



IPv6 Deployment

Issues and Examples of IPv6 Deployment

John Spence

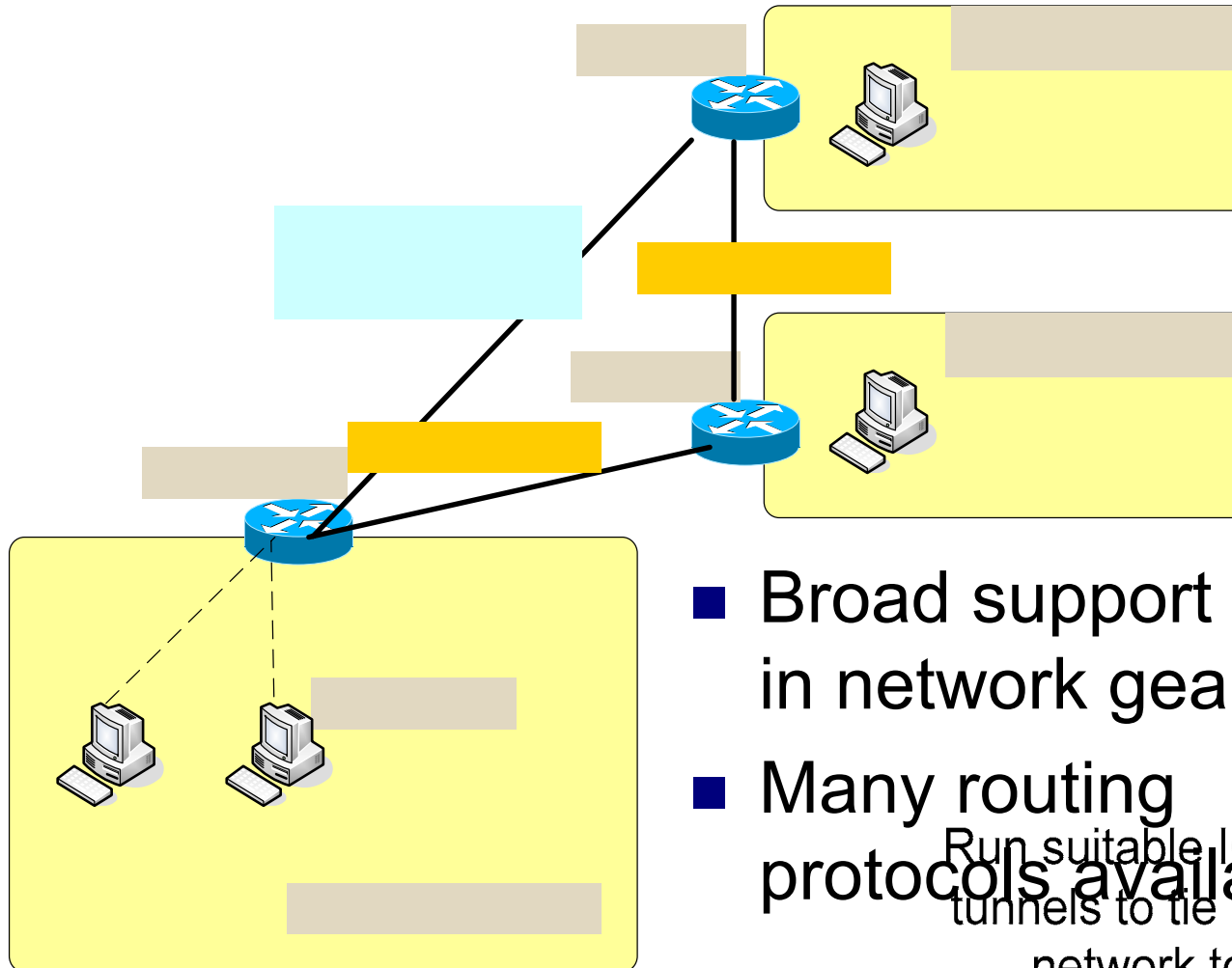
Director of Technology, Native6, Inc.

