Configuration

This chapter provides information about the configuration required for the CWM workstation.

Configuring Topology Discovery

The network.conf file, located in the /usr/users/svplus/config/ directory, is used to specify the network(s) to be discovered and managed by CWM. Basically this file describes the routing protocol, the gateway address to the network, and whether in-band or out-of-band management is used.

The format of the file depends upon the type of network of which there are three as follows.

- AutoRoute network
- PNNI network
- Hybrid network (one consisting of AutoRoute and PNNI nodes connected via pnni/xlmi trunks)

To view the /usr/users/svplus/config/network.conf file, enter the following command:

```
host% more /usr/users/svplus/config/network.conf
```

Configuring AutoRoute Topology

To configure the CWM workstation to use AutoRoute discovery. Modify the **network.conf** file in the **/usr/users/svplus/config** directory as shown in the following example.

✎
Note   The **network.conf** file example below is for a machine named `nmsbpx02` on a network designated `network1`.

```
NETWORK:network1
GATEWAYS:nmsbpx02
DISCOVERY PROTOCOL:AUTOROUTE
IP REACHABILITY FLAG:NWIP_ON
OPTIONAL:"TIMEOUT=7, RETRANSMIT=6, THROTTLE=0, ACKNOWLEDGE=30, BLOCKSIZE=1024"
```

Configuring PNNI Topology

Use the Topology Configurator to provide information required to communicate with the nodes. Also use the configurator to specify Network IP.

Note   These are nodes that have their SNMP community string for GET operations not set to *public*, and SNMP community string for SET operations not set to *private*.

Configuring PXM45 Cards

To configure a PXM45 card, telnet to the card and enter the following commands:

```
pxm45> shmsimulateresetReason 0
pxm45> deltree "C:DB2"
```

Note   The above commands should be used when inconsistency exists between the database and the image.

```
anotherPXM> addcontroller 2 i 2 7 "pxm45 controller"
```

Note   The command above is only required after a *dbtree* or *clrallcnf* command.

```
anotherPXM> addpnport 9:1.1:1
anotherPXM> cnfpnportsig 9:1.1:1 -nniver pnni 10
```

Note   Assumes an AXSM in slot 9

Configuring AXSM Cards

To configure a AXSM card, telnet to the card and enter the following commands:

```
specificAXSM.a> cnfingsct -sct 5
specificAXSM.a> upln 1.1
specificAXSM.a> addport 1 1.1 9600 96000 5 2
specificAXSM.a> addpart 1 1 2 9600 96000 9600 96000 33 4095 33 65535 3 512
specificAXSM.a> cnfilmi -if 1 -id 1 -ilmi 1 -trap 1
specificAXSM.a> dspports
specificAXSM.a> dspparts
specificAXSM.a> dspilmis
specificAXSM.a> cc 7
specificAXSM.a> dsppnports
specificAXSM.a> uppnport 9:1.1:1
specificAXSM.a> ipifconfig atm0 <ipaddress node NWIP>
specificAXSM.a> cnffname <sysname>
```

Note   Assumes PXM card is in slot 7

Configuring Hybrid Topology

To configure CWM for Hybrid networks (AutoRoute and PNNI), the file has the following format.

```
NETWORK:Network1 (a name for CWM to identify the network)
AR-GATEWAYS:sj123456(the name or IP address of the gateway to the Auroroute section of the
                     network)
PNNI-GATEWAYS:sj123456(the name or IP address of the gateway to the PNNI section of the
                     network)
DISCOVERY PROTOCOL:HYBRID (the discovery protocol, in this case always HYBRID)
IP REACHABILITY FLAG:NWIP_OFF (specifies in-band or out-of-band management)
OPTIONAL:"TIMEOUT = 7, RETRANSMIT = 6, THROTTLE = 0, ACKNOWLEDGE = 30, BLOCKSIZE = 1024"
                     (the optional field is used to specify parameters if the
                     desired value is different from the default value,
```

Check that the mnemonic of the gateway node is correct. Also, for AutoRoute nodes, check the IP Reachability Flag is correct.

Configuring Standalone Nodes

In a stand alone environment, the **network.conf** file does not require modification. Use the Topology Configurator to provide the following information:

- IP address (LAN IP)
- Mode, standalone
- Model information

> **Note**   Cisco MGX 8850 is the model for Cisco MGX 8850 Release 2 nodes only. For Cisco MGX 8850 Release 1 nodes choose Cisco MGX 8250.

To add a new node, complete the following steps:

Step 1   On the machine where Cisco WAN Manager Release 11 is installed, enter:

cd /usr/users/svplus/java/bin

Step 2   Enter **runConfigurator** *<CWM hostname> < CWM login> <CWM password>* on a shell's command line**.**

The Network Configurator main window appears, displaying the options to add, delete, and modify nodes.

Step 3   To add a node, select **Edit** from the main menu bar of the Network Configurator window.

Step 4   Select **Node** from the Edit menu.

Step 5   Select **Add** from the Node menu.

A Node Dialog box appears after selecting **Add** from the Node menu. The Node Dialog box contains two tab windows, Node and Mode.

Step 6   In the Node window enter the new node name, the node Descriptor information, and FTP information, in the appropriate fields.

Step 7   In the Mode window enter the Mode, (Connected or Stand Alone), the MGX Model, the IP Address, and any Parent Information, including Feeder Slot, Feeder Port, Parent Name, Parent Slot, and Port.

✎
Note   Enter the lnpci or atm0 address in the IP address field. (Correspondingly specify the chosen IP address as the trapip in the switch by entering the **cnftrapip** command on the switch.

Step 8   Press the **OK** button in the Node Dialog box.

The Network Configurator validates the new node by ensuring its IP address and unique node name. The node will be displayed in the Network Configurator main window if the node information is valid.

Step 9   Select **Close** from the Node Dialog pull down menu, located in the upper left hand corner of the window.

Step 10   Select **File**, then **Save** from the Network Configurator Window.

✎
Note   Changes made using the Network Configurator are not saved in the node_info table until you press the **Save** button. If the **Cancel** button is pressed, no changes will be made to the node_info table.

All MGX 8850 nodes will be displayed in both the standalone view and the integrated view.

For more information on configuring standalone MGX 8850 nodes for management by CWM, refer to Appendix B of the *Cisco WAN Manager User's Guide, Release 11*.

