



March 2004
Volume 1, Issue 1

Inside this Issue

- 1 Dr. Robert Ballard brings visit to Titanic back to land through CEN
- 1 ERATE approval kicks-off Phase IV CEN Deployment
- 2 Partnership with University of Connecticut introduces Advanced Services Support on CEN
- 2 Network Security Vulnerabilities
- 3 Filtering, Caching Update
- 3 Preparing for a CEN Connection
- 3 CEN Part of International Next Generation Research Network
- 4 Higher Education ISP Program expands
- 4 Library Deployment Update

Connecticut Education Network
Dept. of Information Technology
101 East River Drive
East Hartford, CT 06108
860-622-2991

CEN Update

News for the Connecticut Education Network Community

Titanic to be visited live through CEN



In June, world-renowned researcher Dr. Robert Ballard will return to the Titanic 19 years after he first discovered it. Live video from the expedition produced and presented by

Mystic Aquarium & Institute for Exploration's Immersion Project will be fed in real time over the Connecticut Education Network and Internet2 to institutions throughout the United States.

A Powerful Example of CEN

The CEN is a critical component in the Immersion Project's effort to bring expeditions to the public in real time. Through a satellite uplink on a ship floating over the wreck, live video can be sent to the shore, then across the CEN to the Mystic Aquarium and Institute for Exploration where the video is reprocessed and sent back to the public Internet for access around the world.

School sites that are directly attached to the CEN or Internet2 can receive the broadcast-quality live high-definition feeds directly from the underwater Remote Operated Vehicles (ROV's). This capability, which is not available on the public Internet takes advantage of the CEN's IP multicast infrastructure to make high fidelity and wide bandwidth feeds available throughout the CEN Network.

For more information on the Titanic expedition and how to access its online resources, please visit <http://www.ife.org>

CEN Deployment Phase IV Kicks Off

On January, 19, 2004 the State of Connecticut Department of Information Technology was approved for year 6 federal universal service funds (USF), kicking off Phase IV of the CEN deployment. This phase will expand the CEN leased-fiber backbone from Hartford north through Enfield and west from Milford to Stamford. Other sites in Litchfield County, Tolland County, and New London County will also be added.

The deployment adds services to an additional 200,000+ K12 students at 102 sites and also will connect 10 new higher education campuses. That will increase the total students served from the present 42+% to over 80% of Connecticut's public school students.

This year's application will yield a over 50% reimbursement across all the entities involved in the application. That almost doubles the buying power of the State's investment and allows the CEN to continue the extension of optically based connections to each school district.

The anticipated network growth that begins with these funds keeps the CEN deployment on track for completion in 2005. Assuming continued legislative funding support, we anticipate completion of not only these K12 and higher education sites, but also all eligible principal public libraries during the 2004 and 2005 calendar years.

On February 3rd, CEN filed a year 7 application for the funding year that



Expansion (cont'd from page 1)

begins July 1st, 2004. This application includes activation and installation of additional connections *to every remaining school district and library in Connecticut*. The CEN team has already received initial application review queries from the USF administrators and we remain hopeful this application will be approved as early as June, 2004.

Estimated timelines will soon be available on the CEN web site at www.ct.gov/cen

University of Connecticut adds Advanced Services Support to CEN

In July, 2003, the Department of Information Technology and the University of Connecticut signed a Memorandum of Understanding to create a joint Connecticut Education Network Advanced Services Center, or CEN-ASC.

The CEN-ASC will hire a small team of technical individuals to support emerging technologies, higher education services, and continued deployment of the CEN

network. The intention is to have this team spend approximately 50% of its time assisting in network support, while 50% of its time will be dedicated to outreach to CEN participants to help them envision and implement new services on the CEN. Specifically, the agreement allows UConn to provide the following CEN services:

- Provide high-level engineering and design talent to continue the CEN roll-out, introduce new advanced services to CEN participants, and provide high-level consulting on demand to K12, library and higher education institutions connected to CEN.
- Sponsor access to the National Internet2 Abilene backbone to bring world-class international access to high speed networking to all CEN connected K12 and library locations, and optionally to all Connecticut institutions of higher education.
- Provides access to Internet2 related consortium purchasing programs for Internet services for higher education sites and provide primary access to the CEN itself for K12 and Library sites
- Promote the State's participation in regional and national next generation networking efforts, including joint formation of the North East Research and Education Network (NEREN) organization with New York, Rhode Island and Massachusetts.

