



The Road to IPv6

Smooth Driving (With a Few Potholes)

February 16, 2005

R. Kevin Oberman
Network Engineer



Introduction

- Disclaimer
 - ESnet is probably not typical
 - Every network is unique
- Mostly a smooth road
- Some things can jar you without planning
- Few real problems (Stuff that's broken)

Mostly a Smooth Road

- Most major vendors have solid IPv6 implementations
- BGP, ISIS, and OSPFv3 seem to inter-operate well
- Excellent performance on platforms doing hardware forwarding (but many don't!)
- Configuration generally like IPv4 (sort of)

Some Bumps to Avoid

- Addressing plan is important
 - But don't over-plan. Your plan won't be perfect.
- Many platforms forward in the CPU
 - At current traffic levels this may be OK
 - Plan on replacing this hardware as traffic grows
 - Avoid hardware that can't support IPv6 for high speed links (> DS-3)

Some Bumps to Avoid (cont.)

- Firewalls often can't deal with IPv6 at all
 - Bypass is not a good idea as hackers HAVE discovered IPv6
 - Consider a host-based firewall until you can get a unit with integrated support (OpenBSD or FreeBSD)
- Not all vendors support all routing protocols
 - Some do ISIS. Some do OSPFv3. Some do both.

Some Bumps to Avoid (cont.)

- Some configurations lack consistency
 - show bgp ipv6
 - show ipv6 interface
- Don't forget DNS!
 - Do your existing tools support AAAA?
 - Can support be added?
 - Most hosts generate their own addresses
 - DHCPv6 or generated rDNS?

Big Bumps (Ouch!)

- Beware of tunnels. Some don't handle IPv6 well.
- Some protocol interoperation problems still exist
- Re-addressing is still a problem. Try to avoid it. But don't get carried away.

Conclusion

- No time like the present to get started
 - It is better to learn to deal with it BEFORE a customer demands it NOW!
 - DOD, DOE, and other government agencies are likely to make IPv6 a requirement soon
 - International research projects are increasingly making use of IPv6
- He who hesitates is lost (or at least will look confused)