Inter-AS Options for NVO3 and BGP/MPLS VPN

draft-hao-bess-inter-nvo3-vpn-01

Weiguo Hao, Lucy Yong, Sue Hares, Robert Raszuk
Luyuan Fang, Osama Zia, Shahram Davari, Andrew Qu

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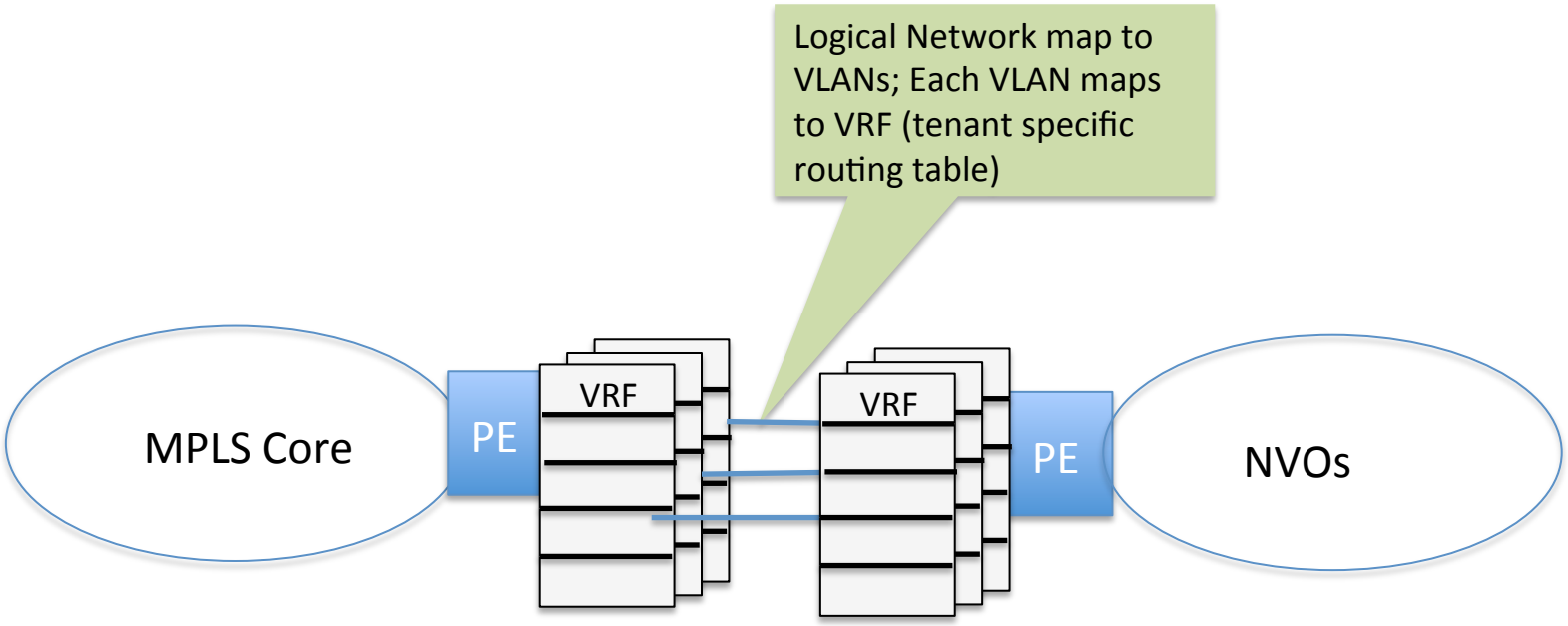
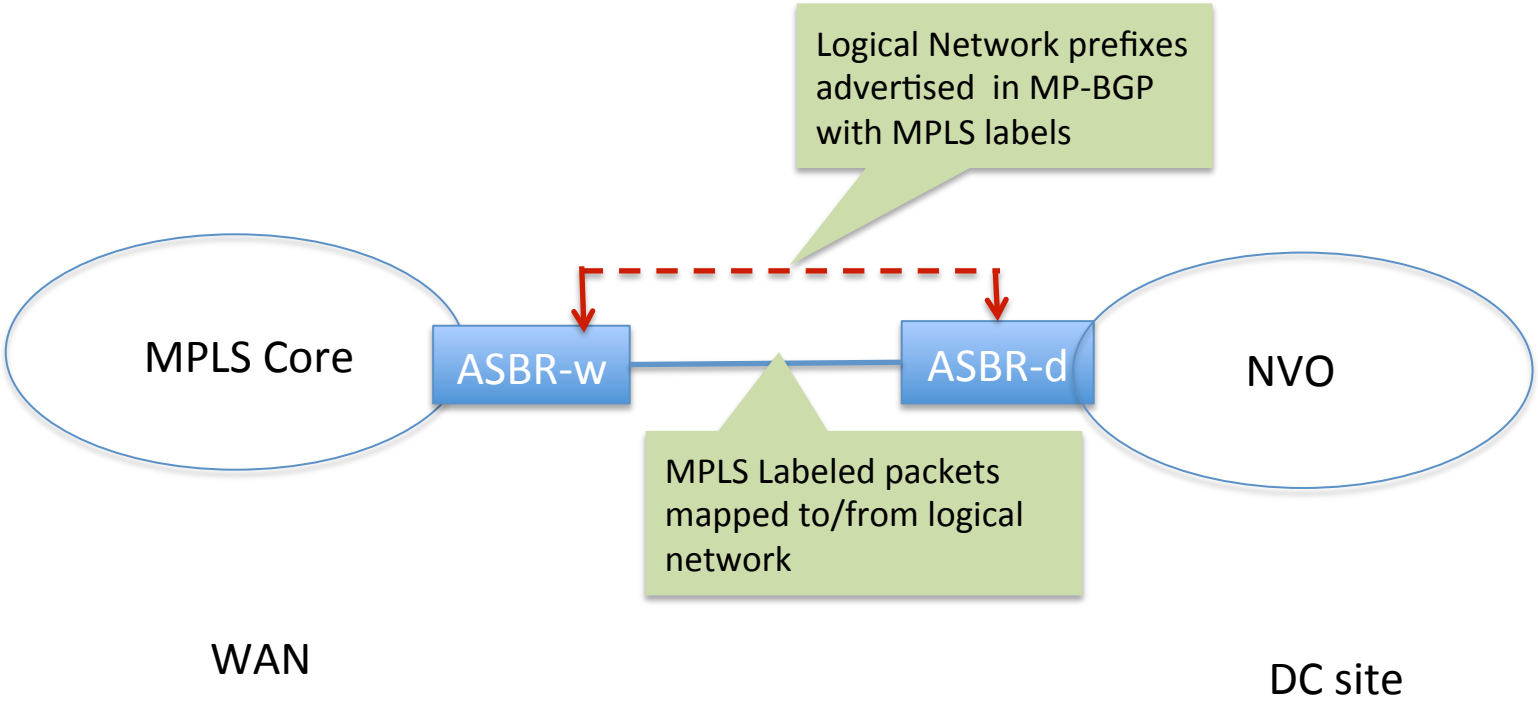
Option A for NVO3 and BGP VPN

