



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

Participants

Nick Buraglio, ESnet	Paul Love, NCO/NITRD
Todd Butler, NASA/GSFC	Joe Mambretti, StarLight/MREN
Bobby Cates, NASA Ames	Linden Mercer, NRL
Dale Carder, ESnet	Alex Moura, KAUST
Basil Decina, NRL	Aruna Muppalla, NASA/GSFC
David Farmer, University of Minnesota	Michael Sinatra, ESnet
Chris Griffin, FLR	Kevin Thompson, NSF
Byron Hicks, LEARN	Steve Wallace, Internet2
Michael Lambert, PSC/3ROC	

Proceeding: This meeting was chaired by Kevin Thompson (NSF).

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

II. **Review of the Minutes of the November 2022 meeting:** Corrections were received via email and incorporated in the posted final minutes.

III. **Updates on Internet2's ROV plans and ARIN's working to accommodate LRSAs with public higher education. Potential insights for LRSAs with Federal Agencies: Steve Wallace**

- A. During TechEX last month Internet2 (I2) discussed with the community its desire implement RPKI Route Origin Validation (ROV) during the first quarter of 2023. This will be on its R&E and I2PX networks. The community agreed this a good thing to do. *(Note: The date has now been set for March 16th.)*
 - a. I2 has found three routes coming from within its community that are invalid and will be dropped when ROV is turned on. I2 has spoken to the parties involved. One is a test; the other two networks will be making changes.
 - b. In looking at traffic from the I2PX service – commercial providers – I2 sees about 400k routes of which over 2k are invalid and would be dropped. In looking at these in detail I2 found that many are covered by a route that was valid and traversed the same AS. There are also some routes that shouldn't in in the I2PX table and should be rejected. I2 shared this data with individuals in the community who concurred that these will not be a problem.

- c. In its discussions with the community, it became apparent that there was a misunderstanding that, if a network doesn't have a RPKI Route Origin Authorization (ROA) for its prefixes they would be dropped. This isn't the case – if there isn't a ROA then the route will not be validated via ROV.
 - d. I2 has updated the route reports it produces. These reflect the MANRS alignment of the routes it received from its members. Until now the reports have not shown what was rejected. While there has been a way to find out what was rejected, the revised route reports make it much easier to see with the reasons for rejection included. (This will be the last new feature in the reports before the system is redone.)
 - e. Questions on ROV, etc.:
 Given the process I2 has to list all the prefixes you except from a customer, can I2 now publish an IRR record of your customer's AS cone?
 Answer: For the I2PX service I2 requires all its customers who BGP peer with it (BGP Participants) to tell I2 which prefixes to accept and to publish the AS Cone for their routes. They can publish it in either PerringDB or in the aut-num object of the AS I2 is peering with. I2 takes all the AS cones and creates its own AS cone – the set of all its BGP Participants with just over 1k ASNs in it.. This is put into PerringDB. This is done as a number of the commercial peers in I2PX require it. I2's R&E network doesn't yet have such a cone but hopefully will by the end of the year. Coordination between NRENs will help move this forward internally.
- B. I2's routing table has about 2400-2500 direct assignments from ARIN. About half are legacy assignments of which about a third have no ARIN agreement. (This is usually for historically reasons as the assignment was made before ARIN existed.) For a variety of reasons the networks have never gone back and signed an agreement with ARIN. Without the agreement they can't participate in the RPKI ROA/ROV system to protect their space. Nor can they use ARIN's authoritative IRR. This will become more important as providers start requiring that there be entries in an IRR or have ROA records.
- Some issues and hints on signing a Legacy RSAs (LRSA):
- a. The standard agreement has language that public entities (governments, public schools and universities, etc.) can't sign. ARIN will always accommodate changes required by law and has a note in its FAQ saying so but it's not clear the steps needed to do so. ARIN will be producing instructions on how to request changes required by law. It will be a big help if you site the state law for markups you make to the ARIN basic agreement. (If, say another public university in your state has worked things out with ARIN, pointing to that agreement would be a big help).
 - b. Because these agreements are needed to use services that enhance network security it will help in getting a leader such, as a Chief Security Officer, involved who can push to work out the LRSA signing.
 - c. ARIN will be producing some five minutes videos that should be helpful in explaining to upper management why the legacy agreement is needed.

- d. ARIN doesn't require that the agreements be confidential. It is going to explicitly say they can be public. This should help an institution find a signed agreement it can use to get its own agreement modified by ARIN so it can be executed.
- e. Through then end of this year, if you sign a Legacy RSA, regardless of how much space it covers, the cost is \$175/yr. That can only increase by \$25/yr. in the future. If you wait until after December 31st the cost of a single /16 will be \$4k/yr. (For all the I2 community legacy space the cost this year would be ~\$175k/yr. After this year it would \$2M/yr.
- f. If you want to create a ROA at RIPE, RIPE has a button that lets you see what the ROA will do before you commit to help prevent outages. ARIN does not but has committed to having a similar feature the end of the year. I2 has created a tool to let you check on the effects that a new ROA would have:
 - docker run -dp 8000:8000 stevenisfine/roa_checker:latest
 with your browser pointed to localhost:8000 and enter what you'd use to create the ROA. You'll get back that its fine or will create problems.
- g. For federal agencies: Unfortunately, not much to say – there are a few who are trying to work out.

