

JET Meeting Minutes
April 16, 2013

I. Participants

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Action Items

Proceedings

This meeting of the JET was chaired by Kevin Thompson of the NSF.

Roundtable

ACE: Dale Finkelson

ACE is installing a 3rd 10G wave between Frankfurt and Washington to be completed this week. It will be lagged with the 2 already in use.

DREN: Phil Dykstra

DREN is transitioning to DREN3 with Century Link as the provider. Circuits are up and equipment is being shipped. Acceptance tests will be carried out over the next 2 months. The new network is scheduled to be completed by the end of the calendar year.

ESnet5: Patrick Dorn

ESnet5 is completing the installation of 100G production circuits. The 100G wave links were prototypes and are now being converted. NERSC and LBL are now configured and tested and await production. Argonne is being converted next week.

ESnet is bringing up 100G facing peers. They are installing 100G cross-connects with Internet2 at 4 locations. Peerings take place at WIX, MAN LAN, Chicago and

Sunnyvale. MAN LAN is up. PacificWave is turning up a 100G wave at Sunnyvale next month.

The Chicago 100G testbed router is moving from Argonne to StarLight today. There are future testbed plans. Hardware has been ordered to extend to MAN LAN. Chicago will be added to ManLAN in about 2 months.

NIH: Mike Gill

NIH is progressing on implementing a 100G and is considering options for connectivity including College Park, MAX, and Internet2.

N-Wave: Mark Mutz

A backup link between Seattle and Chicago over the Northern Tier Network Consortium's Northern Wave is now operational. N-Wave was chosen by the GOES-R satellite program to provide networking going forward. N-Wave will be installing a DWDM ring around the DC area to provide connectivity to GOES-R and other NOAA sites.

Internet2: Dale Finkelson

Internet2 AL2S installations are proceeding, adding Raleigh, Seattle and Ashburn recently. MXs are being installed. Internet2's link across the northern states from Seattle to Chicago is now in-place and being tested

TransPac: Brent Sweeny

No changes.

WIX/MAN LAN: Dale Finkelson

100G links to ESnet are being installed. ACE' is installing a 3rd 10Glink from Frankfurt.

StarLight: Joe Mambretti

StarLight is working with ESnet to move its a core node for its national ESnet 100 Gbps Testbed backbone from Argonne to StarLight.

The Pacific Northwest GigaPOP is implementing a 100G connection (Northern Wave) from Seattle to the StarLight facility in Chicago.

As PNWGP connects with PacificWave, this new connection in Chicago can reach any PacWave location.

StarLight has worked with the Korean international R&E network to install a 10G link from Daejong to StarLight to support data intensive science applications, including LHC experimental research. The LHCONE community is working to optimize its StarLight services.

StarLight is supporting the GENI mesoscale development, which is in the process of implementing 34 InstaGENI racks and 14 ExoGENI racks at sites around the U.S. and GENI backbone network extensions to connect these racks. InstaGENI racks are being installed at the rate of 3 per month.

Ames NGIX: Mark Foster

Ames is working to get additional carriers at the facility including Level3 to provide diverse routes to Ames. The Nexus gear at the exchange point will be upgraded. ESnet and Internet2 are in discussions with Ames to revamp their links to Sunnyvale.

PacificNorthwest GigaPoP: Jonah Keough

PacificNorthwest GigaPoP (PNWGP) is upgrading to 100G. ESnet has a 100G connection to Sunnyvale. PNWGP has provisioned a NOAA backup link between Chicago and Seattle over the NTNC's layer 2 service, Northern Wave.

Big Data Tasking to the JET: Joe Mambretti

The JET Big Data Testbed team is working to provide demonstrations of Big Data transfers at SC13. These demonstrations include Big Data transfers in cooperation with Sloan Digital Sky Survey modeling between John Hopkins, and Oak Ridge (Jaguar computational facility). This was previously demonstrated at 10G and will be demonstrated at SC13 at 100G. A second demonstration of Big Data transfers will move genomics data between NIH/NLM facilities and the University of Chicago (Bob Grossman).

Eli Dart is working with the High Energy Physics community to demonstrate I/O applications for big data transfers. He is also working to generate a demonstration of a networking accelerator (e.g., Phoebus) and movement of multicast data.

Internet2's Architecture for Layer 3 functions over Layer 2 SDN: Dale Finkelson

Internet2 is holding ongoing discussions with its NTAC and the networking community to consider architectures for Layer 3 functionality over Layer 2 networks. The objectives are to innovate, move forward with the architecture, provide stability of SDN functionality over a Layer 2 network, and to provide experience with SDN. There is also a need to:

- Deploy more tools for the separation of the control and data planes
- Provide a vehicle for community discussions on architecture features
- Consider placement and number of IP routers (likely leaving IP routers at their current locations)

Architectural Strawman

Current architectural concepts call for dual 100G interconnects between Layer 2 and IP boxes at 10 cities. 3 concepts for IGP adjacencies are implemented between IP routers include:

- Natively configured
- SDN configured
- Existing LAG'd 10G Layer 1 circuits

There is a desire to depend on SDN-signaled circuits as soon as possible. A full VLAN mesh will be provided among all routers. There is a need to denote the path, possibly with DNS, and there is a need to define restoration of services.

To test SDN circuits, initially several SDN adjacencies would be implemented to test SDN functionality. Concepts for link failure resolution include OESS restoration or convergence at Layer 3. For edge connectivity existing 10G links will stay in-place. Connections to the AL2S network will support SDN configured connectivity back to diverse IP routers. Connections to AL2S will also support natively configured Ethernet

LANs for backhaul to diverse IP routers. They anticipate aggressive adoption of SDN technology in Year 1.

For edge connectivity to the IP node and the Layer 2 node, 10G circuits will be directed to the IP node and 100G circuits into Layer 2.

Under the roadmap:

- March 2013: Continued discussions of milestones and timing
- April/May: Deployment
- August: Revisit the architecture with the evaluation of additional metrics and tools.

Questioning identified that:

- Performance will be measured at the VLAN circuit level.
- If a circuit is constructed across the infrastructure and a portion fails, OESS will redirect traffic along the secondary path.

Meetings of Interest:

April 21-24	Internet2 Member Meeting, Arlington, VA
April 21-24	ARIN, Bridgetown, Barbados
June 3-5	NANOG, New Orleans, LA
June 3-6	TNC, Maastricht, Holland
June 6-7	Global Integrated Lambda Facility (GLIF) Technical Workshop Maastricht Netherlands
June 24-26	US Ignite Application Summit, Chicago
July 15-16	ESCC, Berkeley, CA
July 17-19	Focused Technical Meeting, Network issues in Life Sciences Research LBL; See: http://events.internet2.edu/2013/ftw-life-sciences/
July 21-23	GEC17, Madison, WI
August 19-23	APAN, Daejong, Korea
September 9-11	CANS, Chengdu, China
October 1-2	Global LambdaGrid annual workshop, Singapore
October 7-9	NANOG, Phoenix, AZ
November 17-22	SC13, Denver, CO

Next JET Meetings:

May 21:	11:00-2:00, NSF, Room I-220
June 18:	11:00-2:00, NSF, Room II-515
July 16:	Evening (exact time TBD), Berkeley, CA