



February 2, 2007

Dear Colleagues,

It has been an exciting several months for the roll-out of the new Internet2 Network. The network span from New York to Chicago is live, and has already been used for production network traffic, a 100 gigabit Ethernet service trial, and rapid provisioning and re-provisioning for the Fall Member meeting in Chicago. We continue to learn about the expanded capabilities of the new infrastructure as we begin to use them.

In our November update to the Community, we promised regular progress reports on the new network. This update makes the third of those, following on the original update in November, and a series of sessions at the Fall Member meeting in December.

We will be sharing more details in the coming two weeks informally in Tempe at the Net@EDU and Statenets meetings, and then again the week after at Joint Techs in Minnesota.

### **Internet2 Network Deployment & Transition**

Progress on the new Internet2 Network continues on track in the New Year with turnover of collocation sites in Philadelphia, Pittsburgh and Cleveland in early January. Internet2 and the Global Research NOC are actively working to install equipment in these cities and continue the transition of connectors from the Abilene backbone to the new network. New York, Boston and Philadelphia connectors are using the new network as of this writing. The plan calls for connectors in Washington, Philadelphia, Pittsburgh, Buffalo and Cleveland to move off of Abilene before the end of February.

The next large phase will include the ring from Chicago to Atlanta to Washington DC, passing through Indianapolis, Louisville, Nashville, and Raleigh. Internet2 will receive collocation from Level(3) in early February, with the dedicated wave system scheduled for March 2. Connectors along this path should be thinking about transitioning their connections between March 2 and mid April.

An important step in transition that depends on timely action by connectors is ordering the final cross-connect from their facilities to the new Internet2 suite. While remaining a connector-funded cost, this last cross-connect replaces the current Qwest monthly "backhaul" service fee and should result in a substantial cost reduction to connectors.

A more detailed view of the activities to date is online via Chris Robb's excellent "unofficial" blog at <http://i2net.blogspot.com>. Specific questions about transition are welcome and can be directed to Rob Vietzke at [rvietzke@internet2.edu](mailto:rvietzke@internet2.edu).

## Upcoming Abilene to New Network Connector Transitions

<u>Connector and Location</u>	<u>Transition Status</u>	
NYSERnet New York City	Complete	
Northern Crossroads	Complete	
MANLAN - New York City	Complete	
HOPI - New York City	Complete	
MAGPI	Complete	
New York City Router Swap	Complete	
Chicago Extension to 710 NLSO	Complete	
Indianapolis Router Swap	Scheduled 2/1/07	
NYSERnet Buffalo	Week of 1/29/07	
MREN (Chicago)	Week of 1/29/07	
Starlight	Week of 1/29/07	
HOPI (Chicago)	Week of 1/29/07	
Washington Router Install	Week of 2/5/07	
MAX	Week of 2/5/07	
HOPI (Washington)	Week of 2/5/07	
NGIX (Washington)	Week of 2/5/07	
3ROX	Week of 2/19/07	Pend. Ciena T&TU wk of 2/5/07
Drexel	Week of 2/19/07	Pend. Telcove delivery wk of 2/15 on 2/15/07
N. Lights (Indianapolis Link)	Week of 2/19/07	Pend. BOREAS acceptance of their network
MERIT (Indianapolis Link)	Week of 1/29/07	Temporary via Chicago pending
OARnet (Indianapolis Link)	Week of 2/5/07	Joint work with OARnet
		Pend. OARnet Cleveland Project
<u>Next Set of Transitions</u>		
University of Louisville	After March 2nd	
SOX/SLR	After March 2nd	
Nashville	After March 2nd	
Lanet / LONI	After March 2nd	Pend. LONI fiber project

### Regional and State Network Coordination

Internet2 Regional Coordinator Ana Preston continues to work directly with connectors and regional and state networks to collaborate on issues and concerns around new network transition and services. Several meetings have been held in different regions to specifically address transition requirements and to forge closer working relationships between Internet2 and connectors.

The Internet2 Board of Trustees established a new Internet2 membership category for state and regional networks, based on input from these constituents to the Governance and Nominations Committee and to NPPAC. This membership category is the first major step in ensuring that the regionals and state networking organizations have appropriate recognition and involvement in Internet2 going forward. The text of the resolution passed by the Board can be seen at <https://wiki.internet2.edu/confluence/display/I2BoardTrustees/Home>

On February 4, representatives from the Quilt and StateNets group will be meeting with members of NPPAC to begin fully articulating the goals, definition and implementation of this new membership category. The hope is that the new category will be in place in the next few months. Questions can be directed to Ana Preston, [apreston@internet2.edu](mailto:apreston@internet2.edu).

### **Multiservice Switched Infrastructure & Dynamic Services**

The development of user-controlled dynamic lightpaths across the backbone continues. Internet2 is pleased to have engaged Tom Lehman as a consultant directing the control-plane development for these new services. The first step is to adapt the DRAGON control software to the Ciena infrastructure. This will be done in part through a test environment established between Bloomington and Indianapolis at the Global Research NOC. Coordination with the GRNOC to support the new dynamic services is also underway.

