

Access Ethernet Virtual Private Line (EVPL) Service: Technician Detail

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. Access EVPL can provide a high degree of transparency for frames between the EIs it interconnects such that the frame's header and payload upon Ingress at the UNI is delivered unchanged to the ENNI, with the addition of an S-VLAN tag. The frame's header and payload upon Ingress at the ENNI is delivered unchanged to the UNI except for the removal of the SVLAN tag. 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.

MONITORING, TECHNICAL SUPPORT, AND MAINTENANCE

Network Monitoring. IFN monitors all IFN services purchased by a customer on a 24x7x365 basis.

Technical Support. IFN provides customers a toll-free trouble reporting telephone number to the customer Network Operations Center (NOC) that operates on a 24x7x365 basis. IFN provides technical support for service-related inquiries. Technical support will not offer consulting or advice on issues relating to Customer Premises Equipment (CPE) not provided by IFN.

Escalation. Reported troubles are escalated within the IFN NOC to meet the standard restoration interval described in the Service Level Agreement. Troubles are escalated within the IFN NOC as follows:

- Tier 2 after 30 minutes
- Tier 3 after 2.5 hours

The Service Operations Manager is notified with an escalation to Tier 3.

Maintenance. IFNs standard maintenance window is from 12:00 am – 6:00 am, 7 days a week. Scheduled maintenance is performed during the maintenance window and will be coordinated between IFN and customer. IFN provides a minimum of forty-eight (48) hour notice for non-service impacting scheduled maintenance. IFN provides notification no less than ten (10) business days prior to starting work for planned maintenance activity. Emergency maintenance is performed as needed.

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	Discuss (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

SERVICE LEVEL AGREEMENT

IFN provides a Service Level Agreement for the service, including frame loss, latency, variation, network availability, mean time to respond, and mean time to restore.

Availability. Availability is a measurement of the percentage of the total time that the service is operational when measured over a 30-day period.

Service is considered "inoperative" when either of the following occurs:

1. There is a total loss of signal for the service.
2. Output signal presented to the customer by IFN does not conform to the Technical Specifications as defined in this document.

Mean Time to Respond. Mean Time to Respond is the average time required for the NOC to begin troubleshooting a reported fault. The Mean Time to Respond objective is thirty (30) minutes upon receipt of a fault notification or from the time a trouble ticket is opened with the NOC.

Mean Time to Restore. Mean Time to Restore is the average time required to restore service to an operational condition as defined in the Technical Specifications section of this document. The Mean Time to Restore objective is four (4) hours for electronic equipment failure or twelve (12) hours for fiber optic facilities failure from the time a trouble ticket is opened with the NOC.

Customer Responsibilities. IFN provides CPE for provisioning its services and the delivery of the UNI. IFN will retain ownership and management responsibility for this CPE. As a result, the CPE must only be used for delivering IFN services. Customers are required to shape their egress traffic to the contracted CIR.

Customers have the following responsibilities related to the installation, support, and maintenance of the service.

- Provide an operating environment with temperatures not below fifty-five (55) or above eighty-five (85) degrees Fahrenheit. Humidity shall not exceed ninety (90) percent at eighty-five (85) degrees Fahrenheit.
- Provide outside cable entry conduit(s), entry cable ground point, and internal building conduit to allow IFN the ability to rod/rope a fiber optic cable to the point of demarcation.
- Locate and mark all private underground utilities (water, electric, etc.) along the path of new underground placement not covered by utility companies.
- Provide a pull rope in any existing duct that IFN is to use and ensure the existing duct is serviceable for IFN use.
- Obtain right-of-way entry easement for IFN facilities and equipment from property owners at each customer location.
- The customer is responsible for coring of the building's outside wall and internal walls. Upon request, IFN can perform this activity on an as needed basis for an additional one-time fee.
- Provide access to the buildings and point of demarcation at each customer location to allow IFN and its approved Contractors to install fiber for service installation. Provide access to each location for regular (8 am - 5 pm) and emergency (24-hour) service and maintenance of IFNs equipment and facilities.
- Provide, install, and maintain a device that is capable of routing Network traffic between the service and the customer's Local Area Network (LAN).
- Customer must provide a point of contact for installation, service activation, and any maintenance activities.