

Lucent Technologies
Bell Labs Innovations



OptiStar™ EdgeSwitch
Release 1.5
User Operations Guide

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ABOUT THIS INFORMATION PRODUCT

- Purpose** The *OptiStar™ EdgeSwitch User Operations Guide* provides detailed information on how to order, install, configure, operate, and maintain the OptiStar EdgeSwitch.
- Reason for reissue** This information product is being issued in conjunction with Release 1.5 of the OptiStar EdgeSwitch.
- Intended Audience** This information product is intended for use by network engineers, installers, system administrators, and technical support personnel who require documentation on the OptiStar EdgeSwitch.
- How to use this information product** This user guide consists of reference chapters that provide a product overview, tutorials, and detailed information for the FCIP Network Module Command Line Interface menu features and operation. Later chapters include troubleshooting and technical support procedures.

Assumptions

This document assumes that its readers have an understanding of the following:

- Basic principles of Fibre Channel storage networking
- Common Fibre Channel storage networking and system terminology
- Basic principles of TCP/IP networking, including IP addressing, switching and routing
- Personal computer (PC) operation, common PC terminology, and use of terminal emulation software

Chapter contents

This table provides a brief description of each chapter in this User Operations Guide:

Chapter	Contents
Chapter 1, Product Overview	<ul style="list-style-type: none">• Product Introduction• Product Diagram• Product Features• System Hardware• System Firmware• FCIP Network Module Command Line Interface (CLI)
Chapter 2, Planning and Ordering	<ul style="list-style-type: none">• Application Overview• Engineering Considerations• Ordering Information• Cabling Requirements

Chapter 3, Hardware Installation	<ul style="list-style-type: none"> • Unpacking the Shipping Carton • Rack-Mounting Instructions • Safety Guidelines • Installation of Add-In Modules • Connecting the Cables
Chapter 4, OptiStar EdgeSwitch Configuration	<ul style="list-style-type: none"> • Powering on the OptiStar EdgeSwitch • Accessing the Firmware • Setting Up Security • User Management • Assigning IP Addresses • Setting Up A Static Route and Checking IP Connectivity • Setting Up Routing • Configuring an FCIP Network Module • Setting Up A Fibre Channel Tunnel Between OptiStar EdgeSwitches • Setting Up WWN Zoning • Exporting/Importing the OptiStar EdgeSwitch Configuration
Chapter 5, Detailed OptiStar EdgeSwitch CLI Reference Guide	<ul style="list-style-type: none"> • Operational Information & Status • Port Statistics • Configuration • Administration • Utilities • Change Password
Chapter 6, FCIP Network Module CLI Functions: Detailed Reference Guide	<ul style="list-style-type: none"> • Configure Switch Settings • Reset Switch • Show Device Information • Access Firmware Options • Access Diagnostic Features
Chapter 7, OptiStar EdgeSwitch Maintenance	<ul style="list-style-type: none"> • General Maintenance • Hardware Replacement • Firmware Upgrades • Clearing the Current OptiStar EdgeSwitch Configuration
Chapter 8, Troubleshooting	<ul style="list-style-type: none"> • Possible Problems and Solutions
Chapter 9, Contacting Lucent	<ul style="list-style-type: none"> • Customer support information • Web site support • Product updates
Appendix A	<ul style="list-style-type: none"> • QuickStart Tutorial & Planning Worksheet for a Typical OptiStar EdgeSwitch Configuration

Appendix B	<ul style="list-style-type: none"> • OptiStar EdgeSwitch CLI Menu Structure
Appendix C	<ul style="list-style-type: none"> • FCIP Network Module CLI Menu Structure
Appendix D	<ul style="list-style-type: none"> • OptiStar EdgeSwitch Specifications
Appendix E	<ul style="list-style-type: none"> • Preventing Electrostatic Discharge
Appendix F	<ul style="list-style-type: none"> • OptiStar EdgeSwitch Warranty
Appendix G	<ul style="list-style-type: none"> • OptiStar EdgeSwitch Software License and Disclaimer of Warranties
Appendix H	<ul style="list-style-type: none"> • Environmental and Safety
Appendix I	<ul style="list-style-type: none"> • Cable Ordering

Conventions used

Bold Font: Indicates one of the following:

- a command to be issued by the user
- a menu title
- the name of a parameter

Shaded Font: Indicates output from the device to the monitor

Italic Bold Font: Indicates a warning or recommendation

Related documentation

The documents listed in this section provide additional information about the OptiStar EdgeSwitch:

- *OptiStar EdgeSwitch Release 1.5 User Operations Guide (UOG) 365-575-925R1.5*
Provides step-by-step information for use in OptiStar EdgeSwitch installation, configuration, setup, and daily system operations.
- *OptiStar EdgeSwitch Release 1.5 Software Release Description 365-575-926R1.5*
Provides information about upgrade procedures, feature enhancements, fixes, known problems, and other helpful information related to OptiStar EdgeSwitch firmware release 1.5.

Related training

The following OptiStar EdgeSwitch course will be provided by the Lucent Learning National Product Training Center:

- **Title:** OptiStar EdgeSwitch Installation and Operations Course
Number: LW6650
Audience: Technicians, installers, maintenance engineers, technical support personnel, product evaluators, and anyone desiring installation, operations and maintenance information for the OptiStar EdgeSwitch.
Content: Information supporting installation, operations, and maintenance of the OptiStar EdgeSwitch.
For additional course information, training schedules and online registration, please visit the Lucent Learning website at:
www.lucent-product-training.com

How to comment

Customer comments on OptiStar EdgeSwitch documents are welcome. A comment form can be found at the beginning of this document. If you choose to complete this form online, go to:

<http://www.lucent-info.com/comments>

Otherwise fax to 1-407-767-2760 (U.S. domestic) or 1-407-767-2760 (outside the U.S.).

How to order

The OptiStar EdgeSwitch documents can be ordered as individual paper copies or as a set on CD-ROM from the Customer Information Center (CIC).

To order documents, specify the document or CD-ROM you need by select code. Order by contacting your account executive or by using a contact listed below.

RBOC and BOC customers should process orders through their company documentation coordinator.

Standard Mail Address

Lucent Technologies Inc.
Customer Information Center
Attn: Order Entry Section
2855 N. Franklin Road
P. O. Box 19901
Indianapolis, IN 46219

Internet Address

<http://www.lucentdocs.com>

Telephone/Fax Numbers and Email Addresses

For United States Customers

Telephone: 1-888-582-3688
Fax: 1-800-566-9568
Email: cicorders@lucent.com

For Canada Customers

Telephone: 1-317-322-6615
Fax: 1-317-322-6699
Email: intlnaorders@lucent.com

For International Customers

Telephone: 1-317-322-6416
Fax: 1-317-322-6699
Email: intlorders@lucent.com

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IMPORTANT SAFETY INSTRUCTIONS

When installing, operating, or maintaining this equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

- Read and understand all instructions.
- Follow all warnings and instructions marked on this product.
- For information on proper mounting instructions, consult the User's Manual provided with this product.
- Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.
- Install only equipment identified in the User's Manual provided with this product. Use of other equipment may result in improper connection of circuitry leading to fire or injury to persons.
- For continued protection against risk of fire, all fuses used in this product must be replaced only with the same type and rating.
- To reduce the risk of electric shock or electrical energy/high current levels, disconnect all sources of power before servicing. Disconnect up to two (2) AC power supply connections when removing power from this system.
- This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply, consult your dealer or local Power Company.
- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Do not use this product near water, for example, in a wet basement.
- Never push objects of any kind into this product through slots as they may touch dangerous voltage points or short-out parts that could result in a risk of fire or electrical shock. Never spill liquids of any kind on the product.
- Slots and openings in the unit are provided for ventilation, to protect it from overheating, these openings must not be blocked or covered. This product should not be placed in a built-in installation unless proper ventilation is provided.
- To reduce the risk of electrical shock, do not disassemble this product. Service should be performed by trained personnel only. Opening or removing covers and/or circuit boards may expose you to dangerous voltages or other risks. Incorrect re-assembly can cause electric shock when the unit is subsequently used.

- This product is equipped with a three-wire grounding type plug, a plug having a third (grounding) pin. This plug is intended to fit only into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug. Do not use a 3-to-2-prong adapter at the receptacle. Use of this type adapter may result in risk of electrical shock and/or damage to this product.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
- Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a) When the powers supply cord or plug is damaged or frayed.
 - b) If liquid has been spilled into the product.
 - c) If the product has been exposed to rain or water.
 - d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions because improper adjustment of other controls may result in damage and will often require extensive work by qualified technician to restore the product to normal operation.
 - e) If the product has been dropped or the cabinet has been damaged.
 - f) If the product exhibits a distinct change in performance.

SAVE THESE INSTRUCTIONS

LASER SAFETY GUIDELINES

General Laser Information

Optical fiber telecommunication systems, their associated test sets, and similar operating systems use semiconductor laser transmitters that emit infrared (IR) light at wavelengths between approximately 800 nanometers and 1600 nanometers. The emitted light is above the red end of the visible spectrum, which is normally not visible to the human eye. Although radiant energy at near-IR wavelengths is officially designated invisible, some people can see the shorter wavelength energy even at power levels several orders of magnitude below any that have been shown to cause injury to the eye.

Conventional lasers can produce an intense beam of monochromatic light. The term monochromaticity means a single wavelength output of pure color that may be visible or invisible to the eye. A conventional laser produces a small-size beam of light, and because the beam size is small the power density (also called irradiance) is very high. Consequently, lasers and laser products are subject to federal and applicable state regulations as well as international standards for their safe operation.

A conventional laser beam expands very little over distance, or is said to be very well collimated. Thus, conventional laser irradiance remains relatively constant over distance. However, lasers used in lightwave systems have a large beam divergence, typically 10 to 20 degrees. Here, irradiance obeys the inverse square law (doubling the distance reduces the irradiance by a factor of 4) and rapidly decreases over distance.

Lasers and Eye Damage

The optical energy emitted by laser and high-radiance LEDs in the 400-1400 nm range may cause eye damage if absorbed by the retina. When a beam of light enters the eye, the eye magnifies and focuses the energy on the retina magnifying the irradiance. The irradiance of the energy that reaches the retina is approximately 10^5 or 100,000 times more than at the cornea and, if sufficiently intense, may cause a retinal burn.

The damage mechanism at the wavelengths used in an optical fiber telecommunications is thermal in origin i.e., damage caused by heating. Therefore, a specific amount of energy is required for a definite time to heat an area of retinal tissue. Damage to the retina occurs only when one looks at the light sufficiently long that the product of the retinal irradiance and the viewing time exceeds the damage threshold. Optical energies above 1400 nm cause corneal and skin burns but do not affect the retina. The thresholds for injury at wavelengths greater than 1400 nm are significantly higher than for wavelengths in the retinal hazard region.

Classification of Lasers

Manufacturers of lasers and laser products in the U.S. are regulated by the Food and Drug Administration's Center for Devices and Radiological Health (FDA/CDRH) under 21 CFR 1040. These regulations require manufacturers to certify each laser or laser product as belonging to one of four major Classes I, II, IIIa, IIIb, or IV. The International Electro-technical Commission is an international standards body that writes laser safety standards under IEC-60825. Classification schemes are similar with Classes divided into Classes 1, 2, 3A, 3B, and 4. Lasers are classified according to the accessible emission limits and their potential for causing injury. Optical fiber telecommunication systems are generally classified as Class I/1, because, under normal operating conditions, all energized laser transmitting circuit packs are terminated on optical fibers which enclose the laser energy with the fiber sheath forming a protective housing. Also, a

protective housing / access panel is typically installed in front of the laser circuit pack shelves. The circuit packs themselves, however, may be FDA/CDRH Class I or IIIb or IEC Class 1, 3A, or 3B.

Laser Safety Precautions for Optical Fiber Telecommunication Systems

In its normal operating mode, an optical fiber telecommunication system is totally enclosed and presents no risk of eye injury. It is a Class I/1 system under the FDA and IEC classifications.

The fiber optic cables that interconnect various components of an optical fiber telecommunication system can disconnect or break, and may expose people to laser emissions. Also, certain measures and maintenance procedures may expose the technician to emission from the semiconductor laser during installation and servicing. Unlike more familiar laser devices, such as solid-state and gas lasers, the emission pattern of a semiconductor laser results in a highly divergent beam. In a divergent beam, the irradiance (power density) decreases rapidly with distance. The greater the distance, the less energy will enter the eye, and the less potential risk for eye injury. Inadvertently viewing an unterminated fiber or damaged fiber with the unaided eye at distances greater than 5 to 6 inches normally will not cause eye injury provided the power in the fiber is less than a few milliwatts at the near IR wavelengths and a few tens of milliwatts at the far IR wavelengths. However, damage may occur if an optical instrument such as a microscope, magnifying glass or eye loupe is used to stare at the energized fiber end.



CAUTION: Use of controls, adjustments and procedures other than those specified herein may result in hazardous laser radiation exposure.

Laser Safety Precautions for Enclosed Systems

Under normal operating conditions, optical fiber telecommunication systems are completely enclosed; nonetheless, the following precautions shall be observed:

1. Because of the potential for eye damage, technicians should not stare into optical connectors or broken fibers.
2. Under no circumstance shall laser/fiber optic operations be performed by a technician before satisfactorily completing an approved training course.
3. Since viewing laser emissions directly in excess of Class I/1 limits with an optical instrument such as an eye loupe greatly increases the risk of eye damage, appropriate labels must appear in plain view, in close proximity to the optical port on the protective housing/access panel of the terminal equipment.

Laser Safety Precautions for Unenclosed Systems

During service, maintenance, or restoration, an optical fiber telecommunication system is considered unenclosed. Under these conditions, follow these practices:

1. Only authorized, trained personnel shall be permitted to do service, maintenance and restoration. Avoid exposing the eye to emissions from unterminated, energized optical connectors at close distances. Laser modules associated with the optical ports of laser circuit packs are typically recessed, which limits the exposure distance. Optical port shutters, Automatic Power Reduction (APR), and Automatic Power Shut Down (APSD) are engineering controls that are also used to limit the emissions. However, technicians removing or replacing laser circuit packs should not stare or look directly into the optical port with optical instruments or magnifying lenses. (Normal eyewear or indirect viewing instruments such as Find-R-Scopes are not considered magnifying lenses or optical instruments.)
2. Only authorized, trained personnel shall use optical test equipment during installation or servicing since this equipment contains semiconductor lasers. (Some examples of optical test equipment are Optical Time Domain Reflectometers (OTDR's), Hand-Held Loss Test Sets, and Feature Finders.)
3. Under no circumstances shall any personnel scan a fiber with an optical test set without verifying that all laser sources on the fiber are turned off.
4. All unauthorized personnel shall be excluded from the immediate area of the optical fiber telecommunication systems during installation and service.

Consult ANSI Z136.2 American National Standard for Safe Use of Lasers in the U.S. or outside the U.S., IEC-60825, Part 2 for guidance on the safe use of optical fiber optic communication systems in the workplace.

Optical Specifications of the OptiStar EdgeSwitch Internal Laser Circuit Packs:

Laser Circuit Pack Code	Wavelength (nm)	Output Power (mW)	Fiber Type Core/ Cladding Diameter (µm)	Connector Type	FDA Class / IEC Hazard Level
OC-12c/STM-4c	1310	0.158	SM(8.3/125)	LC	I/1
OC-48c/STM-16c	1310	1.000	SM(8.8/125)	LC	I/1
Gigabit Ethernet Network Module with Single Mode Fiber GBIC	1310	0.500	SM(8.3/125)	SC	I/1
Gigabit Ethernet Network Module with Multimode Fiber GBIC	850	0.320	MM(62.5/125)	SC	I/1
Fibre Channel Network Module with Single Mode Fiber GBIC	1310	0.500	SM(8.3/125)	SC	I/1
Fibre Channel Network Module with Multimode Fiber GBIC	850	0.320	MM(62.5/125)	SC	I/1

Lucent Technologies OPTISTAR EDGESWITCH complies with FDA/CDRH 21 CFR 1040.10 and 1040.11 as a Class I laser product and as an IEC 60825-1 2002 Class 1 laser product.

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CHAPTER 1

Product Overview



Chapter 1 Overview

- Product Introduction
- Product Diagram
- Product Features
- System Hardware
- System Firmware
- FCIP Network Module Command Line Interface (CLI)

1.1 Product Introduction

The OptiStar EdgeSwitch is a high-capacity IP switch/router that enables interconnection of Fibre Channel storage area networks (SAN) over IP metropolitan (MAN) and wide area networks (WAN). It provides Layer 2 switching and Layer 3 routing at the network edge, supporting interconnectivity between 1 Gbps Fibre Channel, OC-48c/STM-16c Packet over SONET/SDH, OC-12c/STM-4c Packet over SONET/SDH, and Gigabit Ethernet (GbE). Key applications include off-site data backup and disaster recovery, data replication and mirroring, and storage hosting. See [CHAPTER 2](#) for more information about OptiStar EdgeSwitch applications.

Installation: The OptiStar EdgeSwitch, at a height of 3 units (the exact chassis height is 5.18 inches), fits into any standard 19-inch rack or on a tabletop.

Interfaces: The OptiStar EdgeSwitch integrates LAN, WAN and SAN access in a single device.

- LAN interfaces: Gigabit Ethernet
- WAN interfaces: Gigabit Ethernet, OC-12c/STM-4c and OC-48c/STM-16c Packet over SONET/SDH (PoS)
- SAN interfaces: Fibre Channel over IP (FCIP)

Configuration: The OptiStar EdgeSwitch includes dual redundant Power Modules and up to four hot swappable Network Modules in any combination.

Cable management: Modules are front panel accessible.

The following table shows a basic description of the selectable add-in modules available for the OptiStar EdgeSwitch. For detailed descriptions and help on the OptiStar EdgeSwitch modules, see [Section 1.4](#), entitled “System Hardware”.

Module Type	Number of ports	Network Connectivity
FCIP	2	1 Gbps Fibre Channel fabric switch ports
OC-48c/STM-16c	1	2.5 Gbps Packet Over SONET/SDH (PoS)
OC-12c/STM-4c	2	622 Mbps Packet Over SONET/SDH (PoS)
Gigabit Ethernet	2	1 Gbps Gigabit Ethernet (IEEE 802.3z/802.3ab)

1.2 Product Diagram

The EdgeSwitch supports redundant power supplies (top row), four add-in modules (middle two rows) and a host module board which contains the switch core (bottom board).

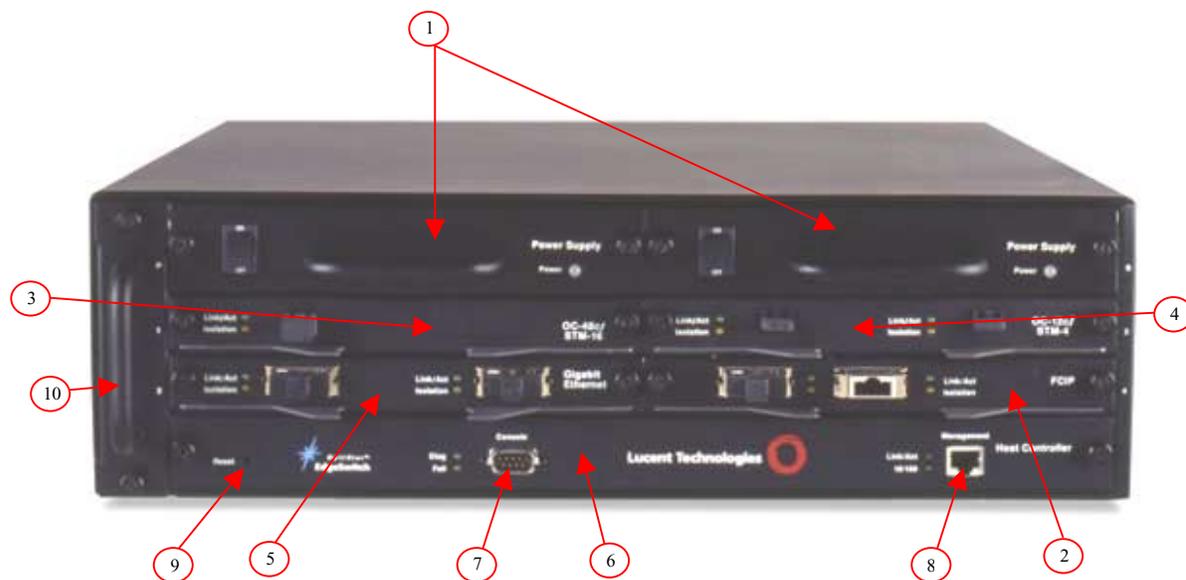


Figure 1-1: Front Panel (Sample Configuration)

1. Power Modules
2. FCIP Network Module - dual port
3. OC-48c/STM-16c Network Module - single port (shown without attached cable)
4. OC-12c/STM-4c Network Module - dual port
5. Gigabit Ethernet Network Module - dual port (shown with Multimode Fiber GBIC Transceiver Modules)
6. Host Controller Module
7. Console Port - DB9 connection for serial interface
8. Management Port - RJ-45 connection for 10/100BaseT Ethernet
9. Reset Button
10. Fan Module
11. Rack mount brackets fit standard 19-inch racks (not shown, attach at sides of unit)

Note: The specific configuration of the OptiStar EdgeSwitch is dependent upon which selection of add-in modules were ordered. All modules come pre-installed.

OPTISTAR EDGESWITCH NETWORK MODULES



Figure 1-2: OC-48c/STM-16c Network Module

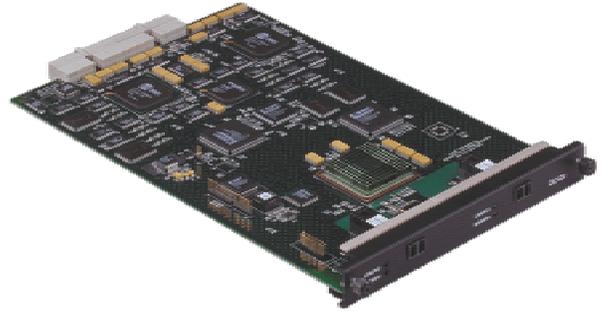


Figure 1-3: OC-12c/STM-4c Network Module

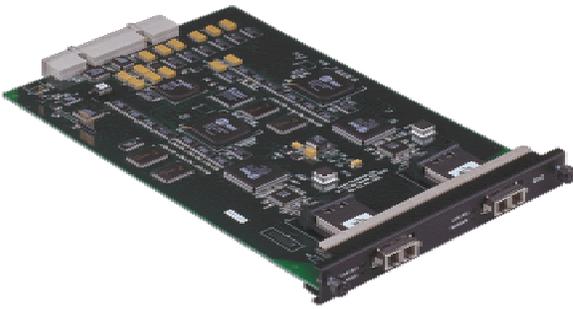


Figure 1-4: Gigabit Ethernet Network Module



Figure 1-5: FCIP Network Module

1.3 Product Features

WAN Connectivity

- High speed optical network connectivity, up to 2.5 Gbps (OC-48c/STM-16c)
- Broad support for industry-standard network interfaces, including OC-48c/STM-16c PoS (2.5 Gbps), OC-12c/STM-4c PoS (622 Mbps), Gigabit Ethernet and Fibre Channel

Network Modules

- Modular architecture with up to four selectable modules
- Up to 8 Fibre Channel ports, two per module
- Up to 4 OC-48c/STM-16c ports, one per module
- Up to 8 OC-12c/STM-4c ports, two per module
- Up to 8 Gigabit Ethernet ports, two per module

Fibre Channel Networking

- Fibre Channel over IP (FCIP) network module interoperates with industry-leading Fibre Channel-based storage technologies including fabric switches, hubs, host bus adapters, storage systems and tape drives
- Support for WWN (World Wide Name) Zoning

Routing

- Static routing, RIP/RIP-II, OSPFv2, BGP4, OSPF/BGP4 Interaction, RFC 2615 - PPP over SONET/SDH with 1+x⁴³ scrambler
- Up to 7K route entries per port provided in CAM
- Up to 1K ARP entries per port provided in CAM
- On Layer 2, Gigabit Ethernet (GbE) card only, the OptiStar EdgeSwitch supports up to 8K FD entries

Power

- Power module and redundant power module shipped with unit
- Auto-sensing for 100/120V 60Hz or 200/240V 47-63Hz operation

Availability

- All Network Modules and GBICs hot-swappable
- High Availability configurations use routing protocols to provide automatic failover between redundant components
- Two redundant, hot-swappable Power Modules with automatic failover
- Hot-swappable Fan Module, includes N+1 fan redundancy
- Ability to backup and restore the current OptiStar EdgeSwitch configuration as a binary file using FTP

Network Management

- SNMP v1 and extensive MIB managed object supported
- Serial console port and 10/100BaseT Ethernet port for local network management and administration
- Remote in-band management via any WAN port

Administrative Interfaces

- Command line and built-in web server for configuration, TFTP and BOOTP for administration and software updates
- Support for up to 8 simultaneous user accounts in addition to the Super User

1.4 System Hardware

1.4.1 Host Controller Module

The OptiStar EdgeSwitch Host Controller Module houses the host processor and related peripherals.



CAUTION: The OptiStar EdgeSwitch Host Controller Module is **NOT** hot swappable or field replaceable. It is recommended that only a qualified Lucent technician service the Host Controller Module.

1.4.1.1 Features

The Host Controller Module has a 10/100BaseT Ethernet port for out-of-band SNMP network management. This port also is used to download runtime firmware from a remote system using TFTP. Cat-5 cabling should be used for this connection.

The Host Controller Module also has a serial interface with DB9 connection (referred to as the Console Port) for command line interface and out-of-band network management including code downloads. The Console Port can be connected to the serial interface (COM port) of a PC or laptop for out-of-band SNMP Network Management. It can also be used to configure the OptiStar EdgeSwitch also via the Command Line Interface (CLI) using terminal emulation software .

1.4.1.2 LED Indicators

The Host Controller Module has visual indicators (LEDs) that report the status of the OptiStar EdgeSwitch. The following table shows the how to interpret the LEDs on the front of the Host Controller Module.

Diagnostics LED (GREEN)	Failure LED (AMBER)	Status
Off/Solid	Solid	Fatal error
Flashes green at the rate of 1 flash per second	Flashes amber at the rate of 1 flash per second	Non-fatal failure *
Flashes green at the rate of 1 flash per second	Off	Normal operation / The system is functioning normally
Flashes green at the rate of 2 flashes per second	Off	Power On Self Test (POST)

* The OptiStar EdgeSwitch can function with limited capabilities with a non-fatal failure.

Any errors with the host module will trigger a trap and an error message will be sent to the designated management station(s).

1.4.1.3 Power On Self-Test (POST)

The POST for the OptiStar EdgeSwitch begins as soon as the Processor Initialisation is completed.

If there is a failure during POST, the severity of failure is identified and sent to POST Results. POST Results may be viewed in 2 ways:

- Via the BootUp Menu (for help [see Section 4.1.2](#))
- Once you have accessed the CLI, follow the path from the main menu:
[1] Operational Information & Status → [2] Hardware Status → [7] POST Results → [1] Host Module POST Results (for help [see Section 5.1.2.7](#))

The following table shows the tests conducted during POST, whether they are Fatal or Non-fatal, and when they are conducted:

Type of Test	Fatal/Non-fatal Error	Test Location
SDRAM	Fatal	Boot Code
Console Port	Fatal	Boot Code
NVSRAM	Fatal	Boot Code
CPU-EEPROM	Fatal	Boot Code
10/100 Base-T Port	Fatal	Boot Code
Switch Fabric	Fatal	Runtime Code
Thermal IC	Fatal	Runtime Code
All OptiStar EdgeSwitch Network Module Line Card tests	Non-fatal	Runtime Code

If there is a **Fatal** error during POST, then the POST is discontinued and the control is passed to the Boot CLI. The HOST Controller Module Failure LED will be turned “On” (solid amber) to indicate Fatal error.

If it is a **Non-fatal** error, then the POST for the rest of the hardware will continue, and the control will be passed to the Boot CLI. The HOST Controller Module Failure LED will flash amber at a rate of 1 flash per second to indicate a Non-fatal error.

The purpose of giving control to BootUp Menu is to alert the user that one of the hardware components has failed. The user can determine which component has failed by viewing the POST Results menu item in the BootUp Menu (follow the path: **[1] Status and Information → [4] POST Results**). At this point the user can choose to perform troubleshooting operations by downloading the Diagnostics or Debugger available under the BootUp Menu. **Note:** The Runtime firmware cannot be invoked unless the hardware component is repaired.

If the POST completes successfully, the user will see the following prompt showing the 7-second countdown:

Press any key to enter to User Configuration... 7..6..5..4..

If the user does not press any key within this countdown period then the control will be given to the Auto Boot process ([see Section 4.1.1](#)), which will boot the switch with the default runtime firmware.

If the user does press a key within the countdown period, then the BootUp Menu will be displayed.

1.4.1.4 Reset Button

The OptiStar EdgeSwitch has a recessed reset button on the lower left hand side of the Host Controller Module. The reset button should be used only when the system does not respond to any other prompt and the OptiStar EdgeSwitch has not initiated a cold reset. Current configuration parameters will be safe when the reset button is utilized. An insulated pinpoint screwdriver needs to be used to fully depress the button. An error message will be sent to the management console indicating a reset has been performed.

1.4.2 Power Module

The OptiStar EdgeSwitch includes two hot swappable, redundant AC Power Modules, which operate in load sharing mode. For additional protection, plug Power Modules into two separate power sources, to allow for a power circuit failure without affecting the performance of the OptiStar EdgeSwitch. Each Power Module has an on/off switch, and a bi-colored LED that shows the status. Each Power Module provides 200 Watts and operates at 90-132/180-264 Volts AC @ 47-63 Hz, auto-ranging.

1.4.2.1 LED Indicators

Each power module has a power on/off switch, and a bi-colored LED that shows the status. The following table describes how to interpret the LEDs on the front of the Power Module.

LED Color	LED Indicates
Green	AC power on
Red	AC power off or power module malfunctioning. <i>Red status is valid only if one of the power modules is on.</i>
No light	Unit is powered off

If one of the Power modules fails, a trap will be sent to the designated management station(s).

1.4.3 Fibre Channel Over IP (FCIP) Network Module

The OptiStar EdgeSwitch Fibre Channel over IP (FCIP) Network Module extends storage networks across the IP WAN. The FCIP Network Module interoperates with industry-leading Fibre Channel-based storage technologies including fabric switches, hubs, host bus adapters and storage systems.

One FCIP Network Module contains an integrated two-port Fibre Channel switch engine, providing two 1 Gbps Fibre Channel switch ports. Fibre Channel frames can be switched between Fibre Channel ports within the same OptiStar EdgeSwitch unit, or may be tunneled over OC-12c/STM-4c, OC-48c/STM-16c, and/or Gigabit Ethernet WAN links. This dual port module is hot swappable and is plugged into the backplane that connects it to the OptiStar EdgeSwitch switch fabric. Each OptiStar EdgeSwitch FCIP Network Module can communicate to up to 239 other OptiStar EdgeSwitch FCIP Network Modules. The number is limited by the available Fibre Channel domains and some addresses are reserved. The domain number is an 8-bit hexadecimal value, ranging from x01-xEF. Each FCIP Network Module must be assigned an IP address, referred to in this document as the FCIP Network Module IP address.

The FCIP Network Modules uses GBICs for the physical interface. The GBICs are hot swappable and are available in 850nm multimode fiber, 1310nm single-mode fiber, and HSSDC or DB9 copper versions. [See Section 2.3.2](#) for more information about FCIP Network Module GBIC options.

1.4.3.1 Features

The FCIP Network Module enables the OptiStar EdgeSwitch to support the following features:

- Fibre Channel tunneling over OC-12c/STM-4c, OC-48c/STM-16c and Gigabit Ethernet WAN links
- Two 1 Gbps Fibre Channel switch ports per network module
- Each Fibre Channel port can be a fabric port (F_Port), fabric loop port (FL_Port) or inter-switch port (E_Port)
- Fibre Channel port type can be automatically detected upon link initialization. Manual configuration of port type is permitted.
- Support for two LEDs per port
- Support for Simple Name Server (SNS), Registered State Change Notification (RSCN) and Fabric Shortest Path First (FSPF) fabric services
- Support for WWN Zoning
- SNMP management (SNMP v1)

1.4.3.1.1 Power On Self Test (POST)

During Power On Self Test (POST), the Fibre Channel over IP (FCIP) Network Module boots from the Power-up Image file stored in Flash. When a new image file is downloaded to Flash, the FCIP Network Module stores an Alternate (or backup) Image in FLASH as a fail-safe mechanism in case the new image is corrupted. If POST fails two times in a row, the FCIP Network Module will automatically switch to the backup image. For help in reloading the desired Image file, please refer to [Section 7.3.2.1](#) entitled “How to Manually Select the FCIP Network Module Firmware Boot Image”.



NOTE: If the POST is interrupted and not allowed to complete, the FCIP Network Module will interpret this as a POST failure. If this happens twice in a row, the FCIP Network Module will boot from the backup image in Flash.

POST Results may be viewed via either the CLI or the Web-based Management interface. For additional help on viewing POST results, please refer to [Section 5.1.2.7.1](#) (for Host Module POST Results) or [Section 5.1.2.7.2](#) (for Switching Module POST Results).

1.4.3.2 LED Indicators

The FCIP Network Module has a Link/Active LED as well as an Isolation LED on the front panel. The following table describes how to interpret the LEDs on the front of the FCIP Network Module.

Link/Active LED (GREEN)	Isolation LED (AMBER)	Status
Off	Off	No GBIC module inserted.
Off	Solid	No link is established.
Solid	Off	The link is established; no data is currently being transmitted received.
Solid	Flashing at a rate of 1 flash every 100 ms	An FCIP port on the module is isolated from the rest of the fabric.
Solid	Solid	No link is established.
Off	Flashing at a rate of 1 flash every 100 ms	Failure.
Flashing	Off	Data is being transmitted or received.
Flashing	Flashing	FCIP Network Module is establishing connectivity to the OptiStar EdgeSwitch.

1.4.4 OC-48c/STM-16c Network Module

The OC-48c/STM-16c Network Module provides one port of Packet over SONET/SDH (PoS) OC-48c/STM-16c for network connectivity at 2.5 Gbps. (The OC-48c/STM-16c Network Module runs at slightly less than full line rate under certain operating conditions.) This single port module is hot swappable and is plugged into the backplane that connects it to the switch fabric. The OC-48c/STM-16c Network Module has a built in optical transceiver with an LC optical interface, and accepts a single mode fiber cable with an LC type connector. Note that scrambling is always turned on for the module. Also, the PPP links must be operational for the port to establish communications. The PPP control link will not have keepalive on, but will respond to keepalive messages from the far end.

1.4.4.1 Features

- High speed (2.48832 Gbps) network connectivity (full duplex)
- Single mode fiber interconnection for extended distance (up to 10 km) communications
- Built-in IP services
- IP Packet over SONET/SDH
- IP Packet over WDM (using SONET framing)
- IPv4 datagram transport
- Hardware assisted IP, UDP, and TCP checksums
- Optical interface components have a nominal center wavelength of 1310 nm and a spectral width of no more than 4nm
- Optical rise/fall time of no more than 200 psec
- Jitter Generation compliant with GR-253 and ITU-T G.957
- Supports RFC 2615 - PPP over SONET/SDH with 1+x⁴³ scrambler

1.4.4.2 LED Indicators

The OC-48c/STM-16c Network Module has a Link/Active LED as well as an Isolation LED on the front panel. The following table describes how to interpret the LEDs on the front of the OC-48c/STM-16c Network Module.

Link/Active LED (GREEN)	Isolation LED (AMBER)	Status
Off	Off	Link not established
Off	Solid	Port is isolated by management
Solid	Off	Link OK
Flashing	Off	Data is being transmitted or received

1.4.5 OC-12c/STM-4c Network Module

The OC-12c/STM-4c Network Module provides two ports of OC-12c/STM-4c Packet over SONET/SDH for network connectivity at 622 Mbps. This dual port module plugs into the backplane, which connects to the switch fabric. The OC-12c/STM-4c Network Module has a built in optical transceiver with an LC optical interface, and accepts a single mode fiber cable with an LC type connector. Note that for both ports, scrambling is always on. Also, the PPP links must be operational for the port to establish communications. The PPP control link will not have keepalive on, but will respond to keepalive messages from the far end.

1.4.5.1 Features

The OC-12c/STM-4c Network Module enables the OptiStar EdgeSwitch to support the following features:

- High speed (622 Mbps) network connectivity
- Single mode network interconnection for extended distance (up to 15 km) communications
- Built-in IP services
- Packet over SONET/SDH
- Packet over WDM (using SONET framing)
- IPv4 datagram transport
- Hardware assisted IP, UDP, and TCP checksums
- Optical interface components have a nominal center wavelength of 1310 nm
- Jitter Generation compliant with ITU-T G.957, Bellcore TR-NWT-000253
- Supports RFC 2615 - PPP over SONET/SDH with 1+x⁴³ scrambler

1.4.5.2 LED Indicators

The OC-12c/STM-4c Network Module has a Link/Active LED as well as an Isolation LED on the front panel. The following table describes how to interpret the LEDs on the front of the OC-12c/STM-4c Network Module.

Link/Active LED (GREEN)	Isolation LED (AMBER)	Status
Off	Off	Link not established
Off	Solid	Port is isolated by management
Solid	Off	Link OK
Flashing	Off	Data is being transmitted or received

1.4.6 Gigabit Ethernet Network Module

The Gigabit Ethernet Network Module provides two ports of Gigabit Ethernet (IEEE 802.3z/802.3ab) for connectivity at 1 Gbps. The Gigabit Ethernet Network Module runs at slightly less than full line rate under certain operating conditions. This dual port module plugs into the backplane, which connects to the switch fabric. The Gigabit Ethernet Network Modules use GBICs for the physical interface. The GBICs are hot swappable and are available in 850nm multimode fiber, 1310nm single-mode fiber, and HSSDC or DB9 copper versions. See Section 2.3.2 for more information about Gigabit Ethernet Network Module GBIC options.

1.4.6.1 LED Indicators

The Gigabit Ethernet Network Module has a Link/Active LED as well as an Isolation LED on the front panel. The following table describes how to interpret the LEDs on the front of the Gigabit Ethernet Network Module.

Link/Active LED (GREEN)	Isolation LED (AMBER)	Status
Off	Off	Link not established
Off	Solid	Port is isolated by management
Solid	Off	Link OK
Solid	Off	Data is being transmitted or received

1.4.7 Fan Module

The OptiStar EdgeSwitch uses a Fan Module with four single speed fans. The OptiStar EdgeSwitch management system will get a temperature alarm if there is a fan failure and the temperature inside the system goes over a fixed threshold. Depending upon the combination of Network Modules used, an individual fan failure may not be detected if the temperature inside the unit stays below the threshold.

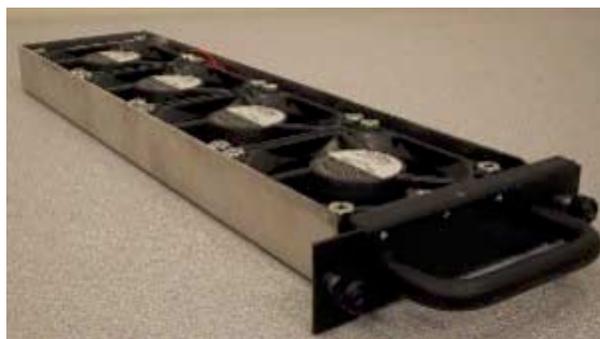


Figure 1-6: Fan Module

1.5 System Firmware

1.5.1 Firmware Components

The OptiStar EdgeSwitch software consists of two firmware components, both stored in Flash ROM:

- **Boot Firmware** – The boot firmware is responsible for performing the following tasks:
 - Initializing the OptiStar EdgeSwitch
 - Performing Power On Self Test (POST) on the hardware components and initializing them when required.
- **Runtime Firmware** – The runtime firmware provides the operating system for the OptiStar EdgeSwitch. The runtime firmware can be reloaded if it is corrupted or accidentally deleted. In addition, new runtime firmware can be downloaded to the OptiStar EdgeSwitch (see Section 7.3.1).



NOTE: It is recommended to make a copy of the firmware and store it on the network for backup purposes. Firmware will be available at the Lucent OnLine Customer Support at <http://www.lucent.com/support> .

1.5.2 Access Methods

CLI - Command Line Interface. The CLI is a configuration and management utility that can be used to configure the OptiStar EdgeSwitch during runtime. The CLI is a part of the runtime firmware. See Section 4.2.1 for details on how to use the CLI.

Web-based Management. The OptiStar EdgeSwitch can also be managed via a standard web browser (Internet Explorer 5.0 or higher and Netscape Communicator 4.xx or higher). See Section 4.2.2 for details on how to use web-based management.

SNMP - Simple Network Management Protocol. The OptiStar EdgeSwitch can be managed using an SNMP management station. The MIBs are available on the OptiStar EdgeSwitch CD or online at <http://www.lucent.com/support>. When online, search the product catalog using the keyword “OptiStar”. See Section 4.2.3 for more information.

CHAPTER 2

Planning and Ordering



Chapter 2 Overview

- Application Overview
- Engineering Considerations
- Ordering Information
- Cabling Guidelines

2.1 Application Overview

The primary purpose of the OptiStar EdgeSwitch is to enable seamless interconnection of remote Fibre Channel storage area networks (SAN) over IP-based metropolitan (MAN) and wide area (WAN) networks. Key applications include off-site data backup, disaster recovery, data replication/mirroring and storage hosting. The OptiStar EdgeSwitch employs the Fibre Channel over IP (FCIP) protocol to encapsulate Fibre Channel storage traffic into IP for transmission across regional networks or long distance backbones.

Through FCIP, the OptiStar EdgeSwitch allows customers to leverage the best of both worlds: Fibre Channel for block-level storage networking, and IP for MAN/WAN internetworking. This solution provides an easy and cost-effective way to extend SAN applications over global distances, providing the storage networking performance and data protection that today's businesses demand.

Shown below is a simple, generic architecture for an OptiStar EdgeSwitch FCIP application that interconnects two remote SANs over an IP MAN/WAN. Each OptiStar EdgeSwitch connects to the IP WAN via a WAN module port, which could be Gigabit Ethernet, OC-48c/STM-16c or OC-12c/STM-4c Packet over SONET/SDH. The SAN at each site connects to a Fibre Channel switch port on the OptiStar EdgeSwitch FCIP Network Module.

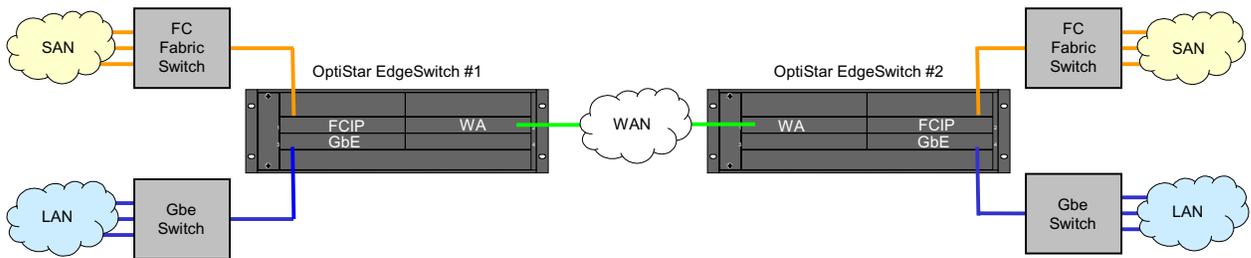


Figure 2-1: Network Diagram

The OptiStar EdgeSwitch FCIP solution appears as a Fibre Channel network to the SAN, so existing Fibre Channel commands, applications, and protocols continue to work automatically. To the MAN/WAN the solution appears as IP, so existing IP networks can be leveraged for full multi-point connectivity – offering connectivity between up to 239 OptiStar EdgeSwitches in a single extended SAN fabric.

The OptiStar EdgeSwitch FCIP Network Module encapsulates Fibre Channel frames into IP packets, allowing Fibre Channel traffic to be routed over the IP MAN/WAN. The storage traffic, along with all Fibre Channel protections and data reliability features, are transparently passed across the optical IP backbone network to the appropriate destination location. An OptiStar EdgeSwitch at the destination site decapsulates the Fibre Channel traffic from the IP packets and connects to the appropriate Fibre Channel SAN device.

The diagram above also shows Gigabit Ethernet connectivity to the LAN using an OptiStar EdgeSwitch Gigabit Ethernet Network Module. The OptiStar EdgeSwitch can be used for data networking as well as SAN applications because of the OptiStar EdgeSwitch's Layer 2/3 IP switching and routing capabilities. One application is extension of Gigabit Ethernet data networking traffic from network attached storage (NAS) or servers on the LAN over the IP WAN links shared with the FCIP traffic.

2.2 Engineering Considerations

Due to the role of the OptiStar EdgeSwitch as a bridge between SAN, LAN, and MAN/WAN networks, there are a variety of factors that network planners and engineers should consider when designing an OptiStar EdgeSwitch application. Each type of network that the OptiStar EdgeSwitch will connect to has its own interface, routing, port, and configuration requirements which impact how the OptiStar EdgeSwitch would be ordered and set up.

2.2.1 High Availability

The OptiStar EdgeSwitch is designed to provide the high application availability that is required to support critical, 24x7 uptime requirements. The OptiStar EdgeSwitch features redundant hot-swappable Power Modules, a hot-swappable Fan Module with N+1 fan redundancy, hot-swappable Network Modules and GBIC Transceiver Modules, automatic fault detection and isolation, as well as hardware components that support automatic failover. Automatic failover, which is also referred to as High Availability (HA) functionality, provides a means for traffic to failover to a secondary backup path if a failure occurs in the primary traffic path.

The failover strategy for a network is a critical aspect of the overall network design that must be carefully planned. Network designers and engineers must understand the levels of availability required by the applications on the network in order to design a failover strategy that supports those requirements.

In addition, the network design process must include a consideration of how the failover strategy will interact with other aspects of the integrated SAN/WAN network, such as security and zoning. For example, since zoning can effectively cut off access from one part of the network fabric to another, all zoning configurations must incorporate the failover paths and components as appropriate.

The well-designed fault-tolerant and high-availability network should support the following four major goals:

- Minimization of single points of failure:** The solution must have the ability to avoid interruption of services to clients if a hardware, software or network component fails or must be taken out of service for maintenance or upgrade.
- Performance scalability:** The solution should be easily expandable such that growth will not require a total replacement of existing hardware.

•**Hardware and link failover protection:** Any component or link on the network that fails should be seamlessly backed up by another component or link without interruption to traffic flow.

•**Resource sharing:** The design must take into account the need to provide shared resources to clients such as files, printers, and applications.

The level of fault tolerance required by the applications on the network should determine the amount of failover protection that is designed into the network. The following diagram shows the potential points of failure that exist in a simple Fibre Channel network.

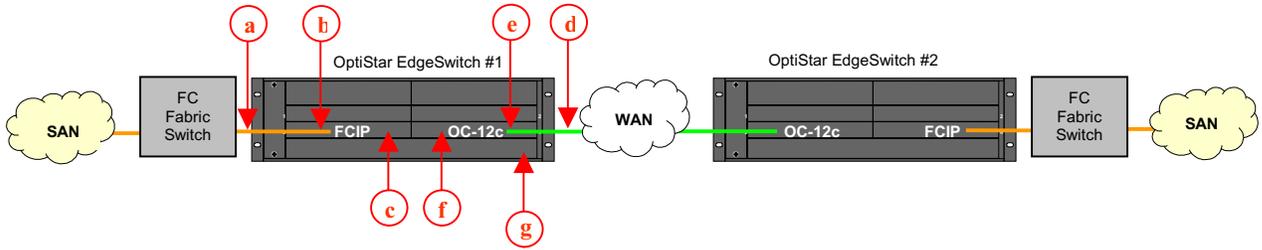


Figure 2-2: Potential Points of Failure in Simple SAN/WAN Application

The OptiStar EdgeSwitch supports high application availability requirements by using routing protocols (e.g. FSPF and OSPF) within the SAN/WAN network to re-route traffic over a secondary path when the primary path is not available. Thus, the amount of redundancy that is built into the network determines how the points of failure are reduced or even eliminated altogether. The table below shows which points of failure in the network are protected by various example high availability configurations.

Example High Availability Configurations	Points of Failure Protected						
	a	b	c	d	e	f	g
	FC Connection/ Link Failure	FC GBIC or Port Failure	FCIP Module Failure	WAN Connection/ Link Failure	WAN Optics or Port Failure	WAN Module Failure	Switch Fabric Failure
1 FCIP Module with 2 Ports	✓	✓					
Dual FCIP Modules	✓	✓	✓				
1 WAN Module with 2 Ports *				✓	✓		
Dual WAN Modules				✓	✓	✓	
Dual Switches	✓	✓	✓	✓	✓	✓	✓

* This configuration does not work with an OC-48c/STM-16c Network Module, since it only has one port.

The routing of traffic to a secondary path will be performed automatically by the routing protocols within the various switches along the path as they seek the best path available. Once the primary path/route/domain is reestablished, the fabric and/or IP routing will shift the traffic back to the primary path via best path routing protocols.

The OptiStar EdgeSwitch supports Active/Active high availability configurations. In an Active/Active configuration, both the primary and secondary paths are established. In some configurations, the primary path carries the data traffic and the secondary path carries only overhead information (e.g. keepalive packets) in order to keep the path established. In other configurations, both paths are utilized for data transport.

The following two examples illustrate high availability strategies with different levels of redundancy.

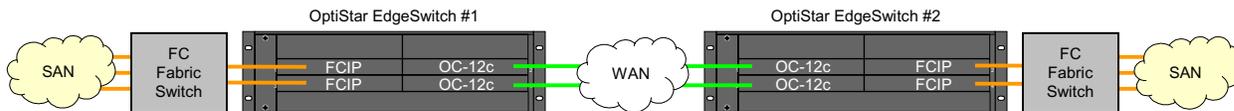


Figure 2-3: High Availability Example #1- 1 OptiStar EdgeSwitch with Dual WAN and FCIP Network Modules

In High Availability Example #1, traffic is routed via the primary path from the SAN through a Fibre Channel (FC) Fabric switch to an FCIP Network Module on the OptiStar EdgeSwitch. The traffic is then routed via a WAN module on the OptiStar EdgeSwitch (an OC-12c Network Module in this example) to the WAN, and then to an OptiStar EdgeSwitch with a similar configuration on the other side of the network. As long as the primary path is healthy, the routing protocol will choose this path (since it has previously been assigned as the best available path via the routing configuration parameters). In the meantime, each OptiStar EdgeSwitch has a redundant FCIP Network Module and a redundant OC-12c Network Module, which enables a secondary route through each OptiStar EdgeSwitch that is always active (in keepalive mode). In this scenario, if there is a disruption or failure in the primary path, traffic will be rerouted to the secondary path in any of the following points of failure:

- the link between the FC Fabric Switch and the OptiStar EdgeSwitch
- the link between the WAN and the OptiStar EdgeSwitch
- any module within the OptiStar EdgeSwitch (including any individual components)

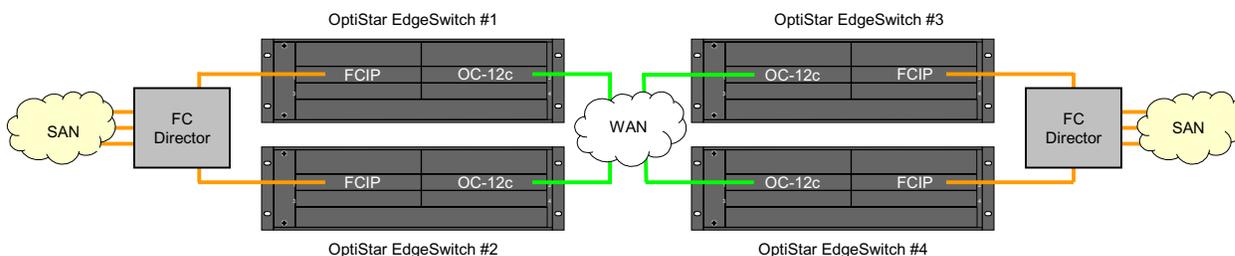


Figure 2-4: High Availability Example #2 - Dual OptiStar EdgeSwitches

In High Availability Example #2, traffic is routed from the SAN to an Fibre Channel (FC) Director. (**Note:** This component in the example could also be a Fibre Channel Switch). The FC Director routes traffic via both available paths to two separate OptiStar EdgeSwitches on each side of the network. The traffic is then routed from the FCIP Network Modules on each OptiStar EdgeSwitch to the WAN via the WAN Network Module (OC-12c Network Modules in this example). Since two active end-to-end paths are available for routing traffic, there is complete protection from points of failure in the network between the FC Directors should any disruption or failure occur. In this scenario, if there is a disruption or failure in the primary path, traffic will be rerouted to the alternate path in any of the following points of failure:

- the link between the FC Director and the OptiStar EdgeSwitch
- the link between the WAN and the OptiStar EdgeSwitch
- any module within the OptiStar EdgeSwitch (including any individual components)
- the switch fabric of an OptiStar EdgeSwitch

2.2.2 MAN/WAN Considerations

Using the Gigabit Ethernet, OC-48c/STM-16c and OC-12c/STM-4c Network Modules, the OptiStar EdgeSwitch can connect to a wide variety of MAN/WAN network elements, including SONET/SDH multiplexers, WDM systems, IP routers and Gigabit Ethernet switches. Selection of the appropriate MAN/WAN link(s) requires consideration of the bandwidth, performance, and other requirements for your particular FCIP application.

2.2.2.1 SONET/SDH Interfaces

When connecting the OC-48c/STM-16c Network Module or the OC-12c/STM-4c Network Module to a SONET/SDH interface, the interface must be *concatenated* SONET/SDH. Channelized SONET/SDH uses different framing and will not work with the OptiStar EdgeSwitch Packet over SONET/SDH interfaces.

2.2.2.2 Optical Power Budgets and Link Loss

The optical power budget (PB) for the particular type of WAN interface also needs to be considered when designing the application. In some cases it may be necessary to adjust the optical power level on the WDM or SONET/SDH system that the OptiStar EdgeSwitch is connecting to, in order to ensure that the link is reliable.

The optical power budget may be viewed as the amount of optical power available to overcome the attenuation within the optical link. Optical attenuation (sometimes called Link Loss, or LL) is caused by passive components associated with the optical cable plant, including cables, cable splices and connectors.

The following table summarizes the optical power budget (PB) for OptiStar EdgeSwitch fiber interfaces:

Interface	Transmit Output Power	Receiver Sensitivity	Power Budget (PB)	Maximum Distance
Single Mode Fiber GBIC	-8 to -3 dBm at 1310 nm (nom)	-26.5 to -3 dBm	19 dB	10 km
Multimode Fiber GBIC	-10 to -4 dBm at 850 nm (nom)	-22.5 to 0 dBm	17 dB	500 m
OC-48c/STM-16c Network Module	-5 to -2 dBm at 1310 nm (nom)	-24 to -18 dBm	19 dB	15 km
OC-12c/STM-4c Network Module	-15 to -8 dBm at 1310 nm (nom)	-28 to -8 dBm	13 dB	15 km

The following link loss factor attenuation guidelines should be used to estimate the power budget of the optical link:

Link Loss Factor	Attenuation
Single mode cable	0.5 dB/km
Connector	0.5 dB
Cable splice	0.5 dB

Power Margin (PM) is defined as the amount of optical power in excess of that required to guarantee the minimum receive power will be available at the receiver, after taking into account the link loss, i.e.

Power Margin (PM) = Power Budget (PB) – Link Loss (LL)

Sample Calculation of Power Margin

Example: Two OptiStar EdgeSwitch units are connected via OC-12c/STM-4c across 15 km of optical cable. The link consists of two connectors and two optical splices. Is there adequate power margin?

Solution:

The link loss for this installation is: $LL = 15 \times 0.5 + 2 \times 0.5 + 2 \times 0.5 = 9.5$ dB

The Power Margin is: $PM = PB - LL = 13 - 9.5 = 3.5$ dB

Since the Power Margin is positive, the installation will perform to specification.

NOTE: Power Margin should be ≥ 3 dB taking into account LED aging, temperature effects and other variables.

2.2.3 SAN Considerations

When planning an OptiStar EdgeSwitch FCIP application, it is necessary to understand the SAN configuration and devices that will be interconnected with the OptiStar EdgeSwitch. The SAN architecture will help determine the OptiStar EdgeSwitch FCIP Network Module port and parameter settings, as well as any unique interoperability or configuration issues.

The Fibre Channel ports on the FCIP Network Module provide connectivity to Fibre Channel SAN fabric switches, servers with host bus adapters (HBA), Fibre Channel arbitrated loop hubs, Fibre Channel routers, storage RAID arrays, JBOD (just-a-bunch-of-disks) disk arrays, tape libraries, and other devices.

Each FCIP Network Module port operates as an E_Port, FL_Port, or an F_Port depending on the type of device that it is interfacing with. E_Port is typically used when connecting to a SAN fabric switch that is compliant with the FC-SW-2 standard. FL_Port is used when connecting to a public loop device such as an arbitrated loop hub or a server's host bus adapter (HBA) that is operating as an NL_Port device. Finally, with a point-to-point connection such as to a Storage RAID array directly connected to the FCIP Network Module port, the port will look like an F_Port, which is a fabric port connecting to an N_port or Node device. Devices that are not FC SW-2 compliant will have to be connected to the FCIP Network Module via a third party switch.

If the SAN environment includes Fibre Channel arbitrated loop devices or hubs, it is also important to know whether the OptiStar EdgeSwitch will be connecting to a private or public loop device. This will alert you as to having to change the FCIP Network Module switch mode of operations in order to be able to support both public loop and private loop devices at the same time.

Another important aspect to consider when planning an OptiStar EdgeSwitch FCIP application is zoning. Zoning is a fundamental technique for Storage Area Network (SAN) management that can be implemented in several different ways. In all cases zoning serves to allow users access to the appropriate storage devices in order to increase security, isolate elements of the SAN for interoperability or application reasons, and optimize the flow of traffic over the network. The OptiStar EdgeSwitch uses WWN Zoning to enable the user to set up logical groupings within the Fibre Channel SAN fabric. WWN (World Wide Name) zoning uses the World Wide N_Port_Names (WWPNs) from the name server in the switches to either allow or block access to

particular WWNs in the fabric. Lucent's WWN zoning configuration complies with T-11 standards (SW-2 and GS-3).

Zoning is a powerful tool for making the most efficient use of storage assets in a SAN. However, it must be planned carefully to make the best use of the available storage and the network's bandwidth. In addition, the network design process must incorporate a consideration of how zoning and the high availability strategy will interact in the fabric. Since zoning can effectively cut off access from one part of the fabric to another, all zoning configurations must accommodate the failover and recovery paths and components as appropriate.

2.2.4 LAN Considerations

Using its Gigabit Ethernet Network Module, the OptiStar EdgeSwitch can connect to Layer 2/3 IP switches, servers with a Gigabit Ethernet network interface card (NIC), Gigabit Ethernet concentrator switches, and other LAN network elements. When combining LAN and SAN applications, the OptiStar EdgeSwitch can be configured to either transmit all traffic over one shared WAN port, or to segregate Gigabit Ethernet traffic over one WAN port and FCIP traffic over a second WAN port (using static routing).

Prior to configuring the OptiStar EdgeSwitch for connectivity to the LAN, it is important to understand the type of IP network, as well as the associated subnets that may already be in use at the site. This applies both to any Gigabit Ethernet port IP assignments being used in the OptiStar EdgeSwitch to connect to the LAN side of the network, as well as to the IP address to be assigned to the OptiStar EdgeSwitch 10/100 Ethernet management port.

2.2.5 Configuration Planning

To assist in planning the IP address and subnet assignments and other parameters for an OptiStar EdgeSwitch installation, refer to the Basic Configuration Worksheet provided in Appendix A.

2.3 Ordering Information

The OptiStar EdgeSwitch is a modular device that allows customers to easily tailor their OptiStar EdgeSwitch order to best suit the needs of their network and planned applications. Preparing an OptiStar EdgeSwitch order consists of five basic steps:

- (1) Identify the number of OptiStar EdgeSwitches to be deployed
- (2) Select number and type of Network Modules to be installed in each OptiStar EdgeSwitch
- (3) **Optional:** Select number and type of GBIC Transceiver Modules for each FCIP Network Module and/or Gigabit Ethernet Network Module
- (4) **Optional:** Select number and type of any spare components desired, including OptiStar EdgeSwitch base configuration, any Network Module, any GBIC, Power Module and/or Fan Module
- (5) **Optional:** Select any fiber and/or copper cables needed to connect OptiStar EdgeSwitch Network Module ports to SAN, LAN, or WAN network elements

2.3.1 OptiStar EdgeSwitch Comcodes

The following table lists the OptiStar EdgeSwitch components that are available for ordering:

Component	Lucent Comcode
Base Configuration	
OptiStar EdgeSwitch Chassis (Base Configuration): 22Gbps Layer 2/3 network switch/router chassis, including Host Controller Module with RS-232 console and 10/100 Ethernet management ports, two redundant hot-swappable AC Power Modules, one Fan Module, all system software and documentation, power cables, rack-mount brackets, and four open slots for Network Modules.	408667111
Network Modules	
FCIP Network Module: Hot-swappable two-port module implementing Fibre Channel Over IP (FCIP) protocol, 1 Gbps (100 Mbps) Fibre Channel per port, integrated Fibre Channel switch engine for E_Port, F_Port, and FL_Port connectivity, includes two open slots for plug-in GBIC interfaces.	408667087
Gigabit Ethernet Network Module: Hot-swappable two-port Gigabit Ethernet, 1 Gbps per port, includes two open slots for plug-in GBIC interfaces.	408667079
OC-48c/STM-16c Network Module: Hot-swappable one-port OC-48c IP Packet over SONET or STM-16c SDH, 2.5 Gbps ¹ , 1310nm nominal wavelength for use with 8.3/125µm single mode fiber, LC connector, 15km max cable length.	408667103
OC-12c/STM-4c Network Module: Hot-swappable two-port OC-12c IP Packet over SONET or STM-4c SDH, 622 Mbps per port, 1310nm nominal wavelength for use with 8.3/125µm single mode fiber, LC connector, 15km max cable length.	408454080
Gigabit Interface Converter (GBIC) Transceiver Modules	
Single Mode Fiber GBIC: Interchangeable, hot-swappable plug-in 8.3/125µm single mode fiber interface for FCIP Network Module or Gigabit Ethernet Network Module, 1310nm nominal wavelength, SC connector, 10km max cable length.	408539773
Multimode Fiber GBIC: Interchangeable, hot-swappable plug-in 62.5/125µm multimode fiber interface for FCIP Network Module or Gigabit Ethernet Network Module, 850nm nominal wavelength, SC connector, 500m max cable length.	408539781
HSSDC Copper GBIC: Interchangeable, hot-swappable plug-in active copper interface for FCIP Network Module or Gigabit Ethernet Network Module, HSSDC connector, 50ft max cable length.	408539799
DB-9 Copper GBIC: Interchangeable, hot-swappable plug-in active copper interface for FCIP Network Module or Gigabit Ethernet Network Module, DB-9 (female) connector, 50ft max cable length.	408539807
Spares & Replacement Parts²	
Power Module: Replacement hot-swappable Power Module, provides 200 Watts, 90-132/180-264 Volts AC @ 47-63Hz, auto-ranging. (Two Power Modules included with each OptiStar EdgeSwitch Base Configuration.)	408667178
Fan Module: Replacement hot-swappable Fan Module, including four cooling fans for N+1 fan redundancy. (One Fan Module included with each OptiStar EdgeSwitch Base Configuration.)	408668663

Notes:

1. The OC-48c/STM-16c and the Gigabit Ethernet Network Modules run at slightly less than full line rate under certain operating conditions.
2. All Network Modules, GBICs, and OptiStar EdgeSwitch Base Configuration are also available as spares or replacement parts.

