

YANG Data Model for SD-WAN OSE service delivery

draft-wood-rtgwg-sdwan-ose-yang-00

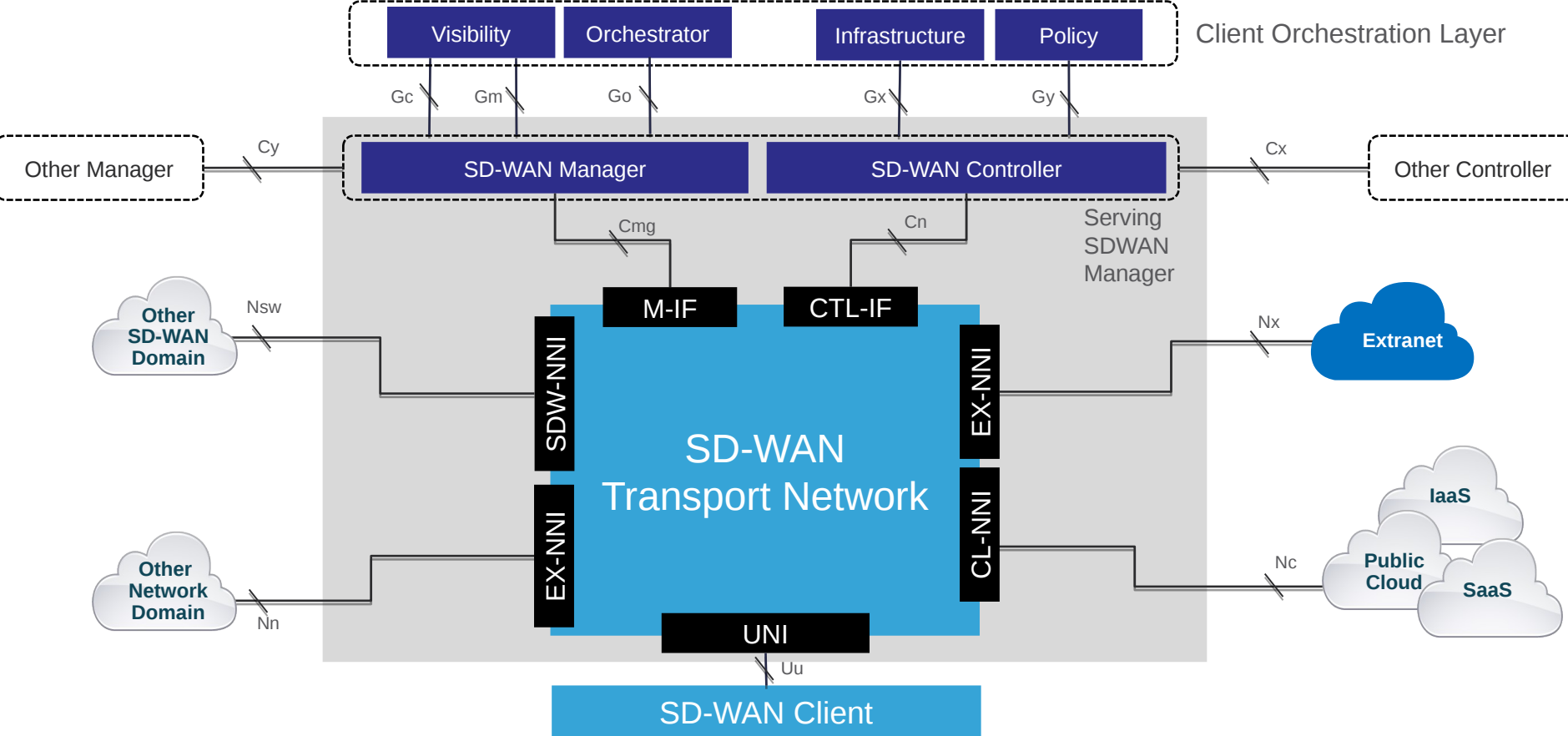


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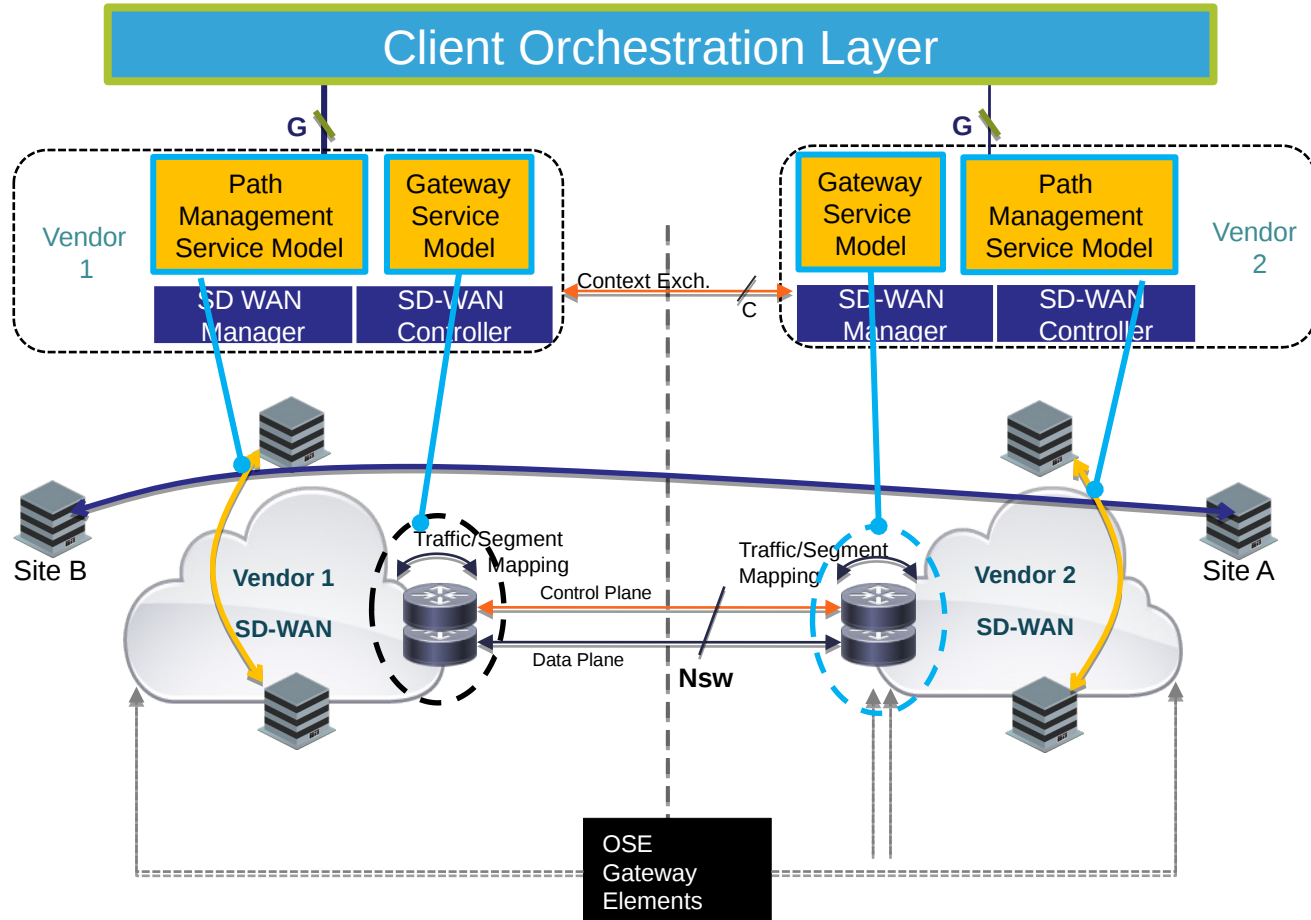
Motivation

The **Open SD-WAN Exchange (OSE)** is an open framework to allow for one vendor SD-WAN solution to federate and communicate with other vendor SD-WAN solutions that utilize different Overlay, Control and Management plane protocols. The “Open SD-WAN Exchange” use cases address marketplace M&A, business partner connectivity, Cloud/Service Provider network connectivity, technology transition and vendor interworking.

