C H A P T E R 4

Configuring the Cisco AS5200 Universal Access Server

This chapter describes how to configure the Cisco AS5200 access server and includes the following sections:

- Booting the Cisco AS5200 Access Server for the First Time

- Configuring the Cisco AS5200

- Specifying the Boot Method

- Checking the Configuration Settings

- Getting More Information

This chapter provides enough information for you to get the Cisco AS5200 up and running. For more information, refer to the Cisco IOS configuration guides and command references.

Booting the Cisco AS5200 Access Server for the First Time

Each time you turn on the Cisco AS5200 access server, it goes through the following boot sequence:

1   The power-on self-test diagnostics are run to verify the basic operation of the CPU, memory, and interfaces.

2   The system bootstrap software (boot ROM image) searches for a valid Cisco IOS image (operating system software). The source of the Cisco IOS image (Flash memory or a Trivial File Transfer Protocol [TFTP] server) is determined by the configuration register setting. The factory-default setting for the configuration register is 0x2102, which indicates that the system should attempt to load a Cisco IOS image from Flash memory.

3 If a valid Cisco IOS image is not found in Flash memory after five attempts, the system reverts to boot ROM mode (used to install or upgrade a Cisco IOS image).

4 If a valid Cisco IOS image is found, the system searches for a valid configuration file.

5 If a valid configuration file is not found in nonvolatile random access memory (NVRAM), the system runs the System Configuration Dialog, so that you can configure it manually. For normal operation, there must be a valid Cisco IOS image in Flash memory and a configuration file in NVRAM.

The first time you boot, you need to configure the server interfaces and save the configuration to a file in NVRAM. Proceed to the next section, "Configuring the Cisco AS5200," for configuration instructions.

Configuring the Cisco AS5200

You can configure the Cisco AS5200 access server using one of the following procedures:

- System Configuration Dialog—Recommended if you are not familiar with Cisco IOS commands.

- Configuration mode—Recommended if you are familiar with Cisco IOS commands.

- AutoInstall—Recommended for automatic configuration if another system running Cisco IOS software is installed on the network. This configuration method must be set up by someone with experience in using Cisco IOS software.

Use the procedure that best fits the needs of your network configuration and level of Cisco IOS experience.

Timesaver   Obtain the correct network addresses from your system administrator or consult your network plan to determine correct addresses before you begin to configure the Cisco AS5200.

Using Configuration Mode

You can configure the Cisco AS5200 manually if you do not want to use AutoInstall or the System Configuration Dialog. Perform the following steps to configure the system manually:

Step 1 Connect a console terminal to the Cisco AS5200. Follow the instructions in the section "Connecting to the Console Port," in the chapter "Installing the Cisco AS5200 Universal Access Server," and then turn on the Cisco AS5200.

Step 2 When you are prompted to enter the initial dialog, enter **no** to enter configuration mode:

```
Would you like to enter the initial dialog? [yes]: no
```

Step 3 After a few seconds the user EXEC prompt `access server >` appears. Enter the **enable** command to access enable mode. You only can make configuration changes in enable mode.

```
access server > enable
```

The prompt changes to the privileged EXEC (enable) prompt:

```
access server #
```

Step 4 Enter the **configure terminal** command at the enable prompt to access configuration mode:

```
access server # configure terminal
```

You can now enter any changes you want to the factory-default configuration file.

Step 5 Press **Ctrl-Z** to exit configuration mode.

Displaying the Operating Configuration

To see the current operating configuration, enter the **show running-config** command at the enable prompt:

```
access server # show running-config
```

To see the configuration in NVRAM, enter the **show startup-config** command at the enable prompt:

```
access server # show startup-config
```

The results of the **show running-config** and **show startup-config** commands will be different if you have made changes to the configuration but have not yet written them to NVRAM.

To make your configuration changes permanent by writing them to NVRAM, enter the **copy running-config startup-config** command at the enable prompt:

```
access server # copy running-config startup-config
********
```

The Cisco AS5200 is now configured and will boot with the configuration you entered.

