ARIN IPv6 HOW-TO

How to do Your Own IPv6 Experiments

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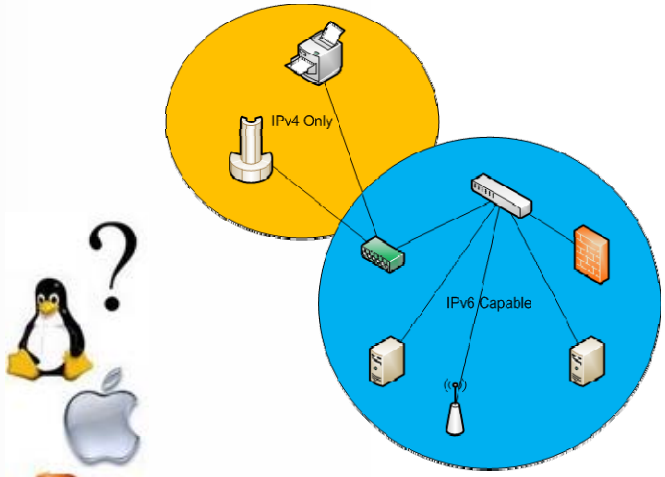
Network Operations Manager

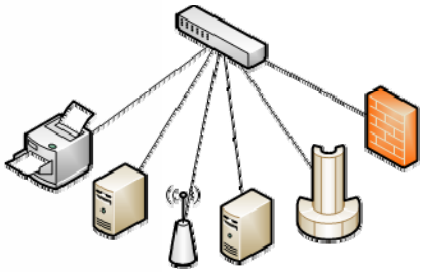
CARIBBEAN SECTOR MEETING

ARIN

What is there to do?

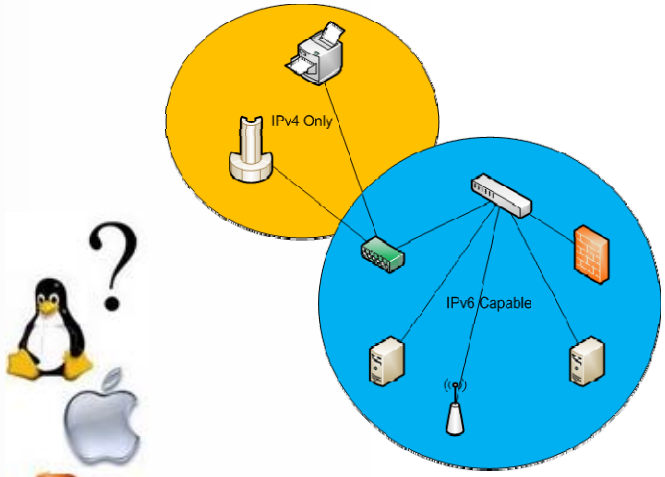
- No Transit Required
  - Provisioning Systems
  - OS / Application Support
  - Security / QOS
- Transit Required
  - Connectivity Testing
    - Routing / PMTU Discovery
    - Performance
    - More!

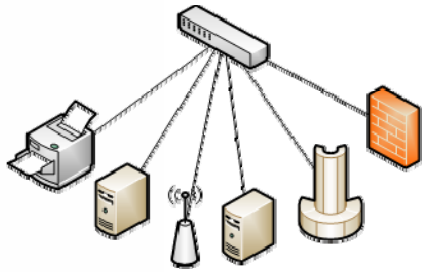




No Transit? No problem!

- OS Support
- Application Support
- Hardware Compatibility





No Transit? No problem!

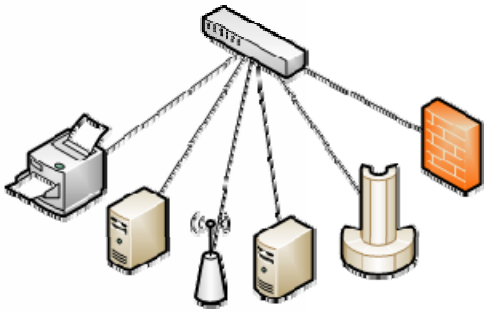
- OS Support
  - All Major OSes Support v6
    - Windows XP Lacks DNS
    - OSX lacks DHCPv6
    - Redhat Lacks Firewall Features
    - Gnome Network Manager is Broken

