Fiber Driver™ Network Management with Linux

EM316LNXNM-OT

Overview

The EM316LNXNM-OT is the network management module from MRV's Fiber Driver™ Optical Multiservice Platform. With Linux-based system software and an advanced hardware design, the EM316LNXNM-OT incorporates many advanced features for complete setup and management control for the full range of Fiber Driver products. It represents the ultimate in multi-service optical transport network management.

The Linux Advantage

The Linux kernel brings the advantages of open source[1,2] to network administration. Security is a prime concern for IT managers, and the management module provides a highly secure operating environment with features such as SSH, SNMPv3, and RADIUS support. User access policies allow multiple users access to the same equipment shelf without compromising system security.

The EM316LNXNM-OT is also designed for extensibility. Future module upgrades are installed easily through remote firmware and programmable logic microcode downloads. In addition, many possible add-on features may be found in the Linux Open Source community.

Management Features

The EM316LNXNM-OT polls the chassis and resident Fiber Driver modules for critical information, and it uses the management information base (MIB) to report MAC addresses, module types, link statuses, and other useful system data. It enables loopback testing and allows configuration of parameters such as the system IP parameters. The management module also monitors operating temperature, power supply status, and fan status, and it fully supports digital diagnostics for optical performance monitoring of pluggable transceivers. SNMP traps may be triggered by events to send instant alerts about potential problems, which can further reduce operating expences.

[1] This product includes software developed by the Open SSL Project for use in the OpenSSL Toolkit. (http://www.openssl.org/).

[2] This product includes software developed by the University of California, Berkeley and its contributors.

Highlights

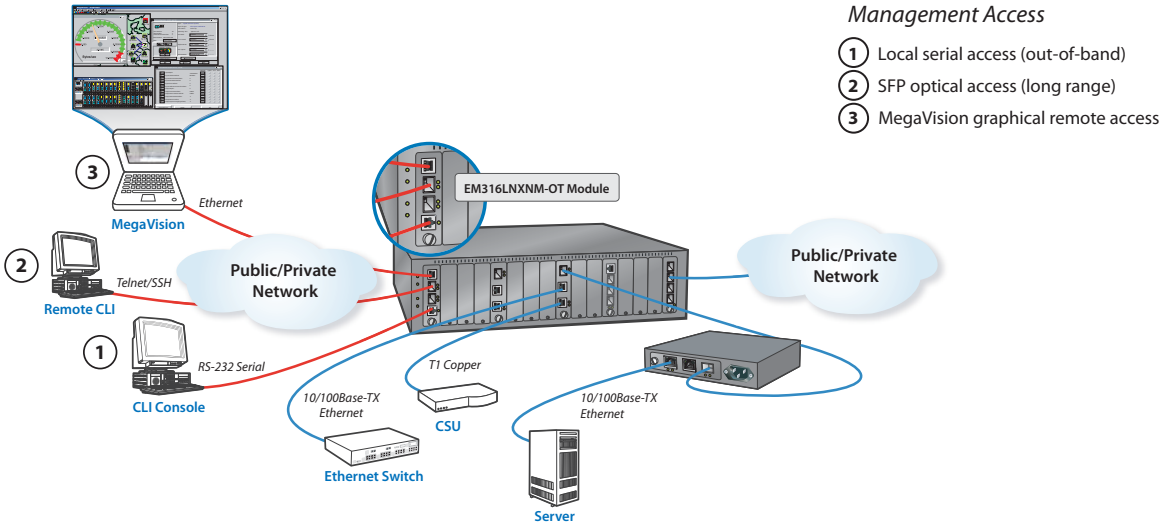
- Fiber Driver chassis, module, and port management
  - Secure end-to-end network management
- Linux-based system software – all the security and extensibility of the open source operating system
- Extensive management features – Link status, optical performance monitoring (including Digital Diagnostics), remote laser shutoff, SNMP traps, module loopback diagnostics, remote module reset, and much more
- In-band (MegaVision Pro, SNMPv1, SNMPv3, SSH, Telnet) management interfaces
- Out-of-band CLI management
- Integrated MegaVision-J – complete Java-based embedded management GUI
- SSH and SNMPv3 – secure in-band management
- Individual user access policies – allocate port access for each user independently
- Time Protocol (TP and NTP) support – automatically synchronizes the system clock with a designated time server
- Syslog – automatic logging of system events
- Editable ASCII configuration files – easily create, edit, and save configuration settings
- Script saving and activation from onboard flash file systems – save and execute macro commands locally
- System configuration TFTP upload and download – save configurations on remote servers for easy retrieval and restoration
- Downloadable firmware and microcode – remote software updates, provide the ability to add additional features as they become available
- 10/100Base-TX management interface port with auto negotiation and auto MDI/MDIX – easy integration into existing Ethernet networks
- Dual 100Base-FX SFP-based interfaces – easy integration into 'gray' or CWDM/DWDM optical networks, able to direct East-West WDM ring OSC
- Advanced Optical Service Channel (OSC) protocol (fast and reliable link failover protection
  - Point-to-point (P2P)
  - WDM ring
- Cluster Discovery Protocol – access every shelf in a WDM cluster from any shelf without the need for a static network map or address table

