



# Cisco Mobile Networks—Static Collocated Care-of Address

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The Cisco Mobile Networks—Static Collocated Care-of Address feature allows a mobile router to roam to foreign networks where foreign agents are not deployed. Before the introduction of this feature, the mobile router was required to use a foreign agent care-of address when roaming. Now a roaming interface with a static IP address configured on the mobile router itself works as the collocated care-of address (CCoA).

## Feature Specifications for Cisco Mobile Networks—Static Collocated Care-of Address

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### Feature History

Release	Modification
12.2(15)T	This feature was introduced.

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### Supported Platforms

For information about platforms supported, refer to Cisco Feature Navigator.

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## Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

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## Prerequisites for Cisco Mobile Networks—Static CCoA

Static CCoA applies to networks where the endpoint IP address is always fixed, such as in a Cellular Digital Packet Data (CDPD) wireless network.

## Restrictions for Cisco Mobile Networks—Static CCoA

Static CCoA is not recommended for environments where the endpoint IP address is not always fixed such as in the Dynamic Host Configuration Protocol (DHCP) or PPP/IPCP where the CCoA and gateway IP address are obtained dynamically.

## Information About the Cisco Mobile Networks—Static CCoA

Before you configure static CCoA, you should understand the following concepts:

- [Care-of Addresses, page 2](#)
- [Benefits of Cisco Mobile Networks—Static CCoA, page 2](#)
- [Feature Design of Cisco Mobile Networks—Static CCoA, page 3](#)

## Care-of Addresses

If a mobile node or mobile router determines that it is connected to a foreign network, it acquires a care-of address. This care-of address is the exit-point of the tunnel towards the mobile node. The care-of address is included in the Mobile IP registration request and is used by the home agent to forward packets to the mobile node in its current location. Two types of care-of addresses exist:

- Care-of address acquired from a foreign agent
- Collocated care-of address

A foreign agent care-of address is an IP address on a foreign agent that is advertised on the foreign network being visited by a mobile node. A mobile node that acquires this type of care-of address can share the address with other mobile nodes. A collocated care-of address is an IP address assigned to the interface of the mobile node itself. A collocated care-of address represents the current position of the mobile node on the foreign network and can be used by only one mobile node at a time.

For the Cisco Mobile Networks—Static CCoA feature, a static collocated care-of address is a fixed IP address configured on a roaming interface of the mobile router.

CCoA support using a dynamically acquired IP address will be available in a future release.

## Benefits of Cisco Mobile Networks—Static CCoA

This feature allows a mobile router to roam to foreign networks where foreign agents are not deployed.

## Feature Design of Cisco Mobile Networks—Static CCoA

In general, static CCoA is intended for links where there are no foreign agents. If foreign agents are present, the interface will not support foreign agent care-of address roaming while the interface is configured for static CCoA. Any foreign agent advertisements detected on that interface will be ignored. A static CCoA interface will solicit advertisements if configured but will not automatically solicit advertisements when the interface comes up. This behavior overrides the default behavior—typically, in the Cisco Mobile Networks feature, when an interface goes down and comes back up, foreign agent advertisements are solicited automatically.

When the mobile router registers a CCoA with a home agent, a single HA-CCoA tunnel is created and is used for traffic to the mobile router and its mobile networks.

The static CCoA configured on the mobile router interface will become the endpoint of the HA-CCoA tunnel as the home agent tunnels packets to the mobile router. The mobile router will use this same tunnel to reverse tunnel packets back to the home agent if configured.

