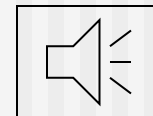


Basic Cisco Router Configuration (IOS)

Getting the Router
Up and Running
Quickly



By Richard Hoppel

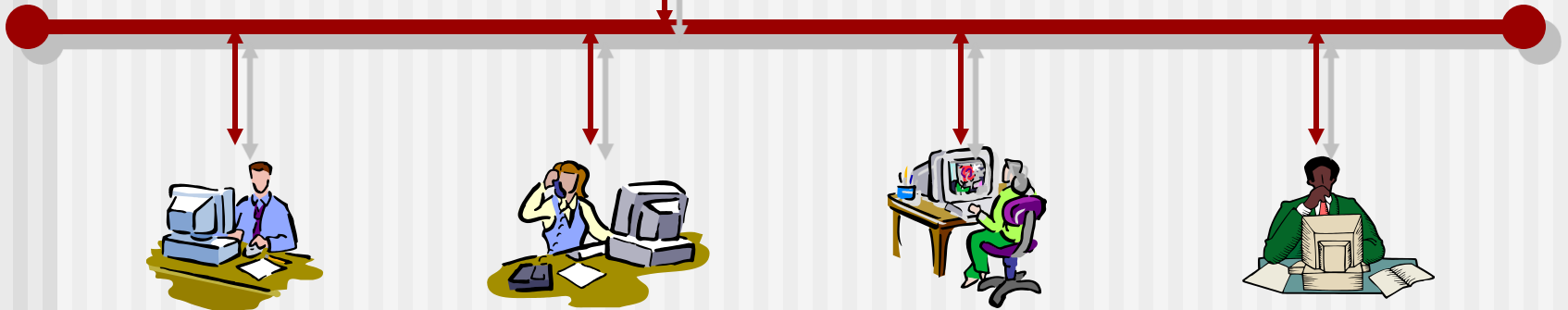
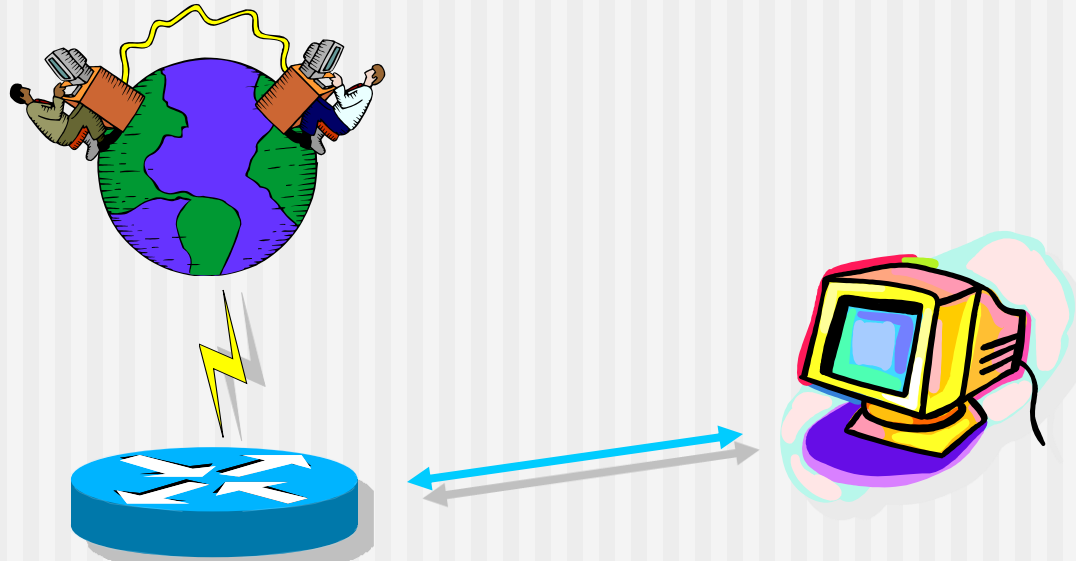
Introduction

- Out of the box
- Starting over from scratch
- Install router into an existing network
- Need network numbers from an network administrator

