

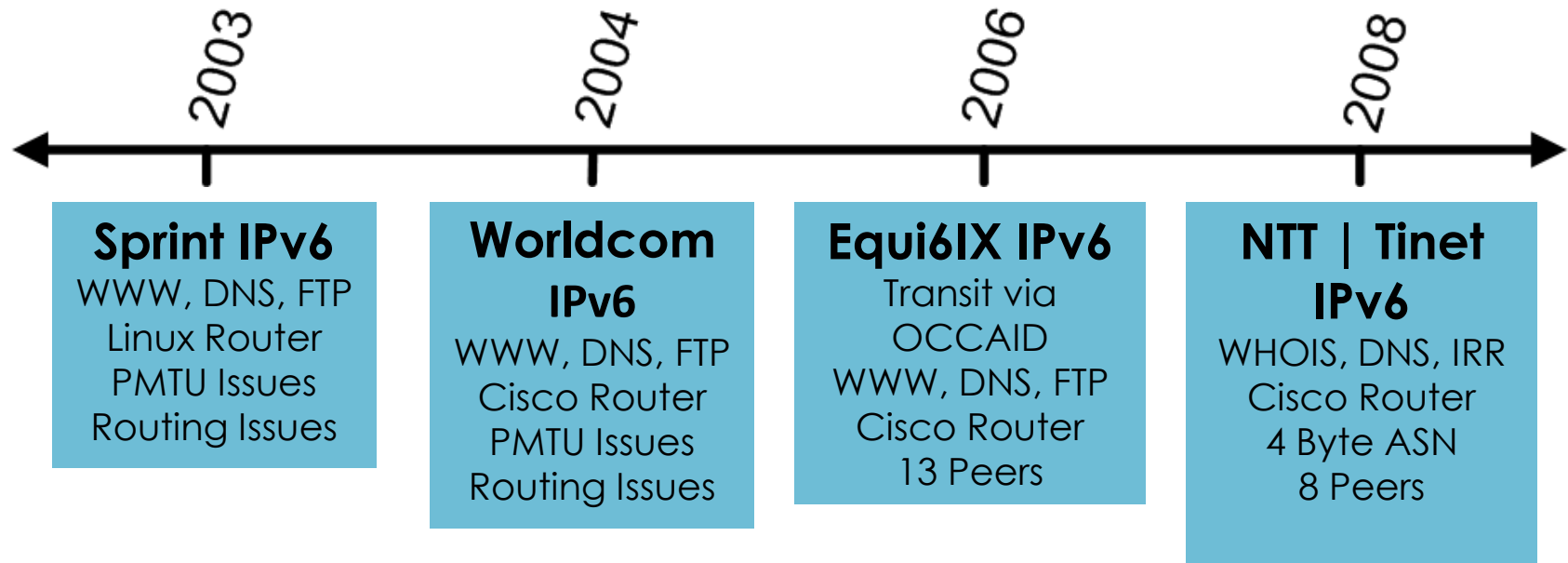


ONTARIO
TORONTO
18-21.APR.2010

IPv6@ARIN

Matt Ryanczak
Network Operations Manager

Timeline



2003

Sprint IPv6

WWW, DNS, FTP
Linux Router
PMTU Issues
Routing Issues

2004

Worldcom IPv6

WWW, DNS, FTP
Cisco Router
PMTU Issues
Routing Issues

2006

Equinix IPv6

Transit via
OCCAID
WWW, DNS, FTP
Cisco Router
13 Peers

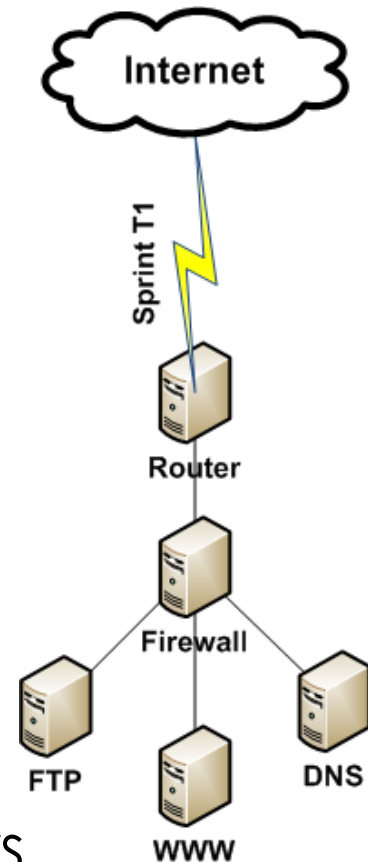
