IPv6 Ready Certification

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IPv6 ready certification

A functionality is a network capability that

- enables compliance with the latest RFC specifications for IPv6
- supports key IPv6 packet and protocol operations, and
- ensures robust and secure IPv6 communication in modern network environments

Starting with Cisco IOS XE Bengaluru, 17.6.1, these IPv6 functionalities are implemented:

- **Fragment Processing and Reassembly (RFC8200)**: The first fragment must contain the mandatory extension header up to the first upper level protocol (ULP) header as specified in RFC 8200.
- **Handling Atomic Fragments in Neighbor Discovery (RFC6980)**: Fragmented neighbor discovery packets must be dropped.
- **Packet too Big (RFC8201)**: Atomic fragmentation is not supported. Packets that do not meet the IPv6 MTU requirement of 1280 bytes are dropped.
- **Route Information Options (RIO) in IPv6 Router Advertisements (RFC4191)**: A new RIO is added to the IPv6 Router Advertisement message to communicate specific routes from routers to hosts. Explicit route configuration ensures that only necessary routes are advertised.
- **IPv6 Hop-by-Hop Processing (RFC 8200)**: This enhancement allows explicit configuration of nodes along the delivery path for packets that require hop-by-hop options header processing.

Feature History for IPv6 ready certification

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

This feature is available in all the releases subsequent to the one in which it is introduced in, unless noted otherwise.

Table 1: Feature History for IPv6 ready certification

Release	Feature	Feature Information
Cisco IOS XE Bengaluru 17.6.1	IPv6 ready certification	This feature is enhanced with the implementation of various IPv6 functionalities that are required to comply with the latest RFC specifications.

Configure IPv6 route information (CLI)

Ensure that IPv6 hosts, especially those on multihomed networks, receive required explicit routes to improve their ability to select the appropriate default router.

The Route Information Option (RIO) in the IPv6 router advertisement messages helps in communicating specific routes from routers to hosts. This improvement enables a host to select an appropriate default router when it is multihomed and the routers are on different links. Only necessary routes are advertised to the hosts because of the explicit route configuration.

Procedure

Step 1 Enter the global configuration mode.

Example:

```
Device# configure terminal
```

Step 2 Specify the interface and enter the interface configuration mode.

Example:

```
Device(config)# interface gigabitethernet1.1
```

Step 3 Configure RIO in IPv6 router advertisement messages.

Example:

```
Device(config-if)# ipv6 nd ra specific-route prefix/length lifetime lifetime/infinity [
preference preference]
```

For more information, see the ipv6 nd ra specific route command.

Verify IPv6 route information

To identify the specific routes that are sent in the router advertisements, use this command:

```
Device# show ipv6 nd ra specific-route
IPv6 Prefix/Length Lifetime Preference Interface
---------------------------------------- -------- ---------- ---------
1234::12/127 1000 High GigabitEthernet2
```