CHAPTER 1

Getting Started

The Cisco NI-2 DSLAM Equipment Module allows you to provision ATM PVCs across Cisco NI-2 DSL access multiplexer (DSLAM) systems. This Equipment Module supports the second generation Network Interface card (NI-2) for Cisco 6000 series DSLAMs. The DSLAM platforms supported by this Equipment Module include the 6260, the 6160, and the 6130. For these DSLAMs, the NI-2 card operates as a central processor and system controller, and provides both a network interface as well as a subtending interface.

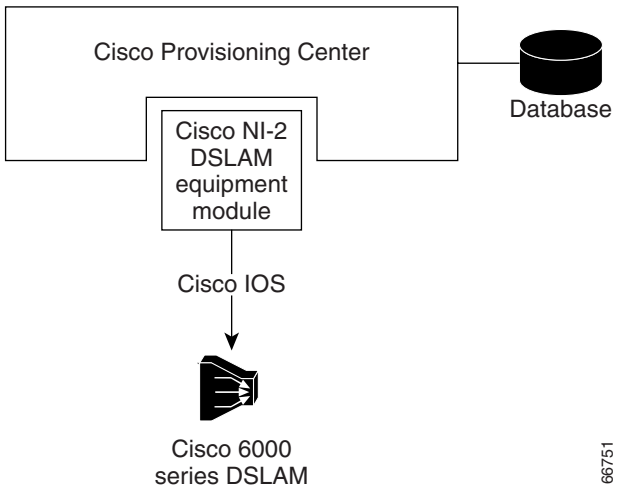
The Cisco 6260 DSLAM provides up to 240 xDSL subscriber connections for a single ATM WAN trunk. The Cisco 6260 chassis contains 30 line card slots. The Cisco 6160 DSLAM terminates up to 256 xDSL subscriber connections and contains 32 line card slots. The Cisco 6130 DSLAM has 32 slots which support up to 128 xDSL subscribers and multiplexes them to one high-speed WAN trunk. Refer to the appropriate Cisco documentation for more details regarding NI-2 DSLAM systems.

This Equipment Module communicates with a Cisco NI-2 DSLAM via Cisco's IOS command line interface.

Note In order to configure the Cisco NI-2 DSLAM Equipment Module you must have installed it during the CPC Server and Client installation procedures. For more information about installing CPC, refer to the *CPC Installation and Administration Guide*.

Figure 1-1illustrates how CPC, the Cisco NI-2 DSLAM Equipment Module, and the Cisco 6000 series DSLAM integrate to form a powerful network provisioning solution.

Figure 1-1 Integration of the Cisco NI-2 DSLAM Equipment Module with CPC



Configuration

Complete the following steps to configure the Equipment Module and make CPC operational:

Table 1-1 Cisco NI-2 DSLAM Equipment Module Configuration Tasklist

Task	Chapter Reference
Verify the software requirements	Chapter 1, “Getting Started”
Verify hardware compatibility	Chapter 1, “Getting Started”
Configure network timeout	Chapter 1, “Getting Started”
Configure workstation upload	Chapter 1, “Getting Started”
Create a network object	Chapter 1, “Getting Started”
Create a node object	Chapter 1, “Getting Started”
Perform a network upload for each network	Chapter 2, “Uploading Fabric and Services”
Perform a node upload for individual nodes (if necessary)	Chapter 2, “Uploading Fabric and Services”
Create inter-networking links	Chapter 2, “Uploading Fabric and Services”
Configure Service element profiles	Chapter 4, “Working with Service Element Profiles”

Software Requirements

Table 1-2 outlines the software requirements that must be fulfilled for the correct operation of the Cisco NI-2 DSLAM Equipment Module. All software included in this section must be acquired independently of the Cisco NI-2 DSLAM Equipment Module.

Table 1-2 Required Software

Vendor	Software	Version
Cisco	IOS	12.1(1)DA, 12.1(2)DA, 12.1(5)DA, 12.1(6)DA

Hardware Compatibility

This section provides information about the hardware compatible with the This is the name of the product (EM, SA, or software package).

Chassis

The This is the name of the product (EM, SA, or software package) supports models 6160, 6260, and 6130 of the Cisco 6000 series DSLAMs.