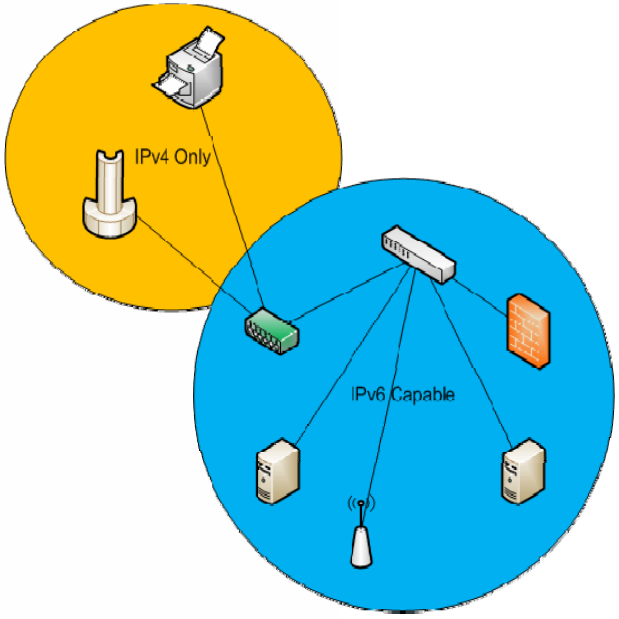
No Transit? No problem!

- Application Support
  - Do My Applications Support v6?
    - Might NAT-PT or similar tech help?
  - Do My Applications Break?
    - Access Control Lists
    - Reverse DNS
  - Monitoring

No Transit? No problem!

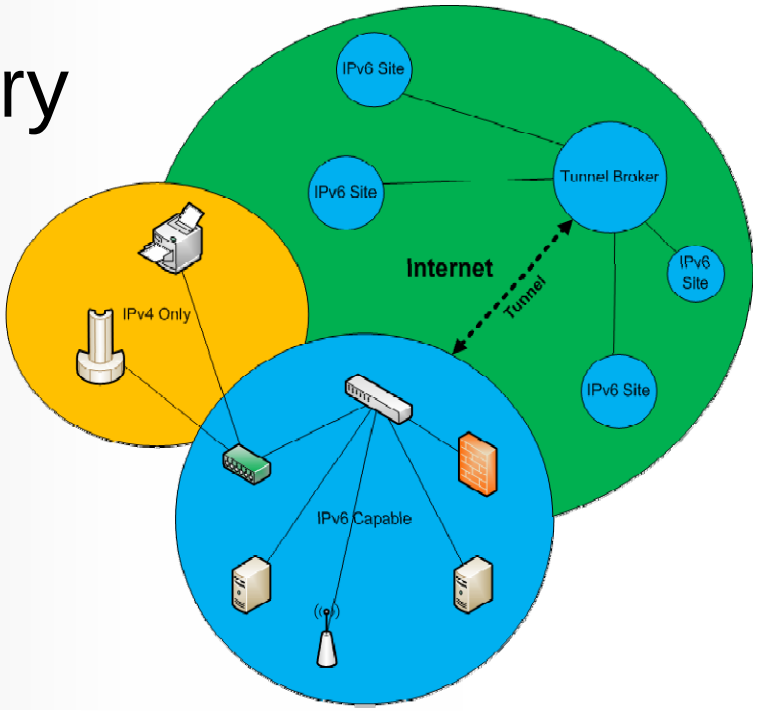
- Hardware Compatibility
  - Network hardware support?
  - Misc hardware support?
  - Do my vendors support v6?





