

# *SD-WANs and Lifecycle Service Orchestration (LSO)*

*October 2017*

MEF

SDN

Open

DevOps.

IoT

5G

LSO

OTT

**MEF**

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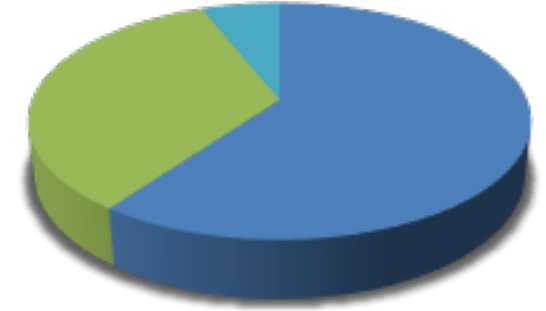
**MEF**

# 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*



■ SPs ■ Vendors ■ Others

**210+ Member Companies**



■ NA ■ EMEA ■ APAC ■ CALA

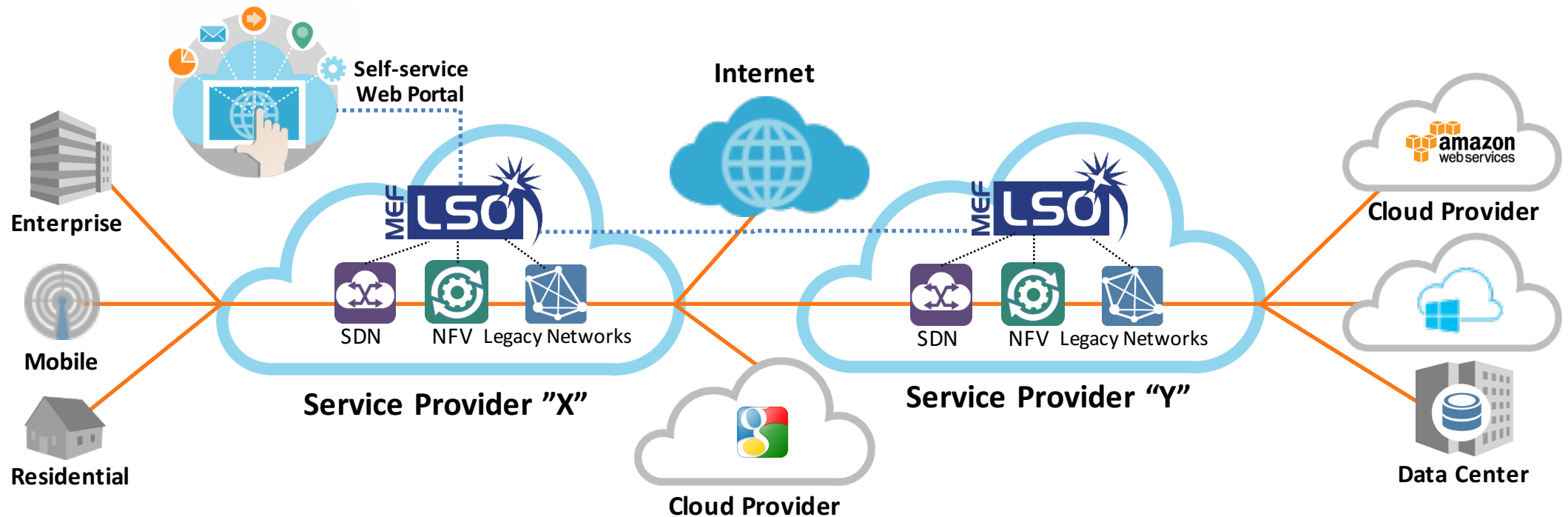
**Global Contributions**

\*IHS Market Report

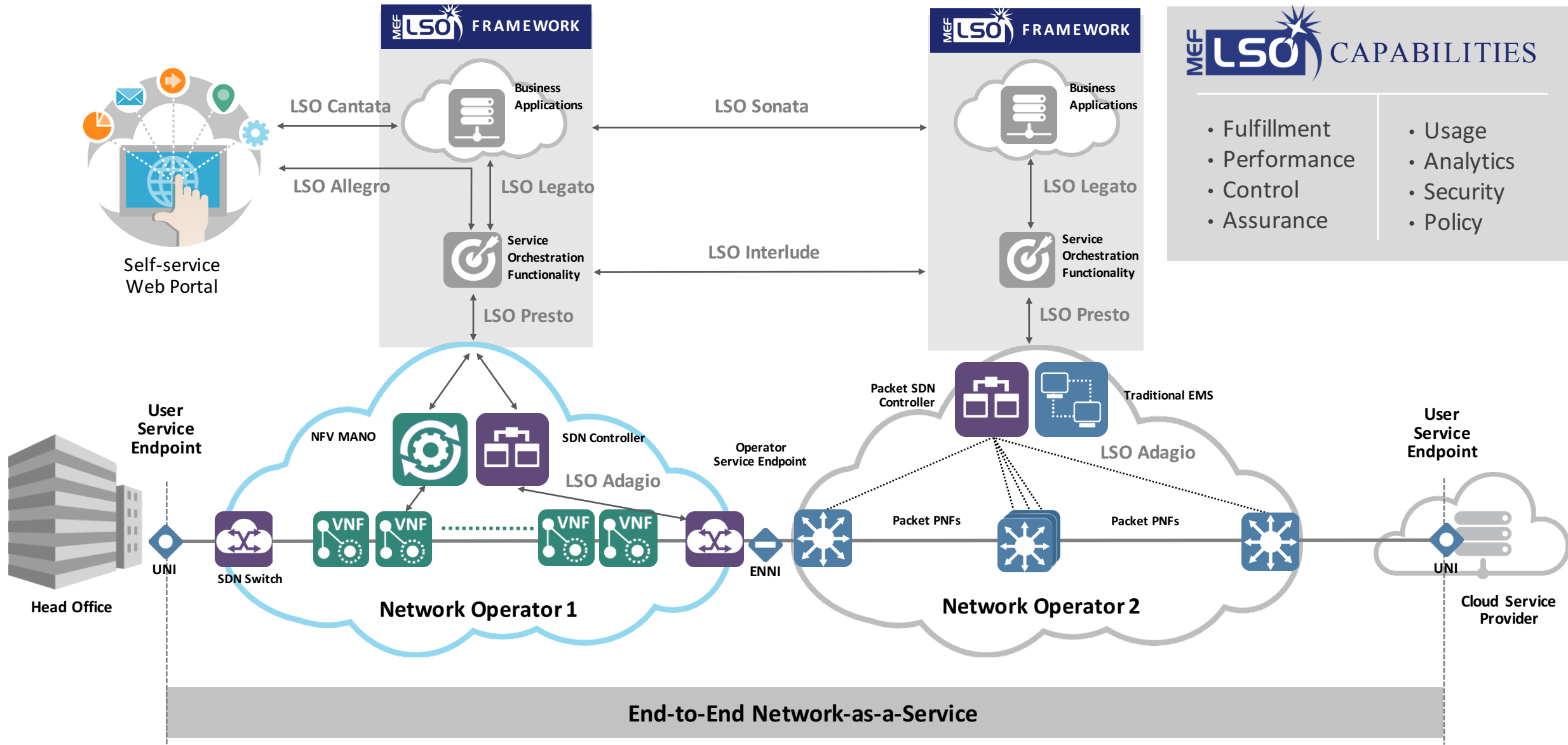
# MEF's Third Network Vision

## TheThirdNetwork

*Agile, Assured, Orchestrated*



# The Key - LSO (Lifecycle Service Orchestration)

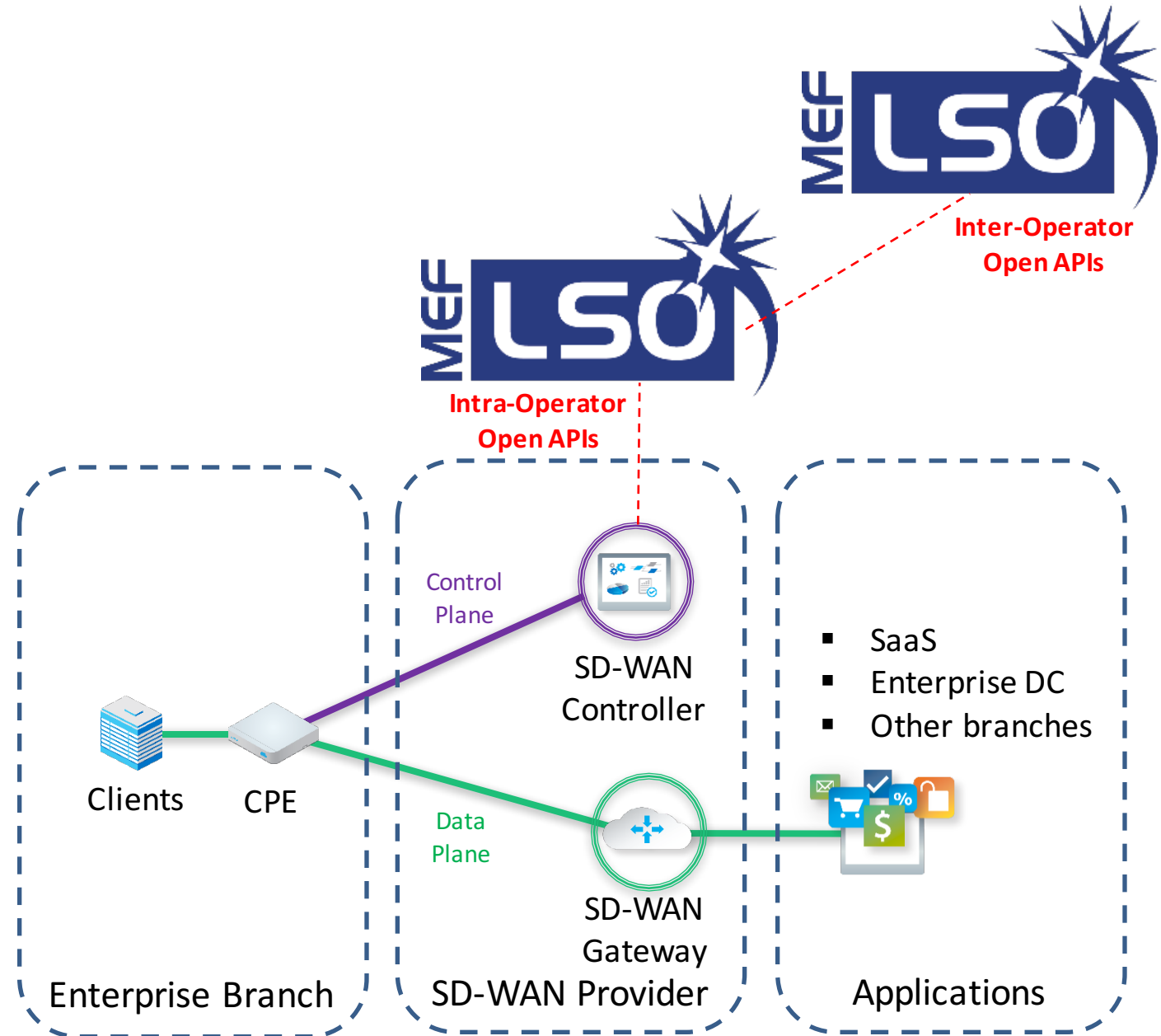


