

# PerfSONAR Update

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# perfSONAR Workshop Summary



- 4 Topics addressed
  - Community building
  - Expanding perfSONAR technology
  - Research uses
  - Operations & deployment
- Results
  - Very optimistic schedule: final report due in 2 months
  - Working documents are on-line with links on the workshop agenda



# Operations & Deployment Breakout

I lead the O&D breakout session

The community identified a set of priorities

- Simplify deployment & make it easier to use
- Support management of a set of remote servers
- Documentation
- Security, analysis & visualization tools, data management, etc
- There is a very strong correlation between what the community current priorities, and the development teams priorities over the last year.

# DICE



We are working on developing a set of common well-defined interoperable services

- Diagnostic Service
- Path Characterization Service
- Circuit Monitoring Service
- Dynamic Circuit Provisioning Service

The aggressive target is 1<sup>st</sup> quarter 2011 for deployment

- GEANT, Internet2, ESnet, 6 NRENs, & some US regionals



# General Updates



## Hardware

- Finishing up deploying PS nodes at last couple 10G Sites and commercial peering points
- Planning for deploying PS nodes at some of the lower speed ESnet sites

## Software

- PS Toolkit 3.2 RC1 was released Monday
  - Moved from Knoppix to Centos
  - New packaging will better support lab environments

# JET/LSN perfSONAR Demonstration Project



# Status



| Domain    | Latency Deployed | Latency Scheduled | Bandwidth Deployed | Bandwidth Scheduled |
|-----------|------------------|-------------------|--------------------|---------------------|
| ESnet     | Yes              |                   | Yes                | Partial             |
| Internet2 | Yes              | Partial           | Yes                | Partial             |
| NOAA      | Yes              |                   | Yes                | Partial             |
| NLR       | Yes              |                   | Yes                |                     |
| NASA      |                  |                   | Yes                | Partial             |
| UEN       | Yes              | Partial           | Yes                | Partial             |

<http://code.google.com/p/perfsonar-ps/wiki/JETPerfSONARDemo>

# Active Tests Internet2 Perspective



## Active Data Sets

<http://ggf.org/ns/nmwg/tools/ipperf/2.0> @ [http://ndb1.internet2.edu:8086/perfSONAR\\_PS/services/pSB](http://ndb1.internet2.edu:8086/perfSONAR_PS/services/pSB)

| First Host                                | First Address   | Second Host                               | Second Address | Protocol | Duration | Window Size | Bandwidth Limit | Bi-Directional | Line Graph     |
|---|-----------------|---|----------------|----------|----------|-------------|-----------------|----------------|----------------|
| anl-pt1.es.net                            | 198.124.252.117 | nms-rthr-eth2.newy32aoa.net.internet2.edu | 64.57.17.82    | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| anl-pt1.es.net                            | 198.124.252.117 | nms-rthr.salt.net.internet2.edu           | 64.57.17.196   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| anl-pt1.es.net                            | 198.124.252.117 | nms-rthr1.salt.net.internet2.edu          | 64.57.17.210   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| bandwidth.chpc.utah.edu                   | 155.101.3.61    | nms-rthr-eth2.newy32aoa.net.internet2.edu | 64.57.17.82    | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| bandwidth.chpc.utah.edu                   | 155.101.3.61    | nms-rthr.salt.net.internet2.edu           | 64.57.17.196   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| bandwidth.chpc.utah.edu                   | 155.101.3.61    | nms-rthr1.salt.net.internet2.edu          | 64.57.17.210   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| nersc-pt1.es.net                          | 198.129.254.22  | nms-rthr-eth2.newy32aoa.net.internet2.edu | 64.57.17.82    | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| nersc-pt1.es.net                          | 198.129.254.22  | nms-rthr.salt.net.internet2.edu           | 64.57.17.196   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| nersc-pt1.es.net                          | 198.129.254.22  | nms-rthr1.salt.net.internet2.edu          | 64.57.17.210   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| nettest.boulder.noaa.gov                  | 140.172.5.21    | nms-rthr-eth2.newy32aoa.net.internet2.edu | 64.57.17.82    | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| nettest.boulder.noaa.gov                  | 140.172.5.21    | nms-rthr.salt.net.internet2.edu           | 64.57.17.196   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| nettest.boulder.noaa.gov                  | 140.172.5.21    | nms-rthr1.salt.net.internet2.edu          | 64.57.17.210   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| nms-rthr-eth2.newy32aoa.net.internet2.edu | 64.57.17.82     | nms-rthr.salt.net.internet2.edu           | 64.57.17.196   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |
| nms-rthr-eth2.newy32aoa.net.internet2.edu | 64.57.17.82     | nms-rthr1.salt.net.internet2.edu          | 64.57.17.210   | TCP      | 30       | 4           |                 | Yes            | -- Select -- ▾ |