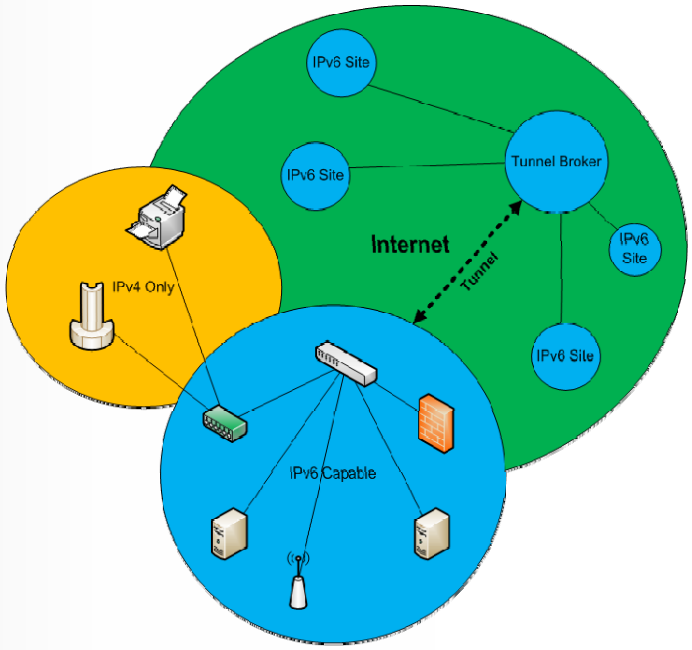
Transit Required

- Connectivity Tests
- Routing / PMTU Discovery
- Performance
- Security



Getting IPv6 Transit

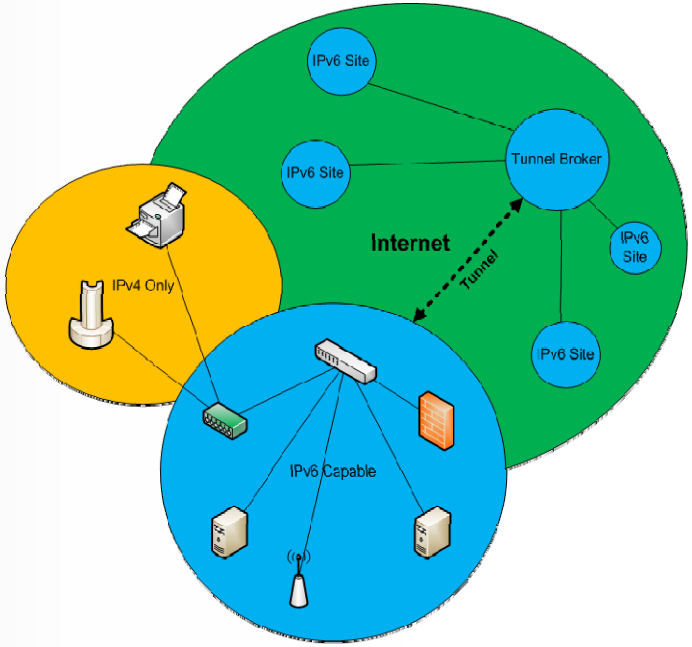
- Native Service
  - Not Likely Supported by your ISP
  - Ask them to support it
- Teredo Tunnels
  - Works behind NAT
- Tunnel Broker
  - Easy to setup
  - Require a public IP address



Teredo

- Good solution for devices behind a NAT
- “Just Works”
- Built into Windows Vista
  - Available for XP but there are problems
- Miredo for Linux / OSX
- Publicly available Teredo servers from Microsoft, consultintel, others.

Tunnelbrokers



- he.net
  - Great for connecting entire networks
  - Supports Linux, Cisco, OSX
  - /48 assignments
- go6.net
  - Great for laptops or devices without fixed addresses
  - Specialized Client for managing connection
- sixxs.net
  - Oldest Tunnel Broker
  - Large Community
  - Supports just about everything

Useful Links

ARIN's IPv6 Wiki: http://www.getipv6.info
SIXXS IPv6 Site: http://www.sixxs.net
he.net tunnel broker: http://www.tunnelbroker.net
go6.net (freenet6 broker): http://www.go6.net
NAT-PT for Linux: http://www.lucastomicki.net/naptd.php
Miredo for Linux / BSD: http://www.remlab.net/miredo/
RADVD: http://www.litech.org/radvd
DHCPv6: http://www.isc.org/index.pl
IVI Information: http://v6s.6test.edu.cn/
SIXXS Cool Stuff: http://www.sixxs.net/misc/coolstuff/