A new Internet2 Network Service Description document is under development which highlights the dynamic capabilities of the new network and options for connecting to the backbone. The first draft of this document was presented at the Internet2 Fall Member Meeting, with positive feedback. Work will continue at the Joint Techs conference and Spring Member meeting to further develop this document:

<http://www.internet2.edu/presentations/fall06/internet2-network-service-descriptions-12042006-v1.0.pdf>

This development work continues in partnership with ESnet, GEANT, CANARIE, and other international partners. This coordination effort assures that as each piece is completed, it will have international reach and application. There are a small number of service trials under way with GEANT to understand all the issues.

### **Commodity (Transit/Peering) Services**

The Internet2 Commercial Peering beta trial continues to evolve with the addition of new network peers, migration of existing services to a new 10Gbps connection to PAIX Palo Alto (to facilitate additional peering), as well as the turn-up of new beta testers. The Network Technical Advisory Committee (NTAC) has been asked to provide Internet2 with a recommendation on the AS used for the peering overlay network. Currently the beta trial is using the same Abilene identifier (AS11537), but this may change based on the NTAC's recommendations. Internet2 is also exploring the potential for using some of the new network's provisioning flexibility to provide alternate implementation options for the commercial peering services as well as the commodity transit service. We anticipate an opportunity to provide additional updates during the Joint Tech's meeting Feb. 11 - 15 in Minneapolis.

### **FiberCo and WaveCo**

Internet2 continues on a number of projects that allow member institutions and networks to use FiberCo and WaveCo services to build and manage their network infrastructure.

FiberCo is a service available to Internet2 members to enable them to acquire, hold, and distribute fiber optic network assets. FiberCo provides intercity and metro fiber as well as new fiber builds at reduced rates. FiberCo also offers a complete suite of professional services to assist universities and RONS with planning, installing, managing and operating their networking infrastructure, i.e. services ranging from consulting on fiber availability and acquisition, to outsourced network operation center (NOC) services, network architecture/

engineering design, equipment procurement, testing and deployment, and asset tracking. As of January 1, 2007, Linda Roos was named to lead the FiberCo efforts.

Internet2 WaveCo provides Internet2 members cost-effective access to dedicated wavelengths on an extensive nationwide and metropolitan footprint covering more than 33,000 miles of optical fiber. More information can be found by contacting [fiberco@internet2.edu](mailto:fiberco@internet2.edu).

### **Network Technical Advisory Committee (NTAC)**

The NTAC held its first face to face meeting at the last Internet2 member meeting <https://wiki.internet2.edu/confluence/display/ntac/Home>. During the meeting, discussion included the desire to keep NTAC's membership as open as possible. A small subgroup of NTAC members took point in articulating more explicitly roles and expectations for NTAC members. Further discussion during the meeting also included a review of existing technical working groups and of existing or potential areas of interest to charter new technical groups. One of the recent groups created is the Commodity and Peering services working group, chaired by Dan Magorian. For more information about the charter and the group, please contact Dan [magorian@maxgigapop.net](mailto:magorian@maxgigapop.net). Inquiries may also be sent to [NTAC@internet2.edu](mailto:NTAC@internet2.edu).

### **Network Observatory**

Implementation of the expanded Internet2 Network Observatory is well underway. Deployment is continuing concurrently with the deployment of each network node throughout the country. In addition to new measurement capabilities on the Ciena platform, new GPS-enabled timing sources are being deployed in many of the network router nodes to enhance measurement accuracy.

An extended presentation on the new Observatory was presented – and well received – at the Fall Member Meeting: <<http://www.internet2.edu/presentations/fall06/20061206-observatory-summerhillCashmanZekauskasBoyd.ppt>>

Additional sessions on the new measurement capabilities will be available at the upcoming Joint Techs meeting in February and the Spring Member Meeting. Contact Eric Boyd for more information – [eboyd@internet2.edu](mailto:eboyd@internet2.edu).

### **Department of Energy Network / ESnet**

The Department of Energy's ESnet build-out on the new Internet2 network has begun in New York, with installation of new routers and other equipment in January. Work will continue west, following the Internet2 build-out, with Washington and Chicago next in their plans. Visit <http://www.es.net> for more information.

### **Level(3), Ciena, Infinera, Juniper**

Internet2's partnerships with Level(3), Ciena, Infinera and Juniper continue to break new ground. In December, these relationships resulted in the rapid provisioning of ten 10-Gigabit Ethernet waves in less than 35 minutes from Chicago to New York for a field trial of a new 100 Gigabit Ethernet system being developed by Infinera. That demo was followed by reconfiguration and re-provisioning of the same path as a 10-Gigabit Packet on Sonet system in 7 minutes.

Together, these partnerships and the innovations they are creating will continue to make the new Internet2 Network the world's leader in performance, scalability, bandwidth flexibility and cost effectiveness of advanced networking for research and education.

Sincerely,

Steve Cotter  
Rob Vietzke

For more information about the new Internet2 Network, see <http://www.internet2.edu/network/> and for deployment updates from the Global Research Network Operations Center, <http://i2net.blogspot.com>