

## JET Meeting Minutes

October 21, 2008

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### Action Items

1. Mike Smith will send the JET members an electronic version of the definition of External Connection so the research networks can implement TIC capabilities consistent with the definition.
2. DHS will attend the March JET meeting to continue their dialog with the research network engineers and architects.

### Proceedings

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

Kevin Thompson indicated that he will be leaving the NSF after the first week in November to assume a position at DHS working with Doug Maughan on security research programs. Members of the JET noted Kevin's many years of service as Co Chair of the JET, providing his vision, leadership, expertise, and guidance on a wide range of topics of critical interest to the JET. Kevin will be greatly missed and the members of the JET wish him all the best in his new position. It is hoped Kevin will continue his association with the JET from his new position at DHS, providing the JET with expertise on security issues for networking.

### **Trusted Internet Connections**

Mike Smith of DHS and several other DHS TIC experts attended this meeting of the JET to provide discussion of TIC issues as they affect the research networks and to continue the dialog between DHS and the research networks on accommodating the requirements of both the TICs and the research networks.

DHS developed and issued a clarifying statement on the definition of an External Connection to ensure that a consistent external connection policy is implemented across all the Federal agencies.

AI: Mike Smith will send the JET members an electronic version of the definition of External Connection so the research networks can implement TIC capabilities consistent with the definition.

In August the TIC program established up a Federal interagency working group with two components: 1. Connectivity, management, situation alert, and governance and 2. Subgroup to develop the TIC architecture. An architecture document is currently being scrubbed by DHS and will be issued to the agencies implementing TICs. Ken White of the JET is slated to receive this document.

How does the TIC deal with OC192 and 10GE? The Einstein suite will process 10 GE flows without interfering with the flow speed. DHS expressed an interest in using JET research networks as a testbed for 10GE flows. A possible venue for this is SC08 in Austin, Texas, November 16-21 where most of the research networks will be demonstrating 10 GE and above applications. Einstein will not currently process OC192 flows but they are working on this capability.

The Einstein suite will process IPv6 and multicast flows but the TIC architecture group is still addressing how to implement IPv6 and multicast with an integrated design across Federal agencies. DREN noted they currently implement IPv6 using the GATOR DoD COTS platform. DREN would like an Einstein box to testbed its interoperation with DREN architecture.

DHS has identified 20 Federal agencies as TIC providers; several have 2 locations; NASA has several locations. In the TIC's first implementation the top two locations will be provisioned with Einstein capabilities for a total of 40 Einstein implementations. A large Co-location facility, such as NGIX-West, StarLight and NGIX-East might require multiple Einstein suites. The Federal agencies need to consider this in developing their TIC plans. A SCIF is not required to support the TIC capability. A secure space is required but it can be remote from the TIC site. DREN currently

monitors 100% of its traffic and internal DREN traffic is all encrypted. All .GOV traffic behind a facility with TIC traffic only can send traffic to another .GOV facility that is completely behind a TIC without going through a TIC. However, .GOV to .MIL traffic must go through a TIC.

The Einstein sensor processes traffic outside the facility. The facility firewall decides what traffic will be allowed inside the facility.

NetFlow and IDS are Einstein components. Einstein will process InfiniBand flows. For dynamic networking with multiple 10GE pipes, the TIC engineers need to work with the research network engineers to develop capabilities to deal with the dynamic links and high bandwidths. If the TIC architecture requires significant backhaul, this might introduce latency detrimental to research applications.

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## **Network and Exchange Point Roundtable**

### **DREN**

DREN is upgrading their Juno software to 8.5R-4 across their entire network. Implementing IPv6, multicast and jumbo frames at each site is always an issue requiring resolution.

### **ESnet**

The dark fiber connecting the Princeton Plasma Physics Lab (and NOAA's Geophysical Fluid Dynamics Lab) to MAGPI is now operational. Its initial traffic is an ESnet 10 G layer 3 connection supporting the two labs along with the Princeton University high energy physicists.

