A Yang Data Model for L1 Connectivity Service Model (L1CSM)

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Purpose of this draft

• [RFC4847] provides a framework and service level requirements for Layer 1 Virtual Private Networks (L1VPNs).

• This draft provides a YANG data model for L1VPN Connectivity Service Model (L1CSM) in the context of L1VPN and [RFC4847] and based on the service definition by MEF Subscriber Layer 1 Connectivity Service Attributes, v0.09.
Deployment Scenario 1: L1VPN for External Customer

• Deployment scenario of the L1VPN SDN control-based service model for an external customer instantiating L1 point-to-point connectivity to the provider.

• With this scenario, the customer service orchestrator interfaces with the network SDN controller of the provider using Customer Service Model CCAMP WG, IETF101 London
Deployment Scenario 2: Multi-Service Backbone for Internal Customers

- Deployment scenario for internal customer (e.g., higher-layer service management department(s)) interfacing the layer 1 transport network department.
- With this scenario, a multi-service backbone is characterized such that each service department of a provider (e.g., L2/3 services) that receives the same provider’s L1VPN service provides a different kind of higher-layer service.
- The customer receiving the L1VPN service (i.e., each service department) can offer its own services, whose payloads can be any layer (e.g., ATM, IP, TDM). The layer 1 transport network and each service network belong to the same organization, but may be managed separately.
L1CSM and L2SM/L3SM

- L2SM and L3SM are Service Models
- L1CSM can be the southbound interface of the Service SDN Controller and can be used in same cases:
  - Multi-Service Backbone for Internal Customers: Only L1 connectivity is required and there is the need of an interface between two departments belonging to the same organization.
  - L1VPN for External Customer (less common for now)
UNI Data Client Protocol | Rate (Gb/s)
---|---
GigE (1000BASE-X) | 1.250
10GigE WAN (10GBASE-W) | 9.95328
10GigE LAN (10GBASE-R) | 10.3125
40GigE (40GBASE-R) | 41.250
100GigE (100GBASE-R) | 103.125
FC-100 | 1.0625
FC-200 | 2.125
FC-400 | 4.250
FC-800 | 8.500
FC-1200 | 10.51875
FC-1600 | 14.025
FC-3200 | 28.05

UNI TDM Client Protocol | Rate (Gb/s)
---|---
OC-3/STM-1 | 0.15552
OC-12/STM-4 | 0.62208
OC-48/STM-16 (CBR2G5) | 2.48832
OC-192/STM-64 (CBR10G) | 9.95328
Summary & Next Steps

• Operators express the need for IETF L1CSM that can serve L1VPN service deployment scenarios for both external customers as well as internal multi-service Layer 1 backbone for L2/3VPN.

• MEF L1CS WG officially sent a letter of liaison to CCAMP WG. We can collaborate with MEF.

• This is in the scope of CCAMP WG:
  • Home of L0/L1 technology
  • Experts are here.

• The YANG model captures the basic models for access and service models and provides a good base for WG adoption. ^