

# Neighbor Detection Configuration Commands

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## CHAPTER 1 ND COMMANDS

Neighbor Detection (ND) commands include the following ones:

- `debug ipv6 nd`
- `show ipv6 neighbors`
- `clear ipv6 neighbors`
- `ipv6 neighbor`
- `ipv6 nd dad attempts`
- `ipv6 nd managed-flag`
- `ipv6 nd ns-interval`
- `ipv6 nd other-flag`
- `ipv6 nd prefix`
- `ipv6 nd ra-interval-range`
- `ipv6 nd ra-interval`
- `ipv6 nd ra-lifetime`
- `ipv6 nd reachable-time`
- `ipv6 nd router-preference`
- `ipv6 nd suppress-ra`

### 1.1.1. debug ipv6 nd

#### Syntax

To enable the switch of printing ND debugging information, run the following command:

```
debug ipv6 nd [entry | timer | X:X:X:X::X]
```

#### Parameter

Parameter	Description
<i>entry</i>	Stands for the switch of neighbor cache entry changes.
<i>timer</i>	Stands for the switch of neighbor cache timer changes.
<i>X:X:X:X::X</i>	Stands for the IPv6 address of neighbor cache.

#### Default value

By default, the switch of printing ND debugging information is in disabled state.

#### Command mode

EXEC

#### Usage guidelines

If the command carries with no extension parameters, all debugging switches are enabled.

### Example

N/A

### Related command

N/A

## 1.1.2. show ipv6 neighbors

### Syntax

To display the current switch's neighbor cache, run the following command:

```
show ipv6 neighbors [ vlan vlanid ]
```

### Parameter

Parameter	Description
<i>vlanid</i>	Stands for the Vlan ID.

### Default value

N/A

### Command mode

EXEC

### Usage guidelines

N/A

### Related command

N/A

## 1.1.3. clear ipv6 neighbors

### Syntax

To cancel on a switch all neighbor caches that are not configured manually, run the following command:

```
clear ipv6 neighbors
```

### Parameter

Parameter	Description
N/A	

### Default value

N/A

## Command mode

EXEC

## Usage guidelines

This command can only cancel all those neighbor caches automatically obtained by a switch itself, not those manually configured by the **ipv6 neighbor** command.

## Related command

ipv6 neighbor

### 1.1.4. ipv6 neighbor

#### Syntax

To set neighbor caches of a switch, run the following command globally:

```
ipv6 neighbor address6 vlan vlanid mac
```

#### Parameter

Parameter	Description
<i>address6</i>	Means the IPv6 address of the neighbor.
<i>vlanid</i>	Stands for the ID of the VLAN port.
<i>mac</i>	Means the link-layer address of a neighbor.

#### Default value

N/A

## Command mode

Global configuration mode

## Usage guidelines

You can use this command to set neighbor caches of a switch. These neighbor caches never times out and are always reachable until **no ipv6 neighbor** is run.

#### Example

```
IPv6_config#ipv6 neighbor 1::1 vlan 1 00:e0::4c:5a:78:eb
```

The above-mentioned example shows how to set on port e1/1 a neighbor whose IPv6 address is 1::1 and whose link-layer address is 00:e0:4c:5a:78:eb.

## Related command

show ipv6 neighbors

### 1.1.5. ipv6 nd dad attempts

#### Syntax

To set the number of transmitted NSs when ND performs DAD on a port, run the following command:

```
ipv6 nd dad attempts num
```

#### Parameter

Parameter	Description
<i>num</i>	Stands for the number of NSs transmitted during DAD.

#### Default value

1

#### Command mode

Interface configuration mode

#### Usage guidelines

You can use the “no” form of this command to resume the default value.

#### Related command

N/A

### 1.1.6. ipv6 nd managed-flag

#### Syntax

To set the M flag in the RA message transmitted by the local port, run the following command.

```
ipv6 nd managed-flag
```

#### Parameter

Parameter	Description
N/A	

#### Default value

The M flag is 0 by default.

#### Command mode

Interface configuration mode

#### Usage guidelines

This command can be used to set to 1 the M flag in the RA message transmitted by the local port, and its “no” form can be used to cancel this settings and resume its value to 0.

#### Related command

N/A

### 1.1.7. ipv6 nd ns-interval

#### Syntax

To set the NS transmission interval of the local port and configure the **retrans-timer** field in the RA message, run the following command:

```
ipv6 nd ns-interval milliseconds
```

#### Parameter

Parameter	Description
<i>milliseconds</i>	Stands for the NS transmission interval, whose unit is millisecond.

#### Default value

The default interval of transmitting NS is 1000 ms, that is, 1 second. The **retrans-timer** field in the RA message is 0 by default, which means uncertainty.

#### Command mode

Interface configuration mode

#### Usage guidelines

This command can be used to set the NS transmission interval of the local switch on the local port and at the same time the **retrans-timer** field in the RA message on the local port.

You can use the “no” form of this command to resume the default value.

#### Related command

N/A

### 1.1.8. ipv6 nd other-flag

#### Syntax

To set the O flag in the RA message transmitted by the local port, run the following command.

```
ipv6 nd other-flag
```

#### Parameter

Parameter	Description
N/A	

#### Default value

The O flag in the transmitted RA message is 0 by default.

#### Command mode

Interface configuration mode

## Usage guidelines

This command can be used to set the O flag in the RA message, which is transmitted by the local port, to 1, and its “no” form can be used to cancel this settings and resume the default settings.

