



## LEADING THE WAY TO TOMORROW'S INTERNET


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Welcome to CENIC Today, the monthly newsletter of the Corporation for Education Network Initiatives in California.

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#### CENIC News

##### The President's Message: Congratulations to National LambdaRail

For those of you who have followed the history of the Internet and higher education and research networking, you'll agree that events like the creation of the ARPANET, BITNET, NSFnet, and Internet2/Abilene are major milestones.

This month, another such milestone of equivalent significance was reached by National LambdaRail (NLR, [www.nlr.net](http://www.nlr.net)), which has completed deployment of a state-of-the-art national network infrastructure in support of research and education.

As many of you know, NLR is a consortium of leading US research universities, state/regional networks like CENIC, and private technology companies. In fact, CENIC is proud to be one of the original members of NLR.

Underlying this newly completed national network is a fiber-optic infrastructure similar to that deployed in the CalREN backbone. This owned architecture can provide various types of networking including wavelengths, switched Layer 2 services, or routed IP services with both flexibility and long-term cost predictability and control. Another of the capabilities of NLR provided by its infrastructure is the operation of physically and operationally separate production and experimental networks along the same backbone.

More than a dozen cutting-edge research projects are already using NLR's WaveNet (wave services), FrameNet (Layer 2 switched services), and PacketNet (IP) services. These projects include the National Science Foundation-supported Extensible Terascale Facility and OptIPuter projects; the US Department of Energy's UltraScience Net project; CENIC and the Pacific Northwest Gigapop's Pacific Wave project; the CAMERA project led by Calit2, the Venter Institute, and UCSD's CEOA; the University of Virginia-led CHEETAH project; and Internet2's Hybrid Optical Packet Infrastructure (HOPI) project.

NLR provides California researchers and scientists with advanced networking capabilities not previously available, enabling experiments and international collaborations not otherwise possible. With the completion of its nationwide infrastructure, NLR enables educators and researchers to access advanced networked resources across the nation and globe. Soon, the above listed projects will be joined by many others as the kind of flexible, cost-effective architecture employed in California over CalREN is at last available nationwide.

As an NLR participant, CENIC provides its members with access to the capabilities of NLR, with a primary interconnect in Los Angeles, and optical wavelength (lambda), Ethernet, and IP services. CENIC also shares colocation space with NLR in Sunnyvale and provides the NLR backbone between Los Angeles and Sunnyvale as well.

To NLR, CENIC offers congratulations for completion of the network and thanks for your support for California institutions. We're not alone in looking forward to the discoveries that this new nationwide infrastructure will foster.

-- *Jim Dolgonas, CENIC*

#### **Multi-Gigabit Connectivity to CalREN for University of Arizona Tucson**

In February 2006, CENIC extended its footprint in Arizona to provide multi-Gigabit Ethernet services to University of Arizona Tucson, putting into production Gigabit connectivity to CalREN-HPR. This connection provides the University of Arizona with high-speed access to CalREN-HPR associates such as the University of California, USC/Los Nettos, Caltech, Stanford and others, as well as affiliates such as CUDI/CLARA, and peers such as Abilene and networks connected via Pacific Wave.

As part of this installation, CENIC is also providing three additional Gigabit connections between Phoenix and Tucson for use by the University of Arizona. These connections will be used for private connectivity to Arizona State University, the University of Arizona College of Medicine, and ISP services.

-- *Nihar Mehta, CENIC*

#### **Latest News on the Coachella Valley Fiber Project**

CENIC has completed the backbone infrastructure for the Coachella Valley Fiber Project, which is currently providing redundant multiple Gigabit network connectivity in the Coachella Valley.

In 2005, CENIC completed the first phase of this project with the installation of the Palm Desert Education Complex node, thus providing services for Cal State San Bernardino's Palm Desert Campus as well as UC Riverside's Heckmann Center.

With the completion of this part of the project, the CalREN backbone now extends from Palm Desert through Yuma, AZ, and El Centro, CA, returning to San Diego. CENIC now operates a fully redundant Gigabit network from Riverside to San Diego to provide services to the fast-growing Coachella Valley region.

-- *Nihar Mehta, CENIC*

#### **California Community Colleges Update**

In February 2006, the DS/3 circuit serving Mission College in the West Valley-Mission Community College District was put into production after completion of some necessary on-campus infrastructure upgrades. Welcome to CalREN, Mission College!

CENIC continues to work with the Community Colleges Chancellor's Office to monitor bandwidth utilization and propose solutions that will provide increased bandwidth to several large districts with high utilization rates.