## How to Configure Cisco Mobile Networks—Static CCoA

This section contains the following procedures:

- [Enabling Static CCoA Processing on a Mobile Router Interface](#)
- [Verifying the Static CCoA Configuration](#)

### Enabling Static CCoA Processing on a Mobile Router Interface

To enable static CCoA processing on a mobile router interface, use the following commands:

#### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **ip address** *ip-address mask*
5. **ip mobile router-service roam**
6. **ip mobile router-service collocated** [*gateway ip-address*]
7. **ip mobile router-service collocated registration retry** *seconds*

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"><li>Enter your password if prompted.</li></ul>
Step 2	<code>configure terminal</code>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<code>interface type number</code>  <b>Example:</b> Router(config)# interface ethernet 1	Configures an interface type and enters interface configuration mode.
Step 4	<code>ip address ip-address mask</code>  <b>Example:</b> Router(config-if)# ip-address 168.71.6.23 255.255.255.0	Sets a primary IP address for an interface. <ul style="list-style-type: none"><li>This is the static CCoA.</li></ul>
Step 5	<code>ip mobile router-service roam</code>  <b>Example:</b> Router(config-if)# ip mobile router-service roam	Enables roaming on an interface.
Step 6	<code>ip mobile router-service collocated [gateway ip-address]</code>  <b>Example:</b> Router(config-if)# ip mobile router-service collocated gateway 168.71.6.1	Enables static CCoA processing on a mobile router. <ul style="list-style-type: none"><li>The gateway IP address is the next hop IP address for the mobile router to forward packets. The gateway IP address is required only on Ethernet interfaces, and must be on the same logical subnet as the primary interface address specified in Step 4.</li></ul>
Step 7	<code>ip mobile router-service collocated registration retry seconds</code>  <b>Example:</b> Router(config-if)# ip mobile router-service collocated registration retry 3	(Optional) Configures the time period that the mobile router waits before sending another registration request after a registration failure. <ul style="list-style-type: none"><li>The default value is 60 seconds. You only need to use this command when a different retry interval is desired.</li></ul>

## Troubleshooting Tips

The gateway IP address required on Ethernet interfaces is the next-hop IP address, not the CCoA. The gateway IP address must be on the same logical subnet as the primary interface address.

## Verifying the Static CCoA Configuration

To verify the static CCoA configuration, perform the following optional steps:

## SUMMARY STEPS

1. **show ip mobile router interface**
2. **show ip mobile router agent**
3. **show ip mobile router registration**
4. **show ip mobile router**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<pre>show ip mobile router interface</pre> <p><b>Example:</b> Mobilerouter# show ip mobile router interface</p>	Displays information about the interface that the mobile router is using for roaming. <ul style="list-style-type: none"> <li>• If the interface is configured for CCoA, the CCoA (IP address) is displayed even if the interface is down.</li> </ul>
Step 2	<pre>show ip mobile router agent</pre> <p><b>Example:</b> Mobilerouter# show ip mobile router agent</p>	Displays information about the agents for the mobile router. <ul style="list-style-type: none"> <li>• If the interface configured for CCoA is up, an entry is shown.</li> </ul>
Step 3	<pre>show ip mobile router registration</pre> <p><b>Example:</b> Mobilerouter# show ip mobile router registration</p>	Displays the pending and accepted registrations of the mobile router.
Step 4	<pre>show ip mobile router</pre> <p><b>Example:</b> Mobilerouter# show ip mobile router</p>	Displays configuration information and monitoring statistics about the mobile router.

## Configuration Examples for Cisco Mobile Networks—Static CCoA

This section provides the following configuration example:

- [Mobile Networks with Static CCoA Example](#)

### Mobile Networks with Static CCoA Example

The following example shows a mobile router configured with a static CCoA address of 172.21.58.23 and a next-hop gateway address of 172.21.58.1.

```
interface loopback 0
! MR home address
ip address 10.1.0.1 255.255.255.255
!
!Static CCoA
interface FastEthernet0/0
```

```
ip address 172.21.58.23 255.255.255.0
ip mobile router-service roam
ip mobile router-service collocated gateway 172.21.58.1
ip mobile router-service collocated registration retry 3
!
router mobile
!
ip mobile router
address 10.1.0.1 255.255.255.255
home-agent 1.1.1.1
ip mobile secure home-agent 1.1.1.1 spi 100 key hex 12345678123456781234567812345678
```

## Additional References

For additional information related to Cisco Mobile Networks—Static Collocated Care-of Address, see the following references:

- [Related Documents](#)
- [Standards](#)
- [MIBs](#)
- [RFCs](#)
- [Technical Assistance](#)

