



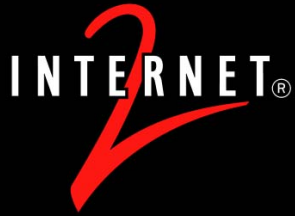
Internet2 IPv6 Update

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Terena Networking Conference 2002

Limerick, Ireland

- IPv6 Status
- IPv6 Infrastructure Upgrade
- IPv6 Training for Campus Engineers
- The challenge to Campuses



Internet2 Engineering Objectives

- Provide our universities with superlative networking:
 - » Performance
 - » Functionality
 - » Understanding
- Make superlative networking strategic for university research and education

Current IPv6 Status

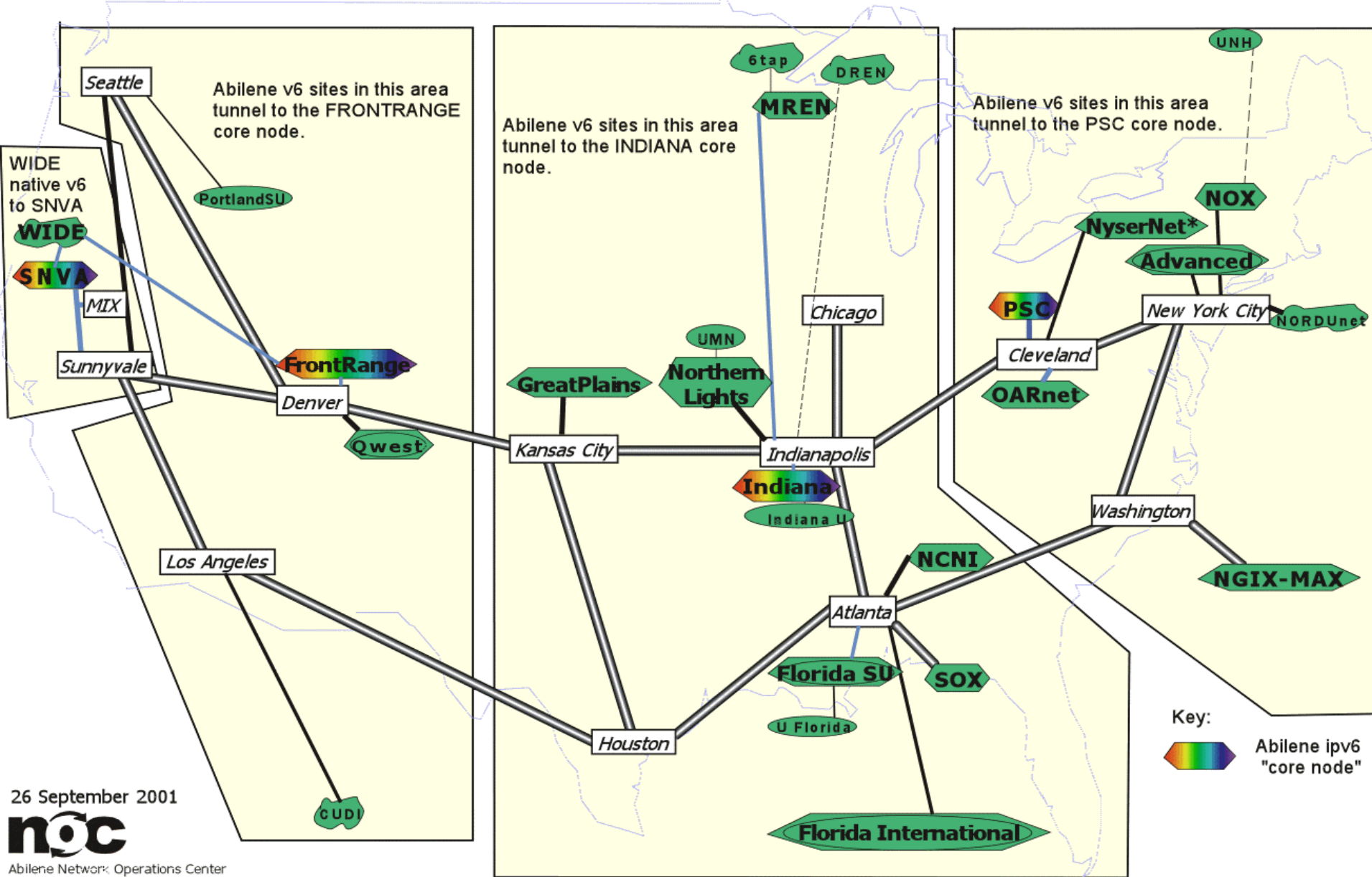
- Clarify motivation for IPv6
 - » End-to-end transparency and global addressability
 - » Supports application innovation, e.g., peer-to-peer

- Four Cisco 7200 Routers
 - » Sunnyvale, Denver, Indianapolis, Washington DC
 - » IPv6-over-IPv4 tunnels among them
 - » IPv6-over-IPv4 tunnels to gigaPoPs and campuses
 - » Supports flexible early deployment
 - » Cannot support very high performance
 - DV teleconferencing support required Cisco IOS upgrades

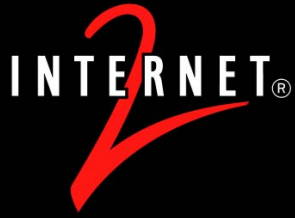
The Abilene Network IPv6 deployment



Four Abilene ipv6 "core nodes" peer with each other, and other nodes with them



- Abilene 10 Gb/s Upgrade
 - » Dual IPv6 plus IPv4 on Juniper T640 routers
 - » Indistinguishable forwarding performance
- Challenge to gigaPoPs and Campuses
 - » Moving from tunneled to native connectivity needs to be coordinated
 - » Cisco 7200s will linger but provide second-rate performance
 - » Key wide-area connectivity and links will be upgraded
 - » Both Cisco and Juniper can now support IPv6 well, but planning needed
- Aspiration: IPv6 First-rate Infrastructure by end of 2002-03 Academic Year



IPv6 Training for Campus Engineers

■ IPv6 Workshop Series

- » Two-day workshops hosted by gigaPoPs
- » Hands-on
- » Addressing, Routing, DNS, some applications
- » About 20 students at each

- Wide-area Infrastructure is (relatively) easy to upgrade
- Campuses have more routers, more servers, and more people to train
- But:
 - » Not an option
 - » Not all LAN segments need to be upgraded, since tunneling works well when performance not a major issue



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