Table 1-3 Supported Chassis

Chassis	Description
6130	The Cisco 6130 DSLAM provides end-to-end voice and data service between a subscriber home or office, a telephone central office (CO) facility, and various networks. The Cisco 6130 DSLAM concentrates traffic from up to 128 ADSL subscribers onto a single high-speed trunk for transport to the Internet or to the corporate intranet with or without plain old telephone service (POTS). The Cisco 6130 chassis has 32 line card slots.
6160	The Cisco 6160 DSL access concentrator terminates up to 256 xDSL subscriber connections and multiplexes them onto a single ATM WAN trunk. Using a subtending feature, up to 13 Cisco DSLAM chassis can be linked to a single WAN trunk. The Cisco 6160 chassis has 32 line card slots.
6260	The Cisco 6260 DSL access concentrator terminates up to 240 xDSL subscriber connections and multiplexes them onto a single ATM WAN trunk. Using a subtending feature, up to 13 Cisco DSLAM chassis can be linked to a single WAN trunk. The Cisco 6260 chassis has 30 line card slots.

Cards

Table 1-4 outlines the network interface cards and line cards supported by this Equipment Module.

Table 1-4 Compatible Cards

Card	Description
Network Interface Cards (NI-2 cards)	
NI-2-155SM-155SM	NI2 OC3/STM1 Single Mode; 1 WAN, 1 Subtend

Table 1-4 Compatible Cards

Card	Description
NI-2-155MM-155MM	NI2 OC3/STM1 Multi-Mode; 1 WAN, 1 Subtend
NI-2-155SM-DS3	NI2 OC3/STM1 Single-Mode WAN, 2 DS3 Subtend
NI-2-155MM-DS3	NI2 OC3/STM1 Multi-Mode WAN, 2 DS3 Subtend
NI-2-DS3-DS3	NI2 DS3 WAN, 2 DS3 Subtend
NI-2-E3-E3	NI2 1E3 WAN 2 E3 Subtend
Line Cards	
ATUC-1-4DMT	4-Port ADSL Line Card with DMT line coding
ATUC-1-4DMT-I	4-port DMT over ISDN card
ATUC-1-4DMT-I-DIR	4-port DMT over ISDN card, Dir. Conn.
ATUC-1-DMT-8	8-Port DMT Card
ATUC-2CAP	2-port ADSL Line Card with CAP line coding
ATUC-2DMT	2 port DMT card
ATUC-4-FLEXI DMT	4-port FLEXI - ADSL configurable for DMT
ATUC-4-FLEXI CAP	4-port FLEXI - ADSL configurable for CAP, G.LITE
ITUC-1-8IDSL	8-port IDSL ITU-C Line Card (supported by the 6160 chassis only)
STUC-4-2B1Q-DIR-1	4-port SDSL Line Card
STUC-8-TCPAM	8-port SHDSL card
STUC-8-TCPAM-ITEMP	8-port SHDSL ITEMP card

Configuring Network Timeout

The This is the name of the product (EM, SA, or software package) implements an overall timeout for service provisioning Transactions. Network Timeout is defined by the environment variables CCP_ACTIVATION_TIMEOUT (Default= 5 seconds) and CCP_RESET_TIMEOUT (Default=45 seconds).

CCP_ACTIVATION_TIMEOUT defines the maximum interval (measured in seconds) allowed to wait for a response from the DSLAM in the context of one Transaction. The This is the name of the product (EM, SA, or software package) uses telnet to send commands to the DSLAM. Therefore, if CCP_ACTIVATION_TIMEOUT=180, then after CPC sends commands via the telnet session, it waits for three minutes before it abandons the Transaction and rolls back to the previous state of the network.

CCP_RESET_TIMEOUT works similarly for Transaction rollbacks. It represents the maximum interval allowed to wait for a response from the DSLAM in a rollback operation. If the response interval exceeds the maximum time allowed, an error message will appear. You will be required to execute the rollback operations manually in the equipment.

Network Timeout requires shutting down the server if it is not already down, setting the variables, and then restarting it to pick up the environment changes.

