CHAPTER 4

Configuring the Cisco 1020

This chapter includes configuration examples for the Cisco 1020:

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- Configuration 1: Dial-out on Demand and Allow Dial-in
- Configuration 2: Continuous Connection
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Initial Password Configuration

Administrative access to the Cisco 1020 is controlled by a password. That is, only network administrators entering the correct password can change the configuration of the unit. The unit is shipped without a password. To set password protection, enter **`enable`** at the `Username:` prompt and press **Return** at the `password:` prompt. Enter the new password using the **enable password** command in the *Cisco 1020 Command Reference* publication.

Dial-in access through the Cisco 1020 can be controlled for each dial-in site. To set password access for a dial-in site, see the **password** command in the *Cisco 1020 Command Reference* publication.

Note To order UniverCD, Cisco's online library of product information, or printed documentation, refer to "Ordering Cisco Documentation," which is in your warranty package.

Logging in to the Cisco 1020

Following is the procedure:

Step 1 If you are using the console terminal, check the DIP switches on the rear-panel. The left DIP switch must be in the up position, and the PC or ASCII terminal should use the following terminal settings: baud rate: 9600 baud; data bits: 8; parity: none; stop bits: 1; and software flow control (XON/XOFF).

Step 2 Press the **Return** key to get a `Username:` prompt. Enter **enable** and press the **Return** key.

If you do not get a `Username:` prompt, check the serial cable between the Async 1 port and the PC.

Step 3 When you are prompted for a password, press the **Return** key.

Step 4 Select a configuration from one of the following configuration examples. See the section "Sample Configurations" in this chapter.

Step 5 At the command line, type the set of commands associated with the configuration you selected.

Note Replace the IP addresses and settings in the following examples with your own. If you did not purchase the IPX routing option or do not want to route IPX, omit the commands that include the keyword *ipx*.

Sample Configurations

The commands for the Cisco 1020 configurations are similar. Only minor changes to the configurations are required to enable or disable specific Cisco 1020 functionality.

The first configuration, which is the most common, is used here as the model. Where the commands in configurations 2, 3, 4, 5, or 6 differ from that of configuration 1, they are in **boldface** for ease of identification. In this way, the commands responsible for the specific functionality of a configuration are easily identified.

For purposes of this example configuration:

- The system is configured as prl.eg.com, using the IP address 192.168.1.1 on the class C network 192.168.1.0, on IPX network 000000F3 with 802.2 as the IPX frame type.
- When the Cisco 1020 sees traffic for any site outside the local network, it will dial out to another router called hq (the name “hq” is only an example) whose IP address is 192.168.200.1 on a different class C network. After five minutes without traffic, the Cisco 1020 hangs up.
- IPX network 000000F2 is only used for this serial link. IPX requires the dial-up line to have its own IPX network number. The remote site might use 000000F1 for its IPX network number.
- If it originates the call, the router will hang up after 5 minutes without any traffic. (RIP packets are not considered to be traffic.) If it answered the call it will not drop the connection.

Note Session-timeout can be set to any value between 0 and 255 minutes.

The following figures show the topology for the example configurations: Figure 4-1 shows example configurations 1 through 4, Figure 4-2 shows example configuration 5, and Figure 4-3 shows example configuration 6.