2.3.2 GBIC Transceiver Modules

The Gigabit Interface Converter (GBIC) Transceiver Modules used by the FCIP and Gigabit Ethernet Network Modules may be ordered through Lucent Technologies or customers may wish to procure them from another source.

The following GBICs have been approved for use with the OptiStar EdgeSwitch FCIP and Gigabit Ethernet Network Modules:

Manufacturer	Model No.	Type	FCIP Network Module	Gigabit Ethernet Network Module	Equivalent Lucent Comcode
Finisar	FTR-1319-3A	Single mode fiber, 1310nm, 5V/3.3V	✓	✓	408539773
Finisar	FTR-1519	Single mode fiber, 1550nm, 5V/3.3V	✓	✓	N/A
Finisar	FTR-8519-3	Multimode fiber, 5V/3.3V	✓	✓	408539781
Finisar	FCM-8520-2	Active copper, HSSDC, 5V/3.3V	✓	✓	408539799
Finisar	FCM-8519-1-T4	Active copper, DB-9, 5V	✓	✓	408539807
Finisar	FCM-8519-2-T4	Active copper, HSSDC, 5V	✓	✓	N/A
Vixel	OE1063SW	Multimode fiber, 5V	✓		N/A
E20	EM125-G3TA	Multimode fiber, 3.3V		✓	N/A

2.4 Cabling Requirements

The table below outlines the cabling requirements for each port type on the OptiStar EdgeSwitch. The connector type listed indicates only what is required to connect to the OptiStar EdgeSwitch port, and may or may not be the same connector type required for the other end of the cable. For cable ordering information, please refer to Appendix I.

Port	Cabling	Maximum Span
Single Mode Fiber GBIC	8.3/125µm single mode duplex fiber or simplex fiber pair (1 transmit, 1 receive), 1310nm nominal wavelength, SC connector	10 km
Multimode Fiber GBIC	62.5/125µm multimode duplex fiber or simplex fiber pair (1 transmit, 1 receive), 850nm nominal wavelength, SC connector	500 m
HSSDC Copper GBIC	Copper cable, HSSDC connector	15 m
DB9 Copper GBIC	Copper cable, DB9 (male) connector	15 m
OC-48c/STM-16c Network Module	8.3/125µm single mode duplex fiber or simplex fiber pair (1 transmit, 1 receive), 1310nm nominal wavelength, LC connector	15 km
OC-12c/STM-4c Network Module	8.3/125µm single mode duplex fiber or simplex fiber pair (1 transmit, 1 receive), 1310nm nominal wavelength, LC connector	15 km
10/100 Ethernet Management Port	Category 5 Ethernet cable, shielded RJ-45 connector	100 m
RS-232 Console Port	Copper null modem cable, RS-232 connector	15 m

CHAPTER 3

Hardware Installation



Chapter 3 Overview

- Unpacking the Shipping Carton
- Rack-Mounting Instructions
- Safety Guidelines
- Installation of Add-In Modules
- Connecting the Cables
- Removal of Modules

3.1 Unpacking the OptiStar EdgeSwitch Shipping Carton

This section will guide you through the process of unpacking the shipping carton containing the OptiStar EdgeSwitch and ensuring you have the necessary items to begin installation.

1. Choose a location to install the OptiStar EdgeSwitch and take the shipping carton to that location. To prevent damage to the OptiStar EdgeSwitch, do not remove it from the shipping carton until a location has been chosen and you are ready to install it.
2. Carefully open the shipping carton and remove the contents of the shipping carton one item at a time. Be sure to use both hands when removing the OptiStar EdgeSwitch unit.

Note: Because the configuration of the OptiStar EdgeSwitch depends upon the specific add-in modules ordered, **it is very important to compare the shipping invoice to your purchase order.** The OptiStar EdgeSwitch is shipped with all selected modules pre-installed. Ensure that the modules installed in the unit matches the modules that were ordered.

3. Ensure that you have all of the components that were ordered, using the **Shipping Carton Contents List** below as well as your purchase order and packing list for optional components. Refer to [Section 1.2, entitled “Product Diagram”](#) for help in matching each component to the shipping invoice and purchase order.

OptiStar EdgeSwitch Shipping Carton Contents List

Standard Equipment:

- Chassis – 19-inch rack mountable or tabletop – with the following standard equipment:
 - Host Controller Module - full width
 - Two AC Power Modules - half-width each
 - Fan Module – vertical side slot
- 2 Power cords
- A CD-ROM containing OptiStar EdgeSwitch documentation and software
- Electrostatic discharge (ESD) preventive wrist strap
- Two (2) rack mount brackets with eight (8) Phillips head screws

Plug-In Equipment:

- Plug-In Network Modules: half-width – in any combination
 - OC-48c/STM-16c - 1 port
 - OC-12c/STM-4c - 2 ports
 - Gigabit Ethernet - 2 ports
 - FCIP – 2 ports
- GBIC Transceiver Modules (for Gigabit Ethernet or FCIP)
 - Single Mode Fiber GBIC
 - Multimode Fiber GBIC
 - HSSDC Copper GBIC
 - DB-9 GBIC

Note: Cables ordered through Lucent Technologies will be shipped separately from the OptiStar EdgeSwitch.

4. Carefully inspect all items for shipping damage. If any damage is evident, immediately contact a Lucent customer service representative and save all packing material. Never install equipment that appears to be damaged.
5. Once all the equipment is unpacked and checked, you are ready to prepare for installation. Please continue to the next section, entitled “Pre-Installation Planning”, to review important installation requirements and guidelines.

3.2 Rack-Mounting Instructions

Before installing the OptiStar EdgeSwitch, please review **Appendix E: “Preventing Electrostatic Discharge”**. Keep in mind the power and cabling requirements that need to be met and the necessary environmental conditions that need to be maintained. In order to install the OptiStar EdgeSwitch, you will need to obtain the following items before you begin:

- OptiStar EdgeSwitch rack mount bracket kit, including two brackets and 8 screws
- Phillips screwdriver
- Additional hardware for rack-mounting, such as screws and nuts
- Any additional tools necessary for installing equipment in a rack
- Fiber or copper cabling, as described in Chapter 2



CAUTION: The power receptacles for the OptiStar EdgeSwitch's AC power cords must be located in close proximity to the unit and must be easily accessible.

A rack-mount installation is recommended due to size, weight and performance considerations. Before installing the OptiStar EdgeSwitch in a 19-inch rack, consider the following rack-mounting guidelines:

- Install in an open rack whenever possible. The OptiStar EdgeSwitch is the height of 3 units.
- If installing in an enclosed rack, make sure the rack has adequate ventilation or an exhaust fan. An enclosed rack with a ventilation system that is too powerful can prevent proper cooling by creating negative air pressure around the OptiStar EdgeSwitch and redirecting air away from the Fan Module. If necessary, leave rack door open during operation. If the enclosed rack does not have an exhaust fan, one must be installed prior to installing the OptiStar EdgeSwitch.
- Maintain a clearance of at least 3 inches (7.62 cm) at the sides of the OptiStar EdgeSwitch to ensure adequate air intake and exhaust. Note that the cooling air flow travels through the OptiStar EdgeSwitch from right to left when facing the front of the switch.
- Allow at least 19 inches (48.3 cm) of clearance at the front of the rack for maintenance.
- Extra clearance above or below the unit on the rack is not required; however, be aware that equipment placed in the rack beneath the OptiStar EdgeSwitch can generate heat that is drawn into Fan Module, which adds to the heat load. Therefore, avoid installing in an overly congested rack. Air flowing to or from other equipment in the rack might interfere with the normal flow of cooling air through the OptiStar EdgeSwitch, increasing the potential for overheating.
- Keep the center of gravity in the rack as low as possible. This ensures that the weight of the OptiStar EdgeSwitch will not make the rack unstable. Make sure that the rack is secured and use the proper mounting hardware to secure the OptiStar EdgeSwitch to the rack.
- Use a cable-management system to help keep interface cables organized, out of the way, and free from kinks or bends that degrade cable performance.

Prior to installing an OptiStar EdgeSwitch in the rack, attach one rack-mount brackets to each side of the OptiStar EdgeSwitch chassis using the screws provided.



Figure 3-1: Installing the Bracket using a Phillips head screwdriver

Once the rack-mount brackets are attached, mount the OptiStar EdgeSwitch in the rack by using four screws or bolts (not provided), to attach the front of the rack-mount brackets to the rack. The OptiStar EdgeSwitch rack-mount brackets are designed for front post rack mounting only. For other rack configurations, the OptiStar EdgeSwitch may need to be placed on a shelf in the rack.

Once the OptiStar EdgeSwitch is secured into the rack, attach both power cords to the back of the switch, and connect the pronged end of each power cord into a separate power circuit.



Figure 3-2: Attaching Power Cord

3.3 Safety Recommendations

- Never attempt to lift an object that might be too heavy for one person to handle.
- Always disconnect the power source and unplug all power cables before installing.
- Keep the work area free of obstructions before, during, and after installation. Keep tools and components away from walk areas.
- Do not wear loose clothing, jewelry (including rings, bracelets, or chains), or other items that could get caught during handling and use.
- Use in accordance with marked electrical ratings and product usage instructions.



CAUTION: The instructions in this guide warn about situations that could cause bodily injury. Before working on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

3.4 Installation of OptiStar EdgeSwitch Modules

3.4.1 Slot Numbering

Review the diagram below indicating the OptiStar EdgeSwitch slots and the location of the 10/100 port and the Console port. **Tip:** Install the Modules in the bottom slots first.

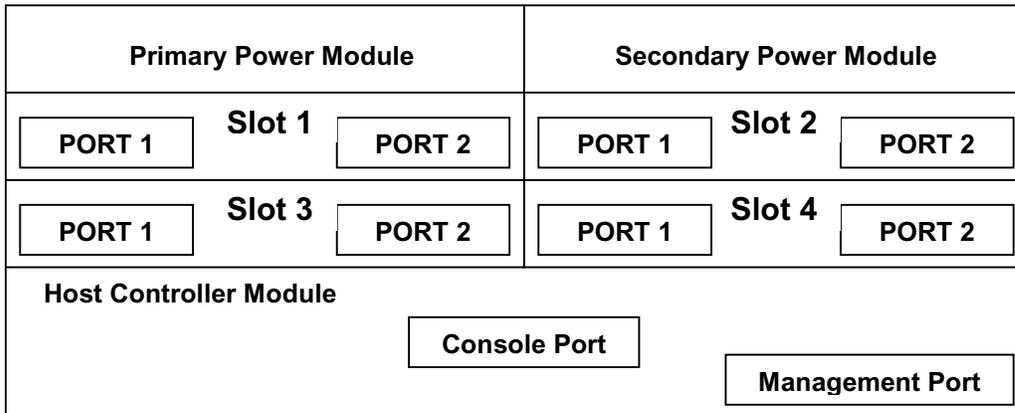


Figure 3-3: Slot Numbering Diagram

3.4.2 Installing the Network Modules

Before installing any of the Network Modules, place an antistatic strap on your wrist and ground it to any unpainted metal on the OptiStar EdgeSwitch. You will find grounded, unpainted metal revealed by loosening any thumbscrew post on a module that is fully inserted into the OptiStar EdgeSwitch chassis. It is recommended to select a thumbscrew post on the Fan Module or a Power Module.



Figure 3-4: Wrist Strap Grounded to Thumbscrew Post

Always place Network Modules component side up on an antistatic surface or in a static-shielding bag. Handle Network Modules only by the edges and avoid touching the board. To install a Module, slowly insert it into the slot making sure that the edges of the Module line up with the guides on the chassis. The Module is seated when the front panel of the Module is flush with the front panel of the OptiStar EdgeSwitch. Ensure that the release levers on the front edges of the modules are in a closed position (pressed against the front panel). Secure with thumbscrews.



Figure 3-5: Installing a Network Module on the OptiStar EdgeSwitch

Any vacant slot in the OptiStar EdgeSwitch must be covered with a blank filler panel to ensure proper flow of cooling air through the power modules, to protect the unit from dust or other particulate matter and to satisfy EMI compliance requirements.



Figure 3-6: Installing a Blank Filler Panel on the OptiStar EdgeSwitch

3.4.3 Installing the GBIC Modules

Both the FCIP Network Modules and the Gigabit Ethernet Network Modules use GBICs for the physical interface. For a list of approved GBICs for the FCIP and Gigabit Ethernet Network Modules see [Section 2.3.2](#). See [Section 2.4](#) for cable guidelines for the GBIC Modules.



Figure 3-7: GBIC Insertion and Removal

3.5 Connecting the Cables

3.5.1 Connecting Cables to the GBICs

Once all Modules are installed, you are ready to connect fiber or copper cables to the GBICs in the OptiStar EdgeSwitch Gigabit Ethernet Network Module and FCIP Network Module ports . Attach the appropriate cable to the Single Mode Fiber GBIC (SC connector), Multimode Fiber GBIC (SC connector), HSSDC Copper GBIC or DB-9 Copper GBIC. Connect the other end of the cable to the appropriate Fibre Channel or Gigabit Ethernet device.



Figure 3-8: HSSDC Cable to HSSDC Copper GBIC



Figure 3-9: Multimode Fiber Cable to Multimode Fiber GBIC

3.5.2 Connecting Cables for the OC-48c/STM-16c Network Module

Once all Modules are installed, you are ready to connect the OptiStar EdgeSwitch OC-48c/STM-16c Network Module port to another OC-48c/STM-16c device. Attach a single mode fiber cable (with LC connector) to the desired OptiStar EdgeSwitch OC-48c/STM-16c Network Module port. Connect the other end of the cable to the other OC-48c/STM-16c device (with LC, SC, FC, ST or other connector type).



Figure 3-10: Single Mode Fiber Cable with LC Connector to the 48c/STM-16c Network Module

3.5.3 Connecting Cables for the OC-12c/STM-4c Network Module

Once all Modules are installed, you are ready to connect the OptiStar EdgeSwitch OC-12c/STM-4c Network Module ports to other OC-12c/STM-4c devices. Attach a single mode fiber cable (with LC connector) to the desired OptiStar EdgeSwitch OC-12c/STM-4c Network Module port. Connect the other end of the cable to the other OC-12c/STM-4c device (with LC, SC, FC, ST or other connector type).



Figure 3-11: Single Mode Fiber Cable with LC Connector to the OC-12c/STM-4c Network Module

3.5.4 Management Cables

To provide 10/100BaseT Ethernet connectivity to the management port, attach a Category 5 Ethernet cable (with RJ-45 connector) to the 10/100BaseT Ethernet management port on the OptiStar EdgeSwitch Host Controller Module.



Figure 3-12: Category 5 Ethernet Cable with RJ-45 Connector to 10/100BaseT (Management) Port

To provide serial port connectivity to the console port, attach a null modem cable (with 9-pin DB-9 connector) to the console port on the OptiStar EdgeSwitch Host Controller Module.



Figure 3-13: Null Modem Cable with DB-9 Connector to Console Port

The following picture is an example of what the OptiStar EdgeSwitch might look like after a complete installation. This example includes:

- One OC-48c/STM-16c Network Module in slot #1
 - One OC-12c/STM-4c Network Module in slot #2
 - One Gigabit Ethernet Network Module with a Single Mode Fiber GBIC and Multimode Fiber GBIC in slot #3
 - One FCIP Network Module with HSSDC Copper GBIC and Multimode Fiber GBIC in slot #4
- Null modem cable and 10/100 Ethernet cable attached to Host Controller Module ports



Figure 3-14: Example of One of Each Type of Network Module with Cables Attached

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CHAPTER 4

OptiStar EdgeSwitch Configuration



Chapter 4 Overview

- Powering on the OptiStar EdgeSwitch
- Accessing the Firmware
- Setting Up Security
- User Management
- Assigning IP addresses
- Setting Up a Static Route and Checking IP Connectivity
- Setting Up Routing
- Configuring an FCIP Network Module
- Setting Up a Fibre Channel Tunnel between OptiStar EdgeSwitches
- Setting Up Zoning
- Exporting/Importing the Current Configuration

4.1 Powering On the OptiStar EdgeSwitch

Step 1 Locate power module(s) and power up (turn on) the OptiStar EdgeSwitch. The system Power On Self Test (POST) will automatically run. [See Section 1.4.1.3](#) for detailed information on both the POST process and interpreting POST Results.

Step 2 After POST, the next step in installing the OptiStar EdgeSwitch involves bringing the runtime firmware into the system using the boot firmware. Booting can proceed in one of two ways:

1. Auto Boot Process ([see Section 4.1.1](#))
2. Manual Boot Process ([see Section 4.1.2](#))

If this is the first time you are logging on to the OptiStar EdgeSwitch, it is recommended that you use the BootUp Menu described in [Section 4.1.2](#) to enter the 10/100BaseT port IP address and Subnet Mask. (Note: The 10/100BaseT port IP address and Subnet Mask can also be entered via the OptiStar EdgeSwitch CLI by following the menu path: [3] Configuration → [4] IP Parameters → [1] Set 10/100BaseT port IP Address and Mask)

4.1.1 Auto BootUp Process

During bootup of the OptiStar EdgeSwitch, you should see the following message:

“Press any key to enter BootUp Menu”

Once POST is complete, a 7 second countdown will be displayed. If no key is pressed during POST or before the countdown ends, then the boot firmware automatically loads the default runtime firmware from the FLASH and enters runtime mode bypassing the initialization menu. This is the normal boot process.

WARNING: If any key is pressed on the OptiStar EdgeSwitch during POST (i.e. before the 7 second countdown is displayed) POST will be aborted and will fail. *Do not press a key to enter the BootUp Menu until the 7 second countdown is displayed.*

If the boot firmware fails to find the runtime file (i.e., the file is not present in the FLASH) the following will occur:

- If the current configuration parameters are valid, TFTP is initiated using the TFTP parameters from the current configuration.
- Otherwise, the Boot firmware will get the TFTP server parameters using BOOTP.

If BOOTP fails, then the user will be prompted for the TFTP parameters and 10/100BaseT parameters through the BootUp Menu (see Section 4.1.2, entitled “Manual BootUp Process”).

4.1.2 Manual BootUp Process

During bootup of the OptiStar EdgeSwitch, you should see the following message:

“Press any key to enter BootUp Menu”

If any key is pressed during POST or before the 7-second countdown ends, the OptiStar EdgeSwitch BootUp Menu will be displayed. Pressing the key causes the boot firmware to load the runtime firmware from the FLASH and write it to SDRAM. The BootUp Menu should be used the first time a user is configuring the OptiStar EdgeSwitch to enter the initial parameters.

4.1.2.1 BootUp Menu

OptiStar EdgeSwitch BootUp Menu:

- [1] Status and Information
- [2] Configuration
- [3] Download Firmware
- [4] Invoke Firmware
- [5] Reset OptiStar EdgeSwitch
- [6] Clear EdgeSwitch Configuration

If this is the first time you are starting up the OptiStar EdgeSwitch, follow these steps:

- Step 1** Follow the menu path **[2] Configuration → [1] Configure Boot Parameters → [1] 10/100BaseT Port IP Address** to enter the 10/100BaseT IP Address.
- Step 2** Next, from the **Configure Boot Parameters** sub-menu, select menu option **[2] 10/100BaseT Port Subnet Mask** to enter the 10/100BaseT Subnet Mask.
- Step 3** Return to the Main **BootUp Menu** by entering ..
- Step 4** From the **BootUp Menu**, select menu option **[5] Reset OptiStar EdgeSwitch** to reboot the OptiStar EdgeSwitch.
- Step 5** Once the system has booted, verify that the LED indicator next to the 10/100BaseT port indicates the proper status.

4.2 Accessing the OptiStar EdgeSwitch Firmware

Once the hardware has been initialized and the firmware has been downloaded, the OptiStar EdgeSwitch is ready to be configured. After the initial configuration is completed, the OptiStar EdgeSwitch can be managed in three ways:

CLI - Command Line Interface. The CLI is a configuration and management utility that can be used to configure the OptiStar EdgeSwitch during runtime. The CLI is a part of the runtime firmware. See [Section 4.2.1](#) for details on how to use the CLI.

Web-based Management. The OptiStar EdgeSwitch can also be managed via a standard web browser (Internet Explorer 5.0 or higher and Netscape Communicator 4.xx or higher). See [Section 4.2.2](#) for details on how to use web-based management.

SNMP - Simple Network Management Protocol. The OptiStar EdgeSwitch can be managed using an SNMP management station. The MIBs are available on the OptiStar EdgeSwitch CD or online at <http://www.lucent.com/support>. When online, search the product catalog using the keyword “OptiStar”. See [Section 4.2.3](#) for more information.

4.2.1 Command Line Interface (CLI) Overview

4.2.1.1 How to Access the Command Line Interface (CLI)

The CLI is accessible via the following methods:

- TELNET APPLICATION OVER 10/100BaseT OR ANY OF THE SWITCHING PORTS.
A Telnet client can connect to the OptiStar EdgeSwitch through 10/100BaseT or any of the switching ports. For help on logging on to the CLI through Telnet, see [Section 4.2.1.1.1](#), entitled “[Logging on to the CLI through Telnet](#)”.
- SERIAL LINK
The console port can connect to a PC or laptop that runs a terminal emulation utility. For help on logging on to the CLI through the serial link, see [Section 4.2.1.1.2](#), entitled “[Logging on to the CLI through Serial Link](#)”.

4.2.1.1.1 Logging on to the CLI through Telnet

Step 1 Ensure that the OptiStar EdgeSwitch is connected to the network via the Ethernet connection and that the management workstation can access the same Ethernet network.

Step 2 Before connecting to the CLI, determine the IP address of the OptiStar EdgeSwitch. (Please see the Basic Configuration Worksheet from [Appendix A](#).)

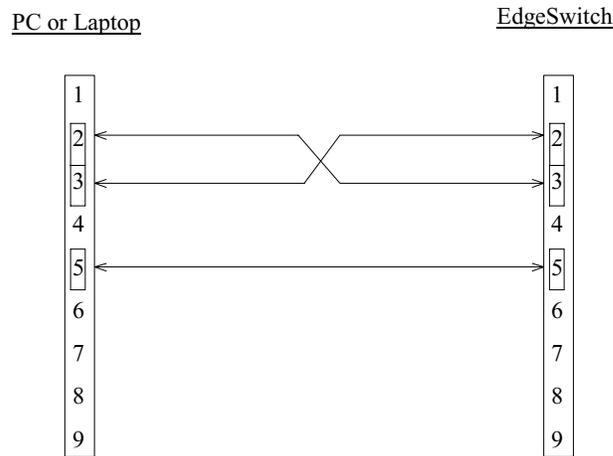
Step 3 At the command line prompt, type:

Telnet x.x.x.x, where *x.x.x.x* is the 10/100BaseT IP address of the OptiStar EdgeSwitch

The Telnet window should appear.

- Step 4** You will now be prompted for a user name and password. Please type these at the prompt. You should now be logged on to the CLI. (*Note:* The default user name is **optistar** and the default password is **optistar**.)
- Step 5** Once you have logged on successfully, skip to [Section 4.2.1.2](#) and read through [Section 4.2.1.4](#) for an overview of the CLI.

4.2.1.1.2 Logging on to the CLI through Serial Link



- Step 1** Attach one end of a null modem cable with a DB-9 connector to the serial port on the management workstation. Attach the other end of the cable to the Console Port on the OptiStar EdgeSwitch. A standard DTE to DTE null modem cable can be used for connecting the port to a PC or laptop.
- Step 2** For Windows workstations, open a terminal session through a terminal emulation with the desired icon, connection name, the appropriate serial port (usually COM1 or COM2 – in certain programs you may choose from the “Connect Using” drop-down list), and the following serial port parameters:

Baud Speed	38400
Parity	None
Data Bits	8
Stop Bits	1
Flow Control	Xon/Xoff

A terminal session window should appear, prompting you for a password.

- Step 3** For Unix workstations, type the following command at the Unix prompt :

```
cu -s 38400 -b 8 -l SerialPortDevicePath
```

(where *SerialPortDevicePath* is the filepath to the serial port used for connection)

- Step 6** You will now be prompted for a user name and password. Please type these at the prompt. You should now be logged on to the CLI. (*Note:* The default user name is **optistar** and the default password is **optistar**.)

Step 7 If you would like to change the console port speed from the default value of 38400, do so now. For help with changing the console port speed, please see [Section 5.3.3.2.2](#). Please remember that once you change the console port speed, you will need to change the speed of your terminal server program to match the new speed.

Step 8 Once you have logged on successfully, continue to [Section 4.2.1.2](#) and read through [Section 4.2.1.4](#) for an overview of the CLI.

4.2.1.2 OptiStar EdgeSwitch Access Priority Scheme

Since there are several methods by which a user can access the OptiStar EdgeSwitch, the system follows a pre-defined priority scheme to control multiple access attempts by a single user. There is no concurrency control of different users logged into the same OptiStar EdgeSwitch.

The OptiStar EdgeSwitch automatically arbitrates if a single user tries to log on to the OptiStar EdgeSwitch while already logged on via a different method. A user can access the CLI via either the serial port or a telnet session, but only one active CLI *per user* will be allowed at any given time. Web-based Management is the only access method that will allow concurrent logins by the same user, but web sessions are only allowed if the user is not already logged in to the CLI. The following table details how multiple session requests by the same user are managed by the OptiStar EdgeSwitch:

Priority	Access Type	Access Rules
1 st priority	Logging on to the CLI through the console port (serial port)	Only one user may be logged on through this port at any given time.
2 nd priority	Logging on to the CLI through telnet (10/100BaseT management port)	Up to 7 concurrent telnet sessions allowed in the network, but only one allowed <i>per user</i> at any given time. If a user is logged on through telnet and then logs on (using the same ID) via the serial port, the telnet session will be terminated automatically.
3 rd priority	Logging on to the Web-based interface	Concurrent logins by the same user allowed. Concurrent logins by different users also allowed. If a user with active Web-based sessions logs on to either telnet or the serial port (using the same ID), the Web-based sessions will be terminated automatically.

Thus, a user logged in via Web-based Management will automatically be logged off if that same user concurrently logs in via telnet or the serial port. Likewise, a user logged in via telnet will be automatically logged off by a concurrent login via the serial port.

Likewise, if a user is logged in via the serial port, then any other login attempts by that same user will be denied. If a user is logged in via telnet, then a login attempt via Web-based Management will be denied.

Note: After 20 minutes of inactivity, the system will time out and the user will automatically be logged off the CLI or the Web-based interface.

Example 1:

1. The user with User ID “optistar” is logged on to the CLI via the serial port.
2. The same user (“optistar”) tries to log on concurrently via telnet.
3. The telnet logon attempt will be denied.

Example 2:

1. The user with User ID “optistar” is logged on to the CLI via the serial port.
2. The user with the User ID “red” successfully logs on to the CLI via telnet.
3. The user with the User ID “blue” also successfully logs on to the CLI via telnet.
4. The user with the User ID “red” tries to open a Web-based Management session but is denied, since the telnet session already established for “red” in Step 2. has priority.
5. The user with the User ID “green” successfully logs on by opening a Web-based Management session.
6. The user with the User ID “green” successfully opens another Web-based Management session.

4.2.1.3 CLI Function Keys

The CLI interprets the **F1**, **F2** and **F3** function keys. The commands for each of these keys work on every screen of the CLI. **Note:** You should only push a function key in either of the following scenarios:

- (1) you would like to cancel any changes you have made to the current screen, or
- (2) you have completed changing/updating the information on the current screen by hitting the **<Enter>** key

If the user presses an active function key before executing the final enter command, then the information to be entered or changed will not be saved.

The CLI Function keys execute the following actions:

- F1** Returns to Main Menu
- F2** or **..** Returns to previous screen
(**Note:** entering the **..** command at the root menu is equivalent to using the **F3** key to exit the system)
- F3** Exits the system

4.2.1.4 CLI Main Menu

Once you have successfully accessed the CLI, you should see the OptiStar EdgeSwitch Main Menu as follows:

OptiStar EdgeSwitch Main Menu

F3 or .. (Exit)

-
- [1] Operational Information & Status
 - [2] Port Statistics
 - [3] Configuration
 - [4] Administration
 - [5] Utilities
 - [6] Change My Password
-

Enter your Choice >

Enter a number from the main menu to go to the corresponding category. For more help on each menu item, see the corresponding section as follows:

Operational Information & Status:	Go to Section 5.1 on page 5-2
Port Statistics:	Go to Section 5.2 on page 5-20
Configuration:	Go to Section 5.3 on page 5-21
Administration:	Go to Section 5.4 on page 5-49
Utilities:	Go to Section 5.5 on page 5-57
Change My Password:	Go to Section 5.6 on page 5-63

The OptiStar EdgeSwitch can be configured in runtime mode using a command line interface. All the parameters that are previously configured are stored in the OptiStar EdgeSwitch and will be used in the next boot up.

Note: If this is the first time you have logged on to the OptiStar EdgeSwitch and the user name and password have not been changed from the defaults, you should change them now. For help, go directly to [Section 4.3, entitled “Setting Up Security”](#).

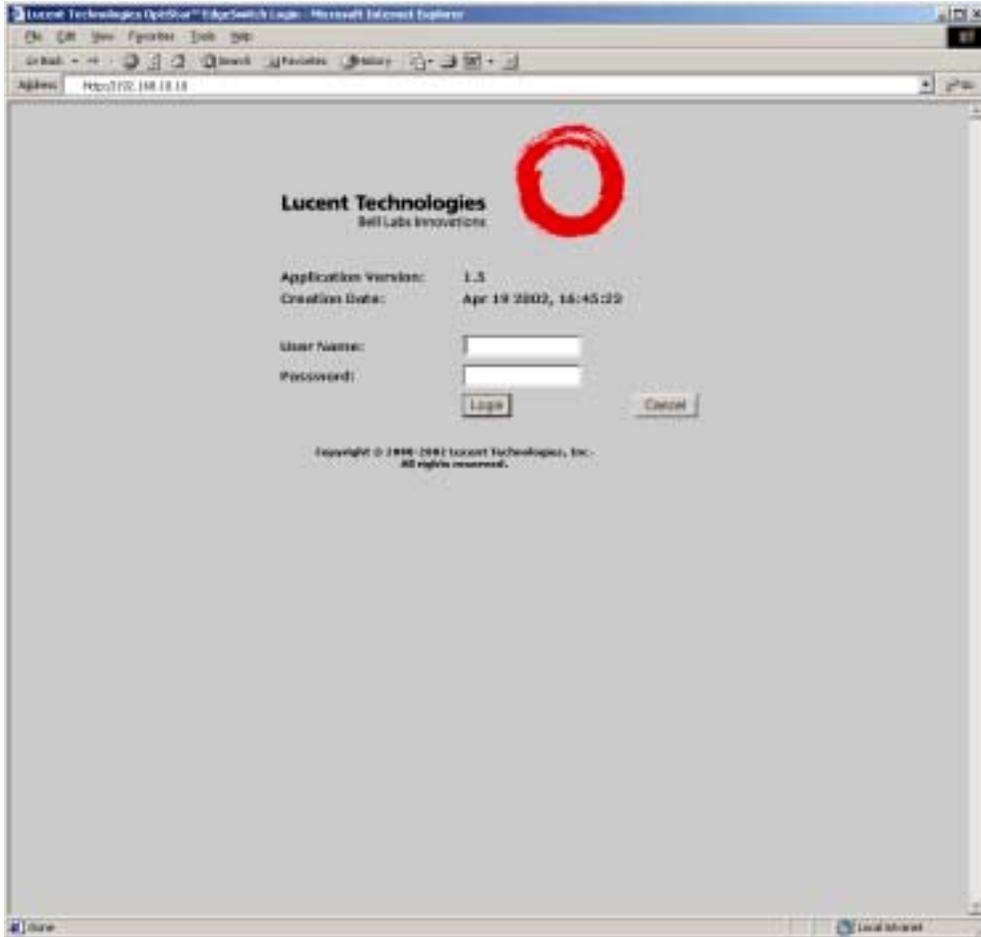
4.2.2 Web-based Management Overview

4.2.2.1 How to Access Web-based Management

The OptiStar EdgeSwitch can be managed via a standard web browser (Internet Explorer 5.0 or higher and Netscape Communicator 4.xx or higher). **Note:** Since there are several methods by which a user can access the OptiStar EdgeSwitch, the system follows a pre-defined priority scheme to control multiple access attempts by a single user. Under this scheme, a user logged in via Web-based Management will automatically be logged off if that same user concurrently logs in via telnet or the serial port. Web-based Management is the only access method that will allow concurrent logins by the same user, but web sessions are only allowed if the user is not already logged in to the CLI. For more information on access priority, see [Section 4.2.1.2](#). To launch the web-based configuration utility:

1. Ensure there is a connection to the OptiStar EdgeSwitch from the machine which hosts the browser. This connection can be over the 10/100BaseT management port or using PPP via the console port attached to a PC or laptop running a terminal emulation utility.

2. Launch the web browser. (**Note:** Depending on the customer environment, it may be necessary to disable the proxy server or add the OptiStar EdgeSwitch IP address to bypass the proxy.)
3. Enter the IP address of the OptiStar EdgeSwitch as the URL in the **Address** field of the browser screen. For example, if the IP address of the OptiStar EdgeSwitch is 192.168.10.10 then enter the URL as shown:
http://192.168.10.10
4. Select **Enter** and the browser will open the OptiStar **Login** page.



5. On the **Login** page, enter your user name in the **User Name** Field and your password in the **Password** field using the **Tab** key to advance to the next field. (**Note:** The default user name is **optistar** and the default password is **optistar**.)
6. Click on the **Login** button. Once you have successfully logged on you will see the OptiStar EdgeSwitch main page. The left hand frame shows the manageable items on the OptiStar EdgeSwitch.

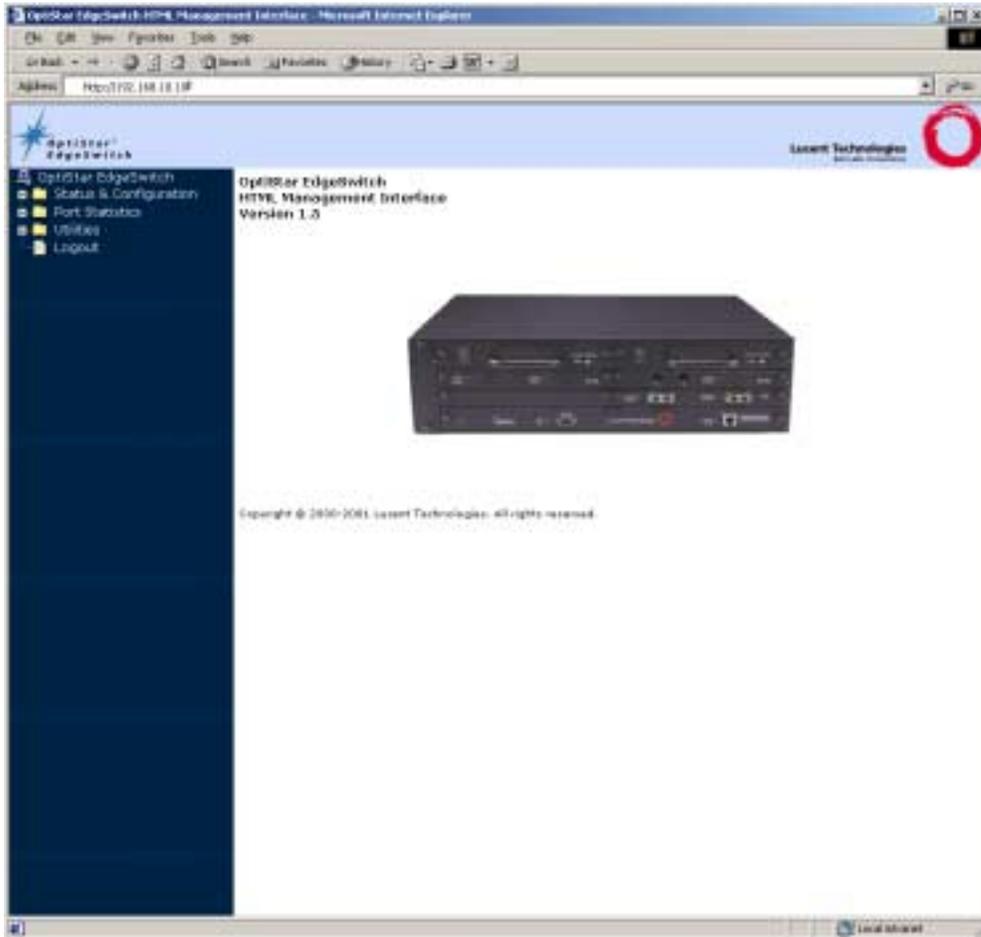
Note: To ensure system security, please log out when you are done using the web-based utility for the OptiStar EdgeSwitch. After 20 minutes of inactivity, the system will time out and you will automatically be logged off.

4.2.2.2 Web-based Management Main Menu

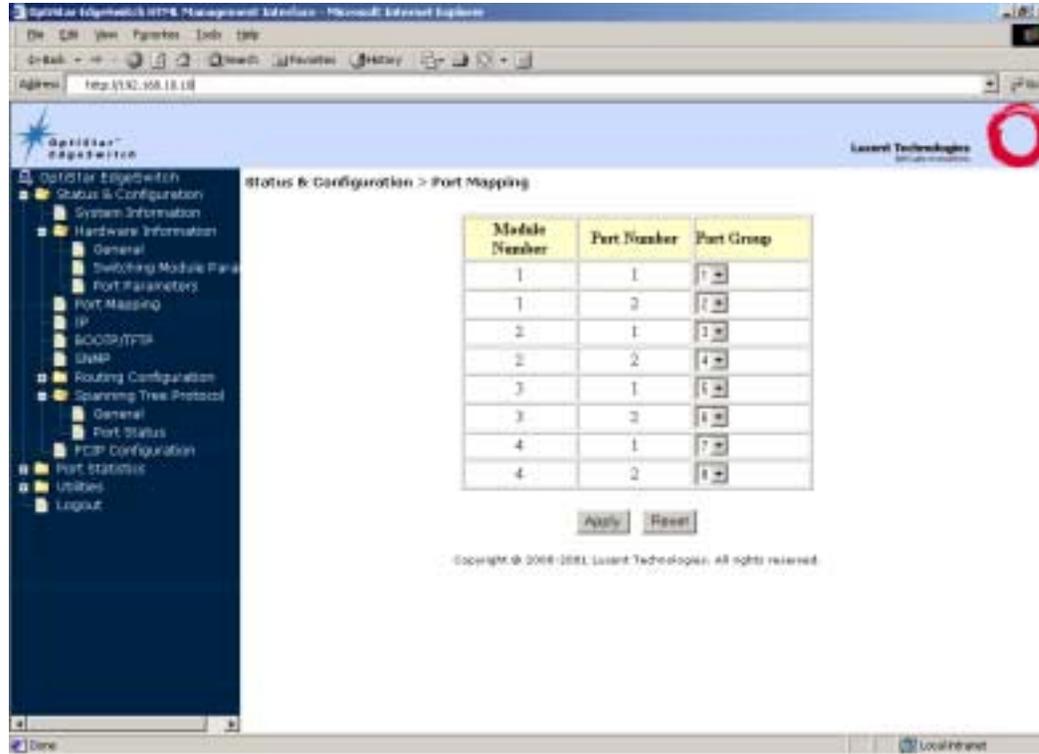
The OptiStar EdgeSwitch Web Configuration home page is set up with 2 frames. The left-hand frame contains a menu showing the management categories/functions on the OptiStar EdgeSwitch. The menu generally corresponds to the categories shown on the main screen of the CLI (see Section 4.2.1).

A key exception is that in the CLI, there are separate menu paths for displaying system parameters (**[1]Operational Information and Status**) versus modifying system parameters (**[3]Configuration**). In the Web-based utility these two categories are combined together under the **Status and Configuration** item on the home page main menu (displayed in the left-hand frame below). This enables users of the Web-based utility to both display and modify parameters associated with a particular function using the same screen.

Another exception is that there are no administrative capabilities available via the Web-based utility. Thus, the functions accessible via main menu item **[4]** of the CLI (labeled “**Administration**”) and its associated sub-menus (such as User Management) are not available using Web-based Management. To perform administration tasks, a user with the appropriate permissions must log on to the CLI via either the serial port or a telnet session. For more information on permissions, see Section 4.4. For more information on the Administration menu, see Section 5.4).



Each folder under the main menu can be clicked on to show the sub-menus (folder icons) and functions (page icons) available under that category. Once a function (or page icon) in the left-hand frame menu is selected, the right-hand frame shows the management screen corresponding to that item. The following graphic shows an example of the OptiStar EdgeSwitch Web Configuration main page with the **Status & Configuration → Port Mapping** menu item selected.



Most management capabilities and screens are analogous to those explained in [CHAPTER 5, entitled “Detailed OptiStar EdgeSwitch CLI Reference Guide”](#), which gives a detailed description of the OptiStar EdgeSwitch CLI. For help on a particular function, please see the section in [CHAPTER 5](#) that corresponds to the web-based selection.

Note: If this is the first time you have logged on to the OptiStar EdgeSwitch and the user name and password have not been changed from the defaults, you should change them now. For help, go directly to [Section 4.3, entitled “Setting Up Security”](#).

4.2.3 SNMP Overview

The OptiStar EdgeSwitch supports SNMP v1. For a detailed listing of supported MIBs, see the [es_mibs.pdf](#) on the OptiStar EdgeSwitch CD or go to Lucent OnLine Customer Support at the following link:

<http://www.lucent.com/support>

When online, search the product catalog using the keyword “OptiStar”.

4.3 Setting Up Security

4.3.1 Setting the Admin User Password

Now you will need to set up a password for the System Administrator (also referred to as the Admin User, or super user). The Admin User is the only person who can modify the Administrator user name and password.

Note: For security purposes, this function is not available via Web-based Management.

If you have already filled out the [OptiStar™ EdgeSwitch Basic Configuration Worksheet](#) provided in **Appendix A** during the planning phase of your installation, you will want to refer to it as you continue through the configuration steps provided in this chapter. If you have not filled out the worksheet, you may wish to do so now, since it is an effective tool for summarizing and maintaining the information you will need to configure the OptiStar EdgeSwitch.

Step 1 To set the Admin User Password, from the main menu follow the path:
[4] Administration → [1] Authentication Information → [2] Modify Admin UserName, Password

Step 2 Once this option is selected from the **Authentication Information** menu, the following prompts will be displayed (in succession):

Enter Old Administrator UserName :
Enter the current user name. (The default user name is **optistar**.)

Enter Old Administrator Password :
Enter the current password. (The default password is **optistar**.)

Step 3 Next, if the user name and password entered in **Step 2** were correct, the following prompts will be displayed (in succession). *If the user name and password have not been changed from the defaults, you should change them now.*

Enter New Administrator UserName :
Enter a new user name that is a minimum of 6 and a maximum of 8 alpha-numeric characters in length. If you enter a user name that is less than 6 characters or greater than 8 characters, you will receive an error message.

Enter New Administrator Password :
Enter a new password that is a minimum of 6 and a maximum of 8 alpha-numeric characters in length. If you enter a password that is less than 6 characters or greater than 8 characters, you will receive an error message.

Re-Enter New Administrator Password :
Re-enter the new password.

4.3.2 Setting up SNMP Management

To set up SNMP Management on the OptiStar EdgeSwitch, complete the following steps:

- Step 1** From the main menu, follow the path:
[4] Administration → [3] SNMP Configuration → [2] Add NMS Entry
- Step 2** Enable the management station to access the OptiStar EdgeSwitch by entering the station's IP address.
- Step 3** From the SNMP Configuration menu, select menu item **[5] Modify Community Name**
- Step 4** Assign a Community Name to each Access Mode. For example: The default Community Names are “**superman**” for **Read-Write** and “**manager**” for **Read-Only**.
- Step 5** From the SNMP Configuration menu, select menu item **[6] Modify Trap Administration Status**
- Step 6** Enable (or disable) each Trap Type as desired.

For more help on setting up SNMP Management, [see Section 5.4.3](#).

4.4 User Management

The next step in setting up the OptiStar EdgeSwitch is to assign authorized users to the system. A maximum of 8 users (not including the super user) may be assigned to the system at any given time. Each user will be granted a set of “permissions” in accordance with their job function and/or job requirements that will determine the level of access they will have on the OptiStar EdgeSwitch.

The following table shows the **Permission Type** and the corresponding **Level of Access** that will be granted.

Permission Type	Level of Access on CLI	Level of Access on Web
Administration	Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), Administration: <i>read-write</i> (Main Menu [4]), ability to Change Password (Main Menu [6])	Port Statistics, Utilities <i>No Administration functionality available</i>
Provisioning Browser -or- Provisioning +	Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), Configuration: <i>read-only</i> (Main Menu [3]), ability to Change Password (Main Menu [6]) Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), Configuration: <i>read-write</i> (Main Menu [3]), ability to Change Password (Main Menu [6])	Port Statistics, Utilities, Status and Configuration: <i>read-only</i> Port Statistics, Utilities, Status and Configuration: <i>read-write</i>
Maintenance Browser -or- Maintenance +	Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), Utilities: <i>read-only</i> (Main Menu [5]), ability to Change Password (Main Menu [6]) Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), Utilities: <i>read-write</i> (Main Menu [5]), ability to Change Password (Main Menu [6])	Port Statistics, Utilities, Status and Configuration: <i>read-only</i> Port Statistics, Utilities, Status and Configuration: <i>read-write</i>

Each user in the system may be assigned from zero to three permissions at the time the user is added to the system. Permissions may be modified at any time by a user with Administration permission. The Admin User should possess all three read-write permissions (Administration, Provisioning +, and Maintenance +).

Note: For the Provision and Maintenance permission types, a user may be assigned either “Browser” or “+”, but not both, since these two categorizations represent read-only (Browser) vs. read-write (+) access to the same functions.

Step 1 To add users to the system, from the main menu follow the path:
[4] Administration → [6] User Management → [1] Add User

Step 2 For the first new user, enter the required information by following the system prompts:

Enter Login UserName: Enter a login name that is a minimum of 6 and a maximum of 8 alpha-numeric characters in length

Enter User's Password: Enter a temporary login password for the user that is a minimum of 6 and a maximum of 8 alpha-numeric characters in length. The user should be instructed to change this password to their own permanent login password once they access the system.

Enter Contact Name: Enter a name that is a maximum of 16 alphanumeric characters.

Step 3 Now you should see the following prompt:

Enter User's Permissions:

If you are ready to assign the permission set for this user, continue on to the next step. If you are not ready to assign permissions, you may still add the user but choose to give them no permissions at this time. *Note:* Permission assignments may be modified at any time by a user with Administrative permission (for help on modifying permissions, see [Section 5.4.6.3](#))

Step 4 The next prompt enables you to assign the user **Administrative** permission:

Administrative Permission? (y/n):

Enter a **y** to give the user **Administrative** permission, which allows read-write access to the Administration functions under CLI Main Menu [4], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change My Password (Main Menu [6]).

Enter a **n** to give no Administrative privileges.

Step 5 Next you will choose which type of **Provisioning** permission to assign:

Provisioning:

1. **Provisioning Browser**
2. **Provisioning +**
3. **None**

Provisioning Permission? (1-3):

Enter a **1** to give the user **Provisioning Browser** permission, which allows *read-only* access to the Configuration functions under Main Menu [3], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change My Password (Main Menu [6]).

Enter a **2** to give the user **Provisioning+** permission, which allows *read-write* access to the Configuration functions under Main Menu [3], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change My Password (Main Menu [6]).

Enter a **3** to give no Provisioning privileges.

Step 6 Now choose which type of **Maintenance** permission to assign:

Maintenance:

1. **Maintenance Browser**
2. **Maintenance +**
3. **None**

Maintenance Permission? (1-3):

Enter a **1** to give the user **Maintenance Browser** permission, which allows *read-only* access to the Utilities functions under Main Menu [5], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change My Password (Main Menu [6]).

Enter a **2** to give the user **Maintenance+** permission, which allows *read-write* access to the Utilities functions under Main Menu [5], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change My Password (Main Menu [6]).

Enter a **3** to give no Maintenance privileges.

Step 7 You should now see a message showing “*UserName* has been added”. Press any key to return to the **User Management** menu. To add another user to the system, select **[1] Add User** from the menu, then go back to **Step 2** and follow the steps again to add the user. If you are done adding users, select **F1** to return to the Main Menu. Continue on to the next section for help in configuring the switch. (For CLI information on adding users, see [Section 5.4.6.1](#)).

4.5 Assigning IP Addresses

Once you have successfully logged on to the OptiStar EdgeSwitch CLI and performed the basic administration tasks , you are ready to begin detailed configuration of the switch. The next step is to enter the IP addresses and corresponding subnet masks for all of the switching ports on the OptiStar EdgeSwitch. To set up the IP addresses in a configuration without bridging, see [Section 4.5.1](#). For help on setting up the IP addresses in a configuration with bridging, see [Section 4.5.2](#). Refer to your [OptiStar™ EdgeSwitch Basic Configuration Worksheet](#) for network-specific information (such as IP addresses) as you work through this section.

4.5.1 How to Set up IP Addresses on the OptiStar EdgeSwitch without Bridging

The following tutorial describes how to set up IP addresses on an OptiStar EdgeSwitch.

Step 1 To configure the IP address and subnet mask for each interface (switching port) on the OptiStar EdgeSwitch, start at the main menu, then follow the path:

[3] Configuration → [4] IP Parameters → [3] Set Switching Port IP Address & Mask

Step 2 You should now see the **Set switching port IP Address & Mask** menu, as follows:

Set Switching Port IP Address and MASK		
F1 (Main Menu)	F2 or .. (Previous Menu)	F3 (Exit)
[1]	Set Switching Port IP Address	
[2]	Set Switching Port Subnet Mask	

Enter your Choice >

If you select **[1] Set Switching Port IP Address**, the following prompts will be displayed in succession:

```
Enter Switching Module Number (1-4) :
Enter Switching Port Number (1-2)   :
Enter Switching Port IP Address      :
```

If you select **[2] Set Switching Port Subnet Mask**, the following prompts will be displayed in succession:

```
Enter Switching Module Number (1-4) :
Enter Switching Port Number (1-2)   :
Enter Switching Port Subnet Mask     :
```

Configure the IP address(es) and subnet mask(s) for each interface (switching port) on the OptiStar EdgeSwitch. Refer to the diagram on [Slot Numbering in Section 3.4.1](#) for help in determining correct module and port numbers. Empty slots on the OptiStar EdgeSwitch do not need to be configured.

Step 3 To verify that the you have entered the IP addresses correctly, you may view the Switching Ports IP Address Table. From the main menu follow the path:

[1] Operational Information & Status → [4] IP Parameters → [3] Switching Ports IP Address

Step 4 Once all of the IP addresses and subnet masks are entered, continue to [Section 4.6, entitled “Setting up a Static Route and Checking IP Connectivity”](#).

4.5.2 How to Set Up IP Addresses on the OptiStar EdgeSwitch with Bridging

Grouping may be done only on Gigabit Ethernet (GbE) ports. Ports that are in the same group allow for Layer 2 switching between those ports. VLAN tags can be passed transparently between GbE ports if they are in the same group. If ports are in different groups, then Layer 3 switching is performed by default. Note that when data passes to or from an OC-12 or an OC-48 port, Layer 3 switching is automatically performed regardless of port grouping.

Thus, port grouping is only meaningful for Gigabit Ethernet ports.

The bridging is set up via the Port Mapping Table (Menu path: [3] Configuration → [5] Port Mapping).

To set up bridging on the OptiStar EdgeSwitch, complete the following steps:

Step 1 First, determine which GbE ports will support bridging. The ports that are going to do the bridging should be assigned to the port group.

Example: On OptiStar EdgeSwitch A, slots 2 & 3 contain Gigabit Ethernet Network modules. Let us assume Module 2/Port 1, Module 2/Port 2 and Module 3/Port 1 are going to do the bridging. Therefore these three ports should all be assigned to the same port group.

Step 2 Next, go to the current Port Mapping Table to find the port group number of the first Gigabit port to be assigned to this bridging group. This will become the port group number for all the ports in this bridging group.

Example: Module 2/Port 1, Module 2/Port 2 and Module 3/Port 1 should be assigned to Port Group 3 (the default port group number for the first port in the group, which is Module 2/Port 1).

Step 3 To view the current port mapping, from the main menu follow the path:
[1] Operational Information & Status → [3] Port Mapping

The following table displays the default Port Mapping. Since there are eight possible switching ports, the maximum number of port groups is also eight. The port numbers go from 1 to 8, and apply only to the switching ports (see Section 3.4.1, entitled “Slot Numbering”, for a diagram showing how the ports on the OptiStar EdgeSwitch are numbered). *Note that the console port and the management port cannot be grouped.*

Module Number	Port Number	Port Group
1	1	1
1	2	2
2	1	3
2	2	4
3	1	5
3	2	6
4	1	7
4	2	8

Step 4 Once you have checked the current Port Mapping, you are ready to set up bridging. To configure the Port Mapping Table, from the main menu follow the path:
[3] Configuration → [5] Port Mapping

When this option is selected, the following prompts will be displayed in succession:

Enter Module Number (1-4) :

Enter the module number of the first port to be assigned to the new port group.

Enter Port Number (1-2) :

Enter the port number of the first port to be assigned to the new port group.

Enter Port Group (1-8) :

Enter the number of the new port group.

Continue adding each port to the Port Group one at a time until all ports are added.

Example: To assign Module 2/Port 1 to Port Group 3, complete the prompts as follows:

```
Enter Module Number (1-4) : 2
Enter Port Number (1-2)   : 1
Enter Port Group (1-8)    : 3
```

Step 5 To verify that the Port Mapping has been configured correctly, return to the Port Mapping Table under **[1] Operational Information & Status → [3] Port Mapping** to view the current Port Mapping configuration.

Example: After entering all the ports in the example configuration, the Port Mapping Table should look like the following example:

Module Number	Port Number	Port Group
1	1	1
1	2	2
2	1	3
2	2	3
3	1	3
3	2	6
4	1	7
4	2	8

Step 6 Now you are ready to assign IP addresses and the subnet mask. To configure the IP address and subnet mask for each interface (switching port) on the OptiStar EdgeSwitch, start at the main menu, then follow the path:

[3] Configuration → [4] IP Parameters → [3] Set Switching Port IP Address & Mask

Step 7 You should now see the **Set switching port IP Address & Mask** menu, as follows:

Set Switching Port IP Address and MASK

F1 (Main Menu)	F2 or .. (Previous Menu)	F3 (Exit)
----------------	--------------------------	-----------

```
[1] Set Switching Port IP Address
[2] Set Switching Port Subnet Mask
```

Enter your Choice >

Under Option **[1] Set Switching Port IP Address**, the following prompts will be displayed in succession:

```
Enter Switching Module Number (1-4) :
Enter Switching Port Number (1-2)   :
Enter Switching Port IP Address      :
```

Under Option **[2] Set Switching Port Subnet Mask**, the following prompts will be displayed in succession:

```
Enter Switching Module Number (1-4) :  
Enter Switching Port Number (1-2)   :  
Enter Switching Port Subnet Mask    :
```

Note: All of the IP addresses in the same port group must be on the same IP subnetwork. The IP address of the first port in the group will be designated as the default gateway for this bridge group. In this example, Module 2/Port 1 is the designated default gateway.

Assign an IP address to the first port in the group by following the prompts under Option **[1] Set Switching Port IP Address**. Repeat this procedure for every port in the group. Then assign a subnet mask to the first port in the group by following the prompts under Option **[2] Set Switching Port Subnet Mask**. Repeat this procedure for every port in the group. Refer to the diagram on [Slot Numbering in Section 3.4.1](#) for help in determining correct module and port numbers.

Step 8 To verify that the you have entered the IP addresses and subnet masks correctly, you may view the **Switching Ports IP Address Table**. From the main menu follow the path:

[1] Operational Information & Status → [4] IP Parameters → [3] Switching Ports IP Address

Step 9 Once all of the IP addresses and subnet masks are entered, continue on to the next section, entitled [“Setting up a Static Route and Checking IP Connectivity”](#).

4.6 Setting up a Static Route and Checking IP Connectivity

Step 1 To set up a static route, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [1] Set Static Route

At the **Enter Destination IP Address:** prompt, enter the IP address of the remote destination.
At the **Enter Subnet Mask:** prompt, enter the subnet mask of the remote destination.
At the **Enter Next Hop IP address:** prompt, enter the IP address of the gateway to the remote destination.

Step 2 To view the configured static route, from the main menu follow the path:

[1] Operational Information & Status → [7] Routing Information → [2] Static Routes

Step 3 Repeat Step (1) at the remote destination, as well as at every hop along the route.

Step 4 To check for IP connectivity, first look at Routing Table to determine the IP address(es) of the systems that should have IP connectivity to the OptiStar EdgeSwitch. To view the Routing Table, from the main menu follow the path:

[1] Operational Information & Status → [7] Routing Information → [1] Routing Table

Step 5 Next, it is recommended that you verify IP connectivity between the ports that you have set up to be on the same IP subnetwork. To use the OptiStar EdgeSwitch Ping Utility to verify IP connectivity, from the main menu of the CLI, follow the path:

[5] Utilities → [1] Ping Utility

Step 6 Once you have accessed the Ping Utility, you will see the following prompt:

Enter IP Address of the Host :

Enter the first IP address (from the Routing Table) and then either use the default parameters or enter new parameters as desired. For help on setting Ping Utility parameters, see [Section 5.5.1](#). If you are successful at pinging the attached system, then you have established IP connectivity. Attempt to ping each attached system in this manner.

4.7 Setting up Routing on the OptiStar EdgeSwitch

The following tutorial provides steps to setting up the following types of routing between 2 (or more) OptiStar EdgeSwitches:

- RIP
- OSPF
- BGP4 with OSPF for a Single Area
- BGP4 with OPSF for Multiple Areas

Note: This tutorial is not intended to provide detailed instruction on routing protocols or internetworking. Rather, its purpose is to help the user successfully navigate through the screens of the OptiStar EdgeSwitch to configure the switch as desired. For additional help on routing, protocols or network schematics, see your Network Administrator.

4.7.1 Example IP Network Configuration between 2 OptiStar EdgeSwitches

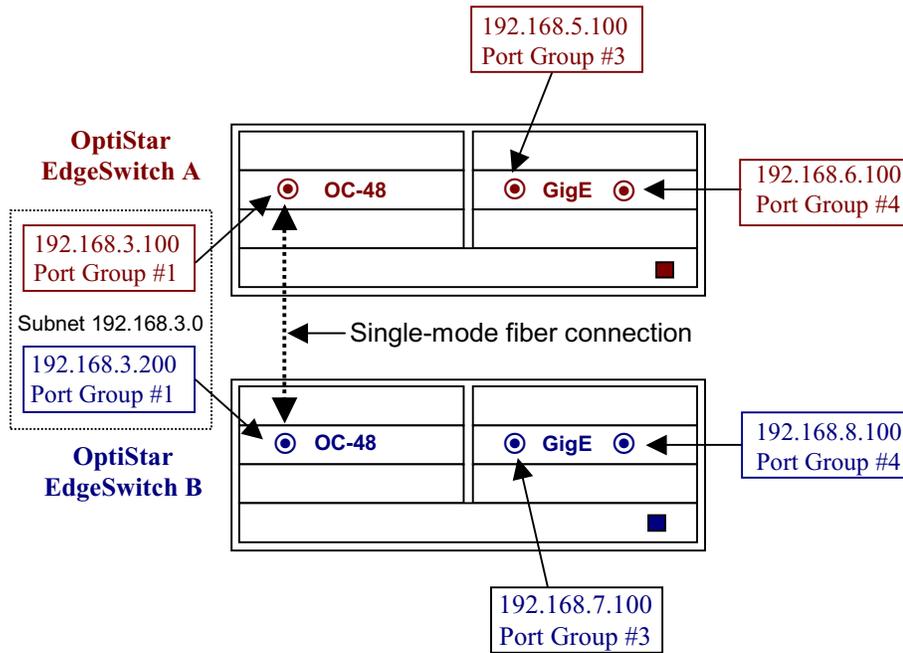
The following example configuration assumes a network with 2 OptiStar EdgeSwitches, each with one Gigabit Ethernet Network Module and one OC-48c Network Module. Let us assume the following configurations.

OptiStar™ EdgeSwitch A

Slot 1: OC-48c Network Module
 Slot 2: Gigabit Ethernet Network Module
 Slot 3: Empty
 Slot 4: Empty

OptiStar™ EdgeSwitch B

Slot 1: OC-48c Network Module
 Slot 2: Gigabit Ethernet Network Module
 Slot 3: Empty
 Slot 4: Empty



Step 1 To assign IP addresses and subnet masks to each port, follow the menu path:

[3] Configuration → [4] IP Parameters → [3] Set Switching Port IP Address & Mask

The following table gives an example of how to assign the Switching Interface (port) IP addresses and subnet masks. Remember that in order to set up routing between 2 EdgeSwitches, you must assign the network-linked port on each EdgeSwitch to the same IP subnetwork.

	OptiStar EdgeSwitch A			OptiStar EdgeSwitch B		
Module Type	OC-48c	Gigabit Ethernet		OC-48c	Gigabit Ethernet	
Slot Number	1	2		1	2	
Port Number	1	1	2	1	1	2
IP Address per Port	192.168.3.100	192.168.5.100	192.168.6.100	192.168.3.200	192.168.7.100	192.168.8.100
Subnet Mask	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0	255.255.255.0

In the given example, the OC-48c module on EdgeSwitch A (Slot 1, Port 1) is in the same subnet (192.168.3.0) as the OC-48c module on EdgeSwitch B (Slot 1, Port 1).

Step 2 Once you have assigned IP addresses and subnet masks to the desired ports, it is recommended that you verify IP connectivity between the ports that you have set up to be on the same IP subnet. To use the OptiStar EdgeSwitch Ping Utility to verify IP connectivity, from the main menu of the CLI, follow the path:

[5] Utilities → [1] Ping Utility

Step 3 Ping the connected port on the remote OptiStar EdgeSwitch by entering the IP address that was assigned to that port. (In the example given above: using the CLI's Ping Utility on OptiStar EdgeSwitch A, enter the IP address of the OC-48c port on OptiStar EdgeSwitch B, which is 192.168.3.200.)

4.7.2 RIP Routing

Step 1 Before you set up routing, ensure that: (1) the IP network between your OptiStar EdgeSwitches is set up properly, and (2) there is IP connectivity between the ports for which you plan to configure routing (see [Section 4.6](#)).

Step 2 To set up RIP routing between Network Modules, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters

Step 3 The following table shows example settings for each item under the under the **RIP General Parameters** menu. Remember to configure the RIP parameters on both OptiStar EdgeSwitches.

