

Fiber Driver® Network Management with Linux

Secure end-to-end network management



Overview

The EM316LNxNM-OT is the next generation Fiber Driver® network management (NM) module from MRV Communications. With Linux-based system software and an advanced hardware design, the Linux NM incorporates many new features. It provides 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 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

Using public and MRV private management information base (MIB), the EM316LNxNM-OT polls active Fiber Driver modules for critical information such as MAC addresses, module types, and link status. 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. Event traps may be set to trigger instant alerts to potential problems to further reduce operating expenses.



Features

- **Linux-based system software** – all the security and extensibility of the open source operating system
- **Fiber Driver® module and chassis configuration and monitoring** – complete end-to-end fiber optic network management
- **Extensive management features** – Link status, optical performance monitoring (including Digital Diagnostics), remote laser shutoff, event 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 interfaces** – management access anytime, anywhere
- **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 ssh or telnet 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 interface (GUI) for the Linux NM and the full line of MRV Fiber Driver chassis and modules.

Configuration files may be uploaded or downloaded 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 NM module.

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

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.

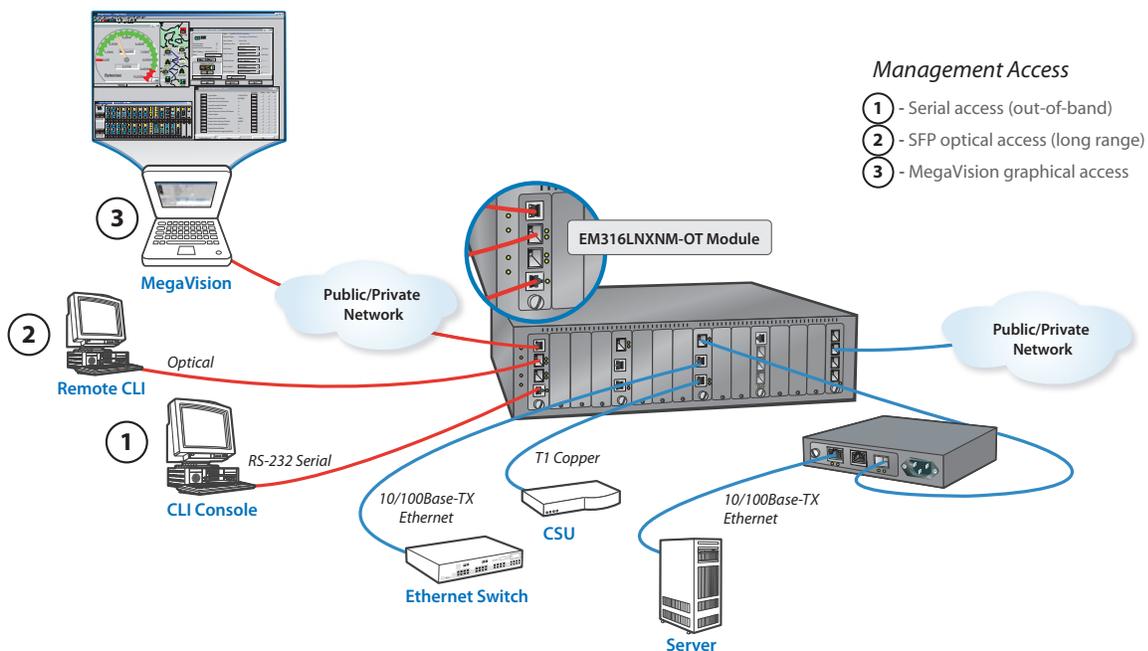
The two SFP interfaces may be used together to create fully redundant OSCs in WDM Ring topology. An advanced OSC protocol ensures fast and reliable link failover protection.

Cluster Discovery Protocol (CDP) is unique to the MRV Linux NM. In a network of Fiber Driver WDM systems, each Linux NM automatically locates and identifies the other Linux NMM 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 its NM module interface.

MegaVisionJ is the built-in Java-based network management system on the Linux NM. 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.

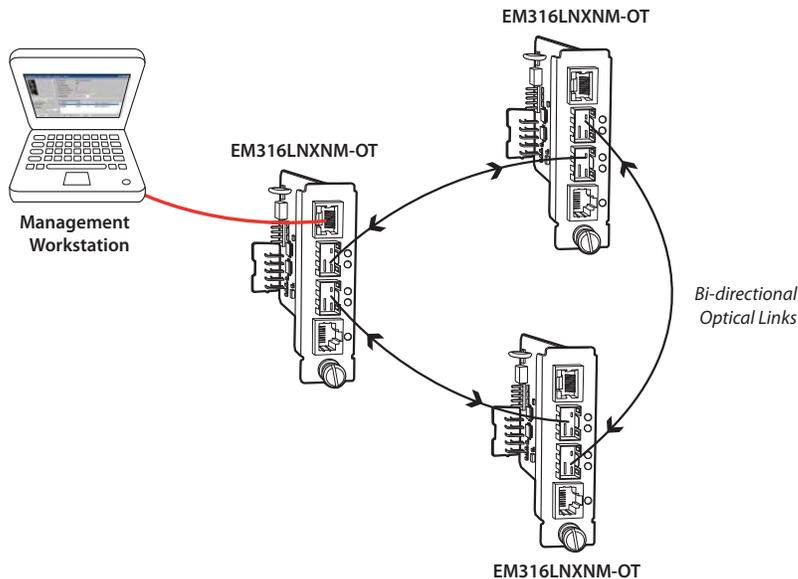
Application 1: Fiber Driver Network Management with Linux



Management Access

- ① - Serial access (out-of-band)
- ② - SFP optical access (long range)
- ③ - MegaVision graphical access

Application 2: WDM Ring Topology



Physical Specifications	
Operating Temperature	0°C to 60°C (32°F to 140°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Relative Humidity	85% maximum, non-condensing
Physical Dimensions	25 mm x 75 mm x 175 mm deep (1" x 3" 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)
	10600019-0051R	RS232 adapter. DB9 Female to RJ45 Receptacle.	-
	70000112-0001R	Crossover Cable, Male RJ-45 to Male RJ-45 (RS232).	-

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