



Using ClickStart and Setup

Cisco IOS includes configuration tools that simplify the process of setting up the initial configuration of a router or access server. These tools are ClickStart and Setup. ClickStart is the most recent addition to the Cisco IOS. ClickStart enables you to configure and monitor a router using a World Wide Web browser.

This chapter is divided into two main sections:

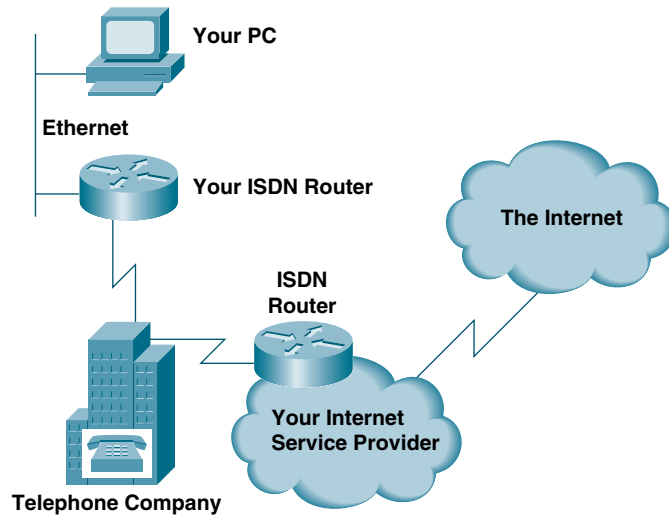
- Using ClickStart
- Using Setup for Configuration Changes

Using ClickStart

This section describes how to use ClickStart. ClickStart is a Cisco IOS software feature that allows you to configure a router using a Web browser, such as Netscape. You can use ClickStart to configure a Cisco 1003, a Cisco 1004, or a Cisco 1005.

ClickStart can be used to configure a router to connect a small office or home PC to the Internet or to another network. In this environment, your PC is connected to the router via an Ethernet connection. You configure the router to dial your Internet service provider, and your Internet service provider supplies an ISDN, Frame Relay, or Asynchronous Serial connection to the Internet. This environment is illustrated in Figure 13 which shows a connection for an ISDN connection and an ISDN router.

Figure 13 Connecting a PC to the Internet through an Internet Service Provider



You do not need to have an extensive background in networks and routers to configure your router using ClickStart.

You can use ClickStart to configure a Cisco 1003 or Cisco 1004 ISDN router running Cisco IOS Release 11.0(6) or later software, or Cisco IOS Release 11.1(2) or later software. You can also use ClickStart to configure a Cisco 1005 Frame Relay or Asynchronous Serial router running Cisco IOS 11.1(5) or later software.

Configuring a Router Using ClickStart Task List

To configure a router using ClickStart, complete the tasks in the following sections:

- Gathering Information
- Ordering Internet Service
- Verifying the TCP/IP Configuration
- Setting Up the Router
- Configuring the Router
- Testing the Router Configuration
- Issuing Cisco IOS Commands Using a Web Browser

For detailed information about how ClickStart works, read the “How ClickStart Works (Optional)” section later in this chapter.

Gathering Information

If you are going to configure a Cisco 1003 or Cisco 1004 ISDN router, you need the following information before proceeding.

From your ISDN service provider, telephone company, or the administrator of your company’s network, get the following information:

- ISDN switch type (in North America this is typically 5ESS, DMS, or NI-1)
- ISDN Service Profile Identifiers (SPIDs)

- ISDN local directory numbers (LDNs)

From your Internet service provider, get the following information:

- IP address for your PC
- IP subnet mask for your PC
- IP address for your router's Ethernet interface
- IP address of your Domain Naming System (DNS) server
- Administrative password that you or your service provider will use to manage your router
- Authentication password that your router will use when connecting to the service provider

Ordering Internet Service

To use a Cisco router, you must order internet service from your telephone company. The type of internet service you order depends on the type of Cisco router you have. If you have a Cisco 1003 or Cisco 1004 ISDN router, then you should order ISDN service. If you have a Cisco 1005 Frame Relay router, then you should order Frame Relay service. If you have a Cisco 1005 Asynchronous Serial router, then you should order Asynchronous Serial service.

To order internet service, order regular telephone service (sometimes referred to as POTS) with the desired internet service and billing options. Once your internet service is installed, plug the telephone into the phone jack.

Many times, you can simply tell your telephone company that you want ISDN service and they will install it correctly. This is common in Europe and fairly common in North America. The telephone company may ask you for specific information about the type of service you want. If they do, read the "Ordering ISDN Service" section that follows.

