

JET Meeting – March 18, 2014

Meeting Minutes

Participants

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Vince Dattoria	vince.dattoria@science.doe.gov	DOE/SC

Agenda adjustments

No adjustments were requested

Action Items

1. Grant Miller will convene the JET Big Data Committee to start planning improved big data demonstrations for SC14. This is scheduled for noon on March 26, 2014
2. If you have a healthcare application that could be demonstrated over US Ignite, contact Glenn Ricart <glenn.ricart@us-ignite.org>
3. Paul Love will send the link to the SDN workshop final draft report to the JET mailing list
4. Inder Monga will send an email to the SDN workshop steering committee to gather their input on the final draft report.
5. For those who are not members of the steering group, send inputs on the SDN workshop final draft report via email to both Inder Monga and Grant Miller
6. Vince Dattoria suggests putting a place holder on future JET agendas to talk about each agency's involvement with Amazon (and other cloud services) and see if there is an opportunity for

collaboration. Also add this as an item on the agenda for the JET meeting in Denver (concurrent with Internet2 summit), and then report back in the LSN meeting in May

Update on 2nd NSF perfSONAR workshop

- Prasad Calyam and Martin Swamy could not make the meeting so Paul Love gave the briefing.
- 8 (out of 10) Program Committee members attended the workshop in person. Final participants were 60. Slides will be up later this week.
- Workshop Objectives were to bring together the stakeholders, to discuss where R&D should be going in the next 5 – 10 years, and to generate a report that is due at the end of March and will be discussed in April or May meeting.
- Discussion goals were re-assessment of the community needs, trying to get consensus on potential R&D focus areas, and consensus on open issues and operational requirements.
- The workshop broke out to different tracks, such as Instrument and Measurement, Measurement Data Analysis and Visualization, Applications Integration and Deployment, and New Frontiers in Software-defined Measurement and Monitoring
- Post-Workshop survey results:
 - 1/3 Participants responded
 - “Was the workshop format suitable for relevant/informative discussions and involved as many participants as possible?” Most participants agreed.
 - “On most issues, my breakout group ...” Most participants answered that it started a good discussion
- Over 1000 perfSONAR nodes deployed. Internet2, IU and ESnet have committed to provide resources for coordinated development.
- Questions and comments:
 - Question: How much representation was there from the community in order to speak to the community needs?
 - Answer: There was good representation on the operational side. There was little less looking further out
 - Question: Was there any discussion about extending the community beyond the network operators and into the network users?
 - Answer: There was some discussion. The breakout sessions had more of it.
 - Comment: One of the things the workshop didn’t do well was to figure out how to expand the tools that are used by perfSONAR. There is not an easy way to make a new tool available to the community. The community has a good toolset/suite, the basic framework still is lacking in the ability to encourage the community to add new analysis or data collection tools that provide unique insights into the network
 - Question: What is the take on what research needs to be done in the next 5-10 years to move perfSONAR forward?
 - Answer: Disappointment in the lack of the forward vision from the community. There is a lot of work and good stuff going on, but the workshop did not really get a lot of discussion on what we need to do for the research side going forward. It was more focused on the deployment issues.
 - Answer: Maybe that is driven by the makeup of the attendees, a lot of people that were there are involved in the development of it.
 - Question: Looking at the survey results, people feel like more is needed to reach a consensus. Was there any discussion about next steps to get things to be more concrete moving forward on research topics?

- Answer: There is a desire for more; there is a consensus from the workshop to keep doing this and more.
- Martin and Prasad will be on in either April or May, after their report is finished, to discuss more fully.