Checking the CWM Workstation File System

At the CWM workstation, log in as user **root**, and examine the following files.

- /etc/hosts
- /etc/netmasks
- /etc/rs2.d/S72inetsvc
- /etc/defaultrouter
- /usr/users/svplus/.cshrc
- /usr/users/svplus/network.conf
- /usr/users/svplus/config/CWMGateway.conf
- /system
- /etc/system

✎
Note   The IP addresses shown are examples. Use addresses relevant to your network.

/etc/hosts

Examine the **/etc/hosts** file and check that the file contains a nodename and IP address for all nodes. The IP address should be one that CWM can use for network discovery (see following paragraphs). Enter the correct nodenames and addresses for any missing nodes.

To view the **/etc/hosts** file, enter the following command:

```
host% more /etc/hosts
```

Use vi Editor to enter items into the file.

MGX (Rel 1.x, 2.0 and up to 2.1.60) Nodes

For each node:

Enter the ATM0 or NWIP address and the node name.

Enter the LnPci0 or LANIP address and the nodename followed by an identifier such as -l, or -lan).

Example:

```
172.70.207.9mgx1
192.0.0.9mgx1-l
```

MGX (Rel 2.1.70 and above) Nodes

For each node:

Enter the IP address used in option 8 of the **cnfndparms** command. This address can be displayed at the node by entering the **dspndparms** command.

Example:

```
172.70.209.9mgx4
```

BPX Nodes

For each node:

Enter the node's IP address and the node name.

Example:

```
192.0.0.8bpx1
```

Example Host File

As an example, a hosts file might look like the following example:

```
# MGX Rel 1, 2.0, up to 2.1.60 nodes
172.70.207.9mgx1
192.0.0.9mgx1-l
172.70.207.6mgx2
192.0.0.6mgx2-l
172.70.207.4mgx3
192.0.0.4mgx3-l
#
#MGX Rel 2.1.70 and up nodes
172.70.209.9mgx4
172.70.209.8mgx5
172.70.209.7mgx6
172.70.209.6mgx7
#
#BPX nodes
192.0.0.8bpx1
192.0.0.9bpx2
192.0.0.10bpx3
```

/etc/netmasks

Examine the **/etc/netmasks** file for all subnet and netmask entries. To view the **/etc/netmasks** file, enter the following command:

```
host% more /etc/netmasks
```

/etc/rc2.d/S72inetsvc

Examine the **/etc/rc2.d/S72inetsvc** file to ensure that the IP relay address points to the gateway node. To view the **/etc/rc2.d/S72inetsvc** file, enter the following command:

```
host% more /etc/rc2.d/S72inetsvc
```

Use the vi Editor to open the **S72inetsvc** file and find the following line:

```
/usr/sbin/route add -interface -netmask "224.0.0.0" "224.0.0.0" "$mcastif"
)&
```

Add the following line directly below that line

/usr/sbin/route add net 10.10.10.0 209.165.200.225 1 *(use your site's valid IP addresses)*

> **Note**   When using the *vi* editor, remember to write your changes before quitting: press **Esc**, **colon (:)**, then **wq!**

/etc/defaultrouter

Examine the **/etc/defaultrouter** file. To view the **/etc/defaultrouter** file, enter the following command:

```
host% more /etc/defaultrouter
```

> **Note**   If this file does not exist, use the vi Editor to create a new file with the name defaultrouter.

If the router IP address is not currently in the file, use the vi Editor to add a line containing the IP address of the default router to which the CWM workstation is attached.

> **Note**   To save your changes while using the vi editor, remember to press **Esc**, **colon (:)**, then **wq!**.

usr/users/svplus/.cshrc

Use the *vi* editor to modify **.cshrc** as follows:

vi usr/users/svplus/.cshrc

Change the line:
setenv PATH$ORBIXROOT/bin:$PATH
to
setenv PATH$ORBIXROOT/bin:/opt/NSCPcom:$PATH

Add the following lines to the end of the file.

> setenv PATH "netscape path":$PATH
> setenv MOZILLA_HOME "netscape path"
> Exit vi.

svplus/config/network.conf file

The network.conf file is located in the /usr/users/svplus/config directory.

The user should modify this file to specify networks parameters for each network to be discovered and managed. This file can describe multiple networks where each network can be any one of the following types.

- AutoRoute

- PNNI

- Hybrid (consisting of AutoRoute and PNNI segments)

For each network specified in the network.conf file, its entry consists of the following fields.

- NETWORK (this must be the first field)

- NETWORK ID

- GATEWAYS

- DISCOVERY PROTOCOL

- IP REACHABILITY FLAG

- OPTIONS

NETWORK

The NETWORK field has the following format.

NETWORK: <Network Name>

When describing a network's parameters, NETWORK must be the first parameter.

The Network name cannot have more than 10 characters and cannot contain a space.

Note Long network names are truncated to 10 characters and invalid names are ignored.

NETWORK ID

The NETWORK ID field has the following format.

NETWORK_ID: <Network ID>

Network ID is optional. If it is specified, the Network ID must be a unique numeric value in the range in [1, 32000].

Note After Network ID is modified, a CWM cold start is needed.

GATEWAYS

The GATEWAYS field has the following formats.

GATEWAYS: <Gateway Name(s)> (used for AutoRoute and PNNI).

AR-GATEWAYS: <Gateway Name> (used for AutoRoute segments in a Hybrid network type).

PNNI-GATEWAYS: <Gateway Name(s)> (used for PNNI segments in a Hybrid network type).

The user should enter the name(s) of any gateways that CWM is to use for network discovery.

The rules for gateways parameters depend upon the network type.

AutoRoute

Use the GATEWAYS: <Gateway Name> format and specify one (and only one) network node to be used as the AutoRoute gateway.

PNNI

Use the GATEWAYS: <Gateway Name> format and specify one or more network nodes to be used as PNNI gateways. If more than one gateway is specified for the network, the names should be separated by commas.

Hybrid

This field is used to specify which gateways should be used for the AutoRoute and PNNI segments of the network.

Use the PNNI-GATEWAYS: <Gateway Names> format to specify one or more network nodes to be used as PNNI gateways. If more than one gateway is specified for the PNNI segment, the names should be separated by commas.

Use the AR-GATEWAYS: <Gateway Names> format and specify one (and only one) network node to be used as an AutoRoute gateway.