Ordering ISDN Service

If your telephone company asks for specific information about the type of ISDN service you want, find out from them which ISDN switch type they support.

In Europe, common switches are basic-net3, 1TR6, and VN3. Normally, you should be able to order ISDN service without needing to specify switch capabilities.

In North America, common switches are the 5ESS custom, DMS-100, and the NI-1. Information about the type of capabilities you should order for these switches is listed in the sections that follow.

5ESS Custom Switch (AT&T)

For data service only, order the following capabilities:

- 2 B channels for data
- Point-to-point connection
- Terminal type E
- 1 directory number assigned by the telephone company
- MTERM = 1
- Request delivery of calling line ID on Centrex lines
- Set speed of calls to 56 kbps outside the local exchange

If you have an ISDN telephone connected to the line, you can order voice and data service with the following capabilities:

- 2 B channels for voice or data
- Multipoint connection
- Terminal type D
- 2 directory numbers assigned by the telephone company
- 2 SPIDs assigned by the telephone company, in the format 01xxxxxxx0, where the xxxxxx is replaced with the seven-digit telephone number (omitting the area code)
- MTERM = 2
- Number of call appearances = 1
- Ringing/idle call appearances = idle
- Autohold = no
- Onetouch = no
- Request delivery of calling line ID on Centrex lines
- Set speed of calls to 56 kbps outside the local exchange
- (Optional) Directory number 1 can hunt to directory number 2 (this service is more expensive)

DMS-100 Switch (Northern Telecom)

Order the following capabilities:

- 2 B channels for voice and data
- 2 directory numbers assigned by the telephone company
- 2 SPIDs assigned by the telephone company
- Functional signaling
- Dynamic TEI assignment
- Maximum number of keys = 64
- Release key or key number = no
- Ringing indicator = no
- EKTS = no
- PVC = 1, for all BCS loads up to BCS 34 (note that a PVC of 2 indicates an NI-1 switch)
- Request delivery of calling line ID on Centrex lines
- Set speed of calls to 56 kbps outside the local exchange
- (Optional) Directory number 1 hunt to directory number 2 (this service is more expensive)

NI-1 Switch (supported by AT&T and Northern Telecom switches)

Order the following capabilities:

- 2 B channels for voice and data
- 2 directory numbers assigned by the telephone company

- 2 SPIDs assigned by the telephone company (format will vary)
- Terminal type = A
- Set speed of calls to 56 kbps outside the local exchange
- (Optional) Directory number 1 hunt to directory number 2 (this service is more expensive)

Verifying the TCP/IP Configuration

The sections that follow contain specific instructions for how to verify the TCP/IP configuration on your system. There are instructions for each of the most common PC environments: on a Windows 3.11 PC, on a Windows 95 PC, on a Macintosh, and on a UNIX workstation.

On a Windows 3.11 PC

To verify the TCP/IP configuration on a PC running Windows 3.11, perform the following tasks:

- 1 Check that the PC has the correct IP address.
- 2 Configure 255.255.255.255 as the address of the DNS server.
- 3 After you have configured the router, set the default gateway to the router's IP address.

Note Check the stack supplier documentation for further information on how to verify the TCP/IP configuration.

If you change any of these parameters from previous settings, you must either exit all the TCP/IP applications and restart them, or restart your PC.

On a Windows 95 PC

To verify the TCP/IP configuration on a PC running Windows 95, perform the following tasks by using the Network Control Panel and selecting the TCP/IP configuration information:

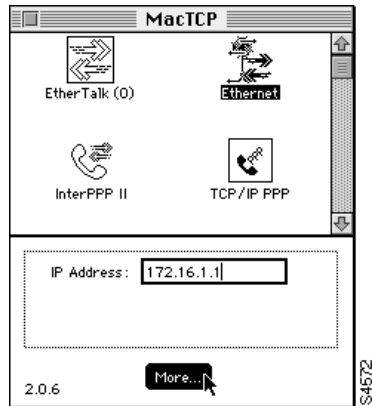
- 1 In the IP Address section, check that the PC has the correct IP address.
- 2 After you have configured the router, set the default gateway to the router's IP address.

If you change any of the TCP/IP parameters, you must restart your PC.

