Joint Engineering Team (JET) Meeting Minutes

National Coordination Office for Networking and Information Technology R&D (NCO/NITRD)
490 L'Enfant Plaza SW, Suite 8001, Washington, DC 20024
March 16, 2021 12:00-2:00 p.m. ET
This meeting was held virtually

Participants

Shawn Armstrong, University of Alaska
Joe Breen, UTEN/University of Utah
Rich Carlson, DOE/SC
Bobby Cates, NASA/Ames
Basil Decina, NRL
Dave Diller, MAX
Bill Fink, NASA/GSFC
Jonah Keough, PNWGP/Pacific Wave
Michael Lambert, PSC/3ROX
Paul Lang, NASA/GSFC
Paul Love, NCO/NITRD
Howard Lu, NIH
Joe Mambretti, StarLight/MREN
Christopher Mishaga, NASA/GSFC
Edward Moynihan, Indiana University
Aruna Muppalla, NASA/GSFC
Mark Mutz, NOAA
Linden Mercer, NRL
Kevin Thompson, NSF
George Uhl, NASA/GSFC

Proceeding: This meeting was chaired by Rich Carlson (DOE/SC) and Kevin Thompson (NSF).

I. **Action Items**:

- Internet2 and ESnet updates on their respective new networks.

II. **Review of the Minutes** of the February 2021 meeting: Corrections were received and will be reflected in the posted minutes. (*n.b.*: They were.)

III. D**iscussion of the JET's tasking on tools to help with inter-domain issues – Joe Breen, all**

A. Prototype/pilot: The various pilots are progressing. Work continues to get basic measurement data from different universities and RONs.
   a. Jeronimo Bezerra of FIU/AmLight using community data has built on the Global NOC's Global Research Map a display of the AmLight community from Miami, FL, to South America and South Africa. As soon as IP addresses are added augmented trace route will soon be possible. In developing this Jeronimo has worked with RedCLARA and TENET. With his encouragement they both want to join and share their data.
   b. There will soon be discussions with MERIT regarding the sharing of its data.
   c. Discussions are continuing with OSHEAN and NCSA on their joining and sharing data.

B. Background on efforts lead by Eric Boyd, Joe Breen, James Deaton, Dan Doyle, and Karl Newell:
   a. The project gets basic SNMP metrics from groups around the country that are willing to share for trouble shooting and research. Metrics include link utilization,

discards and errors. These are collected hop by hop as the path crosses multiple domains.

b. Several prototypes are going along with the drafting a basic letter of intent for those wishing to participate.
c. Tools: Telegraf container as an option for local collection. Nearly ready for production use.
d. Tracking sheet of networks willing to share data. Please update your network's entry. See: https://docs.google.com/spreadsheets/d/1pMW_PNVpeT42nAxa3bW4QostMxccHTXkWSPbZOplFwE/edit#gid=0
The spreadsheet also has an embedded link to measurement templates for campus, regional and national networks setting out what data is desired. See: https://drive.google.com/drive/folders/1l-LRyril6u4AvBeY6NlvyYYalNRpjByA
e. The Internet2 Performance Working Group Community Measurement, Metrics, and Telemetry project holds meetings on the second Tuesday for those participating or interested. If you are interested, please contact Joe:
Joe Breen <Joe.Breen@utah.edu>
f. While NASA polices preclude EOS from sharing this data, EOS has an internal perfSONAR (pS) mesh. They are happy to open their firewalls to permit pS testing by prior arrangement. Contact George at:
"Uhl, George D." <george.d.uhl@nasa.gov>

IV. O**perational network security roundtable**

A. 3ROX (Michael Lambert): Google has started to record RPKI status in their dashboard for peers. Google is also noting if the peers are properly registered in the routing registry. At this point Google doesn't appear to be doing anything with this information beyond noting.

V. **Network roundtable**

A. ESnet (Nick Buraglio via email): Work has begun on the IPv6-only mandate at the DoE level. It is very early in the process. Along with other labs and DoE departments, ESnet is participating. Nick is the current implementation team lead.
A. International Networks – Indiana University (Ed Moynihan):
a. NEA^{3}AR: The new 100G New York<>London circuit is operational, joining the 100G New York<>Amsterdam which became operational in January. London is on the AC1 cable while Amsterdam is on AC2. Some work remains for full integration in into the ANA collaboration.
b. perfSONAR (pS) workshops: After a year's delay due to COVID the final pS workshop in Africa was held virtually the first week of February with RENU, the Ugandan R&E network. Ugandan universities and other RENU members participated. As RENU already had some experience with pS so this workshop's shift in focus from a hands on, installation to a usage and benefits to institutions and networks worked. Nodes installed at the universities were 1G. RENU's backbone is 10G. It has a deployed a combination of 100M, 1G and 10G nodes.

c. TransPAC:
    i. Circuits are stable.
    ii. Indiana University continues to work with the new consortium procuring the 100G Guam<>Singapore circuit. Until then the existing 10G Guam<>Hong Kong will remain in use.

