



The IPv6 Hour at RIPE 56

Building an IPv6-only Network



Goals

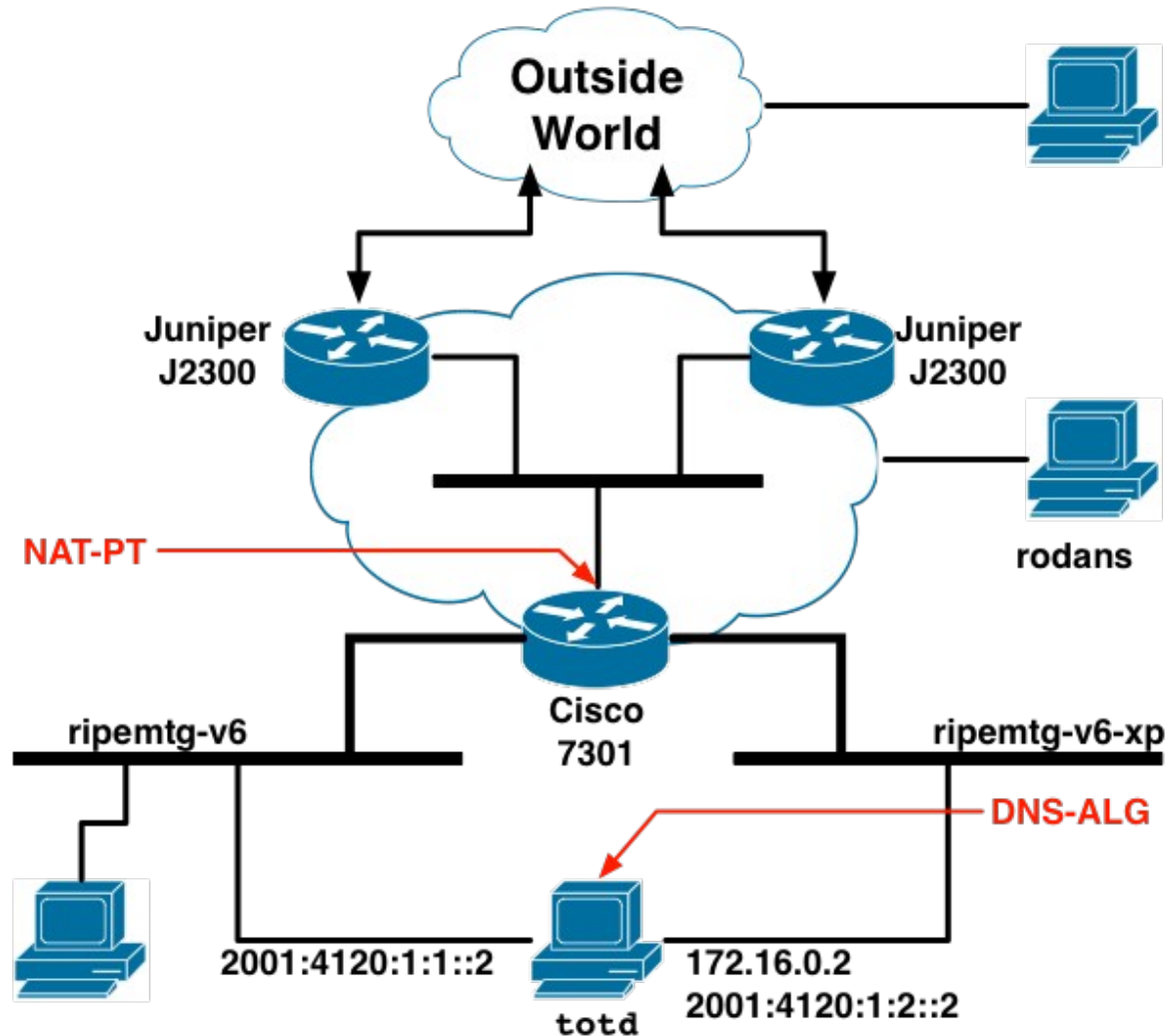
- IPv6-only network in today's (or near future) Internet
 - Possible practical scenario
- Raise awareness
 - Is your organisation ready?
 - Can a remote participant avoid using translators?
 - Are your resources visible in IPv6 Internet?



