

Internet2 and IPv6 Futures: A Backbone Perspective

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History

- vBNS had IPv6 around 1998
 - Recollection: tunneled on Cisco 7500s
 - No support on Netstar Gigarouters
- Our first IPv6 router
 - Cisco 1005, single-legged on 10BaseT
 - Both external (BGP) and internal

More History

- IPv6 on Abilene
 - Began with tunneled network
 - Soon migrated to dual stack
 - Can't recall whether first dual stack was on Cisco 12000s or Juniper M160s
 - T640s, MX960s, T1600s all dual stack
 - IPv6 multicast enabled at some point (but how important?)

Other Backbones

- ESnet IPv6 enabled (dual stack)
- As is DREN (I'm pretty sure)
- Don't know about other FedNets
- Many (most?) international NRENs are dual stack
 - CERNET2 is IPv6-only
- More and more commodity providers dual stack

What's left for backbones?

- Assist with transition mechanisms
 - 6to4
 - Yes, despite move toward deprecation
 - Many problems with black holes
 - Run a relay router
 - Two on Internet2: 3ROX, Indiana GigaPoP
 - Others (NAT64, Teredo, etc) best left to campus/RON

Take-Aways

- Work mostly complete on backbone networks
- Transition mechanisms (tunneled) aren't optimal, but still need support
- Be resource for regionals, campuses
 - Generally more experience with routing, addressing