Figure 4-1 Configurations 1 through 4 Topology

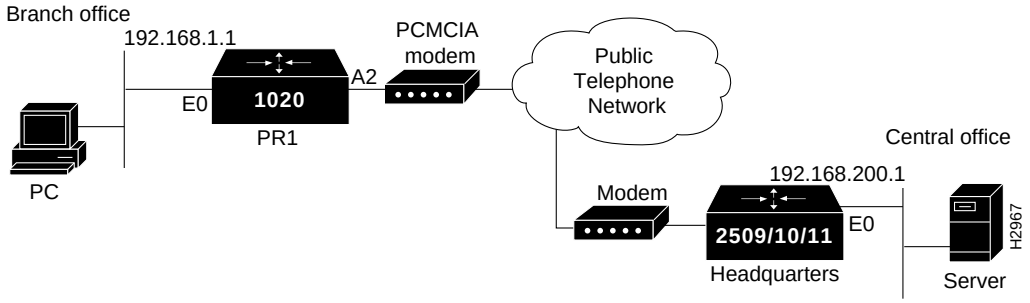


Figure 4-2 Configuration 5 Topology

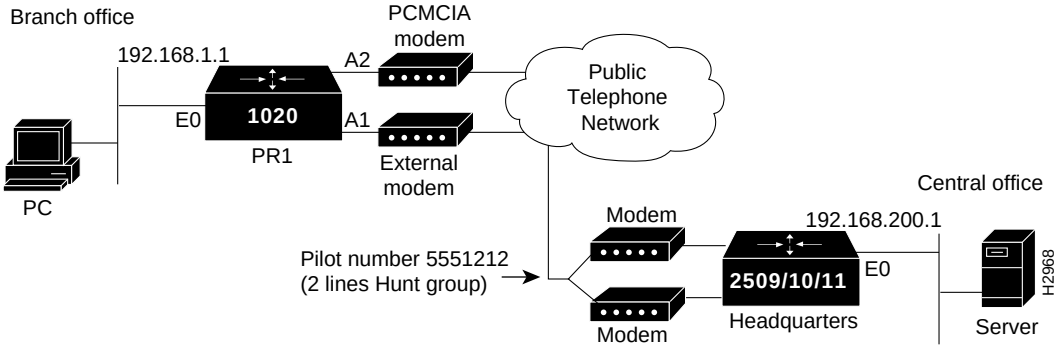
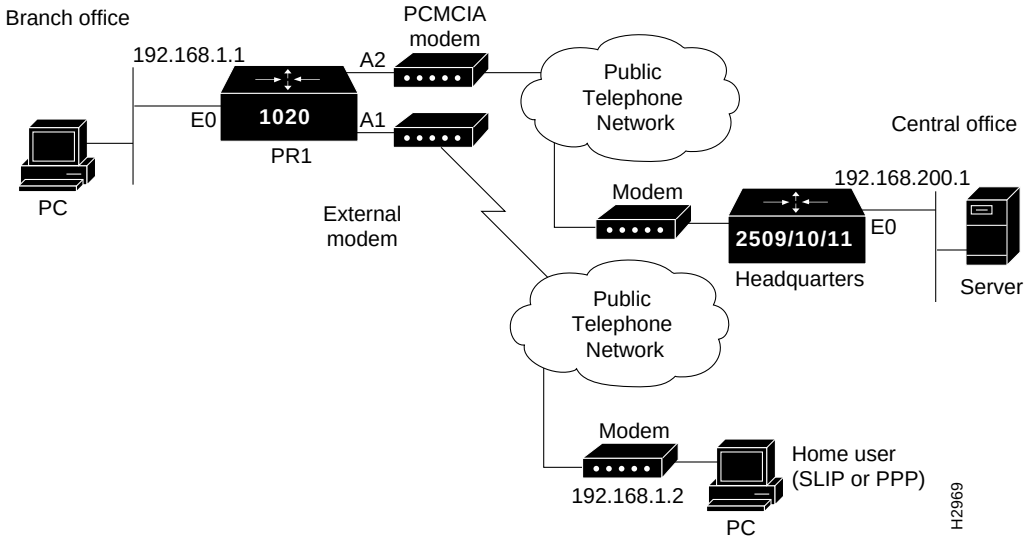


Figure 4-3 Configuration 6 Topology



Configuration 1: Dial-out on Demand and Allow Dial-in

This configuration enables dial-out on demand and allows dial-in on the PCMCIA (Async 2) port. (See Figure 4-1.)

```
# configure terminal
hostname pr1
ip domain-name eg.com
enable password whatUwant
! IPX option must be purchased from Cisco.
option ipx IPXOptionKeyHere
modem-def usrv34 “USR V.34 Courier” 115200 "" “AT&F1S0=1&W” “OK” ""
!
! Go to site hq for all unknown networks (default route).
ip route 0.0.0.0 192.168.200.1 1
!
interface ethernet 0
ip address 192.168.1.1 255.255.255.0
ipx network F3
ipx encapsulation sap
!
interface async 2
! Incoming/outgoing calls allowed.
modem inout
dialer rotary-group 2
modem-type usrv34
!
!type the following chat-script as one continuous line
!
! 5551212 is the phone number of the other side.
! pr1 is username on the other side.
! what4ever is our password on the other side.
! 192.168.1.1 is our IP address from Ethernet 0.
chat-script hqdial "" “ATDT 5551212” “CONNECT” "" “name:” “pr1” “word:”
“what4ever” “>” “ppp 192.168.1.1”
!
site hq
password what4ever
system-script hqdial
dial-on demand
session-timeout 5
dialgroup 2
encapsulation ppp
! Identifies the IP address on the other end.
ip address 192.168.200.1 255.255.255.0
```

```
routing rip
ip tcp header-compression
! Novell network number of async link.
ipx network F2
! Must be set to 1 to use one port.
max-ports 1
!
^Z
# write
# quit
```

