Default Configuration

Default configuration indicates the tasks performed by the device during the boot up process. When you boot up the device in autonomous mode, the device looks for a default file name-the PID of the device. For example, the Cisco Catalyst 8000 Series Edge Platforms look for a file named `c8000.cfg` . The device looks for this file before finding the standard files-router-confg or the `ciscortr.cfg` .

The device looks for the `c8000.cfg` file in the bootflash. If the file is not found in the bootflash, the device then looks for the standard files-router-confg and `ciscortr.cfg` . If none of the files are found, the device then checks for any inserted USB that may have stored these files in the same particular order.

If there is a configuration file with the PID as its name in an inserted USB, but one of the standard files are in bootflash, the system finds the standard file for use.

Configure Global Parameters

To manually define Gigabit Ethernet interfaces, follow these steps, beginning from global configuration mode.

Procedure

Step 1 **configure terminal**

Example:

```
Router> enable
Router# configure terminal
Router(config)#
```

Enters global configuration mode when using the console port.

Use the following to connect to the device with a remote terminal:

```
telnet router-name or address
Login: login-id
Password: *********
Router> enable
```

Step 2 **hostname** *name*

Example:

```
Router(config)# hostname Router
```

Specifies the name for the device.

Step 3 **enable secret** *password*

Example:

```
Router(config)# enable secret cr1ny5ho
```

Specifies an encrypted password to prevent unauthorized access to the device.

Step 4 **no ip domain-lookup**

Example:

```
Router(config)# no ip domain-lookup
```

Disables the device from translating unfamiliar words (typos) into IP addresses.

For complete information on global parameter commands, see the Cisco IOS Release Configuration Guide documentation set.

Configure Gigabit Ethernet Interfaces

To manually define onboard Gigabit Ethernet interfaces, follow these steps, beginning from global configuration mode.

Procedure

Step 1 **interfacegigabitethernet***slot/bay/port*

Example:

```
Router(config)# interface gigabitethernet 0/0/1
```

Enters the configuration mode for a Gigabit Ethernet interface on the device.

Step 2 **ip address***ip-addressmask*

Example:

```
Router(config-if)# ip address 192.0.2.2 255.255.255.0
```

Sets the IP address and subnet mask for the specified Gigabit Ethernet interface. Use this Step if you are configuring an IPv4 address.

Step 3 **ipv6 address***ipv6-address/prefix*

Example:

```
Router(config-if)# ipv6 address 2001.db8::ffff:1/128
```

Sets the IPv6 address and prefix for the specified Gigabit Ethernet interface. Use this step instead of Step 2, if you are configuring an IPv6 address.

Step 4 **noshutdown**

Example:

```
Router(config-if)# no shutdown
```

Enables the Gigabit Ethernet interface and changes its state from administratively down to administratively up.

Step 5 **exit**

Example:

```
Router(config-if)# exit
```

Exits configuration mode for the Gigabit Ethernet interface and returns to privileged EXEC mode.

Configure a Loopback Interface

This task explains how to configure a loopback interface.

Procedure

Step 1 **interface***type number*

Example:

```
Router(config)# interface Loopback 0
```

Enters configuration mode on the loopback interface.

Step 2 (Option 1) **ip address***ip-addressmask*

Example:

```
Router(config-if)# ip address 10.108.1.1 255.255.255.0
```

Sets the IP address and subnet mask on the loopback interface. (If you are configuring an IPv6 address, use the **ipv6 address** command.

Step 3 (Option 2) **ipv6 address***ipv6-address/prefix*

Example:

```
Router(config-if)# 2001:db8::ffff:1/128
```

Sets the IPv6 address and prefix on the loopback interface.

Step 4 **exit**

Example:

```
Router(config-if)# exit
```

Exits configuration mode for the loopback interface and returns to global configuration mode.

