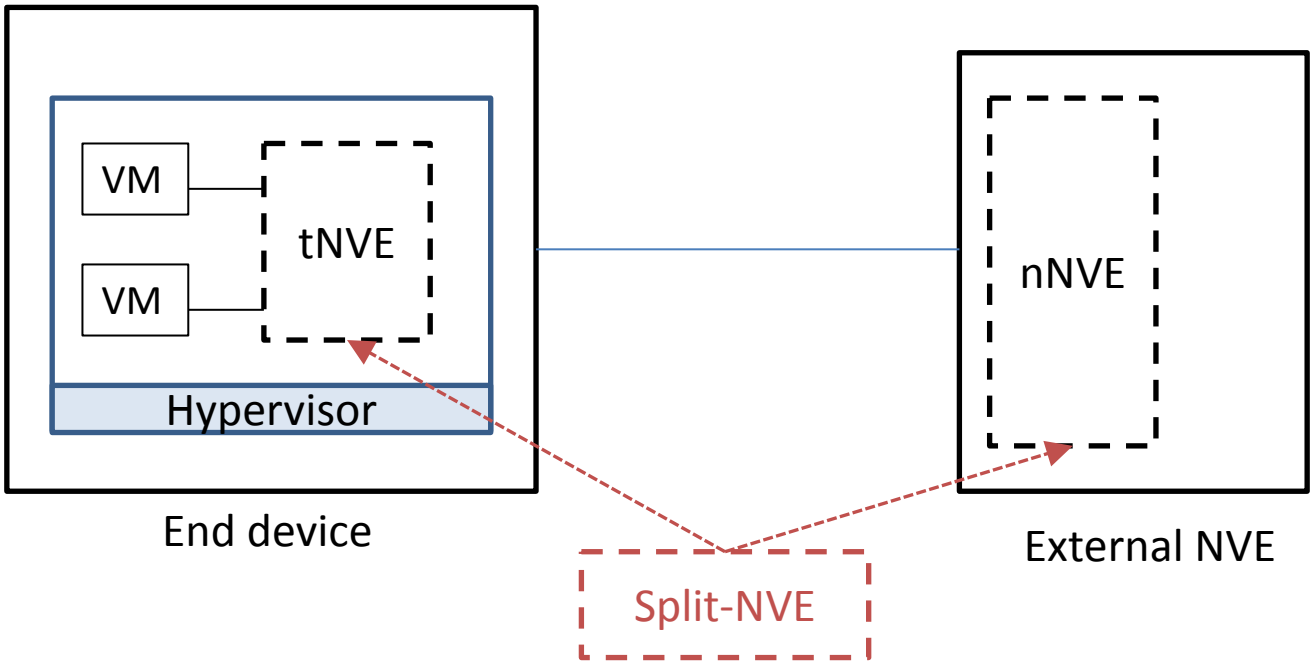
New filter info format for IP address

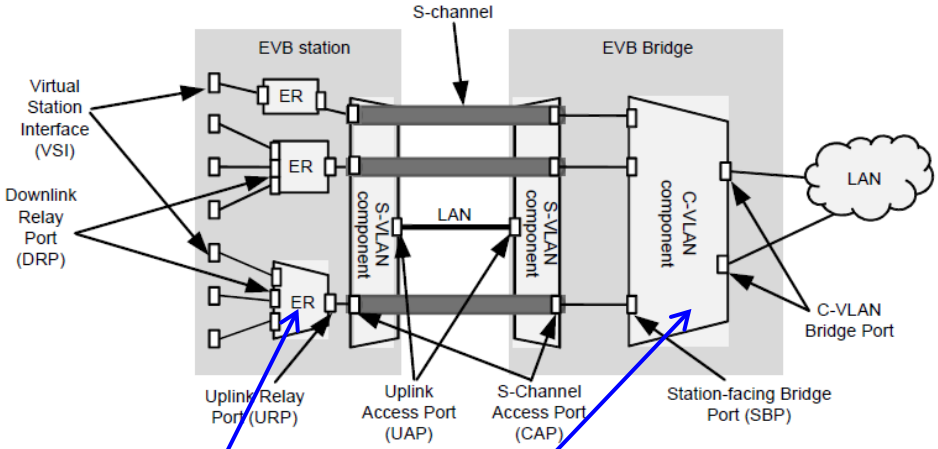
Yizhou Li (liyizhou@huawei.com)
Paul Bottorff (paul.bottorff@hpe.com)

Split-NVE in NVO3



tNVE: the portion of Split-NVE functionalities located on the end device supporting virtualization. It interacts with tenant system by internal interface in end device.
nNVE: the portion of Split-NVE functionalities located on the network device which is directly or indirectly connects to the end device holding the corresponding tNVE. nNVE normally performs encapsulation and decapsulation to the overlay network.

Correspondence with EVB architecture



- tNVE functionalities resides in ER in EVB station
- nNVE functionalities resides in C-VLAN component in EVB bridge
- No change of S-VLAN component
- TSI (Tenant System Interface) in NVE arch = VSI in EVB

