Enhanced IPv6 Neighbor Discovery Cache Management

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Neighbor discovery protocol enforces the neighbor unreachability detection process to detect failing nodes, or devices, and the changes to link-layer addresses. Neighbor unreachability detection process maintains the reachability information for all the 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 resolution is pending, and traffic might flow to this neighbor.
- INCOMPLETE: Address resolution is in progress, and the link-layer address is not yet known.
- PROBE: Neighbor 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 resolution, and traffic may flow 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 to 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 9600 Series Switches)*
For information on IPv6 Neighbor Discovery Inspection	See the *Security* section of *Software Configuration Guide (Catalyst 9600 Switches)*

Feature History for IPv6 Neighbor Discovery

This table provides release and related information for the features explained in this module.

These features are available in all the releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS XE Gibraltar 16.11.1	Enhanced IPv6 Neighbor Discovery Cache Management	Neighbor discovery protocol enforces neighbor unreachability detection, which can detect failing nodes or routers, and changes to link-layer addresses.
Cisco IOS XE Cupertino 17.7.1	Enhanced IPv6 Neighbor Discovery Cache Management	This feature was implemented on the Cisco Catalyst 9600 Series Supervisor 2 Module (C9600X-SUP-2).

Use the Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to https://cfnng.cisco.com/