

VYATTA, INC.



**Vyatta System**

# Guide to IPv6 Support



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## Quick Reference to Commands

Use this section to help you quickly locate a command.

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# Quick List of Examples

Use this list to help you locate an example you'd like to look at or try.

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# Preface

This document describes the various deployment, installation, and upgrade options for Vyatta software.

This preface provides information about using this guide. The following topics are presented:

- [Intended Audience](#)
- [Organization of This Guide](#)
- [Document Conventions](#)
- [Vyatta Publications](#)

## Intended Audience

This guide is intended for experienced system and network administrators. Depending on the functionality to be used, readers should have specific knowledge in the following areas:

- Networking and data communications
- TCP/IP protocols
- General router configuration
- Routing protocols
- Network administration
- Network security
- IP services

## Organization of This Guide

This guide has the following aid to help you find the information you are looking for:

- [Quick Reference to Commands](#)  
Use this list to help you quickly locate commands.
- [Quick List of Examples](#)  
Use this list to help you locate examples you'd like to try or look at.

This guide has the following chapters:

Chapter	Description	Page
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<a href="#">Chapter 2: IPv6 Configuration Examples</a>	This chapter provides configuration examples for IPv6.	6
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# Document Conventions

This guide uses the following advisory paragraphs, as follows.




---

**WARNING** Warnings alert you to situations that may pose a threat to personal safety.

---




---

**CAUTION** Cautions alert you to situations that might cause harm to your system or damage to equipment, or that may affect service.

---



---

**NOTE** Notes provide information you might need to avoid problems or configuration errors.

---

This document uses the following typographic conventions.

Monospace	Examples, command-line output, and representations of configuration nodes.
<b>bold Monospace</b>	Your input: something you type at a command line.
<b>bold</b>	Commands, keywords, and file names, when mentioned inline.  Objects in the user interface, such as tabs, buttons, screens, and panes.
<i>italics</i>	An argument or variable where you supply a value.
<key>	A key on your keyboard, such as <Enter>. Combinations of keys are joined by plus signs (“+”), as in <Ctrl>+c.
[ key1   key2 ]	Enumerated options for completing a syntax. An example is [enable   disable].
<i>num1–numN</i>	A inclusive range of numbers. An example is 1–65535, which means 1 through 65535, inclusive.
<i>arg1..argN</i>	A range of enumerated values. An example is eth0..eth3, which means eth0, eth1, eth2, or eth3.
<i>arg[ arg... ]</i> <i>arg[,arg...]</i>	A value that can optionally represent a list of elements (a space-separated list and a comma-separated list, respectively).

## Vyatta Publications

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Full product documentation is provided in the Vyatta technical library. To see what documentation is available for your release, see the *Guide to Vyatta Documentation*. This guide is posted with every release of Vyatta software and provides a great starting point for finding the information you need.

Additional information is available on [www.vyatta.com](http://www.vyatta.com) and [www.vyatta.org](http://www.vyatta.org).

# Chapter 1: IPv6 Support Overview

This chapter provides an overview of the Vyatta system's IPv6 implementation.

**NOTE** Please note also that that IPv6 forwarding is enabled by default. If you want to disable IPv6 forwarding, use the following command in configuration mode: **set system ipv6 disable-forwarding**.

This chapter presents the following topics:

- [IPv6 Background](#)
- [IPv6 Addressing](#)
- [Special Addresses](#)
- [IPv6 Auto-Configuration](#)
- [Additional IPv6 Support within the Vyatta System](#)

## IPv6 Background

---

There are two versions of the Internet Protocol in use today. Version 4 (IPv4) is the version most commonly in use. IPv6 is version 6 of the Internet Protocol. The version currently in use by most devices is version 4 (IPv4). However, there are issues with IPv4, and the Internet Engineering Task Force (IETF) has designated IPv6 to succeed IPv4 as the next-generation protocol for use on the Internet.

IPv6 has a number of advantages over IPv4. The following are four important ones:

- Large address space.

An IPv4 address consists of four bytes (32 bits). IPv6 addresses consist of 16 bytes (128 bits). The increase from 32 to 128 bits results in a huge number of available addresses: 79 billion billion billion times the addresses available in the IPv4—this is about  $10^{38}$  addresses, or  $10^{30}$  addresses for each person on the planet.

The expanded address space means that IPv6 does not face the address exhaustion problems predicted imminently for IPv4. Furthermore, the availability for so many addresses means that private address spaces are not required, and address shortage work-arounds such as Network Address Translation (NAT) can be eliminated. With no private addresses, there need be no hidden networks or hosts, and all devices can be globally reachable. A larger address space also means that features such as multihoming and aggregation are easier to implement.

- Support for mobile devices

A special protocol, Mobile IP, is required to support mobility. Mobile IP is not automatic in IPv4, and there are several challenges involved in implementing Mobile IP on an IPv4 network. In contrast, Mobile IP was designed into IPv6 from its inception, and is a mandatory feature in a standards-compliant IPv6 protocol stack.

- Flexibility

IPv6 Multiple levels of hierarchy in the address space. This allows for hierarchical allocation of addressing and more efficient route aggregation. It also permits new kinds of addresses not possible in IPv4, such as link- and site-scoped addressing

- Security

Because devices can be globally reachable, end-to-end security can be employed, which is not possible on an internetwork with hidden networks and hosts. In addition, IP security (IPSec), which is an “add-on” feature in IPv4 networks, is mandatory in IPv6 networks, designed into the IPv6 protocol stack.

## IPv6 Addressing

---

IP addresses generally take the following form:

`x:x:x:x:x:x:x`

where *x* is a 16-bit hexadecimal number; for example:

`1EF7:0000:0000:0000:51DA:27C0:E4C2:0124`

Addresses are case-insensitive; for example, the following is equivalent to the example given above:

```
1EF7:0000:0000:0000:51da:27c0:E4c2:0124
```

Leading zeros are optional; for example, the following is a valid IPv6 address:

```
1EF7:0:0:0:51DA:27C0:E4C2:124
```

IPv6 addresses often contain many bytes with a value of zero. Successive fields of zeros can be represented by replacing them with a double colon, as in the following:

```
1EF7::51DA:27C0:E4C2:124
```

Similarly the following:

```
1EF7::124
```

is equivalent to the following:

```
1EF7:0:0:0:0:0:0:0124
```

and this:

```
0:0:0:0:0:0:0:1
```

is equivalent to this:

```
::1
```

The replacement by the double colon may be made only once within an address, as using the double colon more than once can result in ambiguity. For example, the following:

```
1EF7::27C0::E4C2:0124
```

is ambiguous between these three addresses:

```
1EF7:0000:27C0:0000:0000:0000:E4C2:0124
```

```
1EF7:0000:0000:27C0:0000:0000:E4C2:0124
```

```
1EF7:0000:0000:0000:27C0:0000:E4C2:0124
```

IPv6 addresses that are extensions of IPv4 addresses can be written in a mixed notation, where the the rightmost four bytes of the IPv6 address are replaced with the four decimal octets of the IPv4 address. In mixed notation, the four hexadecimal bytes are separated by colons and the four decimal octets are separated by dots, as in the following example:

```
1EF7:0:0:0:192.168.100.51
```

## Special Addresses

Like IPv4, IPv6 has some special addresses, which are used by convention for special functions. For unicast addresses, these include the following:

- The unspecified address. This address is used as a placeholder ) when no address is available (for example, in an initial DHCP address), or to stand for “any” address. In IPv6, the unspecified address can be represented as either of the following:

```
0:0:0:0:0:0:0:0
```

::

- The localhost (loopback) interface. The loopback interface is a software interface that represents the local device itself. In IPv4, the address 127.0.0.1 is used by convention for the loopback interface. In IPv6, the loopback interface can be represented by either of the following:

0:0:0:0:0:0:0:1

::1

The IPv6 address architecture is quite rich, and includes types of addressing unavailable in IPv4, such as unicast and multicast scoped addresses, aggregatable global addresses, and anycast addresses. Multicast broadcast addresses do not exist in IPv6. For more information about the IPv6 address architecture, consult RFC 4291, *IP Version 6 Addressing Architecture*.

