



Enhanced IPv6 Neighbor Discovery Cache Management

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Neighbor discovery protocol enforces neighbor unreachability detection, which can detect failing nodes or devices, and changes to link-layer addresses. Neighbor unreachability detection is used to maintain reachability information for all paths between hosts and neighboring nodes, including host-to-host, host-to-device, and device-to-host communication.

The neighbor cache maintains mapping information about the IPv6 link-local or global address to the link-layer address. The neighbor cache also maintains the neighbor's reachability state, which is updated using neighbor unreachability detection. Neighbors can be in one of the following five possible states:

- DELAY—Neighbor is pending re-resolution, and traffic might flow to this neighbor.
- INCOMPLETE—Address resolution is in progress, and the link-layer address is not yet known.
- PROBE—Neighbor re-resolution is in progress, and traffic might flow to this neighbor.
- REACHABLE—Neighbor is known to be reachable within the last reachable time interval.
- STALE—Neighbor requires re-resolution, and traffic may flow to this neighbor.

Use the **ipv6 nd na glean** command to configure neighbor discovery to glean an entry from an unsolicited neighbor advertisement.

Use the **ipv6 nd nud retry** command to configure neighbor discovery to maintain an neighbor discovery cache entry for a neighbor during network disruption.

Use the **ipv6 nd cache expire refresh** command to configure the neighbor to maintain an neighbor discovery cache entry, when no traffic is sent to the neighbor.

Customizing the Parameters for IPv6 Neighbor Discovery

To customize the parameters for IPv6 neighbor discovery, perform this procedure:

Procedure

| | Command or Action | Purpose |
|---------------|--|---|
| Step 1 | enable Example: Device> enable | Enables privileged EXEC mode. Enter your password, if prompted. |
| Step 2 | configure terminal Example: Device# configure terminal | Enters global configuration mode. |
| Step 3 | interface type number Example: Device (config) # interface gigabitethernet 1/1/4 | Specifies an interface type and identifier; enters the interface configuration mode. |
| Step 4 | ipv6 nd nud retry base interval max-attempts [final-wait-time] Example: Device (config-if) # ipv6 nd nud retry 1 1000 3 | Configures the number of times neighbor unreachability detection resends neighbor solicitations. |
| Step 5 | ipv6 nd cache expire expire-time-in-seconds [refresh] Example: Device (config-if) # ipv6 nd cache expire 7200 | Configures the length of time before an IPv6 neighbor discovery cache entry expires. |
| Step 6 | ipv6 nd na glean Example: Device (config-if) # ipv6 nd na glean | Configures the length of time before an IPv6 neighbor discovery cache entry expires. |
| Step 7 | end Example: Device (config-if) # end | Exits interface configuration mode and returns to privileged EXEC mode. |
| Step 8 | show ipv6 interface Example: Device# show ipv6 interface | (Optional) Displays the usability status of interfaces that are configured for IPv6 along with neighbor discovery cache management. |

Examples: Customizing Parameters for IPv6 Neighbor Discovery

In the following example, IPv6 neighbor advertisement gleaning is enabled and the IPv6 neighbor discovery cache expiry is set to 7200 seconds (2 hours):

```
Device> enable
Device# configure terminal
Device(config)# interface Port-channel 189
Device(config-if)# no ip address
Device(config-if)# ipv6 address 2001:BD8::/64
Device(config-if)# ipv6 nd reachable-time 2700000
Device(config-if)# ipv6 nd na glean
Device(config-if)# ipv6 nd cache expire 7200
Device(config-if)# no ipv6 redirects
Device(config-if)# end
```

Additional References

Related Documents

| Related Topic | Document Title |
|--|--|
| For complete syntax and usage information for the commands used in this chapter. | See the <i>IP Command Reference (Catalyst 3850 Switches)</i> |
| For information on IPv6 Neighbor Discovery Inspection | See the <i>Security Configuration Guide (Catalyst 3850 Switches)</i> |

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.

Table 1: Feature Information for IPv6 Neighbor Discovery

| Feature Name | Releases | Feature Information |
|---|--------------------|---|
| Enhanced IPv6 Neighbor Discovery Cache Management | Cisco IOS XE 3.2SE | Neighbor discovery protocol enforces neighbor unreachability detection, which can detect failing nodes or routers, and changes to link-layer addresses. |

