iMcV-Giga-FiberLinX-III

Operation Manual

B&B ELECTRONICS

Make The Right Connections

International Headquarters

B&B Electronics Mfg. Co. Inc.

707 Dayton Road

Ottawa, IL 61350 USA

Phone (815) 433-5100 -- **General Fax** (815) 433-5105

Website: **www.bb-elec.com**

European Headquarters

B&B Electronics

Westlink Commercial Park

Oranmore, Co. Galway, Ireland

Phone +353 91-792444 -- **Fax** +353 91-792445

Website: **www.bb-europe.com**

CAUTION

This is an Electrostatic Sensitive Device. Use ESD precautions for safe handling.

Before removing the card from the anti-static protective packaging:

- Discharge any static electricity buildup on your body by touching a large grounded metal surface or the metal chassis on equipment connected to earth ground by a 3-wire power cord. Use of a grounding wrist strap is recommended.

- Avoid touching the gold connectors or other parts on the card except when necessary to set the configuration DIP switches.

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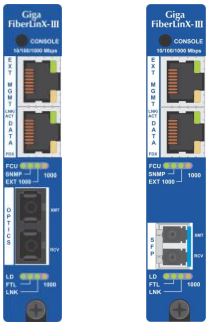
CHAPTER 1: GENERAL INFORMATION

INTRODUCTION

The iMcV-Giga-FiberLinX-III allows network operators to deploy managed Ethernet services with a full range of remote management, traffic monitoring, and alarm reporting features. The single wide module offers two fixed 10/100/1000Mbps copper ports and one fiber port in a fixed transceiver in a variety of wavelengths for SMMM and CWDM. Another model offers an SFP port that allows copper or fiber SFPs.



iMcV-Giga-FiberLinX-III

The iMcV-Giga-FiberLinX-III supports three main configuration modes: Standalone, Host/Remote, or as a Host or a Remote. When using Host/Remote, the Remote modules can be fully managed without an IP address over the fiber optic segment. The network operator can choose to assign an IP address to the Host or Standalone module in any mode. Or, if using a local iMediaChassis managed chassis, all local and remotely connected iMcV-Giga-FiberLinX-III modules can be managed using the single IP address of the chassis. This not only preserves IP addresses and reduces configuration complexity, but management traffic traveling on the non-IP based transmission channel is kept isolated from customer traffic, enhancing network security.

The iMcV-Giga-FiberLinX-III offers the following features:

- Securely separates the SNMP management network from the data network
- IEEE 802.1Q VLAN Tagging
- Q-in-Q VLAN Extra-Tagging with EtherType (TPID) selection
- Remote traffic monitoring

- Remote automatic alarms
- Bandwidth limiting
- Link Fault Pass Through (LFPT)
- Loopback testing
- Auto Negotiation
- Selective Advertising
- IEEE-802.3ah OAM support
- Management through UMA
- Console

The iMcV-Giga-FiberLinX-III module is a single-slot, chassis-mounted module. Compatible chassis include the following:

- iMediaChassis series
- MediaChassis series
- IE-MediaChassis series

PORT INTERFACES

Every iMcV-Giga-FiberLinX-III includes the following ports:

- A 10/100/1000 twisted pair (RJ-45) port (EXT MGMT) for management

One of the following ports:

- One fixed 1000 Mbps Fiber port, OR
- A SFP port capable of receiving a gigabit or 100Mbps fiber optic SFP module, or a gigabit twisted pair (RJ-45) SFP module

DATA port:

- A 10/100/1000 twisted pair (RJ-45) port

MANAGEMENT

Although the iMcV-Giga-FiberLinX-III provides a twisted pair port solely for management (EXT MGMT), the iMcV-Giga-FiberLinX-III can be configured to accept IP-based management traffic from any of its three ports. Enable

management on more than one port, or disable management on all of the ports, as desired. These switches limit only IP-based management. Host-to-Remote management is IP-less and is never blocked from the fiber port. Serial port management of the unit is available via the console port located at the top of the module using a Mini-jack adapter.

In addition to defining which ports are used to manage the iMcV-Giga-FiberLinX-III units, the management DIP switch settings also define what ports the flow of the Network Provider's Management Domain traffic can take through the unit. See *Application Examples* for information regarding the Management Domain.

DIP Switch 1 = **ON** for management on the EXT MGMT port.
DIP Switch 2 = **ON** for management on the DATA port.
DIP Switch 3 = **ON** for management on the OPTICS or UPLINK port.

SPECIFICATIONS

Environmental	Operating temperature range: +32°F to +1°F (0°C to +50°C)
	Humidity: 5% to 95%, non-condensing
	Altitude: 0 to 10,000 ft.
	Storage Temperature:-13°F to +158°F (-25°C to +70°C)
Power	Power Consumption (Typical): 731mA @ 5V DC
Standards / Compliance	• Read/write IEEE 802.1Q VLAN tags • QoS IEEE 802.1p-based packet prioritization (4 queues [high/low] with 4 levels of priority) • IEEE 802.3ab 1000Base-T twisted pair • IEEE 802.3z 1000Base-X fiber • IEEE 802.3x Flow Control • IEEE 802.3i 10Base-T twisted pair • IEEE 802.3u 100Base-TX twisted pair • IEEE 802.3u 100Base-FX or SX fiber
Dimensions	Single-Slot iMcV-Module

CHAPTER 2: INSTALLATION INSTRUCTIONS

Each iMcV-Giga-FiberLinX-III module requires one slot in an iMediaChassis, MediaChassis or IE-MediaChassis. To install the module in a chassis, remove the blank faceplates covering the slots where the module is to be installed. Then slide the module into the chassis card guides until the module is seated securely in the connector. Secure the module to the chassis by tightening the captive screw.

The iMcV-Giga-FiberLinX-III module includes on-board SNMP logic. A chassis other than an iMediaChassis series cannot manage an iMcV-Giga-FiberLinX-III, so the iMcV-Giga-FiberLinX-III must be managed independently.

When installed in an iMediaChassis, the iMcV-Giga-FiberLinX-III module can be managed from the chassis by using the Unified Management Agent (UMA). iMcV-Giga-FiberLinX-III modules not managed by UMA must have an IP address assigned to them after installation before they can be managed. Refer to *Assigning IP Information* for more information.

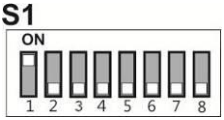
DIP SWITCH SELECTABLE MODE CONFIGURATION

Before installing the module in a chassis, there are two features that must be selected using the DIP switches. These selections are:

- Enable or disable management on each port
  (DIP switches 1, 2, and 3)
- Configure the module as a standalone, a host, or a remote
  (DIP switches 7 and 8)

DIP SWITCH SETTINGS

Before installing the iMcV-Giga-FiberLinX-III, use the DIP switches to set the hardware-configurable features. The DIP switches are located on Bay SW1 on the iMcV-Giga-FiberLinX-III card. Refer to the diagram and table for switch settings and available features.



DIP switch (SFP model).

Switch	Function	Default Setting
1	Management on EXT MGMT port	ON
2	Management on DATA port	OFF
3	Management on OPTICS or UPLINK port	OFF
4	Factory use – Do not change	---
5	Factory use – Do not change	---
6	LoSPD SFP If the model is 1x9, LoSPD is not functional	OFF
7	Remote Module	OFF
8	Host Module	OFF

HOST/REMOTE AND STANDALONE UNITS

The iMcV-Giga-FiberLinX-III can be used as a Host, Remote, or Standalone unit. Refer to the *Application Examples* section for examples.

When two iMcV-Giga-FiberLinX-III units are used as a pair, configure one as a Host unit (DIP Switch 8 = **ON**) and the other as a Remote unit (DIP Switch 7 = **ON**). As a host unit, the iMcV-Giga-FiberLinX-III requests management information from the attached remote unit. It then displays that information, along with its own, when queried by SNMP. As a Remote unit, the iMcV-Giga-FiberLinX-III will respond to requests for management information from an attached Host unit.

The iMcV-Giga-FiberLinX-III default configuration is as a Standalone unit (DIP Switches 7 and 8 = **OFF**).

LOSPD

When LoSPD is set to ON, it will force the SFP mode to run at 100Mbps. If it is set to OFF, the SFP will run at the highest usable speed determined by the SFP itself.

MINI-SERIAL PORT

A console port, located on the front faceplate of the module, allows the customer to use a local RS-232 serial interface for management. A special mini-jack to DB9-F cable is provided with the product for direct connection to a PC serial port.

CHAPTER 3: CONFIGURATION

SOFTWARE CONFIGURATION

The following sections describe the features that can be configured.

ASSIGNING IP INFORMATION

When the iMcV-Giga-FiberLinX-III is installed in an iMediaChassis, use UMA to manage the iMcV-Giga-FiberLinX-III without an IP address (refer to the iView² online help for more information on UMA). When the iMcV-Giga-FiberLinX-III is not installed in an iMediaChassis, SNMP-management is not accessible until the iMcV-Giga-FiberLinX-III IP information (e.g., IP address, subnet mask, etc.) is configured (using iConfig, a serial port craft connection, or DHCP). After assigning iMcV-Giga-FiberLinX-III an IP address, use iView² or another SNMP-compatible Network Management System (NMS) to remotely configure, monitor and manage the iMcV-Giga-FiberLinX-III.

UNIFIED MANAGEMENT AGENT (UMA)

Centralized management makes practical sense for networks of all sizes, especially service provider networks that must monitor and upgrade large quantities of devices. The Unified Management Agent (UMA) allows operators to manage all devices installed in a B&B iMediaChassis with a single IP address from a central location. In addition, UMA allows users to centrally manage and administer firmware upgrades over multiple devices.

AUTO NEGOTIATION, DUPLEX MODE AND SPEED

The DATA and EXT MGMT ports on the iMcV-Giga-FiberLinX-III module Auto Negotiate for speed and duplex. This module also provides the option of selectively advertising or forcing the speed and duplex.

The iMcV-Giga-FiberLinX-III ships from the factory with Auto Negotiation enabled on the twisted-pair ports. In this mode, the ports negotiate for speed and duplex.

FORCING THE SPEED AND DUPLEX MODE

Manually set the twisted-pair ports on the iMcV-Giga-FiberLinX-III for 10 Mbps or 100, or 1000 Mbps operation at Half- or Full-Duplex (i.e., 10 Mbps Full-Duplex, 10 Mbps Half-Duplex, 100 Mbps Full-Duplex, 100 Mbps Half-Duplex, 1000 Mbps Full-Duplex, 1000 Mbps Half-Duplex). The Optics Port operates at 1000Mbps Full-Duplex for fixed fiber transceivers, and can support 100Mbps as well as gigabit fiber SFPs.

SELECTIVE ADVERTISING

Selective Advertising, when used in combination with Auto Negotiation, advertises only the configured speed and duplex mode for the twisted pair port. If a specific speed and/or duplex are desired, B&B Electronics recommends using Selective Advertising, rather than Force Mode, when connecting to devices that only use Auto Negotiation.

BANDWIDTH CONTROL

The iMcV-Giga-FiberLinX-III includes bi-directional bandwidth control (configurable via iView^2). This allows the bandwidth limit to be set independently from the DATA Port to the OPTICS (or UPLINK) Port and vice versa in a single iMcV-Giga-FiberLinX-III application. In a Host/Remote iMcV-Giga-FiberLinX-III application, it can be set from the Host unit to the Remote unit and vice versa (i.e., the bandwidth on the DATA ports on both the Host and Remote modules can be limited independently).

LINK FAULT PASS THROUGH (LFPT)

Link Fault Pass Through (LFPT) is a diagnostic feature that can be enabled or disabled. When enabled, it allows the end-user to visually detect that the Link and the LNK LEDS will extinguish on the front faceplate of the module, when a fault occurs. LFPT can be enabled through the SNMP software (iView²) or serial/Telnet.

The iMcV-Giga-FiberLinX-III has three ports: Data, Optics and Ext Management. LFPT can be enabled between any two ports. For example, if LFPT is configured as “from” the Optics port “to” the Data port, when a fault occurs on the Optics port, both LEDs for those ports will extinguish. The end-user can decide which

port he wants the fault to be reported to, based on which port he wants to be in control. LFPT allows the fault to be reported down the line, through to the link partner at the end, such as a switch or a router.

LFPT can be used in addition to setting up SNMP Traps for link up/link down. LFPT provides a visual way to determine that link is down, and an SNMP Trap provides a notification of a link down to a designated workstation.

LOOPBACK TESTING

The iMcV-Giga-FiberLinX-III includes Loopback testing functionality. During loopback testing, management traffic entering the uplink port is still capable of managing the device. This is selectable form the UNIT screen in a serial/Telnet session or through iView².

The menu of choices in the CLI includes:

- No loopback, normal traffic mode
- Loopback Enabled
- Loopback, Source/Destination address swap
- Loopback, address swap and clear Multicast bit
- No learning on fiber or Data ports

The menu of choices in iView² includes:

- OFF
- ON
- On- Address Swap
- On-Address swap + Clear MC

LOOPBACK TESTING ON REMOTE OR STANDALONE

NO LOOPBACK, NORMAL TRAFFIC MODE

The standard mode in which the units function, either as standalone or Host/Remote.

LOOPBACK ENABLED

Loopback mode without address swap

LOOPBACK, SOURCE/DESTINATION ADDRESS SWAP

A Layer 2 Ethernet switch will discard all received packets with the same MAC address as sent packets. To avoid this issue the Loopback feature can swap the source and destination MAC addresses on the looped data. (This selection can cause a frame with a multicast source address to be created, which violates the IEEE standard.)

LOOPBACK, ADDRESS SWAP AND CLEAR MULTICAST BIT

In addition to swapping the source and destination MAC addresses on the looped data, the Loopback feature can also be set to clear the multicast bit. This allows the looped data to avoid being blocked by any multicast settings.

LOOPBACK TESTING IN A HOST/REMOTE CONFIGURATION

The iMcV-Giga-FiberLinX-III is strictly a CPE device; configuration on a Host would require an iMcV-Giga-FiberLinX-III; select No Learning on OPTICS and DATA Ports on the Host; on the Remote, choose SRC/DST Address Swap or Address Swap and Clear Multicast Bit.

HOST: NO LEARNING ON OPTICS AND DATA PORTS

The Loopback feature can be set to disable address learning on the OPTICS (or UPLINK) and DATA ports, allowing the loopback to be performed without interference from MAC address filtering functions. This is a function on the HOST unit. Set the REMOTE unit for Loopback then set the HOST to disable learning so Loopback frames pass from the OPTICS port to the DATA port.

REMOTE: SOURCE/DESTINATION ADDRESS SWAP

A Layer 2 Ethernet switch will discard all received packets with the same MAC address as sent packets. To avoid this issue the Loopback feature can swap the source and destination MAC addresses on the looped data.

OR

ADDRESS SWAP AND CLEAR MULTICAST BIT

In addition to swapping the source and destination MAC addresses on the looped data, the Loopback feature can also be set to clear the multicast bit. This allows the looped data to avoid being blocked by any multicast settings.