Note If either AR-GATEWAYS or PNNI-GATEWAYS is specified for the network, the other gateway entry (PNNI-GATEWAYS or AR-GATEWAYS as the case may be) can be omitted. However, specifying both types of gateway speeds up the discovery process and is recommended.

.DISCOVERY PROTOCOL

This field is used to specify the network type and has the following format.

DISCOVERY PROTOCOL: <Protocol Name>

The Protocol Name can be either AUTOROUTE or PNNI or HYBRID.

AUTOROUTE is used to discover Auto Route networks .

PNNI is used for ILMI or PNNI discovery of PNNI networks.

HYBRID is used to discover networks that contain both AutoRoute and PNNI segments.

IP REACHABILITY FLAG

The IP REACHABILITY FLAG field is used to specify which IP address method is to be used for managing network nodes. This field is used for AutoRoute networks and Hybrid AutoRoute segments only. It is ignored for PNNI networks or segments.The IP REACHABILITY FLAG field has the following format.

IP REACHABILITY FLAG:<Ip Flag>

IP Flag can be set to NWIP_ON or NWIP_OFF or LANIP.

NWIP_ON — All the routing nodes in the network are managed using their nw ip addresses.

NWIP_OFF — All the routing nodes in the network are managed through the Gateway. The Gateway then routes packets to the individual routing nodes on the corresponding routing trunks.

LANIP — All the nodes in the network are managed using Lan IP. The AUTOROUTE Gateway node is always managed using the LAN IP. By specifying "LANIP", all management traffic (including link0/link1, snmp and tftp) is sent to each node (routing node or feeders) using their Lan IP addresses.

If NWIP is set to ON or OFF, management messages use the managed network for delivery and are therefore considered to be in-band. A setting of LAN IP, on the other hand, uses a separate LAN (or LAN emulation) network for message delivery and is therefore considered to be out-of-band.

OPTIONAL

The OPTIONAL field is used to specify a number of options associated with the IP REACHABILITY FLAG and has the following format.

OPTIONAL: "List of Parameters for Auto Route Networks"

This field is mandatory for AutoRoute networks and AutoRoute segments in Hybrid networks. If this field is not specified, Auto Route networks and segments WILL NOT be discovered

OPTIONAL does not apply for PNNI networks and is ignored.

The OPTIONAL field has five sub-fields (options) as follows:

- TIMEOUT
- RETRANSMIT
- THROTTLE
- ACKNOWLEDGE
- BLOCKSIZE

TIMEOUT

Link timeout value. The amount of time to wait before resending a message to an Cisco IGX 8400 and Cisco BPX 8600 when a response is not received. Default value is 7.

RETRANSMIT

Link retry count. The number of times CWM will retransmit a message before it declares the link down. Default value is 6.

THROTTLE

Download throttling timeout value. Default value is 0

ACKNOWLEDGE

ACK timeout value used during the download process. When an acknowledgment to a configuration message sent to an Cisco IGX 8400, or Cisco BPX 8600 is not received within this time period, the message is sent again. Default value is 30.

BLOCKSIZE

Block size used for an Cisco IGX 8400, or Cisco BPX 8600 configuration upload. Default value is 1024.

Note   In this release the default values must not be changed.

Network.conf Examples

1. Discover an AutoRoute Network

NETWORK:Network1

GATEWAYS:B8650_SJ

DISCOVERY PROTOCOL:AUTOROUTE

IP REACHABILITY FLAG:NWIP_ON

OPTIONAL:"TIMEOUT = 7, RETRANSMIT = 6, THROTTLE = 0, ACKNOWLEDGE = 30, BLOCKSIZE = 1024"

2. Discover a PNNI network

NETWORK:Network2

GATEWAYS:M8850_LA

DISCOVERY PROTOCOL:PNNI

> **Note** PNNI networks do not need IP REACHABILITY and OPTIONAL parameter

3. Discover a HYBRID Network

#NETWORK:Network3

#PNNI-GATEWAYS:M8850_LA, M8850_CH

#AR-GATEWAYS:B8650_LA

#DISCOVERY PROTOCOL:HYBRID

#IP REACHABILITY FLAG:NWIP_ON

#OPTIONAL:"TIMEOUT = 7, RETRANSMIT = 6, THROTTLE = 0, ACKNOWLEDGE = 30, BLOCKSIZE = 1024"

CWM Gateway Configuration File

If the upgraded CWM workstation is part of a multiple CWM gateway configuration, check the CWMGateway.conf file and ensure that the DomainGatewayList contains all the stations in the Gateway domain.

For example:

```
host% cd usr/users/svplus/config
host% more CWMGateway.conf
```
Check the DomainGatewayList portion of this file.

```
## Default: DomainGatewayList
## Usage: DomainGateWayList tmonda dilbag sgharat
DomainGatewayList CWM1 CWM2 CWM3
```

In this example, CWM1, CWM2, and CWM3 are the names of the CWM gateways.

/system

Change directory to **/system** and enter the **ls** command. Check to see that all required HPOV PSOV_XXXXX patches have been installed.

```
#   cd /system
#   ls
```

/etc/system

Check to see that the CWM installation process added the semaphores required for Solaris and HP OpenView operability

```
(set semsys:seminfo_semmsl=30).

forceload: sys/shmsys
forceload: sys/semsys
set semsys:seminfo_semaem=16384
set semsys:seminfo_semmap=66
set semsys:seminfo_semmni=4096
set semsys:seminfo_semmns=4096
set semsys:seminfo_semmnu=4096
set semsys:seminfo_semume=64
set semsys:seminfo_semvmx=32767
set semsys:seminfo_semmsl=30
set shmsys:shminfo_shmmax=268435456
set shmsys:shminfo_shmmin=100
set shmsys:shminfo_shmmni=100
set shmsys:shminfo_shmseg=100
```

Reboot the Workstation

After completing the configuration, reboot the workstation.

```
#   sync ;sync ;reboot
```

Modifying the SNMP Community String

Cisco IGX 8400 and Cisco BPX 8600 nodes require that you modify the SNMP Community string using the cnfsnmp command. For example:

```
host% cnfsnmp <getme> <setme> <trapme>
```

In addition, you must modify two files on the CWM workstation in directory /usr/users/svplus/config:

- svplus.conf
- process.conf

Modifying the svplus.conf File

As user **root** on the CWM workstation, use vi or some other editor to edit the /usr/users/svplus/config/svplus.conf file and set SV_COMMUNITY to **getme** and set SV_SETCOMMUNITY to **setme**.