## IPv6 Auto-Configuration

---

IPv6 supports two mechanisms for automatically configuring devices with IP addresses: stateful and stateless. Both are supported in the Vyatta system

In stateful configuration, addressing and service information is distributed by a protocol (DHCPv6) in the same way that the Dynamic Host Configuration Protocol (DHCP) distributes information for IPv4. This information is “stateful” in that both the DHCP server and the DHCP client must maintain the addressing and service information.

Stateless configuration uses the Stateless Address Auto-Configuration (SLAAC) protocol, which is a component of the larger Neighbor Discover (ND) protocol. SLAAC has a host component and a router component.

In the host component of SLAAC, the IPv6 system constructs its own unicast global address from the system’s network prefix together with its Ethernet media access control (MAC) address. The device proposes this address to the network, without requiring approval from a server such as a DHCP server. The combination of network prefix and MAC address is assumed to be unique. Stateless auto-configuration is performed by default by most IPv6 systems, including the Vyatta system.

In the router component of SLAAC, routers multicast ND Router Advertisement (RA) and Router Solicitation (RS) packets that include prefix information. Hosts receive these advertisements and use them to form globally unique IPv6 addresses. The RS and RA packets also provide the router discovery function, allowing hosts to locate routers that are configured to serve as default routers. The Vyatta system fully supports router-side SLAAC and router discovery, including all required configurable parameters.

The ND protocol and the router discovery function are specified in RFC 4861. IPv6 Stateless Address Auto-Configuration is described in RFC 4862.



# Additional IPv6 Support within the Vyatta System

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In addition to the general IPv6 information found in this document, information pertinent to other parts of the Vyatta system are found within the applicable documents.

- Static IPv6 routing information can be found in the *Vyatta Basic Routing Reference Guide*.
- RIPng-related dynamic IPv6 routing information can be found in the *Vyatta RIPng Reference Guide*.
- BGP-related dynamic IPv6 routing information can be found in the *Vyatta BGP Reference Guide*.
- DHCPv6-related information can be found in the *Vyatta Services Reference Guide* as well as the *Vyatta LAN Interfaces Reference Guide*.
- Tunneling IPv6 over IPv4 is discussed in the *Vyatta Tunnels Reference Guide*.

## Chapter 2: IPv6 Configuration Examples

This chapter provides configuration examples for IPv6.

This chapter presents the following topics:

- [IPv6 Basics](#)

## IPv6 Basics

---

This section provides an overview of how to provide basic IPv6 configuration and operation. This section presents the following topics:

- [Verify IPv6 Support](#)
- [Configure an IPv6 Address on an Interface](#)
- [Display the IPv6 Routing Table](#)
- [Confirm Connectivity](#)
- [Display IPv6 Neighbor Discovery \(ND\) Cache](#)
- [Clear ND Cache](#)

### Verify IPv6 Support

A simple step to verify that IPv6 support is available is to ping the loopback interface. To verify IPv6 support, perform the following step in operational mode.

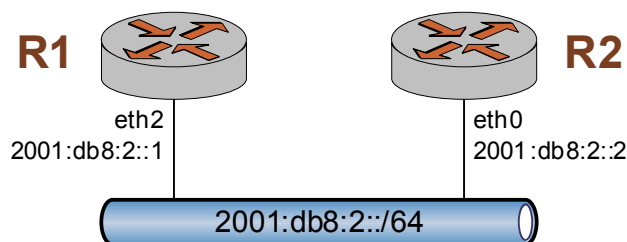
Example 2-1 Confirm IPv6 support

Step	Command
Ping the loopback interface.	<pre>vyatta@R1:~\$ ping6 ::1 PING ::1(::1) 56 data bytes 64 bytes from ::1: icmp_seq=1 ttl=64 time=2.13 ms 64 bytes from ::1: icmp_seq=2 ttl=64 time=0.086 ms ^C --- ::1 ping statistics --- 2 packets transmitted, 2 received, 0% packet loss, time 1006ms rtt min/avg/max/mdev = 0.086/1.112/2.138/1.026 ms</pre>

### Configure an IPv6 Address on an Interface

[Figure 2-1](#) shows a simple network with two IPv6 nodes.

Figure 2-1 IPv6 address on an interface



IPv6 addresses are configured on Ethernet interfaces in the same way that IPv4 addresses are. To configure eth2 on R1, perform the following steps in configuration mode.

#### Example 2-2 Add an IPv6 address to eth2 on R1

Step	Command
Add the IPv6 address to the eth2 interface.	vyatta@R1# <b>set interfaces ethernet eth2 address 2001:db8:2::1/64</b>
Commit the change.	vyatta@R1# <b>commit</b>
Change to operational mode	vyatta@R1# <b>exit</b> exit vyatta@R1:~\$
Show the status of the interfaces on R1.	vyatta@R1:~\$ <b>show interfaces</b>
	<pre> Interface IP Address      State  Link  Description eth0      -                    up     up eth1      -                    up     up eth2      2001:DB8:2::1/64    up     up eth3      -                    up     up lo        127.0.0.1/8         up     up lo        ::1/128              up     up </pre>

To configure eth0 on R2, perform the following steps in configuration mode.

#### Example 2-3 Add an IPv6 address to eth0 on R2

Step	Command
Add the IPv6 address to the eth0 interface.	vyatta@R2# <b>set interfaces ethernet eth0 address 2001:db8:2::2/64</b>
Commit the change.	vyatta@R2# <b>commit</b>

**Example 2-3** Add an IPv6 address to eth0 on R2

---

Change to operational mode	vyatta@R2# <b>exit</b> exit vyatta@R2:~\$			
Show the status of the interfaces on R2.	vyatta@R2:~\$ <b>show interfaces</b>			
	Interface	IP Address	State	Link
	Description			
	eth0	2001:DB8:2::2/64	up	up
	eth1	-	up	up
	eth2	-	up	up
	lo	127.0.0.1/8	up	up
	lo	::1/128	up	up

---

## Display the IPv6 Routing Table

When an IPv6 address is added to an interface a connected network for it appears in the routing table. To display the routing table, perform the following step in operational mode.

**Example 2-4** Display the IPv6 routing table

---

Step	Command
Show the routing table.	vyatta@R1:~\$ <b>show ipv6 route</b> Codes: K - kernel route, C - connected, S - static, R - RIPng, O - OSPFv3, I - ISIS, B - BGP, * - FIB route.  C>* ::1/128 is directly connected, lo C>* 2001:db8:2::/64 is directly connected, eth2 C * fe80::/64 is directly connected, eth2 C * fe80::/64 is directly connected, eth1 C>* fe80::/64 is directly connected, eth0 K>* ff00::/8 is directly connected, eth2

---

## Confirm Connectivity

To confirm that R1 and R2 can communicate, use the **ping6** command. To confirm connectivity, perform the following step in operational mode.

## Example 2-5 Confirm connectivity between R1 and R2

Step	Command
Ping R2 from R1.	<pre>vyatta@R1:~\$ ping6 2001:db8:2::2 PING 2001:db8:2::2(2001:db8:2::2) 56 data bytes 64 bytes from 2001:db8:2::2: icmp_seq=1 ttl=64 time=6.52 ms 64 bytes from 2001:db8:2::2: icmp_seq=2 ttl=64 time=0.333 ms ^C --- 2001:db8:2::2 ping statistics --- 2 packets transmitted, 2 received, 0% packet loss, time 1013ms rtt min/avg/max/mdev = 0.333/3.427/6.522/3.095 ms</pre>

## Display IPv6 Neighbor Discovery (ND) Cache

To display a list of neighbors in the Neighbor Discovery (ND) cache, use the **show ipv6 neighbors** command. To display the ND cache, perform the following step in operational mode.

