

Neighbor Discovery Configuration

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Chapter 1 Neighbor Discovery Configuration

1.1 Neighbor Discovery Overview

A node (host and router) uses ND (Neighbor Discovery protocol) to determine the link-layer addresses of the connected neighbors and to delete invalid cache rapidly. The host also uses the neighbor to discover the packet-forwarding neighboring routers. Additionally, the node uses the ND mechanism to positively trace which neighbors are reachable or unreachable and to test the changed link-layer address. When a router or the path to a router has trouble, the host positively looks for another working router or another path.

IPv6 ND corresponds to IPv4 ARP, ICMP router discovery and ICMP redirect.

ND supports the following link types: P2P, multicast, NBMA, shared media, changeable MTU and asymmetric reachability. The ND mechanism has the following functions:

- (1) To discover routers: how the host to locate the routers on the connected links.
- (2) To discover prefixes: how the host to find a group of address prefixes, defining which destinations are on-link on the connected links.
- (3) To discover parameters: how the node to know the link-related or network-related parameters of the transmission interface.
- (4) To automatically set addresses: how the node to set the address of an interface automatically.
- (5) Address solution: When the IP of a destination is given, how a node determines the link-layer address of the on-link destination.
- (6) To determine the next hop: it is an algorithm to map the IP address of a destination to the neighboring IP. The next hop can be a router or destination.
- (7) To test unreachable neighbors: how a node to determine unreachable neighbors; if neighbor is a router, the default router can be used. If the neighbor is both router and host, it needs address resolution.
- (8) To test repeated address: how a node to determine whether a to-be-used address is not used by another node.
- (9) Redirect: how a router to notify the host of the best next hop.

1.1.1 Address Resolution

Address resolution is a procedure of resolving the link-layer address through node's IP.

Packet exchange is realized through ND request and ND notification.

- Configuring a static ND cache

In most cases, dynamic address resolution is used and static ND cache configuration is not needed. If necessary, you can set static ND cache in global mode and the system will use it to translate IP into the link-layer address. The following table shows how to set a static-IP-to-link-layer-address mapping.

Run the following relative command in global mode:

Command	Purpose
ipv6 neighbor ipv6address vlan vlanid hardware-address	Sets a static ND cache and translates IPv6 address into a link-layer address.