Agenda

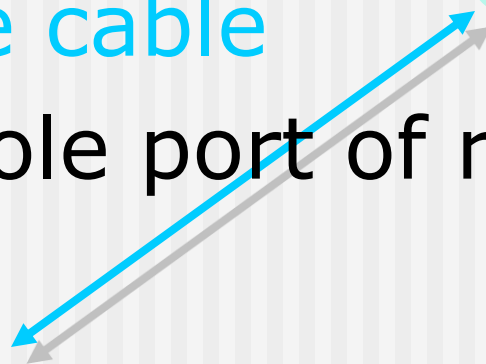
- Overview
- Resetting the Router
- Setting the Global Configuration
- Configuring Interfaces
- Starting the Routing Protocols
- Reviewing, Testing, & Saving the Configuration

Overview



Talking to the Router

- Use Hyper-terminal (Com port X)
 - 9600 baud rate
 - no parity
 - 8 data bits
 - 1 stop bit
 - no flow control
- Use blue console cable
- Connect to console port of router
 - Router>



Resetting the Router

- Enter privileged mode
 - Router>enable
- Erase the previous configuration
 - Router#erase startup-config
- Restart the router
 - Router#reload
- Enter privileged mode again
 - Router>enable
 - Router#

router prompts
in gray

type required
commands in
blue

Setting the Global Configuration

■ Enter Global Configuration Mode

- Router#**configure terminal**
- Router(config)#

type parameter selections in <gray>

■ Create Name for Router

- Router(config)#hostname <name>
- Router(config)#hostname **MyRouter**

type user-defined parameter in red

■ Create Passwords

- MyRouter(config)#enable secret <password>
- MyRouter(config)#enable secret **cisco**
- MyRouter(config)#enable password <password>
- MyRouter(config)#enable password **class**

Configuring Interfaces

■ Configure Interface (Ethernet port 0)

- `MyRouter(config)#interface <type> <slot/port>`
- `MyRouter(config)#interface Ethernet 0`
- `MyRouter(config-if)#no shutdown`

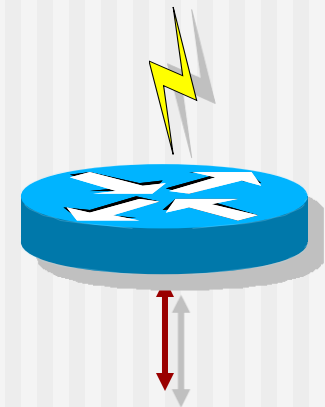
<type>
Ethernet
Serial
<slot/port>
0/1

■ Assign Internet Address

- `MyRouter(config-if)#ip address <ip-address> <mask>`
- `MyRouter(config-if)#ip address 192.168.0.1 255.255.255.0`

■ Configure Serial Port (DCE)

- `MyRouter(config-if)#clockrate <port>`
- `MyRouter(config-if)#clockrate 56000`



Exiting a Mode

- Exit to previous mode
 - MyRouter(config-if) # **exit**
 - MyRouter(config) # **exit**
 - MyRouter # **exit**
 - MyRouter >
- Return to top of Privileged mode
 - MyRouter(config-if) # **Ctrl-Z**
 - MyRouter #

Configuring Routing Protocol

- Enter routing configuration mode
 - `MyRouter(config)#router rip`
 - `MyRouter(config-router)#`
- Configure advertised networks
 - `MyRouter(config-router)#network <network number>`
 - `MyRouter(config-router)#network 192.168.0.1`
 - `MyRouter(config-router)#network 10.15.256.1`
 - `MyRouter(config-router)#Ctrl-Z`
 - `MyRouter#`
- Router can now receive routes form other routers



Reviewing, Testing, & Saving the Configuration

■ Review configuration commands

- MyRouter#`show running-config`

[example](#)

■ Review interface configuration

- MyRouter>`show ip interface`

[example](#)

■ Test interfaces

- MyRouter>`ping 192.168.012`

[success failure](#)

■ Review routing tables

- MyRouter>`show ip route`

[example](#)

■ Save your setup

- MyRouter#`copy running-config startup-config`

Help System

■ ? – Help system

- use at prompt
- lists all commands available in mode
- use at each field to see options

■ Auto-finish (pressing tab will finish command)

- | | | |
|----------|---|----------------|
| • ena | ⇒ | enable |
| • config | ⇒ | configure |
| • addr | ⇒ | address |
| • e0 | ⇒ | Ethernet 0 |
| • s0 | ⇒ | Serial 0 |
| • start | ⇒ | startup-config |
| • run | ⇒ | running-config |

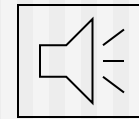
Command Line Editing

- Go to **P**revious command
 - Ctrl-P
 - ↑
- Go to following or **N**ext command
 - Ctrl-N
 - ↓
- Auto-finish parameter
 - <tab>
- Line editing
 - ← or → to move cursor within a line
 - <Backspace> to delete a character

Summary

- Start from clean configuration
- Add hostnames and passwords
- Setup all your interfaces
- Review your configuration
- Test all connections
- Make changes as needed
- Save your working configuration

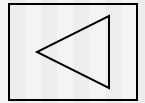
Questions ??????