CONFIGURATION OPTIONS

The iMcV-Giga-FiberLinX-III includes many features that are configurable via a serial/Telnet session (CLI) or through iView² (SNMP Management view; iConfig view).

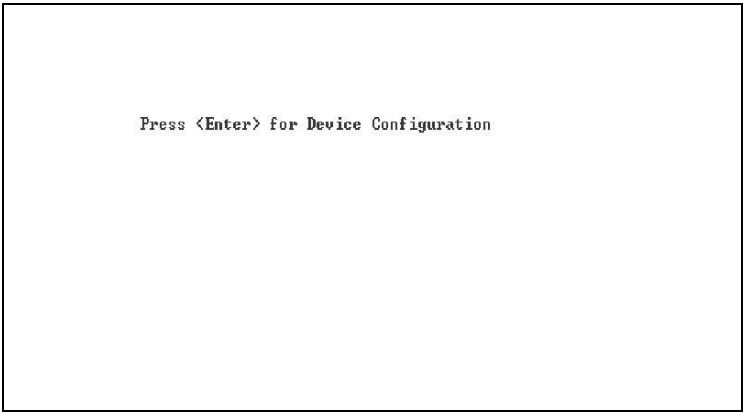
The following options are configurable through both the iView^2 (iConfig view) and/or Serial/Telnet.

Feature	iView²	Serial/Telnet
Loopback	✓	✓
Auto Negotiation	✓	✓
Force Mode	✓	✓
FlowControl	✓	✓
VLANs	✓	✓
IP Address	✓	✓
Subnet Mask	✓	✓
Default Gateway	✓	✓
MIB Community	✓	✓
Traps Assignment	✓	✓
Users	✓	✓
Passwords	✓	✓
Access Level	✓	✓
Reboot	✓	✓
Frame size selection	✓	✓
Bandwidth Limiting	✓	✓
OAM AH	✓	✓
OAM CFM	✓	
Boot Tray Delay	✓	✓
PROM Software Download/Upload	✓	
Telnet Session	✓	✓
Software Download Setup (TFTP)		✓
DHCP		✓
Restore Configuration	✓	✓
Save Configuration	✓	
Link Fault Pass Through (LFPT)	✓	✓

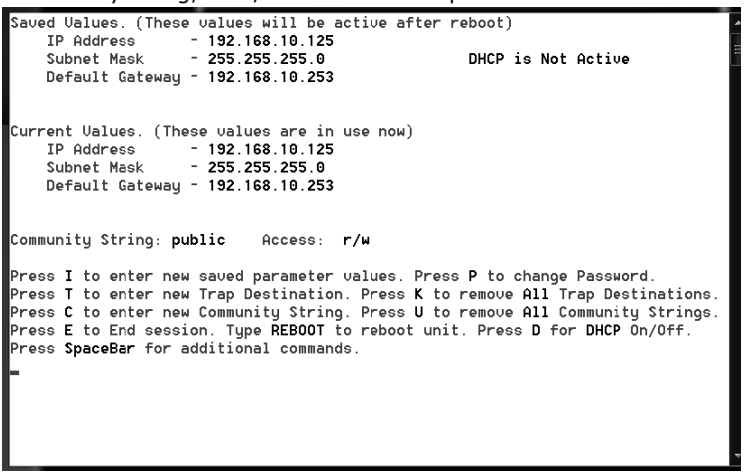
BASIC DEVICE CONFIGURATION USING THE CLI

After running through an initial self-test, the screen will display the following message:

Press **Enter** for Device Configuration.



Press **Enter** to open the main configuration screen. This screen allows the user to set the IP address and the destination IP address for traps with the community string, read/write access and password as usual.



This screen contains the following information and options:

SAVED AND CURRENT VALUES

Saved values display the changes made during the current session and current values display the values currently in use:

- IP Address (IP address of SNMP agent)
- Subnet Mask (mask to define IP subnet to which agent is connected)
- Default Gateway (default router for IP traffic outside of the subnet)
- DHCP
- Community Strings

COMMAND LIST

I = Enter new **Saved Parameter Values**

P = Change the **Password***

T = Enter new **Trap Destinations**

K = Remove **All Trap Destinations**

C = Create **SNMP Community Strings**

U = Delete All **SNMP Community Strings**

E = **End** the session*

Reboot = Reboot the unit (may result in short data loss)

D = Enable or disable **DHCP**

Space Bar = Opens the device specific configuration options screen.

*The screens illustrated in this manual show capabilities for users with Admin rights. Individuals with User-level rights can only view port status and port settings, change their password, end a session, and reboot the unit.

> ***Note:*** *It is necessary to reboot the iMcV-Giga-FiberLinX-III after making any modifications to the Saved Values for the changes to take effect. To reboot, type Reboot at the prompt on the Main Configuration screen.*

ASSIGNING IP INFORMATION

To modify the Saved Parameter Values (i.e. assign IP address and subnet mask), press **I**. The system prompts for the IP address and subnet mask for the connected device. Press **Enter** after each entry. A default gateway can also be assigned, or press **Enter** to skip. When finished, press **Enter**, then type **reboot** for changes to take effect. The Current Values can only be saved and acted on after the iMcV-Giga-FiberLinX-III has been successfully rebooted.

PASSWORD PROTECTION FOR SERIAL PORT CONNECTIONS

Password/username is not offered for the serial port by default. This allows the end user to quickly access the device for some basic configuration capability. Password protection is provided for the serial configuration process by pressing **P** on the main configuration screen. Enter a password, keeping in mind that passwords are case-sensitive and must not exceed eight characters or include spaces, and press **Enter**. This password will be requested whenever logging on. To remove password protection, select **P** and, instead of entering a password, press **Enter**.

Passwords have the following requirements:

- The password must be between 1 and 8 characters long
- The password consists of a combination of any ASCII characters except spaces
- Passwords are case sensitive

Passwords are a way to make the management of the devices secure, but these password lists must be stored and maintained.

ASSIGNING TRAP DESTINATIONS

Traps are sent by the manageable device to a management PC when a certain event takes place. To enter a trap destination, press **T**. When prompted, enter a New IP Address prompt, enter the appropriate IP address of the destination device and press **Enter**. Then, type the name of the community string (that the destination device has been configured to accept) and press **Enter**. Select whether the trap is for SNMP version 1 or

2c and press **Enter**. This function enables ALL of the device traps. Supported traps include: Link Down, Link Up, and Last Gasp.

REMOVING TRAP DESTINATIONS

To remove all trap destinations, press **K**. Press **Y** to continue to confirm or **N** to abort and remove all trap destinations. Press **Enter** to finish.

This function will delete all trap destinations. To selectively delete trap destinations or to disable/enable Traps, use iView^2 (iConfig view) to configure the device. To enter another Trap destination, repeat the steps listed above.

CREATING COMMUNITY STRINGS

Community strings add a level of security to a network. The default community string is named "public" and has read/write access. For security, "public" should be replaced with custom community strings such as ones created with read-only access (for general use), and another with read/write access (for the administrator).

To create a new community string, go to the main configuration screen and press **C**. Enter the name of the new community (up to 16 characters, no spaces) and press **Enter**. Then type one of the following to assign the community string's access rights:

- **R** = read-only access
- **W** = read/write access
- **Enter** = abort

After entering **R** or **W**, press **Enter**. To finish, press **Enter** and reboot.

DELETING COMMUNITY STRINGS

To delete all community strings, perform the following:

Press **U**. The "Are you sure you want to delete all community strings?" prompt is displayed. Press **Y** when prompted to proceed and delete all community strings, **N** to abort. Press **Enter** to finish.

This function will delete ALL community strings. To selectively delete community strings, use iView^2 (iConfig view) to configure the device.

ENDING THE SESSION

Press **E** to end a serial port or Telnet/HyperTerminal session before disconnecting the serial cable. This will stop the continuous stream of data to the serial port.

REBOOTING THE UNIT

To reboot the iMcV-Giga-FiberLinX-III, type **reboot** from the main screen or the command menu.

ENABLING/DISABLING DHCP

To toggle DHCP on the iMcV-Giga-FiberLinX-III between enable and disable, press **D** and then **Y.** Press the **Space Bar** once to return to the main screen without making any changes.

DHCP DISABLE (STATIC IP ADDRESSING)

DHCP is disabled in the default configuration. Initially, modules are assigned a Static default IP Address of 10.10.10.10. Changes to the Static IP Address can be added manually through iView^2 (iConfig view), an RS-232 serial session, or a Console session. The changes will be initiated following reboot of the module.

DHCP ENABLE (DYNAMIC IP ADDRESSING)

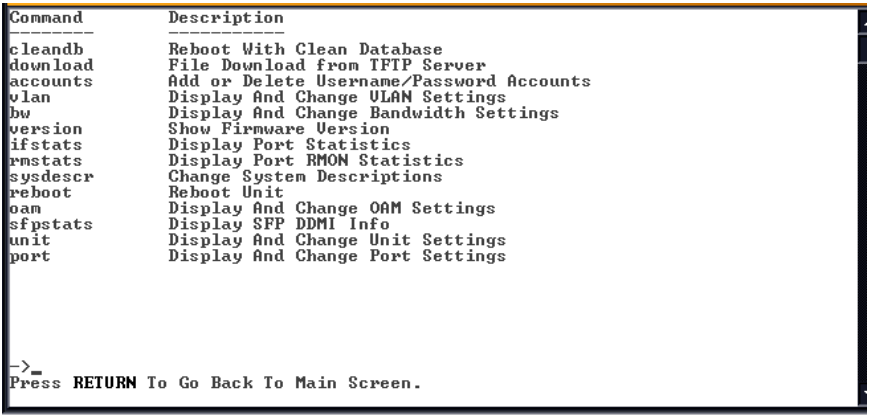
If a DHCP server is present on the network and DHCP is enabled, the DHCP client will initiate a dialogue with the server during the boot up sequence. The server will then issue an IP address to the management card. Once the new IP address is received, the SNMP Management Module will reboot so that the new IP address will take effect. Refer to About Serial Port Configuration for more information about Enabling/Disabling DHCP.

When there is no DHCP server on the network, use the serial configuration to manually set the IP addresses.

When DHCP is enabled, the IP address (default 10.10.10.10 or a previously used IP address, or user-configured) is saved. When DHCP is disabled, the saved IP address will be reinstated and the device will reboot.

DHCP servers give out lease times: devices renew their leases based on the administrator-specified time. If a device cannot renew its lease, and the lease expires, the device will be given the IP address 10.10.10.10 or the previously saved IP and will reboot.

COMMANDS LIST (SPACE BAR)



The iMcV-Giga-FiberLinX-III also includes several device-specific options. To access these options, press the **Space Bar** from the Main Configuration screen, type the name of the action to be performed (as shown below) and press **Enter**.

Command	Description
cleandb	Reboots the unit with a clean database. This removes all information from the database and sets the unit to factory defaults.
download	Downloads firmware via the TFTP protocol
accounts	Allows the addition for User, Operator, Admin
vlan	Provides selection of three modes of operation to support all VLAN configurations.
bw	Displays settings for Bandwidth configuration
version	Displays the unit's firmware and hardware version
ifstats	Displays interface statistics
rmstats	Displays remote monitoring (RMON) statistics on packets received as defined in RFC 2819 for RMON.
sysDescr	Allows the editing of sysName, sysDescr, and Port information
reboot	Allows a soft reboot of the unit after changes are made by the end user
oam	Allows an array of OAM configurations

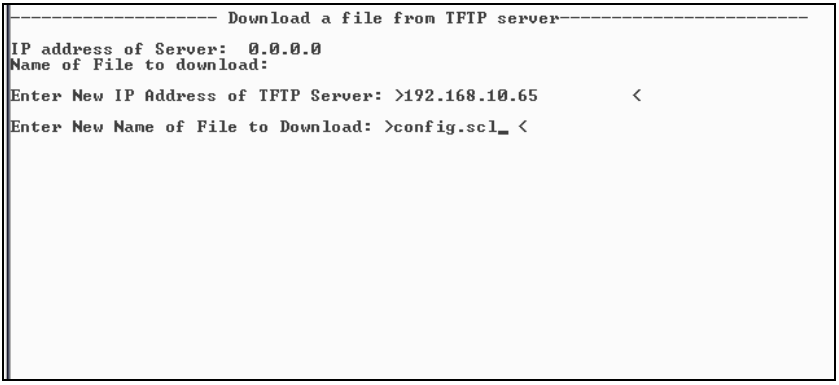
Command	Description
sfpstats	Provides information about the wavelength, serial number, output power, BER and other information.
unit	Unit global settings, frame size selection. Unit OAM enable must be enabled for AH and AG to function.
port	Displays the port status and allows changes to port settings, such as duplex status and speed.

CLEANDB

Entering cleandb reboots the unit with its database cleaned depending on the option selected. Users are presented with two, sequential options, first to reset all SNMP settings and, second, to reset all of the unit's configuration to default. Enabling the first option presents the second. Resetting the unit to factory default values (option two) will delete all custom IP and other configurations performed through iView², to reset the unit to the default configuration.

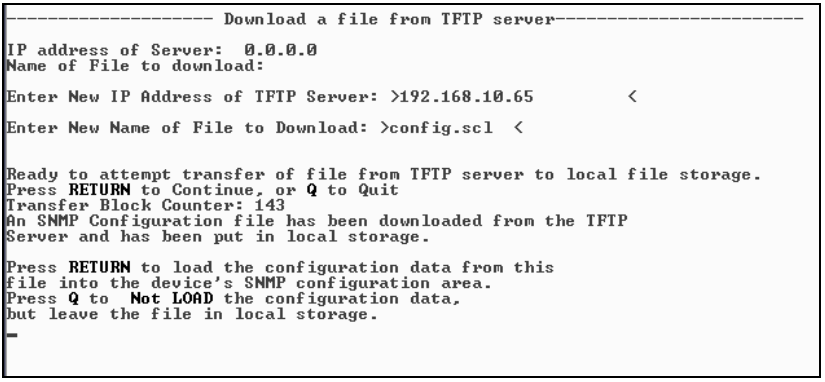
DOWNLOADING FILES

Firmware and/or saved configuration data for the iMcV-Giga-FiberLinX-III can be downloaded via a TFTP connection from a central server via TFTP protocol. Initiate this download via serial configuration or Telnet session. To download a configuration file, type **download** and press **Enter** to be taken to the Download a file screen. This screen displays the IP Address of the TFTP server and the name of the file to be downloaded:



The TFTP server should be open. Press **Enter** to start downloading the file.

After the transfer process is complete, press **Enter** to load the configuration file:



Once loaded into the device's SNMP memory area, the system prompts the user to **reboot** the device to make the new configuration active.

