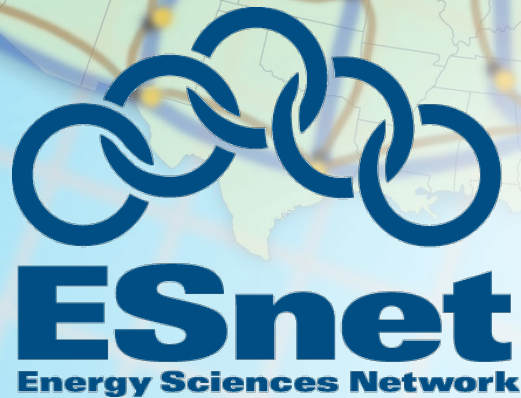


ESnet Network Measurements

Joe Metzger

Presented at ESCC

Feb 5 2008



*Supporting Advanced Scientific Computing
Research • Basic Energy Sciences • Biological
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Sciences • High Energy Physics • Nuclear
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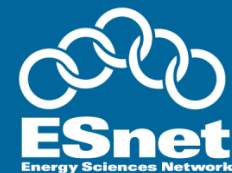


U.S. DEPARTMENT OF
ENERGY

Office of
Science

- ESnet
 - Goals
 - Provide Services to ESnet Users
 - Encourage community deployment
 - Roadmap
 - Deployment Activities
 - Research & Development Activities
- ESnet Sites
 - Participation
 - Deployment
 - Next Steps

Providing Services to ESnet Users



- Support adhoc network measurements for troubleshooting and infrastructure verification.
 - By ESnet Staff within the backbone
 - By ESnet sites to the backbone
 - By ESnet customers across the backbone
- Support regularly scheduled tests for diagnosing problems, demonstrating capabilities and monitoring.
 - Between ESnet POPS
 - Between ESnet sites & peers to ESnet POPS
 - From sites across ESnet.
- Visualization
 - Allow ESnet user community to better understand our network & it's capabilities.
 - Allow ESnet users to understand how their use impacts the backbone.
- Alarming
 - Automated analysis of regularly scheduled measurements to raise alerts.



Foster Community Deployment



- Developing recommendations on how to use and deploy the tools:
 - <http://fasterdata.es.net>
 - Hardware
 - Software
 - Measurements
 - Which scheduled & adhoc measurements should be setup
 - How to interpret results
- Working with focused communities
 - LHC Tier 1 & 2
 - Universities
 - Others



Deployment Activities(1)



- ✓ Deployed the Hardware in the ESnet backbone
 - OWAMP Servers (>5 left)
 - BWCTL Servers (>5 left)
- ✓ Deployed tools to support adhoc measurements for debugging
 - OWAMPD
 - BWCTLD
- Harden the infrastructure
 - Centralized management of OS & Services configuration
 - Continuous monitoring of servers & services
 - Performance tuning & verifying everything is working as designed.