Robert Vietzke, a UConn employee who has previously led the CEN network architecture and deployment at DOIT has increased his CEN responsibilities to full time and serves as this group's Director.

In November, 2003 Robin Brown joined the team as a Senior Network Security Analyst. Doug Gregory also moved in to

Network Security Requires Constant Vigilance Don't take it personally!

Today's hacker community has become adept at exploiting known system and software vulnerabilities. They indiscriminately scan the Internet for vulnerable hosts to exploit.

The Sans Institute and the FBI compiled a list of the most commonly exploited system vulnerabilities. This is intended to be a guide to addressing the most critical and potentially damaging problems for those organizations lacking the resources of a technically advanced security administration team.

Top Vulnerabilities to Windows Systems

- [W1 Internet Information Services \(IIS\)](#)
- [W2 Microsoft Data Access Components \(MDAC\) -- Remote Data Services](#)
- [W3 Microsoft SQL Server](#)
- [W4 NETBIOS -- Unprotected Windows Networking Shares](#)
- [W5 Anonymous Logon -- Null Sessions](#)
- [W6 LAN Manager Authentication -- Weak LM Hashing](#)
- [W7 General Windows Authentication -- Accounts with No Passwords or Weak Passwords](#)
- [W8 Internet Explorer](#)
- [W9 Remote Registry Access](#)
- [W10 Windows Scripting Host](#)

Concentrating your efforts on protecting your networks and systems against these top vulnerabilities will give you a good start to keeping your network available when you need it most.

SANS recommendations for protecting your network assets can be found at: <http://www.sans.org/top20/oct02.php#index> . For assistance from the CEN-ASC team on security issues, please call Robin Brown at 860-622-2991.

Advanced Services (Cont'd from Page 2)

a permanent Network Technician position. One outstanding position search for a CCIE level network engineer is still being reviewed.

When fully underway, this team can provide a level of support, consulting and insight that many CEN participants cannot afford individually on their own. CEN users are encouraged to think creatively about how they will use this new resource. The CEN-ASC team can be engaged for "free consulting", for security training, for network design or for technical support of advanced applications.

The CEN Advanced Services team can be reached at the Department of Information Technology at 860-622-2991.

N2H2 Filtering News

The CEN N2H2 Sentient filtering system and cache engines have recently been upgraded to accommodate the significant growth CEN has seen in K12 and Library connections over the last 12 months. Two redundant cache engines are now inline to handle over 310 Mbps of filtered web-traffic throughput. Additionally, a backup N2H2 server is being configured to assure continued high availability of the filtering system

The CEN team is also working to expand redundancy in the caching and filtering complex as the network grows. In summer, 2004, the filtering system will be divided into several sub-groups, to allow greater fault protection for this critically important piece of many K12 connections.

N2H2 has recently released software that includes a reporting feature that would allow CEN to email regular reports to filtering administrators. The CEN team is presently testing this reporting feature and will announce its availability once a production upgrade is scheduled.

Preparing for your CEN Connection

Many factors affect the timing of a CEN installation once a site has been scheduled for a deployment wave. Items ranging from the quality and age of the telephone poles surrounding a site, through environmental issues inside a building can impact installation and incur unanticipated costs.

Sites anticipating a connection can prepare by reviewing the following: Please call the CEN team with questions.

- For CEN optical connections, verify that a path exists from the telephone poles or underground telephone conduits near your building to your server facility. In many cases sites do not have spare underground conduits in to a building, but an aerial path can be identified. In other cases, site electricians are able to prepare a path in advance of the CEN installation on a schedule that is more convenient to school schedules.
- Install a dedicated power outlet, on emergency power if available, at the site where the CEN connection will be located. CEN recommends a dedicated 1200 watt UPS and a feed from an emergency generator to assure network availability.
- Clear rack space or wall-board space to terminate the fiber cable and mount the CEN equipment. For optical installations, the CEN requires 10 rack-units or 17.5 inches of empty space in an equipment rack. In some instances, the CEN's vendor is also required by regulatory policy to locate equipment on wall-board where the traditional telephone demarcation point is, even if this location is not near the district's network equipment.

CEN Part of Next Generation Internet2

Through the sponsorship of Connecticut's two Carnegie designated research institutions, Yale University and the University of Connecticut, the Connecticut Education Network now connects to the Internet2 *Abilene Network*. Internet2 is a collaborative effort by over 210 U.S. universities to develop advanced Internet technology and applications vital to the research and education missions of higher education and K12. The CEN's physical connection to Internet2 is provided through the University of Connecticut CEN-ASC partnership.

