Federated SDN-based Controllers for NVO3

draft-sb-nvo3-sdn-federation

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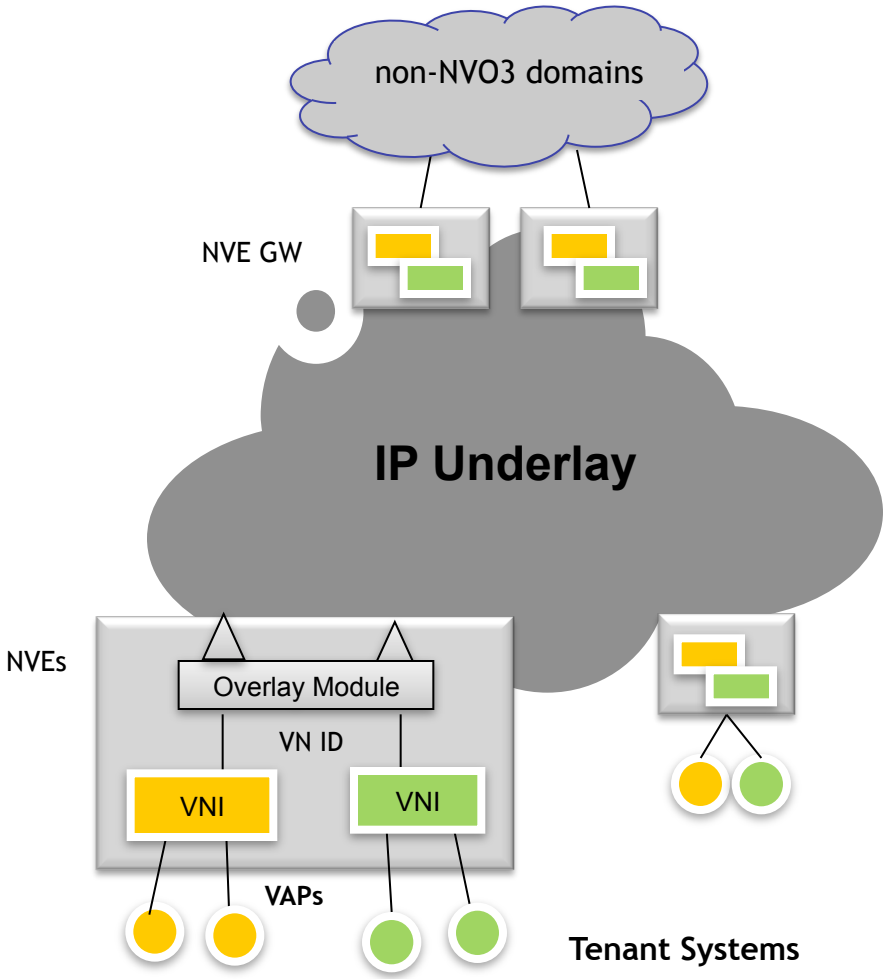
Scope

- Pull together an end2end solution view
  - Point to existing work, describe missing pieces and solution where it makes sense
- Generate discussion about solution gaps
- Create awareness about required work in other forums

