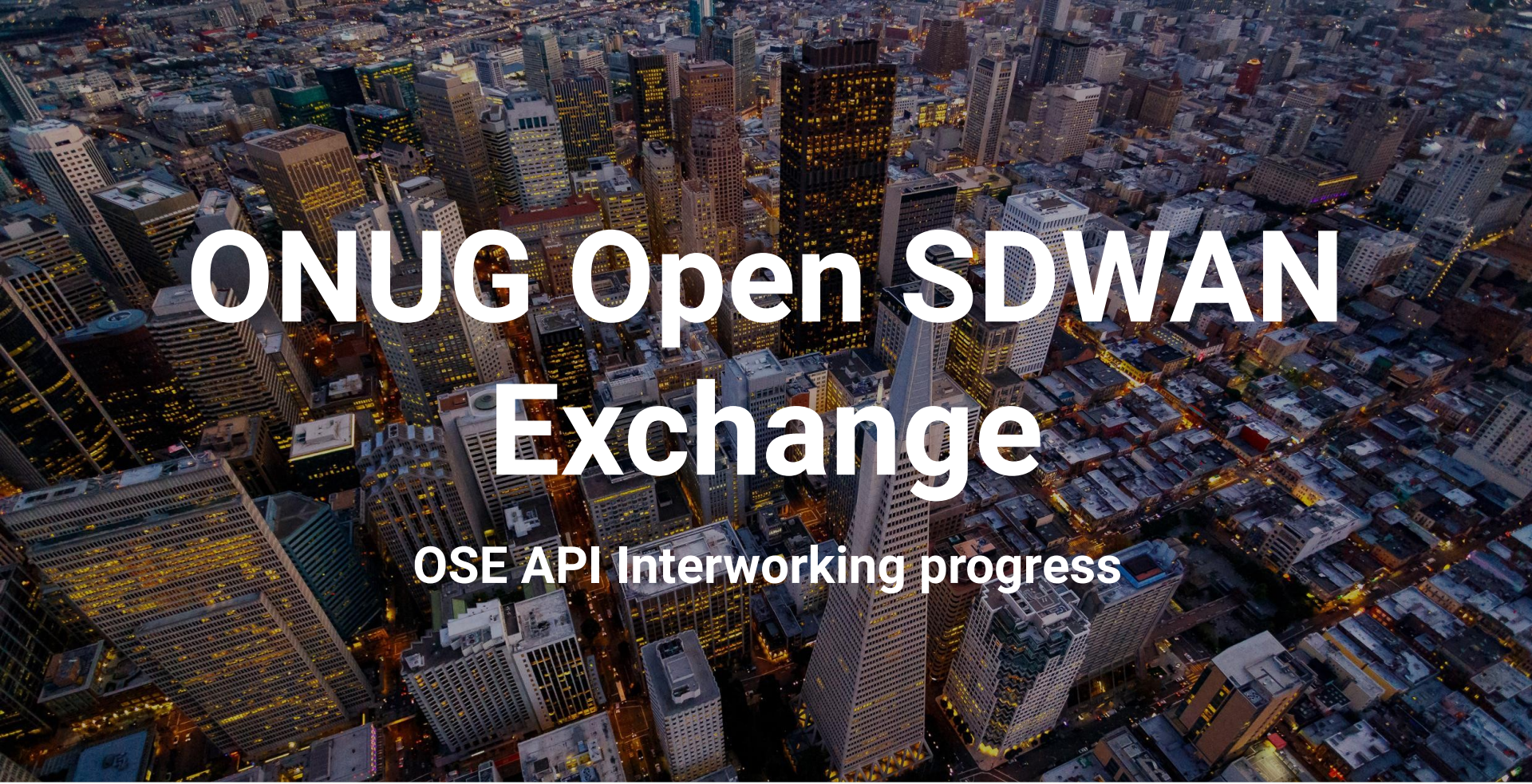

ONUG Open SDWAN Exchange

OSE API Interworking progress

ONUG Is the largest user community of the Global 2000 that speaks with one voice

ONUG BOARD MEMBERS

ONUG Board Companies Represent $1.6 Trillion Dollars in Market Cap

Building Practical Hybrid-Multi Cloud Infrastructure is ONUG's Focus

- Open SD-WAN Exchange
- Software-Defined Security Services
- Monitoring and Analytics