## Related Documents

Related Topic	Document Title
Mobile IP configuration tasks	“Configuring Mobile IP” chapter in the <i>Cisco IOS IP Configuration Guide</i> , Release 12.2
Mobile IP commands: complete command syntax, command mode, defaults, usage guidelines, and examples	“Mobile IP Commands” chapter in the <i>Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services</i> , Release 12.2
Mobile IP commands related to Cisco Mobile Networks	“Cisco Mobile Networks” feature document, Release 12.2(4)T and 12.2(13)T

## Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

## MIBs

MIBs	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL:  <a href="http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml">http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml</a>

## RFCs

RFCs	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

## Technical Assistance

Description	Link
Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips, tools, and lots more. Registered Cisco.com users can log in from this page to access even more content.	<a href="http://www.cisco.com/public/support/tac/home.shtml">http://www.cisco.com/public/support/tac/home.shtml</a>

# Command Reference

This section documents new and modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.2T command reference publications.

## New Commands

- [collocated single-tunnel](#)
- [ip mobile router-service collocated](#)
- [ip mobile router-service collocated registration retry](#)

## Modified Commands

- [show ip mobile router](#)
- [show ip mobile router agent](#)
- [show ip mobile router interface](#)
- [show ip mobile router registration](#)

# collocated single-tunnel

To configure the number of tunnels between the mobile router and home agent when registering with a collocated care-of address (CCoA), use the **collocated single-tunnel** command in mobile router configuration mode.

## collocated single-tunnel

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**Syntax Description** This command has no arguments or keywords.

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**Defaults** Defaults to single-tunnel enabled.

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**Command Modes** Mobile router

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Command History	Release	Modification
	12.2(15)T	This command was introduced.

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**Usage Guidelines** This command is used as a “placeholder” only and defaults to single-tunnel enabled. This command can not be unconfigured. In future Cisco IOS releases, a dual-tunnel capability will be needed for IPSec between the mobile router and the home agent. At that time, this command will be optional with dual tunnels (**no collocated single-tunnel**) being the default. This command is only provided now for backward compatibility when the dual-tunnel capability is implemented.

# ip mobile router-service collocated

To enable static collocated care-of address (CCoA) processing on a mobile router interface, use the **ip mobile router-service collocated** command in interface configuration mode. To disable static CCoA processing, use the **no** form of this command.

**ip mobile router-service collocated** [*gateway ip-address*]

**no ip mobile router-service collocated**

<b>Syntax Description</b>	<b>gateway ip-address</b> (Optional) Next hop IP address for the mobile router to forward packets. The <b>gateway ip-address</b> combination is required only for Ethernet interfaces.
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<b>Defaults</b>	No default behavior or values
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<b>Command Modes</b>	Interface configuration
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<b>Command History</b>	<table border="1"> <thead> <tr> <th style="border: none;">Release</th> <th style="border: none;">Modification</th> </tr> </thead> <tbody> <tr> <td style="border: none;">12.2(15)T</td> <td style="border: none;">This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	12.2(15)T	This command was introduced.
Release	Modification				
12.2(15)T	This command was introduced.				

