

## **JET Meeting Minutes**

### **October 21, 2014**

#### **Participants**

Nick Buraglio	ESnet	<a href="mailto:buraglio@es.net">buraglio@es.net</a>
Richard Carlson	DOE/SC	<a href="mailto:Richard.Carlson@science.doe.gov">Richard.Carlson@science.doe.gov</a>
Vince Dattoria	DOE/SC	<a href="mailto:vince.dattoria@science.doe.gov">vince.dattoria@science.doe.gov</a>
Bill Fink	NASA	<a href="mailto:bill@wizard.sci.gsfc.nasa.gov">bill@wizard.sci.gsfc.nasa.gov</a>
Mark Foster	NASA/ARC	<a href="mailto:mark.foster@nasa.gov">mark.foster@nasa.gov</a>
Mike Gill	NIH/NLM	<a href="mailto:gill@nlm.nih.gov">gill@nlm.nih.gov</a>
Will Habeck	NASA/Ames	<a href="mailto:will.habeck@nasa.gov">will.habeck@nasa.gov</a>
Jonah Keough	PNWGP	<a href="mailto:keough@uw.edu">keough@uw.edu</a>
Kevin Kranacs	NASA	<a href="mailto:kevin.m.kranacs@nasa.gov">kevin.m.kranacs@nasa.gov</a>
Michael Lambert	PSC	<a href="mailto:lambert@psc.edu">lambert@psc.edu</a>
Paul Lang	NASA/GSFC	<a href="mailto:Paul.A.Lang@nasa.gov">Paul.A.Lang@nasa.gov</a>
Mike Laufer	NOAA/NESDIS	<a href="mailto:michael.laufer@noaa.gov">michael.laufer@noaa.gov</a>
Paul Love	NCO	<a href="mailto:epl@sover.net">epl@sover.net</a>
Linden Mercer	NRL	<a href="mailto:linden@cmf.nrl.navy.mil">linden@cmf.nrl.navy.mil</a>
Grant Miller	NCO	<a href="mailto:miller@nitrd.gov">miller@nitrd.gov</a>
Chris Rapier	PSC	<a href="mailto:rapier@psc.edu">rapier@psc.edu</a>
Kevin Thompson	NSF	<a href="mailto:kthompso@nsf.gov">kthompso@nsf.gov</a>
George Uhl	NASA/GSFC	<a href="mailto:george.d.uhl@nasa.gov">george.d.uhl@nasa.gov</a>

#### **Action Items**

#### **Proceedings**

This meeting of the JET was chaired by Vince Dattoria of DOE and Kevin Thompson of the NSF.

#### **Web 10G**

Obtaining performance information from the TCP stack is important to understanding the performance and failures of networks. Stack metrics can give engineers real-time world insight. They can reduce the time for diagnosis and remediation. We can obtain stack metrics only if we:

- Instrument the stack
- Bring the metrics out of the kernel
- Provide an API and
- Build tools

RFC 4898 provides the basis of the KIS (Kernel Instrument Stack) with 127+ different metrics based on events in the TCP stack. It currently supports Reno, BIC, CUBIC, and HTCP. Each instrument contains the current value only. The data has no life span. It can support millions of connections.

Data need to be moved out of the kernel. Proc is slow. Netlink (NL) is much faster and well supported in the Linux kernel. The Web 10g binary interface uses DLKM (Dynamically Loadable Kernel Modules) for wrappers and entry points into KIS memory structs. Other access methods can be built around nl using the Web 10g nl family.

A user-side API was developed to interact with nl and to process the results. It uses a small number of calls and can be incorporated into existing applications or for building new tools.

Web 10g provides increased information, better tools and deeper insight into usage. Underutilization of the network is a “real” problem. Web 10g provides tools to point out poorly performing flows and enables users to easily report problems to the NOC.

The Insight NOC tool gives NOCs an easy entry point into reported flow data. The developers hope to add reporting, advanced search, and some form of data visualization. Insight is too limited for most users but it can be installed in the DMZs to monitor scheduled transfers and provide access to real-time visualization or post-transfer reports in plain language.

For the full briefing please see the JET Website at:

[https://www.nitrd.gov/nitrdgroups/index.php?title=JET\\_Meetings\\_2014](https://www.nitrd.gov/nitrdgroups/index.php?title=JET_Meetings_2014), See the October 2014 meeting.

## **Network Roundtable**

### **NASA: Mark Foster**

Nothing new to report

### **NIH: Mike Gill**

NIH is continuing with the upgrades to its networks. They plan to have a 100G connection to the MAX by the end of the calendar year.

### **NRL: Linden Mercer**

NRL is participating in the JET Big Data Demonstrations for SC14.

### **Pacific Wave: Jonah Keough**

Pacific Wave is preparing for SC14. They received 100G wave equipment from Ciena for connectivity to CANARIE. This link will also connect to SINGAREN

### **Pacific Northwest GigaPOP (PNWGP): Jonah Keough**

PNWGP is working to enable 100G improvements to their services.

## **Exchange Points**

### **Ames: Mark Foster**

Ames has received new switching equipment for deployment including new cross-connect equipment for connectivity from Ames to PAX. They expect operational capability by the end of the year

### **StarLight: Joe Mambretti (by separate communication)**

StarLight is engaged in multiple projects preparing for a large number of 100 Gbps demonstrations at SC14. Many of these will be supported by ESnet's 100 Gbps national network. CenturyLink is provisioning a dedicated 100 Gbps path from StarLight to our booth on the show floor to support some of these demonstrations. Our booth there will have 3 100 Gbps

connections. We are also supporting Cal Tech's Tbps loop on the show floor from this booth on separate fiber. This week the StarLight Facility is supporting several demonstrations for the GENI Engineering Conference (GEC 21) in Bloomington Indiana. These demonstrations incorporate those based on SDX services, including a slice exchange service as a joint project with NCHC in Taiwan, the University of Tokyo, NICT, NTT and KDD.

**3ROX: Michael Lambert**

Their GENI rack is installed and plugged in. They are awaiting the OK to proceed to production.

**Meetings of Interest:**

October 20-23	<a href="#">GEC21</a> , Bloomington, IN
October 26-30	<a href="#">2014 Technology Exchange</a> , Indianapolis, IN
November 6-7	<a href="#">Introduction to GENI</a> , Baltimore, MD
November 9-14	<a href="#">IETF91</a> , Honolulu, HI
November 13-14	GENI Workshop on Future Research Infrastructure for the Wireless Edge, Washington, DC
November 16-21	<a href="#">SC14</a> , New Orleans, LA
February 2-4, 2015	<a href="#">NANOG63</a> , San Antonio, TX
March 22-27	<a href="#">IETF92</a> , Dallas, TX
March 23-26	GEC22, Arlington, VA
April 26-30	<a href="#">Internet2 Global Summit</a> , Washington, DC

**Next JET Meetings:**

November 19	1:30-3:30PM CST, Room 264, Ernest N. Morial Convention Center, New Orleans, LA	<i>nb</i> : This meeting is concurrent with SC14
December 16	11:00-2:00 EST, NSF	<i>nb</i> : Scheduled only if needed