SD-WANs and Lifecycle Service Orchestration (LSO)

October 2017

MEF

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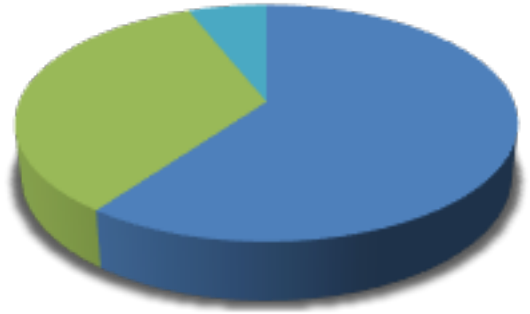
MEF

About MEF

MEF created the $80B* Carrier Ethernet Market.

MEF's goal is to leverage the global Carrier Ethernet managed services interconnected footprint and evolve to a cloud-native, programmable and virtualized network with new revenue services for the digital economy

TheThirdNetwork
Agile, Assured, Orchestrated



210+ Member Companies

Global Contributions

*IHS Market Report

MEF's Third Network Vision

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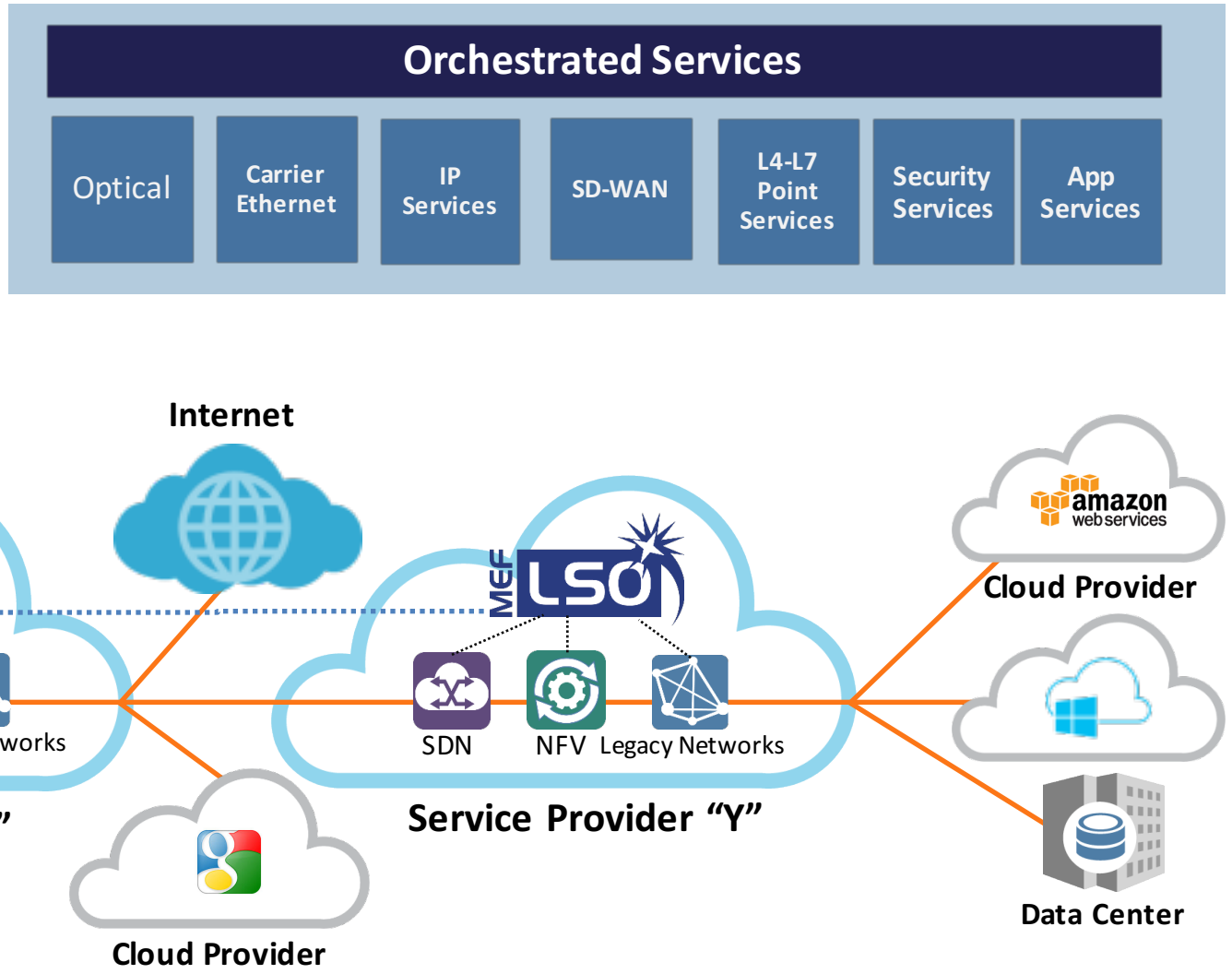
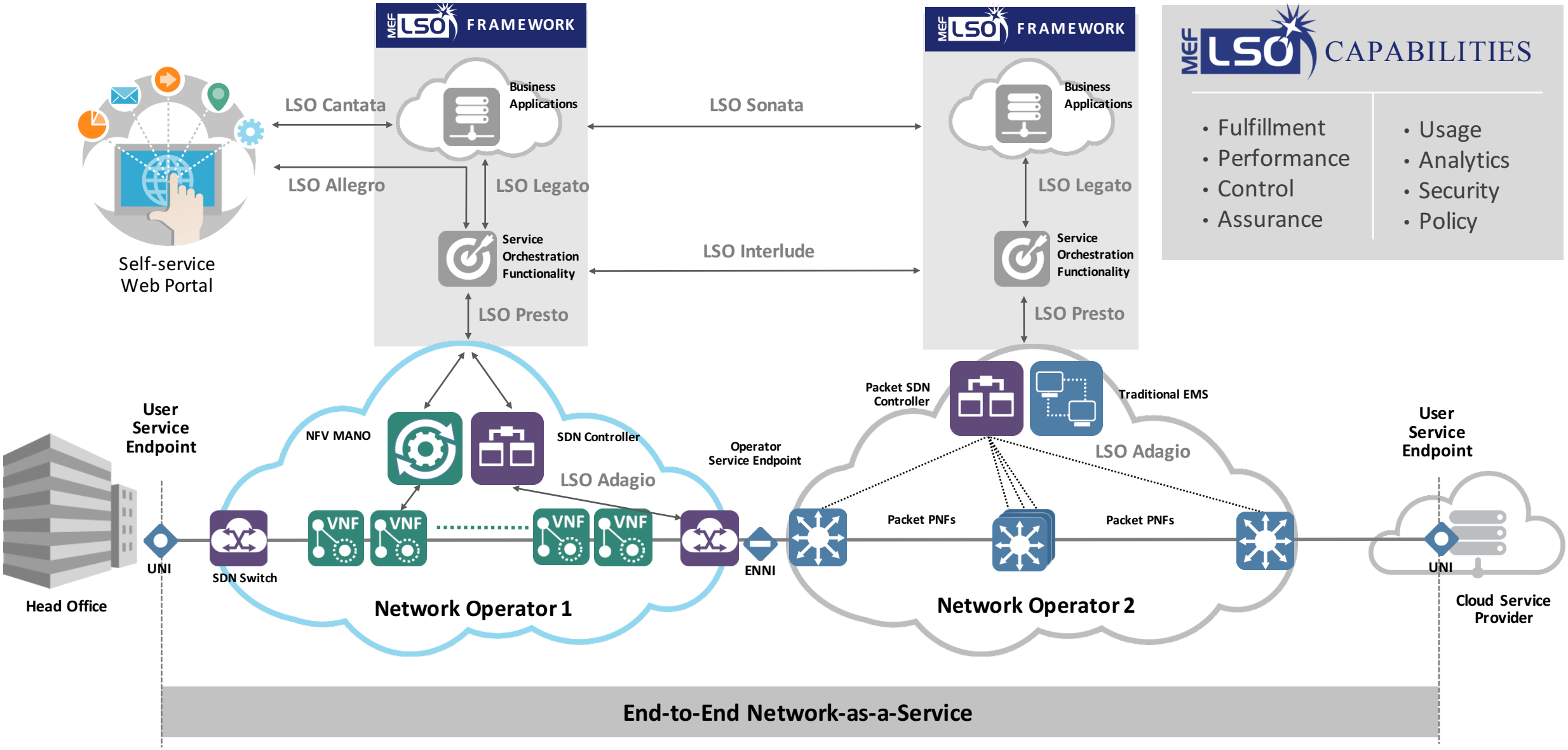
Agile, Assured, Orchestrated