Using AutoInstall

The AutoInstall process is designed to configure the Cisco AS5200 automatically after connecting to your WAN. For AutoInstall to work properly, a Transmission Control Protocol/Internet Protocol (TCP/IP) host on your network must be preconfigured to provide the required configuration files. The TCP/IP host can exist anywhere on the network as long as the following two conditions are maintained:

1 The host must be on the remote side of the Cisco AS5200 synchronous serial connection to the WAN.

2 User Datagram Protocol (UDP) broadcasts to and from the Cisco AS5200 and the TCP/IP host must be enabled.

These requirements are coordinated by the system administrator at the site where the TCP/IP host is located. You should not attempt to use AutoInstall unless the required files have been provided on the TCP/IP host. For more information, refer to the Cisco IOS configuration guides and command references.

The Cisco AS5200 attempts to run AutoInstall whenever you turn it on, if there is a WAN connection and the Cisco AS5200 does not have a configuration file stored in NVRAM. It can take several minutes for the Cisco AS5200 to determine that AutoInstall is not set up to access a remote TCP/IP host.

If you do not plan to use AutoInstall, make sure that all WAN cables are disconnected from the Cisco AS5200. This prevents the Cisco AS5200 from attempting to run the AutoInstall process.

Perform the following steps to prepare your Cisco AS5200 for the AutoInstall process:

Step 1 Attach the WAN cable to the Cisco AS5200.

Step 2 Turn on the Cisco AS5200.

The Cisco AS5200 will load the operating system image from Flash memory. If the remote end of the WAN connection is properly configured, the AutoInstall process will begin.

Step 3 If AutoInstall runs successfully, you can write the configuration data to the Cisco AS5200 NVRAM. Enter the **copy running-config startup-config** command:

```
access server # copy running-config startup-config
```

Writing the configuration to NVRAM saves the configuration settings that the AutoInstall process created in the Cisco AS5200. If you do not do this, your configuration will be lost the next time you reload the Cisco AS5200.

Using the System Configuration Dialog

If your Cisco AS5200 does not have a configuration setup file and you are not using AutoInstall, the Cisco AS5200 automatically activates the setup command facility. An interactive dialog called the System Configuration Dialog appears on the console screen. This dialog helps you navigate through the configuration process by prompting you for the configuration information.

Many prompts in the System Configuration Dialog include default answers, which are included in square brackets following the questions. To accept a default answer, press Return; otherwise, enter your response.

This section provides an example configuration using the System Configuration Dialog. When you are configuring your Cisco AS5200, respond as appropriate for your network.

At any time during the System Configuration Dialog, you can request help by entering a question mark (?) at a prompt.

Before proceeding with the System Configuration Dialog, obtain from your system administrator the node addresses and the number of bits in the subnet field (if applicable) for the Ethernet and synchronous serial ports. For more information about Internet Protocol (IP) addresses and subnets, refer to the *Internetworking Technology Overview*.

Perform the following steps to configure the Cisco AS5200 with the System Configuration Dialog:

Step 1 Connect a console terminal to the console connector on the rear panel of your Cisco AS5200, and turn it on. (For more information, refer to the section "Connecting to the Console Port" in the chapter "Installing the Cisco AS5200 Universal Access Server.") The default parameters for the console port are 9600 baud, 8 data bits, no parity, and 2 stop bits.

Approximately 30 seconds after you have successfully booted your Cisco AS5200, information similar to the following is displayed on the console screen:

Note The messages displayed vary, depending on the Cisco IOS release and feature set that you selected. The screen displays in this section are for reference only and might not reflect the exact screen displays on your console.

```
System Bootstrap, Version XX.X(XXXX) [XXXX XXX], RELEASE SOFTWARE
Copyright (c) 1994-1996 by cisco Systems, Inc.
AS5200 processor with 16384 Kbytes of main memory

program load complete, entry point: 0x3000060, size: 0x26b8d8

Notice: NVRAM invalid, possibly due to write erase.

program load complete, entry point: 0x22000060, size: 0x656870
```

```
                  Restricted Rights Legend

Use, duplication, or disclosure by the Government is
subject to restrictions as set forth in subparagraph
(c) of the Commercial Computer Software - Restricted
Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

             cisco Systems, Inc.
             170 West Tasman Drive
             San Jose, California 95134-1706



Cisco Internetwork Operating System Software
IOS (tm) 5200 Software (AS5200-JM-L), Version 11.1(XXXX) [XXXX XXX]
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Wed 21-Feb-96 10:20 by XXXX
Image text-base: 0x22035BCC, data-base: 0x00004000

cisco AS5200 (68030) processor (revision 0x00) with 16384K/4096K
bytes of memory.
Processor board ID 00000000
Bridging software.
SuperLAT software copyright 1990 by Meridian Technology Corp).
X.25 software, Version 2.0, NET2, BFE and GOSIP compliant.
TN3270 Emulation software (copyright 1994 by TGV Inc).
Primary Rate ISDN software, Version 1.0.
1 Ethernet/IEEE 802.3 interface.
2 Serial network interfaces.
128K bytes of non-volatile configuration memory.
8192K bytes of processor board System flash partition 1 (Read ONLY)
8192K bytes of processor board System flash partition 2 (Read/Write)
4096K bytes of processor board Boot flash (Read/Write)

Notice: NVRAM invalid, possibly due to write erase.
         --- System Configuration Dialog ---

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.
Would you like to enter the initial configuration dialog? [yes]:
```

