



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
October 17, 2023, 12:00 – 2:00p.m. ET
This meeting was held virtually

Participants

Dale Carder, ESnet	Linden Mercer, NRL
Basil Decina, NRL	Aruna Muppalla, NASA/GSFC
Bill Fink, NASA/GSFC	Ralph McEldowney, DREN
Michael Lambert, PSC/3ROX/ACCESS	Glenn Ricart, US Ignite
Theo Lavis, MCNC	Kevin Thompson, NSF
Paul Love, NCO/NITRD	Steve Wallace, Internet2
Joe Mambretti, StarLight/MREN	Jim Williams, Indiana University

Proceeding: This meeting was chaired by Kevin Thompson (NSF) and Ralph McEldowney (DREN).

I. **Action Items:** (none pending)

II. **Review of the Minutes of the September 2023 meeting:** Corrections were received and are reflected in the posted final minutes.

II. **Routing Integrity and Security Update – Steve Wallace**

The slides for this brief can be found at:

<https://www.nitrd.gov/coordination-areas/lsn/jet/jet-meetings-2023/>

A. Current ROA coverage and trends:

- a. Between April and September 2023, the global Internet's ROA coverage has increased from just over 40% to nearly 46%. During the same five months US R&E ROA coverage has increased from just under 15% to nearly 18%. (Three years ago, this was just 4%). MANRS participants who are also Internet2 (I2) participants only have 43% coverage.
- b. Why? Some research done by Deepak Gouda and Cecilia Testart at the Georgia Institute of Technology shows, for both the global internet and R&E spaces, that larger ASs have a higher percentage of coverage than smaller. This disparity is getting worse over time and will probably get even worse as new tools for routing security, such as ASPA and BGPsec, come into use which smaller networks may not use.
- c. In looking at the global R&E space, the NRENs including I2, there are about 16k covering prefixes. Of those 3.4k, just over 20% have ROA coverage.

- B. Progress on an ARIN agreement for R&E networks:
- a. This past February about 700 I2 connected networks did not have an agreement with ARIN. That's down to 600. (As a reference point, about 80% of addresses assigned to organizations that connect to I2 are legacy assignments.)
 - b. I2 has a public spreadsheet showing ARIN agreement status:
https://docs.google.com/spreadsheets/d/1DhZjxK7H4gBW3Z2cw1j_7WeZJTcSSbJ1/edit#gid=289857579
 - c. ARIN now has a current list of agreement status for all IP assignments:
<https://www.arin.net/announcements/20231009-report/>
- C. Update on I2's Route Reports:
- a. Is an instruction's routing doing what is expected? The report now flags an address if I2 is seeing more specifics in the global internet than in I2.
 - b. The reports now display the AS path that is being announced with the route and also display the number of pre-pens. (Some routes have ten, or even more, pre-pens.)
 - c. I2 is building a probe to better understand its participants' routing. It will have one interface connected to I2 and a second connected to a commodity internet transit provider. It will send challenge packets to a network and see if the response comes back over the I2 connected interface or the commodity internet. When it's working the results will be included in the route reports.

Question: When the new tools are in place what will I2 do with the information about the routing of their members?

Answer: Mostly I2 is going to make people aware of the tools and the interesting things they reveal. For a few networks, just a handful, where most or all of their addresses have more specifics outside of I2. I2 too will reach to these one-to-one just to be sure that their routing is doing what they expect.

I2 also has a longer-term goal of helping the community to transition to better practices for their BGP configurations. I2 sees lots of evidence of BGP configurations that probably are continuing efforts from years ago where newer practices may well be an improvement. I2 is going to offer an outreach program to offer training and configuration for folks.

Question: What about your ASPA WG?

Answer: The WG has about 20 members. They are spread out between NREN operators, equipment vendors and RIR operators. It's held one meeting and one of the ASPA RFCs spoke there. It'll be a year or two before the RIRs allow you to create ASPA objects as it'll be that long before the RFCs are settled. The next step for the WG is to some use cases of how ASPA would function in the NREN environment where the members allow transit/partial transit between rather than just going upstream to a transit provider as is the case in the commodity internet. A question remains if ASPA will work in the NREN environment. The target for the next WG meeting is the end of the year.

III. JET's tasking on tools to help with inter-domain problem resolution

- Remains on hiatus while Joe Breen is engaged with other matters.