# The MEF and SD-WAN

- 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

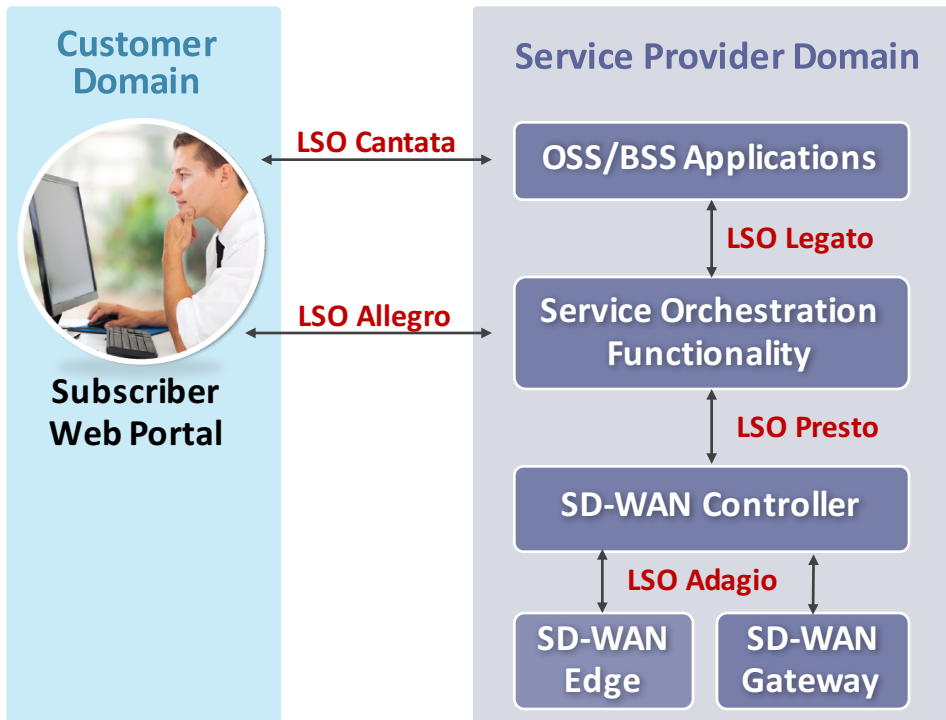
- Focus on Service Provider SD-WAN managed services market
- Enable LSO APIs in SD-WAN services
- Segregate control and data plane
- Support
  - Service Provider SD-WAN components in the form of VNF's
  - SD-WAN CPE in virtual or physical form factor