ACCOUNTS

The following are the three levels for CLI or Telnet account access:

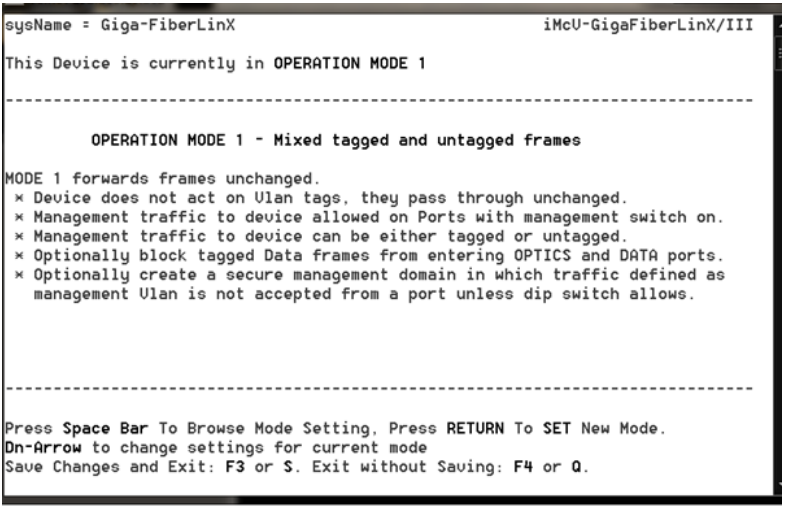
User	View status, change own password, and reboot.
Operator	All User privileges mentioned above, plus ability to change settings.
Administrator	Operator privileges mentioned above, plus ability to add/delete accounts and reinitialize the unit to default settings (cleandb).

OPERATIONAL MODE CONFIGURATION

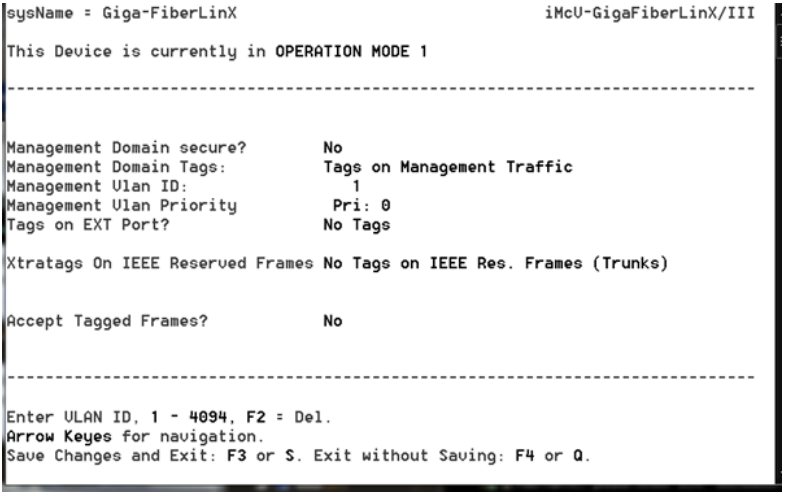
There are three modes of operation that can be configured through the Serial/Telnet session: Mode 1, which supports a mixture of tagged and untagged traffic, Mode 2, Extra tagging and Mode 3, VLAN Filter.

OPERATION MODE 1 – MIXED TAGGED AND UNTAGGED FRAMES

In this mode, all tagged and untagged frames pass on any given port. Management to the device can be tagged or untagged.

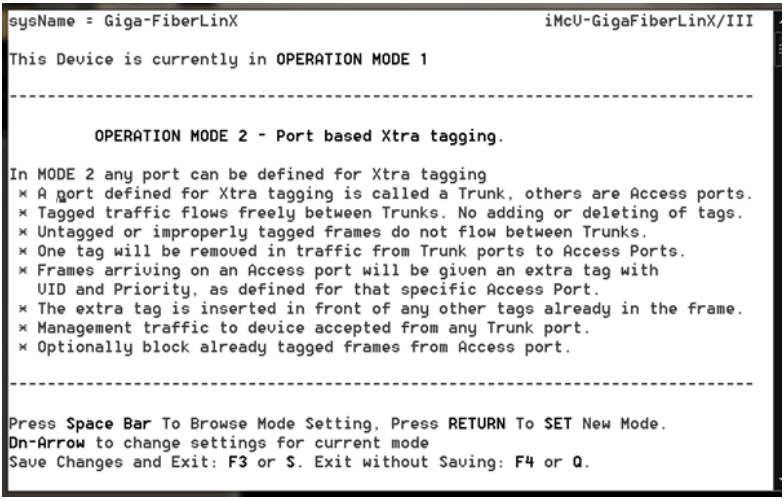


Press the down arrow on the computer keyboard to access additional configuration selections.

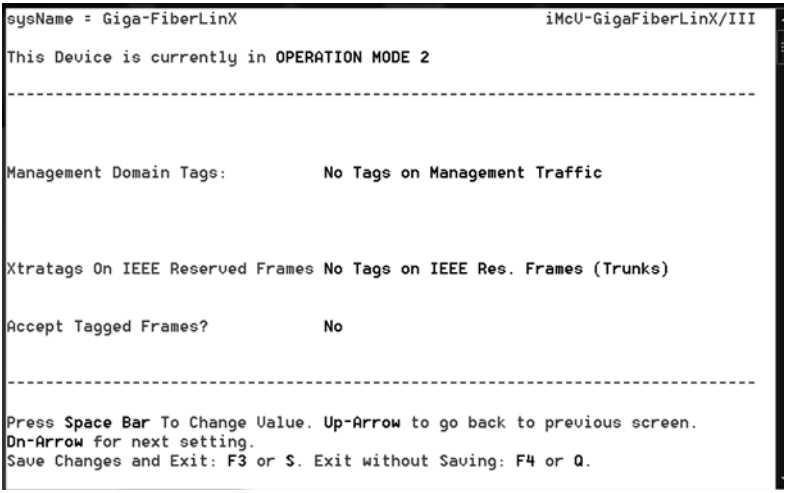


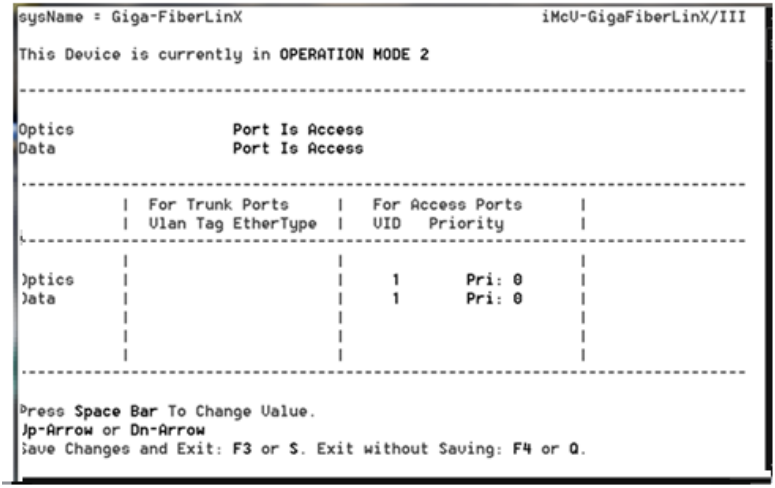
OPERATION MODE 2 PORT BASED XTRA TAGGING

Any port can be configured for extra tags on the frames.

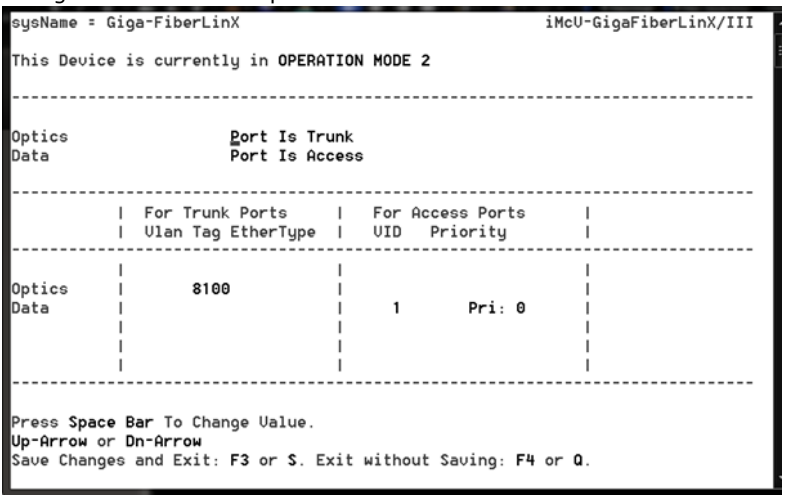


Press the down arrow on the computer keyboard to access the additional configuration commands.





By default, the device is set up to access ports. However, one must be configured to be a trunk port.

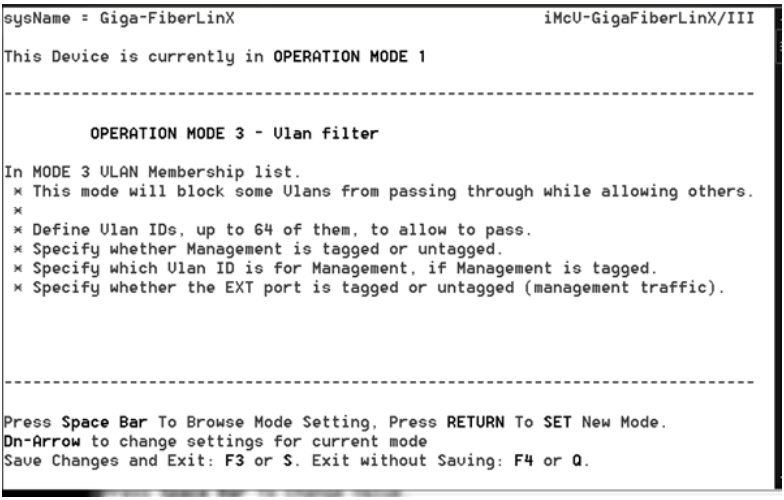


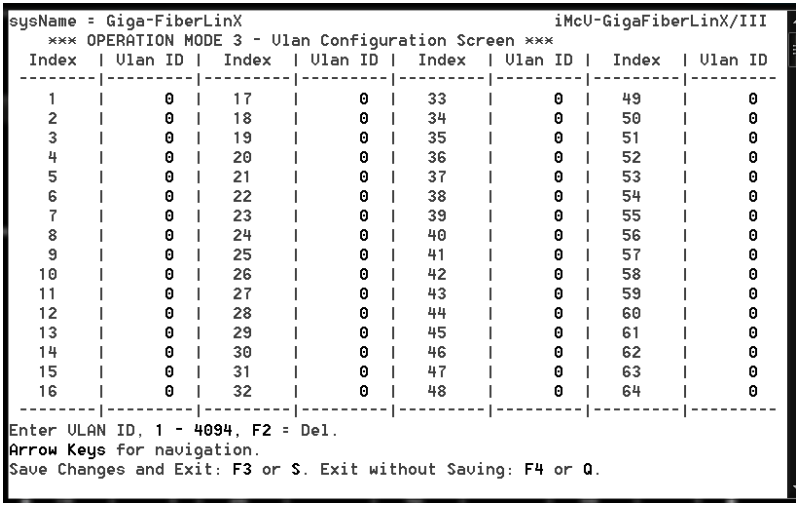
The Optics port and the Data port can be configured as an access port or a trunk port. When configuring as a trunk port, an Ethertype can be user-defined (a trunk port is also defined as a provider port, based on 802.1ad). If an Ethertype value come in a trunk port and is different than the user-defined Ethertype, it

will be treated as an unrecognized VLAN tagged frame. If configuring the port as an access port, enter a VLAN ID between 1 and 4094.

OPERATION MODE 3 VLAN FILTER

In Operation Mode 3, VLAN filters can be configured to allow passing traffic with up to 64 separate VLAN IDs between the Optics port and the Data port. Choose whether you want to enter a tag or no tag for management traffic. Enter up to 64 VLAN IDs in the DATA VLANs filed; VLAN IDs may be between 1 and 4094. (If entering the value of "0", it will disable that entry. The value of "0" is a default setting.)



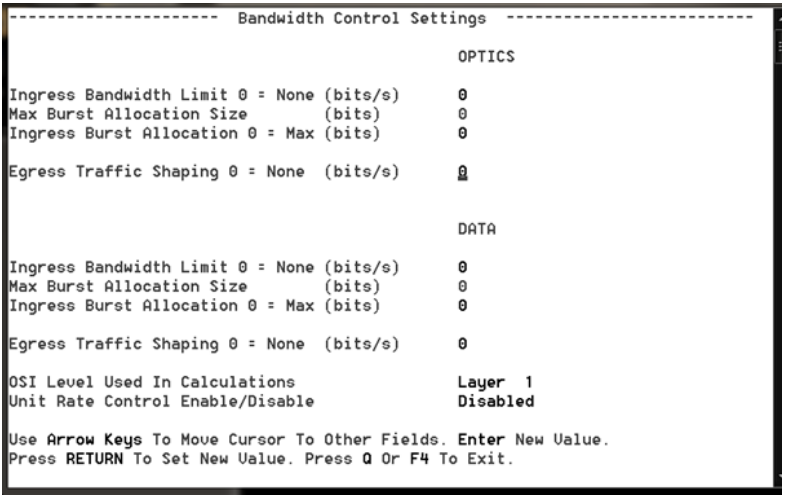


```
sysName = Giga-FiberLinX                                  iMcU-GigaFiberLinX/III
    *** OPERATION MODE 3 - Vlan Configuration Screen ***
 Index  | Vlan ID |  Index  | Vlan ID |  Index  | Vlan ID |  Index  | Vlan ID
--------|---------|---------|---------|---------|---------|---------|---------
   1    |       0 |   17    |       0 |   33    |       0 |   49    |       0
   2    |       0 |   18    |       0 |   34    |       0 |   50    |       0
   3    |       0 |   19    |       0 |   35    |       0 |   51    |       0
   4    |       0 |   20    |       0 |   36    |       0 |   52    |       0
   5    |       0 |   21    |       0 |   37    |       0 |   53    |       0
   6    |       0 |   22    |       0 |   38    |       0 |   54    |       0
   7    |       0 |   23    |       0 |   39    |       0 |   55    |       0
   8    |       0 |   24    |       0 |   40    |       0 |   56    |       0
   9    |       0 |   25    |       0 |   41    |       0 |   57    |       0
  10    |       0 |   26    |       0 |   42    |       0 |   58    |       0
  11    |       0 |   27    |       0 |   43    |       0 |   59    |       0
  12    |       0 |   28    |       0 |   44    |       0 |   60    |       0
  13    |       0 |   29    |       0 |   45    |       0 |   61    |       0
  14    |       0 |   30    |       0 |   46    |       0 |   62    |       0
  15    |       0 |   31    |       0 |   47    |       0 |   63    |       0
  16    |       0 |   32    |       0 |   48    |       0 |   64    |       0
--------|---------|---------|---------|---------|---------|---------|---------
Enter VLAN ID, 1 - 4094, F2 = Del.
Arrow Keys for navigation.
Save Changes and Exit: F3 or S. Exit without Saving: F4 or Q.
```

Note: *It is highly recommended that customers configure the modules to segregate management traffic from data traffic. This is accomplished by assigning VLAN IDs. If the traffic is not segregated, then any tests performed may not get the expected result. By segregating the types of traffic, the management network is secured from the customer's network.*

BANDWIDTH (BW)

Displays settings for Bandwidth configuration.



