IPv4-IPv6 Co-existence: dual-stack lite

• Suzanne Woolf
• Internet Systems Consortium
• NANOG 48, Austin, 23 February 2010
We've all heard the news....

• Unallocated IPv4 is running out
  – Gone in 2012? Sooner?
  – Functionally already gone for large network operators
• Applications aren't IPv6-enabled
• Content providers are mixed at best
• ISPs/access providers have to bridge the gap
IPv4-IPv6 co-existence

• A variety of technologies being discussed
• Some people think we'll just do more IPv4 NAT, or NAT64/DNS64, or Host-based dual-stack
• We're here to talk about dual-stack lite: https://datatracker.ietf.org/doc/draft-ietf-softwire-dual-stack-lite/
Dual stack lite

• Allows IPv4 applications behind IPv6 CPE to communicate with IPv4 servers and peers over IPv6 infrastructure

• One AFTR (“Address Family Transition Router”) can handle many clients
  – Tunnel over IPv6 infrastructure
  – NAT to IPv4
How it works

• Network sees both IPv4 and IPv6 in use:
  – One IPv6 delegation for the customer site
  – One IPv4 delegation for the AFTR

• Customer sees “business as usual”
  – IPv6-aware applications can use Ipv6
  – IPv4-only applications Just Work
An open source implementation

- ISC with support from Comcast has released an open source implementation of dual-stack lite

- Distribution is:
  - Client side DHCP with functionality to set up tunnel (the “B4” element in the spec)
  - Server side tunnel concentrator/NAT (the “AFTR” element in the spec)

- http://www.isc.org/software/aftr
Try it out!

• Dual-stack lite is just one of the tools in the kit.
• We think the use case goes way beyond large access networks
  – If you're growing a network and can only get IPv6 addresses,
  – And you have an installed base of IPv4 end nodes....
We want to hear from you

• The usual open source mechanisms:
  – Mailing lists
  – AFTR Forum

• Look for us here, IETF, RIR meetings....

• Drop me or our product manager a line:
  – Suzanne Woolf (woolf@isc.org)
  – Larissa Shapiro (larissas@isc.org)