The Key - LSO (Lifecycle Service Orchestration)



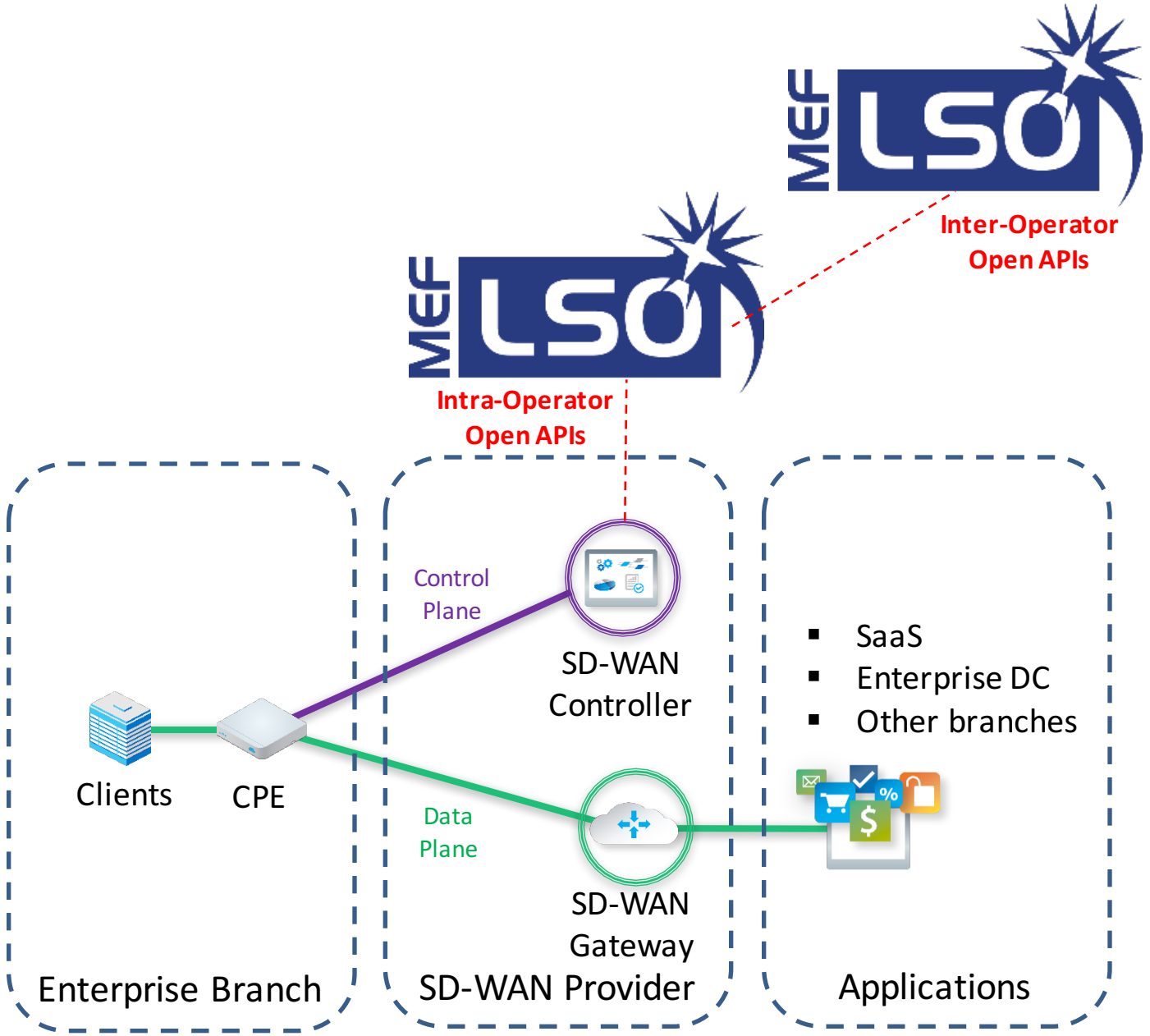
EMS: Element Management System PNF: Physical Network Function SOF: Service Orchestration Function