OPTICS PORT

Ingress Bandwidth Limit (CIR)	Monitors the traffic entering the unit (ingress), discarding traffic that exceeds a fixed Committed Information Rate (CIR) plus Burst Allocation (BA). Frames are not held in queue, they either meet the bandwidth limits and are accepted into the unit or they are dropped.
Max Burst Allocation size (BA)	The BA size is specified in bits; the # of bits above the bandwidth limit before packets are thrown away.
Ingress Burst Allocation	Bandwidth limiting can be set at Ingress of each port individually by setting the MAX Bandwidth Limit in bits/sec. and the BA in bits. Traffic in excess of the bandwidth limit plus BA for any time interval will be dropped. This function utilizes an advanced "Leaky Token-Bucket" algorithm to provide typical resolution under 5% of the set values at all data rate and frames sizes.
Egress Traffic Shaping	Egress Traffic shaping actively controls the transmitter and ***hard*** limits the maximum frame rate that can be sent. Frames can be delayed in the internal buffers of the unit, waiting their turn to

be sent. If the internal buffers are full, excess traffic will be dropped. The Unit Rate Control can be used to alleviate this.

DATA PORT

Ingress Bandwidth Limit

(CIR)

Monitors the traffic entering the unit (ingress), discarding traffic that exceeds a fixed Committed Information Rate (CIR) plus Burst Allocation (BA). Frames are not held in queue, they either meet the bandwidth limits and are accepted into the unit or they are dropped.

Max Burst Allocation size (BA)

The BA size is specified in bits; the # of bits above the bandwidth limit before packets are thrown away.

Ingress Burst Allocation

Bandwidth limiting can be set at Ingress of each port individually by setting the MAX BW Limit in bits/sec. and the BA in bits. Traffic in excess of the bandwidth limit plus BA for any time interval will be dropped. This function utilizes an advanced "Leaky Token-Bucket" algorithm to provide typical resolution under 5% of the set values at all data rate and frames sizes.

Egress Traffic Shaping

Actively controls the transmitter and ***hard*** limits the maximum frame rate that can be sent. Frames can be delayed in the internal buffers of the unit, waiting their turn to be sent. If the internal buffers are full, excess traffic will be dropped. The Unit Rate Control can be used to alleviate this.

OSI Level Used in Calculations

Choose Layer 1, 2 or 3 for the counter, this will determine how many bytes from the Ethernet frame are to be included in the calculations.

(Open Systems Interconnect, referring to the seven layers for TCP/IP)

Layer 1:	Preamble + DA to CRC + IFG
Layer 2:	Frames DA to CRC
Layer 3:	Frames DA to CRC – 18
	(- 4 if frame is tagged)

Explanations:

Preamble	= 8 bytes
DA	= EtherNet Destination Address
CRC	= EtherNet Checksum
IFG	= 12 bytes

Unit Rate Control Enable/Disable Allows the end user to globally configure all Bandwidth settings when enabling Unit Rate Control (Flow Control). If the END device connected to the port also has Flow Control enabled, this will ensure packets will not be dropped.

OSI Notes: *The Bandwidth Limit functions can be adjusted to only count the Layer 1, 2, or 3 portions of the physical line rate. Layer 1 is used to relate Bandwidth to the physical line rate where a 100BaseT Ethernet line can carry a MAX bandwidth of 100Mbps. Layer 2 may be more useful when the Ethernet Frame may be carried over several different physical protocols such as SONET or SDH. Only the bandwidth required by the Ethernet frame is counted, making this a more consistent number over different protocols. Layer 3 counting could be used when a relationship to the actual customer data or line payload is required. If a 10 Mbps customer file needs to be sent in one second, then a minimum bandwidth limit of 10Mbps would need to use Layer 3 counting to allow this.*

It must be noted that only Layer 1 counting is not affected by the size of the Ethernet frame. At 64 byte Ethernet frames, the MAX bandwidth the line can support at Layer 2 is only 76.2% of the line rate. This maximum falls to 54.8% of the line rate when counting is further limited by only counting Layer 3 payload data.

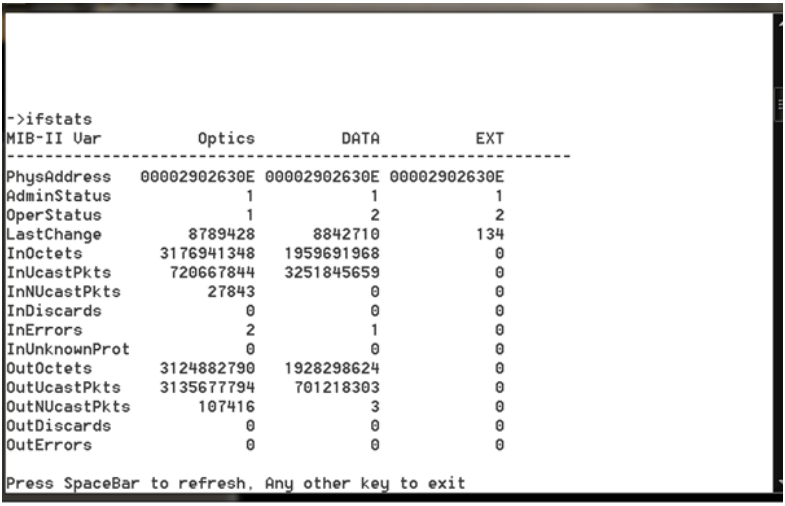
VERSION

Entering **version** will display the version of the firmware operating the iMcV-Giga-FiberLinX-III.

VIEWING PORT STATISTICS (IFSTATS)

To view port statistics on the iMcV-Giga-FiberLinX-III, enter ifstats. This will open a screen displaying information on packets received and transmitted as defined by MIB-II standard RFC 1213.

Pressing the **Space Bar** will refresh the data on the screen.



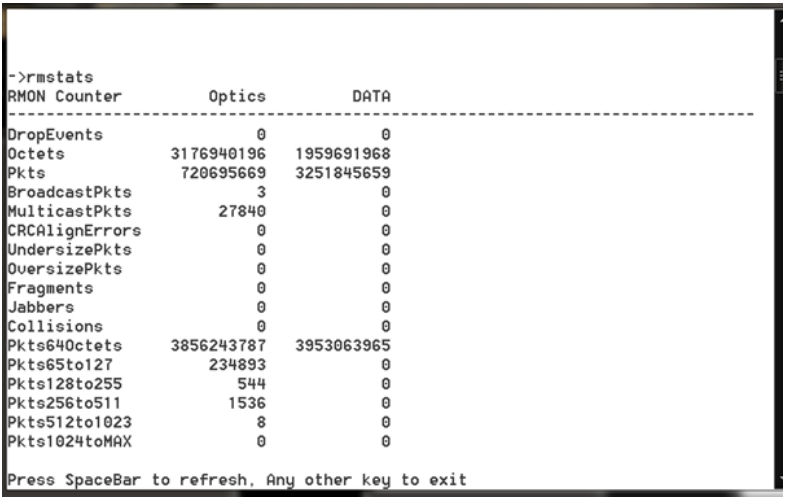
```
->ifstats
MIB-II Var          Optics         DATA          EXT
-------------------------------------------------------------
PhysAddress    00002902630E 00002902630E 00002902630E
AdminStatus               1            1             1
OperStatus                1            2             2
LastChange          8789428      8842710           134
InOctets         3176941348   1959691968             0
InUcastPkts       720667844   3251845659             0
InNUcastPkts          27843            0             0
InDiscards                0            0             0
InErrors                  2            1             0
InUnknownProt             0            0             0
OutOctets        3124882790   1928298624             0
OutUcastPkts     3135677794    701218303             0
OutNUcastPkts       107416            3             0
OutDiscards               0            0             0
OutErrors                 0            0             0

Press SpaceBar to refresh, Any other key to exit
```

VIEWING PORT RMON STATISTICS (RMSTATS)

To view port RMON (Remote MONitoring) statistics on the iMcV-Giga-FiberLinX-III, enter rmstats. This will display RMON information on packets received as defined in RFC 2819 for RMON.

Pressing the **Space Bar** will refresh the data on the screen.



```
->rmstats
RMON Counter          Optics          DATA
-------------------------------------------------------------------------------
DropEvents                 0             0
Octets            3176940196    1959691968
Pkts               720695669    3251845659
BroadcastPkts              3             0
MulticastPkts          27840             0
CRCAlignErrors             0             0
UndersizePkts              0             0
OversizePkts               0             0
Fragments                  0             0
Jabbers                    0             0
Collisions                 0             0
Pkts640ctets      3856243787    3953063965
Pkts65to127          234893             0
Pkts128to255            544             0
Pkts256to511           1536             0
Pkts512to1023             8             0
Pkts1024toMAX             0             0

Press SpaceBar to refresh, Any other key to exit
```

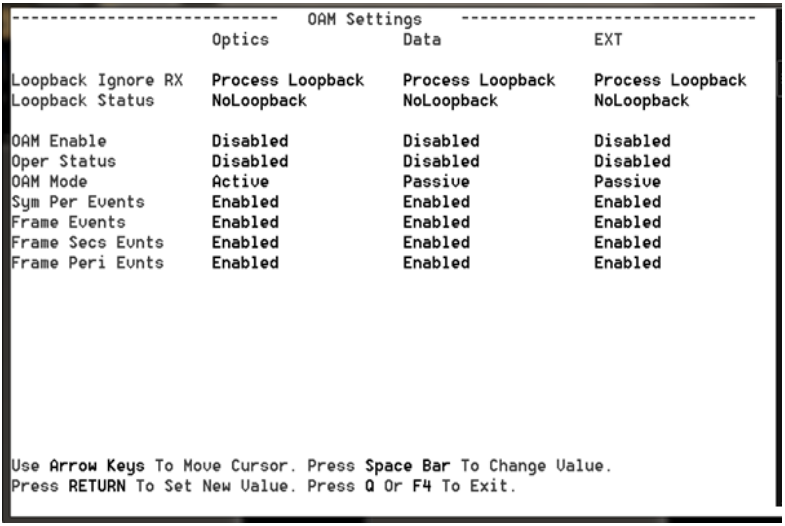
SYSTEM DESCRIPTION (SYSDESCR)

The sysDescr allows the end-user to enter a description for the B&B Electronics device. Within the iView² GUI, a name or some kind of identifier can be entered into the text box labeled **Description**. Once that description is saved, the identifier will be maintained, even if power is interrupted to the unit.

REBOOT

Entering reboot will save settings and reboot the iMcV-Giga-FiberLinX-III.

(OPERATION AND ADMINISTRATION MANAGEMENT) OAM



Two modes of operations control the OAM function, Passive and Active. Passive mode is the default mode. OAM Enable is defaulted to Enable.

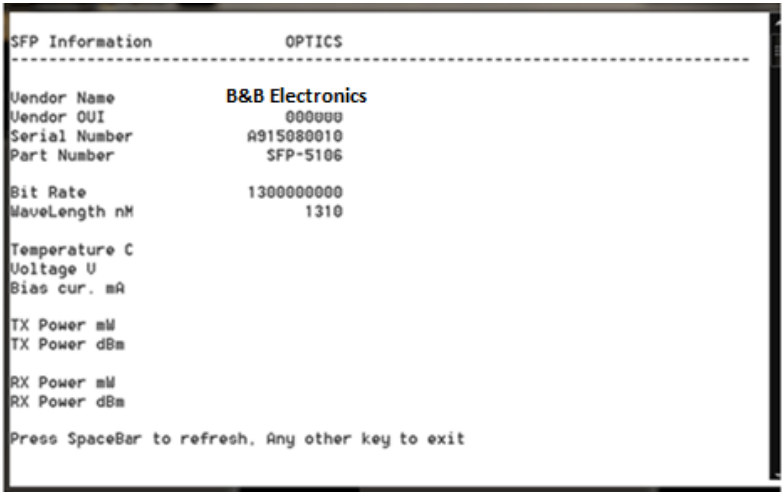
OAM AH passive/active is available on the fiber SFP ports and TX ports

- Supports Discovery functions on the SFP ports.
- Supports reporting OAM Flag Events (Link Fault, Critical Event, and Dying Gasp)
- Supports Loopback

VIEWING SFP STATISTICS (SFPSTATS)

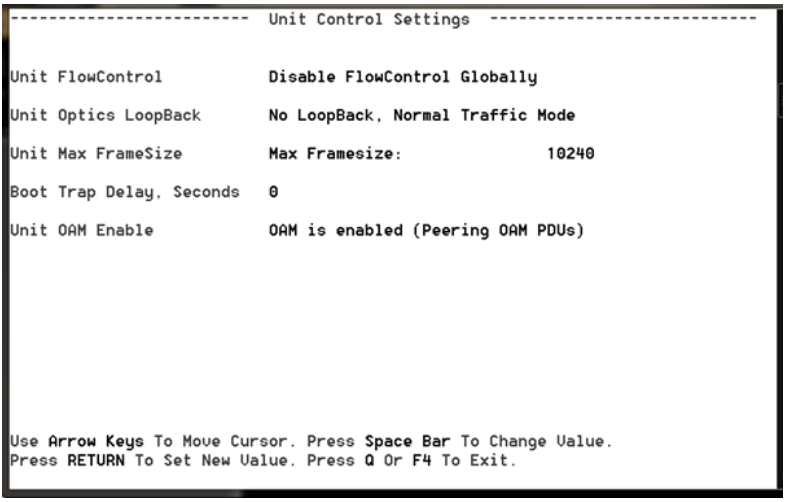
To view SFP statistics on the iMcV-Giga-FiberLinX-III, enter sfpstats. This will open a screen displaying SFP information, including vendor, serial number, bit rate and other options.

Pressing the Space Bar will refresh the data on the screen.



UNIT

Unit FlowControl displays the following screen:

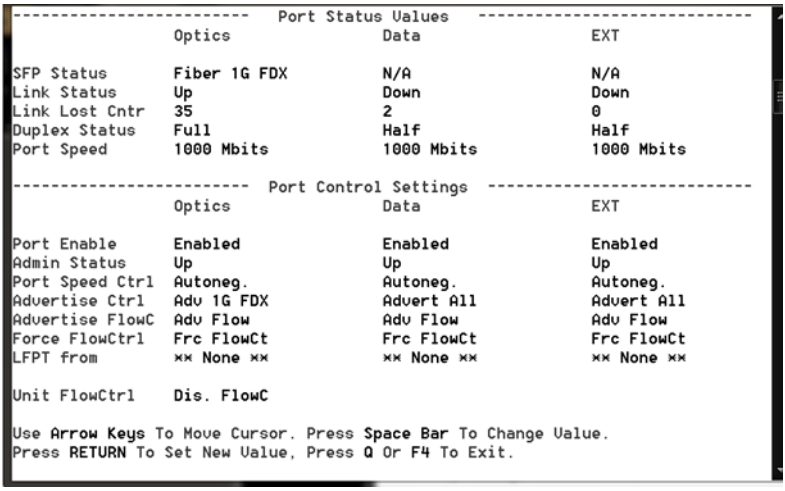


Unit FlowControl	Enable/Disable FlowControl functionality on the unit. This must be enabled for FlowControl to function on any of the ports.

