1188 East Arques Avenue
Sunnyvale, CA 94086
tel: 408.400.1900
fax: 408.400.1863
sales@ipinfusion.com
www.ipinfusion.com

ZebOS®
Network Platform

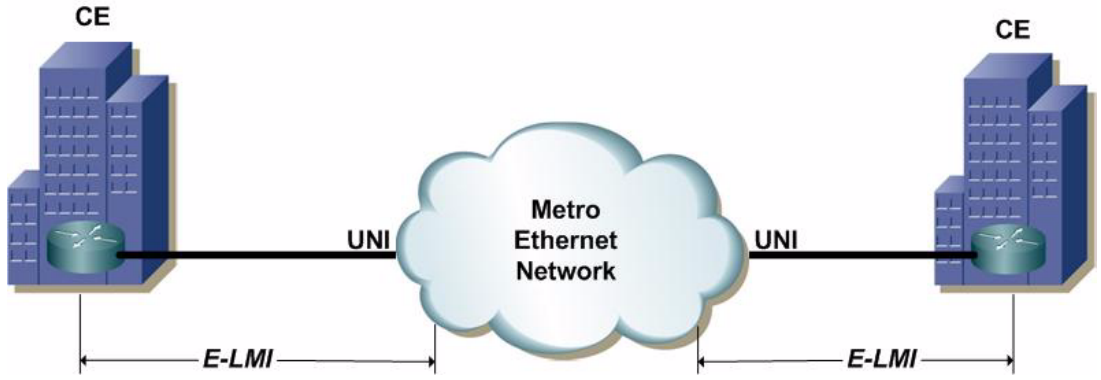
# Ethernet Local Management Interface Module

## Overview

Ethernet Local Management Interface (E-LMI) is an Ethernet OAM (Operation, Administration, and Management) protocol used for communications between two User Network Interfaces (that is, UNI-C and UNI-N). E-LMI provides both UNI and EVC (Ethernet Virtual Connection) status information to customer edge (CE) devices. This information enables automatic configuration of CE operation based on the Metro Ethernet Network configuration. The ZebOS E-LMI module is a portable software solution designed for the Metro Ethernet Forum 16 (MEF16) specification. It includes the following procedures:

- Notifies a CE device when an Ethernet Virtual Connection (EVC) is added
- Notifies a CE device when an EVC is deleted
- Notifies a CE device of the status of a configured EVC (that is, active, not active, or partially active)
- Communicates via the Metro Ethernet Network (MEN) with User Network Interface (UNI) and EVC attributes to the CE device

E-LMI works with most router architectures and is not specific to any hardware platform. It operates on both UNI-C and UNI-N to help facilitate communication between the two networks.




E-LMI System Architecture

## Operation

The E-LMI protocol enables a CE to request and receive status and service data from the MEN. This enables a CE device to configure its network to access Metro Ethernet services. The functionality of E-LMI is similar to Frame Relay LMI. However, unlike FR-LMI, E-LMI does not manage the link between the CE and the MEN, so users must provide link management between these two interfaces by some other means, such as the link management function in IEEE 802.3.

By design, E-LMI terminates by UNI-C on the CE side and by UNI-N on the MEN side. E-LMI utilizes a point-to-point connection link to operate between the CE device and the PE (Provider Edge) device. In the current ZebOS architecture, all UNI functionality is located at the NSM (Network Service Manager). E-LMI

depends on the NSM for information regarding the attributes of both EVC and UNI. Furthermore, it relies on CFM (Connectivity Fault Management) for end-to-end status of EVCs across the CFM domain.

### Design

Each protocol module that supports E-LMI uses E-LMI client APIs to communicate with the E-LMI base module. These APIs connect to and exchange information with the E-LMI server module.

### Software Integration

The E-LMI module interacts with other modules, such as the NSM and other protocol modules, via the E-LMI client. The E-LMI client library in the protocol modules connects to the E-LMI server library in the E-LMI base module using a socket interface.

## Features

- Full implementation of the MEF16 E-LMI specification
- Allows for auto configuration of the CE
- Includes both UNI-C and UNI-N functionality
- Has a local UNI significance between the MEN and the CE
- All-inclusive interaction among all new and existing EVC modules

## Requirements

- ZebOS Network Services Manager
- ZebOS Layer 2 Modules
- ZebOS Integrated Management Interface

## Standards Supported

- MEF 16 - Ethernet Local Management Interface (E-LMI)
- MEF 2 - Requirement and Framework for Ethernet Service Protection
- MEF 11 - User Network Interface (UNI) Requirements and Framework (UNI Type 1 and 2 only), which includes:
  - MEF 20 Section 8 - UNI Type 2 Discovery and Configuration
  - MEF 20 Section 9 - Supporting E-LMI for UNI Type 2
  - MEF 20 Section 10 - Supporting Ethernet OAM (Link and Service level OAM)
  - MEF 10.1 - UNI and EVC per UNI Service attributes
  - MEF 10.1 - EVC Service attributes
- MEF 17 - Service OAM Framework and Requirements

## Standard Deliverables

- Source Code (written in ANSI compliant C)
- Installation Guide
- Configuration Guide
- Command Reference Guide
- Developer Guide