

Transitioning to IPv6

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Transitioning to IPv6

- IPv4 Addresses Running Out
- Completely Allocated by 2H 2011
- Already difficult to obtain IPv4 Address blocks

- Begin Planning for IPv6 Now
- No Drop Dead Date
 - It's not like Year 2000
- IPv6 Co-Exists with IPv4
 - IPv6 is NOT backward compatible

Transitioning to IPv6

- But IPv4 is working fine for us ...
- Yes and IPv4 will continue to work but ...
- How will you communicate with
 - Government, Businesses, Banks
 - Your Customers!

Getting Started ...

- IPv6/VSE ... Check
- z/VSE 4.2.2 ... Check
- zSeries machine to run it ... Check
- Network Interface ... Check
 - OSA Express in QDIO mode
 - Hipersockets
- Cool! I'm ready to go ... Right?

What Else is There?

- The OSA Adapter connects to ...
- Switches and Hubs!
- Do they support IPv6 Ethernet Frames?
- Check every single Switch/Hub
 - Some Switches do not support IPv6

What Else ...

- The Switch connects to ...
- A Router!

- Does the Router support IPv6?
- Extra Charge Item?

One More Step ...

- The Router connects to ...
- A Firewall
- Does the Firewall support IPv6?
- Many do not. May need to upgrade.

OK, Go On ...

- The Firewall connects to ...
- A modem (DSL, Cable, T1, etc.)

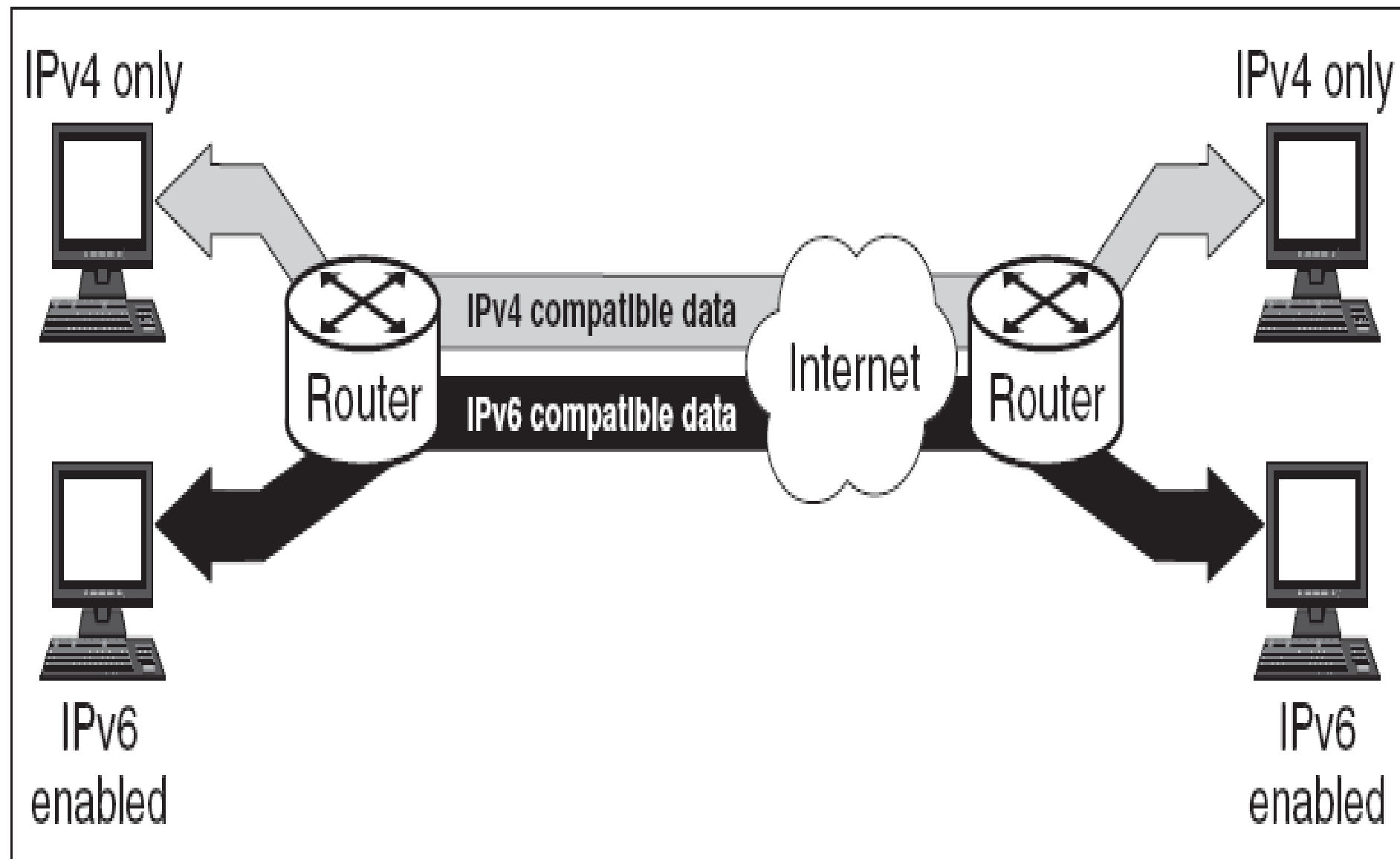
- Does it support IPv6?
- Lots do not

Finally, The Outside World

- The Modem connects to ...
- Your ISP!

