CHAPTER 4

Performing a Basic Configuration of the Cisco 7206

This chapter describes how to perform a basic configuration for your Cisco 7206. The chapter contains the following sections:

- If You Need More Information
- Using the Enable Secret and the Enable Password
- Configuring the Cisco 7206
- Implementing Other Configuration Tasks

This chapter guides you through a basic Cisco 7206 configuration, which is sufficient for you to access your network. Complex configuration procedures are beyond the scope of this publication and can be found in the configuration publications listed in the section "If You Need More Information."

To configure the Cisco 7206 from a console, you need to connect a terminal to the router's console port. Configuration requires access to the console port on the router's I/O controller.

If You Need More Information

The Cisco Internetwork Operating System (Cisco IOS) software running the Cisco 7206 contains extensive features and functionality. The effective use of these features is easier if you have more information at hand. For additional information on configuring the Cisco 7206 router, the following documentation resources are available:

- Cisco Connection Documentation, Enterprise Series CD-ROM

  This publication and additional Cisco Systems publications are available on a CD-ROM called Cisco Connection Documentation, Enterprise Series, which is Cisco's online library of product information. The CD is updated and shipped monthly, so it might be more up to date than printed documentation. To order Cisco Connection Documentation, Enterprise Series CD, contact a Cisco Sales or Customer Service representative.

- For systems running Cisco IOS Release 11.1(472), a Cisco-approved Release 11.1(472) beta software version, or a later Cisco IOS release, refer to the following modular configuration and modular command reference publications, as appropriate for your configuration:

  — *Configuration Fundamentals Configuration Guide*

  — *Configuration Fundamentals Command Reference*

  — *Wide-Area Networking Configuration Guide*

  — *Wide-Area Networking Command Reference*

  — *Network Protocols Configuration Guide*

  — *Network Protocols Command Reference*

  — *Bridging and IBM Networking Configuration Guide*

  — *Bridging and IBM Networking Command Reference*

  — *Configuration Builder Getting Started Guide*

  — *Troubleshooting Internetworking Systems*

- To obtain information about documentation, refer to the Cisco Connection Documentation, Enterprise Series CD, or to Cisco Connection Online (CCO)—at the URL http://www.cisco.com. You can also call Customer Service at 800 553-6387 or 408 526-7208. Customer Service hours are 5:00 a.m. to 6:00 p.m. Pacific time, Monday through Friday (excluding company holidays). You can also send e-mail to `cs-rep@cisco.com`. You can also refer to the *Cisco Information Packet* that shipped with your router.

Using the Enable Secret and the Enable Password

The Cisco 7206 is administered using the Cisco command interpreter, called the EXEC. You must boot and log in to the router before you can enter an EXEC command. For security purposes the EXEC has two levels of access to commands, user EXEC mode and privileged EXEC mode.

The commands available at the user level are a subset of those available at the privileged level. Because many privileged-level EXEC commands are used to set operating parameters, you should password-protect these commands to prevent unauthorized use.

There are two commands you can use to set the password protection:

- **enable secret** *password* (which is a very secure, encrypted password).
- **enable** *password* **(which is a less secure, or nonencrypted, password)**.

You must enter the correct password to gain access to privileged-level commands. The passwords should be different for maximum security. If you enter the same password for both during the setup script, the system will accept it, but you will receive a warning message indicating that you should enter a different password.

An enable secret password can contain from 1 to 25 uppercase and lowercase alphanumeric characters; an enable password can contain any number of uppercase and lowercase alphanumeric characters. In both cases, a number cannot be the first character. Spaces are also valid password characters; for example, “two words” is a valid password. Leading spaces are ignored; trailing spaces are recognized.

Configuring the Cisco 7206

You can configure the Cisco 7206 using one of the procedures described in the following sections:

- Configuring the Cisco 7206 Using AutoInstall
- Configuring the Cisco 7206 Manually Using the Setup Facility
- Configuring the Cisco 7206 Using the Configuration Mode

Follow the procedure that best fits the needs of your network configuration.

Note You need to acquire the correct network addresses from your system administrator or consult your network plan to determine correct addresses before you can complete the router configuration.

Before continuing the configuration process, check the current state of the router by entering the **show version** command. The **show version** command displays the release of Cisco IOS software that is available on the router.

Configuring the Cisco 7206 Using AutoInstall

The AutoInstall process is designed to configure the Cisco 7206 automatically after connection to your wide-area network (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 may 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 router's synchronous serial connection to the WAN.
2. User Datagram Protocol (UDP) broadcasts to and from the router and the TCP/IP host are enabled.

This functionality is coordinated by your system administrator at the site where the TCP/IP host is located. You should not use AutoInstall unless the required files are available on the TCP/IP host. See the publications *Configuration Fundamentals Configuration Guide and Configuration Fundamentals Command Reference* for information about how AutoInstall works.

