



## ICMP for IPv6 Redirect

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The IPv6 Redirect Messages feature enables a device to send Internet Control Message Protocol (ICMP) IPv6 neighbor redirect messages to inform hosts of better first-hop nodes (devices or hosts) on the path to a destination.

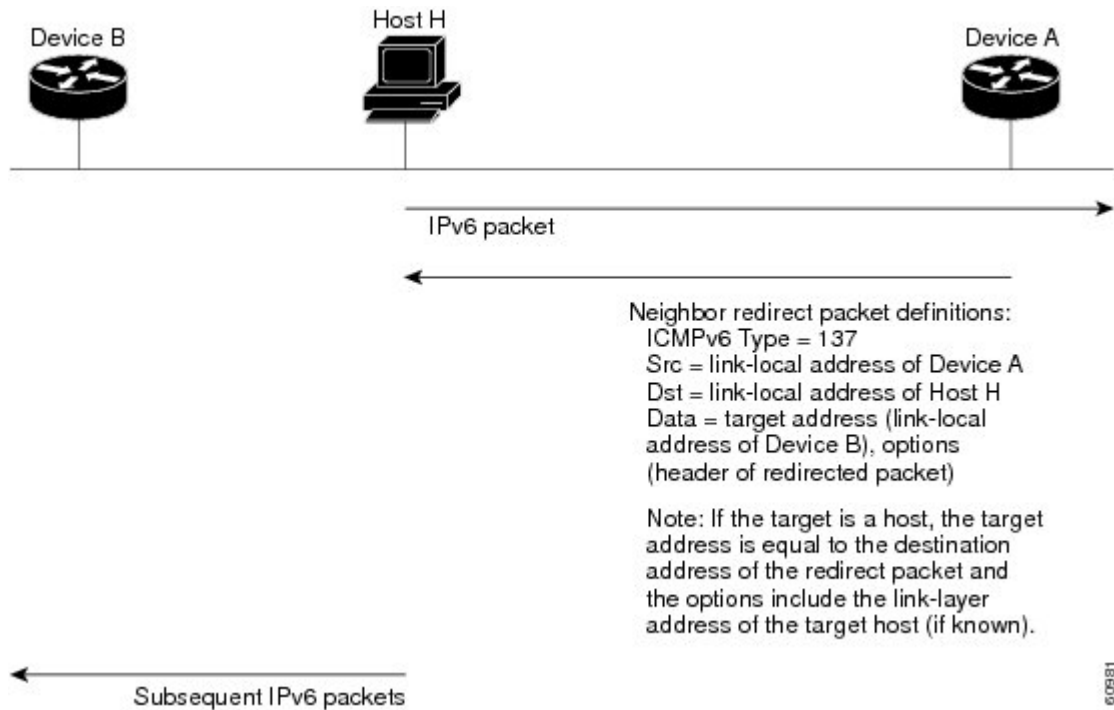
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## Information About ICMP for IPv6 Redirect

### IPv6 Neighbor Redirect Message

A value of 137 in the type field of the ICMP packet header identifies an IPv6 neighbor redirect message. Devices send neighbor redirect messages to inform hosts of better first-hop nodes on the path to a destination (see the figure below).

Figure 1: IPv6 Neighbor Discovery: Neighbor Redirect Message



**Note** A device must be able to determine the link-local address for each of its neighboring devices in order to ensure that the target address (the final destination) in a redirect message identifies the neighbor device by its link-local address. For static routing, the address of the next-hop device should be specified using the link-local address of the device; for dynamic routing, all IPv6 routing protocols must exchange the link-local addresses of neighboring devices.

After forwarding a packet, a device should send a redirect message to the source of the packet under the following circumstances:

- The destination address of the packet is not a multicast address.
- The packet was not addressed to the device.
- The packet is about to be sent out the interface on which it was received.
- The device determines that a better first-hop node for the packet resides on the same link as the source of the packet.
- The source address of the packet is a global IPv6 address of a neighbor on the same link, or a link-local address.

Use the **ipv6 icmp error-interval** command to limit the rate at which the device generates all IPv6 ICMP error messages, including neighbor redirect messages, which ultimately reduces link-layer congestion.



**Note** A device must not update its routing tables after receiving a neighbor redirect message, and hosts must not originate neighbor redirect messages.