2008

NTT | Tinet IPv6

WHOIS, DNS, IRR
Cisco Router
4 Byte ASN
8 Peers

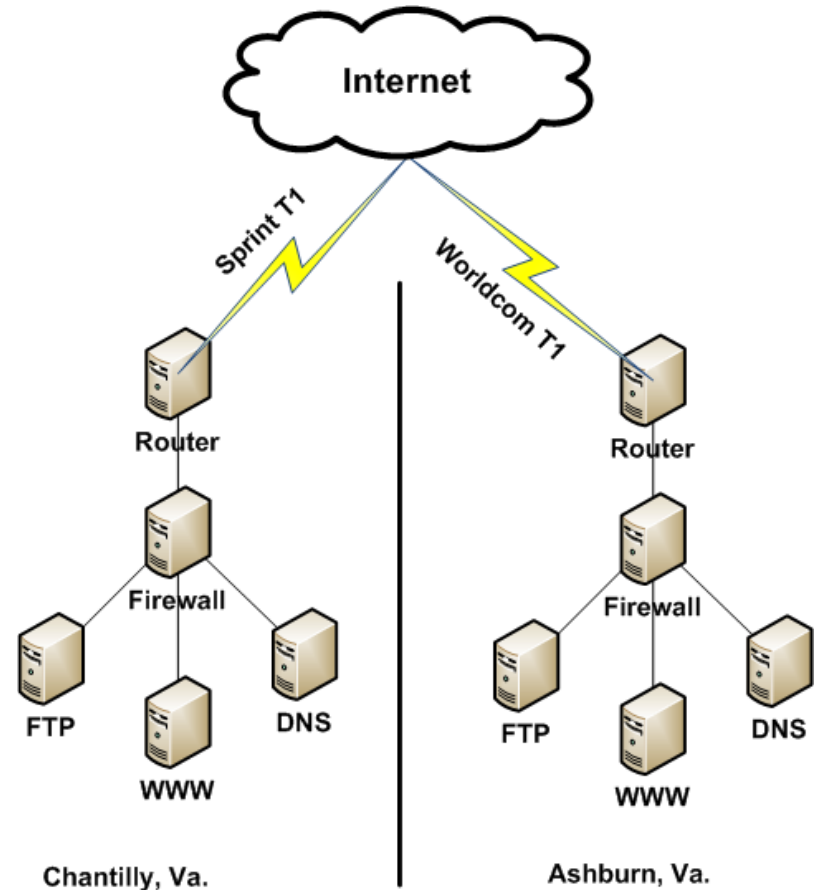
2003: Sprint

- T1 via Sprint
- Linux Router with Sangoma T1 Card
- OpenBSD Firewall
- Linux Based WWW, DNS, FTP Servers
- Segregated Network No Dual Stack (Security Concerns)
- A lot of PMTU Issues
- A lot of Routing Issues
- Service has gotten better over the years



