



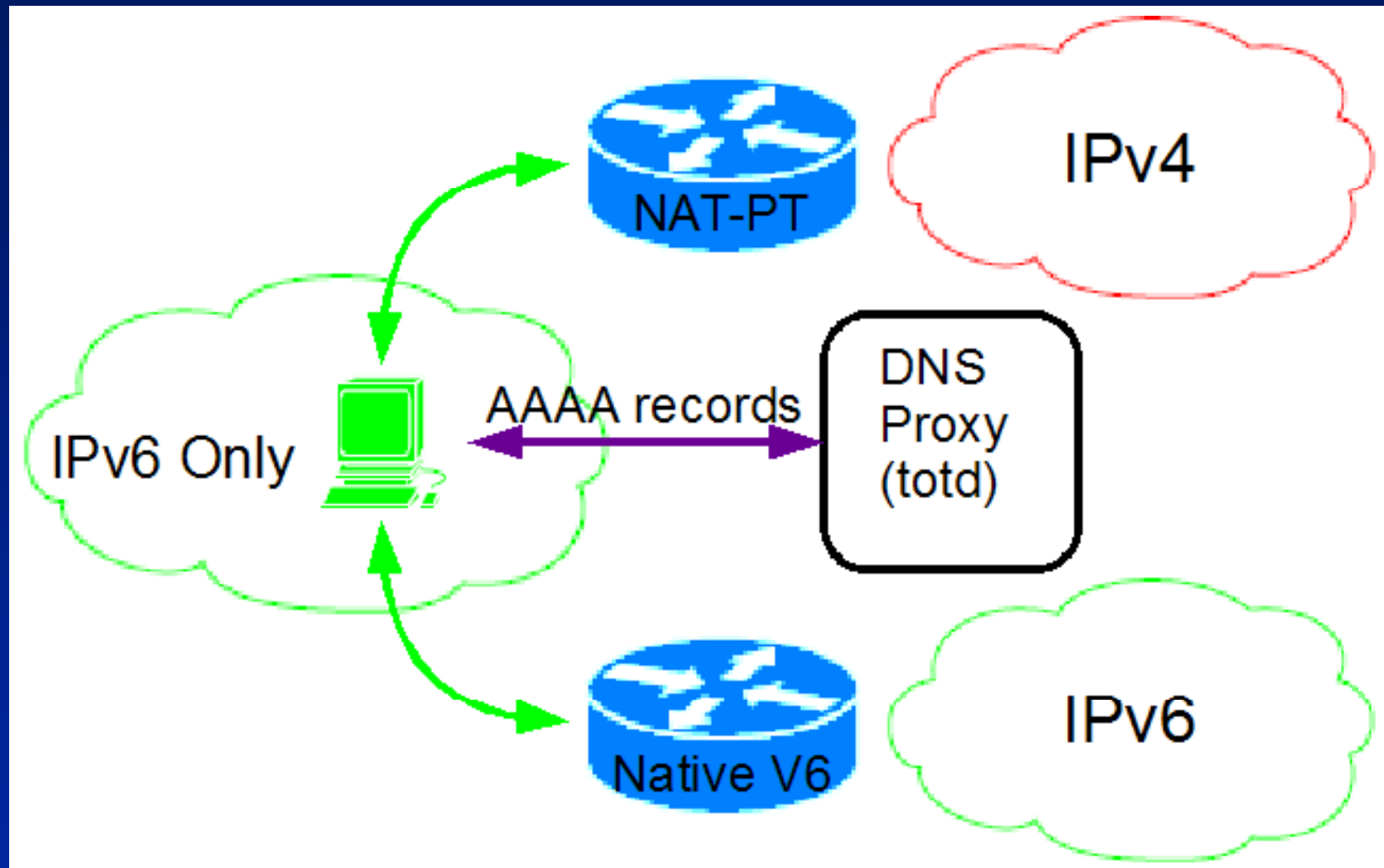
NAT-PT and told dns setup

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NAT-PT Overview

- An IPv4-to-IPv6 Transition Technology
- NAT's IPv4 to IPv6 to provide IPv4 access on IPv6 only networks
- Native IPv6 traffic remains native
- DNS IPv4 "A" records translated to IPv6 "AAAA" records by totd dns proxy
- These AAAA records map to IPv6 space on the NAT-PT device which NAT's to IPv4

NAT-PT simplified logical diagram



NAT-PT Implementations

- Cisco
 - Suitable for production deployments
 - Successfully used at Apricot Feb 08 meeting
- Linux (www.lucastomicki.net/natpt.php)
 - Useful for testing/experimentation
 - Used at NANOG and ARIN meetings
- BSD's (KAME - www.kame.net)
 - KAME project discontinued 2 years ago
 - Patches for older BSD's (e.g. FreeBSD 5.4)
 - Haven't tested – Randy Bush says it works

Cisco NAT-PT

- Available since 12.2(13)T IOS release
 - 12.3(14)T or better recommended for support for overload, packet fragmentation, and CEF
- Useful Documents
 - www.cisco.com/en/US/docs/ios/12_2t/ipv6/SA_natpt.pdf
 - www.civil-tongue.net/6and4/wiki/APRICOT2008-Router

Cisco NAT-PT Lessons Learned

- Cisco docs useful, but incomplete (could not get working at NANOG)
- Apricot was able to get working with considerable help from Cisco (see Apricot config from previous slide)
- Reports from Apricot indicate that once working, it worked well

Linux NAT-PT

- www.lucastomicki.net/naptd.php
- Useful Documents
 - www.lucastomicki.net/naptd.docs.php
- Uses a binary config file
 - Create using `naptd-confmaker` application
 - See www.lucastomicki.net/ipv6.router.php
- Deployed at NANOG and ARIN meetings

Linux NAT-PT Lessons Learned

- Implemented as userspace daemon (uses libpcap to listen to all packets)
 - Limits scalability (probably okay for NANOG/ARIN sized meetings)
- Code quality currently a bit rough
 - Stability problems at NANOG as daemon did not handle packets from unconfigured v6 networks gracefully (hung process)
- Need to follow docs carefully
 - Make sure you have ip6tables and iptables rules configured as documented

Totd DNS proxy setup

- www.vermicelli.pasta.cs.uit.no/ipv6/software.html
 - Site currently down
- Alternate download site
 - www.lucastomicki.net/download.php?id=83
- Useful documents
 - mucc.mahidol.ac.th/~ccvvs/totd-setup.html
 - www.lucastomicki.net/ipv6.router.php
- Lessons learned
 - Totd fairly straightforward to configure, seems to work well

NAT-PT Summary/Conclusions

- Linux NAT-PT implementation works, but somewhat flakey and is currently not designed to scale to many users
- Cisco implementation offers improved stability/scalability, but don't trust docs
- Quite useful for testing native IPv6 support in apps, but real-world utility somewhat unclear