

EP-LAN: Secure, Reliable, High-Speed Multi-Site Connectivity

OVERVIEW

Ethernet Private Local Area Network (EP-LAN) service from IFN provides high-speed, any-to-any connectivity across the IFN network. EP-LAN is an ideal option for businesses that need a cost-effective, fast, simple and widely customizable Ethernet solution to connect all business locations on a single network.

EP-LAN provides a multipoint-to-multipoint Ethernet Wide Area Network (WAN) that extends your Local Area Network (LAN) to a Metro or Wide Area Network. This allows for the seamless transmission of mission-critical applications and data across the entire network. EP-LAN quickly and securely moves large amounts of data between sites.

Key Highlights of EP-LAN:

- **Private & Secure:** All data travels within the secure domain of a Layer 2 dedicated, high-capacity, any-to-any connection at native Ethernet speeds.
- **Fast & Reliable:** With speeds ranging from 10Mbps to 10Gbps, EP-LAN is a reliable, flexible, and higher bandwidth alternative to traditional hub and spoke topologies utilizing Ethernet or TDM private lines
- **Standards-Based:** Upholds Ethernet Private LAN (EP-LAN) MEF 2.0 certifications.
- **Traffic Separation:** Maintain discrete pathways when you consolidate previously separate domains for specific applications or departments onto a single network.
- **Cost Savings:** A single handoff reduces network equipment and management costs.

Service Description

- IFN Ethernet Private Local Area Network (EP-LAN) Service is a reliable, flexible, and higher bandwidth alternative to the traditional hub and spoke topologies utilizing Ethernet or TDM private lines (T1, DS3, SONET, etc.).
- The EP-LAN service enables customers to connect their locations using a lower cost Ethernet interface.
- The EP-LAN service allows the customer to use any VLANs or Ethernet control protocol across the service without coordination with IFN.
- The EP-LAN service provides one Ethernet Virtual Connection (EVC) allowing any-to-any connectivity between multiple customer locations.
- The service is offered with 10Mbps, 100Mbps, 1Gbps or 10Gbps Ethernet User-to-Network Interfaces (UNI) and is available in speed increments from 10Mbps to 10Gbps.

TECHNICAL SPECIFICATIONS

Ethernet User-to-Network Interface:

The service provides full duplex transmission of Ethernet frames using a standard IEEE 802.3 Ethernet interface. The table below lists the available UNI physical interfaces.

UNI Speed	UNI Physical Interface
10Mbps	10Base-T
100Mbps	100Base-T
1Gbps	1000Base-TX 1000Base-SX 1000Base-LX
10Gbps	10GBASE-SR 10GBASE-LR

Figure 1: Available UNI interface types and CBS values for different CIR increments

Locations:

EP-LAN services interconnect multiple customer sites in any-to-any manner. Each customer site is referred to as a Node within the service. IFN EP-LAN services support a maximum of 20 Node sites. Support for additional Node sites will be considered on an individual case basis.

MAC Learning Support:

In order to efficiently move traffic, EP-LAN services learn the MAC addresses of any customer devices attached to the service. Each EVC will support learning of 250 MAC addresses. Each UNI will support learning of 250 MAC addresses. Additional MAC learning will be supported on an individual case basis.

Traffic Management:

IFN's network traffic-policing policies restrict traffic flows to the subscribed CIR for each service. If the customer-transmitted bandwidth rate for any service exceeds the subscription rate (CIR) and burst size (CBS), IFN will discard the excess frames. For frames with CoS marking the service will transmit them without altering the customer's CoS markings.

Maximum Frame Size:

The service supports a Maximum Transmission Unit (MTU) frame size of 9000 bytes to support untagged or 802.1Q tagged frame sizes. For On-Net Services delivered via the IFN Last Mile Partner Network, frame sizes may not exceed 1518 MTU size (1522 with single VLAN tag). All frames that exceed specifications shall be dropped.

VLAN Tag Preservation:

The service supports IEEE 802.1Q VLAN-tagged customer frames. All customer VLAN IDs and priority code points (IEEE 802.1p) for CoS are transmitted and received unaltered by the service. Frames received without an IEEE 802.1Q VLAN tag will be delivered without an IEEE 802.1Q VLAN tag. Customers may configure their own VLANs on their customer-owned CPE without coordination with IFN. IFN may reserve one VLAN for network management purposes.

Ethernet Service Frame Disposition:

Unicast frames will be forwarded to the UNI that hosts the destination MAC address only. Multicast and Broadcast frames will be flooded to all UNIs in the service.

Layer 2 Control Protocol (L2CP) Processing:

Certain L2CP frames are discarded at the UNI, tunneled across the IFN network or peered at (processed by) the UNI. Reference the table below for EPL 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 Disposition
01-80-C2-00-00-00	STP, RSTP, MSTP	Tunnel (All UNIs)
01-80-C2-00-00-01	PAUSE	Discard (All UNIs)
01-80-C2-00-00-02	LACP, LAMP	Peer or Discard (behavior specified per UNI)
01-80-C2-00-00-02	Link OAM	Peer or Discard (disposition specified per UNI)
01-80-C2-00-00-03	802.1X	Tunnel (All UNIs)
01-80-C2-00-00-07	E-LMI	Tunnel (All UNIs)
01-80-C2-00-00-0E	LLDP	Tunnel (All UNIs)
01-80-C2-00-00-20 through 01-80-C2-00-00-2F	GARP, MRP	Tunnel (All UNIs)

Figure 5: L2CP Frame Disposition

More advanced technical information can be found in the appendix »