Brief on the draft report from December's SDN workshop - Inder Monga

- Report is in final draft stage awaiting input from the rest of the folks who attended the workshop, and from the steering committee members. Hoping to finalize it by end of March, might be running a week or so late.
- Background: The workshop was held in December as a response to OSTP's tasking for agencies to look at how to operationalize and deploy SDN. The output of this report will be fed to OSTP.
- Comment from Vince Dattoria: If JET agency reps see any issues with this draft report, they should indicate it now. They need to make sure it's not going contrary to their agencies' plans.
- Comment from Inder Monga: If you don't have a lot of time to examine the whole report, at least read the executive summary section that highlights the high level recommendations, and comment on that.
- Three goals for the workshop:
 - Identify the operational gap in terms of architecture, tools and policies
 - Come up with a plan on how to deploy and operate securely multi-layer, multi domain SDN networks
 - Identify research, development and technologies needed to support new, innovative users and applications
- Those goals will help achieve an ecosystem of security savvy operational SDN experts, rapid proto-types with open-source tools, and building knowledge.
- Workshop structure:
 - Keynotes – available online at <https://www.orau.gov/sdnpr2013>
 - Breakout groups:
 - Users and Applications (UAM)
 - Technology and Operational Deployment (TOD)
 - Security
 - Readouts and Discussion
 - Workshop Report (in final draft stage)
- Findings of the workshop:
 - **It is about running networks (not just about network research)** - Think about planning, troubleshooting, and debugging
 - **Strong need to interoperate with existing IP networks as base capability** – Most of the traffic on the Internet will be IP for a long time, any SDN installation should build multiple community supported Software-Defined eXchanges (SDX)
 - **Network is important component of the larger application picture** – SDN should transition to Software-Defined Instrument (SDI) – break the networking black box and include compute and storage along with network

- **Standardize APIs and Application plugin processes** – Open the SDN app store, leverage applications within a community to benefit all
- **Manageability goes hand-in-hand with Programmability** - highlight the gap in service manageability, the fact that there are no common debugging statistics, and that we are missing basic tools
- **Community is an important element of successful transformation** – build a community that would share
- **Network virtualization** – No real clarity on managing underlays and overlays, techniques still not well understood, still a research topic.
- **Security** – highlight the uses of SDN for security, and making SDN more secure

Roundtables

Networks

ESnet: Patrick Dorn

- ANA 100G trans-Atlantic link – working on incorporating the 100G link into the LHCONE for testing purposes. More performance testing was done through the LHCONE instance; all the participating networks have setup BGP peering across the ANA 100G link. From ESnet’s perspective, we have peering with folks on the far side of the Atlantic (GÉANT, NORDUnet and CERN). Working on finding the operational parameters for inserting and removing that link from the LHCONE berth so they can use it when it’s not in use by other experiments.
- MAX ESnet peering at 100G through the WIX switch is at final configuration stages.
- Fermi’s 100G link Starlight - we have started moving over some of the Fermi lab OSCARS circuits to that 100G link. The 100G has been in production from ESnet’s perspective for a while now but this is the first case of Fermi moving production traffic over to it.
- Chin Guok and the OSCARS team have been rolling out OSCARS enhancement to the overall OSCARS deployment. Contact me for more information.
- Currently in process of making some changes in the perfSONAR mesh to make the ESnet perfSONAR testers available from Amazon web services.
- Ames lab in Iowa is in process of upgrading to 10G connectivity.
- Working on relocating our hub in Las Vegas into Level 3 facility in Las Vegas so we can be on the shared optical system with Internet2.
- The Atlanta hub – ESnet is working with Internet2 to get an optical presence at 56 Marietta. Integrating with Level 3 on route options in the Atlanta metro area to determine the best mix of resiliency to get optical connectivity between Peachtree and Marietta. Currently waiting on Level 3 to come back with details on one last route before making decisions.
- ESnet has direct peering with Amazon today through fabric interfaces at the exchanges, no dedicated physical interfaces to Amazon at this point (In response to a question about direct connects to Amazon)