DC Network Virtualization Framework



DC IP Underlay Network

- Utilize L3 networking to interconnect NVEs

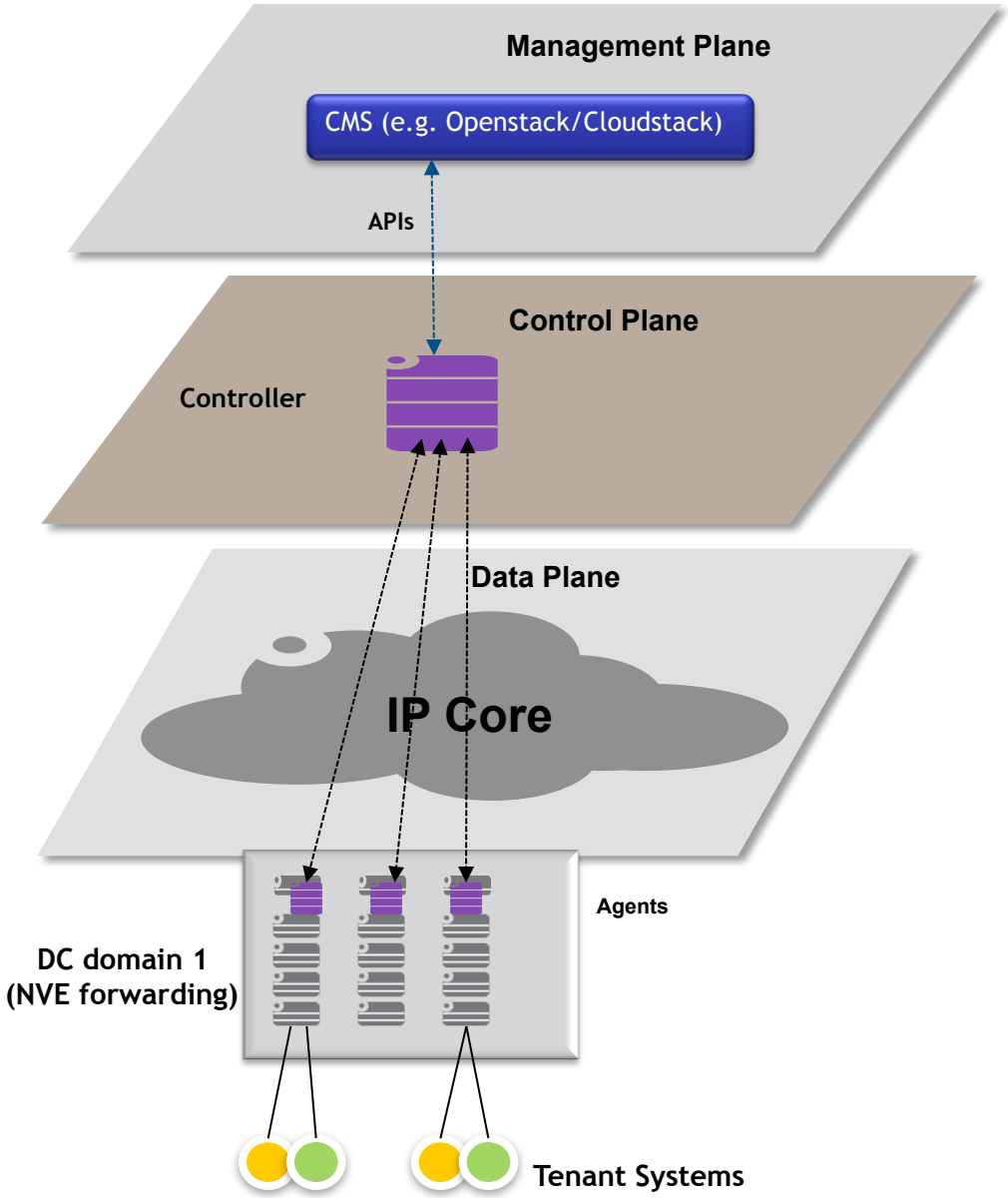
Network Virtualization Edge (NVE)

- Handle L2/L3 service instances
- Hide tenant addressing information
- Map tenant traffic into tunnel
- Perform NVO3 tunnel encapsulation

Tenant Systems

- Physical or virtual system that can play the role of a host, or a forwarding element (eg router, switch)
- Examples: VMs, Bare Metal servers, Networks Appliances (FW,LB)

Control, Data & Management Plane for one DC domain



CMS functions

- TS instantiation, management: e.g. compute and related applications, appliances
- Open source or proprietary systems

Controller functions

- Learns about the TS events and profile
- Populates TS addresses in its RIB, generates FIB
- Provides required FIB, ARP entries to NVEs
- Address advertisements to other domains (WAN/DC)
- Underlay awareness