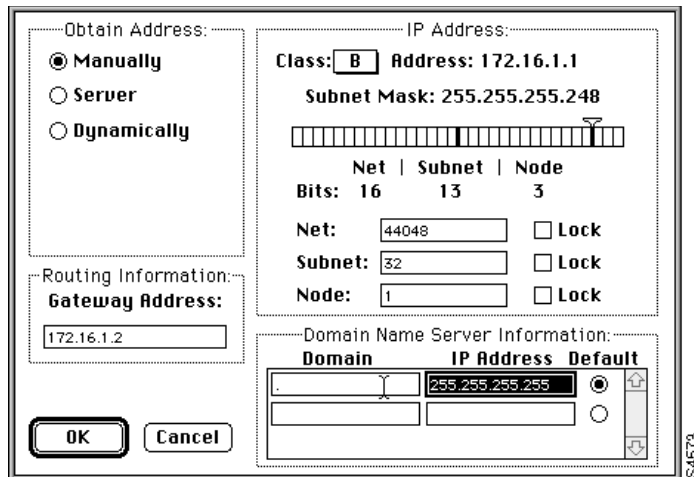
On a Macintosh

To verify the TCP/IP configuration on a Macintosh, perform the following tasks using the MacTCP Control Panel (Control Panels are in the Apple menu).

- 1 Check that the Macintosh has the correct IP address. This address is shown in the IP Address box:



- 2 Click the **More...** button to display the next MacTCP dialog box:



- 3 Configure 255.255.255.255 as the IP address of the DNS server.
 - 4 Configure the domain name as a period (.).
 - 5 After you have configured the router, set the default gateway to the router's IP address.
- If you change any of these parameters from previous settings, you must restart the Macintosh.

On a UNIX Workstation

From a UNIX workstation or PC, you cannot use ClickStart to configure your router for the first time because the router cannot discover its IP address. Instead, you must configure the router's IP address when you set up the router as follows:

- 1 Connect a terminal to the router's console port.
- 2 Configure an IP address for the router's Ethernet port.

Note For documentation on how to configure an IP address for the router's Ethernet port, consult the *Network Protocols Configuration Guide, Part 1*.

Setting Up the Router

To set up the router, perform the following tasks:

- Step 1** Plug your router into a power socket.
- Step 2** If necessary, power on the router (some Cisco routers do not have power switches). Allow the router to initialize for about 2 minutes.
- Step 3** Make sure that the PC and the router are connected to each other using the proper Ethernet cables.
- Step 4** If you are configuring a new router, skip this step.

If you are reconfiguring a router that already has a working configuration file, save the configuration file in a text file on your system. Then issue an **erase startup-config** command and restart the router.

Ways to Provide an Ethernet Connection

You can provide an Ethernet connection with one of the following:

- Hub.

A hub is a device for connecting Ethernet ports when you have more than two devices on your Ethernet network. If you use a hub, use straight-through Ethernet cable.

To find out if you are using the correct cable, look at the two ends of the cable. The sequence of the colored wires should be the same for each connector.

- Back-to-back 10BaseT cable (also called a cross-over cable).

Use this cable to connect the router directly to your PC when the PC is the only device on your Ethernet network.

To find out if you are using the correct cable, look at the two ends of the cable. The sequence of the colored wires should be different for each connector.

Checking the Ethernet Connection

To check that the Ethernet connection is attached properly, do the following:

- For hubs, the “Link OK” LED on the hub is lit if you are connected properly. (On older hubs, this LED might be disabled.)
- When you plug the Ethernet cable into the router, the “Link OK” LED on the router is lit if you are connected properly. If it is not on, you are using the wrong cable or the cable is damaged.
- When a device on the network is transmitting packets the “LAN RX” LED on the router blinks if you are connected properly. If it is not blinking, you are not connected properly.

Configuring the Router

Now you are ready to configure the router. You do this by completing the router EZ Setup form, which is located on the router.

Before you continue, make sure you have your list of ISDN and IP parameters handy. We suggest that you print a sample copy of the Router EZ Setup form and fill in all the values you want to enter on the form located on the router.

Note After you power on the router, you must wait for 2 to 5 minutes before using the ClickStart feature to configure the router. During this time, the router is collecting information from the network that is necessary for configuring the router. The “System OK” light on the router will be on, but will not be blinking, when the router is ready.

To use ClickStart to configure the router software, follow these steps:

Step 1 Start Netscape or another Web browser on one of the computers connected to the network.

Step 2 In the browser’s location field, enter the following URL to get to the router home page:

`http://new-router.cisco.com`

Step 3 Select EZ Setup from the router home page.

This link displays the EZ Setup form, which you use to configure the router software.

Step 4 Complete the section on the EZ Setup form that configures the router name and password.