This configuration example shows the loopback interface configured on the Gigabit Ethernet interface with an IP address of 203.0.113.1/32, which acts as a static IP address. The loopback interface points back to virtual-template1, which has a negotiated IP address.

```
!
interface loopback 0
ip address 203.0.113.1 255.255.255.255 (
static IP address
)
ip nat outside
!
interface Virtual-Template1
ip unnumbered loopback0
no ip directed-broadcast
ip nat outside
```

Verifying Loopback Interface Configuration

Enter the **show interface loopback** command. You should see an output similar to the following example:

```
Router#
show interface loopback 0
Loopback0 is up, line protocol is up
Hardware is Loopback
Internet address is 203.0.113.1/32
MTU 1514 bytes, BW 8000000 Kbit/sec, DLY 5000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation LOOPBACK, loopback not set
Keepalive set (10 sec)
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue: 0/0 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
0 packets input, 0 bytes, 0 no buffer
Received 0 broadcasts (0 IP multicasts)
0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
0 packets output, 0 bytes, 0 underruns
Output 0 broadcasts (0 IP multicasts)
0 output errors, 0 collisions, 0 interface resets
0 output buffer failures, 0 output buffers swapped out
```

Alternatively, use the **ping** command to verify the loopback interface, as shown in the following example:

```
Router#
ping  203.0.113.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 203.0.113.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/1 ms
```

Dynamic allocation of cores

Dynamic core allocations provide flexibility for users to leverage the CPU cores for different services and/or CEF/IPSec performances. The Catalyst 8000 Series Edge platforms are equipped with a minimum of 8 CPU cores and have the flexibility to allocate cores into the service plane from the data plane. The core allocation is based on the customer configuration of the different services available on these platforms.
From Cisco IOS XE Release 17.4 onwards, you can use the **platform resource { service-plane-heavy | data-plane-heavy }** command to adjust the cores across service plane and data plane. However, you have to reboot the device for the configured profile to take effect.

Following are the list of Catalyst 8000 Series Edge platforms that support changing the core allocations dynamically:

- C8300-2N1S-6T
- C8300-2N1S-4T2X
- C8300-2N2S-6T
- C8300-2N2S-4T2X
- C8200-1N-4T

Configure Command-Line Access

To configure parameters to control access to the device, follow these steps :

Procedure

Step 1 **line** [| **console**| **tty**| **vty**] *line-number*

Example:

```
Router(config)#line console 0
```

Enters line configuration mode, and specifies the type of line.

The example provided here specifies a console terminal for access.

Step 2 **password***password*

Example:

```
Router(config-line)#password 5dr4Hepw3
```

Specifies a unique password for the console terminal line.

Step 3 **login**

Example:

```
Router(config-line)#login
```

Enables password checking at terminal session login.

Step 4 **exec-timeout***minutes* [*seconds*]

Example:

```
Router(config-line)#

 exec-timeout 5 30
Router(config-line)#
```

Sets the interval during which the EXEC command interpreter waits until user input is detected. The default is 10 minutes. Optionally, adds seconds to the interval value.

The example provided here shows a timeout of 5 minutes and 30 seconds. Entering a timeout of **0 0** specifies never to time out.

Step 5 **exit**

Example:

```
Router(config-line)#exit
```

Exits line configuration mode to re-enter global configuration mode.

Step 6 **line** [| **console**| **tty**| **vty**] *line-number*

Example:

```
Router(config)#

 line vty 0 4
Router(config-line)#
```

Specifies a virtual terminal for remote console access.

Step 7 **password***password*

Example:

```
Router(config-line)#password aldf2ad1
```

Specifies a unique password for the virtual terminal line.

Step 8 **login**

Example:

```
Router(config-line)#login
```

Enables password checking at the virtual terminal session login.

Step 9 **end**

Example:

```
Router(config-line)#end
```

Exits line configuration mode, and returns to privileged EXEC mode.

This configuration shows the command-line access commands.