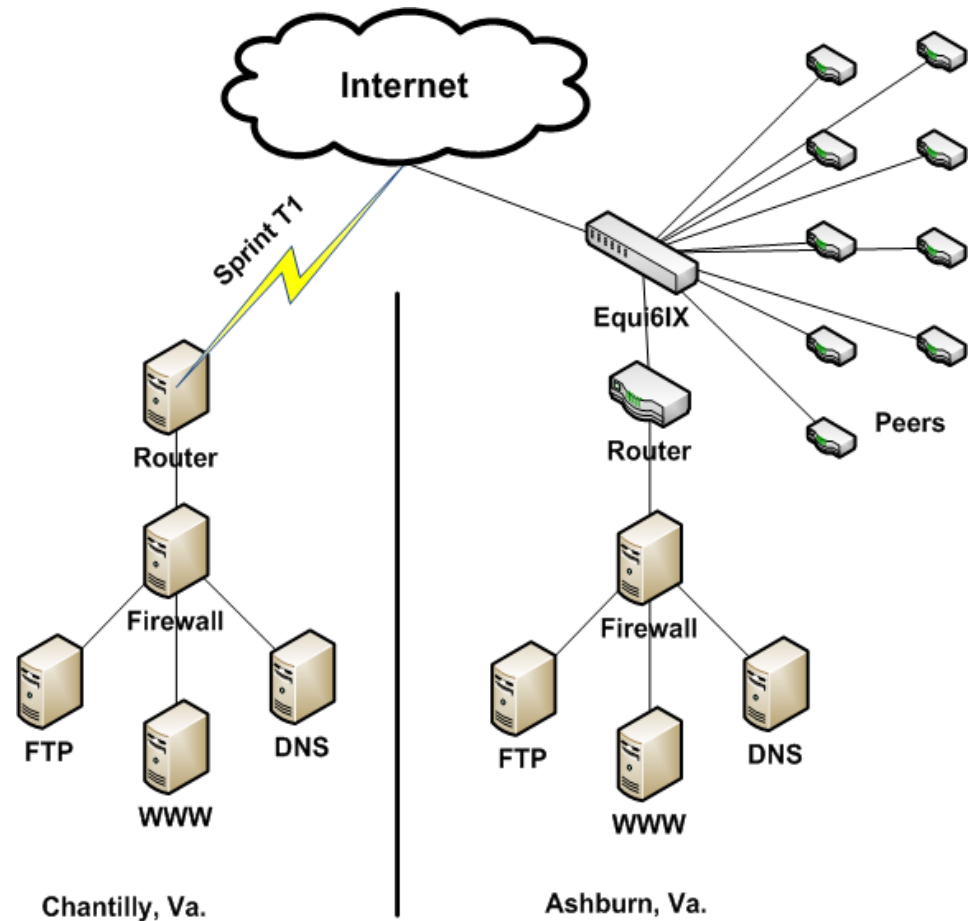
2004: Worldcom

- T1 via Worldcom to Equinix
- Cisco 2800 Router
- OpenBSD Firewall
- Linux Based WWW, DNS, FTP Servers
- Segregated Network No Dual Stack (Security Concerns)
- A lot of PMTU Issues
- A lot of Routing Issues