The **svplus.conf** file should look like the following example:

```
# Community name for BPX and IPX
#
SV_COMMUNITY=getme
SV_SETCOMMUNITY=setme
```

> ✎
> **Note**   When using the vi Editor, remember to write your changes before quitting. To save your changes while using the vi editor, remember to press **Esc**, **colon (:)**, then **wq!**.

Modifying the process.conf File

As user **svplus** on the CWM workstation, edit the /usr/users/svplus/config/process.conf file. The process.conf file should have a line like the following example:

```
cmgrd    on  .      cmgrd    -c setme  -C getme  -i 5
```

> ✎
> **Note**   When using the vi Editor, remember to write your changes before quitting. To save your changes while using the vi editor, remember to press **Esc**, **colon (:)**, then **wq!**.

Setting Up the IP Address on a Cisco MGX 8850 PXM45-based Switch

Use the following procedure to set up IP Addresses on a Cisco MGX 8850 PXM45-based switch up to Release 2.1.60.

Procedure for Releases up to and including 2.1.60

Before you can manage the switch through the PXM45 LAN port, you must first assign an IP address to the LAN port. This Ethernet LAN port is located on the PXM45 back card. For additional instructions on physically connecting a terminal or workstation to this port, refer to the *MGX 8850 (PXM45 and PXM1E) Hardware Installation Guide*.

To configure an IP address for the PXM45 LAN port, use the following procedure.

Step 1   Establish a CLI management session using a username with SUPER_GP privileges.

The default user name and password for this level are *superuser*, *superuser.*

Step 2   Verify that the IP address is not already configured by entering the **dspipif** command:

```
mgx8850a.7.PXM.a> dspipif lnPci0
```

> ✎
> **Note**   If you omit the **lnPci0** option, the switch displays the configuration for all switch IP interfaces: the ATM interface (atm0), the PXM45 LAN port interface (lnPci0), and the PXM45 maintenance port interface (sl0).

In the IP Interface Configuration Table, look for an Internet address entry under the lnPci entry. If an IP address is configured, you can use that address and skip the rest of this procedure. However, if the address has not been entered or is incompatible with your network, you must configure a valid IP address as described in the next step.

Step 3   To set the IP address for the LAN port, enter the **ipifconfig** command using the following format:

```
mgx8850a.7.PXM.a> ipifconfig lnPci0 <IP_Addr> <netmask Mask>
```

Replace *IP_Addr* with the IP address you want this port to use. Replace *Mask* with the network mask used on this network.

Tip   Cisco recommends that you use the same subnet for all IP addresses defined on all MGX 8850 switches. This simplifies router configuration.

Note   There are other options for the **ipifconfig** command, and you can set one or more options simultaneously. Any options you do not define in a command remain unchanged. For more information on this command, refer to *Cisco CWM Routing Switch Command Reference, Release 2*.

After you complete this procedure, the switch is ready for management through the PXM45 Ethernet port.

Procedure for Releases 2.1.70 and later.

Use the following procedure to set up IP Addresses on a Cisco MGX 8850 running Release 2.1.70 and later.

Step 1   Establish a CLI management session using a username with SUPER_GP privileges.

The default user name and password for this level are *superuser, superuser.*

Step 2   Verify that the IP address is not already configured by entering the **dspndparms** command. Look at the value for option 8. If no address or the wrong address is found, enter the correct address entering the cnfndparms command (option 8).

Setting Up ATM WAN Connections

An ATM connection extends switch management to all workstations that have access to the ATM network in which the switch is installed. Figure 10-1 shows the hardware required for an ATM WAN connection.

Figure 10-1   Hardware Required for an ATM WAN Connection
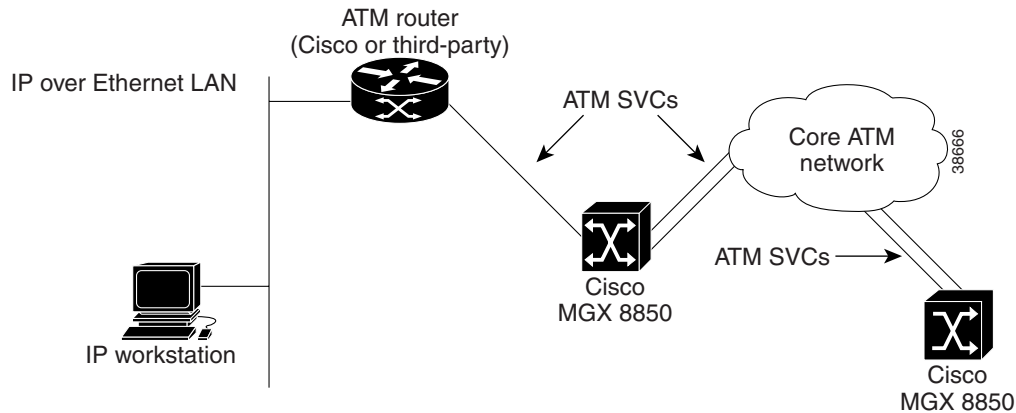
The workstation in Figure 10-1 uses a LAN to connect to a router that supports both LAN and ATM interfaces. An IP address is assigned to an ATM interface in each Cisco MGX 8850. To manage an MGX 8850, the workstation operator configures a network management program to communicate with the IP address assigned to the ATM interface. Network managers can use the following tools to manage the switch:

- Command line interface (CLI) using a Telnet session
- Cisco WAN Manager (CWM)
- Third-party Simple Network Management Protocol (SNMP) manager

To support the ATM SVCs over which the IP traffic travels, both the router and switch are configured to map the respective IP addresses to ATM End Station Addresses (AESAs). When a management session is initiated, the IP workstation directs all communications to the IP address assigned to the ATM interface on the switch. The router encapsulates this IP traffic in ATM cells and forwards it over SVCs to the switch. The destination switch retrieves the IP messages from the ATM cells and forwards them to the internal IP management tools. Replies to the workstation follow the same path in reverse.

This feature provides maximum flexibility for switch management. Any workstation with a connection to a properly-configured ATM router can manage any switch in the network. Furthermore, additional routers connected to other switches can be configured to support this feature, enabling switch configuration from multiple locations throughout an ATM network.

