



Using the Management Ethernet Interface

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Gigabit Ethernet Management Interface Overview

The chassis has one Gigabit Ethernet Management Ethernet interface on each Route Switch Processor.

The purpose of this interface is to allow users to perform management tasks on the router; it is basically an interface that should not and often cannot forward network traffic but can otherwise access the router, often via Telnet and SSH, and perform most management tasks on the router. The interface is most useful before a router has begun routing, or in troubleshooting scenarios when the interfaces are inactive.

The following aspects of the Management Ethernet interface should be noted:

- Each RSP has a Management Ethernet interface, but only the active RSP has an accessible Management Ethernet interface (the standby RSP can be accessed using the console port, however).
- IPv4, IPv6, and ARP are the only routed protocols supported for the interface.
- The interface provides a method of access to the router even if the interfaces or the IOS processes are down.
- The Management Ethernet interface is part of its own VRF. For more information, see the [Gigabit Ethernet Management Interface VRF, on page 2](#).

Gigabit Ethernet Port Numbering

The Gigabit Ethernet Management port is always GigabitEthernet0.

In a dual RSP configuration, the Management Ethernet interface on the active RSP will always be Gigabit Ethernet 0, while the Management Ethernet interface on the standby RSP will not be accessible using the Cisco IOS CLI in the same telnet session. The standby RSP can be accessed via console port using telnet.

The port can be accessed in configuration mode like any other port on the chassis.

```
Router#config t  
Enter configuration commands, one per line. End with CNTL/Z.  
Router(config)#interface gigabitethernet0  
Router(config-if)#
```

IP Address Handling in ROMmon and the Management Ethernet Port

IP addresses can be configured using ROMmon (**IP_ADDRESS=** and **IP_SUBNET_MASK=** commands) and the IOS command-line interface (the **ip address** command in interface configuration mode).

Assuming the IOS process has not begun running on the chassis, the IP address that was set in ROMmon acts as the IP address of the Management Ethernet interface. In cases where the IOS process is running and has taken control of the Management Ethernet interface, the IP address specified when configuring the Gigabit Ethernet 0 interface in the IOS CLI becomes the IP address of the Management Ethernet interface. The ROMmon-defined IP address is only used as the interface address when the IOS process is inactive.

For this reason, the IP addresses specified in ROMmon and in the IOS CLI can be identical and the Management Ethernet interface will function properly in single RSP configurations.

In dual RSP configurations, however, users should never configure the IP address in the ROMmon on either RP0 or RP1 to match each other or the IP address as defined by the IOS CLI. Configuring matching IP addresses introduces the possibility for an active and standby Management Ethernet interface having the same IP address with different MAC addresses, which will lead to unpredictable traffic treatment or possibility of an RSP boot failure.

Gigabit Ethernet Management Interface VRF

The Gigabit Ethernet Management interface is automatically part of its own VRF. This VRF, which is named “Mgmt-intf,” is automatically configured on the chassis and is dedicated to the Management Ethernet interface; no other interfaces can join this VRF. Therefore, this VRF does not participate in the MPLS VPN VRF or any other network-wide VRF.

Placing the management ethernet interface in its own VRF has the following effects on the Management Ethernet interface:

- Many features must be configured or used inside the VRF, so the CLI may be different for certain Management Ethernet functions on the chassis than on Management Ethernet interfaces on other routers.
- Prevents transit traffic from traversing the router. Because all of the interfaces and the Management Ethernet interface are automatically in different VRFs, no transit traffic can enter the Management Ethernet interface and leave an interface, or vice versa.
- Improved security of the interface. Because the Mgmt-intf VRF has its own routing table as a result of being in its own VRF, routes can only be added to the routing table of the Management Ethernet interface if explicitly entered by a user.

The Management Ethernet interface VRF supports both IPv4 and IPv6 address families.

Common Ethernet Management Tasks

Because users can perform most tasks on a router through the Management Ethernet interface, many tasks can be done by accessing the router through the Management Ethernet interface.

This section documents common configurations on the Management Ethernet interface and includes the following sections:

Viewing the VRF Configuration

The VRF configuration for the Management Ethernet interface is viewable using the **show running-config vrf** command.

