, and Pacific Northwest Gigapop.

CENIC's Network Operations Center has also moved forward on a variety of projects, such as its Disaster Recovery Plan. Crucial tools have been identified to be replicated at the recovery facility at UC Irvine, and our engineers are engaged in training on how to achieve an incident-free failover. Also, the NOC continues to provide Layer 1 support for National LambdaRail as well as support for their Phase II deployment. And thanks to the survey sent out to customers who have contacted the NOC for assistance, we're able to report a customer satisfaction level of 97%.

It's also been a busy, productive year for CalREN Video Services. Not only was the migration to H.323 completed for all of California's community colleges, but a new scheduling software package powered by the Polycom Conference Suite is being put into place that will enable campus videoconference administrators to schedule and manage their own videoconferences with even greater convenience and flexibility. By the end of summer 2006, all of our Associate sites will be migrated to the new CVS Scheduling Desk.

CENIC has also been delighted to contribute networking support to some of the most significant international conferences of the past year, including SC|05, iGrid 2005, and the US-India Summit on Education, Research, and Technology. And at our own conference, "Your Connection to The World," held in Oakland this past March, attendees enjoyed presentations by some of the best and brightest of California and beyond, including our Innovations in Networking Award winners: David Wasley, the iGrid 2005 team, the MonALISA team, and Loma Linda Connected Communities.

We have also completed plans for future network upgrades. CENIC's core engineering team developed a design proposal for the next-generation CalREN-DC network and presented it to the DC TAC in March to overwhelming approval. A design subcommittee of the HPR TAC also developed design recommendations for the next-generation CalREN-HPR. With the approval of both designs, work will proceed apace, and the upgrade to the DC network will begin in 2007, with the HPR network slated for upgrade in 2008.

In summary, it's been a busy year. Our network has improved for our Associates, our services have expanded, and the reach of CalREN and California's research and education communities has extended beyond both the borders of our state and our nation. New Associates have joined, and existing ones have experienced significant improvements in their connectivity. None of these would have been possible without the tireless effort and dedication of our Associates, our industry partners, especially Cisco and AT&T, and the members of our Advisory Councils and ad hoc groups and committees. California's high-performance networking has improved by leaps and bounds this year, and it's thanks to all of you. We look forward to building on these great accomplishments next year, and working with you to achieve them!

-- Jim Dolgonas, CENIC

#### **Naval Postgraduate School Becomes Newest Member of CalREN-HPR Network**

The Naval Postgraduate School (NPS) in Monterey, CA has become the latest institution to connect to CalREN-HPR at its backbone node located in Soledad, CA. NPS was created in 1909 in Annapolis, MD and moved to its current location on the beautiful California coast in 1951.

Founded to provide advanced education to US naval officers, the Naval Postgraduate School now has a student population of 1,800 from all service branches of the U.S. defense community, as well as from the Coast Guard, the National Oceanic and Atmospheric Administration, and the services of more than 25 allied nations. Today, the school provides more than 40 programs of study, ranging from the traditional engineering and physical sciences to the rapidly evolving space science programs.

CENIC looks forward to the innovations in research and education the Naval Postgraduate School will doubtless provide for its students and faculty with Gigabit Ethernet connectivity to CalREN!

-- Janis Cortese, CENIC

#### **High-Speed Link Achieved Between CENIC's California Research and Education Network and CANet 4**

CENIC, the Pacific Northwest Gigapop and CANARIE completed connection of CENIC's California Research and Education Network (CalREN) to CANet 4, the Canadian research and education network managed by CANARIE. This new Gigabit link was announced at the Canada-California Strategic Innovation Partnership Summit which took place June 11-12 in Vancouver, British Columbia.

CANet 3 was the world's first national-level optical research and education network and remains among the most advanced such networks in the world. The next-generation CANet 4's connection to CalREN is located

in Seattle at the Pacific Wave international peering facility, a partnership venture between CENIC, the University of Southern California and the Pacific Northwest Gigapop.