NASA activity in networking: – Andy Germain/Mark Foster

- Redoing the architecture (not sure when it will occur) – Standard IP service and Premium IP service is being re-architected into internal and external, and the TICAPs will be between the internal and external. PIP will be purely internal from center to center, SIP will be the external peering network, and there will be multiple TICAPs in between.
- The TICAP plans have gone forward; the plan that was briefed last spring to the JET has turned into a project, and has gotten some amount of funding (not enough funding to do it as quickly as they wanted to). They are in the process of rolling out some incremental steps that will allow them for a targeted completion in the 2015 time frame.
- In response to a question about direct connects to Amazon: Mark Foster mentioned that NASA went from a prototype that was leveraging some of the work that JPL had done a couple of years ago, and moving more into a pilot phase. Part of that is using government cloud services, and part of it is a private setup of Amazon web services.

NLR: Brian Court

- The 3/17 date for going dark is still in effect. No further reprieves are likely
- Level 3 plans to take down equipment (i.e., pull jumpers, turn off breakers) on or about 3/17. We know of at least one case where the work is scheduled for the 18th.
- CENIC intends to operate the network until it finally goes dark. We will not turn down customer or peer interfaces unless asked to by those customers or peers.
- The timing of the actual turndown of various components is outside of the NOC's control.
- The NOC will send out outage notifications to its usual distribution lists, as outages are observed, on a per-site or per-route basis.

NOAA activity in networking: – Paul Love

- First TICAP to be deployed is the shared one in Hawaii, sometime in the summer.

TransPAC: – Brent Sweeny

- No new or changed capabilities. There is some more use on TransPAC in support of OSCARS circuits from Japan for GEC.

Exchange Points -

Ames: - Bobby Cates

- We are looking at new switch to light the dark fiber to PAIX.
- Established a new Amazon Gov Cloud "Direct Connect" link.
- Establishing an AWS "Direct Connect" link as well. These extend the cross connects at Equinix San Jose back to NASA Ames.
- Moving the peering for NASA and NREN from old DREN II switch to new DREN III switch later today – ***This has been deferred, will resume the project when new card is installed***

StarLight: – Alan Verlo

- NLR shutdown: We've been working with a number of groups to find alternative paths from NLR. I believe solutions have been found for all of the issues that we're aware of, but if anyone still needs assistance at StarLight, please contact us: 710engineers@startup.net
- LHCONE: Some re-architecting of connections was completed at StarLight to improve LHCONE peerings and traffic flow through StarLight.
- StarLight's 100G exchange switch now also has 10G ports enabled to allow additional connections and paths into the 100G fabric.
- StarLight is collaborating with Georgia Tech on a Software-Defined Network Exchange (SDX) project for GENI which will be implemented in conjunction with SOX.

Meetings of Interest

- Richard Carlson is planning a workshop this summer (networking issues for operators) – no date specified yet, will send more information to group when available

From February minutes:

- April 6-10 [Internet2 Global Summit](#), Denver, CO
- April 9-11 [PRAGMA26](#), Tainan, Taiwan
- April 15-16 [ARIN33](#), Chicago, IL
- May 19-22 [TNC2014](#), Dublin, Ireland
- May 28-29 LHC meeting, Rome, Italy
- June 2-4 [NANOG61](#), Bellevue, WA
- June 22-24 [GEC20](#), Davis, CA
- June 24-27 [US Ignite Applications Summit](#), Silicon Valley, CA
- July 14-16 [Focused Technical Workshop: High Performance Networking for International Climate Science](#), Boulder, CO
- 30 September – 1 October [14th Annual Global LambdaGrid Workshop](#), Queenstown, NZ
- October 6-8 [NANOG62](#), Baltimore, MD
- October 26-30 [Internet2 Technology Exchange](#), Indianapolis, IN

Next JET Meetings

- April 9: 11:45AM-1:15PM MDT, Governor's Square 14 room, Sheraton Denver Downtown, Denver, CO
nb: This is collocated with the Internet2 Global Summit
- May 20: 11:00-2:00, NSF, Room II-415