<b>Usage Guidelines</b>	<p>The primary IP address of the interface is used as the CCoA. The interface must already be configured as a roaming interface using the <b>ip mobile router-service roam</b> interface configuration command.</p> <p>The gateway IP address is the next-hop IP address for registration packets. Upon successful registration, this address will be used as the default gateway and default route.</p> <p>You need not specify the <b>gateway ip-address</b> combination if using a serial interface. The <b>gateway ip-address</b> combination is required on all non point-to-point interfaces such as Ethernet LANs and must be on the same logical subnet as the primary interface IP address.</p>
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<b>Examples</b>	The following example enables static CCoA processing on a mobile router interface:
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```
interface FastEthernet0/0
! Primary IP address is the CCoA
ip address 172.21.58.23 255.255.255.0
ip mobile router-service roam
! Gateway IP address is next-hop destination
ip mobile router-service collocated gateway 172.21.58.1
```

<b>Related Commands</b>	<table border="1"> <thead> <tr> <th style="border: none;">Command</th> <th style="border: none;">Description</th> </tr> </thead> <tbody> <tr> <td style="border: none;"><a href="#">ip mobile router-service collocated registration retry</a></td> <td style="border: none;">Configures the time period that the mobile router waits before sending another registration request after a registration failure.</td> </tr> </tbody> </table>	Command	Description	<a href="#">ip mobile router-service collocated registration retry</a>	Configures the time period that the mobile router waits before sending another registration request after a registration failure.
Command	Description				
<a href="#">ip mobile router-service collocated registration retry</a>	Configures the time period that the mobile router waits before sending another registration request after a registration failure.				

# ip mobile router-service collocated registration retry

To configure the time period that the mobile router waits before sending another registration request after a registration failure, use the **ip mobile router-service collocated registration retry** command in interface configuration mode. To disable this functionality, use the **no** form of this command.

**ip mobile router-service collocated registration retry** *seconds*

**no ip mobile router-service collocated registration retry**

<b>Syntax Description</b>	<b>retry</b> <i>seconds</i>	Retry interval (in seconds) for registration requests. The range is from 1 to 65535.
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<b>Defaults</b>	60 seconds
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<b>Command Modes</b>	Interface configuration.
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	12.2(15)T	This command was introduced.

**Usage Guidelines**

An interface configured for static collocated care-of address (CCoA) will not have foreign agent advertisements to use to trigger new registration attempts. Any foreign agent advertisements detected on that interface are ignored.

The default retry value is 60 seconds. You need to use this command only when a different retry interval is desired.

**Examples**

The following example shows that the mobile router will wait 30 seconds before sending another registration request after a registration failure:

```
interface FastEthernet0/0
! Primary IP address is the CCoA
ip address 172.21.58.23 255.255.255.0
ip mobile router-service roam
ip mobile router-service collocated gateway 172.21.58.1
ip mobile router-service collocated registration retry 30
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">ip mobile router-service collocated</a>	Enables static CCoA processing on a mobile router interface.

# show ip mobile router

To display configuration information and monitoring statistics about the mobile router, use the **show ip mobile router** command in privileged EXEC mode.

## show ip mobile router

**Syntax Description** This command has no arguments or keywords.

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(4)T	This command was introduced.
	12.2(13)T	This command was enhanced to display information about the mobile network interfaces.
	12.2(15)T	This command was enhanced to display information about collocated care-of addresses (CCoAs).

**Usage Guidelines** The display includes the mobile router configuration information such as the home address and network mask, home agent, and registration settings, and operational information such as status, tunnel interface, active foreign agent, and care-of address.

**Examples** The following is sample output from the **show ip mobile router** command:

```
Router# show ip mobile router

Mobile Router
  Enabled 05/30/02 11:16:03
  Last redundancy state transition 05/30/02 11:15:01

Configuration:
  Home Address 20.0.0.4.1 Mask 255.255.255.0
  Home Agent 46.0.0.3 Priority 100 (best) (current)
  Registration lifetime 120 sec
  Retransmit Init 1000, Max 5000 msec, Limit 3
  Extend Expire 120, Retry 3, Interval 10
  Redundancy group AlwaysUp (active)
  Mobile Networks:Ethernet5 (200.0.0.0/255.255.255.248)
    Ethernet2 (46.0.0.0/255.0.0.0)
    Ethernet3 (44.0.0.0/255.255.255.0)

Monitor:
  Status -Registered-
  Active foreign agent 11.0.0.2, Care-of 11.0.0.2
  On interface Serial0
```

```
Tunnel0
```

The following is sample output from the **show ip mobile router** command when a mobile router is registered using a CCoA:

```
Router# show ip mobile router

Mobile Router
  Enabled 02/12/02 18:29:13
  Last redundancy state transition NEVER
Configuration:
  Home Address 20.0.4.1 Mask 255.255.255.0
  Home Agent 46.0.0.3 Priority 100 (best)
  Registration lifetime 120 sec
  Retransmit Init 1000, Max 5000 msec, Limit 3
  Extend Expire 120, Retry 3, Interval 10
Monitor:
  Status -Registered-
  Using Collocated Care-of Address 44.0.0.1
  On interface Ethernet1
  Tunnel0
```