To read this release in its entirety, visit CENIC's press releases at <http://www.cenic.org/about/releases/releases.htm>. To read the full CANARIE release on the collaboration between Canada and California, please visit [http://www.canarie.ca/press/releases/06\\_06\\_22.html](http://www.canarie.ca/press/releases/06_06_22.html).

### **CVS Scheduling Desk Is Here!**

As mentioned in last month's newsletter, the new CVS Scheduling Desk, powered by the Polycom Conference Suite, is now in full production. With the new system, campus videoconference administrators now have the ability to schedule their own videoconferences directly and are able to view scheduled conferences in a variety of formats.

For those videoconference administrators who have not already done so, we recommend that you first take CENIC's online training, which can be found at <http://training.cenic.org/>. Our online training features animations demonstrating precisely how to create and manage videoconferences, resources, equipment, and users. While there, you can also participate in our CVS Users' Forums where you can engage in discussions and exchange tips and information with other users.

Access to the online training requires a userid and password; to obtain these, please contact CENIC via email to [SchedDesk@cenic.org](mailto:SchedDesk@cenic.org) at your earliest convenience so that you can begin to enjoy the added features and flexibility of the new CVS Scheduling Desk.

Additional information about the CVS Scheduling Desk can be found on our Web site at:

[http://www.cenic.org/services/cvs/PCS\\_Document.pdf](http://www.cenic.org/services/cvs/PCS_Document.pdf)

To learn more about CalREN Video Services and how your campus can take advantage of the benefits of high-quality Video-over-IP over CalREN, please visit:

<http://www.cenic.org/services/cvs/>

-- *Sherilyn Evans, CENIC*

### **CalREN Update: Network Projects and Activities**

Cal State update:

June has been a busy month for the Campus Access Infrastructure Initiative, which seeks to provide all Cal State campuses diverse Gigabit connectivity to the CalREN backbone. On July 10, San Diego State is scheduled to become the latest CSU campus to enjoy redundant, diverse connectivity at Gigabit speeds when the campus receives its second Gigabit Ethernet connection. Cal State Long Beach has received its first Gigabit Ethernet circuit, and work is progressing on the Gigabit Ethernet connection for Monterey's Moss Landing Marine Laboratories. On the CENIC-managed fiber side, San Jose State University is now connected to CalREN at Gigabit speeds, and the infrastructure is in place for the California Maritime Academy to receive the first of two CENIC-managed fiber connections.

Community College update:

CENIC is in the midst of working with several community colleges to move or install new circuits due to infrastructure changes or campus moves. Preliminary planning is underway in preparation to provide new connections during the upcoming fiscal year to various offsite centers in California's community college system which do not currently have direct connections to the CalREN-DC backbone.

K-12 update:

CENIC continues to work closely with the K-12 community on a variety of activities from operational issues to legislative advocacy. CENIC is continuing to work with the Imperial County K-12 Local Education Authority on planning related to circuit upgrades during the year to come.

-- *Ed Smith, CENIC*

### **Network Upgrades for CalREN-DC and CalREN-HPR: The Latest News**

In the March 2006 issue of CENIC Today, you learned that the design proposal to upgrade the CalREN-DC network was overwhelmingly approved by the DC Technical Advisory Committee immediately after our annual conference. Now, the Finance Committee and the Board of Directors have given their approval and the timetable to proceed with the upgrade is underway! This design will increase the speed of the CalREN-DC backbone from 2.5 Gb/s to 10 Gb/s, and includes additional functionality such as IPv6 and jumbo frames, previously available only on CalREN-HPR.

CENIC staff, working with the advisory councils, are developing an RFP for network equipment to support this upgrade. This RFP is expected to be released in July.

-- *Brian Court, CENIC*

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### **National Networking News**

#### **TeraGrid'06: Advancing Scientific Discovery**

More than 450 people from academia, research institutions, government, industry, and education gathered June 12-15 in Indianapolis for the first TeraGrid conference, TeraGrid'06: Advancing Scientific Discovery. The gathering was a forum for individuals and institutions that use cyberinfrastructure to address the challenging computational problems facing our world.