	OptiStar EdgeSwitch A	OptiStar EdgeSwitch B
a. RIP Version	2	2
b. RIP Administration Status	Enabled	Enabled
c. Supplier Mode	Supplier	Supplier
d. Border Gateway Filtering	Enabled	Enabled
e. Act as a Gateway?	Yes	Yes
f. Multicast/Broadcast	Broadcast	Broadcast

- a. Select the **RIP Version** Number (1 or 2) that you will be running. Both switches should be set to run the same version. The default value is Version **2**.
- b. Set the **RIP Administration Status** to **Enable**. *Note:* RIP will **not** run on the switch if this parameter is disabled. The default value is **ENABLE**.
- c. Select the **Supplier Mode** (either Supplier or Listener). The default value is **SUPPLIER**.
- d. Turn Border Gateway Filtering on (Enable) or off (Disable). The default value is **ENABLE**.
- e. Select whether the switch should **Act as gateway?** The default value is **Yes (RIP_GATEWAY)**.
- f. Select **Multicast** or **Broadcast** mode. The default value is **BROADCAST**.

Step 2 To verify that you have the desired **RIP General Parameter** settings, from the main menu follow the path:
[1] Operational Information & Status → [7] Routing Information → [3] RIP Parameters → [1] RIP General Parameters

Step 3 The next step is to enable RIP routing on the selected ports. Go back to the **RIP Parameters** menu (from the main menu follow the path: **[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters**) and select:

[2] Set RIP Interface Status

Enter a Slot Number (1-4) and a Port Number (1 or 2) to add a port as a RIP Interface. Select **1** to **Enable**. Repeat this step for each port that will be designated to use RIP.

Note: You **must** enable the RIP Interface for each port that is designated to use RIP.

Step 4 To verify that you have the desired Interface Status for each port on the OptiStar EdgeSwitch, from the main menu follow the path: **[1] Operational Information & Status → [7] Routing Information → [3] RIP Parameters → [2] RIP Interface Status**

Step 5 In order for the new configuration to take effect, you must restart the OptiStar EdgeSwitch. From the main menu follow the path:
[3] Configuration → [2] System Information → [7] Reset OptiStar EdgeSwitch

4.7.3 OSPF Routing

Step 1 Before you set up routing, ensure that: (1) the IP network between your OptiStar EdgeSwitches is set up properly, and (2) there is IP connectivity between the ports for which you plan to configure routing (see Section 4.6).

Step 2 You must also ensure that **RIP Administration Status** is disabled. If it is enabled, RIP will override OSPF and the switch will use only RIP routing.

To check the **RIP Administration Status**, from the main menu follow the path:

[1] Operational Information & Status → [7] Routing Information → [3] RIP Parameters → [1] RIP General Parameters

To disable the **RIP Administration Status**, from the main menu follow the path: **[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters → [3] RIP Admin Status**, then select **2. DISABLE**.

Step 3 To set up OSPF routing between Network Modules, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [2] General Group

The following table shows example settings for each item under the under the OSPF General Group menu. Remember to configure the OSPF parameters on both OptiStar EdgeSwitches.

	OptiStar EdgeSwitch A	OptiStar EdgeSwitch B
a. OSPF Admin Status	Enabled	Enabled
b. OSPF Router ID	192.168.5.100	192.168.7.100
c. AS Border Router	Enabled	Disabled
d. TOS Support	False	False

a. First, from the **General Group** menu, enable the **OSPF Administration Status** by selecting:

[1] OSPF Admin Status

Enter **1 (enable)** then press the <Enter> key.

b. Next, returning to the **General Group** menu, select:

[2] Router ID

At the prompt, enter the IP address of the port on the OptiStar EdgeSwitch that will be the designated OSPF Router ID. Press the <Enter> key.

c. Next, from the General Group menu, select:

[3] AS Border Router

If this OptiStar EdgeSwitch will be an AS Border Router, select (**Yes**), otherwise select (**No**).

d. Finally, from the General Group menu, select:

[4] TOS Support

Select whether Type of Service (TOS) is supported (**enabled**) or not (**disabled**).

This step completes the **General Group** settings.

Step 4 To verify that you have the desired OSPF General Parameter settings, from the main menu follow the path:
[1] Operational Information & Status → [7] Routing Information → [4] OSPF Parameters → [1] Get OSPF Status

Step 5 Now go back to the **Set OSPF Parameters** menu (from the main menu: **[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters**) then select:

[4] OSPF Area Group → [1] Add Area Entry

See your Network Administrator for a network schematic showing the OSPF Area assignments for your network. Enter all OSPF Areas that will be assigned to OSPF Interfaces on this switch.

Note: The Area ID will not be recognized by the switch unless it is entered as an **OSPF Area Entry**.

Step 6 To verify that the OSPF Area IDs have been entered correctly, from the main menu follow the path:
[1] Operational Information & Status → [7] Routing Information → [4] OSPF Parameters → [3] Current OSPF Area Status

Step 7 Return to the **Set OSPF Parameters** menu (from the main menu: **[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters**) then select:

[3] Interface Group → [1] Add Interface Entry

Step 8 Now you are ready to enable OSPF for the selected ports. Select a Slot (1-4) and a Port (1 or 2) to add as an OSPF Interface. Set the Interface Entry variables, referring to the following example table for help. Repeat this step for each port that will be designated to use OSPF. **Note:** You **must** enable the OSPF Interface Entry for each port that is designated to use OSPF.

	OptiStar EdgeSwitch A			OptiStar EdgeSwitch B		
Module Type	OC-48c	Gigabit Ethernet		OC-48c	Gigabit Ethernet	
Slot Number	1	2		3	4	
Port Number	1	1	2	1	1	2
IP Address per Port	192.168.3.100	192.168.5.100	192.168.6.100	192.168.3.200	192.168.7.100	192.168.8.100
a. Admin Status	Enabled	Enabled	Enabled	Enabled	Enabled	Enabled
b. Area ID	10.10.10.10	10.10.10.10	10.10.10.10	10.10.10.10	10.10.10.10	10.10.10.10
c. Interface Cost	2	3	3	2	3	3
d. Router Priority (0-255)	1	1	1	1	1	1
↓ Transit Delay (0-3600)	1	1	1	1	1	1
Retransmit Interval (0-3600)	5	5	5	5	5	5
Hello Interval (1-65535)	10	10	10	10	10	10
Router Dead Interval	40	40	40	40	40	40
Poll Interval	120	120	120	120	120	120
Authentication Type	0	0	0	0	0	0
Authentication Key	0	0	0	0	0	0

- a. To enable this port for OSPF, select **Enable** at the **Admin Status** prompt.
- b. For the next prompt (**Add Area ID**) see your Network Administrator for a network schematic showing the OSPF Area assignments for your network. Enter the appropriate Area ID at the prompt. (In the above example, the Area ID is 10.10.10.10.)
If the OSPF Area ID you are assigning is not on the list of **Current Area IDs**, please return to **Step 5** in this section to add the Area Entry.
- c. For the next prompt (**Interface Cost**) see your Network Administrator for a network schematic showing the cost assignments for each route on your network. Enter the **Interface Cost** in accordance with the network schematic.
- d. Continue filling in the settings in accordance with your OSPF network design by responding to each prompt.

Step 9 To verify that you have enabled the desired OSPF Interfaces and entered all of the settings correctly, from the main menu follow the path:

[1] **Operational Information & Status** → [7] **Routing Information** → [4] **OSPF Parameters** → [2] **Get OSPF Interface Status** → **Enter Module (1-4)** → **Enter Port (1-2)**

Step 10 In order for the new configuration to take effect, you must restart the OptiStar EdgeSwitch. From the main menu follow the path:

[3] **Configuration** → [2] **System Information** → [7] **Reset OptiStar EdgeSwitch**

4.7.4 BGP4 Routing with OSPF for a Single Area

Step 1 Before you set up routing, ensure that: (1) the IP network between your OptiStar EdgeSwitches is set up properly, and (2) there is IP connectivity between the ports for which you plan to configure routing (see Section 4.6).

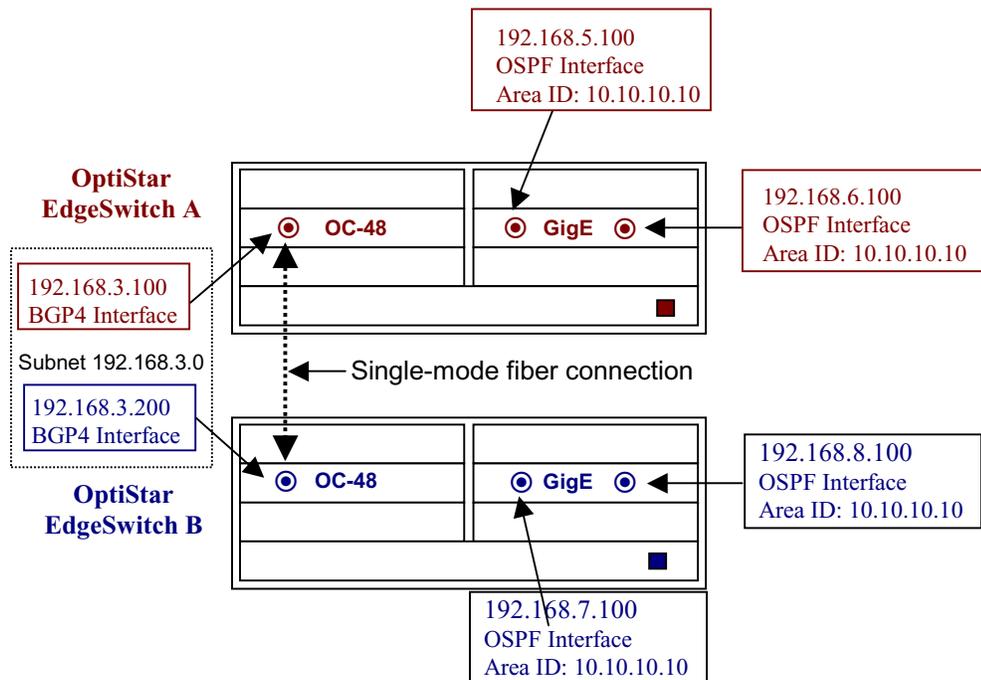
Step 2 You must also ensure that **RIP Administration Status** is disabled. If it is enabled, RIP will override BGP4 and OSPF causing the switch to use only RIP routing.

To check the **RIP Administration Status**, from the main menu follow the path:

[1] **Operational Information & Status** → [7] **Routing Information** → [3] **RIP Parameters** → [1] **RIP General Parameters**

To disable the **RIP Administration Status**, from the main menu follow the path: [3] **Configuration** → [6] **Routing Configuration** → [5] **Set RIP Parameters** → [1] **Set RIP General Parameters** → [3] **RIP Admin Status**, then select **2. DISABLE**.

Step 3 The following diagram shows how BGP4 and OSPF routing interact in the OptiStar EdgeSwitch network.



As shown in the previous diagram, BGP4 routing is configured for the route connecting OptiStar EdgeSwitch A and B via the OC-48c ports on both switches. OSPF routing is configured for all other switching ports (in this case Gigabit Ethernet) that have connections to other devices on the network.

Step 4 In accordance with the above network diagram, OSPF routing will be configured for all of the Gigabit Ethernet ports on both OptiStar EdgeSwitches. If the ports have already been configured to run OSPF and the OSPF Interfaces are enabled, skip to **Step 5**.

For help in setting up OSPF routing between these modules, see [Section 4.7.3](#). OSPF Interfaces should be enabled for each of the following:

OptiStar EdgeSwitch A: Slot 2/Port 1, Slot 2/Port 2

OptiStar EdgeSwitch B: Slot 2/Port 1, Slot 2/Port 2

Step 5 At this point, only the Switching Interfaces that are designated to run OSPF should be enabled as OSPF Interfaces (in this example, the Gigabit Ethernet ports). If the ports that will be doing BGP4 routing have previously been set up as OSPF Interface Entries, these must be deleted before setting up BGP4.

To verify the OSPF Interface Entry status of each port, from the main menu follow the path:

[1] Operational Information & Status → [7] Routing Information → [4] OSPF Parameters →

[2] Get OSPF Interface Status → Enter Slot Number (1-4) → Enter Port Number (1-2)

If only the ports designated to run OSPF show the **OSPF Admin Status** as enabled, skip to **Step 6**.

If the ports that will be running BGP4 are also currently enabled as OSPF Interfaces, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [3] Interface Group → [2] Delete Interface Entry

One at a time, enter the Module Number (1-4) and the Port Number (1 or 2) of the ports that will be deleted as OSPF Interface Entries. (In the given example, the OC-48c port in Slot 1/Port 1 should be deleted as an OSPF Interface Entry.)

Step 6 To set up BGP4 routing between OC-48c ports, you should first configure the general parameters for BGP4. From the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [1] Set BGP4 General Parameters

	OptiStar EdgeSwitch A	OptiStar EdgeSwitch B	
a.	BGP Admin Status	Enabled	Enabled
b.	BGP Identifier	192.168.5.100	192.168.7.100
c.	BGP Policy Server IP Address	0.0.0.0	0.0.0.0
↓	Configure From File?	Disabled	Disabled
	Policy Enabled?	Disabled	Disabled
	BGP Directory Name	See Network Administrator	See Network Administrator
	BGP Configuration File Name	See Network Administrator	See Network Administrator
	BGP Policy File Name	See Network Administrator	See Network Administrator
	BGP Policy Server User Name	See Network Administrator	See Network Administrator
	BGP Policy Server Password	See Network Administrator	See Network Administrator
	BGP Initialize Memory?	Disabled	Disabled
	BGP Set Default Values?	Disabled	Disabled
	BGP Local Autonomous System Number	1	2
	BGP Redistribute OSPF?	Enabled	Enabled
	BGP Redistribute Static?	Disabled	Disabled
	BGP Redistribute OSPF External?	Enabled	Enabled
	BGP Synchronization with IGP?	Enabled	Enabled
	BGP Route Reflector Cluster ID	0	0

- a. Set the **BGP Admin Status** to **Enable**. *Note:* BGP4 will **not** run on the switch if this parameter is disabled.
- b. Next enter the **BGP Identifier**. This number should be the same as the OSPF Router ID to enable synchronization between OSPF and BGP. See [Section 5.3.6.6.2.2](#) for help in finding the OSPF Router ID.
- c. If applicable, enter the BGP Policy Server information and additional BGP parameters as appropriate for your network. See your Network Administrator for Policy Server information.

Step 7 The final step in configuring BGP4 is to enable BGP peering for the OC-48c ports on each EdgeSwitch. To set up BGP peers, from the main menu follow the path: **[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [2] Configure BGP Peer → [1] Add BGP Peer**

Note: You **must** add a BGP Peer Entry for each set of BGP Peers that are designated to use BGP4.

	OptiStar EdgeSwitch A	OptiStar EdgeSwitch B
a.	BGP Peer Number	0
b.	BGP Peer Local IP Address	192.168.3.100
c.	BGP Peer Remote IP Address	192.168.3.200
d.	BGP Peer Subnet Mask	255.255.255.0
e. ↓	BGP Peer Remote Autonomous System Number	2
	BGP Peer Local Preference	100
	BGP Peer Hold Time	120
	BGP Peer Keepalive Time	90
	BGP Peer Connect Retry Time	30
	BGP Peer Update Interval Time	30
	BGP Peer Intra AS Route Update Interval Time	30
f.	BGP Peer Admin Status	ENABLED

- The BGP Peer Number is automatically assigned in sequential order.
- At the **BGP Peer Local IP Address** prompt, enter the IP address of the port on this switch that is designated to run BGP4.
- At the **BGP Peer Remote IP Address** prompt, enter the IP address of the port on the remote switch that is connected to the local switching port.
- At the **BGP Peer Subnet Mask** prompt, enter the Subnet Mask associated with the IP address entered in **Step b**.
- Enter the BGP parameters as appropriate for your network. See your Network Administrator for help on setting these parameters.
- At the **BGP Peer Admin Status** prompt, enter **1. Enable**. *Note:* The **BGP Peer Admin Status** must be set to **Enable** for BGP4 to run.

Step 8 To verify that the BGP Peer(s) have been configured correctly, from the main menu follow the path: **[1] Operational Information & Status → [7] Routing Information → [5] BGP4 Parameters → [2] Get BGP Peer Table**, then enter the BGP Peer #.

Step 9 In order for the new configuration to take effect, you must restart the OptiStar EdgeSwitch. From the main menu follow the path: **[3] Configuration → [2] System Information → [7] Reset OptiStar EdgeSwitch**

4.7.5 BGP4 Routing with OSPF for Multiple Areas

Step 1 Before you set up routing, ensure that: (1) the IP network between your OptiStar EdgeSwitches is set up properly, and (2) there is IP connectivity between the ports for which you plan to configure routing (see Section 4.6).

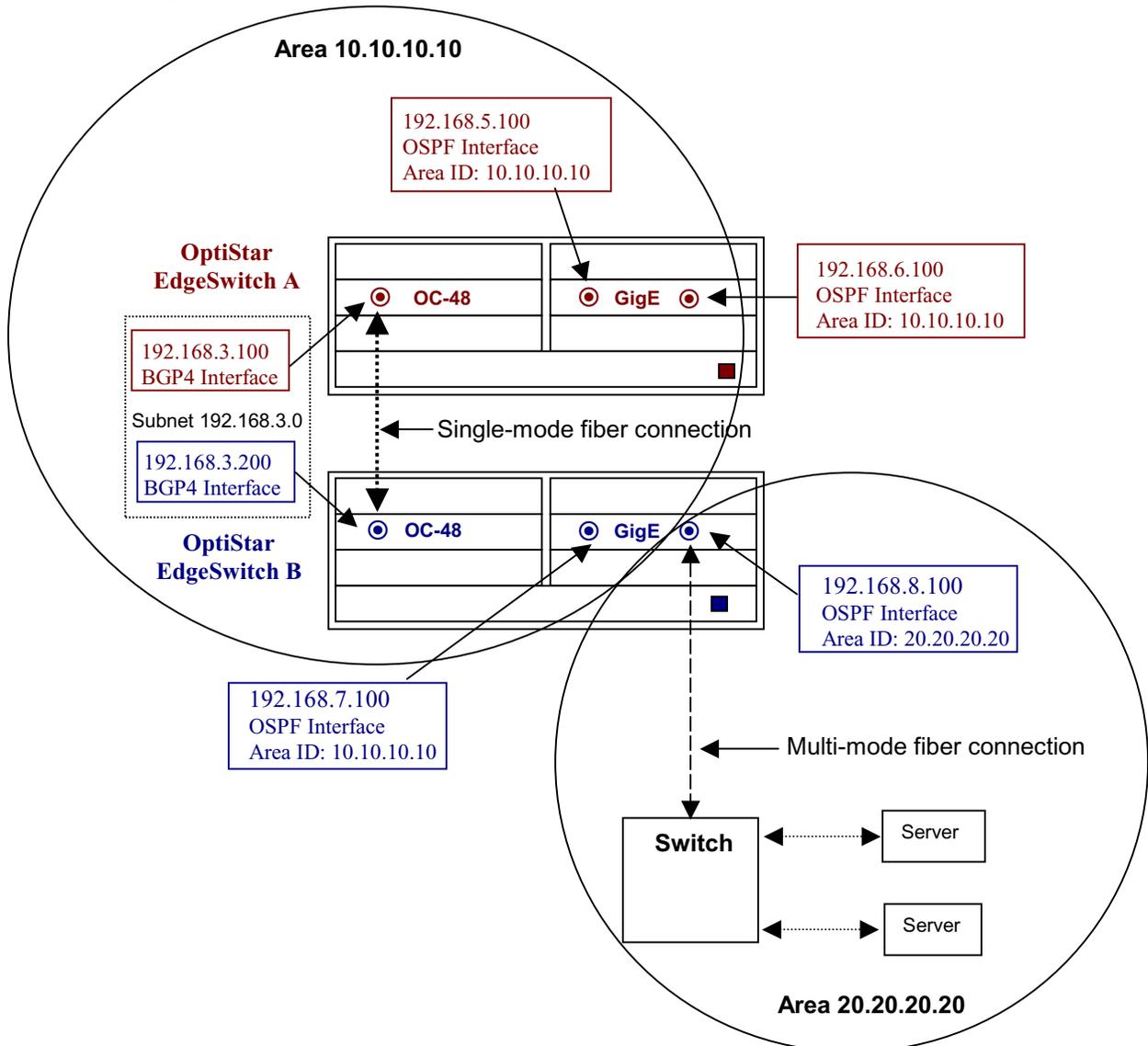
Step 2 You must also ensure that **RIP Administration Status** is disabled. If it is enabled, RIP will override BGP4 and OSPF and the switch will use only RIP routing.

To check the **RIP Administration Status**, from the main menu follow the path:

[1] **Operational Information & Status** → [7] **Routing Information** → [3] **RIP Parameters** → [1] **RIP General Parameters**

To disable the **RIP Administration Status**, from the main menu follow the path: [3] **Configuration** → [6] **Routing Configuration** → [5] **Set RIP Parameters** → [1] **Set RIP General Parameters** → [3] **RIP Admin Status**, then select **2. DISABLE**.

Step 3 The following diagram shows BGP4 and OSPF routing with multiple areas in an OptiStar EdgeSwitch network.



-
- Step 4** As shown in the previous diagram, BGP4 routing is configured for the route connecting OptiStar EdgeSwitch A and B via the OC-48c ports on both switches. OSPF routing is configured for all other switching ports (in this case Gigabit Ethernet) that have connections to other devices on the network.
- Step 5** In accordance with the network diagram shown in **Step 3**, OSPF routing will be configured for all of the Gigabit Ethernet ports on both OptiStar EdgeSwitches. If the ports have already been configured to run OSPF and the OSPF Interfaces are enabled, skip to **Step 5**.

For help in setting up OSPF routing between these modules, see [Section 4.7.3](#). OSPF Interfaces should be enabled for each of the following:

OptiStar EdgeSwitch A: Slot 2/Port 1, Slot 2/Port 2
OptiStar EdgeSwitch B: Slot 2/Port 1, Slot 2/Port 2

As you are setting up OSPF, ensure that both 10.10.10.10 and 20.20.20.20 are added as OSPF Area ID's. (see [Section 5.3.6.6.4.1](#)) Then, when adding the OSPF Interface Entries, assign Area ID 10.10.10.10 to Switch A Slot 2/Port 1, Switch A Slot 2/Port 2, and Switch B Slot 2/Port 1. Assign Area ID 20.20.20.20 to Switch B Slot 2/Port 2.

- Step 6** At this point only the Switching Interfaces that are designated to run OSPF should be enabled as OSPF Interfaces (in this example, the Gigabit Ethernet ports). If the ports that will be doing BGP4 routing have previously been set up as OSPF Interface Entries, these must be deleted before setting up BGP4.

To verify the OSPF Interface Entry status of each port, from the main menu follow the path:

[1] Operational Information & Status → [7] Routing Information → [4] OSPF Parameters → [2] Get OSPF Interface Status → Enter Slot Number (1-4) → Enter Port Number (1-2)

If only the ports designated to run OSPF show the **OSPF Admin Status** as enabled, skip to **Step 6**. If the ports that will be running BGP4 are also currently enabled as OSPF Interfaces, from the main menu follow that path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [4] Interface Group → [2] Delete Interface Entry

One at a time, enter the Module Number (1-4) and the Port Number (1 or 2) of the ports that will be deleted as OSPF Interface Entries. (In the given example, the OC-48c port in Slot 1/Port 1 should be deleted as an OSPF Interface Entry.)

Step 7 To set up BGP4 routing between OC-48c ports, you should first configure the general parameters for BGP4. From the main menu follow the path:
[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [1] Set BGP4 General Parameters

	OptiStar EdgeSwitch A	OptiStar EdgeSwitch B	
a.	BGP Admin Status	Enabled	Enabled
b.	BGP Identifier	192.168.5.100	192.168.7.100
c.	BGP Policy Server IP Address	0.0.0.0	0.0.0.0
↓	Configure From File?	Disabled	Disabled
	Policy Enabled?	Disabled	Disabled
	BGP Directory Name	See Network Administrator	See Network Administrator
	BGP Configuration File Name	See Network Administrator	See Network Administrator
	BGP Policy File Name	See Network Administrator	See Network Administrator
	BGP Policy Server User Name	See Network Administrator	See Network Administrator
	BGP Policy Server Password	See Network Administrator	See Network Administrator
	BGP Initialize Memory?	Disabled	Disabled
	BGP Set Default Values?	Disabled	Disabled
	BGP Local Autonomous System Number	1	2
	BGP Redistribute OSPF?	Enabled	Enabled
	BGP Redistribute Static?	Disabled	Disabled
	BGP Redistribute OSPF External?	Enabled	Enabled
	BGP Synchronization with IGP?	Enabled	Enabled
	BGP Route Reflector Cluster ID	0	0

- a. Set the **BGP Admin Status** to **Enable**. *Note:* BGP4 will **not** run on the switch if this parameter is disabled.
- b. Next enter the **BGP Identifier**. This number should be the same as the OSPF Router ID to enable synchronization between OSPF and BGP. See [Section 5.3.6.6.2.2](#) for help in finding the OSPF Router ID.
- c. If applicable, enter the BGP Policy Server information and additional BGP parameters as appropriate for your network. See your Network Administrator for Policy Server information.

Step 8 The final step in configuring BGP4 is to enable BGP peering for the OC-48c ports on each EdgeSwitch. To set up BGP peers, from the main menu follow the path: **[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [2] Configure BGP Peer → [1] Add BGP Peer**

Note: You **must** add a BGP Peer Entry for each set of BGP Peers that are designated to use BGP4.

	OptiStar EdgeSwitch A	OptiStar EdgeSwitch B
a.	BGP Peer Number	0
b.	BGP Peer Local IP Address	192.168.3.100
c.	BGP Peer Remote IP Address	192.168.3.200
d.	BGP Peer Subnet Mask	255.255.255.0
e. ↓	BGP Peer Remote Autonomous System Number	2
	BGP Peer Local Preference	100
	BGP Peer Hold Time	120
	BGP Peer Keepalive Time	90
	BGP Peer Connect Retry Time	30
	BGP Peer Update Interval Time	30
	BGP Peer Intra AS Route Update Interval Time	30
f.	BGP Peer Admin Status	ENABLED

- The BGP Peer Number is automatically assigned in sequential order.
- At the **BGP Peer Local IP Address** prompt, enter the IP address of the port on this switch that is designated to run BGP4.
- At the **BGP Peer Remote IP Address** prompt, enter the IP address of the port on the remote switch that is connected to the local switching port.
- At the **BGP Peer Subnet Mask** prompt, enter the Subnet Mask associated with the IP address entered in **Step b**.
- Enter the BGP parameters as appropriate for your network. See your Network Administrator for help on setting these parameters.
- At the **BGP Peer Admin Status** prompt, enter **1. Enable**. *Note:* The **BGP Peer Admin Status** must be set to **Enable** for BGP4 to run.

Step 9 To verify that the BGP Peer(s) have been configured correctly, from the main menu follow the path: **[1] Operational Information & Status → [7] Routing Information → [5] BGP4 Parameters → [2] Get BGP Peer Table**, then enter the BGP Peer #.

Step 10 In order for the new configuration to take effect, you must restart the OptiStar EdgeSwitch. From the main menu follow the path: **[3] Configuration → [2] System Information → [7] Reset OptiStar EdgeSwitch**

4.8 Configuring an FCIP Network Module

The following tutorials describe how to configure the OptiStar EdgeSwitch for tunneling over IP between Fibre Channel over IP (FCIP) Network Modules.

- How to set up IP addresses on an OptiStar EdgeSwitch with one or more FCIP Network Modules (see [Section 4.8.1](#))
- How to access the FCIP Network Module CLI and perform initial configuration (see [Sections 4.8.2](#) through [4.8.4](#))
- How to Reset an FCIP Network Module (see [Section 4.8.5](#))
- How to set up a Fibre Channel Network Between OptiStar EdgeSwitches, each containing one or more FCIP Network Modules (see [Section 4.9](#))
- Example Configuration of 2 OptiStar EdgeSwitches (see [Section 4.9.1](#))

For detailed help on the FCIP Network Module CLI, please refer to [CHAPTER 6](#).

4.8.1 How to Assign an IP Address to an FCIP Network Module

Step 1 Ensure that an IP address and subnet mask is assigned to each interface (switching port) on the OptiStar EdgeSwitch. From the main menu, follow the path:

[1] Operational Information & Status → [4] IP Parameters → [3] Switching Ports IP Address

Step 2 If not, go to [Section 4.5](#) for help on entering IP addresses and subnet masks for all switching ports on the OptiStar EdgeSwitch.

Step 3 Next you will need to configure the FCIP Network Module IP address for each FCIP Network Module on the OptiStar EdgeSwitch. From the main menu, follow the path:

[3] Configuration → [9] FCIP Network Module Configuration → [1] Add Local FCIP Network Module

You should now see the following prompts:

Enter the FCIP Network Module Number :

To configure the FCIP Network Module, enter the number of the slot into which the module was inserted.

Enter the IP Address of the FCIP Network Module :

Enter an FCIP Network Module IP address for the FCIP Network Module. The IP address you assign must be in the same subnet as Port 1 of the FCIP Network Module, otherwise the boot up will fail. (For example, if the IP address of Port 1 in Slot 2 is 192.168.1.100, the FCIP Network Module IP address for the FCIP Network Module in Slot 2 must be 192.168.1.x, where x ≠ 100.)

Enter the Subnet Mask :

Enter the subnet mask for the FCIP Network Module IP address.

Step 4 To verify that you have entered the FCIP Network Module IP addresses correctly, from the main menu follow the path:

**[1] Operational Information & Status → [10] FCIP Network Module Status
→ [1] Local FCIP Network Module IP Parameters**

The **Local FCIP Network Module IP Parameters Table** is a read-only table that displays the currently configured FCIP Network Module IP address and subnet mask information for each slot on the local OptiStar EdgeSwitch. See [Section 5.1.10.1](#), entitled “**Local FCIP Network Module IP Parameters**” for more help on interpreting this table.

4.8.2 How to Access the CLI for an FCIP Network Module

Step 1 Ensure that the OptiStar EdgeSwitch is configured correctly. If using Telnet, ensure that the PC NIC card has been configured to be on the same subnet as the OptiStar EdgeSwitch 10/100BaseT port (see [Section 4.5](#)).

Step 2 Ensure that the FCIP Network Module has been configured correctly (see [Section 4.8.1](#)).

Step 3 Ensure that the FCIP Network Module is enabled. From the main menu, follow the path:
[5] Utilities → [5] Local FCIP Network Module State

For help interpreting the **Local FCIP Network Module State** table, see [Section 5.5.5](#).

Step 4 Next, to access the CLI for the FCIP Network Module, determine how you are logged in to the OptiStar EdgeSwitch CLI (either via serial link or telnet; see [Section 4.2.1.1](#) for additional help). If you are logged on to the OptiStar EdgeSwitch CLI through the serial link, you will access the FCIP Network Module CLI through the Serial Proxy menu item. From the OptiStar EdgeSwitch main menu, follow the path:

[4] Administration → [4] FCIP Network Module CLI – Serial Proxy

If you are logged on to the OptiStar EdgeSwitch CLI through telnet, you will access the FCIP Network Module CLI through the Telnet Proxy menu item. From the main menu, follow the path:

[4] Administration → [5] FCIP Network Module CLI – Telnet Proxy

Step 5 At the prompt, enter the number of the specific FCIP Network Module (slot) that you would like to access.

Step 6 At the next prompt, enter the password. If a specific password has not been defined, the default password is ‘**manage**’. Please go directly to the next section ([Section 4.8.3](#)) for help on setting passwords for the FCIP Network Module CLI.

Step 7 You should now see the FCIP Network Module CLI Root Menu, as follows:

- 1) **config - Configure switch settings**
- 2) **reset - Reset switch (Example: >reset)**
- 3) **show - Show device information**
- 4) **firmware - Access firmware options**
- 5) **diagnostics - Access diagnostic features**

4.8.3 How to Set Passwords for an FCIP Network Module

The FCIP Network Module comes configured with two default user passwords. The first password ‘**monitor**’ allows a user read-only access to view system configuration settings. With this password the user cannot make any changes to settings. The second password ‘**manage**’ allows a user read-write access to view and/or modify system configuration settings. For security reasons, it is highly recommended that the customer change these passwords from the default values to new passwords as soon as possible. Note that the menu items under the Password menu have the same names as the default passwords (**monitor** and **manage**). Also, ensure that you change the passwords from the default values on each FCIP Network Module. There is no method for changing the passwords on all modules at once; each FCIP Network Module must be set individually. It is recommended that you change the passwords on all of the FCIP Network Modules on the OptiStar EdgeSwitch.

Step 1 Access the CLI for the FCIP Network Module for which you would like to change the password(s). (see [Section 4.8.2](#), entitled “How to Access the CLI for an FCIP Network Module” for help).

Step 2 At the FCIP Network Module CLI Root Menu, select:
1) config - Configure switch settings

Step 3 From the Configure switch settings menu, select:
6) password - Change passwords

Step 4 The sub-menu will allow the user to change either the ‘**monitor**’ (read-only access) or ‘**manage**’ (read-write access) passwords.

- a. To change the ‘**monitor**’ password, select:
2) Monitor - Set monitor only password

At the prompt, enter the old password (if this password has not been previously changed, it will be the default password ‘**monitor**’).

At the next prompt, enter the new password, then re-enter the new password when prompted. Press the <Enter> key.

(*Note:* Once you have changed the password, the new password will be required to change this password again.)

- b. To change the ‘**manage**’ password, select:
3) Manage - Set Monitor/Manage password

At the prompt, enter the old password (if this password has not been previously changed, it will be the default password ‘**manage**’).

At the next prompt, enter the new password, then re-enter the new password when prompted.

(*Note:* Once you have changed the password, the new password will be required to change this password again.)

Step 5 If you are done making changes to the FCIP Network Module using the CLI, type **Exit** then select the <Enter> key to close the session.

4.8.4 How to Set the Date and Time for an FCIP Network Module

Step 1 Access the CLI for the FCIP Network Module for which you would like to set the date and/or time. (see [Section 4.8.2](#), entitled “How to Access the CLI for an FCIP Network Module” for help).

Step 2 At the FCIP Network Module CLI Root Menu, select: **1) config – Configure switch settings**; then from the Configure switch settings menu, select: **5) system – Set system parameters**
-or-
From the FCIP Network Module CLI Root Menu, type: **config system**

Step 3 You should now see the following menu:

- 1) back – Go back
- 2) show - Show system settings
- 3) name - Set system name
- 4) time - Set system time with format xx:xx:xx
- 5) date - Set system date with format xx/xx/xxxx
- 6) contact - Set system contact
- 7) ethmode - Set Ethernet mode
- 8) location - Set system location
- 9) advanced - Configure advanced settings

Step 4 To change the System Time, select:
4) time - Set system time

Example: (config/system)>4

Once this menu item is selected, the existing System Time is shown in brackets:

System Time [16:52:17] =

Press the <Enter> key to keep the existing System Time, or enter a new time value (in the format xx:xx:xx) after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new time has been accepted.

Step 5 To change the System Date, select:
5) date - Set system date

Example: (config/system)>5

Once this menu item is selected, the existing System Date is shown in brackets:

System Date [10/03/2001] =

Press the <Enter> key to keep the existing System Date, or enter a new date value (in the format xx/xx/xxxx) after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new date has been accepted.

If you are done making changes to the FCIP Network Module using the CLI, type **Exit** then select the <Enter> key to close the session. For the changes to take effect, the FCIP Network Module must be reset. Please see [Section 4.8.5](#), entitled “How to Reset an FCIP Network Module” for help.

4.8.5 How to Reset an FCIP Network Module

- Step 1** Before you perform a reset, ensure that you have made all of the desired changes to the FCIP Network Module. Also, you may configure multiple FCIP Network Modules on an OptiStar EdgeSwitch before performing a reset using method (b.) below.
- Step 2** There are three methods for resetting an individual FCIP Network Module.
- To reset from the FCIP Network Module CLI without affecting the OptiStar EdgeSwitch:
At the FCIP Network Module CLI root menu, type **reset**
 - To reset the FCIP Network Module by rebooting the entire switch:
 - Exit out of the FCIP Network Module CLI by typing **logout** (versus exit) at the root menu.
 - To reboot, from the OptiStar EdgeSwitch main menu, follow the menu path:
[3] Configuration → [2] System Information → [7] Reset OptiStar EdgeSwitch
 - To reset the FCIP Network Module by disabling and then reenabling the FCIP Network Module:
 - Exit out of the FCIP Network Module CLI by typing **logout** (versus exit) at the root menu.
 - From the OptiStar EdgeSwitch main menu, follow the menu path:
[4] Administration → [2] Set Module Admin Status → Enter Module Number (1-4):
 - At the prompt **Enter choice: (1-2)** prompt, enter a **2** to disable the module.
 - To re-enable the module, return to the same option and enter a **1** to enable the module.

4.9 Setting up a Fibre Channel Tunnel Between OptiStar EdgeSwitches

Step 1 First you will need to configure the connecting IP address and subnet mask for each interface (switching port) on both OptiStar EdgeSwitches, as well as the FCIP Network Module IP addresses and subnet masks for all FCIP Network Modules. Please follow the steps given in Section 4.8.1 then continue on to the next step.

Step 2 Next you will need to add the FCIP Network Module IP address of the remote FCIP Network Module to the Remote FCIP Network Module IP Parameters Table on each OptiStar EdgeSwitch.

Step 3 Go to the CLI main menu for the first OptiStar EdgeSwitch and follow the path:

[3] Configuration → [9] FCIP Network Module Configuration → [3] Add Remote FCIP Network Module

Step 4 You should now see the following prompts in succession:

Enter the IP Address of Remote FCIP Network Module :

Enter an FCIP Network Module IP address that was assigned to the remote FCIP Network Module.

Enter the Subnet Mask of Remote FCIP Network Module :

Enter the subnet mask that was assigned to the remote FCIP Network Module.

To check to see if the new information has been added correctly, you may view the **Remote FCIP Network Module IP Parameters** (see Section 5.1.10.2, entitled “Remote FCIP Network Module IP Parameters” for help).

- Step 5** Next go to the CLI main menu for the second OptiStar EdgeSwitch and repeat steps (3) and (4) for the second OptiStar EdgeSwitch.
- Step 6** Next you are ready to set up routing between the two OptiStar EdgeSwitches. The routing can be set up via static route entry or via one of the following protocols: RIP, OSPF, BGP4. [See Sections 4.6 and 4.7](#) for additional help.
- Step 7** Now you are ready to boot up the OptiStar EdgeSwitches.

Booting Instructions:

Configure both OptiStar EdgeSwitches using the tutorials, then boot them separately without connecting the cable. After both OptiStar EdgeSwitches come up successfully, connect the cable so that link will be UP. Now wait for several moments so that the FCIP Network Modules can do the tunnel negotiations. To check whether FCIP Network Modules established the tunnel successfully, select the following option:

[1] Operational Information & Status → [10] FCIP Network Module Status → [3] FCIP Network Module Connection Status

[See Section 5.1.10.3, entitled “FCIP Network Module Connection Status”](#) for help interpreting this table. [See Section 5.5.4, entitled “Local FCIP Network Module Domain ↔ IP Table”](#) for additional information.

4.9.1 Example FCIP Tunnel Configuration for 2 OptiStar EdgeSwitches

The following example configuration assumes a network with 2 OptiStar EdgeSwitches, each with one Gigabit Ethernet Module and one FCIP Network Module. Let us assume the following configurations.

OptiStar EdgeSwitch A

Slot 1: Gigabit Ethernet Network Module
 Slot 2: FCIP Network Module
 Slot 3: Empty
 Slot 4: Empty

OptiStar EdgeSwitch B

Slot 1: Empty
 Slot 2: Empty
 Slot 3: Gigabit Ethernet Network Module
 Slot 4: FCIP Network Module

Step 1 Configure the IP Addresses and Subnet Masks on OptiStar EdgeSwitch A

Using the tutorial in Section 4.8.1, assign the interface IP addresses and subnet masks for OptiStar EdgeSwitch A as follows:

<u>Port</u>	<u>IP address</u>	<u>Subnet Mask</u>
1	192.168.3.100	255.255.255.0
2	192.168.4.100	255.255.255.0
3	192.168.5.100	255.255.255.0
4	192.168.6.100	255.255.255.0
5	0.0.0.0	0.0.0.0
6	0.0.0.0	0.0.0.0
7	0.0.0.0	0.0.0.0
8	0.0.0.0	0.0.0.0

Continuing with the tutorial in Section 4.8.1, assign the FCIP Network Module IP address and subnet mask for the FCIP Network Module in OptiStar EdgeSwitch A:

FCIP Network Module IP Address

192.168.5.1

Note: Since the FCIP Network Module is in Slot 2, the FCIP Network Module IP address must be in the subnet 192.168.5.0/24.

Step 2 Configure the IP Addresses and Subnet Masks on OptiStar EdgeSwitch B

Now let us assume that we are going to connect the 1st port on the Gigabit Ethernet Network Module of OptiStar EdgeSwitch A to the 2nd port on the Gigabit Ethernet Network Module of OptiStar EdgeSwitch B (i.e. Port 1 of OptiStar EdgeSwitch A is connected to Port 6 of OptiStar EdgeSwitch B). These two ports should therefore be in the same subnet. Since we configured Port 1 of OptiStar EdgeSwitch A in the subnet **192.168.3.0/24**, let us assume an IP address of **192.168.3.200** for Port 6 of OptiStar EdgeSwitch B.

Again using the tutorial in Section 4.8.1, assign the interface IP addresses and subnet masks for OptiStar EdgeSwitch B as follows:

<u>Port</u>	<u>IP address</u>	<u>Subnet Mask</u>
1	0.0.0.0	0.0.0.0
2	0.0.0.0	0.0.0.0
3	0.0.0.0	0.0.0.0
4	0.0.0.0	0.0.0.0
5	192.168.17.100	255.255.255.0
6	192.168.3.200	255.255.255.0
7	192.168.19.100	255.255.255.0
8	192.168.20.100	255.255.255.0

Continuing with the tutorial in Section 4.8.1, assign the FCIP Network Module IP address and subnet mask for the FCIP Network Module in OptiStar EdgeSwitch B:

FCIP Network Module IP Address

192.168.19.2

Note: Since the FCIP Network Module is in Slot 4, the FCIP Network Module IP address must be in the subnet 192.168.19.0/24.

Step 3 Set the Remote FCIP Network Module IP Addresses on both OptiStar EdgeSwitches

Using the tutorial in Section 4.9, add the remote FCIP Network Module IP addresses and corresponding subnet masks to each OptiStar EdgeSwitch as follows:

Using the CLI to configure OptiStar EdgeSwitch A, add the remote FCIP Network Module with the following FCIP Network Module IP address and subnet mask from OptiStar EdgeSwitch B:

<u>FCIP Network Module IP Address</u>	<u>Subnet Mask</u>
192.168.19.2	255.255.255.0

Next, using the CLI to configure OptiStar EdgeSwitch B, add the remote FCIP Network Module with the following FCIP Network Module IP address and subnet mask from OptiStar EdgeSwitch A:

<u>FCIP Network Module IP address</u>	<u>Subnet Mask</u>
192.168.5.1	255.255.255.0

Step 4 Set up Routing using Static Routes

In this example, routing will be set up via static route entry for each OptiStar EdgeSwitch as follows:

To set the static route for OptiStar EdgeSwitch A, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [1] Set Static Route

Use the following parameters to set the static route:

Destination IP:	192.168.19.2
Subnet Mask:	255.255.255.0

For this switch the remote FCIP Network Module IP address is the one belonging to the FCIP Network Module in OptiStar EdgeSwitch B (192.168.19.2).

Gateway (next hop): 192.168.3.200

Since we are doing the tunnel through the Gigabit Ethernet Network Module, the Gateway IP address should be the corresponding interface IP address on port 6 of the Gigabit Ethernet Network Module on OptiStar EdgeSwitch B (192.168.3.200).

To set the static route for OptiStar EdgeSwitch B use the following parameters:

Destination IP:	192.168.5.1
Subnet Mask:	255.255.255.0

For this switch the remote FCIP Network Module IP address is the one belonging to the FCIP Network Module in OptiStar EdgeSwitch A (192.168.5.1).

Gateway (next hop): 192.168.3.100

Since we are doing the tunnel through the Gigabit Ethernet Network Module, the Gateway IP address should be the corresponding interface IP address on port 1 of the Gigabit Ethernet Network Module on OptiStar EdgeSwitch A (192.168.3.100).

4.10 Setting Up WWN Zoning

4.10.1 Understanding WWN Zoning

4.10.1.1 Zoning Overview

Zoning is a fundamental technique for Storage Area Network (SAN) management that can be implemented in several different ways. In all cases zoning serves to allow users access to the appropriate storage devices in order to increase security, isolate elements of the SAN for interoperability or application reasons, and optimize the flow of traffic over the network. The OptiStar EdgeSwitch uses WWN Zoning to enable the user to set up logical groupings within the Fibre Channel SAN fabric. WWN (World Wide Name) zoning uses the World Wide N_Port_Names (WWPNs) from the name server in the switches to either allow or block access to particular WWNs in the fabric. Lucent's WWN zoning configuration complies with T-11 standards (SW-2 and GS-3).

Zoning is a powerful tool for making the most efficient use of storage assets in a SAN. However, it must be planned carefully to make the best use of the available storage and the network's bandwidth. In addition, the network design process must include a consideration of how zoning will interact with the building of a high availability fabric. Since zoning can effectively cut off access from one part of the fabric to another, all zoning configurations must incorporate the failover paths and components as appropriate.

4.10.1.2 Zoning Applications within a SAN-based Storage Environment

WWN Zoning is extremely effective for a variety of applications within a SAN fabric, and works in both single-switch and multi-switch topologies.

- **Security**

- Control access to selected fabric segments
- Designate closed user groups (e.g. designate selected devices within a zone for the exclusive use of zone members)

- **Customize environments**

- Separate different operating system environments
- Separate test or maintenance areas from production areas
- Consolidate equipment by functional areas

- **Optimize IT resources**

- Consolidate equipment for IT efficiency
- Facilitate time or resource-sensitive functions, such as backup operations

4.10.1.3 Zoning Configuration Rules

- WWN Zoning consists of zoning entries. A zoning entry is an occurrence of a Zone Set, Zone, or Member. (A zoning entry also exists for each mapping of Zone to Zone Set and Member to Zone.)
- The OptiStar EdgeSwitch Release 1.5 supports up to 20,000 zoning entries. For example, the switch can hold 20 Zone Sets, each with 9 Zones, which each contain 100 Members. Under this scenario, 18,200 entries are written to Flash ($20 + [20 * 9] + [20 * 9 * 100]$).
- Zone Sets contain Zones, and Zones contain Members.

- Configuration of WWN zoning goes from the top down: Zone Sets, Zones, then Members. The higher-order object must be created before the lower-order object. Thus, at least one Zone Set must exist before a Zone can be defined, and both a Zone Set and a Zone must exist before a Member, or WWPN, can be defined. The following table shows an example of the zoning configuration structure:

<i>Structure</i>	<i>Example</i>
Zone Set	Backup
Zone	backupNT
Member	FF EE DD CC BB AA 99 88
Member	DD EE AA DD DD EE AA DD
Zone	backupUNIX
Member	11 22 33 44 55 66 77 88
Member	DD EE AA DD DD EE AA DD

- A specific Member may be used in more than one Zone, and a specific Zone may be used in more than one Zone Set.
- Only one Zone Set may be enforced (activated) on the fabric at a time.
- The enforced Zone Set is not persistent; it is regenerated every time one or more switches powers up.

4.10.1.4 Enforcement of Zoning Changes

Zoning configuration is accomplished using the Management Server of the Managing Switch. The Managing Switch is a switch on which activation or de-activation has been initiated, and which has been granted authority to change zoning on the fabric. When you activate or deactivate a Zone Set through the Web Manager or CLI, a zone change request is sent to the switch's Management Server. The switch attempts to gain authority to change zoning on the fabric. If this authority is granted, the switch momentarily becomes the Managing Switch. (Only one switch at a time can be a Managing Switch.) Through its Management Server, the Managing Switch validates the received zone change request and updates other switches (referred to as Managed Switches) with the zone change. On each Managed Switch, the activated Zone Set is stored in flash (for persistence at power-up). The enforced Zone Set (which is identical to the activated Zone Set) is stored in temporary memory only.

4.10.1.5 Enforcement of Previously Activated Zone Sets—Zone Merge

At power-up or when fabrics are joined, each switch becomes aware of Inter-Switch Links (ISLs). No Zone Set is enforced yet. The switch attempts to combine its active Zone Set (from flash) with those of connected switches. This combination process is called the zone merge operation. Success depends on compatibility of active Zone Sets. For ease of illustration, the zone merge operation is described here as it occurs between two switches. To be compatible with the active Zone Set on the connected switch, a switch's active Zone Set must have the same name and all of its Zones must be unique. A successful zone merge operation results in a common enforced Zone Set. (Once a Zone Set is enforced, it is stored in the temporary memory of all switches in the fabric. Each individual switch's previously active Zone Set remains that switch's flash memory). Successful zone merge can happen in two ways:

- When both switches begin with identical copies of the active Zone Set, the resulting Enforced Zone Set is the same as the active Zone Set in each switch's flash. (See Row 1 in the table below.)
- When each switch begins with different but compatible copies of the active Zone Set, the resulting enforced Zone Set reflects their combination; therefore, the Zone Set stored in each switch's temporary memory could differ from the Zone Set stored in that switch's flash (see Rows 2 and 3 in the table below).

Example Number	Examples of Successful Zone Merge Operations			
	Active Zone Set (in Flash)		Enforced Zone Set (in Temp. Memory) After Zone Merge	
	Switch A	Switch B	Switch A	Switch B
1	Zone Set "Backup" • Zone "UNIX" Member: 11 22 33 44 55 66 77 88	Zone Set "Backup" • Zone "UNIX" Member: 11 22 33 44 55 66 77 88	Zone Set "Backup" • Zone "UNIX" Member: 11 22 33 44 55 66 77 88	
2	Zone Set "Backup" • Zone "UNIX" Member: 11 22 33 44 55 66 77 88	Zone Set "Backup" • Zone "UNIX" Member: 11 22 33 44 55 66 77 88 • Zone "NT" Member: FF EE DD CC BB AA 99 88	Zone Set "Backup" • Zone "UNIX" Member: 11 22 33 44 55 66 77 88 • Zone "NT" Member: FF EE DD CC BB AA 99 88	
3	Zone Set "Backup" • Zone "UNIX" Member: 11 22 33 44 55 66 77 88	Zone Set "Backup" • Zone "NT" Member: FF EE DD CC BB AA 99 88 • Zone "MAC" Member: 21 00 00 20 37 CC DD EE	Zone Set "Backup" • Zone "UNIX" Member: 11 22 33 44 55 66 77 88 • Zone "NT" Member: FF EE DD CC BB AA 99 88 • Zone "MAC" Member: 21 00 00 20 37 CC DD EE	

Example 1: The Zone Sets named "Backup" on Switch A and Switch B are identical (that is, they both contain the Zone named "UNIX" which contains the Member "11 22 33 44 55 66 77 88"). Because they are identical, the zone merge is successful.

Example 2: Switch A and Switch B both have active Zone Sets named "Backup". Both Zone Sets contain the identical Zone named "UNIX"(which contains the Member "11 22 33 44 55 66 77 88"), and the Zone Set on Switch B also contains the Zone named "NT" with the Member "FF EE DD CC BB AA 99 88". Since there is no incompatibility, the zone merge is successful. The new enforced Zone Set on both switches contains both Zone "UNIX" and Zone "NT".

Example 3: Switch A and Switch B both have active Zone Sets named "Backup". The Zone Sets are different (that is, they do not share any Zones with the same name). Since there is no incompatibility between Zones of the same name, the Zones Sets will successfully merge into a new enforced Zone Set on both switches. The enforced Zone Set "Backup" consists of the Zone "UNIX" from Switch A and the Zones "NT" and "MAC" from Switch B.

If active Zone Sets are not compatible, the ports connecting the affected switches go into the “Isolated E_Port” state and the switches no longer communicate with each other.

<i>Examples of a Failed Zone Merge Operations</i>			
Active Zone Set (in Flash)		Enforced Zone Set (in Temp. Memory) After Zone Merge	
Switch A	Switch B	Switch A	Switch B
Zone Set “Backup” • Zone “UNIX” Member: 11 22 33 44 55 66 77 88	Zone Set “Backup” • Zone “UNIX” Member: 21 00 00 20 37 C6 E2 95	Zone Set “Backup” • Zone “UNIX” Member: 11 22 33 44 55 66 77 88	Zone Set “Backup” • Zone “UNIX” Member: 21 00 00 20 37 C6 E2 95

In the above example, the Zone Merge is not successful because the Zone Sets are not compatible. Switch A and Switch B both have a Zone Set named “Backup”, and each Zone Set contains a Zone named “UNIX”. However, the UNIX Zone defined on Switch A contains the “11 22 33 44 55 66 77 88” Member, whereas the UNIX Zone defined on Switch B contains the “21 00 00 20 37 C6 E2 95” Member. The result is separate enforced Zone Sets and no communication between the switches.

Because results from zone merge operations are stored in temporary memory, deletion of a Zone Set from a switch does not affect current enforcement. However, this deletion may change the results of the next zone merge operation. Any unique Zones from the deleted Zone Set will be excluded from the resulting merge. If no “Active” marked Zone Set definitions exist on any switches in the fabric, then zoning will not be in effect.

4.10.1.6 Joining Zoned Fabrics

When a switch connect already-zoned fabrics through Inter-Switch Links (ISLs), or when switches in some other way become newly aware of ISLs (such as at power-up), the zone merge operation is initiated. (For more on Zone Merge see the previous section, [Section 4.10.1.5](#). Before you join fabrics that have pre-existing Active Zone Sets, ensure that the fabrics meet the following conditions:

- All Domain IDs must be unique.
- Zones cannot conflict. For example, if multiple switches have a Zone named “video,” then the contents (list of Members within this Zone) must be identical for each switch; otherwise, an isolated E_Port condition will occur, as indicated by a blinking-green-LED-and-solid-amber-LED combination on the affected port.
- The names of the enforced Zone Sets cannot conflict, though contents may differ. For example, one fabric may have an enforced Zone Set containing three unique Zones; the other fabric may have an enforced Zone Set containing two unique Zones. As long as these Zone Sets have the same name, combination of these fabrics will succeed.

After a successful zone merge operation, the resulting enforced Zone Set may contain more Zones than were originally defined within the Zone Set. The “enforced Zone Set” display is identical on all switches. (To view the original definition of the Zone Set, go to the switch on which it was defined, then type the following command from the Root Menu of the CLI, then follow directions: **config zone wwn zoneset show**). **Note:** The enforced Zone Set is not persistent; it is regenerated every time one or more switches powers up.

To create a permanent copy of the enforced Zone Set, go to one of the switches and configure a Zone Set with the same name, Zones, and Members. The configured Zone Set is permanently stored in this switch’s flash. If

you like, you can reactivate this Zone Set to update other switches on the fabric so that all switches have a permanent record of the enforced Zone Set.

4.10.2 How to Configure & Activate WWN Zoning on the OptiStar EdgeSwitch

Step 1 Log on to the CLI at the management level for the FCIP Network Module for which you would like to set up WWN zoning (see [Section 4.8.2](#), entitled “How to Access the CLI for an FCIP Network Module” for help).

Step 2 From the FCIP Network Module CLI Root Menu, select: **1) config → 3) zone → 3)wwn → 4)zoneset**
-or-
From the FCIP Network Module CLI Root Menu, type: **config zone wwn zoneset**

The **zoneset** menu will now be displayed:

Step 3 From the **zoneset** menu (config/zone/wwn/zoneset), create empty Zone Set(s):

add “ZoneSetName”
(where *ZoneSetName* is the name of the empty Zone Set)

Example: (config/zone/wwn/zoneset)>add “Backup”

For additional help on the **zoneset** menu, see [Section 6.1.3.3.4](#).

Step 4 Add Zone(s) to the Zone Set, using either of the following methods:

Method 1

To create an empty Zone and add it to the earlier-created Zone Set:

Go to the zone menu (config/zone/wwn/zone) and type:

zadd “ZoneName” “ZoneSetName”
(where *ZoneName* is the name of the empty Zone and *ZoneSetName* is the name of the Zone Set)

Example: (config/zone/wwn/zone)>zadd “backupNT” “Backup”

Method 2

To select from Zones that were already created:

Go to the zoneset menu (config/zone/wwn/zoneset) and type:

define “ZoneSetName”
(where “*ZoneSetName*” is the name of the Zone Set)

Enter a “**Y**” for **yes** in the brackets for each zone to be added to the Zone Set.

Example:
(config/zone/wwn/zoneset)>define “Backup”
(Enter 0 to exit)
backupNT [Y]:

For additional help on the **zone** menu, see [Section 6.1.3.3.5](#).

Step 5 Add Members to the Zone(s) using one of the following three methods:

Method 1

To select from World Wide N_Port_Names within the fabric (from the zone menu config/zone/wwn/zone):

madd

Example:

```
(config/zone/wwn/zone)>madd
Item          Member Identifier
1)           21 00 00 20 37 C6 E4 BD
Enter item from list to select member
(Enter 0 to exit, r to repeat list, or <CR> to continue)
(config/zone/wwn/zone - member)> 1
Item          Zone Name
1)           backupNT
Enter item from list to select zone
(Enter 0 to exit, r to repeat list, or <CR> to continue)
(config/zone/wwn/zone - zone)> 1
```

Method 2

To manually enter World Wide N_Port_Names:

madd “WWPN” “ZoneName”

(where *WWPN* is the World Wide N_Port_Name and *ZoneName* is the name of the Zone)

Example:

```
(config/zone/wwn/zone)>madd “FF EE DD CC BB AA 99 88” “backupNT”
(config/zone/wwn/zone)>madd “11 22 33 44 55 66 77 88” “backupUNIX”
```

Method 3

To quickly select from the pool of Members that already exist in the zoning database (Members that have already been added to one or more Zones):

(*Note:* This method is only recommended as a shortcut once all potential Members have been previously added to the database, since the **define** command only allows selection from a pre-defined list).

define “ZoneName”

(where “*ZoneName*” is the name of the Zone)

Example:

```
(config/zone/wwn/zone)>define “backupNT”
(Enter 0 to exit)
11 22 33 44 55 66 77 88 [N]:
FF EE DD CC BB AA 99 88 [Y]:
Storing zone set information...
Do you wish to continue (Yes / No): [Y]
```

Step 6 WWN zoning is now configured. To put WWN zoning in effect, the next step is to activate a Zone Set. To activate a Zone Set, go to the **zoneset** menu [(1) **config** → (3) **zone** → (3) **wwn** → (4) **zoneset** or shortcut **config zone wwn zoneset**] and type:

activate “ZoneSetName”

(where “*ZoneSetName*” is the name of the Zone Set)

Example:

```
(config/zone/wwn/zoneset)>activate "Backup"
```

At this command, the switch activates the Zone Set on itself then attempts to force the Zone set onto other switches in the fabric (Zone Merge). Once you have entered this command, press the down arrow key to scroll to a message that states “**depress any key to cancel**”. **WARNING:** Striking any key at this point, including the Enter key, will cancel the activate command.

If the **activate** command is completed successfully (<15 seconds), the message “**OK**” should be displayed. Once a Zone Set is activated, it is stored in the temporary memory of all switches in the fabric. If the attempt is unsuccessful, error messages appear, event messages are logged, and an isolated E_Port condition occurs, as indicated by a blinking-green LED and solid-amber LED combination on the affected port. For more help on activating Zone Sets, [see Section 6.1.3.3.4.7](#). For a description of the Zone Merge operation, [see Section 4.10.1.5](#).

Step 7 To verify that the Zone Set is enforced, type the following command from the **zoneset** menu:
(config/zone/wwn/zoneset)>: **senf**
or from the Root Menu type: **config zone wwn show**

4.11 Exporting/Importing the OptiStar EdgeSwitch Configuration

Once you have configured all of the critical parameters on your OptiStar EdgeSwitch, it is recommended that you save the current configuration to a file using the Configuration File Export utility. This file may then be imported back into an OptiStar EdgeSwitch at a later time using the Configuration File Import utility. The ability to save and import specific OptiStar EdgeSwitch configurations is extremely useful in the following scenarios:

- Upgrading to a new firmware release
- Configuring multiple OptiStar EdgeSwitches in a network
- Reverting to a previous configuration
- Recovering from an unexpected failure in which parameters were either changed or reset to default values

The following two tutorials describe how to create and export a configuration file, as well as import a file with configuration settings into an OptiStar EdgeSwitch.

4.11.1 Export Configuration File

To export the current OptiStar EdgeSwitch configuration to a binary file, complete the following steps:

Step 1 First ensure that all desired configuration parameters for the OptiStar EdgeSwitch have been defined.

Step 2 Before the current configuration can be exported as a file to an FTP Server, several parameters must be set on the OptiStar EdgeSwitch. The next steps will guide you in setting up the following parameters, which are all accessible from the **EdgeSwitch Configuration Import/Export** sub-menu:

- a. The IP address of the FTP Server to which the EdgeSwitch Configuration file will be saved.
- b. The directory name (if any) on the FTP Server within which the file will be saved.
- c. The file name that will be given to the EdgeSwitch Configuration file.

- d. The user name of the authorized user for the FTP Server.
- e. The password of the authorized user.

Step 3 Next, from the main menu, follow the path:
[5] Utilities → [8] EdgeSwitch Configuration Import/Export

To view the current settings for the above parameters, select item **[1] Display EdgeSwitch Configuration Server Information** from the **EdgeSwitch Configuration Import/Export** sub-menu. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 4 To set up or modify the IP Address of the FTP server to which you would like to save the configuration file, select item **[2] EdgeSwitch Configuration Server IP Address** from the **EdgeSwitch Configuration Import/Export** sub-menu and follow the prompts. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 5 To save the configuration file to a specific sub-directory under the default directory on the FTP server, select item **[3] EdgeSwitch Configuration Server Directory Name** from the **EdgeSwitch Configuration Import/Export** sub-menu and follow the prompts. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 6 To enter the file name for the configuration file that will be exported to the FTP Server, select item **[4] EdgeSwitch Configuration Server File Name** from the **EdgeSwitch Configuration Import/Export** sub-menu and follow the prompts. The file name can be a maximum of 8 alphanumeric characters and must have the **.esb** extension. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 7 To enter a user name for the authorized user on the FTP Server, select item **[5] EdgeSwitch Configuration Server User Name** from the **EdgeSwitch Configuration Import/Export** sub-menu and follow the prompts to enter the user name. You will also be prompted to enter the **EdgeSwitch Configuration Server Password** connected to the user name you just entered. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 8 Once you have completed the above steps and have ensured that you have no more edits to the current EdgeSwitch configuration, export the current configuration to the FTP Server as a binary file by selecting item **[7] Export Binary EdgeSwitch Configuration to Server** from the **EdgeSwitch Configuration Import/Export** sub-menu.

Step 9 Enter **y** at the prompt to complete the export procedure. Check on the FTP Server for a file with the file name given in **Step 6** to ensure the file has been successfully exported.

WARNING: Once you have saved the OptiStar EdgeSwitch configuration to a binary file, *do not edit the file*. Editing this file may corrupt NVRAM when it is imported in to the OptiStar EdgeSwitch.

4.11.2 Import Configuration File

Step 1 To update an OptiStar EdgeSwitch with a new configuration or to automatically configure a newly installed OptiStar EdgeSwitch, follow the steps in this tutorial to use the Import Configuration File utility. (**WARNING:** Once you import a file to the OptiStar EdgeSwitch, the current configuration parameters on the OptiStar EdgeSwitch will be overwritten.)