This example shows the default VRF configuration:

```
Router# show running-config vrf
Building configuration...
Current configuration : 351 bytes
vrf definition Mgmt-intf
!
 address-family ipv4
 exit-address-family
!
 address-family ipv6
 exit-address-family
!
(some output removed for brevity)
```

Viewing Detailed VRF Information for the Management Ethernet VRF

To see detailed information about the Management Ethernet VRF, enter the **show vrf detail Mgmt-intf** command.

```
Router# show vrf detail Mgmt-intf
VRF Mgmt-intf (VRF Id = 4085); default RD <not set>; default VPNID <not set>
  Interfaces:
    Gi0
Address family ipv4 (Table ID = 4085 (0xFF5)):
  No Export VPN route-target communities
  No Import VPN route-target communities
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-prefix
Address family ipv6 (Table ID = 503316481 (0x1E000001)):
  No Export VPN route-target communities
  No Import VPN route-target communities
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-prefix
```

Setting a Default Route in the Management Ethernet Interface VRF

To set a default route in the Management Ethernet Interface VRF, enter the following command

```
ip route vrf Mgmt-intf 0.0.0.0 0.0.0.0 next-hop-IP-address
```

Setting the Management Ethernet IP Address

The IP address of the Management Ethernet port is set like the IP address on any other interface.

Below are two simple examples of configuring an IPv4 address and an IPv6 address on the Management Ethernet interface.

IPv4 Example

```
Router(config)# interface GigabitEthernet 0
Router(config-if)# ip address A.B.C.D A.B.C.D
```

IPv6 Example

```
Router(config)# interface GigabitEthernet 0
Router(config-if)# ipv6 address X:X:X:X::X
```

Telnetting over the Management Ethernet Interface

Telnetting can be done through the VRF using the Management Ethernet interface.

In the following example, the router telnets to 172.17.1.1 through the Management Ethernet interface VRF:

```
Router# telnet 172.17.1.1 /vrf Mgmt-intf
```

Pinging over the Management Ethernet Interface

Pinging other interfaces using the Management Ethernet interface is done through the VRF.

In the following example, the router pings the interface with the IP address of 172.17.1.1 through the Management Ethernet interface.

```
Router# ping vrf Mgmt-intf 172.17.1.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.17.1.1, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 1/1/1 ms
```

Copy Using TFTP or FTP

To copy a file using TFTP through the Management Ethernet interface, the **ip tftp source-interface GigabitEthernet 0** command must be entered before entering the **copy tftp** command because the **copy tftp** command has no option of specifying a VRF name.

Similarly, to copy a file using FTP through the Management Ethernet interface, the **ip ftp source-interface GigabitEthernet 0** command must be entered before entering the **copy ftp** command because the **copy ftp** command has no option of specifying a VRF name.

TFTP Example

```
Router(config)# ip tftp source-interface gigabitethernet 0
```

FTP Example

```
Router(config)# ip ftp source-interface gigabitethernet 0
```

NTP Server

To allow the software clock to be synchronized by a Network Time Protocol (NTP) time server over the Management Ethernet interface, enter the **ntp server vrf Mgmt-intf** command and specify the IP address of the device providing the update.

The following CLI provides an example of this procedure.

```
Router(config)# ntp server vrf Mgmt-intf 172.17.1.1
```

SYSLOG Server

To specify the Management Ethernet interface as the source IPv4 or IPv6 address for logging purposes, enter the **logging host ip-address vrf Mgmt-intf** command.

The following CLI provides an example of this procedure.

```
Router(config)# logging host <ip-address> vrf Mgmt-intf
```

SNMP-related services

To specify the Management Ethernet interface as the source of all SNMP trap messages, enter the **snmp-server source-interface traps gigabitEthernet 0** command.

The following CLI provides an example of this procedure:

```
Router(config)# snmp-server source-interface traps gigabitEthernet 0
```

Domain Name Assignment

The IP domain name assignment for the Management Ethernet interface is done through the VRF.

To define the default domain name as the Management Ethernet VRF interface, enter the **ip domain-name vrf Mgmt-intf domain** command.

```
Router(config)# ip domain-name vrf Mgmt-intf cisco.com
```

DNS service

To specify the Management Ethernet interface VRF as a name server, enter the **ip name-server vrf Mgmt-intf IPv4-or-IPv6-address** command.

```
Router(config)# ip name-server vrf Mgmt-intf  
IPv4-or-IPv6-address
```

RADIUS or TACACS+ Server

To group the Management VRF as part of a AAA server group, enter the **ip vrf forward Mgmt-intf** command when configuring the AAA server group.

The same concept is true for configuring a TACACS+ server group. To group the Management VRF as part of a TACACS+ server group, enter the **ip vrf forwarding Mgmt-intf** command when configuring the TACACS+ server group.

Radius Server Group Configuration

```
Router(config)# aaa group server radius hello  
Router(config-sg-radius)# ip vrf forwarding Mgmt-intf
```

Tacacs+ Server Group Example

```
outer(config)# aaa group server tacacs+ hello  
Router(config-sg-tacacs+)# ip vrf forwarding Mgmt-intf
```

VTY lines with ACL

To ensure an access control list (ACL) is attached to vty lines that are and are not using VRF, use the **vrf-also** option when attaching the ACL to the vty lines.

```
Router(config)# line vty 0 4  
Router(config-line)# access-class 90 in vrf-also
```