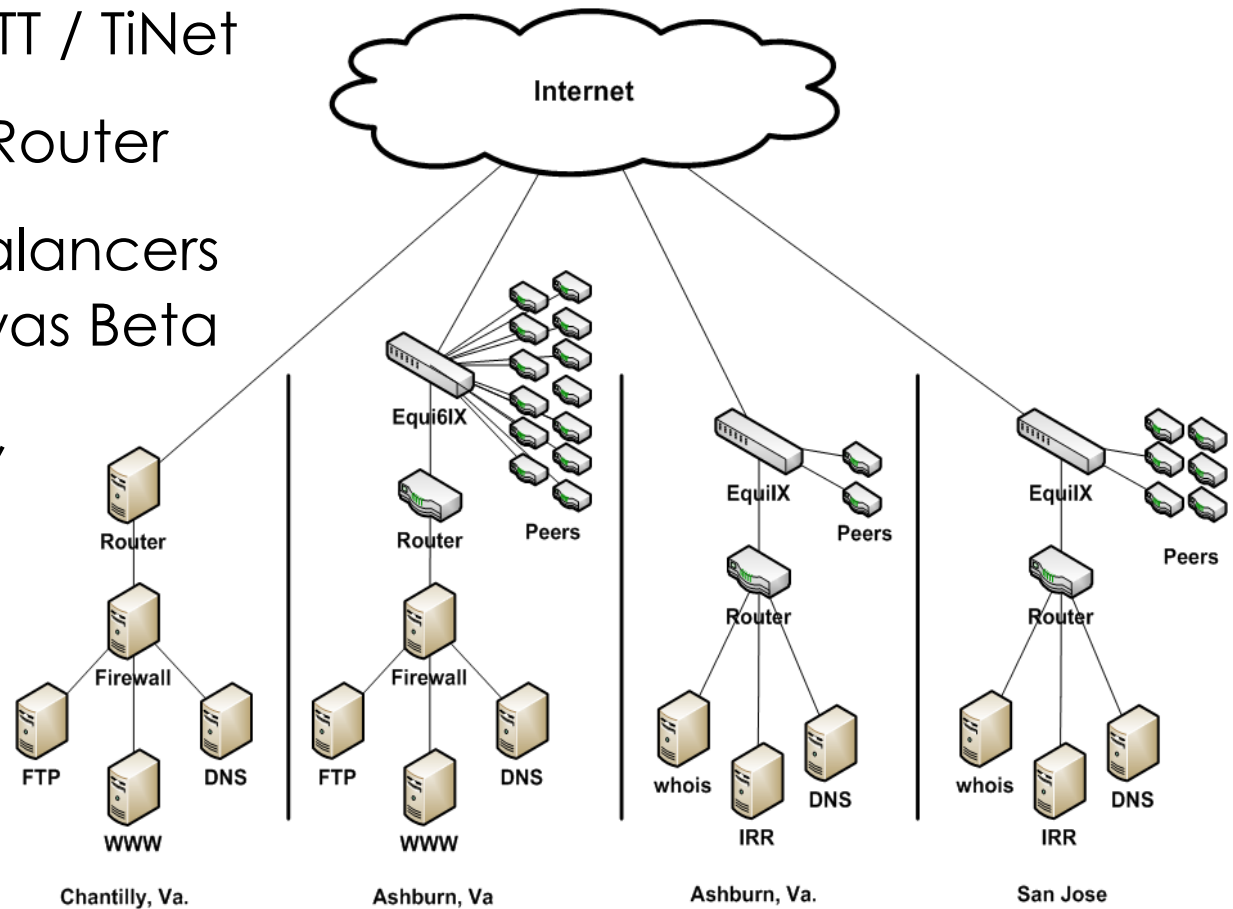
2006: Equi6IX

- 100 Mbit/s Ethernet to Equi6IX
- Transit via OCCAID
- Cisco 2800 Router
- OpenBSD Firewall
- WWW, DNS, FTP Servers
- Segregated Network
- Some Dual Stack