# 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



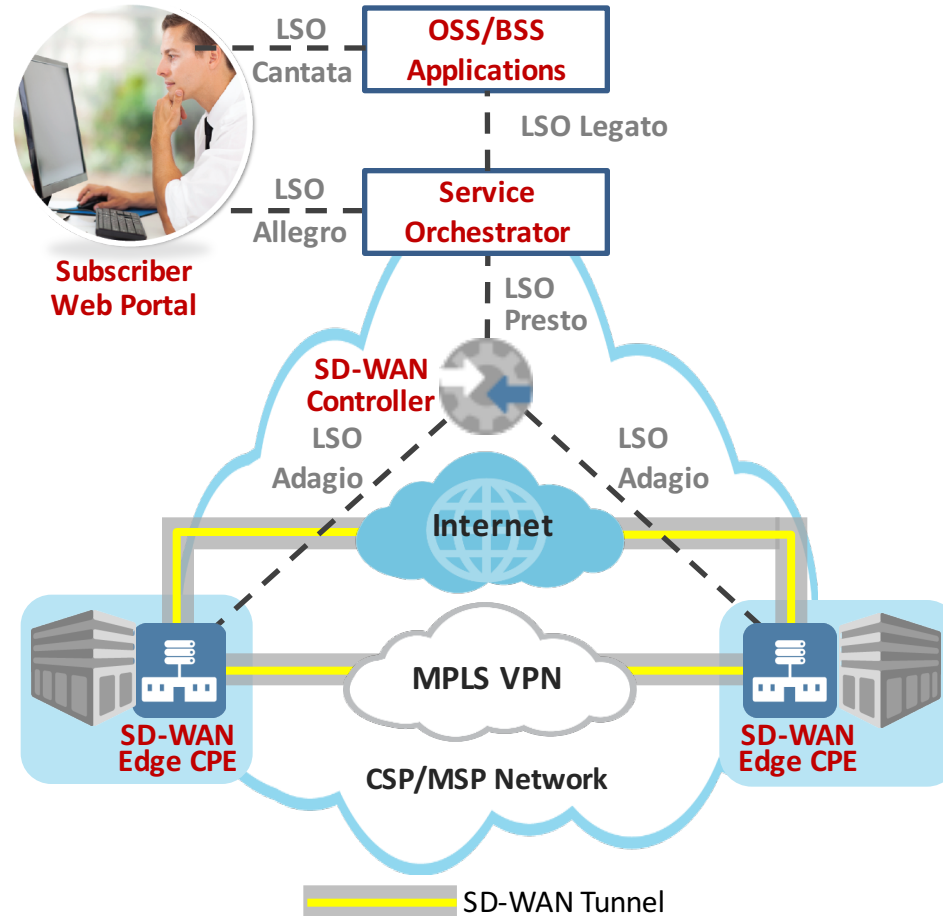


# Industry neutral MEF terminology

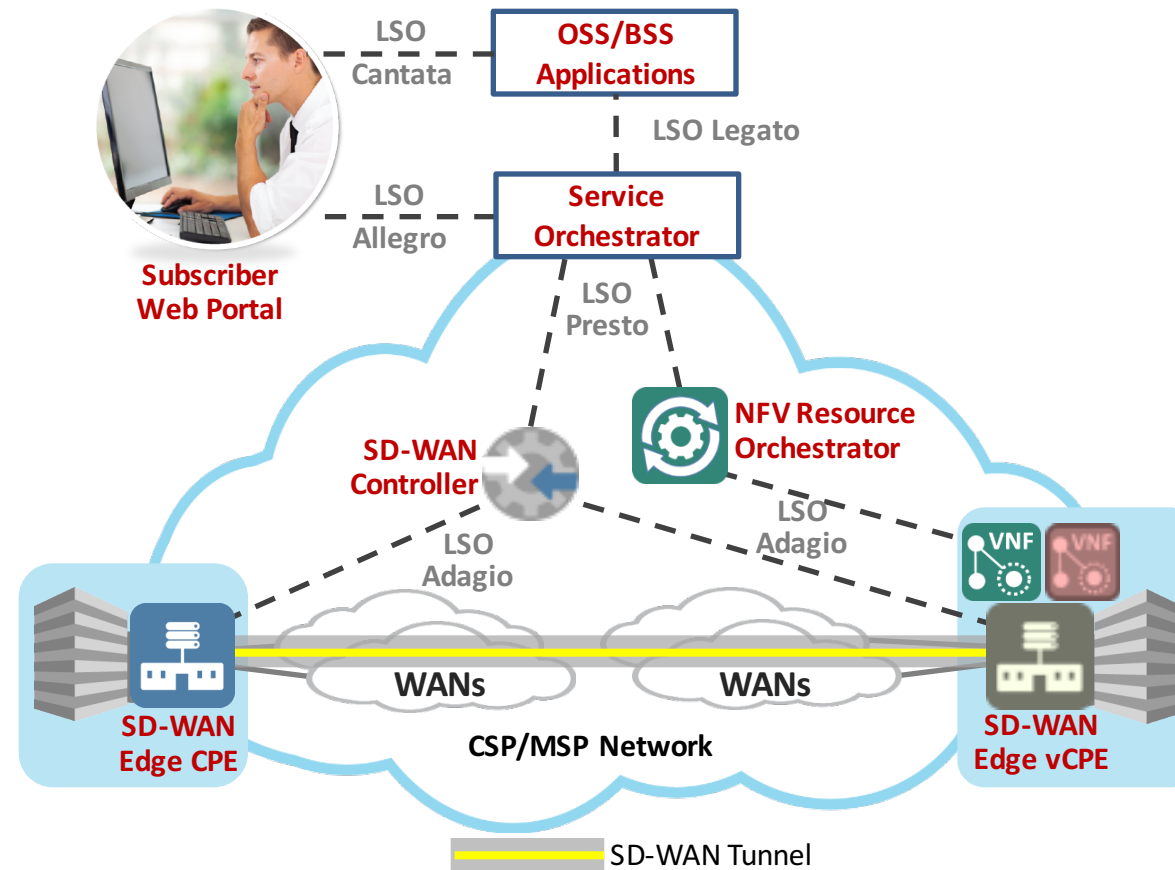
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- The diagram illustrates the SD-WAN architecture, showing the interaction between various components:
- Subscriber Web Portal:** A user interface for subscribers, connected to the OSS/BSS Applications and the Service Orchestrator.
  - OSS/BSS Applications:** Operate over the LSO (Legato, Presto, Adagio) interfaces.
  - Service Orchestrator:** Manages the network, connected to the SD-WAN Controller via the LSO (Legato, Presto, Adagio) interfaces.
  - SD-WAN Controller:** The central control point, connected to the SD-WAN Edge VNF and the SD-WAN Gateway.
  - SD-WAN Edge VNF:** Virtual Network Function in the Public Cloud, connected to the SD-WAN Controller and the Internet.
  - SD-WAN Edge CPE:** Customer Premises Equipment in the Private Cloud / Data Center, connected to the SD-WAN Controller and the Internet.
  - Internet:** The central network cloud connecting all edge components.
  - SD-WAN Gateway:** Connects the SD-WAN Controller to the Private Cloud / Data Center.
  - MPLS VPN (SD-WAN Overlay):** A virtualized MPLS VPN cloud.
  - MPLS VPN (Native):** A native MPLS VPN cloud.
  - SD-WAN Edge vCPE:** Virtual Customer Premises Equipment in the Private Cloud / Data Center, connected to the MPLS VPN (SD-WAN Overlay).
  - Private Cloud / Data Center:** The environment where the SD-WAN Edge CPE, SD-WAN Edge vCPE, and SD-WAN Gateway are located.
  - SD-WAN Tunnel:** Represented by a yellow line, indicating the data path between the edge components and the Internet.



