CISCO-IP-IF-MIB Support for IP Helper Addresses

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This module contains information about IP helper MIBs used with interfaces and hardware components. Network architectures are commonly deployed where Cisco routers are used as DHCP relays. Multiple servers are often specified in Cisco IOS router DHCP relay configuration through IP helper addresses. These IP helper addresses are critical because they enable the router to forward DHCP broadcasts, thus eliminating the need for a DHCP server on each network segment. This feature utilizes the CISCO-IP-IF-MIB to enable customers to retrieve all IP helper addresses that are configured on each interface.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see 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 for the CISCO-IP-IF-MIB" section on page 7.

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

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Americas Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Prerequisites for the CISCO-IP-IF-MIB (IP Helper MIB)

Configure Simple Network Management Protocol (SNMP) on the router on which the IP helper MIB feature is to be used. See the "Configuring the Router to Use SNMP" section on page 2 for more information. For more information on configuring an SNMP server, see the "Configuring SNMP Support" chapter of the *Cisco IOS Network Management Configuration Guide*.

Information About the CISCO-IP-IF-MIB (IP Helper MIB)

Overview of the CISCO-IP-IF-MIB (IP Helper MIB)

Network architectures are commonly deployed where Cisco routers are used as DHCP relays. Multiple servers are often specified in Cisco IOS router DHCP relay configuration through IP helper addresses. The IP helper addresses enable routers to forward various types of broadcast traffic. These addresses eliminate the need to deploy DHCP servers on each network segment, thus reducing costs and simplifying DHCP management.

This feature delivers new functionality that enables all IP Helper addresses configured on each interface to be stored (and retrieved via SNMP) in the MIB.

The ciiHelperAddressTable in the CISCO-IP-IF-MIB (the IP helper MIB) enables you to retrieve all IP helper addresses that are configured on each interface to be stored (and retrieved through the SNMP) in the MIB.

The ciiHelperAddressTable in the CISCO-IP-IF-MIB accesses the multiple set of addresses through a network (SNMP) management station. The CISCO-IP-IF-MIB accesses all the configured IP helper addresses on an interface.

How to Configure SNMP and Retrieve the CISCO-IP-IF-MIB (IP Helper MIB)

Configuring the Router to Use SNMP

Note The task described in this section include examples of the SNMP CLI syntax used to set configuration parameters on the router and to read values from MIB objects on the router. These SNMP CLI syntax examples are taken from a Linux workstation using public domain SNMP tools. The SNMP CLI syntax for your workstation might be different. See the documentation that was provided with your SNMP tools for the correct syntax for your network management workstation.

Before you can use the CISCO-IP-IF-MIB feature, you must first configure the router to support SNMP. Perform this task to enable SNMP on the router.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **snmp-server community** *string1* **ro**
4. **snmp-server community** *string2* **rw**
5. **end**

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	**snmp-server community** *string1* **ro** **Example:** `Router(config)# snmp-server community public ro`	Sets up the community access string to permit access to SNMP. • The *string1* argument is a community string that consists of 1 to 32 alphanumeric characters and functions much like a password, permitting access to the SNMP protocol. Blank spaces are not permitted in the community string. • The **ro** keyword specifies read-only access. SNMP management stations that use this string can retrieve MIB objects. **Note** The SNMP community read-only (RO) string for the example is public. You should use a more complex string for this value in your configuration.

	Command or Action	Purpose
Step 4	**snmp-server community** *string2* **rw** **Example:** `Router(config)# snmp-server community private rw`	Sets up the community access string to permit access to SNMP. • The *string2* argument is a community string that consists of 1 to 32 alphanumeric characters and functions much like a password, permitting access to the SNMP protocol. Blank spaces are not permitted in the community string. • The **rw** keyword specifies read-write access. SNMP management stations that use this string can retrieve and modify MIB objects. **Note** The SNMP community read-write (RW) string for the example is private. You should use a more complex string for this value in your configuration.
Step 5	**end** **Example:** `Router(config)# end`	Exits the current configuration mode and returns to privileged EXEC mode.

What to Do Next

Retrieving IP Helper Addresses

After configuring the router to support SNMP, the ciiHelperAddressTable in the CISCO-IP-IF-MIB (the IP helper MIB) is used to retrieve all IP helper addresses configured on each interface and to store the addresses in a configuration file. The IP helper addresses are retrieved each time the router acts as a DHCP relay.