B. NASA GSFC (George Uhl): No update today.
C. NOAA (Mark Mutz):
    a. NOAA (N-Wave) is having ongoing conversations with other Department of Commerce (DOC) bureaus regarding internet/TICAP connectivity. Currently connected are DOC's headquarters building, NIST and USPTO. Discussions are in progress with BIS and the Commerce Business Solutions Center.
    b. N-Wave has a major effort underway to expand the sites it supports in Alaska. This includes building a Juneau<>Fairbanks<>Anchorage ring. This will enhance support for N-Wave's existing Alaskan sites and aid support of National Marine Fisheries Service and National Ocean Service sites.
    c. N-Wave is the initial stages of planning a procurement to upgrade its core routers to be able to support 400G. It is working with Internet2 to make use of its new infrastructure permitting N-Waves core sites in Denver, CO, Chicago, IL, Atlanta, GA and the DC metro area to be interconnected with 400G.
D. NRL (Linden Mercer): Planning for SC21 in St. Louis, MO, At this point it's not clear what will be possible. NRL is having good conversations with ESnet on this. Otherwise nothing to report today.
E. Pacific Wave (Jonah Keough):
    a. Pacific Wave (PW) is continuing some exploratory meetings to gain information on networking and interconnectivity issues in Alaska. PW is looking to install a PW node in Alaska in a couple of years. PW would like to move up this timeline. There may be expanded international connectivity options.
    b. PW is continuing some code upgrades in the PW infrastructure.
    c. PW is also starting work on a new monitoring and measurement platform.
F. 3ROX (Michael Lambert):
    a. 3ROX: No update.
    b. PSC: With Bridges-2 up it is seeing increased traffic over the 100G between 3ROX and the supercomputer's machine room.
    c. XSEDE: Several new resources will be coming online during the balance of the year. Each will have the option to be connected to XSEDE's L3VPN which rides on Internet2. Hopefully they will as it provides better traffic statistics.
G. University of Alaska (Shawn Armstrong): No updates.
H. University of Utah (Joe Breen):
    a. Utah Education and Teaching Network (UETN)
        i. UETN's buildout continues. The goal is to get 400G to the university's DMZs in the next month.
        ii. Work continues on 5G at the edge – discussions with various school districts.
    b. University of Utah: Work also continues on the campus 5G testbed, POWDER.

VI. **Exchange Points Round Table**

A. PNWGP (Jonah Keough): No updates today.
B. Ames (Bobby Cates): The supercomputer facility, NAS, is upgrading its LAN to 100G. This has led to discussions on how to capture the traffic with the SOC and TIC facility. The solution is TBD. Mark Mutz described what NOAA currently has in place.
C. StarLight (Joe Mambretti):
    a. StarLight (SL) is working with NASA/GSFC and NRL on plans for this year's SC conference in St. Louis. They anticipate 400G between DC, SL & SC and are exploring options to extend the circuit to San Diego, CA.
    b. SL is part of an international consortium designing the Data Mover Challenge testbed which is part of Supercomputing Asia. The testbed is designed this year for experimenters to use for the Challenge. The Challenge results are announced as part of next March's conference.
    c. The interconnection of SL's international p4 testbed with GÉANT's is expected to be completed in the in the next few weeks.
    d. SL continues to work with the international AutoGOLE/SENSE (AG/S) consortium to develop a global multi-point testbed. Several new sites are in discussion. The consortium is looking at NetBox as a way to monitor the AG/S fabric.
    e. SL continues working with CERN on the NOTED project. The NOTED project is to develop a service which will anticipate large scale data transfers through ML and do just in time connection provisioning.
    f. SL's work to support the FNAL integration project of the Rucio data manager, FNAL's Big Data Express and DOE's SENSE data orchestrator has concluded. The results will be presented at next week's LHC networking meeting.
    g. SL continues to work on several provisioning projects: with Internet2 and its new optical backbone, with FABRIC and with ESnet on ESnet6.
D. MAX (Dave Diller): MAX has started on a network refresh. Timeline: Some by year's end. Completion: 18-24 months.

VIII. **LSN update – Rich Carlson**

The JET's parent organization within NITRD is the Large Scale Networking IWG. It has co-chairs from DOE, DOD and NSF. Its attendees are program managers and directors from various federal agencies. For its members to be better informed of what the constituent groups are doing the LSN is working to have each brief the LSN on a significant effort the group is engaged in.

After last month's JET discussion have started with broadband (BRD) group about an exchange of briefs on measurement. BRD's measurement effort is done by NTIA on commercial networks.

Meetings of Interest 2020

Note: Meetings cancelled since the March JET have been removed from this list. Those moved to a virtual format have been updated.

Apr 11-14	ARIN 47, virtual meeting
Jun 14-16	NANOG 82, virtual meeting

Jun 21-25	TNC21, virtual meeting
Jul 24-30	IETF 111, In person cancelled, moved to a virtual meeting
Aug	APAN52, Yogyakarta, Indonesia
Sep 20-21	The 2nd Global Research Platform (2GRP) Workshop, Innsbruck, Austria
Sep 27-30	Internet2 Technology Exchange (tentative)
Oct 4-6	NANOG 83, Toronto, ON
Oct 7-8	ARIN 48, Toronto, ON
Nov 6-12	IETF 112, Madrid, Spain
Nov 14-19	SC21, St. Louis, MO

Next JET meetings

Note: It is anticipated that most of the JET's meetings in CY2021 will be virtual due to COVID-19 guidelines.

Apr 20, 2021 12-2 p.m. ET
May 18, 2021 12-2 p.m. ET
Jun 15, 2021 12-2 p.m. ET