The conference keynote was delivered by National Science Foundation Director Arden Bement, with plenary talks given by Daniel Atkins, director of the newly created NSF Office of Cyberinfrastructure; Kelvin Droegemeier of the School of Meteorology and Center for Analysis and Prediction of Storms at the University of Oklahoma; and Donna Cox, director of Visualization and Experimental Technologies at NCSA.

Source: <http://www.teragrid.org/>

### **FEMA Talks About IT Lessons Learned**

The office of the CIO for the Federal Emergency Management Agency has made several changes in the past year in order to better communicate with state and local officials, support citizens who need assistance, and keep better track of assets such as food and water. Network World Senior Editor Denise Pappalardo recently spoke with FEMA CIO Barry West and Deputy CIO Jeanne Ezzell about some of these changes.

Source: Network Works, <http://www.networkworld.com/news/2006/052606-fema-qa.html>

### **Wireless: What Works?**

Thinking beyond Wi-Fi (and no, this is not another hype of WiMAX), an emerging option you should know about is very high frequency (71-76 GHz, 81-86 GHz, and 91-95 GHz), very high capacity licensed wireless. The technology is known as millimeter wave or E-band, and the FCC also refers to it as "virtual fiber."

At these recently-made-available frequencies, the overall bandwidth capacity is much greater than traditional radio frequency communications, even microwave. These focused, line-of-sight, Gigabit/second signals can be set up in point-to-point configurations for distances of up to a mile. Sounds great, no?

Source: [http://www.campus-technology.com/news\\_article.asp?id=18718&typeid=155](http://www.campus-technology.com/news_article.asp?id=18718&typeid=155)

### **A Process-Oriented Approach to Engineering Cyberinfrastructure**

In the last two decades, computational and information infrastructures have become increasingly important and ubiquitous as enablers for Engineering (and more broadly, NSF) researchers, educators, and practitioners. In 2002, NSF convened a Blue Ribbon Advisory Committee to evaluate the opportunities and challenges in developing and deploying enabling "cyber-infrastructure" for its communities. The committee's report, commonly referred to as the "Atkins report," provides a compelling vision of the opportunities for NSF's research and education communities through the development and provision of enabling cyberinfrastructure.

The next steps to achieving the vision for Engineering described in the Atkins Report is a plan of action for understanding the engineering communities' requirements, resources, and needs, as well as for integrating cyberinfrastructure efforts within the broader portfolio of the Engineering Directorate's research and education efforts.

Source: <http://director.sdsc.edu/pubs/ENG/>

### **NCAR Joins TeraGrid**

The National Center for Atmospheric Research (NCAR) has joined the TeraGrid, the nation's most comprehensive and advanced infrastructure for open scientific research. The announcement was made by National Science Foundation director Arden Bement today at the TeraGrid '06 conference.

As a TeraGrid partner site, NCAR will offer increased access to its high-performance computing, climate data, and tools for data analysis and visualization. Access to these facilities will help Earth system scientists better understand complex phenomena such as global climate change, hurricanes and other severe storms, wildfires, air pollution, solar storms, and space weather.

Source: <http://www.teragrid.org/news/news06/0613.html>

### **Report Outlines Components of Quality Distance Learning**

"Evidence of Quality in Distance Education Programs Drawn from Interviews with the Accreditation Community" is a March 2006 report from the Department of Education's Office of Postsecondary Education. The report is divided into the areas of mission, curriculum and instruction, faculty support, student and academic services, planning for sustainability and growth, and evaluation and assessment. The section on planning for sustainability and growth deserves particular attention as a grounded reference to the level of resources needed to offer truly high quality distance education.

Source: <http://www.itcnetwork.org/Accreditation-EvidenceofQualityinDEPrograms.pdf>

### **Spanning Spaces at Hawaii Pacific University**

Hawaii Pacific University (HPU) is located in downtown Honolulu on the island of Oahu, with another campus on the windward side of Oahu in the city of Kaneohe. More than 5,500 students from every state in the United States, and from more than 100 countries, attend classes on one of our two campuses. Approximately 3,000 additional students attend HPU on eight military bases located on Oahu.