Presentation Agenda

Network Infrastructure

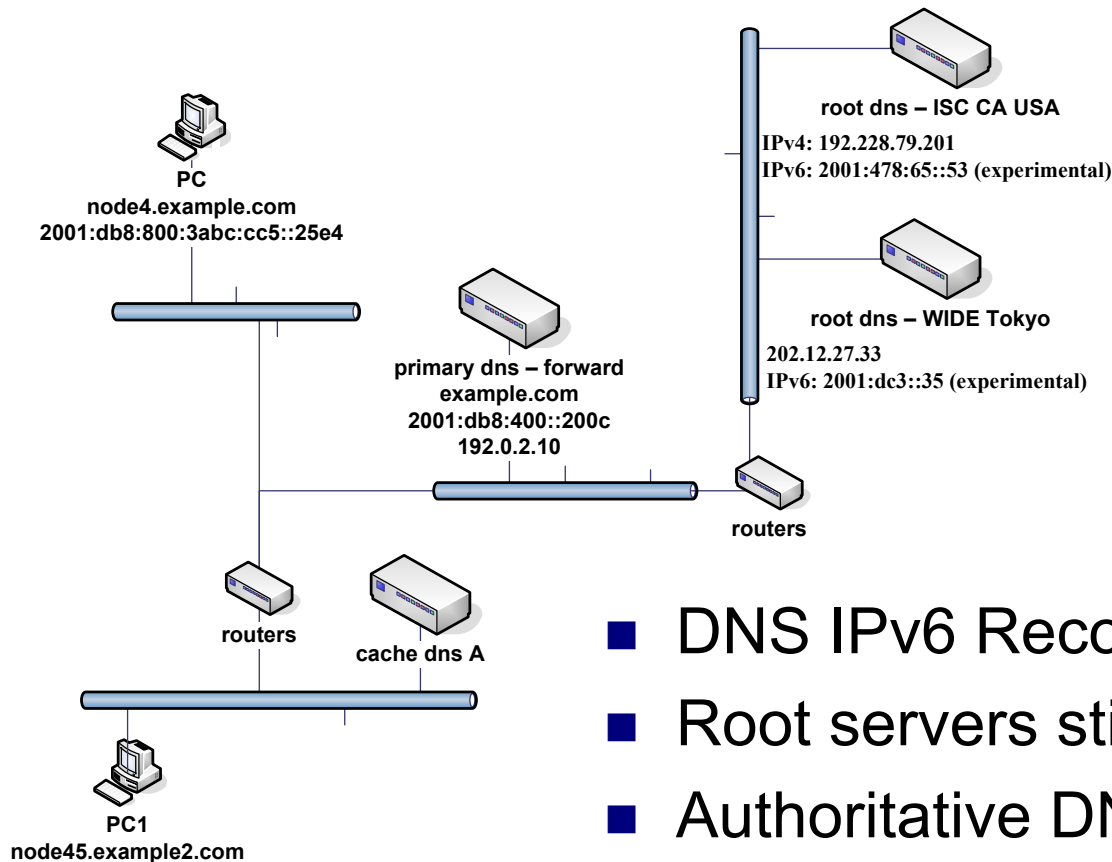
- DNS/DHCP
- Services
- Custom Applications
- Connecting to the IPv6 Internet
- Address Allocation
- Security
- Examples