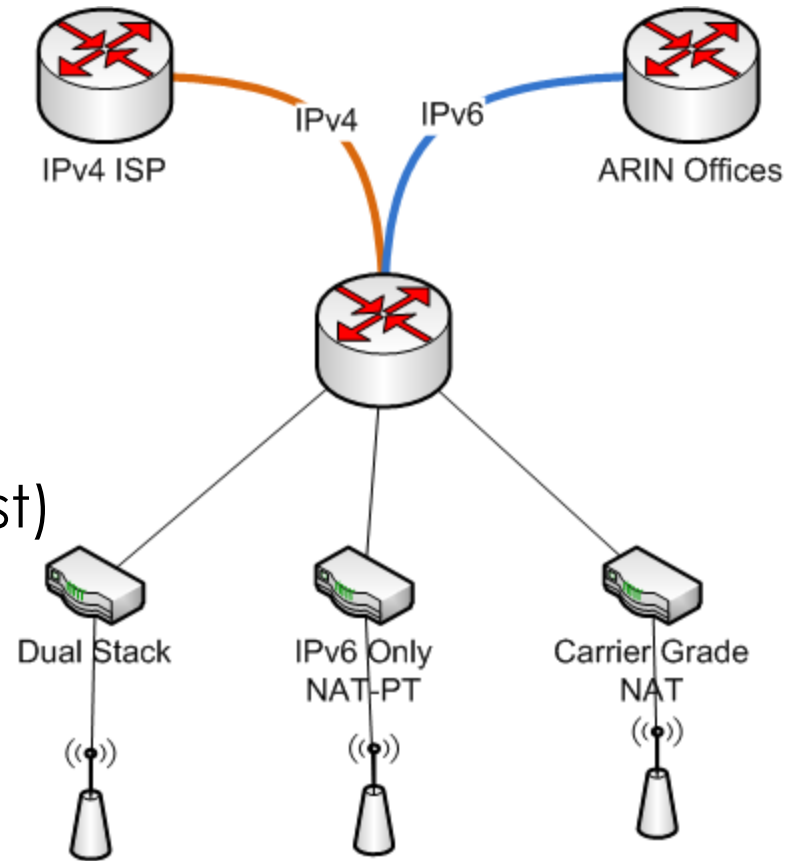
2008: NTT / TiNet IPv6

- 1000 Mbit/s to NTT / TiNet
- Cisco ASR 1000 Router
- Foundry Load Balancers - IPv6 Support was Beta
- DNS, WHOIS, IRR, More Later
- Dual Stack
- Stand Alone Network



Meeting Networks

- IPv6 enabled since 2005
 - Tunnels to ARIN, Others
- Testbed for Transition Tech
 - NAT-PT (Cisco, OSS)
 - Carrier Grade NAT (Comcast)
- Training Opportunity
 - For Staff & Members

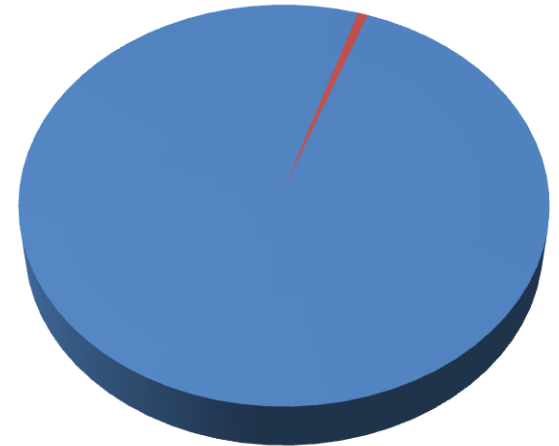
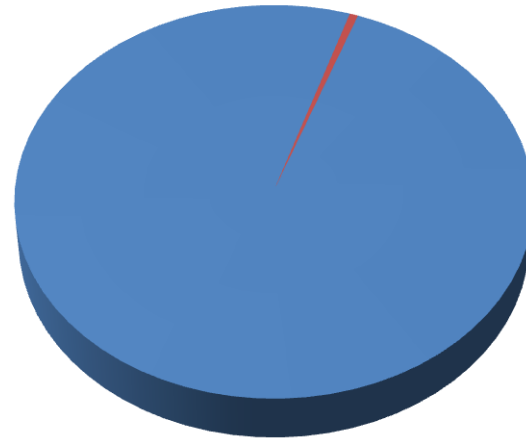
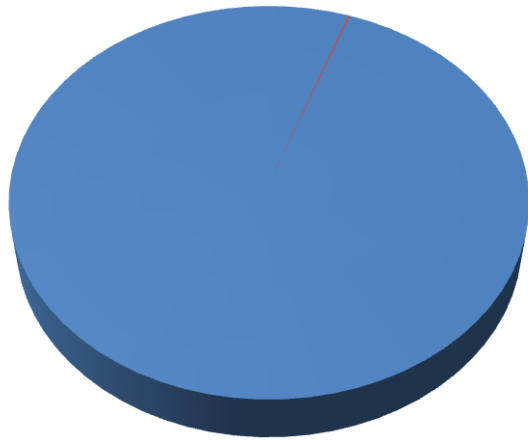


How much IPv6 Traffic?

Whois .12%

DNS .55%

WWW .65%



■ IPv4 ■ IPv6

Lessons Learned

- Tunnels are less desirable than native
- Not all transit is equal
- Routing is not as reliable
- Dual Stack is not so bad
- Proxies are good
- People fear 4 byte ASN

More Lessons Learned

- Native support is better
- DHCPv6 is not well supported
- Reverse DNS is a pain
- Windows XP is broken but usable
- Bugging vendors does work!

Useful Software

- The Apache Web Server
 - mod_proxy, rewrite
- 6tunnel
 - proxy TCP & UDP
- Wireshark and other OSS applications

Today and the Future:

- Standardized on dual stack
- IPv6 is enabled by default
- IPv6 support a requirement from vendors
- All RFPs list IPv6 as a requirement

Thank You