Unit Optics Loopback	There are five selections to determine connectivity over the fiber run.
Unit Max Framesize	Choose from three selections of frame sizes.
Boot Trap Delay Seconds	When connected to a switch, such as a Cisco switch, there is a delay time for a boot sequence (typically about 30 seconds). Enter a value of 30 seconds or more so that the device does not send a Trap indicating the link is down.
Unit OAM Enable	Allows the end-user to enable or disable OAM. OAM configuration can be set up via the CLI by accessing the submenu and typing in the command OAM.

Port Configuration (port)

Serial/Telnet sessions display port status as well as allowing configuration of some port features. Type **port** and press **Enter** to be taken to the Port screen. From this screen, view the port speed, duplex and link status.



The Port screen contains the following commands:

Port Enable	Enable/Disable the port. (Select Enable to enable the port.)
Admin Status	Set Administration status. (Select UP to enable/disable management through the port.)

	Both settings must be enabled to enable the port.
Port Speed Ctrl	Set the port manually or for Auto Negotiation for the Twisted Pair ports. By default, the setting is AN. A Force mode can be selected for both speed and duplex at 10, 100 or 1000Mbps.
Advertise Ctrl	This is the Selective Advertising feature. Selective Advertising, when used in combination with Auto Negotiation, advertises the configured speed and duplex mode for the twisted pair ports. Auto Negotiation must be enabled for Selective Advertising.
Advertise FlowCtrl	This enable/disable feature is the selection for Advertising Flow Control. Choose this option to change based on the link partner's capability; by default, it is enabled as Advertise Flow.
Force FlowCtrl	This is the selection for Force Flow Control; choose this if enabling Flow Control. You can select Force and select it to automatically negotiate based on the link partner's capability.
LFPT from	This is the Link Fault Pass Through (LFPT) diagnostic function. By default, this is disabled. You can choose any two ports to configure LFPT in order for the device to report a failure to one port if a fault occurs on another port.
Unit FlowCtrl	This is the selection for enabling/disabling global flow control. Once this is set to enabled, you can select the flow control settings for each port as listed in the above list.

LINK FAULT PASS THROUGH (LFPT)

Link Fault Pass Through (LFPT) is a diagnostic feature that can be enabled or disabled. When enabled, it allows the end user to visually detect that the Link and its associated LEDS on the front faceplate of the module are not lit when a fault occurs. LFPT can be enabled through the SNMP software (iView²) or serial/Telnet.

The iMcV-Giga-FiberLinX-III has three ports: Data, Optics and EXT management. LFPT can be enabled between any two ports. For example, if LFPT is configured as "from" the Optics port "to" the Data port, then when a fault occurs on the Optics port , both LEDs for those ports will extinguish. The end-user can decide which port he wants the fault to be reported to, based on which port he wants to be in control. LFPT allows the fault to be reported down the line through to the link partner at the end, such as a switch or a router.

LFPT can be used in addition to setting up SNMP Traps for link up/link down. LFPT provides a visual way to determine that link is down, and an SNMP Trap provides a notification of a link down to a designated workstation.

CONFIGURATION FILE SAVE / RESTORE FUNCTION

REQUIREMENTS

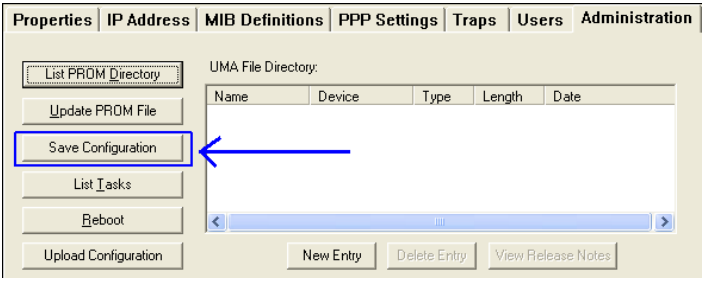
The Configuration File Save/Restore Function allows a user the ability to backup all the configuration settings of a unit. With this backup, a user can restore settings to a unit if necessary or use this backup to apply the same settings to a different unit.

All configurable managed objects are saved in a configuration file that is stored in the unit's Large File Area. This includes all configurable settings such as VLAN configurations, IP Address configuration and SNMP agent settings. The configuration file can be transferred from the unit to a PC and saved to disk through the iView^2 (iConfig view) utility. The configuration file can be transferred from a PC to a unit of the same type through iView^2 (iConfig view) or TFTP into the unit's Large File Area. After the transfer is complete, the unit copies the configuration to flash and reboots.

The configuration file's contents is device-type specific and can be identified by iView^2 (iConfig view) as a configuration file as well as to what type of device it is applicable to.

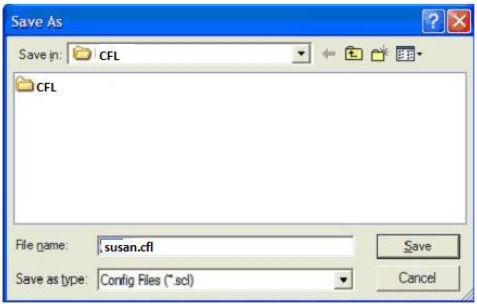
SAVING A CONFIGURATION FILE TO DISK:

From the Administration Tab in iView^2 (iConfig view) click the **Save Configuration** button:



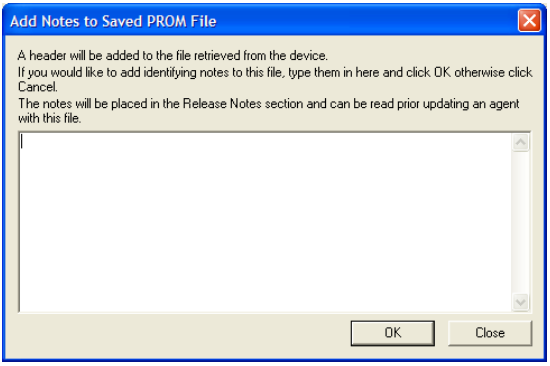
Save Configuration screen.

The user is prompted for a filename:



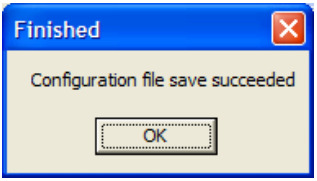
Save As screen.

The user is prompted to enter any notes to the header of the saved file for future reference when uploading the file through iView^2 (iConfig view):



Configuration Notes screen.

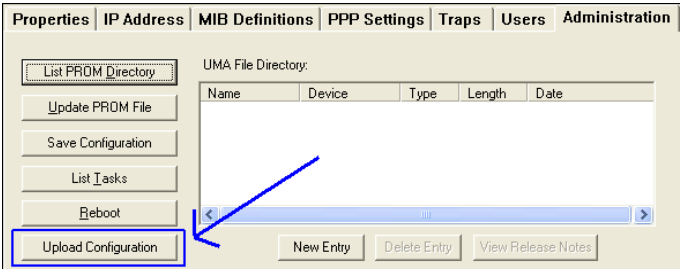
After the file transfer from the device to disk, the user is notified of the status:



Configuration Saved screen.

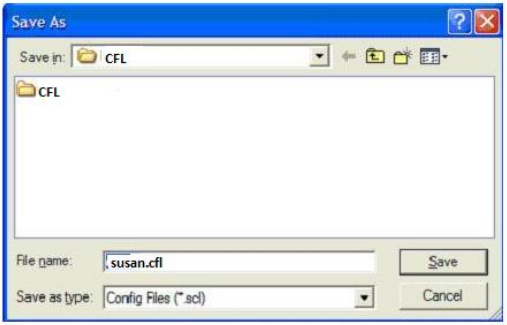
UPLOADING A SAVED CONFIGURATION FILE THROUGH IVIEW^2 (ICONFIG VIEW)

From the Administration Tab in iView^2 (iConfig view) click the **Upload Configuration** button:



Upload Configuration screen.

The user will be prompted to select a configuration file. Once selected, the user can also view any notes that were added when the file was saved:



After selecting the configuration file, the file upload process begins; when completed, the user is notified of the status and also notified that a reboot is necessary for the new configuration to become active:

By design, the IP Address configuration currently on the device is kept intact and not overwritten by the new configuration file.

CHAPTER 4: OPERATION

Before using iMcV-Giga-FiberLinX-III, decide the following:

- Will iMcV-Giga-FiberLinX-III units be located at only one or at both ends of the fiber?
- How will the iMcV-Giga-FiberLinX-III units be managed?
- Will VLAN IDs be defined?

HOW MANY iMcV-GIGA-FIBERLINX-III UNITS WILL BE USED?

- Two for Host/Remote applications–allows IP-less management providing greater security
- One for a single unit application
- One unit as a host and a Giga-AccessEtherLinX-II or IE-MultiWay as a Remote

HOW WILL THE iMcV-GIGA-FIBERLINX-III BE MANAGED?

The iMcV-Giga-FiberLinX-III can be managed through any of its three ports (and any combination thereof) or from the chassis. Using the EXT MGMT/OPTICS (or UPLINK) port combination separates management traffic from the data and provides the highest level of security. UMA management does not require an IP address.

WILL VLAN IDS BE DEFINED?

When VLAN traffic is used with specific tags on the DATA port, it is necessary to define VLAN IDs (refer to *VLAN Operation Modes* section). VLANs may be tagged, untagged, or double-tagged.

SMALL FORM-FACTOR PLUGGABLE PORTS (SFP)

iMcV-Giga-FiberLinX-III modules are available with one optional SFP port. The SFP port can support a 100Mbps or 1000Mbps fiber SFP. It can also support a 1000Mbps or 10/100/1000Mbps copper SFP. SFPs must be MSA-compliant, with or without Digital Diagnostics Monitoring Interface (DDMI). The SFP port will accept third-party SFPs. DDMI statistics provide real-time access to transceiver operating parameters such as voltage, temperature, laser bias current, and both transmitted and received optical power. DDMI information can be accessed in iView^2 by clicking Tables > SFP Info.

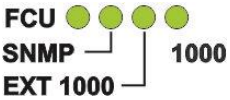
> ***Note:*** *iMcV-Giga-FiberLinX-III has been tested with the B&B Electronics SFP modules. You can install any MSA-compliant SFP module. However, B&B Electronics does not guarantee the functionality of non- B&B Electronics SFP modules due to possible non-conformity with MSA design standards.*

CHAPTER 5: LED OPERATION

The iMcV-Giga-FiberLinX-III features diagnostic LEDs as shown below.

TX/FX LEDS

Diagnostic LEDs



FCU (Far CPU Up):

- Host: Glows green when far end is detected.
- Remote: Glows green when unit is configured as Remote.
- Standalone Unit: LED remains OFF.

SNMP:

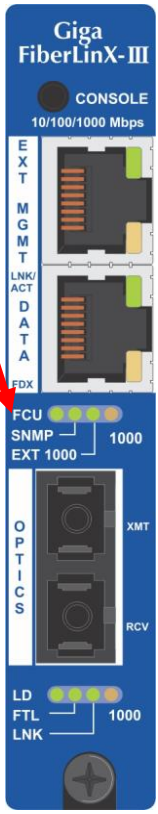
- This LED glows green to indicate that this is an SNMP manageable module.

EXT 1000:

- Glows green when EXT MGMT port is operating at 1000 Mbps.

1000:

- Glows green when the fiber is operating at 1000 Mbps.



Optics Port LEDs

LD:

Glows green when "light" is detected on fiber input.

FTL (Far TX Link):

- Host: Glows green when a link is established on remote (far-end) DATA port.
- Remote: Glows green when unit is configured as Remote.
- Standalone: LED remains OFF.

LNK (Link):

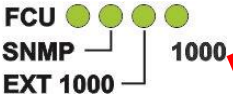
- Glows green when link is established on port.

1000:

- Glows green when the fiber is operating at 1000 Mbps.

TX/SFP LEDS

Diagnostic LEDs



FCU (Far CPU Up):

- Host: Glows green when far end is detected.
- Remote: Glows green when unit is configured as Remote.
- Standalone Unit: LED remains OFF.

SNMP:

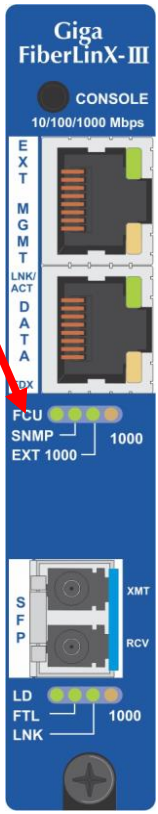
- This LED glows green to indicate that this is an SNMP manageable module.

EXT 1000:

- Glows green when EXT MGMT port is operating at 1000 Mbps.

1000*:*

- Glows green when the fiber is operating at 1000 Mbps.



Optics Port LEDs

LD:

- Glows green when "light" is detected on fiber input.

FTL:

- Host: Glows green when a link is established on remote (far-end) DATA port.
- Remote: Glows green when unit is configured as Remote.
- Standalone: LED remains OFF.

LNK (Link):

- Glows green when link is established on port.

1000:

- Glows green when the fiber is operating at 1000 Mbps; no LED for 100Mbps SFP.

CHAPTER 6: TROUBLESHOOTING

- If two iMcV-Giga-FiberLinX-III Host/Remote units are not communicating properly, make sure one is a Host and the other is a Remote. If the second unit is not configured as a Remote, it will be recognized as a Standalone unit and the Host and Remote units will not communicate with each other properly. Setting the OPTICS port management DIP Switch 3 to the **ON** position on both modules will allow performing a simple PING test. This is possible only if PINGing from the computer through the optics uplink port, which is highly unusual. The EXT or data switch must be enabled and connected to the computer to ping either device.

- If a link on a twisted pair port cannot be established, make sure the cable is in working order; if not, replace the cable (iMcV-Giga-FiberLinX-III includes Auto-Cross; a link should be detected regardless of the CAT5 cable type).

- If a fiber link cannot be established, make sure that the fiber transceivers on iMcV-Giga-FiberLinX-III are not over/under driving the fiber receivers. Make sure the fiber mode and wavelength on both iMcV-Giga-FiberLinX-III units match (i.e., both are 1310 nm single-mode fiber).

- Make sure the port speeds on iMcV-Giga-FiberLinX-III match those on the end devices connected to iMcV-Giga-FiberLinX-III. B&B Electronics recommends configuring all connected devices to Auto Negotiation, or if using Force mode, ensure speed and duplex settings match.

- If using single-strand fiber, make sure the pair of devices is compatible single-strand fiber devices. For example, an iMcV-Giga-FiberLinX-III TX/SSFX-SM1310-SC which transmits 1310 nm and receives 1550 nm must be connected to a device which transmits 1550 nm and receives 1310 nm.

