



Introduction to Cisco Routers

1 Background

There are ten 25xx Cisco routers, so we will work two people with one router.

The routers are each connected to a computer through a serial cable. You will configure the router using the **Terminal** program in Windows 98. You can start it from the **Run** entry in the **Start** menu. The connection speed is 9600 bits per second, and most computers are connected to the router via COM1. Each computer has a yellow sticky label showing the host name of the router it is connected to.

Each router has two synchronous serial WAN network interfaces (**s0** and **s1**), and one Ethernet network interface, **e0**.

The routers are connected together via their serial interfaces, as shown in figure 1. We will not use the Ethernet interfaces in this exercise.

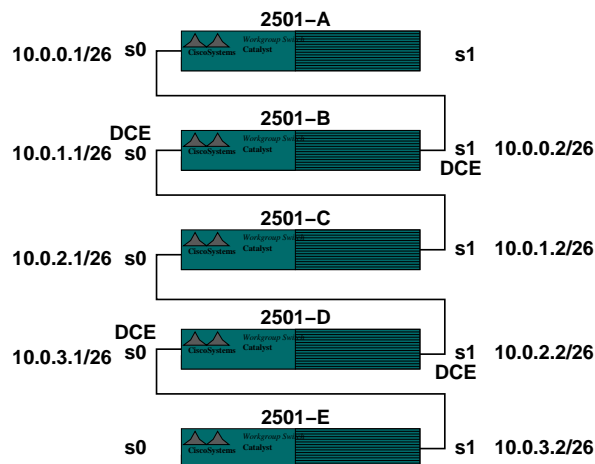


Figure 1: The connections between the routers.

The interfaces marked DCE can be configured with the speed of the serial link, which should be 56,000 bits per second.

1.1 Router Modes

There are four modes that the router can be in:

- user mode: rather limited; you need to be in privileged mode to ping, for example. Prompt looks like: `Router>`
- privileged mode: you can ping, use the `traceroute` command, use the `show` command, and perform router configuration. You also need privileged mode to use the `debug` command.

Prompt looks like this: `Router#`

- global configuration mode: you can set up the routing protocol here, and select an interface to configure.

Prompt looks like this: Router(config)#

- interface configuration mode: to assign IP addresses to network interfaces, set the serial clock speed, and other interface parameters.

Prompt looks like this: Router(config-if)#

Type exit to leave each configuration mode. The prompt changes at each mode.

Commands will only work in the appropriate mode.

Settings for the interfaces are as follows:

1. for 2501A, and 2501A2:

```
2501A# configure terminal
2501A(config)# interface s0
2501A(config-if)# ip address 10.0.0.1 255.255.255.128
2501A(config-if)# no shutdown
2501A(config-if)# exit
2501A(config)# exit
```

2. For 2501B, and 2501B2:

```
2501B# configure terminal
2501B(config)# interface s0
2501B(config-if)# ip address 10.0.1.1 255.255.255.128
2501B(config-if)# no shutdown
2501B(config-if)# clock rate 56000
2501B(config-if)# bandwidth 56
2501B(config-if)# interface s1
2501B(config-if)# ip address 10.0.0.2 255.255.255.128
2501B(config-if)# no shutdown
2501B(config-if)# clock rate 56000
2501B(config-if)# bandwidth 56
2501B(config-if)# exit
2501B(config)# exit
```

3. For 2501C, and 2501C2:

```
2501C# configure terminal
2501C(config)# interface s0
2501C(config-if)# ip address 10.0.2.1 255.255.255.128
2501C(config-if)# no shutdown
2501C(config-if)# interface s1
2501C(config-if)# ip address 10.0.1.2 255.255.255.128
2501C(config-if)# no shutdown
2501C(config-if)# exit
```

4. For 2501D, and 2501D2:

```
2501D# configure terminal
2501D(config)# interface s0
2501D(config-if)# ip address 10.0.3.1 255.255.255.128
2501D(config-if)# no shutdown
2501D(config-if)# clock rate 56000
2501D(config-if)# bandwidth 56
2501D(config-if)# interface s1
2501D(config-if)# ip address 10.0.2.2 255.255.255.128
2501D(config-if)# no shutdown
2501D(config-if)# clock rate 56000
2501D(config-if)# bandwidth 56
2501D(config-if)# exit
2501D(config)# exit
```

5. for 2501E, and 2501E2:

```
2501E# configure terminal
2501E(config)# interface s1
2501E(config-if)# ip address 10.0.3.2 255.255.255.128
2501E(config-if)# no shutdown
2501E(config-if)# exit
2501E(config)# exit
```

To see the routing tables:

```
Router#show ip route
```

To configure the RIP2 routing protocol:

```
Router#configure terminal
Router(config)#router rip
Router(config-router)#network 10.0.0.0
Router(config-router)#version 2
Router(config-router)#exit
Router(config)#exit
```

To see the RIP2 routing protocol broadcasts:

```
Router#debug ip rip
```

2 Procedure

1. Start the terminal program on the Windows machine and check that you can communicate with the router by pressing **(Enter)**. The bit rate should be set to 9600 bps. You will now be in *user mode*. At the `router>` prompt, type in a question mark `?`, then press the **(Enter)** key to view the commands a screen at a time.
2. Now enter `enable` to get you into *privileged mode*.

3. Most routers are set without any password. If prompted for a password, try these: `3star`, or perhaps `5star`, or failing that, `cisco`. If that still doesn't work, let us know.
4. Type `config` `(Enter)`. Press `(Enter)` to configure the router. Type a question mark to see what commands are available.
5. Now configure the interfaces on your router as shown above in section 1 on page 1.
6. Observe the routing tables with `show ip route`.
7. Start the RIP2 routing protocol on your router.
8. Observe the routing protocol broadcasts with `debug ip rip`.
9. As your routing table builds up, `ping` your other neighbours.
10. Run `traceroute` on your neighbours.