SDWAN Interworking Reference Architecture



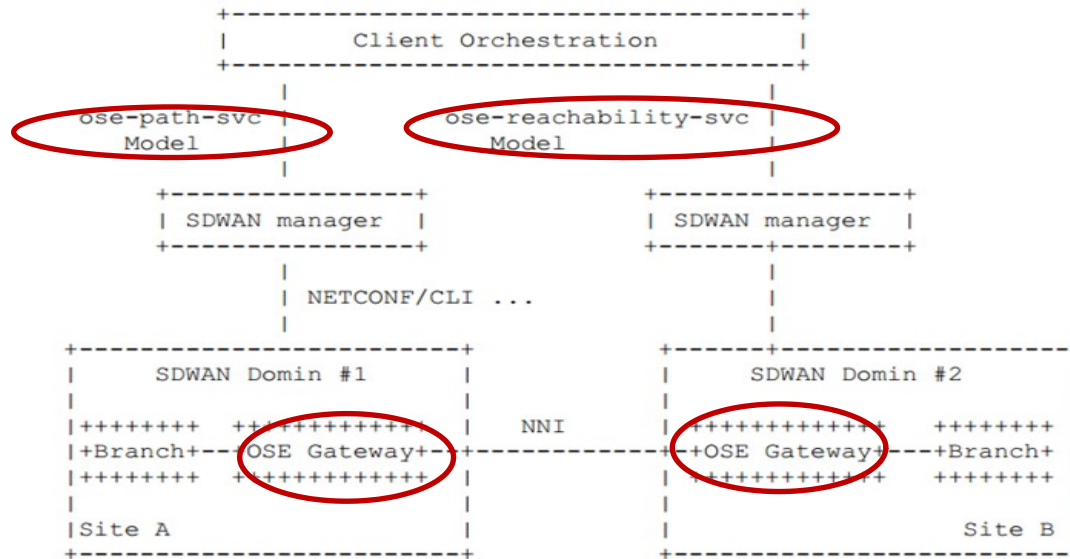
OSE Interworking Model – RFC Coverage Areas



Use Case 1: Path Management Policy and Enforcement

Use Case 2: Interdomain Reachability and Segmentation

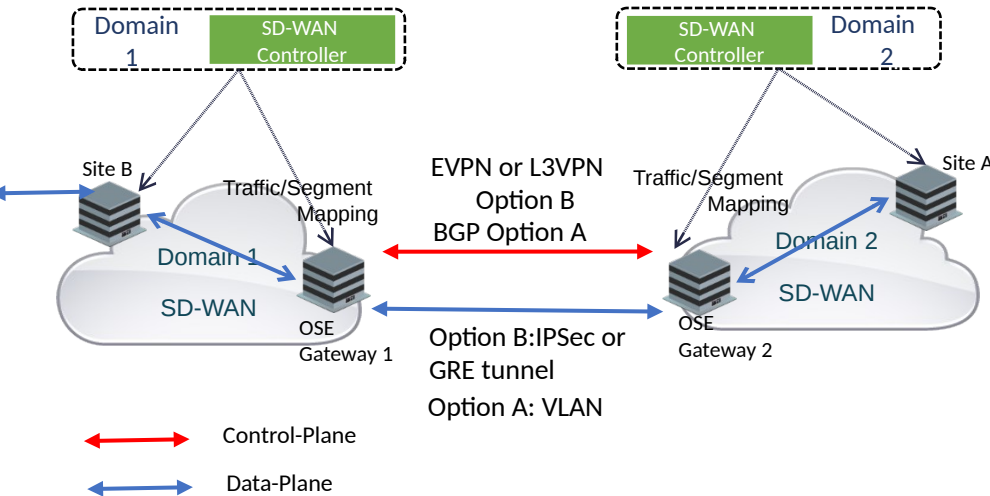
Service Model usage example



- The communication between client Orchestrator and SD-WAN manager is based on Restconf/YANG
- **OSE-reachability-svc-model** functionality:
 - Ose Gateway created in each domain
 - Ose Gateway MP-BGP/BGP control plane peering configuration
 - Underlay connection setup: VLAN or interface configuration
 - Overlay Tunnel setup: GRE/IPsec parameters
 - Segmentation instance creation, cross-connect
- **OSE-Path-svc-model**
 - Dynamic path selection for cross-domain traffic configuration

