What’s Happening in Network Services

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March 5, 2024
RPI, I2CC, DDoS, I2IC Network Numbers Entering 2024

2024 Stats

- **I2 Cloud Connect**
  - 539 Connections

- **I2 RPI**
  - 42 10G Interfaces
  - 2 100G Interfaces

- **I2 DDOS**
  - 14 Subscribers
  - 95 Tenants

- **I2 Insight Console (Since 11/23)**
  - 217 Layer 2 Connections Created or Updated
  - 90 Layer 3 Connections Created or Updated
  - 48,000 Looking Glass Queries Executed

- **Routing Integrity**
  - LRSA executed by ~300 R&E institutions
Sessions Involving Great Folks from Network Services

Network Automation and Security:
- Tuesday: A Discussion of Routing Integrity for the Internet2 Community | 11:20 – 11:40 a.m.
  - Steve Wallace
- Tuesday: Network Security SIG | 12:00 – 1:00 p.m.
  - Adair Thaxton
- Wednesday: DDoS Mitigation SIG | 12:00 – 1:00 p.m.
- Wednesday: NTAC Network Automation SIG | 12:00 – 1:00 p.m.
  - Shannon Byrnes

Consortiums and Collaborative Initiatives:
- Tuesday: Introducing MetrANOVA: Consortium for Advancing Network Observation and Analysis | 11:20 – 12:00 p.m.
- Tuesday: Global Net Advancement (GNA-G) Meeting | 12:00 – 1:00 p.m.
76% under ARIN RSA
13% in authenticated IRR
16% protected by RPKI-ROAs
Sessions Involving Great Folks from Network Services

Special Interest Groups and Meetings:
- Tuesday: Connector/Network Member BoF (Invitation Only) | 5:30 – 7:00 p.m.

Innovative Architectures and Development:
- Tuesday: Insight Console: Update on current status and work in progress | 10:45 – 11:15 a.m.
  - Mike Simpson
- Wednesday: Collaborating and Testing Innovative Architectures within the R&E Community | 8:30 – 9:30 a.m.
  - Matt Mullins
  - JoAnne Bender
  - Jeff Bartig
- Thursday: Building a NetDevOps Team | 8:30 - 9:30 a.m.
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<th>Peer</th>
<th>Gbps</th>
<th>Petabytes</th>
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Sessions Involving Great Folks from Research Engagement

Research Engagement:

● Tuesday: BoF: Evolving R&E Engagement From REN/NRENs | 12:00 - 1:00 p.m.
● Wednesday: How to Connect with Researchers and Why | 2:40 - 3:40 p.m.
● Thursday: The Campus Research Computing Consortium & RCD Nexus | 8:30 - 9:30 a.m.
National Research Platform Contributions

Distributed Computing

- Participate in Open Science Data Federation (OSDF)
- Provides Distributed high-throughput computing (dHTC) in support of open science
- Internet2 operates 12 cache / compute nodes
- Filling key latency and location gaps
A Plethora of Public perfSONAR Points in PoPs
Developing Areas of Community Engagement & Contribution

Internet2 NETWORK SERVICES

- **Routed Services**: Developing a program to better drive utilization of national and regional networks
  - MANRS and Routing Intentions (led by Steve Wallace)
  - “Peer Engineer” (led by Jeff Bartig and Hans Addleman) - BGP skill development, workshops
  - Network Technical Advisory Committee (NTAC) P&R - architecture evolution of the Internet2 Platform

Looking for opportunities to bolster partnerships in the NRENs / R&E networks (example: NSRC, GEANT)

- **Core Network**: Starting to test potential packet hardware for evolution of the Internet2 core; starting to deploy discrete coherent optics (instead of classic transponders); starting to expand use of “alien waves” on the platform
  - Packet Exploration (led by Matt Mullins, leveraging community knowledge in NTAC)
  - Optical Exploration (led by JoAnne Bender, leveraging community knowledge in NTAC)

Looking to bolster partnerships in NRENs / R&E network

- **Programmatic Science**:  
  - Example: Strengthening involvement with Open Science Grid (led by Frank Wuerthwein, UCSD)  
    Planning to deploy 3rd generation OSDF DTN nodes (10 in service on backbone)

- **Workforce Development**: Developing skills in engineering, software/devops, international, and network research
  - Example: Strengthening involvement with Women in IT Networking at SC (WINS), SCInet in general, and OFC
  - Example: Strong internal focus on Internet2’s own workforce development
Highlight: Developing Areas of Community Engagement & Contribution

International Programs

• Partnerships and Collaboration are the Key to Success!
Highlight: Developing Areas of Community Engagement & Contribution

Internet2 NETWORK SERVICES

International Collaboration: NA-REX

- North American consortium of Exchange Point Operators, Connectivity Providers, Science Networks
- Improve coordination, establish common operating principles
- Leverage common toolsets, provisioning mechanisms
- Support dedicated links for experimental traffic, network research
- Initial links online:
  - Chicago and Seattle (dedicated)
  - Chicago and Los Angeles (shared)
- Links were successfully leveraged by Supercomputing NREs (Network Research Experiments)
- Currently planning for 2024:
  - Deployment of dashboard based on NetSage
  - Bring additional 400G links online
  - Restore API functionality to I2 Exchange Points (Q2)
Highlight: Developing Areas of Community Engagement & Contribution
Internet2 NETWORK SERVICES

International Collaboration: Architecture Development

  - ANA has 400G capacity coming online 2024, 2025 and needs improved link management, analytics, and interoperability with DOE networks

- A system-engineering approach to support:
  - Global traffic management (example: primary and secondary paths)
  - Varied philosophies and business models of participants
  - Support Multiple Use Cases

- Likely will focus on ANA initially, but push larger best practices out to community through the GNA-G

- Additional GNA-G activity on “digital twin” testbeds and demo activities (led by Marijke Kaat and the team at the University of Amsterdam)
A closing thought:

Collaboration is one of our key strengths as a community!