

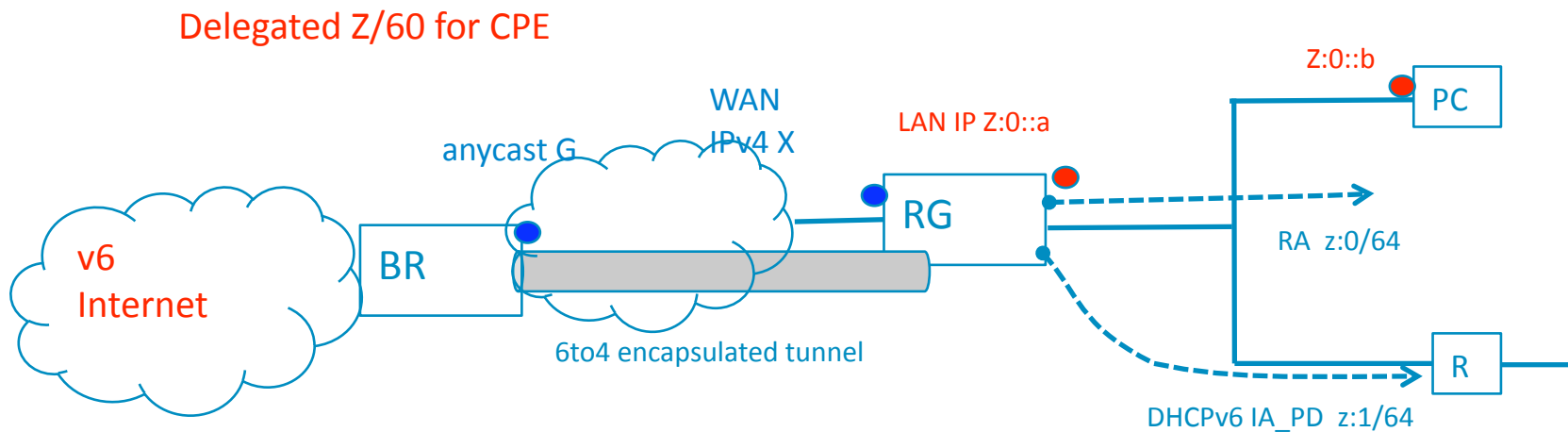
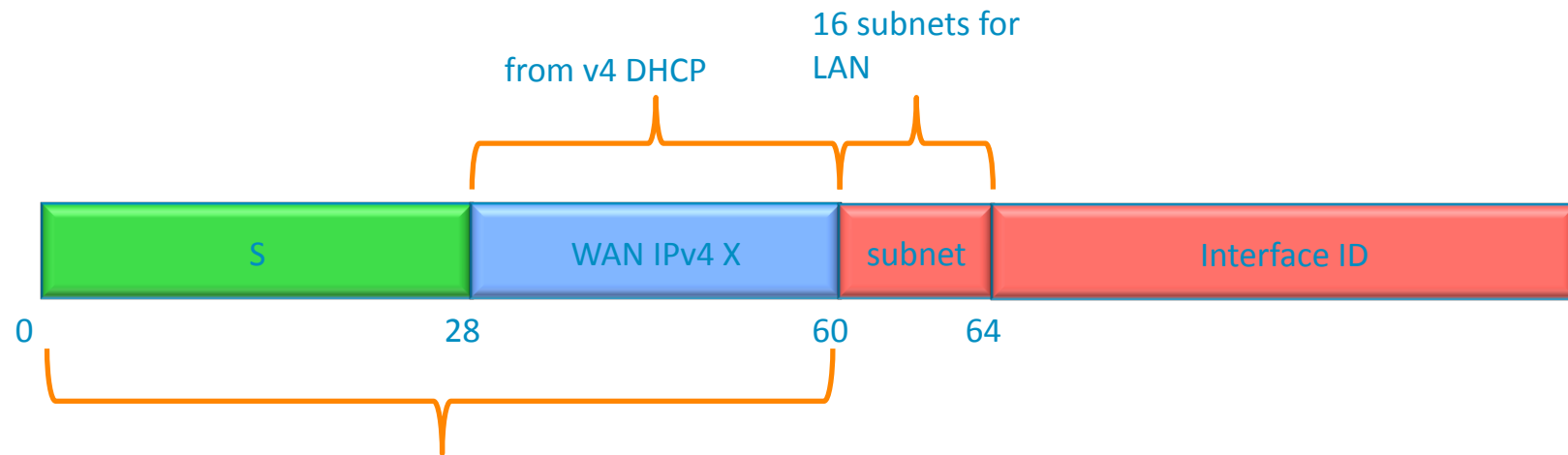


Transitioning Broadband to IPv6 Using 6rd

Chris Chase, AT&T Labs

June 10, 2010

v6 Service via 6rd: tunneling v6 through v4



SP Prefix and Multiple 6rd Domains

If multiple private IPv4 instances deployed

- Then require multiple SP prefixes
- Require OSS tracking of sub to domain mapping

Prefer one 6rd domain

- Single SP /28 for public and private v4 subs
- Get off 6rd before duplicating IPv4 address space



DNS

May need separate DNS infrastructure for v6 enabled subscriber

May need to rely on DNSv4 for AAAA resolution

- CPE may not support DNSv6 initially
- Need a uniform way to inform LAN clients of DNS server v6 addresses
 - Today all clients get v4 DNS servers from DHCP from CPE
 - These point to the CPE as the resolver; CPE gets DNS servers from PPP or DHCP
 - DHCPv6 versus RA Option (RFC5006) – still unclear



6rd Parameter Configuration

Managed CPE

- Configured using TR-69 rather than DHCP

Unmanaged or customer owned router

- Legacy services are PPP and not DHCP based
 - DNS learned via PPP
- Upgrading BRAS to support DHCP relay is a non-starter
- TR-69 may not be an option
- Configure via DHCP Inform msg to a unicast IPv4 to obtain 6rd and DNS
 - <http://tools.ietf.org/html/draft-ietf-dhc-dhcppinform-clarify-04>
- ISP certified 6rd CPE
 - Either fulfilled by ISP preconfigured with DHCP IP
 - Or user entered DHCP IP



Rollout

Field upgradeable CPE

- Can be rolled out geographically with all CPE enabled based on OPs plans
 - Off by default until OPs enables
 - No need for customer to trigger an order
- Matched with BR capacity
- Allow customer to disable

Replacement CPE

- Customer owned
 - Require customer order trigger for new CPE
- ISP owned
 - Require business case to replace



Simple and Business Broadband Services

Single host model

- Care supports only a single host attached to CPE
 - Could be a single PC or router
 - Can still provide IA_PD

Business services

- Get a “static” public v4 subnet besides the dynamic WAN IPv4
- Allow 6rd tunnel to be sourced from an interface with the static public IPv4
 - Requesting BBF to support