IV. Operational Security Round Table: No updates were given.

V. Network roundtable

- A. ESnet (Dale Carder, Nick Buraglio, Michael Sinatra):
 - a. ESnet has restarted its effort with RPKI and have just the issues Steve has described. ESnet's Chief Security Office is supportive. The discussions with ARIN during the recent Internet2 TechEX were very helpful.
 - b. Two groups in the Department of Energy (DOE) have successfully migrated their VoIP systems to IPv6-only. It went reasonably smoothly as the VoIP industry seems to be supporting IPv6-only. On DoE's next reporting cycle there should be 1,000s to 10,000 new IPv6 clients.
- B. LEARN (Byron Hicks):
 - a. LEARN is starting to do its education process with its members on RPKI based on Steve's discussions at TechEX and today. It is getting Legacy RSAs and ROAs up to date.
 - b. LEARN is doing a packet RFP. The list of responders has been winnowed to three finalists with their presentations starting later today. LEARN is anticipating a forklift for the existing packet service.
- C. FLR (Chris Griffin):
 - a. FLR is in the middle of a forklift for its entire packet network. The new core routers have been deployed and its members are being moved over.
 - b. Once the migration has been completed FLR will go back and do a backbone upgrade to 400G. Most of the hardware for that is already in hand. Target date for completion is April.

- c. FLR will be doing its push into RPKI this summer. As a side note, at the University of Florida not much progress for a couple of years. The pending increase in ARIN fees has gotten things starting to move forward.
- D. KAUST (Alex Moura): No update today.
- E. GSFC (Todd Butler): In Todd's component they are working on the IPv6-only issues.
- F. NRL (Linden Mercer): Cleaning up from SC.
- G. 3ROX (Michael Lambert): 3ROX is in the process of replacing its Brocade MLX router with a pair of Juniper MX204s. It's also bringing up a cross-state link to MAGPI for additional R&E redundancy.

VI. Exchange Points Round Table

- A. NASA Ames (Bobby Cates via email): Nothing significant to report.
- B. StarLight (Joe Mambretti):
 - a. Starlight (SL) has just received a shipment of High Touch servers for ESnet 6.
 - b. The DREN 4 rack is due shortly.
 - c. SL is preparing for a National Research Platform (NRP) workshop next month at UCSD.
 - d. SL and several others are working on a session on the Global Research Platform (GRP) during the NRP workshop. There will also be a GRP workshop during SupercomputingAsia.
 - e. SupercomputingAsia will also have several sessions on international support for data intensive science, and the data mover challenge.
 - f. SL is also preparing for Optical Fiber Communications (OFC) conference in San Diego in March. For the first time OFC will have a "SCinet like" network, OFCnet, that will permit demonstrations & exhibits with remote components. SL is working on three demonstrations:
 - i. A 400G transport of data intensive science
 - ii. A showcase of some work on SL's quantum network testbed (classical network and quantum on the same fiber)
 - iii. An attempt to combine the two.
 - g. Work has started for SC23 next November in Denver, CO.
 - h. SL is working with Argon National Laboratory (ANL) on the extension of SL into ANL with a focus on innovations and data intensive science.

Meetings of Interest 2022-2023

Note: Meetings whose format has changed have been updated.

Jan 15-18	PTC'23 , Honolulu, HI
Jan 25-26	HIC, Maui, HI
Feb 8-10	4NRP , San Diego, CA
Feb 13-15	NANOG 87 , Atlanta, GA
Feb 13-17	APAN55 , Nepal
Feb 27-Mar 2	Supercomputing Asia 2023 , Singapore
Mar 5-9	OFC , San Diego, CA
Mar 7-9	The Quilt Winter Meeting , virtual

Mar 25-31 [IETF 116](#), Yokohama, Japan
Apr 16-19 [ARIN 51](#), Tampa, FL
May 8-11 [Internet2 Community Exchange](#), Atlanta, GA
Jun 5-9 [TNC23](#), Tirana, Albania
Jun 12-14 [NANOG 88](#), Seattle, WA
Jul 22-28 [IETF 117](#), San Francisco, CA
Aug/Sep TBA [APAN56](#), Colombo, Sri Lanka
Sep 18-21 [Internet2 Technology Exchange](#), Minneapolis, MN
Sep 25-28 [The Quilt Fall Meeting](#), Columbus, OH

Next JET meetings

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

Feb 21, 2023 12-2 p.m. ET
Mar 21, 2023 12-2 p.m. ET
Apr 18, 2023 12-2 p.m. ET