SOHO CPE IPv6 Wish List

for

UK IPv6 Council

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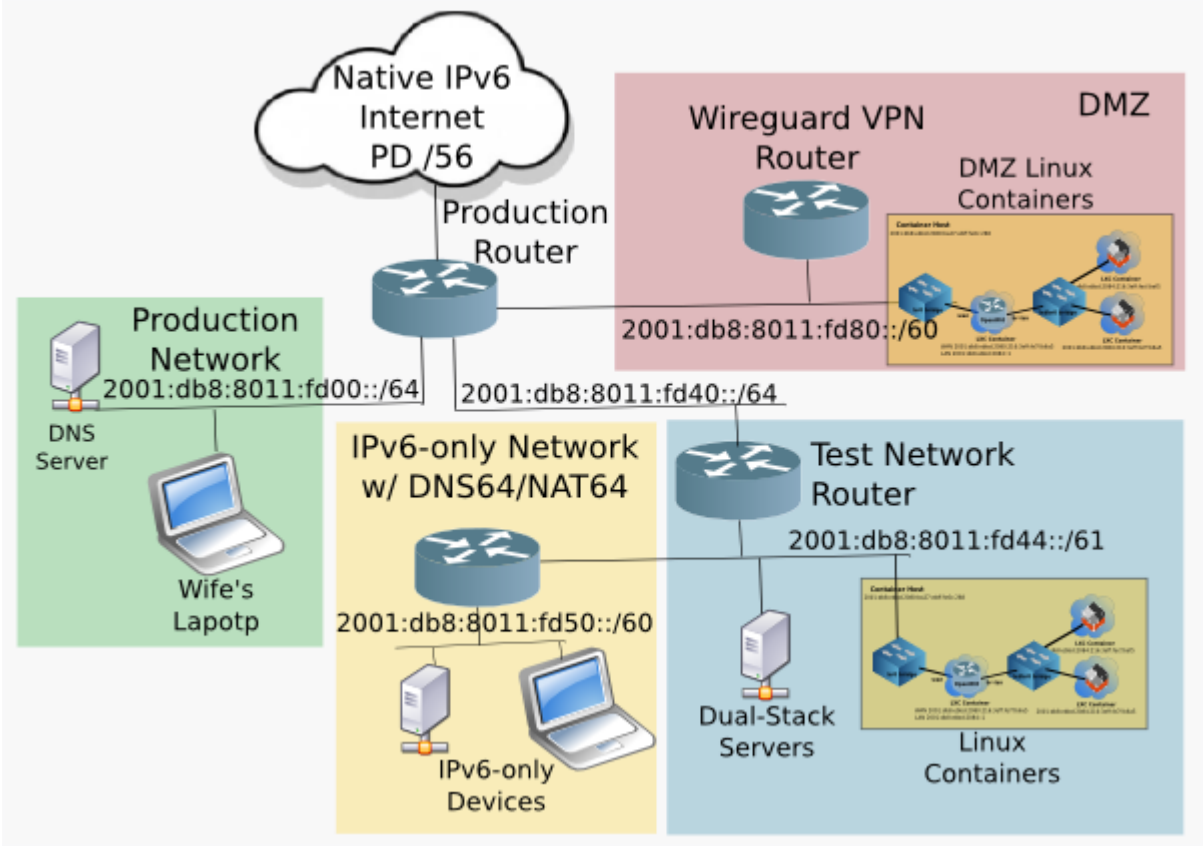
CPE and IPv6 Support

- The CPE (Customer Premise Equipment) or home router is beginning to see support for IPv6, but it is far from complete
- Small Office/Home Office (SOHO) networks tend to grow organically into complex networks
- IPv6 Support **must not be an add-on**, but baked in from the beginning

SOHO Grows into a complex network

- A complex SOHO network



IETF is a good start

- RFC 7084 Basic Requirements for IPv6 Customer Edge Routers
- RFC 7368 IPv6 Home Networking Architecture Principles
- ~~RFC 7788 HomeNet~~*
- RFC 9099 Operational Security Considerations for IPv6 Networks, Sect 3.8 General Device Hardening
- RFC 7597 & RFC 7599 Transitional Technologies of IPv4 over IPv6 using MAP-T & MAP-E, respectfully

* removed due to lack of implmentations

Additional Wish List Items

- If HomeNet Control Protocol is not supported, then a simple routing protocol such as RIPng (RFC 2080) support
  - RIPng is a plug in play routing protocol, not everyone understands OSPF type 3,5,7 and 10 LSAs
- Downstream DHCPv6-PD support
  - The CPE should also answer DHCPv6-PD requests from the LAN-side, further delegating prefix address space

Additional Wish List Items

- DNS Auto Naming Support for both SLAAC & DHCPv6 Nodes on the SOHO Network
  - As IPv6 is more readily used, the age of memorizing IP addresses is coming to an end. DNS will be how SOHO users access devices on the network
- Sane default Firewall Rules
  - Firewall Rules should permit passing of ICMPv6 messages, and optionally rate limit them

Additional Wish List Items

- Wireless Mesh Support
  - SOHO router should be able to enable 802.11s, including Hybrid Wireless Mesh Protocol (HWMP)
- Wi-fi Calling
  - CPE should include default firewall rules to permit it

Leverage Open Source: OpenWrt

- OpenWrt: an open source project which supports hundreds of commercial routers, already has excellent IPv6 support
- Commercial vendors such as GL-iNET and Cudy already include OpenWrt as the base of their product
- Using open source accellerates your product-to-market time

Summary

- The CPE must be able to act as a stand alone gateway to the IPv6 Internet, or in concert with other IPv6-enabled routers
- It must be ready to support IPv6-only, including IPv6-only management of the device, and a transition technology (such as NAT64)
- It must be ready to grow as the SOHO network itself becomes a complex network, with the understanding that the person deploying the SOHO network is not a networking expert
- Features such as auto-addressing, and auto name service (DNS) are key to the "deploy and go" mindset
- This wish list is still in development
  - I am looking for feedback, please feel free to email me suggestions at cvmiller@gmail.com

More Info:

http://www.makiki.ca/ipv6/soho_cpe_ipv6_wish_list.html

Questions?