## Example 2-6 Display the ND cache

Step	Command
Display the list of known neighbors.	<pre>vyatta@R1:~\$ show ipv6 neighbors 2001:db8:2::2 dev eth2 lladdr 00:0c:29:4e:fc:b6 router REACHABLE fe80::20c:29ff:fe4e:fc:b6 dev eth2 lladdr 00:0c:29:4e:fc:b6 DELAY</pre>

## Clear ND Cache

To clear the Neighbor Discovery (ND) cache, use the **clear ipv6 neighbors** command. To clear the ND cache on interface eth2, perform the following step in operational mode.

## Example 2-7 Clear the ND cache

Step	Command
Clear the list of known neighbors on eth2.	<pre>vyatta@R1:~\$ clear ipv6 neighbors interface eth2</pre>

## Chapter 3: IPv6 Commands

This chapter describes IPv6 commands.

This chapter contains the following commands.

<b>Configuration Commands</b>	
<b>System Commands</b>	
<code>system ipv6 blacklist</code>	Disables IPv6 on the system.
<code>system ipv6 disable</code>	Disables assignment of IPv6 addresses on all interfaces.
<code>system ipv6 disable-forwarding</code>	Disables IPv6 forwarding on all interfaces.
<code>system ipv6 strict-dad</code>	Disables IPv6 operation on an interface when DAD fails for a link-local address.
<b>Operational Commands</b>	
<b>System Management</b>	
<code>clear ipv6 neighbors address &lt;ipv6&gt;</code>	Clears a specific IPv6 address from the IPv6 ND cache.
<code>clear ipv6 neighbors interface &lt;ethx&gt;</code>	Clears the system's IPv6 ND cache for a specific interface.
<code>show ipv6 neighbors</code>	Displays the system's IPv6 ND cache.
<b>Diagnostics</b>	
<code>ping6 &lt;host&gt;</code>	Sends ICMP ECHO_REQUEST packets to IPv6 network hosts.
<code>traceroute6 &lt;host&gt;</code>	Displays the route packets take to an IPv6 network host.



---

## clear ipv6 neighbors address <ipv6>

Clears a specific IPv6 address from the IPv6 ND cache.

---

### Syntax

```
clear ipv6 neighbors address ipv6
```

---

### Command Mode

Operational mode.

---

### Parameters

<i>ipv6</i>	Clears the ND (Neighbor Discovery) cache of the specified IPv6 address.
-------------	---

---

### Default

None.

---

### Usage Guidelines

Use this command to remove entries associated with a specific IPv6 address from the Neighbor Discovery cache.

---

## clear ipv6 neighbors interface <ethx>

Clears the system's IPv6 ND cache for a specific interface.

---

### Syntax

```
clear ipv6 neighbors interface ethx
```

---

### Command Mode

Operational mode.

---

### Parameters

---

<i>ethx</i>	Clears the entire IPv6 ND (Neighbor Discovery) cache for the specified Ethernet interface. The range of values is <b>eth0</b> to <b>eth23</b> .
-------------	---

---

### Default

None.

---

### Usage Guidelines

Use this command to remove entries associated with an Ethernet interface from the IPv6 Neighbor Discovery cache.

## ping6 <host>

Sends ICMP ECHO\_REQUEST packets to IPv6 network hosts.

---

### Syntax

**ping6** *host*

---

### Command Mode

Operational mode

---

### Parameters

---

<i>host</i>	The host being pinged. Can be specified either as name (if DNS is being used on the network) or as an IPv6 address.
-------------	---

---

---

### Usage Guidelines

The `ping6` command is used to test whether an IPv6 network host is reachable or not.

The `ping6` command uses the ICMP protocol's mandatory ECHO\_REQUEST datagram to elicit an ICMP ECHO\_RESPONSE from a host or gateway. ECHO\_REQUEST datagrams (pings) have an IP and ICMP header, followed by a "struct timeval" and then an arbitrary number of pad bytes used to fill out the packet.

To interrupt the `ping6` command, press **<Ctrl>+c**.

When using `ping6` for fault isolation, it should first be run on the local host, to verify that the local network interface is up and running. Then, hosts and gateways further and further away should be "pinged". Round-trip times and packet loss statistics are computed.

If duplicate packets are received, they are not included in the packet loss calculation, although the round-trip time of these packets is used in calculating the minimum/average/maximum round-trip time numbers. When the specified number of packets have been sent (and received) or if the program is terminated, a brief summary is displayed.

## show ipv6 neighbors

Displays the system's IPv6 ND cache.

---

### Syntax

```
show ipv6 neighbors
```

---

### Command Mode

Operational mode.

---

### Parameters

None.

---

### Default

None.

---

### Usage Guidelines

Use this command to display the system's IPv6 ND (Neighbor Discovery) cache.

[Table 3-1](#) shows possible ND states.

Table 3-1 ND states

State	Description
incomplete	Address resolution is currently being performed on this neighbor entry. A neighbor solicitation message has been sent but a reply has not yet been received.
reachable	Address resolution has determined that the neighbor is reachable. Positive confirmation has been received and the path to this neighbor is operationable.
stale	More than the configured elapsed time has passed since reachability confirmation was received from this neighbor.
delay	More than the configured elapsed time has passed since reachability confirmation was received from this neighbor. This state allows TCP to confirm the neighbor. If not, a probe should be sent after the next delay time has elapsed.

Table 3-1 ND states

<b>State</b>	<b>Description</b>
probe	A solicitation has been sent and the router is waiting for a response from this neighbor.
failed	Neighbor reachability state detection failed.
noarp	The neighbor entry is valid. There will be no attempts to validate it but it can be removed from the cache when its lifetime expires.
permanent	The neighbor entry is valid indefinitely and should not be cleared from the cache.
none	No state is defined

---

## system ipv6 blacklist

Disables IPv6 on the system.

---

### Syntax

```
set system ipv6 blacklist
delete system ipv6 blacklist
show system ipv6
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
system {
  ipv6 {
    blacklist
  }
}
```

---

### Parameters

None.

---

### Default

IPv6 is enabled on the system.

---

### Usage Guidelines

Use this command to disable IPv6 on the system.

Use the **set** form of this command to disable IPv6 on the system.

Use the **delete** form of this command to enable IPv6 on the system.

Use the **show** form of this command to display the configuration.

---

## system ipv6 disable

Disables assignment of IPv6 addresses on all interfaces.

---

### Syntax

```
set system ipv6 disable
delete system ipv6 disable
show system ipv6 disable
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
system {
  ipv6 {
    disable
  }
}
```

---

### Parameters

None.

---

### Default

IPv6 addresses are assigned on all interfaces.

---

### Usage Guidelines

Use this command to disable the assignment of IPv6 addresses on all interfaces.

Use the **set** form of this command to disable IPv6 address assignment on all interfaces.

Use the **delete** form of this command to enable IPv6 address assignment on all interfaces.

Use the **show** form of this command to display the configuration.

## system ipv6 disable-forwarding

Disables IPv6 forwarding on all interfaces.

---

### Syntax

```
set system ipv6 disable-forwarding
delete system ipv6 disable-forwarding
show system ipv6 disable-forwarding
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
system {
  ipv6 {
    disable-forwarding
  }
}
```

---

### Parameters

None.

---

### Default

IPv6 packets are forwarded.

---

### Usage Guidelines

Use this command to disable IPv6 forwarding on all interfaces. IPv6 forwarding can also be disabled on a per interface basis using [interfaces <interface> ipv6 disable-forwarding command](#).

Use the **set** form of this command to disable IPv6 packet forwarding on all interfaces.

Use the **delete** form of this command to enable IPv6 packet forwarding on all interfaces.

Use the **show** form of this command to display the configuration.



## system ipv6 strict-dad

Disables IPv6 operation on an interface when DAD fails for a link-local address.