- If using an iMcV-Giga-FiberLinX-III unit with an SFP port and it is not functioning properly or at all, make sure that the installed SFP module is the correct speed (1000 Mbps).

- If management is not functioning properly, make sure that the DIP Switch settings are accurate for the port to be managed.

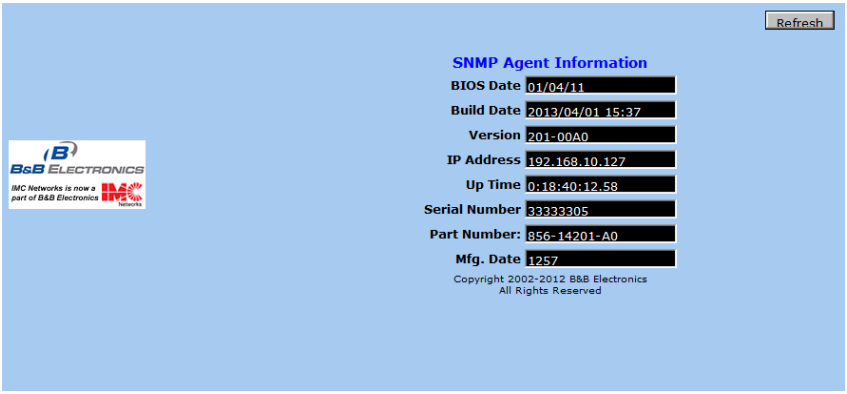
- To restore the unit to factory default settings, use the cleandb function via the serial port (refer to the Device-Specific Options from the Command Line section for more information). This is especially helpful if the module may have been configured improperly. If restarting to factory defaults is necessary, B&B

Electronics recommends using this function on both units in Host/Remote applications, then reconfiguring all settings.

- Ensure READ/WRITE Community Strings for iMcV-Giga-FiberLinX-III and iView² are the same.
- Ensure none of the twisted-pair ports on the iMcV-Giga-FiberLinX-III are connected to the twisted-pair port on the Management Module in an iMediaChassis series chassis.

THE AGENT INFO SCREEN

Information about the SNMP Agent software managing the iMcV-Giga-FiberLinX-III is contained on this screen.



CHAPTER 7: FIBER OPTIC CLEANING GUIDELINES

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.

2. Dust caps are installed by the manufacturer to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Should it be necessary to disconnect the fiber device, reinstall the protective dust caps.

3. Store spare caps in a dust-free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.

4. If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

APPENDIX A: IVIEW² MANAGEMENT SOFTWARE

iView² is the management software that features a Graphical User Interface (GUI) and gives network managers the ability to monitor and control the manageable B&B Electronics products.

iView² is available in several versions, including a WebServer version 3.0, and can also function as a snap-in module for HP OpenView Network Node Manager and other third party SNMP Management software.

iView² supports the following platforms:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7

Please see the SNMP Management Module manual for software configuration options.

IVIEW² (ICONFIG VIEW)

iView² (iConfig view) is an in-band utility used for SNMP configuration for B&B Electronics' SNMP-manageable devices.

The iView² (iConfig view) feature allows the following to be performed:

- Set an IP address, subnet mask and default gateway
- Define community strings and SNMP Traps

iView² (iConfig view) also includes an authorized IP address system and restricted access to MIB groups which are supported by B&B Electronics' manageable devices. These extra layers of security do not affect SNMP compatibility. iView² (iConfig view) can upload new versions of the system software and new MIB information. It also includes diagnostic capabilities for faster resolution of technical support issues.

USING IVIEW²

iView² is management software that provides network management in an easy to use GUI. Once iView² is installed on a network management PC using a Windows operating system, use the Start menu to access iView².

> ***Note:*** *Windows SNMP services must be installed to receive Traps.*

The autoscan feature of iView² will detect B&B Electronics devices on an active subnet and list them in the network outline. Click the connection for the iMcV-Giga-FiberLinX-III to open its iView² screen. To perform additional configuration, select the iView² iConfig view icon on the toolbar in iView². This allows a session to be launched, and the default password/username is admin/admin. Additional private usernames and passwords can be entered in the USERS tab. If the list of passwords is not maintained, the usernames and passwords can be reset by opening a CLI session and typing in the cleandb command. This will reset all but the IP address of the device.

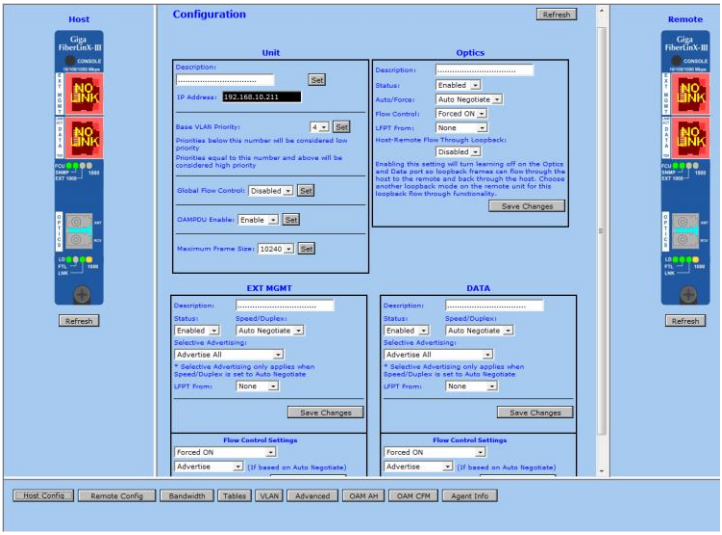
iView² main screen.

The following functions can be performed via iView²:

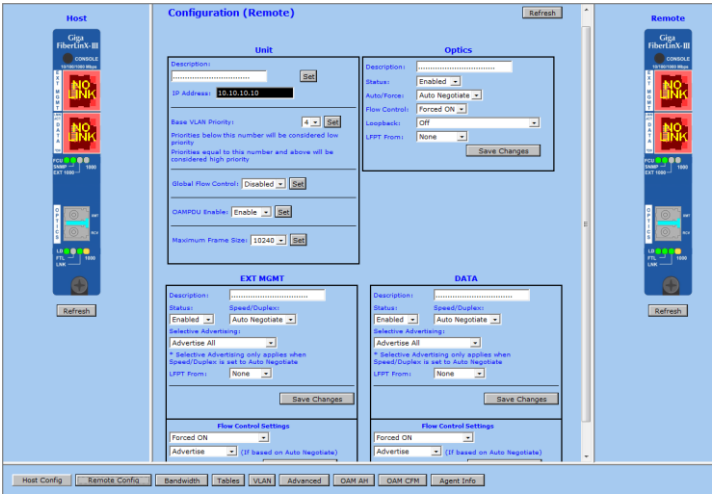
Function	Description
Unit Configuration	Display/modify unit information
Port Configuration	Display/modify port data
Bandwidth	Displays settings for Bandwidth configuration
Tables	Display statistics tables, including Unit and Port tables, RMON statistics, MIB-II ifTable and SFP Info.
VLAN	Provides configuration for VLAN IDs per port
Advanced	Reboot the module; also allows boot trap delay
OAM AH	Configure passive and active 802.3ah
OAM CFM	Perform 802.1ag for connectivity fault management
Agent Info	Displays SNMP agent data

UNIT CONFIGURATION

Select Unit Configuration to display/modify unit information, including IP address (display only, modification available through iConfig), global flow control, maximum frame size, and OAMPDU. The Unit Configuration is available within the Host Config settings and the Remote Config settings.



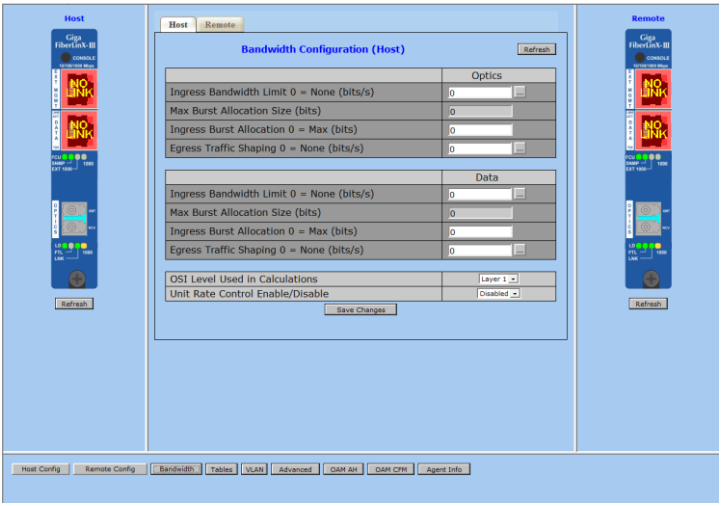
Host Configuration screen.



Remote Configuration screen.

BANDWIDTH

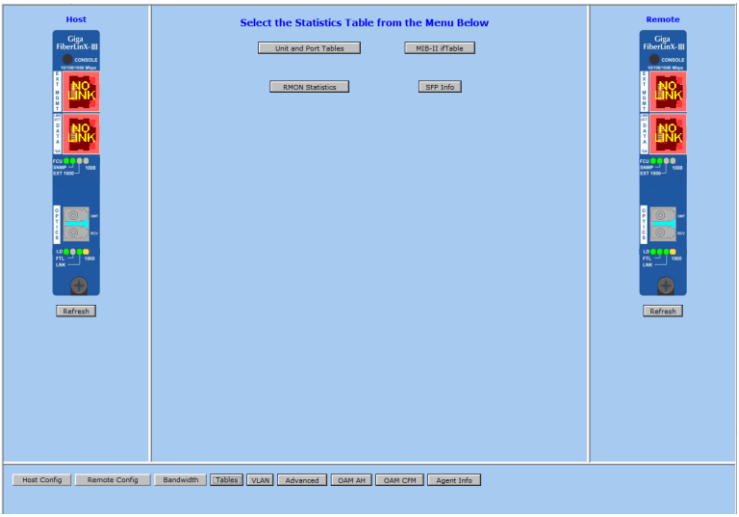
Select Bandwidth to display configured bandwidth settings for the DATA or the Optics port.



Bandwidth Configuration screen.

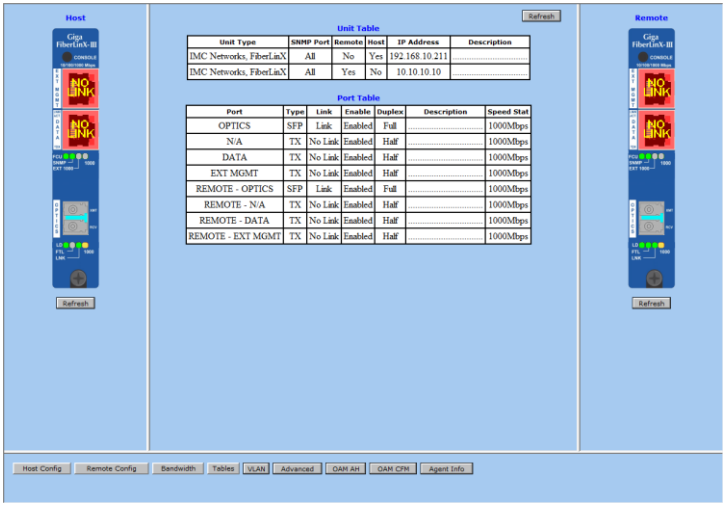
TABLES

Select tables to display a screen on which you can extract SFP information, RMON statistics, Unit and Port Tables, or MIB-II ifTable.



Tables main screen.

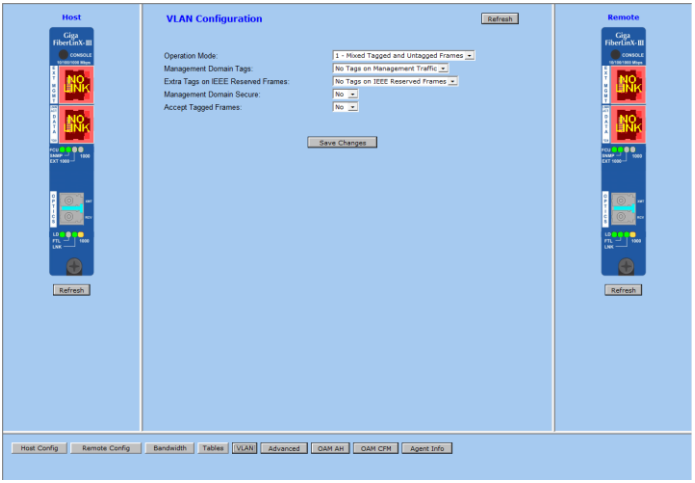
Select Unit and Port Tables to display the following information: the link status, if the port is enabled/disabled, SNMP status, speed status on each port and other vital statistics.



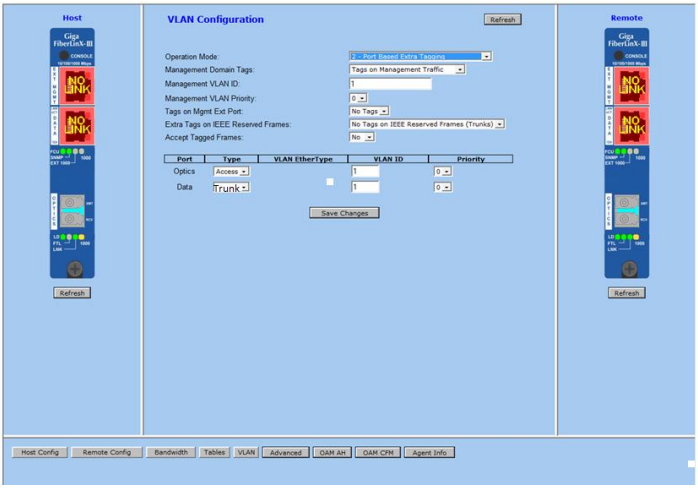
Unit and Port Tables screen.

VLAN

Enter a VLAN ID between 1 and 4,094; possible priority settings are 0 (lowest priority) through 7 (highest priority).

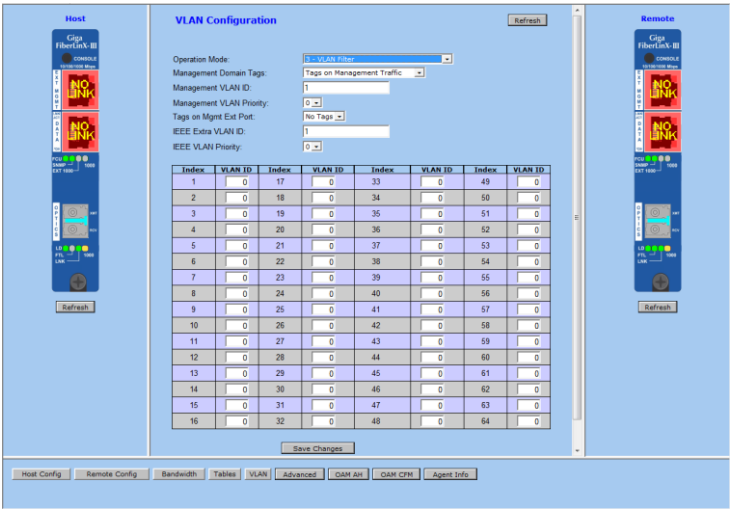


VLAN Configuration screen showing Operation Mode 1.