You do not have to input the commands marked default. These commands appear automatically in the configuration file that is generated when you use the **show running-config** command.

```
!
line console 0
exec-timeout 10 0
password 4youreyesonly
login
transport input none (

 default
)
stopbits 1 (

 default
)
line vty 0 4
password secret
login
!
```

Configure static routes

Static routes provide fixed routing paths through the network. They are manually configured on the device. If the network topology changes, the static route must be updated with a new route. Static routes are private routes unless they are redistributed by a routing protocol .

To configure static routes, follow these steps :

Procedure

Step 1 (Option 1) **ip route** *prefix mask* {*ip-address* | *interface-type interface-number* [*ip-address*]}

Example:

```
Router(config)# ip route 192.0.2.8 255.255.0.0 10.10.10.2
```

Specifies a static route for the IP packets. (If you are configuring an IPv6 address, use the **ipv6 route** command described below.)

Step 2 (Option 2) **ipv6 route** *prefix/mask* {*ipv6-address* | *interface-type interface-number* [*ipv6-address*]}

Example:

```
Router(config)# ipv6 route 2001:db8:2::/64 2001:DB8:3000:1
```

Specifies a static route for the IP packets.

Step 3 **end**

Example:

```
Router(config)# end
```

Exits global configuration mode and enters privileged EXEC mode.

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 devices in the network.

A device can use IP routing protocols, such as Routing Information Protocol (RIP) or Enhanced Interior Gateway Routing Protocol (EIGRP), to learn about routes dynamically.

Configure Routing Information Protocol

This task covers details on configuring Routing Information Protocol that helps routers determine the most efficient path for data packets to travel across a network.

Procedure

Step 1 **routerrip**

Example:

```
Router(config)# router rip
```

Enters router configuration mode, and enables RIP on the router.

Step 2 **version** { **1** | **2** }

Example:

```
Router(config-router)# version 2
```

Specifies use of RIP version 1 or 2.

Step 3 **network***ip-address*

Example:

```
Router(config-router)#
network 192.0.2.8
Router(config-router)#
network 10.10.7.1
```

Specifies a list of networks on which RIP is to be applied, using the address of the network of each directly connected network.

Step 4 **noauto-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 5 **end**

Example:

```
Router(config-router)# end
```

Exits router configuration mode, and enters privileged EXEC mode.

This completes the configuration of Routing Information Protocol.

What to do next

Verify the Routing Information Protocol configuration is complete.

Use the **show running-config** command from privileged EXEC mode.

```
    !
    Router#
    show running-config
    service timestamps debug datetime msec
    service timestamps log datetime msec
    service call-home
    platform qfp utilization monitor load 80
    platform punt-keepalive disable-kernel-core
    platform hardware throughput crypto 1G
    :
    :
    call-home
    ! If contact email address in call-home is configured as sch-smart-licensing@cisco.com
    ! the email address configured in Cisco Smart License Portal will be used as contact
email address to send SCH notifications.
    contact-email-addr sch-smart-licensing@cisco.com
    profile "CiscoTAC-1"
    active
    destination transport-method http
    !
    !
    end
```

To verify that you have configured RIP correctly, enter the **show ip route** command and look for RIP routes marked with the letter R. You should see an output similar to the one shown in this example:

```
    Router#
    show ip route
    Codes: C - connected, S - static, 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
```

```
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    192.0.2.3/8 [120/1] via 192.0.2.2, 00:00:02, Ethernet0/0/0
```

Configure Enhanced Interior Gateway Routing Protocol

This task covers details on configuring Enhanced Interior Gateway Routing Protocol

Procedure

Step 1 **router eigrp** *as-number*

Example:

```
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

Step 2 **network** *ip-address*

Example:

```
Router(config)# network 192.0.2.8
Router(config)# network 10.10.12.15
```

Specifies a list of networks on which EIGRP is to be applied, using the IP address of the network of directly connected networks.

Step 3 **end**

Example:

```
Router(config-router)# end
```

Exits router configuration mode, and enters privileged EXEC mode.

This completes the configuration of EIGRP.

What to do next

Verify that EIGRP configuration is complete:

This configuration example shows the EIGRP routing protocol enabled in IP networks 192.0.2.8 and 10.10.12.15. The EIGRP autonomous system number is 109. To see this configuration, use the **show running-config** command.