---

### Syntax

```
set system ipv6 strict-dad
delete system ipv6 strict-dad
show system ipv6 strict-dad
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
system {
  ipv6 {
    strict-dad
  }
}
```

---

### Parameters

None.

---

### Default

IPv6 operation is not disabled on an interface where Duplicate Address Detection (DAD) fails for a link-local address.

---

### Usage Guidelines

Use this command to disable IPv6 operation on an interface where Duplicate Address Detection fails for a link-local address. Link-local addresses are formed from an interface identifier based on the hardware address, which is supposed to be uniquely assigned. By default the duplicate address is not assigned to the interface but IPv6 continues to operate. This command disables IPv6 on the interface when a duplicate of the link-local address is detected.

Use the **set** form of this command to disable IPv6 operation on an interface when DAD fails for a link-local address.

Use the **delete** form of this command to leave IPv6 operational on an interface when DAD fails for a link-local address.

Use the **show** form of this command to display the configuration.

## traceroute6 <host>

Displays the route packets take to an IPv6 network host.

---

### Syntax

```
traceroute6 host
```

---

### Command Mode

Operational mode

---

### Parameters

---

<i>host</i>	The host that is the destination for the packets. Can be specified either as name (if DNS is being used on the network) or as an IPv6 address.
-------------	--

---

---

### Usage Guidelines

Traceroute utilizes the IP protocol time to live (“ttl”) field and attempts to elicit an ICMP TIME\_EXCEEDED response from each gateway along the path to some host to track the route a set of packets follows. It attempts to trace the route an IP packet would follow to some internet host by launching UDP probe packets with a small ttl then listening for an ICMP “time exceeded” reply from a gateway.

# Chapter 4: IPv6 Interface Commands

This chapter describes commands for configuring IPv6 on various interfaces.

This chapter presents the following topics:

- [IPv6 Interface Commands](#)

# IPv6 Interface Commands

This chapter contains the following commands.

Configuration Commands	
<code>interfaces &lt;interface&gt; ipv6 address</code>	Assigns an IPv6 address to an interface.
<code>interfaces &lt;interface&gt; ipv6 disable-forwarding</code>	Disables IPv6 forwarding on an interface.
<code>interfaces &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;num&gt;</code>	Specifies the number of times to transmit NS packets as part of the DAD process.
<code>interfaces &lt;interface&gt; ipv6 router-advert</code>	Specifies Router Advertisement (RA) settings on an interface.
<code>interfaces &lt;interface&gt; ipv6 router-advert cur-hop-limit &lt;limit&gt;</code>	Specifies the Hop Count field of the IP header for outgoing (unicast) IP packets.
<code>interfaces &lt;interface&gt; ipv6 router-advert default-lifetime &lt;lifetime&gt;</code>	Specifies the lifetime associated with the default router.
<code>interfaces &lt;interface&gt; ipv6 router-advert link-mtu &lt;mtu&gt;</code>	Specifies the MTU used in router advertisements.
<code>interfaces &lt;interface&gt; ipv6 router-advert managed-flag &lt;state&gt;</code>	Specifies whether hosts use the administered protocol for address autoconfiguration.
<code>interfaces &lt;interface&gt; ipv6 router-advert max-interval &lt;interval&gt;</code>	Specifies the maximum time allowed between sending unsolicited multicast router advertisements.
<code>interfaces &lt;interface&gt; ipv6 router-advert min-interval &lt;interval&gt;</code>	Specifies the minimum time allowed between sending unsolicited multicast router advertisements.
<code>interfaces &lt;interface&gt; ipv6 router-advert other-config-flag &lt;state&gt;</code>	Specifies whether hosts use the administered protocol for autoconfiguration of non-address information.
<code>interfaces &lt;interface&gt; ipv6 router-advert prefix &lt;ipv6net&gt;</code>	Specifies the IPv6 prefix that is to be advertised on the interface.
<code>interfaces &lt;interface&gt; ipv6 router-advert prefix &lt;ipv6net&gt; autonomous-flag &lt;state&gt;</code>	Specifies that the prefix can be used for autonomous address configuration.
<code>interfaces &lt;interface&gt; ipv6 router-advert prefix &lt;ipv6net&gt; on-link-flag &lt;state&gt;</code>	Specifies that the prefix can be used for on-link determination.
<code>interfaces &lt;interface&gt; ipv6 router-advert prefix &lt;ipv6net&gt; preferred-lifetime &lt;lifetime&gt;</code>	Specifies the length of time addresses generated from the prefix via SLAAC remain preferred.
<code>interfaces &lt;interface&gt; ipv6 router-advert prefix &lt;ipv6net&gt; valid-lifetime &lt;lifetime&gt;</code>	Specifies the length of time the prefix remains valid for on-link determination.

---

<code>interfaces &lt;interface&gt; ipv6 router-advert reachable-time &lt;time&gt;</code>	Specifies the length of time a node assumes a neighbor is reachable after receiving a reachability confirmation.
<code>interfaces &lt;interface&gt; ipv6 router-advert retrans-timer &lt;time&gt;</code>	Specifies the length of time between retransmitted Neighbor Solicitation messages.
<code>interfaces &lt;interface&gt; ipv6 router-advert send-advert &lt;state&gt;</code>	Specifies whether or not router advertisements are sent from this interface.

---

<b>Operational Commands</b>	
None.	

---

## interfaces <interface> ipv6 address

Assigns an IPv6 address to an interface.

---

### Syntax

```
set interfaces interface ipv6 address [autoconf | eui64 ipv6prefix]  
delete interfaces interface ipv6 address [autoconf | eui64 ipv6prefix]  
show interfaces interface ipv6 address [autoconf | eui64]
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {  
    ipv6 {  
        address {  
            autoconf  
            eui64 ipv6prefix  
        }  
    }  
}
```

---

### Parameters

---

<i>interface</i>	Mandatory. The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<b>autoconf</b>	Specifies that the interface will generate an IPv6 address using the SLAAC (Stateless Address Auto-Configuration) protocol as defined in RFC 4862. This parameter is set if the interface is performing a “host” function rather than a “router” function. In addition to this parameter being set, IPv6 forwarding must be disabled either globally or on this interface in order for the system to acquire addresses on this interface using SLAAC. This parameter can be specified in addition to static IPv6, static IPv4, and IPv4 DHCP addresses on the interface.

---

---

<i>ipv6prefix</i>	The 64-bit IPv6 address prefix used to configure an IPv6 address using EUI-64 format. The system concatenates this prefix with a 64-bit EUI-64 value that is formed based on the 48-bit MAC address of the interface.
-------------------	---

---

### Default

None.

### Usage Guidelines

Use this command to specify an IPv6 address on an interface.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i></code> bridged-ethernet	<i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.  <i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b> , where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i></code> classical-ipoa	<i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.  <i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b> , where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa</code> <i>num</i>	<i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.  <i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b> , where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.  <i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.

---



Interface Type	Syntax	Parameters
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Ethernet Vif PPPoE	<code>ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Loopback	<code>loopback <i>lo</i></code>	<i>lo</i> The name of the loopback interface.

Interface Type	Syntax	Parameters
Multilink	multilink <i>mlx</i> vif <i>1</i>	<p><i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”).</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.</p>
OpenVPN	openvpn <i>vtunx</i>	<p><i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b>, where <i>x</i> is a non-negative integer.</p>
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<p><i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b>.</p>
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dci</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>dci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.</p>
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Tunnel	tunnel <i>tunx</i>	<p><i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b>.</p>
Wireless	wireless <i>wlanx</i>	<p><i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b>.</p>
Wireless Modem	wirelessmodem <i>wlmx</i>	<p><i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b>.</p>

Use the **set** form of this command to specify an IPv6 address for the interface.

Use the **delete** form of this command to delete an IPv6 address from the interface.

Use the **show** form of this command to view the IPv6 address configuration settings.