The MEF and SD-WAN

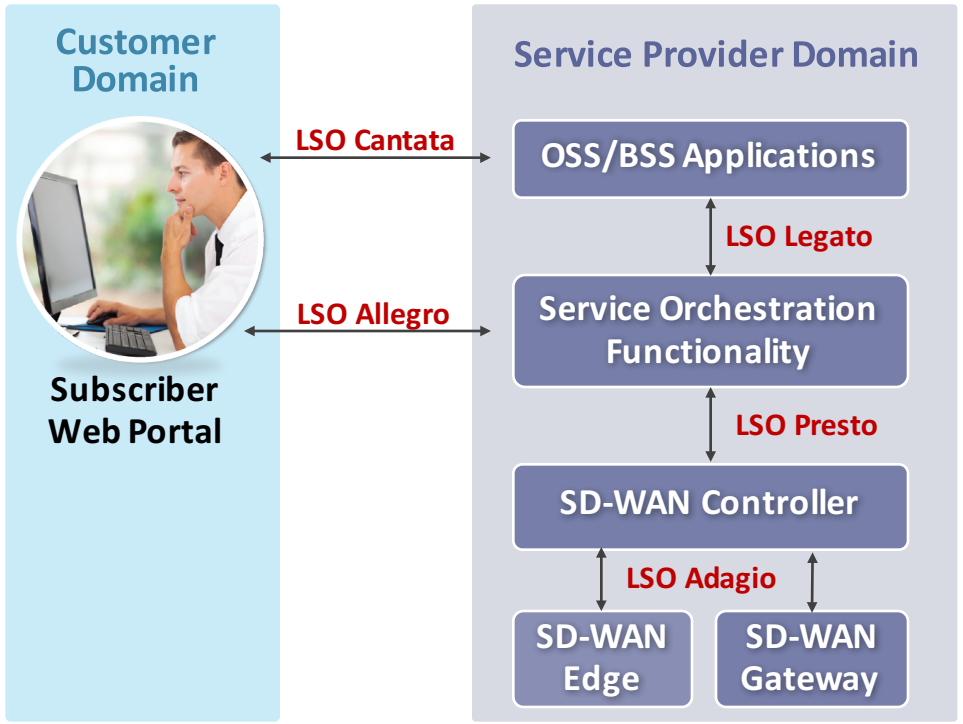
- Facilitate multi-vendor SD-WAN interoperability and operational agility as service providers look to streamline operational efficiencies and control network resources on demand
- OpenCS SD-WAN project that is focused on defining LSO APIs, SD-WAN reference implementations (RI) and proof of concepts (POCs) to facilitate and accelerate SD-WAN service deployments
- SD-WAN Market Education Project to explain MEF's position on SD-WAN and how it aligns with other initiatives focused on orchestrated Layer 1-7 services enabled by LSO APIs. Educational materials will include white papers, webinars, workshops, and use cases.