CHAP Alternative

If the system being called supports CHAP and PPP Address Negotiation you can use the following instead:

```
chat-script hqdial "" “ATDT 5551212” “CONNECT”
```

If the Cisco 1020 dials out to another system it can either use a chat script to log in, or it can do CHAP. The Cisco 1020 will not authenticate itself using PAP.

If another system dials into the Cisco 1020 and starts sending PPP packets without going through the Username: Password: login sequence, the Cisco 1020 will ask the other system to authenticate itself with PAP, and if that is refused it will ask the other system to authenticate itself with CHAP. If that is refused also then the Cisco 1020 will hang up, since the other system is refusing to authenticate itself.

For best results, set your Cisco 2500 for `ppp authentication chap`.

Configuration 2: Continuous Connection

This configuration enables dial-out only and establishes a continuous connection on the PCMCIA modem. This configuration is shown with no timeout enabled. (See Figure 4-1.)

```
# configure terminal
hostname pr1
ip domain-name eg.com
enable password whatUwant
option ipx IPXOptionKeyHere
modem-def usrv34 “USR V.34 Courier” 115200 "" “AT&F1S0=1&W” “OK” ""
!
ip route 0.0.0.0 192.168.200.1 1
!
interface ethernet 0
ip address 192.168.1.1 255.255.255.0
ipx network F3
ipx encapsulation sap
!
interface async 2
modem out
dialer rotary-group 2
modem-type usrv34
!
!type the following chat-script as one continuous line
!
chat-script hqdial "" “ATDT 5551212” “CONNECT” "" “name:” “pr1” “word:”
“what4ever” “>” “ppp 192.168.1.1”
!
site hq
password what4ever
system-script hqdial
dial-on continuous
dialgroup 2
encapsulation ppp
ip address 192.168.200.1 255.255.255.0
routing rip
ip tcp header-compression
ipx network F2
max-ports 1
!
^Z
# write
# quit
```

Configuration 3: Dial-in Only

This configuration enables dial-in only on the PCMCIA modem slot (Async 2). This configuration is shown with no timeout enabled. (See Figure 4-1.)

```
# configure terminal
hostname pr1
ip domain-name eg.com
enable password whatUwant
option ipx IPXOptionKeyHere
modem-def usrv34 “USR V.34 Courier” 115200 "" “AT&F1S0=1&W” “OK” ""
!
ip route 0.0.0.0 192.168.200.1 1
!
interface ethernet 0
ip address 192.168.1.1 255.255.255.0 1
ipx network F3
ipx encapsulation sap
!
interface async 2
modem in
modem-type usrv34
!
site hq
password what4ever
encapsulation ppp
ip address 192.168.200.1 255.255.255.0
routing rip
ip tcp header-compression
ipx network F2
!
^Z
# write
# quit
```

Configuration 4: Hardwire Network Using PPP

This configuration enables a hardwire dial-up network connection on the PCMCIA modem slot (Async 2) using PPP. (See Figure 4-1.)

```
# configure terminal
hostname pr1
ip domain-name eg.com
enable password whatUwant
option ipx IPXOptionKeyHere
!
ip route 0.0.0.0 192.168.200.1 1
!
interface ethernet 0
ip address 192.168.1.1 255.255.255.0
ipx network f3
ipx encapsulation sap
!
interface async 2
no modem
async default ip address 192.168.200.1 255.255.255.0
encapsulation PPP
ipx network f2
ip tcp header-compression
routing rip
^Z
# write
# quit
```