- Inter-AS Option A [RFC4364]: Map Logical Network to VLANs



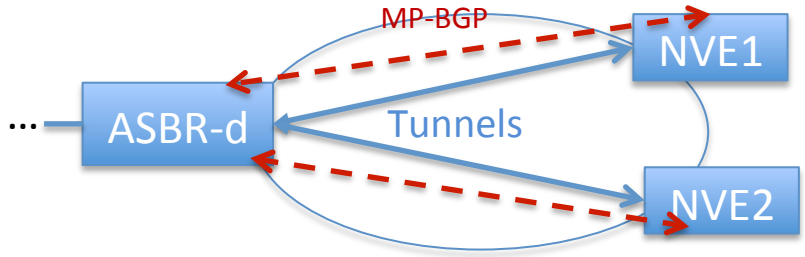
Option B for NVO3 and BGP VPN

- Inter-AS Option B [RFC4364]:

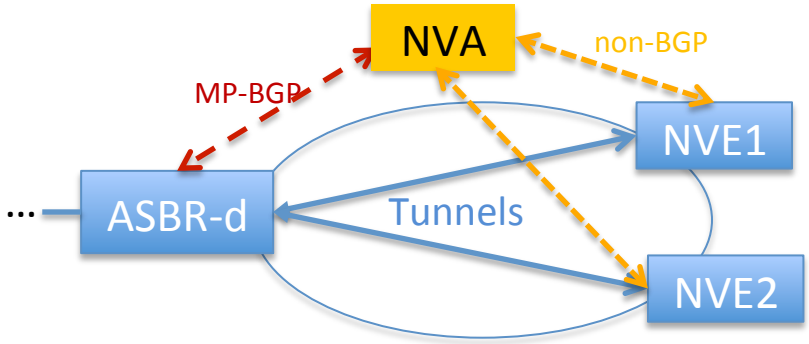


Option B Implementations at DC site

- Case 1: Vanilla Option B by use of BGP in DC
- Case 2: Vanilla Option B by use of NVA in DC



Case 1



Case 2

- Case 1 & 2 are in Common:
  - ASBR-d does not have VRFs and sub-interfaces
  - Date planes have the exact same implementation

Note: there is a concern on use of MP-BGP to set up a tunnel in case 2, the proper solution will be addressed under IDR WG

ASBR-d Process in Case1&2

Control Plane:

- Allocates a VNID per a VPN label when getting a route from ASBR-w.
- Allocates an MPLS label per <NVE and VNID> when getting a route from an NVE.