Step 2 Locate the FTP Server on which an EdgeSwitch Configuration file has previously been saved. (For help on exporting the current OptiStar EdgeSwitch configuration to a binary file on an FTP Server,

see Section 4.11.1.) In order to import the file, the following parameters will need to be set on the OptiStar EdgeSwitch to which the file will be imported:

- a. The IP Address of the FTP Server on which the EdgeSwitch Configuration file is located
- b. The directory (if any) in which the EdgeSwitch Configuration file is saved.
- c. The file name of the binary file containing the current OptiStar EdgeSwitch configuration.
- d. The user name of the authorized user for the FTP Server.
- e. The password of the authorized user.

Step 3 Next, from the main menu, follow the path:
[5] Utilities → [8] EdgeSwitch Configuration Import/Export

To view the current settings for the above parameters, select item **[1] Display EdgeSwitch Configuration Server Information** from the **EdgeSwitch Configuration Import/Export** sub-menu. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 4 To set up or modify the IP Address of the FTP server from which you would like to import the configuration file, select item **[2] EdgeSwitch Configuration Server IP Address** from the **EdgeSwitch Configuration Import/Export** sub-menu and follow the prompts. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 5 If the configuration file to was saved in a specific sub-directory under the default directory on the FTP server, enter the directory name by selecting item **[3] EdgeSwitch Configuration Server Directory Name** from the **EdgeSwitch Configuration Import/Export** sub-menu and following the prompts. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 6 To enter the file name of the binary EdgeSwitch Configuration file that is on the FTP Server, select item **[4] EdgeSwitch Configuration Server File Name** from the **EdgeSwitch Configuration Import/Export** sub-menu and follow the prompts. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 7 To enter a user name for the authorized user on the FTP Server, select item **[5] EdgeSwitch Configuration Server User Name** from the **EdgeSwitch Configuration Import/Export** sub-menu and follow the prompts to enter the user name. You will also be prompted to enter the **EdgeSwitch Configuration Server Password** connected to the user name you just entered. Return to the **EdgeSwitch Configuration Import/Export** sub-menu by typing **F2**.

Step 8 Once you have completed the above steps, import the EdgeSwitch Configuration file from the FTP Server by selecting item **[8] Import Binary EdgeSwitch Configuration File from Server to EdgeSwitch** from the **EdgeSwitch Configuration Import/Export** sub-menu.

Step 9 Enter **y** at the prompt to import the file to the OptiStar EdgeSwitch.

WARNING: This action will overwrite the current configuration parameters on the OptiStar EdgeSwitch.

CHAPTER 5

Detailed OptiStar EdgeSwitch CLI Reference Guide



Chapter 5 Overview

- Operational Information & Status
- Port Statistics
- Configuration
- Administration
- Utilities

The following section shows the detailed menu flow in the CLI and gives key MIB variable descriptions. Once the OptiStar EdgeSwitch is booted up, you should see the Main Menu as follows:

OptiStar EdgeSwitch Main Menu

		F3 or .. (Exit)
1)	Operational Information & Status	(For help on this item, go to Section 5.1 on page 5-2)
2)	Port Statistics	(For help on this item, go to Section 5.2 on page 5-20)
3)	Configuration	(For help on this item, go to Section 5.3 on page 5-21)
4)	Administration	(For help on this item, go to Section 5.4 on page 5-49)
5)	Utilities	(For help on this item, go to Section 5.5 on page 5-57)
6)	Change My Password	(For help on this item, go to Section 5.6 on page 5-63)

Enter your Choice >

Enter a number from the main menu to go to the corresponding category.

5.1 Operational Information & Status

When this option is selected, the following sub menu will be displayed:

Operational Information & Status

F1 (Main Menu)	F2 or .. (Previous Menu)	F3 (Exit)
[1] System Information	(For help on this item, go to Section 5.1.1 on page 5-3)	
[2] Hardware Status	(For help on this item, go to Section 5.1.2 on page 5-4)	
[3] Port Mapping	(For help on this item, go to Section 5.1.3 on page 5-7)	
[4] IP Parameters	(For help on this item, go to Section 5.1.4 on page 5-8)	
[5] BOOTP/TFTP Parameters	(For help on this item, go to Section 5.1.5 on page 5-9)	
[6] SNMP Agent Parameters	(For help on this item, go to Section 5.1.6 on page 5-9)	
[7] Routing Information	(For help on this item, go to Section 5.1.7 on page 5-10)	
[8] Spanning Tree Protocol	(For help on this item, go to Section 5.1.8 on page 5-15)	
[9] Forwarding Database	(For help on this item, go to Section 5.1.9 on page 5-16)	
[10] FCIP Network Module Parameters	(For help on this item, go to Section 5.1.10 on page 5-17)	

Enter your Choice >

Enter a number from the Operational Information & Status menu to go to the corresponding category.

5.1.1 System Information

The following 3 sections enable the user to view general information about the system hardware, the controller module and the system firmware.

5.1.1.1 System General Information

Menu Path:

[1] Operational Information & Status → [1] System Information → [1] System General Information

Description:

This menu item displays general information about the OptiStar EdgeSwitch system, as shown in the following example screen:

System Description	:	OPTISTAR EDGESWITCH
System Manufacturers Name	:	Lucent Technologies
System Name	:	System1
System Up Date and Time	:	August 30 2000, 10:30:58 PM
System Current Date	:	August 30 2000, 11:30:00 PM
System Location	:	LocationA, Company, City, State
System Contact	:	oansupport@lucent.com
System Services	:	
	:	: Layer2, Layer3 switching support on gigabit Ethernet ports.
	:	: Layer3 switching support on OC48/STM-16c, OC12/STM-4c and FCIP Network Module.
	:	: Management support on 10/100BaseT, console and on switching ports.
	:	: CLI support on console port.
	:	: CLI through TELNET over 10/100BaseT, console and on switching ports.
	:	: FCIP Network Module CLI access through OptiStar EdgeSwitch CLI.
System Time Server IP Address	:	192.168.1.58
System Part Number	:	xyz123
System Serial Number	:	xyz123
System Version Number	:	xyz123

5.1.1.2 Controller Module Information

Menu Path:

[1] Operational Information & Status → [1] System Information → [2] Controller Module Information

Description:

This menu item displays the part number, serial number and version number of the Controller Module.

5.1.1.3 System Firmware Information

Menu Path:

[1] Operational Information & Status → [1] System Information → [3] System Firmware Information

Description:

Displays the current versions of the Controller Module Boot Firmware and the Controller Module Runtime Firmware.

5.1.2 Hardware Status

Sections [5.1.2.1](#) through [5.1.2.7](#) enable the user to display status information about the OptiStar EdgeSwitch, including system temperature, status of the power module, information on fault system resets, parameters for each switching module, parameters for each port, and Power On Self Test (POST) information.

5.1.2.1 System Temperature

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [1] System Temperature

Description:

Displays the current system temperature in both Celsius and Fahrenheit and the threshold temperature in Celsius.

5.1.2.2 Power Module Status

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [2] Power Module Status

Description:

Displays the status (either **OK** or **NOT OK**) of both the primary and secondary power modules. If the status is **NOT OK**, complete the following steps:

1. Check to make sure the power supply is inserted all the way into the chassis and that it is seated correctly.
2. Check the power cable in the back of the OptiStar EdgeSwitch to make sure it is properly connected.
3. If the power supply is correctly inserted and the cable is properly connected, power down the OptiStar EdgeSwitch and reinsert the power module. Power up again.
4. If the power module status on the primary power supply is still NOT OK, switch the primary and secondary power supplies, then contact technical support.

5.1.2.3 Number of Fault System Resets

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [3] Number of Fault System Reset

Description:

Displays the number of times the system has been reset due to faults.

5.1.2.4 Switching Module Parameters

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [4] Switching Module Parameters → Enter Module Number (1-4):

Description:

Displays basic parameters about the selected module, including what type of module it is (GB for Gigabit Network Module, FC for FCIP Network Module, OC-48c/STM-16c or OC-12c/STM-4c) and the Operational Status (UP or DOWN) of the module. Also displays Part Number, Serial Number, Version Number, and Module Change Status for the module.

5.1.2.5 Port Parameters

The following 3 sections allow the user to display parameters for the 3 different types of ports on the OptiStar EdgeSwitch (10BaseT Port, Console Port and Switching Ports).

5.1.2.5.1 10/100BaseT Port Parameters

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [5] Port Parameters
→ [1] 10/100BaseT Port Parameters

Description:

Displays basic parameters about the 10/100BaseT Port on the OptiStar EdgeSwitch, including Interface Type, Network Type, Interface Flags, Port Speed, IP address and Subnet Mask, MAC Address, Admin Status, Physical Link Status and Operational Status. Also displays operational parameters such as MTU, MRU, Duplex Mode (Full Duplex/Half Duplex) and Auto Negotiation (Enabled/Disabled). To modify the parameters on this screen, from the main menu follow the path:

[3] Configuration → [3] Port Parameters, or [3] Configuration → [4] IP Parameters.

5.1.2.5.2 Console Port Parameters

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [5] Port Parameters → [2] Console Port Parameters

Description:

Displays basic parameters about the Console Port on the OptiStar EdgeSwitch, including Interface Type, Network Type, Port Speed, IP address and Subnet Mask, Admin Status and Operational Status. Also displays operational parameters such as Remote Peer IP address, MTU, MRU, LCP state, IPCP state, and PPP mode (Enabled/Disabled). To modify the parameters on this screen, from the main menu follow the path:

[3] Configuration → [3] Port Parameters, or [3] Configuration → [4] IP Parameters.

5.1.2.5.3 Switching Port Parameters

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [5] Port Parameters
→ [3] Switching Port Parameters → Enter Module Number (1-4): → Enter Port Number (1-2):

Description:

Displays basic parameters about each Switching Port on the OptiStar EdgeSwitch, including Interface Type, Network Type, Port Speed, IP Address and Subnet Mask, MAC Address, Admin Status and Operational Status. (**Note:** The MAC Address field on this screen is only applicable to Gigabit Ethernet ports. This field will not show up for all other types of ports. For help on viewing the MAC address for a port on an FCIP Network Module, see [Section 6.3.10](#)).

This screen also displays operational parameters specific to the Interface Type (either Gigabit Ethernet, Fibre Channel over IP, OC-48c/STM-16c or OC-12c/STM-4c).

To modify the parameters on this screen, from the main menu follow the path:

[3] Configuration → [3] Port Parameters –or- [3] Configuration → [4] IP Parameters

	NOTE: OC-48c/STM-16c Modules contain only one port per module.
---	---

5.1.2.6 Fan Status

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [6] Fan Status

Description:

This menu item enables the user to view the status of each of the 4 fans on the OptiStar EdgeSwitch.

5.1.2.7 Power On Self Test (POST) Results

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [7] POST Results

Description:

The following 2 sections show the results for the POST tests on the Host Module and the Switching Modules.

5.1.2.7.1 Host Module POST Results

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [7] POST Results → [1] Host Module POST Results

Description:

This menu item shows the POST results for the following tests:

Type of Test	Fatal/Non-fatal Error	Test Location
SDRAM	Fatal	Boot Code
Console Port	Fatal	Boot Code
NVSRAM	Fatal	Boot Code
CPU-EEPROM	Fatal	Boot Code
10/100 Base-T Port	Fatal	Boot Code
Switch Fabric	Fatal	Runtime Code
Thermal IC	Fatal	Runtime Code

For additional information on the POST process, see [Section 1.4.1.3](#).

5.1.2.7.2 Switching Module POST Results

Menu Path:

[1] Operational Information & Status → [2] Hardware Status → [7] POST Results → [2] Switching Module POST Results

Description:

This menu item shows the POST results for the following tests:

Type of Test	Fatal/Non-fatal Error	Test Location
All OptiStar EdgeSwitch Network Module Line Card tests (includes FCIP Network Module, Gigabit Ethernet Network Modules, OC-48c/STM-16c Network Modules, and OC-12c/STM-4c Network Modules).	Non-fatal	Runtime Code

For additional information on the POST process, see [Section 1.4.1.3](#).

5.1.3 Port Mapping

Menu Path:

[1] Operational Information & Status → [3] Port Mapping

Description:

Grouping may be done only on Gigabit Ethernet (GbE) ports. Ports that are in the same group allow for Layer 2 switching between those ports. VLAN tags can be passed transparently between GbE ports if they are in the

same group. If ports are in different groups, then Layer 3 switching is performed by default. Note that when data passes to or from an OC-12 or an OC-48 port, Layer 3 switching is automatically performed regardless of port grouping. **Thus, port grouping is only meaningful for Gigabit Ethernet ports.**

The following table displays the default Port Mapping. There are eight switching ports, the maximum number of port groups. The port numbers go from 1 to 8, and apply only to the switching ports (see Section 3.4.1 for port numbering diagram). The console port and the management port cannot be grouped. For a tutorial on bridging and port mapping, see Section 4.5.2 entitled “How to Set Up IP Addresses on the OptiStar EdgeSwitch with Bridging”.

Module Number	Port Number	Port Group
1	1	1
1	2	1
2	1	1
2	2	4
3	1	5
3	2	6
4	1	7
4	2	8

5.1.4 IP Parameters

The following 3 sections enable the user to view the current IP address and subnet mask for every port type on the OptiStar EdgeSwitch.

5.1.4.1 10/100BaseT Port IP Address

Menu Path:

[1] Operational Information & Status → [4] IP Parameters → [1] 10/100BaseT port IP Address

Description:

This read-only table shows the current 10/100BaseT Port IP address and subnet mask. To modify the parameters on this screen, from the main menu follow the path:

[3] Configuration → [4] IP Parameters → [1] Set 10/100BaseT Port IP Address and MASK

5.1.4.2 Console Port IP Address

Menu Path:

[1] Operational Information & Status → [4] IP Parameters → [2] Console Port IP Address

Description:

This read-only table shows the current Console Port IP address and subnet mask. To modify the parameters on this screen, from the main menu follow the path:

[3] Configuration → [4] IP Parameters → [2] Set Console Port IP Address and MASK

5.1.4.3 Switching Ports IP Address

Menu Path:

[1] Operational Information & Status → [4] IP Parameters → [3] Switching Ports IP Address

Description:

This read-only table shows the current IP address and corresponding subnet mask for each switching port on the OptiStar EdgeSwitch. To modify the parameters on this screen, from the main menu follow the path:
[3] Configuration → [4] IP Parameters → [3] Set Switching Port IP Address and MASK

5.1.5 BOOTP/TFTP Parameters

Menu Path:

[1] Operational Information & Status → [5] BOOTP/TFTP Parameters

Description:

When this option is selected, BOOTP/TFTP parameters are displayed, including BOOTP Status (Enabled/Disabled), TFTP Server IP Address, TFTP Firmware File Name, and TFTP Operational Status. To modify BOOTP/TFTP parameters, from the main menu follow the path:
[3] Configuration → [1] BOOTP/TFTP Configuration

5.1.6 SNMP Agent Parameters

The following 4 sections enable the user to view information about the SNMP Agent, including SNMP Agent parameters, IP address and other information for the Network Management System (NMS), community name information, and the trap state (enabled/disabled) for each type of trap on the OptiStar EdgeSwitch.

5.1.6.1 SNMP Agent Parameters

Menu Path:

[1] Operational Information & Status → [6] SNMP Agent Parameters → [1] SNMP Agent Parameters

Description:

This read-only screen shows information about the SNMP Agent Version and the SNMP Security Level.

5.1.6.2 NMS Information

Menu Path:

[1] Operational Information & Status → [6] SNMP Agent Parameters → [2] NMS Information

Description:

This read-only table shows the following Network Management System (NMS) information: the IP address of each management station as well as the **Access Mode** associated with that management station and the **Community Name** assigned to that Access Mode. To modify the parameters on this screen, from the main menu follow the path: [4] Administration → [3] SNMP Configuration → [2] Add NMS Entry

5.1.6.3 Community Name Information

Menu Path:

[1] Operational Information & Status → [6] SNMP Agent Parameters → [3] Community Name Information

Description:

This read-only table shows the **Community Name** assigned to each **Access Mode** (either **Read-Write** or **Read-Only**) on the system. To modify a **Community Name**, from the main menu follow the path:

[4] Administration → [3] SNMP Configuration → [5] Modify Community Name

5.1.6.4 Get SNMP Trap Administration Status

Menu Path:

[1] Operational Information & Status → [6] SNMP Agent Parameters → [4] Get SNMP Trap Administration Status → Enter Community Mode (Read Write = 1; Read Only = 2):

Description:

This read-only table shows the Trap State (either **Enabled** or **Disabled**) for each type of trap on the OptiStar EdgeSwitch. To modify a trap state on this screen, from the main menu follow the path:

[4] Administration → [3] SNMP Configuration → [6] Modify Trap Administration Status

For help on modifying a Trap State, [see Section 5.4.3.6](#).

5.1.7 Routing Information

[Sections 5.1.7.1 through 5.1.7.5](#) enable the user to view routing information for the OptiStar EdgeSwitch, including the routing table, static route information, and the current parameters for each routing protocol (RIP, OSPF and BGP4).

5.1.7.1 Routing Table

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [1] Routing Table

Description:

This read-only table shows the routing information for the OptiStar EdgeSwitch.

5.1.7.2 Static Routes

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [2] Static Routes

Description:

This read-only table shows the static route entries for the OptiStar EdgeSwitch. To add a static route, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [1] Set Static Route

To delete a static route, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [2] Delete Static Route

5.1.7.3 RIP General Parameters

The following 3 sections enable the user to view the current parameters for RIP, including general parameters, the RIP interface status for each port (enabled/disabled) and the RIP route table.

5.1.7.3.1 RIP General Parameters

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [3] RIP Parameters
→ [1] RIP General Parameters

Description:

This read-only table shows the current general parameters for RIP. To modify the parameters on this screen, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters

5.1.7.3.2 RIP Interface Status

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [3] RIP Parameters
→ [2] RIP Interface Status

Description:

This read-only table shows the RIP Interface Status (**Enabled/Disabled**) for each switching port on the OptiStar EdgeSwitch. To modify the RIP Interface Status, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [2] Set RIP Interface Status

5.1.7.3.3 RIP Route Table

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [3] RIP Parameters → [3] RIP Route Table

Description:

This read-only screen shows the RIP route table.

5.1.7.4 OSPF Parameters

The following 3 sections enable the user to view the status current parameters for OSPF, including the OSPF parameters that apply to the switch, OSPF parameters that apply to each switching port (interface), and parameters for each OSPF Area.

5.1.7.4.1 Get OSPF Status

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [4] OSPF Parameters → [1] Get OSPF Status

Description:

This read-only screen shows the current OSPF status for the OptiStar EdgeSwitch, including whether running (**Enabled/Disabled**), OSPF Version, Router Id, AS border support (**Enabled/Disabled**), and TOS support (**Enabled/Disabled**). To modify the OSPF parameters, from the main menu follow the path:
[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters

5.1.7.4.2 Get OSPF Interface Status

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [4] OSPF Parameters
→ [2] Get OSPF Interface Status → Enter Module Number (1-4): → Enter Port Number (1-2):

Description:

This read only table shows the current OSPF interface status and detailed OSPF parameters for the selected switching port. To modify the OSPF parameters, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters.

For help on modifying OSPF parameters, see [Section 5.3.6.6](#).

5.1.7.4.3 Current OSPF Area Status

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [4] OSPF Parameters
→ [3] Current OSPF Area Status

Description:

When this option is selected, a table is displayed that shows all the valid area ID's that are currently present.

Area ID's Currently Present
1.1.1.1
2.2.2.2
3.3.3.3

To view the Current OSPF Area Status table on a particular area, the user may then enter the desired Area ID at the prompt. For example:

Enter Area ID: 3.3.3.3

Current OSPF Area Status		
Id	:	3.3.3.3
Authentication type	:	
Import external AS	:	Enabled/Disabled
SPF runs	:	
Area border router count	:	
AS border router count	:	
Area LSA count	:	
Area LSA checksum	:	

To modify the Area Group entries, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [5] Area Group

5.1.7.5 BGP4 Parameters

The following 7 sections enable the user to view the current parameters for BGP4, including general parameters, the BGP peer table, the OSPF external and internal subnet tables, the network – multi-exit-discriminator table, BGP filter tags, and the OSPF metric to BGP metric map.

5.1.7.5.1 Get BGP4 General Parameters

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [5] BGP4 Parameters
→ [1] Get BGP4 General Parameters

Description:

This read-only table shows the current general parameters for BGP4. To modify BGP4 general parameters, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [1] Set BGP4 General Parameters

5.1.7.5.2 Get BGP Peer Table

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [5] BGP4 Parameters
→ [2] Get BGP Peer Table → Enter BGP Peer Number:

Description:

This read-only table shows information specific to each BGP Peer. The BGP Peer is identified by the BGP Peer Number, which must be entered in order to view the table. The first number starts at 0. To add or delete BGP peers, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [2] Configure BGP Peer

5.1.7.5.3 Get OSPF External Subnet Table

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [5] BGP4 Parameters
→ [3] Get OSPF External Subnet Table

Description:

This read-only screen shows the OSPF External Subnet Table. To add or delete entries to the OSPF External Subnet Table, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [3] Configure OSPF External Subnets

5.1.7.5.4 Get OSPF Internal Subnet Table

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [5] BGP4 Parameters
→ [4] Get OSPF Internal Subnet Table

Description:

This read-only screen shows the OSPF Internal Subnet Table. To add or delete entries to the OSPF Internal Subnet Table, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [4] Configure OSPF Internal Subnets

5.1.7.5.5 Get Network, Multi-Exit-Discriminator Table

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [5] BGP4 Parameters
→ [5] Get Network, Multi-Exit-Discriminator Table

Description:

This read-only screen shows the Network, Multi-Exit-Discriminator Table. To add or delete entries to the Network, Multi-Exit-Discriminator Table, from the main menu follow the path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [5] Configure Network Multi-Exit-Discriminator pair

5.1.7.5.6 Get BGP Filter Tags

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [5] BGP4 Parameters → [6] Get BGP Filter Tags

Description:

This read-only table shows the BGP Filter Tags. To add or delete BGP Filter Tags, from the main menu follow the path: [3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [6] Configure BGP4 Filter Tags

5.1.7.5.7 Get OSPF Metric to BGP Metric Map

Menu Path:

[1] Operational Information & Status → [7] Routing Information → [5] BGP4 Parameters
→ [7] Get OSPF Metric To BGP Metric Map

Description:

This read-only table shows the OSPF Metric to BGP Metric map. To add or delete entries to the Network, Multi-Exit-Discriminator Table, from the main menu follow the path: [3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [7] Configure OSPF Metric to BGP Metric Map

5.1.8 Spanning Tree Protocol

The following 2 sections enable the user to view information about the Spanning Tree Protocol, including STP Bridge parameters and STP port parameters.

5.1.8.1 Get Spanning Tree Protocol Bridge Parameters

Menu Path:

[1] Operational Information & Status → [8] Spanning Tree Protocol → [1] Get STP Bridge Parameters

Description:

When this option is selected, the STP Bridge Parameters are displayed, as in the following example:

STP Bridge Parameters		
STP State	:	ENABLED
Bridge Priority	:	0
Bridge Max Age	:	6
Bridge Hello Time	:	1
Bridge Forward Delay	:	4

To modify STP Bridge parameters, from the main menu follow the path:

[3] Configuration → [7] Spanning Tree Protocol → [1] Set Spanning Tree Bridge Parameters

5.1.8.2 Get Spanning Tree Protocol Port Parameters

Menu Path:

[1] Operational Information & Status → [8] Spanning Tree Protocol → [2] Get STP Port Parameters

Description:

When this option is selected, the STP Parameters for each switching port on the OptiStar EdgeSwitch are displayed, as in the following example:

STP Port Parameters					
Module Number	Port Number	STP Port State	STP Port Status	STP Port Priority	STP Port Path Cost
1	1	ENABLED	Forwarding	128	1
1	2	ENABLED	Learning	129	1
2	1	ENABLED	Forwarding	130	1
2	2	ENABLED	Forwarding	131	1
3	1	ENABLED	Forwarding	132	1
3	2	ENABLED	Forwarding	133	1
4	1	ENABLED	Forwarding	134	1
4	2	ENABLED	Blocked	135	1

To modify STP Port parameters, from the main menu follow the path:

[3] Configuration → [7] Spanning Tree Protocol → [2] Set Spanning Tree Port Parameters

5.1.9 Forwarding Database

The following section enables the user to view the Static Forward Database Table.

5.1.9.1 Static Forward Database Table

Menu Path:

[1] Operational Information & Status → [9] Forwarding Database → [1] Static Forward Database Table

Description:

This read-only screen shows the Static Forwarding Database Table, as in the following example.

MAC Address	Switching Port Number
00:11:02:03:04:05	7

To modify the Static Forward Database Table, from the main menu follow the path:

[3] Configuration → [8] Forwarding Database Entry → [1] Set Static Forwarding Database Entry
→ [1] Add Static Forwarding Database Entry

Note: This function is not available via Web-based Management.

5.1.10 FCIP Network Module Status

The following 3 sections enable the user to view status information about each FCIP Network Module, including IP parameters and the connection status of both local and remote FCIP Network Modules.

5.1.10.1 Local FCIP Network Module IP Parameters

Menu Path:

[1] Operational Information & Status → [10] FCIP Network Module Status
→ [1] Local FCIP Network Module IP Parameters

Description:

The **Local FCIP Network Module IP Parameters Table** is a read-only table that displays the currently configured FCIP Network Module IP address and subnet mask information for each FCIP Network Module on the local OptiStar EdgeSwitch. The maximum size of the table is four, since there can be a maximum of four FCIP Network Modules in each OptiStar EdgeSwitch. To configure (add) new FCIP Network Module IP addresses, go to the **Add Local FCIP Network Module** screen (see Section 5.3.9.1 for help). When this option is selected, a screen similar to the following should be displayed:

Local FCIP Network Module Table

FCIP Network Module Number	IP Address	Subnet Mask
1	192.168.1.101	255.255.255.0
2	192.168.3.101	255.255.255.0
3	192.168.5.101	255.255.255.0
4	192.168.7.101	255.255.255.0

Press Enter To Continue ...

The **Local FCIP Network Module IP Parameters** fields are defined as follows:

Name of field	Possible Values	Definition
FCIP Network Module Number	Integer from 1-4	Number of the slot on the OptiStar EdgeSwitch that contains the FCIP Network Module.
IP Address	Valid FCIP Network Module IP Address	The FCIP Network Module IP address assigned to the FCIP Network Module. This address has the same subnet as the IP address of the 1 st port on the FCIP Network Module.
Subnet Mask	Valid IP Address	Subnet mask for the FCIP Network Module IP address.

5.1.10.2 Remote FCIP Network Module IP Parameters

Menu Path:

[1] Operational Information & Status → [10] FCIP Network Module Status
 → [2] Remote FCIP Network Module IP Parameters

Description:

The Remote FCIP Network Module IP Parameters Table is a read-only table that displays the currently configured FCIP Network Module IP address and subnet mask information for remote FCIP Network Modules. This table is updated by the user through the [Add Remote FCIP Network Module](#) menu item (see [Section 5.3.9.3](#)) or the [Delete Remote FCIP Network Module](#) menu item (see [Section 5.3.9.4](#)). The maximum size of the table is 235. When this option is selected, a screen similar to the following should be displayed:

Remote FCIP Network Module Table

IP Address	Subnet Mask
192.168.11.100	255.255.255.0
192.168.12.100	255.255.255.0
192.168.21.100	255.255.255.0
192.168.22.100	255.255.255.0

Press Enter To Continue ...

The **Remote FCIP Network Module IP Parameters** fields are defined as follows:

Name of field	Possible Values	Definition
IP Address	Valid FCIP Network Module IP Address	The FCIP Network Module IP address assigned to the FCIP Network Module. This address has the same subnet as the IP address of the 1 st port on the FCIP Network Module.
Subnet Mask	Valid IP Address	Subnet mask for the FCIP Network Module IP address.

5.1.10.3 FCIP Network Module Connection Status

Menu Path:

[1] Operational Information & Status → [10] FCIP Network Module Status
→ [3] FCIP Network Module Connection Status

Description:

The FCIP Network Module Connection Status lists the IP addresses of the local and remote FCIP Network Modules that the OptiStar EdgeSwitch can see.

When this option is selected, a screen similar to the following should be displayed:

FCIP Network Module Connection Status

IP Address	Subnet Mask	Connection Status	FCIP Network Module Location
192.168.1.101	255.255.255.0	Reachable	Local
192.168.3.101	255.255.255.0	Unreachable	Remote

Press Enter To Continue ...

The FCIP Network Module Connection Status Table fields are defined as follows:

Name of field	Possible Values	Definition
IP Address	Valid FCIP Network Module IP Address	The FCIP Network Module IP address assigned to the FCIP Network Module. This address has the same subnet as the IP address of the 1 st port on the FCIP Network Module.
Subnet Mask	Valid IP Address	Subnet mask for the FCIP Network Module IP address.
Connection Status	reachable/unreachable	Local FCIP Network Modules become reachable when the inband-link between the switch and the module passes. Remote FCIP Network Modules become reachable when routing is set up between corresponding FCIP Network Modules.
FCIP Network Module Location	local/remote	Shows whether the FCIP Network Module belongs to the local OptiStar EdgeSwitch or a remote OptiStar EdgeSwitch.

5.2 Port Statistics Tasks

When this option is selected, the following sub menu will be displayed:

Port Statistics		
F1 (Main Menu)	F2 or .. (Previous Menu)	F3 (Exit)
[1] 10/100BaseT Port Statistics	(For help on this item, go to Section 5.2.1 on page 5-20)	
[2] Console Port Statistics	(For help on this item, go to Section 5.2.2 on page 5-20)	
[3] Switching Port Statistics	(For help on this item, go to Section 5.2.3 on page 5-20)	

Enter your Choice >

Enter a number from the Port Statistics menu to go to the corresponding category.

5.2.1 10/100BaseT Port Statistics

Menu Path:

[2] Port Statistics → [1] 10/100BaseT Port Statistics

Description:

This read-only table shows statistics for the 10/100BaseT port, including Received and Sent quantities for: **Bytes, Unicast packets, Non-Unicast packets, Discards, Errors, and Unknown protocols.**

5.2.2 Console Port Statistics

Menu Path:

[2] Port Statistics → [2] Console Port Statistics

Description:

This read-only table shows statistics for the console port, including Received and Sent quantities for: **Bytes, Unicast packets, Non-Unicast packets, Discards, Errors, and Unknown protocols.**

5.2.3 Switching Port Statistics

Menu Path:

[2] Port Statistics → [3] Switching Port Statistics → Enter Module Number (1-4): → Enter Port Number (1-2):

Description:

This read-only table shows a number of key statistics (measured by Received and Transmit packet sizes) for the selected switching port.

5.3 Configuration Tasks

When this option is selected, the following sub menu will be displayed:

Configuration		
F1 (Main Menu)	F2 or .. (Previous Menu)	F3 (Exit)
[1] BOOTP/TFTP Configuration		(For help on this item, go to Section 5.3.1 on page 5-21)
[2] System Information		(For help on this item, go to Section 5.3.2 on page 5-22)
[3] Port Parameters		(For help on this item, go to Section 5.3.3 on page 5-24)
[4] IP Parameters		(For help on this item, go to Section 5.3.4 on page 5-29)
[5] Port Mapping		(For help on this item, go to Section 5.3.5 on page 5-31)
[6] Routing Configuration		(For help on this item, go to Section 5.3.6 on page 5-31)
[7] Spanning Tree Protocol		(For help on this item, go to Section 5.3.7 on page 5-43)
[8] Forwarding Database Entry		(For help on this item, go to Section 5.3.8 on page 5-45)
[9] FCIP Network Module Configuration		(For help on this item, go to Section 5.3.9 on page 5-46)

Enter your Choice >

Enter a number from the Configuration menu to go to the corresponding category.

5.3.1 BOOTP/TFTP Configuration

The following 4 sections enable the user to configure the BOOTP/TFTP parameters for the OptiStar EdgeSwitch.

5.3.1.1 Enable TFTP to Download Firmware

Menu Path:

[3] Configuration → [1] BOOTP/TFTP Configuration → [1] Enable TFTP to Download Firmware

Description:

The TFTP Server IP Address is required before beginning the download process. To verify the TFTP Server IP Address and the Firmware File Name, from the main menu follow the path:

[1] Operational Information & Status → [5] BOOTP/TFTP Parameter

For help, see [Section 5.1.5](#).

To enter a new TFTP Server IP Address, from the main menu follow the path:

[3] Configuration → [1] BOOTP/TFTP Configuration → [3] Set TFTP Server IP Address

For help, see [Section 5.3.1.3](#).

To enter a new Firmware File Name, from the main menu follow the path:

[3] Configuration → [1] BOOTP/TFTP Configuration → [4] Set OptiStar EdgeSwitch Firmware File Name:

For help, see [Section 5.3.1.4](#).

Once you have verified that the TFTP Server IP Address is entered correctly, then answer **y** (yes) or **n** (no) as to whether you want to update the firmware through TFTP. The OptiStar EdgeSwitch will need to be rebooted for these changes to take effect.

5.3.1.2 Set BOOTP Status

Menu Path:

[3] Configuration → [1] BOOTP/TFTP Configuration → [2] Set BOOTP Status

Description:

Enter **1 (Enable)** or **2 (Disable)** to enable or disable BOOTP Status.

5.3.1.3 Set TFTP Server IP Address

Menu Path:

[3] Configuration → [1] BOOTP/TFTP Configuration → [3] Set TFTP Server IP Address

Description:

Enter the IP address for the TFTP Server.

5.3.1.4 Set TFTP Firmware File Name

Menu Path:

[3] Configuration → [1] BOOTP/TFTP Configuration → [4] Set OptiStar EdgeSwitch Firmware File Name:

Description:

Enter the file name of the TFTP Firmware. This file is located on the OptiStar EdgeSwitch CD or on the Lucent Website. This file should then be copied to your TFTP server. **Note:** If applicable, preface the file name with the directory path indicating the file's location on your TFTP server.

5.3.2 System Information

The following 6 sections enable the user to modify system information for the OptiStar EdgeSwitch. [Section 5.3.2.7](#) enables the user to reset the OptiStar EdgeSwitch.

5.3.2.1 Set System Name

Menu Path:

[3] Configuration → [2] System Information → [1] Set System Name

Description:

Enter the system name.

5.3.2.2 Set System Location

Menu Path:

[3] Configuration → [2] System Information → [2] Set System Location

Description:

Enter the system location.

5.3.2.3 Set System Contact

Menu Path:

[3] Configuration → [2] System Information → [3] Set System Contact

Description:

Enter the system contact.

5.3.2.4 Set System Temperature Threshold

Menu Path:

[3] Configuration → [2] System Information → [4] Set System Temperature Threshold

Description:

Enter the temperature threshold for the system (allowable range between 10-70 Celsius; default is 50 Celsius).

5.3.2.5 Set Time Server IP Address

Menu Path:

[3] Configuration → [2] System Information → [5] Set Time Server IP Address

Description:

Enter the IP address of the Time Server.

5.3.2.6 Set System with Default Values

Menu Path:

[3] Configuration → [2] System Information → [6] Set System with Default Values

Description:

When this menu item is selected, the default values for the key system parameters will be displayed. Enter y (yes) if you would like to configure the system with the default parameters.

5.3.2.7 Reset OptiStar EdgeSwitch

Menu Path:

[3] Configuration → [2] System Information → [7] Reset OptiStar EdgeSwitch

Description:

Enter **y** (yes) to reset the OptiStar EdgeSwitch. **CAUTION:** If you enter yes, the EdgeSwitch will be reset.

5.3.3 Port Parameters

Sections 5.3.3.1 through 5.3.3.3 enable the user to set and modify parameters for each port type on the OptiStar EdgeSwitch.

5.3.3.1 Set 10/100BaseT Port Parameters

The following section enables the user to set and modify parameters for the 10/100BaseT port.

5.3.3.1.1 Set Auto Negotiation Mode for 10/100BaseT Port

Menu Path:

[3] Configuration → [3] Port Parameters → [1] Set 10/100BaseT Port Parameters
→ [1] Set Auto negotiation mode

Description:

This menu item lets the user enable or disable **Auto Negotiation** for the 10/100BaseT port. At the prompt, enter a **1** to enable or a **2** to disable. In the default configuration, **Auto Negotiation** is enabled.

5.3.3.2 Set Console Port Parameters

The following 3 sections enable the user to set and modify parameters for the Console port.

5.3.3.2.1 Set Console Port with Default Parameters

Menu Path:

[3] Configuration → [3] Port Parameters → [2] Set Console Port Parameters
→ [1] Set Console port with default parameters

Description:

When this menu item is selected, the following screen will be displayed, showing the default parameters for the console port:

Console port default parameters	
1. Port Speed	:38400 bits/sec
2. Maximum Transmission Unit	:1500 Bytes
3. Maximum Receive Unit	:1500 Bytes
4. PPP Mode	:Enabled

Do you wish to configure console port with default parameters? (y/n):

Enter **y** (yes) to configure the port with the default parameters.

5.3.3.2.2 Set Console Port Speed

Menu Path:

[3] Configuration → [3] Port Parameters → [2] Set Console Port Parameters → [2] Set Console port speed

Description:

When this menu item is selected, the following screen will be displayed, showing the port speed options for the console port:

Console port speed	
1. 9600 bits/sec	
2. 19200 bits/sec	
3. 38400 bits/sec	

Enter choice (1-3):

5.3.3.2.3 Set Console Port PPP Mode

Menu Path:

[3] Configuration → [3] Port Parameters → [2] Set Console Port Parameters → [3] Set PPP mode

Description:

This menu item lets the user enable or disable **Set PPP Mode** for the console port. At the prompt, enter a **1** to enable or a **2** to disable. In the default configuration, **Set PPP Mode** is enabled.

5.3.3.3 Set Switching Port Parameters

Menu Path:

[3] Configuration → [3] Port Parameters → [3] Set Switching Port Parameters → Enter Module Number (1-4):
→ Enter Port Number (1-2):

Description:

When this menu item is selected, the following menu will be displayed. These menu items enable the user to set and modify parameters for each switching port on the OptiStar EdgeSwitch.

Switching Port Parameters

F1 (Main Menu)	F2 or .. (Previous Menu)	F3 (Exit)
[1] Set Switching Port With Default Parameters	(For help on this item, go to Section 5.3.3.3.1 on page 5-26)	
[2] Set Scrambling Mode (OC/STM only)	(For help on this item, go to Section 5.3.3.3.2 on page 5-26)	
[3] Set Auto negotiation Mode (GbE only)	(For help on this item, go to Section 5.3.3.3.3 on page 5-27)	
[4] Set Maximum Transmission Unit	(For help on this item, go to Section 5.3.3.3.4 on page 5-27)	
[5] Set Maximum Receive Unit	(For help on this item, go to Section 5.3.3.3.5 on page 5-28)	
[6] Set Framing Mode (OC/STM only)	(For help on this item, go to Section 5.3.3.3.6 on page 5-28)	
[7] Set CRC Mode (OC/STM only)	(For help on this item, go to Section 5.3.3.3.7 on page 5-29)	

Enter your Choice >

Enter a number from the Switching Port Parameters menu to go to the corresponding category. For sections 5.3.3.3.1 through 5.3.3.3.7, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.3.3.1 Set Switching Port with Default Parameters

Menu Path:

[3] Configuration → [3] Port Parameters → [3] Set Switching Port Parameters → Enter Module Number (1-4):
→ Enter Port Number (1-2): → [1] Set Switching Port with Default Parameters

Description:

When this menu item is selected, a screen will be displayed that shows the default parameters for the selected switching port. The default parameters shown are based on the type of module (e.g. Gigabit Ethernet, FCIP, OC-48c/STM-16c or OC-12c/STM-4c).

Enter **y** (yes) to configure the port with the default parameters.

5.3.3.3.2 Set Scrambling Mode for Switching Port

Menu Path:

[3] Configuration → [3] Port Parameters → [3] Set Switching Port Parameters → Enter Module Number (1-4):
→ Enter Port Number (1-2): → [2] Set Scrambling Mode

Description:

When this menu item is selected, the following screen will be displayed, showing the **Scrambling Mode** options for the selected switching port. This menu item applies only to OC/STM modules.

Scrambling Mode

1. Post Scrambling
 2. Pre Scrambling
 3. No Scrambling
-
-

Enter choice (1-3):

5.3.3.3.3 Set Auto Negotiation Mode for Switching Port

Menu Path:

[3] Configuration → [3] Port Parameters → [3] Set Switching Port Parameters → Enter Module Number (1-4):
→ Enter Port Number (1-2): → [3] Set Auto negotiation Mode

Description:

This menu item enables the user to set the Auto Negotiation Mode. This function applies only to Gigabit Ethernet modules. At the prompt, enter a **1** to enable or a **2** to disable.

5.3.3.3.4 Set Maximum Transmission Unit for Switching Port

Menu Path:

[3] Configuration → [3] Port Parameters → [3] Set Switching Port Parameters → Enter Module Number (1-4):
→ Enter Port Number (1-2): → [4] Set Maximum Transmission Unit

Description:

When this option is selected, the following screen will be displayed:

Maximum Transmission Unit

1. 1500 Bytes
 2. 2048 Bytes
 3. 4096 Bytes
 4. 4608 Bytes
 5. 8192 Bytes
 6. 9216 Bytes
-
-

Enter choice (1-6):

5.3.3.3.5 Set Maximum Receive Unit for Switching Port

Menu Path:

[3] Configuration → [3] Port Parameters → [3] Set Switching Port Parameters → Enter Module Number (1-4):
→ Enter Port Number (1-2): → [5] Set Maximum Receive Unit

Description:

When this option is selected, the following screen will be displayed:

Maximum Receive Unit
1. 1500 Bytes
2. 2048 Bytes
3. 4096 Bytes
4. 4608 Bytes
5. 8192 Bytes
6. 9216 Bytes

Enter choice (1-6):

5.3.3.3.6 Set Framer Mode

Menu Path:

[3] Configuration → [3] Port Parameters → [3] Set Switching Port Parameters → Enter Module Number (1-4):
→ Enter Port Number (1-2): → [7] Set Framer Mode

Description:

This menu item applies only to OC/STM modules. This menu item enables the user to set the Framer Mode for the selected OC or STM module. If the module is either OC-12c or OC-48c, enter **1** to set the Framer Mode to **SONET**. If the module is either STM-4c or STM-16c, enter **2** to set the Framer Mode to **SDH**. The default value is **SONET**.

5.3.3.3.7 Set CRC Mode

Menu Path:

[3] Configuration → [3] Port Parameters → [3] Set Switching Port Parameters → Enter Module Number (1-4):
→ Enter Port Number (1-2): → [8] Set CRC Mode

Description:

This menu item applies only to OC/STM modules. This menu item enables the user to set the CRC Mode for the selected OC or STM module. Enter **1** to set the CRC Mode to **16 bit**, or enter **2** to set the CRC Mode to **32 bit**.

5.3.4 IP Parameters

Sections 5.3.4.1 through 5.3.4.3 enable the user to set or modify the IP address and subnet mask for each port on the OptiStar EdgeSwitch.

5.3.4.1 Set 10/100Base T Port IP Address and Mask

The following 2 sections enable the user to set the IP address and subnet mask for the 10/100BaseT port. For sections 5.3.4.1.1 and 5.3.4.1.2, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.4.1.1 Set 10/100BaseT IP Address

Menu Path:

[3] Configuration → [4] IP Parameters → [1] Set 10/100BaseT port IP Address and MASK
→ [1] Set 10/100BaseT IP Address

Description:

This menu item enables the user to enter the IP address for the 10/100BaseT port.

5.3.4.1.2 Set 10/100BaseT Subnet Mask

Menu Path:

[3] Configuration → [4] IP Parameters → [1] Set 10/100BaseT port IP Address and MASK
→ [2] Set 10/100BaseT Subnet Mask

Description:

This menu item enables the user to enter a subnet mask for the 10/100BaseT port.

5.3.4.2 Set Console Port IP Address and MASK

The following 2 sections enable the user to set the IP address and subnet mask for the Console port. For sections 5.3.4.2.1 and 5.3.4.2.2, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.4.2.1 Set Console Port IP Address

Menu Path:

[3] Configuration → [4] IP Parameters → [2] Set Console Port IP Address and MASK
→ [1] Set Console Port IP Address

Description:

This menu item enables the user to enter the IP address for the Console port.

5.3.4.2.2 Set Console Port Subnet Mask

Menu Path:

[3] Configuration → [4] IP Parameters → [2] Set Console Port IP Address and MASK
→ [2] Set Console Port Subnet Mask

Description:

This menu item enables the user to enter a subnet mask for the Console port.

5.3.4.3 Set Switching Port IP Address and MASK

The following 2 sections enable the user to set the IP address and subnet mask for a Switching port. For sections 5.3.4.3.1 and 5.3.4.3.2, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.4.3.1 Set Switching Port IP Address

Menu Path:

[3] Configuration → [4] IP Parameters → [3] Set Switching Port IP Address and MASK
→ [1] Set Switching Port IP Address

Description:

This menu item enables the user to enter the IP address for each Switching port on the OptiStar EdgeSwitch. First enter the number of the module (from 1-4) to which the port belongs, then enter the port number (1 or 2). Refer to the diagram on [Slot Numbering](#) for help in determining module and port numbers. Now enter the IP address for the Switching port.

5.3.4.3.2 Set Switching Port Subnet Mask

Menu Path:

[3] Configuration → [4] IP Parameters → [3] Set Switching Port IP Address and MASK
→ [2] Set Switching Port Subnet Mask

Description:

This menu item enables the user to enter the subnet mask for each Switching port on the OptiStar EdgeSwitch. First enter the number of the module (from 1-4) to which the port belongs, then enter the port number (1 or 2). Refer to the diagram on [Slot Numbering](#) for help in determining module and port numbers. Now enter the subnet mask for the Switching port.

5.3.5 Port Mapping

Menu Path:

[3] Configuration → [5] Port Mapping

Description:

This menu item lets the user assign ports to port groups. When this option is selected, the following prompts will be displayed in succession:

```
Enter Module Number (1-4)  :  
Enter Port Number (1-2)   :  
Enter Port Group (1-8)    :
```

Grouping may be done only on Gigabit Ethernet (GbE) ports. Ports that are in the same group allow for Layer 2 switching between those ports. VLAN tags can be passed transparently between GbE ports if they are in the same group. If ports are in different groups, then Layer 3 switching is performed by default. Note that when data passes to or from an OC-12 or an OC-48 port, Layer 3 switching is automatically performed regardless of port grouping. **Thus, port grouping is only meaningful for Gigabit Ethernet ports.** The OptiStar EdgeSwitch will need to be rebooted for these changes to take effect. For more help on Bridging and Port Mapping, see the tutorial in [Section 4.5.2, entitled “How to Set Up IP Addresses on the OptiStar EdgeSwitch with Bridging”](#).

5.3.6 Routing Configuration

[Sections 5.3.6.1 through 5.3.6.7](#) enable the user to set up routing for the OptiStar EdgeSwitch.

5.3.6.1 Set Static Route

Menu Path:

[3] Configuration → [6] Routing Configuration → [1] Set Static Route

Description:

When this option is selected, the following prompts will be displayed in succession:

```
Enter Destination IP Address :  
Enter Subnet Mask           :  
Enter Next Hop IP Address   :
```

5.3.6.2 Delete Static Route

Menu Path:

[3] Configuration → [6] Routing Configuration → [2] Delete Static Route

Description:

When this option is selected, the following prompts will be displayed in succession:

```
Enter Destination IP Address  :
Enter Subnet Mask           :
```

Note: Currently this command is not available via web-based management. Static routes can only be deleted using the CLI utility.

5.3.6.3 Set Default Gateway

Menu Path:

[3] Configuration → [6] Routing Configuration → [3] Set Default Gateway

Description:

When this option is selected, the following prompt will be displayed:

```
Enter Default Gateway Address :
```

5.3.6.4 Delete Default Gateway

Menu Path:

[3] Configuration → [6] Routing Configuration → [4] Delete Default Gateway

Description:

Note: Selecting this option will delete the Default Gateway with no warning message. When this option is selected, the following message will be displayed:

```
Default Gateway Entry Deleted
Press Enter to Continue...
```

5.3.6.5 Set RIP Parameters

[Sections 5.3.6.5.1 and 5.3.6.5.2](#) enable the user to set parameters for the RIP routing protocol. For these sections, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.6.5.1 Set RIP General Parameters

The following 7 sections enable the user set general parameters for RIP.

5.3.6.5.1.1 Configure RIP with Default Parameters

Menu Path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters
→ [1] Configure RIP with default parameters

Description:

When this option is selected, the following screen will be displayed:

```

Default Parameters for RIP
-----
RIP version                : 2
Supplier mode              : RIP_SUPPLIER
Border gateway filtering   : ENABLE
Act as a gateway?         : RIP_GATEWAY
Multicast/Broadcast        : RIP_BROADCAST
RIP Administration Status  : ENABLE
-----

```

Do you want to configure RIP with above default parameters? (y/n):

5.3.6.5.1.2 RIP Version

Menu Path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters
→ [2] RIP version

Description:

When this option is selected, the following screen will be displayed:

```

RIP version
-----
1. RIPv1
2. RIPv2
-----

```

Enter RIP version number (1/2):

5.3.6.5.1.3 RIP Administration Status

Menu Path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters →
[3] RIP Admin Status

Description:

When this option is selected, the following screen will be displayed:

RIP Administration Status

1. ENABLE
 2. DISABLE
-
-

Enter choice (1-2):

5.3.6.5.1.4 *Supplier Mode*

Menu Path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters
→ [4] Supplier Mode

Description:

When this option is selected, the following screen will be displayed:

Supplier Mode

1. SUPPLIER
 2. LISTENER
-
-

Enter choice (1-2):

5.3.6.5.1.5 *Border Gateway Filtering*

Menu Path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters
→ [5] Border gateway filtering

Description:

When this option is selected, the following screen will be displayed:

Border Gateway filtering

1. ENABLE
 2. DISABLE
-
-

Enter choice (1-2):

5.3.6.5.1.6 Set as Gateway

Menu Path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters → [6] Act as a Gateway?

Description:

When this option is selected, the following screen will be displayed:

Act as a default gateway?

- 1. YES
- 2. NO

Enter choice (1-2):

5.3.6.5.1.7 Multicast/Broadcast

Menu Path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [1] Set RIP General Parameters → [7] Multicast/Broadcast

Description:

When this option is selected, the following screen will be displayed:

Multicast/Broadcast

- 1. BROADCAST
- 2. MULTICAST

Enter choice (1-2):

5.3.6.5.2 Set RIP Interface Status

Menu Path:

[3] Configuration → [6] Routing Configuration → [5] Set RIP Parameters → [2] Set RIP Interface Status → Enter Module Number (1-4): → Enter Port Number (1-2):

Description:

Enter a **1** to **Enable** or a **2** to **Disable**.

5.3.6.6 Set OSPF Parameters

Sections [5.3.6.6.1](#) through [5.3.6.6.4](#) enable the user to set parameters for the OSPF routing protocol. For these sections, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.6.6.1 Configure OSPF with Default Parameters

Menu Path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters
→ [1] Configure OSPF with default parameters

Description:

This menu item enables the user to configure OSPF with default parameters.

5.3.6.6.2 OSPF General Group

The following 4 sections enable the user to set and modify parameters for the OSPF general group.

5.3.6.6.2.1 OSPF Admin Status

Menu Path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [2] General Group
→ [1] OSPF Admin Status

Description:

Enter a **1** to **enable** or a **2** to **disable** the Administrative Status of OSPF.

5.3.6.6.2.2 OSPF Router ID

Menu Path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [2] General Group
→ [2] Router Id

Description:

Enter the OSPF router ID (IP address).

5.3.6.6.2.3 OSPF AS Border Router

Menu Path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [2] General Group
→ [3] AS border router

Description:

AS border router

1. Yes

2. No

Enter choice (1-2):

5.3.6.6.2.4 OSPF TOS Support

Menu Path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [2] General Group
→ [4] TOS support

Description:

This menu item enables the user to enable/disable TOS support.

5.3.6.6.3 Interface Group

The following 2 sections allow the user to modify the Interface Group by adding or deleting Interface Entries.

5.3.6.6.3.1 Add Interface Entry

Menu Path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [3] Interface Group
→ [1] Add Interface Entry → Enter Module Number (1-4): → Enter Port Number (1-2):

Description:

This menu item enables this port as an Interface Entry (y/n).

```

Enter Area ID (x.x.x.x)           :
Interface Cost (Enter a non-zero value) :
Router Priority (0-255)           :
Transit Delay (0-3600)           :
Retransmit Interval (0-3600)     :
Hello Interval (1-65535)         :
Router Dead Interval             :
Poll Interval                    :
Authentication Type (0-None, 1-Simple Password, 2-MD5):
Authentication Key               :

```

Press Enter to Continue...

5.3.6.6.3.2 Delete Interface Entry

Menu Path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [3] Interface Group
→ [2] Delete Interface Entry → Enter Module Number (1-4): → Enter Port Number (1-2)

Description:

This menu item deletes the selected port as an Interface Entry.

5.3.6.6.4 OSPF Area Group

The following 2 sections allow the user to modify the OSPF Area Group by adding or deleting Area Entries.

5.3.6.6.4.1 Add Area Entry

Menu Path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [4] Area Group
→ [1] Add Area Entry

Description:

When this option is selected, a table is displayed that shows all the valid area ID's that are currently present.

Area ID's Currently Present
1.1.1.1
2.2.2.2
3.3.3.3

Enter the Area ID you would like to add:

Enter Area ID:
Authentication Type (0 – None, 1 – Simple Password, 2 – MD5):
Import as Extern? (y/n):

Press Enter to Continue...

5.3.6.6.4.2 Delete Area Entry

Menu Path:

[3] Configuration → [6] Routing Configuration → [6] Set OSPF Parameters → [4] Area Group
→ [2] Delete Area Entry

Description:

This menu item enables the user to delete an area entry by entering the Area ID to be deleted.

5.3.6.7 SET BGP4 Parameters

[Sections 5.3.6.7.1 through 5.3.6.7.7](#) enable the user to set parameters for the BGP4 routing protocol. For these sections, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.6.7.1 Set BGP4 General Parameters

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [1] Set BGP4 General Parameters

Description:

- [1] BGP Admin Status
- [2] Enter BGP Identifier (x.x.x.x)
- [3] BGP Policy server Address
- [4] Configure From File?
- [5] Policy Enabled ?
- [6] BGP Directory Name
- [7] BGP Configuration File Name
- [8] BGP Policy File Name
- [9] BGP Policy Server User Name
- [10] BGP Policy Server Password
- [11] BGP Initialize Memory
- [12] BGP set Default Values
- [13] BGP Local Autonomous System Number
- [14] BGP Redistribute OSPF?
- [15] BGP Redistribute Static?
- [16] BGP Redistribute OSPF External?
- [17] BGP Synchronization with IGP?
- [18] BGP Route Reflector Cluster ID

5.3.6.7.2 Configure BGP Peer

The following 2 sections enable the user to add or delete BGP peers.

5.3.6.7.2.1 Add BGP Peer

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [2] Configure BGP Peer
→ [1] Add BGP Peer

Description:

Enter Peer Local IP Address (x.x.x.x)	:
Enter Peer Remote IP Address (x.x.x.x)	:
Enter Peer Subnet Mask (x.x.x.x)	:
Enter Peer Remote AS Number	:
Enter Peer Local Preference	:
Enter Peer Hold Time in Seconds	:
Enter Peer Keepalive Time in Seconds	:
Enter Peer Connect Retry Time in Seconds	:
Enter Peer Update Interval Time in Seconds	:
Enter Peer Intra AS Route Update Interval Time in Seconds	:
Enter Peer Admin Status (Enable(1)/Disable(2))	:

5.3.6.7.2.2 Delete BGP Peer

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters → [2] Configure BGP Peer
→ [2] Delete BGP Peer

Description:

This menu item enables the user to delete a BGP peer by entering the number of the BGP peer to be deleted.

5.3.6.7.3 Configure OSPF External Subnets

The following 2 sections enable the user add or delete OSPF external subnets.

5.3.6.7.3.1 Add OSPF External Subnet

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [3] Configure OSPF External Subnets → [1] Add OSPF External Subnet

Description:

Enter Network Address :
Enter Network Mask :

5.3.6.7.3.2 Delete OSPF External Subnet

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [3] Configure OSPF External Subnets → [2] Delete OSPF External Subnet

Description:

Enter Network Address :
Enter Network Mask :

5.3.6.7.4 Configure OSPF Internal Subnets

The following 2 sections enable the user add or delete OSPF internal subnets.

5.3.6.7.4.1 Add OSPF Internal Subnet

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [4] Configure OSPF Internal Subnets → [1] Add OSPF Internal Subnet

Description:

Enter Network Address :
Enter Network Mask :

5.3.6.7.4.2 Delete OSPF Internal Subnet

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [4] Configure OSPF Internal Subnets → [2] Delete OSPF Internal Subnet

Description:

Enter Network Address :
Enter Network Mask :

5.3.6.7.5 Configure Network Multi-Exit-Discriminator Pair

The following 2 sections enable the user add or delete Network Multi-Exit-Discriminator pairs.

5.3.6.7.5.1 Add Network Multi-Exit-Discriminator Pair

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [5] Configure Network Multi-Exit-Discriminator pair → [1] Add Network, MED Pair

Description:

Enter Network Address :
Enter MED :

5.3.6.7.5.2 Delete Network Multi-Exit-Discriminator Pair

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [5] Configure Network Multi-Exit-Discriminator pair → [2] Delete Network, MED Pair

Description:

Enter Network Address :
Enter MED :

5.3.6.7.6 Configure BGP4 Filter Tags

The following 2 sections enable the user add or delete BGP4 filter tags.

5.3.6.7.6.1 Add BGP4 Filter Tags

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [6] Configure BGP4 Filter Tags → [1] Add BGP Filter Tags

Description:

This menu item enables the user to add a BGP Filter Tag.

5.3.6.7.6.2 Delete BGP4 Filter Tags

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [6] Configure BGP4 Filter Tags → [2] Delete BGP Filter Tags

Description:

This menu item enables the user to delete a BGP Filter Tag.

5.3.6.7.7 Configure OSPF Metric to BGP Metric Map

The following 2 sections enable the user add or delete OSPF Metric to BGP Metric maps.

5.3.6.7.7.1 Add OSPF Metric to BGP Metric

Menu Path:

[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [7] Configure OSPF Metric to BGP Metric Map → [1] Add OSPF Metric to BGP Metric

Description:

Enter OSPF Metric	:
Enter BGP Metric	:

5.3.6.7.7.2 Delete OSPF Metric to BGP Metric

Menu Path:

[[3] Configuration → [6] Routing Configuration → [7] Set BGP4 Parameters
→ [7] Configure OSPF Metric to BGP Metric Map → [2] Delete OSPF Metric to BGP Metric

Description:

Enter OSPF Metric :

5.3.7 Spanning Tree Protocol

5.3.7.1 Set Spanning Tree Bridge Parameters

The following 6 sections enable the user to set various parameters for the Spanning Tree Bridge, including default parameters, STP State, Bridge Priority, Bridge Max Age, Bridge Hello Time and Bridge Forward Delay. For these sections, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.7.1.1 Configure Spanning Tree Bridge with Default Parameters

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [1] Set Spanning Tree Bridge Parameters
→ [1] Configure STP Bridge with default parameters

Description:

This menu item enables the user to configure the STP Bridge with the following default parameters:

STP State	: ENABLE
Bridge Priority	: 32768
Bridge Max Age (seconds)	: 20
Bridge Hello Time (seconds)	: 2
Bridge Forward Delay (seconds)	: 15

5.3.7.1.2 Set Spanning Tree Protocol State

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [1] Set Spanning Tree Bridge Parameters
→ [2] Set STP State

Description:

This menu item enables the user to enable/disable the STP state for the bridge.

5.3.7.1.3 Set Spanning Tree Protocol Bridge Priority

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [1] Set Spanning Tree Bridge Parameters
→ [3] Set Bridge Priority

Description:

Enter Bridge Priority (range: integer from 0-65535).

5.3.7.1.4 Set Spanning Tree Protocol Bridge Max Age

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [1] Set Spanning Tree Bridge Parameters
→ [4] Set Bridge Max Age

Description:

Enter Bridge Max Age (range: 6-40 seconds).

5.3.7.1.5 Set Spanning Tree Protocol Bridge Hello Time

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [1] Set Spanning Tree Bridge Parameters
→ [5] Set Bridge Hello Time

Description:

Enter Bridge Hello Time (range: 1-10 seconds).

5.3.7.1.6 Set Spanning Tree Protocol Bridge Forward Delay

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [1] Set Spanning Tree Bridge Parameters
→ [6] Set Bridge Forward Delay

Description:

Enter Bridge Forward Delay (range: 4-30 seconds).

5.3.7.2 Set Spanning Tree Port Parameters

The following 4 sections enable the user to set various parameters for the Spanning Tree Port, including default parameters, Port State, Port Priority and Port Path Cost. For these sections, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.7.2.1 Configure Spanning Tree Protocol Port with Default Parameters

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [2] Set Spanning Tree Port Parameters
→ [1] Configure STP ports with default parameters

Description:

This menu item enables the user to configure the STP Port with the following default parameters:

STP Port State : ENABLE
STP Port Priority : 128
STP Port PathCost : 1

5.3.7.2.2 Set Spanning Tree Protocol Port State

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [2] Set Spanning Tree Port Parameters
→ [2] Set STP Port State → Enter Module Number (1-4): → Enter Port Number (1-2):

Description:

This menu item enables the user to set the STP Port State (enable/disable).

5.3.7.2.3 Set Spanning Tree Protocol Port Priority

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [2] Set Spanning Tree Port Parameters
→ [3] Set STP Port Priority → Enter Module Number (1-4): → Enter Port Number (1-2):

Description:

Enter STP Port Priority (range: 0-255).

5.3.7.2.4 Set Spanning Tree Protocol Port Path Cost

Menu Path:

[3] Configuration → [7] Spanning Tree Protocol → [2] Set Spanning Tree Port Parameters
→ [4] Set STP Port Path Cost → Enter Module Number (1-4): → Enter Port Number (1-2):

Description:

Enter STP Port Path Cost (range: 1-65535).

5.3.8 Forwarding Database Entry

The following section enables the user to add and delete entries to the static forwarding database.

5.3.8.1 Set Static Forwarding Database Entry

The following 2 sections enable the user to add or delete entries to the static forwarding database. For these sections, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.8.1.1 Add Static Forwarding Database Entry

Menu Path:

[3] Configuration → [8] Forwarding Database Entry → [1] Set Static Forwarding Database Entry
→ [1] Add Static Forwarding Database Entry

Description:

Enter MAC Address <xx:xx:xx:xx:xx:xx> :
Enter Switching Port Number :

Note: This function is not available via Web-based Management.

5.3.8.1.2 Delete Static Forwarding Database Entry

Menu Path:

[3] Configuration → [8] Forwarding Database Entry → [1] Set Static Forwarding Database Entry
→ [2] Delete Static Forwarding Database Entry

Description:

Enter MAC Address <xx:xx:xx:xx:xx:xx> :

Note: This function is not available via Web-based Management.