Step 5 Complete the section on the EZ Setup form that configures the WAN interface in the router.

If your router has an ISDN interface, use the remote router name, remote phone number, remote CHAP password, ISDN switch type, ISDN interface speed, and SPIDs given to you by your service provider or network administrator.

If your router has a Frame Relay interface, use the IP address, netmask, and DLCI given to you by your service provider or network administrator.

Step 6 Complete the section of the EZ Setup form that configures the IP address of the default router. The default router is a router that can direct packets to their destination if your local router does not know the path to the destination. You commonly enter the IP address of a router located at the remote end of the WAN connection. If there is a router on your local network on which IP routing is enabled, you can enter the IP address of that router.

Step 7 Complete the section of the EZ Setup form that configures IP addresses.

Enter the IP address and netmask of the Ethernet interface on the router. Use the IP address and netmask given to you by your service provider or network administrator. If your router has a Frame Relay interface, note that the IP address and netmask you enter in this step are different from those you entered in Step 5.

Enter the IP address of a DNS server.

Step 8 Enable or disable debug information.

Step 9 Click the **Submit** button to configure the router.

Note After you click **Submit**, a “Congratulations!” page will be displayed, indicating the configuration was successful. Select the “Visit the router’s home page” to return to the router home page. You should make a bookmark for this page.

When you are done configuring the router, check the configuration.

Troubleshooting ClickStart and the Router Configuration

If you did not get to the router EZ Setup form on the router or if the router did not configure properly, try one or more of the following steps until you succeed in configuring the router:

- 1 Check that the Ethernet cable is correctly connected.
- 2 If you have already clicked `new-router.cisco.com`, turn the router off. Then restart it and try to configure the router using the EZ Setup form.
- 3 If your initial configuration attempt did not work, turn off and restart the router, and quit and reload your browser. Try to configure the router using the EZ Setup form.
- 4 If you reconfigured TCP on your PC and did not reboot the PC, reboot the PC and try to configure the router.
- 5 If your router was previously configured, ClickStart will not work. To use ClickStart on a previously configured router, connect a terminal to the router's console port and use the **erase startup-config** command to erase the existing configuration file. Then use the EZ Setup form to configure the router.

If, after completing these steps, the router is still not configured properly, contact the Cisco Technical Response Center (TRC).

Testing the Router Configuration

If you followed the directions when configuring the router, you created an HTTP bookmark to the router's home page when you configured the router. Use this bookmark to visit the router and try a few of the hyperlinks on the home page, such as the link to the **show interfaces** command.

If you forgot to create a bookmark, use the router's IP address to get to the router's home page. To do this, open a URL that looks like this:

```
http://10.0.0.11/
```

Change the 10.0.0.1 address to the IP address that you assigned your router.

Issuing Cisco IOS Commands Using a Web Browser

You can use a Web browser to issue Cisco IOS commands to your router. This functionality is not limited to Cisco 1003, Cisco 1004, and Cisco 1005 routers. You can use it on any access server or router running a current version of Cisco IOS Release 11.1 or 11.0 software.

If you have a Cisco 1003, Cisco 1004, or Cisco 1005 router, you can automatically use this functionality.

If you have any other Cisco router, you must enable this functionality before you can use it to issue commands to your router.

Note The documentation which describes how to enable the Cisco Web browser interface is located in the "Understanding the User Interface" chapter in this book.

How ClickStart Works (Optional)

This section provides the technical background for how ClickStart operates. In most cases, you do not need to understand the technical background in order to use ClickStart. This background information is provided primarily for network administrators. For more information about the terms used in this section, refer to the configuration guides for Cisco IOS Release 11.2.

When using a Web browser and ClickStart to configure a router, there are two broad issues:

- Setting the Initial IP Address
- Choosing Configuration Options

Setting the Initial IP Address

When using a Web browser to configure a router, the trickiest part is the initial configuration because the router does not yet have an IP address. Traditionally, you use protocols such as BOOTP or DHCP and their corresponding server programs to configure a router initially. In fact, the router can use BOOTP to get an initial IP address, and Windows NT has a DHCP server. However, using these protocols assumes you have a moderate degree of computer and networking expertise.

When a router without a valid configuration file in nonvolatile RAM (NVRAM) starts up, it attempts to locate a configuration file by using RARP, BOOTP, and the setup console dialog. The router can also get a configuration file using HTML.

Starting the browser initiates a transaction between the browser and the PC that identifies the IP address of the PC.

Note To use ClickStart with a UNIX PC, you must first assign an IP address to the router.