Data Plane:

- Has an outgoing forwarding table,
  - An entry has the mapping of VNID to MPLS label.
- Has an incoming forwarding table,
  - An entry has the mapping of MPLS label to < NVE IP address, VNID>.
- Perform NVO3 Tunnel and MPLS VPN tunnel stitching
  - No payload lookup, which is scalable.

VNID	Out VPN Label
10000	3000
10001	4000

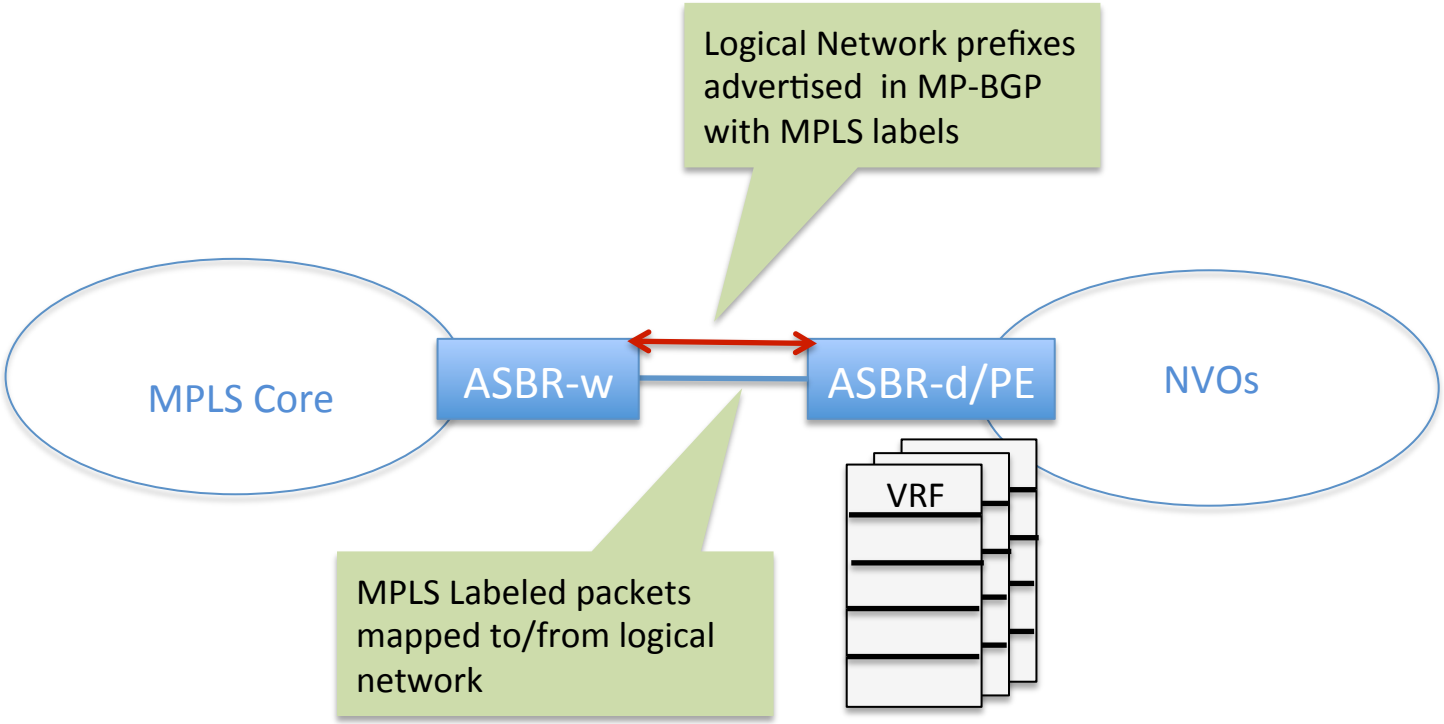
Table 3 Outgoing forwarding table

MPLS VPN Label	NVE + VNID
1000	NVE1 + 10
2000	NVE1 + 20
1001	NVE2 + 10
2001	NVE2 + 20

Table 1 Incoming forwarding table

Option B Implementations at DC site

- Case 3: Partial Option B



Options Comparison

- Inter-AS options are good for the cases where DC and BGP/MPLS WAN belong different administrators

	Option-A	Partial Option-B	Vanilla Option-B
Sub-interface	Yes	No	No
VRF	Yes	Yes	No
Scalability	Worst	Middle	Best
Hardware Implementation at ASBR-d	No Upgrade	No Upgrade	Need Upgrade

Next Steps

- Solicit comments
- Request to adopt it as WG draft