## interfaces <interface> ipv6 disable-forwarding

Disables IPv6 forwarding on an interface.

---

### Syntax

```
set interfaces interface ipv6 disable-forwarding
delete interfaces interface ipv6 disable-forwarding
show interfaces interface ipv6 disable-forwarding
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
    ipv6 {
        disable-forwarding
    }
}
```

---

### Parameters

None.

---

### Default

IPv6 packets are forwarded.

---

### Usage Guidelines

Use this command to disable IPv6 packet forwarding on an interface. IPv6 forwarding can also be disabled globally (for all interfaces) using [system ipv6 disable-forwarding command](#).

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>

Interface Type	Syntax	Parameters
Bridge	bridge <i>brx</i>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	ethernet <i>ethx</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	ethernet <i>ethx</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Ethernet Vif	ethernet <i>ethx</i> vif <i>vlan-id</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.
Ethernet Vif PPPoE	ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	loopback <i>lo</i>	<i>lo</i> The name of the loopback interface.
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.

Interface Type	Syntax	Parameters
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dcli</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>dcli</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.</p>
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .
Wireless Modem	wirelessmodem <i>wlmx</i>	<i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

Use the **set** form of this command to disable IPv6 packet forwarding on an interface.

Use the **delete** form of this command to enable IPv6 packet forwarding on an interface.

Use the **show** form of this command to display the configuration.

## interfaces <interface> ipv6 dup-addr-detect-transmits <num>

Specifies the number of times to transmit NS packets as part of the DAD process.

---

### Syntax

```
set interfaces interface ipv6 dup-addr-detect-transmits num
delete interfaces interface ipv6 dup-addr-detect-transmits
show interfaces interface ipv6 dup-addr-detect-transmits
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
    ipv6 {
        dup-addr-detect-transmits num
    }
}
```

---

### Parameters

<i>interface</i>	Mandatory. The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>num</i>	The number of times to transmit Neighbor Solicitation (NS) packets as part of the Duplicate Address Detection (DAD) process. The default is 1.

---

### Default

One NS packet is transmitted as part of the DAD process.

---

### Usage Guidelines

Use this command to specify the number of times to transmit Neighbor Solicitation (NS) packets as part of the Duplicate Address Detection (DAD) process.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>



Interface Type	Syntax	Parameters
Bridge	bridge <i>brx</i>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	ethernet <i>ethx</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	ethernet <i>ethx</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Ethernet Vif	ethernet <i>ethx</i> vif <i>vlan-id</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.
Ethernet Vif PPPoE	ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	loopback <i>lo</i>	<i>lo</i> The name of the loopback interface.
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.

Interface Type	Syntax	Parameters
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dci</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>dci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.</p>
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .
Wireless Modem	wirelessmodem <i>wlmx</i>	<i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

Use the **set** form of this command to specify the number of times to transmit Neighbor Solicitation (NS) packets as part of the Duplicate Address Detection (DAD) process.

Use the **delete** form of this command to delete the parameter from the interface and use the default value.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert

Specifies Router Advertisement (RA) settings on an interface.

---

### Syntax

```
set interfaces interface ipv6 router-advert
delete interfaces interface ipv6 router-advert
show interfaces interface ipv6 router-advert
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
    ipv6 {
        router-advert {
        }
    }
}
```

---

### Parameters

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
------------------	---

---

### Default

Router Advertisements are not sent on an interface.

---

### Usage Guidelines

Use this command to specify that Router Advertisements (RA) are to be sent out the interface. Router Advertisements are sent out by IPv6 routers in order to advertise their existence to hosts on the network. IPv6 hosts do not send out Router Advertisements. If the **router-advert** node of the configuration tree is missing then Router Advertisements are not sent out. If IPv6 forwarding is disabled either globally

(see [system ipv6 disable-forwarding command](#)) or on the interface ([interfaces <interface> ipv6 disable-forwarding command](#)) then Router Advertisements are not sent out.

Most of the Router Advertisement parameters are required by either the Neighbor Discover (ND) protocol or the Stateless Address Auto-Configuration (SLAAC) protocol. These parameters are used both locally for the IPv6 implementation and become part of the RA messages sent to hosts on the network so that they can be configured appropriately.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i></code> <code>bridged-ethernet</code>	<i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface. <i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b> , where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i></code> <code>classical-ipoa</code>	<i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface. <i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b> , where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa</code> <code><i>num</i></code>	<i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface. <i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b> , where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically. <i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named <code>pppoa0</code> to <code>pppoa15</code> .

Interface Type	Syntax	Parameters
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Ethernet Vif PPPoE	<code>ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Loopback	<code>loopback <i>lo</i></code>	<i>lo</i> The name of the loopback interface.

Interface Type	Syntax	Parameters
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .
Wireless Modem	wirelessmodem <i>wlmx</i>	<i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

Use the **set** form of this command to create the **router-advert** configuration node and begin to send router advertisements.

Use the **delete** form of this command to remove **router-advert** configuration node and stop sending router advertisements.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert cur-hop-limit <limit>

Specifies the Hop Count field of the IP header for outgoing (unicast) IP packets.

---

### Syntax

```
set interfaces interface ipv6 router-advert cur-hop-limit limit
delete interfaces interface ipv6 router-advert cur-hop-limit
show interfaces interface ipv6 router-advert cur-hop-limit
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
  ipv6 {
    router-advert {
      cur-hop-limit limit
    }
  }
}
```

---

### Parameters

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>limit</i>	The value to be placed in the Hop Count field of the IP header for outgoing (unicast) IP packets. The range of values is 0 to 255. The default value is 64. A value of 0 means unspecified by the router.

---

### Default

The Hop Count field is set to 64.



## Usage Guidelines

Use this command to specify the value of the Hop Count field of the IP header for outgoing (unicast) IP packets. The value should be set to the current diameter of the Internet. Specifying a value of 0 indicates that it is unspecified by the router.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>

Interface Type	Syntax	Parameters
Bonding	<code>bonding bondx</code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding bondx vif vlan-id</code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> . <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.
Bridge	<code>bridge brx</code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet ethx</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet ethx pppoe num</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Ethernet Vif	<code>ethernet ethx vif vlan-id</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.
Ethernet Vif PPPoE	<code>ethernet ethx vif vlan-id pppoe num</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	<code>loopback lo</code>	<i>lo</i> The name of the loopback interface.
Multilink	<code>multilink mlx vif 1</code>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	<code>openvpn vtunx</code>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	<code>pseudo-ethernet pethx</code>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .

Interface Type	Syntax	Parameters
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dlci</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>dlci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.</p>
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Tunnel	tunnel <i>tunx</i>	<p><i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b>.</p>
Wireless	wireless <i>wlanx</i>	<p><i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b>.</p>
Wireless Modem	wirelessmodem <i>wlmx</i>	<p><i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b>.</p>

Use the **set** form of this command to specify the value of the Hop Count field of the IP header for outgoing (unicast) IP packets.

Use the **delete** form of this command to return the Hop Count field to its default value.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert default-lifetime <lifetime>

Specifies the lifetime associated with the default router.

---

### Syntax

```
set interfaces interface ipv6 router-advert default-lifetime lifetime
delete interfaces interface ipv6 router-advert default-lifetime
show interfaces interface ipv6 router-advert default-lifetime
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
    ipv6 {
        router-advert {
            default-lifetime lifetime
        }
    }
}
```

---

### Parameters

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>lifetime</i>	The lifetime associated with the default router (in seconds). The range of values is 0, and <b>max-interval</b> to 9000 (18.2 hours). 0 indicates the router is not a default router. The default value is 3 * <b>max-interval</b> .

---

### Default

The default router lifetime is 3 \* **max-interval**.