Glossary

- IP – *Internet Protocol*
- RIP – *Routing Information Protocol*
- DCE – *Data Communication Equipment*
- DTE – *Data Terminating Equipment*
- Router – *network layer device used to transport packets between networks*

Ping Success Example

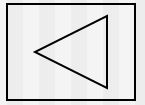


The image shows a screenshot of a HyperTerminal window titled "Cisco Router - HyperTerminal". The window has a menu bar with "File", "Edit", "View", "Call", "Transfer", and "Help". Below the menu bar is a toolbar with icons for file operations and communication. The main text area displays the following output:

```
MyRouter>ping 192.168.0.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.1, timeout is 2 seconds:
!!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms
```

At the bottom of the window, there is a status bar with several fields: "Connected 0:04:38", "Auto detect", "9600 8-N-1", "SCROLL", "CAPS", "NUM", "Capture", and "Print echo".

Ping Failure Example

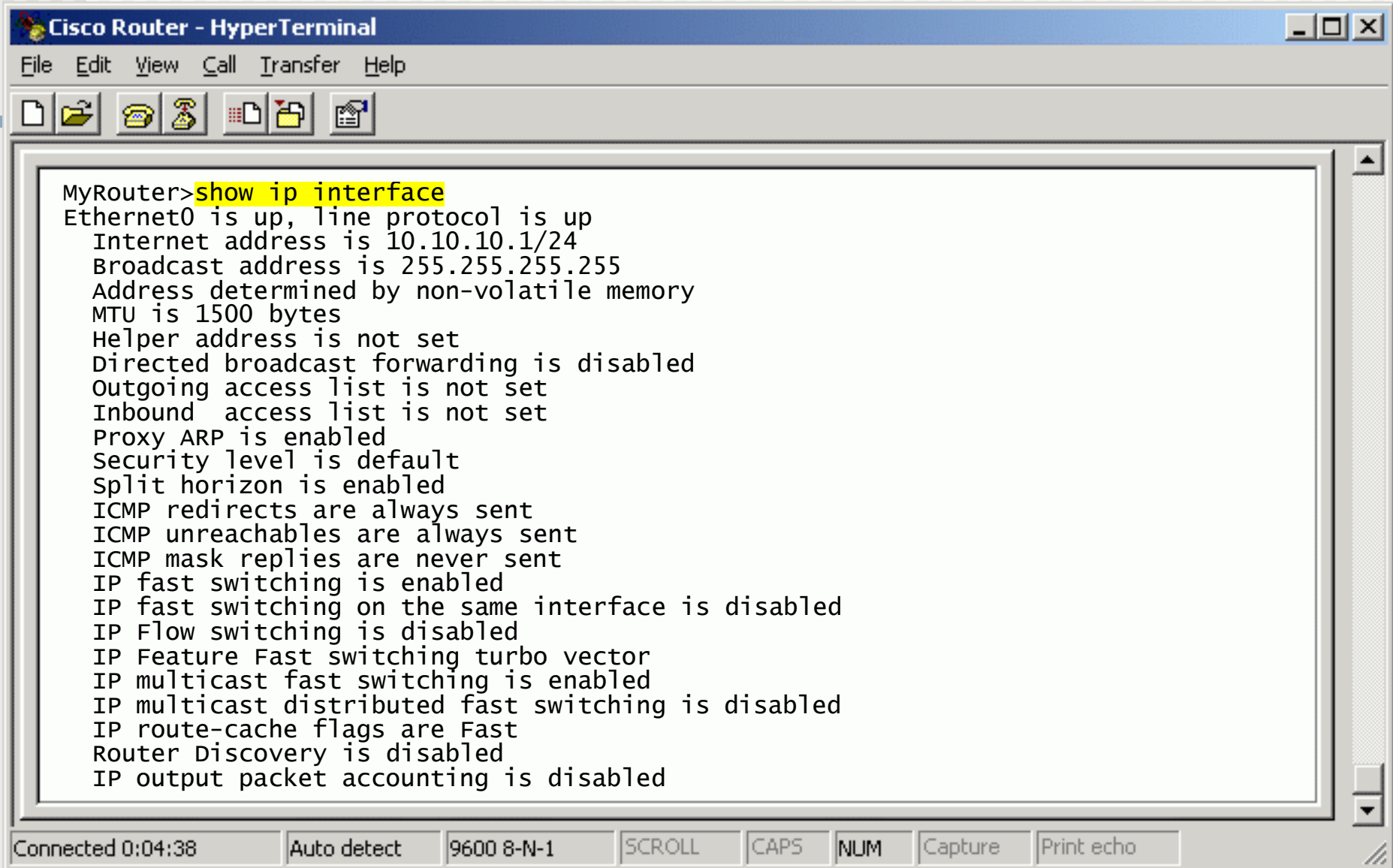
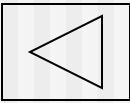