Configuring the Switch

To support IP connectivity over the ATM interface, perform the following tasks:

- Assign an IP address to the ATM interface.
- Assign an AESA to the ATM interface.
- Define an AESA for every adjacent router that supports IP communications to the ATM interface.
- Configure ATM communications between the switch and the router.

To configure the switch to support IP connectivity to the ATM interface, use the following procedure.

Step 1 Establish a CLI management session using a username with SUPER_GP privileges.

The default user name and password for this level are *superuser*, *superuser*.

Step 2   Verify that the IP address for the ATM interface is not already configured by entering the following command:

```
mgx8850a.7.PXM.a> dspipif atm0
```

> **Note**   If you omit the **atm0** option, the switch displays the configuration for all switch IP interfaces: the ATM interface (atm0), the PXM45 LAN port interface (lnPci0), and the PXM45 maintenance port interface (sl0).

Step 3   In the IP Interface Configuration Table, look for an Internet address entry under the atm entry.

If an IP address is configured, you can use that address. However, if the address has not been entered or is incompatible with your network, you must configure a valid IP address as described in the next step.

Step 4   To set the switch IP address for the ATM interface, enter the **ipifconfig** command using the following format:

```
mgx8850a.7.PXM.a> ipifconfig atm0 <IP_Addr> <netmask Mask>
```

Replace *IP_Addr* with the IP address you want this port to use, and replace *Mask* with the network mask used on this network.

> **Tip**   Cisco recommends that you use the same subnet for all IP addresses defined on all MGX 8850 switches. This simplifies router configuration.

> **Note**   There are other options for the **ipifconfig** command, and you can set one or more options simultaneously. Any options you do not define in a command remain unchanged. For more information on this command, refer to *MGX 8850 and MGX 8950 Command Reference, Release 3*.

Step 5   To verify the IP address you configured, enter the following command:

```
mgx8850a.7.PXM.a> dspipif atm0
```

Step 6   Make a note of the IP address defined for the atm0 interface. This is the IP address switch administrators must use to manage the switch.

Step 7   Configure the switch AESA for IP connectivity by entering the following command:

```
mgx8850a.7.PXM.a> svcifconfig atm0 local <ATM_Addr>
```

Replace *ATM_Addr* with the AESA for the interface. This address must conform to the address plan for the switch.

Step 8   Define the AESA for the ATM router by entering the following command:

```
mgx8850a.7.PXM.a> svcifconfig atm0 router <ATM_Addr>
```

Replace *ATM_Addr* with the AESA for the interface. This address must conform to the address plan for the switch.

Step 9   To verify the ATM addresses you configured, enter the following command:

```
mgx8850a.7.PXM.a> dspsvcif
```

Step 10   If you have not already done so, configure the PNNI controller.

As described in "Configuring the PNNI Controller," in Chapter 2, "Configuring General Switch Features" in the *Cisco MGX 8850 Software Configuration Guide Release 3*.

Step 11   Configure the ATM line to the ATM router as described in "Line Configuration Quickstart" in Chapter 5, "Provisioning AXSM Communication Links" in the *Cisco MGX 8850 Software Configuration Guide, Release 3*.

The line configuration should specify a UNI port, SCT 6, and a partition that supports at least 20 connections.

Step 12   To verify connectivity to directly attached ATM routers, enter the **dsppnsysaddr** command.

The ATM addresses of directly attached ATM routers should appear in the list the switch displays. To display an ATM address for a remote router, you need to establish a CLI session on the remote switch and enter the **dsppnsysaddr** command.

Step 13   To check the status of ports leading to directly-attached ATM routers, enter the **dsppnports** command.

The following example shows commands that you can use to configure an Cisco MGX 8850 for IP communications over ATM.

Example 10-1   Switch Commands for IP Communications over ATM

```
mgx8850a.7.PXM.a> ipifconfig atm0 A.B.E.F     # Replace A.B.E.F with IP Address
mgmgx8850a.7.PXM.a> svcifconfig atm0 local
47.0091.8100.0000.0010.7b65.f258.0010.7b65.1111.01
mgx8850a.7.PXM.a> svcifconfig atm0 router
47.0091.8100.0000.0010.7b65.f258.0010.7b65.ffff.f1
mgx8850a.7.PXM.a> addcontroller 2 i 2 7 #if controller does not already exist
mgx8850a.10.AXSM.a > cnfcdsct 6
mgx8850a.10.AXSM.a > upln 1.1
mgx8850a.10.AXSM.a > addport 1 1.1 96000 96000 6 1
mgx8850a.10.AXSM.a > addpart 1 1 2 500000 500000 500000 500000 1 20 32 52 1 20
mgx8850a.10.AXSM.a > upport 1
mgx8850a.10.AXSM.a > cnfilmi -if 1 -id 1 -ilmi 1 -vpi 0 -vci 16 -trap 1 -s 10 -t 10 -k 10
#Optional. This command configures ILMI for the port.
mgx8850a.7.PXM.a> addaddr 10:1.1:1 47.0091.8100.0000.0010.7b65.f258.0010.7b65. ffff.f1 160
#Enter only at switch with direct connection to router. Omit if using ILMI.
mgx8850a.7.PXM.a> dsppnsysaddr

(example output)
47.0091.8100.0000.0010.7b65.f258.0010.7b65.ffff/152
Type:      uni    Port id:    17111041

mgx8850a.7.PXM.a> dsppnports

(example output)
Per-port status summary

PortId         IF status         Admin status        ILMI state       Total Activeconns

10:1.1:1        up                up                  Undefined        3
```

Configuring the Router

To support IP over ATM communications on the ATM router, you need to configure the following interfaces:

- ATM interface to switch
- Interface to the LAN that hosts the management workstation

To configure the ATM interface to the switch, you need to performs the following tasks:

- Create an ATM interface.
- Assign an IP address to the ATM interface.
- Assign an AESA to the ATM interface.
- Configure the ATM interface to be the ATMARP server for the switch.

If the router's IP address for the ATM interface is on the same subnet as the IP address on the switch ATM interface, no additional configuration is required for the router's IP LAN interface.

To configure the IP interface to the LAN, you need to perform the following tasks:

- If the router's IP address for the ATM interface is not on the same subnet as the IP address on the switch ATM interface, you must manually configure on IP host-route for each MGX 8850 to which the interface will connect.
- Configure a routing protocol to broadcast the switch IP addresses to the LAN or create default routes to the switch on the management workstation.