Step 2 Press **Return** or enter **yes** to begin the configuration process.

Step 3 When the System Configuration Dialog asks whether you want to view the current interface summary, press **Return** or enter **yes**:

```
First, would you like to see the current interface summary? [yes]: yes

Any interface listed with OK? value "NO" does not have a valid
configuration

Interface        IP-Address    OK?   Method Status      Protocol
Ethernet0        unassigned    NO    unset  up          up
Serial0          unassigned    NO    unset  down        down
Serial1          unassigned    NO    unset  down        down
```

Step 4 Configure the global parameters. Choose which protocols to support on the Ethernet interface. For IP installations, you can press Return to accept the default values (in brackets) for most of the questions. A typical configuration follows:

```
Configuring global parameters: <Return>

  Enter host name [Router]: <Return>
```

Next, you are prompted to enter an enable secret password. There are two types of privileged-level passwords:

- Enable secret password—a very secure, encrypted password

- Enable password—a less secure, nonencrypted password

The enable secret password is available in Cisco IOS Release 10.3 and later.

For maximum security, make sure that the passwords are different. If you enter the same password for both, the Cisco AS5200 accepts your entry but displays a warning message indicating that you should enter a different password.

Step 5 Enter an enable secret password:

```
The enable secret is a one-way cryptographic secret used
instead of the enable password when it exists.

  Enter enable secret: password

The enable password is used when there is no enable secret
and when using older software and some boot images.
```

Step 6 Enter the enable and virtual terminal passwords:

```
Enter enable password: password1
Enter virtual terminal password: password2
```

Step 7 Press **Return** to accept SNMP management, or enter **no** to refuse it:

```
Configure SNMP Network Management? [yes]: no
```

Step 8 In the following example, the Cisco AS5200 is configured for AppleTalk, IP, and Internetwork Packet Exchange (IPX). Configure the appropriate protocols for your network.

```
Configure Vines? [no]:
Configure LAT? [no]:
Configure AppleTalk? [no]: yes
  Multizone networks? [no]: yes
Configure DECnet? [no]:
Configure IP? [yes]:
  Configure IGRP routing? [yes]:
  Your IGRP autonomous system number [1]: 15
Configure CLNS? [no]:
Configure bridging? [no]:
Configure IPX? [no]: yes
Configure XNS? [no]:
Configure Apollo? [no]:
```

Configuring the Ethernet Interface

Perform the following steps to configure the Ethernet interface for communication over a LAN. To configure the interface parameters, you need to know your Ethernet interface network addresses. In this example, the system is being configured for an Ethernet LAN using IP.

Step 1 Respond as follows to the setup prompts, substituting the correct address and subnet mask for your network.

```
Configuring interface Ethernet0:
  Is this interface in use? [yes]:
  Configure IP on this interface? [yes]:
    IP address for this interface: 172.16.72.1
    Number of bits in subnet field [8]: 8
    Class B network is 172.16.0.0, 8 subnet bits; mask is
    255.255.255.0
```

Step 2 Enter **yes** if you are using AppleTalk on the interface. Enter **yes** to configure the Cisco AS5200 for extended AppleTalk networks, and then enter the cable range. Enter the zone name and any other zones that are associated with your local zone:

```
Configure AppleTalk on this interface? [no]: yes
  Extended AppleTalk network? [no]: yes
  AppleTalk starting cable range [0]: 3
  AppleTalk ending cable range [1]: 3
  AppleTalk zone name [myzone]:
  AppleTalk additional zone name: otherzone
  AppleTalk additional zone name:
```

