

Deploying IPv6 in a Windows LAN

Deploying is offering services.

Or solving an unrelated problem.

Deploying IPv6 in a Windows LAN

Motivation

- New people installed new software
- Unexpected new servers (i.e. virtual ones)
- Unknown dependencies
- Maintenance and administrative problems

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Immediate Needs

- Touch every server
- Touch every piece of software
- Check every connection between programs

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Solution

- Deploy IPv6 to server applications
- Announce a conference talk
- Get a direct connection to Microsoft IPv6 team
- Announce a visit from Microsoft

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Planning deployment

- Enable IPv6
- Remove legacy tunnels
- Security policies
- SNMP, DHCPv6
- Active Directory
- IIS
- MSSQL
- DNS via IPv6
- Auto AAAA and PTR
- DFS
- Project
- Sharepoint
- CRM
- Exchange

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Planning debugging

- WireShark for Windows: ok
- Network monitor supports IPv6: ok
- Look at communication before and after changes

Practical debugging

- Reality hurts: Full protocols too hard to check
- Use netstat -n

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Enabling IPv6

- Windows 2000: Use technology preview
- Windows 2003: Simply turn on
- Windows 2008: On by default

Problems

- `ipv6.exe`: no stack => Wait for RD
- Wrong addresses => 2003 learns from VLANs

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Remove legacy tunnels

- Prevent security holes
- Ease debugging
- netsh interface ipv6 set teredo disable, ...
- Delete interfaces on 2000: ipv6 del 4
- Advanced config: Prefer IPv6 over IPv4

Problems

- Only works on Vista/2008 with registry entry

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SNMP, NTP, DHCPv6, Active Directory

- Only works first at 2008
- DHCPv6 client first at Vista

Problems

- Nothing to configure
- Third party software for DHCPv6
- We deployed a 2008 server for DHCPv6

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Internet Information Server 6

- HTTP works, when not configured
- FTP is not used here, works at IIS7
- SMTP, NNTP are replaced by Exchange 2007

Problems

- Configuring IPs only for IPv4
- IIS7 FTP is distributed in two versions

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MSSQL 2003/2005

- Simply works
- Special connection paths for applications

Project, Sharepoint, CRM

- Use the IIS for incoming and MSSQL as backend

DFS

- Nothing to configure, it works
- Unable to check, if it works via IPv6 or not

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DNS and Autoregistration

- In and out queries via IPv6 work
- AAAA is ok, PTR is *strongly discouraged*
- Reverse Zone: One folder per nibble, not pruned
- Privacy addresses not traceable

Solution

- Own registration daemon
- API on XP broken: sockaddr has wrong size

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Remote Desktop

- Client version 6.0 (Vista) supports IPv6
- IPv4 is always preferred
- IPv6 is only used, if IPv4 fails
- 2008 supports IPv6 first
- netsh interface portproxy add v6tov4 3389
- Killerapplication for managing customer networks

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Exchange

- IPv6 first at Exchange 2007 SP 1 on 2008 Server
- PortProxy allows incoming SMTP

Surprise!

- Outlook works with Exchange 2003 on a IPv6-only workstation running Vista
- Turning off IPv4 and forget to turn it on again
- IPv6-only Vista is production ready!

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Legacy wins in the long run

- IPv4 connection: *fails*
- Fallback to Netbios: *fails*
- Fallback to Netbios over IPv4 (135-139): *fails*
- Fallback to Netbios over TCP (445): **works**
- Reason: TCP/445 tunnel uses getaddrinfo
- 445 was introduced, because 13x was blocked
- DFS might work in the same way

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Final warning

Many problems disappear when disabling IPv6.
Most of those problems are not related to IPv6.
You have to find out the bug anyway.
Sometimes. Later.

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Questions?

Windows

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