**Table 1** describes the significant fields shown in the display.

**Table 1** *show ip mobile router Field Descriptions*

Field	Description
Enabled	Date and time (in hh:mm:ss) when the mobile router was enabled.
Last redundancy state transition	Date and time (in hh:mm:ss) when the mobile router redundancy state changed.
Home Address/Mask	Home IP address of the mobile router, including the network mask.
Home Agent	Home agent that the mobile router registers with. The mobile router registers only to the home agent with the highest priority when multiple addresses are configured.
Registration lifetime	Registration lifetime (in seconds) granted by the home agent for the mobile router.
Retransmit Init/Max/Limit	Registration request retransmission settings. When registration requests are not responded to, the mobile router will resend. Displays the initial and maximum transmission timers and the limit on the number of retries allowed.
Extend Expire/Retry /Interval	Extend registration lifetime. After the mobile router has registered, reregister before lifetime expires. Retry is the number of times between intervals.
Redundancy group	Name of redundancy group used to provide mobile router redundancy. Mobile router is either “active” or “passive.” If redundancy is enabled or disabled, this information is displayed or absent, respectively. Active means the mobile router is functioning fully, and passive means the mobile router is idle.
Mobile Networks	Mobile networks associated to the mobile router.
Reverse tunnel required	If reverse tunnel is enabled or disabled, this information is displayed or absent, respectively.

**Table 1** *show ip mobile router Field Descriptions (continued)*

Field	Description
Status	Indication of the state of the mobile router. Options are: <ul style="list-style-type: none"> <li>• Home—connected to home network</li> <li>• Registered—registered on foreign network</li> <li>• Pending—sent registration and waiting for reply</li> <li>• Isolated—mobile router has heard an agent advertisement but is isolated from the network</li> <li>• Unknown—cannot determine status</li> </ul>
Active Foreign Agent/Care-of	Foreign agent and care-of address used by the registered mobile router.
Using Collocated Care-of Address	Displayed if a mobile router is registered using a CCoA.
On interface	Mobile router registered on this interface.
Tunnel	Tunnel number between mobile router and home agent.

**Related Commands**

Command	Description
<a href="#">ip mobile router</a>	Enables the mobile router and enters mobile router configuration mode

# show ip mobile router agent

To display information about the agents for the mobile router, use the **show ip mobile router agent** command in privileged EXEC mode.

## show ip mobile router agent

**Syntax Description** This command has no arguments or keywords.

**Defaults** No default behavior or values.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(4)T	This command was introduced.
	12.2(15)T	This command was enhanced to display information about the retry interval used in static collocated care-of address (CCoA) processing.

**Usage Guidelines** This command displays a list containing information on all foreign agents currently discovered on the mobile router. This list also displays information about each interface configured for static CCoA. An interface must be “up” to be displayed on the list.

You can use the **clear ip mobile router agent** command to clear foreign agent care-of addresses (CoAs) but not static CCoAs. CCoAs cannot be cleared.

**Examples** The following is sample output from the **show ip mobile router agent** command when a static CCoA is configured on a mobile router interface:

```
Router# show ip mobile router agent

Mobile Router Agents:

Foreign agent 45.0.0.2:
  Care-of address 42.0.0.2
  Interface Ethernet1, MAC 0030.9492.6627
  Agent advertisement seq 56649, Flags rbhFmGvt, Lifetime 36000
  IRDP advertisement lifetime 30, Remaining 29
  Last received 02/13/02 17:55:48
  First heard 02/13/02 11:21:46

Collocated Care-of address 11.0.0.1:
  Interface Serial0
  Registration retry interval 60
  Next CCoA reg attempt in 00:00:55 seconds
```

[Table 2](#) describes the significant fields shown in the display.