### **Internet 2**

Internet2 has augmented its capacity to the Equinix commercial exchange point from 10Gbps to 20Gbps to handle the increased traffic load between our CPS peers at their exchange point switch. The link was lit two weeks ago, but they implemented a change freeze on the network during the New Orleans Internet2 Fall Member Meeting. They plan to put the circuit into production this Friday evening.

They also augmented their capacity between their New York and Washington DC IP routers in response to an increase in traffic demands along that path. The circuit is engineered as a 10GigE, making it the first 10GigE circuit to be used on the Internet2 backbone (when discounting CPS exchange points). Traffic is being load balanced on a per-flow basis.

### **Supercomputing 2008 Circuit List**

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Internet2 will be providing six circuits into SC2008 via our San Antonio optical node:

- 2x 10GigE for ESnet to El Paso

- OC-192 to IP Network in Houston
- OC-192 to IP Network in Salt Lake City
- OpenFabrics 10GigE to Kansas City
- Dutch Research Wave 10GigE to MANLAN

SCinet WAN staging is this week, so these should be operational shortly.

## **NIH**

The NIH link to the MAX has been upgraded to 10 GE.

## **National LambdaRail (NLR)**

NLR is upgrading its network. The upgrade started in Charlotte and then moved north and south to reach from the Jacksonville to DC. That path will then be brought up in segments, starting on Jacksonville to Atlanta. NLR expects the full upgrade of their Northern Tier (Jacksonville north, west and then south to Los Angeles) to be completed by the end of January, 2009. This upgrade process is expected to be non-intrusive.

NLR is merging its Framenet and Packet services so they will have 20 GB available for each service (some paths will provide 30 GB). This will be implemented after SC08. Non-dedicated Framenet services will remain in-place. NLR has not dropped any packets over the non-dedicated FrameNet service and the additional bandwidth under this merging of services will assure greater capacity.

The API for the NLR dynamic VLAN service, Sherpa, is on the NLR Web site at: [noc.nlr.net](http://noc.nlr.net) NLR has developed a charging algorithm for its dynamic service. All VLANs will be managed through the Sherpa interface soon.

## **NREN**

NREN is continuing its relationship with NLR. NREN is refocusing its efforts on research networking, in addition to supporting access to HPC resources.

## **USGS**

USGS has implemented a 10 G link to the South Dakota Research and Education Network that provides a 10 G link to Kansas. The Ninja Probe 2000 does line capture at 1 G for all traffic through the USGS nodes.

## **College Park**

The NGIX-East bought up NIH and NOAA at 10 G

## **StarLight**

StarLight supported two demonstrations at the Seattle GLIF meeting, HPDMnet and CineGrid net. StarLight supported a set of applications in South Dakota using CalREN. StarLight also supported the demonstration of tying together two high performance computers in Amsterdam.

The HPDMnet demonstration provisioned fiber and used a series of overlay technologies to provide an international, dynamically configured network for Layer 1 and Layer 2 circuits to support optical multicast. Participants in the demonstration included the University of Washington, University of Amsterdam, Canarie in Ottawa, and

NetherLight. The demonstration proves a persistent service to dynamically allocate Layer 2 circuits. A more elaborate version of this demonstration will be given at SC08.

**NGIX-West**

The ISC service has been discontinued. The legacy FIPS address block has been discontinued.

**Meetings of interest**

November 15-21, SC08, Austin, Texas

February 1-4 2009: ESCC/Joint Techs meeting in College Station, Texas

February 4-5, 2009 ESCC meeting in College Station, Texas

**Future JET Meetings**

November 19 1:00-4:00 CST, Austin Convention Center, Room 8A

(In conjunction with SC08)

December 16, 11:00-2:00 at the NSF, Room 1150

January 2009 Meeting: Canceled

February 2, 2009, 8:15-10:45 Hilton Hotel, College Station, Texas (In coordination with the Joint Techs meeting)