CENIC will also have a presence at the CISOA 06 Conference in April at the Hyatt Regency in Monterey, CA. We will co-present, along with the Community Colleges Chancellor's Office, a presentation titled .Bridging the IT and Research Communities in California through Advanced Networking..

The CCC Chief Information Systems Officers Association (CISOA) represents the information systems professionals working in California's Community College system and provides them with direction and networking, as well as increased visibility for information systems. For more information about CISOA 06, visit [http://www.cisoa.org/index.php?module=shtml&op=load&sid=s1\\_030\\_c06home](http://www.cisoa.org/index.php?module=shtml&op=load&sid=s1_030_c06home) .

-- *Ed Smith, CENIC*

#### **More Developments on Cal State Campus Access Infrastructure Initiative (CAI)**

CENIC's network operations staff completed acceptance testing on three additional Gigabit Ethernet circuits for Cal State campuses at Fullerton and Dominguez Hills, and San Jose State University. Cal State Fullerton put its second GigE circuit into production already and is now dually connected at GigE speeds.

Cal State Dominguez Hills is scheduled to put their second GigE circuit into production in early March, while San Jose State's migration date is still pending.

The Cal State system has recently requested that CENIC work with them on solutions to provide connectivity or increased connectivity to several off-site centers located throughout the state. The CAI project team is currently examining the various telco, infrastructure, business, and campus issues necessary to provide connectivity to these off-site centers.

An updated CAI installation schedule is available online at <http://www.cenic.org/projects/cai>.

-- Ed Smith, CENIC

### **CENIC Network Operations Report**

As reported above, NLR has recently completed the deployment of its backbone fiber infrastructure. The CENIC Network Operations Center (NOC) played a major role in this two-year project, partnering with other key players such as Indiana University, Cisco, Wiltel, and Level3 in deployment, testing, and turn-up.

CENIC's NOC has ongoing responsibility for support for the expanded NLR footprint, as well as for sites represented by the other projects detailed above such as the Campus Access Infrastructure Initiative for the CSU campuses, connectivity for the Nevada System of Higher Education, and the Coachella Valley Fiber Project. As the NOC's responsibilities grow, we are working to refine and improve processes and practices in order to ensure efficient and consistent delivery of the highly reliable network services for which CalREN has become known.

Of course, we are always interested in feedback from our community of users and encourage the use of our Customer Satisfaction Survey form to provide us with your input. For anyone who has opened a request with the NOC, the link to the survey is provided in the email note sent upon resolution of a problem or request. For those who have not seen this, you can access the survey directly by going to <http://www.zoomerang.com/survey.zgi?p=WEB22458HFRUZR>.

-- Sherilyn Evans, CENIC

### **CalREN and K12HSN In The News -- Converge Magazine Winter 2006**

If you receive Converge Magazine, you'll already have read all about how CalREN and the K12 High-Speed Network are improving education for California's young people, but just in case you haven't, you can find the article at CENIC's website at <http://www.cenic.org/about/inthenews.htm>. A quote:

"Through the K12HSN and its connections to CalREN, most California K-12 public schools have access to both the commercial Internet and Internet2 resources. Financial savings based on this arrangement are significant.

"For example, CENIC has negotiated significant savings in commercial Internet costs for California K-12 by purchasing in volume. [...] As an example, when California students search the Internet via Google, the traffic never flows across the commercial Internet because Google has entered into a peering agreement with CENIC."

The entire article can be found in PDF form at <http://www.cenic.org/about/inthenews.htm>.

-- Janis Cortese, CENIC

### **CENIC Annual Innovations in Networking Award Winners Announced**

CENIC is proud to announce the winners of its annual Innovations in Networking Award for 2006. With this award, CENIC seeks to highlight network applications by identifying exemplary innovations that leverage the network and have the potential to improve the way instruction and research is conducted, even when the impact of the innovation may not be felt immediately.

CENIC will present the awards at its 10th annual conference March 13-15, 2006, at the Oakland Marriott City Center hotel and convention center. Award winners will also be given the opportunity to present and discuss their application in a special session at the conference.

