

BGP L3VPN Virtual PE

draft-fang-l3vpn-data-center-interconnect-01

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Use Cases

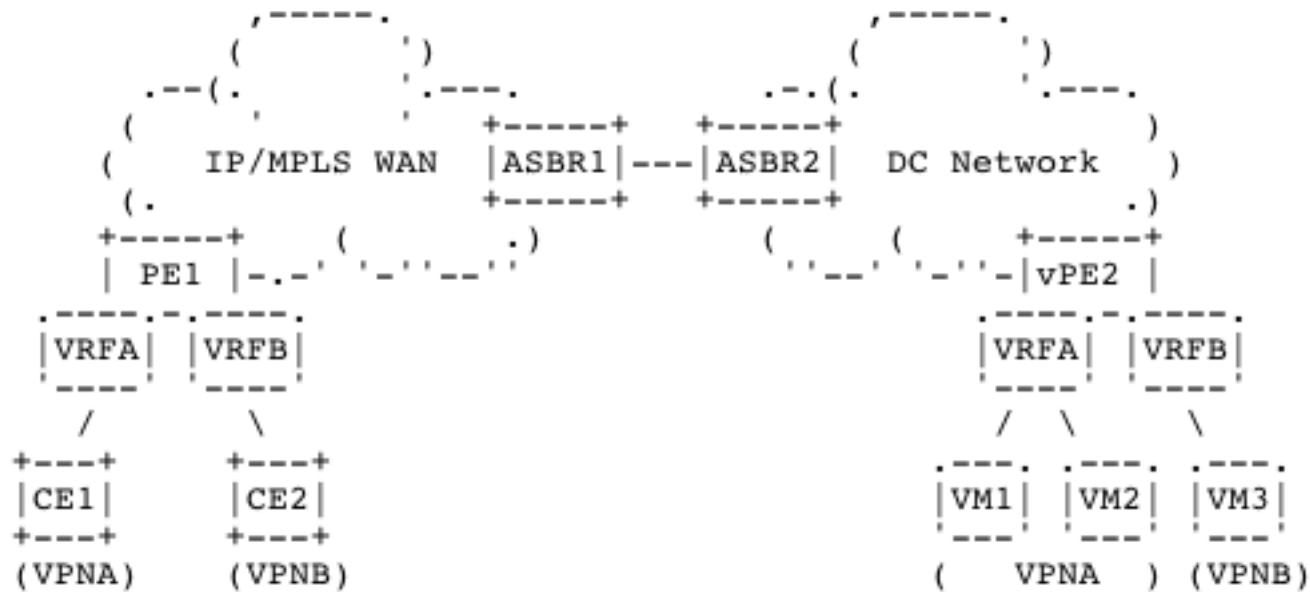
Case 1: End-to-end BGP IP VPN cloud inter-connection

Case 2: Hybrid cloud inter-connection

Strong requirements from multiple service providers for both cases

Reference model 1 (a)

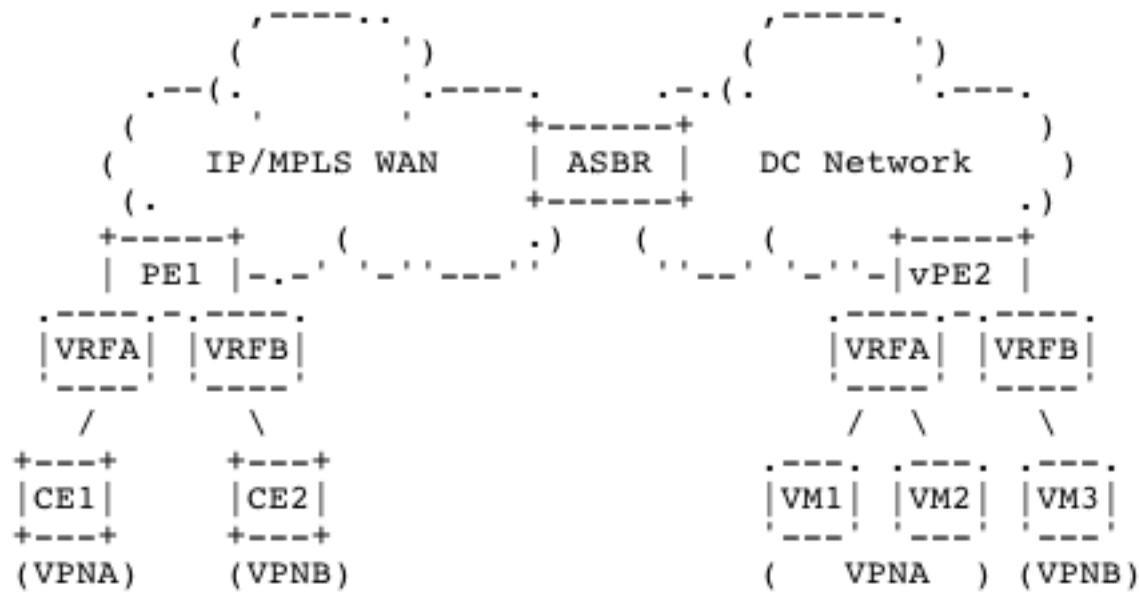
End-to-end BGP IP VPN Cloud Inter-connection