The EM316LNXNM-OT provides a standardized CLI interface accessible out-of-band through the local serial port or in-band from the network using Telnet or the more secure SSH protocols. Remote in-band access is also available through any SNMP-enabled network management system (NMS). MRV Communications' own MegaVision Pro NMS provides a complete graphical user inteface (GUI) for the LNXNM and the full line of MRV Fiber Driver chassis and modules down to the port level.

Configuration files may be uploaded or downloaded to the LNXNM in standard ASCII format, allowing configurations to be edited offline and saved remotely. To further ease system setup and management, macro commands and scripts may be saved to and activated from the LNXNM module.

The EM316LNXNM-OT provides four front panel ports for management access. The RS-232 port provides local out-of-band serial access. The 10/100Base-TX interface and dual redundant 100Base-FX Ethernet fiber ports with SFP interface docks provide in-band access remotely from any network workstation.

Application 1: Fiber Driver Network Management with Linux



WDM Capabilities

The Linux network manager includes capabilities designed specifically for WDM networks. An SFP interface may be used to create an Optical Service Channel (OSC) with the wavelength determined by the SFP transceiver. The industry standard wavelength bands are 1310 nanometers, 1550 nanometers, or any CWDM or DWDM grid wavelength.

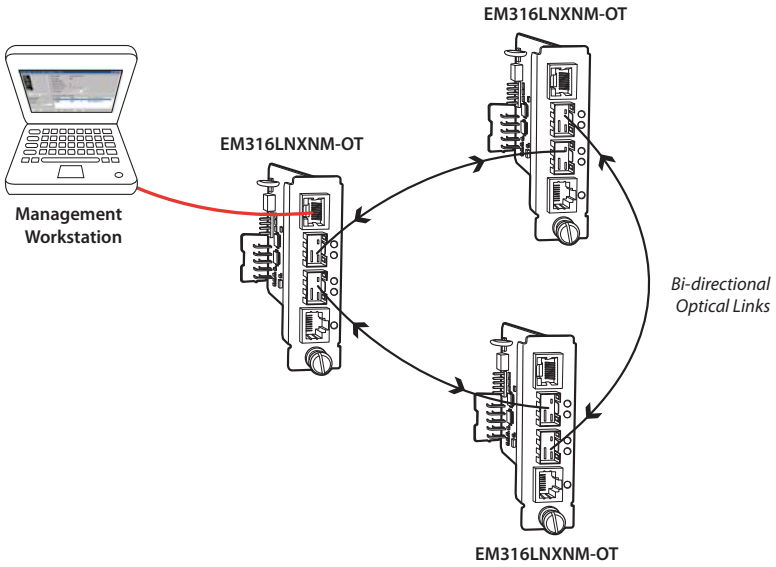
The two SFP interfaces may be used together to create fully redundant OSCs in a WDM Ring topology. An advanced OSC protocol ensures fast and reliable link failover protection.

Cluster Discovery Protocol (CDP) is unique to the MRV's EM316LNXNM-OT. In a network of Fiber Driver WDM systems, each LNXNM automatically locates and identifies the other LNXNM modules on the OSC to build a table of available management IP addresses. A network administrator can manage any of the other WDM systems as well by connecting to any one of the WDM equipment shelves in the cluster through itsLNXNM module interface.

MegaVisionJ is the built-in Java-based network management software on the LNXNM-OT. MegaVisionJ, CDP, a local connection to one shelf, and a web browser are all that a network administrator needs to manage an entire WDM cluster.

Contact your nearest authorized MRV representative for more information on the EM316LNXNM-OT and any of the complete line of Fiber Driver multi-service optical transport solutions. To find your nearest dealer, visit the MRV website at www.mrv.com.

Application 2: WDM Management Ring



Physical Specifications	
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Relative Humidity	85% maximum, non-condensing
Physical Dimensions (H x W x D)	75 mm x 25 mm x 175 mm deep (3" x 1" x 7" deep)
Weight	Approximately 140 g (4 oz)
Regulatory Compliance	FCC Part 15 (Class A); IC (Class A); EMC Directive: Emission (Class A) and Immunity; RoHS Directive; China RoHS; WEEE Directive

Ordering Info	Part Number	Description	Ports
	EM316LNXNM-OT	Fiber Driver Network Management Module for Fiber Driver Linux-based system interface, MegavisionJ embedded.	RJ-45 RJ-48 SFP (2 empty)
	2012001-001	RS-232 adapter and cable, DB-9 Female to RJ-45 Female, crossover.	-

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