Enhanced IPv6 Neighbor Discovery Cache Management

Enhanced IPv6 Neighbor Discovery Cache Management

Neighbor discovery protocol enforces the neighbor unreachability detection process to detect failing nodes, or devices, and changes to link-layer addresses. Neighbor unreachability detection process maintains the 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 reachability state of the neighbor using the neighbor unreachability detection process. Neighbors can be in one of the following five possible states:

- DELAY—Neighbor is pending re-resolution with a limited flow of traffic 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 with a limited flow of traffic to this neighbor.

- REACHABLE—Neighbor detected within the last reachable time interval.

- STALE—Neighbor requires re-resolution with a limited flow of traffic to this neighbor.

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

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

Use the **ipv6 nd cache expire refresh** command to configure the neighbor discovery protocol maintain a neighbor discovery cache entry even when no traffic flows 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

The following example shows that 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 *IP Addressing Services* section of *Command Reference (Catalyst 9400 Series Switches)*
For information on IPv6 Neighbor Discovery Inspection	See the *Security* section of *Software Configuration Guide (Catalyst 9400 Series Switches)*

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 Neigbor Discovery

Feature Name	Releases	Feature Information
Enhanced IPv6 Neighbor Discovery Cache Management	Cisco IOS XE Everest 16.6.1	Neighbor discovery protocol enforces neighbor unreachability detection, which can detect failing nodes or routers, and changes to link-layer addresses.