To provide efficient and fast technical support to our students enrolled in the online Distance Education Program, we initially used a leading Web conferencing provider for remote control capabilities. The school's IT staff, a mix of full-time employees and Computer Science majors, found that it was much easier to guide students through the technical support process when they were able to take control of the student's computer ...

Source: [http://www.campus-technology.com/news\\_article.asp?id=18672&typeid=156](http://www.campus-technology.com/news_article.asp?id=18672&typeid=156)

### **Taming the Digital Beast**

No one will dispute that academic institutions excel at generating and collecting knowledge and information, but when it comes to incorporating modern technologies, students have been farther ahead of the curve than their institutions. Too many schools are still mired in paper admissions processes, for instance, while their students are actively trading MP3 files across the school's Internet connection.

Though more gradually than their charges, schools are moving to modern digital media as a means of archiving and accessing their vast stores of knowledge. And campus library sciences professionals are partnering with IT to lead the way as the data and information explosion propels the cause forward. Sharing content has been a leading driver of the digital repository initiative, because, simply put, unshared knowledge isn't knowledge -- it's a secret.

Source: <http://www.campustechnology.com/article.asp?id=18574>

### **S. Florida Educators Use Latest Technology in the Classroom**

The students in Cheryl Zuckerman's sign-language class at Fort Lauderdale's Dillard High recently exchanged ideas with teenagers at Dunkirk High near Buffalo, NY, seemingly oblivious to the camera positioned in the far corner in their classroom.

One of Zuckerman's students joked about how cold it must be up north.

At Broward School Board headquarters, Vijay Sonty watched the conversation on a split-screen computer monitor.

"This is just the beginning -- we're going to cross new boundaries in education," boasted Sonty, head of technology for the Broward school district.

Source: <http://www.belleville.com/mid/belleville/news/nation/14358444.htm>

### **Caltech Names News President: Georgia Tech Provost Jean-Lou Chameau**

Jean-Lou Chameau, the provost and vice president for academic affairs at the Georgia Institute of Technology, has been named the new president of the California Institute of Technology. He will take office on or before September 1. He succeeds David Baltimore, who is stepping down from the presidency after nearly nine years in the post. Baltimore will remain at the Institute, where he intends to focus on his scientific work and teaching.

Chameau, 53, a Georgia Research Alliance Eminent Scholar and Hightower Professor at Georgia Tech, was formerly dean of the Georgia Tech College of Engineering, the largest in the country.

Source: [http://pr.caltech.edu/media/Press\\_Releases/PR12857.html](http://pr.caltech.edu/media/Press_Releases/PR12857.html)

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### **About CENIC**

California's education and research communities leverage their networking resources under the umbrella of a nonprofit corporation known as CENIC, the Corporation for Education Network Initiatives in California, in order to obtain cost-effective, high-bandwidth networking to support their missions and answer the needs of their faculty, staff, and students. CENIC designs, implements, and operates CalREN, the California Research and Education Network, a high-bandwidth, high-capacity Internet network specially designed to meet the unique requirements of these communities, and to which the vast majority of the state's K-20 educational institutions are connected. In order to facilitate collaboration in education and research, CENIC also provides connectivity to non-California institutions and industry research organizations with which CENIC's Associate researchers and educators are engaged.

CENIC is governed by its member institutions. Representatives from these institutions also donate expertise through their participation in various committees designed to ensure that CENIC is managed effectively and efficiently, and to support the continued evolution of the network as technology advances.

For more information, visit [www.cenic.org](http://www.cenic.org).

### **Subscription Information**

You can subscribe and unsubscribe to CENIC Today via the web at: <http://lists.cenic.org/mailman/listinfo/cenic-today>

Website questions: [webmaster@cenic.org](mailto:webmaster@cenic.org)

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