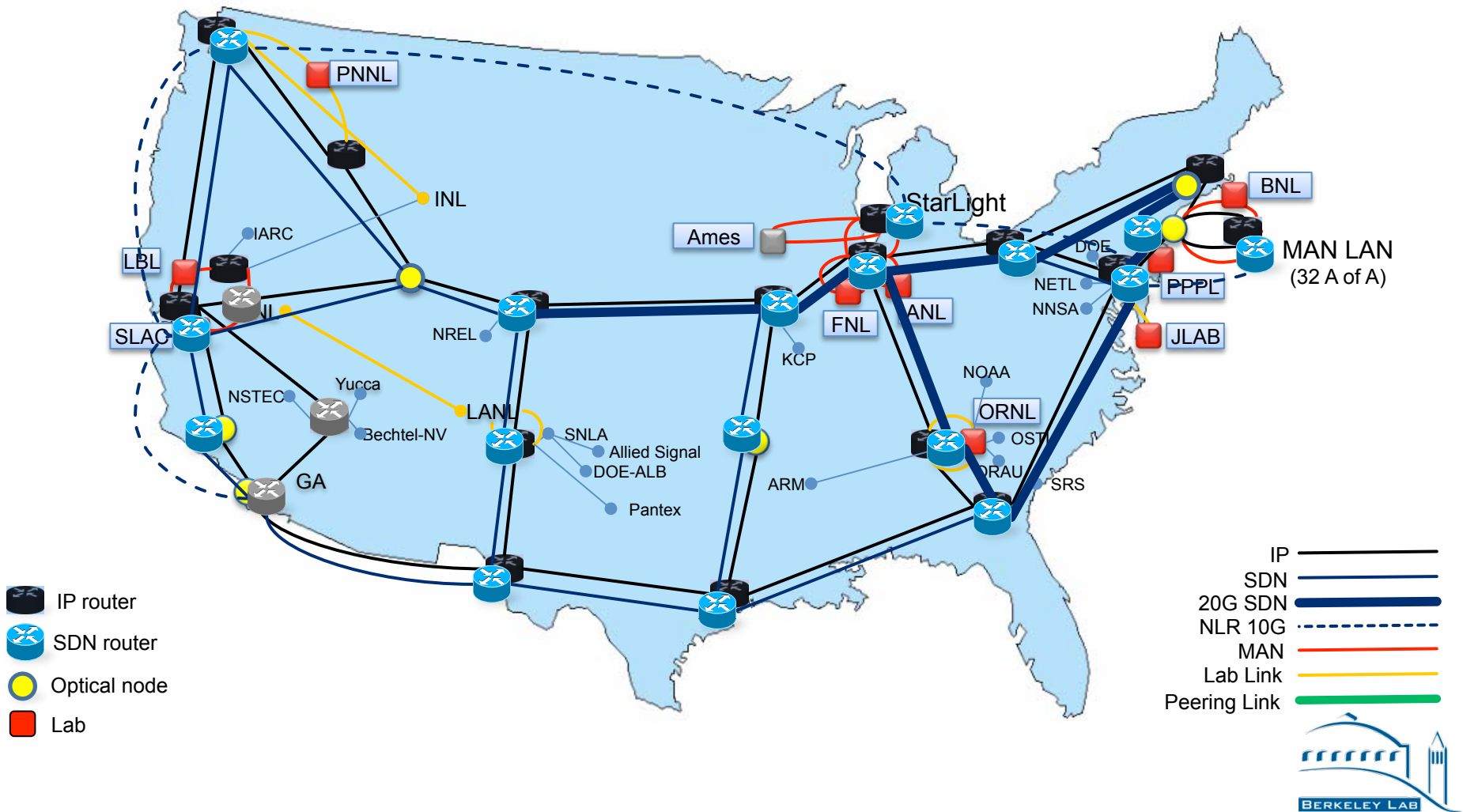
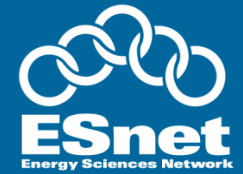
Deployment Activities(2)



- perfSONAR Buoy Deployment
 - Between ESnet systems
 - To Internet2 & GEANT
 - To/From ESnet Sites
- Topology Service
- Utilization Service
- Simple GUIs for all of the above



ESnet4 – Jan 2009



Research & Development Activities

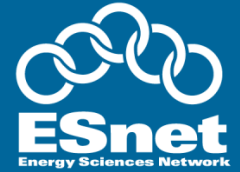


- Scaling & robustness enhancements
- Visualization Tools
 - Single Domain Tools
 - Utilization Browser
 - Topology Browser
 - Latency & Bandwidth Browser
 - Advanced Tools
 - Looking across multiple domains
 - Looking at correlations between different types of measurements
 - Application or user community specific views
- Alarming
- Integrating OSCARS circuits
 - Topology
 - Utilization
 - Active measurements across them



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ESnet Site Planning



- Identify Measurements
 - SNMP
 - Utilization
 - Errors
 - Active
 - Latency
 - Bandwidth
 - Topology
- Identify Users
 - Who will use the data and how?
- Evaluate publication issues
 - Is the data already published?
 - Are there security concerns?
 - Can they be addressed?



- Hardware
 - Generic White boxes
 - Koi System
- Software
 - Site policy will influence your options
 - NPToolkit
 - RPMs
 - Source distributions

Next Steps



- Using the Measurement Infrastructure
 - <http://fasterdata.es.net>
 - Lists of deployed services
 - Brief instructions on how to use them
 - Pointers to lots of other resources.
- Should we start a more organized ESCC community deployment effort?
 - ESnet Site mailing list?
 - Working group?

