

# Internet2 Services and coordination with European NREN Services

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# Intro and Overview

- Internet2 Services portfolio overview
  - DCN-> ION transition
  - Operationalizing perfSONAR
- Coordination of services with European NRENs

# Internet2 Service Portfolio

- Network
  - Nationwide backbone network infrastructure
    - R&E IP Network
    - Commercial Peering Service
    - ION (dynamic circuit network service)
    - Static circuits
    - WaveCo
  - FiberCo
  - MAN LAN Exchange Point

## Internet2 Service Portfolio cont'd

- perfSONAR-based measurement and monitoring
- InCommon Federation
- USHER (U.S. Higher Education Root Certificate Authority)
- Internet2 Commons (video-conference)

## DCN -> ION Transition

- Transition former Dynamic Circuit Network (DCN) Pilot to a production service named: ION (Interoperable On-Demand Network)
- InterDomain Control (IDC) protocol-compatible

# History of Internet Dynamic Circuits

- Leveraged experience gained on the Internet2 HOPI Testbed
- Dynamic Circuit Network based on Ciena CoreDirector CI platform
- Control software developed in collaboration with ESNNet, MAX, USC ISI East, and George Mason University
- DCN Pilot Discussion in the DCN Working Group
  - Define production service
  - Began in late 2008

# Internet2 ION Service

- Interoperable On-demand Network
- Leverages existing control plane work with a simplified web-application to instantiate circuits on the Internet2 dynamic circuit fabric
- Production in September
  - Supported at the Internet2 NOC

# ION Service Characteristics

- Reservation of 50Mbps-10Gbps circuits
- Ability to reserve circuits on both Internet2 ION fabric and other dynamic circuit networks
- Each connector receives 250Mbps of permanent circuit capacity to use as they desire
- No additional fees for service
- AUP free with no membership requirements to participate
- Support for direct IDC calls from 3rd party signaling applications

# Operationalizing perfSONAR

- The goal of perfSONAR is to make network diagnostic data available in a consistent fashion across multiple domains.
- Our operational goals:
  - Make network data for backbone / MAN LAN available (Short-term)
  - Support regional networks, campuses, and international links (e.g. IRNC) in making network data available (Short-term)
  - Partner with international peers on running tests (Medium-Term)
  - Consume data from our network, MAN LAN, and partners via perfSONAR (Medium-Term)

# Operationalizing perfSONAR

- Internet2 would ensure that data was available from key points in its own networks
  - MAN LAN
  - Backbone Locations

# Operationalizing perfSONAR

- There will be an informational effort aimed at explaining the use and value of perfSONAR.
- The more domains that are included in this effort the more useful it will be.
- Initially it would be concentrated on Backbone/International/Regional partners.
- Later extended to individual research scientists.

# Operationalizing perfSONAR

- Development work will continue as well.
  - Better GUI's that look at data across multiple domains and help to diagnose problems across multiple domains

# Coordination of Services with European NRENs

- Would like both services to be interoperable with European NRENs' services
- Major elements of both services have been developed in conjunction with the GEANT community (IDC protocol and perfSONAR protocols)
- Challenge is to deploy interoperably across our respective networks and between each other
  - Across entire end to end path

## DICE work in this area

- DICE: informal collaboration (5+ years ongoing) of ESnet, CANARIE, GEANT, Internet2 and (more recently) USLHCnet
- Current focus: interconnecting and operating circuit services and perfSONAR capabilities
  - For Europe, in context of the GN3 multi-domain services work

# Thoughts? Questions?

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