



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
September 19, 2023, 11:45a.m. – 1:00p.m. ET
This meeting was virtually

Participants

Todd Butler, NASA/GSFC	Paul Love, NCO/NITRD
Basil Decina, NRL	Joe Mambretti, StarLight/MREN
Phil Emer, MCNC	Aruna Muppalla, NASA/GSFC
Andrew Gallo, CAAREN/GWU	Ralph McEldowney, DREN
Jonah Keough, Pacific Wave/PNWGP	Glenn Ricart, US Ignite
Michael Lambert, PSC/3ROX/ACCESS	Michael Sinatra, ESnet

Proceeding: This meeting was chaired by Ralph McEldowney (DREN).

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

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

II. **MANRS Update – Andrew Gallo**

The slides for this brief can be found at:

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

- A. This an update on what has been happening recently with MANRS (Mutually Agreed Norms for Routing Security) project which is overseen by a Board under ISOC.
- B. MANRS organized a virtual Routing Security Summit over held over several days in July. For reference the sessions are available on YouTube:
<https://www.youtube.com/playlist?list=PL-p9vONMIDhJv8QzdfBebHzK2BBUcyYza>
- C. MANRS has an ongoing program of Ambassadors and Mentors. Mentors are a bit senior in routing security. While the Ambassadors aren't necessarily early career, they are new to routing security. The most recent group of ambassadors are from Benin, France and Chile. (It's notable that this group is being mentored by somebody who was an ambassador last year.) The three current ambassadors are working on: implementing the MANRS+ tool, Detect Forged-Origin Hijacks (DFOH), Autonomous System Provider Authorization (ASPA) and Sourced Address Validation (SAV) tools.
 - a. MANRS+ is an enhanced membership in the MANRS program that will be more intensive, closer to a certification. Perhaps fee based. The tool aims to evaluate supply chain risk factors – your upstreams and peers from a network security

perspective. Who in the chain is complying with which features of the MANRS program.

- b. DFOH will detect when a hijacker is using an invalid ASN to hijack IP space. The work is built on a longitudinal study of serial hijackers. DFOH is an area where MANRS sponsored the academic research. Details can be found at: <http://dfoh.info.ucl.ac.be/>
 - c. The ASPA effort is searching for a methodology to measure ASPA adoption. Steve Wallace has organized an ASPA WG which includes the R&E community along with international network operators, ARIN and APNIC among others
 - d. For SAV the project includes a survey of the existing tools and techniques, a comparison of the existing SAV tools with CAIDA's Spoofer and an identification of Spoofer data gaps. (As a note, currently SAV is the only MANRS' optional requirement. This due to the current difficulty in detecting.)
- D. The previous cohort of ambassadors (2022) worked on these projects: RPKI time measurement, Relying Party validation time, ROVista and RTBH (Remotely Triggered Black Hole routing) and RPKI.
- a. RPKI time: What's the prorogation time from making a change at an RPKI portal to a network operator seeing the updated entry? The five IRRs loaned IPv4 and IPV6 blocks with measurements taken over eleven months. The measurements uncovered a bug in how ARIN released ROAs and their publication. When found ARIN quickly corrected and ARIN's prorogation time dropped by more than 50%. Relying Party validation times were include in the published report
 - b. ROVista is working on alternative means to measure the status of ROV in the wild. Current methods (BGP data and RIPE Atlas) have limitations. ROVista gathered ~27k ASNs. Its findings: 44% (12k) of the ASNs it collected were not performing ROV. Just 9.4% (2.6k) were. The ROVISTA effort also looked at IP-ID Side Channel.
- E. Improvements in the MANRS Observatory
- a. There's an investigation into an alternative data source to replace the use of GRIP.
 - i. Cloudflare Radar
 - ii. Cachepoint
 - b. New internal tools: ROA stats & a ROA history API

Questions/discussion:

Discussion: At an Amazon routing security summit just before the June NANOG ASPA was discussed. It was clear that if the community wants ASPA to happen it will need to tell the vendor that it's needed as soon as the RFCs are settled.

Question: Has MANRS looked at the ARTEMIS tool set to do some of what BGPmon did?

Answer: Yes. There are ongoing discussions with CADIA. ARTEMIS is very much in the mix.

Question: AS path filtering for would be a real problem for a downstream who is multi-homed.

Answer: It's a nightmare. Every edge network should be required to do BCP 38 filtering as the problem then just goes away. Even one step further in and the problem is far more complicated.

Question: For MANRS+ are RONS considered part of the target networks?

Answer: The initial targeted networks were health care and other regulated entities. MANRS+ might become so accepted for what it represents that it could become specified in RFPs, etc. The issue of possible fees for those joining and how that related to RONS was discussed.