5.3.9 FCIP Network Module Configuration

The following 4 sections enable the user to configure local and remote FCIP Network Modules. For these sections, the OptiStar EdgeSwitch will need to be rebooted for the changes to take effect.

5.3.9.1 Add Local FCIP Network Module

Menu Path:

[3] Configuration → [9] FCIP Network Module Configuration → [1] Add Local FCIP Network Module

Description:

The **Add Local FCIP Network Module** menu item allows the user to configure the FCIP Network Module IP address (which is the FCIP Network Module's internal IP address) for all FCIP Network Modules in the local OptiStar EdgeSwitch. When this option is selected from the **FCIP Network Module Configuration** menu, the following prompts will be displayed in succession:

Enter the FCIP Network Module Number (1-4):

To configure the FCIP Network Module, enter the number of the slot into which the module was inserted.

Enter the IP Address of FCIP Network Module:

Enter an IP address for the FCIP Network Module. The IP address you assign must have the same subnet as the 1st port in the slot containing this FCIP Network Module. (For example, if the IP address of the 1st port in Slot 2 is 192.168.1.100, the IP address for the FCIP Network Module in Slot 2 must be 192.168.1.xx)

To check to see if the new information has been added correctly, you may view the **Local FCIP Network Module IP Parameters** (see [Section 5.1.10.1](#), entitled "Local FCIP Network Module IP Parameters" for help).

5.3.9.2 Delete Local FCIP Network Module

Menu Path:

[3] Configuration → [9] FCIP Network Module Configuration → [2] Delete Local FCIP Network Module

Description:

The **Delete Local FCIP Network Module** menu item allows the user to delete information about FCIP Network Modules from the local OptiStar EdgeSwitch. When this option is selected from the **FCIP Network Module Configuration** menu, the following prompts will be displayed in succession:

Enter the IP Address of Local FCIP Network Module:

Enter the FCIP Network Module IP address of the local FCIP Network Module. (**Note:** This IP address should have been assigned when the module was initially configured on the OptiStar EdgeSwitch.)

Enter the Subnet Mask of Local FCIP Network Module:

Enter the subnet mask for the FCIP Network Module IP address that was assigned to the local FCIP Network Module. (**Note:** This subnet mask should have been assigned when the module was initially configured on the OptiStar EdgeSwitch.)

To check to see if the information has been deleted correctly, you may view the **Local FCIP Network Module IP Parameters** (see [Section 5.1.10.1](#), entitled "Local FCIP Network Module IP Parameters" for help).

5.3.9.3 Add Remote FCIP Network Module

Menu Path:

[3] Configuration → [9] FCIP Network Module Configuration → [3] Add Remote FCIP Network Module

Description:

The **Add Remote FCIP Network Module** menu item allows the user to add IP address and subnet mask information about remote FCIP Network Modules to the local OptiStar EdgeSwitch. When this option is selected from the **FCIP Network Module Configuration** menu, the following prompts will be displayed in succession:

Enter the IP Address of Remote FCIP Network Module:

Enter the FCIP Network Module IP address of the remote FCIP Network Module. (*Note:* This IP address should have been assigned when the remote module was initially configured at its local OptiStar EdgeSwitch.)

Enter the Subnet Mask of Remote FCIP Network Module:

Enter the subnet mask for the FCIP Network Module IP address that was assigned to the remote FCIP Network Module. (*Note:* This subnet mask should have been assigned when the remote module was initially configured at its local OptiStar EdgeSwitch.)

To check to see if the new information has been added correctly, you may view the **Remote FCIP Network Module IP Parameters** (see [Section 5.1.10.2, entitled “Remote FCIP Network Module IP Parameters”](#) for help).

5.3.9.4 Delete Remote FCIP Network Module

Menu Path:

[3] Configuration → [9] FCIP Network Module Configuration → [4] Delete Remote FCIP Network Module

Description:

The **Delete Remote FCIP Network Module** menu item allows the user to delete information about remote FCIP Network Modules from the local OptiStar EdgeSwitch. When this option is selected from the **FCIP Network Module Configuration** menu, the following prompts will be displayed in succession:

Enter the IP Address of Remote FCIP Network Module:

Enter the FCIP Network Module IP address of the remote FCIP Network Module. (*Note:* This IP address should have been assigned when the remote module was initially configured at its local OptiStar EdgeSwitch.)

Enter the Subnet Mask of Remote FCIP Network Module:

Enter the subnet mask for the FCIP Network Module IP address that was assigned to the remote FCIP Network Module.
(*Note:* This subnet mask should have been assigned when the remote module was initially configured at its local OptiStar EdgeSwitch.)

To check to see if the information has been deleted correctly, you may view the **Remote FCIP Network Module IP Parameters** (see [Section 5.1.10.2, entitled “Remote FCIP Network Module IP Parameters”](#) for help).

5.4 Administration Tasks

When this option is selected, the following sub menu will be displayed:

Administration		
F1 (Main Menu)	F2 or .. (Previous Menu)	F3 (Exit)
[1] Authentication Information		(For help on this item, go to Section 5.4.1 on page 5-49)
[2] Set Module Admin Status		(For help on this item, go to Section 5.4.2 on page 5-50)
[3] SNMP Configuration		(For help on this item, go to Section 5.4.3 on page 5-50)
[4] FCIP Network Module CLI – Serial Proxy		(For help on this item, go to Section 5.4.4 on page 5-53)
[5] FCIP Network Module CLI – Telnet Proxy		(For help on this item, go to Section 5.4.5 on page 5-53)
[6] User Management		(For help on this item, go to Section 5.4.6 on page 5-54)

Enter your Choice >

Enter a number from the Administration menu to go to the corresponding category.

5.4.1 Authentication Information

This following 2 sections enable the user to view ([Section 5.4.1.1](#)) and modify ([Section 5.4.1.2](#)) the Administrator user name and password.

5.4.1.1 Get Authentication Parameter

Menu Path:

[4] Administration → [1] Authentication Information → [1] Get Authentication Parameter

Description:

The **User Information** Table shows User Name and User Type for the Admin User. For example:

User Information	
User Name	User Type
optistar	Administrator

NOTE: The default Admin User Login is 'optistar', which is case sensitive.
The default Admin User Password is 'optistar', which is case sensitive.

5.4.1.2 Modify Administrator User Name and Password

Menu Path:

[4] Administration → [1] Authentication Information → [2] Modify Admin UserName, Password

Description:

The Admin User is the only person who can modify the Administrator user name and password. (**Note:** For security purposes, this function is not available via Web-based Management.) When this option is selected from the **Authentication Information** menu, the following prompts will be displayed:

Enter Old Administrator UserName :
Enter Old Administrator Password :

The default user name is **optistar** and the default password is **optistar**. If the user name and password have not been changed from the defaults, you should change them now. For security purposes, the following prompts will be displayed (in succession) only if the previously entered **Old Administrator UserName** and **Old Administrator Password** are correct.

Enter New Administrator UserName :
Enter a new user name up to 16 alpha-numeric characters in length.
Enter New Administrator Password :
Enter a new password up to 16 alpha-numeric characters in length.
Re-Enter New Administrator Password :

5.4.2 Set Module Admin Status

Menu Path:

[4] Administration → [2] Set Module Admin Status → Enter Module Number (1-4)

Description:

This menu item enables the user to enable/disable the administrative status of the selected module. Enter **1** to **Enable** the administrative status for the module, enter **2** to **Disable**. When a module is first installed, the default **Admin Status** is set to **Enable**.

5.4.3 SNMP Configuration

The following 6 sections enable the user to perform configuration tasks related to the Network Management Station (NMS) and SNMP traps.

5.4.3.1 Set SNMP Trap Interval

Menu Path:

[4] Administration → [3] SNMP Configuration → [1] Set SNMP Trap Interval

Description:

The menu item enables the user to set the interval (in centiseconds) at which SNMP traps will be sent to the management station.

5.4.3.2 Add NMS Entry

Menu Path:

[4] Administration → [3] SNMP Configuration → [2] Add NMS Entry

Description:

This menu item enables the user to add an NMS station for the OptiStar EdgeSwitch by entering the IP address of the management station. The **Community Mode** field (also referred to as **Access Mode**) enables the user to assign either **Read-Write(1)** or **Read-Only(2)** access to the OptiStar EdgeSwitch. To view the current NMS stations, from the main menu follow the path:

[1] Operational Information & Status → [6] SNMP Agent Parameters → [2] NMS Information

5.4.3.3 Delete NMS Entry

Menu Path:

[4] Administration → [3] SNMP Configuration → [3] Delete NMS Entry

Description:

This menu item enables the user to delete an NMS station from the OptiStar EdgeSwitch by entering the IP address of the management station. To view the current NMS stations, from the main menu follow the path:

[1] Operational Information & Status → [6] SNMP Agent Parameters → [2] NMS Information

5.4.3.4 Modify NMS Entry

Menu Path:

[4] Administration → [3] SNMP Configuration → [4] Modify NMS Entry

Description:

This menu option enables the user to modify the **Access Mode** for an existing NMS station. To view the current **Access Mode** for the NMS station, from the main menu follow the path:

[1] Operational Information & Status → [6] SNMP Agent Parameters → [2] NMS Information

5.4.3.5 Modify Community Name

Menu Path:

[4] Administration → [3] SNMP Configuration → [5] Modify Community Name

Description:

This menu option enables the user to change the **Community Name** that is assigned to each **Access Mode** on the system (either **Read-Write** or **Read-Only**). To view the current **Community Name**, from the main menu follow the path:

[1] Operational Information & Status → [6] SNMP Agent Parameters → [3] Community Name Information

The default values are “**superman**” for **Read-Write** and “**manager**” for **Read-Only**.

5.4.3.6 Modify Trap Administration Status

Menu Path:

[4] Administration → [3] SNMP Configuration → [6] Modify Trap Administration Status

Description:

When this option is selected from the **SNMP Configuration** menu, the following screen will be displayed, showing the list of traps:

Trap Type
1 Cold Start Trap
2 Warm Start Trap
3. Link Up Trap
4. Link Down Trap
5. Authentication Failure Trap
6. Bridge Traps
7. Rmon Traps
8. Power Module Failure Trap
9. Temperature Threshold Trap

Enter Trap Type (1-9) :

Enter the number of the desired trap type.

Enter Community Mode (Read-Write(1), Read-Only(2)) :

Enter the Community Mode for the trap type.

Enter New Trap state (ENABLE(1), DISABLE(2)) :

Enter the desired state for the selected trap.

Note: To view the current state assigned to a particular trap type, from the main menu follow the path:

[1] Operational Information & Status → [6] SNMP Agent Parameters

→ [4] Get SNMP Trap Administration Status

For help on viewing trap status, see [Section 5.1.6.4](#).

5.4.4 Accessing the FCIP Network Module CLI – Serial Proxy

Menu Path:

[4] Administration → [4] FCIP Network Module CLI – Serial Proxy

Description:

To access the CLI for a specific FCIP Network Module, first determine how you are logged in to the OptiStar EdgeSwitch (either via serial link or telnet, see [Section 4.2.1.1, entitled “How to Access the Command Line Interface \(CLI\)”](#) for additional help). If you are logged on to the CLI through the serial link, you will access the FCIP Network Module CLI through the Serial Proxy menu item. From the main menu, follow the path:

[4] Administration → [4] FCIP Network Module CLI – Serial Proxy

If you are logged on to the OptiStar EdgeSwitch through telnet, you will access the FCIP Network Module CLI through the Telnet Proxy menu item. Please refer to [Section 5.4.5](#) for help.

The above menu item allows the user to connect directly to a specific FCIP Network Module using a terminal server program. Through the terminal server program the user can access the FCIP Network Module CLI to perform detailed functions for each specific FCIP Network Module. This utility includes information such as serial number, MAC address of the FCIP Network Module, domain settings, and diagnostics.

At the prompt, enter the number of the specific FCIP Network Module to which you would like to connect, then enter the password. If a specific password has not been defined, the default password is ‘**manage**’. See [Section 4.8.3](#) for help on setting passwords for the FCIP Network Module CLI.

You should now see the FCIP Network Module CLI Root Menu. Please see [CHAPTER 6](#) for help on performing specific functions.

Note: The above menu item is not available via Web-based Management.

5.4.5 Accessing the FCIP Network Module CLI – Telnet Proxy

Menu Path:

[4] Administration → [5] FCIP Network Module CLI – Telnet Proxy

Description:

To access the CLI for a specific FCIP Network Module, first determine how you are logged in to the OptiStar EdgeSwitch (either via serial link or telnet, see [Section 4.2.1.1, entitled “How to Access the Command Line Interface \(CLI\)”](#) for additional help). If you are logged on to the CLI through the telnet, you will access the FCIP Network Module CLI through the Telnet Proxy menu item. From the main menu, follow the path:

[4] Administration → [5] FCIP Network Module CLI – Telnet Proxy

If you are logged on to the OptiStar EdgeSwitch through the serial link, you will access the FCIP Network Module CLI through the Serial Proxy menu item. Please refer to [Section 5.4.4](#) for help.

The above menu item allows the user to connect directly to a specific FCIP Network Module using a terminal server program. Through the terminal server program the user can access the FCIP Network Module CLI to perform detailed functions for each specific FCIP Network Module. This utility includes information such as serial number, MAC address of the FCIP Network Module, domain settings, and diagnostics.

At the prompt, enter the number of the specific FCIP Network Module to which you would like to connect, then enter the password. If a specific password has not been defined, the default password is 'manage'. See Section 4.8.3 for help on setting passwords for the FCIP Network Module CLI.

You should now see the FCIP Network Module CLI Root Menu. Please see CHAPTER 6 for help on performing specific functions.

Note: The above menu item is not available via Web-based Management.

5.4.6 User Management

Menu Path:

[4] Administration → [6] User Management

Description:

The following 5 sections enable a user with Administration rights to perform various user management tasks.

5.4.6.1 Add User

Menu Path:

[4] Administration → [6] User Management → [1] Add User

Description:

This menu item enables any user in the system with **Administration** permission, including the system's super user, to add new users. A maximum of 8 users (not including the super user) may be assigned to the system at any given time.

A new user is added to the system once the following information is entered:

Login UserName	Enter a login name that is a minimum of 6 and a maximum of 8 alpha-numeric characters in length
User's Password	Enter a temporary login password for the user that is a minimum of 6 and a maximum of 8 alpha-numeric characters in length. The user should be instructed to change this password to their own permanent login password once they access the system.
Contact Name	Enter a name that is a maximum of 16 alphanumeric characters.

User's Permissions Enter zero or more permissions for the user. If no permissions are granted, the user will have read-only access to the Main Menu and will be able use Main Menu item **[6] Change My Password**. However, a user with no permissions will not be able to access any sub-menus. For each of the following permission types the user may assign permission or deny it, in accordance with the following table. Please refer to [Section 4.4](#) on User Management for more detailed help in adding users and assigning permission sets.

Permission Type	Options	Access
Administration	y (Yes)	read-write access to the Administration functions under Main Menu [4], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change Password (Main Menu [6]).
	n (No)	No access to Administration functions.
Provisioning	1. Browser	read-only access to the Configuration functions under Main Menu [3], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change Password (Main Menu [6]).
	2. +	read-write access to the Configuration functions under Main Menu [3], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change Password (Main Menu [6]).
	3. None	No access to Configuration functions.
Maintenance	1. Browser	read-only access to the Utilities functions under Main Menu [5], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change Password (Main Menu [6]).
	2. +	read-write access to the Utilities functions under Main Menu [5], plus access to Operational Information and Status (Main Menu [1]), Port Statistics (Main Menu [2]), and the ability to Change Password (Main Menu [6]).
	3. None	No access to Utilities functions.

5.4.6.2 Delete User

Menu Path:

[4] Administration → [6] User Management → [2] Delete User

Description:

This menu item enables any user in the system with **Administration** permission to remove a user from the system by entering the **Login UserName** of the user to be removed. **Note:** Only the Admin User can not be removed. Once a user is deleted, the OptiStar EdgeSwitch will not recognize their **Login UserName** and that user will no longer have access to the system.

5.4.6.3 Modify User's Permission

Menu Path:

[4] Administration → [6] User Management → [3] Modify User's Permission

Description:

This menu item enables any user in the system with **Administration** permission to modify the **Permission** type for a current user. Any current user, with the exception of the Admin User, can be assigned a new set of permissions via this screen. Please refer to [Section 4.4](#) on User Management for a detailed explanation of **Permission** types and how to assign them.

5.4.6.4 Show Users

Menu Path:

[4] Administration → [6] User Management → [4] Show Users

Description:

This menu item enables any user in the system with **Administration** permission to view the current list of users. For each user, the **Contact Name**, the **Login Name**, and the **Permission Set** (Administration, Provisioning and/or Maintenance) is displayed. Please refer to [Section 4.4](#) on User Management for a detailed explanation of **Permission** types.

5.4.6.5 Reset User's Password

Menu Path:

[4] Administration → [6] User Management → [5] Reset User's Password

Description:

This menu item enables a user in the system with **Administration** permission to reset a user's password. To reset the password, enter the user's **Login UserName** and the **User's New Password**. Enter the new password again to confirm.

Note: The Admin User's password can not be reset with this menu item. For help in resetting the Admin User password, [see Section 5.4.1.2](#)). Only the Admin User can reset the Admin User password.

5.5 Utilities

When this option is selected, the following sub menu will be displayed:

Utilities		
F1 (Main Menu)	F2 or .. (Previous Menu)	F3 (Exit)
[1] Ping Utility		(For help on this item, go to Section 5.5.1 on page 5-57)
[2] BGP Debug		(For help on this item, go to Section 5.5.2 on page 5-58)
[3] OSPF Debug		(For help on this item, go to Section 5.5.3 on page 5-59)
[4] Local FCIP Network Module Domain ↔ IP Table		(For help on this item, go to Section 5.5.4 on page 5-59)
[5] Local FCIP Network Module State		(For help on this item, go to Section 5.5.5 on page 5-60)
[6] Clear EdgeSwitch Configuration		(For help on this item, go to Section 5.5.6 on page 5-60)
[7] Debug Mode Enable		(For help on this item, go to Section 5.5.7 on page 5-61)
[8] EdgeSwitch Configuration Import/Export		(For help on this item, go to Section 5.5.8 on page 5-61)

Enter your Choice >

Enter a number from the Utilities menu to go to the corresponding category.

5.5.1 Ping Utility

Menu Path:

[5] Utilities → [1] Ping Utility

Description:

When this option is selected from the **Utilities** menu, the following prompts will be displayed in succession:

Enter IP Address of the Host :

Enter the IP address of the host you would like to ping.

Do you want to ping with default values (y/n) :

If you entered **y** (yes) to the previous prompt, you should now see the following message, showing you the default values:

```

Number of times to ping           : 4
Size of ICMP Echo packet         : 32
ICMP Echo Request interval in seconds : 2
ICMP Echo Request timeout in seconds : 30

```

Pinging with default values

If you entered **n** (no) to the previous prompt, you should now see the following prompts in succession:

```

Enter Number of times to ping (1-100) :
Enter Size of ICMP echo packet         :
Enter ICMP echo request interval in seconds :
Enter ICMP echo reply timeout in seconds :

```

After the user has entered the desired parameters, the ping utility information will be displayed. For example, if a host with the IP address 192.168.1.209 is pinged 4 times with 32 bytes of data, the following information will be displayed.

Pinging 192.168.1.209 with 32 bytes of data:

Reply from 192.168.1.209: bytes=32 time=2ms TTL=64

Reply from 192.168.1.209: bytes=32 time=1ms TTL=64

Reply from 192.168.1.209: bytes=32 time=1ms TTL=64

Reply from 192.168.1.209: bytes=32 time=1ms TTL=64

192.168.1.209 Ping Statistics

4 packets transmitted, 4 packets received, 0% packet loss

round-trip (ms) min/avg/max = 1/1/2

Host reachable

5.5.2 BGP Debug

Menu Path:

[5] Utilities → [2] BGP Debug

Description:

Debug messages will be printed to screen until a key is pressed. When this option is selected from the **Utilities** menu, the following screen will be displayed:

BGP Debug

1. ENABLE

2. DISABLE

Enter choice (1-2):

Enter the correct number to enable (or disable) the BGP Debug utility. You should now see the following message:

BGP Debug Prints Enabled (Disabled)

Press Enter to Continue...

Note: This menu item is not available via Web-based Management.

5.5.3 OSPF Debug

Menu Path:

[5] Utilities → [3] OSPF Debug

Description:

Debug messages will be printed to screen until a key is pressed. When this option is selected from the **Utilities** menu, the following screen will be displayed:

OSPF Debug

1. ENABLE
 2. DISABLE
-

Enter choice (1-2):

Enter the correct number to enable/disable the OSPF Debug utility. You should now see the following message:

OSPF Debug Prints Enabled (Disabled)

Press Enter to Continue...

Note: This menu item is not available via Web-based Management.

5.5.4 Local FCIP Network Module Domain ↔ IP Table

Menu Path:

[5] Utilities → [4] Local FCIP Network Module Domain ↔ IP Table

Description:

The Local FCIP Network Module Domain ↔ IP Table shows all the local and remote FCIP Network Modules that are reachable from this switch.

When this option is selected, a screen similar to the following should be displayed:

Local FCIP Network Module Domain ↔ IP Table

Slot	Domain	IP Address
1		
2		

Press Enter To Continue ...

The Local FCIP Network Module Domain ↔ IP Table fields are defined as follows:

Name of field	Possible Values	Definition
Slot	1-4	Slot Number
Domain	Hexadecimal (values x01-xEF)	The Fibre Channel domain to which the OptiStar EdgeSwitch has been assigned.
IP Address	Valid FCIP Network Module IP address	The FCIP Network Module IP address of the reachable FCIP Network Module

5.5.5 Local FCIP Network Module State

Menu Path:

[5] Utilities → [5] Local FCIP Network Module State

Description:

The Local FCIP Network Module State shows the state (enabled or disabled) of the FCIP Network Modules in the local OptiStar EdgeSwitch.

When this option is selected, a screen similar to the following should be displayed. (In this example, Slot 4 of the OptiStar EdgeSwitch contains an FCIP Network Module.)

Local FCIP Network Module State		
Slot	FCIP Network Module State	Interface State
[1]	FCIP Network Module not present	0
[2]	FCIP Network Module not present	0
[3]	FCIP Network Module not present	0
[4]	Inband – Link test Passed and FCIP Network Module Ports Enabled	1

Press Enter To Continue ...

The **Local FCIP Network Module State** fields are defined as follows:

Name of field	Possible Values	Definition
Slot	1-4	The slot number on the OptiStar EdgeSwitch
FCIP Network Module State	FCIP Module present/ FCIP Module not present	FCIP Module present indicates that there is a FCIP Network Module in the given slot on the OptiStar EdgeSwitch. FCIP Module not present indicates that no FCIP Network Module is recognized in the given slot.
Interface State	0/1	1 indicates that the FCIP Network Module passed the link test and is enabled and working. 0 indicates that the FCIP Network Module is not present or failed the link test.

5.5.6 Clear EdgeSwitch Configuration

Menu Path:

[5] Utilities → [6] Clear EdgeSwitch Configuration

Description:

Enter **y** (yes) to clear the current OptiStar EdgeSwitch configuration values. Enter **n** (no) to abort the clear operation.

WARNING: Many key parameters will be deleted once the current configuration is cleared. If needed, either export the current EdgeSwitch Configuration to a file (for help see [Section 5.5.8](#)) or write down each of the following parameters: IP Address Table, Port Group Information, Static Routes, Local FC IP Address Table, Remote FC IP Address Table, NMS Table, Community Table, and Routing Protocols Configuration. *The MAC Addresses for the OptiStar EdgeSwitch will not be deleted during this operation.* **Note:** Once you have cleared

the current configuration, the BAUD rate will revert to 38400 (the default value). If you would like the baud rate of your terminal server program to be different than the default value of 38400, please change the value now. See Section 5.3.3.2.2 to change the Console Port Speed.

Note: For security purposes, this menu item is not available via Web-based Management.

5.5.7 Debug Mode Enable

Menu Path:

[5] Utilities → [7] Debug Mode Enable

Description:

This menu item allows the user to enable or disable debug mode for the OptiStar EdgeSwitch.

Note: This menu item is not available via Web-based Management.

5.5.8 EdgeSwitch Configuration Import/Export

Menu Path:

[5] Utilities → [8] EdgeSwitch Configuration Import/Export

Description:

The following 8 sections enable a user to export the current OptiStar EdgeSwitch configuration to a file, as well as import a file with configuration settings into the OptiStar EdgeSwitch. The export command will write all configuration parameters to a binary file with the exception of account information, such as User account information, Configuration Server User Information, IP Address and File Name, and the BGP Policy Server User Information, IP Address and File Name.

WARNING: Make all desired configuration changes before exporting the configuration. Once you have saved the current configuration to a binary file, **do not edit the file**. Editing this file may corrupt NVRAM when it is imported in to the OptiStar EdgeSwitch.

5.5.8.1 Display EdgeSwitch Configuration Server Information

Menu Path:

[5] Utilities → [8] EdgeSwitch Configuration Import/Export → [1] Display EdgeSwitch Configuration Server Information

Description:

This menu item displays the current EdgeSwitch FTP Server parameters, including the EdgeSwitch Configuration FTP Server IP Address, the EdgeSwitch Configuration FTP Server Directory, the EdgeSwitch Configuration FTP Server File Name, and the EdgeSwitch Configuration Server User Name. To change any of these parameters, use the **EdgeSwitch Configuration Import/Export** sub-menu.

5.5.8.2 EdgeSwitch Configuration Server IP Address

Menu Path:

[5] Utilities → [8] EdgeSwitch Configuration Import/Export → [2] EdgeSwitch Configuration Server IP Address

Description:

Enter the IP Address of the EdgeSwitch Configuration Server, which is the FTP server to which you would like to save the configuration file.

5.5.8.3 EdgeSwitch Configuration Server Directory Name

Menu Path:

[5] Utilities → [8] EdgeSwitch Configuration Import/Export → [3] EdgeSwitch Configuration Server Directory Name

Description:

If you would like to save the configuration file to a specific sub-directory under the default directory on the FTP server, enter the directory name.

5.5.8.4 EdgeSwitch Configuration Server File Name

Menu Path:

[5] Utilities → [8] EdgeSwitch Configuration Import/Export → [4] EdgeSwitch Configuration Server File Name

Description:

Enter the desired file name of the configuration file that will be exported to the EdgeSwitch Configuration Server. The file name can be a maximum of 8 alpha-numeric characters and must have the **.esb** extension.

5.5.8.5 EdgeSwitch Configuration Server User Name

Menu Path:

[5] Utilities → [8] EdgeSwitch Configuration Import/Export → [5] EdgeSwitch Configuration Server User Name

Description:

This menu item enables the user to enter the **User Name** of an authorized user on the FTP Server. Once the user name is entered, the user will also be prompted to enter a password. For help in changing the password at a later time, see [Section 5.5.8.6](#).

5.5.8.6 EdgeSwitch Configuration Server Password

Menu Path:

[5] Utilities → [8] EdgeSwitch Configuration Import/Export → [6] EdgeSwitch Configuration Server Password

Description:

Enter the password for the authorized user entered under menu item [5] → [8] → [5].

5.5.8.7 Export Binary EdgeSwitch Configuration to Server

Menu Path:

[5] Utilities → [8] EdgeSwitch Configuration Import/Export → [7] Export Binary EdgeSwitch Configuration to Server

Description:

Enter **y** at the prompt if you would like to export the current OptiStar EdgeSwitch configuration to the FTP server.

WARNING: Make all desired configuration changes before exporting the configuration. Once you have saved the current configuration to a binary file, *do not edit the file*. Editing this file may corrupt NVRAM when it is imported in to the OptiStar EdgeSwitch.

5.5.8.8 Import Binary EdgeSwitch Configuration File from Server to EdgeSwitch

Menu Path:

[5] Utilities → [8] EdgeSwitch Configuration Import/Export → [8] Import Binary EdgeSwitch Configuration File from Server to EdgeSwitch

Description:

Enter **y** at the prompt if you would like to import the EdgeSwitch Configuration file that is on the server to the OptiStar EdgeSwitch.

WARNING: This action will overwrite the current configuration parameters on the OptiStar EdgeSwitch.

5.6 Change My Password

Menu Path:

[6] Change My Password

Description:

This menu item enables a user to change their own password. This function enables the user to change *only* the password for the **Login UserName** that was used to log in to the *current* session.

To change your password, enter your **Login UserName** at the prompt, then enter the current password and the new password as required. Once the password has been successfully changed, the user should see the system message “Current Password modified”.

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CHAPTER 6

Detailed FCIP Network Module CLI Reference Guide



Chapter 6 Overview

- Configure Switch Settings
- Reset Switch
- Show Device Information
- Access Firmware Options
- Access Diagnostic Features

The following chapter shows the detailed menu flow in the FCIP Network Module CLI and gives help on accessing and performing each function. *Note:* In the menu descriptions throughout this section, the use of the word “switch” refers to the FCIP Network Module. Each FCIP Network Module contains an on-board two port Fibre Channel switch engine.

Once you have accessed the FCIP Network Module CLI (see [Section 4.8.2](#)) you should see the **FCIP Network Module CLI Main Menu** as follows:

FCIP Network Module CLI Main Menu

- | | |
|--|--|
| 1) config - Configure switch settings | (For help on this item, go to Section 6.1 on page 6-3) |
| 2) reset - Reset switch | (For help on this item, go to Section 6.2 on page 6-60) |
| 3) show - Show device information | (For help on this item, go to Section 6.3 on page 6-60) |
| 4) firmware - Access firmware options | (For help on this item, go to Section 6.4 on page 6-74) |
| 5) diagnostics - Access diagnostic features | (For help on this item, go to Section 6.5 on page 6-77) |
-

Enter your Choice >

Enter a number from the main menu to go to the corresponding category.

The CLI has certain global commands that can be entered at any time during the CLI session. These commands are displayed at the beginning of every CLI session and are defined as follows:

login	Log in to this same FCIP Network Module with different access privilege
logout	Close current FCIP Network Module command line session
exit	Close current FCIP Network Module command line session
?	Redisplay the current menu
..	Back out of current sub menu (allows the user to navigate back to the previous menu level)
root	Go back to the FCIP Network Module root menu
help	Display help

6.1 Configure Switch Settings

When menu item **1) config - Configure switch settings** is selected, the following sub menu will be displayed:

config menu

- | | |
|---|--|
| 1) back - Go back to the previous menu | |
| 2) event - Set event reporting parameters | (For help on this item, go to Section 6.1.2 on page 6-3) |
| 3) zone - Set zone parameters | (For help on this item, go to Section 6.1.3 on page 6-8) |
| 4) port - Set port parameters | (For help on this item, go to Section 6.1.4 on page 6-19) |
| 5) system - Set system parameters | (For help on this item, go to Section 6.1.5 on page 6-35) |
| 6) password - Change passwords | (For help on this item, go to Section 6.1.6 on page 6-47) |
| 7) key - Set license keys | (For help on this item, go to Section 6.1.7 on page 6-49) |
| 8) com - Set communication parameters | (For help on this item, go to Section 6.1.8 on page 6-49) |
| 9) mode - Set switch operating mode | (For help on this item, go to Section 6.1.9 on page 6-58) |
-

Enter a number from the **config** menu to go to the corresponding category.

6.1.1 General Description

The **config - Configure switch settings** menu item enables the user to configure parameters on an FCIP Network Module (referred to as “switch” in the menu). When this menu item is selected, the **config** sub menu will be displayed.

6.1.2 Event Reporting Parameters

Menu Path:

1) **config** → 2) **event**

Shortcut Command:

At the root menu, type **config event**

Description:

When menu item 2) **event – Set event reporting parameters** is selected, the following sub menu will be displayed:

config/event menu

- | | |
|---|---|
| 1) back - Go back to the previous menu | |
| 2) show – Show current severity settings | (For help on this item, go to Section 6.1.2.2 on page 6-4) |
| 3) log – Show event log | (For help on this item, go to Section 6.1.2.3 on page 6-4) |
| 4) event_sev - Set the event log severity level | (For help on this item, go to Section 6.1.2.4 on page 6-6) |
| 5) led_sev - Assign severity level to fault LED | (For help on this item, go to Section 6.1.2.5 on page 6-6) |
| 6) clear_log - Clear event log | (For help on this item, go to Section 6.1.2.6 on page 6-7) |
| 7) reset_led - Reset fault LED | (For help on this item, go to Section 6.1.2.7 on page 6-8) |
-

Enter a number from the **config/event** menu to go to the corresponding category.

6.1.2.1 General Description

The **event – Set event reporting parameters** menu item enables the user to set the parameters that will determine when and how network management events are reported by the FCIP Network Module CLI. When this menu item is selected, the current severity settings will be displayed, followed by the **config/event** sub menu.

6.1.2.2 Show Current Severity Settings

Menu Path:

1) **config** → 2) **event** → 2) **show**

Shortcut Command:

At the root menu, type **config event show**

Description

When the user enters the **show** menu, the existing Fault LED and Event Log Severity settings are displayed.

Example:

```
Fault LED Severity : critical
Event Log Severity : notify
```

In this example, the Fault LED is tripped by messages at the **critical** severity level or higher (**Critical, Alert, or Emergency**) and the Event Log Severity log records messages that are at the **notify** severity level or higher. See [Section 6.1.2.5](#) for more help on the Fault LED Severity level. See [Section 6.1.2.4](#) for more help on the Event Log Severity level.

6.1.2.3 Show Event Log

Menu Path:

1) **config** → 2) **event** → 3) **log**

Shortcut Command:

At the root menu, type **config event log**

Description

When this menu item is selected, the Event Log will be displayed. The events are shown one screen at a time. Approximately 20 events are displayed on each screen. The last sets of events are displayed for view. At the prompt, the user can exit the screen back to the menu with a “0”, display all the events with an “a” or display the next screen at a time with a “<CR>”.

Example:

Event log messages

###	Sev	Date & Time	Description
---	---	-----	-----
5338	5	10/23/2000 10:03:05	[126] Restarted Port 1
5339	5	10/23/2000 10:03:07	[126] Restarted Port 1
5340	4	10/23/2000 10:03:07	[122] F_Port 1, Port 1, linkdown
5341	5	10/23/2000 10:03:08	[126] Restarted Port 1
5342	5	10/23/2000 10:03:10	[126] Restarted Port 1
5343	4	10/23/2000 10:03:10	[122] F_Port 1, Port 1, linkdown
5344	5	10/23/2000 10:03:11	[126] Restarted Port 1
5345	5	10/23/2000 10:03:14	[126] Restarted Port 1
5346	4	10/23/2000 10:03:14	[122] F_Port 1, Port 1, linkdown
5347	5	10/23/2000 10:03:15	[126] Restarted Port 1
5348	5	10/23/2000 10:03:17	[126] Restarted Port 1
5349	4	10/23/2000 10:03:17	[122] F_Port 1, Port 1, linkdown
5350	5	10/23/2000 10:03:18	[126] Restarted Port 1
5351	5	10/23/2000 10:03:20	[126] Restarted Port 1
5352	4	10/23/2000 10:03:20	[122] F_Port 1, Port 1, linkdown
5353	5	10/23/2000 10:03:21	[126] Restarted Port 1
5354	5	10/23/2000 10:03:23	[126] Restarted Port 1
5355	4	10/23/2000 10:03:23	[122] F_Port 1, Port 1, linkdown
5356	5	10/23/2000 10:03:25	[126] Restarted Port 1
5357	5	10/23/2000 10:03:27	[126] Restarted Port 1

(Enter '0' to exit, 'a' for all, or <CR> to continue)

(show/events)>0

The Event Log displays messages generated from the FCIP Network Module that include Storage Area Network (SAN) and device status changes, device configurations. Status changes include reconfigurations (such as assigning an address to a port) and health (such as a device entering a non-functional state). The event log also displays certain events that are not logged by the device (and thus not included in the Device Events window), such as a power-off, the removal of a managed device, or the causes of a loop down condition.

CLI displays the following columns for device events.

- **###** - the column assigns a number showing relative sequence in which the event message was recorded
- **Sev** – this column identifies the severity level of the event, as assigned by the vendor (see the above list for the possible severity levels and their descriptions)
- **Description** – this column contains the Ref number (in brackets), which is the vendor’s or MIB’s unique identification of this event string , followed by the event description.

6.1.2.4 Set Event Log Severity Level

Menu Path:

1) **config** → 2) **event** → 4) **event_sev**

Shortcut Command:

At the root menu, type **config event event_sev #**, where # represents the desired Event Log Severity level number (see available options in the Description section below).

Shortcut Example:

```
>config event event_sev 5
```

Description:

The user can set the Event Log Severity level from a mark level [8] up to an emergency level [0]. FCIP Network Modules have the option to restrict event logs to a minimum severity level. The nine possible levels are described as follows:

Log Severity Levels	Description
[0] emergency	Immediate action required; system failing
[1] alert	Unrecoverable condition reported; major event in progress
[2] critical	Event failed with possible loss of integrity
[3] error	Condition failed; action required
[4] warning	Failed event occurred; no action required
[5] notify	Configuration error or abnormal event occurred; no action required
[6] info	Event occurred; no action required
[7] debug	Internal message for development
[8] mark	Message marker

The existing level is displayed in brackets at the prompt (in this example the severity level is set to **[5] notify**):

```
Event Log Severity [5] =
```

Press the <Enter> key to keep the current setting, or enter a new setting after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new setting has been accepted.

6.1.2.5 Assign Severity Level to Fault LED

Menu Path:

1) **config** → 2) **event** → 5) **led_sev**

Shortcut Command:

At the root menu, type **config event led_sev #**, where # represents the desired Fault LED Severity level number (see available options in the Description section below).

Shortcut Example:

```
>config event led_sev 2
```

Description

There are nine Fault LED severity levels that can be selected. The Fault LED Severity is tripped by messages at the set severity level or higher. The **Fault LED** is triggered over the following conditions:

- Internal FCIP Network Module failure – an internal failure was detected
- Self test failure - The POST test failed and the system needs attention.
- Incorrect configuration loaded

The nine possible levels are described as follows:

Fault LED Severity Levels	Description
[0] emergency	Immediate action required; system failing
[1] alert	Unrecoverable condition reported; major event in progress
[2] critical	Event failed with possible loss of integrity
[3] error	Condition failed; action required
[4] warning	Failed event occurred; no action required
[5] notify	Configuration error or abnormal event occurred; no action required
[6] info	Event occurred; no action required
[7] debug	Internal message for development
[8] mark	Message marker

The existing level is displayed in brackets at the prompt (in this example the severity level is set to **[2] critical**):

```
Fault LED Severity [2] =
```

Press the <Enter> key to keep the current setting, or enter a new setting after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new setting has been accepted.

6.1.2.6 Clear Event Log

Menu Path:

1) config → 2) event → 6) clear_log

Shortcut Command:

At the root menu, type **config event clear_log**

Description

This menu item allows the user to clear the current event log (i.e. delete all events messages that are stored on the FCIP Network Module). The FCIP Network Module will continue to generate event messages as they occur.

```
Do you wish to continue (Yes / No): [N]
```

Press the <Enter> key to keep the event messages, or type a **Y**, then press the <Enter> key to clear the log.

6.1.2.7 Reset Fault LED

Menu Path:

1) **config** → 2) **event** → 7) **reset_led**

Shortcut Command:

At the root menu, type **config event reset_led**

Description

This menu item is not supported on Release 1.2 of the OptiStar EdgeSwitch.

6.1.3 Set Zone Parameters

Menu Path:

1) **config** → 3) **zone**

Shortcut Command:

At the root menu, type **config zone**

Description:

When menu item 3) **zone** – **Set zone parameters** is selected, the following sub menu will be displayed:

config/zone menu

- 1) **back** - **Go back** to the previous menu
 - 2) **port** – Set **port** zoning parameters (For help on this item, go to [Section 6.1.3.2 on page 6-9](#))
 - 3) **wwn** – Set **WWN** zoning parameters (For help on this item, go to [Section 6.1.3.3 on page 6-9](#))
-

Enter a number from the **config/zone** menu to go to the corresponding category.

6.1.3.1 General Description

Zoning is a fundamental technique for Storage Area Network (SAN) management that can be implemented in several different ways. In all cases zoning serves to allow users access to the appropriate storage devices in order to increase security, isolate elements of the SAN for interoperability or application reasons, and optimize the flow of traffic over the network. The OptiStar EdgeSwitch uses WWN Zoning to enable the user to set up logical groupings within the Fibre Channel SAN fabric. Port Zoning is not supported on the OptiStar EdgeSwitch. For a detailed description and tutorial on setting up WWN Zoning on the OptiStar EdgeSwitch, see [Section 4.10](#).

6.1.3.2 Set Port Zoning Parameters

Menu Path:

1) **config** → 3) **zone** → 2) **port**

Shortcut Command:

At the root menu, type **config zone port**

Description:

This menu item and the related sub menus are not supported on the OptiStar EdgeSwitch.

6.1.3.3 Set WWN Zoning Parameters

Menu Path:

1) **config** → 3) **zone** → 3) **wwn**

Shortcut Command:

At the root menu, type **config zone wwn**

Description:

When menu item 3) **wwn – Set WWN Zoning Parameters** is selected, the existing settings are displayed (for help see [Section 6.1.3.3.1](#)) followed by the sub-menu shown below:

config/zone/wwn menu

- | | |
|---|---|
| 1) back - Go back | |
| 2) show - Show other zoning information | (For help, go to Section 6.1.3.3.2 on page 6-10) |
| 3) state - Set default state | (For help, go to Section 6.1.3.3.3 on page 6-10) |
| 4) zoneset - Configure WWN Zone sets | (For help, go to Section 6.1.3.3.4 on page 6-10) |
| 5) zone - Configure WWN Zones | (For help, go to Section 6.1.3.3.5 on page 6-15) |
-

Enter a number from the **config/zone/wwn** menu to go to the corresponding category.

6.1.3.3.1 General Description

WWN (World Wide Name) zoning uses the World Wide N_Port_Names (WWPNs) from the name server in the switches to either allow or block access to particular WWNs in the fabric. Lucent's WWN zoning configuration complies with T-11 standards (SW-2 and GS-3). For a detailed description and tutorial on setting up WWN Zoning on the OptiStar EdgeSwitch, see [Section 4.10](#).

6.1.3.3.2 Show Other Zoning Information

Menu Path:

1) config → 3) zone → 3) wwn → 2) show

Shortcut Command:

At the root menu, type **config zone wwn show**

Description:

This menu item displays the name of the currently enforced zone set and the current setting of the default Zone State. For help changing the currently enforced zone set, see [Section 6.1.3.3.4.7](#). For help changing the default Zone State, see [Section 6.1.3.3.3](#).

6.1.3.3.3 Set Default State

Menu Path:

1) config → 3) zone → 3) wwn → 3) state

Shortcut Command:

At the root menu, type **config zone wwn state**

Shortcut Example:

```
>config zone wwn state nonBlocking
```

This example sets the Zone State to the default value of nonBlocking.

Description:

This setting governs communicability of devices in the fabric when no Zone Set is enforced. While **nonBlocking** allows all devices in the fabric to see all other devices in the fabric, **Blocking** does not allow any device to see any other device. This setting does not affect fabric operation when a Zone Set is enforced. To allow all devices connected to an unzoned switch access to all other connected devices, set the **Zone State** to **nonBlocking**. To block access to the switch until zoning is in effect, set the **Zone State** to **Blocking**.

6.1.3.3.4 Configure WWN Zone Sets

Menu Path:

1) config → 3) zone → 3) wwn → 4) zoneset

Shortcut Command:

At the root menu, type **config zone wwn zoneset**

Description:

When menu item **4) zoneset – Configure WWN Zone Sets** is selected, the existing settings are displayed (for help see [Section 6.1.3.3.4.1](#)) followed by the sub-menu shown below:

config/zone/wwn/zoneset menu

1) back - Go back	
2) show - Show zone sets	(For help, go to Section 6.1.3.3.4.2 on page 6-12)
3) senf - Show enforced zone set	(For help, go to Section 6.1.3.3.4.3 on page 6-12)
4) add - Add zone set	(For help, go to Section 6.1.3.3.4.4 on page 6-12)
5) delete - Delete zone set	(For help, go to Section 6.1.3.3.4.5 on page 6-13)
6) define - Map defined zoneset & zones	(For help, go to Section 6.1.3.3.4.6 on page 6-13)
7) activate - Activate zone set	(For help, go to Section 6.1.3.3.4.7 on page 6-14)
8) deactiv - Deactivate zone set	(For help, go to Section 6.1.3.3.4.8 on page 6-14)

Enter a number from the **config/zone/wwn/zoneset** menu to go the corresponding category.

6.1.3.3.4.1 General Description

- WWN Zoning consists of zoning entries. A zoning entry is an occurrence of a Zone Set, Zone, or Member. (A zoning entry also exists for each mapping of Zone to Zone Set and Member to Zone.)
- The OptiStar EdgeSwitch Release 1.5 supports up to 20,000 zoning entries. For example, the switch can hold 20 Zone Sets, each with 9 Zones, which each contain 100 Members. Under this scenario, 18,200 entries are written to Flash ($20 + [20 * 9] + [20 * 9 * 100]$).
- Zone Sets contain Zones, and Zones contain Members.
- Configuration of WWN zoning goes from the top down: Zone Sets, Zones, then Members. The higher-order object must be created before the lower-order object. Thus, at least one Zone Set must exist before a Zone can be defined, and both a Zone Set and a Zone must exist before a Member, or WWPN, can be defined. The following table shows an example of the zoning configuration structure:

<i>Structure</i>	<i>Example</i>
Zone Set	Backup
Zone	backupNT
Member	FF EE DD CC BB AA 99 88
Member	DD EE AA DD DD EE AA DD
Zone	backupUNIX
Member	11 22 33 44 55 66 77 88
Member	DD EE AA DD DD EE AA DD

- A specific Member may be used in more than one Zone, and a specific Zone may be used in more than one Zone Set.
- Only one Zone Set may be enforced (activated) on the fabric at a time.
- The enforced Zone Set is not persistent; it is regenerated every time one or more switches powers up.

6.1.3.3.4.2 Show Zone Sets

Menu Path:

1) **config** → 3) **zone** → 3) **wwn** → 4) **zoneset** → 2) **show**

Shortcut Command:

At the root menu, type **config zone wwn zoneset show**

Description:

This menu item displays all configured Zone Sets. When a Zone Set is selected from this display, constituent Zones are displayed. When a Zone is selected, constituent Members are displayed.

6.1.3.3.4.3 Show Enforced Zone Set

Menu Path:

1) **config** → 3) **zone** → 3) **wwn** → 4) **zoneset** → 3) **senf**

Shortcut Command:

At the root menu, type **config zone wwn zoneset senf**

Description:

This menu item displays the currently enforced Zone Set (if any). There can be only one Zone Set enforced at any given time. When the displayed (enforced) Zone Set is selected, constituent Zones are shown. (The list of zones may reflect a zone merge operation and thus be different than originally defined. For an explanation of zone merging, see [Section 4.10.1](#). When a Zone is selected, constituent Members are shown.

6.1.3.3.4.4 Add Zone Set

Menu Path:

1) **config** → 3) **zone** → 3) **wwn** → 4) **zoneset** → 4) **add**

Shortcut Command:

At the root menu, type **config zone wwn zoneset add**

Shortcut Example:

```
>config zone wwn zoneset add "zone_set_1"
```

This example creates a new zone set named "zone_set_1".

Description:

This menu item enables the user to create an empty Zone Set with the name specified. A Zone Set must be created before any zones or members can be defined.

add "ZoneSetName", (where *ZoneSetName* is the name of the empty Zone Set)

Example: (config/zone/wwn/zoneset)>add "Backup"

6.1.3.3.4.5 Delete Zone Set

Menu Path:

1) config → 3) zone → 3) wwn → 4) zoneset → 5) delete

Shortcut Command:

At the root menu, type **config zone wwn zoneset delete**

Shortcut Example:

```
>config zone wwn zoneset del "zone_set_1"
```

This example deletes the zone set named "zone_set_1".

Description:

This menu item enables the user to permanently delete a Zone Set.

WARNING: Deleting a Zone Set will delete all of the contents of the Zone Set, including Zones and Members that do not belong to any other Zone Set.

Currently the FC SW2 standard does not define any method for deleting a Zone Set from the entire fabric from one switch. To delete a Zone Set fabric-wide, the Zone Set must be deleted from each individual switch on which the Zone Set is defined.

6.1.3.3.4.6 Map Defined Zone Set & Zones

Menu Path:

1) config → 3) zone → 3) wwn → 4) zoneset → 6) define

Shortcut Command:

At the root menu, type **config zone wwn zoneset define**

Shortcut Example:

```
>config zone wwn zoneset def "zone_set_1"
```

This example opens the (previously created) zone set named "zone_set_1" and enables the user to quickly add previously defined zones to the zone set.

Description:

This menu item enables the user to define (configure) Zones within the specified Zone Set. Each previously added Zone is displayed with a Y/N prompt. The initially displayed value within the prompt reflects the current status of the Zone in relation to the specified Zone Set.

To select from Zones that were already created:

Go to the zoneset menu (config/zone/wwn/zoneset) and type:

```
define "ZoneSetName"
```

(where "ZoneSetName" is the name of the Zone Set)

Enter a "Y" for **yes** in the brackets for each zone to be added to the Zone Set.

Example:

```
(config/zone/wwn/zoneset)>define "Backup"  
(Enter 0 to exit)  
backupNT [Y]:
```

6.1.3.3.4.7 Activate Zone Set

Menu Path:

1) **config** → 3) **zone** → 3) **wwn** → 4) **zoneset** → 7) **activate**

Shortcut Command:

At the root menu, type **config zone wwn zoneset activate**

Shortcut Example:

```
>config zone wwn zoneset activate "zone_set_1"
```

This example activates the (previously created) zone set named "zone_set_1".

Description:

The menu item enables the user to activate the specified Zone Set (assuming no other Zone Set is already enforced in the fabric). If another Zone Set is already enforced in the fabric, that Zone Set must be deactivated before a new Zone Set can be activated. To verify that the Zone Set is enforced, type the following command from the Root Menu: **config zone wwn show** or the following command from the Zone Set menu (config/zone/wwn/zoneset): **senf**

At this command, the switch activates the Zone Set on itself then attempts to force the Zone set onto other switches in the fabric (Zone Merge). Once you have entered this command, press the down arrow key to scroll to a message that states "**depress any key to cancel**". **WARNING:** Striking any key at this point, including the Enter key, will cancel the **activate** command.

If the **activate** command is completed successfully (<15 seconds), the message "**OK**" should be displayed. Once a Zone Set is activated, it is stored in the temporary memory of all switches in the fabric. If the attempt is unsuccessful, error messages appear, event messages are logged, and an isolated E_Port condition occurs, as indicated by a blinking-green LED and solid-amber LED combination on the affected port. For a description of the Zone Merge operation, see [Section 4.10.1.5](#).

6.1.3.3.4.8 Deactivate Zone Set

Menu Path:

1) **config** → 3) **zone** → 3) **wwn** → 4) **zoneset** → 8) **deactiv**

Shortcut Command:

At the root menu, type **config zone wwn zoneset deactiv**

Description:

This menu command deactivates the current active zone set. Since only one zone set can be active in the fabric at any given time, this command does not need an argument. Once you have entered this command, press the

down arrow key to scroll to a message that states “**depress any key to cancel**”. **WARNING:** Striking any key at this point, including the Enter key, will cancel the **deactivate** command.

When the current active zone set (or enforced zone set) is deactivated, no zone set will be enforced in the fabric until a new one is assigned using the **Activate Zone Set** command (see [Section 6.1.3.3.4.7](#)).

If the **deactivate** command has been issued and a time out occurs, remove the FC switch (or FCIP Network Module) from the fabric and then reattempt the **deactivate** command.

6.1.3.3.5 Configure WWN Zones

Menu Path:

1) **config** → 3) **zone** → 3) **wwn** → 5) **zone**

Shortcut Command:

At the root menu, type **config zone wwn zone**

Description:

When menu item **5) zone – Configure WWN Zones** is selected, the existing settings are displayed (for help see [Section 6.1.3.3.5.1](#)) followed by the sub-menu shown below:

config/zone/wwn/zone menu

- | | |
|---|---|
| 1) back - Go back | |
| 2) show - Show zones | (For help, go to Section 6.1.3.3.5.2 on page 6-16) |
| 3) zadd - Add zone | (For help, go to Section 6.1.3.3.5.3 on page 6-16) |
| 4) zdel - Delete zone | (For help, go to Section 6.1.3.3.5.4 on page 6-16) |
| 5) madd - Add member | (For help, go to Section 6.1.3.3.5.5 on page 6-17) |
| 6) mdel - Delete member | (For help, go to Section 6.1.3.3.5.6 on page 6-18) |
| 7) define - Define members within zones | (For help, go to Section 6.1.3.3.5.7 on page 6-18) |
-

Enter a number from the **config/zone/wwn/zone** menu to go to the corresponding category.

6.1.3.3.5.1 General Description

When defining zones, object names (for new or existing Zone Sets, Zones, or Members) must be enclosed in quotes when specified. While the command examples shown within the menu specify one or more object names (an object being a Zone Set, Zone, or Member), you may enter just the command. If the required object names are not specified when the command is entered, then you are prompted either for the desired name or for selection of one or more objects from a list of those available.

6.1.3.3.5.2 Show Zones

Menu Path:

1) config → 3) zone → 3) wwn → 5) zone → 2) show

Shortcut Command:

At the root menu, type **config zone wwn zone show**

Description:

This menu item displays all configured Zones. When a Zone is selected, constituent Members are displayed.

6.1.3.3.5.3 Add Zone

Menu Path:

1) config → 3) zone → 3) wwn → 5) zone → 3) zadd

Shortcut Command:

At the root menu, type **config zone wwn zone zadd**

Shortcut Example:

```
>zadd "zone_1" "zone_set_1"
```

This example creates a zone named “zone_1” in the (previously created) zone set named “zone_set_1”.

Description:

This menu item enables the user to add Zone(s) to the Zone Set by creating an empty Zone and adding it to the earlier-created Zone Set:

Go to the zone menu (config/zone/wwn/zone) and type:

```
zadd "ZoneName" "ZoneSetName"
```

(where *ZoneName* is the name of the empty Zone and *ZoneSetName* is the name of the Zone Set)

Example: (config/zone/wwn/zone)>zadd “backupNT” “Backup”

6.1.3.3.5.4 Delete Zone

Menu Path:

1) config → 3) zone → 3) wwn → 5) zone → 4) zdel

Shortcut Command:

At the root menu, type **config zone wwn zone zdel**

Shortcut Example:

```
>zdel "zone_1"
```

This example deletes the zone named “**zone_1**” from all zone sets to which it had been assigned.

Description:

This menu item enables the user to delete (remove) all occurrences of the specified Zone. A deleted Zone is no longer available for configuration.

6.1.3.3.5.5 Add Member**Menu Path:**

1) config → 3) zone → 3) wwn → 5) zone → 5) madd

Shortcut Command:

At the root menu, type **config zone wwn zone madd**

Shortcut Example:

```
>madd "23 45 AB CD 98 76 EF CD" "zone_1"
```

This example adds the member named “**23 45 AB CD 98 76 EF CD**” in the (previously created) zone named “**zone_1**”.

Description:

This menu item enables the user to add Members to a previously created Zone. Add Members to the Zone(s) using one of the following methods:

Method 1

To select from World Wide N_Port_Names within the fabric (from the zone menu config/zone/wwn/zone):

madd

Example:

```
(config/zone/wwn/zone)>madd
Item          Member Identifier
1)            21 00 00 20 37 C6 E4 BD
Enter item from list to select member
(Enter 0 to exit, r to repeat list, or <CR> to continue)
(config/zone/wwn/zone - member)> 1
Item          Zone Name
1)            backupNT
Enter item from list to select zone
(Enter 0 to exit, r to repeat list, or <CR> to continue)
(config/zone/wwn/zone - zone)> 1
```

Method 2

To manually enter World Wide N_Port_Names:

```
madd “WWPN” “ZoneName”
```

(where *WWPN* is the World Wide N_Port_Name and *ZoneName* is the name of the Zone)

Example:

```
(config/zone/wwn/zone)>madd "FF EE DD CC BB AA 99 88" "backupNT"  
(config/zone/wwn/zone)>madd "11 22 33 44 55 66 77 88" "backupUNIX"
```

6.1.3.3.5.6 Delete Member

Menu Path:

1) config → 3) zone → 3) wwn → 5) zone → 6) mdel

Shortcut Command:

At the root menu, type **config zone wwn zone mdel**

Shortcut Example:

```
>mdel "23 45 AB CD 98 76 EF CD"
```

Description:

This menu item enables the user to delete a member from a Zone.

6.1.3.3.5.7 Define Members Within Zones

Menu Path:

1) config → 3) zone → 3) wwn → 5) zone → 7) define

Shortcut Command:

At the root menu, type **config zone wwn zone define**

Shortcut Example:

```
>define "zone_1"
```

Description:

This menu item enables the user to add members to a zone by quickly selecting from the pool of Members that already exist in the zoning database (Members that have already been added to one or more Zones).

(*Note:* This method is only recommended as a shortcut once all potential Members have been previously added to the database, since the **define** command only allows selection from a pre-defined list).

define "ZoneName"

(where "ZoneName" is the name of the Zone)

Example:

```
(config/zone/wwn/zone)>define "backupNT"  
(Enter 0 to exit)  
11 22 33 44 55 66 77 88 [N]:  
FF EE DD CC BB AA 99 88 [Y]:  
Storing zone set information...  
Do you wish to continue (Yes / No): [Y]
```

6.1.4 Set Port Parameters

Menu Path:

1) **config** → 4) **port**

Shortcut Command:

At the root menu, type **config port**

Description:

When menu item 4) **port – Set port parameters** is selected, the following sub menu will be displayed:

config/port menu

- | | |
|--|--|
| 1) back - Go back | |
| 2) show - Show current port settings | (For help, go to Section 6.1.4.2 on page 6-21) |
| 3) type - Set port type | (For help, go to Section 6.1.4.3 on page 6-22) |
| 4) name - Set port name | (For help, go to Section 6.1.4.4 on page 6-23) |
| 5) port - Set port number | (For help, go to Section 6.1.4.5 on page 6-24) |
| 6) prli - Enable / Disable PLOGI/PRLI Probing | (For help, go to Section 6.1.4.6 on page 6-24) |
| 7) fan - Enable / Disable Fabric Address Notification | (For help, go to Section 6.1.4.7 on page 6-25) |
| 8) stream - Set the number of frames per route request | (For help, go to Section 6.1.4.8 on page 6-25) |
| 9) credit - Set BB Credit for port | (For help, go to Section 6.1.4.9 on page 6-26) |
| 10) mrbs - Set maximum receive buffer size | (For help, go to Section 6.1.4.10 on page 6-26) |
| 11) advanced - Configure advanced port settings | (For help, go to Section 6.1.4.11 on page 6-27) |
| 12) rscn - Set RSCN mode | (For help, go to Section 6.1.4.12 on page 6-35) |
-

Enter a number from the **config/port** menu to go to the corresponding category.

6.1.4.1 General Description

The **port – Set port parameters** menu item enables the user to set the parameters for a selected port on an FCIP Network Module CLI. When this menu item is selected, the Port Configuration Table, which displays the current settings for the selected port, will be displayed. This is followed by the currently selected port, which is shown in the **Current Port Number** field. The **config/port** sub menu will then be displayed.

To change the current port being modified, from the **config/port** sub menu select menu item **5) port – Set port number** (for help see [Section 6.1.4.5](#)).

Example:

Port Configuration Table

Port	Name	Type	Module	PRLI	FAN	Stream	BB Credit	MRBS	RSCN
1	Port 1	5	4	1	1	8	16	16	1
2	Port 2	5	5	1	1	8	16	16	1

Current Port Number: **1**

The **Port Configuration Table** fields are defined in the following table:

Field Name	Description
Port Name	Port name for the selected port.
Type (Protocol)	AutoDetect: Automatically detects the protocol used by the port. Valid for all modes on FCIP Network Module. E_Port: Cascaded switch port. Valid for Fabric and Public/Private Communication Mode. F_Port: Used for direct fabric point-to-point connection for individual hosts or raids. May be used for attaching to another Fibre Channel switch (switch to switch connection). Full duplex, no arbitration, and faster transfer, used for initiators. Valid for all modes. FL_Port: Switch loop port. Valid for Fabric and Public/Private Communication Mode. G_Port: Generic port; can act as either F_Port or E_Port. Valid for Fabric and Public/Private Communication Mode. Stealth Loop: This option is not supported on the OptiStar EdgeSwitch.
Module	The type of GBIC module inserted into the FCIP Network Module switch port.
PRLI	The N_Port system that logs into the FCIP Network Module switch port will initiate a Service Parameter exchange with another N_Port system.
Fabric Address Notification	When enabled and an initialization event occurs, the Fabric port sends a Fabric Address Notification (FAN) Extended Link Service to all FLOGI-logged-in, attached ports. These ports can then authenticate active Exchanges and operating parameters, such as BB credits. FAN is available for public ports on an FCIP Network Module running in Fabric or Public/Private Communication Mode (FAN is enabled by default in these conditions).
Stream	stream – the desired number of frames per route request. The number of frames per route request is the number of frames that will pass from, or are passed consecutively between, one port to another in a round robin fashion. This prevents the other ports from starving out for data frames or holding too much in their data buffers.
BB Credits	Buffer-to-buffer credits—the number of receive buffers available for holding Class 2 or 3 frames from the attached NxPort, for buffer-to-buffer flow control in the direction from the attached NxPort (if applicable) to FxPort.
MRBS	Number of transmit buffers available for transmitting Class 2 or 3 frames to the attached NxPort, for buffer-to-buffer flow control in the direction from the attached NxPort (if applicable) to FxPort.
RSCN	Registered State Change Notification (RSCN) is a command that may be sent to selected ports to notify those ports that an event has occurred that may have affected the login state of one or more indicated port(s). The state change notification may be sent by an N_Port to another N_Port, N_Port to the fabric controller at well known address x'FF FF FD', or by the fabric controller to one or more N_Ports.

6.1.4.2 Show Current Port Settings

Menu Path:

1) config → 4) port → 2) show

Shortcut Command:

At the root menu, type **config port show**

Description:

Port Configuration Table

Port	Name	Type	Module	PRLI	FAN	Stream	BB Credit	MRBS	RSCN
1	Port 1	5	4	1	1	8	16	16	1
2	Port 2	5	5	1	1	8	16	16	1

Current Port Number: 1

Legend for enumerated columns:

#	Type	Module*	PRLI	FAN	RSCN
1	fPort	unknown	true	true	normal
2	flPort	dualFrequencyShortwave	false	false	TXonly
3	ePort	dualFrequencyLongwave			RXonly
4	stealthLoop	fcLaserShortwave			no RSCN
5	autoDetect	serialModDef			
6	gPort	fcLaserLongwave			
7		copperIntraCabinet			
8		copperInterCabinet			
9		noModule			

Note: Type 4 (stealthLoop) is not supported on the OptiStar EdgeSwitch.

In the above example, the port being displayed is Port 1. All subsequent port operations will be performed on this port. If the user decides to set another port, first they must choose option 5 to change the FCIP Network Module switch port (see [Section 6.1.4.5](#)), then continue on with other selections to set the port attributes. The port type is defined on menu option 3 (see [Section 6.1.4.3](#)).