## Related command

N/A

### 1.1.9. ipv6 nd prefix

## Syntax

To set the prefix of the RA message, run the first one of the following two commands:

```
ipv6 nd prefix {ipv6-prefix/prefix-length | default} [no-advertise | [valid-lifetime
preferred-lifetime [off-link | no-autoconfig]] | infinite ]
```

## Parameter

Parameter	Description
<i>ipv6-prefix</i>	Stands for the prefix of IPv6.
<i>Prefix-length</i>	Stands for the length of the prefix.
<i>Valid-lifetime</i>	Stands for the valid time.
<i>Preferred-lifetime</i>	Stands for the most privileged time.

## Default value

The default valid-lifetime is 2592000 seconds and the default preferred-lifetime is 604800 seconds.

## Command mode

Interface configuration mode

## Usage guidelines

**no-advertise** means that the prefix is not contained in the RA message.

**off-link** means that the ON-Link flag in the prefix of the RA message is 0, and **no-autoconfig** means that the AUTO-CONFIG in the prefix of the RA message is 0.

You can run **ipv6 nd prefix *ipv6-prefix/prefix-length* ...** to set a prefix under this port and run the negative form of this command to remove this prefix.

You can set the default value of the prefix by using the **ipv6 nd prefix default ...** command and cancel this settings by running the “no” form of this command.

## Example

1. IPv6\_config\_v1#ipv6 nd prefix 1::/64

The prefix “1::0/64” is added on a port and the other fields will be attributed with default values. The following RA messages will all be added with this prefix.

2. IPv6\_config\_v1#ipv6 nd prefix 2::/64 off-link

The prefix “2::/64” is added, the ON-LINK flag is 0, and other protocols are their default values.

3. IPv6\_config\_v1#ipv6 nd prefix default no-autoconfig

The default value on this port is changed to NO-AUTOCONFIG, and other protocols are their default values. If the two commands are used successfully, the third command will not influence the prefix “2::/64” configured by the second command but the prefix “1::/64” configured by the first command will change to NO-AUTOCONFIG.

### Related command

N/A

### 1.1.10. ipv6 nd ra-interval-range

#### Syntax

To set the maximum or minimum interval of RA transmission, run the following command:

```
ipv6 nd ra-interval-range max [min]
```

#### Parameter

Parameter	Description
<i>max</i>	Sets the maximum interval of RA transmission, whose unit is second.
<i>min</i>	Sets the minimum interval of RA transmission, whose unit is second.

#### Default value

The default maximum interval is 600 seconds and the default minimum interval is only 1/3 of the default maximum interval.

#### Command mode

Interface configuration mode

#### Usage guidelines

This command is always used to set the range of the RA transmission interval.

You can use the “no” form of this command to resume the default value.

#### Related command

ipv6 nd ra-interval

ipv6 nd ra-lifetime

### 1.1.11. **ipv6 nd ra-interval**

#### Syntax

To set the interval of RA transmission on the local port, run the following command:

**ipv6 nd ra-interval** *seconds*

#### Parameter

Parameter	Description
<i>seconds</i>	Sets the interval of RA transmission, whose unit is second.

#### Default value

The interval for the local port to transmit the first three messages cannot be more than 16 seconds, while that to transmit the following messages varies between the maximum interval (600 seconds) and the minimum interval (200 seconds).

#### Command mode

Interface configuration mode

#### Usage guidelines

This command is always used to set the range of the RA transmission interval for the local port.

As to the first three RA messages transmitted by the local port, if their transmission interval is less than 16 seconds, the time will be used as the transmission interval. Otherwise, the transmission interval for the first three messages is 16 seconds. The following RA messages' transmission interval is the just configured time.

You can use the “no” form of this command to resume the default value.

#### Related command

ipv6 nd ra-interval-range

### 1.1.12. **ipv6 nd ra-lifetime**

#### Syntax

To set the router-lifetime field in the RA message transmitted by the local port, run the following command.

**ipv6 nd ra-lifetime** *seconds*

#### Parameter

Parameter	Description
<i>seconds</i>	Stands for the value in the router-lifetime field in the RA message, whose unit is second.

#### Default value

1800 seconds or triple of the maximum RA transmission interval configured by **ipv6 nd ra interval max**

### Command mode

Interface configuration mode

### Usage guidelines

You can use the “no” form of this command to resume the default value.

### Related command

ipv6 nd ra-interval-range

## 1.1.13. ipv6 nd reachable-time

### Syntax

To set the reachable-time field of the RA message and the reachable time of all automatically configured neighbor caches on the local port, run the following command:

```
ipv6 nd reachable-time milliseconds
```

### Parameter

Parameter	Description
<i>milliseconds</i>	Stands for the time, whose unit is second.

### Default value

The reachable-time is 0 by default and the default reachable time for the neighbor cache is a value between 15 seconds and 45 seconds.

### Command mode

Interface configuration mode

### Usage guidelines

You can use the “no” form of this command to resume the default value.

### Related command

N/A

## 1.1.14. ipv6 nd router-preference

### Syntax

To set the value of the switch preference in the RA message, run the following command:

```
ipv6 nd router-preferenc preference
```

### Parameter

Parameter	Description
<i>Preference</i>	Stands for the preference of a switch, which can be one of the three values: high, medium and low.

**Default value**

medium

**Command mode**

Interface configuration mode

**Usage guidelines**

You can use the “no” form of this command to resume the default value.

**Related command**

N/A

**1.1.15. ipv6 nd suppress-ra****Syntax**

To stop a port to be the notification port of a switch, run the following command:

```
ipv6 nd suppress-ra
```

**Parameter**

Parameter	Description
N/A	

**Default value**

The port works as the notification port of the switch.

**Command mode**

Interface configuration mode

**Usage guidelines**

You can use the “no” form of this command to resume the default value.

**Related command**

N/A