CHAPTER 1

Basic Configurations

This chapter describes basic configuration information for the Optical Services Modules (OSMs).

This chapter consists of these sections:

For detailed configuration and configuration information for platform-specific features supported on the different OSMs, see the individual chapters.

For information on configuring the Packet over SONET (POS) OSMs, see Chapter 1, "Configuring the OC-3c/STM-1, OC-12c/STM-4, and OC-48c/STM-16 SONET/SDH Optical Services Modules."

For information on configuring the 4-port Gigabit Ethernet WAN modules, see Chapter 1, "Configuring 4-Port Gigabit Ethernet WAN Optical Services Modules."

For information on configuring the channelized OC-12 and OC-48 modules, see Chapter 1, "Configuring the Channelized OC-12/T3 SONET/SDH Optical Services Modules."

For information on configuring the OC-12 ATM modules, see Chapter 1, "Configuring the OC-12 ATM Optical Services Modules."

For information on configuring quality of service and traffic shaping on the OSMs, see Chapter 9, "Configuring QoS on the Optical Services Modules."

For information on configuring Destination Sensitive Services, see Chapter 1, "Configuring Destination Sensitive Services on the Optical Services Modules."

For information on configuring MPLS and EoMPLS, see Chapter 1, "Configuring Multiprotocol Label Switching on the Optical Services Modules."

Configuring the OSMs

This section describes how to perform a basic configuration: enabling an interface (with the **no shutdown** command) and specifying IP routing.

You might also need to enter other configuration subcommands, depending on the requirements for your system configuration and the protocols you plan to route on the interface.

In the following procedure, press the **Return** key after each step unless otherwise noted. At any time you can exit the privileged level and return to the user level by entering **disable** at the prompt as follows:

Router# **disable**

Router>

	Command	Purpose
Step 1	`Router# configure terminal`	Enters configuration mode and specifies that the console terminal is the source of the configuration subcommands.
Step 2	`Router(config)# interface pos 7/1`	Specifies the new interface to configure.
Step 3	`Router(config-if)# ip address 10.0.0.10 255.255.255.255`	Assigns an IP address and subnet mask to the interface (if IP routing is enabled on the system), as in this example.
Step 4	`Router(config-if)# no shutdown`	Changes the shutdown state to up and enables the interface. The **no shutdown** command passes an enable command to the interface and causes the OSM to configure itself based on the previous configuration commands sent.
Step 5	`Router# copy running-config startup-config`	Writes the new configuration to NVRAM.

Customizing the Configuration

You can change the default values of all configuration parameters to match your network environment. Use the interface subcommands in the following sections if you need to customize the OSM configuration.

Note The interface subcommands in this section function the same regardless of the platform in which your OSM is installed; however, all of these commands require that you first enter the **interface pos** command to select the interface that you want to configure.

Setting the MTU Size

The default maximum transmission unit (MTU) size is 4470 bytes. To set the MTU size, enter the **mtu** *bytes* command, where *bytes* is a value in the range of 64 through 9216.

```
Router(config)# interface pos 7/1
Router(config-if)# mtu 3000
```

To restore the default of 4470 bytes, enter the **no mtu** command.

Configuring Framing

Note The channelized OC-12 and OC-48 modules do not support SDH framing.

.The default framing setting is SONET STS-3c. To configure for SDH STM-1, enter the **pos framing-sdh** command:

```
Router(config)# interface pos 7/1
Router(config-if)# pos framing-sdh
```

To change back to SONET STS-3c, enter the **no pos framing-sdh** command.

Setting the Source of the Transmit Clock

The clocking default specifies that the OSM uses the recovered receive (Rx) clock to provide transmit (Tx) clocking (called loop timing). To specify the OSM to generate the transmit clock internally, enter the **clock source internal** command:

```
Router(config)# interface pos 7/1
Router(config-if)# clock source internal
```

To restore loop timing, enter the **no clock source internal** command or the clock source line command.

Configuring Cyclic Redundancy Checks

The cyclic redundancy check (CRC) default is for a 16-bit CRC (CRC-CITT). The CRC is an error-checking technique that uses a calculated numeric value to detect errors in transmitted data. The OSM also supports a 32-bit CRC. The sender of a data frame calculates the frame check sequence (FCS). The sender appends the FCS value to outgoing messages. The receiver recalculates the FCS and compares it to the FCS from the sender. If a difference exists, the receiver assumes that a transmission error occurred and sends a request to the sender to resend the frame.

To configure an interface for a 32-bit CRC, enter the **crc 32** command:

```
Router(config)# interface pos 7/1
Router(config-if)# crc 32
```

To disable the 32-bit CRC and return the interface to the default 16-bit CRC, enter the **no crc 32** command.

Configuring SONET Payload Scrambling

The default is that SONET payload scrambling is disabled. SONET payload scrambling applies a self-synchronous scrambler (x^43+1) to the SPE of the WAN interface to ensure sufficient bit-transition density.

Note Both ends of the connection must use the same scrambling algorithm.

You enable SONET payload scrambling using the **pos scramble-atm** command. (This command has no keywords or arguments.)

To enable SONET payload scrambling, use the following command sequence:

```
Router(config)# interface pos 7/1
Router(config-if)# pos scramble-atm
Router(config-if)# no shutdown
Router(config-if)# end
```

To verify that SONET payload scrambling is enabled on an interface, enter the **show startup-config** command. If scrambling is enabled, the following line is displayed in the configuration:

```
pos scramble-atm
```

To disable SONET payload scrambling, enter the **no pos scramble-atm** command.