## Usage Guidelines

Use this command to specify the lifetime associated with the default router. Specifying a value of 0 indicates that the router is not a default router and should not appear on the default router list. This option applies only to the router's usefulness as a default router; it does not apply to information contained in other message fields or options. Options that need time limits for their information include their own lifetime fields.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named <code>pppoa0</code> to <code>pppoa15</code>.</p>

Interface Type	Syntax	Parameters
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Ethernet Vif PPPoE	<code>ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Loopback	<code>loopback <i>lo</i></code>	<i>lo</i> The name of the loopback interface.

Interface Type	Syntax	Parameters
Multilink	multilink <i>mlx</i> vif <i>1</i>	<p><i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”).</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.</p>
OpenVPN	openvpn <i>vtunx</i>	<p><i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b>, where <i>x</i> is a non-negative integer.</p>
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<p><i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b>.</p>
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dci</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>dci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.</p>
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Tunnel	tunnel <i>tunx</i>	<p><i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b>.</p>
Wireless	wireless <i>wlanx</i>	<p><i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b>.</p>
Wireless Modem	wirelessmodem <i>wlmx</i>	<p><i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b>.</p>

Use the **set** form of this command to specify the value of the lifetime associated with the default router.

Use the **delete** form of this command to return the lifetime option to its default value.

Use the **show** form of this command to view the configuration.



## interfaces <interface> ipv6 router-advert link-mtu <mtu>

Specifies the MTU used in router advertisements.

---

### Syntax

```
set interfaces interface ipv6 router-advert link-mtu mtu
delete interfaces interface ipv6 router-advert link-mtu
show interfaces interface ipv6 router-advert link-mtu
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
  ipv6 {
    router-advert {
      link-mtu mtu
    }
  }
}
```

---

### Parameters

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>mtu</i>	The MTU value to be advertised for the link. The range of values is 0, or 1280 to the maximum MTU for the link (see RFC 2464). The default value is 0 (meaning unspecified).

---

### Default

The MTU is not specified in the router advertisement message.

## Usage Guidelines

Use this command to specify the MTU value that will be specified in router advertisement messages. By default, the MTU is configured on the interface itself and not here. This option is used in cases where the link MTU is not well known. The system will issue a warning, but not fail, if the value set here does not match the MTU configured on the interface.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named <code>pppoa0</code> to <code>pppoa15</code>.</p>

Interface Type	Syntax	Parameters
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Ethernet Vif PPPoE	<code>ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Loopback	<code>loopback <i>lo</i></code>	<i>lo</i> The name of the loopback interface.

Interface Type	Syntax	Parameters
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dldci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dldci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .
Wireless Modem	wirelessmodem <i>wlmx</i>	<i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

Use the **set** form of this command to specify the MTU to be sent in router advertisement messages

Use the **delete** form of this command to return it to its default and cease sending the MTU in router advertisements.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert managed-flag <state>

Specifies whether hosts use the administered protocol for address autoconfiguration.

---

### Syntax

```
set interfaces interface ipv6 router-advert managed-flag state
delete interfaces interface ipv6 router-advert managed-flag
show interfaces interface ipv6 router-advert managed-flag
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
    ipv6 {
        router-advert {
            managed-flag state
        }
    }
}
```

---

### Parameters

---

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>state</i>	Allows you to enable the administered protocol for address autoconfiguration. Supported values are as follows:  <b>true:</b> Hosts use the administered (stateful) protocol for address autoconfiguration in addition to any addresses autoconfigured using stateless address autoconfiguration.  <b>false:</b> Hosts use only stateless address autoconfiguration  The default value is <b>false</b> .

---

---

## Default

Hosts use stateless address autoconfiguration.

---

## Usage Guidelines

Use this command to specify whether or not hosts use the administered (stateful) protocol for address autoconfiguration. When set (true), hosts use the administered (stateful) protocol for address autoconfiguration in addition to any addresses autoconfigured using stateless address autoconfiguration. When not set (false), host only use stateless address autoconfiguration (see RFC 4862).

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>

---

Interface Type	Syntax	Parameters
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Ethernet Vif PPPoE	<code>ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Loopback	<code>loopback <i>lo</i></code>	<i>lo</i> The name of the loopback interface.



Interface Type	Syntax	Parameters
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dlci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dlci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .
Wireless Modem	wirelessmodem <i>wlmx</i>	<i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

Use the **set** form of this command to specify whether or not hosts use the administered (stateful) protocol for address autoconfiguration.

Use the **delete** form of this command to return it to its default and only use stateless address autoconfiguration

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert max-interval <interval>

Specifies the maximum time allowed between sending unsolicited multicast router advertisements.

---

### Syntax

```
set interfaces interface ipv6 router-advert max-interval interval
delete interfaces interface ipv6 router-advert max-interval
show interfaces interface ipv6 router-advert max-interval
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
  ipv6 {
    router-advert {
      max-interval interval
    }
  }
}
```

---

### Parameters

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>interval</i>	The maximum time (in seconds) allowed between sending unsolicited multicast router advertisements from the interface. The range of supported values is 4 to 1800. The default value is 600 (10 minutes).

---

### Default

The maximum time between unsolicited multicast router messages is 600 seconds.

## Usage Guidelines

Use this command to specify the maximum time (in seconds) allowed between sending unsolicited multicast router advertisements from the interface.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p>

Interface Type	Syntax	Parameters
Bonding Vif	<code>bonding bondx vif vlan-id</code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> . <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.
Bridge	<code>bridge brx</code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet ethx</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet ethx pppoe num</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Ethernet Vif	<code>ethernet ethx vif vlan-id</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.
Ethernet Vif PPPoE	<code>ethernet ethx vif vlan-id pppoe num</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	<code>loopback lo</code>	<i>lo</i> The name of the loopback interface.
Multilink	<code>multilink mlx vif 1</code>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	<code>openvpn vtunx</code>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	<code>pseudo-ethernet pethx</code>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .

Interface Type	Syntax	Parameters
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dlci</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>dlci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.</p>
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Tunnel	tunnel <i>tunx</i>	<p><i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b>.</p>
Wireless	wireless <i>wlanx</i>	<p><i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b>.</p>
Wireless Modem	wirelessmodem <i>wlmx</i>	<p><i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b>.</p>

Use the **set** form of this command to specify the maximum time (in seconds) allowed between sending unsolicited multicast router advertisements from the interface.

Use the **delete** form of this command to return it to its default value.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert min-interval <interval>

Specifies the minimum time allowed between sending unsolicited multicast router advertisements.

---

### Syntax

```
set interfaces interface ipv6 router-advert min-interval interval
delete interfaces interface ipv6 router-advert min-interval
show interfaces interface ipv6 router-advert min-interval
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
  ipv6 {
    router-advert {
      min-interval interval
    }
  }
}
```

---

### Parameters

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>interval</i>	The minimum time (in seconds) allowed between sending unsolicited multicast router advertisements from the interface. The range of supported values is 3 to 0.75 * max-interval. The default value is 0.33 * max-interval.

---

### Default

The minimum time between unsolicited multicast router messages is 0.33 \* max-interval.

## Usage Guidelines

Use this command to specify the minimum time (in seconds) allowed between sending unsolicited multicast router advertisements from the interface.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p>



Interface Type	Syntax	Parameters
Bonding Vif	<code>bonding bondx vif vlan-id</code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> . <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.
Bridge	<code>bridge brx</code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet ethx</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet ethx pppoe num</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Ethernet Vif	<code>ethernet ethx vif vlan-id</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.
Ethernet Vif PPPoE	<code>ethernet ethx vif vlan-id pppoe num</code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	<code>loopback lo</code>	<i>lo</i> The name of the loopback interface.
Multilink	<code>multilink mlx vif 1</code>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	<code>openvpn vtunx</code>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	<code>pseudo-ethernet pethx</code>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .

Interface Type	Syntax	Parameters
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dlci</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>dlci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.</p>
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Tunnel	tunnel <i>tunx</i>	<p><i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b>.</p>
Wireless	wireless <i>wlanx</i>	<p><i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b>.</p>
Wireless Modem	wirelessmodem <i>wlmx</i>	<p><i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b>.</p>

Use the **set** form of this command to specify the minimum time (in seconds) allowed between sending unsolicited multicast router advertisements from the interface.