The screenshot shows a HyperTerminal window titled "Cisco Router - HyperTerminal". The menu bar includes "File", "Edit", "View", "Call", "Transfer", and "Help". The toolbar contains icons for file operations and communication. The main text area displays the following output:

```
MyRouter>ping 192.168.0.100
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.0.100, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)
```

At the bottom of the window, there is a status bar with the following information: "Connected 0:04:38", "Auto detect", "9600 8-N-1", "SCROLL", "CAPS", "NUM", "Capture", and "Print echo".

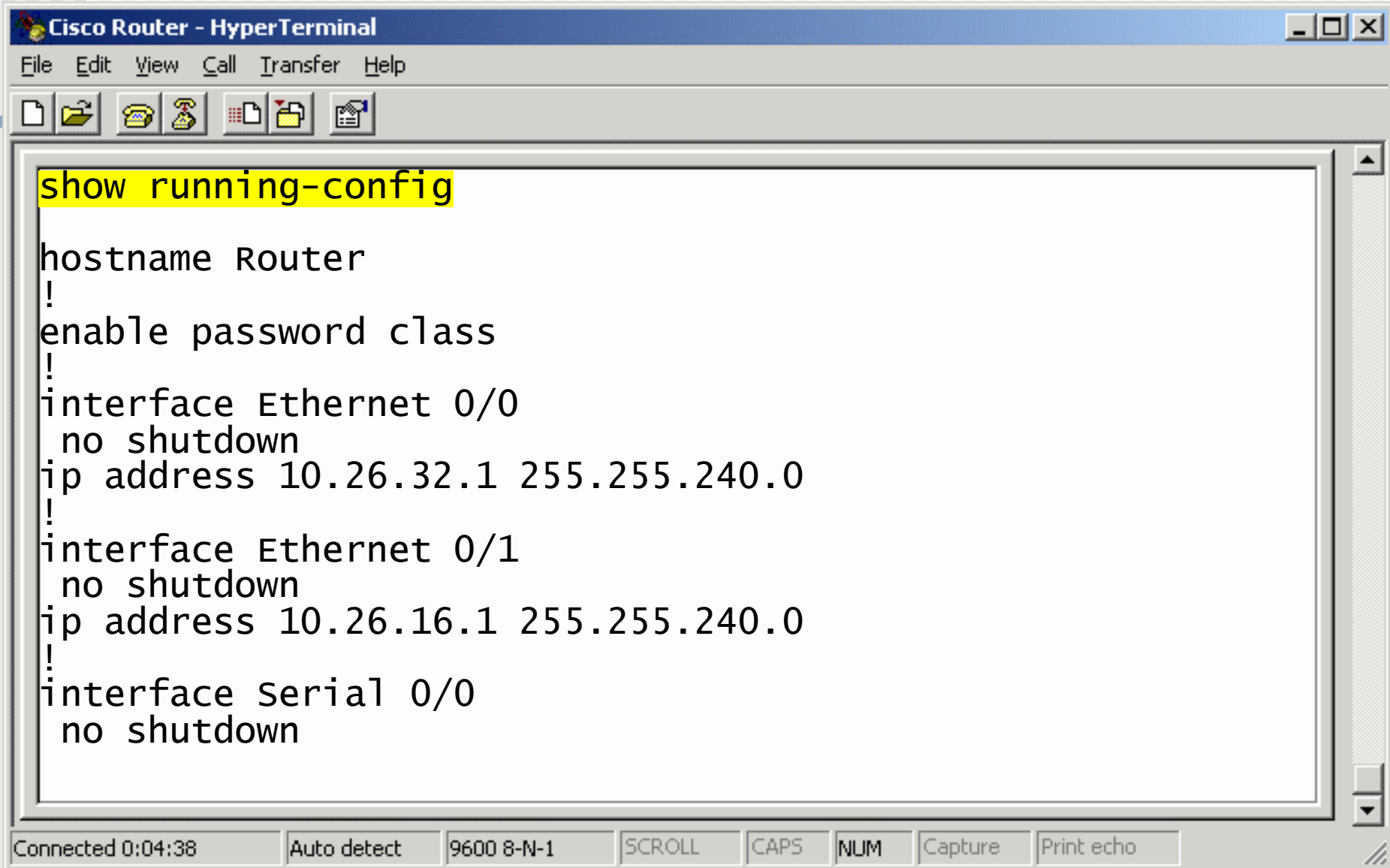
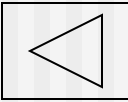
Show IP Interface Example