Network Infrastructure



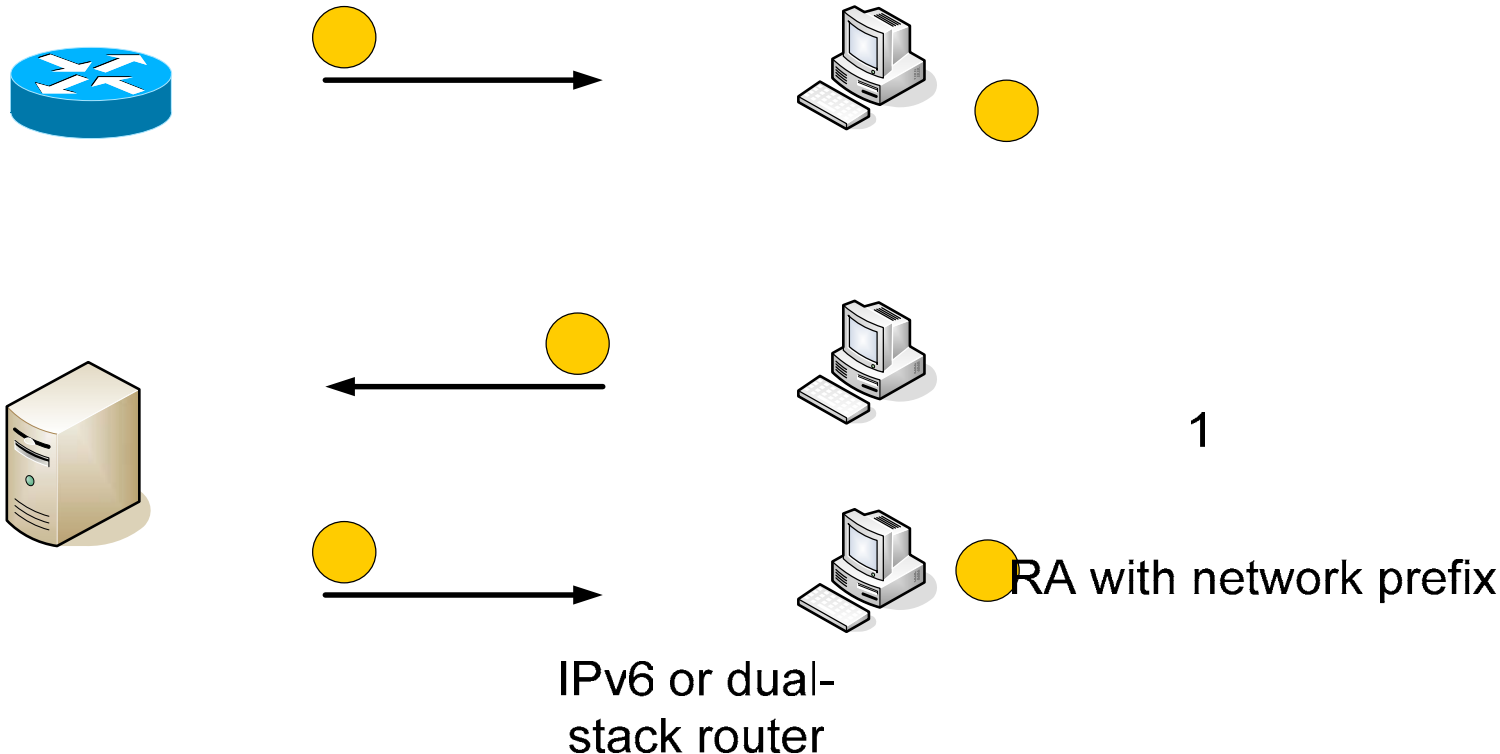
- Broad support for IPv6 in network gear
 - Many routing protocols available
- Run suitable IGP through tunnels to tie Virtual IPv6 network together

DNS



- DNS IPv6 Records well-supported
- Root servers still IPv4-only
- Authoritative DNS almost all IPv4
- Peer-to-peer will drive DDNS