This year's award winners are:

CENIC 2006 Outstanding Individual Contribution • David Wasley

CENIC 2006 Innovation Award for Educational Applications • Acme Animation • [www.acmeanimation.org](http://www.acmeanimation.org)

- Dave Master ACME Director
- John Ramirez, ACME Art Director
- John Perry, Development Director
- Chris Chavez, ACME On-Air Program Manager
- Elizabeth Brooks, ACME Online Program Manager

CENIC 2006 Innovation Award for Experimental/Developmental Applications • iGrid 2005 • [www.igrid2005.org](http://www.igrid2005.org)

- Larry Smarr, Calit2, UCSD
- Tom DeFanti, Calit2, UCSD
- Maxine Brown, Electronics Visualization Lab, UIC

CENIC 2006 Innovation Award for Gigabit/Broadband Applications • Loma Linda Connected Communities Project • [www.lomalinda-ca.gov/llccp\\_index.htm](http://www.lomalinda-ca.gov/llccp_index.htm)

- Dennis Holloway: City Manager
- W. James Hettrick: Director of Information Systems and Project Leader

- Elliott Patterson: Information Systems Supervisor and Lead Systems Engineer
- Kathy Sorrells: Compliancy and Customer Satisfaction
- Mike Houska: Project Manager for Underground Construction and Installation
- Mark Eggen: Manufacturer Liaison
- Roy Willcut: Network Design and Distribution Specialist
- Jason Patterson: Systems Architect and Senior Systems Engineer

CENIC 2006 Innovation Award for High-Performance Applications • MonALISA • monalisa.cacr.caltech.edu

- Mihaela Toarta (Universitatea Politehnica Bucharest -- UPB)
- Nicolae Tapus (UPB)
- Corina Stratan (UPB)
- Catalin Cirstoiu (CERN)
- Costin Grigoras (UPB)
- Ramiro Voicu (CERN)
- Adrian Muraru (UPB)
- Ciprian Dobre (UPB)
- Lucian Musat (UPB)
- Alexandru Costan (UPB)
- Florin Pop (UPB)
- Alexandru Herisanu (UPB)
- Iosif Legrand (Caltech)
- Harvey Newman (Caltech)

If you'd like to meet these innovators and see their presentations for yourself, be sure to register for CENIC 2006: Your Connection To The World at <http://www.cenic.org/events/cenic2006/>.

Congratulations to everyone, and we look forward to your presentations at this year's conference, taking place on March 13-15, 2006 in Oakland, CA.

-- Janis Cortese, CENIC

#### **CENIC 2006 Conference Update -- "Your Connection To The World"**

CENIC's annual conference is fast approaching, but you can still register at <http://www.cenic.org/events/cenic2006/> up to the first full day of the conference.

The conference will be held this year from March 13-15, 2006 in beautiful, historic Oakland, CA. Located in the heart of Oakland, the Oakland Marriott City Center Hotel is convenient to shopping, day and nightlife, museums, and restaurants that showcase Oakland as a vibrant 21st century city. To learn more about what you can do while there, check out <http://www.cenic.org.events/cenic2006/oakland.html> and find out what Oakland holds in store for you.

To learn about what CENIC's annual conference holds in store, you can also visit <http://www.cenic.org/events/cenic2006/> to get a look at the updated conference agenda, sponsorship information, hotel and travel, resources for speakers including equipment information and a PowerPoint presentation template, and directions to and from the conference hotel.

Time's fast approaching, so register now. We look forward to seeing you there!

-- Sharleen Kim, CENIC

#### **National Networking News**

##### **Cities' Wireless Plans Hit Snags**

There's a battle brewing in cities across the country, one with important implications for schools.

On one side are municipal governments that want to extend wireless Internet access citywide. On the other side are local cable and telecommunications companies fighting to block such efforts, fearing these will cut into their broadband business.

Caught in the middle are educators, students, and other stakeholders who would benefit greatly from the promise of instantaneous, always-on, citywide wireless access. How these skirmishes play out could decide how quickly ubiquitous computing and the evolution of anytime, anywhere learning in these communities can be realized.

Source: eSchool News, <http://www.eschoolnews.com/news/showstoryts.cfm?Articleid=6073>

##### **BlackBerry Suit Threatens School Service**

In a case that could pose significant complications for school leaders and other users of the popular BlackBerry wireless e-mail device, the US Supreme Court yesterday refused to hear an appeal from the device's maker in a long-running patent dispute.

The high court's refusal to hear Canada-based Research In Motion Ltd.'s (RIM's) appeal means that a trial judge in Richmond, VA could impose an injunction against the company and block BlackBerry use among owners of the device the United States, including administrators, teachers, and students in many schools and districts.

Source: eSchool News, <http://www.eschoolnews.com/news/showstoryts.cfm?Articleid=6068>

#### **From Pakistan to Pasadena: Students Hone Grid Skills With International Cooperation**

Over the past 18 months, five students from the National University of Sciences and Technology in Pakistan have traveled to Caltech to develop their grid computing skills. The students, who have already collaborated remotely with Caltech scientists for at least one year, spend six months in California developing grid software and services.