- BGP/MPLS IP VPN Inter-Connection with ASBR in each network

Reference model 1 (b)

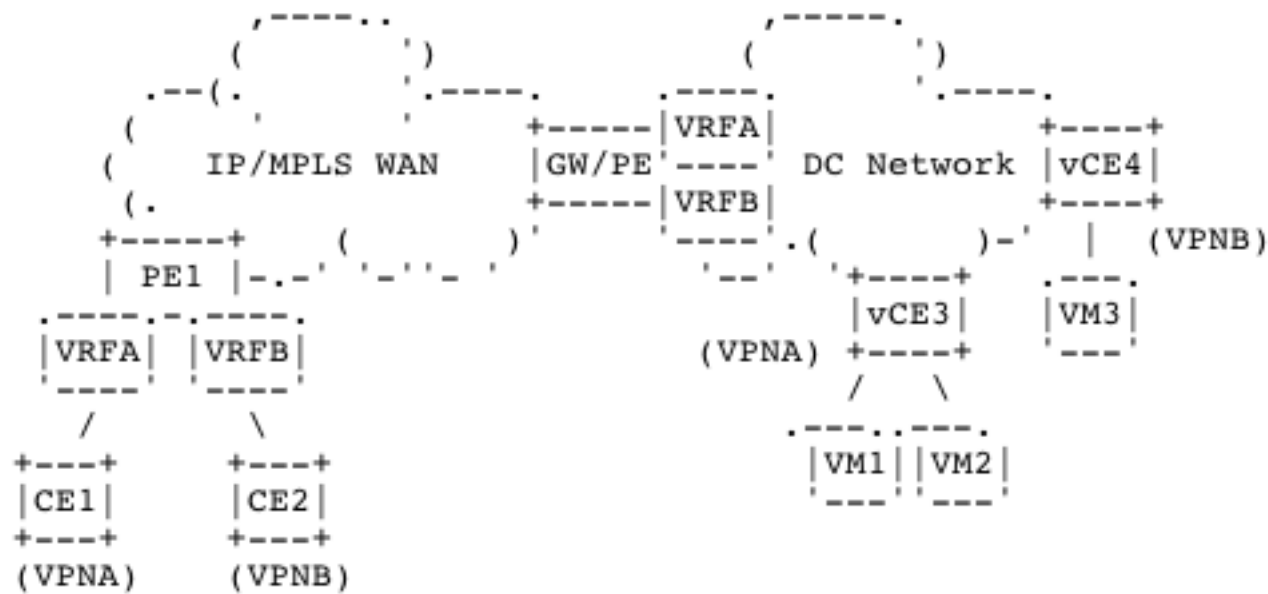
End-to-end BGP IP VPN cloud inter-connection



- BGP/MPLS IP VPN Inter-Connection with shared ASBR(s)