DHCPv6

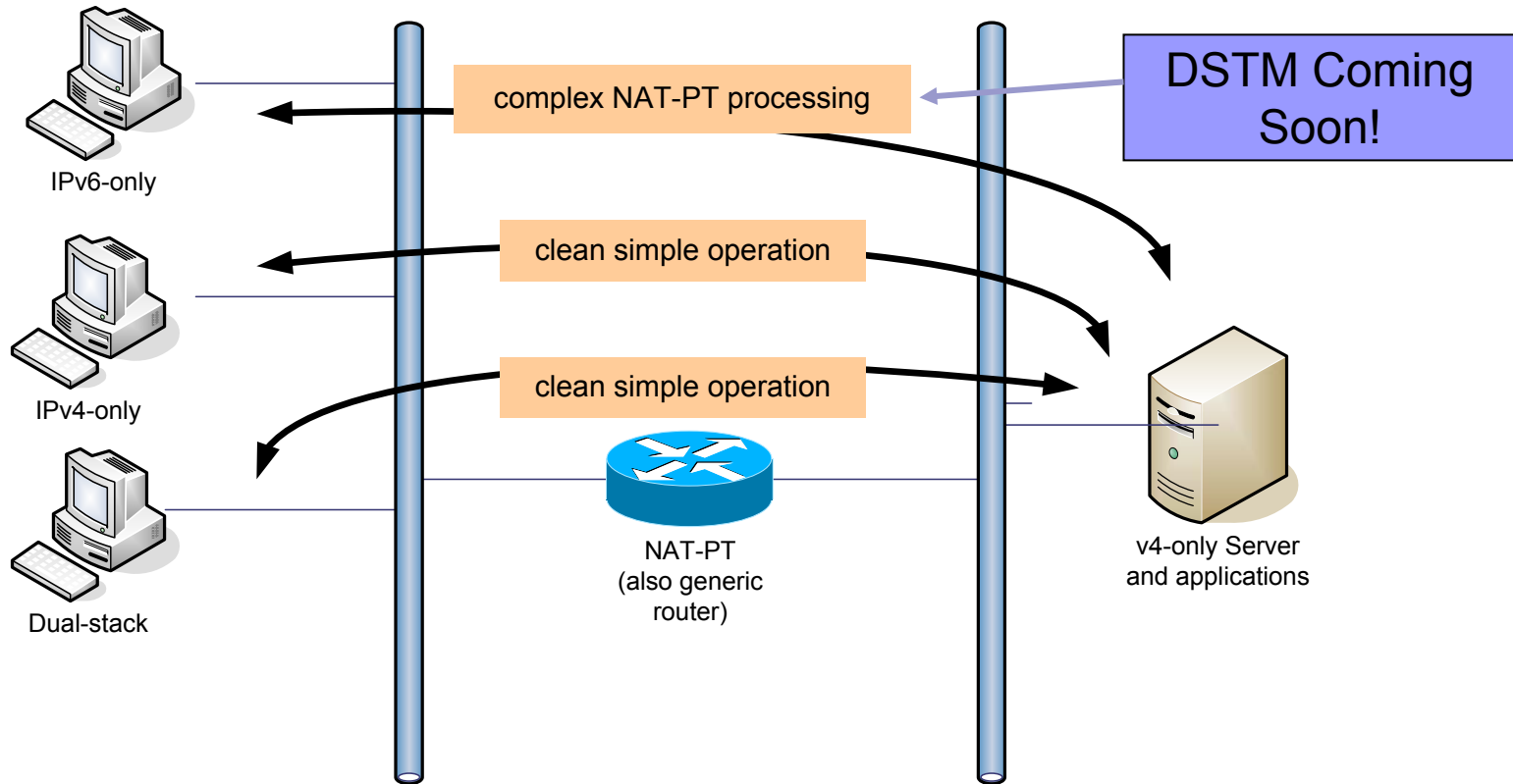


- DHCPv6 solutions still new
- “stateless” DHCPv6 useful in combination with stateless autoconfiguration
- Enterprises may gravitate to DHCPv6 due to comfort factor