Choosing Configuration Options

A second issue in configuring a router with a Web browser is that the Cisco IOS software can be configured with an enormous variety of options. While these options are useful for an experienced network manager, the sheer number of commands and possible approaches to configure even a simple dial-up ISDN router is a formidable barrier if you simply want to configure the router.

ClickStart translates the information you fill in on the EZ Setup form to a standard configuration template. The standard configuration assumes that you will dial only one destination and use PPP/CHAP and static routing. It requires values for the following parameters:

- *hostname* – Name of the router
- *password* – Enable password for the router
- *remote-name* – Name of the remote router (used by CHAP)
- *remote-number* – Telephone number to dial
- *remote-password* – Password at the remote end (used by CHAP)
- *switch-type* – Service provider switch type
- *isdn-sp1d1* – Service profile identifier number assigned by the ISDN server provider for the B1 channel
- *isdn-sp1d2* – Service profile identifier number assigned by the ISDN server provider for the B2 channel
- *ip-address* – IP address of Ethernet interface 0

- *ip-mask* – Address mask for Ethernet interface 0
- *dns-server-address* – IP address of the DNS server for Ethernet interface 0

ClickStart Configuration Template

ClickStart configures the router with the following configuration:

```

service timestamps debug
service timestamps log
!
hostname hostname
!
service password-encryption
enable-secret password password
line vty 0 5
password password
!
isdn switch-type switch-type
username remote-name password remote-password
!
interface ethernet 0
ip address ip-address ip-mask
ip helper-address dns-address
no lat enabled
no mop enabled
!
interface bri 0
ip unnumbered ethernet 0
encapsulation ppp
dialer map ip 192.168.254.254 name remote-name speed 56 remote-number
isdn spid1 spid1
isdn spid2 spid2
ppp authentication chap
dialer-group 1
!
ip classless
ip route 0.0.0.0 0.0.0.0 192.168.254.254
ip route 192.168.254.254 interface bri 0
logging buffered
access-list 101 deny udp any any eq snmp
access-list 101 deny udp any any eq ntp
access-list 101 permit ip any any
snmp-server community public RO
dialer-list 1 list 101
!
end

```

Features of the ClickStart Configuration

This section further explains some of the features of the configuration used by ClickStart.

IP Address 191.168.254.254

The address 192.168.254.254 is specified in RFC 1597, *Address Allocation for Private Internets*. RFC 1597 addresses are available for private use. They are never used on the public Internet. Using unnumbered interfaces for the BRI results in the static routing and dialer map commands still needing an IP address. However, this address is never advertised outside the router and no packets are ever addressed to it.

logging buffered

ClickStart configures the **logging buffered** command and a few **debug** commands, such as **debug dialer** and **debug isdn events**, to simplify problem resolution. The **debug** commands are already in the log.

access-list

The dialer access lists allow any IP packets, except SNMP and NTP packets, to bring or keep up the link. In other words, SNMP and NTP packets are considered to be uninteresting and are ignored.

```
interface bri 0
...
dialer group 1
...
access-list 101 deny udp any any eq snmp
access-list 101 deny udp any any eq ntp
access-list 101 permit ip any any
```

ip helper-address

Because the PC is configured with a DNS server address of 255.255.255.255, the local broadcast needs to be directed to the real address of the DNS server.

```
interface ethernet 0
...
ip helper-address dns-address
```

Using Setup for Configuration Changes

The **setup** command facility is an interactive facility that allows you to perform first-time configuration and other basic configuration procedures on all routers. The facility prompts you to enter basic information needed to start a router functioning quickly and uneventfully.

Although the **setup** command facility is a quick way to “set up” a router, you can also use it after first-time startup to perform basic configuration changes. This section focuses on:

- How to use the **setup** command facility after first-time startup
- How to use the streamlined **setup** facility

Refer to your hardware platform’s user guide for more information on how to use **setup** for first-time startup.

Whenever you use the **setup** command facility, be sure that you know the:

- Interfaces the router has
- Protocols the router is routing
- Whether the router is to perform bridging
- Network addresses for the protocols being configured
- Password strategy for your environment

Setup Command Facility Task List

You can perform the tasks in the following sections to make configuration changes using the **setup** command facility. Both tasks are optional.

