

Practical No. 4

Basic commands of Routers: hostname, password, Show Run, Show IP int brief, Assigning IP addresses to interfaces

- **Enable**

Used to enable the router for connection and Data transmission.

- **Ping <destination ip address>**

To check communication between devices

- **do show ip route**

Used to find the intermediate IP addresses between node A to node B.

- **show version**

To display the configuration of the system hardware, the software version, the names and sources of configuration files, and the boot images, use the **show version** EXEC command.

show version

- **show running-config**

To display the configuration information currently running on the terminal, use the show running-config EXEC command. This command replaces the write terminal command.

show running-config

- **show interfaces**

Use the show interfaces EXEC command to display statistics for all interfaces configured on the router or access server. The resulting output varies, depending on the network for which an interface has been configured.

show interfaces [type number] [first] [last] [accounting]

show interfaces [type slot/port] [accounting] (for Cisco 7200 series, and for the Cisco 7500 series routers with a Packet over SONET Interface Processor)

**show interfaces [type slot/port-adapter/port] [ethernet | serial]
(for ports on VIPs in the Cisco 7500 series routers)**

Syntax Description

type	(Optional) Interface type. Allowed values for type include async, bri0, ethernet, fastethernet, fddi, hssi, loopback, null, serial, tokenring, and tunnel.
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	For the Cisco 4000 series routers, type can be e1, ethernet, fastethernet, fddi, serial, t1, and token. For the Cisco 4500 series routers, type can also include atm. For the Cisco 7000 family, type can be atm, e1, ethernet, fastethernet, fddi, serial, t1, and tokenring. For the Cisco 7500 series type can also include pos.
number	(Optional) Port number on the selected interface.
first last	(Optional) For the Cisco 2500 and 3000 series routers ISDN Basic Rate Interface (BRI) only. The argument first can be either 1 or 2. The argument last can only be 2, indicating B channels 1 and 2. D-channel information is obtained by using the command without the optional arguments.
Accounting	(Optional) Displays the number of packets of each protocol type that has been sent through the interface.
slot	(Optional) Refer to the appropriate hardware manual for slot and port information.
port	(Optional) Refer to the appropriate hardware manual for slot and port information.
port -adapter	(Optional) Refer to the appropriate hardware manual for information about port adapter compatibility.

Command Mode

EXEC

- **Configuring Dynamic Routes**

In dynamic routing, the network protocol adjusts the path automatically, based on network traffic or topology. Changes in dynamic routes are shared with other routers in the network.

The Cisco routers can use IP routing protocols, such as Routing Information Protocol (RIP) or Enhanced Interior Gateway Routing Protocol (EIGRP), to learn routes dynamically. You can configure either of these routing protocols on your router.

- “Configuring Routing Information Protocol” section
- “Configuring Enhanced Interior Gateway Routing Protocol” section

- **Configuring Routing Information Protocol**

To configure the RIP routing protocol on the router, follow these steps, beginning in global configuration mode.

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SUMMARY STEPS

1. configure terminal
2. router rip
3. version { 1 | 2 }
4. network *ip-address*
5. no auto-summary
6. end

DETAILED STEPS

	Command	Task
Step 1	configure terminal Example: Router> configure terminal	Enters global configuration mode.
Step 2	router rip Example: Router(config)# router rip	Enters router configuration mode, and enables RIP on the router.
Step 3	version { 1 2 } Example: Router(config-router)# version 2	Specifies use of RIP version 1 or 2.
Step 4	network <i>ip-address</i> Example: Router(config-router)# network 192.168.1.1	Specifies a list of networks on which RIP is to be applied, using the address of the network of each directly connected network.
Step 5	no auto-summary Example: Router(config-router)# no auto-summary	Disables automatic summarization of subnet routes into network-level routes. This allows subprefix routing information to pass across classful network boundaries.
Step 6	End Example: Router(config-router)# end	Exits router configuration mode, and enters privileged EXEC mode.

Example: RIP Configuration

The following configuration example shows RIP version 2 enabled in IP network 10.0.0.0 and 192.168.1.0.

To see this configuration, use the **show running-config** command from privileged EXEC mode.

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Router# show running-config

router rip

version 2

network 10.0.0.0

network 192.168.1.0

no auto-summary!

Verifying RIP Configuration

To verify that you have properly configured RIP, enter the show ip route command and look for RIP routes signified by “R” as shown in this example.

Router# show ip route

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGPD - 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 i - IS-IS, su - IS-IS summary, 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 not set 10.0.0.0/24 is subnetted, 1 subnets C 10.108.1.0 is directly connected, Loopback0 R 3.0.0.0/8 [120/1] via 2.2.2.1, 00:00:02, Ethernet0/0

- **Configuring Enhanced Interior Gateway Routing Protocol**

To configure Enhanced Interior Gateway Routing Protocol (EGRP), perform these steps.

SUMMARY STEPS

1. **configure terminal**
2. **router eigrp as-number**
3. **network ip-address**
4. **end**

DETAILED STEPS

	Command	Purpose
Step 1	configure terminal Example: Router> configure terminal	Enters global configuration mode.
Step 2	router eigrp as-number Example: Router(config)# router eigrp 109	Enters router configuration mode, and enables EIGRP on the router. The autonomous-system number identifies the route to other EIGRP routers and is used to tag the EIGRP information.

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Step 3	network <i>ip-address</i> Example: Router(config)# network 192.145.1.0	Specifies a list of networks on which EIGRP is to be applied, using the IP address of the network of directly connected networks.
Step 4	End Example: Router(config-router)# end Router#	Exits router configuration mode, and enters privileged EXEC mode.

Example: Configuring EIGRP

This configuration example shows the EIGRP routing protocol enabled in IP networks 192.145.1.0 and 10.10.12.115. The EIGRP autonomous system number is 109.

To see this configuration, use the **show running-config** command, beginning in privileged EXEC mode.

Router# show running-config...!

router eigrp 109

network 192.145.1.0

network 10.10.12.115

!...

Verifying EIGRP Configuration

To verify that you have properly configured EIGRP, enter the show ip route command, and look for EIGRP routes indicated by “D “ as shown in the following example:

Router# show ip route

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGPD - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter areaN1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2E1 - OSPF external type 1, E2 - OSPF external type 2i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2ia - IS-IS inter area, * - candidate default, U - per-user static routeo - ODR, P - periodic downloaded static route Gateway of last resort is not set 10.0.0.0/24 is subnetted, 1 subnetsC 10.108.1.0 is directly connected, Loopback0D 3.0.0.0/8 [90/409600] via 2.2.2.1, 00:00:02, Ethernet0/0