



## NHRP MIB

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The Cisco NHRP MIB feature introduces support for the NHRP MIB, which helps to manage and monitor the Next Hop Resolution Protocol (NHRP) via Simple Network Management Protocol (SNMP). Statistics can be collected and monitored via standards-based SNMP techniques (get operations) to query objects defined in the NHRP MIB. The NHRP MIB is VRF aware and supports VRF aware queries.



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**Note**

Security threats, as well as the cryptographic technologies to help protect against them, are constantly changing. For more information about the latest Cisco cryptographic recommendations, see the [Next Generation Encryption](#) (NGE) white paper.

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## 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](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Prerequisites for NHRP MIB

- You should be familiar with configuring SNMP.

## Restrictions for NHRP MIB

- Cisco does not support all the MIB variables defined in RFC-2677, Definitions of Managed Objects for the NBMA Next Hop Resolution Protocol (NHRP). For a list of variables supported and other caveats of this feature, see the Agent Capabilities file. Cisco does not support the set operations defined in RFC-2677.

## Information About NHRP MIB

### CISCO-NHRP-MIB

CISCO-NHRP-MIB provides NHRP MIB information on managed objects relating to clients only, servers only, and clients and servers.

The NHRP MIB module contains ten tables of objects as follows:

- NHRP Cache Table
- NHRP Purge Request Table
- NHRP Client Table
- NHRP Client Registration Table
- NHRP Client NHS Table
- NHRP Client Statistics Table
- NHRP Server Table
- NHRP Server Cache Table
- NHRP Server NHC Table
- NHRP Server Statistics Table

The Cisco implementation supports all of the tables except the NHRP Purge Request Table.

### RFC-2677

RFC-2677 - Definitions of Managed Objects for the NBMA Next Hop Resolution Protocol (NHRP), describes managed objects that can be used to remotely monitor NHRP using SNMP and provide management information on the performance of NHRP.

## How to Use NHRP MIB

No special configuration is needed for this feature. The SNMP framework can be used to manage NHRP MIB. See the section “Configuration Examples for NHRP MIB” for an example of how to manage a VRF aware NHRP MIB.

## Verifying NHRP MIB Status

Use this task to verify the NHRP MIB status.

### SUMMARY STEPS

1. **enable**
2. `show snmp mib nhrp status`

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b> <b>Example:</b> Router> enable	Enables EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<code>show snmp mib nhrp status</code> <b>Example:</b> Router# show snmp mib nhrp status	Displays the status of the NHRP MIB.

## Configuration Examples for NHRP MIB

### Example Verifying NHRP MIB Status

The following output is from the `show snmp mib nhrp status` command:

```
Spoke_103# show snmp mib nhrp status
NHRP-SNMP Agent Feature: Enabled
NHRP-SNMP Tree State: Good
ListEnqueue Count = 0 Node Malloc Counts = 1
Spoke_103#
```

The “Enabled” status of “NHRP-SNMP Agent Feature:” indicates that the NHRP MIB is enabled. If the NHRP MIB was disabled, it would display “Disabled”. “ListEnqueue Count” and “Node Malloc Counts” counts are internal counts. “ListEnqueue Count” indicates how many nodes are queued for freeing. “Node Malloc Counts” displays how many nodes are allocated.

### Example VRF-Aware NHRP MIB Configuration

The following is an example of how to configure a VRF Table with the name V3red, for monitoring by SNMP:

```
ip vrf V3red
 rd 198102
 ! Name of the SNMP VPN context
 context V3red_context
 !
```

```

crypto isakmp policy 1
  encr aes
  authentication pre-share
  group 14
crypto isakmp key cisco47 address 0.0.0.0
!
crypto ipsec transform-set trans2 esp-aes esp-sha-hmac
!
crypto ipsec profile vpnprof
  set transform-set trans2
!
interface Tunnel0
  bandwidth 1000
! DMVPN tunnel for V3red VPN
  ip vrf forwarding V3red
  ip address 10.0.0.1 255.255.255.0
  ip mtu 1400
  ip nhrp authentication donttell
  ip nhrp map multicast dynamic
  ip nhrp network-id 99
  ip nhrp holdtime 300
  no ip split-horizon eigrp 1
  ip tcp adjust-mss 1360
  delay 1000
  tunnel source Ethernet0
  tunnel mode gre multipoint
  tunnel key 100000
  tunnel protection ipsec profile vpnprof
!
interface Ethernet0
  ip address 172.17.0.1 255.255.255.0
!
interface Ethernet1
  ip address 192.168.0.1 255.255.255.0
!
router eigrp 1
  address-family ipv4 vrf V3red
  network 10.0.0.0 0.0.0.255
  network 192.168.0.0 0.0.0.255
  no auto-summary
  autonomous-system 1
  exit-address-family
!
! V2C Community ABC for VRF V3red
snmp-server group abc v2c context V3red_context read view_V3
snmp-server view view_V3 iso included
snmp-server community abc RO
snmp-server community public RO
snmp-server context V3red_context
!
!
snmp mib community-map abc context V3red_context
Spoke Configuration for DMVPN Example
crypto isakmp policy 1
  encr aes
  authentication pre-share
  group 14
crypto isakmp key cisco47 address 0.0.0.0
!
crypto ipsec transform-set trans2 esp-aes esp-sha-hmac
!
crypto ipsec profile vpnprof
  set transform-set trans2
!

```

```

interface Tunnel0
 bandwidth 1000
 ip address 10.0.0.2 255.255.255.0
 ip mtu 1400
 ip nhrp authentication donttell
 ip nhrp map 10.0.0.1 172.17.0.1
 ip nhrp map multicast 172.17.0.1
 ip nhrp network-id 99
 ip nhrp holdtime 300
 ip nhrp nhs 10.0.0.1
 ip tcp adjust-mss 1360
 delay 1000
 tunnel source Ethernet0
 tunnel mode gre multipoint
 tunnel key 100000
 tunnel protection ipsec profile vpnprof
!
interface Ethernet0
 ip address dhcp hostname Spoke1
!
interface Ethernet1
 ip address 192.168.1.1 255.255.255.0
!
router eigrp 1
 network 10.0.0.0 0.0.0.255
 network 192.168.1.0 0.0.0.255

```

## Additional References

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Commands List, All Releases</a>
Description of SNMP, SNMP MIBs, and how to configure SNMP on Cisco devices	The chapter “Configuring SNMP Support” in the <i>Cisco IOS Network Management Configuration Guide</i>
Recommended cryptographic algorithms	<a href="#">Next Generation Encryption</a>

### Standards

Standard	Title
None	--

### MIBs

MIB	MIBs Link
CISCO-NHRP-MIB	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL:  <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

**RFCs**

RFC	Title
RFC 2677	Definitions of Managed Objects for the NBMA Next Hop Resolution Protocol (NHRP)

**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.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for NHRP MIB

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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**Table 1: Feature Information for NHRP MIB**

Feature Name	Releases	Feature Information
NHRP MIB	12.4(20)T	<p>The Cisco NHRP MIB feature introduces support for the NHRP MIB, which helps to manage and monitor Next Hop Resolution Protocol (NHRP) via Simple Network Management Protocol (SNMP). Statistics can be collected and monitored via standards-based SNMP techniques (get operations) to query objects defined in the NHRP MIB.</p> <p>The following commands were introduced or modified: <code>debug snmp mib nhrp</code>, <code>show snmp mib nhrp status</code>.</p>