- Use Setup After First-Time Startup
- Use the Streamlined Setup Facility

Use Setup After First-Time Startup

The command parser allows you to make very detailed changes to your configurations. However, some major configuration changes do not require the granularity provided by the command parser. In these cases, you can use **setup** command facility to make major enhancements to your configurations. For example, you might want to use **setup** to add a protocol suite, to make major addressing scheme changes, or to configure a newly installed interface. While you can use the command parser to make these major changes, the **setup** command facility provides you with a high-level view of the configuration and guides you through the configuration change process.

Additionally, if you are not familiar with Cisco products and the command parser, the **setup** command facility is a particularly valuable tool because it asks you the questions required to make configuration changes.

Note If you use **setup** to modify a configuration because you have added or modified the hardware, be sure to verify the physical connections using the **show version** command. Also, verify the logical port assignments using the **show running-config** command to ensure that you configure the proper port. Refer to your platform's hardware publications for details on physical and logical port assignments.

To enter the **setup** command facility, perform the following task in privileged EXEC mode:

Task	Command
Enter the setup command facility.	setup

When you enter the **setup** command facility after first-time startup, an interactive dialog called the System Configuration Dialog appears on the system console screen. The System Configuration Dialog guides you through the configuration process. It prompts you first for global parameters and then for interface parameters. The values shown in brackets next to each prompt are the default values last set using either the **setup** command facility or the **configure** command.

Note The prompts and the order in which they appear on the screen vary depending on the platform and the interfaces installed in the device.

You must run through the entire System Configuration Dialog until you come to the item that you intend to change. To accept default settings for items that you do not want to change, press the Return key.

To return to the privileged EXEC prompt without making changes and without running through the entire System Configuration Dialog, press **Ctrl-C**.

The facility also provides help text for each prompt. To access help text, press the question mark (?) key at a prompt.

When you complete your changes, the **setup** command facility shows you the configuration command script that was created during the **setup** session. It also asks you if you want to use this configuration. If you answer Yes, the configuration is saved to NVRAM. If you answer No, the configuration is not saved and the process begins again. There is no default for this prompt; you must answer either Yes or No.

Note If any problems exist with the configuration file pointed to in NVRAM, or if the ignore NVRAM bit is set in the configuration register, the router enters the streamlined **setup** command facility. See the “Use the Streamlined Setup Facility” section for more information.