* The table on the next page shows how the lights along the GBIC on the front of the FCIP Network Module correspond to the enumerated Module values from the legend above:

The following shows how to interpret the GBIC LEDs on the front of the FCIP Network Module, as well as how the LED status corresponds to the enumerated Module values from the legend above:

Link/Active LED (GREEN)	Isolation LED (AMBER)	Status
Off	Off	No GBIC module inserted. Module value 9.
Off	Solid	Port is bypassed; the GBIC may have a transmitter (Tx) fault. Module value 1.
Solid	Off	GBIC is inserted and good; communication is established. Module values 2 through 8.
Solid	Solid	GBIC is inserted and good, but no link is established.
Flashing	Flashing	Port has been reset and did not complete start-up sequence -or- Beacon Port Mode
Flashing	Off	Data is being transmitted or received

6.1.4.3 Set Port Type

Menu Path:

1) config → 4) port → 3) type

Shortcut Command:

At the root menu, type **config port type #**, where # is the number representing the desired port type (see available options in the Description section below).

Description:

Once this menu item is selected, the following list of options will be displayed, followed by the existing port type in brackets. In this example, the current port type is [5] autoDetect. **Note: Option [4] stealthLoop is not supported on the OptiStar EdgeSwitch.** However, even though Option [4] stealthLoop may not be set as the selected port type, in certain cases the FCIP port will report itself as a stealthLoop port type. For example, when using a private JBOD device like the SUN A5200 JBOD with the FCIP module in fabric public / private mode and the FCIP port type set to G port, the FCIP port will report itself as a Stealth Loop port type when the JBOD is connected.

- [1] fPort
- [2] flPort
- [3] ePort
- [4] stealthLoop
- [5] autoDetect
- [6] gPort

Type [5] =

Press the <Enter> key to keep the existing port type, or enter a new type after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new port type has been accepted. Please refer to the following table for detailed definitions of each port type.

Type (Protocol)	Description
F_Port	Used for attaching another Fibre Channel switch (switch to switch connection) or for a direct point-to-point connection for individual hosts or raids. Full duplex, no arbitration, and faster transfer, used for initiators. Valid for all modes.
FL_Port	Switch loop port. Valid for Fabric and Public/Private Communication Mode.
E_Port	Cascaded switch port. Valid for Fabric and Public/Private Communication Mode.
Stealth Loop	This option is not supported. If it is selected, an “invalid parameter” error message will be displayed. Even though this option is not available, In certain cases, the FCIP port will report itself as a Stealth Loop port type when it is set to G_Port.
AutoDetect	Automatically detects the protocol used by the port. Valid for all modes on FCIP Network Module.
G_Port	Generic port; can act as either F_Port or E_Port. Valid for Fabric and Public/Private Communication Mode. Note: In certain cases (e.g. when using a private JBOD device like the SUN A5200 JBOD with the FCIP module in fabric public / private mode), setting the FCIP port type to G_port will allow the FCIP port to act as a Stealth Loop port type when the JBOD is connected.

6.1.4.4 Set Port Name

Menu Path:

1) config → 4) port → 4) name

Shortcut Command:

At the root menu, type **config port name “abc”**, where **abc** is the desired name for the port.

Shortcut Example:

```
>config port name “Port 1”
```

Description:

This menu item enables the user to enter a port name up to 15 characters that identifies or describes the system. When this menu item is selected, the range is displayed, followed by the existing System Name in brackets.

```
[0..15] Characters
```

```
Name [Port 1] =
```

Press the <Enter> key to keep the existing system name, or enter a new name after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new name has been accepted.

6.1.4.5 Set Port Number

Menu Path:

1) config → 4) port → 5) port

Shortcut Command:

At the root menu, type **config port port #**, where # is the desired Port Number.

Shortcut Example:

>config port port 2

Description:

This menu item enables the user to change the port upon which the current port operations are being performed. When this menu item is selected, the range is displayed, followed by the existing Port Number in brackets.

Port Number [1] =

In this example, all port operations are now being performed on Port 1. Press the <Enter> key to keep the existing port, or enter a new port number after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new number has been accepted.

6.1.4.6 Enable / Disable PLOGI/PRLI Probing

Menu Path:

1) config → 4) port → 6) prli

Shortcut Command:

At the root menu, type **config port prli #**, where # is the desired PRLI setting.

Description:

This menu item enables the user to change enable or disable PLOGI/PRLI (Port Login/Process Login service parameter exchange). When PRLI is set to [1] true, the port will accept Fabric services. The N_Port (fabric device) system that logs into the FCIP Network Module switch port will initiate a Service Parameter (Process_Associators) exchange with another N_Port (fabric device) system. This exchange is stored in the FCIP Network Module's SNS table. When this menu item is selected, the possible values are displayed.

[1] true

[2] false

PRLI [1] =

In this example, the port will accept Fabric services. Press the <Enter> key to keep the current PRLI setting, or enter a new setting after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new setting has been accepted.

6.1.4.7 Enable / Disable Fabric Address Notification

Menu Path:

1) config → 4) port → 7) fan

Shortcut Command:

At the root menu, type **config port fan #**, where # is the desired FAN setting.

Description:

Fabric Address Notification (FAN) was added by the Fabric Loop Attach to provide a mechanism for the FL_Port to notify logged-in NL_Ports of the FL_Port's address, Port_Name, and Node_Name. The purpose of FAN is to allow the FL_Port to provide information to all logged-in NL_Ports on an arbitrated loop following loop initialization. The NL_Ports use this information to authenticate the address and identity of the FL_Port before continuing exchanges in progress prior to the initialization.

When enabled, an initialization event occurs, the Fabric port sends a FAN Extended Link Service to all FLOGI-logged-in, attached ports. These ports can then authenticate active Exchanges and operating parameters, such as BB credits. FAN is available for public ports running in Fabric or Public/Private Communication Mode (FAN is enabled by default in these conditions).

When this menu item is selected, the possible values are displayed.

```
[1] true
[2] false
```

```
FAN [1] =
```

In this example, Fabric Address Notification (FAN) is enabled. Press the <Enter> key to keep the current FAN setting, or enter a new setting after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new setting has been accepted.

6.1.4.8 Set Number of Frames Per Route Request

Menu Path:

1) config → 4) port → 8) stream

Shortcut Command:

At the root menu, type **config port stream #**, where # is the desired number of frames per route request.

Description:

This menu item enables the user to set the number of frames sent to a route request. The number of frames per route request is the number of frames that will pass from, or are passed consecutively between, one port to another in a round robin fashion. This prevents the other ports from starving out for data frames or holding too much in their data buffers.

When this menu item is selected, the possible values are displayed.

[1..15] Range

Stream [8] =

In this example, the number of frames per route request is set to 8. Press the <Enter> key to keep the current Stream setting, or enter a new setting after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new setting has been accepted.

6.1.4.9 Set BB Credit for Port

Menu Path:

1) config → 4) port → 9) credit

Shortcut Command:

At the root menu, type **config port credit #**, where # is the desired BB credit.

Description:

Buffer-to-buffer credits (BB Credit) are the number of receive buffers available for holding Class 2 or 3 frames from the attached NxPort, for buffer-to-buffer flow control in the direction from the attached NxPort (if applicable) to FxPort. This is the number of BB Credits available on an FCIP Network Module for receiving data from the connected device (NxPort) inbound to the switch. The default value is 16 BB Credits per port.

When this menu item is selected, the possible values are displayed.

[0..MRBS] BB Credit Range

BB Credit [16] = Press the <Enter> key to accept the current BB Credit setting.

In this example, the BB Credit value is set to 16. Press the <Enter> key to keep the current BB Credit setting, or enter a new setting after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new setting has been accepted.

6.1.4.10 Set Maximum Receive Buffer Size

Menu Path:

1) config → 4) port → 10) mrbs

Shortcut Command:

At the root menu, type **config port mrbs #**, where # is the desired MRBS value.

Description:

The MRBS is the number of transmit buffers available for transmitting Class 2 or 3 frames to the attached NxPort, for buffer-to-buffer flow control in the direction from the attached NxPort (if applicable) to FxPort. In other words, this is the number of buffers calculated by dividing the maximum frame size into 34432 bytes that are available on the FCIP Network Module to accept data frames from the connected device on the port. There is a maximum of 16 receive buffers by default per port. If the user divides 3443 by 2112, the maximum frame size, they get 16 buffers.

When this menu item is selected, the possible values are displayed.

[1..(34432/RBS)] Max Rx Buffers Range

MRBS [16] = Press the <Enter> key to keep the existing MRBS value.

In this example, the MRBS is set to 16. Press the <Enter> key to keep the current MRBS value, or enter a new setting after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new value has been accepted.

6.1.4.11 Configure Advanced Port Settings

Menu Path:

1) config → 4) port → 11) advanced

Shortcut Command:

At the root menu, type **config port advanced**

Description:

When menu item **11) advanced – Configure Advanced Port Settings** is selected, the existing settings are displayed (for help see [Section 6.1.4.11.1](#)) followed by the sub-menu shown below:

config/port/advanced menu

- | | |
|---|---|
| 1) back - Go back | |
| 2) show - Show advanced port settings | (For help, go to Section 6.1.4.11.2 on page 6-28) |
| 3) rbs - Set max receive buffer payload size | (For help, go to Section 6.1.4.11.3 on page 6-29) |
| 4) tbs - Set the maximum transmit buffers | (For help, go to Section 6.1.4.11.4 on page 6-29) |
| 5) edtov - Set error detection time-out value | (For help, go to Section 6.1.4.11.5 on page 6-30) |
| 6) ratov - Set resource allocation time-out value | (For help, go to Section 6.1.4.11.6 on page 6-31) |
| 7) altov - Set loop initialization time-out value | (For help, go to Section 6.1.4.11.7 on page 6-32) |
| 8) lpto - Set loop connection timeout | (For help, go to Section 6.1.4.11.8 on page 6-32) |
| 9) rxthrsh - Set the receive credit threshold | (For help, go to Section 6.1.4.11.9 on page 6-33) |
| 10) txthrsh - Set transmit available threshold | (For help, go to Section 6.1.4.11.10 on page 6-33) |
| 11) port - Set port number | (For help, go to Section 6.1.4.11.11 on page 6-34) |
| 12) speed - Set the port speed | (For help, go to Section 6.1.4.11.12 on page 6-34) |
-

Enter a number from the **config/port/advanced** menu to go to the corresponding category.

6.1.4.11.1 General Description

IMPORTANT NOTE: Consult Lucent Technical Support before modifications to any of Advanced Port settings.

The **advanced – Configure Advanced Port Settings** menu item enables the user to set the advanced parameters for a selected port on an FCIP Network Module CLI. When this menu item is selected, the **Advanced Port Configuration Table**, which displays the current advanced port settings for the selected port, will be displayed. This is followed by the currently selected port, which is shown in the **Current Port Number** field. The **config/port/advanced** sub menu will then be displayed.

To change the current port being modified, from the **config/port/advanced** sub menu select menu item **(11) Set port number** (for help see [Section 6.1.4.11.11](#)).

Port Configuration Table

Port	RBS	TBS	EDTOV	RATOV	ALTOV	LPTO	RXTHRSH	TXTHRSH	SPEED
1	2112	16	1000	120000	15	100	3	4	2
2	2112	16	1000	120000	15	100	3	4	2

Current Port Number: **1**

Legend for the enumerated column (SPEED) on the Port Configuration Table:

#	SPEED
1	Invalid
2	oneGig

6.1.4.11.2 Show Advanced Port Settings

Menu Path:

1) config → 4) port → 11) advanced → 2) show

Shortcut Command:

At the root menu, type **config port advanced show**

Description:

Port Configuration Table

Port	RBS	TBS	EDTOV	RATOV	ALTOV	LPTO	RXTHRSH	TXTHRSH	SPEED
1	2112	16	1000	120000	15	100	3	4	2
2	2112	16	1000	120000	15	100	3	4	2

Current Port Number: **1**

Legend for the enumerated column (SPEED) on the Port Configuration Table:

#	SPEED
1	Invalid
2	oneGig

6.1.4.11.3 Set Max Receive Buffer Payload Size

Menu Path:

1) **config** → 4) **port** → 11) **advanced** → 3) **rbs**

Shortcut Command:

At the root menu, type **config port advanced rbs #**, where # is the desired Maximum Receive Buffer Payload Size.

Shortcut Example:

```
>config port advanced rbs 300
```

This example sets the Maximum Receive Buffer Payload Size to 300 bytes.

Description:

Please consult Lucent Technical Support before modifying this value. The Receive Buffer Payload Size (RBS) is the frame size set by the user or installer for the Fibre Channel frames coming into the FCIP Network Module in each receive buffer. The default size is 2112 bytes, the maximum frame size.

When this menu item is selected, the allowable range (in bytes) for the RBS is displayed in brackets:

```
[128..2112] Rx Payload Size
```

Next, the current RBS setting is displayed in brackets (in this example the RBS is set to 2112 bytes):

```
RBS [2112] =
```

To accept the current RBS setting, press the <Enter> key. To change the setting, first type in the new value then press the <Enter> key.

For example, to change the RBS value to 300 bytes, type 300 at the prompt:

```
RBS [2112] = 300 <Enter>
```

6.1.4.11.4 Set Maximum Transmit Buffers

Menu Path:

1) **config** → 4) **port** → 11) **advanced** → 4) **tbs**

Shortcut Command:

At the root menu, type **config port advanced tbs #**, where # is the desired Maximum Transmit Buffer Size.

Shortcut Example:

```
> config port advanced tbs 16
```

This example sets the Maximum Transmit Buffer Size to 16.

Description:

Please consult Lucent Technical Support before modifying this value. The Maximum Transmit Buffer Size (TBS) is the number of transmit buffers available for transmitting Class 2 or 3 frames to the attached NxPort, for buffer-to-buffer flow control from the to FxPort to the attached NxPort (if applicable). The default size is 16.

When this menu item is selected, the allowable range (in bytes) for the RBS is displayed in brackets:

[1..16] Max Tx Buffers Range

Next, the current TBS setting is displayed in brackets (in this example the TBS is set to 16):

TBS [16] =

To accept the current TBS setting, press the <Enter> key. To change the setting, first type in the new value then press the <Enter> key.

For example, to change the TBS value to 4, type 4 at the prompt:

TBS [16] = 4 <Enter>

6.1.4.11.5 Set Error Detection Timeout Value

Menu Path:

1) config → 4) port → 11) advanced → 5) edtov

Shortcut Command:

At the root menu, type **config port advanced edtov #**, where # is the desired Error Detection Timeout Value.

Shortcut Example:

)> config port advanced edtov 2000

This example sets the Error Detection Timeout Value to 2000 milliseconds.

Description:

Please consult Lucent Technical Support before modifying this value. The Error Detection Timeout Value (EDTOV) is the maximum round trip time an operation can take before declaring an error condition. The default value is 2000 milliseconds. **Note:** The EDTOV value for all switches in the fabric must be the same, otherwise the initialization sequence will not complete. If you change the EDTOV value, ensure that it matches the EDTOV value for the other switches in the fabric.

When this menu item is selected, the allowable range (in milliseconds) for the EDTOV is displayed in brackets:

[0..2147483647] Milliseconds

Next, the current EDTOV setting is displayed in brackets (in this example the EDTOV is set to 10):

EDTOV [2000] =

To accept the current EDTOV setting, press the <Enter> key. To change the setting, first type in the new value then press the <Enter> key.

For example, to change the EDTOV value to 1000, type 1000 at the prompt:

```
EDTOV [2000] =1000 <Enter>
```

6.1.4.11.6 Set Resource Allocation Timeout Value

Menu Path:

1) config → 4) port → 11) advanced → 5) ratov

Shortcut Command:

At the root menu, type **config port advanced ratov #**, where # is the desired Resource Allocation Timeout Value.

Shortcut Example:

```
> config port advanced ratov 10000
```

This example sets the Resource Allocation Timeout Value to 10000 milliseconds.

Description:

Please consult Lucent Technical Support before modifying this value. The Resource Allocation Timeout Value (RATOV) is used to timeout operations that depend on the maximum allowable time a frame could be delayed in the fabric and still be delivered. The default value is 10000 milliseconds. **Note:** The RATOV value for all switches in the fabric must be the same, otherwise the initialization sequence will not complete. If you change the RATOV value, ensure that it matches the RATOV value for the other switches in the fabric.

When this menu item is selected, the allowable range (in milliseconds) for the RATOV is displayed in brackets:

```
[0..2147483647] Milliseconds
```

Next, the current RATOV setting is displayed in brackets (in this example the RATOV is set to 10000):

```
RATOV [10000] =
```

To accept the current RATOV setting, press the <Enter> key. To change the setting, first type in the new value then press the <Enter> key.

For example, to change the RATOV value to 20000, type 20000 at the prompt:

```
RATOV [10000] =20000 <Enter>
```

6.1.4.11.7 Set Loop Initialization Timeout Value

Menu Path:

1) config → 4) port → 11) advanced → 6)altov

Shortcut Command:

At the root menu, type **config port advanced altov #**, where # is the desired Arbitrated Loop Timeout Value.

Shortcut Example:

```
>config port advanced altov 15
```

This example sets the Arbitrated Loop Timeout Value to 15 milliseconds.

Description:

Please consult Lucent Technical Support before modifying this value. The Arbitrated Loop Timeout Value (ALTOV) Loop initialization Timeout value is the maximum amount of time allowed for a transmission word to propagate around a worst-case loop. This setting is applicable only in FL Mode. The default value is 15ms.

When this menu item is selected, the allowable range (in milliseconds) for the ALTOV is displayed in brackets:

```
[0..2147483647] Milliseconds
```

Next, the current ALTOV setting is displayed in brackets (in this example the ALTOV is set to 15):

```
ALTOV [15] =
```

To accept the current ALTOV setting, press the <Enter> key. To change the setting, first type in the new value then press the <Enter> key.

For example, to change the ALTOV value to 20, type 20 at the prompt:

```
ALTOV [15] =20 <Enter>
```

6.1.4.11.8 Set Loop Connection Timeout

Menu Path:

1) config → 4) port → 11) advanced → 8) lpto

Shortcut Command:

At the root menu, type **config port advanced lpto #**, where # is the desired Loop Connection Timeout Value.

Shortcut Example:

```
>config port advanced lpto 100
```

This example sets the Loop Connection Timeout Value to 100 milliseconds.

Description:

Please consult Lucent Technical Support before modifying this value. The current LPTO setting (in milliseconds) is displayed in brackets (in this example the LPTO is set to 100 ms):

```
LPTO [100] =
```

Press the <Enter> key to accept the current LPTO setting.

6.1.4.11.9 Set Receive Credit Threshold

Menu Path:

1) config → 4) port → 11) advanced → 9) rxthresh

Shortcut Command:

At the root menu, type **config port advanced rxthresh #**, where # is the desired Receive Credit Threshold.

Shortcut Example:

```
>config port advanced rxthresh 10
```

This example sets the Receive Credit Threshold to 10.

Description:

Please consult Lucent Technical Support before modifying this value. When this menu item is selected, the allowable range for the Receive Credit Threshold (RXTHRESH) is displayed in brackets:

```
[0..15] Range
```

Next, the current RXTHRESH setting is displayed in brackets (in this example the RXTHRESH is set to 3):

```
RXTHRESH [3] =
```

Press the <Enter> key to accept the current RXTHRESH setting, or enter a new value then press the <Enter> key. The display will show **OK**, indicating the new value has been accepted.

6.1.4.11.10 Set Transmit Available Threshold

Menu Path:

1) config → 4) port → 11) advanced → 10) txthresh

Shortcut Command:

At the root menu, type **config port advanced txthresh #**, where # is the desired Transmit Available Threshold.

Shortcut Example:

```
>config port advanced txthresh 100
```

This example sets the Transmit Available Threshold to 100.

Description:

Please consult Lucent Technical Support before modifying this value. When this menu item is selected, the allowable range for the Transmit Available Threshold (TXTHRESH) is displayed in brackets:

[0..127] Range

Next, the current TXTHRESH setting is displayed in brackets (in this example the TXTHRESH is set to 4):

TXTHRESH [4] =

Press the <Enter> key to accept the current TXTHRESH setting, or enter a new value then press the <Enter> key. The display will show OK, indicating the new value has been accepted.

6.1.4.11.11 Set Port Number

Menu Path:

1) config → 4) port → 11) advanced → 11) port

Shortcut Command:

At the root menu, type **config port advanced port #**, where # is the desired Port Number.

Shortcut Example:

>config port advanced port 2

This example selects Port Number 2 as the port that may be configured.

Description:

This menu item enables the user to change the Port Number as needed to configure the advanced port parameters for each FCIP Network Module switch port. When this menu item is selected, the current Port Number is displayed in brackets. In this example Port Number 1 is the port that currently may be configured.

Port Number [1] =

Press the <Enter> key to accept the current Port Number, or enter a new number then press the <Enter> key. The display will show OK, indicating the new value has been accepted.

6.1.4.11.12 Set Port Speed

Menu Path:

1) config → 4) port → 11) advanced → 12) speed

Shortcut Command:

At the root menu, type **config port advanced speed** to view the current Port Speed setting.

Description:

Please consult Lucent Technical Support before modifying this value. During normal operation the Port Speed should always be set to [2] 1 gig and should not be modified.

This menu item enables the user to change the Port Speed for the currently selected FCIP Network Module switch port. When this menu item is selected, the possible values are displayed, followed by the value representing the current Port Speed in brackets.

```
[1] invalid
[2] 1 gig
```

```
Port Speed [2] =
```

In this example, the Port Speed is set to 1 Gbps. Press the <Enter> key to keep the current speed, or enter a new value after the equal sign, then press the <Enter> key. The display will show OK, indicating the new Port Speed has been accepted.

6.1.4.12 Set RSCN Mode

Menu Path:

1) config → 4) port → 12) rscn

Shortcut Command:

At the root menu, type **config port rscn #**, where # is the desired RSCN setting (please see the Description below for possible settings).

Description:

Registered State Change Notification (RSCN) is a command that may be sent to selected ports to notify those ports that an event has occurred that may have affected the login state of one or more indicated port(s). The state change notification may be sent by an N_Port to another N_Port, N_Port to the fabric controller at well known address x'FF FF FD', or by the fabric controller to one or more N_Ports. This menu item enables the user to configure the port with normal, transmit RSCN, receive RSCN or no RSCN activity.

The following values may be selected for RSCN:

```
[1] normal
[2] TxOnly
[3] RxOnly
[4] noRSCN
```

```
RSCN [1] =
```

Press the <Enter> key to accept the current RSCN setting, or enter a new value then press the <Enter> key. The display will show OK, indicating the new value has been accepted.

6.1.5 Set System Parameters

Menu Path:

1) **config** → 5) **system**

Shortcut Command:

At the root menu, type **config system**

Description

When menu item **5) system – Set system parameters** is selected, the following sub menu will be displayed:

config/system menu

- | | |
|--|--|
| 1) back – Go back | |
| 2) show - Show system settings | (For help, go to Section 6.1.5.2 on page 6-37) |
| 3) name - Set system name | (For help, go to Section 6.1.5.3 on page 6-37) |
| 4) time - Set system time with format xx:xx:xx | (For help, go to Section 6.1.5.4 on page 6-38) |
| 5) date - Set system date with format xx/xx/xxxx | (For help, go to Section 6.1.5.5 on page 6-38) |
| 6) contact - Set system contact | (For help, go to Section 6.1.5.6 on page 6-39) |
| 7) ethmode - Set Ethernet mode | (For help, go to Section 6.1.5.7 on page 6-39) |
| 8) location - Set system location | (For help, go to Section 6.1.5.8 on page 6-39) |
| 9) advanced - Configure advanced settings | (For help, go to Section 6.1.5.9 on page 6-40) |
| 10) trap - Trap destination configurations | (For help, go to Section 6.1.5.10 on page 6-44) |
-

Enter a number from the **config/system** menu to go to the corresponding category.

6.1.5.1 General Description

The **system – Set system parameters** menu item enables the user to set system parameters for the FCIP Network Module CLI. When this menu item is selected, the current system parameters will be displayed, followed by the **config/system** sub menu.

Example:

```
Name          : sysName not set
Location       : sysLocation not set
Contact        : sysContact not set
System Time    : 16:34:59
Date           : 10/30/2000
Detected Ethernet : eth10half
Ethernet Mode  : ethAuto
Address Mode   : Fabric
Boot Image     : Image 1
Up Time        : 0 days, 00:51:40 (hr:min:sec)
```

6.1.5.2 Show System Settings

Menu Path:

1) **config** → 5) **system** → 2) **show**

Shortcut Command:

At the root menu, type **config system show**

Description

When the user enters the **Show system settings** menu, the existing system settings are displayed.

Example:

```
Name           : sysName not set
Location        : sysLocation not set
Contact         : sysContact not set
System Time     : 16:34:59
Date           : 10/30/2000
Detected Ethernet : eth10half
Ethernet Mode   : ethAuto
Address Mode    : Fabric
Boot Image      : Image 1
Up Time         : 0 days, 00:51:40 (hr:min:sec)
```

6.1.5.3 Set System Name

Menu Path:

1) **config** → 5) **system** → 3) **name**

Shortcut Command:

At the root menu, type **config system name "abc"**, where *abc* is the desired System Name.

Shortcut Example:

```
>config system name "Lab System A"
```

Description

This menu item enables the user to enter a system name up to 256 characters that identify or describe the system. When this menu item is selected, the range is displayed, followed by the existing System Name in brackets.

```
[0..256] Characters
```

```
Name [LabA] =
```

Press the <**Enter**> key to keep the existing system name, or enter a new name after the equal sign, then press the <**Enter**> key. The display will show **OK**, indicating the new name has been accepted.

6.1.5.4 Set System Time

Menu Path:

1) **config** → 5) **system** → 4) **time**

Shortcut Command:

At the root menu, type **config system time xx:xx:xx**, where **xx:xx:xx** is the desired System Time setting.

Shortcut Example:

```
>config system time 13:45:00
```

Description:

This menu item enables the user to enter a new System Time. When this menu item is selected, the existing System Time is shown in brackets.

```
System Time [16:52:17] =
```

Press the <Enter> key to keep the existing System Time, or enter a new time value after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new time has been accepted.

6.1.5.5 Set System Date

Menu Path:

1) **config** → 5) **system** → 5) **date**

Shortcut Command:

At the root menu, type **config system date xx/xx/xxxx**, where **xx/xx/xxxx** is the desired System Date setting.

Shortcut Example:

```
>config system date 10/03/2000
```

Description:

This menu item enables the user to enter a new System Date. When this menu item is selected, the existing System Date is shown in brackets.

```
Date [10/03/2000] =
```

Press the <Enter> key to keep the existing System Date, or enter a new date value after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new date has been accepted.

6.1.5.6 Set System Contact

Menu Path:

1) config → 5) system → 6) contact

Shortcut Command:

At the root menu, type **config system contact “abc”**, where *abc* is the desired System Contact.

Shortcut Example:

>config system contact “john smith”

Description

This menu item enables the user to enter a string up to 256 characters that identify or describe the contact person. When this menu item is selected, the range is displayed, followed by the existing System Contact in brackets.

[0..256] Characters

Contact [John Smith] =

Press the <Enter> key to keep the existing System Contact, or enter a new string after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new string has been accepted.

6.1.5.7 Set Ethernet Mode

Menu Path:

1) config → 5) system → 7) ethmode

Shortcut Command:

At the root menu, type **config system ethmode**

Description

This menu item is not supported on the OptiStar EdgeSwitch.

6.1.5.8 Set System Location

Menu Path:

1) config → 5) system → 8) location

Shortcut Command:

At the root menu, type **config system location “abc”**, where *abc* is the desired System Location.

Shortcut Example:

>config system location “Building A”

Description

This menu item enables the user to enter a string up to 256 characters that identify or describe the location of the system. When this menu item is selected, the range is displayed, followed by the existing System Location in brackets.

[0..256] Characters

Location [Building A] =

Press the <Enter> key to keep the existing System Location, or enter a new string after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new string has been accepted.

6.1.5.9 Configure Advanced Settings

Menu Path:

1) **config** → 5) **system** → 9) **advanced**

Shortcut Command:

At the root menu, type **config system advanced**

Description

When menu item 9) **advanced – Configure advanced settings** is selected, the following sub menu will be displayed:

config/system/advanced menu

- | | |
|---|---|
| 1) back - Go back | |
| 2) show - Show advanced system settings | (For help, go to Section 6.1.5.9.2 on page 6-41) |
| 3) domid - Set the default domain id | (For help, go to Section 6.1.5.9.3 on page 6-41) |
| 4) numadd - Set the # of private addresses per port | (For help, go to Section 6.1.5.9.4 on page 6-42) |
| 5) priority - Set the principal switch priority | (For help, go to Section 6.1.5.9.5 on page 6-43) |
| 6) lfa - Set loop fabric address mode | (For help, go to Section 6.1.5.9.6 on page 6-43) |
| 7) rcf - Set RCF disruptive mode | (For help, go to Section 6.1.5.9.7 on page 6-44) |
-

Enter a number from the **config/system/advanced** menu to go to the corresponding category.

6.1.5.9.1 General Description

The **advanced – Configure advanced settings** menu item enables the user to set advanced system parameters for the FCIP Network Module CLI. When this menu item is selected, the current advanced system parameters will be displayed, followed by the **config/system/advanced** sub menu.

Example:

```
System Domain ID      : 60
Default Domain ID    : 60
Private Addresses     : 64
Principal Switch      : false
Priority               : 254
Loop Fabric Address   : disabled
RCF Disruptive mode  : nonDestructive
```

6.1.5.9.2 Show Advanced System Settings

Menu Path:

1) **config** → 5) **system** → 9) **advanced** → 2) **show**

Shortcut Command:

At the root menu, type **config system advanced show**

Description

When this menu item is selected, the current advanced system settings will be displayed.

Example:

```
System Domain ID      : 60
Default Domain ID    : 60
Private Addresses     : 64
Principal Switch      : false
Priority               : 254
Loop Fabric Address   : disabled
RCF Disruptive mode  : nonDestructive
```

6.1.5.9.3 Set the Default Domain ID

Menu Path:

1) **config** → 5) **system** → 9) **advanced** → 3) **domid**

Shortcut Command:

At the root menu, type **config system advanced domid #**, where # is the hexadecimal value of the desired Domain ID

Shortcut Example:

>config system advanced domid 60

Description

The Default Domain ID should be unique for each FCIP network module and Fibre Channel switch present in the fabric. In a multiple switch environment, the switches arbitrate for mastership, and mastership (principal switch) is assigned to the switch with the lowest World Wide Name (WWN). The principal switch will assign the other Domain ID's to the subordinate switches. This principal switch retains its master designation until it disconnects. Each FCIP network module participates in the arbitration process as a separate Fibre Channel Switch.

When this menu item is selected, the following will be displayed:

Note: This is only a request.
Primary domain manager assignment of this
parameter will take precedence.
Default Domain ID [60] =

In this example, the Domain ID is set to 60. Press the <Enter> key to keep the current Domain ID, or enter a new ID after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new value has been accepted. Note that this number is a hexadecimal value.

6.1.5.9.4 Set the Number of Private Addresses per Port

Menu Path:

1) config → 5) system → 9) advanced → 4) numadd

Shortcut Command:

At the root menu, type **config system advanced numadd**

Description

This option specifies the number of AL_PAs (per port) that are reserved for private devices when the FCIP Network Module is running in Public/Private Communication Mode. The default number is 64, which allows private devices the range 0x73- 0xEF; public devices are given access to the remaining AL_PAs, starting at 0x01.

When this menu item is selected, the following will be displayed:

Private Addresses [64] = Press the <Enter> key to keep the number of private addresses per port.

In this example, the number of Private Addresses is set to 64. Press the <Enter> key to keep the current number, or enter a new number after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new value has been accepted.

6.1.5.9.5 Set the Principal Switch Priority

Menu Path:

1) **config** → 5) **system** → 9) **advanced** → 5) **priority**

Shortcut Command:

At the root menu, type **config system advanced priority**

Description

When this menu item is selected, the allowable range for the Principal Switch Priority is displayed in brackets:

```
[1..255] Range
```

A priority of 255 disables the FCIP Network Module from participating in the principal switch selection. A setting of 1 allows that switch to operate as the principal FCIP Network Module. Next, the current Priority setting is displayed in brackets (in this example the Priority is set to 254):

```
Priority [254] =
```

Press the <Enter> key to keep the principal switch priority setting, or enter a new value then press the <Enter> key. The display will show **OK**, indicating the new value has been accepted.

6.1.5.9.6 Set Loop Fabric Address (LFA) Mode

Menu Path:

1) **config** → 5) **system** → 9) **advanced** → 6) **lfa**

Shortcut Command:

At the root menu, type **config system advanced lfa**

Description

When this menu item is selected, the available settings for the Loop Fabric Address (lfa) are displayed in brackets:

```
[0] disabled
```

```
[1] enabled
```

Next, the current Loop Fabric Address setting is displayed (in this example the lfa is disabled):

```
Loop Fabric Address [0] =
```

Press the <Enter> key to keep the current Loop Fabric Address setting, or enter a new value then press the <Enter> key. The display will show **OK**, indicating the new value has been accepted.

6.1.5.9.7 Set RCF Disruptive Mode

Menu Path:

1) **config** → 5) **system** → 9) **advanced** → 7) **rcf**

Shortcut Command:

At the root menu, type **config system advanced rcf**

Description

Please consult Lucent Technical Support before modifying this value. During normal operation the **RCF Disruptive Mode** should always be set to **[0] disabled** and should not be modified.

When this menu item is selected, the available settings for the RCF Disruptive Mode (rcf) are displayed in brackets:

[0] disabled
[1] enabled

Next, the current RCF Disruptive Mode setting is displayed (in this example the mode is set to disabled):

RCF Disruptive mode [0] =

Press the <Enter> key to keep the current RCF Disruptive Mode setting, or enter a new value then press the <Enter> key. The display will show **OK**, indicating the new value has been accepted.

6.1.5.10 Trap Destination Configurations

Menu Path:

1) **config** → 5) **system** → 10) **trap**

Shortcut Command:

At the root menu, type **config system trap**

Description

When menu item **10) trap – Trap destination configurations** is selected, the following sub menu will be displayed:

config/system/trap menu

- | | |
|--|--|
| 1) back - Go back | |
| 2) show – show current traps | (For help, go to Section 6.1.5.10.2 on page 6-45) |
| 3) add – add or modify trap configurations | (For help, go to Section 6.1.5.10.3 on page 6-45) |
| 4) state – set state of trap | (For help, go to Section 6.1.5.10.4 on page 6-46) |
| 5) delete – delete trap | (For help, go to Section 6.1.5.10.5 on page 6-46) |
-

6.1.5.10.1 General Description

The **trap –Trap destination configurations** menu item enables the user to view detailed information about the trap settings on the FCIP Network Module. When this menu item is selected the **config/system/trap** sub menu will be displayed.

6.1.5.10.2 Show Current Traps

Menu Path:

1) config → 5) system → 10) trap → 2) show

Shortcut Command:

At the root menu, type **config system trap show**

Description

When this menu item is selected **No entry is available** will be displayed unless a trap configuration has been added. If a trap configuration has been added, the following items will be displayed:

Item	IP Addr	Port	RowState
1>	192.168.67.1	162	Active

6.1.5.10.3 Add or Modify Trap Configurations

Menu Path:

1) config → 5) system → 10) trap → 3) add

Shortcut Command:

At the root menu, type **config system trap add**

Description

When this menu item is selected the user is prompted to enter the IP address and destination port (typically 162).

The following list of selections for trap type is displayed:

- [1] eventTraps
- [2] switchTraps
- [3] fcMgmtTraps
- [4] eventAndFcMgmtTraps
- [5] switchAndFcMgmtTraps

Select type of trap or <CR> to quit =

Once a trap type is selected, a list of trap severity selections is displayed:

Trap Severity Levels	Description
[0] emergency	Immediate action required; system failing
[1] alert	Unrecoverable condition reported; major event in progress
[2] critical	Event failed with possible loss of integrity
[3] error	Condition failed; action required
[4] warning	Failed event occurred; no action required
[5] notify	Configuration error or abnormal event occurred; no action required
[6] info	Event occurred; no action required
[7] debug	Internal message for development
[8] mark	Message marker

Select Trap severity or <CR> to quit =

Once Trap severity has been selected OK will be displayed.

6.1.5.10.4 Set State of Trap

Menu Path:

1) config → 5) system → 10) trap → 4) state

Shortcut Command:

At the root menu, type **config system trap state**

Description

When this menu item is selected, a list with the following headers will be displayed: Item, IPAddr, Port, RowState. If no trap configuration has been added, no data available will be displayed.

Item	IP Addr	Port	RowState
1>	192.168.67.1	162	Active

Enter item from list to set Trap row state
Enter 0 to exit, r to repeat list or <CR> to quit =

6.1.5.10.5 Delete Trap

Menu Path:

1) config → 5) system → 10) trap → 5) delete

Shortcut Command:

At the root menu, type **config system trap delete**

Description

When this menu item is selected, a list with the following headers will be displayed: Item, IPAddr, Port, RowState. If no trap configuration has been added, no data available will be displayed.

Item	IP Addr	Port	RowState
1>	192.168.67.1	162	Active

Enter item from list to delete Trap destination entry
Enter 0 to exit, r to repeat list or <CR> to quit =

6.1.6 Change Passwords

Menu Path:

1) **config** → 6) **password**

Shortcut Command:

At the root menu, type **config password**

Description

When menu item 6) **password – Change passwords** is selected, the following sub menu will be displayed:

config/password menu

- | | |
|---|---|
| 1) back | |
| 2) monitor – Set monitor only password | (For help, go to Section 6.1.6.2 on page 6-47) |
| 3) manage – Set monitor / manage password | (For help, go to Section 6.1.6.3 on page 6-48) |
-

Enter a number from the **config/password** menu to go to the corresponding category.

6.1.6.1 General Description

The **password – Change passwords** menu item enables the user to set passwords for both the **monitor** (read-only) and **manage** (read-write) modes for the FCIP Network Module CLI. When this menu item is selected, the **config/password** sub menu will be displayed.

6.1.6.2 Set Monitor Only Password

Menu Path:

1) **config** → 6) **password** → 2) **monitor**

Shortcut Command:

At the root menu, type **config password monitor**

Description

The FCIP Network Module comes configured with two default user passwords. The first password '**monitor**' allows a user read-only access to view system configuration settings. With this password the user cannot make any changes to settings. The second password '**manage**' allows a user read-write access to view and/or modify system configuration settings. For security reasons, it is highly recommended that the customer change these passwords from the default values to new passwords as soon as possible. Note that the menu items under the Password menu have the same names as the default passwords (**monitor** and **manage**). Also, ensure that you change the passwords from the default values on each FCIP Network Module. There is no method for changing the passwords on all modules at once; each FCIP Network Module must be set individually. It is recommended that you change the passwords on all of the FCIP Network Modules on the OptiStar EdgeSwitch, then perform a reset of the OptiStar EdgeSwitch (see [Section 4.8.5](#)) for the password changes to take effect.

This menu item enables the user to set the **monitor** password. To set the **manage** password, please refer to [Section 6.1.6.3](#).

Once you have selected this menu item, at the prompt, enter the old password (if this password has not been previously changed, it will be the default password '**monitor**').

At the next prompt, enter the new password, then re-enter the new password when prompted. Press the <Enter> key.

(*Note:* Once you have changed the password, the new password will be required to change this password again.)

If you are done making changes to the FCIP Network Module using the CLI, type **Exit** then select the <Enter> key to close the session. For the password change to take effect, the FCIP Network Module must be reset. Please see [Section 4.8.5, entitled "How to Reset an FCIP Network Module"](#) for help.

6.1.6.3 Set Monitor / Manage Password

Menu Path:

1) **config** → 6) **password** → 3) **manage**

Shortcut Command:

At the root menu, type **config password manage**

Description

The FCIP Network Module comes configured with two default user passwords. The first password '**monitor**' allows a user read-only access to view system configuration settings. With this password the user cannot make any changes to settings. The second password '**manage**' allows a user read-write access to view and/or modify system configuration settings. For security reasons, it is highly recommended that the customer change these passwords from the default values to new passwords as soon as possible. Note that the menu items under the Password menu have the same names as the default passwords (**monitor** and **manage**). Also, ensure that you change the passwords from the default values on each FCIP Network Module. There is no method for changing the passwords on all modules at once; each FCIP Network Module must be set individually. It is recommended that you change the passwords on all of the FCIP Network Modules on the OptiStar EdgeSwitch, then perform a reset of the OptiStar EdgeSwitch (see [Section 4.8.5](#)) for the password changes to take effect.

This menu item enables the user to set the **manage** password. To set the **monitor** password, please refer to [Section 6.1.6.2](#).

To change the '**manage**' password, select:

3) Manage - Set Monitor/Manage password

At the prompt, enter the old password (if this password has not been previously changed, it will be the default password '**manage**').

At the next prompt, enter the new password, then re-enter the new password when prompted.

(*Note:* Once you have changed the password, the new password will be required to change this password again.)

6.1.7 Set License Keys

Menu Path:

1) **config** → 7) **key**

Shortcut Command:

At the root menu, type **config key**

Description

This menu item is not supported on the OptiStar EdgeSwitch.

6.1.8 Set Communication Parameters

Menu Path:

1) **config** → 8) **com**

Shortcut Command:

At the root menu, type **config com**

Description

The **Set Communication Parameters** menu item and the related sub menus are not supported on the OptiStar EdgeSwitch.

When menu item **8) com – Set communication parameters** is selected, the following sub menu will be displayed:

config/com menu

- | | |
|---|---|
| 1) back | |
| 2) show - Show current communication settings | (For help, go to Section 6.1.8.2 on page 6-50) |
| 3) console - Set console mode | (For help, go to Section 6.1.8.3 on page 6-50) |
| 4) ethernet - Set ethernet parameters | (For help, go to Section 6.1.8.4 on page 6-52) |
| 5) slip - Set SLIP parameters | (For help, go to Section 6.1.8.5 on page 6-55) |
| 6) modem - Set modem parameters | (For help, go to Section 6.1.8.6 on page 6-57) |
-

Enter a number from the **config/com** menu to go to the corresponding category.

6.1.8.1 General Description

The **com – Set communication parameters** menu item and the related sub menus are not supported on the OptiStar EdgeSwitch.

Example:

```
IP Address      : 192.168.11.73
Netmask         : 255.255.255.0
Default Gateway : 192.168.11.253
SLIP Address    : 192.168.11.79
SLIP Netmask   : 255.255.255.0
Modem Init String : ATE0V1Q0
```

6.1.8.2 Show Current Communication Settings

Menu Path:

1) **config** → 8) **com** → 2) **show**

Shortcut Command:

At the root menu, type **config com show**

Description

When this menu item is selected, the current communication settings will be displayed.

Example:

```
IP Address      : 192.168.11.73
Netmask         : 192.168.11.0
Default Gateway : 192.168.11.253
SLIP Address    : 192.168.11.79
SLIP Netmask   : 255.255.255.0
Modem Init String : ATE0V1Q0
```

The Netmask expresses the network attributes. In this example 192.168.11.x expresses a full Class C address. Therefore the Network part of the IP address is 192.168.11 and the node is 73. The Default gateway Network portion must equal the network portion of the IP address.

6.1.8.3 Set Console Mode

Menu Path:

1) **config** → 8) **com** → 3) **console**

Shortcut Command:

At the root menu, type **config com console**

Description

The **Set console mode** menu item is not supported on the OptiStar EdgeSwitch.

When menu item **3) console - Set console mode** is selected, the following sub menu will be displayed:

config/com/console menu

- | | |
|---|---|
| 1) back | |
| 2) show - Show current console settings | (For help, go to Section 6.1.8.3.2 on page 6-51) |
| 3) mode - Set console mode | (For help, go to Section 6.1.8.3.3 on page 6-51) |
-

Enter a number from the **config/com/console** menu to go to the corresponding category.

6.1.8.3.1 General Description

The **console – Set console mode** menu item is not supported on the OptiStar EdgeSwitch.

Example:

Power up console mode: Command

Note: This parameter determines the power-on mode of the serial port. Changing this parameter may affect the user's ability to manage the device through the serial port using the Command Line Interface.

6.1.8.3.2 Show Current Console Settings

Menu Path:

1) config → 8) com → 3) console → 2) show

Shortcut Command:

At the root menu, type **config com console show**

Description

When this menu item is selected, the current **Power up console mode** for the FCIP Network Module will be displayed. In the following example, the console mode is set to **Command**.

Example:

The following is the switch console attributes menu for the configuration choice.

Power up console mode: Command

6.1.8.3.3 Set Console Mode

Menu Path:

1) config → 8) com → 3) console → 3) mode

Shortcut Command:

At the root menu, type **config com console mode #**, where # is the number representing the Console Mode (see available options in the Description section below).

Description

The **Set console mode** menu item is not supported on the OptiStar EdgeSwitch.

This menu item enables the user to determine how the serial port will communicate with other data terminating equipment (Command - DTE) or data communication equipment (SLIP - DCE).

Note: This parameter determines the power on mode of the serial port. Changing this parameter may affect the user's ability to manage the device through the serial port using the Command Line Interface.

When this menu item is selected, the available settings for the Console Mode are displayed in brackets:

Note: Changes to this parameter will take affect on next reset

[1] Command

[2] SLIP

Next, the current Console Mode setting is displayed in brackets. In this example the Console Mode is set to [1] Command.

Console Mode [1] =

Press the <Enter> key to keep the current Console Mode value, or enter a new value then press the <Enter> key. The display will show **OK**, indicating the new value has been accepted.

6.1.8.4 Set Ethernet Parameters

Menu Path:

1) config → 8) com → 4) Ethernet

Shortcut Command:

At the root menu, type **config com Ethernet**

Description

When menu item 4) **Ethernet - Set Ethernet parameters** is selected, the following sub menu will be displayed:

config/com/Ethernet menu

- | | |
|--|---|
| 1) back | |
| 2) show - Show current ethernet settings | (For help, go to Section 6.1.8.4.2 on page 6-53) |
| 3) address - Set ethernet address | (For help, go to Section 6.1.8.4.3 on page 6-53) |
| 4) netmask - Set ethernet netmask | (For help, go to Section 6.1.8.4.4 on page 6-54) |
| 5) gateway - Set default gateway | (For help, go to Section 6.1.8.4.5 on page 6-54) |
-

Enter a number from the **config/com/Ethernet** menu to go to the corresponding category.

6.1.8.4.1 General Description

The **Ethernet – Set Ethernet parameters** menu item enables the user to view and/or configure the Ethernet settings for the FCIP Network Module CLI, including the IP address, the netmask, and the default gateway.

When this menu item is selected, the current Ethernet parameters will be displayed, followed by the **config/com/Ethernet** sub menu.

Example:

```
IP Address      : 192.168.11.72
Netmask        : 192.168.11.0
Default Gateway : 192.168.11.253
```

6.1.8.4.2 Show Current Ethernet Settings

Menu Path:

1) **config** → 8) **com** → 4) **Ethernet** → 2) **show**

Shortcut Command:

At the root menu, type **config com Ethernet show**

Description

When this menu item is selected, the current Ethernet settings will be displayed.

Example:

```
IP Address      : 192.168.11.72
Netmask        : 192.168.11.0
Default Gateway : 192.168.11.253
```

The Netmask expresses the network attributes. In this example, 192.168.11.x identifies this as a class C address. Therefore the Network part of the IP address is 192.168.11 and the node is 73. The Default gateway Network portion must equal the network portion of the IP address.

6.1.8.4.3 Set Ethernet Address

Menu Path:

1) **config** → 8) **com** → 4) **Ethernet** → 3) **address**

Shortcut Command:

At the root menu, type **config com Ethernet address x.x.x.x**, where **x.x.x.x** is the desired Ethernet address

Description

This menu item enables the user to change the Ethernet Address for the switch. The default IP address for the switch is 192.168.1.129. If the user is installing more than one switch, each switch must have a separate Ethernet address. The user must set the Ethernet address to be able to later configure the switch through the CLI. When this menu item is selected, the current IP address is displayed in brackets.

Note: Changes to this parameter will take effect on next reset

```
IP Address [192.168.11.73] =
```

Press the <Enter> key to keep the current Ethernet address, or enter a new address after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new address has been accepted.

6.1.8.4.4 Set Ethernet Netmask

Menu Path:

1) config → 8) com → 4) Ethernet → 4) netmask

Shortcut Command:

At the root menu, type **config com Ethernet netmask x.x.x.x**, where **x.x.x.x** is the desired Ethernet netmask

Description

This menu item enables the user to change the Ethernet netmask for the switch. The default Ethernet netmask for the switch is 255.255.255.0. The user must set the Ethernet netmask to be able to later configure the switch through the CLI. When this menu item is selected, the current Ethernet netmask is displayed in brackets.

Note: Changes to this parameter will take affect on next reset

Netmask [255.255.255.0] =

Press the <Enter> key to keep the current Ethernet netmask, or enter a new netmask after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new netmask has been accepted.

6.1.8.4.5 Set Default Gateway

Menu Path:

1) config → 8) com → 4) Ethernet → 5) gateway

Shortcut Command:

At the root menu, type **config com Ethernet gateway x.x.x.x**, where **x.x.x.x** is the desired gateway address

Description

This menu item enables the user to change the Default Gateway for the switch. The user must set the Default Gateway in order to be able to communicate to the switch through a router. When this menu item is selected, the current Default Gateway is displayed in brackets.

Note: Changes to this parameter will take affect on next reset

Default Gateway [192.168.11.253] =

Press the <Enter> key to keep the current Default Gateway, or enter a new gateway address after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new gateway address has been accepted.

6.1.8.5 Set SLIP Parameters

Menu Path:

1) **config** → 8) **com** → 5) **slip**

Shortcut Command:

At the root menu, type **config com slip**

Description

When menu item 5) **slip** – **Set SLIP parameters** is selected, the following sub menu will be displayed:

config/com/slip menu

- | | |
|--------------------------------------|---|
| 1) back | |
| 2) show - Show current SLIP settings | (For help, go to Section 6.1.8.5.2 on page 6-55) |
| 3) address - Set SLIP IP address | (For help, go to Section 6.1.8.5.3 on page 6-56) |
| 4) netmask - Set SLIP netmask | (For help, go to Section 6.1.8.5.4 on page 6-56) |
-

Enter a number from the **config/com/slip** menu to go to the corresponding category.

6.1.8.5.1 General Description

The **slip** – **Set SLIP parameters** menu item enables the user to view and set SLIP parameters. Serial Line Internet Protocol (SLIP) is available to the user when they want to access the CLI on a switch over a modem using the Internet. SLIP allows the user to connect an Internet modem to the serial port of the switch and attach this modem onto a phone line for dial-up. NIP address and (sub) netmask is needed to make this connection work. When this menu item is selected, the current SLIP parameters will be displayed, followed by the **config/com/slip** sub menu.

Example:

```
SLIP Address   : 192.168.2.129
SLIP Netmask  : 255.255.255.0
```

6.1.8.5.2 Show Current SLIP Settings

Menu Path:

1) **config** → 8) **com** → 5) **slip** → 2) **show**

Shortcut Command:

At the root menu, type **config com slip show**

Description

When this menu item is selected, the current SLIP settings will be displayed.

Example:

```
SLIP Address   : 192.168.2.129
SLIP Netmask  : 255.255.255.0
```

6.1.8.5.3 Set SLIP IP Address

Menu Path:

1) config → 8) com → 5) slip → 3) address

Shortcut Command:

At the root menu, type **config com slip address x.x.x.x**, where **x.x.x.x** is the new SLIP IP Address.

Description

This menu item enables the user to change the SLIP IP Address for the switch. If there is more than one switch on the network, the user must assign a unique address to each switch. When this menu item is selected, the current SLIP IP Address is displayed in brackets.

Note: Changes to this parameter will take affect on next reset

SLIP Address [192.168.2.129] =

Press the <Enter> key to keep the current address, or enter a new address after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new address has been accepted.

6.1.8.5.4 Set SLIP Netmask

Menu Path:

1) config → 8) com → 5) slip → 4) netmask

Shortcut Command:

At the root menu, type **config com slip netmask x.x.x.x**, where **x.x.x.x** is the new SLIP netmask.

Description

This menu item enables the user to change the SLIP netmask for the switch. When this menu item is selected, the current SLIP netmask is displayed in brackets.

Note: Changes to this parameter will take affect on next reset

SLIP Netmask [255.255.255.0] =

Press the <Enter> key to keep the current netmask, or enter a new netmask after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new netmask has been accepted.

6.1.8.6 Set Modem Parameters

Note: This menu item and the related sub menus are not supported on the OptiStar EdgeSwitch.

When menu item **6) modem – Set modem parameters** is selected, the following sub menu will be displayed:

config/com/modem menu

- 1) back
 - 2) show - Show current modem settings (For help, go to [Section 6.1.8.6.2 on page 6-57](#))
 - 3) init - Set modem init string (For help, go to [Section 6.1.8.6.3 on page 6-57](#))
-
-

Enter a number from the **config/com/modem** menu to go to the corresponding category.

6.1.8.6.1 General Description

The **modem – Set modem parameters** menu item and the related sub menus are not supported on the OptiStar EdgeSwitch.

6.1.8.6.2 Show Current Modem Settings

Menu Path:

1) **config** → 8) **com** → 6) **modem** → 2) **show**

Shortcut Command:

At the root menu, type **config com modem show**

Description

This menu item is not supported on the OptiStar EdgeSwitch.

6.1.8.6.3 Set Modem Init String

Menu Path:

1) **config** → 8) **com** → 6) **modem** → 3) **init**

Shortcut Command:

At the root menu, type **config com modem init**

Description

This menu item is not supported on the OptiStar EdgeSwitch.

6.1.9 Set FCIP Network Module Operating Mode

Menu Path:

1) **config** → 9) **mode**

Shortcut Command:

At the root menu, type **config mode**

Description

When menu item 9) **mode – Set switch operating mode** is selected, the following sub menu will be displayed:

config/mode menu

- | | |
|--|---|
| 1) back - Go back | |
| 2) show - Show current mode of operation | (For help, go to Section 6.1.9.2 on page 6-58) |
| 3) sam - Set switch addressing mode | (For help, go to Section 6.1.9.3 on page 6-59) |
| 4) cfg - Configure Stealth-3 mode | (For help, go to Section 6.1.9.4 on page 6-59) |
| 5) policy – Set switch operating policy | (For help, go to Section 6.1.9.5 on page 6-59) |
-

Enter a number from the **config/mode** menu to go to the corresponding category.

6.1.9.1 General Description

The **mode – Set switch operating mode** menu item enables the user to view and set the FCIP Network Module operating mode settings. When this menu item is selected, the current FCIP Network Module operating mode settings will be displayed, followed by the **config/mode** sub menu.

Example:

```
Address Mode      : Fabric (Public/Private)
Alt JBOD Add Mode : false
Stealth Master    : false
```

6.1.9.2 Show Current Mode of Operation

Menu Path:

1) **config** → 9) **mode** → 2) **show**

Shortcut Command:

At the root menu, type **config mode show**

Description

When this menu item is selected, the operation mode settings for the switch will be displayed.

Example:

```
Address Mode      : Fabric (Public/Private)
Alt JBOD Add Mode : false
Stealth Master    : false
```

6.1.9.3 Set Switch Addressing Mode

Menu Path:

1) config → 9) mode → 3) sam

Shortcut Command:

At the root menu, type **config mode sam**

Description

This menu item enables the user to set the Switch Addressing Mode (SAM). When this menu item is selected, the available options for the SAM, or Address Mode, are displayed in brackets:

Switch Addressing Mode Options

[2] Fabric

[4] Fabric (Public/Private)

Next, the current Address Mode setting is displayed in brackets (in this example the SAM is set to [2] Fabric):

Address Mode [2] =

Press the <Enter> key to keep the current SAM setting, or enter a new setting then press the <Enter> key. The display will show **OK**, indicating the new setting has been accepted.

6.1.9.4 Configure Stealth-3 Mode

This menu item is not supported on the OptiStar EdgeSwitch.

6.1.9.5 Set Switch Operating Policy

Menu Path:

1) config → 9) mode → 3) policy

Shortcut Command:

At the root menu, type **config mode policy**

Description

This menu item enables the user to set the operating policy on the OptiStar EdgeSwitch. When this menu item is selected, the available options are displayed:

Operating Policy Options

[0] Standard

[1] MCDT Open Fabric

[2] SANMark Compliant

6.2 Reset the FCIP Network Module

Menu Path:

2) reset

Shortcut Command:

At the root menu, type **reset**

Description

This menu item enables the user to reset the FCIP Network Module. Once you have selected this item, you should see the following prompt:

```
Do you wish to continue (Yes / No): [N]
```

Press the <Enter> key for “No”, which will not reset the FCIP Network Module.

Type a **Y** at the prompt to reset the FCIP Network Module. All new settings created through the CLI will take effect upon reset.

6.3 Show Device Information

Menu Path:

3) show

Shortcut Command:

At the root menu, type **show**

Description

When menu item 3) **show – Show device information** is selected, the following sub menu will be displayed:

show menu

- | | |
|---|--|
| 1) back - Go back to the previous menu | |
| 2) zones - Show zone settings | (For help, go to Section 6.3.2 on page 6-61) |
| 3) ports - Show port settings | (For help, go to Section 6.3.3 on page 6-63) |
| 4) system - Show system settings | (For help, go to Section 6.3.4 on page 6-67) |
| 5) communications - Show communication settings | (For help, go to Section 6.3.5 on page 6-68) |
| 6) keys - Show key features and current key status | (For help, go to Section 6.3.6 on page 6-69) |
| 7) events - Show event log | (For help, go to Section 6.3.7 on page 6-69) |
| 8) sensors - Show sensor information | (For help, go to Section 6.3.8 on page 6-69) |
| 9) firmware - Show firmware image information | (For help, go to Section 6.3.9 on page 6-70) |
| 10) info - Show device information | (For help, go to Section 6.3.10 on page 6-71) |
| 11) link - Show Link Statistics | (For help, go to Section 6.3.11 on page 6-71) |
| 12) sns - Show SNS table | (For help, go to Section 6.3.12 on page 6-73) |
| 13) fspf - Show FSPF table | (For help, go to Section 6.3.13 on page 6-73) |
-

Enter a number from the **show** menu to go to the corresponding category.

6.3.1 General Description

The **show – Show device information** menu item enables the user to view detailed information about all aspects of the FCIP Network Module. When this menu item is selected the **show** sub menu will be displayed.

6.3.2 Show Zone Settings

Menu Path:

3) **show** → 2) **zones**

Shortcut Command:

At the root menu, type **show zones**

Description

When menu item 2) **zones – Show Zone Settings** is selected, the following sub menu will be displayed:

show/zones menu

- | | |
|---|---|
| 1) back - Go back to the previous menu | |
| 2) ports – Show port zoning configuration | (For help, go to Section 6.3.2.2 on page 6-61) |
| 3) wwn – Show WWN zoning information | (For help, go to Section 6.3.2.3 on page 6-62) |
-

Enter a number from the **show/zones** menu to go to the corresponding category.

6.3.2.1 General Description

The **zones – Show Zone Settings** menu item enables the user to view the current zone settings. When this menu item is selected, the **show/zones** sub menu will be displayed.

6.3.2.2 Show Port Zoning Configurations

Menu Path:

3) **show** → 2) **zones** → 2) **ports**

Shortcut Command:

At the root menu, type **show zones ports**

Description

Note: Port Zoning is not supported on the OptiStar EdgeSwitch.

6.3.2.3 Show WWN Zoning Information

Menu Path:

3) show → 2) zones → 3) wwn

Shortcut Command:

At the root menu, type **show zones wwn**

Description

When menu item 2) wwn – **Show WWN Zoning Information** is selected, the following sub menu will be displayed:

show/zones/wwn menu

- | | |
|--|---|
| 1) back - Go back to the previous menu | |
| 2) show - Show Zone Sets | (For help, go to Section 6.3.2.3.2 on page 6-62) |
| 3) senf - Show Enforced Zone Set | (For help, go to Section 6.3.2.3.3 on page 6-62) |
| 4) soth - Show Other Zoning Parameters | (For help, go to Section 6.3.2.3.4 on page 6-63) |
-

Enter a number from the **show/zones/wwn** menu to go to the corresponding category.

6.3.2.3.1 General Description

The **wwn – Show WWN Zoning Information** menu item enables the user to view the detailed WWN zoning information. When this menu item is selected, the **show/zones/wwn** sub menu will be displayed.

6.3.2.3.2 Show Zone Sets

Menu Path:

3) show → 2) zones → 3) wwn → 2) show

Shortcut Command:

At the root menu, type **show zones wwn show**

Description:

This menu item displays all configured Zone Sets. When a Zone Set is selected from this display, constituent Zones are displayed. When a Zone is selected, constituent Members are displayed.

6.3.2.3.3 Show Enforced Zone Set

Menu Path:

3) show → 2) zones → 3) wwn → 3) senf

Shortcut Command:

At the root menu, type **show zones wwn senf**

Description

This menu item displays the currently enforced Zone Set (if any). There can be only one Zone Set enforced at any given time. When the displayed (enforced) Zone Set is selected, constituent Zones are shown. (The list of zones may reflect a zone merge operation and thus be different than originally defined. For an explanation of zone merging, see [Section 4.10.1.](#)) When a Zone is selected, constituent Members are shown.

6.3.2.3.4 Show Other Zoning Parameters

Menu Path:

3) show → 2) zones → 3) wwn → 4) soth

Shortcut Command:

At the root menu, type **show zones wwn soth**

Description

This menu item displays the name of the currently enforced Zone Set (if any) and the current setting of the Default Zone State.

6.3.3 Show Port Settings

Menu Path:

3) show → 3) ports

Shortcut Command:

At the root menu, type **show ports**

Description

When menu item 3) ports – **Show Port Settings** is selected, the following sub menu will be displayed:

show/port menu

-
- | | |
|--|---|
| 1) back - Go back to the previous menu | |
| 2) config - Show port configuration | (For help, go to Section 6.3.3.2 on page 6-64) |
| 3) status - Show port status | (For help, go to Section 6.3.3.3 on page 6-64) |
| 4) gen_stat - Show general port statistics | (For help, go to Section 6.3.3.4 on page 6-65) |
| 5) advanced - Show advanced port settings | (For help, go to Section 6.3.3.5 on page 6-66) |
| 6) c2_stat - Show Class 2 port statistics | (For help, go to Section 6.3.3.6 on page 6-66) |
| 7) c3_stat - Show Class 3 port statistics | (For help, go to Section 6.3.3.7 on page 6-67) |
| 8) clear – Clear port statistics | (For help, go to Section 6.3.3.8 on page 6-67) |
-

Enter a number from the **show/port** menu to go to the corresponding category.

6.3.3.1 General Description

The **ports – Show port settings** menu item enables the user to view detailed information about the port settings on the FCIP Network Module. When this menu item is selected the **show/port** sub menu will be displayed.

6.3.3.2 Show Port Configuration

Menu Path:

3) show → 3) ports → 2) config

Shortcut Command:

At the root menu, type **show ports config**

Description

When this menu item is selected, the Port Configuration Table will be displayed.

