



## PUBLICATIONS

Volume 6, Issue 4  
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### IN THIS ISSUE:

#### CENIC News

- NGI Roundtable Examines One Gigabit or Bust Initiative
- CENIC 2003 - On the Road to a Gigabit
- Digital California Program Update
- New CENIC NOC Under Construction
- Optical Network Update

#### National Networking News

- SCO Throws a Legal Scare at Linux Users
- Art, Artifacts & Slides: Digitization Opens Collections to New Audiences and Uses
- Mosaic Web Browser Celebrates 10th Birthday
- Californians Named as Members of the President's Information Technology Advisory Committee

#### About CENIC

- About CENIC
- Subscription Information

#### QUICK LINKS

**CENIC Today**  
**DCP Today**  
**GB Today**  
**Brochures**  
**Reports**  
**Presentations**  
**Video Presentations**  
**Other Documents**  
**CENIC Home**

#### CENIC News

##### NGI Roundtable Examines One Gigabit or Bust Initiative

Promise, potential and possibilities ignited imaginations at CENIC's NGI Day at CENIC 2003. Kicking-off CENIC's annual conference, the day was chock full of research, updates and news from analysts, NGI award winners and broadband experts. Attendees and presenters spent the day examining the challenges and benefits of fulfilling the NGI Roundtable's initiative of one gigabit to every home, business and school in California by 2010.

Gartner analysts Mark Gilbert and Kathie Hacker were first up in the day's lineup. Gartner was commissioned by CENIC to investigate the potential impact that one gigabit would have on California. Through their research and interviews to examine one gigabit's promise, Gartner uncovered these key findings:

- Responsible leadership is needed to guide statewide broadband deployment
- No one killer application will drive one gigabit
- A \$376-billion upside in gross state product (GSP) by 2010 likely to be facilitated by the implementation of a focused One Gigabit or Bust broadband initiative

Brenda Neidigh from Virginia Tech's eCorridors followed Gartner's presentation. Neidigh pointed out that eCorridors, which is facilitating the deployment of an advanced network infrastructure, has traversed a similar path in Virginia and encountered many of the obstacles now faced by CENIC. As a gigabit trailblazer, Neidigh offered excellent tips for broadband enthusiasts who want to push beyond today's megabit constraints.

With Gartner and eCorridors setting the stage, the subsequent NGI presenters examined the opportunities, challenges and issues for one gigabit from three perspectives: technology, policy and implementation.

Victor Braud of Fiber Channels and Charlie Christ of Semptra Energy reviewed new technology that offers last mile alternatives to service providers' cable and copper. Next, SBC's Fasil Fenikile, Steve Jarvis from Valley Technology Accelerator and Brenda Neidigh of Virginia Tech tackled policy issues. And to close the day, Fred Cohn, Deputy City Manager, City of Monterey: Institutional Networking over the Cable System; Tina Nerat, Redwood Technology Consortium; and Dave Reese, CENIC CTO, discussed implementation.

With most presenters focused on discussing ways to break through gigabit barriers, the successes and achievements of NGI's One Gigabit or Bust award winners were the high point of the day. These broadband addicts discussed how they overcame network bottlenecks and developed gigabit-and multigigabit networks for their communities. As Tom West said, "For some of these folks gigabit is ho-hum." For a complete list of winners, see: <http://www.cenic.org/gb/awards/2003/winners.htm>

### **CENIC 2003 - On the Road to a Gigabit**

The second day of CENIC 2003 began with a keynote address by Alex Lightman, author of the book, "Brave New Unwired World: The Digital Bang and the Infinite Internet." Meeting participants then heard from Woodrow (Woody) Clark II, a senior policy advisor in the office of Governor Gray Davis, about the significance of the DCP for the State of California. The morning session was concluded with a panel session on the Educational Applications of CalREN-DC for K-12 and Higher Education which was moderated by John Vaillie of CENIC. The panelists included Ruth Mary Cradler, Educational Support Systems; Todd Finnell, Imperial County Office of Education; John Ittleson, CSU Monterey Bay; and Harry Powell, Monterey County Office of Education.

Following lunch, CENIC 2003 participants chose between a series of three breakout sessions focused on the three layers of CalREN: CalREN-DC, CalREN-HPR, and CalREN-XD. During the first breakout session, Alan Blatecky of the San Diego Supercomputer Center and Richard Mount of SLAC/Stanford University participated in the HPR Track: Wave Division Multiplexing and Grid Computing; Brian Court of CENIC addressed the DC Track: The New CalREN Network including the Migration of 4CNet; and Vineet Mehta of MIT addressed the XD Track: Bringing Physical Layer Network Research to the Researchers.

