

# IPv6 Neighbor Discovery Cache

The IPv6 neighbor discovery cache feature allows static entries to be made in the IPv6 neighbor cache.

The per-interface neighbor discovery cache limit function can be used to prevent any particular customer attached to an interface from overloading the neighbor discovery cache, whether intentionally or unintentionally.


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# Information About IPv6 Static Cache Entry for Neighbor Discovery

## IPv6 Neighbor Discovery

The IPv6 neighbor discovery process uses ICMP messages and solicited-node multicast addresses to determine the link-layer address of a neighbor on the same network (local link), verify the reachability of a neighbor, and track neighboring devices.

The IPv6 static cache entry for neighbor discovery feature allows static entries to be made in the IPv6 neighbor cache. Static routing requires an administrator to manually enter IPv6 addresses, subnet masks, gateways, and corresponding Media Access Control (MAC) addresses for each interface of each device into a table. Static routing enables more control but requires more work to maintain the table. The table must be updated each time routes are added or changed.

## Per-Interface Neighbor Discovery Cache Limit

The number of entries in the Neighbor Discovery cache can be limited by interface. Once the limit is reached, no new entries are allowed. The per-interface Neighbor Discovery cache limit function can be used to prevent any particular customer attached to an interface from overloading the Neighbor Discovery cache, whether intentionally or unintentionally.

When this feature is enabled globally, a common per-interface cache size limit is configured on all interfaces on the device. When this feature is enabled per interface, a cache size limit is configured on the associated interface. The per-interface limit overrides any globally configured limit.

# How to Configure IPv6 Neighbor Discovery Cache

## Configuring a Neighbor Discovery Cache Limit on a Specified Interface

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface** *type number*
4. **ipv6 nd cache interface-limit** *size* [**log** *rate*]

### DETAILED STEPS

**Procedure**

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br>**Example:**<br>`Device> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | **configure terminal**<br>**Example:**<br>`Device# configure terminal` | Enters global configuration mode. |
| **Step 3** | **interface** *type number*<br>**Example:**<br>`Device(config)# interface GigabitEthernet 1/0/0` | Specifies an interface type and number, and places the device in interface configuration mode. |
| **Step 4** | **ipv6 nd cache interface-limit** *size* [**log** *rate*]<br>**Example:**<br>`Device(config-if)# ipv6 nd cache interface-limit 1` | Configures a Neighbor Discovery cache limit on a specified interface on the device.<br>• Issuing this command overrides any configuration that may have been created by issuing the **ipv6 nd cache interface-limit** in global configuration mode. |

# Configuring a Neighbor Discovery Cache Limit on All Device Interfaces

**SUMMARY STEPS**

1. **enable**
2. **configure terminal**
3. **ipv6 nd cache interface-limit** *size* [**log** *rate*]

**DETAILED STEPS**

**Procedure**

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | **enable**<br>**Example:**<br>`Device> enable` | Enables privileged EXEC mode.<br>• Enter your password if prompted. |
| **Step 2** | **configure terminal**<br>**Example:**<br>`Device# configure terminal` | Enters global configuration mode. |
| **Step 3** | **ipv6 nd cache interface-limit** *size* [**log** *rate*]<br>**Example:**<br>`Device(config)# ipv6 nd cache interface-limit 4` | Configures a neighbor discovery cache limit on all interfaces on the device. |

# Configuration Examples for IPv6 Neighbor Discovery Cache

## Example: Configuring a Neighbor Discovery Cache Limit

```
Device# show ipv6 interface GigabitEthernet2/0/0

Interface GigabitEthernet2/0/0, entries 2, static 0, limit 4

IPv6 Address               Age Link-layer Addr State  Interface
2001:0db8::94                 0 aabb.cc00.5d02    REACH  GE2/0/0
FE80::A8BB:CCFF:FE00:5D02  0 aabb.cc00.5d02    DELAY  GE2/0/0
```

# Additional References

### Related Documents

| Related Topic | Document Title |
|---|---|
| IPv6 addressing and connectivity | *IPv6 Configuration Guide* |
| Cisco IOS commands | Cisco IOS Master Commands List, All Releases |
| IPv6 commands | *Cisco IOS IPv6 Command Reference* |
| Cisco IOS IPv6 features | Cisco IOS IPv6 Feature Mapping |

### Standards and RFCs

| Standard/RFC | Title |
|---|---|
| RFCs for IPv6 | *IPv6 RFCs* |

### MIBs

| MIB | 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 locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:<br>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 IPv6 Neighbor Discovery

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.

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.

***Table 1: Feature Information for IPv6 Neighbor Discovery***

| Feature Name | Releases | Feature Information |
|---|---|---|
| IPv6 Neighbor Discovery | 12.0(22)S<br>12.2(2)T<br>12.2(14)S<br>12.2(17a)SX1<br>12.2(25)SG<br>12.2(28)SB<br>12.2(33)SRA<br>Cisco IOS XE Release 2.1<br>12.2(50)SY<br>15.0(1)SY<br>3.2.0SG | The IPv6 neighbor discovery process uses ICMP messages and solicited-node multicast addresses to determine the link-layer address of a neighbor on the same network (local link), verify the reachability of a neighbor, and track neighboring devices.<br>The following commands were introduced or modified: **ipv6 nd cache expire**, **ipv6 nd na glean**, **ipv6 nd nud retry**. |
| IPv6: Neighbor Discovery Duplicate Address Detection | 12.0(22)S<br>12.2(4)T<br>12.2(17a)SX1<br>12.2(14)S<br>12.2(25)SG<br>12.2(28)SB<br>12.2(33)SRA<br>12.2(50)SY<br>15.0(1)SY<br>15.1(1)SY<br>15.3(1)S<br>Cisco IOS XE Release 2.1 | IPv6 neighbor discovery duplicate address detection is performed first on a new, link-local IPv6 address before the address is assigned to an interface (the new address remains in a tentative state while duplicate address detection is performed).<br>No commands were introduced or modified. |

| Feature Name | Releases | Feature Information |
|---|---|---|
| IPv6 Neighbor Discovery Nonstop Forwarding | 12.2(33)SRE<br>15.0(1)S<br>15.0(1)SY<br>15.1(1)SY | The IPv6 Neighbor Discovery Nonstop Forwarding feature provides IPv6 high availability support.<br>No commands were introduced or modified. |