Use the **delete** form of this command to return it to its default value.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert other-config-flag <state>

Specifies whether hosts use the administered protocol for autoconfiguration of non-address information.

### Syntax

```
set interfaces interface ipv6 router-advert other-config-flag state
delete interfaces interface ipv6 router-advert other-config-flag
show interfaces interface ipv6 router-advert other-config-flag
```

### Command Mode

Configuration mode.

### Configuration Statement

```
interfaces interface {
    ipv6 {
        router-advert {
            other-config-flag state
        }
    }
}
```

### Parameters

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>state</i>	<p>Allows you to enable the administered protocol for autoconfiguration of non-address information (see RFC 4862). Supported values are as follows:</p> <p><b>true:</b> Hosts use the administered (stateful) protocol for autoconfiguration of non-address information.</p> <p><b>false:</b> Hosts use stateless autoconfiguration of non-address information.</p> <p>The default value is <b>false</b>.</p>

---

## Default

Hosts use stateless autoconfiguration of non-address information.

---

## Usage Guidelines

Use this command to specify whether hosts use the administered (stateful) protocol for autoconfiguration of non-address information.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>

---

Interface Type	Syntax	Parameters
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Ethernet Vif PPPoE	<code>ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Loopback	<code>loopback <i>lo</i></code>	<i>lo</i> The name of the loopback interface.

Interface Type	Syntax	Parameters
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .
Wireless Modem	wirelessmodem <i>wlmx</i>	<i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

Use the **set** form of this command to specify whether hosts use the administered protocol for autoconfiguration of non-address information.

Use the **delete** form of this command to return it to its default value.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert prefix <ipv6net>

Specifies the IPv6 prefix that is to be advertised on the interface.

---

### Syntax

```
set interfaces interface ipv6 router-advert prefix ipv6net
delete interfaces interface ipv6 router-advert prefix ipv6net
show interfaces interface ipv6 router-advert prefix [ipv6net]
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
  ipv6 {
    router-advert {
      prefix ipv6net {}
    }
  }
}
```

---

### Parameters

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>ipv6net</i>	Multi-node. The IPv6 prefix to be advertised on the IPv6 interface. It is in the format ipv6-address/prefix.

---

### Default

None.

---

### Usage Guidelines

Use this command to specify the IPv6 prefix that is to be advertised on the interface.



The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>

Interface Type	Syntax	Parameters
Bridge	bridge <i>brx</i>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	ethernet <i>ethx</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	ethernet <i>ethx</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Ethernet Vif	ethernet <i>ethx</i> vif <i>vlan-id</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.
Ethernet Vif PPPoE	ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	loopback <i>lo</i>	<i>lo</i> The name of the loopback interface.
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.

Interface Type	Syntax	Parameters
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dcli</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>dcli</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.</p>
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Tunnel	tunnel <i>tunx</i>	<p><i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b>.</p>
Wireless	wireless <i>wlanx</i>	<p><i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b>.</p>
Wireless Modem	wirelessmodem <i>wlmx</i>	<p><i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b>.</p>

Use the **set** form of this command to specify the IPv6 prefix that is to be advertised on the interface.

Use the **delete** form of this command to delete the specified IPv6 prefix.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert prefix <ipv6net> autonomous-flag <state>

Specifies that the prefix can be used for autonomous address configuration.

---

### Syntax

```
set interfaces interface ipv6 router-advert prefix ipv6net autonomous-flag state
delete interfaces interface ipv6 router-advert prefix ipv6net autonomous-flag
show interfaces interface ipv6 router-advert prefix ipv6net autonomous-flag
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
  ipv6 {
    router-advert {
      prefix ipv6net {
        autonomous-flag state
      }
    }
  }
}
```

---

### Parameters

---

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>ipv6net</i>	Multi-node. The IPv6 prefix to be advertised on the IPv6 interface. It is in the format <code>ipv6-address/prefix</code> .

---

---

<i>state</i>	<p>Allows you to enable the prefix to be used for autonomous address configuration (see RFC 4862). Supported values are as follows:</p> <p><b>true:</b> The prefix can be used for autonomous address configuration.</p> <p><b>false:</b> The prefix cannot be used for autonomous address configuration.</p> <p>The default value is <b>true</b>.</p>
--------------	--

---

### Default

The prefix can be used for autonomous address configuration.

### Usage Guidelines

Use this command to specify whether or not the prefix can be used for autonomous address configuration.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i></code> <code>bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i></code> <code>classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>

---

Interface Type	Syntax	Parameters
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>

Interface Type	Syntax	Parameters
Ethernet Vif PPPoE	ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	loopback <i>lo</i>	<i>lo</i> The name of the loopback interface.
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dlci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dlci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .

---

<b>Interface Type</b>	<b>Syntax</b>	<b>Parameters</b>
Wireless Modem	wirelessmodem <i>w/mx</i>	<i>w/mx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

---

Use the **set** form of this command to specify whether or not the prefix can be used for autonomous address configuration.

Use the **delete** form of this command to return the option to its default state.

Use the **show** form of this command to view the configuration.



## interfaces <interface> ipv6 router-advert prefix <ipv6net> on-link-flag <state>

Specifies that the prefix can be used for on-link determination.

---

### Syntax

```
set interfaces interface ipv6 router-advert prefix ipv6net on-link-flag state
delete interfaces interface ipv6 router-advert prefix ipv6net on-link-flag
show interfaces interface ipv6 router-advert prefix ipv6net on-link-flag
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
    ipv6 {
        router-advert {
            prefix ipv6net {
                on-link-flag state
            }
        }
    }
}
```

---

### Parameters

---

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>ipv6net</i>	Multi-node. The IPv6 prefix to be advertised on the IPv6 interface. It is in the format <code>ipv6-address/prefix</code> .

---

---

<i>state</i>	<p>Allows you to enable the prefix to be used for on-link determination (see RFC 4862). Supported values are as follows:</p> <p><b>true:</b> The prefix can be used for on-link determination.</p> <p><b>false:</b> The advertisement makes no statement about on-link or off-link properties of the prefix. For instance, the prefix might be used for address configuration with some addresses belonging to the prefix being on-link and others being off-link.</p> <p>The default value is <b>true</b>.</p>
--------------	---

---

### Default

The prefix can be used for on-link determination.

### Usage Guidelines

Use this command to specify whether or not the prefix can be used for on-link determination

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i></code> bridged-ethernet	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i></code> classical-ipoa	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>

---

Interface Type	Syntax	Parameters
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>

Interface Type	Syntax	Parameters
Ethernet Vif PPPoE	ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	loopback <i>lo</i>	<i>lo</i> The name of the loopback interface.
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dlci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dlci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .

---

<b>Interface Type</b>	<b>Syntax</b>	<b>Parameters</b>
Wireless Modem	wirelessmodem <i>w/mx</i>	<i>w/mx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

---

Use the **set** form of this command to specify whether or not the prefix can be used for on-link determination

Use the **delete** form of this command to return the option to its default state.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert prefix <ipv6net> preferred-lifetime <lifetime>

Specifies the length of time addresses generated from the prefix via SLAAC remain preferred.

---

### Syntax

```
set interfaces interface ipv6 router-advert prefix ipv6net preferred-lifetime lifetime
delete interfaces interface ipv6 router-advert prefix ipv6net preferred-lifetime
show interfaces interface ipv6 router-advert prefix ipv6net preferred-lifetime
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
  ipv6 {
    router-advert {
      prefix ipv6net {
        preferred-lifetime lifetime
      }
    }
  }
}
```

---

### Parameters

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>ipv6net</i>	Multi-node. The IPv6 prefix to be advertised on the IPv6 interface. It is in the format <code>ipv6-address/prefix</code> .