Example:

Port Configuration Table

Port	Name	Type	ModuFle	PRLI	FAN	Stream	BB Credit	MRBS	RSCN
1	Port 1	5	4	1	1	8	16	16	1
2	Port 2	5	5	1	1	8	16	16	1

Current Port Number: 1

Legend for enumerated columns:

#	Type	Module	PRLI	FAN	RSCN
1	fPort	unknown	true		true normal
2	flPort	dualFrequencyShortwave	false		false TXonly
3	ePort	dualFrequencyLongwave			RXonly
4	stealthLoop	fcLaserShortwave			no RSCN
5	autoDetect	serialModDef			
6	gPort	fcLaserLongwave			
7		copperIntraCabinet			
8		copperInterCabinet			
9		noModule			

Note: Type 4 (stealthLoop) is not supported on the OptiStar EdgeSwitch.

6.3.3.3 Show Port Status

Menu Path:

3) show → 3) ports → 3) status

Shortcut Command:

At the root menu, type **show ports status**

Description

When this menu item is selected, the Port Status Table will be displayed.

Example:

Port Status Table

Port	State	Prot St	GBICLED	STATLED	RX Avl	TX Avl	BB Avl	Det Typ
1	11	2	2	2	16	16	16	1
2	11	2	2	2	16	16	16	1

Legend for enumerated columns:

#	State	Prot St	GBICLED	STATLED	Det Typ
1	unknown	unknown	unknown	unknown	unknown
2	bypassed	inoperative	off	off	fPort
3	active	loopInit	on	on	flPort
4	loopback	loopOpenInit1	blinking	blinking	ePort
5	txfault	loopUp	fastBlink	fastBlink	stealthLoop
6	diagtx	loopActive	onHwCntrl	onHwCntrl	
7	lipF8Present	loopOpenInit2			
8	dataTimeout	fPortInit			
9	disabled	fPortReset			
10	offline	fPortActive			
11	noMedia	loopNonparticipate			
12	linkDown				
13	isolated				

Note: Det Typ 5 (stealthLoop) is not supported on the OptiStar EdgeSwitch.

6.3.3.4 Show General Port Statistics

Menu Path:

3) show → 3) ports → 4) gen_stat

Shortcut Command:

At the root menu, type **show ports gen_stat**

Description

When this menu item is selected, the Port Statistics Table will be displayed.

Example:

Port Statistics Table

Port#	RxFCPcmds	RxABTS	ActDev	SelfReg	PRLIRsp
1	0	0	0	0	0
2	0	0	0	0	0

6.3.3.5 Show Advanced Port Settings

Menu Path:

3) show → 3) ports → 5) advanced

Shortcut Command:

At the root menu, type **show ports advanced**

Description

When this menu item is selected, the Advanced Port Configuration Table will be displayed.

Example:

Port Configuration Table

Port	RBS	TBS	EDTOV	RATOV	ALTOV	LPTO	RXTHRS	TXTHRS	SPEED
1	2112	16	1000	120000	15	100	3	4	2
2	2112	16	1000	120000	15	100	3	4	2

Current Port Number: **1**

Legend for enumerated columns:

#	SPEED
1	Invalid
2	oneGig

6.3.3.6 Show Class 2 Port Statistics

Menu Path:

3) show → 3) ports → 6) c2_stat

Shortcut Command:

At the root menu, type **show ports c2_stat**

Description

When this menu item is selected, the Class 2 Statistics Table will be displayed.

Example:

Class 2 Statistics Table

Port	IN_FRM	OUT_FRM	IN_OCT	OUT_OCT	DISCARD	F_BSY	F_RJT
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0

6.3.3.7 Show Class 3 Port Statistics

Menu Path:

3) show → 3) ports → 7) c3_stat

Shortcut Command:

At the root menu, type **show ports c3_stat**

Description

When this menu item is selected, the Class 3 Statistics Table will be displayed.

Example:

Class 3 Statistics Table

Port	IN_FRM	OUT_FRM	IN_OCT	OUT_OCT	DISCARD
1	0	0	0	0	0
2	0	0	0	0	0

6.3.3.8 Clear Port Statistics

Menu Path:

3) show → 3) ports → 7) clear

Shortcut Command:

At the root menu, type **show ports clear**

Description

When this menu item is selected, the option to clear the general, class 2 and class 3 port statistics will be displayed. Select y (yes) to continue with clearing the port statistics.

6.3.4 Show System Settings

Menu Path:

3) show → 4) system

Shortcut Command:

At the root menu, type **show system**

Description

When this menu item is selected, the System settings will be displayed.

Example:

```
Name : sysName not set
Location : sysLocation not set
Contact : sysContact not set
System Time : 14:39:55
Date : 10/31/2000
Detected Ethernet : eth10half
Ethernet Mode : ethAuto
Address Mode : Stealth-3
Boot Image : Image 1
Up Time : 0 days, 00:08:09 (hr:min:sec)
System Domain ID : 00
Default Domain ID : 60
Private Addresses : 64
Principal Switch : false
Priority : 254
Loop Fabric Address : disabled
RCF Disruptive mode : nondestructive
```

6.3.5 Show Communication Settings

Menu Path:

3) show → 5) communication

Shortcut Command:

At the root menu, type **show communication**

Description

When this menu item is selected, the Communication settings will be displayed.

Example:

```
IP Address : 192.168.11.73
Netmask : 255.255.255.0
Default Gateway : 192.168.11.253
SLIP Address : 192.168.2.129
SLIP Netmask : 255.255.255.0
Modem Init String : ATE0V1Q0
```

6.3.6 Show Key Features and Current Key Status

Menu Path:

3) show → 6) keys

Shortcut Command:

At the root menu, type **show keys**

Description

This menu item is not supported on the OptiStar EdgeSwitch.

6.3.7 Show Event Log

Menu Path:

3) show → 7) events

Shortcut Command:

At the root menu, type **show events**

Description

When this menu item is selected, the Event Log will be displayed.

Example:

Event log messages

###	Sev	Date & Time	Description
1	5	10/31/2000 14:31:51	[134] Shutdown Port 1,
2	5	10/31/2000 14:31:51	[134] Shutdown Port 2,
3	5	10/31/2000 14:31:51	[126] Restarted Port 1
4	5	10/31/2000 14:31:51	[126] Restarted Port 2
5	1	10/31/2000 14:31:51	[284] System fault detected: tTimer
6	5	10/31/2000 14:31:51	[126] Restarted Port 1
7	5	10/31/2000 14:31:51	[126] Restarted Port 2

(Enter '0' to exit, 'a' for all, or <CR> to continue)

(show/events)>0

6.3.8 Show Sensor Information

Menu Path:

3) show → 8) sensor

Shortcut Command:

At the root menu, type **show sensor**

Description

When this menu item is selected, the Sensor information will be displayed.

Example:

Sensor #	Type	Status
1	fan	on
2	fan	on
3	fan	on
4	fan	on
5	temperature	nominal
6	battery	on
7	power-supply	on
8	power-supply	off

6.3.9 Show Firmware Image Information

Menu Path:

3) show → 9) firmware

Shortcut Command:

At the root menu, type **show firmware**

Description

When this menu item is selected, the current firmware information will be displayed. The fields are defined as follows:

Power-up Image: The firmware image that the FCIP Network Module will boot from at the next restart.

Current Image: The firmware image that the FCIP Network Module is currently running from. This field shows date, time, and version information.

Alternate Image: This file can be thought of as the backup FCIP Network Module firmware image. This field shows date, time, and version information.

Example:

Power-up Image : Image 1

Image 1

Current Image : Received 10/30/2000 at 11:51:47

Current Image Ver : 03.00 00108

Image 2

Alternate Image : Received 10/16/2000 at 12:52:35

Alternate Image Ver : 03.00 00106

6.3.10 Show Device Information

Menu Path:

3) **show** → 10) **info**

Shortcut Command:

At the root menu, type **show info**

Description

When this menu item is selected, the current device information will be displayed. The device information screen contains information helpful to Customer Support to assist in problem determination.

Example:

```
MAC Address       : 00 10 9B 82 0D 5C
World Wide Name   : 100000109b820d5d
Manufacturers Date : 04/27/2000 14:19:08
Model Serial Number : Z16DL000450
Board Serial Number : Z18DJ000292
Card Assembly Info :
SNS Version       : 5.3
Decoder Version   : 32 00
FPP Version       : 1.2
MIB Version       : 01.00a
Router Version    : 30 00
Serial Prom Version : 2
```

6.3.11 Show Link Statistics

Menu Path:

3) **show** → 11) **link**

Shortcut Command:

At the root menu, type **show link**

Description:

When menu item 11) **link** – **Show Link Statistics** is selected, the following sub menu will be displayed:

show/link menu

- | | |
|---|--|
| 1) back - Go back to the previous menu | |
| 2) connection - Show link connection statistics | (For help, go to Section 6.3.11.2 on page 6-72) |
| 3) data - Show link data statistics | (For help, go to Section 6.3.11.3 on page 6-72) |
| 4) protocol - Show link protocol statistics | (For help, go to Section 6.3.11.4 on page 6-72) |
| 5) clear - Clear link statistics | (For help, go to Section 6.3.11.5 on page 6-73) |
-

Enter a number from the **show/link** menu to go to the corresponding category.

6.3.11.1 General Description

The **link – Show link statistics** menu item enables the user to view statistics about the connection. When this menu item is selected the **show/link** sub menu will be displayed.

6.3.11.2 Show Link Connection Statistics

Menu Path:

3) **show** → 11) **link** → 2) **connection**

Shortcut Command:

At the root menu, type **show link connection**

Description

When this menu item is selected, the Link Connection Statistics Table will be displayed.

Example:

Link Connection Statistics Table

Port	Fail	SyncLoss	SignalLoss	RxClkLos	LinkTO	LoopConnTO	TxParityErr	TxTagErr
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0

6.3.11.3 Show Link Data Statistics

Menu Path:

3) **show** → 11) **link** → 3) **data**

Shortcut Command:

At the root menu, type **show link data**

Description

When this menu item is selected, the Link Data Statistics Table will be displayed.

Example:

Link Data Statistics Table

Port	PrmSeqErr	InvTxWrd	TxCRCErr	RxCRCErr	RxMissDelim	TxMissDelim	RxOls	TxOls
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0

6.3.11.4 Show Link Protocol Statistics

Menu Path:

3) **show** → 11) **link** → 4) **protocol**

Shortcut Command:

At the root menu, type **show link protocol**

Description

When this menu item is selected, the Link Protocol Statistics Table will be displayed.

Example:**Link Protocol Statistics Table**

Port	RxRst	TxRst	RxFrmTooShrt	RxFrmTooLng	RxOvrRn	TxUndrRn	RxOpnCls	TxClsOpn
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0

6.3.11.5 Clear Link Statistics**Menu Path:**

3) show → 11) link → 5) clear

Shortcut Command:

At the root menu, type **show link clear**

Description

When this menu item is selected, the user will be given the option to clear the link statistics. Type a **Y** at the prompt to clear the statistics, then press the <Enter> key. To do nothing, press the <Enter> key.

Example:

This will clear the link statistics

Do you wish to continue (Yes / No): [N]

6.3.12 Show SNS Table**Menu Path:**

3) show → 12) sns

Shortcut Command:

At the root menu, type **show sns**

Description:

When this menu item is selected, the SNS Table will be displayed.

6.3.13 Show FSPF Table**Menu Path:**

3) show → 13) fspf

Shortcut Command:

At the root menu, type **show fspf**

Description:

When this menu item is selected, the FSPF Table will be displayed.

6.4 Access Firmware Options

When menu item 4) **firmware** – **Access firmware options** is selected, the following sub menu will be displayed:

firmware menu

- | | |
|---|---|
| 1) back – Go back to the previous menu | |
| 2) show – Show current firmware settings | (For help, go to Section 6.4.2 on page 6-74) |
| 3) load – Load new firmware via tftp | (For help, go to Section 6.4.3 on page 6-75) |
| 4) select – Select alternate version of firmware | (For help, go to Section 6.4.4 on page 6-76) |
| 5) reset – Reset switch | (For help, go to Section 6.4.5 on page 6-76) |
-

Enter a number from the **firmware** menu to go to the corresponding category.

6.4.1 General Description

The **firmware** – **Access firmware options** menu item enables the user to view the current firmware settings, load new firmware, as well as load a backup version of the firmware. When this menu item is selected, the current firmware settings will be displayed, followed by the **firmware** sub menu. **Note:** In order to upload new FCIP Network Module firmware, the user must be logged in to the CLI via the serial port ([see Section 4.2.1.1.2](#)). This function is not available via a telnet CLI session or via Web-based Management.

6.4.2 Show Current Firmware Settings

Menu Path:

4) **firmware** → 2) **show**

Shortcut Command:

At the root menu, type **firmware show**

Description

When this menu item is selected, the current firmware information will be displayed. The fields are defined as follows:

Power-up Image: The firmware image that the FCIP Network Module will boot from at the next restart.

Current Image: The firmware image that the FCIP Network Module is currently running from. This field shows date, time, and version information.

Alternate Image: This file can be thought of as the backup FCIP Network Module firmware image. This field shows date, time, and version information.

Example:

```
Power-up Image   : Image 1
```

Image 1

```
Current Image    : vxWorks.dwn
```

```
Current Image Ver : 03.00 00109
```

Image 2

```
Alternate Image  : vxWorks.dwn
```

```
Alternate Image Ver : 03.00 00108
```

6.4.3 Load New Firmware via TFTP

Menu Path:

4) **firmware** → 3) **load**

Shortcut Command:

At the root menu, type **firmware load**

Description

When this menu item is selected, the following message will be displayed:

Start tftp Transfer to m: from host shell.

Open a DOS-prompt box on the PC that is connected to the OptiStar EdgeSwitch (e.g. the TFTP server). Type the following command at the DOS prompt:

```
tftp -i <OptiStar EdgeSwitch 10/100BaseT IP address> put <filename of firmware image to upload, including full pathname> m:
```

(For example: type the command **tftp -i 192.168.23.1 put c:\upload\vxworks.dwn m:** where the IP address of the 10/100BaseT port on the OptiStar EdgeSwitch is **192.168.23.1** and the location and filename of the firmware image on the Windows system is **c:\upload\vxworks.dwn**).

Once the upload process is completed, from the FCIP Network Module CLI **Load new firmware via tftp** menu, select:

1) verify and store

When the message “**File Transfer Complete/OK**” this means that the upload process was successful and the new firmware has been stored to the FCIP Network Module onboard flash memory.

Optional: To verify that the new firmware image has been uploaded and will be the Power-up Image at the next reboot of the OptiStar EdgeSwitch, from the **Access firmware options** menu, select:

2) show – Show current firmware settings

Note that the new firmware image has been loaded into the **Alternate Image** (Image 2), as shown by an update in the **Received date and time** field, and that the **Power-up Image** has automatically changed to Image 2 so that the FCIP Network Module will boot from it at the next restart.

Note that the OptiStar EdgeSwitch must be rebooted before the firmware change will take effect. For help on resetting the FCIP Network Module, please see the tutorial in [Section 4.8.5](#). For more help on loading new firmware, see the tutorial in [Section 7.3.2, entitled “Installing New FCIP Network Module Firmware”](#).

6.4.4 Select Alternate Version of Firmware

Menu Path:

4) **firmware** → 4) **select**

Shortcut Command:

At the root menu, type **firmware select**

Description

When this menu item is selected, the possible values will be displayed on the **Available Image Selections** screen.

```
Available Image Selections
```

```
[1] Image 1
```

```
[2] Image 2
```

```
Power-up Image [1] =
```

From this screen you can select the desired Power-up Image, which is the image the FCIP Network Module will boot from at the next restart. This screen will show in the current image in brackets next to the **Power-up Image** field. (e.g. if the screen shows **Power-up Image [1] =**, then the current image the FCIP Network Module will boot from on restart is Image 1). To change the image, enter the number representing the desired file.

In this example, the Power-up Image is set to [1] Image 1. Press the <Enter> key to keep the current setting, or enter a new value after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new file has been accepted.

For more help on loading new firmware, see the tutorial in [Section 7.3.2, entitled “Installing New FCIP Network Module Firmware”](#).

6.4.5 Reset Switch

Menu Path:

4) **firmware** → 5) **reset**

Shortcut Command:

At the root menu, type **firmware reset**

Description

This menu item is not supported in Release 1.2 of the OptiStar EdgeSwitch.

This menu item enables the user to reset the FCIP Network Module. Once you have selected this item, you should see the following prompt:

```
This will reset the switch
```

```
Do you wish to continue (Yes / No): [N]
```

Press the <Enter> key for “No”, which will not reset the FCIP Network Module.

Type a **Y** at the prompt to reset the FCIP Network Module. All new settings created through the FCIP Network Module CLI will take effect upon reset.

6.5 Access Diagnostic Features

When menu item **5) diagnostics – Access diagnostic features** is selected, the following sub menu will be displayed:

diagnostics menu

- | | |
|---|---|
| 1) back - Go back to the previous menu | |
| 2) system – Access system diagnostics | (For help, go to Section 6.5.2 on page 6-77) |
| 3) port - Access port diagnostics | (For help, go to Section 6.5.3 on page 6-79) |
| 4) clear_errors - Clear system errors | (For help, go to Section 6.5.4 on page 6-83) |
| 5) stack - Show stack dump from last detected fault | (For help, go to Section 6.5.5 on page 6-83) |
| 6) read - Read memory | (For help, go to Section 6.5.6 on page 6-84) |
| 7) memshow - Show available memory space | (For help, go to Section 6.5.7 on page 6-84) |
| 8) trace - Debugging trace control | (For help, go to Section 6.5.8 on page 6-85) |
-

Enter a number from the **diagnostics** menu to go to the corresponding category.

6.5.1 General Description

The **diagnostics – Access diagnostic features** menu item enables the user to access various diagnostic features contained within the FCIP Network Module CLI. When this menu item is selected, the **diagnostics** sub menu will be displayed.

6.5.2 Access System Diagnostics

Menu Path:

5) diagnostics → 2) system

Shortcut Command:

At the root menu, type **diagnostics system**

Description:

When menu item **2) system – Access system diagnostics** is selected, the following sub menu will be displayed:

diagnostics/system menu

- | | |
|---|---|
| 1) back - Go back to the previous menu | |
| 2) show – Show system diagnostics | (For help, go to Section 6.5.2.2 on page 6-78) |
| 3) ethled – Select Ethernet LED behavior | (For help, go to Section 6.5.2.3 on page 6-78) |
| 4) default – Reset switch settings to Factory default | (For help, go to Section 6.5.2.4 on page 6-79) |
-

Enter a number from the **diagnostics/system** menu to go to the corresponding category.

Note: Menu item **3) ethled – Select Ethernet LED behavior** is not supported on the OptiStar EdgeSwitch.

6.5.2.1 General Description

The **system – Access system diagnostics** menu item enables the user to reset certain FCIP Network Module settings to the factory defaults. The Ethernet LED mode options under this sub menu are not supported on the OptiStar EdgeSwitch. When this menu item is selected, the current Ethernet LED Mode will be displayed, followed by the **diagnostics/system** sub menu.

Example:

```
Ethernet LED Mode : rx
```

6.5.2.2 Show System Diagnostics

Menu Path:

5) **diagnostics** → 2) **system** → 2) **show**

Shortcut Command:

At the root menu, type **diagnostics system show**

Description:

This menu item shows the current Ethernet LED Mode. **Note:** The **Ethernet LED Mode** function is not supported on the OptiStar EdgeSwitch.

Example:

```
Ethernet LED Mode : rx
```

In this example, the Ethernet LED behavior mode is set to receive.

6.5.2.3 Select Ethernet LED Behavior

Menu Path:

5) **diagnostics** → 2) **system** → 3) **ethled**

Shortcut Command:

At the root menu, type **diagnostics system ethled**

Description:

This menu item is not supported on the OptiStar EdgeSwitch.

6.5.2.4 Reset Switch Settings to Factory Default

Menu Path:

5) **diagnostics** → 2) **system** → 4) **default**

Shortcut Command:

At the root menu, type **diagnostics system default**

Description:

This menu item enables the user to reset most of the FCIP Network Module CLI settings (such as the Domain ID and port settings) to factory default. Certain items will not be reset, including the System Date, System Time, Serial Number and IP address.

When this menu item is selected, you should see the following prompt:

```
Do you wish to continue (Yes / No): [N]
```

Press the <Enter> key for “No”, which will not reset the settings.

Type a **Y** at the prompt to reset all settings to factory default, then press the <Enter> key. For the settings to take effect, the FCIP IP Network Module must be reset (see [Section 4.8.5](#) for help).

6.5.3 Access Port Diagnostics

Menu Path:

5) **diagnostics** → 3) **port**

Shortcut Command:

At the root menu, type **diagnostics port**

Description:

When menu item 3) **system** – **Access port diagnostics** is selected, the following sub menu will be displayed:

diagnostics/port menu

- | | |
|--|---|
| 1) back - Go back to the previous menu | |
| 2) show - Show diagnostic port settings | (For help, go to Section 6.5.3.2 on page 6-80) |
| 3) beacon - Beacon port | (For help, go to Section 6.5.3.3 on page 6-81) |
| 4) reset - Reset port | (For help, go to Section 6.5.3.4 on page 6-81) |
| 5) prli - Send PLOGI/PRLI to all devices on port | (For help, go to Section 6.5.3.5 on page 6-81) |
| 6) mode – Set the operating mode of port | (For help, go to Section 6.5.3.6 on page 6-82) |
| 7) port - Set port number | (For help, go to Section 6.5.3.7 on page 6-82) |
-

Enter a number from the **diagnostics/port** menu to go to the corresponding category.

6.5.3.1 General Description

The **system** – **Access port diagnostics** menu item enables the user to perform various diagnostic tasks related to a particular port on an FCIP Network Module. When this menu item is selected, the current Port Diagnostics Table will be displayed, followed by the **diagnostics/port** sub menu.

Port Diagnostics Table

Port	Beacon State
1	3
2	3

Legend for enumerated columns:

#	Beacon State
1	unknown
2	on
3	off

6.5.3.2 Show Diagnostic Port Settings

Menu Path:

5) **diagnostics** → 3) **port** → 2) **show**

Shortcut Command:

At the root menu, type **diagnostics port show**

Description:

This menu item shows the current Port Diagnostics table.

Example:

Port Diagnostics Table

Port	Beacon State
1	3
2	3

Legend for enumerated columns:

#	Beacon State
1	unknown
2	on
3	off

6.5.3.3 Beacon Port

Menu Path:

5) diagnostics → 3) port → 3) beacon

Shortcut Command:

At the root menu, type **diagnostics port beacon**

Description:

Beacon Port mode is used to flag a port by causing both LEDs on the port to flash. When Beacon Port mode is enabled (set to **[2] on**), the current LED state is overridden with the Beacon Port signal (both LEDs flashing).

When this menu item is selected, the possible values are displayed.

[1] unknown

[2] on

[3] off

Beacon State [3] =

In this example, the Beacon State is set to off. Press the <Enter> key to keep the current setting, or enter a new state after the equal sign, then press the <Enter> key. The display will show **OK**, indicating the new setting has been accepted.

6.5.3.4 Reset Port

Menu Path:

5) diagnostics → 3) port → 4) reset

Shortcut Command:

At the root menu, type **diagnostics port reset**

Description:

When this menu item is selected, the port is automatically reset. The display will show **OK**, indicating the reset has taken place.

6.5.3.5 Send PLOG/PRLI to All Devices on Port

Menu Path:

5) diagnostics → 3) port → 5) prli

Shortcut Command:

At the root menu, type **diagnostics port prli**

Description:

When this menu item is selected, the PLOGI/PRLI (Port Login/Process Login service parameter exchange) information is sent to all devices on the port.
The display will show **OK**, indicating the send has taken place.

6.5.3.6 Set the Operating Mode of Port

Menu Path:

5) diagnostics → 3) port → 6) mode

Shortcut Command:

At the root menu, type **diagnostics port mode**

Description:

When this menu item is selected, the mode options are displayed as follows:

```
[0] disabled  
[1] enabled
```

```
Port mode [1] =
```

The port mode default is [1] enabled.

6.5.3.7 Set Port Number

Menu Path:

5) diagnostics → 3) port → 7) port

Shortcut Command:

At the root menu, type **diagnostics port port**

Description:

When this menu item is selected, the port that is currently selected is displayed in brackets.

```
Port Number [1] =
```

In this example, the port that is being acted upon is Port 1. Press the **<Enter>** key to keep the current port, or enter a new port number after the equal sign, then press the **<Enter>** key. The display will show **OK**, indicating the new setting has been accepted.

6.5.4 Clear System Errors

Menu Path:

5) diagnostics → 4) clear_errors

Shortcut Command:

At the root menu, type **diagnostics clear_errors**

Description:

When this menu item is selected, the configuration data is synchronized and the fault indicator is cleared.

```
This will synchronize configuration data and clear fault indicator
Do you wish to continue (Yes / No): [N]
```

Press the <Enter> key for “No”, which will not initiate the clear system errors command.
Type a **Y** at the prompt to clear system errors, then press the <Enter> key.

6.5.5 Show Stack Dump from Last Detected Fault

Menu Path:

5) diagnostics → 5) stack

Shortcut Command:

At the root menu, type **diagnostics stack**

Description:

When this menu item is selected, the stack dump since the last detected fault is displayed.

Example:

```
tFsvc
SAT FEB 19 10:11:35 2000
Vector Number: 2
Fault Instruction Pointer: 0x00000000
Stack -0: 0x00000000
Stack -1: 0x109FD068
Stack -2: 0x00000000
Stack -3: 0x00000000
Stack -4: 0x00000000
Stack -5: 0x00000000
Stack -6: 0x00000000
Stack -7: 0x00000000
Stack -8: 0x00000000
Stack -9: 0x00000000
```

6.5.6 Read Memory

Menu Path:

5) **diagnostics** → 6) **read**

Shortcut Command:

At the root menu, type **diagnostics read**

Description:

When menu item 6) **read** – **Read memory** is selected, the following sub menu will be displayed:

diagnostics/read menu

1) **rtc** - Dump RTC NV ram item

(For help, go to [Section 6.5.6.1 on page 6-84](#))

Enter a number from the **diagnostics/read** menu to go to the corresponding category.

6.5.6.1 Dump RTC NVRAM Item

Menu Path:

5) **diagnostics** → 6) **read** → 1) **rtc**

Shortcut Command:

At the root menu, type **diagnostics read rtc #**, where # is the NVRAM item number

Description:

When this menu item is selected, the NVRAM is displayed in accordance with the item number entered.

Example:

```
(diagnostics/read)>rtc 12  
01 09 1E 0C 00 00 14 00
```

6.5.7 Show Available Memory Space

Menu Path:

5) **diagnostics** → 7) **memshow**

Shortcut Command:

At the root menu, type **diagnostics memshow**

Description:

When this menu item is selected, the maximum available memory block size will be displayed.

Example: **Max Available Memory Block Size: 5974592**

6.5.8 Debugging Trace Control

Menu Path:

5) diagnostics → 8) trace

Shortcut Command:

At the root menu, type **diagnostics trace**

Description:

When menu item 8) trace – **Debugging trace control** is selected, the following sub menu will be displayed:

diagnostics/trace menu

- | | |
|----------------------------------|---|
| 1) back - Go back | |
| 2) list – List all known modules | (For help, go to Section 6.5.8.2 on page 6-85) |
| 3) set – Set module trace mask | (For help, go to Section 6.5.8.3 on page 6-86) |
-

6.5.8.1 General Description

The **trace –Debugging trace control** menu item enables the user to view detailed information about the trace control on the FCIP Network Module. When this menu item is selected the **diagnostics/trace** sub menu will be displayed.

6.5.8.2 List All Known Modules

Menu Path:

5) diagnostics → 8) trace → 2) list

Shortcut Command:

At the root menu, type **diagnostics trace list**

Description:

When this menu item is selected, the following module information is displayed:

Module	mask
timer	0x0
ZDBModule	0x0
veport	0x0
router	0x0
port0	0x0
fctl	0x0
eport	0x0
zoneManager	0x0
zoneEnforcer	0x0
fc2	0x0
nsdb	0x0
dns	0x0

6.5.8.3 Set Module Trace Mask

Menu Path:

5) diagnostics → 8) trace → 3) set

Shortcut Command:

At the root menu, type **diagnostics trace set “*nameofmodule*” “*state*”**, where *nameofmodule* is a module selection from the list in [Section 6.5.8.2](#) and *state* is either “on” or “off”

Shortcut Example:

>diagnostics trace set “port0 on”

Description:

To set the module trace mask, the user must use the shortcut command from the diagnostics/trace menu.

CHAPTER 7

OptiStar EdgeSwitch Maintenance Tasks



Chapter 7 Overview

- General Maintenance
- Hardware Replacement
- Firmware Upgrades
- Clearing the current OptiStar EdgeSwitch Configuration

7.1 General Maintenance

Periodically perform maintenance on your OptiStar EdgeSwitch. Keep components free of dust and other particulate matter. Check fans for reduced airflow caused by dust build-up and clean as necessary. Examine cables and fiber for damage and ensure that airflow requirements have been met. Otherwise, no special maintenance is required.

7.2 Hardware Replacement

7.2.1 Network Module Replacement

A Network Module may need to be replaced for one of two reasons; the Network Module needs to be upgraded or the Network Module is faulty. Indications of a faulty Network Module include:

- The LED on the Network Module goes out indicating that traffic is not running through the ports on the module.
- On the FCIP Network Module only, the operational status of the Module is **DOWN** (see [Section 5.1.2.4 entitled “Switching Module Parameters”](#)).
- The Power On Self Test (POST) fails upon reboot.
- The Network Module does not properly boot up when the OptiStar EdgeSwitch is rebooted.

The following tutorial explains how to replace a Network Module on the OptiStar EdgeSwitch.

Note: Before replacing any of the Network Modules, make sure you are grounded with a wrist strap. For information on grounding, see [Section 3.4.2 entitled “Installing the Network Modules”](#).

To remove a Network Module from the OptiStar EdgeSwitch, please use the following steps:

- Step 1** Disable the module using the software commands in [Section 5.4.2, “Set Module Admin Status”](#). Even if the Network Module is faulty, the module should be administratively disabled so that there is no power to the slot when the replacement module is inserted. **WARNING:** If slot is “hot” when the new board connects with the back plane, then the module will immediately power up, which will result in an abnormal and potentially faulty boot process. In addition, there is a slight chance that inserting the new module in to a “hot” slot may damage the module or pose a safety threat to the person inserting the module.
- Step 2** Carefully disconnect the cables from the module you want to remove and loosen the thumbscrews.
- Step 3** Gently grasp the release levers on the front edges of the module and pull towards you, taking care to pull straight out of the guide frame (see Figure 7-1). Handle Network Modules only by the edges; avoid touching the board or excessively handling the connector cable.

Step 4 Place the Network Module in a static-shielding bag and then place in a protective container.



Figure 7-1: Network Module Removal. Note that Release Levers are Extended.

To install a new Network Module (except for the FCIP Module), please use the following steps:

Note: Always place Network Modules component side up on an antistatic surface or in a static-shielding bag. Handle Network Modules only by the edges and avoid touching the board.

- Step 1** Slowly insert the Network Module into the slot making sure that the edges of the Module line up with the guides on the chassis. The Module is seated when the front panel of the Module is flush with the front panel of the OptiStar EdgeSwitch.
- Step 2** Ensure that the release levers on the front edges of the modules are in a closed position (pressed against the front panel).
- Step 3** Secure with thumbscrews.
- Step 4** Reconnect the cables to the new Network Module following the instructions in [Section 3.5](#) “Connecting the Cables”.
- Step 5** Enable the Network Module using the software commands in [Section 5.4.2](#), “Set Module Admin Status”.

To install a new FCIP Network Module, please use the following steps:

- Step 1** Slowly insert the FCIP Network Module into the slot making sure that the edges of the Module line up with the guides on the chassis. The Module is seated when the front panel of the Module is flush with the front panel of the OptiStar EdgeSwitch.
- Step 2** Ensure that the release levers on the front edges of the modules are in a closed position (pressed against the front panel).
- Step 3** Secure with thumbscrews.
- Step 4** Reconnect the cables to the new FCIP Network Module by following the instructions in [Section 3.5](#), “Connecting the Cables”.
- Step 5** Enable the FCIP Network Module using the software commands in [Section 5.4.2](#), “Set Module Admin Status”.
- Step 6** Reset the Domain ID for the FCIP Module using the menu path in [Section 6.1.5.9.3](#) titled “Set the Default Domain ID”. It may be necessary to set other values based on the current EdgeSwitch configuration.

7.2.2 Power Module Replacement

To remove a Power Module, turn off using the switch on the front of the Power Module. Loosen the thumbscrews and gently pull the Power Module by the handle on the front of the unit. Place one hand underneath the Power Module to support it and guide it straight out of the slot. Place the Power Module in a static-shielding bag and then place in a protective container. No software commands are necessary to deactivate the Power Module. To install the new Power Module(s), slowly insert the Power Module into the slot with one hand, while placing your other hand along the bottom to support it and guide it straight into the slot. The Power Module is seated when the front panel of the Power Module is flush with the front panel of the OptiStar EdgeSwitch. Secure with thumbscrews. No software commands are necessary for unit to be functional.



Figure 7-2: Power Module Replacement

7.2.3 Fan Module Replacement

The Fan Module is hot swappable. When removing the Fan Module, work as quickly as you can while the OptiStar EdgeSwitch is still running. To replace, loosen the two thumbscrews on the front panel of the unit where the Fan Module is located. Gently remove the Fan Module by pulling on the handle on the front of the module, taking care to pull straight out of the guide frame. . Handle the fan module carefully, place in a static-shielding bag and then place in a protective container. No software commands are necessary.

To replace, insert the replacement Fan Module back into the OptiStar EdgeSwitch. The Fan Module is seated when the front panel of the module is flush with the front panel of the unit. Secure the thumbscrews.



Figure 7-3: Fan Module Replacement

7.2.4 Power Socket Fuse Replacement

Under normal operating conditions you would not need to replace the power socket fuse, however, in the event of a severe power surge occurring in a power circuit providing AC electrical power to the OptiStar EdgeSwitch, it is possible that the fuse may burn out. To change the fuse, locate the compartment at the bottom of the power cord socket on the back of the switch. With a screwdriver, pry out the fuse tray and remove the fuse.



Figure 7-4: Fuse Replacement

7.3 Firmware Upgrades

7.3.1 Installing New Firmware via the OptiStar EdgeSwitch CLI



NOTE: A copy of the runtime firmware is on the OptiStar EdgeSwitch CD that shipped with your OptiStar EdgeSwitch. Also, firmware is available at the Lucent OnLine Customer Support at <http://www.lucent.com/support>.

This section explains how to install new runtime firmware using the menus on the OptiStar EdgeSwitch CLI. The firmware will be installed using BOOTP with TFTP.

Step 1 The TFTP server IP address should be entered before beginning the download process. To verify the TFTP server IP address and the firmware file name, from the main menu follow the path:
[1] Operational Information & Status → [5] BOOTP/TFTP Parameter

For help, see [Section 5.1.5](#).

Step 2 To enter a new TFTP server IP address, from the main menu follow the path:
[3] Configuration → [1] BOOTP/TFTP Configuration → [3] Set TFTP Server IP Address

For help, see [Section 5.3.1.3](#).

Step 3 To enter a new firmware file name, from the main menu follow the path:
[3] Configuration → [1] BOOTP/TFTP Configuration → [4] Set OptiStar EdgeSwitch Firmware File Name:

Note: If applicable, preface the file name with the directory path indicating the file's location on the TFTP server.

For help, see [Section 5.3.1.4](#).

Step 4 Once you have verified or modified the TFTP IP address and firmware file name you are ready to download the firmware. From the main menu, follow the path:
[3] Configuration → [1] BOOTP/TFTP Configuration → [1] Enable TFTP to Download Firmware

Step 5 Type **y** (yes) to update the firmware through TFTP or **n** (no) to cancel the operation.

Once the firmware is downloaded, it is written to flash memory and from the next boot forward the most recently downloaded firmware will be used.

7.3.2 Installing New FCIP Network Module Firmware

FCIP Network Module firmware can be uploaded via either the OptiStar EdgeSwitch 10/100BaseT network connection or a Gigabit Ethernet network connection (applicable only if the OptiStar EdgeSwitch contains a Gigabit Ethernet Network Module). The firmware upload process must be done independently for each FCIP Network Module. *Note:* In order to upload new FCIP Network Module firmware, the user must be logged in to the CLI via the serial port (see [Section 4.2.1.1.2](#)). This function is not available via a telnet CLI session or via Web-based Management.

Step 1 First, determine whether you will be using the 10/100BaseT network connection or a Gigabit Ethernet network connection to upload the firmware.

To upload FCIP Network Module firmware using the OptiStar EdgeSwitch 10/100BaseT network connection:

- a. Ensure that the OptiStar EdgeSwitch is configured correctly and that the PC NIC card has been configured to be on the same subnet as the OptiStar EdgeSwitch 10/100BaseT port (see [Section 4.5](#)).
- b. Ensure that the FCIP Network Module has been configured correctly (see [Section 4.8](#)).
- c. Continue the upload process by going to Step (2) below.

To upload FCIP Network Module firmware using the OptiStar EdgeSwitch Gigabit Ethernet network connection:

- a. Ensure that the OptiStar EdgeSwitch is configured correctly (see [Section 4.5](#)).
- b. Ensure that the Gigabit Ethernet network card on the PC (TFTP server) is connected directly to a Gigabit Ethernet Network switching port on the OptiStar EdgeSwitch.
- c. Ensure that the OptiStar EdgeSwitch Gigabit Ethernet switching port is on the same subnet as the connected Gigabit Ethernet network card.
- d. Ensure that the FCIP Network Module has been configured correctly (see [Section 4.8](#)).
- e. Add a static route from the OptiStar EdgeSwitch to the PC with the Gigabit Ethernet network card (for help see the tutorial in [Section 4.6](#)).
- f. Add static route from PC with the Gigabit Ethernet network card to FCIP Network Module.

- g. Test connectivity by pinging the OptiStar EdgeSwitch Gigabit Ethernet switching port and the OptiStar EdgeSwitch FCIP Network Module switching port using their respective assigned IP addresses.
- h. Continue the upload process by going to Step (2) below.

Step 2 Access the CLI for the FCIP Network Module for which you would like to select the firmware boot image. (see Section 4.8.2, entitled “How to Access the CLI for an FCIP Network Module” for help).

Step 3 At the FCIP Network Module CLI Root Menu, select:
4) firmware - Access firmware options

Step 4 Now you should see both firmware images currently loaded on the FCIP Network Module, shown in the following fields:

Power-up Image: The firmware image that the FCIP Network Module will boot from at the next restart.

Current Image: The firmware image that the FCIP Network Module is currently running from. This field shows date, time, and version information.

Alternate Image: This file can be thought of as the backup FCIP Network Module firmware image. This field shows date, time, and version information.

Step 5 To upload a new firmware image, from the **Access firmware options** menu, select:
3) load - Load new firmware via tftp

Step 6 You should now see the following message:
Start tftp Transfer to m: from host shell.

Step 7 Next, open a DOS-prompt box on the PC that is connected to the OptiStar EdgeSwitch (e.g. the TFTP server).

Step 8 Type the following command at the DOS prompt:

tftp -i <OptiStar EdgeSwitch 10/100BaseT IP address> put <filename of firmware image to upload, including full pathname> m:

(For example: type the command **tftp -i 192.168.23.1 put c:\upload\vxworks.dwn m:** where the IP address of the 10/100BaseT port on the OptiStar EdgeSwitch is **192.168.23.1** and the location and filename of the firmware image on the Windows system is **c:\upload\vxworks.dwn**).

Step 9 Once the upload process is initiated, from the FCIP Network Module CLI **Load new firmware via tftp** menu, select:
1) verify and store

When the message “**File Transfer Complete/OK**” this means that the upload process was successful and the new firmware has been stored to the FCIP Network Module onboard flash memory.

Step 10 *Optional:* To verify that the new firmware image has been uploaded and will be the Power-up Image at the next restart, from the **Access firmware options** menu, select:

2) show – Show current firmware settings

Note that the new firmware image has been loaded into the **Alternate Image** (Image 2), as shown by an update in the **Received date and time** field, and that the **Power-up Image** has automatically changed to Image 2 so that the FCIP Network Module will boot from it at the next restart.

Step 11 If applicable, repeat the firmware upload process (steps 1-10) for other FCIP Network Modules on the OptiStar EdgeSwitch. *It is strongly recommended that the same firmware level is maintained for all FCIP Network Modules on an OptiStar EdgeSwitch* . Even though it is possible for modules to have different firmware versions, it is not recommended.

If you are done making changes to the FCIP Network Module using the CLI, type **Logout** then select the **<Enter>** key to close the session. For the changes to take effect, the FCIP Network Module must be reset. Please see [Section 4.8.5, entitled “How to Reset an FCIP Network Module”](#) for help.

7.3.2.1 How to Manually Select the FCIP Network Module Firmware Boot Image

Step 1 Access the CLI for the FCIP Network Module for which you would like to select the firmware boot image (see [Section 4.8.2, entitled “How to Access the CLI for an FCIP Network Module”](#) for help).

Step 2 At the FCIP Network Module CLI Root Menu, select:
4) firmware - Access firmware options

Step 3 From the **Access firmware options** menu select:
4) select

Step 4 You should now see the **Available Image Selections** screen. From this screen you can select the Power-up Image, which is the image the FCIP Network Module will boot from at the next restart. This screen will show in the current image in brackets next to the **Power-up Image** field. (e.g. if the screen shows **Power-up Image [2] =**, then the current image the FCIP Network Module will boot from on restart is Image 2. To change the image, enter the number of the desired file.

Step 5 If you are done making changes to the FCIP Network Module using the CLI, type **Exit** then select the **<Enter>** key to close the session. For the changes to take effect, the FCIP Network Module must be reset. Please see [Section 4.8.5, entitled “How to Reset an FCIP Network Module”](#) for help.

7.4 Clearing the Current OptiStar EdgeSwitch Configuration

To reconfigure the entire OptiStar EdgeSwitch you may clear the current configuration. To clear the configuration, please complete the following steps:

Step 1 First, before you clear the configuration, remember that all of the OptiStar EdgeSwitch will be reset to the default values. To view the default values that will be assigned, follow the menu path:
[3] Configuration → [2] System Information → [6] Set System with Default Values

Step 2 **WARNING:** Many key parameters will be deleted once the configuration is cleared. *The MAC Addresses for the OptiStar EdgeSwitch will not be deleted during this operation.* If you would like to retain your current configuration, use the Export Configuration File utility (see [Section 4.11.1](#)) to save your current configuration settings. Also, ensure that you have filled out the [OptiStar™ EdgeSwitch Basic Configuration Worksheet](#) in Appendix A for easy reference to key parameters.

Step 3 Clear the current configuration by following the menu path:
[5] Utilities → [6] Clear EdgeSwitch Configuration

Step 4 Enter **y** (yes) to clear the current configuration values. Enter **n** (no) to abort the clear operation.

- Step 5** Once you have cleared the configuration, the BAUD rate will revert to 38400 (the default value). If you would like the baud rate of your terminal server program to be different than the default value of 38400, please change the value now. [See Section 5.3.3.2.2](#) to change the Console Port Speed.
- Step 6** If applicable, reconfigure all of the parameters listed in **Step 2**.

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CHAPTER 8

Troubleshooting



Chapter 8 Overview

- Possible Problems and Solutions

Note: For the most recent information on interoperability issues, troubleshooting and application tips, refer to OptiStar EdgeSwitch Technical Notes at <http://www.lucent.com/support>.

Problem	Possible Solutions
OptiStar EdgeSwitch goes to Configuration Utility after power up.	<ul style="list-style-type: none"> • Missing or wrong TFTP parameters or configuration corrupted. Re-enter the TFTP parameters and reboot the OptiStar EdgeSwitch. For help on entering TFTP parameters, please see Section 5.3.1.
OptiStar EdgeSwitch displays “file download to SDRAM timeout” on the console.	<ul style="list-style-type: none"> • Follow the menu path [1] Operational Information & Status → [5] BOOTP/TFTP Parameters to check the settings to verify you have entered the correct TFTP Server IP address and Host File Name. For help on changing the TFTP settings, please see Section 5.3.1. • Verify that the TFTP Server is operational. • Verify connectivity via 10/100BaseT port to the network.
OptiStar EdgeSwitch displays “FLASH erase error” or “FLASH write error” on the console.	<ul style="list-style-type: none"> • The FLASH chip is corrupted. Contact Lucent for technical support. See Section 9.1 for contact information.
OptiStar EdgeSwitch displays “net attach error” and the link/activity LED does not flash	<ul style="list-style-type: none"> • Check for duplicate IP address assignment for 10/100BaseT port.
Admin User Password is forgotten or lost.	<ul style="list-style-type: none"> • Contact Lucent for service. See Section 9.1 for contact information.
Temperature alarm from NMS.	<ul style="list-style-type: none"> • One or more fans are non-operational. Follow the menu path [1] Operational Information & Status → [2] Hardware Status → [6] Fan Status to check the status of the fans. • If one or more of the fans is not operating properly, first make sure the fan tray is inserted and seated properly. • If the problem is still not resolved, replace the fan tray. • If replacing the fan tray doesn’t cool the unit down, power it down and contact Lucent for technical support. See Section 9.1 for contact information. • Check to make sure that the OptiStar EdgeSwitch is in a good location. See Section 3.2 for Rack-Mounting instructions.
The OptiStar EdgeSwitch not powering up.	<ul style="list-style-type: none"> • Check the fuse in the power entry socket on the rear panel where the power cords are connected. • Make sure the Power Supply Modules are fully inserted and the thumbscrews are tight. • Make sure the power switches are in “ON” position. • Make sure power cable is attached and plugged in.

Problem	Possible Solutions
<p>The OptiStar EdgeSwitch powers up, the Failure LED is OFF, but no error message (or unrecognized characters) appears on the console.</p>	<ul style="list-style-type: none"> • If an error message doesn't appear on the console, check to see that the serial cable is properly connected, then check the COM port selection in the terminal emulation utility. • Check the serial cable wiring for defects. • If unrecognizable characters appear, then check the serial port parameters for the correct BAUD rate, parity, data size and number of STOP bits. The first time the OptiStar EdgeSwitch powers ON, it will have the following default parameters: <ul style="list-style-type: none"> BAUD rate – 38400 Parity – None Data size – 8 Number of STOP bits – 1
<p>OptiStar EdgeSwitch modules are not being detected.</p>	<ul style="list-style-type: none"> • Turn the power to the OptiStar EdgeSwitch off and make sure that all modules are completely inserted into the chassis and thumbscrews are tight. Then power up the OptiStar EdgeSwitch. • If this condition persists, contact Lucent Customer Support.
<p>Fail LED flashes.</p>	<ul style="list-style-type: none"> • Power On Self Test (POST), detected an error which is non fatal. The system can still function within a limited capability. Contact Lucent for service.
<p>Fail and Diagnostic LEDs are on after power on.</p>	<ul style="list-style-type: none"> • The OptiStar EdgeSwitch is not booting up. The SDRAM memory may be loose in the socket. Check to make sure it is seated correctly. If the problem still exists, contact Lucent for service.
<p>Link LED remains off even after connecting to a good network.</p>	<ul style="list-style-type: none"> • Check the network cable. • Make sure the Modules are properly seated in the slot and the thumbscrews are secure. • If the problem is still not resolved, the network may not be functioning properly. Consult your local network administrator.
<p>OptiStar EdgeSwitch crashes after some time.</p>	<ul style="list-style-type: none"> • The unit may be overheating. Make sure there is adequate space around OptiStar EdgeSwitch for proper ventilation. • Check to make sure that the fans are functioning properly. Follow the menu path [1] Operational Information & Status → [2] Hardware Status → [6] Fan Status to check the status of the fans. Replace the fan tray assembly if necessary. • If the problem has still not been identified, there may be a hardware failure. Please contact Lucent for technical support. See Section 9.1 for contact information. • Check system temperature.
<p>OptiStar EdgeSwitch reboots itself unnecessarily.</p>	<ul style="list-style-type: none"> • The Power supply may be malfunctioning. Contact Lucent for technical support. • The Firmware crashes and the watchdog timer resets the system. Contact Lucent for service.

Problem	Possible Solutions
A Network Module becomes faulty	<ul style="list-style-type: none"> Replace the Network Module following the steps in Section 7.2.1, entitled "Network Module Replacement".
Not able to log in to the FCIP Network Module.	<ul style="list-style-type: none"> Ensure that a local FCIP Network Module IP address has been assigned to the FCIP Network Module. Also, ensure that the FCIP Network Module IP address you assigned is in the same subnet as Port 1 of the FCIP Network Module. For help please refer to Section 4.8, entitled "Configuring an FCIP Network Module".
The FCIP Network Module booted from the wrong firmware image file.	<p>For backup purposes, the FCIP Network Module has two separate locations to store complete copies of its firmware. These locations are known as Image 1 and Image 2. If the FCIP Network Module cannot boot from one of these images, it can be set to boot from the other. Currently, there are three ways to change the boot image for the FCIP Network Module:</p> <ol style="list-style-type: none"> 1. Upload new firmware to the FCIP Network Module. For help, see Section 7.3.2, entitled "Installing New FCIP Network Module Firmware". 2. Manually select the firmware boot image. For help, see Section 7.3.2.1, entitled "How to Manually Select the FCIP Network Module Firmware Boot Image". 3. A single firmware image fails to boot twice in a row. If the firmware image selected as the Power-up Image fails to boot up twice in a row the FCIP Network Module will automatically change the Power-up Image to the other firmware image file. In this way a corrupted or non-functional firmware image file can be replaced while minimizing the EdgeSwitch downtime.
Both LEDs on the FCIP Network Module (green and amber) are flashing.	<ul style="list-style-type: none"> This condition may indicate the Beacon Port Mode has been turned on. Please see Section 6.5.3.3 for more help. If Beacon Port Mode has not been enabled, ensure that a local FCIP Network Module IP address has been assigned to the FCIP Network Module. Also, ensure that the FCIP Network Module IP address you assigned is in the same subnet as Port 1 of the FCIP Network Module. For help please refer to the Section 4.8, entitled "Configuring an FCIP Network Module".

Problem	Possible Solutions
<p>The FCIP Network Module State message indicates an error (from the OptiStar EdgeSwitch main menu, follow the path (5) Utilities → (5) FCIP Network Module State).</p>	<ul style="list-style-type: none"> • Check to see if the FCIP Network Module is inserted properly into the slot on the OptiStar EdgeSwitch. • Check to make sure the FCIP Network Module has an assigned IP address. • If you are able to log in to the FCIP Network Module, check to make sure the FCIP Network Module has a unique Domain ID. To view the current Default Domain ID for an FCIP Network Module, at the FCIP Network Module CLI root menu, type config system advanced show.
<p>A Fibre Channel (FCIP) tunnel can not be established:</p> <ul style="list-style-type: none"> • between two OptiStar EdgeSwitches (via their respective FCIP Network Modules) • between an OptiStar EdgeSwitch and another switch in the fabric. • between two or more FCIP Network Modules in the same OptiStar EdgeSwitch 	<ul style="list-style-type: none"> • Ensure that both FCIP Network Modules have solid green LEDs. For help on interpreting the FCIP Network Module LEDs, see Section 1.4.3.2. • Check the Local FCIP Network Module State. On the OptiStar EdgeSwitch CLI, follow the menu path (5) Utilities → (5) Local FCIP Network Module State. This field should indicate “Inband - Link test Passed and FC Ports Enabled”. • On the OptiStar EdgeSwitch CLI, follow the menu path (1) Operational → (10) FCIP Network Module Status → (3) FCIP Network Module Connection Status to ensure that the remote FC switch is listed in the table as “reachable”. For help, see Section 5.1.10.3. • If the remote FCIP switch is not listed in the above table, add it to the Remote FCIP Network Module IP Parameters table. On the OptiStar EdgeSwitch CLI, follow the menu path (3) Configuration → (9) FCIP Network Module Configuration → (3) Add Remote FCIP Network Module. The OptiStar EdgeSwitch will need to be rebooted for these changes to take effect. For help, see Section 5.3.9.3. • On the OptiStar EdgeSwitch CLI, follow the menu path (5) Utilities → (4) Local FCIP Network Module Domain <-> IP Table to ensure that the Domain ID of the local and remote FC switches are listed in the table. For help, see Section 5.5.4. • Check to make sure that both FCIP Network Modules have unique Domain ID’s. To view the current Default Domain ID for an FCIP Network Module, at the FCIP Network Module CLI root menu, type config system advanced show.

Problem	Possible Solutions
The FCIP Network Module Initialization sequence will not complete.	<ul style="list-style-type: none"> • If you are able to log in to the FCIP Network Module, check to make sure that the Error Detection Timeout Value (EDTOV) on the FCIP Network Module matches the EDTOV for all other switches in the fabric. For help on setting the EDTOV, see Section 6.1.4.11.5. • Next, check to make sure that the Resource Allocation Timeout Value (RATOV) on the FCIP Network Module matches the RATOV for all other switches in the fabric. For help on setting the EDTOV, see Section 6.1.4.11.6.
After changing the Domain ID, an FC tunnel can not be established between OptiStar EdgeSwitches.	<ul style="list-style-type: none"> • Ensure that the OptiStar EdgeSwitch has been rebooted for the Domain ID to take effect. For help rebooting the OptiStar EdgeSwitch, see Section 4.8.5.
The password for the FCIP Network Module has been forgotten.	<ul style="list-style-type: none"> • Please contact Customer Support (see Section 9.1).

CHAPTER 9

Contacting Lucent



Chapter 8 Overview

- Customer support information
- Web site support
- Product updates

9.1 Lucent Technologies Customer Support

Lucent Technologies warrants that during the warranty period the OptiStar EdgeSwitch will operate in accordance with Lucent's standard published documentation accompanying the OptiStar EdgeSwitch. The warranty period for the OptiStar EdgeSwitch is twelve (12) months for hardware and ninety (90) days for software, unless your purchase agreement provides a different warranty.

Technical support services for the OptiStar EdgeSwitch are accessible through the main Lucent Technologies Customer Support Center at the following telephone numbers:

Toll Free Tech Support (U.S.)	1-866-LUCENT8 (1-866-582-3688)
International Calls	1-630-224-4672

When contacting Lucent Technologies Customer Support, please provide the product ID and serial number of the OptiStar EdgeSwitch and detailed information regarding the technical problem or question. For more information about your OptiStar EdgeSwitch warranty or available technical support services, please refer to **Appendix F, “OptiStar EdgeSwitch Warranty”** in the OptiStar EdgeSwitch User Operations Guide (365-575-925R1.5), or contact your Lucent Technologies Sales Representative or your Authorized Lucent Worldwide Services Delivery Partner.

9.2 Lucent OnLine Customer Support

Technical support services for the OptiStar EdgeSwitch are available via the web at Lucent OnLine Customer Support:

<http://www.lucent.com/support>

User documentation and release notes are accessible through the public “guest” login. Customers with service agreements, warranties, or other support agreements and Business Partners with an advantage contract can register for premium online support. These include both client self-help and technician-assisted services options to meet your specific support requirements.

9.3 Product Updates

Maintenance releases and updates to the OptiStar EdgeSwitch firmware will be available during the software warranty period through Lucent OnLine Customer Support:

<http://www.lucent.com/support>

For information on how to register for Lucent OnLine Customer Support, please refer to the website instructions. For firmware updates beyond the standard warranty period, or for hardware updates, please contact your Lucent Technologies Sales Representative or your Authorized Lucent Worldwide Services Delivery Partner.

APPENDICES

APPENDIX A: QuickStart Checklist & Planning Worksheet for a Typical OptiStar EdgeSwitch Configuration

Step	Action to Perform	Menu Path	Section in the User's Guide
1	Plan your network configuration. A Basic Configuration Worksheet is included at the end of Appendix A to guide you in the planning process.	NA	Appendix A
2	Unpack the shipping package.	NA	Section 3.1
3	Rack mount – prepare a space for installation of the OptiStar EdgeSwitch.	NA	Section 3.2
4	Install Network Modules and GBIC Modules (if not pre- installed).	NA	Section 3.4
5	Connect cables to Network Modules.		Section 3.5
6	Locate the Console port on the OptiStar EdgeSwitch and attach the DB-9F null modem cable between it and the PC's Serial/Com port (DB-9F).	NA	Section 3.5.4
7	Locate the 10/100 port on the OptiStar EdgeSwitch and attach the straight through cable to the 10/100 Base-T hub/switch.	NA	Section 3.5.4
8	Bring up a terminal program on your PC and configure the appropriate communications parameters (configure it for the connection to the OptiStar EdgeSwitch at 38400 baud on the correct Com port).	NA	Section 4.2.1.1.2
9	Locate power module(s) and turn on (Power Up) OptiStar EdgeSwitch.	NA	Section 1.2
10	Enter the BootUp Menu by pressing a key when prompted	Press any key	Section 4.1.2
11	Enter the IP address and subnet mask for the 10/100BaseT port.	[2] Configuration → [1] Configure Boot... [1] 10/100BaseT IP... [2] 10/100BaseT Sub...	Section 4.1.2
12	Select "Boot OptiStar™ EdgeSwitch" and allow the OptiStar EdgeSwitch to boot.	[5] Reset OptiStar EdgeSwitch	Section 4.1.2
13	Verify that the LED indicator next to the 10/100BaseT port indicates the proper status.	NA	NA

14	Login in as “optistar” and then enter a new password for Admin User.	[4] Administration → [1] Authentication Info... → [2] Modify Administrator...	Section 5.4.1.2
15	Reboot/Reset the OptiStar EdgeSwitch.	[3] Configuration → [2] System Information → [7] Reset OptiStar...	Section 5.3.2.7
16	Allow the OptiStar EdgeSwitch to fully boot (this time allow it to AutoBoot instead of getting in to the BootUp Menu).	NA	Section 4.1.1
17	Login in as Admin User (use “optistar” if not changed in step 12).	NA	Section 4.3.1
18	Ping the 10/100 port from a PC on the same subnet.	NA	NA
19	Ping your PC from the OptiStar EdgeSwitch.	[5] Utilities → [1] Ping Utility	Section 5.5.1
20	Set up SNMP management: - Add NMS Entry - Modify Community Name - Modify Trap Admin Status	[4] Administration → [3] SNMP Configuration → then: [2] Add NMS Entry [5] Modify Community... [6] Modify Trap Admin...	Section 5.4.3
21	Add all authorized users the system. The maximum number of users that may be assigned is 8 (not including the super user).	[4] Administration → [6] User Management → [1] Add User	Section 4.4
22	Assign IP addresses/Subnet Masks to all other ports.	[3] Configuration → [4] IP Parameters → [3] Set switching port IP address & Mask...	Section 5.3.4.3
23	Assign an IP address to each FCIP Network Module.	[3] Configuration → [9] FCIP Network...→ [1] Add Local FCIP...	Section 5.3.9.1
24	Reboot the OptiStar EdgeSwitch for changes made in Steps 22 and 23 to take effect.	[[3] Configuration → [2] System Information → [7] Reset OptiStar...	Section 5.3.2.7
25	Login to a specific FCIP Network Module CLI via Telnet Proxy or Serial Proxy as appropriate(password = ”manage”).	[4] Administration → [4] ... Serial Proxy → Enter the FCIP Net... [5] ... Telnet Proxy → Enter the FCIP Net...	Section 5.4.4
26	Assign new passwords for the FCIP Network Module.	1) config → 6) password → then: 2) monitor 3) manage	Section 6.1.6
27	Repeat Steps 25 and 26 for any additional FCIP network modules.	NA	NA

28	Port Mapping: If you have any Gigabit Ethernet ports that are on the same subnet (Layer 2 switching), they need to be in the same port map group.	[3] Configuration → [5] Port Mapping → Enter Module Number... Enter Port Number... Enter Port Group...	Section 5.3.5
29	Set up OSPF Routing.	[3] Configuration → [6] Routing Configuration→ [6] Set OSPF Param... → [2] General Group	Section 4.7.3
30	Assign remote FCIP IP addresses.	[3] Configuration → [9] FCIP Network...→ [3] Add Remote FCIP...	Section 5.3.9.3
31	Reboot/Restart the OptiStar EdgeSwitch.	[3] Configuration → [2] System Information → [7] Reset OptiStar...	Section 5.3.2.7
32	Verify that the local and remote FCIP Network Modules are “reachable”.	[1] Operational Info...→ [10] FCIP Network...→ [3] FCIP Network Module...	Section 5.1.10.3
33	Verify that there are entries in the Domain → IP Table.	[5] Utilities → [4] Local FCIP Network...	Section 5.5.4
34	Configure WWN Zoning.	[4] Administration → [4] ... Serial Proxy → Enter the FCIP Net... [5] ... Telnet Proxy → Enter the FCIP Net... 1) config → 3) zone → 3) wwn	Section 4.10
35	Save the current configuration to a file by setting up the FTP server parameters and then using the Configuration File Export command.	[5] Utilities → [8] Config. Import/Export...	Section 5.5.8

OptiStar™ EdgeSwitch Basic Configuration Worksheet

SNMP NMS Entries

IP Address	Access Mode	Community Name

User Management Table

No.	Login UserName	Temporary Password	Contact Name	Permissions		
				Administration (enter yes or no)	Provisioning (enter either Browser, Plus or None)	Maintenance (enter either Browser, Plus, or None)
Super				yes	plus	plus
1						
2						
3						
4						
5						
6						
7						
8						

Note: Default super user login is "optistar" and default super user password is "optistar".

TFTP Information

TFTP Server IP Address	
TFTP Firmware File Name	

OptiStar Configuration Import/Export Information

FTP Server IP Address	
FTP Server Directory Name (optional)	
FTP Server File Name	
User Name for FTP Server	
User Password for FTP Server	

Port IP Addressing

Slot	Module Type	Port	IP Address	Subnet Mask
1		1		
		2		
2		1		
		2		
3		1		
		2		
4		1		
		2		
	Host Controller Module	10/100		
		Console		

Local FCIP Network Module Parameters

Slot	IP Address	Domain ID	Password
1			
2			
3			
4			

Note: Only fill in rows for slots that contain an FCIP Network Module.

Remote FCIP Network Module Parameters

IP Address	Subnet Mask

IP Address	Subnet Mask

Note: Add additional remote FCIP Network Modules as needed. A maximum of 239 Domain IDs can be assigned per network. Each Fibre Channel Switch as well as each FCIP Network Module must have a unique Domain ID.

Static Routes (Optional)

Destination IP Address	Subnet Mask	Gateway IP Address

Note: Only if static routing is used. Add additional static routes as needed.

World Wide Name (WWN) Zoning

Complete the following tables to help in planning and configuring WWN Zoning on the OptiStar EdgeSwitch. Copy this page to add additional Zone Sets and Zones. The maximum number of zoning entries allowed on the switch depends on the amount of Flash used for the flash file system. (A zoning entry is an occurrence of a Zone Set, Zone, or Member. A Zone or Member entry also includes mapping information to the appropriate Zone Set or Zone, respectively.) The OptiStar EdgeSwitch Release 1.5 supports up to 20,000 entries. For example, the switch can hold 20 Zone Sets, each with 9 Zones, which each contain 100 Members. Under this scenario, 18,200 entries are written to Flash ($20 + [20 * 9] + [20 * 9 * 100]$).

Zone Set Name _____

Zones	
1	
2	
3	
4	

Note: Add additional Zones to the Zone Set as needed.

Zone Set Name _____

Zones	
1	
2	
3	
4	

Note: Add additional Zones to the Zone Set as needed.

Zone Name _____

Members	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Note: Add additional Members to the Zone as needed.

Zone Name _____

Members	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Note: Add additional Members to the Zone as needed.

