



HEAnet

1 / 12

Dual-stacking a server and DNS

`colm.maccarthaigh@heanet.ie`

- Dual-stacking servers
- Dual-stacking a service
- Forward DNS
- Reverse DNS

- Actually dual-stacking a server should be easy
- IPv6 is enabled by default on many Operating Systems;
 - Linux \geq 2.6, OS X, *BSD, Solaris \geq 9
- Usually trivial on other operating systems;
 - Windows $>$ 2000: “ipv6 install”
- See chapter 5 of “IPv6 Network Administration”

- Default addresses are usually not suitable for a server;
 - ◆ EUI-64 addresses are MAC-dependent
 - ◆ Privacy addresses are pseudo-random
- ◆ Solution:
 - ◆ Use static addresses, for example;
2001:770:18:aa40::193.1.193.64
2001:770:18:aa40::c101:c140
- ◆ Still safe to use router advertisements

- Most server software is IPv6 capable
- On Windows; services support same IP versions as the Operating System
- On *nix: Most software can figure it out, sometimes compile/configure time options required, i.e. `--enable-ipv6`

- Some conventions;
 - ◆ -4 and -6 options
 - ◆ Sometimes mean “enable support”, sometimes mean “only use”
- Square brackets for IPv6 addresses;
[2001:770:18:a::90]:25

- Some gotchas;
 - ◆ logs
 - ◆ application-level ACLs
 - ◆ reverse DNS mapping
 - ◆ “listen” statements

- Mapped addresses can be awkward;
 - ◆ Transition mechanism provided at kernel level
 - ◆ Allows a single IPv6 socket to receive IPv6 and IPv4 packets.
 - ◆ IPv4 addresses become IPv6-mapped-IPv4 addresses;
::ffff:127.0.0.1

- Forward DNS

- ◆ AAAA records - like A only bigger:

www.heanet. IN AAAA 2001:770:18::104

- ◆ A6 records - deprecated

- Sometimes “ipv6.” and “ipv4.” used to provide version-specific records, e.g.;

ftp.ipv4.heanet.ie. IN A 193.1.193.64

ftp.ipv6.heanet.ie. IN AAAA 2001:770:18:AA40::C101:C140

- Reverse DNS

- ◆ Ordinary PTR records
- ◆ Two reverse domains;
 - ip6.arpa
 - ip6.int - deprecated

- Reverse records look like;

0.4.1.C.1.0.1.C.0.0.0.0.0.0.0.0.0.4.A.A.8.1.0.0.0.
7.7.0.1.0.0.2.ip6.arpa PTR ftp.heanet.ie

- Start with the address;
2001:770:18:AA40::C101:C140
- Expand all of the zeros;
2001:0770:0018:AA40:0000:0000:C101:C140
- Reverse the address;
041C 101C 0000 0000 04AA 8100 0770 1002
- Add dots;
0.4.1.C.1.0.1.C.0.0.0.0.0.0.0.0.4.A.A.8.1.0.0.0.7.7.0.1.0.0.2



HEAnet

13 / 12

Questions?

?