The procedure you use to configure the ATM router will depend on the router you are using. The following example lists commands you can use on a Cisco router to support IP over ATM communications with the Cisco MGX 8850.

Example 10-2   Router Configuration Commands for IP Communications over ATM

```
config term
ip routing
ip route 0.0.0.0 0.0.0.0 W.X.Y.Z 1 (set default route)
interface atm 0
ip address A.B.C.D G.H.I.J   # G.H.I.J = netmask
atm nsap-address 47.0091.8100.0000.0010.7b65.f258.0010.7b65.ffff.f1
atm uni-version 3.1
atm pvc 1 0 5 qsaal
atm pvc 2 0 16 ilmi #Optional. Enter to enable ILMI.
atm ilmi-keepalive 10 #Optional. Enter to configure ILMI.
atm esi-address 00107B65FFFF.F1 #Optional. Enter to support ILMI.
atm arp-server self
no shut
^Z

write memory
```

cnflan

Configure LAN

This command configures node communication parameters, so the node can communicate with a Cisco WAN Manager terminal over an Ethernet LAN using TCP/IP protocol. The parameters all contain address information about the Ethernet TCP/IP network that connects the Cisco WAN Manager station to an IGX or BPX node. The values must conform to those of the network. The network administrator can supply the parameters.

Syntax

cnflan *<IP_Address> <IP_Subnet_Mask> <Maximum LAN Transmit Unit>*
        <TCP Service Port><GatewayIPAddr>

<IPAddress>	*Specifies the Internet address of the node used in the TCP/IP protocol.*
<IP Subnet Mask>	*Specifies a 32-bit mask that contains information about the bit lengths of the subnet ID and host ID address fields. The format of this field uses 1s for the subnet ID field and 0s for the host ID address field as defined in the TCP/IP protocol. The default value (in decimal notation) is 255 255 255.0. This mask denotes both subnet ID and host ID fields as 8-bit fields.*
<Maximum. LAN Transmit Unit>	*BPX nodes only: typical length is 1500 bytes.*
<TCPServicePort>	*Specifies the node's service point used by the transmission control protocol (TCP).*
<GatewayIPAddr>	*Specifies the Internet gateway address.*

Related Commands

upln, **dnln**, **cnfln**

Attributes

Privilege	Jobs	Log	Node	Lock
1	No	Yes	IGX, BPX	Yes

Example

```
sw197           TN    SuperUser       IGX 8420    9.2 Apr. 7 1998  01:48 GMT

Active IP Address:                  172.29.9.111
IP Subnet Mask:                     255.255.255.0
IP Service Port:                    5120
Default Gateway IP Address:         172.29.9.1
Maximum LAN Transmit Unit:          1500
Ethernet Address:                   00.C0.43.00.1F.7F


Type      State
LAN       READY
TCP       UNAVAIL
UDP       READY
Telnet    READY
TFTP      READY
TimeHdlr  READY
SNMP      READY


This Command: cnflan


Enter IP Address:
```

cnfnwip

Configure Network IP Address

The network IP address and subnet mask support statistics collection for Cisco WAN Manager. The **cnfnwip** command defines the IP address the system uses to pass messages between Cisco WAN Manager and the node. The Statistics Master process in Cisco WAN Manager Network collects statistics. The Statistics Manager requests and receives statistics using TFTP Get and Put messages. These TFTP messages pass between the node and the Statistics Master using IP Relay. (See the **cnfstatmast** description for details on setting the Statistics Master address.)

Syntax

cnfnwip *<IPAddr> <IPSubnetMask>*

<IPAddr>	*IP address of the node: the format is nnn.nnn.nnn.nnn, where nnn can be 1–255*
<IPSubnetMask>	*subnet mask: the format is nnn.nnn.nnn.nnn*

Related Commands

None

Attributes

Privilege	Jobs	Log	Node	Lock
1	No	Yes	IGX, BPX	Yes

Example

```
cnfnwip 169.134.90.106 255.255.255.0

axiom        TN    Bootzilla      IGX 32    9.2        Aug. 5 19981998  18:25 GMT

Active Network IP Address:            169.134.90.106
Active Network IP Subnet Mask:        255.255.255.0




Last Command: cnfnwip 169.134.90.106 255.255.255.0


Next Command:
```

cnfstatmast

Configure statistics master SV+ address

Configures an IP address for the Statistics Master process in WAN Manager. The **cnfstatmast** command defines the IP address for routing the messages to and from the Statistics Master in WAN Manager.

The Statistics Master process requests and receives network statistics by using TFTP Get and Put messages. These TFTP messages pass between the node and the Statistics Master over IP Relay. See the **cnfnwip** description for details on setting a node address.

Syntax

cnfstatmast *<ip Address>*

ip address	*Specifies the IP address for the Statistics Master. IP addresses have 32-bits. The format of an IP address is x.x.x.x, where x is a value in the range 1–255.*

Related Commands

cnfnwip, **dspnwip**

Attributes

Privilege	Jobs	Log	Node	Lock
1	Yes	Yes	IGX, BPX	Yes

Example

```
cnfstatmast 199.35.96.217
```

Configure 199.35.96.217 as the IP address for the Statistics Master.

Configuring PNNI using CiscoView

CiscoView provides the capability for configuring and displaying PNNI parameters on an MGX 8000 Series PXM 45 card.

Getting Started

Start the PNNI configuration by performing the following steps.

Step 1   In the **svplus** directory, start CiscoView by entering **cview** at the command prompt.

Step 2   Select the Cisco MGX 8000 device to be configured by selecting the IP address of the device in the top left corner of the CiscoView main window.

Step 3   When the device is displayed, right-click in the black area above or below the cards to display the **configuration...** message.

Step 4   Right click the **configuration...** message to display the Shelf Configuration window.

Step 5   Open the Category dropdown menu as shown in Figure 10-2.

Step 6   Select **PNNI Controller Configuration**.

Step 7   Click **OK**.