OSE Gateway Service Model design

- **Ose-gateway list:** Each domain has one or more OSE-Gateway to provide inter-domain interoperability
- **Peering list:**
 - Control-Plane configuration parameters
 - Option B: Reachability exchange between OSE Gateway: MP-BGP based EVPN or L3VPN exchange routes with additional reachability.
 - Option A: Use of separate instances of BGP to be configured on a per VRF basis.
 - Data-Plane configuration parameters
 - Option B: GRE encapsulation between SD-WAN islands. For added security IKE based IPSec can be used.
 - Option A: Alternatively, Use of VLAN tagging to separate traffic between tenants.
- **Segment mapping list**
 - Network segmentation for inter SD-WAN islands is required to ensure per per segment traffic flow separation while passing through sd-wan island boundaries



OSE Gateway List

BGP peer Tunnel parameters

Cross-domain Segment Mapping

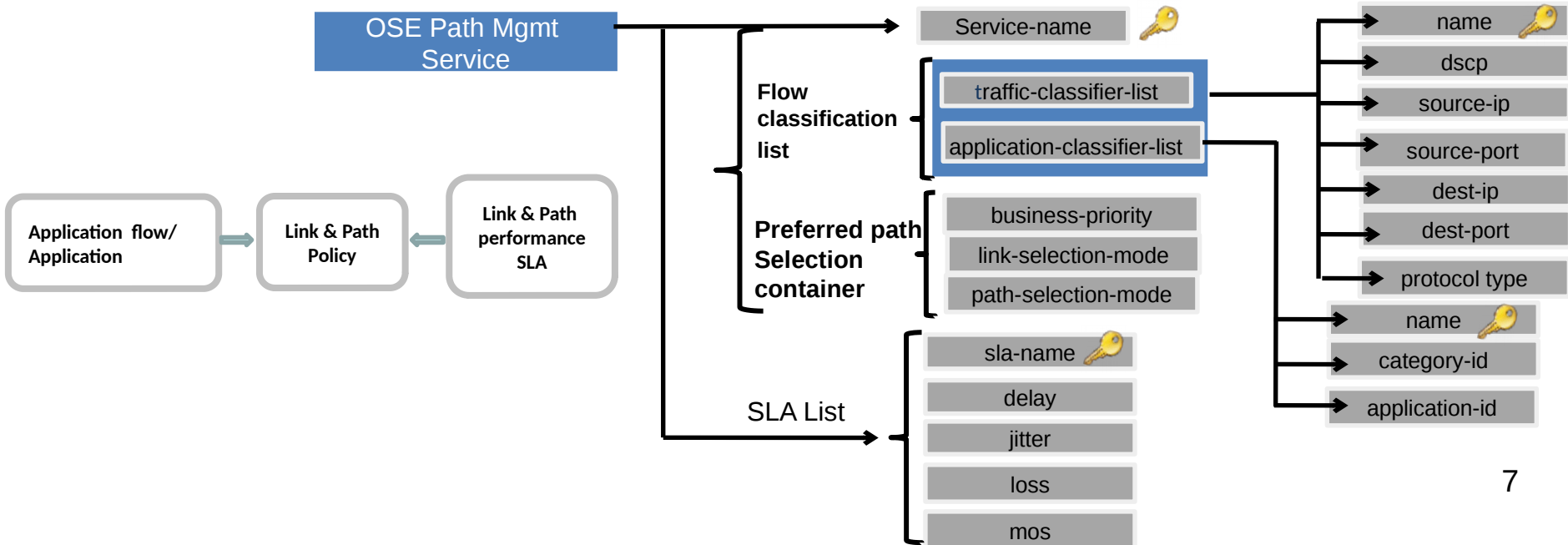
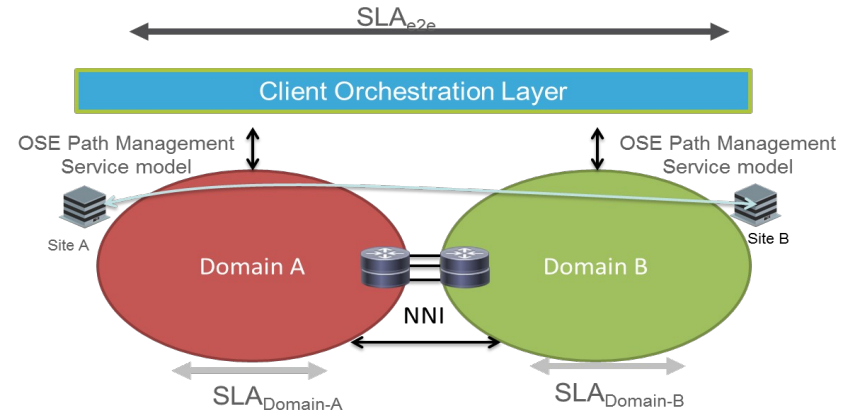
```

module: gatewayservices
+--rw ose-gateway
|
|  +--rw ose-gateway* [OSE-gw-list-name]
|  |
|  |  +--rw ose-gw-list-name?      string
|  |  +--rw gw-ID?                 uint32
|  |  +--rw gw-name?               string
|  |  +--rw ose-interworking-option? enumeration
|  |  +--rw encap-type?            enumeration
|  |  +--rw auth-type?             enumeration
|  |  +--rw crypto?                enumeration
|  |  +--rw peers
|  |  |
|  |  |  +--rw peer-list* [peer-list-name]
|  |  |  |
|  |  |  |  +--rw name?              string
|  |  |  |  +--rw PeerGWID?          uint32
|  |  |  |  +--rw peerGWName?       string
|  |  |  |  +--rw authType?         enumeration
|  |  |  |  +--rw CryptoSelect?     enumeration
|  |  |  |  +--rw ose-interworking-option? enumeration
|  |  |  +--rw segments