The decision by the Internet2 community to extend access to *Abilene* and to engage innovators from all sectors of education in the development and deployment of advanced network services and applications, evolved through conversations among various Internet2-related councils and groups and discussions among Internet2 members.

Examples of resources now available on CEN and Internet2 include the high fidelity Health Sciences Career Series, the Lewis and Clark Expedition tools, a world tour language exchange program, American Sign Language video-based learning objects. These and many other learning tools can be found at <http://k20.internet2.edu>.

Connecticut's CEN network is one of only a small handful of state networks truly capable of delivering Internet2 capabilities to every school district and campus in the State. Whereas almost every state except Connecticut has network bottlenecks between their Internet2 connections and each school district, CEN's optical architecture actually extends research-university grade networking all the way to each school district.

For more information on Internet2, call the CEN ASC team at 860-622-2991.

Preparing for a Connection (cont'd)

- o Understand your inside and outside network routing topology. If you have a firewall, the CEN conversion should be fairly straight forward. If your site does not have a firewall, or if the router that services your remote sites is also the router that connects you to the Internet, call the CEN team as early as possible to begin discussions on how CEN will connect to existing infrastructure.
- o Create an updated list of Internet domain name (DNS) entries used for servers at your site. The list should include IP addresses, DNS names. It is also important to know where the actual records are hosted and who has designated authority with the DNS registrar to re-point those records.

CEN Budget Update

The Governor's proposed budget includes a \$5,000,000 appropriation for the CEN in fiscal year 2005. In a continuum of budgets, this is the anticipated level of funding required to complete the CEN deployment in 2005.

While this is good news, it remains troubling that the package of administrative bonding for fiscal year 2004 where CEN's funding was planned never was passed by the legislature. Along with CEN, certain projects at higher education institutions also remain unfunded. The CEN is encouraged by indications that the State intends to remedy these deficiencies, but remains watchful that additional action is still required for this \$5,000,000 funding gap in FY'04 before moving into FY'05.

CEN will continue to require annual appropriations to support both the ongoing network construction, and also operating costs for Internet access, equipment maintenance and staffing.

Your support is appreciated in conveying the program's importance and its relationship to local budget savings to the legislature.

ISP Program for Higher Ed expands

Over the past six months, a growing number of institutions and programs beyond K12 have begun to use CEN as their primary or backup Internet service connection. Three of the four public colleges, three private colleges, an Aquarium and a digital library all use CEN to attach to the commercial Internet, or the non-commercial Internet2.

Through bulk-purchasing agreements with higher education institutions across the country, CEN is able to offer access to commercial providers through this program at between 50% and 80% less than individual institutions might pay on their own.

CEN has added staff, through the CEN-ASC partnership with UConn to support the additional needs of the program and the requisite 7x24 support of the ISP peering services.

At present, Internet service from Qwest Communications and Internet2 are available. CEN anticipates making a second commodity Internet provider available during July, 2004 in anticipation of the fall 2004 academic year.

Library Deployment Schedule for '04

CEN currently provides connectivity to a small number of libraries originally connected to the Connecticut Library Network through a partnership of the Connecticut State Library and the Connecticut State University. CEN's 1st priority for library connections, using funds from the Year 6 Erate application, is to upgrade connections to those sites.

The CEN team is also working with the State Library and the Library Service Centers to develop a model for connecting to the remaining libraries in the State. CEN has applied for USF support to connect each Library Service Center and the principal public library in each town to the CEN.

Libraries interested in determining scheduling for their location should visit the CEN website's "Network Deployment" section at <http://www.ct.gov/cen>.

CEN 7x24 SUPPORT MAIN NUMBER *DOIT HELPDESK 860-622-2300*

Connecticut Education Network Support Staff

Robin Brown, Senior Security Analyst	860-622-2139
Sheri Devaux, CEN Filtering and DNS Administrator	860-622-2455
Doug Gregory, Network Technician	860-622-2998
Christine Northrup, CEN Filtering and DNS Administrator	860-622-2512
Julie Scribner, Enterprise Network Support	860-622-2573
Peter Polanski, Enterprise Network Support	860-622-2573
Rob Vietzke, Network Architect & Director of CEN ASC	860-622-2238
John Vittner, Co-program Manager	860-622-2241