Reference model 2

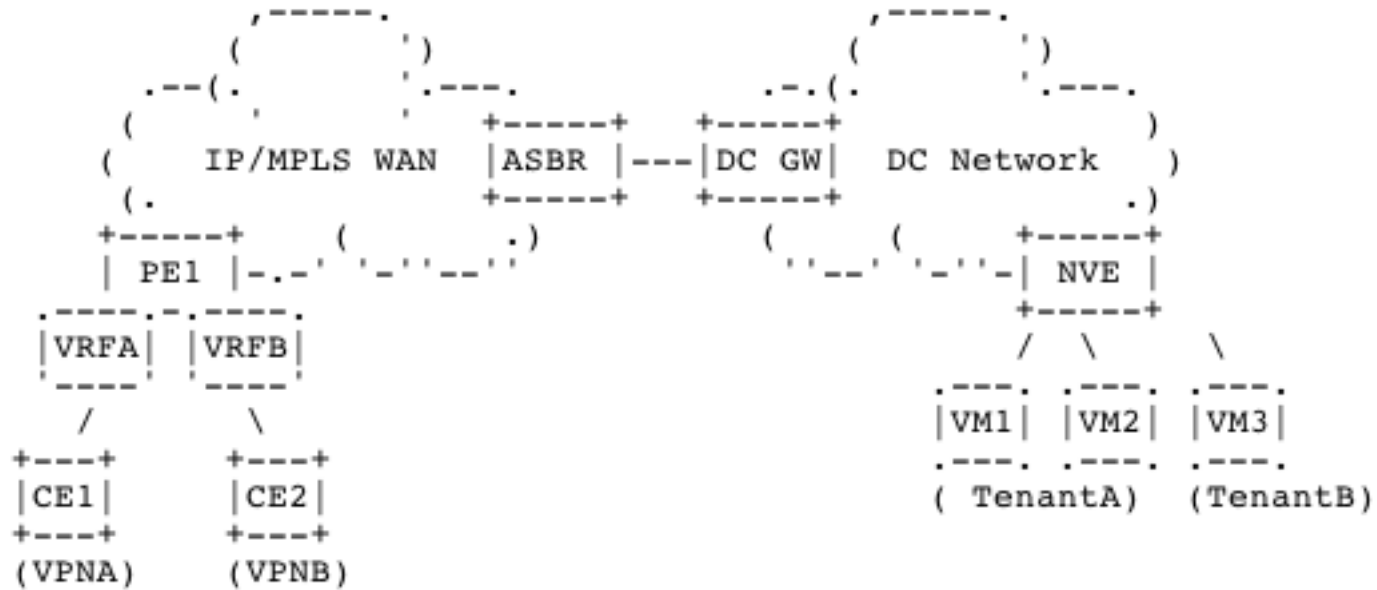
BGP/MPLS IP VPN Gateway PE connect to DC vCE Model



- BGP/MPLS IP VPN GW/PE connect to vCEs (no BGP/MPLS IP VPN in the DC)

Reference model 3

Hybrid inter-connection Model



- BGP/MPLS IP VPN GW/PE to vCEs (without BGP/MPLS IP VPN in the DC)

Inter-connect IP VPN between DC and WAN

Options	Description	Scale	Security
Inter-AS Option A	back-to-back VRF	Low (vrfs, ports, rts, bgp sessions)	High (terminating)
Inter-AS Option B	BGP exchange VPN routes	Mid	Mid
Inter-AS Option C	Multihop eBGP exchange VPN-IPv4 Routes, need IGP visibility	High	Low (should not be used in inter-provider)
Single AS	One IGP domain	Low	High (only apply to single operator own DC and net)

- In addition to use RT-constrain [RFC 4648], routes summarization is needed between DC and WAN.

Inter-connect IP VPN and non-IP VPN overlay networks

- Connecting to DC with VXLAN or NVGRE
- Connection models:
 1. VRF Termination
 - The overlay based virtual network terminates into a BGP IP VPN VRF at the DC-WAN Gateway router.
 - The DC gateway performs an IP lookup and MPLS or IP encap.
 - Packet encapsulation with MPLS or IP.
 2. DC-VN and IP VPN Inter-working
 - DC Gateway router performs a direct translation between VN-IDs and IP VPN labels.
 - No IP look-up performed
 - The DC Gateway Router acts as an Inter-AS Option B ASBR peering with other ASBRs.

Next Steps

- Continue working on more text
- All comments are welcome
- Post new revision