Step 3 Enter **yes** if you are using IPX on the interface, and then enter the unique IPX network number:

```
Configure IPX on this interface? [no]: yes
  IPX network number [1]: B001
```

Configuring the Synchronous Serial Interfaces

The synchronous serial interfaces are configured to allow connection to WANs. Once the Ethernet port on the Cisco AS5200 is configured, perform the following steps to configure the synchronous serial interfaces:

Step 1 Press **Return** or enter **yes** to configure serial port 0:

```
Configuring interface Serial0:
  Is this interface in use? [yes]:
```

Step 2 Determine which protocols you want on the synchronous serial interface, and enter the appropriate responses. In the following example, the system is being configured for IP, AppleTalk, and IPX:

```
Configure IP on this interface? [yes]:
Configure IP unnumbered on this interface? [no]:
  IP address for this interface: 172.16.73.1
  Number of bits in subnet field [8]:
  Class B network is 172.16.0.0, 8 subnet bits; mask is
  255.255.255.0
Configure AppleTalk on this interface? [no]: yes
  Extended AppleTalk network? [yes]:
  AppleTalk starting cable range [2]: 4
  AppleTalk ending cable range [3]: 4
  AppleTalk zone name [myzone]: ZZ Serial
  AppleTalk additional zone name:
Configure IPX on this interface? [no]: yes
  IPX network number [2]: B002
```

Step 3 Configure the second synchronous serial interface. For example:

```
Configuring interface Serial1:
  Is this interface in use? [yes]:
  Configure IP on this interface? [yes]:
  Configure IP unnumbered on this interface? [no]:
    IP address for this interface: 172.16.74.2
    Number of bits in subnet field [8]:
    Class B network is 172.16.0.0, 8 subnet bits; mask is
    255.255.255.0
```

```
                  Configure AppleTalk on this interface? [no]: yes
                    AppleTalk starting cable range [3]: 5
                    AppleTalk ending cable range [4]: 5
                    AppleTalk zone name [myzone]: ZZ Serial
                    AppleTalk additional zone name:
                  Configure IPX on this interface? [no]: yes
                    IPX network number [3]: B003
```

Step 4 The configuration you entered is displayed, and you are asked if you want to use the displayed configuration. If you enter **no**, you will lose the configuration information you just entered and you can begin the configuration again. If you enter **yes**, the configuration is entered and saved in the startup configuration:

```
Use this configuration? [yes/no]: yes
Building configuration...
Use the enabled mode 'configure' command to modify this
configuration.


Press RETURN to get started!
```

Configuring the Dual T1 PRI Card

This section describes how to configure the dual T1 PRI card. This card is configured for Extended Superframe Format (ESF) signal format, bipolar eight zero substitution (B8ZS), and full bandwidth as the factory default. Depending on your networking environment, you might need to change these settings.

Be prepared with the following information:

- T1 information, for example, clock source, line code, and framing type

- Channel-group information and time slot mapping

- Protocols and encapsulations you plan to use on the new interfaces

- Internet protocol (IP) addresses, if you plan to configure the interfaces for IP routing

- Any protocols that require bridging

Perform the following steps to configure the dual T1 PRI card for a basic T1 connection. Substitute the correct addresses and host names for your network:

Step 1 At the privileged-mode prompt, enter the configuration mode and specify that the console terminal will be the source of the configuration subcommands, as follows:

```
Router# configure terminal

      Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
```

Step 2 At the prompt, specify the controller to configure by entering the subcommand **cont**, followed by **t1**, and the unit number. The example that follows is for the T1 interface unit number 1:

```
Router(config)# cont t1 1
```

Step 3 At the prompt, specify the clock source for the controller. The clock source command will determine which end of the circuit provides the clocking.

```
Router(config-controller)# clock source line
```

Note The clock source should only be set to use the internal clocking for testing the network or if the full T1 line is used as the channel-group. Only one end of the T1 line should be set to internal.