Complete the following steps to prepare your Cisco 7206 for the AutoInstall process:

Step 1 Attach the appropriate synchronous serial cable to synchronous serial interface 0 on the router.

Step 2 Turn the power switch on each power supply to the ON (|) position. (This action turns on AC power to the router.)

The router loads the operating system image from Flash memory. If the remote end of the WAN connection is connected and properly configured, the AutoInstall process begins.

Once the AutoInstall process is completed, use the **copy running-config startup-config** command to write the configuration data to the router's nonvolatile random-access memory (NVRAM). Perform the following step to complete this task.

Step 3 At the # prompt enter the following command:

```
Hostname# copy running-config startup-config
```

Completing this step saves the configuration settings that the AutoInstall process created to NVRAM. If you fail to do this, your configuration will be lost the next time you reload the router.

Configuring the Cisco 7206 Manually Using the Setup Facility

If you do not plan to use AutoInstall, do not connect the router's serial (WAN) cable to the channel service unit/data service unit (CSU/DSU). If the serial (WAN) cable is connected to the CSU/DSU and the router does not have a configuration stored in NVRAM, the router attempts to run AutoInstall at start up. The router may take several minutes to determine that AutoInstall is not set up to a remote TCP/IP host.

Once the router has determined that AutoInstall is not configured, it will default to the setup facility. If the serial (WAN) cable is not connected, the router will boot from Flash memory and go automatically into the setup facility.

Note You can run the setup facility any time you are at the enable prompt (#) by entering the command **setup**.

Configuring Global Parameters

When you first start the setup program, you must configure the global parameters. These parameters are used for controlling system-wide settings. Complete the following steps to enter the global parameters:

Step 1 Connect a console terminal to the console port on the I/O controller, and then boot the router.

Step 2 After booting from Flash memory, the following information appears after about 30 seconds. When you see this information, you have successfully booted your router:

```
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) 7200 Software (C7200-J-M), Experimental Version 11.1(472)
[kpfjrgiu 100]
Copyright (c) 1986-1996 by cisco Systems, Inc.
Compiled Sun 21-Apr-96 04:10 by
```

```
cisco 7200 (R4700) processor with 22528K/10240K bytes of memory.
R4700 processor, Implementation 33, Revision 1.0 (Level 2 Cache)
Last reset from power-on
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).
4 Ethernet/IEEE 802.3 interfaces.
5 FastEthernet/IEEE 802.3 interfaces.
8 Serial network interfaces.
125K bytes of non-volatile configuration memory.

20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
4096K bytes of Flash internal SIMM (Sector size 256K).
Configuration register is 0x0
```

Note The first two sections of the configuration script (the banner and the installed hardware) appear only at initial system startup. On subsequent uses of the **setup** command facility, the script begins with a System Configuration Dialog as shown in the following example.

```
         --- System Configuration Dialog ---

At any point you may enter a questions mark '?' for help.
Use ctrl-c to abort configuration dialof at any prompt.
Default settings are in square brackets '[]'.

continue with configuration dialog? [yes]:
```

Step 3 When asked if you want to enter the initial configuration dialog and see the current interface summary, enter **yes** or press **Return**:

```
Would you like to enter the initial configuration dialog? [yes]:

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

In the following example, the summary shows a Cisco 7206 at first-time startup; that is, nothing is configured.

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

Interface     IP-Address     OK?     Method   Status    Protocol
Ethernet0/0   unassigned     NO      not set  down      down
Ethernet0/1   unassigned     NO      not set  down      down
```

Step 4 Choose which protocols to support on your interfaces. For Internet Protocol (IP)-only installations, you can accept the default values for most of the questions. A typical configuration using IP, IPX, and AppleTalk follows and continues through Step 10:

```
Configuring global parameters:

  Enter host name [Router]: router
```

Step 5 Enter the enable secret password and the enable password:

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

  Enter enable secret: barney

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

  Enter enable password: betty
```

Step 6 The Simple Network Management Protocol (SNMP) is the most widely supported open standard for network management. It provides a means to access and set configuration and run-time parameters of routers and communication servers. SNMP defines a set of functions that can be used to monitor and control network elements.

Enter **yes** to accept SNMP management; enter **no** to refuse it:

```
  Configure SNMP Network Management? [yes]:
    Community string [public]:
```

Step 7 For the following query, do not enable CLNS:

```
Configure CLNS? [no]: no
```

Step 8 For the following queries, enable routing on AppleTalk and IPX:

```
Configure AppleTalk? [no]: yes
    Multizone networks? [no]: yes

Configure IPX? [no]: yes
```

Step 9 For the following queries, do not enable Vines, XNS, DECnet, or bridging:

```
Configure Vines? [no]: no
Configure XNS? [no]: no
Configure DECnet? [no]: no
Configure bridging? [no]: no
```

Step 10 In most cases you will use IP routing. If you are using IP routing, you must also select an interior routing protocol. You can specify only one of two interior routing protocols to operate on your system using setup: Interior Gateway Routing Protocol (IGRP) or Routing Information Protocol (RIP).

To configure IP routing, enter **yes** (the default) or press **Return**, and then select an interior routing protocol:

```
  Configure IP? [yes]:
    Configure IGRP routing? [yes]:
      Your IGRP autonomous system number [1]: 15
```

In the following example, routing is enabled on AppleTalk and IPX; IP is already selected:

```
Configure AppleTalk? [no]: yes
    Multizone networks? [no]: yes

Configure IPX? [no]: yes
```

The following sample display includes a continuous listing of all configuration parameters selected in Step 4 through Step 8. These parameters are shown in the order in which they appear on your console terminal. Only IP, IPX, and AppleTalk are the selected protocols for this example.

```
Configuring global parameters:

  Enter host name [Router]:

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

  Enter enable secret: barney

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

  Enter enable password: wilma
  Enter virtual terminal password: fred
  Configure SNMP Network Management? [yes]:
    Community string [public]:
  Configure IP? [yes]:
    Configure IGRP routing? [yes]:
      Your IGRP autonomous system number [1]: 15
  Configure Vines? [no]:
  Configure IPX? [no]: y
  Configure AppleTalk? [no]: y
    Multizone networks? [no]: y
  Configure Apollo? [no]:
  Configure DECnet? [no]:
  Configure XNS? [no]:
  Configure CLNS? [no]:
  Configure bridging? [no]:
```

Step 11 Save your settings to NVRAM. (Refer to the section "Saving Your Settings to NVRAM" later in this chapter.)

Configuring Interfaces

Following are the steps for configuring interfaces to allow communication over a local-area network (LAN) or WAN. To configure the interface parameters, you need your interface network addresses and subnet mask information. Consult with your network administrator for this information.

Configuring Ethernet Interfaces

Step 1 In the following example, the system is being configured for an Ethernet LAN using IP. Respond to the prompts as follows, using your own addresses and mask at the setup prompts:

```
Configuring interface parameters:

Configuring interface Ethernet0/0:
  Is this interface in use? [no]: yes
  Configure IP on this interface? [no]: yes
    IP address for this interface: 1.1.1.10
    Number of bits in subnet field [0]:
    Class A network is 1.0.0.0, 0 subnet bits; mask is 255.0.0.0
```

Step 2 Determine if you are going to enable IPX on this interface; if you are, enter the unique IPX network number:

```
Configure IPX on this interface? [no]: yes
    IPX network number [2]:
```

Step 3 If you will be using AppleTalk on the interface, enter **yes**. Enter **yes** to configure for extended AppleTalk networks, and then enter the cable range number. Enter the zone name and any other additional zones that will be associated with your local zone:

```
  Configure AppleTalk on this interface? [no]: yes
    Extended AppleTalk network? [no]: yes
    AppleTalk starting cable range [0]:
```

Step 4 Save your settings to NVRAM. (Refer to the section “Saving Your Settings to NVRAM” later in this chapter.)

Note If additional Ethernet interfaces are available in your system, you are prompted for their configuration as well.

Configuring Synchronous Serial Interfaces

The synchronous serial interfaces are configured to allow connection to WANs through a CSU/DSU. Complete the following steps to configure the serial ports:

Step 1 To configure serial port 0 enter **yes**:

```
Configuring interface Serial0/0:
  Is this interface in use? [no]: yes
```

Step 2 Determine which protocols you want on the synchronous serial interface and enter the appropriate responses:

```
Configure IP unnumbered on this interface? [no]:
    IP address for this interface: 1.1.1.20
    Number of bits in subnet field [0]:
    Class A network is 1.0.0.0, 0 subnet bits; mask is 255.0.0.0

Configure IPX on this interface? [no]: yes
    IPX network number [2]:

Configure AppleTalk on this interface? [no]: yes
    Extended AppleTalk network? [no]:
    AppleTalk network number [1]:
```

Step 3 Save your settings to NVRAM. (Refer to the section “Saving Your Settings to NVRAM” later in this chapter.)

Note If additional synchronous serial interfaces are available in your system, you are prompted for their configuration as well.

The following sample display includes a continuous listing of all interface configuration parameters selected for Ethernet and synchronous serial interfaces. These parameters are shown in the order in which they appear on your console terminal. Only one Ethernet and one synchronous serial interface are configured for this example.