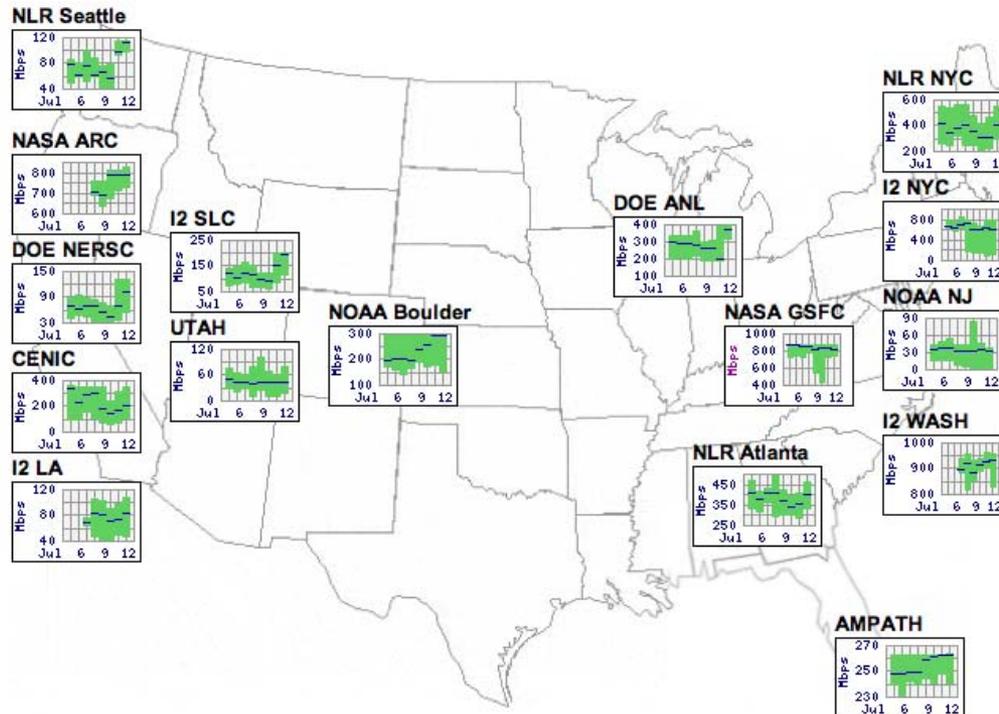
# Active Tests NASA Perspective



## EOS Active Network Testing JET Destinations

The sites below are participants in the OSTP Large Scale Networking (LSN) Joint Engineering Team (JET), and are tested under the ENSIGHT Active Testing Program. The graph for each site shows the minimum, maximum, and median thrupt for the past week. Selecting any of these graphs will link to a page with detailed testing results for that site.

- AMPATH:** [Miami](#)
- CENIC:** [Los Angeles](#)
- DOE:**
  - [NERSC - Berkeley](#)
  - [ANL - Chicago](#)
- Internet2:**
  - [Los Angeles, CA](#)
  - [Washington, DC](#)
  - [Salt Lake City, UT](#)
  - [New York City](#)
- NASA:**
  - [ARC](#)
  - [GSFC](#)
- NLR:**
  - [Atlanta](#)
  - [New York](#)
  - [Seattle](#)
- NOAA:**
  - [Princeton, NJ](#)
  - [Boulder CO](#)
- Utah:** [Salt Lake City](#)





# Test Results Summary

- There is significant variability on the cross-domain paths being tested.
  - Some are actively used paths with significant cross traffic
  - Some paths are mostly idle
  - **Some paths are not allowed by policy**
- Bandwidth results
  - Many show high, stable performance
  - Some show significant variability
  - Some are asymmetric, probably due to test infrastructure configuration issues



# Lessons Learned – Initial Comments

- BWCTL tests are far more prevalent than the latency tests
- Having a mostly full mesh of both the latency and the throughput yields a better and more rounded picture
- Exposing the data for 3rd party access is problematic from a policy and technical perspective. However, this data is necessary for good troubleshooting.
- Exposing the data for fixed site and tests is useful, but being able to dynamically bring up sites and graphs would be even more useful to active troubleshooting.
- Not everyone is setting up IPv6 interfaces for measurement at this time
  - More thoughts on how to balance IPv6 measurements might be necessary.

# Next Steps



July - Collect Lessons Learned

August - Write up a report

# Questions?