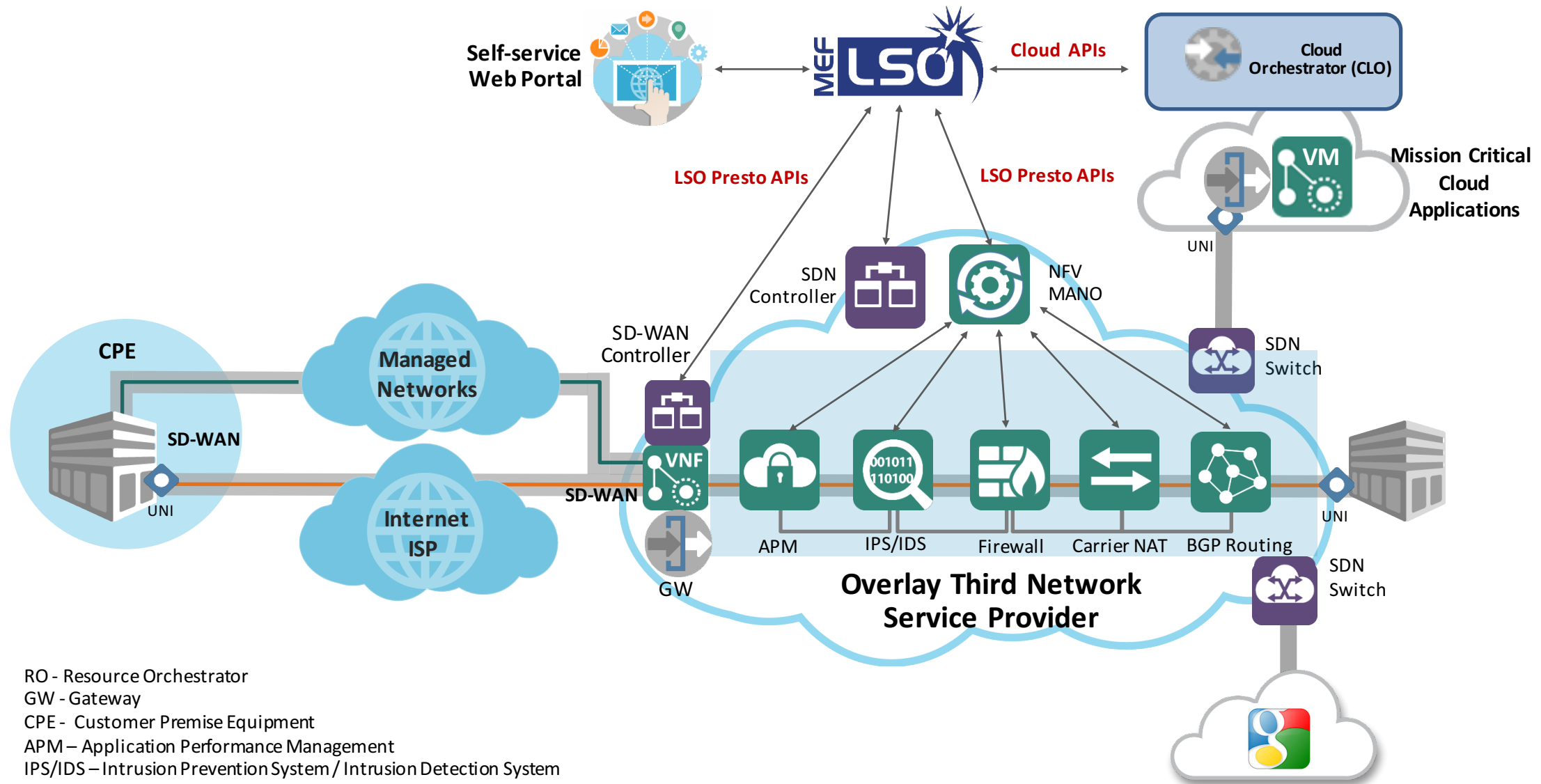
# Example Use Case: SD-WAN Service Tunneled over Internet and MPLS WANs