Configuration Examples for CISCO-IP-IF-MIB

The following example shows the list of retrieved IP helper addresses in a configuration file:

```
!
interface FastEthernet1/0.1
 encapsulation dot1Q 501
!
interface FastEthernet1/0.2
 encapsulation dot1Q 502
 ip helper-address 209.165.202.129
!
interface FastEthernet1/0.3
 encapsulation dot1Q 503
 ip helper-address 209.165.202.129
!
interface FastEthernet2/0
 ip helper-address 209.165.200.225
 ip helper-address 209.165.200.227
 ip helper-address 209.165.200.254
 ip helper-address 209.165.200.226
 ip helper-address 209.165.202.129
 shutdown
 duplex half
!
interface ATM6/0
 no ip address
 ip helper-address 209.165.201.10
 ip helper-address 209.165.201.5
 shutdown
 no atm enable-ilmi-trap
!
```

The preceding Cisco IOS configuration provides the following output:

```
~> snmpbulkget -v2c -Ob -c public <ip-address> 1.3.6.1.4.1.9.9.309.1.2.1
CISCO-IP-IF-MIB::ciiHelperAddressStatus.4.0.1.4.209.165.200.225 = INTEGER: notInService(2)
CISCO-IP-IF-MIB::ciiHelperAddressStatus.4.0.1.4.209.165.200.226 = INTEGER: notInService(2)
CISCO-IP-IF-MIB::ciiHelperAddressStatus.4.0.1.4.209.165.200.227 = INTEGER: notInService(2)
CISCO-IP-IF-MIB::ciiHelperAddressStatus.4.0.1.4.209.165.200.254 = INTEGER: notInService(2)
CISCO-IP-IF-MIB::ciiHelperAddressStatus.4.0.1.4.209.165.202.129 = INTEGER: notInService(2)
CISCO-IP-IF-MIB::ciiHelperAddressStatus.9.0.1.4.209.165.202.129 = INTEGER: active(1)
CISCO-IP-IF-MIB::ciiHelperAddressStatus.10.0.1.4.209.165.202.129 = INTEGER: active(1)
CISCO-IP-IF-MIB::ciiHelperAddressStatus.15.0.1.4.209.165.201.5 = INTEGER: notInService(2)
CISCO-IP-IF-MIB::ciiHelperAddressStatus.15.0.1.4.209.165.201.10 = INTEGER: notInService(2)
CISCO-IP-IF-MIB::ciiHelperAddressStorage.4.0.1.4.209.165.200.225 = INTEGER: nonVolatile(3)
CISCO-IP-IF-MIB::ciiHelperAddressStorage.4.0.1.4.209.165.200.226 = INTEGER: nonVolatile(3)
CISCO-IP-IF-MIB::ciiHelperAddressStorage.4.0.1.4.209.165.200.227 = INTEGER: nonVolatile(3)
CISCO-IP-IF-MIB::ciiHelperAddressStorage.4.0.1.4.209.165.200.254 = INTEGER: nonVolatile(3)
CISCO-IP-IF-MIB::ciiHelperAddressStorage.4.0.1.4.209.165.202.129 = INTEGER: nonVolatile(3)
CISCO-IP-IF-MIB::ciiHelperAddressStorage.9.0.1.4.209.165.202.129 = INTEGER: nonVolatile(3)
CISCO-IP-IF-MIB::ciiHelperAddressStorage.10.0.1.4.209.165.202.129 = INTEGER:
nonVolatile(3)
```

```
CISCO-IP-IF-MIB::ciiHelperAddressStorage.15.0.1.4.209.165.201.5 = INTEGER: nonVolatile(3)
CISCO-IP-IF-MIB::ciiHelperAddressStorage.15.0.1.4.209.165.201.10 = INTEGER: nonVolatile(3)
```

Additional References

Related Documents

Related Topic	Document Title
SNMP commands, complete command syntax, command reference, command history, defaults, defaults, usage guidelines, and examples	*Cisco IOS Network Management Command Reference*
SNMP Configuration	"Configuring SNMP Support" chapter of the *Cisco IOS Network Management Configuration Guide*

Standards

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

MIBs

MIB	MIBs Link
CISCO-IP-IF-MIB	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for the CISCO-IP-IF-MIB

Table 1 lists the release history for this feature.

Not all commands may be available in your Cisco IOS software release. For release information about a specific command, see the command reference documentation.

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which Cisco IOS and Catalyst OS software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

Note Table 1 lists only the Cisco IOS software release that introduced support for a given feature in a given Cisco IOS software release train. Unless noted otherwise, subsequent releases of that Cisco IOS software release train also support that feature.

Table 1 Feature Information for the CISCO-IP-IF-MIB

Feature Name	Releases	Feature Information
CISCO-IP-IF-MIB Support for IP Helper Addresses	12.2(33)SXI1	The CISCO-IP-IF-MIB support for IP Helper Addresses feature enables you to retrieve all IP helper addresses that are configured on each interface.

Glossary

DHCP—Dynamic Host Configuration Protocol. Provides a mechanism for allocating IP addresses dynamically so that addresses can be reused when hosts no longer need them.

MIB—Management Information Base. Database of network management information that is used and maintained by a network management protocol, such as SNMP or CMIP. The value of a MIB object can be changed or retrieved using SNMP or CMIP commands, usually through a GUI network management system. MIB objects are organized in a tree structure that includes public (standard) and private (proprietary) branches.

SNMP—Simple Network Management Protocol. A network management protocol used almost exclusively in TCP/IP networks. SNMP provides a means to monitor and control network devices and to manage configurations, statistics collection, performance, and security.