The mid-afternoon breakout sessions continued with tracks on the three layers of CalREN: Russ Hobby of Internet2 addressed the HPR Track: On the Road to Achieving End-to-End Performance; David Barnett of the Santa Clara County Office of Education and Susan Bowers of CSU addressed the DC Track: DC Applications-Utilizing CalVIP (video over IP) for Education in California. And, Greg Hidley of Cal-(IT)2 at UCSD, addressed the XD Track: A New Paradigm for Data-intensive Computing and Collaboration Over Optical Networks.

The final breakout session for the day included the HPR Track, with Steven Low of Caltech addressing FAST Protocols to Enhance HPR Application Performance; the DC Track, with David Walker of UCOP discussing Developing Architectures and Practical Technologies to Support Inter-institutional Sharing. In addition, there was a panel session on "California's Finest: Museums, Medicine and Entertainment" with presentations from John Vaillie of CENIC, and Parvati Dev of Stanford.

At the end of the day, many of the participants went "off site" to the Santa Barbara City College campus to observe a groundbreaking collaboration of technology and music during a live "virtual performance."

The keynote speaker on the final day of CENIC 2003 was Peter Freeman, an NSF Assistant Director with responsibility for the Computer and Information Science and Engineering (CISE) Directorate. Following the keynote were two panel sessions which were moderated by John Silvester, CENIC's chairman. The first panel addressed the Applications and the Science of Experimental Networks and included Dan Blumenthal of UCSB, Greg Hidley of Cal-(IT)2 at UCSD, Bob Aiken of CISCO, and Richard Mount of SLAC/Stanford. The second panel was on Meeting the Research Need with the NLR (National Lambda Rail), the New National Research Fiber Backbone, and included Javad Boroumand of CISCO, Tom West of CENIC, and Jim Williams, a consultant.

At the close of the NLR session, participants were able to pick up a box lunch before heading off to the afternoon's tutorials: Network Security with Mike Iglesias of UC Irvine and Eugene Schultz of Lawrence Berkeley National Laboratory; and Optical Networkong with Dan Blumenthal of UCSB.

Presentation slides can be viewed at <http://www.cenic.org/events/cenic2003/agenda.htm>

### **Digital California Program Update**

It has been a very productive and busy time on the DCP front. With the addition of Alpine County in April we now have connectivity to 56 out of California's 58 Counties. The remaining two counties without connectivity are Del Norte and Humboldt counties for which the telecommunications carriers have no network infrastructure to support the type of high speed networking the DCP provides. CENIC engineering staff are currently examining alternatives and ways around this problem, including the use of microwave technology. Round 2 Node site installation is also underway and this process is scheduled to be completed in the next few months. When completed, the build out will result in 76 node sites.

School district proposals for Last Mile grants have been solicited. The objective of the Last Mile grant program is provide funding to connect the least connected schools. Among those that meet minimum participation standards, DCP will chose randomly those to receive grant awards. Awards and funding are expected to be completed by the end of the fiscal year.

The April meeting of the Program Steering Committee (PSC) focused on tools and the role that the DCP could play with respect to the dissemination of information about tools and their use. The PSC saw the following product demonstrations: the Open RCT program, a free online collaboration tool to support distance learning by Dick Walters; the Tapped In tool, which facilitates online collaboration and communities of practice by Mark Schlager; and LessonLab, an online learning platform that supports the use of videos in instruction by Mitch Gordon. DCP staff also indicated that many other useful exist.

The chair of the PSC since its inception, Jack McCredie, CIO and Vice Chancellor at UC Berkeley announced his resignation so he could serve on a board of the Internet 2 organization. The members of the PSC thanked Jack for the leadership and service he had demonstrated over the last three years, and welcomed David Meaney, Superintendent of Schools from Sacramento County, and former Vice Chair, as the new Chair of the PSC.

DCP staff are also currently finalizing reports of last mile connectivity data collected at the end of the calendar year. Two versions of the Last Mile reports, Statewide and Regional, are being prepared. According to data gathered for the reports, 71% of K-12 schools were connected to the CalREN DC network. District

connectivity rose to 82%. DCP staff are working with communications carriers to identify the cost of connecting the remaining schools and to help develop strategies to close the gap until 100% of public K-12 schools have access to the DC network at speeds that are at least T-1 speed.

The DCP Federal E-rate application has passed the first hurdle and has been accepted. DCP is hopeful of receiving discounts (as we received in the current year) to fund the backbone network costs and fund grants for schools and districts to implement Last Mile Connectivity. More information on the status of our application should be known within the next two months

Source: Jim Dolgonas

#### **New CENIC NOC Under Construction**

After the CENIC NOC Advisory Committee (as referred to in the February issue) reviewed responses to the NOC RFP, the committee unanimously concluded that operating a NOC internally was a better solution for CENIC than was outsourcing. As a result, CENIC is creating an internal NOC capability. The Advisory Committee will continue in its consultative capacity while the new NOC is put into operation. The Committee will provide input and advice on a variety of issues and topics associated with NOC services, including the selection of a trouble ticketing system, and the identification of standard NOC reports, internal operating procedures, etc. Members of the Advisory Committee include Catherine McKenzie, Community College Chancellor's Office; Michel Davidoff, CSU Chancellor's Office; Celeste Anderson, ISI/USC; David Wasley, UC Office of the President; and Jerry Keith, UC Riverside. CENIC is seeking a number of highly-qualified staff members to complete the new NOC. See <http://www.cenic.org/> for details.