The RIPE Meeting IPv6 networks

- Classic dual-stack network
 - **ripemtg / ripemtga**
 - 2001:4120:1::/64
- IPv6-only
 - **ripemtg-v6 / ripemtga-v6**
 - 2001:4120:1:1::/64
- IPv6 with local RFC1918 resolver for Windows XP
 - **ripemtg-v6-xp / ripemtga-v6-xp**
 - 2001:4120:1:2::/64

The RIPE Meeting (IPv6) Network





IPv6 Transition Mechanisms

- NAT-PT
 - Network Address Translation - Protocol Translation
 - RFC2766 from 2000, historic
 - Cisco IOS 12.4(15)T5 “Advanced IP Services”
 - this version is from 1 May 2008 but 12.4(15)T3 or later “Should Also Work”.
 - IPv4 sites will see all traffic originating from 193.0.29.3
- DNS ALG
 - DNS Application Layer Gateway
 - Synthesises **AAAA** records for those DNS entries which have only **A** records
 - totd software

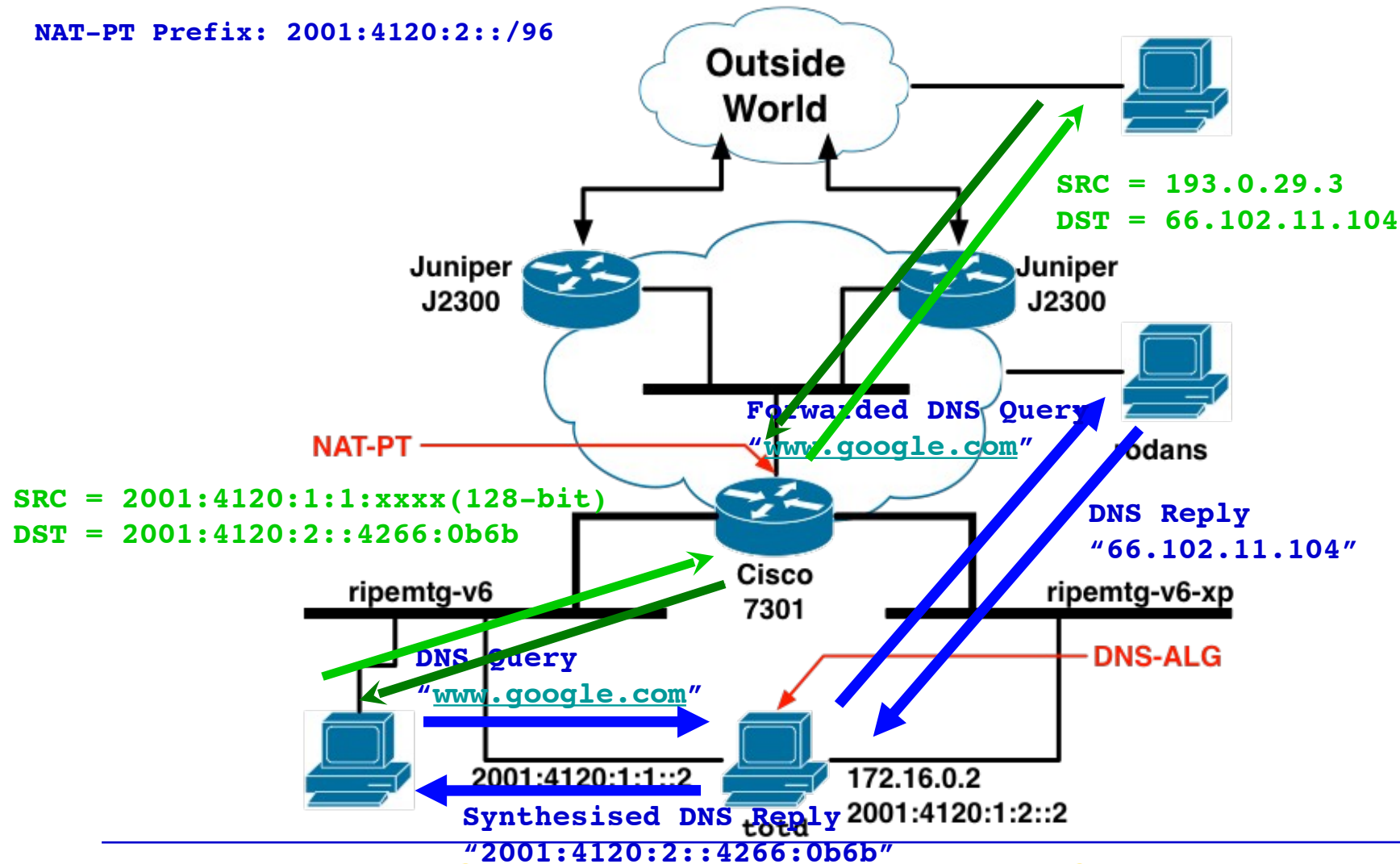


DNS ALG