```
Configuring interface parameters:

Configuring interface Ethernet0/0:
  Is this interface in use? [no]: yes
  Configure IP on this interface? [no]: yes
    IP address for this interface: 1.1.1.10
    Number of bits in subnet field [0]:
    Class A network is 1.0.0.0, 0 subnet bits; mask is 255.0.0.0
  Configure IPX on this interface? [no]: yes
    IPX network number [2]: 10
  Configure AppleTalk on this interface? [no]: yes
    Extended AppleTalk network? [no]: yes
    AppleTalk starting cable range [0]:

Configuring interface Serial0/0:
  Is this interface in use? [no]: yes
  Configure IP on this interface? [no]: yes
  Configure IP unnumbered on this interface? [no]:
    IP address for this interface: 1.1.1.20
    Number of bits in subnet field [0]:
    Class A network is 1.0.0.0, 0 subnet bits; mask is 255.0.0.0
  Configure IPX on this interface? [no]: yes
    IPX network number [2]:
  Configure AppleTalk on this interface? [no]: yes
    Extended AppleTalk network? [no]:
    AppleTalk network number [1]:

The following configuration command script was created:

hostname Router
enable secret 5 $1$u8z3$PMYY8em./8sszhzk78p/Y0
enable password wilma
line vty 0 4
password s
snmp-server community public
!
ip routing
no vines routing
ipx routing
```

```
appletalk routing
no apollo routing
no decnet routing
no xns routing
no clns routing
no bridge 1
! Turn off IPX to prevent network conflicts.
interface Ethernet0/0
no ipx network
interface Ethernet0/1
no ipx network
!
interface Ethernet0/0
ip address 1.1.1.10 255.0.0.0
appletalk cable-range 0-0 0.0
appletalk discovery
no mop enabled
!
interface serial0/0
ip address 1.1.1.20 255.0.0.0
ip route-cache cbus
no keepalive
!
!
router igrp 15
network 1.0.0.0
!
end

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

Press RETURN to get started!
```

Your Cisco 7206 is now minimally configured and is ready to use. You can use the **setup** command if you want to modify the parameters after the initial configuration. To perform more complex configurations, use the **configure** command.

For information on additional interface configuration and specific system configurations, refer to the section "If You Need More Information" earlier in this chapter.

Configuring the Cisco 7206 Using the Configuration Mode

You can configure the Cisco 7206 manually if you prefer not to use the setup facility or AutoInstall. Complete the following steps to configure the Cisco 7206 manually:

Step 1 Connect a console terminal to the console port on the I/O controller.

Step 2 When asked if you want to enter the initial dialog, answer **no** to go into the normal operating mode of the router:

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

Step 3 After a few seconds the user EXEC prompt (`Router>`) is displayed. Type **enable** to enter enable mode (configuration changes can only be made in enable mode):

```
Router> enable
```

The prompt changes to the privileged EXEC prompt:

```
Router#
```

Step 4 Enter the **config terminal** command at the enable prompt to enter configuration mode from the terminal:

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

At the `Router(config)#` prompt, enter the **interface** *type slot/port* command to enter the interface configuration mode:

```
Router(config)# interface serial slot/port
Router(config-int)#
```

In either configuration mode, you can now enter any changes to the configuration. Press **Ctrl-Z** to exit configuration mode.

Step 5 Save your settings to NVRAM. (Refer to the section "Saving Your Settings to NVRAM" later in this chapter.)

Your Cisco 7206 is now minimally configured and will boot with the configuration you have entered. To see a list of the configuration commands available to you, enter ? at the prompt or press the **help** key while in configuration mode

Saving Your Settings to NVRAM

To store the configuration or changes to your startup configuration in NVRAM, enter the **copy running-config startup-config** command at the `Hostname#` prompt:

```
Hostname# copy running-config startup-config
```

Using this command saves the configuration settings that you created in the Cisco 7206 using configuration mode and the setup facility. If you fail to do this, your configuration will be lost the next time you reload the router.

Checking Your Settings and Reviewing Your Configuration Changes

You can check your settings and review any changes to your configuration using various software commands.

To check the value of the settings you have entered, enter the **show running-config** command at the `Router#` prompt:

```
Router# show running-config
.
.
.
```

To review changes you make to the configuration, use the EXEC **show startup-config** command to display the information stored in NVRAM.

Implementing Other Configuration Tasks

To make advanced configuration changes after you establish the basic startup configuration for your Cisco 7206, refer to the publications listed in the section "If You Need More Information" in this chapter. These publications contain additional information on using the **configure** command.

The configuration publications also provide information about the following tasks:

- Understanding and working with the user interface on your router
- Booting and rebooting the router
- Setting the configuration register
- Loading configuration files or system images using remote copy (rcp) or Trivial File Transfer Protocol (TFTP)
- Reloading the operating system

What Do I Do Now?

After you have installed the Cisco 7206 hardware, checked all external connections, turned on the system power, allowed the system to boot up, and minimally configured the system, you might need to perform more complex configurations, which are beyond the scope of this publication.

For specific information on system and interface configuration, refer to the publications listed in the section "If You Need More Information" in this chapter.