The following example shows how to use the **setup** command facility to configure interface serial 0 and to add ARAP and IP/IPX PPP support on the asynchronous interfaces.

```
Router# setup

    --- 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 '['].

Continue with configuration dialog? [yes]:

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

Interface      IP-Address      OK? Method      Status          Protocol
Ethernet0      172.16.72.2     YES manual       up              up
Serial0        unassigned      YES not set        administratively down down
Serial1        172.16.72.2     YES not set        up              up

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 [<Use current secret>]:

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

Enter enable password [ww]:
Enter virtual terminal password [ww]:
Configure SNMP Network Management? [yes]:
  Community string [public]:
Configure DECnet? [no]:
Configure AppleTalk? [yes]:
  Multizone networks? [no]: yes
Configure IPX? [yes]:
Configure IP? [yes]:
  Configure IGRP routing? [yes]:
    Your IGRP autonomous system number [15]:
Configure Async lines? [yes]:
  Async line speed [9600]: 57600
  Configure for HW flow control? [yes]:
```

```
Configure for modems? [yes/no]: yes
  Configure for default chat script? [yes]: no
Configure for Dial-in IP SLIP/PPP access? [no]: yes
  Configure for Dynamic IP addresses? [yes]: no
  Configure Default IP addresses? [no]: yes
  Configure for TCP Header Compression? [yes]: no
  Configure for routing updates on async links? [no]:
Configure for Async IPX? [yes]:
Configure for Appletalk Remote Access? [yes]:
  AppleTalk Network for ARAP clients [1]: 20
  Zone name for ARAP clients [ARA Dialins]:

Configuring interface parameters:

Configuring interface Ethernet0:
Is this interface in use? [yes]:
Configure IP on this interface? [yes]:
  IP address for this interface [172.16.72.2]:
  Number of bits in subnet field [8]:
  Class B network is 172.16.0.0, 8 subnet bits; mask is /24
Configure AppleTalk on this interface? [yes]:
  Extended AppleTalk network? [yes]:
  AppleTalk starting cable range [1]:
  AppleTalk ending cable range [1]:
  AppleTalk zone name [Sales]:
  AppleTalk additional zone name:
Configure IPX on this interface? [yes]:
  IPX network number [1]:

Configuring interface Serial0:
Is this interface in use? [no]: yes
Configure IP on this interface? [no]: yes
Configure IP unnumbered on this interface? [no]: yes
  Assign to which interface [Ethernet0]:
Configure AppleTalk on this interface? [no]: yes
  Extended AppleTalk network? [yes]:
  AppleTalk starting cable range [2]: 3
  AppleTalk ending cable range [3]: 3
  AppleTalk zone name [myzone]: ZZ Serial
  AppleTalk additional zone name:
Configure IPX on this interface? [no]: yes
  IPX network number [2]: 3

Configuring interface Serial1:
Is this interface in use? [yes]:
Configure IP on this interface? [yes]:
Configure IP unnumbered on this interface? [yes]:
  Assign to which interface [Ethernet0]:
Configure AppleTalk on this interface? [yes]:
  Extended AppleTalk network? [yes]:
  AppleTalk starting cable range [2]:
  AppleTalk ending cable range [2]:
  AppleTalk zone name [ZZ Serial]:
  AppleTalk additional zone name:
Configure IPX on this interface? [yes]:
  IPX network number [2]:
Configure interface Async1:
  IPX network number [4]:
  Default client IP address for this interface [none]: 172.16.72.4
Configure interface Async2:
  IPX network number [5]:
  Default client IP address for this interface [172.16.72.5]:
Configure interface Async3:
  IPX network number [6]:
  Default client IP address for this interface [172.16.72.6]:
```

```
Configuring interface Async4:
  IPX network number [7]:
  Default client IP address for this interface [172.16.72.7]:
Configuring interface Async5:
  IPX network number [8]:
  Default client IP address for this interface [172.16.72.8]:
Configuring interface Async6:
  IPX network number [9]:
  Default client IP address for this interface [172.16.72.9]:
Configuring interface Async7:
  IPX network number [A]:
  Default client IP address for this interface [172.16.72.10]:
Configuring interface Async8:
  IPX network number [B]:
  Default client IP address for this interface [172.16.72.11]:
Configuring interface Async9:
  IPX network number [C]:
  Default client IP address for this interface [172.16.72.12]:
Configuring interface Async10:
  IPX network number [D]:
  Default client IP address for this interface [172.16.72.13]:
Configuring interface Async11:
  IPX network number [E]:
  Default client IP address for this interface [172.16.72.14]:
Configuring interface Async12:
  IPX network number [F]:
  Default client IP address for this interface [172.16.72.15]:
Configuring interface Async13:
  IPX network number [10]:
  Default client IP address for this interface [172.16.72.16]:
Configuring interface Async14:
  IPX network number [11]:
  Default client IP address for this interface [172.16.72.17]:
Configuring interface Async15:
  IPX network number [12]:
  Default client IP address for this interface [172.16.72.18]:
Configuring interface Async16:
  IPX network number [13]:
  Default client IP address for this interface [172.16.72.19]:
```

The following configuration command script was created:

```
hostname Router
enable secret 5 $1$krIg$emfYm/1OwHVspDuS8Gy0K1
enable password ww
line vty 0 4
password ww
snmp-server community public
!
no decnet routing
appletalk routing
ipx routing
ip routing
!
line 1 16
speed 57600
flowcontrol hardware
modem inout
!
arap network 20 ARA Dialins
line 1 16
arap enable
autoselect
!
! Turn off IPX to prevent network conflicts.
```

```
interface Ethernet0
no ipx network
interface Serial0
no ipx network
interface Serial1
no ipx network
!
interface Ethernet0
ip address 172.16.72.2 255.255.255.0
appletalk cable-range 1-1 1.204
appletalk zone Sales
ipx network 1
no mop enabled
!
interface Serial0
no shutdown
no ip address
ip unnumbered Ethernet0
appletalk cable-range 3-3
appletalk zone ZZ Serial
ipx network 3
no mop enabled
!
interface Serial1
no ip address
ip unnumbered Ethernet0
appletalk cable-range 2-2 2.2
appletalk zone ZZ Serial
ipx network 2
no mop enabled
!
Interface Async1
ipx network 4
ip unnumbered Ethernet0
peer default ip address 172.16.72.4
async mode interactive
!
Interface Async2
ipx network 5
ip unnumbered Ethernet0
peer default ip address 172.16.72.5
async mode interactive
!
Interface Async3
ipx network 6
ip unnumbered Ethernet0
peer default ip address 172.16.72.6
async mode interactive
!
Interface Async4
ipx network 7
ip unnumbered Ethernet0
peer default ip address 172.16.72.7
async mode interactive
async dynamic address
!
Interface Async5
ipx network 8
ip unnumbered Ethernet0
peer default ip address 172.16.72.8
async mode interactive
!
Interface Async6
ipx network 9
ip unnumbered Ethernet0
```

```
peer default ip address 172.16.72.9
async mode interactive
!
Interface Async7
ipx network A
ip unnumbered Ethernet0
peer default ip address 172.16.72.10
async mode interactive
!
Interface Async8
ipx network B
ip unnumbered Ethernet0
peer default ip address 172.16.72.11
async mode interactive
!
Interface Async9
ipx network C
ip unnumbered Ethernet0
peer default ip address 172.16.72.12
async mode interactive
!
Interface Async10
ipx network D
ip unnumbered Ethernet0
peer default ip address 172.16.72.13
async mode interactive
!
Interface Async11
ipx network E
ip unnumbered Ethernet0
peer default ip address 172.16.72.14
async mode interactive
!
Interface Async12
ipx network F
ip unnumbered Ethernet0
peer default ip address 172.16.72.15
async mode interactive
!
Interface Async13
ipx network 10
ip unnumbered Ethernet0
peer default ip address 172.16.72.16
async mode interactive
!
Interface Async14
ipx network 11
ip unnumbered Ethernet0
peer default ip address 172.16.72.17
async mode interactive
!
Interface Async15
ipx network 12
ip unnumbered Ethernet0
peer default ip address 172.16.72.18
async mode interactive
!
Interface Async16
ipx network 13
ip unnumbered Ethernet0
peer default ip address 172.16.72.19
async mode interactive
!
router igrp 15
network 172.16.0.0
```

```

!
end

Use this configuration? [yes/no]: yes

Building configuration...

Use the enabled mode 'configure' command to modify this configuration.

Router#