Source: Jim Dolgonas

#### **Optical Network Update**

Cisco successfully completed installation and testing of the San Diego to Los Angeles and the Los Angeles to Sunnyvale backbone paths. These two backbone segments were completed on time and as scheduled. The equipment for the Sunnyvale to Sacramento backbone path has been installed, with site and route testing scheduled to be completed in mid-June. The equipment on the redundant backbone path between San Diego and Los Angeles has been installed, and site and route testing is scheduled to be completed in late June. During the month of June, Cisco is scheduled to conduct their site surveys on the backbone path between Los Angeles and Sacramento, commonly referred to as the Central Valley segment. The target completion date for this segment is early August.

SBC is also on schedule with the deployment of their Enhanced GigaMAN (EGM) services. UCOP, UC Berkeley and UCLA are scheduled to have their EGM services delivered on or before May 30. The remaining sites are expected to get their connection delivered during the month of June.

CENIC Engineering staff have installed routing and switching equipment in backbone locations from Los Angeles to Oakland and are working with campuses to install optical equipment for campus last mile connectivity.

Even though the NLR agreement was only recently announced, preliminary scheduling work is already underway in preparation for testing and measuring backbone fibers characteristics.

Source: Ed Smith & Brian Court

#### **National Networking News**

##### **SCO Throws a Legal Scare at Linux Users**

In the latest chapter of an intellectual property battle that threatens to derail the open-source software movement just as it is beginning to catch on among schools, SCO Group-which owns key components of the Unix operating system-has sent letters to Linux customers claiming the software is an "unauthorized derivative" of its property.

Source: eSchool News Online

##### **Art, Artifacts & Slides: Digitization Opens Collections to New Audiences and Uses**

The collections of art and artifacts housed at museums, libraries, and academic departments on the University of California campuses draw scholars, as well as the public, from around the world. But the keepers of these cultural treasures have struggled with the issue of how to make them accessible to a wider audience so that they may serve a greater educational mission. Digital technology creates unprecedented opportunities to make these artistic resources more accessible and usable as tools for scholarship and instruction. However, it's not an easy transition - digitizing tens or hundreds of thousands of slides, documents and artifacts, making them easily findable, and facilitating their instructional use represent formidable challenges not faced by initiatives to digitize text. <http://www.uctltc.org/news/2003/05/feature.html>

Source: UC Teaching, Learning and technology Center (TLtC)

##### **Mosaic Web Browser Celebrates 10th Birthday**

Ten years ago, the world's first freely available Web browser to allow Web pages to include both graphics and text was developed by students and staff working at the NSF-supported National Center for Supercomputing Applications (NCSA) at the University of Illinois, Urbana-Champaign. The Mosaic Web browser spurred a revolution in communications, business, education, and entertainment that has had a trillion-dollar impact on the global economy. "Without Mosaic, Web browsers might not have happened or be

what they are today" said Peter Freeman, NSF assistant director for Computer and Information Science and Engineering (CISE). "The growth of the Web and its impact on daily life shows the kind of dramatic payoff that NSF investments in computer science research can have for all areas of science and engineering, education and society as a whole."

Source: <http://www.nsf.gov/home/news.html#story4>

#### **Californians Named as Members of the President's Information Technology Advisory Committee**

The President's Information Technology Advisory Committee (PITAC) was established by Executive Order and is chartered by Congress under the High-Performance Computing Act of 1991 and the Next Generation Internet Act of 1998. PITAC will help guide the Administration's efforts to accelerate the development and adoption of information technologies vital for American prosperity in the 21st century.

Californians named to PITAC are: co-chair Marc Benioff, Ruzena Bajcsy, Harold Mortazavian, David Patterson and Geoffrey Yang.

Source: <http://www.whitehouse.gov/news/releases/2003/05/20030508-6.html>

#### **About CENIC**

CENIC is a not-for-profit corporation serving California Institute of Technology, California State University, Stanford University, University of California, University of Southern California, California Community Colleges and the statewide K-12 school system.

CENIC's mission is to facilitate and coordinate the development, deployment and operation of a set of robust multi-tiered advanced network services for this research and education community.

More information about CENIC can be found at [www.cenic.org](http://www.cenic.org).

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