

Access Ethernet Virtual Private Line (EVPL) Service: Secure, Reliable, High-Speed Site-Site Connectivity

OVERVIEW

Ethernet Access (E-Access) service types leverage Intelligent Fiber Network's (IFN) Carrier Class MPLS and Ethernet infrastructure to provide Ethernet Operator Virtual Connection (OVC) circuits to carrier customers. Any Ethernet service that is based on an OVC that associates at least one OVC End Point at an External Network-to-Network Interface (ENNI), is designated as an E-Access service type. Access Ethernet Virtual Private Line (EVPL) is the E-Access service that uses a Point-to-Point OVC to associate one OVC End Point at a UNI and one OVC End Point at an ENNI. One User-to-Network Interface (UNI) can support one or more Access EVPL instances.

Key Highlights of EPL:

- **Private and Secure:** All data travels within the secure domain of a Layer 2 dedicated, high-capacity, one-to-one connection at sub-rated interfaces.
- **Fast and Reliable:** With speeds ranging from 10Mbps to 10Gbps, Access EVPL is a reliable, flexible, and higher bandwidth alternative to Time-Division Multiplex (TDM) private lines like T1, DS3, SONET.
- **Cost Savings:** Enables customers to connect their locations using a lower-cost Ethernet service.

Service Description

Intelligent Fiber Network (IFN) Ethernet Access (E-Access) Ethernet Virtual Private Line (EVPL) service provides a 1Gbps or 10Gbps External Network-to-Network (ENNI), giving carriers, application, data center, and solution providers a single point of access into IFN's Ethernet footprint. IFN E-Access includes a set of advanced features to deliver a reliable Ethernet interconnection, scalable up to 4,000 services per port, with options for IFN E-Access, EVPL, and EPL from the same port.

- E-Access EVPL service must use a Point-to-Point Optical Virtual Connection (OVC) to associate a User-to-Network Interface (UNI) OVC End Point and an ENNI OVC End Point
- One UNI can support one or more Access EVPL instances
- The bandwidth profile is per OVC, bandwidth is not shared between OVC circuits
- Fixed CIR bandwidth (no EIR burst option)
- CE0VLAN, Class of Service (CoS) ID, and Layer 3 DSCP values will be preserved

TECHNICAL SPECIFICATIONS

Ethernet User-to-Network Interface

An Access EVPL can be used to create services. With Access EVPL, a UNI can support multiple service instances, including a mix of Access and Ethernet Virtual Connections (EVC) services. Such configurations are not possible if Access EPL is offered at the UNI. An Access EVPL need not provide as much transparency of Service Frames as with and Access EPL, as the OVC End Point map determines with CE-VLANs are mapped to OVCs or dropped. Because multiple instances of EVCs and Access EVPLs are permitted, not all ingress Service Frames at the UNI need to be sent to the same destination. The customer equipment is expected to shape traffic towards the IFN service at the UNI. The service provides full-duplex transmission of Ethernet frames using a standard Institute of Electrical and Electronics Engineers (IEEE) 802.3 Ethernet interface.

Maximum Frame Size

The Access EVPL service supports multiple OVCs per UNI. As such, Service Frames are mapped to OVCs based on a CE-VLAN map provided to IFN. With the Access EVPL service, bandwidth profiles are provisioned per service at the shared UNI based on incoming VLAN and the CE-VLAN map.

MAC Learning Support

Each E-Access service supports unlimited Medium Access Control (MAC) addresses.

Layer 2 Control Protocol Processing

Certain L2CP frames are discarded at the UNI, tunneled across the IFN Network, or peered at (processed by) the UNI. Refer to Table 1 for EVPL UNI behavior for specific L2CP. For L2CPs with multiple behavior possibilities, the customer must specify to IFN which behavior should be taken. The default behavior is to discard these L2CP Service Frames.

Destination MAC Address	Layer 2 Control Protocol	L2CP Frame Behavior
01-80-C2-00-00-00	STP, RSTP, MSTP	Peer or Discard (all UNIs)
01-80-C2-00-00-01	PAUSE	Discard (all UNIs)
01-80-C2-00-00-02	LACP, LAMP	Peer or Discard (disposition specified per UNI)
01-80-C2-00-00-02	Link OAM	Peer or Discard (disposition specified per UNI)
01-80-C2-00-00-03	Port Authentication	Peer or Discard (disposition specified per UNI)
01-80-C2-00-00-07	E-LMI	Peer or Discard (disposition specified per UNI)
01-80-C2-00-00-0E	LLDP	Discard (all UNIs)
01-80-C2-00-00-20 through 01-80-C2-00-00-2F	GARP, MRP Block	Peer or Tunnel (all UNIs)

Figure 1: L2CP Frame Behaviors

More advanced technical information can be found in the appendix »