



## 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  
August 20, 2024, 12:00 – 2:00 p.m. ET  
This meeting was held virtually

### Participants

Hans Addleman, Indiana University	Joe Mambretti, StarLight/MREN
Shawn Armstrong, University of Alaska	Ralph McEldowney, DREN
Dale Carder, ESnet	Linden Mercer, NRL
James Deaton, Internet2	Aruna Muppalla, NASA/GSFC
Basil Decina, NRL	Michael Sinatra, ESnet
Phil Dykstra, DREN	Mickey Slimp, GPN
Jonah Keough, Pacific Wave	Patrick Smith, NSF
Hans Knudsen, NLM	Nik Sultana, IIT
Michael Lambert, PSC/3ROX/ACCESS	Hammas Tanveer, University of Iowa
Paul Love, NCO/NITRD	Kevin Thompson, NSF

**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 July 2024 meeting:** No corrections were received. The final minutes have been posted on the JET's web page.

### II. **Making Sense of Constellations: Methodologies for Understanding Starlink's Scheduling Algorithms: Hammas Tanveer**

High-fidelity RTT measurements were performed to identify evidence for the presence of an on-satellite MAC scheduler.

A methodology was developed to identify the current satellite to which a user terminal is connected.

The behavior of Starlink's "global scheduler" was described.

The slides for the presentation are available on the JET's web page at:

<https://www.nitrd.gov/coordination-areas/lsn/jet/jet-meetings-2024/>

III. **Operational Security Round Table:** No updates this month.

#### IV. Network roundtable

- A. DREN (Ralph McEldowney and Phil Dykstra):
  - a. DREN will be holding its Technical Interchange Meeting (TIM) next week at Kirkland AFB, Albuquerque, NM.
  - b. Collaborations:
    - i. A good bit of work with CAIDA that'll be discussed at the TIM.
    - ii. DREN and ESnet met a couple of weeks ago. Among other things they discussed establishing direct connections. These would support layer 2 handoffs and potentially provide mutual disaster backups.
- B. ESnet (Dale Carder and Michael Sinatra):
  - a. ESnet has just completed updating its BGP import policies to support better handling of BGP communities: no export, graceful shutdown and other traffic control knobs.
  - b. They are now scrubbing all extended communities (most commonly used for VPN signaling).
- C. GPN (Mickey Slimp):
  - a. Members are adding a few more nodes – in Missouri these are mostly to support K-12.
  - b. GPN is working on its quantum initiative. GPN will start an interest group in September built on a summer trip to the Sanford Underground Research Facility (SURF) in Lead, SD, of a dozen researchers. GPN's member institutions have about fifteen NSF awards in this area and the group at SURF was investigating what new initiatives that could be added.
  - c. GPN is investigating the site for its 2025 summer conference.
- D. International Networking at Indiana University (Hans Alderman):
  - a. NEA3R had just signed a contract with Aqua Comms to upgrade NEA3R's New York<>Amsterdam link from 100G to 400G. The target is to have the upgraded circuit online in mid-October to be able to support SC24.
  - b. TransPAC is stable.
  - c. International Networking at Indiana is working with APOnet to prepare for SCinet's planned trans-Pacific Research Exposition.
- E. SCinet (Hans Alderman):
  - a. SCinet is expecting 9.4 Tb total coming into Atlanta, GA, up from 6.7 last year. There are 1.2 Tb links from Chicago, IL, and McLean, VA along with circuits from the both coasts and Miami.
  - b. The coastal points will be supporting numerous trans-oceanic links including a 10x100G from University of Tokyo using both APOnet and ANA, They are hoping to see 800G file transfer speeds across the 10 circuits.
  - c. 9.7Tb is not cheap to bring up - Internet2 and ESnet have really stepped up as have industry partners Lumen & Verizon.
  - d. SCinet is anticipating a Fabric node at the show. Any Fabric user will be able to use the SC node. The node's bandwidth is still under discussion.