IV. **Operational Security Round Table:** No updates were received.

V. **Network roundtable**

- A. DREN (Ralph McEldowney)
 - a. Not much is happening on the WAN side as the transition to DREN4 has been worked through.
 - b. DREN is getting ready for a major audit from the Department of Defense security group. This is slated for January and will be from a configuration point of view.
 - c. The HIC will meet on Kauai 30-31 January 2024.
- B. ESnet (Dale Carder): Concurrent with this meeting are ESnet's CONFAB23 and ESnet Site Coordinators Committee meetings in Gaithersburg, MD. The major announcement yesterday made by the Department of Energy (DOE) at CONFAB23 was about the High Performance Data Facility (HPDF). HPDF is a joint project of Jefferson Laboratory (JLAB) and Lawrence Berkeley Laboratory (LBL). The facility will be built at JLAB with a mirror facility at LBL. This is very significant as it adds another resource comparable to NERSC to the DOE and the ESnet footprint. ESnet will be doing upgrades to support. This is part of DOE's Integrated Research Infrastructure (IRI). IRI is about ensuring that experiments, the end science activity, are backed with centralized compute resources.
- C. Indiana University/International Networks (Jim Williams):
 - a. Two members of the Indiana University/International Networks (IU/IT) team, Hans Addleman and Brenna Meade, are very involved with SCinet at SC23, Hans as the SCinet chair and Brenna as the chair of the Network Research Exhibition team, which is consuming all of their hours right now.
 - b. Bijan Jabbari (PI) and Jerry Sobieski (Co-PI) had an NSF award for the Bridges Project. While the award has concluded Jean and Jerry have some more experiments they'd like to do. To facilitate that IU/IN is going to move the needed gear from South Carolina to IU/IN's space in MAN LAN. Jean and Jerry will use some VLAN's on IU/IN's infrastructure to Europe for their work. A good example of a cooperative venture between two IRNC funded projects.
- D. MCNC (Theo Lavis): No update today.
- E. NASA/GSFC (Bill Fink): Working with Joe Mambretti and Jim Chen at StarLight and Linden Mercer at NRL on final preparations for SC23 next month. All is encouraging.
- F. Pacific Wave (Jonah Keough via email):
 - a. Pacific Wave's 400Gbps upgrades are continuing on pace with deployment of Juniper PTX platform.
 - b. SC prep for demo support including new NA-REX connections with other US exchange points at 400Gbps is underway.
 - c. Continuing to add participants to the route server.
 - d. DREN is back on Pacific Wave after the transition to theDREN4 contract and is accepting peers with the same IPs as before.
- G. 3ROX/PSC/ACCESS (Michael Lambert): No updates this month.
- H. US Ignite (Glenn Riker):
 - a. Nothing for US Ignite.

- b. For FABRIC there was a major milestone as its Terabit backbone became operational at the end of September. Using ESnet's High Touch development, FABRIC will have timing to the picosecond. This, in turn, opens up all sorts of very interesting and precisely timed experiments.
- I. NRL (Linden Mercer): NRL is deep into assembling things for our demos at SC. As was mentioned, NRL is deeply grateful for having some of these things early. And lots of bandwidth.

VI. Exchange Points Round Table

A. StarLight (Joe Mambretti):

- a. StarLight (SL) is doing its final preparations for demonstrations at SC23. It is working with many groups including NRL, GSFC and international organizations to create the platform for the Network Research Exhibition demos. This is coming along very well aided by terrific help from SC's SCinet group in implementing the optical transport.
- b. Very early there was a 1.2T link between the Joint Big Data Testbed (JBDT) facility in McLean, VA, and SL. The early availability greatly helped the work being done by GSFC and NRL.
- c. 1.2T onto SC is about to come up along with 400G from the JBDT to Denver. Both of these will come into the SL booth on the show floor.
- d. SL is working on a number of individual projects:
 - i. The NOTED (Network Optimized for Transport of Experimental Data) project with CERN.
 - ii. Scitags which identifies science flows to permit optimization and traffic engineering on the identified flows.
 - iii. SL is also using ESnet's High Touch (HT) FPGAs for a variety of interesting measurements. Yatish Kumar (ESnet) and Tom Lehman (FABRIC) are working on the mechanism of doing the HT testing as the number of boxes available during SC23 is limited.
 - iv. SL is also supporting several applications with in-band computing.
 - v. One highlight for SL will be supporting AutoGOLE/SENSE as a project and using it to support projects.
 - vi. AutoGOLE/SENSE is very similar to a project led by Internet2 – NA Rex (formerly AP-REX 2.0). This will put 400G paths between all the open exchanges in North America – Pacific Wave (Los Angeles, CA, Sunnyvale, CA, and Seattle, WA), SL, MAN LAN, WIX, Boston, AmPath, and Montreal Open Exchange. NA Rex is going to be demonstrated at SC using the 1.2T SC<>SL SCinet connection as a proxy as well as 400G SL<>PacWave Seattle and 400G SL<> PacWave LA paths, both of which will be part of the permanent NA REX.
- e. SL is working on several other test beds – the Data Mover Challenge that is part of SCAsia and CERN's high luminosity data challenge.
- f. The Global Research Platform workshop that was part of IEEE's e-science conference this month was very successful.

Meetings of Interest 2023

Oct 16-18 [NANOG 89](#), San Diego, CA
Oct 16-18 [ESnet Confab23](#), Washington, DC
Oct 18-19 [CANARIE Summit 2023](#), Montreal, QC, Canada
Oct 19-20 [ARIN 52](#), San Diego, CA
Oct 19-20 [ESCC](#), Washington, DC
Nov 4-10 [IETF 118](#), Prague, Czech Republic
Nov 12-17 [SC23](#), Denver, CO
Dec 12-14 [AINTEC](#), Hanoi, Vietnam

2024

Jan 21-24 [PTC'24](#), Honolulu, HI
Jan 30-31 [HIC](#), Kauai, HI
Feb 5-7 [NANOG 90](#), Charlotte, NC
Feb 19-22 [SupercomputingAsia 2024](#), Sydney, Australia
Mar 4-7 [Internet2's Community Exchange](#), Chicago, IL
Mar 16-22 [IETF 119](#), Brisbane, Australia
Mar 24-28 [OFC](#), San Diego, CA
Apr 14-17 [ARIN 53](#), Bridgetown, Barbados
Jun 10-12 [NANOG 91](#), Kansas City, MO
Jun 10-14 [TNC24](#), Rennes, France

Next JET meetings

Note: It is anticipated that most JET meetings will remain virtual for the foreseeable future

Nov 14, 2023 1:00-2:30 p.m. MT This will be a hybrid meeting held in conjunction with SC23 in Denver, CO. The meeting will be in room 712 of the Colorado Convention Center, 700 14th St, Denver, CO 80202
Dec 19, 2023 12-2 p.m. ET *n.b. This meeting will be held only if needed*
Jan 16, 2024 12-2 p.m. ET