VLAN Configuration screen showing Operation Mode 2.

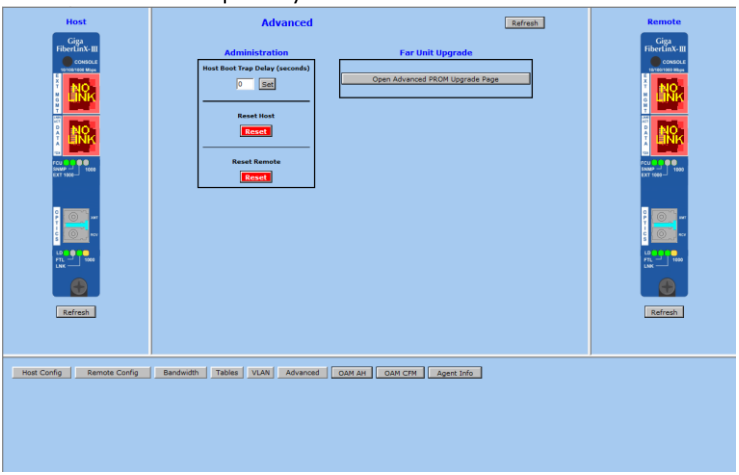
NOTE: the VLAN configuration only applies to the Host. The Remote unit must be accessed directly via a separate IP address or through Telnet.



VLAN Configuration screen showing Operation Mode 3.

ADVANCED

Select Advanced button to upgrade a Host/Remote unit and reset the Host or Remote or set the Boot Trap Delay.



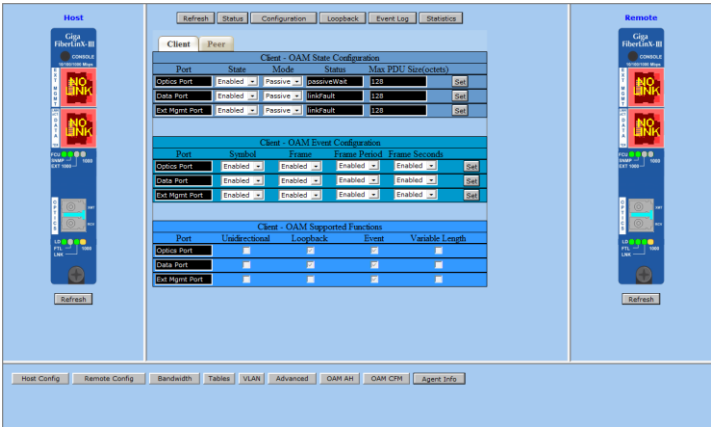
Advanced screen.

OAM AH

Select OAM AH to display the following screen and monitor the status, configuration, loopback, event log and statistics.

OAM AH screen.

From the above screen, select Configuration to display state and event configuration information as well as OAM supported functions:



OAM AH: Configuration screen.

LOOPBACK TESTING

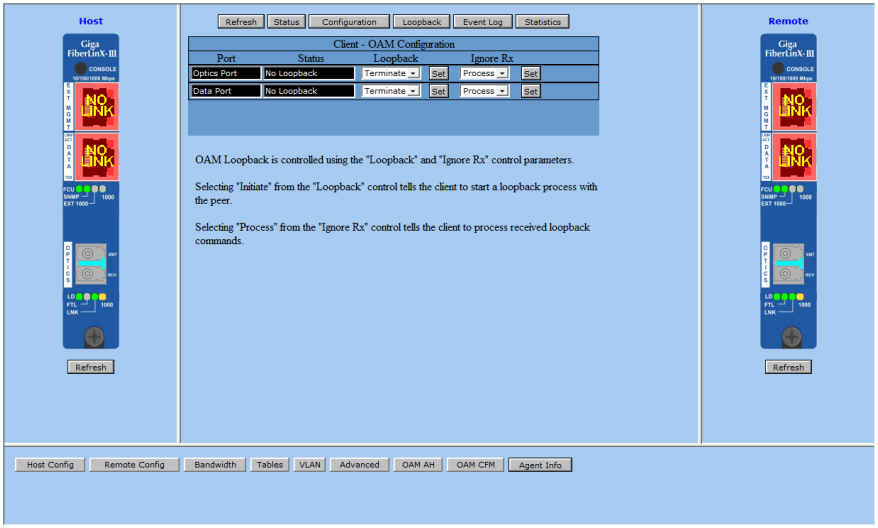
The iMcV-Giga-FiberLinX-III includes Loopback testing functionality. This feature is selectable via iView² within the OAM AH configuration. The menu of choices for all ports includes:

- Terminate/initiate
- Process/ignore

OAM Loopback is controlled by using the "Loopback" and "Ignore Rx" control parameters. Selecting "Initiate" from the "Loopback" control tells the client to start a loopback process with the peer. Selecting "Process" from the "Ignore Rx" control tells the client to process received loopback commands.

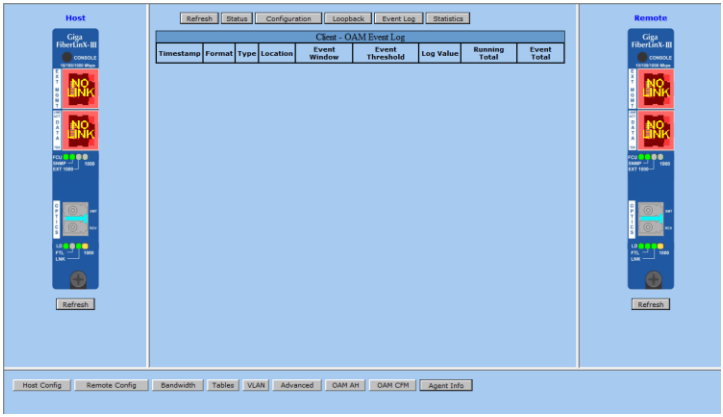
Only AH "Active" units can send a Loopback command to a remote unit. Either Active or Passive AH units can respond to a Loopback command, but must be configured to process these commands or they will be ignored.

Select Loopback to display loopback data and define how loopback is configured:



OAM AH: Loopback screen.

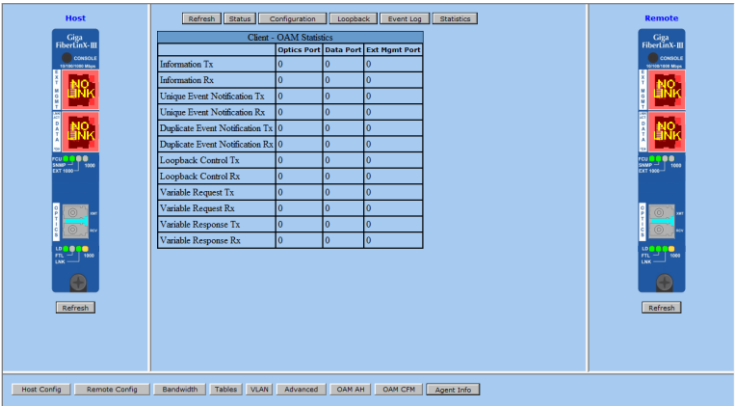
Select Event Log to display the OAM event log showing fault changes that have occurred via OAM configuration:



OAM AH: Event Log screen.

The OAM Event Log table displays a history of the threshold crossing events and non-threshold crossing events that have occurred at the Ethernet OAM AH Level. There is a maximum of 8 events that can be displayed. When the maximum number of events is reached older entries are deleted to make room for newer entries.

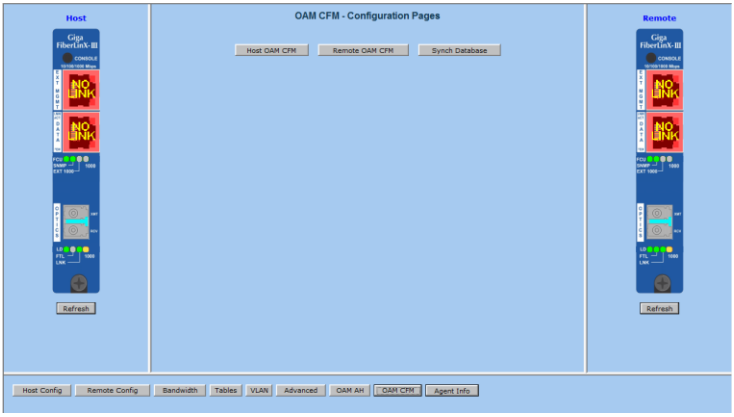
Select Statistics to display OAM statistics:



OAM AH: Statistics screen.

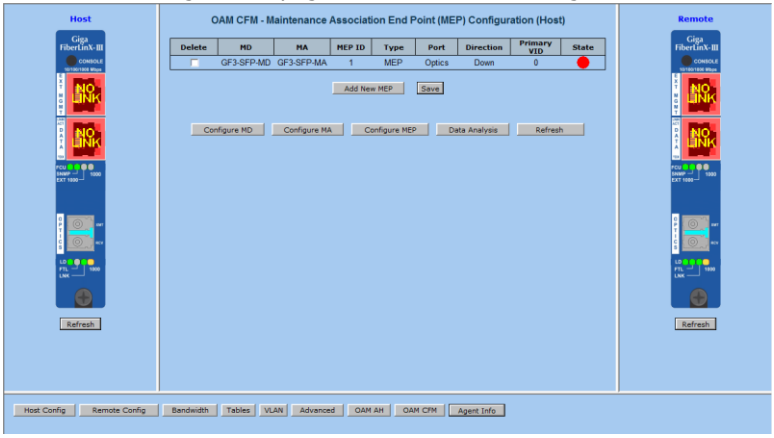
OAM CFM

Select OAM CFM to display the following screen and perform administrative control for Maintenance Domains (MDs), Maintenance Assocations (MAs) and Maintenance Association End Points (MEPs). The page contains a list of the local MEPs and provides menu controls to access the administrative functions associated with Create, Delete, and List MD, MA, and MEP information. An example of a default OAM CFM Configuration page is shown below:



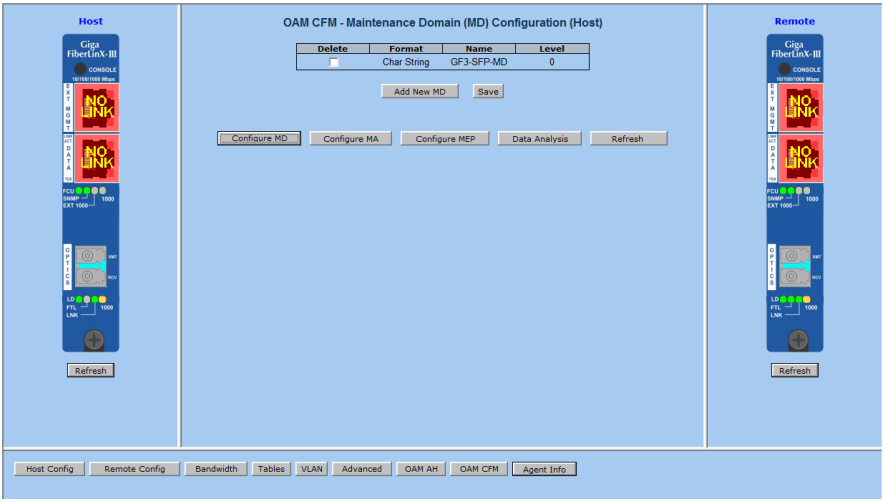
OAM CFM: Configuration screen.

The OAM CFM Configuration page defaults to the "Configure MEP" selections.



OAM CFM: MEP Screen.

For the first-time configuration, the user must first create an MD, then an MA, then local and peer MEPs can be added. To create an MD, select the "Configure MD' button to display the OAM CFM Maintenance Domain Configuration page as shown below:

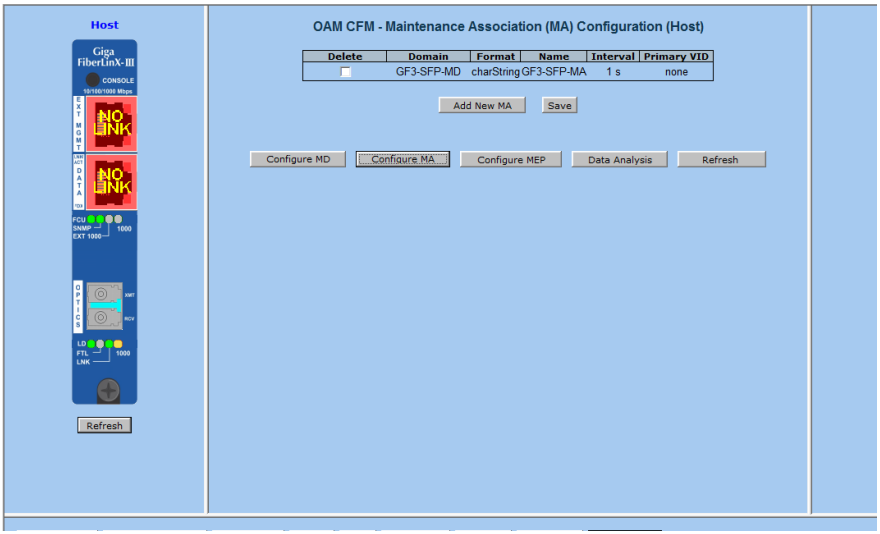


OAM CFM: Maintenance Domain Configuration screen.

> ***NOTE:*** *iView² will automatically display this page if there is no MD yet defined when the user attempts to access any other menu control.*

Enter the MD name and select the level for the domain. To cancel the MD, select **Delete**. To store the MD, press **Save** and the screen is refreshed.

For the first configuration, create an MA after the MD. Select "Configure MA" to display the OAM CFM Maintenance Association Configuration screen as shown below:

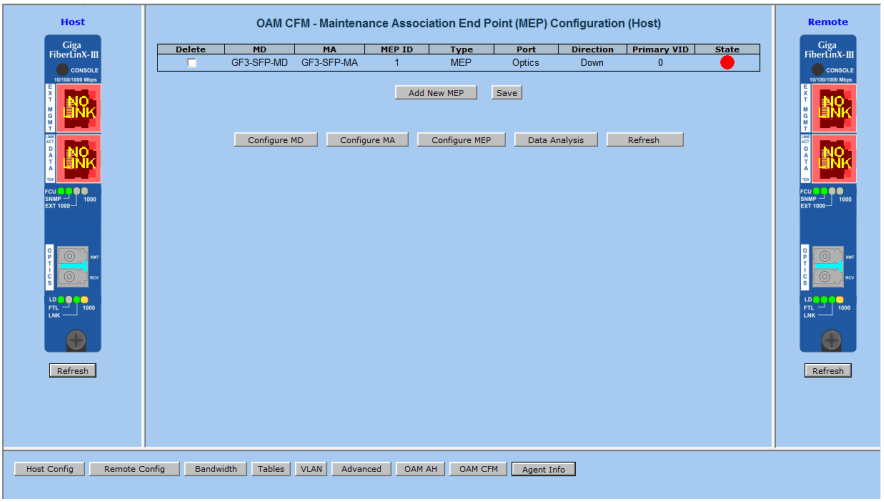


OAM CFM: Maintenance Association Configuration screen.