LSO and SD-WAN

- **Focus on Service Provider SD-WAN managed services market**
- **Enable LSO APIs in SD-WAN services**
- **Segregate control and data plane**
- **Support**
  - Service Provider SD-WAN components in the form of VNF's
  - SD-WAN CPE in virtual or physical form factor



Using the MEF LSO Reference Architecture



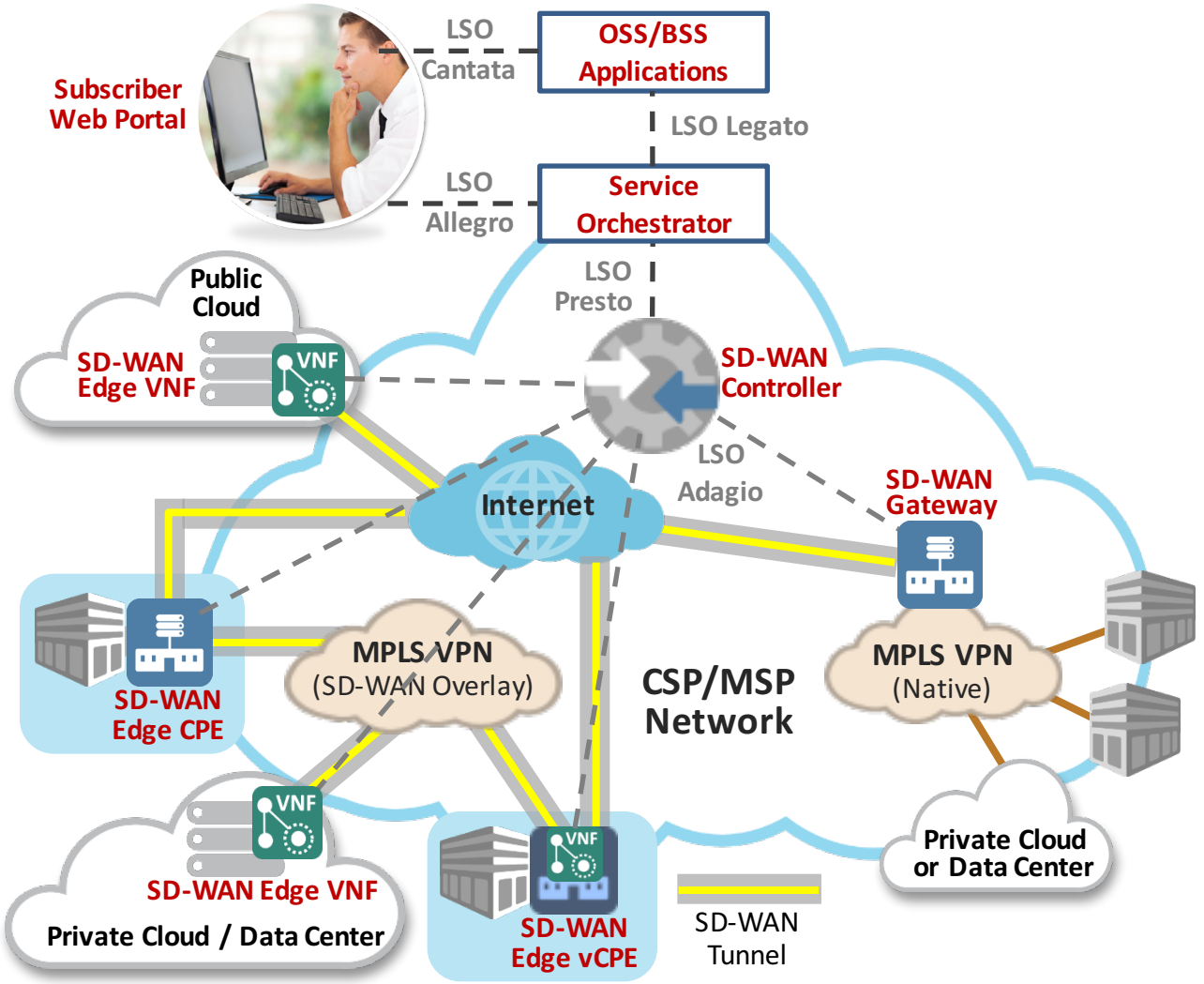
LSO Presto Reference Point

- Enables a Service Orchestrator to manage different vendor SD-WAN Controllers
- SD-WAN Controllers manage SD-WAN Edges in their domain
- MEF OpenCS SD-WAN Project focusing on functionality (SOF) at the LSO Presto Reference Point