```

Use the Streamlined Setup Facility

The streamlined **setup** command facility is available only if your router is running from ROM monitor and has RXBOOT ROMs installed. The following routers can have this type of ROM installed:

- Cisco 2500 running the IGS-RXBOOT image
- Cisco 3000 running the IGS-RXBOOT image
- Cisco 4000 running the XX-RXBOOT image
- Other routers running the RXBOOT image

The streamlined **setup** command facility permits your router to load a system image from a network server when there are problems with the startup configuration. The Cisco IOS software automatically puts you in the streamlined **setup** command facility when your router is accidentally or intentionally rebooted (or you are attempting to load a system image from a network server) after any of the following circumstances:

- You issued an **erase startup-config** command, thereby deleting the startup configuration file.
- You have bit 6 (ignore NVRAM configuration) set in the configuration register.
- Your startup configuration has been corrupted.
- You configured the router to boot from a network server (the last four bits of the configuration register are not equal to 0 or 1) and there is no Flash or no valid image in Flash.
- You configured the router to boot the RXBOOT image.

The streamlined **setup** command facility differs from the standard **setup** command facility because the streamlined facility does not ask you to configure global router parameters. You are prompted only to configure interface parameters, which permit your router to boot.

The following example shows a router entering the streamlined **setup** command facility:

```

--- System Configuration Dialog ---

Default settings are in square brackets '[]'.

Configuring interface IP parameters for netbooting:

```

Note The message “Configuring interface IP parameters for netbooting” only appears if you are booting over a network server and your configuration has insufficient IP information.

The streamlined **setup** command facility continues by prompting you for interface parameters for each installed interface. The facility asks if an interface is in use. If so, the facility then prompts you to provide an IP address and subnet mask bits for the interface. Enter the subnet mask bits as a decimal value, such as 5.

The following example shows the portion of the streamlined **setup** command facility that prompts for interface parameters. In the example, the facility is prompting for Ethernet0 interface parameters and Serial0 interface parameters:

```
Configuring interface Ethernet0:
  Is this interface in use? [yes]:
  Configure IP on this interface? [yes]:
    IP address for this interface: 192.195.78.50
    Number of bits in subnet field [0]: 5
    Class C network is 192.195.78.0, 5 subnet bits; mask is 255.255.255.248

Configuring interface Serial0:
  Is this interface in use? [yes]:
  Configure IP on this interface? [yes]:
    IP address for this interface: 192.195.78.34
    Number of bits in subnet field [5]:
    Class C network is 192.195.78.0, 5 subnet bits; mask is 255.255.255.248
```

The configuration information you provide on this screen is *temporary* and exists only so that you can proceed with booting your system. When you reload the system, your original configuration is left intact. If your startup configuration is corrupted, enter the **setup** command facility, and configure the basic parameters. Then issue the **copy running-config startup-config** command to write this configuration to NVRAM.