|  |  |  |
|  |  |  |  +--rw segment* [segment-list-name]
|  |  |  |  |
|  |  |  |  |  +--rw segment-list-name  string
|  |  |  |  |  +--rw segment-name?     string
|  |  |  |  |  +--rw vlan_id?          uint16
|  |  |  |  |  +--rw vrf_id?           uint16
|  |  |  |  |  +--rw segment-type?     enumeration
|  |  |  |  |  +--rw CrossConnects* [CCName]
|  |  |  |  |  |
|  |  |  |  |  |  +--rw PeerSegName?    string
|  |  |  |  |  |  +--rw PeerSegID-VLAN?  uint16 {ose-option-A}?
|  |  |  |  |  |  +--rw PeerSegID-VRF?   uint16 {ose-option-B}?
|  |  |  |  +--rw PeerSegID-VLAN?  uint16 {ose-option-A}?
|  |  |  |  +--rw PeerSegID-VRF?   uint16 {ose-option-B}?
|  |  |  +--rw PeerSegID-VLAN?  uint16 {ose-option-A}?
|  |  |  +--rw PeerSegID-VRF?   uint16 {ose-option-B}?
|  |  +--rw PeerSegID-VLAN?  uint16 {ose-option-A}?
|  |  +--rw PeerSegID-VRF?   uint16 {ose-option-B}?
|  +--rw PeerSegID-VLAN?  uint16 {ose-option-A}?
|  +--rw PeerSegID-VRF?   uint16 {ose-option-B}?

```

OSE Path management service model design

- Path Management Policy is an ordered list
- Custom traffic classifier or application will be matched for the cross-domain traffic from a site
- The first match will be applied the link & path policy which is in the context of the Performance SLA associated to the links and paths



Open Items

- OSE Gateway control and data plane protocol will be specified when relevant protocols defined
- A method needs to be specified for budgeting end-to-end delay across multiple domains
 - delay/loss/jitter needs to be shared so that each domain can compute the total path, determine who's violating and then execute path change.

Next Step

- Review feedback; adjust/improve models
- API definitions
- Create additional SDWAN service models to cover major use cases