```
Router# show running-config

router eigrp 109
network 192.0.2.8
```

```
network 10.10.12.15
```

To verify that you have configured IP EIGRP correctly, enter the **show ip route** command, and look for EIGRP routes marked by the letter D. You should see verification output similar to the following:

```
Router# show ip route
Codes: C - connected, S - static, 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
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
D     192.0.2.3/8 [90/409600] via 192.0.2.2, 00:00:02, Ethernet0/0
```

Configure Routing Information Protocol

This task covers details on configuring Routing Information Protocol that helps routers determine the most efficient path for data packets to travel across a network.

Procedure

Step 1 **routerrip**

Example:

```
Router(config)# router rip
```

Enters router configuration mode, and enables RIP on the router.

Step 2 **version** { **1** | **2** }

Example:

```
Router(config-router)# version 2
```

Specifies use of RIP version 1 or 2.

Step 3 **network***ip-address*

Example:

```
Router(config-router)#
network 192.0.2.8
Router(config-router)#
network 10.10.7.1
```

Specifies a list of networks on which RIP is to be applied, using the address of the network of each directly connected network.

Step 4 **noauto-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 5 **end**

Example:

```
Router(config-router)# end
```

Exits router configuration mode, and enters privileged EXEC mode.

This completes the configuration of Routing Information Protocol.

What to do next

Verify the Routing Information Protocol configuration is complete.

Use the **show running-config** command from privileged EXEC mode.

```
    !
    Router#
    show running-config
    service timestamps debug datetime msec
    service timestamps log datetime msec
    service call-home
    platform qfp utilization monitor load 80
    platform punt-keepalive disable-kernel-core
    platform hardware throughput crypto 1G
    :
    :
    call-home
    ! If contact email address in call-home is configured as sch-smart-licensing@cisco.com
    ! the email address configured in Cisco Smart License Portal will be used as contact
email address to send SCH notifications.
    contact-email-addr sch-smart-licensing@cisco.com
    profile "CiscoTAC-1"
    active
    destination transport-method http
    !
    !
    end
```

To verify that you have configured RIP correctly, enter the **show ip route** command and look for RIP routes marked with the letter R. You should see an output similar to the one shown in this example:

```
    Router#
    show ip route
    Codes: C - connected, S - static, 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
    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    192.0.2.3/8 [120/1] via 192.0.2.2, 00:00:02, Ethernet0/0/0
```

Configure Enhanced Interior Gateway Routing Protocol

This task covers details on configuring Enhanced Interior Gateway Routing Protocol

Procedure

Step 1 **router eigrp** *as-number*

Example:

```
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

Step 2 **network** *ip-address*

Example:

```
Router(config)# network 192.0.2.8
Router(config)# network 10.10.12.15
```

Specifies a list of networks on which EIGRP is to be applied, using the IP address of the network of directly connected networks.

Step 3 **end**

Example:

```
Router(config-router)# end
```

Exits router configuration mode, and enters privileged EXEC mode.

This completes the configuration of EIGRP.

What to do next

Verify that EIGRP configuration is complete:

This configuration example shows the EIGRP routing protocol enabled in IP networks 192.0.2.8 and 10.10.12.15. The EIGRP autonomous system number is 109. To see this configuration, use the **show running-config** command.

```
Router# show running-config

router eigrp 109
network 192.0.2.8
network 10.10.12.15
```

To verify that you have configured IP EIGRP correctly, enter the **show ip route** command, and look for EIGRP routes marked by the letter D. You should see verification output similar to the following:

```
Router# show ip route
Codes: C - connected, S - static, 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
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
D     192.0.2.3/8 [90/409600] via 192.0.2.2, 00:00:02, Ethernet0/0
```