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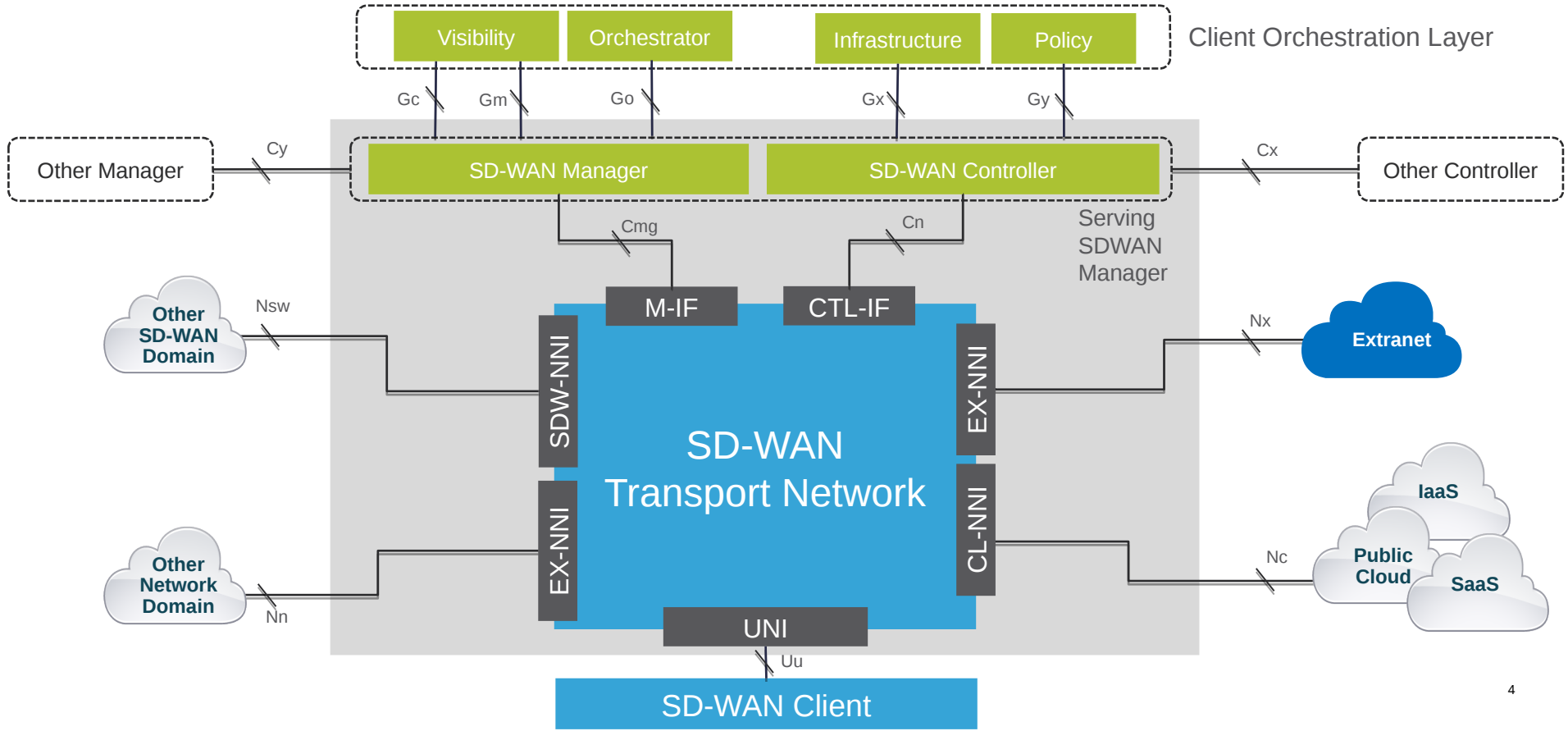
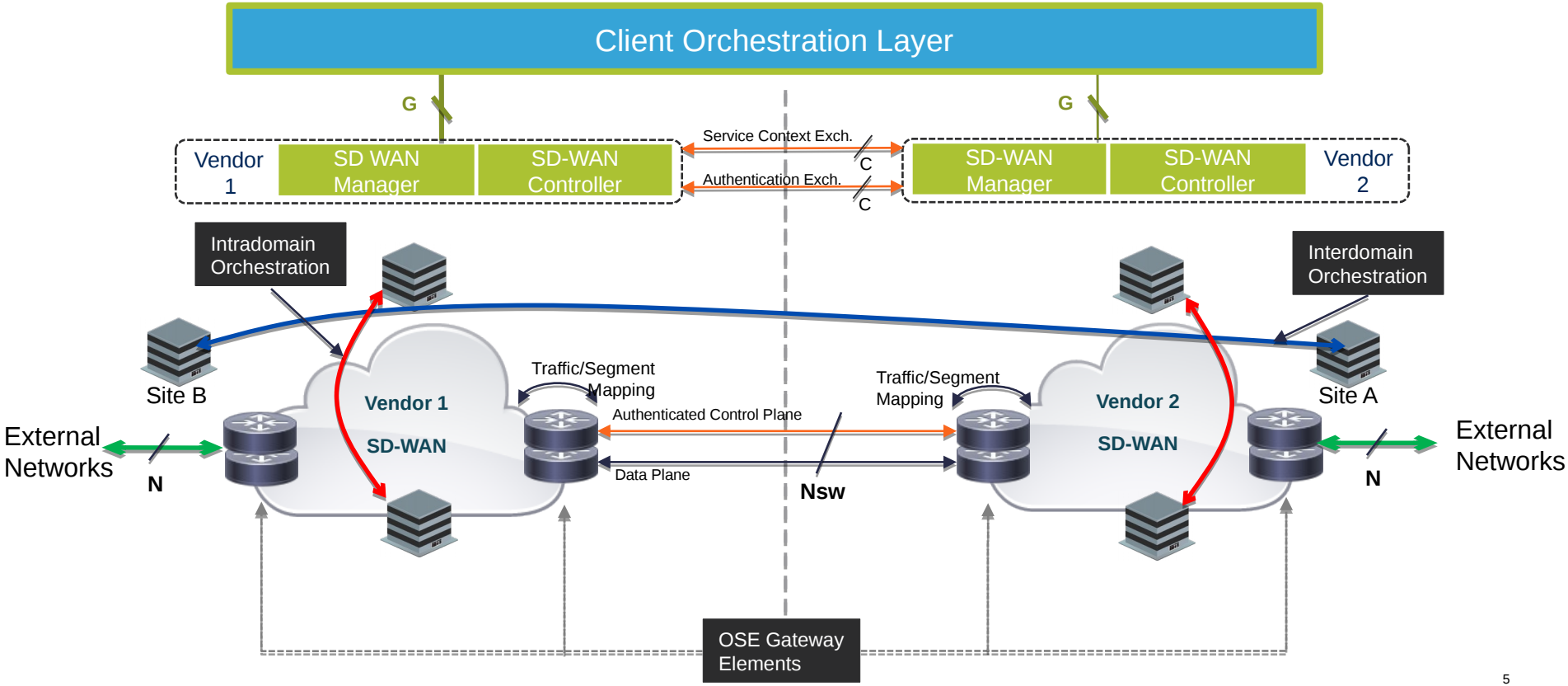
*The **Open SD-WAN Exchange (OSE)** is an open framework to allow for one vendor SD-WAN solution to federate and communicate with other vendor SD-WAN solutions that utilize different Overlay, Control and Management plane protocols. The “Open SD-WAN Exchange” use cases address marketplace M&A, business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