tNVE
Split-NVE
nNVE

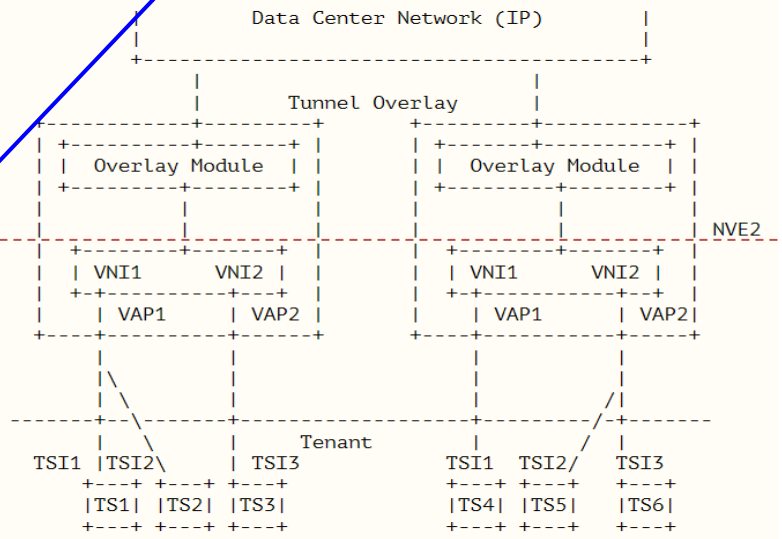


Figure 2: NVE Reference Model

Requirements from NVO3

- In the Split-NVE architecture, the external NVE may be able to reach multiple MAC and IP addresses via a TSI. For example, Tenant Systems that are providing network services (such as transparent firewall, load balancer, VPN gateway) are likely to have complex address hierarchy.
- Req-10: The protocol MUST allow an End Device initiating a request to add, remove or update address(es) associated with a TSI instance on the external NVE. Addresses can be expressed in different formats, for example, MAC, IP or pair of IP and MAC.
- Extension for VDP: add new "filter info format" type to allow IP address

New Filter Info Format Values

- Add to section 41.2.8, table 41-6 Filter Info Format Values

Format	Value
VID (41.2.9.1)	0x01
MAC/VID (41.2.9.2)	0x02
GroupID/VID (41.2.9.3)	0x03
GroupID/MAC/VID (41.2.9.4)	0x04
IPv4/VID (41.2.9.5)	0x05
IPv6/MAC/VID (41.2.9.6)	0x06
GroupID/IPv4/VID (41.2.9.7)	0x07
GroupID/IPv4/MAC/VID (41.2.9.8)	0x08
Reserved for future standardization	0x00, 0x09 through 0xFF

Add Section 41.9.2.5

41.2.9.5 IP/VID Filter Info format

The IP/VID Filter Info format indicates that the Format Info field specifies a sequence of IP/VID value pairs to be associated with the VSI instance (41.2.7). Figure 41-x illustrates the IP/VID Filter Info format of the Filter Info field.

Number of entries (2 octets)	IPv4 address (4 octets)	PS (1 bit)	PCP (3 bit)	VID (12 bits)

The number of IP/VID pair values is specified by the field Number of Filter Info entries. Each IP/VID pair value carries a 4-octet individual MAC address and a 2-octet VID value.

The Filter Info field can specify the null VID for any entry. Use of the null VID indicates that the VID value is supplied by the Bridge.

Add Section 41.9.2.6

41.2.9.5 IP/MAC/VID Filter Info format

The IP/MAC/VID Filter Info format indicates that the Format Info field specifies a sequence of IP/MAC/VID value triples to be associated with the VSI instance (41.2.7). Figure 41-x illustrates the IP/MAC/VID Filter Info format of the Filter Info field.

Number of entries (2 octets)	IPv4 address (4 octets)	MAC address (6 octets)	PS (1 bit)	PCP (3 bit)	VID (12 bits)

The number of IP/MAC/VID triple values is specified by the field Number of Filter Info entries. Each IP/MAC/VID triple value carries a 4-octet IPv4 address, a 6-octet MAC address and a 2-octet VID value.

The Filter Info field can specify the null VID for any entry. Use of the null VID indicates that the VID value is supplied by the Bridge.

Add Section 41.9.2.7

41.2.9.7 GroupID/IP/VID Filter Info format

The GroupID/IP/VID Filter Info format indicates that the Format Info field specifies a sequence of GroupID/IP/VID triples to be associated with the VSI instance (41.2.7).

Figure 41-x illustrates the GroupID/IP/VID Filter Info format of the Filter Info field.

Number of entries (2 octets)	GroupID (4 octets)	IP address (4 octets)	PS (1 bit)	PCP (3 bit)	VID (12 bits)

The number of GroupID/IP/VID triples is specified by the Number of entries field.

The null VID (see Table 9-2) can be used in a GroupID/IP/VID triple when the GroupID/IP/VID filter format is specified in the VDP Request. In this case, the Bridge is expected to supply the corresponding local VID value in the VDP Response. For this purpose, the Bridge maintains, or has access to, the mapping between GroupID and local VID.

Add Section 41.9.2.8

41.2.9.7 GroupID/IP/MAC/VID Filter Info format

The GroupID/IP/MAC/VID Filter Info format indicates that the Format Info field specifies a sequence of GroupID/IP/MAC/VID values to be associated with the VSI instance (41.2.7).

Figure 41-x illustrates the GroupID/IP/MAC/VID Filter Info format of the Filter Info field.

Number of entries (2 octets)	GroupID (4 octets)	IP address (4 octets)	MAC address (6 octets)	PS (1 bit)	PCP (3 bit)	VID (12 bits)

- The number of GroupID/IP/MAC/VID values is specified by the Number of entries field. The null VID (see Table 9-2) can be used in a GroupID/IP/MAC/VID value when the GroupID/IP/MAC/VID filter format is specified in the VDP Request. In this case, the Bridge is expected to supply the corresponding local VID value in the VDP Response. For this purpose, the Bridge maintains, or has access to, the mapping between GroupID and local VID.

Other addition

- Add IPv6 address (format similar as IPv4 in slide 6-9.
- Clarify NULL VID meaning VID is zero.

  - 41.2.9.1: The VID field can specify the null VID (see Table 9-2). NULL VID means the value of VID field is zero in the whole document.