Figure 10-2   Shelf Configuration Window Showing Category Dropdown Menu
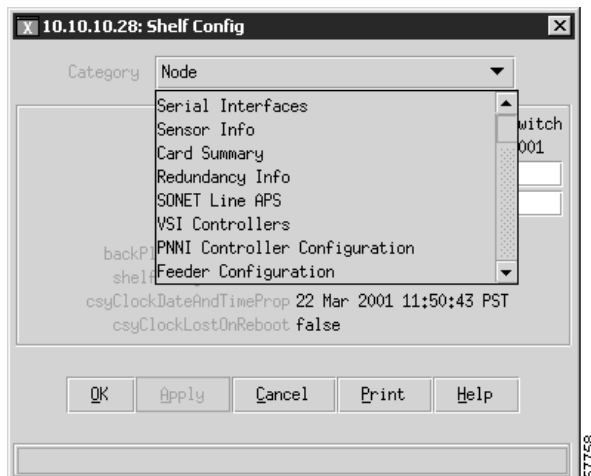

PNNI Configuration

Continue the PNNI configuration by performing the following steps.

Step 1   Display the CiscoView PNNI Configuration window using steps 1 to 5 above.

This window has a drop-down menu that permits the user to select from 18-PNNI configuration categories. Categories consist of configuration dialog boxes and display boxes as shown in Figure 10-3.

Figure 10-3   PNNI Configuration
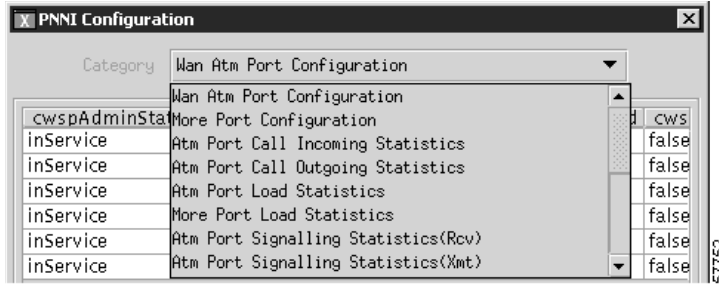
Step 2   Click on the desired configuration category to display its dialog box.

Each configuration dialog box consist of a table of parameter values associated with its category. Parameters that are configurable by the user have a white background and parameters that are for display only have a shaded background as shown in Figure 10-4.

Figure 10-4   Typical PNNI Configuration Dialog Box
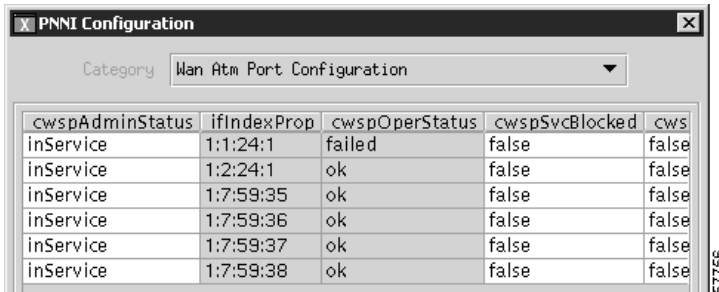
Step 3   Where applicable, users can create a new row in a table by clicking the Create button at the bottom of the window. This action displays a Row Creation dialog box. The user enters the appropriate information about the new row and clicks **OK**. An example of a Row Creation dialog box is shown in Figure 10-5.

Figure 10-5   Row Creation Dialog Box
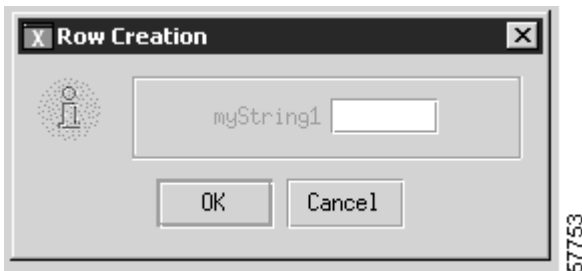
Step 4   When the configuration dialog box is configured, click **OK**. At this point another category can be selected.

PNNI Configuration Categories

Table 10-1 shows the parameters for each of the PNNI categories.

> **Note**   Because of the large number of columns in some categories, some tables have been extended to a second category with the second category prefixed with "More". Hence the "More ATM Port Configuration" is an extension of "ATM Port Configuration". The same also applies to the "ATM Port Load Statistics" and "PNNI Node Configuration" categories.

Table 10-1   PNNI Parameters

PNNI Category	Parameter
Atm Port Configuration	cwspAdminStatus
	ifIndexProp
	cwspOperStatus
	cwspSvcBlocked
	cwspSpvcBlocked
	cwspIlmiAddrReqEnable
	cwspIlmiAutoConfEnable
	cwspServReqEnable
	cwspPhyIdentifierProp
	cwspSignallingVpi
	cwspSignallingVci
	cwspRoutingVpi
	cwspRoutingVci
	cwspMaxVpiBits
	cwspMaxVciBits
More ATM Port Configuration	cwspUniType
	ifIndexProp
	cwspUniVersion
	cwspNniVersion
	cwspPhyIdentifierProp
	cwspSide
	cwspMaxP2pCalls
	cwspMaxP2mpRoots
	cwspMaxP2mpLeafs
	cwspMinSvccVpi
	cwspMaxSvccVpi
	cwspMinSvccVci
	cwspMaxSvccVci

Table 10-1   PNNI Parameters (continued)

PNNI Category	Parameter
	cwspMinSvpcVpi
	cwspMaxSvpcVpi
	cwspEnhancedlisp
ATM Port Call Incoming Statistics	cwspCountReset
	PortIndexProp
	cwspInCallAttempts
	cwspInCallEstabs
	InCallFailures
	InFilterFailures
	InRouteFailures
	InResrcFailures
	InTimerFailures
	InCrankbacks
ATM Port Call Outgoing Statistics	cwspOutCallAttempts
	PortIndexProp
	cwspOutCallEstabs
	cwspOutCallFailures
	cwspOutFilterFailures
	cwspOutRouteFailures
	cwspOutResrcFailures
	cwspTimerFailures
	cwspOutCrankbacks
ATM Port Load Statistics	cwspLoadBwTotal
	ifIndexProp
	cwspLoadMaxBwCbr
	cwspLoadMaxBwRtVbr
	cwspLoadMaxBwNrtVbr
	cwspLoadMaxBwAbr
	cwspLoadMaxBwUbr
	cwspLoadBwAvail
	cwspLoadAvlBwCbr
	cwspLoadAvlBwRtVbr
	cwspLoadAvlBwNrtVbr
	cwspLoadAvlBwAbr
	cwspLoadAvlBwUbr
	cwspLoadVcAvail

