Underlay Connectivity Service (UCS)

SD-WAN Services operate over **Underlay Connectivity Services** (UCS). Underlay Connectivity Services are network service offerings that provide connectivity between the Subscriber sites.

Underlay Connectivity Services can include a variety of services including (but not limited to) Ethernet Services (as defined in MEF 6.3 - Subscriber Ethernet Services Definitions), IP Services (as defined in MEF 61.1 - IP Service Attributes), L1 Connectivity Services (as defined in MEF 63 - Subscriber Layer 1 Service Attributes), and public Internet Services. Access to these Underlay Connectivity Services can be via a variety of networking technologies, such as DSL, HFC, LTE, fiber, WiFi, Ethernet, and the transport can be based on Ethernet switching, IP Routing, MPLS, or other technologies.

Underlay Connectivity Services have several characteristics that are relevant to the Policies that determine the forwarding of Application Flows within the SD-WAN Service.

- An Underlay Connectivity Service is *Public* or *Private*. The primary distinction is whether the Underlay Connectivity Service is carried (in whole or in part) over public Internet Services.
- Cost for usage of an Underlay Connectivity Service is *flat-rate* or *usage-based*. Flat rate means that a given amount of service bandwidth is billed at a fixed amount for the billing period, e.g., $50/month for 100Mbps. Usage-based means that service is billed based on the amount of data that is transmitted or received, e.g., £10/GB. More complex charging structures are also possible.
- The Service Provider and Subscriber can agree that an Underlay Connectivity Service is designated as a *Backup* UCS at an SD-WAN Edge.
- Underlay Connectivity Services have bandwidth limitations.
- Underlay Connectivity Services have performance characteristics, e.g., 1% packet loss or 50ms packet latency and Performance Objectives usually specified in a Service Level Specification.

SD-WAN Services are frequently deployed over multiple, and often disparate, Underlay Connectivity Services. Multiple Underlay Connectivity Services with different performance and cost characteristics (e.g., an IP-VPN over MPLS Network and an IPsec tunnel over the public Internet) can be used to provide cost benefits, resiliency, and differentiated transport.

Underlay Connectivity Services can be provided by the SD-WAN Service Provider on its own network or over the networks of other network operators (including the Public Internet). Underlay Connectivity Services arranged independently by the Subscriber can also be used by the SD-WAN Service. How the Subscriber communicates the details of such Underlay Connectivity Services to the SD-WAN Service Provider in this case, and the division of responsibility for such services between the Subscriber and the SD-WAN Service Provider are outside the scope of MEF 70 - SD-WAN Service Attributes and Services Definition.

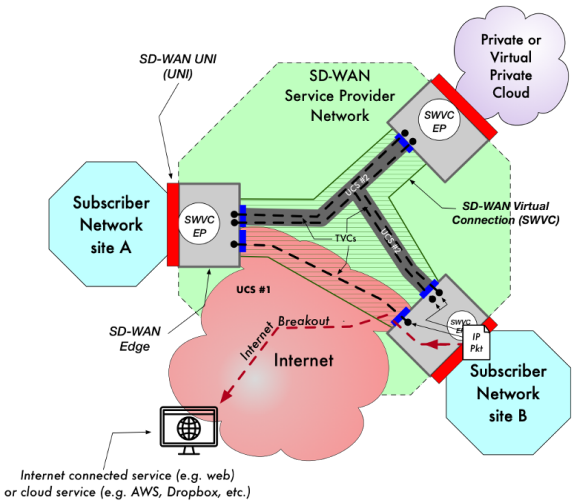

Figure 1

[1] Service Attributes for Underlay Connectivity Services are out of scope for this version of the specification. It is expected that a future version of the document will incorporate Service Attributes that define SD-WAN Edge connectivity to the Underlay Connectivity Services.

Status

PUBLISHED

Study Requirement

MEF-SDCP Exam Study Reference

Source(s) and Reference(s)

MEF 70 - SD-WAN Service Attributes and Services Definition

Related and Further Reading

- SD-WAN Edge
- SD-WAN Controller
- Defined: SD-WAN Service Components
- SD-WAN Tunnel Virtual Connection (TVC)
- SD-WAN Service Components
- SD-WAN Service Components
- SD-WAN Controller
- SD-WAN Edge
- SD-WAN Tunnel Virtual Connection (TVC)
- Defined: SD-WAN Service Components
- SD-WAN UNI
- Underlay Connectivity Service (UCS)
- SD-WAN UNI
- Underlay Connectivity Service (UCS)
- SD-WAN Service Orchestrator
- SD-WAN Service Orchestrator

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[3] This case is not precluded in this document nor is it explicitly discussed. Details for supporting Underlay Connectivity Services that are provided by the Subscriber are not in scope for this document.

[4] Service Attributes for Underlay Connectivity Services are out of scope for this version of the specification. It is expected that a future version of the document will incorporate Service Attributes that define SD-WAN Edge connectivity to the Underlay Connectivity Services.