Configuration 5: Multiline Load-Balancing

This configuration enables multiline load-balance on demand, using a PCMCIA modem slot (Async 2) and a second external modem (connected to the Async 1 port). The answering system must have at least two lines on a rotary for this to work because the site uses the same phone number for both modem dial-outs. (See Figure 4-2.)

```
# configure terminal
hostname pr1
ip domain-name eg.com
enable password whatUwant
option ipx IPXOptionKeyHere
modem-def usrv34 “USR V.34 Courier” 115200 "" “AT&F1S0=1&W” “OK” ""
!
ip route 0.0.0.0 192.168.200.1 1
!
interface ethernet 0
ip address 192.168.1.1 255.255.255.0
ipx network F3
ipx encapsulation sap
!
interface async 1
modem inout
dialer rotary-group 2
modem-type usrv34
!
interface async 2
modem inout
dialer rotary-group 2
modem-type usrv34
!
!type the following chat-script as one continuous line
!
chat-script hqdial "" “ATDT 5551212” “CONNECT” "" “name:” “pr1” “word:”
“what4ever” “>” “ppp 192.168.1.1”
```

```
!
site hq
password what4ever
system-script hqdial
dial-on demand
session-timeout 5
dialgroup 2
load-threshold 1000
encapsulation ppp
ip address 192.168.200.1 255.255.255.0
routing rip
ip tcp header-compression
ipx network F2
max-ports 2
!
^Z
# write
# quit
```

Configuration 6: Branch Office with Dial-in from Home

This configuration enables the user “home” to dial into an external modem connected to the Async 1 port and run PPP from home, while enabling dial on demand using the PCMCIA modem to headquarters. (See Figure 4-3.)

```
# configure terminal
hostname pr1
ip domain-name eg.com
enable password whatUwant
option ipx IPXOptionKeyHere
modem-def usrv34 “USR V.34 Courier” 115200 "" “AT&F1S0=1&W” “OK” ""
!
ip route 0.0.0.0 192.168.200.1 1
!
interface ethernet 0
ip address 192.168.1.1 255.255.255.0
ipx network F3
ipx encapsulation sap
!
interface async 1
modem in
dialer rotary-group 1
modem-type usrv34
!
interface async 2
modem inout
dialer rotary-group 2
modem-type usrv34
!
!type the following chat-script as one continuous line
!
chat-script hqdial "" “ATDT 5551212” “CONNECT” "" “name:” “pr1” “word:”
“what4ever” “>” “ppp 192.168.1.1”
```

```
!
site hq
password what4ever
system-script hqdial
dial-on demand
session-timeout 5
dialgroup 2
encapsulation ppp
ip address 192.168.200.1 255.255.255.0
routing rip
ip tcp header-compression
ipx network F2
max-ports 1
!
site home
password no12gess
encapsulation ppp
ip address 192.168.1.2 255.255.255.255
no routing rip
ip tcp header-compression
ipx network F4
^Z
# write
# quit
```

Cisco 2500 Setup

Here is how you configure a Cisco 2500 series Access Server to accept dialin on Async5 from a Cisco 1020. The Cisco 1020 should use the following chat-script, entered as one continuous line:

```
chat-script hq "" “ATDT 5551212” “CONNECT” “” “name:” “pr1” “word:”
“what4ever” “>” “ppp 192.168.1.1”
```

Note The Cisco 1020 does not accept a PAP challenge if it dials to someone, it prefers to do CHAP.

An example configuration for the Cisco 2500 Series for use with dial-ins to Async5 follows:

```
!
version 10.2
service timestamps debug uptime
!
! Used for CHAP and to identify site to remote end.
hostname hq
!
enable password a11powerizmine
!
! Used for CHAP with remote site pr1.
username pr1 password what4ever
ipx routing 0000.0c0a.2e9a
!
interface Ethernet0
ip address 192.168.200.1 255.255.255.0
ipx network f1 encapsulation sap
!
interface Async5
ppp authentication chap
ip unnumbered Ethernet0
ip tcp header-compression passive
encapsulation ppp
async dynamic address
async mode interactive
ipx network f2
dialer in-band
dialer map ip 192.168.1.1 name pr1
dialer map ipx f2.0000.0cc0.5002 name pr1 broadcast
dialer-group 1
!
! To ease doing telnet to line 5.
ip host MODEM5 2005 192.168.200.1
ip domain-name eg.com
!
ip route 192.168.1.0 255.255.255.0 192.168.1.1
!
line 5
! Presents Username: Password: to match chat script.
login local
modem InOut
rxspeed 38400
txspeed 38400
```

```
flowcontrol hardware
```