Step 4 At the prompt, specify the framing type:

```
Router(config-controller)# framing esf
```

Step 5 At the prompt, specify the line code format:

```
Router(config-controller)# linecode b8zs
Router(config-controller)#
%CONTROLLER-3-UPDOWN: Controller T1 1, changed state to up
Router(config-controller)#
```

Step 6 At the prompt, specify the channel-group modification command, channel-group, and time slots to be mapped. The example shows channel-group 0 and time slots 1, 3 through 5, and 7 selected for mapping.

```
Router(config-controller)# channel-group 0 timeslots 1,3-5,7

Router(config-controller)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1:0, changed
state to down
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1:0, changed
state to up
Router(config-controller)#
Router(config-controller)#
```

Step 7 At the prompt, specify the interface, serial, unit number, and channel-group to modify.

```
Router(config-controller)# int serial 1:0
```

Step 8 At the prompt, assign an IP address and subnet mask to the interface with the IP address configuration subcommand as shown in the following example:

```
Router(config-if)# ip address 1.1.15.1 255.255.255.0
Router(config-if)#
```

Step 9 Add any other configuration subcommands required to enable routing protocols and adjust the interface characteristics.

Step 10 After including all of the configuration subcommands, to complete the configuration, enter **Ctrl Z** (hold down the Control key while you press Z) to exit the configuration mode.

Step 11 Write the new configuration to memory as follows:

```
Router# copy running-config startup-config
```

The system displays an OK message when the configuration is stored.

Step 12 Exit the privileged level and return to the user level by entering disable at the prompt, as follows:

```
Router# disable
Router>
```

Step 13 Check the interface configuration with **show** commands.

For more information, refer to the Cisco IOS configuration guides and command references.

Configuring the 12-Port Modem Card

Modem parameters are defined in configuration mode. Modems can be configured separately or in groups.

In the following example, all 48 modems are configured identically and are configured as a single group. The modems are configured to meet the following requirements:

- Allow incoming and outgoing calls.

- Allow incoming calls to use any connect protocol, such as UNIX rlogin or TCP/IP Telnet protocols.

- Use PPP (Point-to-Point Protocol) sessions.

- Allow the use of PPP or SLIP (Serial Line Internet Protocol) EXEC commands.

- Use asynchronous routing and dynamic addressing.

- Do not use IP address pooling, but use the Ethernet interface IP address as the source of all outgoing data.

- Set the line to transmit and receive at 115200 bps.

- Use hardware (RTS/CTS) flow control.

- Transmit one stop bit per byte.

The following procedure is used to configure the modems for the line and interface requirements:

Step 1 Enter enable mode:

```
access server > enable
Password: <enablepassword>
```

Step 2 Enter configuration mode:

```
access server # configure terminal
```

The following commands configure the modem serial interface. All modems in the example configuration use the same interface parameters and are configured as a group using the **interface group-async** command.

Step 3 Enter the interface configuration mode:

```
access server (config)# interface group-async 1
```

Step 4 The example configuration does not assign a specific IP address to each modem interface but uses the ethernet interface IP address. Enter the **ip unnumbered** command to use the IP address assigned to the Ethernet interface:

```
access server (config-if)# ip unnumbered ethernet 0
```

Step 5 Disable the IP routing high-speed switching cache for the modem interface (recommended for serial interfaces below 64 kbps):

```
access server (config-if)# no ip route-cache
```

Step 6 Enable asynchronous routing:

```
access server (config-if)# async default routing
```

Step 7 Enable dynamic addressing on the interface:

```
access server (config-if)# async dynamic address
```

Step 8 Allow PPP and SLIP EXEC commands:

```
access server (configif)# async mode interactive
```

Step 9 The example configuration does not use an IP address pool. Enter the following command to turn off IP pooling for the interface:

```
access server (config-if)# no peer default ip address pool
```

Step 10 Specify the modems to be configured with the group parameters. In this example, all modems are defined in the interface group:

```
access server (config-if)# group-range 1 48
```

Step 11 Exit the interface configuration mode:

```
access server (config-if)# exit
```

Step 12 Enter the **line** command to configure the lines as a group. For this example, all 48 modem lines are configured as one group:

```
access server (config)# line 1 48
```

Step 13 Use the following command to disable the EXEC command interpreter timeout for detecting user input:

```
access server (config-line)# exec-timeout 0 0
```

Step 14 Configure the line to start a PPP (Point-to-Point Protocol) session:

```
access server (config-line)# autoselect ppp
```

Step 15 Configure the line for both incoming and outgoing calls:

```
access server (config-line)# modem inout
```

Step 16 Allow incoming calls to connect using any protocol (for example, the UNIX rlogin or the TCP/IP Telnet protocol):

```
access server (config-line)# transport input all
```

Step 17 Transmit one stop bit with each byte transmitted:

```
access server (config-line)# stopbits 1
```