- F. Internet2 (James Deaton):
  - a. Several initiatives coming along, some related to The Quilt's meeting next month. I hope Internet2 can share at the next JET meeting.
  - b. MetrANOVA is very exciting. It has its first full retreat shortly after The Quilt meeting to discuss some of the fundamental aspects of the project is coming up. MetrANOVA builds on a lot of investment from NSF to give fuller understanding, visibility and observation of the network. It also builds on software tool kits from NetSage, perfSONAR or elsewhere.
- G. NRL (Linden Mercer):
  - a. NRL is working hard to make use of all the bandwidth SCinet has organized for Atlanta and to prioritize its use of it.
  - b. NRL has a 400G data mover working in the lab with TB in 30 seconds as a cool result! It's a starting point as NRL wants to extend the reach and scale it across multiple 400G links. What we have is a good starting point, but we're not finished with it yet.
  - c. It's exciting to have a good amount of bandwidth in our environment between the Joint Big Data Testbed in McLean and Chicago. And, on Hans' map, extended to Atlanta.
- H. Pacific Wave (Jonah Keough):
  - a. Pacific Wave (PW) is continuing work to support SC24. Many of items Hans discussed include support from PW.
  - b. The 400G West Coast backbone is close to being online next month. This is pending some swap out work where PW doesn't have the capacity for both 100G and 400G at the same time.
- I. PSC/3ROX/ACCESS (Michael Lambert): Nothing to report.
- J. University of Alaska (Shawn Armstrong): No updates since last month.

## V. Exchange Points Round Table

- A. WIX, MAN LAN & Boston (James Deaton): Nothing new to report today.
- B. StarLight (Joe Mambretti):
  - a. StarLight (SL) is preparing for the Global Research Platform (GRP) workshop, co-located with IEEE's eScience conference. SL is also planning a GRP follow-up workshop collocated with SupercomputingAsia in Singapore next March.
  - b. SL continues its preparations for SC24, working with SCinet and making us of the bandwidth Hans described.
  - c. SL is involved with about 2 dozen NREs – leading, participating or supporting.
  - d. SL is working with Bill Fink at GSFC along Basil Decina and Linden Mercer at NRL. In support of this there are 2x600G paths between the Joint Big Data Testbed (JBDT) in McLean and SL using Waveservers which are already up. Almost up (a single cross connect remains) is a 1.2T path for Fabric between SL and the JBDT.
  - e. SL's booth in Atlanta will have 1.2T from SL and at least 1.6T from McLean.
  - f. SL is also collaborating with ESnet who will have a 400G from LBNL to SC.
  - g. There will be a testbed to demonstrate scitags with University of Victoria. Another testbed at SC will be for p4.

- h. SL is working with its partner to determine the number of Data Center Interconnects to be deployed.
- i. NA-REX, with its 400G exchange point interconnects, will be extended into SC.
- j. John Graham has shipped at National Research Platform server to CERN along with a DTN. The goal is to tie CERN, SL and SC together. Options out of Boston include NEA3R, Internet2 or ESnet.

### **Meetings of Interest 2024**

Aug 26-30	<a href="#">APAN58</a> , Islamabad, Pakistan
Aug 27-28	<a href="#">DREN TIM</a> , Albuquerque, NM.
Aug 30 – Sep 6	<a href="#">APNIC 58</a> , Wellington, New Zealand
Sep 16-19	<a href="#">Fifth Global Research Platform Workshop</a> at <a href="#">IEEE eScience</a> , Osaka, Japan
Sep 17-19	<a href="#">The Quilt Fall Meeting</a> , Hartford, CT
Oct 9-10	<a href="#">CANARIE Summit</a> , Ottawa, Canada
Oct 21-23	<a href="#">NANOG 92</a> , Toronto, ON Canada
Oct 24-25	<a href="#">ARIN 54</a> , Toronto, ON Canada
Oct 28 – Nov 1	<a href="#">RIPE 89</a> , Prague, Czech Republic
Nov 2-8	<a href="#">IETF 121</a> , Dublin, Ireland
Nov 17-22	<a href="#">SC24</a> , Atlanta, GA
Dec 9-12	<a href="#">Internet2 Technology Exchange</a> , Boston, MA
Feb 3-5, 2025	<a href="#">NANOG 93</a> , Atlanta, GA
Feb 3-6, 2025	<a href="#">The Quilt Winter Meeting</a> , Tempe, AZ
Mar 3-7, 2025	<a href="#">APAN59</a> , Yokohama, Japan
Mar 10-13, 2025	<a href="#">SCA25</a> , Singapore
Mar 15-21, 2025	<a href="#">IETF 122</a> , Bangkok, Thailand
Mar 27-30, 2025	<a href="#">ARIN 55</a> , Charlotte, NC
Apr 28-May 1, 2025	<a href="#">Internet2 Community Exchange</a> , Anaheim, CA

### **Next JET meetings**

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

Sep 17, 2024	12-2 p.m. ET
Oct 15, 2024	12-2 p.m. ET
Nov 20, 2024	10-11:30AM ET. This will be a hybrid meeting held in conjunction with SC24 in Atlanta, GA. The meeting will be in room A-313 of the Georgia World Congress Center, 285 Andrew Young International Blvd NW, Atlanta, GA 30313
Dec 17, 2024	12-2 p.m. ET <i>n.b. This meeting will be held only if needed.</i>