"It's a fantastic learning experience," says Adeel Zafar, one of two NUST students currently visiting Caltech. Zafar and Atif Mehmood, both research assistants preparing to apply to graduate school, started working on grids at NUST in early 2004. They deployed a grid node for the CMS particle physics experiment, then moved to developing Web services for the Grid Analysis Environment.

Source: Science Grid This Week, [http://www.interactions.org/sgtw/2006/0201/nust\\_caltech\\_more.html](http://www.interactions.org/sgtw/2006/0201/nust_caltech_more.html)

#### **Optical Fiber Celebrates 40th Anniversary**

Forty years ago, the concept of transmitting data on light signals through glass was considered madness by many, including the media. However, given the limited capacity of ordinary copper to carry phone calls, engineers at Standard Telecommunication Laboratories (STL) in Harlow, UK, were committed to come up with an alternative technology.

[...]

Out of all the options, Charles Kao and George Hockham working at STL were the first to realize that the idea of sending light down thin bits of glass a few microns across was the most attractive idea. The duo's landmark paper, "Dielectric-fiber surface waveguides for optical frequencies", was published by the Institution of Electrical Engineers in 1966 (see below) and gave the green light to the concept of optical fiber communication.

Source: Fibers.org: <http://fibers.org/articles/news/8/2/9/1>

#### **PUC Names Four to the California Emerging Technology Fund Governing Board**

The California Public Utilities Commission (PUC) today appointed four members to serve on the governing board of the California Emerging Technology Fund (CETF), created to achieve ubiquitous access to broadband and advanced services in California through the use of emerging technologies by the year 2010.

The CETF was established following the Commission's November 2005 approval of the mergers between SBC and AT&T and between Verizon and MCI in California. As a condition of the mergers, the Commission required the merged companies to provide funds to support the CETF.

The members appointed are:

1. Michael R. Peevey, President, California Public Utilities Commission
2. Senator Martha Escutia
3. Mike Volpi, Senior Vice President, Cisco Systems
4. Carol Whiteside, President, Great Valley Center

Source: California Public Utilities Commission, [http://www.cpuc.ca.gov/PUBLISHED/NEWS\\_RELEASE/53686.htm](http://www.cpuc.ca.gov/PUBLISHED/NEWS_RELEASE/53686.htm)

#### **AOL Goes Peer-to-Peer For Video**

AOL will use a peer-to-peer approach borrowed from the file-sharing world of Kazaa and BitTorrent when it begins delivering high-definition Internet video to consumers next month.

[...]

AOL's new video service, called "In2TV," is set to launch in March and will feature high-definition content delivered over the peer-to-peer network.

AOL's approach is similar to the one adopted by the British Broadcasting Corporation (BBC). In 2004, the BBC conducted trials of an "Interactive Media Player" that used BitTorrent P2P technology to offer free access to archived TV programs.

Source: Light Reading, [http://www.lightreading.com/document.asp?doc\\_id=88118&WT.svl=news1\\_4](http://www.lightreading.com/document.asp?doc_id=88118&WT.svl=news1_4)

#### **N.C. Statewide Research and Education Network Boosts Bandwidth, Provides Foundation for Innovation**

A four-year, \$15 million project to enhance North Carolina's statewide Research and Education Network (NCREN) has been completed, providing faster and more reliable services to all of the University of North Carolina's 16 universities, many private universities and colleges, state government, and other nonprofit institutions throughout North Carolina.

The project, called NCREN 3, builds upon North Carolina's nationally renowned advanced network collaboration. NCREN is a collaborative effort among universities, the UNC General Administration, the state of North Carolina, and MCNC, and is operated by MCNC.

"Together with our partners across the higher education institutions in the state, we take a great deal of pride in this accomplishment," said MCNC Chief Executive Officer John Crites. "The NCREN 3 Project was primarily funded by MCNC and is an excellent example of how we have leveraged the strength of this company to support research and education in North Carolina."

Source: MCNC, [http://www.mcnc.org/index.cfm?fuseaction=news\\_item&id=120](http://www.mcnc.org/index.cfm?fuseaction=news_item&id=120)

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### About CENIC

CENIC is charged with designing, provisioning, and operating robust, high-capacity, next-generation Internet communications services through a cohesive infrastructure for its associates and affiliates. CENIC represents the common interests of its associates, who are drawn from California's higher education academic and research communities, and is highly accountable to the institutions it serves in order to fulfill the trust that has been placed with it. CENIC also provides services to California K-12 schools and, in order to facilitate the education and research mission of its associates, to non-California higher education institutions, and to industry research organizations with which CENIC Associate researchers and educators are engaged.

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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