Services

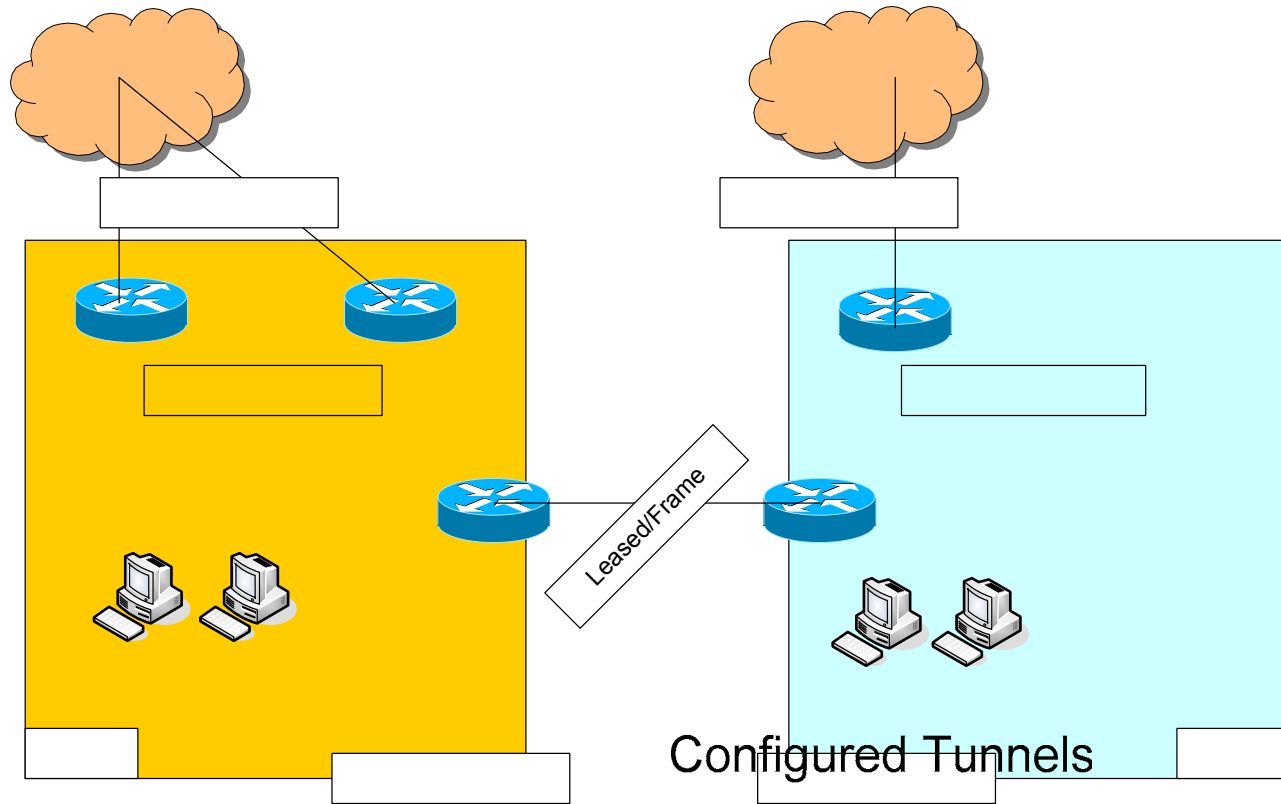
- Few services ready today
- Apache on Unix “poster child” for mature solution
- Microsoft IISv6 IPv6-capable
- Support for “complementary tools” patchy
- Many things that can be done (fetch IMAP mail over IPv6 with non-Microsoft clients) are more technology demonstration than products ready for deployment

Custom Applications



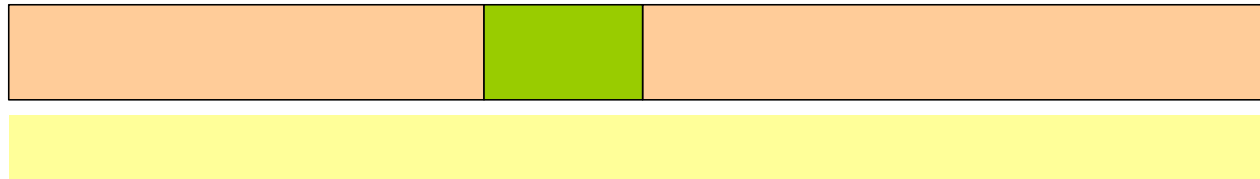
- Most cases dual-stack clients will be better than NAT-PT
- Some applications will port to IPv6/IPv4 easily

Connectivity to the Internet



- Many choices for connectivity today
- Early deployments can use tunnel to gain experience
- Multihoming still an important issue to be resolved

/48 allocations



48 bits

Entire 128-bit Address

- 16 bit topology goes fast for a large growing organization
- Poor deployment planning will lead to renumbering
- Multiple /48 allocations will be common for large enterprise

Security

- Tunneled traffic difficult to inspect and control
- IPsec tunnels are completely opaque to edge-based firewalls
 - use distributed firewalls for IPsec peers talking to untrusted external peers
- Teredo is based on defeat of (weak) NAT protections – understand how this mechanism works
- IPsec deployment will still lack without PKI and widespread alternatives to manual keying
- ICMP rate-limiting should replace ICMP-packet dropping at network edge

Questions

Thank you for your time

jspence@native6.com

www.native6.com