An example configuration that allows both dial-in to and dial-out from the 2500.

```
!
version 10.2
!
hostname hq
!
enable password whatUwant
!
username pr1 password what4ever
ipx routing 0000.0c0a.3e2c
chat-script cisco-default ABORT ERROR "" "at" "OK" "ATDT\T" TIMEOUT 60
"CONNECT"
chat-script pr1 "" "\r\r" "name:" "hq" "word:" "what4ever"
!
interface Ethernet0
ip address 192.168.200.1 255.255.255.0
ipx network F1 encapsulation sap
!
interface Async5
ip unnumbered Ethernet0
ip tcp header-compression
encapsulation ppp
hold-queue 40 out
async dynamic address
async mode interactive
dialer in-band
dialer rotary-group 1
!
interface Dialer1
ip unnumbered Ethernet0
encapsulation ppp
ipx network F2
no ipx route-cache
ipx watchdog-spoof
dialer in-band
dialer map ip 192.168.1.1 name pr1 modem-script cisco-default
system-script pr1 5558888
dialer map ipx F2.0000.0cc0.500f name pr1 modem-script cisco-default
system-script pr1 broadcast 5558888
dialer-group 3
ppp authentication chap
!
ip host MODEM5 2005 192.168.200.1
```

```
!
ip route 192.168.1.0 255.255.255.0 192.168.1.1
ip route 192.168.1.1 255.255.255.255 Dialer1
!
access-list 10 permit 0.0.0.0 255.255.255.255
access-list 800 deny FFFFFFFF F2
access-list 800 permit FFFFFFFF FFFFFFFF
ipx route F3 F2.0000.0cc0.500f
!
dialer-list 3 list 10
dialer-list 3 list 800
!
line 5
login local
modem InOut
rxspeed 38400
txspeed 38400
flowcontrol hardware
```

Testing the Configuration

After completing the installation and configuring the IP address, use the **ping** command to test for connectivity between the Cisco 1020 and a host, by sending an echo request to a host residing anywhere in your network.

Step 1 To test connectivity from the Cisco 1020 router to a workstation with an IP address of 192.34.56.5, enter **ping 192.34.56.5**. To stop the ping, enter **ping** with no argument.

Step 2 If the router receives a response, the connection is verified by the following message display:

```
192.34.56.5 is alive.
```

For more information on the **ping** command and what to expect with no response, refer to the *Cisco 1020 Command Reference* manual.

Note If you did a **write** to save your configuration parameters to NVRAM, they remain set even if you disconnect power to the Cisco 1020. The **clear startup-config** command returns all parameters to their default values. Refer to the *Cisco 1020 Command Reference* manual.

Troubleshooting

Failures in systems are characterized by certain symptoms. Each symptom can be diagnosed based on problems or causes using specific troubleshooting tools. After identifying each cause, a series of actions can solve the problem. Use these steps to develop your troubleshooting process.

When problem solving, consider the following on the Cisco 1020:

- Power system—This includes the power supply and the cable.
- Network interfaces—The LEDs related to the network interfaces (Link and LAN) can be used to help identify a failure. For complete information on LED indicators, refer to the section “Front-Panel LEDs” in the this chapter.
- System cables—This includes all of the interface cables that connect the router to the network.

Checking the Power System

If the SYSTEM - OK LED is off, check power and the power cable.

Checking Network Interfaces

Verify that the LINK - OK LED is lit. This will confirm that the Cisco 1020 is connected to a 10BaseT hub. If the LINK - OK LED is not lit, check the hub and 10BaseT connection and wiring.

The LAN - ACT LED blinks to indicate Ethernet traffic.

Checking System Cables

For the Ethernet LAN connection, verify that the RJ-45 connector is firmly seated in the Ether 0 connector on the Cisco 1020.

For the WAN connection, verify that the PCMCIA modem is firmly seated in its slot, and that the modular telephone cable is connected to the appropriate phone jack.

Ensure that power is off when you insert the PCMCIA modem.