**Table 2** *show ip mobile router agent Field Descriptions*

Field	Description
Home or Foreign Agent	IP address of the home agent or foreign agent.
Care-of address	Attachment point in the foreign network.
Interface	Interface on which the agent was learned.
MAC	MAC address of the learned agent.
Agent advertisement seq/Flags/Lifetime	Agent advertisement sequence number, flags, and lifetime (in seconds). The sequence number can be used to detect reboot by the agent. The flags are services provided by the agent. The lifetime is the limit advertised by the agent.
IRDP advertisement lifetime/Remaining	The IRDP advertisement lifetime is the interval in which this foreign agent will provide service. When lifetime expires, the foreign agent is disconnected from the mobile router. The remaining field shows the time before expiration.
Last received	Date and time when advertisement was received.
First heard	Date and time when the agent was first heard. This is useful information in determining which agent to use when multiple learned agents are heard by the mobile router.
Collocated Care-of address	Collocated care-of address configured on the mobile router interface.
Interface	Mobile router interface.
Default gateway	The next-hop IP address for registration packets. Upon successful registration, this address will be used as the default gateway and default route. This field is only displayed if the IP address is fixed (static) on an Ethernet interface.
Registration retry interval	The interval that the mobile router waits before sending another registration request if a registration request failed.
Next CCoA reg attempt in 00:00:55 seconds	If the interval timer is running, the time remaining (in seconds) until the next registration attempt.

**Related Commands**

Command	Description
<b>clear ip mobile router agent</b>	Deletes learned agents and the corresponding care-of address of the foreign agent from the mobile router agent table.

# show ip mobile router interface

To display information about the interfaces configured for roaming, use the **show ip mobile router interface** command in privileged EXEC mode.

## show ip mobile router interface

**Syntax Description** This command has no arguments or keywords.

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(4)T	This command was introduced.
	12.2(15)T	This command was enhanced to display information about collocated care-of addresses (CCoAs).

**Usage Guidelines** The mobile router uses the interfaces for roaming, discovering foreign agents, and registering its location on the foreign network.

Use this command to display information about roaming interfaces. If the interface is configured for collocated care-of address (CCoA), the CCoA (IP address) is displayed. If it is not configured for CCoA, “none” is displayed. The interface can be up or down.

**Examples** The following is sample output from the **show ip mobile router interface** command:

```
Router# show ip mobile router interface

Mobile Router Interfaces:

Listed in order of preference.

Ethernet1:
  Priority 100, Bandwidth 10000, Address 45.0.0.20
  Periodic solicitation disabled, Interval 600 sec
  Retransmit Init 1000, Max 5000 msec, Limit 3
  Current 5000, Remaining 0 msec, Count 7
  Hold down 0 sec
  Routing disallowed
  Collocated CoA 45.0.0.20

Serial0:
  Priority 100, Bandwidth 1544, Address 11.0.0.1
  Periodic solicitation disabled, Interval 600 sec
  Retransmit Init 1000, Max 5000 msec, Limit 3
  Current 0, Remaining 0 msec, Count 0
```

```
show ip mobile router interface
```

```
Hold down 0 sec
Routing disallowed
Collocated CoA none
```

Table 3 describes the significant fields shown in the display.

**Table 3** *show ip mobile router interface Field Descriptions*

Field	Description
Priority	Interface priority. Comparison to decide the preferred interface to register by the mobile router. The interface with the highest priority is used to send registrations.
Bandwidth	Interface bandwidth. When multiple interfaces have the highest priority, the highest bandwidth is the preferred choice.
Address	Interface IP address. If priority and bandwidth are the same among roaming interfaces, the highest address is preferred by the mobile router.
Periodic solicitation	Send solicitations periodically (enabled) or wait for periodic advertisements (disabled).
Interval	Period of time (in seconds) to wait before sending the next periodic solicitation.
Retransmit Init/Max/Limit	Solicitation retry settings. Displays the initial and maximum transmission timers and the limit on the number of retries allowed.
Current/Remaining	Current retransmission interval and remaining time before it expires.
Count	Retransmission count.
Hold down	Period of time (in seconds) to wait before registering to a learned agent.
Routing	Routing is disallowed when the mobile router is roaming and allowed when the mobile router is home.
Collocated CoA	IP address displayed if the interface is configured for CCoA; otherwise none is displayed. The CCoA is displayed if configured, even if the interface is down.