Step 18 Set the line receive speed to 115200 bps:

```
access server (config-line)# rxspeed 115200
```

Step 19 Set the line transmit speed to 115200 bps:

```
access server (config-line)# txspeed 115200
```

Step 20 Configure the line to use RTS/CTS hardware flow control:

```
access server (config-line)# flowcontrol hardware
```

Step 21 Exit line configuration mode:

```
access server (config-line)# exit
access server (config)#
```

Step 22 Exit the configure mode and save the configuration:

```
access server (config)# exit
access server # copy running-config startup-config
Building configuration ...
[OK]
access server # exit
access server >
```

Configuring the Modem Ports

Refer to the *12-Port Modem AT Command Set and Register Summary* that accompanied your Cisco AS5200 for more information on configuration commands for the modem's serial and modem ports.

Specifying the Boot Method

You can enter multiple boot commands in the configuration in NVRAM to provide a backup method for loading the Cisco IOS image onto the Cisco AS5200. The Cisco AS5200 boots using the first boot command that succeeds. If you enter multiple boot commands, the Cisco AS5200 executes them in the order they are entered. There are two ways to load the Cisco IOS image: from Flash memory or from a TFTP server on the network.

Loading from Flash Memory

Information stored in Flash memory is not affected by network failures that might occur when you load system software from servers. In the following example, replace *filename* with the filename of the Cisco IOS image:

```
access server > enable
Password: enablepassword
access server # configure terminal
access server  (config)# boot system flash filename
access server  (config)# Ctrl-Z
access server # copy running-config startup-config
Building configuration ...
[OK]
access server # exit
access server >
```

Loading from a TFTP Server

If Flash memory is not available or does not contain a valid Cisco IOS image, you can specify that system software be loaded from a TFTP server on your network as a backup boot method for the Cisco AS5200. In the following example, replace *filename* with the filename of the Cisco IOS image, and replace *ipaddress* with the IP address of the TFTP server:

```
access server > enable
Password: enablepassword
access server # configure terminal
access server  (config)# boot system tftp filename ipaddress
access server  (config)# Ctrl-Z
access server # copy running-config startup-config
Building configuration ...
[OK]
access server # exit
access server >
```

For more information about the **configure terminal** command, refer to the Cisco IOS *Configuration Fundamentals Configuration Guide* and Configuration Fundamentals *Command Reference*.

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Checking the Configuration Settings

Enter the **show version** command to check the software version (third line from the top in the following sample display) and configuration register setting (at the end of the following sample display):

```
access server > show version
Cisco Internetwork Operating System Software
IOS (tm) XX00 Software (XXX-X-X), RELEASE SOFTWARE XX.X(XXXX) [XXX]
Copyright (c) 1986-1996 by Cisco Systems, Inc.
Compiled Tue XX-XXX-XX 13:07 by XXXXX
Image text-base: 0x03032810, data-base: 0x00001000

ROM: System Bootstrap, Version X.X(XXXX) [XXXXX], RELEASE SOFTWARE
ROM: XX00 Bootstrap Software (XXX-BOOT-X), Version XX.X(XXXXX) [XXXXX]

access server  uptime is 4 minutes
System restarted by power-on
System image file is "flash:XXX/XXX-X-X.Nov14", booted via flash

Cisco XXXX(68030) processor (revision X) with 4092K/2048K bytes of memory.
Processor board ID 00000000
Bridging software.
SuperLAT software copyright 199X by Meridian Technology Corp).
X.25 software, Version X.X, NET2, BFE and GOSIP compliant.
TN3270 Emulation software (copyright 199X by TGV Inc).
1 Ethernet/IEEE 802.3 interface.
2 Serial network interfaces.
No module installed for Serial Interface 0
No module installed for Serial Interface 1
32K bytes of non-volatile configuration memory.
8192K bytes of processor board System flash (Read ONLY)

Configuration register is 0x2102

access server >
```

Getting More Information

For more information about Cisco AS5200 software configuration, refer to the Cisco IOS configuration guides and command references.

These publications are available on the Cisco Connection Documentation CD-ROM, Cisco's online library of product information. You can also access Cisco technical documentation on the world wide URL http://www.cisco.com. To order the Cisco Connection Documentation CD-ROM, or paper documentation, refer to the *Cisco Information Packet* publication that accompanied your Cisco AS5200.