Cisco Mobile Networks Static Collocated Care-of Address

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

Feature History	
Release	Modification
12.2(15)T	This feature was introduced.
Supported Platforms	
For information about platforms supported, refer to Cisco Feature Navigator.	

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

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

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

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	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**interface** *type number* **Example:** `Router(config)# interface ethernet 1`	Configures an interface type and enters interface configuration mode.
Step 4	**ip address** *ip-address mask*	Sets a primary IP address for an interface.

	Command or Action	Purpose
	Example: `Router(config-if)# ip-address 168.71.6.23 255.255.255.0`	• This is the static CCoA.
Step 5	**ip mobile router-service roam** **Example:** `Router(config-if)# ip mobile router-service roam`	Enables roaming on an interface.
Step 6	**ip mobile router-service collocated** [**gateway** *ip-address*] **Example:** `Router(config-if)# ip mobile router-service collocated gateway 168.71.6.1`	Enables static CCoA processing on a mobile router. • 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.
Step 7	**ip mobile router-service collocated registration retry** *seconds* **Example:** `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. • The default value is 60 seconds. You only need to use this command when a different retry interval is desired.

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	**show ip mobile router interface** **Example:** `Mobilerouter# show ip mobile router interface`	Displays information about the interface that the mobile router is using for roaming. • If the interface is configured for CCoA, the CCoA (IP address) is displayed even if the interface is down.

	Command or Action	Purpose
Step 2	**show ip mobile router agent** **Example:** `Mobilerouter# show ip mobile router agent`	Displays information about the agents for the mobile router. • If the interface configured for CCoA is up, an entry is shown.
Step 3	**show ip mobile router registration** **Example:** `Mobilerouter# show ip mobile router registration`	Displays the pending and accepted registrations of the mobile router.
Step 4	**show ip mobile router** **Example:** `Mobilerouter# show ip mobile router`	Displays configuration information and monitoring statistics about the mobile router.

Configuration Examples for Cisco Mobile Networks Static CCoA

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

Related Topic	Document Title
Mobile IP configuration tasks	"Configuring Mobile IP" chapter in the *Cisco IOS IP Configuration Guide,* Release 12.2
Mobile IP commands: complete command syntax, command mode, defaults, usage guidelines, and examples	"Mobile IP Commands" chapter in the*Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services,* 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: http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml

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.	http://www.cisco.com/public/support/tac/home.shtml

Command Reference

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS IP Mobility Command Reference* at http://www.cisco.com/en/US/docs/ios/ipmobility/command/reference/imo_book.html. For information about all Cisco IOS commands, go to the Command Lookup Tool at http://tools.cisco.com/Support/CLILookup or to the *Cisco IOS Master Commands List* .

- **collocated single-tunnel**
- **ip mobile router-service collocated**
- **ip mobile router-service collocated registration retry**
- **show ip mobile router**
- **show ip mobile router agent**
- **show ip mobile router interface**
- **show ip mobile router registration**

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 Refer to the Internetworking Terms and Acronyms for terms not included in this glossary.