#### Related Commands

Command	Description
<b>ip mobile router-service</b>	Enables mobile router service on an interface.
<b>ip mobile router-service collocated</b>	Enables static CCoA processing on a mobile router interface.

# show ip mobile router registration

To display pending and/or accepted registrations of the mobile router, use the **show ip mobile router registration** command in privileged EXEC mode.

## show ip mobile router registration

**Syntax Description** This command has no arguments or keywords.

**Defaults** No default behavior or values

**Command Modes** Privileged EXEC

Command History	Release	Modification
	12.2(4)T	This command was introduced.
	12.2(13)T	This command was enhanced to display new extensions in the registration request.
	12.2(15)T	This command was enhanced to display collocated care-of addresses (CCoAs) if configured.

**Examples** The following is sample output from the **show ip mobile router registration** command:

```
Router# show ip mobile router registration

Mobile Router Registrations:

Foreign Agent 44.0.0.1:
  Registration accepted 01/15/01 10:04:01, On Ethernet2/2
  Care-of addr 41.0.0.1, HA addr 49.0.0.3, Home addr 49.0.0.5
  Lifetime requested 01:00:00 (3600), Granted 00:30:00 (1800)
  Remaining 00:20:13
  Flags sbdmgvt, Identification BE0D49E5.5E1C56E4
  Register next time 00:18:13
  Extensions
    Mobile Network 44.0.0.0/8
    MN-HA Authentication SPI 100
```

The following is sample output from the **show ip mobile router registration** command if a mobile router interface is configured with a CCoA:

```
Home agent 4.4.4.3:
  Registration accepted 01/01/02 10:24:46, On Ethernet5/3
  Collocated care-of addr 3.3.3.2, HA addr 4.4.4.3, Home addr 4.4.4.2
  Lifetime requested 00:01:30 (90), Granted 00:01:30 (90)
  Remaining 00:01:08
  Flags sbDmg-T-, Identification BFDC0CEE.C7A75D64
  Register next time 00:00:23
  Extensions:
    Mobile Network 95.95.95.0/24
```

## ■ show ip mobile router registration

MN-HA Authentication SPI 100

Table 4 describes the significant fields shown in the display.

**Table 4** show ip mobile router registration Field Descriptions

Field	Description
Home or Foreign Agent	IP address of the home agent or foreign agent.
Registration accepted	Date and time (in hh:mm:ss) when registration was accepted.
On	Which interface registration occurred on.
Care-of addr/Collocated care-of addr	Attachment point in the foreign network. The collocated care-of address is displayed if configured.
HA addr	IP address of the home agent.
Home addr	Home IP address.
Lifetime requested	Requested lifetime of registration.
Granted	Registration lifetime granted by the home agent.
Remaining	Remaining time before registration expires.
Flags	Flags in the registration reply.
Identification	Identification in the registration reply.
Register next time	Remaining time before the mobile router sends the next registration request.
Extensions	New extensions added to the registration request.
Mobile Network	Mobile network connected to mobile router.
MN-HA Authentication	Mobile node and home agent authentication. Indicates the SPI number.

---

**Related Commands**

Command	Description
<a href="#">register (mobile router)</a>	Controls the registration parameters of the mobile router.

# Glossary

**care-of address**—The termination point of the tunnel to a mobile node or mobile router. This can be a collocated care-of address, by which the mobile node or mobile router acquires a local address and detunnels its own packets, or a foreign agent care-of address, by which a foreign agent detunnels packets and forwards them to the mobile node or mobile router.

**foreign agent**—A router on the visited network of a foreign network that provides routing services to the mobile node while registered. The foreign agent detunnels and delivers packets to the mobile node or mobile router that were tunneled by the home agent of the mobile node. For packets sent by a mobile node, the foreign agent may serve as a default router for registered mobile nodes.

**link**—A facility or medium over which mobile nodes communicate at the link layer. A link underlies the network layer.



Note

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Refer to the [Internetworking Terms and Acronyms](#) for terms not included in this glossary.

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