# How to Display IPv6 Redirect Messages

## Displaying IPv6 Redirect Messages

### SUMMARY STEPS

1. **enable**
2. **show ipv6 interface** [**brief**] [*type number*] [**prefix**]
3. **show ipv6 neighbors** [*interface-type interface-number* [ *ipv6-address* | *ipv6-hostname* ] ] | **statistics**]
4. **show ipv6 route** [*ipv6-address* | *ipv6-prefix/prefix-length* | *protocol* | **interface** *interface-type interface-number*]
5. **show ipv6 traffic** [ **interface** *interface-type interface-number*]
6. **show hosts** [**vrf** *vrf-name* | **all** | *hostname* | **summary**]
7. **enable**
8. **show running-config**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b> Device# enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>show ipv6 interface</b> [ <b>brief</b> ] [ <i>type number</i> ] [ <b>prefix</b> ] <b>Example:</b> Device# show ipv6 interface gigabitethernet 0/0/0	Displays the usability status of interfaces configured for IPv6.
<b>Step 3</b>	<b>show ipv6 neighbors</b> [ <i>interface-type interface-number</i> [ <i>ipv6-address</i>   <i>ipv6-hostname</i> ] ]   <b>statistics</b> ] <b>Example:</b> Device# show ipv6 neighbors gigabitethernet 2/0/0	Displays IPv6 Neighbor Discovery cache information.
<b>Step 4</b>	<b>show ipv6 route</b> [ <i>ipv6-address</i>   <i>ipv6-prefix/prefix-length</i>   <i>protocol</i>   <b>interface</b> <i>interface-type interface-number</i> ] <b>Example:</b> Device# show ipv6 route	(Optional) Displays the current contents of the IPv6 routing table.

	Command or Action	Purpose
Step 5	<b>show ipv6 traffic</b> [ <b>interface</b> <i>interface-type</i> <i>interface-number</i> ] <b>Example:</b> Device# show ipv6 traffic	(Optional) Displays statistics about IPv6 traffic.
Step 6	<b>show hosts</b> [ <b>vrf</b> <i>vrf-name</i>   <b>all</b>   <i>hostname</i>   <b>summary</b> ] <b>Example:</b> Device# show hosts	Displays the default domain name, the style of name lookup service, a list of name server hosts, and the cached list of hostnames and addresses.
Step 7	<b>enable</b> <b>Example:</b> Device> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 8	<b>show running-config</b> <b>Example:</b> Device# show running-config	Displays the current configuration running on the device.

## Configuration Examples for ICMP for IPv6 Redirect

### Example: Displaying IPv6 Interface Statistics

In the following example, the **show ipv6 interface** command is used to verify that IPv6 addresses are configured correctly for GigabitEthernet interface 0/0/0. Information is also displayed about the status of IPv6 neighbor redirect messages, IPv6 neighbor discovery messages, and stateless autoconfiguration.

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

GigabitEthernet0/0/0 is up, line protocol is up
IPv6 is stalled, link-local address is FE80::1
Global unicast address(es):
  2001:DB8:2000::1, subnet is 2001:DB8:2000::/64
  2001:DB8:3000::1, subnet is 2001:DB8:3000::/64
Joined group address(es):
  FF02::1
  FF02::2
  FF02::1:FF00:1
MTU is 1500 bytes
ICMP error messages limited to one every 100 milliseconds
ICMP redirects are enabled
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND advertised reachable time is 0 milliseconds
ND advertised retransmit interval is 0 milliseconds
ND router advertisements are sent every 200 seconds
```

ND router advertisements live for 1800 seconds  
Hosts use stateless autoconfig for addresses.

## Additional References

### Related Documents

Related Topic	Document Title
IPv6 addressing and connectivity	<i>IPv6 Configuration Guide</i>
Cisco IOS commands	<a href="#">Cisco IOS Master Commands List, All Releases</a>
IPv6 commands	<i>Cisco IOS IPv6 Command Reference</i>
Cisco IOS IPv6 features	<i>Cisco IOS IPv6 Feature Mapping</i>

### Standards and RFCs

Standard/RFC	Title
RFCs for IPv6	<i>IPv6 RFCs</i>

### MIBs

MIB	MIBs Link
	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:  <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

### 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.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