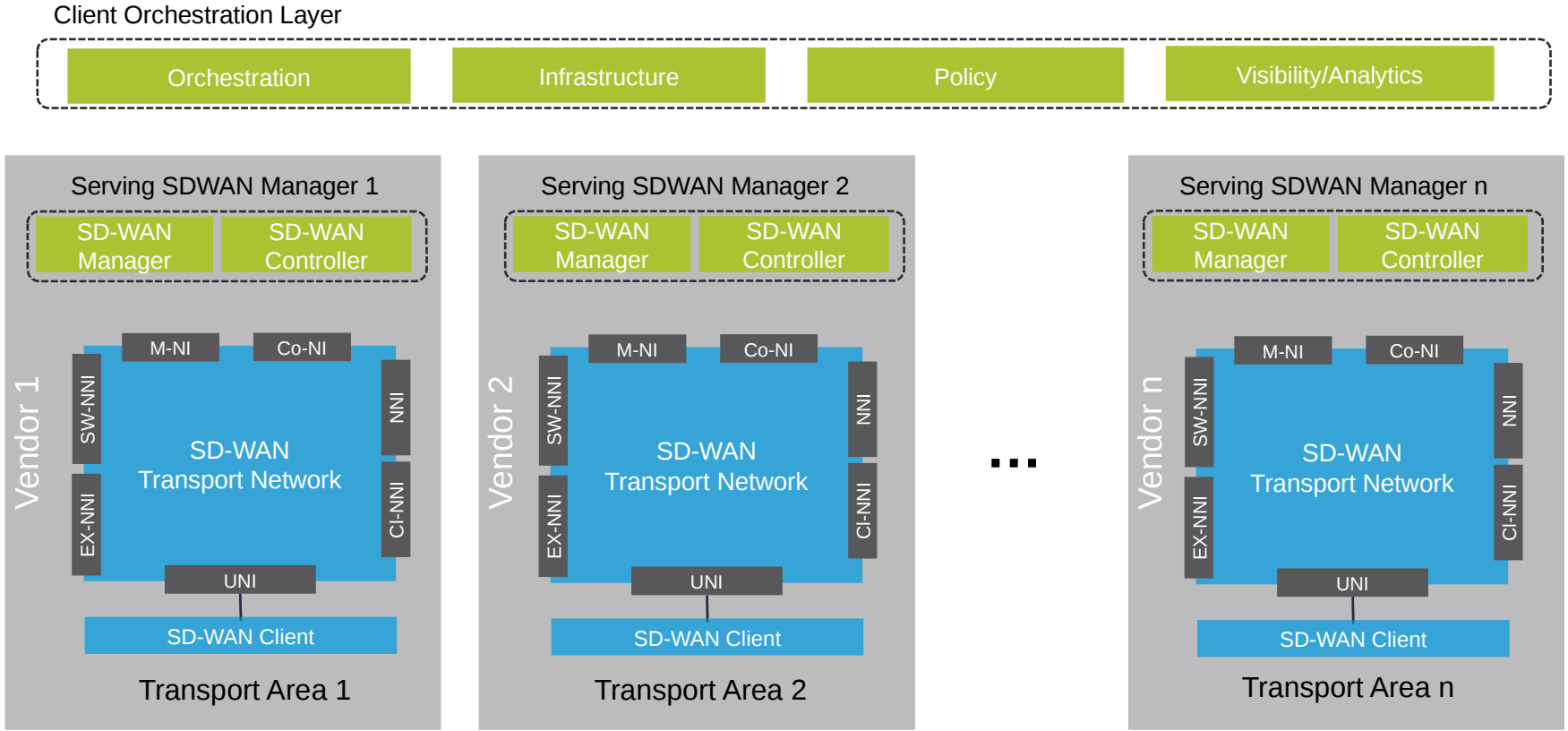
OSE Interworking Architecture Framework



Open SDWAN Interworking Model



OSE Multiple Area Reference Network



OSE WORK ACTIVITY & TASK FORCES

- Task Forces
  1. Open Authentication Framework –Definition of Open Auth between controllers.
  2. Service Chaining – propose requirements and objectives for Open SD-WAN
  3. Reachability Exchange via API –proposal for controller-to-controller direct interface methods.
  4. OSE Hybrid Cloud API - Establish use cases and requirements. OSE requirements for common API services to leading cloud providers.

