

network management simplified

The Geek Speaks

An Introduction to IPv6



solarwinds 

Introduction

- A big “Howdy” from SolarWinds in Austin Texas
 - » Josh Stephens – VP of Technology & Head Geek
- Today’s Topic:
 - » Introduction to IPv6
- Who is SolarWinds?
 - » What we do...
 - » Who are our customers?
 - » The SolarWinds community...



Agenda

- IPv6 defined
- Why IPv6 is important and relevant
- Why IPv6 has been delayed
- Why now is the time for IPv6
- The effects of IPv6 on IT organizations
- Assessing your readiness
- Initial investments
- Closing and summary

IPv6 Defined

- IP addresses are used for computer to computer communications
- Every computer on the network has at least one IP address
- Historically other protocols were used but almost everything is IP now
- IP is the protocol used on the internet

```
Administrator: C:\Windows\system32\cmd.exe
C:\Users\Josh.Stephens>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : tul.solarwinds.net
    Link-local IPv6 Address . . . . . : fe80::4ac:b5da:102f:b35a%11
    IPv4 Address. . . . . : 10.110.22.143
    Subnet Mask . . . . . : 255.255.254.0
    Default Gateway . . . . . : 10.110.22.1

Tunnel adapter isatap.tul.solarwinds.net:

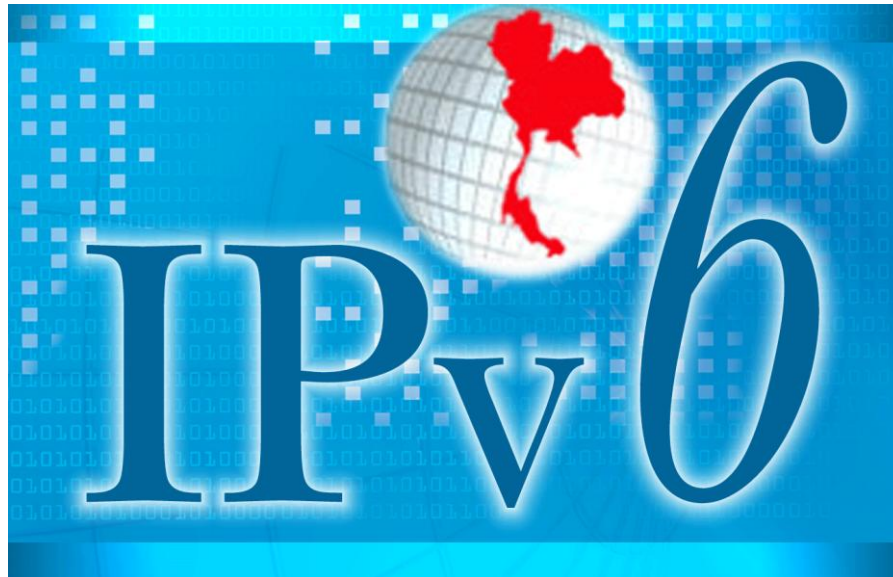
    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : tul.solarwinds.net

Tunnel adapter Local Area Connection* 23:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
```

IPv6 Defined

- Most networks today use IP version 4
- When people generically say “IP” or “TCP/IP” or “IP address” they’re referring to an IPv4 address
- IPv4 is a 32 bit address with a maximum of 4.3 billion addresses
- IPv6 is a 128 bit address



IPv6 Trivia

- How many IP addresses do you think are available in IPv6? (hint: remember that IPv4 has 4.3 billion IP addresses)
 - A. Twice as many as in IPv4
 - B. 4 times as many as in IPv4
 - C. 96 times as many as in IPv4
 - D. 65,536 times as many as in IPv4

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Why IPv6 is important

- The number of network users is growing exponentially
 - All ages
 - Worldwide
 - All disciplines
- The number of devices per person is growing fast
 - Smart phones
 - Pad style devices
 - Home-based technologies

Why IPv6 is important

- We're out of IPv4 addresses
 - ICANN issues last two /8 public IP ranges in late January of this year
 - Microsoft paid \$7.5M for Nortel's public IP address space
- NAT isn't enough for some situations
 - Complicates management
 - Doesn't work for some connection-based technologies
 - Still doesn't accommodate growth

Why IPv6 is important

- Federal government mandates IPv6 adoption
 - Some agencies are implementing now
 - Many organizations in the planning phase
 - Consideration for all new technology deployments
 - Government networks are extra large
 - Government networks are growing extra fast



Why IPv6 has been delayed

- NAT worked better than we anticipated
- IT spending has been tightly controlled
- Other IT projects have taken priority
- It's a huge project with no definitive due date
- It represents a huge training requirement
- It's sort of like the metric system...



Why now is the time for IPv6

- Mandates are still looming
- IPv4 exhaustion has now occurred
- Network growth is continuing to accelerate
- Cloud computing accelerates need for IPv6
- The snowball has started down the mountain...



IPv6 Effects on IT Organizations

- Obviously, it's a big change for the network and the network team
- Not just them - Every part of IT needs to think about IPv6
 - Server and systems teams
 - Application teams
 - Web teams
 - Database teams

IPv6 Effects on IT Organizations

- Management needs to understand the implications of this change
 - Scope of projects
 - Training required
 - Implications of dual stack
- When purchasing or deploying new technology
 - Validate IPv6 compatibility or roadmap
 - Look for IPv6 help and guidance

Assessing your IPv6 Readiness

- Are you impacted by mandates or regulations?
- Is your team trained?
- Do you have customer facing systems and applications?
- How do you manage your IP address space?
- Are there major redesigns or deployments looming on the horizon?
- Remember, it's more than the network...

Initial investments toward IPv6

- Training
- Labs
- Management tools – spreadsheets aren't enough
- Planning projects and assessments



Network World's Survey Results

- Most enterprises will be on IPv6 by 2013
- 30% of respondents have helped deploy IPv6 and have hands-on experience
- Half have completed their initial IPv6 assessments
- 25% of the organizations have already started deploying IPv6
- 75% of respondents want their company to help lead the charge to IPv6

Summary

Thank you for attending!

*More educational material available at
SolarWinds.com*

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