- DNS **A** records are of no use on a pure IPv6 network so what do we do if we receive only an **A** record in response to a query?
- Local DNS proxy (todd) has a hack: takes an **A** and embeds it within a particular IPv6 prefix and returns a synthesised **AAAA**.
- NAT-PT knows the prefix and strips it back to IPv4 when a packet leaves the pure IPv6 network

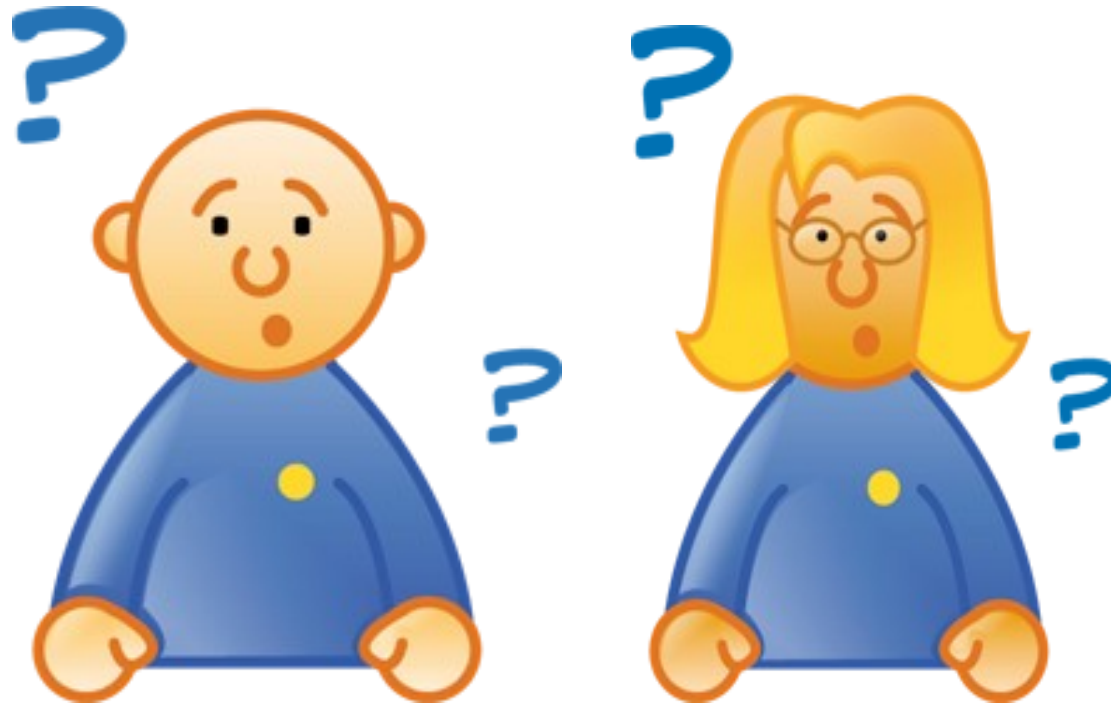
DNS ALG / NAT-PT

NAT-PT Prefix: 2001:4120:2::/96



Summary

- We need to have much of the Internet supporting IPv6 in the coming couple of years
- Today's IPv6 Internet is small, but we can make it big using translation as a transition mechanism
- IPv6 will not replace IPv4 overnight, IPv6 and IPv4 will have to co-exist for years
- Transition mechanisms work, but require ALG for specific applications
- NAT-PT has a number of issues and is moved to historic, but work in underway at the IETF



Questions?