SAVI for Delegated IPv6 Prefixes

draft-kaippallimalil-savi-dhcp-pd-00.txt

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May have N:1 VLAN in U interface. AN does split horizon forwarding in all cases.

** Broadband Forum WT-177 Architecture (simplified)
Problem Statement

• CPE-R obtains delegated prefix from Access Router using RFC 3633, provides individual prefixes to hosts. (CPE-R may also obtain other addresses using SLAAC, DHCP).

• How to validate IPv6 source address of upstream packets initiated by host, forwarded by CPE-R to Access Router (AR).

• Switch (in between CPE-R, AR) may ensure that IPv6 address and lower binding anchor are not spoofed.
Provider Network Architecture

Customer Network | Provider Network

+-----+ +-------+  |     +--------+       
| H   | CPE-R  |------| Switch |---------| Access Router |
+-----+ +-------+  |     /+--------+       / +---------------+
                     /                        /  
                   /                        / 
                  /                        / 
                +--------+   / 
                | Switch |--/
                +--------+

CPE Router forwards host packets to Access Router

SAVI solution in switch to prevent host in one customer network spoofing host in another customer network
Solution

- Solution based on snooping RFC 3633, builds binding state information [section 2.3]

- Determine Prefix ownership:
  Switch snoops RFC 3633 and binds an IPv6 prefix with lower level binding anchor (Line ID, MAC). [section 2.4 - 2.6]

- Filter Upstream Traffic:
  Switch inspects upstream traffic based on filtering rules. [section 3]
Solution Applicability

• Proposed solution satisfies Broadband Forum filtering for delegated prefixes:
  “..AN SHOULD inspect upstream and downstream DHCPv6 (RFC3315, RFC3633) and ND (RFC4861, 4862) per user port, discover the mapping of IPv6 prefix to MAC address and populate its IP Anti-spoofing table accordingly” (WT-177)

• Applies to access provider networks, and complies with SAVI scope:
  “…the WG is already chartered to work also on a solution for Ethernet-based broadband access networks that are used in DSL environments.” [SAVI Charter]
- Comments?

- Interest to adopt as WG draft?
Thank you