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. CARREN (Andrew Gallo): CARREN is looking at its first expansion in its decade of existence by doubling to two routers.
- B. ESnet (Michael Sinatra):
 - a. ESnet has wrapped up all the needed physical work to be ready for IPv6 and is now working on the logical side of the transition. A big piece of this is the proper generation of requirements to submit to its automation system. This is still a work in progress with ESnet's IPv6 transition is taking a bit longer than anticipated.
 - b. All ESnet goals for using L2VPNs and L3VPNs rely on the migration tools, etc. being completed. When they are the existing can be migrated to IPv6 and new ones add for transit services, etc.
 - c. ESnet is experiencing some equipment problems. Its SR2s Nokia routers have been great but some have had a hardware issue. Some of the router's mid-plane card are having an issue that requires a card replacement. Nokia is working on a permanent solution. At this point it's unclear if this is a manufacturing batch issue or not.
 - d. ESnet is extremely close to signing the LRSAs for its IPv4 space.
 - e. Earlier this week some of ESnet's optical gear at StarLight suffered from building's pipe bursting. To be sure all pieces are good to go, ESnet is sending a complete replacement of its optical gear to StarLight.
- C. Pacific Wave (Jonah Keough):
 - a. Pacific Wave (PW) has received its new Juniper PTXs that will support 400G customer connections. These are being racked and installed – some portion will be installed in time to support demos at SC.
 - b. As part of the upgrade PW is also working to upgrade its West Coast backbone to 400G. There's no timeline for this as yet but a stretch goal is in time for SC.

- D. 3ROX/PSC/ACCESS (Michael Lambert):
 - a. 3ROX and MAGPI have established a 100G connection thereby giving each a second connection to Internet2.
 - b. PSC is beginning the decommissioning of most of its Cisco 15454's.
- E. US Ignite (Glenn Riker):
 - a. US Ignite (USI) is working with some communities where there can be a sharing of state, private and federal paths that will benefit all by sharing. This has come about from the lessons learned from the seven communities USI worked with under an NSF's grant. These include Columbus, Ohio and Albuquerque, New Mexico.
If anybody knows of a community that would benefit from this arrangement USI would be glad to go and work with them - contact Glenn.
 - b. There is significant interest in an eduroam overlay on the internet. USI has been working with Greensboro, North Carolina. Some work has also been done in Nebraska and Las Vegas, Nevada. The target is a ubiquitous eduroam overlay on the internet with the goal of making a relative safe network available to primary and pre-primary students. USI is working with local school districts to direct traffic to the districts which already have the needed filters in place.
- F. MCNC (Phil Emer): MCNC is working with UNC-Greensboro on this. MCNC is discussing this type of use of eduroam with Internet2 to insure Internet2 is aware.
- G. NRL (Basil Decina): NRL is working with StarLight as it continues to prepare for demos at SC.

VI. Exchange Points Round Table

- A. PNWGP (Jonah Keough): No updates today.
- B. StarLight (Joe Mambretti):
 - a. As is usual this time of the year, StarLight (SL) and its research partners such as NRL, NASA/GSFC and others are working with SCinet to create the infrastructure platform for Network Research Demos (NREs). This is coming along really well thanks to the hard work of the SCinet group of volunteers. Among other steps, there is already 1.2Tbps between the Joint Big Data Testbed facility in McLean, Virginia and SL which is in use for experimentation on demos for SC23.
 - b. One of the NREs will be a 1.2T service for data intensive science across LANs. Another will be similar service, but at 400G, across WANs.
 - c. SL is working with researchers at CERN on NOTED (Network Optimized for Transport of Experimental Data) on moving their high energy physics data.
 - d. Another area with a lot of work is in-band compute. Argonne National Labs has one effort. Another is at ESnet is on gamma ray tracing.
 - e. SL is also working with SupercomputingAsia (SCA) of its Data Mover Challenge testbed. SL is also working on a demo for the SCA Challenge that will involve not only large scale, 100G links but Starlink.
 - f. SL is preparing for a High Energy Physics data mover challenge as part of CERN's preparations for LHC's high luminosity experiments.

- g. SL has organized the Global Research Platform workshop that will be held in conjunction with IEEE's 19th International Conference on e-science which will be held in October on Cyprus. The list of speakers looks very promising.
- h. SL has a testbed for quantum networking. It's being used in a joint project with FNL, ANL and the Photonics Communication Computing Center at Northwestern University to test the co-propagation of quantum and classical signals on the same fiber. For the first time the classical channel tested included a 400G channel. This is up from 100G used at OFC last spring.
- i. As Michael Sinatra mentioned, the building that houses SL had a pipe burst and unfortunately ESnet's gear was right under the cascade. The issue has been addressed.

Meetings of Interest 2023

Sep 18-21	Internet2 Technology Exchange , Minneapolis, MN
Sep 25-28	The Quilt Fall Meeting , Columbus, OH
Oct 8-9	GRP workshop at IEEE eScience , Limassol, Cyprus
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, CA
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

Oct 17, 2023	12-2 p.m. ET
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 <i>n.b. This meeting will be held only if needed</i>