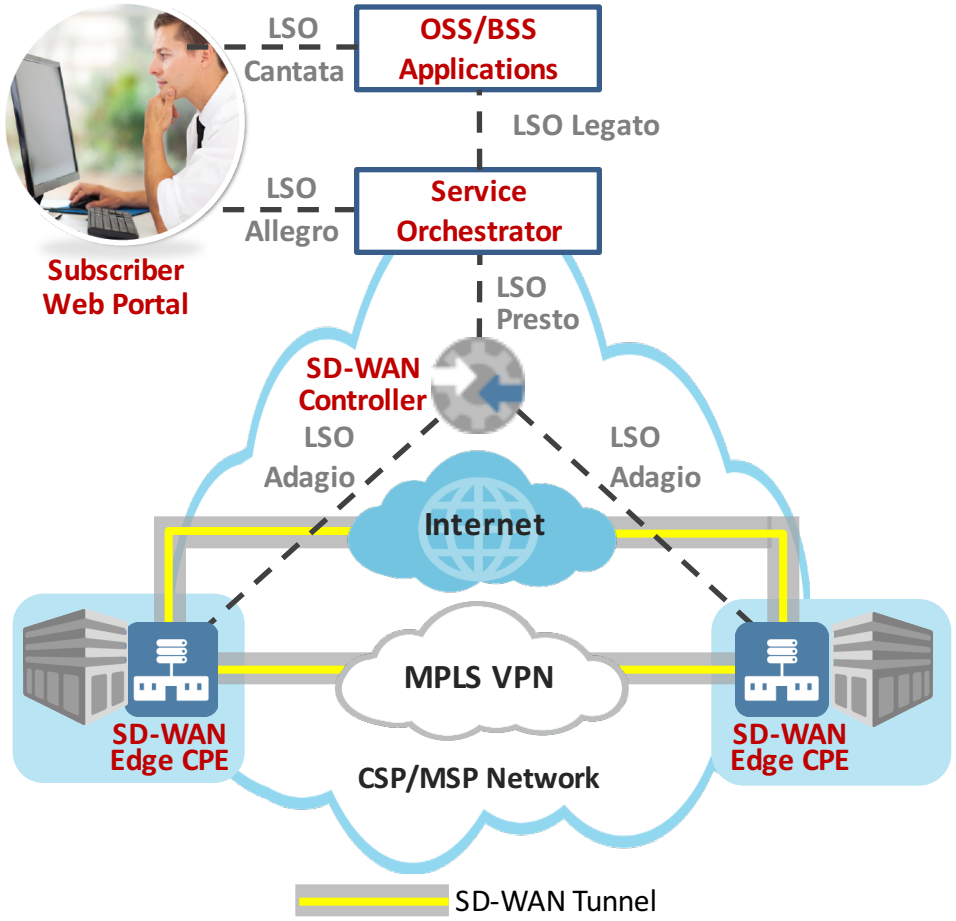
SD-WAN Service Components

Industry neutral MEF terminology