Table 10-1   PNNI Parameters (continued)

PNNI Category	Parameter
	cwspLoadAvlVcCbr
	cwspLoadAvlVcRtVbr
	cwspLoadAvlVcNrtVbr
	cwspLoadAvlVcAbr
	cwspLoadAvlVcUbr
More ATM Port Load Statistics	cwspLoadCtdCbr
	ifIndexProp
	cwspLoadCtdRtVbr
	cwspLoadCtdNrtVbr
	cwspLoadCtdAbr
	cwspLoadCtdUbr
	cwspLoadCtvCbr
	cwspLoadCdvRtVbr
	cwspLoadCdvNrtVbr
	cwspLoadClr0Abr
	cwspLoadClr0Ubr
	cwspLoadClr1Cbr
	cwspLoadClr1RtVbr
	cwspLoadClr1NrtVbr
	cwspLoadClr1Abr
	cwspLoadClr1Ubr
	cwspLoadMinGurCrCbr
	cwspLoadMinGurCrRtVbr
	cwspLoadMinGurCrNrtVbr
	cwspLoadMinGurCrAbr
	cwspLoadMinGurCrUbr
ATM Port Signalling Statistics (Rcv)	cwspCallProcRcv
	SigPortIndexProp
	cwspConnectRcv
	cwspConnectAckRcv
	cwspSetupRcv
	cwspReleaseRcv
	cwspReleaseCommp[Rcv
	cwspRestartRcv
	cwspRestartAckRcv
	cwspStatusRcv

Table 10-1   PNNI Parameters (continued)

PNNI Category	Parameter
	cwspStatisEnqRcv
	cwspNotifyRcv
	cwspAlertRcv
	cwspProgressRcv
	cwspAddPtyRcv
	cwspAddPtyAckRcv
	cwspAddPtyRejRcv
	cwspDropPtyRcv
	cwspIncorrectMsgRcv
	SigCounter Reset
ATM Port Signalling Statistics (Xmit)	cwspCallProcXmt
	SigPortIndexProp
	cwspConnectXmt
	cwspConnectAckXmt
	cwspSetupXmt
	cwspReleaseXmt
	cwspReleaseCommp[Xmt
	cwspRestartXmt
	cwspRestartAckXmt
	cwspStatusXmt
	cwspStatisEnqXmt
	cwspNotifyXmt
	cwspAlertXmt
	cwspProgressXmt
	cwspAddPtyXmt
	cwspAddPtyAckXmt
	cwspAddPtyRejXmt
	cwspDropPtyRcv
	cwspTimerExpires
	cwspTimerExpires
	cwspLastCause
	cwspDiagnostic
	cwspSscopStatus
	SigCounterReset
SVC CAC Configuration	cwspMaxVcCbr
	ifIndexProp

Table 10-1   PNNI Parameters (continued)

PNNI Category	Parameter
	cwspMaxVcRtVbr
	cwspMaxVcNrtVbr
	cwspMaxVcAbr
	cwspMaxVcUbr
	cwspMinVcCbr
	cwspMinVcRtVbr
	cwspMinVcNrtVbr
	cwspMinVcAbr
	cwspMinVcUbr
	cwspMaxVcBwCbr
	cwspMaxVcBwRtVbr
	cwspMaxVcBwNrtVbr
	cwspMaxVcBwAbr
	cwspMaxVcBwUbr
SVC CAC Configuration	cwspDefaultCdvtCbr
	InIndexProp
	cwspDefaultCdvtRtVbr
	cwspDefaultCdvtNrtVbr
	cwspDefaultCdvtAbr
	cwspDefaultCdvtUbr
	cwspDefaultMbsRtVbr
	cwspDefaultMbsNrtVbr
ATM Port Addresses	cwspAtmAddressProp
	ATMPortIndexProp
	cwspAddrLenProp
	cwspAddrType
	cwspAddrProto
	cwspAddrPlan
	cwspAddrScope
	cwspAddrRedistribute
CWSP Interfaces Operation Configuration	ifIndexProp
	cwspOperIlmiEnable
	cwspOperIfcType
	cwspOperIfcSide
	cwspOperMaxVPCs
	cwspOperMaxVCCs

Table 10-1   PNNI Parameters (continued)

PNNI Category	Parameter
	cwspOperMaxVpiBits
	cwspOperUniType
	cwspOperUniVersion
	cwspOperDeviceType
	cwspOperIlmiVersion
	cwspOperNniSigVersion
	cwspOperMaxSvpcVci
	cwspOperMinSvpcVci
	cwspOperMaxSvpcVpi
	cwspOperMinSvpcVpi
	cwspOperMaxSvccVci
	cwspOperMinSvccVci
PNNI Node Configuration	pnniNodeIndexProp
	pnniNodeLevel
	pnniNodeId
	pnniNodeLowest
	pnniNodeAdminStatus
	pnniNodeOperStatus
	pnniNodeDomainName
	pnniNodeAtmAddress
	pnniNodePeerGroupId
More PNNI Node Configuration	pnniNodeIndexProp
	pnniNodeRestrictedTransitProp
	pnniNodeRestrictedBranchingProp
	pnniNodeComplexRepProp
	pnniNodeDatabaseOverload
	pnniNodePlses
PNNI PGL Configuration	pnniNodePglLeadershipPriorityProp
	pnniNodeCfgParentNodeIndexProp
	pnniNodePglInitTimeProp
	pnniNodePglOverrideDelayProp
	pnniNodePglReelectTimeProp
	pnniNodePglState
	pnniNodePreferredPgl
	pnniNodePeerGroupLeader
	pnniNodePglTimeStamp

Table 10-1   PNNI Parameters (continued)

PNNI Category	Parameter
PNNI Address Summary	pnniNodeActiveParentNodeId
	Type
	Type
	PnniSummaryAddressAddressProp
	PreficLength
	pnniSummaryAddressSuppressState
PNNI Base Group Configuration	pnniHighestVersion
	pnniLowestVersion
	pnniDt1CounterOriginator
	pnniDt1CountBorder
	pnniCrankbackCounterOriginator
	pnniCrankbackCountBorder
	pnniAltRouteCounterOriginator
	pnniAltRouteCountBorder
	pnniRouteFailCounterOriginator
	pnniRouteFailCountBorder
	pnniFailUnreachableCounterOriginator
	pnniFailUnreachableCountBorder