A screenshot of a HyperTerminal window titled "Cisco Router - HyperTerminal". The window has a menu bar with "File", "Edit", "View", "Call", "Transfer", and "Help". Below the menu bar is a toolbar with icons for file operations and communication. The main text area shows the output of the "show ip interface" command on a Cisco router. The status bar at the bottom shows connection details and control buttons.

```
MyRouter>show ip interface
Ethernet0 is up, line protocol is up
 Internet address is 10.10.10.1/24
 Broadcast address is 255.255.255.255
 Address determined by non-volatile memory
 MTU is 1500 bytes
 Helper address is not set
 Directed broadcast forwarding is disabled
 Outgoing access list is not set
 Inbound access list is not set
 Proxy ARP is enabled
 Security level is default
 Split horizon is enabled
 ICMP redirects are always sent
 ICMP unreachables are always sent
 ICMP mask replies are never sent
 IP fast switching is enabled
 IP fast switching on the same interface is disabled
 IP Flow switching is disabled
 IP Feature Fast switching turbo vector
 IP multicast fast switching is enabled
 IP multicast distributed fast switching is disabled
 IP route-cache flags are Fast
 Router Discovery is disabled
 IP output packet accounting is disabled
```

Connected 0:04:38 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

Sample Configuration File



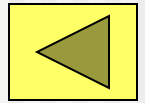
The image shows a HyperTerminal window titled "Cisco Router - HyperTerminal". The window has a menu bar with "File", "Edit", "View", "Call", "Transfer", and "Help". Below the menu bar is a toolbar with icons for file operations and communication. The main text area displays the output of the "show running-config" command. The configuration includes the hostname "Router", an enable password "class", and three interfaces: Ethernet 0/0, Ethernet 0/1, and Serial 0/0. Each interface is configured with "no shutdown" and an IP address. The status bar at the bottom shows "Connected 0:04:38" and several control buttons: "Auto detect", "9600 8-N-1", "SCROLL", "CAPS", "NUM", "Capture", and "Print echo".

```
show running-config

hostname Router
!
enable password class
!
interface Ethernet 0/0
 no shutdown
ip address 10.26.32.1 255.255.240.0
!
interface Ethernet 0/1
 no shutdown
ip address 10.26.16.1 255.255.240.0
!
interface Serial 0/0
 no shutdown
```

Connected 0:04:38 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

Show IP Route Example



```
Cisco Router - HyperTerminal
File Edit View Call Transfer Help
MyRouter>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B -
BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS
inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is 192.168.0.1 to network 0.0.0.0

   10.0.0.0/24 is subnetted, 1 subnets
C       10.10.10.0 is directly connected, Ethernet0
C       192.168.0.0/24 is directly connected, Ethernet1
S*     0.0.0.0/0 [254/0] via 192.168.0.1

Connected 0:04:38  Auto detect  9600 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```

Password Recovery

- Reset to setup from known configuration
- Boot from flash without loading configuration
 - Power-cycle router
 - Press **<BREAK>** key within 60 seconds

router prompts
in gray

- rommon 1> confreg 0x2142
- rommon 2> reset

type required
commands in
blue

- The router resets
- **Ctrl-C** at first prompt to exit auto-config
- Enter Privileged Mode
 - Router> enable
 - Router#