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



# The Third Network Overlay Virtualized Model



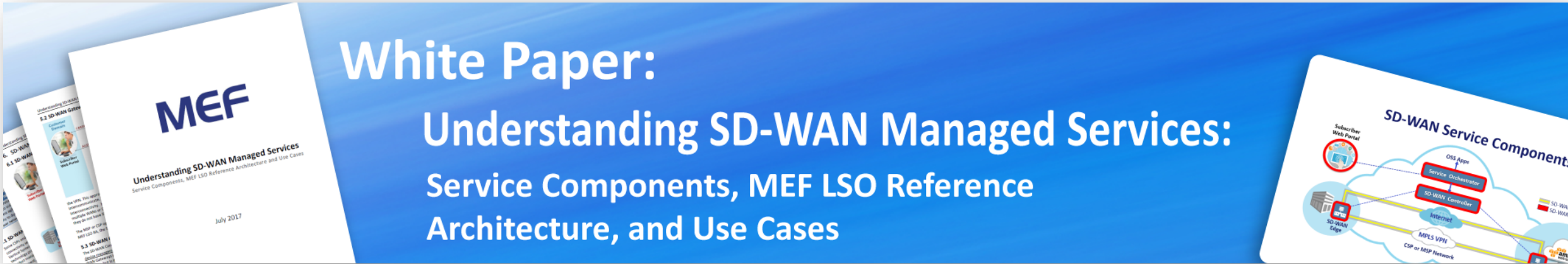
# Key Takeaways...

- **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:



# 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](http://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](http://wiki.mef.net/display/MC/SD-WAN+Market+Education+Project)

[mef.net/sd-wan/understanding-sd-wan](http://mef.net/sd-wan/understanding-sd-wan)

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