- Active Specification Work
  1. OSE Architecture Spec – Reference SDWAN Architecture and interface reference points
  2. OSE Path Management – Access network selection service definition
  3. OSE External Gateway Spec – cross-domain reachability and segmentation exchange

SD-WAN Work Areas

- APIs for Service Management & Provisioning
  - Access Network (Path) Management Service Definition
  - SDWAN domain peering and interworking
  - OSE Gateway NNI
- Authentication between domains
- Security (Confidentiality/Crypto)
- Segmentation
  - Ensure that traffic is mapped between network segment with same policy intent
- Service Definitions
  - Consistent service behaviors across SD-WANs end-to-end
  - Standard metadata exchange for traffic classifier and service policy
  - Standard namespaces (eg. AppID)
- Service connection / mapping at peering points
  - IPSec and Routing interworking specifications
- Hybrid Cloud Services Access homologation (vPC, SaaS, IaaS)
- Service Chaining across SDWANs

KEY PROGRESS & RESULTS

- SD-WAN Reference Architecture
  - First draft of architecture spec published for external review
- OSE Path Management Service API
  - First draft API released. Not yet for implementation.
  - External review and improvement
  - Yang Service models for:
    - Predefined and custom SLA definition
    - Flow classification
    - Preferred path selection

KEY PROGRESS & RESULTS

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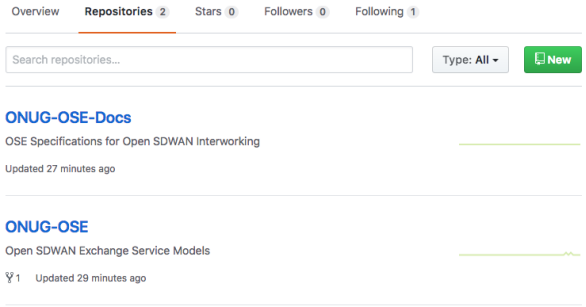
  - External review and improvement
- OSE Gateway Service API
  - Gateway Service creation, interface configurati
  - Segmentation instance creation, cross-connec
  - Yang-based service models

Steve Wood
swood1465

Principal Engineer and Solution Architect for SD-WAN and Enterprise Networking at Cisco. ONUG OSE Working Group Chair



- Where to find?
  - Github: swood1465
  - Repositories: ONUG-OSE, ONUG-OSE-Docs

OPEN ITEMS

- Service definitions: services available via the API
- Close on outstanding Nsw reference point definitions
  - IPSec definition
  - API for VPN and control plane configuration across Nsw reference point
- API Element/Type definitions and OSE namespace
- API Authentication

OSE HYBRID CLOUD USE-CASES

1. vPC/IaaS – SD-WAN edge inside a vPC
   - Establish an SD-WAN fabric edge in vPC/IaaS facility.
   - Multiple vendor SD-WAN services can be hosted in a single vPC.
   - Common service API definition would be beneficial
2. SD-WAN Integration to Carrier Neutral Facility (CNF)
   - Similar to use case #1
   - Orchestration API definition, NBI interface to CNF services
3. Public Cloud / SaaS – SD-WAN user access SaaS providers (O365, SFDC,..)
   - Access to SaaS applications via Internet or private WAN (MPLS) providers
   - SD-WAN access to SaaS is vendor specific and does not require interoperability
   - Common service definition and behavior required – path selection, security, app assurance, vQoE

OSE HYBRID CLOUD TASK FORCE

- Step 1: Establish use cases and requirements:
  - Building the Hybrid IT Datacenter
  - Direct Internet Access i.e. split tunnel (SaaS)
  - Direct Cloud access i.e. SD-WAN Edge (IaaS, PaaS, Colo)
  - Branch to hybrid DC connection use cases: Any-any SD WAN ; via Relay-site
  - Defines types of network services between DCs (SD-WAN or Direct connect/cloud express)
  - Define use cases for Colo - SD-WAN Edge connect to colocated services/Apps
  - Resiliency requirements

- Step 2: Areas of Work/API definition
  - Translation/Adaptation API to consume CSP VNF orchestration and lifecycle mgmt across multiple CSPs in a common way
    - Control plane services
    - Management/Orchestration services
    - Common set of services? Service homologation?

Create a proposal to define the details we need to work in the areas above
Focus CSPs: AWS, Azure, Google, IBM, Oracle

  - Enumerate the DC-side connectivity options (CP/DP) for each CSP

Discussion