- Does your ISP support IPv6?
- Want to bet?
 - Comcast just start field testing

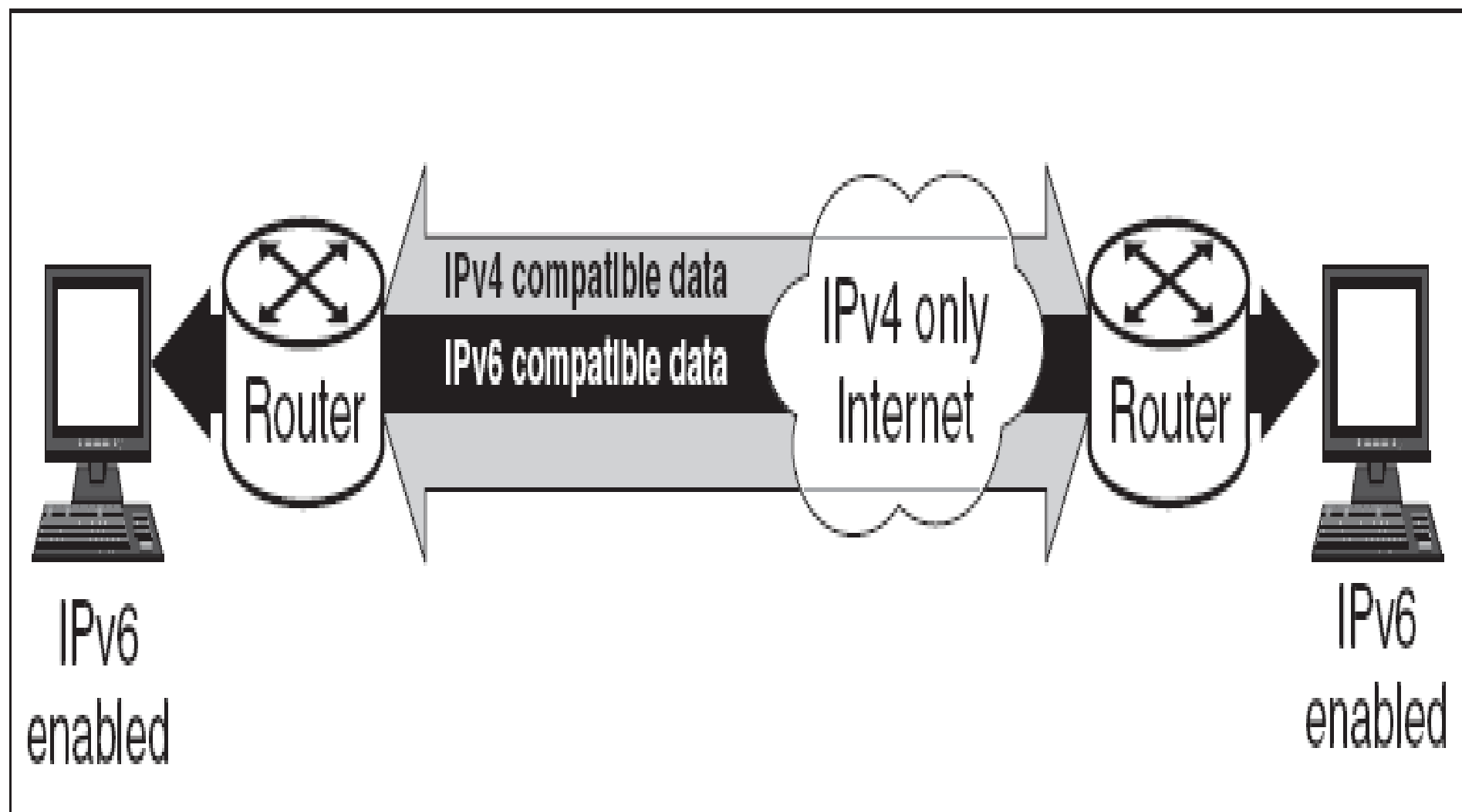
Figure 6: Example of a Dual Stack Network



Oh, No ISP support!

- Tunneling is an Option
- Used for Testing and Transition
- What is Tunneling?
 - IPv6 packets carried in IPv4 packets
 - IPv4 Protocol 41 IP packets
- 6in4 via Tunnel Broker
- 6to4 via Automatic

Figure 7: Example of Tunneling IPv6 Traffic inside an IPv4-Only Internet



Static Tunneling

- 6in4 via Tunnel Broker
- Free
- Broker provides prefix
- Broker handle routing
- Dlink DIR-825

Automatic Tunneling

- 6to4 Automatic Tunneling
- Easy to use
- Packets sent to 192.88.99.1
- 192.88.99.1 is relay anycast address
- ISP sends packets to Relay Router
- 2002:IPv4:IPv4::/48 Prefix
 - E.g., 2002:C0A8:0101::1
- CISCO SA 520W

OK, I have Connectivity

- What about my PC's?
- Simple question, right? Wrong!
- Linux is pretty easy. Years of support.
- Unix is pretty easy too.
- Solaris? Yes.
- Check vendor support pages.

What about Windows?

- Check Microsoft support
- Good Knowledge Base articles
- Windows 95/98/98SE/NT/2000 ... Forget it
- Windows XP ... NO!
Windows XP SP3 has manual IPv6 support
- Windows Vista ... Yes but limited
- Windows 7 ... Yes and its pretty good.

Transitioning to IPv6

- * Routers
 - o Backbones
 - o Exchange Points
 - o Regional ISPs
 - o Local Networks
 - + Authentication and session set up
- * Servers
 - o Server farms
 - o Local Networks
 - + Authentication and session set up
- * DNS
 - o Root Servers
- * Home CPE
 - o DSL Modems
 - o Cable Modems - DOCSIS
 - o Fiber Modems
 - o Mobile hand units (mobile phones)
- * Applications
 - o Telephony
 - o Firewalls & Security
 - o Databases
 - o Email

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- Questions?
- EZA Programming 106 for IPv6
Mon 10:30am
Tony Thigpen

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