Zone Name _____

Members	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Note: Add additional Members to the Zone as needed.

Zone Name _____

Members	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Note: Add additional Members to the Zone as needed.

APPENDIX B: OptiStar EdgeSwitch CLI Menu Structure

First Level Menus

- 1) **Operational Information & Status**
- 2) **Port Statistics**
- 3) **Configuration**
- 4) **Administration**
- 5) **Utilities**
- 6) **Change My Password**

Second Level Menus

- | | |
|--|---|
| 1) Operational Information & Status | <ol style="list-style-type: none">1) System Information2) Hardware Status3) Port Mapping4) IP Parameters5) BootP/TFTP Parameter6) SNMP Agent Parameters7) Routing Information8) Spanning Tree Protocol9) Forwarding Database10) FCIP Network Module Status |
| 2) Port Statistics | <ol style="list-style-type: none">1) 10/100BaseT Port Statistics2) Console Port Statistics3) Switching Port Statistics |
| 3) Configuration | <ol style="list-style-type: none">1) BOOTP/TFTP Configuration2) System Information3) Port Parameters4) IP Parameters5) Port Mapping6) Routing Configuration7) Spanning Tree Protocol8) Forwarding Database Entry9) FCIP Network Module Configuration |
| 4) Administration | <ol style="list-style-type: none">1) Authentication Information2) Set Module Admin Status3) SNMP Configuration4) FCIP Network Module CLI – Serial Proxy5) FCIP Network Module CLI – Telnet Proxy6) User Management |
| 5) Utilities | <ol style="list-style-type: none">1) Ping Utility2) BGP Debug3) OSPF Debug4) Local FCIP Network Module Domain <--> IP Table5) Local FCIP Network Module State6) Clear EdgeSwitch Configuration7) Debug Mode Enable8) EdgeSwitch Configuration Import/Export |
| 6) Change My Password | -- (no sub menus) |

Third Level Menus

- 1) **Operational → 1) System Information**
 - 1) System General Information
 - 2) Controller Module Information
 - 3) System Firmware Information

- 1) **Operational → 2) Hardware Status**
 - 1) System Temperature
 - 2) Power Module Status
 - 3) Number of Fault System Resets
 - 4) Switching Module Parameters
 - 5) Port Parameters
 - 6) Fan Status
 - 7) POST

- 1) **Operational → 3) Port Mapping**
 - (no sub menus)

- 1) **Operational → 4) IP Parameter**
 - 1) 10/100BaseT Port IP Address
 - 2) Console Port IP Address
 - 3) Switching Ports IP Address

- 1) **Operational → 5) BOOTP/TFTP Parameter**
 - (no sub menus)

- 1) **Operational → 6) SNMP Agent Parameters**
 - 1) SNMP Agent Parameters
 - 2) NMS Information
 - 3) Community Name Information
 - 4) Get SNMP Trap Administration Status

- 1) **Operational → 7) Routing Information**
 - 1) Routing Table
 - 2) Static Routes
 - 3) RIP Parameters
 - 4) OSPF Parameters
 - 5) BGP4 Parameters

- 1) **Operational → 8) Spanning Tree Protocol**
 - 1) Get STP Bridge Parameters
 - 2) Get STP Port Parameters

- 1) **Operational → 9) Forward Database**
 - 1) Static Forward Database Table

- 1) **Operational → 10) FCIP Network Module**
 - 1) Local FCIP Network Module IP Parameters
 - 2) Remote FCIP Network Module IP Parameters
 - 3) FCIP Network Module Connection Status

- 2) **Port Stats → 1) 10/100BaseT Port Stats →**
 - (no sub menus)

- 2) **Port Stats → 2) Console Port Stats→**
 - (no sub menus)

- 2) **Port Stats → 3) Switching Port →**
 - Enter Module Number (1-4):
 - Enter Port Number (1-2):

- 3) **Config → 1) BOOTP/TFTP →**
 - 1) Enable TFTP to Download Firmware
 - 2) Set BOOTP Status
 - 3) Set TFTP Server IP Address
 - 4) Set TFTP Firmware File Name

3) Config → 2) System Info →	<ul style="list-style-type: none"> 1) Set System Name 2) Set System Location 3) Set System Contact 4) Set System Temperature Threshold 5) Set Time Server IP Address 6) Set System with Default Values 7) Reset OptiStar EdgeSwitch
3) Config → 3) Port Parameters →	<ul style="list-style-type: none"> 1) Set 10/100BaseT Port Parameters 2) Set Console Port Parameters 3) Set Switching Port Parameters
3) Config → 4) IP Parameters →	<ul style="list-style-type: none"> 1) Set 10/100BaseT Port IP Address and Mask 2) Set Console Port IP Address and Mask 3) Set Switching Port IP Address and Mask
3) Config → 5) Port Mapping →	<ul style="list-style-type: none"> Enter Module Number (1-4): Enter Port Number (1-2): Enter Port Group (1-8):
3) Config → 6) Routing Config →	<ul style="list-style-type: none"> 1) Set Static Route 2) Delete Static Route 3) Set Default Gateway 4) Delete Default Gateway 5) Set RIP Parameters 6) Set OSPF Parameters 7) Set BGP4 Parameters
3) Config → 7) Spanning Tree Protocol →	<ul style="list-style-type: none"> 1) Spanning Tree Bridge Parameters 2) Spanning Tree Port Parameters
3) Config → 8) Forwarding Database Entry →	<ul style="list-style-type: none"> 1) Set Static Forwarding Database Entry
3) Config → 9) FCIP Network Module Configuration →	<ul style="list-style-type: none"> 1) Add Local FCIP Network Module 2) Delete Local FCIP Network Module 3) Add Remote FCIP Network Module 4) Delete Remote FCIP Network Module
4) Admin → 1) Authentication Info →	<ul style="list-style-type: none"> 1) Get Authentication Parameter 2) Modify Admin User Name and Password
4) Admin → 2) Set Module Admin Status →	<ul style="list-style-type: none"> 1.ENABLE 2.DISABLE Enter Module Number (1-4) : Enter choice (1-2) :
4) Admin → 3) SNMP Configuration →	<ul style="list-style-type: none"> 1) Get SNMP Trap Interval 2) Add NMS Entry 3) Delete NMS Entry 4) Modify NMS Entry 5) Modify Community Name 6) Modify Trap Administration Status
4) Admin → 4) FCIP Network Module – Serial Proxy →	Enter the FCIP Network Module Number (1 - 4)
4) Admin → 5) FCIP Network Module – Telnet Proxy →	Enter the FCIP Network Module Number (1 - 4)

- 4) Admin → 6) User Management →
 - 1) Add User
 - 2) Delete User
 - 3) Modify User's Permission
 - 4) Show Users
 - 5) Reset User's Password

- 5) Util → 1) Ping Utility →
 - Enter the IP Address of the Host :
 - Do you want to Ping With Default Values(y/n) :
 - Enter the Number Of times to Ping (1-100) :
 - Enter size of ICMP echo packet :
 - Enter ICMP echo request Interval in Seconds :
 - Enter ICMP echo reply timeout in Seconds :

- 5) Util → 2) BGP Debug →
 - 1.ENABLE
 - 2.DISABLE
 - Enter choice (1-2) :

- 5) Util → 3) OSPF Debug →
 - 1.ENABLE
 - 2.DISABLE
 - Enter choice (1-2) :

- 5) Util → 4) Local FCIP Network Mod Domain <-> IP Table → -- (no sub menus)

- 5) Util → 5) Local FCIP Network Module State → -- (no sub menus)

- 5) Util → 6) Clear EdgeSwitch Configuration →
 - WARNING : THIS WILL RESET ALL THE EDGESWITCH CONFIGURATION VALUES (Eg.,IP Address, StaticRoutes).
 - Do you want to Clear EdgeSwitch Configuration (y/n):

- 5) Util → 7) Debug Mode Enable →
 - 1.ENABLE
 - 2.DISABLE
 - Enter choice (1-2) :

- 5) Util → 8) EdgeSwitch Configuration Import/Export →
 - [1] Display EdgeSwitch Configuration Server Information
 - [2] EdgeSwitch Configuration Server IP Address
 - [3] EdgeSwitch Configuration Server Directory Name
 - [4] EdgeSwitch Configuration Server File Name
 - [5] EdgeSwitch Configuration Server User Name
 - [6] EdgeSwitch Configuration Server Password
 - [7] Export Binary EdgeSwitch Configuration to Server
 - [8] Import Binary EdgeSwitch Configuration File...

Fourth Level Menus

- 1) Operational → 1) System Info → 1) Gen Info -- (no sub menus)

- 1) Operational → 1) System Info → 2) Controller Module -- (no sub menus)

- 1) Operational → 1) System Info → 3) System Firmware -- (no sub menus)

- 1) Operational → 2) Hardware Status → 1) System Temperature -- (no sub menus)

- 1) Operational → 2) Hardware Status → 2) Power Module Status -- (no sub menus)

- 1) Operational → 2) Hardware Status → 3) # of Fault Sys Reset -- (no sub menus)

- 1) Operational → 2) Hardware Status → 4) Switching Module Enter Module Number(1-4):

1) Operational → 2) Hardware Status → 5) Port Parameters	1) 10/100BaseT Port Parameters 2) Console Port Parameters 3) Switching Port Parameters
1) Operational → 2) Hardware Status → 6) Fan Status	-- (no sub menus)
1) Operational → 2) Hardware Status → 7) POST	1) Host Module POST Results 2) Switching Module POST Results
1) Operational → 3) Port Mapping → →	-- (no sub menus)
1) Operational → 4) IP Parameter → 1) 10/100BaseT Port IP Address	-- (no sub menus)
1) Operational → 4) IP Parameter → 2) Console Port IP Address	-- (no sub menus)
1) Operational → 4) IP Parameter → 3) Switching Ports IP Address	-- (no sub menus)
1) Operational → 5) BOOTP/TFTP Parameter → →	-- (no sub menus)
1) Operational → 6) SNMP Agent → 1) SNMP Agent	-- (no sub menus)
1) Operational → 6) SNMP Agent → 2) NMS Information	-- (no sub menus)
1) Operational → 6) SNMP Agent → 3) Community Name Info	-- (no sub menus)
1) Operational → 6) SNMP Agent → 4) Get SNMP Trap Admin Status	-- (no sub menus)
1) Operational → 7) Routing Info → 1) Routing Table	-- (no sub menus)
1) Operational → 7) Routing Info → 2) Static Routes	-- (no sub menus)
1) Operational → 7) Routing Info → 3) RIP Parameters	1) RIP General Parameters 2) RIP Interface Status 3) RIP Route Table
1) Operational → 7) Routing Info → 4) OSPF Parameters	1) Get OSPF Status 2) Get OSPF Interface Status 3) Current OSPF Area Status
1) Operational → 7) Routing Info → 5) BGP4 Parameters	1) Get BGP4 General Parameters 2) Get BGP Peer Table 3) Get OSPF External Subnet Table 4) Get OSPF Internal Subnet Table 5) Get Network, Multi-Exit-Discriminator Table 6) Get BGP Filter Tags 7) Get OSPF Metric to BGP Metric Map
1) Operational → 8) STP → 1) Get STP Bridge Parameters	-- (no sub menus)
1) Operational → 8) STP → 1) Get STP Port Parameters	-- (no sub menus)
1) Operational → 9) Forwarding Database → 1) Static Forward Database Table	-- (no sub menus)
1) Operational → 10) FCIP Network Module → 1) Local	-- (no sub menus)
1) Operational → 10) FCIP Network Module → 2) Remote	-- (no sub menus)
1) Operational → 10) FCIP Network Module → 3) FCIP Connection Status	-- (no sub menus)
2) Port Stats → 1) 10/100BaseT Port Stats → →	-- (no sub menus)

- 2) Port Stats → 2) Console Port Stats → → -- (no sub menus)
- 2) Port Stats → 3) Switching Port Stats → → -- (no sub menus)
- 3) Config → 1) BOOTP/TFTP Config → 1) Enable to Download Do you want to update firmware through TFTP (y/n)
- 3) Config → 1) BOOTP Config → 2) Set BOOTP Status
 - 1. ENABLE
 - 2. DISABLE
 - Enter Choice (1-2):
- 3) Config → 1) BOOTP Config → 3) Set TFTP Server IP Address Enter TFTP Server IP Address:
- 3) Config → 1) BOOTP Config → 4) Set ES Firmware File Name Enter TFTP Firmware File Name:
- 3) Config → 2) System Info → 1) Set System Name Enter System Name:
- 3) Config → 2) System Info → 2) Set System Location Enter System Location:
- 3) Config → 2) System Info → 3) Set System Contact Enter System Contact:
- 3) Config → 2) System Info → 4) Set System Temp Threshold Enter System Threshold Temperature (10 – 70 in celsius):)
- 3) Config → 2) System Info → 5) Set Time Server IP Address Enter Time Server IP Address
- 3) Config → 2) System Info → 6) Set System with Default Values Do you want to configure system with the above default parameters?(y/n)
- 3) Config → 2) System Info → 7) Reset OptiStar EdgeSwitch Do you want to Reset the OptiStar(TM) EdgeSwitch(y/n) :
- 3) Config → 3) Port Parameters → 1) Set 10/100BaseT Port Parameters
 - 1) Set Auto Negotiation Mode for 10/100BaseT Port
- 3) Config → 3) Port Parameters → 2) Set Console Port Parameters
 - 1) Set Console Port with Default Parameters
 - 2) Set Console Port Speed
 - 3) Set Console Port PPP Mode
- 3) Config → 3) Port Parameters → 3) Set Switching Port Parameters
 - Enter Module Number (1-4):
 - Enter Port Number)1-2):
 - 1) Set Switching Port with Default Parameters
 - 2) Set Scrambling Mode (OC/STM only)
 - 3) Set Auto Negotiation Mode (GbE only)
 - 4) Set Maximum Transmission Unit
 - 5) Set Maximum Receive Unit
 - 6) Set Frammer Mode (OC/STM only)
 - 7) Set CRC Mode (OC/STM only)
- 3) Config → 4) IP Parameters → 1) Set 10/100 BaseT port IP Address & Mask
 - 1) Set 10/100BaseT IP Address
 - 2) Set 10/100BaseT Subnet Mask
- 3) Config → 4) IP Parameters → 2) Set Console port IP Address & Mask
 - 1) Set Console Port IP Address
 - 2) Set Console Port Subnet Mask
- 3) Config → 4) IP Parameters → 3) Set Switching port IP Address & Mask
 - 1) Set Switching Port IP Address
 - 2) Set Switching Port Subnet Mask
- 3) Config → 5) Port Mapping → → -- (no sub menus)

3) Config → 6) Routing → 1) Set Static Route	Enter Destination IP Address : Enter Subnet Mask : Enter Next Hop IP Address :
3) Config → 6) Routing → 2) Delete Static Route	Enter Destination IP Address to be Deleted : Enter Subnet Mask :
3) Config → 6) Routing → 3) Set Default Gateway	Enter Default Gateway Address :
3) Config → 6) Routing → 4) Delete Default Gateway	Default Gateway Entry Deleted
3) Config → 6) Routing → 5) Set RIP Parameters	1) Set RIP General Parameters 2) Set RIP Interface Status
3) Config → 6) Routing → 6) Set OSPF Parameters	1) Configure OSPF with Default Parameters 2) General Group 3) Interface Group 4) OSPF Area Group
3) Config → 6) Routing → 7) Set BGP4 Parameters	1) Set BGP4 General Parameters 2) Configure BGP Peer 3) Configure OSPF External Subnets 4) Configure OSPF Internal Subnets 5) Configure Network Multi-Exit-Discriminator Pair 6) Configure BGP Filter Tags 7) Configure OSPF Metric to BGP Metric Map
3) Config → 7) STP → 1) Spanning Tree Bridge Parameters	1) Configure Spanning Tree Bridge w/ Default Parameters 2) Set STP State 3) Set STP Bridge Priority 4) Set STP Bridge Max Age 5) Set STP Bridge Hello Time 6) Set STP Bridge Forward Delay
3) Config → 7) STP → 2) Spanning Tree Port Parameters	1) Configure STP Port with Default Parameters 2) Set STP Port State 3) Set STP Port Priority 4) Set STP Port Path Cost
3) Config → 8) Fwd Dbase → 1) Set Static Frwd Database Entry	1) Add Static Forwarding Database Entry 2) Delete Static Forwarding Database Entry
3) Config → 9) FCIP → 1) Add Local FCIP Network Module	Enter the FCIP Network Module Number (1-4): Enter the IP Address of FCIP Network Module:
3) Config → 9) FCIP → 2) Delete Local FCIP Network Module	Enter the IP Address of Local FCIP Network Module: Enter the SubNet Mask of Local FCIP Network Module:
3) Config → 9) FCIP → 3) Add Remote FCIP Network Module	Enter the IP Address of Remote FCIP Network Module: Enter the SubNet Mask of Remote FCIP Network Module:
3) Config → 9) FCIP → 4) Delete Remote FCIP Network Module	Enter the IP Address of Remote FCIP Network Module: Enter the SubNet Mask of Remote FCIP Network Module:
4) Admin → 1) Auth Info → 1) Get Authentication Parameter	-- (no sub menus)
4) Admin → 1) Auth Info → 2) Modify Admin UserName, Pswrd	Enter Old Administrator User Name: Enter Old Administrator Password : Enter New Administrator UserName : Enter New Administrator Password :

4) Admin → 2) Set Module Admin Status → →	-- (no sub menus)
4) Admin → 3) SNMP → 1) Set SNMP Trap Interval	Enter Trap Interval (in centiseconds) :-- (no sub menus)
4) Admin → 3) SNMP → 2) Add NMS Entry	Enter NMS IP Address :-- (no sub menus)
4) Admin → 3) SNMP → 3) Delete NMS Entry	NMS Entry Deleted -- (no sub menus)
4) Admin → 3) SNMP → 4) Modify NMS Entry	Enter NMS IP Address : Enter CommunityMode (Read-Write(1), Read-Only(2)) :
4) Admin → 3) SNMP → 5) Modify Community Name	Enter CommunityMode (Read-Write(1), Read-Only(2)) : Enter New CommunityName :
4) Admin → 3) SNMP → 6) Modify Trap Administration Status	1. ColdStart Trap 2. WarmStart Trap 3. LinkDown Trap 4. LinkUp Trap 5. Authentication Failure Trap 6. Egp Neighbor Loss Trap 7. Enterprise Specific Trap 8. Bridge Traps 9. Rmon Traps 10. Power Module Failure Trap 11. Temperature Threshold Trap 12. Fan Status Trap
4) Admin → 4) FCIP Network Module CLI - Serial Proxy → →	-- (no sub menus)
4) Admin → 5) FCIP Network Module CLI - Telnet Proxy → →	-- (no sub menus)
5) Util → 1) Ping Utility → →	-- (no sub menus)
5) Util → 2) BGP Debug → →	-- (no sub menus)
5) Util → 3) OSPF Debug → →	-- (no sub menus)
5) Util → 4) Local FCIP Net Module Domain <-> IP Table → →	-- (no sub menus)
5) Util → 5) Local FCIP Network Module State → →	-- (no sub menus)
5) Util → 6) Clear EdgeSwitch Configuration → →	-- (no sub menus)
5) Util → 7) Debug Mode Enable → →	-- (no sub menus)
5) Util → 8) ES Import/Export → 1) Display ES Config Svr Info	-- (no sub menus)
5) Util → 8) ES Import/Export → 2) ES Config Server IP Address	-- (no sub menus)
5) Util → 8) ES Import/Export → 3) ES Config Server Dir Name	-- (no sub menus)
5) Util → 8) ES Import/Export → 4) ES Config Server File Name	-- (no sub menus)
5) Util → 8) ES Import/Export → 5) ES Config Server User Name	-- (no sub menus)
5) Util → 8) ES Import/Export → 6) ES Config Server Password	-- (no sub menus)
5) Util → 8) ES Import/Export → 7) Export Binary ES Config	-- (no sub menus)
5) Util → 8) ES Import/Export → 8) Import Binary ES Config File	-- (no sub menus)

Fifth Level Menus

3) Config → 6) Routing → 5) Set RIP→ 1)General	<ul style="list-style-type: none">1) Configure RIP with Default Parameters2) RIP Version3) RIP Administration Status4) Supplier Mode5) Border Gateway Filtering6) Set as Gateway7) Multicast/Broadcast
3) Config → 6) Routing → 5) Set RIP→ 2)Interface	-- (no sub menus)
3) Config → 6) Routing → 6) Set OSPF→ 1) Default	-- (no sub menus)
3) Config → 6) Routing → 6) Set OSPF→ 2) General	<ul style="list-style-type: none">1) OSPF Admin Status2) OSPF Router ID3) OSPF AS Border Router4) OSPF TOS Support
3) Config → 6) Routing → 6) Set OSPF→ 3) Interface	<ul style="list-style-type: none">1) Add Interface Entry2) Delete Interface Entry
3) Config → 6) Routing → 6) Set OSPF→ 4) Area	<ul style="list-style-type: none">1) Add Area Entry2) Delete Area Entry
3) Config → 6) Routing → 7) Set BGP4→ 1) General	-- (no sub menus)
3) Config → 6) Routing → 7) Set BGP4→ 2) BGP Peer	<ul style="list-style-type: none">1) Add BGP Peer2) Delete BGP Peer
3) Config → 6) Routing → 7) Set BGP4→ 3) OSPF Ext	<ul style="list-style-type: none">1) Add OSPF External Subnet2) Delete OSPF External Subnet
3) Config → 6) Routing → 7) Set BGP4→ 4) OSPF Int	<ul style="list-style-type: none">1) Add OSPF Internal Subnet2) Delete OSPF Internal Subnet
3) Config → 6) Routing → 7) Set BGP4→ 5) Network	<ul style="list-style-type: none">1) Add Network Multi-Exit-Discriminator Pair2) Delete Network Multi-Exit-Discriminator Pair
3) Config → 6) Routing → 7) Set BGP4→ 6) Filter Tag	<ul style="list-style-type: none">1) Add BGP4 Filter Tags2) Delete BGP4 Filter Tags
3) Config → 6) Routing → 7) Set BGP4→ 7) Metric	<ul style="list-style-type: none">1) Add OSPF Metric to BGP Metric2) Delete OSPF Metric from BGP Metric

APPENDIX C: FCIP Network Module CLI Menu Structure

First Level Menu's

- 1) **config** - Configure switch settings
- 2) **reset** - Reset switch (Example: >reset)
- 3) **show** - Show device information
- 4) **firmware** - Access firmware options
- 5) **diagnostics** - Access diagnostic features

Second Level Menu's

- | | |
|--|--|
| 1) config - Configure switch settings | <ol style="list-style-type: none"> 1) back - Go back 2) event - Set event reporting parameters 3) zone - Set zone parameters 4) port - Set port parameters 5) system - Set system parameters 6) password - Change passwords 7) key - Set license keys 8) com - Set communication parameters 9) mode - Set switch operating mode |
| 2) reset - Reset switch (Example: >reset) | This will reset the switch. Do you wish to continue (Yes / No): [N] |
| 3) show - Show device information | <ol style="list-style-type: none"> 1) back - Go back 2) zones - Show zone settings (Example: >zones) 3) ports - Show port settings 4) system - Show system settings (Example: >system) 5) communications - Show communication settings (Ex: >communications) 6) keys - Show key features and current key status (Example: >keys) 7) events - Show event log (Example: >events) 8) sensors - Show sensor information (Example: >sensors) 9) firmware - Show firmware image information (Example: >firmware) 10) info - Show device information (Example: >info) 11) link - Show Link Statistics 12) sns - Show SNS table (Example: >sns) 13) fspf - Show FSPF routing table (Example: >fspf) |
| 4) firmware - Access firmware options | <ol style="list-style-type: none"> 1) back - Go back 2) show - Show current firmware settings (Example: >show) 3) load - Load new firmware via tftp or xmodem (Example: >load tftp) 4) select - Select alternate version of firmware (Example: >select 2) 5) reset - Reset switch (Example: >reset) |
| 5) diagnostics - Access diagnostic features | <ol style="list-style-type: none"> 1) back - Go back 2) system - Access system diagnostics 3) port - Access port diagnostics 4) clear_errors - Clear system errors 5) stack - Show stack dump from last detected fault (Example: >stack) 6) read - Read memory 7) memshow - Show available memory space (Example: >memshow) 8) trace - Debugging trace control (Example: >trace) |

Third Level Menu's

1) config → 2) event

- 1) back - Go back
- 2) show - Show current severity settings (Example: >show)
- 3) log - Show event log (Example: >log)
- 4) event_sev - Set the event log severity level (Example: >event critical)
- 5) led_sev - Assign severity level to fault LED (Example: >led_sev alert)
- 6) clear_log - Clear event log (Example: >clear)
- 7) reset_led - Reset fault LED (Example: >reset)

1) config → 3) zone

- 1) back - Go back
- 2) port - set port zoning parameters
- 3) wwn - set WWN zoning parameters

1) config → 4) port

- 1) back - Go back
- 2) show - Show current port settings (Example: >show)
- 3) type - Set port type (Example: >type 1)
- 4) name - Set port name (Example: >name "Group 1")
- 5) port - Set port number (Example: >port 3)
- 6) prli - Enable / Disable PLOGI/PRLI Probing (Example: >prli true)
- 7) fan - Enable / Disable Fabric Address Notification (Example: >fan true)
- 8) stream - Set the number of frames per route request (Example: >stream 3)
- 9) credit - Set BB Credit for port (Example: >credit 16)
- 10) mrbs - Set maximum receive buffer size (Example: >mrbs 100)
- 11) advanced - Configure advanced port settings
- 12) rscn - Set RSCN mode (Example: >rscn normal)

1) config → 5) system

- 1) back - Go back
- 2) show - Show system settings (Example: >show)
- 3) name - Set system name (Example: >name "lady hawk")
- 4) time - Set system time with format xx:xx:xx (Ex: >time 13:45:00)
- 5) date - Set system date with format xx/xx/xxxx (Ex: >date 01/23/2000)
- 6) contact - Set system contact (Example: >contact "john smith")
- 7) ethmode - Set Ethernet mode (Example: >ethmode eth10half)
- 8) location - Set system location (Example: >location "Building A")
- 9) advanced - Configure advanced settings
- 10) trap - Trap destination configurations

1) config → 6) password

- 1) back - Go back
- 2) monitor - Set monitor only password (Example: >monitor)
- 3) manage - Set monitor / manage password (Example: >manage)

1) config → 7) key

- 1) back - Go back
- 2) show - Show the current keys & status (Example: >show)
- 3) set - Set license key (Example: >set 21-00001-13001061-ba-000000)

1) config → 8) com

- 1) back - Go back
- 2) show - Show current communication settings (Example: >show)
- 3) console - Set console mode
- 4) ethernet - Set ethernet parameters
- 5) slip - Set SLIP parameters
- 6) modem - Set modem parameters

1) config → 9) mode	<ul style="list-style-type: none"> 1) back - Go back 2) show - Show current mode of operation (Example: >show) 3) sam - Set switch addressing mode (Example: >sam Stealth-3) 4) cfg - Configure Stealth-3 mode 5) policy – Set switch operating policy (Example: >policy Standard)
2) reset →	-- (no sub menus)
3) show → 2) zones →	-- (no sub menus)
3) show → 3) ports →	<ul style="list-style-type: none"> 1) back - Go back 2) config - Show port configuration (Example: >config) 3) status - Show port status (Example: >status) 4) gen_stat - Show general port statistics (Example: >gen_stat) 5) advanced - Show advanced port settings (Example: >advanced) 6) c2_stat - Show Class 2 port statistics (Example: >c2_stat) 7) c3_stat - Show Class 3 port statistics (Example: >c3_stat) 8) clear – Clear port statistics (Example: >clear)
3) show → 4) system →	-- (no sub menus)
3) show → 5) communications →	-- (no sub menus)
3) show → 6) keys →	-- (no sub menus)
3) show → 7) events →	-- (no sub menus)
3) show → 8) sensors →	-- (no sub menus)
3) show → 9) firmware →	-- (no sub menus)
3) show → 10) info →	-- (no sub menus)
3) show → 11) link →	<ul style="list-style-type: none"> 1) back - Go back 2) connection - Show link connection statistics (Example: >connection) 3) data - Show link data statistics (Example: >data) 4) protocol - Show link protocol statistics (Example: >protocol) 5) clear - Clear link statistics (Example: >clear)
3) show → 12) sns →	-- (no sub menus)
3) show → 13) fspf →	-- (no sub menus)
4) firmware → 2) show →	-- (no sub menus)
4) firmware → 3) load →	<ul style="list-style-type: none"> 1) Verify and Store 2) Abort
4) firmware → 4) select →	<ul style="list-style-type: none"> [1] Image 1 [2] Image 2

- 4) firmware → 5) reset → -- Caution, there is no prompt allowing user to cancel operation.
- 5) diagnostics → 2) system →
 - 1) back - Go back
 - 2) show - Show system diagnostics settings (Example: >show)
 - 3) ethled - Select Ethernet LED behavior (Example: >ethled rx)
 - 4) default - Reset switch settings to factory default (Example: >default)
- 5) diagnostics → 3) port →
 - 1) back - Go back
 - 2) show - Show diagnostic port settings (Example: >show)
 - 3) beacon - Beacon port (Example: >beacon on)
 - 4) reset - Reset port (Example: >reset)
 - 5) prli - Send PLOGI/PRLI to all devices on port (Example: >prli)
 - 6) mode - Set the operating mode of port (Example: >mode enabled)
 - 7) port - Set port number (Example: >port 2)
- 5) diagnostics → 4) clear_errors → -- (no sub menus)
- 5) diagnostics → 5) stack → -- (no sub menus)
- 5) diagnostics → 6) read →
 - 1) rtc - Dump RTC NV ram item (Example: >rtc 17)
- 5) diagnostics → 7) memshow → -- (no sub menus)
- 5) diagnostics → 8) trace →
 - 1) back - Go back
 - 2) list - List all known modules
 - 3) set - Set module trace mask

Fourth Level Menu's

- 1) config → 2) event → 2) log → -- (no sub menus)
- 1) config → 2) event → 3) zone → -- (no sub menus)
- 1) config → 2) event → 4) event sev →
 - [0] emergency
 - [1] alert
 - [2] critical
 - [3] error
 - [4] warning
 - [5] notify
 - [6] info
 - [7] debug
 - [8] mark
- 1) config → 2) event → 5) led_sev →
 - [0] emergency
 - [1] alert
 - [2] critical
 - [3] error
 - [4] warning
 - [5] notify
 - [6] info
 - [7] debug
 - [8] mark
- 1) config → 2) event → 6) clear_log → -- (no sub menus)

1) config → 2) event → 7) reset_led →	-- (no sub menus)
1) config → 3) zone → 1) back →	-- (no sub menus)
1) config → 3) zone → 2) port →	-- (no relevant sub menus)
1) config → 3) zone → 3) wwn →	1) back - Go back 2) show - show zone sets 3) state – set default state 4) zoneset – configure WWN zone sets 5) zone – configure WWN zones
1) config → 4) port → 2) show →	-- (no sub menus)
1) config → 4) port → 3) type →	[1] fPort [2] flPort [3] ePort [4] stealthLoop [5] autoDetect [6] gPort
1) config → 4) port → 4) name →	-- (no sub menus)
1) config → 4) port → 5) port →	-- (no sub menus)
1) config → 4) port → 6) prli →	[1] true [2] false
1) config → 4) port → 7) fan →	[1] true [2] false
1) config → 4) port → 8) stream →	-- (no sub menus)
1) config → 4) port → 9) credit →	-- (no sub menus)
1) config → 4) port → 10) mrbs →	-- (no sub menus)
1) config → 4) port → 11) advanced →	1) back - Go back 2) show - Show advanced port settings (Example: >show) 3) rbs - Set max receive buffer payload size (Example: >rbs 300) 4) tbs - Set the maximum transmit buffers (Example: >tbs 16) 5) edtov - Set error detection time-out value (Example: >edtov 1000) 6) ratov - Set resource allocation time-out value (Example: >ratov 120000) 7) altov - Set loop initialization time-out value (Example: >altov 15) 8) lpto - Set loop connection timeout (Example: >lpto 10000) 9) rxthrsh - Set the receive credit threshold (Example: >rxthresh 10) 10) txthrsh - Set transmit available threshold (Example: >txthresh 100) 11) port - Set port number (Example: >port 3) 12) speed - Set the port speed (Example: >speed twoGig)

1) config → 4) port → 12) rscn →	[1] normal [2] TxOnly [3] RxOnly [4] noRSCN
1) config → 5) system → 2) show →	-- (no sub menus)
1) config → 5) system → 3) name →	-- (no sub menus)
1) config → 5) system → 4) time →	-- (no sub menus)
1) config → 5) system → 5) date →	-- (no sub menus)
1) config → 5) system → 6) contract →	-- (no sub menus)
1) config → 5) system → 7) ethmode →	-- (no sub menus)
1) config → 5) system → 8) location →	-- (no sub menus)
1) config → 5) system → 9) advanced →	1) back - Go back 2) show - Show advanced system settings (Example: >show) 3) domid - Set the default domain id (Example: >domid 02) 4) numadd - Set the # of private addresses per port (Example: >numadd 10) 5) priority - Set the principal switch priority (Example: >priority 1) 6) lfa - Set loop fabric address mode (Example: >lfa enabled) 7) rcf - Set RCF disruptive mode (Example: >rcf destructive)
1) config → 5) system → 10) trap →	1) back – Go back 2) show – Show current traps (Example: >show) 3) add – Add or modify trap configurations (Example: >add) 4) state – Set state of trap (Example: >state) 5) delete – Delete trap (Example: >delete)
1) config → 8) com → 2) show →	-- (no sub menus)
1) config → 8) com → 3) console →	1) back - Go back 2) show - Show current console settings (Example: >show) 3) mode - Set console mode (Example: >mode slip)
1) config → 8) com → 4) ethernet →	1) back - Go back 2) show - Show current ethernet settings (Example: >show) 3) address - Set ethernet address (Example: >address 192.168.11.71) 4) netmask - Set ethernet netmask (Example: >netmask 255.255.255.0) 5) gateway - Set default gateway (Example: >gateway 192.168.11.1)
1) config → 8) com → 5) slip →	1) back - Go back 2) show - Show current SLIP settings (Example: >show) 3) address - Set SLIP IP address (Example: >address 192.168.11.72) 4) netmask - Set SLIP netmask (Example: >netmask 255.255.255.0)
1) config → 8) com → 6) modem →	1) back - Go back 2) show - Show current modem settings (Example: >show) 3) init - Set modem init string (Example: >init atel1v1)

1) config → 9) mode → 2) show →	-- (no sub menus)
1) config → 9) mode → 3) sam →	[2] Fabric [4] Fabric (Public/Private)
1) config → 9) mode → 4) cfg →	1) back - Go back 2) show - Show current Stealth-3 settings (Example: >show) 3) alternate - Set alternate JBOD address mode (Example: >alternate true) 4) master - Set mastership (Example: >master true) 5) reset - Reset all ports (Example: >reset) 6) deinsertion – set alternate Alpha LIP mode
1) config → 9) mode → 5) policy →	-- (no sub menus)
2) reset →	-- (no sub menus)
3) show → 3) ports → 2) config →	-- (no sub menus)
3) show → 3) ports → 3) status →	-- (no sub menus)
3) show → 3) ports → 4) gen_stat →	-- (no sub menus)
3) show → 3) ports → 5) advanced →	-- (no sub menus)
3) show → 3) ports → 6) c2_stat →	-- (no sub menus)
3) show → 3) ports → 7) c3_stat →	-- (no sub menus)
3) show → 3) ports → 8) clear →	-- (no sub menus)
4) firmware → → →	-- (no fourth level sub menus under firmware)
5) diagnostics → 2) system → 2) show	-- (no sub menus)
5) diagnostics → 2) system → 3) ethled	[1] rx [2] tx Ethernet LED Mode [x] =
5) diagnostics → 2) system → 4) default →	This will reset all settings to factory default and reset the device. Do you wish to continue (Yes / No): [N]
5) diagnostics → 3) port → 2) show →	-- (no sub menus)
5) diagnostics → 3) port → 3) beacon →	[1] unknown [2] on [3] off Beacon State [x] =
5) diagnostics → 3) port → 4) reset →	-- Caution, there is no prompt allowing user to cancel operation.
5) diagnostics → 3) port → 5) prli →	-- (no sub menus)
5) diagnostics → 3) port → 6) mode →	-- (no sub menus)

5) diagnostics → 3) port → 7) port → Port Number [x] =
5) diagnostics → 4) clear_errors → → -- (no sub menus)
5) diagnostics → 5) stack → → -- (no sub menus)
5) diagnostics → 6) read → → -- (no sub menus)
5) diagnostics → 7) memshow → → -- (no sub menus)
5) diagnostics → 8) trace → 2) list → -- (no sub menus)
5) diagnostics → 8) trace → 3) set → -- (no sub menus)

APPENDIX D: OptiStar™ EdgeSwitch Specifications

Table 1: Technical Specifications

Description	Specifications
WAN Connectivity	Up to 2.5 Gbps: <ul style="list-style-type: none"> • OC-48c/STM-16c Packet over SONET (PoS) (single mode fiber up to 15 km) • OC-12c/STM-4c Packet over SONET (PoS) (single mode fiber up to 15 km) • Gigabit Ethernet (single mode fiber up to 10 km, multimode fiber up to 500 m)
Network Modules and Ports	Four hot-swappable network modules available; up to four modules can be installed per switch: <ul style="list-style-type: none"> • OC-48c/STM-16c Network Module (1 port per module) • OC-12c/STM-4c Network Module (2 ports per module) • Gigabit Ethernet Network Module (2 copper/multimode fiber/single mode fiber ports per module) • FCIP Network Module (2 Fibre Channel switch ports per module)
FCIP Network Module	Supports 1 Gbps Fibre Channel E_Port (expansion), F_Port (fabric), and FL_Port (fabric loop) interfaces Classes: Class 2 (acknowledged) and Class 3 (unacknowledged)
Switch Fabric	Nonblocking 22 Gbps
Routing	OSPFv2, BGP4, OSPF/BGP4 Interaction, RIP/RIP-II, Spanning Tree
Network Management	SNMPv1 and extensive MIB managed object supported Console (serial) and 10/100BaseT Ethernet ports for out-of-band network management and administration
Administrative Interfaces	Command Line and Web/HTTP administrative interface TFTP and BOOTP for software updates Multi-user support
Visual Indicators (LEDs)	Link status and port isolate status for each port Link data activity on each port Power supply status Switch status
Power	Two redundant, hot-swappable power supplies with automatic failover 200 Watts, 90-132/180-264 Volts AC @ 47-63 Hz, auto-ranging
Environmental Requirements	Operating Temperature 0° to 40°C Operating Humidity 10-80% non-condensing

Table 2: Physical Specifications

Description	Specifications
Chassis height	5.18 inches (131.6 cm)
Chassis width	17.50 inches (444.5 cm)
Chassis depth	15.46 inches (392.7 cm)
Weight, maximum configuration	37.13 lb (16.84 kg) with two AC power modules
Weight, Host Controller Module	2.42 lb (1.1 kg)
Weight, FCIP Network Module	1.04 lb (0.47 kg)
Weight, Power Module	4.19 lb (1.9 kg)
Weight, OC-48c/STM-16c Network Module	1.02 lb (0.46 kg)
Weight, OC-12c/STM-4c Network Module	.88 lb (0.4 kg)
Weight, Gigabit Ethernet Network Module	1.04 lb (0.47 kg)

APPENDIX E: Preventing Electrostatic Discharge



Electrostatic discharge (ESD) can damage electronic components and equipment. ESD occurs when electronic components are improperly handled and can result in complete or intermittent failures. Always follow ESD-prevention procedures when removing and replacing components.

Use the following guidelines to prevent ESD damage:

- Always use an ESD wrist or ankle strap and ensure that it makes skin contact.
- Connect the equipment end of the strap to an unpainted metal chassis surface.
- If no wrist strap is available ground yourself by touching the metal chassis.
- When installing a module, use any available ejector levers or captive installation screws to properly seat the bus connectors in the backplane or module slot. These devices prevent accidental removal, provide proper grounding for the system, and help to ensure that bus connectors are properly seated.
- When removing a module, use any available ejector levers or captive installation screws to release the bus connectors from the backplane or module slot.
- Handle adapter modules by available handles or edges only. Avoid touching the printed circuit boards or connectors.
- Place a removed module board-side-up on an antistatic surface or in an approved antistatic container.
- If you need to return the module to Lucent, immediately place it in a static shielding container.
- Avoid contact between printed circuit boards and clothing. A wrist or ankle strap only protects components from ESD voltages on the body; ESD voltages on clothing can still cause damage.

APPENDIX F: OptiStar™ EdgeSwitch Warranty

Except to the extent that your purchase agreement provides a different warranty, Lucent warrants to you during the applicable Warranty Period only that (i) products manufactured by Lucent (including those purchased by Lucent according to its procurement specifications) will be free from defects in material and workmanship and will conform to the specifications for such products; (ii) software developed by Lucent will be free from those defects which materially affect performance in accordance with the specifications; and (iii) services will be performed in a workmanlike manner and in accordance with good industry practice in the community in which services are provided. With respect to products or software or partial assembly of products furnished by Lucent but not manufactured by Lucent, Lucent assigns to you, to the extent permitted, the warranties given to Lucent by its vendors of such items.

The Warranty Period for products is 12 months and for associated software is 90 days. The Warranty Period for any product (or part thereof) or software repaired or replaced under this warranty is the unexpired portion of the original Warranty Period. The Warranty Period for the related services defined here is 30 days. For products and software, the Warranty Period begins on the date of shipment, unless Lucent installs, in which case the Warranty Period begins on the earlier of (i) the date Lucent completes installation and (ii) the 31st day after delivery, if you schedule or delay installation by more than 30 days after delivery. The Warranty Period for services begins on the date Lucent completes the services.

If, under normal and proper use, a defect or non-conformity appears in a warranted product or software during the applicable Warranty Period and you promptly notify Lucent in writing during the applicable Warranty Period of such defect or non-conformance, and follow Lucent's instructions regarding return of such defective or non-conforming product or software, then Lucent will, at no charge to you, either (i) repair, replace or correct the same at its manufacturing or repair facility or (ii) if Lucent determines that it is unable or impractical to repair, replace or correct the product or software, provide a refund or credit not to exceed the original purchase price or license fee. If services prove not to be performed as warranted during the applicable Warranty Period, Lucent, at its option, either will correct or re-perform the services or render a credit for the defective or non-conforming portion of the services.

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APPENDIX H: Environmental and Regulatory Information

Environmental Specifications

Description	Value
Temperature	Operating: 32° to 104° F (0° to 40° C) Nonoperating: -4° to 149° F (-20° C to 65° C)
Humidity	Noncondensing, operating: 10 to 80% Noncondensing, nonoperating: 5 to 95%
Altitude	Operating: 0 to 10,000 ft (0 to 3048 m) Nonoperating: 0 to 30,000 ft (0 to 9144 m)
Heat dissipation	6,000 Btu/hr maximum
Acoustic Noise	69 dbA maximum
Shock	Operating: 5 to 500 Hz, 0.5 g ¹ (0.1 oct/min ²) Nonoperating: 5 to 100 Hz, 1 g (0.1 oct/min); 100 to 500 Hz, 1.5g (0.2 oct/min); 500 to 1000 Hz, 1.5 g (0.2 oct/min)

¹g = gravity.

²oct/min = octave per minute.

Regulatory

Safety

- UL 60950, Third Edition; “Safety of Information Technology Equipment, Including Electrical Business Equipment”
- CSA C22.2 No. 60950-00, Third Edition, “Safety of Information Technology Equipment, Including Electrical Business Equipment”
- EN 60950, “Safety of Information Technology Equipment”
- IEC 60950, Third Edition, “Safety of Information Technology Equipment”

FCC Information (USA)

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Interference-Causing Equipment Standard Compliance Notice (Canada)

"This Class A digital apparatus complies with Canadian ICES-003."
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EN 55022 (CISPR Pub 22) And Chinese National Standard 13438 Warning Statement

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms and Standards:

- EN 55022 (CISPR Pub 22) Measurement Of Radio Disturbance Characteristic For Information Technology Equipment (ITE)
- EN 55024 (CISPR Pub 24) (IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11) – Electromagnetic Immunity For ITE Equipment
- IEC 61000-6-1 (IEC 61000-4-2, IEC 61000-4-3, ENV 50204, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11) – Electromagnetic Immunity For Residential, Commercial and Light-Industrial Environments
- EN 60950 (IEC950) Product Safety
- EN 61000-3-2 Limits For Harmonic Current
- EN 61000-3-3 Limitation Of Voltage Fluctuations and Flicker

Singapore Compliance Notice

Note: This equipment has been tested and found to comply with the Info-Communications Development Authority of Singapore (IDA) limits for a Class A digital device, pursuant to The IDA TS EMC Requirements for Telecommunication Equipment.

VCCI Compliance Notice

Class A ITE

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Translation:

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case, the user may be required to take corrective actions.

APPENDIX I: Cable Ordering

Single Mode (8.3 Micron) Fiber

The following fiber cabling is available for use with OptiStar EdgeSwitch WAN interface ports, including Gigabit Ethernet Network Module with Single Mode Fiber GBIC, OC-48c/STM-16c Network Module, or OC-12c/STM-4c Network Module. Two fibers are required for connection to each port, one for transmit and one for receive; these can be ordered either as two simplex fibers or one duplex fiber pair. The ends of a fiber pair intended to connect to the Gigabit Ethernet Network Module with a Single Mode Fiber GBIC must use SC connectors. The ends of a fiber pair intended to connect to the OC-48c/STM-16c Network Module or the OC-12c/STM-4c Network Module must use LC connectors. For additional fiber cabling options, please contact your Lucent Technologies sales representative.

Product Code	Comcode	No. of Fibers	End 1	End 2	Cable Type	Length (feet)
LS1SC-SC-04	106908254	Simplex	SC	SC	9000A3	4
LS1SC-SC-05	106908262	Simplex	SC	SC	9000A3	5
LS1SC-SC-10	106908270	Simplex	SC	SC	9000A3	10
LS1SC-SC-15	106908288	Simplex	SC	SC	9000A3	15
LS1SC-SC-16	107849804	Simplex	SC	SC	9000A3	16
LS1SC-SC-20	106908296	Simplex	SC	SC	9000A3	20
LS1SC-SC-25	106908304	Simplex	SC	SC	9000A3	25
LS1SC-SC-30	106908312	Simplex	SC	SC	9000A3	30
LS1SC-SC-35	106908320	Simplex	SC	SC	9000A3	35
LS1SC-SC-40	106908338	Simplex	SC	SC	9000A3	40
LS1SC-SC-50	106908346	Simplex	SC	SC	9000A3	50
LS1SC-SC-55	107668782	Simplex	SC	SC	9000A3	55
LS1SC-SC-60	107668790	Simplex	SC	SC	9000A3	60
LS1SC-SC-65	107668808	Simplex	SC	SC	9000A3	65
LS1SC-SC-70	107668816	Simplex	SC	SC	9000A3	70
LS1SC-SC-75	106908387	Simplex	SC	SC	9000A3	75
LS1SC-SC-80	107668824	Simplex	SC	SC	9000A3	80
LS1SC-SC-85	107668832	Simplex	SC	SC	9000A3	85
LS1SC-SC-90	107668840	Simplex	SC	SC	9000A3	90
LS1SC-SC-95	107668857	Simplex	SC	SC	9000A3	95
LS1SC-SC-100	106908395	Simplex	SC	SC	9000A3	100
MS1SC-SC-04	107265209	Simplex	SC	SC	MiniCord	4
MS1SC-SC-05	107198228	Simplex	SC	SC	MiniCord	5
MS1SC-SC-10	107198236	Simplex	SC	SC	MiniCord	10
MS1SC-SC-15	107198244	Simplex	SC	SC	MiniCord	15
MS1SC-SC-16	107849838	Simplex	SC	SC	MiniCord	16
MS1SC-SC-20	107198251	Simplex	SC	SC	MiniCord	20
MS1SC-SC-25	107198269	Simplex	SC	SC	MiniCord	25
MS1SC-SC-30	107198277	Simplex	SC	SC	MiniCord	30
MS1SC-SC-35	107198285	Simplex	SC	SC	MiniCord	35
MS1SC-SC-40	107198293	Simplex	SC	SC	MiniCord	40

Product Code	Comcode	No. of Fibers	End 1	End 2	Cable Type	Length (feet)
MS1SC-SC-45	107198301	Simplex	SC	SC	MiniCord	45
MS1SC-SC-50	107198319	Simplex	SC	SC	MiniCord	50
MS1SC-SC-75	107198327	Simplex	SC	SC	MiniCord	75
MS1SC-SC-100	107198335	Simplex	SC	SC	MiniCord	100
MS2SC-SC-04	107265233	Duplex	SC	SC	MiniCord	4
MS2SC-SC-05	107198640	Duplex	SC	SC	MiniCord	5
MS2SC-SC-10	107198665	Duplex	SC	SC	MiniCord	10
MS2SC-SC-15	107198830	Duplex	SC	SC	MiniCord	15
MS2SC-SC-16	107849853	Duplex	SC	SC	MiniCord	16
MS2SC-SC-20	107198848	Duplex	SC	SC	MiniCord	20
MS2SC-SC-25	107198855	Duplex	SC	SC	MiniCord	25
MS2SC-SC-30	107198863	Duplex	SC	SC	MiniCord	30
MS2SC-SC-35	107198871	Duplex	SC	SC	MiniCord	35
MS2SC-SC-40	107198889	Duplex	SC	SC	MiniCord	40
MS2SC-SC-45	107198897	Duplex	SC	SC	MiniCord	45
MS2SC-SC-50	107198905	Duplex	SC	SC	MiniCord	50
MS2SC-SC-75	107198913	Duplex	SC	SC	MiniCord	75
MS2SC-SC-100	107198921	Duplex	SC	SC	MiniCord	100
MS4SC-SC-10	107868697	Quad	SC	SC	MiniCord	10
MS4SC-SC-15	107868705	Quad	SC	SC	MiniCord	15
MS4SC-SC-20	107868713	Quad	SC	SC	MiniCord	20
MS4SC-SC-25	107868721	Quad	SC	SC	MiniCord	25
MS4SC-SC-30	107868739	Quad	SC	SC	MiniCord	30
MS4SC-SC-35	107868747	Quad	SC	SC	MiniCord	35
MS4SC-SC-40	107868754	Quad	SC	SC	MiniCord	40
MS4SC-SC-50	107868762	Quad	SC	SC	MiniCord	50
MS4SC-SC-60	107868796	Quad	SC	SC	MiniCord	60
MS4SC-SC-75	107868770	Quad	SC	SC	MiniCord	75
MS4SC-SC-100	107868804	Quad	SC	SC	MiniCord	100
MS1LC-LC-4	107735177	Simplex	LC	LC	MiniCord	4
MS1LC-LC-5	107735185	Simplex	LC	LC	MiniCord	5
MS1LC-LC-6	107735227	Simplex	LC	LC	MiniCord	6
MS1LC-LC-8	107735235	Simplex	LC	LC	MiniCord	8
MS1LC-LC-10	107735243	Simplex	LC	LC	MiniCord	10
MS1LC-LC-15	107735250	Simplex	LC	LC	MiniCord	15
MS1LC-LC-20	107735268	Simplex	LC	LC	MiniCord	20
MS1LC-LC-25	107735276	Simplex	LC	LC	MiniCord	25
MS1LC-LC-30	107735284	Simplex	LC	LC	MiniCord	30
MS1LC-LC-35	107735292	Simplex	LC	LC	MiniCord	35
MS1LC-LC-40	107735300	Simplex	LC	LC	MiniCord	40
MS1LC-LC-50	107735318	Simplex	LC	LC	MiniCord	50
MS1LC-LC-75	107735326	Simplex	LC	LC	MiniCord	75
MS1LC-LC-100	107735334	Simplex	LC	LC	MiniCord	100
MS2LC-LC-4	107735367	Duplex	LC	LC	MiniCord	4

Product Code	Comcode	No. of Fibers	End 1	End 2	Cable Type	Length (feet)
MS2LC-LC-5	107735375	Duplex	LC	LC	MiniCord	5
MS2LC-LC-6	107735383	Duplex	LC	LC	MiniCord	6
MS2LC-LC-8	107735391	Duplex	LC	LC	MiniCord	8
MS2LC-LC-10	107735409	Duplex	LC	LC	MiniCord	10
MS2LC-LC-15	107735417	Duplex	LC	LC	MiniCord	15
MS2LC-LC-20	107735425	Duplex	LC	LC	MiniCord	20
MS2LC-LC-25	107735433	Duplex	LC	LC	MiniCord	25
MS2LC-LC-30	107735441	Duplex	LC	LC	MiniCord	30
MS2LC-LC-35	107735458	Duplex	LC	LC	MiniCord	35
MS2LC-LC-40	107735466	Duplex	LC	LC	MiniCord	40
MS2LC-LC-50	107735474	Duplex	LC	LC	MiniCord	50
MS2LC-LC-75	107735482	Duplex	LC	LC	MiniCord	75
MS2LC-LC-100	107735490	Duplex	LC	LC	MiniCord	100
LS1FC-SC-E/W	106470438	Simplex	FC	SC	9000A3	Custom
LS1SC-SC-E/W	106470495	Simplex	SC	SC	9000A3	Custom
LS1SC-D4-E/W	106470503	Simplex	SC	D4	9000A3	Custom
MS1LC-LC-E/W	107735342	Simplex	LC	LC	MiniCord	Custom
MS1LC-SC-E/W	107815912	Simplex	LC	SC	MiniCord	Custom
MS1LC-EP-E/W	107815896	Simplex	LC	STII+	MiniCord	Custom
MS1SC-SC-E/W	107265175	Simplex	SC	SC	MiniCord	Custom
LS2FC-SC-E/W	106470610	Duplex	FC	SC	9001A3	Custom
LS2SC-SC-E/W	106470677	Duplex	SC	SC	9001A3	Custom
LS2SC-D4-E/W	106470685	Duplex	SC	D4	9001A3	Custom
MS2LC-LC-E/W	107735508	Duplex	LC	LC	MiniCord	Custom
MS2LC-SC-E/W	107815920	Duplex	LC	SC	MiniCord	Custom
MS2LC-EP-E/W	107815904	Duplex	LC	STII+	MiniCord	Custom
MS2SC-SC-E/W	107265217	Duplex	SC	SC	MiniCord	Custom

Multimode (62.5 Micron) Fiber

The following fiber cabling is available for use with OptiStar EdgeSwitch LAN or SAN interface ports, including FCIP Network Module with Multimode Fiber GBIC or Gigabit Ethernet Network Module with Multimode Fiber GBIC. Two fibers are required for connection to each port, one for transmit and one for receive; these can be ordered either as two simplex fibers or one duplex fiber pair. The ends of a fiber pair intended to connect to the Multimode Fiber GBIC must use SC connectors. For additional fiber cabling options, please contact your Lucent Technologies sales representative.

Product Code	Comcode	No. of Fibers	End 1	End 2	Cable Type	Length (feet)
LL1SC-SC-04	108911744	Simplex	SC	SC	9860A3	4
LL1SC-SC-05	108911751	Simplex	SC	SC	9860A3	5
LL1SC-SC-10	108911769	Simplex	SC	SC	9860A3	10
LL1SC-SC-15	108911777	Simplex	SC	SC	9860A3	15
LL1SC-SC-20	108911785	Simplex	SC	SC	9860A3	20
LL1SC-SC-25	108911793	Simplex	SC	SC	9860A3	25

Product Code	Comcode	No. of Fibers	End 1	End 2	Cable Type	Length (feet)
LL1SC-SC-30	108911801	Simplex	SC	SC	9860A3	30
LL1SC-SC-35	108911819	Simplex	SC	SC	9860A3	35
LL1SC-SC-40	108911827	Simplex	SC	SC	9860A3	40
LL1SC-SC-50	108911835	Simplex	SC	SC	9860A3	50
LL1SC-SC-75	108911843	Simplex	SC	SC	9860A3	75
LL1SC-SC-100	108911850	Simplex	SC	SC	9860A3	100
ML1SC-SC-04	108917899	Simplex	SC	SC	MiniCord	4
ML1SC-SC-05	108917907	Simplex	SC	SC	MiniCord	5
ML1SC-SC-10	108913039	Simplex	SC	SC	MiniCord	10
ML1SC-SC-15	108913047	Simplex	SC	SC	MiniCord	15
ML1SC-SC-20	108913054	Simplex	SC	SC	MiniCord	20
ML1SC-SC-25	108913062	Simplex	SC	SC	MiniCord	25
ML1SC-SC-30	108913070	Simplex	SC	SC	MiniCord	30
ML1SC-SC-35	108913088	Simplex	SC	SC	MiniCord	35
ML1SC-SC-40	108913096	Simplex	SC	SC	MiniCord	40
ML1SC-SC-45	108913104	Simplex	SC	SC	MiniCord	45
ML1SC-SC-50	108913112	Simplex	SC	SC	MiniCord	50
ML1SC-SC-75	108913120	Simplex	SC	SC	MiniCord	75
LL2SC-SC-04	108912197	Duplex	SC	SC	9861A3	4
LL2SC-SC-05	108912221	Duplex	SC	SC	9861A3	5
LL2SC-SC-10	108912239	Duplex	SC	SC	9861A3	10
LL2SC-SC-15	108912254	Duplex	SC	SC	9861A3	15
LL2SC-SC-20	108912262	Duplex	SC	SC	9861A3	20
LL2SC-SC-25	108912270	Duplex	SC	SC	9861A3	25
LL2SC-SC-30	108912296	Duplex	SC	SC	9861A3	30
LL2SC-SC-35	108912304	Duplex	SC	SC	9861A3	35
LL2SC-SC-40	108912312	Duplex	SC	SC	9861A3	40
LL2SC-SC-50	108912320	Duplex	SC	SC	9861A3	50
LL2SC-SC-75	108912338	Duplex	SC	SC	9861A3	75
LL2SC-SC-100	108912346	Duplex	SC	SC	9861A3	100
ML2SC-SC-04	108917923	Duplex	SC	SC	MiniCord	4
ML2SC-SC-05	108917931	Duplex	SC	SC	MiniCord	5
ML2SC-SC-10	108913146	Duplex	SC	SC	MiniCord	10
ML2SC-SC-15	108913153	Duplex	SC	SC	MiniCord	15
ML2SC-SC-20	108913161	Duplex	SC	SC	MiniCord	20
ML2SC-SC-25	108913179	Duplex	SC	SC	MiniCord	25
ML2SC-SC-30	108913187	Duplex	SC	SC	MiniCord	30
ML2SC-SC-35	108913195	Duplex	SC	SC	MiniCord	35
ML2SC-SC-40	108913203	Duplex	SC	SC	MiniCord	40
ML2SC-SC-45	108913211	Duplex	SC	SC	MiniCord	45
ML2SC-SC-50	108913229	Duplex	SC	SC	MiniCord	50
ML2SC-SC-75	108913237	Duplex	SC	SC	MiniCord	75
ML2SC-SC-100	108913245	Duplex	SC	SC	MiniCord	100
LL1FC-SC-E/W	106473291	Simplex	FC	SC	9860A3	Custom

Product Code	Comcode	No. of Fibers	End 1	End 2	Cable Type	Length (feet)
LL1SC-SC-E/W	106473523	Simplex	SC	SC	9860A3	Custom
LL1SC-SC-E/W	106473523	Simplex	SC	SC	9860A3	Custom
ML1SC-SC-E/W	108913138	Simplex	SC	SC	MiniCord	Custom
ML1LC-SC-E/W	108914029	Simplex	LC	SC	MiniCord	Custom
ML1SC-SC-E/W	108913138	Simplex	SC	SC	MiniCord	Custom
LL2FC-SC-E/W	106476658	Duplex	FC	SC	9861A3	Custom
LL2SC-SC-E/W	106476740	Duplex	SC	SC	9861A3	Custom
ML2LC-SC-E/W	108914136	Duplex	LC	SC	MiniCord	Custom
ML2SC-SC-E/W	108913252	Duplex	SC	SC	MiniCord	Custom

HSSDC and DB-9 Copper Cabling

The following copper cabling is available for use with OptiStar EdgeSwitch LAN or SAN interface ports, including FCIP Network Module with HSSDC GBIC or DB-9 GBIC, or Gigabit Ethernet Network Module with HSSDC GBIC or DB-9 GBIC. One copper cable is required for connection to each port. The end of a copper cable intended to connect to the HSSDC GBIC must use an HSSDC connector. The end of a copper cable intended to connect to the DB-9 GBIC must use a DB-9 Male connector. For additional copper cabling options, please contact your Lucent Technologies sales representative.

Comcode	End 1	End 2	Length (meters)
848836870	HSSDC	HSSDC	1
848836888	HSSDC	HSSDC	3
848836854	HSSDC	HSSDC	5
848836896	HSSDC	HSSDC	10
848836862	HSSDC	HSSDC	20
848836920	HSSDC	DB-9 Male	1
848836938	HSSDC	DB-9 Male	3
848836904	HSSDC	DB-9 Male	5
848836946	HSSDC	DB-9 Male	10
848836912	HSSDC	DB-9 Male	20
848837035	HSSDC	DB-9 Female	1
848837043	HSSDC	DB-9 Female	3
848837001	HSSDC	DB-9 Female	5
848837050	HSSDC	DB-9 Female	10
848837019	HSSDC	DB-9 Female	20
848836979	DB-9 Male	DB-9 Male	2
848836987	DB-9 Male	DB-9 Male	3
848836953	DB-9 Male	DB-9 Male	5
848836995	DB-9 Male	DB-9 Male	10
848836961	DB-9 Male	DB-9 Male	20
848837100	DB-9 Male	DB-9 Female	1
848837118	DB-9 Male	DB-9 Female	3
848837076	DB-9 Male	DB-9 Female	5
848837126	DB-9 Male	DB-9 Female	10

Comcode	End 1	End 2	Length (meters)
848837092	DB-9 Male	DB-9 Female	20

Ethernet Cabling

The following cabling is available for use to connect to the OptiStar EdgeSwitch 10/100 Ethernet management port:

Product Code	Comcode	End 1	End 2	Cable Type	Length (feet)
LCCADS-A-AB-AB-015	109151993	RJ-45	RJ-45	24AWG 4PR, 8 position	15
LCCADS-A-AB-AB-020	109151985	RJ-45	RJ-45	24AWG 4PR, 8 position	20
LCCADS-A-AB-AB-030	109151951	RJ-45	RJ-45	24AWG 4PR, 8 position	30
LCCADS-A-AB-AB-040	109151944	RJ-45	RJ-45	24AWG 4PR, 8 position	40
LCCADS-A-AB-AB-050	109080457	RJ-45	RJ-45	24AWG 4PR, 8 position	50
LCCADS-A-AB-AB-070	109151936	RJ-45	RJ-45	24AWG 4PR, 8 position	70
LCCADS-A-AB-AB-100	109080465	RJ-45	RJ-45	24AWG 4PR, 8 position	100
LCCADS-A-AB-AB-150	109080473	RJ-45	RJ-45	24AWG 4PR, 8 position	150
LCCADS-A-AB-AB-200	109080499	RJ-45	RJ-45	24AWG 4PR, 8 position	200
LCCADS-A-AB-AB-300	109080515	RJ-45	RJ-45	24AWG 4PR, 8 position	300

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