CGN Deployment with BGP/MPLS IP VPNs

draft-kuarsingh-lsn-deployment-06

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Baseline

- First Presented in IETF78 – Maastricht
- Since work is operations focused, draft not continued in BEHAVE
- Now on Version -06

- Re-presenting as a potential add to WG documents
- Show real world implementation option for CGN (based on NAT444 Model)
- Includes models for IPv6 Dual Stack with CGN/NAT444

- Can be used in Wireless or Wireline domains

Motivation

- IPv4 Run Out is REAL
- Not all providers will have enough IPv4 addresses to deal with future IPv4 connectivity demand
- IPv6 based connectivity may not be an option at first (not to be confused with IPv6 in DS mode)

- Operators need to solve real problems to integrate CGN to existing IPv4 service

Provider Requirements for CGN deployment

- A NAT44/LSN deployment should support:
  - Centralized/Decentralized (cost/flexibility)
  - Coexistence with IPv4 Native and IPv6 DS
  - CGN By-Pass
  - Routing Segmentation (different needs Native vs. CGN)
  - Adaptable to multiple access networks
  - Support Address Overlap
  - Plus others

Basic Model (Diagram)

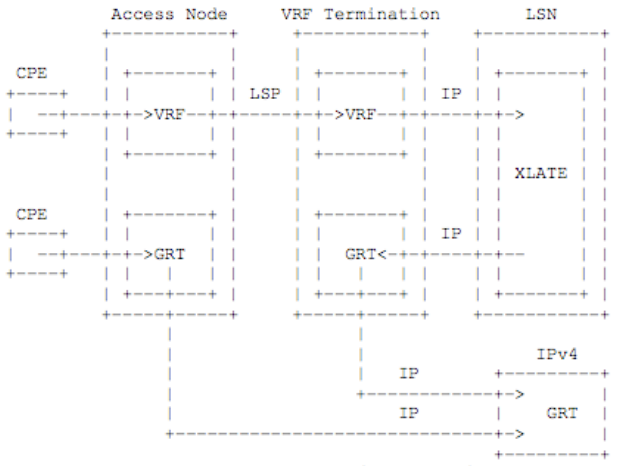

Figure 1 Basic MPLS/VPN NAT44/LSN Model

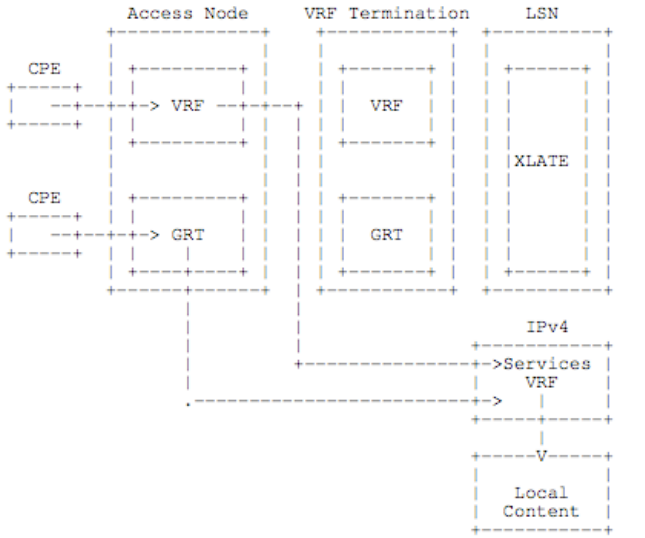

Figure 2 Internal Services and NAT44/LSN By-Pass

- CGN Traffic in IP VPN (BGP/MPLS)
- Post translated traffic on Global (Internet) routing table
- Allows separation of legacy IPv4 and CGN IPv4 traffic
- Utilizes common operation technologies
- Provides efficient way to accomplish CGN by-pass
- CGN hardware can be located anywhere on network (no policy routing required)

Dual Stack Concept with LSN (Diagram)

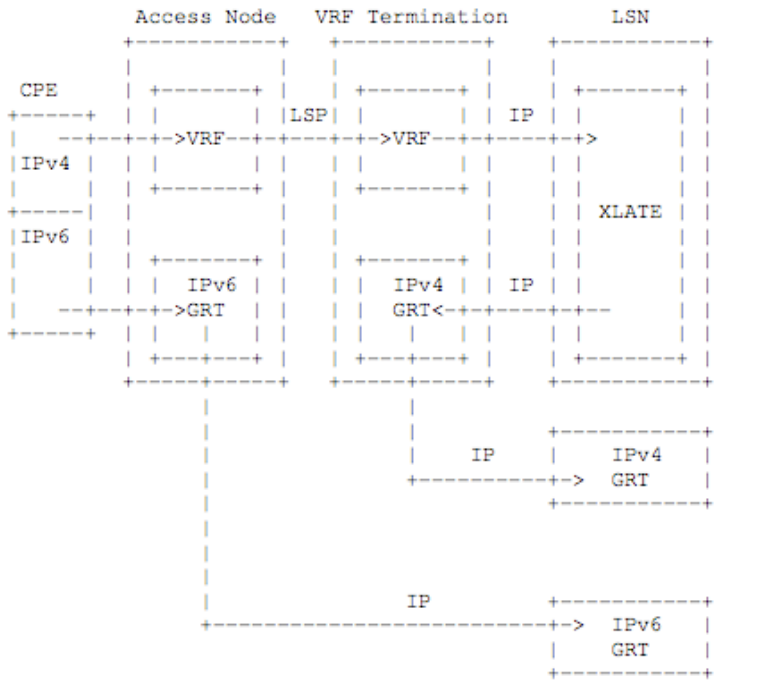

Figure 3 NAT44/LSN with IPv6 Dual Stack Operation

- Supports dual stack operation if IPv6 is needed with CGN/ NAT444

How can this fit into transition

- Once IPv6 environment is stable/mature the provider can replace the NAT44/LSN with DS-Lite (for example)
  - This would replace the LSP tunnel with an IPv6 tunnel
  - Preference here is that all services are now natively available via IPv6
- Vendors building LSN hardware appear to be also building them to be AFTRs and NAT64 boxes
  - Once ready, the devices can be re-configured for new role (vendor specific)

Experiences

- It works (Wireless and Wireline network)
- Does not inherently solve NAT444 issues
- Does lower impact to overlaying CGN over existing system

- Still need to address NAT444 challenges

Questions?

- WG Document?
- Real Solution for a Real Problem