History of IPv6 @ ARIN

Sprint IPv6
WWW, DNS, FTP
Linux Router
PMTU Issues
Routing Issues

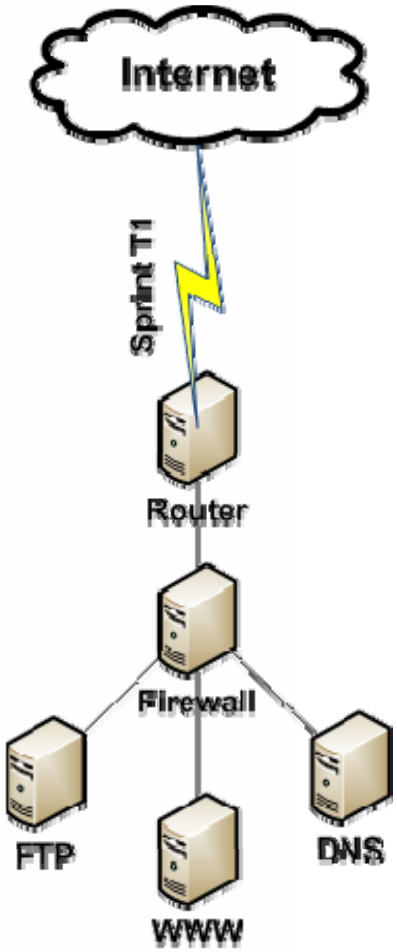
Worldcom IPv6
WWW, DNS, FTP
Cisco Router
PMTU Issues
Routing Issues