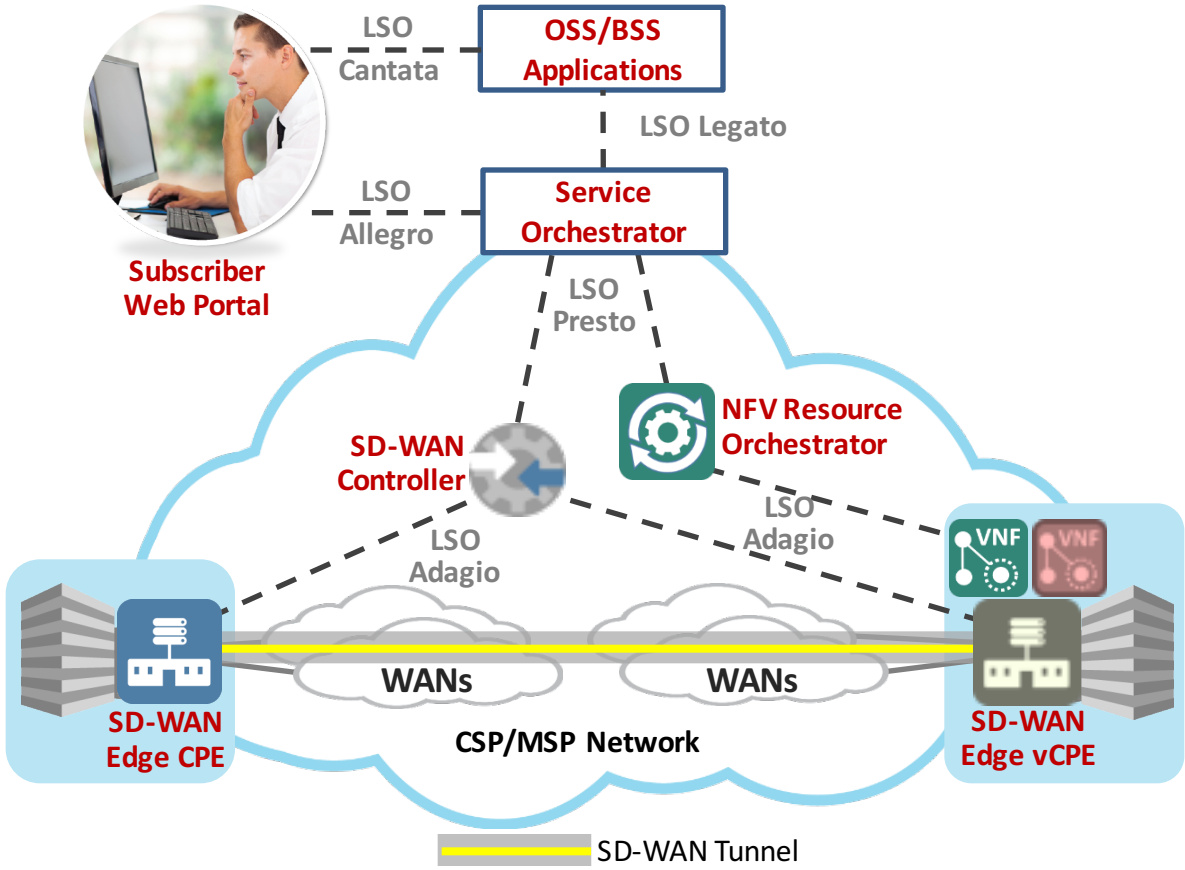
- SD-WAN Edge VNF
- SD-WAN Controller
- SD-WAN Gateway
- SD-WAN Edge CPE