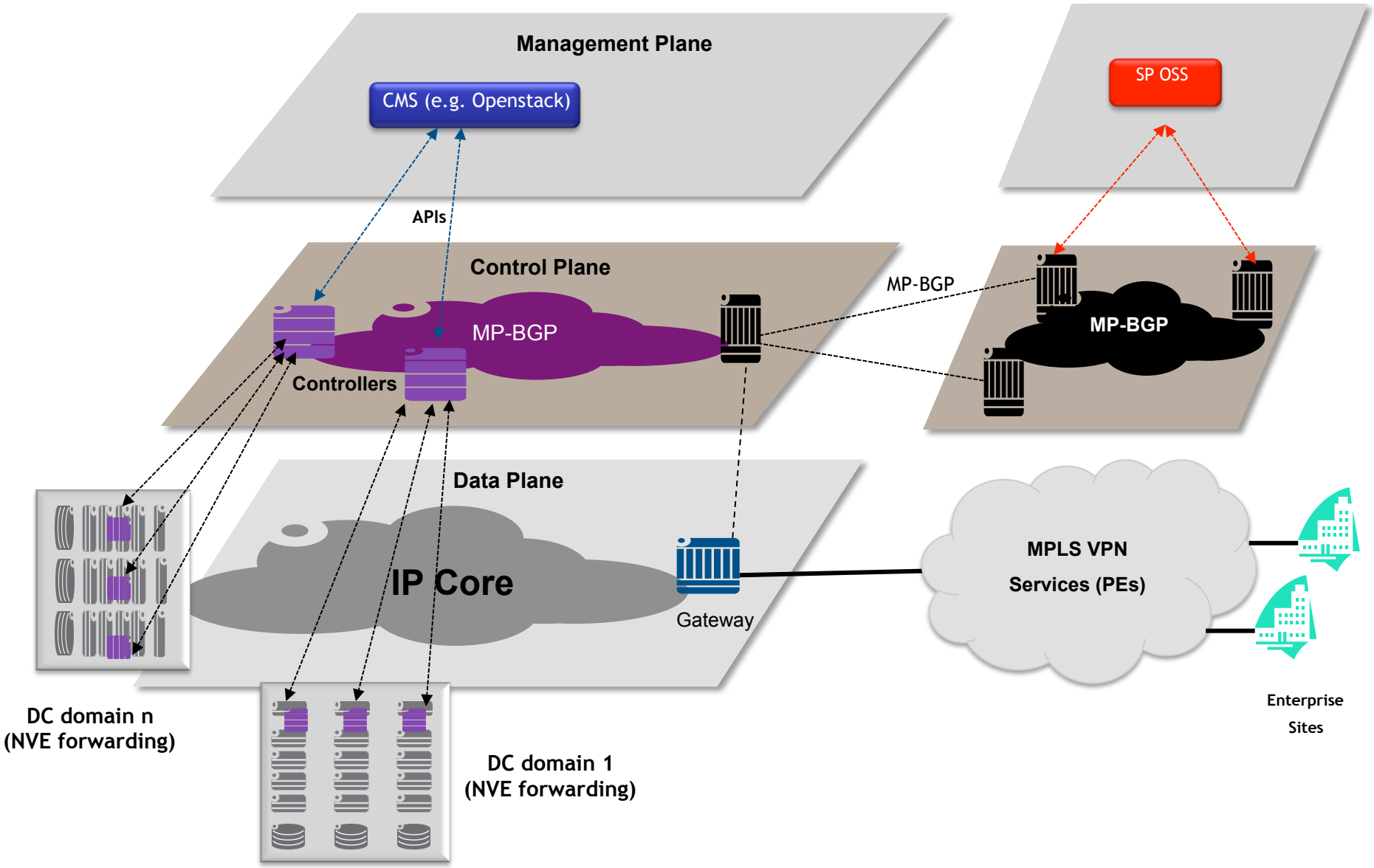
Discovery of TS States & required Service Profile

- CMS driven: e.g. Openstack quantum API
- NVE driven: local procedure or server2nve
- Server, CMS software dictating choice of protocols

Tenant System States

- Derived from VM lifecycle management
- Generalization required for different type of TS
- From VMs to HW Appliances, BMS etc…

Extending the model across DC domains and to VPN WAN



What's covered and what's missing?

- Tenant System States
  - Get down to the minimum set
  - Generalization to non-VM TS
- CMS driven TS state discovery
  - Common information model between CMS & Controller
- NVE driven TS State discovery
  - Openflow extensions to send TS events & profile
  - ToR NVE Server2NVE signalling: covered in NVO3 proposals
- Controller to NVE with Openflow
  - Re-use existing hypervisor capability to accelerate adoption
- MP-BGP advertisements between Controllers and PEs
  - Re-use EVPN for L2: base spec in L2VPN + NVO3 proposal
  - Re-use IP VPN for L3: L3VPN specifications

Next steps

- Open discussion on the missing pieces
  - Where should they be addressed?
- Decide on the modules NVO3 takes on
  - Update the charter, schedule
- Collaborate with external organizations
  - about missing pieces we would like to see addressed
- WG contributions welcome