Equi6IX IPv6
Transit via OCCAID
WWW, DNS, FTP
Cisco Router
9 Peers

NTT IPv6
WWW, DNS, FTP, SMTP
Cisco Router

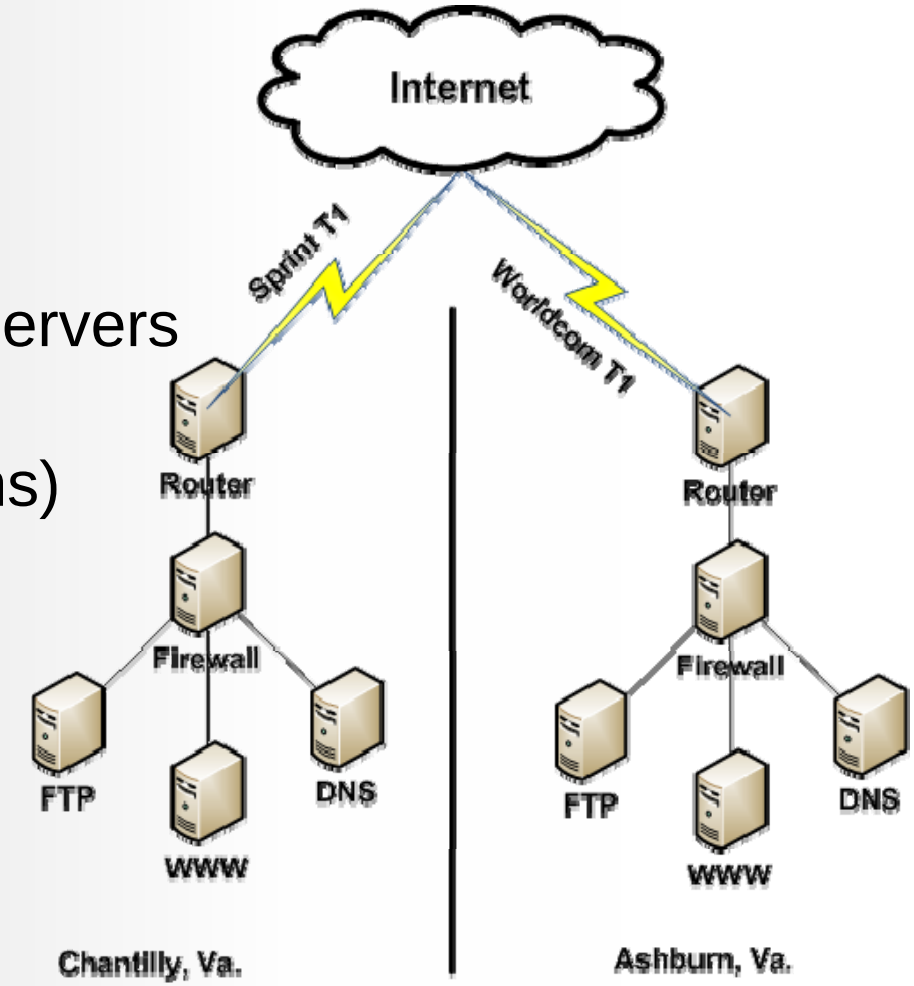
2003: Sprint IPv6

- 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



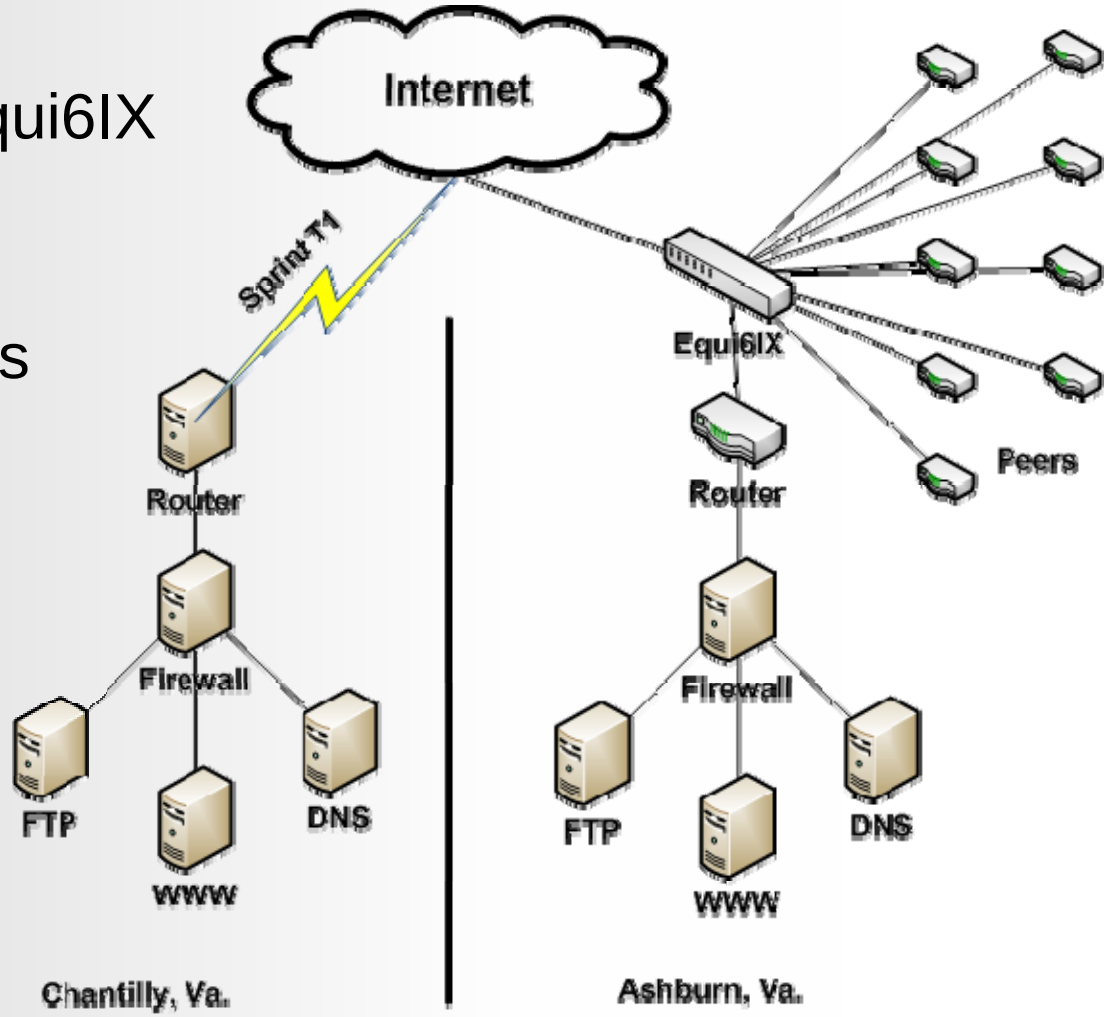
2004: Worldcom IPv6

- 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



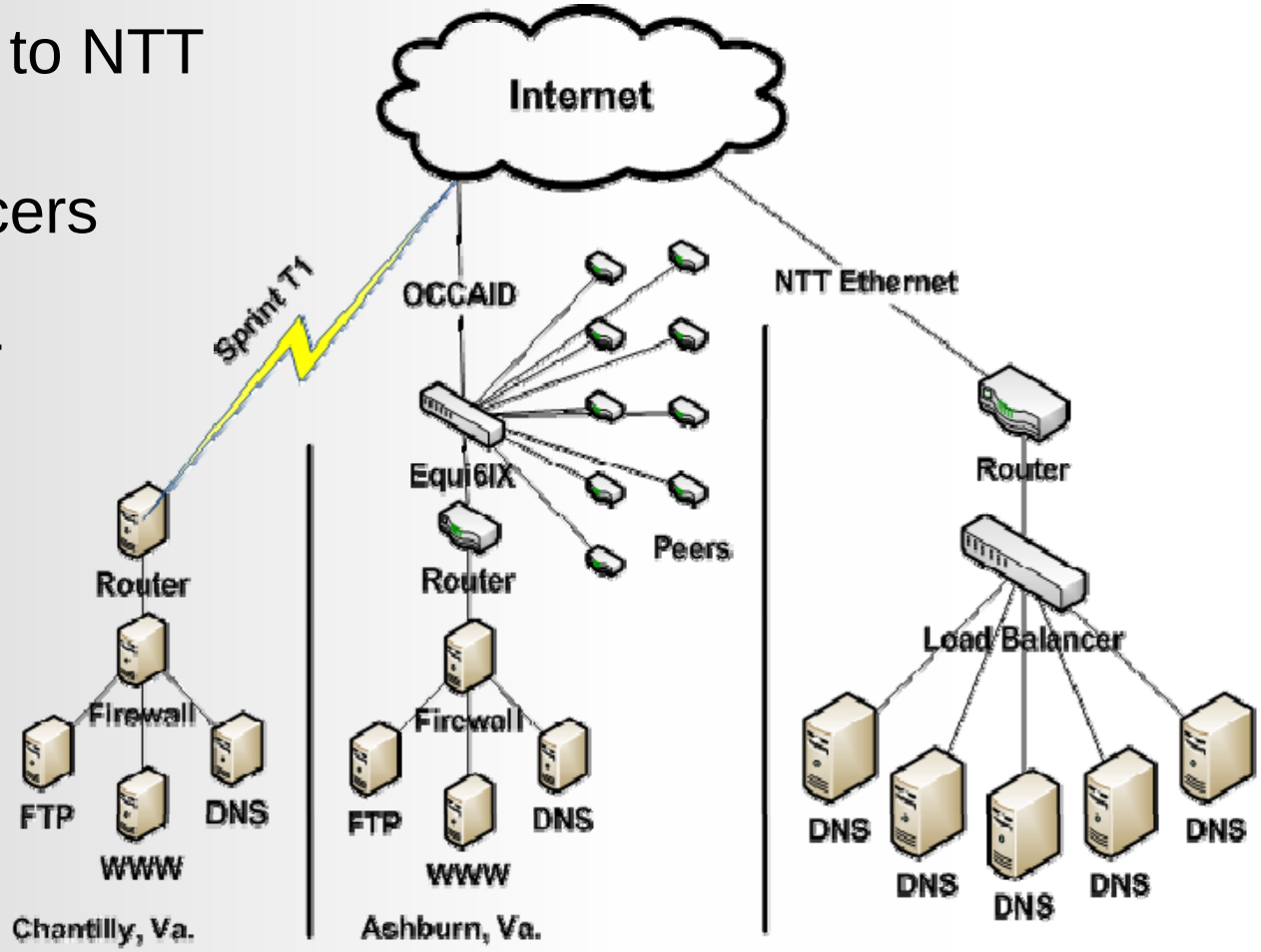
2006: Equi6IX IPv6

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



2008: NTT IPv6

- 1000 Mbit/s Ethernet to NTT
- Cisco 3825 Router*
- Foundry Load Balancers
  - IPv6 Support is Beta
- DNS Now, More later
- Dual Stack
- Stand Alone Network



Today and the Future:

- Rolling out IPv6 to Desktop
- Standardizing on Dual Stack
- IPv6 is enabled by default
- V6 support a requirement from Vendors
- All RFPs will list IPv6 as a requirement

Questions?

Thank You!