> ***NOTE:*** *iView² will automatically display this page if there is no MD yet defined when the user attempts to access any other menu control.*

Select the **Domain** and **Format**, and enter the MA name in the **Name** field. Use **Interval** to select the interval for continuity check messaging, and choose **Primary VID**, if applicable. To cancel the MA without saving, select **Delete**. To store the MA, select **Save** and the screen is refreshed.

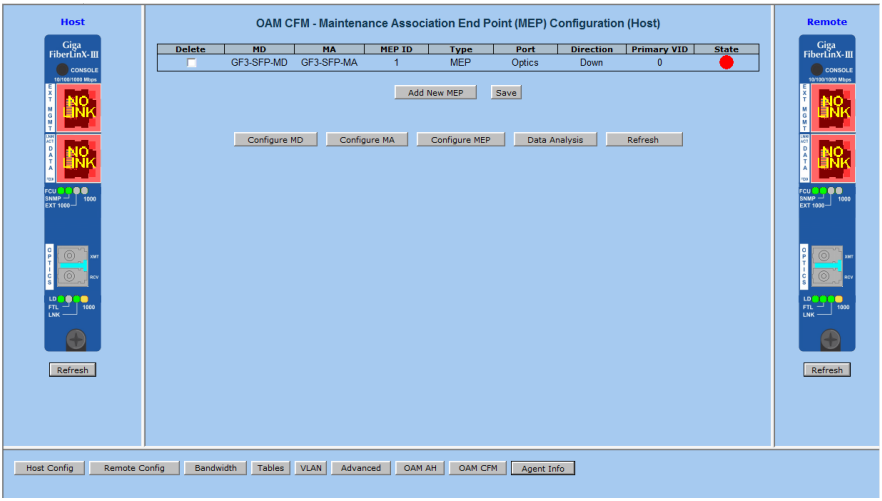
For a first time configuration, the next step is to create a MEP. Select **Add New MEP** to display the OAM CFM MEP configuration page as shown below:



OAM CFM: MEP Configuration screen.

Select the MD, MA, enter the MEP ID, select the appropriate type, port and direction, and select the **Primary VID**, if applicable. To cancel the MEP without saving, select **Delete**. To store the MEP, select **Save** and the screen is refreshed.

Once the user has configured the MD, MA and at least one MEP, a particular instance of an MEP can be accessed for more detailed configuration. To access a particular instance of an MEP, click on the row containing the desired MEP as shown below:



OAM CFM: MEP Configuration screen: MEP selected.

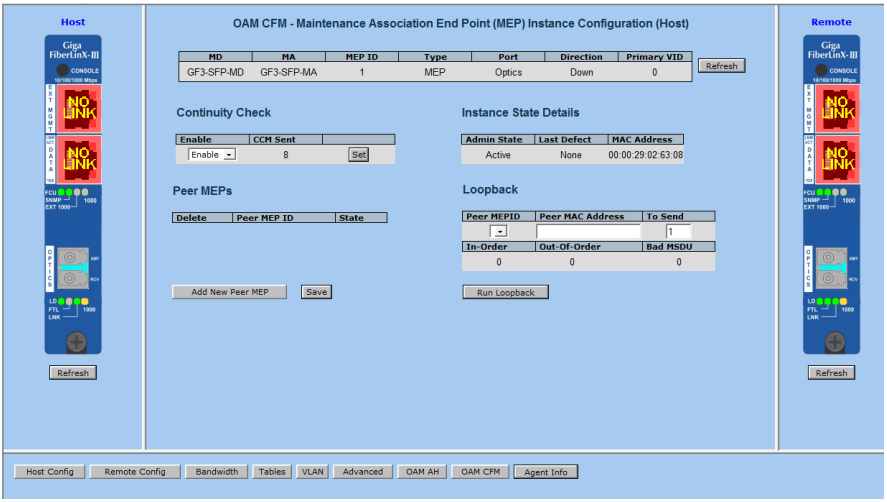
The current state of the MEP is shown by the color in the "State" column.

Color	Description
Green	Correctly functioning MEP—all MEP's are active and sending CCMs
Red	Idle state or problem associated with the MEP
Yellow	Not all peer MEP CCMs are being received.

Moving the mouse over the displayed color displays a comment giving additional information about the current state. Valid comments are:

- MEP is Idle
- MEP is Active
- Remote MEP Idle
- Remote MEP Failed

The MEP Instance Configuration page offers more details about an individual MEP as shown below:

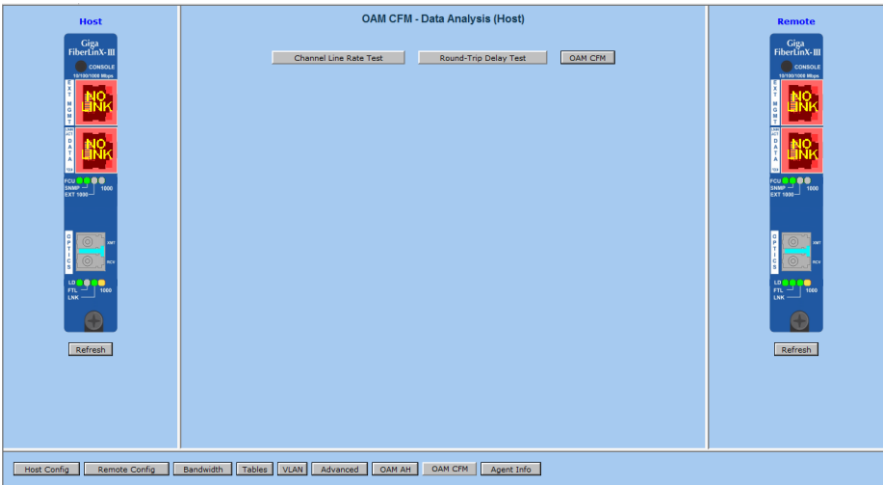


OAM CFM: MEP Instance Configuration screen.

From this screen, the user can perform the following functions:

Function	Description
Continuity Check	Enable/disable CCMs and verify the number of CCMs that have been sent.
Instance State Details	Verify the current administrative state of the MEP, view the last defect identified by the MEP, and view the MAC address of the MEP.
Peer MEPs	Create/List/Delete Peer MEPS associated with the MEP
Loopback	Activate loopback and see the results of loopback operations.

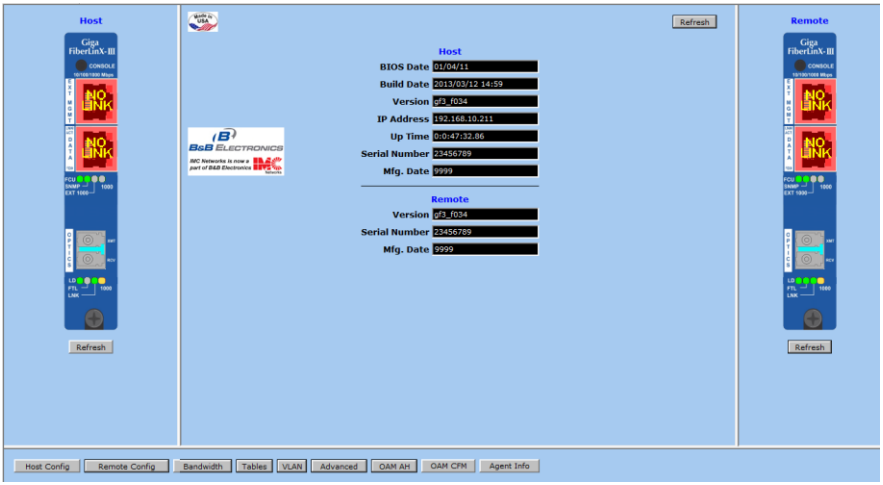
Select **Data Analysis** to perform a channel line rate test, a round trip delay test, and a return to the main OAM CFM screen by selecting **OAM CFM**.



OAM CFM: Data Analysis screen.

AGENT INFO

Select Agent Info to display agent data:

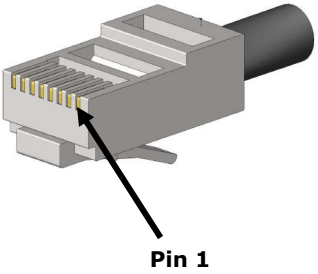


Agent Info screen.

APPENDIX B: PINOUTS

RJ-45 DATA PORT PINOUT

The following table lists the pin configuration for the RJ-45 Data connector.



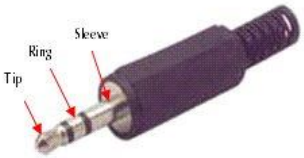
Pin	Signal Name 1000M	Signal Direction 10/100M
1	TXD1+	Out*
2	TXD1-	Out*
3	RXD2+	In*
4	D3+	
5	D3-	
6	RXD2-	In*
7	D4+	
8	D4-	

NOTE: *The MDI/MDIX function will automatically adjust the direction of these signals to match the connected unit when running 10/100Base-T. 1000Base-T will use all 4 pairs in full duplex mode.*

RS-232 SERIAL CONSOLE PORT

The following table lists the pin configuration for the RS-232 3-pin Mini Jack mating connector for the console serial port.

Pin	DB9-F Pin#	Signal Name	Direction
Tip	2	Transmit	Out of Unit
Ring	3	Receive	In to Unit
Sleeve	5	Return	Return



APPENDIX C: TROUBLESHOOTING

If a fiber connection cannot be established, perform the following to make sure that the fiber transceivers on the iMcV-Giga-FiberLinX-III are not over/under driving the fiber receivers:

1. Make sure the fiber wavelength on both connected devices match (i.e. both are 1310 nm single-mode fiber).

2. Make sure the twisted-pair port speed on the iMcV-Giga-FiberLinX-III matches that of the end devices connected to the iMcV-Giga-FiberLinX-III. Configure the iMcV-Giga-FiberLinX-III and its link partner to Auto Negotiation or, if using Force mode, be sure speed and duplex match.

3. iMcV-Giga-FiberLinX-III allows the end user to assign a VLAN tag to all management traffic (SNMP and telnet). It is important to understand that IF using telnet or iView^2 to assign a VLAN tag to management traffic then as soon as this setting is saved the connectivity will be lost until the PC becomes a member of the VLAN which was assigned to management traffic.

4. If a VLAN tag has been assigned to management traffic and the end user cannot re-establish a connection to the device via iView^2 or telnet, directly connect a PC to the device via the serial cable and review/modify the changes made (reference section on serial port config).

APPENDIX D: UNIFIED MANAGEMENT AGENT (UMA)

UMA operates in conjunction with B&B Electronics devices with on-board intelligence (e.g., the iMcV-Giga-FiberLinX-III and the iMediaChassis series. For example, install 20 devices in the chassis at the Central Office (CO), then connect each to a remote iMcV-Giga-FiberLinX-III unit installed at the customer's premise (CPL); UMA will then allow users to manage all 40 devices (including the chassis at the CO) via a single IP address. Users may still assign IP addresses to each iMcV-Giga-FiberLinX-III and manage them independently when the SNMP Management Card within the iMediaChassis is omitted.

WITH THE UNIFIED MANAGEMENT AGENT

When an SNMP request for a iMcV-Giga-FiberLinX-III comes in, the SNMP Management Card in the iMediaChassis passes the request to the SNMP agent in the specific module. The SNMP agent in the iMcV-Giga-FiberLinX-III provides the relevant management information which is then routed via the SNPM Management Card and supplied to the client GUI (iView^2).

WITHOUT THE UNIFIED MANAGEMENT AGENT

When an SNMP request for an iMcV-Giga-FiberLinX-III comes in, the iMediaChassis cycles through each slot checking for iMcV-Giga-FiberLinX-III modules. The iMediaChassis sees the first iMcV-Giga-FiberLinX-III modules in the chassis, and they can be selected, but they cannot be managed; the full management interface is inaccessible. Management for each iMcV-Giga-FiberLinX-III requires a separate connection and a separate IP address.

EASY UPGRADES WITH THE UNIFIED MANAGEMENT AGENT

- Upgrade one or multiple Host (CO) or Remote (CPE) devices with just a few mouse clicks
- All devices in chassis are fully functional while upgrades are in process

- Manage up to 41 devices with a single IP address
- Telnet capability available for all devices
- Conserve usage of switch ports; separate SNMP connections for installed devices are not required

APPENDIX E: GLOSSARY

The following are terms and phrases used within this manual, or which are found in documents associated with this equipment.

Term/Acronym	Definition
802.1ag	IEEE standard for end-to-end OAM
802.3ah	IEEE standard addressing Ethernet in the first mile and also OAM for point-to-point Ethernet links.
CFM	Connectivity Fault Management
CLI	Command Line Interface: An interface screen used for system management and diagnostics requiring the user to type commands rather than use a GUI.
CPE	Customer Premises Equipment; normally the end point of a leased fiber.
DC	Direct Current
DDMI	Digital Diagnostic Monitor Interface: A defined serial interface and data format typically used to access SFP internal information
DHCP	Dynamic Host Configuration Protocol: Used to automate configuration of computers that use TCP/IP
GUI	Graphical User Interface: Software that provides a visual interface to enable an end-user to manage and monitor network devices.
IEEE	Institute of Electrical and Electronics Engineers; IEEE develops industry-wide standards for use in a variety of electronic devices
IP	Internet Protocol
LED	Light Emitting Diode: a light to indicate link, duplex or other options.
MA	Maintenance Association
MD	Maintenance Domain

Term/Acronym	Definition
MDI/MDIX	Media-Dependent Interface/ Media-Dependent Interface Crossover. The ability of an Ethernet port to automatically detect and configure its cabling connections to accommodate crossover or non-crossover wiring, depending on its link partner and cabling.
MEP	Maintenance Association End Points
MIB	Management Information Base: A database of objects that can be monitored by a network management system. Both SNMP and RMON use standardized MIB formats that allow any SNMP and RMON tools to monitor any device defined by a MIB.
MSA	Multi-Source Agreement (SFP): The standard an SFP must meet to be compatible in network devices.
NOC	Network Operations and Control Center
OAM	Operations, Administration and Maintenance
OAM CFM	IEEE 802.1ag Connectivity Fault Management
PROM	Programmable Read-Only Memory
SFP	Small Form-Factor Pluggable: An industry standard optical pluggable module.
SNMP	Simple Network Management Protocol: A set of protocols for managing complex networks over a standards-based IP network.
TFTP	Trivial File Transfer Protocol
VLAN	Virtual Local Area Network