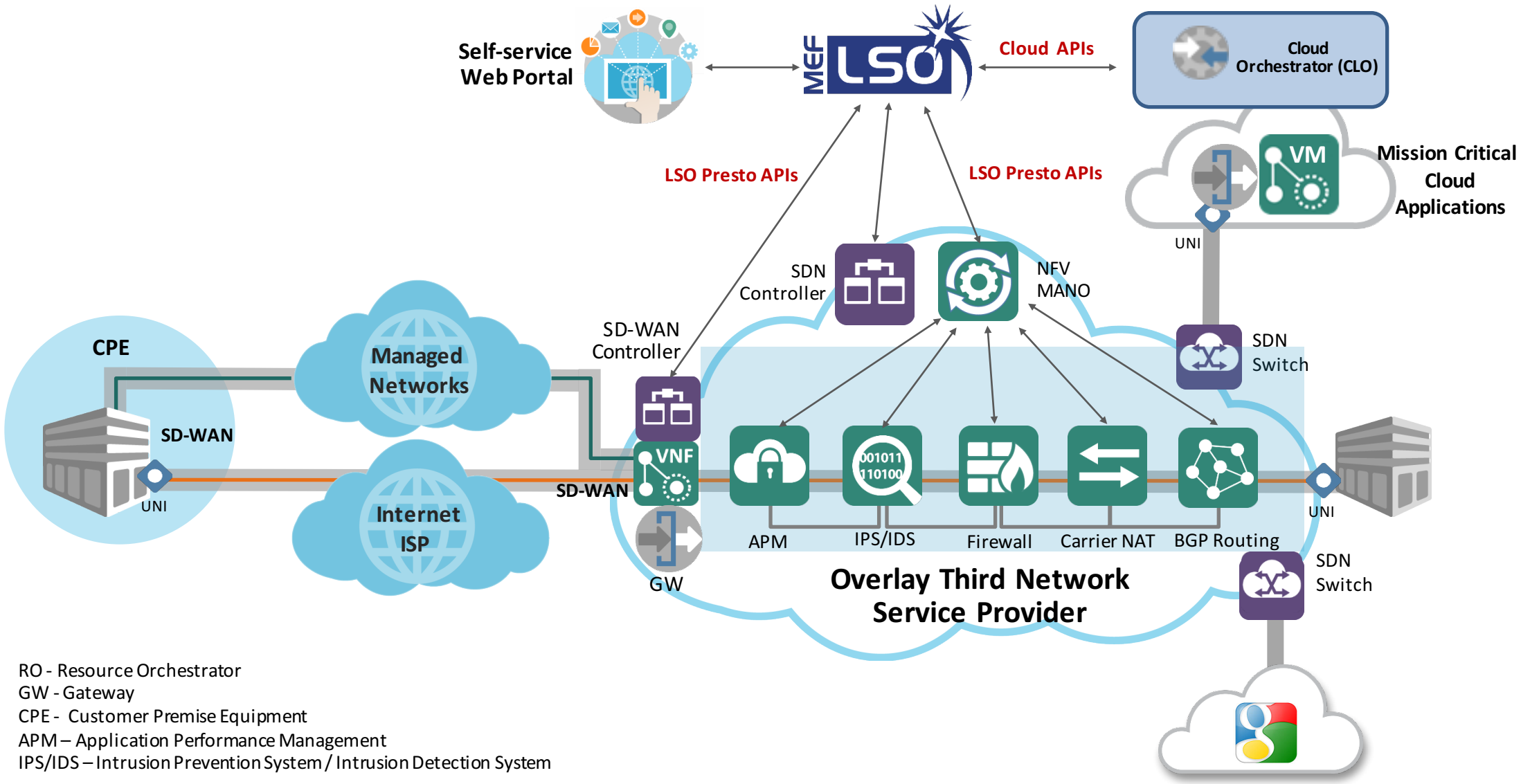
Example Use Case: SD-WAN Service Tunneled over Internet and MPLS WANs



Example Use Case: SD-WAN Service with SD-WAN Edge vCPE Supporting Multiple VNFs



The Third Network Overlay Virtualized Model



RO - Resource Orchestrator
GW - Gateway
CPE - Customer Premise Equipment
APM – Application Performance Management
IPS/IDS – Intrusion Prevention System / Intrusion Detection System

Key Takeaways…

- **MEF work on SD-WAN Services helping industry move forward**
  - Managed SD-WAN offerings achieved using MEF LSO Reference Framework
  - Open standardized LSO APIs covering SD-WAN service use cases
  - Reference implementations of SD-WAN use cases
  - Definition of standardized SD-WAN service

SD-WAN MEF members contributing to MEF's SD-WAN work:

riverbed velocloud™ FUJITSU nuagenetworks From Nokia silverpeak™ VERSA NETWORKS

Contributing to MEF SD-WAN Work

- **OpenCS SD-WAN Project**
  - Developing Use Cases and User Stories
  - Building Reference Implementations within the MEF LSO framework
  - wiki.mef.net/display/CTO/OpenCS+SD-WAN+Project

- **SD-WAN Market Education Project**
  - Developing Use Cases
  - Developing and Delivering white papers, webinars and workshops
  - wiki.mef.net/display/MC/SD-WAN+Market+Education+Project

mef.net/sd-wan/understanding-sd-wan

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