ARIN
American Registry for Internet Numbers

Bringing ARIN Services to IPv6

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NANOG 31

ARIN Services

To the Internet, we're an "enterprise"

- No transit, simple topology, but multi-location

ARIN has brought the following to v6

- DNS - all zones we have
- WWW - non-secure, with a v4 proxy to "WebWho"
- FTP

We're working on the other services

IPv4

ARIN has two locations

- office in Chantilly, VA and co-lo in Ashburn, VA
- network services are operated at both locations

We also contract operations for some servers

Adding IPv6

IPv6 is in our office location

- Native connection, not tunneled
- Co-lo gets v6 soon, also native

Router

- Linux 2.4.22, static packet forwarding

Firewall

- OpenBSD 3.5, built in PF firewall

FTP and WWW

FTP

dual stack, ProFTPD 1.2.9 on Solaris 9

WWW

apache 2.0.48, on Solaris 8

dual stack machine, http is on v6 only

uses v4 to get answers to web-form whois queries, apache's mod_proxy plugin

no big surprises, no horror stories

DNS

We have servers in three "places"

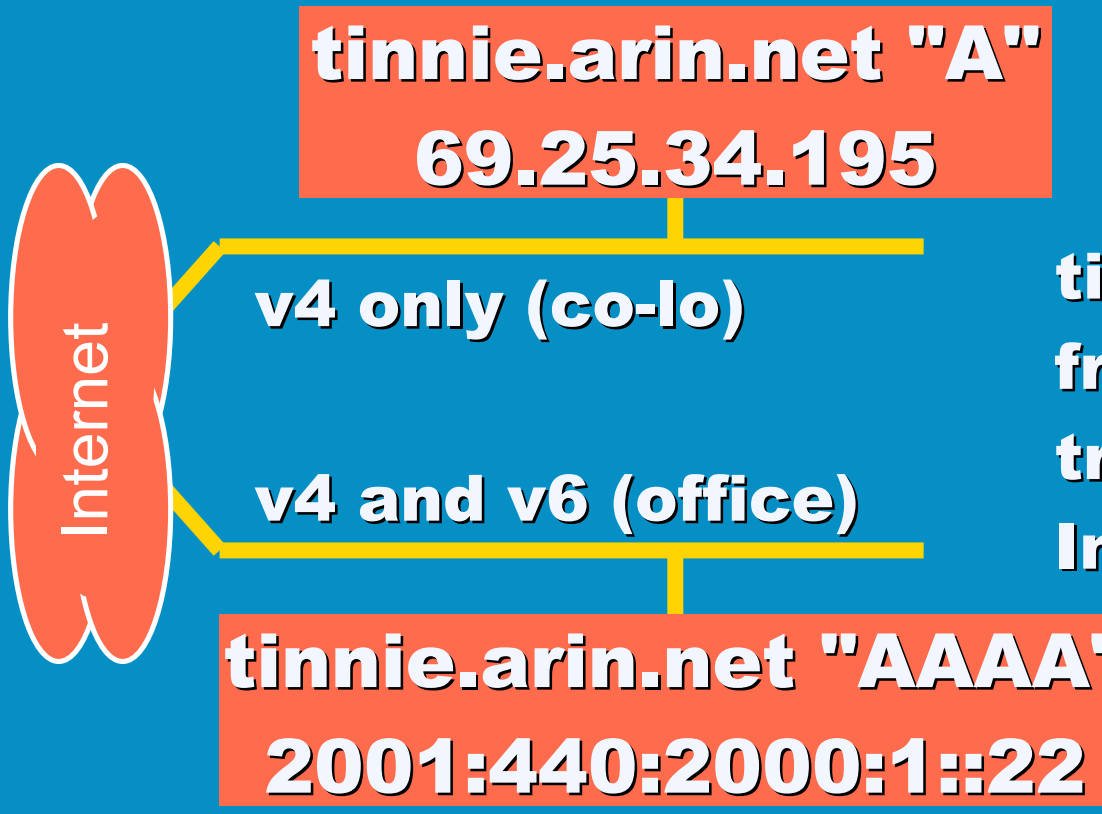
- At a contractor because of bandwidth/uptime
- At a higher-bandwidth co-lo site
- At the lower-bandwidth office site

The challenge is to serve on v6 the data on the contracted machines and the co-lo machine without moving them "home" (where the v6 is).

Non-dual Stack DNS

- **Running non-dual stack servers for a zone on v4 and v6 can be done two ways**
  - Having the servers have an A "x"or AAAA record
  - Using one server name on two machines
- **BIND seeks A and AAAA for all NS names**
  - Recommendation to use "one name, two machines"

One name, two machines



tinnie "AAAA" slaves from tinnie "A" via v4, transparent to the Internet at large

One "gotcha"

The "other" v6 service we run, SSH

 # ssh tinnie.arin.net

- AAAA is preferred over A
- If you wanted to reach tinnie A, oops.

Once did a "tail -f log" on the wrong host

- Why wasn't an event being logged?
- Good thing it wasn't an "rm" command

Otherwise, acceptable but sub-optimal

Another "gotcha"

If the "A" server is running other services that can't be brought to v6

- Separate the services physically, or
- Separate the services via domain names

We separated by purchasing a new server

- Newer hardware - good

Experience with BIND

Ran and still run BIND 9.2.3 on Solaris and Linux

- Found a few bugs, all v6, not that obscure
- ISC fixed them all, quickly, fixes in the new releases
- ISC recommends switching to 9.3 for IPv6

If I find bugs, does that mean I'm a pioneer?

Summary

Adding IPv6 as a Network Protocol

It's not as hard as you think. It can't be.

Recommendations

Use latest acceptable versions of software

Use the same physical media for IPv4 and IPv6

Get in early, while the bandwidth is easy to handle and grow with it