To set the CCP_ACTIVATION_TIMEOUT and the CCP_RESET_TIMEOUT environment variables:

Step 1 Shut down the CPC server by issuing the following command:

```
SYnpt -h
```

Step 2 Set the environment variable to an integer (measured in seconds) that amounts to the maximum time to elapse before the NIF times out:

```
export CCP_ACTIVATION_TIMEOUT=90
export CCP_RESET_TIMEOUT=90
```

Step 3 Source the Server environment again, then bring up the CPC Server. To source the environment and start up the Server, run the following commands in succession:

```
cd /opt/SY/Activator/Server/mng/utility
. syccpovdef
SYnpt -sS
```

Workstation Upload Configuration

Enabling the FTP (or TFTP) Daemon

The Cisco NI-2 DSLAM Equipment Module uses an FTP (or TFTP) client to upload configuration files from an NI-2 DSLAM. The Equipment Module contacts the DSLAM, via telnet and initiates an FTP (or TFTP) client to connect to an FTP (or TFTP) server on the CPC host and transfers its running configuration back to the CPC host.

In order to accomplish this, the FTP (or TFTP) daemon must be running on the CPC host. To enable the FTP (or TFTP) daemon in your CPC host, complete the following steps:

Step 1 Navigate to the /etc directory.

```
cd /etc
```

Step 2 Edit the inetd.conf file using a standard text editor.

Step 3 Ensure that one of the following lines is in the file and that it is un-commented (i.e., that the # is removed from the beginning of the line).

For FTP:

```
ftp stream tcp nowait root /usr/sbin/in.ftpd in.ftpd
```

For TFTP:

```
tftp dgram udp wait root /usr/sbin/in.tftpd in.tftpd
```

Setting Environment Variables

Configuration files from the NI-2 DSLAMs can be uploaded via the FTP or TFTP protocols. In order to enable DSLAM configuration uploads, you must configure the C2FTPAccess.config file found in the $CCP_CONFIG directory. This file allows you to set the following four environment variables:

- C2_USER
- C2_PASSWORD

- C2_IPADDRESS
- C2_FTP

The user and password combination must correspond to an existing user account on the CPC Server, which has write permission on the /tmp directory. This account is used by the FTP protocol to retrieve a running-configuration from the DSLAM. The IP address is optional and must only be specified if the server has multiple IP addresses. The FTP variable allows you to communicate with the DSLAMs via FTP (if set to "True" or left blank) or TFPT (if set to "False").

The environment variables must be set before the CPC server starts. To set the Cisco NI-2 DSLAM upload configuration variables, complete the following steps:

Step 1 Ensure that the CPC server is down.

Step 2 Source the CPC server environment:

```
. mng/utility/syccpovdef
```

Step 3 Navigate to the $CCP_CONFIG directory:

```
cd $CCP_CONFIG
```

Step 4 Set the required Cisco NI-2 DSLAM upload configuration variables by editing the C2FTPAccess.config file. For example:

```
C2_USER=ftp_user_name
C2_PASSWORD=ftp_users_password
C2_IPADDRESS=IP_address
C2_FTP=true_or_false
```

Where *ftp_user_name* and *ftp_users_password* are for the upload ftp account.

Step 5 Start the CPC server:

```
SYnpt -sS
```

Creating Networks

You must create a Cisco 6160/6260/6130 DSLAM network object for each of your Cisco 6160/6260/6130 networks (or subnetworks). To create a network object, complete the following steps:

Step 1 Navigate to **networks > Cisco NI-2 DSLAM Equipment Module > Elements > Network**.

Step 2 Click the **Create** button on the Action Bar.

Step 3 Enter the required attribute values in the network Object View. For attribute values, refer to Table A-4 in Appendix A, "Attribute Reference".

Step 4 Click the **save** or **apply now** button to save or apply the network.

Creating Nodes

You must create a Cisco 6160/6260/6130 DSLAM node object for each Cisco 6160/6260/6130 DSLAM in your network before you upload. To create a network object, complete the following steps:

Step 1 Navigate to **networks > Cisco NI-2 DSLAM Equipment Module > Elements > Node**.

Step 2 Click the **Create** button on the Action Bar.

Step 3 Enter the required attribute values in the node Object View. For attribute values, refer to Table A-5 in Appendix A.

Step 4 Click the **save** or **apply now** button to save or apply the node.