---

---

<i>lifetime</i>	<p>The length of time (in seconds) (relative to the time the packet is sent) that the addresses generated from the prefix via stateless address autoconfiguration (SLAAC) remain preferred. (see RFC 4862). Supported values are as follows:</p> <p>1-4294967296: The time in seconds.</p> <p><b>infinity</b>: A symbolic value representing infinity (that is a value of all one bits - 0xffffffff).</p> <p>The default value is 604800 (7 days).</p>
-----------------	--

---

### Default

Addresses generated from the prefix via SLAAC remain preferred for 604800 seconds.

### Usage Guidelines

Use this command to specify the length of time addresses generated from the prefix via SLAAC remain preferred.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>

---

Interface Type	Syntax	Parameters
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>



Interface Type	Syntax	Parameters
Ethernet Vif PPPoE	ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	loopback <i>lo</i>	<i>lo</i> The name of the loopback interface.
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dlci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dlci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .

---

<b>Interface Type</b>	<b>Syntax</b>	<b>Parameters</b>
Wireless Modem	wirelessmodem <i>w/mx</i>	<i>w/mx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

---

Use the **set** form of this command to specify the length of time addresses generated from the prefix via SLAAC remain preferred.

Use the **delete** form of this command to return the option to its default value.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert prefix <ipv6net> valid-lifetime <lifetime>

Specifies the length of time the prefix remains valid for on-link determination.

---

### Syntax

set interfaces *interface* ipv6 router-advert prefix *ipv6net* valid-lifetime *lifetime*

delete interfaces *interface* ipv6 router-advert prefix *ipv6net* valid-lifetime

show interfaces *interface* ipv6 router-advert prefix *ipv6net* valid-lifetime

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
  ipv6 {
    router-advert {
      prefix ipv6net {
        valid-lifetime lifetime
      }
    }
  }
}
```

---

### Parameters

---

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>ipv6net</i>	Multi-node. The IPv6 prefix to be advertised on the IPv6 interface. It is in the format ipv6-address/prefix.

---

---

<i>lifetime</i>	<p>The length of time (in seconds) (relative to the time the packet is sent) that the prefix is valid for the purpose of on-link determination. (see RFC 4862). Supported values are as follows:</p> <p>1-4294967296: The time in seconds.</p> <p><b>infinity</b>: A symbolic value representing infinity (that is a value of all one bits - 0xffffffff).</p> <p>The default value is 2592000 (30 days).</p>
-----------------	--

---

### Default

Prefixes remain valid for the purpose of on-link determination for 2592000 seconds.

### Usage Guidelines

Use this command to specify the length of time prefixes remain valid for the purpose of on-link determination.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa	<p><i>adslx</i> The name of a Classical IPOA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>

---

Interface Type	Syntax	Parameters
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IpoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>

Interface Type	Syntax	Parameters
Ethernet Vif PPPoE	ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system. <i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094. <i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.
Loopback	loopback <i>lo</i>	<i>lo</i> The name of the loopback interface.
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dlci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dlci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .

---

<b>Interface Type</b>	<b>Syntax</b>	<b>Parameters</b>
Wireless Modem	wirelessmodem <i>w/mx</i>	<i>w/mx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

---

Use the **set** form of this command to specify the length of time prefixes remain valid for the purpose of on-link determination.

Use the **delete** form of this command to return the option to its default value.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert reachable-time <time>

Specifies the length of time a node assumes a neighbor is reachable after receiving a reachability confirmation.

---

### Syntax

```
set interfaces interface ipv6 router-advert reachable-time time
delete interfaces interface ipv6 router-advert reachable-time
show interfaces interface ipv6 router-advert reachable-time
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
  ipv6 {
    router-advert {
      reachable-time time
    }
  }
}
```

---

### Parameters

---

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>time</i>	The length of time (in milliseconds) that a node assumes a neighbor is reachable after having received a reachability confirmation. This value is used by address resolution and the Neighbor Unreachability Detection algorithm (see Section 7.3 of RFC 2461). The range of supported values is 0 to 3600000. A value of 0 means unspecified (by this router).  The default value is 0 (unspecified by this router).

---



---

## Default

This option is 0 (unspecified by this router).

---

## Usage Guidelines

Use this command to specify the length of time a node assumes a neighbor is reachable after receiving a reachability confirmation.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>

---

Interface Type	Syntax	Parameters
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Ethernet Vif PPPoE	<code>ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Loopback	<code>loopback <i>lo</i></code>	<i>lo</i> The name of the loopback interface.

Interface Type	Syntax	Parameters
Multilink	multilink <i>mlx</i> vif <i>1</i>	<p><i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”).</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.</p>
OpenVPN	openvpn <i>vtunx</i>	<p><i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b>, where <i>x</i> is a non-negative integer.</p>
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<p><i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b>.</p>
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dci</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>dci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.</p>
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<p><i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b>. The interface must already have been defined.</p> <p><i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.</p>
Tunnel	tunnel <i>tunx</i>	<p><i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b>.</p>
Wireless	wireless <i>wlanx</i>	<p><i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b>.</p>
Wireless Modem	wirelessmodem <i>wlmx</i>	<p><i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b>.</p>

Use the **set** form of this command to specify the length of time a node assumes a neighbor is reachable after receiving a reachability confirmation.

Use the **delete** form of this command to return the option to its default value.

Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert retrans-timer <time>

Specifies the length of time between retransmitted Neighbor Solicitation messages.

---

### Syntax

```
set interfaces interface ipv6 router-advert retrans-timer time
delete interfaces interface ipv6 router-advert retrans-timer
show interfaces interface ipv6 router-advert retrans-timer
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
    ipv6 {
        router-advert {
            retrans-timer time
        }
    }
}
```

---

### Parameters

---

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>time</i>	The length of time (in milliseconds) between retransmitted Neighbor Solicitation messages. This value is used by address resolution and the Neighbor Unreachability Detection algorithm (see Sections 7.2 and 7.3 of RFC 2461). The range of supported values is 0 to 4294967295. A value of 0 means unspecified (by this router).  The default value is 0 (unspecified by this router).

---

---

## Default

This option is 0 (unspecified by this router).

---

## Usage Guidelines

Use this command to specify the length of time between retransmitted Neighbor Solicitation messages.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>

---

Interface Type	Syntax	Parameters
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Ethernet Vif PPPoE	<code>ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Loopback	<code>loopback <i>lo</i></code>	<i>lo</i> The name of the loopback interface.

Interface Type	Syntax	Parameters
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .
Wireless Modem	wirelessmodem <i>wlmx</i>	<i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

Use the **set** form of this command to specify the length of time between retransmitted Neighbor Solicitation messages.

Use the **delete** form of this command to return the option to its default value.



Use the **show** form of this command to view the configuration.

## interfaces <interface> ipv6 router-advert send-advert <state>

Specifies whether or not router advertisements are sent from this interface.

---

### Syntax

```
set interfaces interface ipv6 router-advert send-advert state
delete interfaces interface ipv6 router-advert send-advert
show interfaces interface ipv6 router-advert send-advert
```

---

### Command Mode

Configuration mode.

---

### Configuration Statement

```
interfaces interface {
    ipv6 {
        router-advert {
            send-advert state
        }
    }
}
```

---

### Parameters

---

<i>interface</i>	The type of interface. For detailed keywords and arguments that can be specified as interface types, see the table in Usage Guidelines below.
<i>state</i>	Allows you to specify whether router advertisements are sent from this interface. Supported values are as follows:  <b>true:</b> Send router advertisements from this interface.  <b>false:</b> Do not send router advertisements from this interface (parameters in this sub-tree are still used to configure the local implementation parameters).  The default value is <b>true</b> .

---

---

## Default

Router advertisements are sent from this interface.

---

## Usage Guidelines

Use this command to specify whether or not router advertisements are sent from this interface.

The following table shows the syntax and parameters for supported interface types.

Interface Type	Syntax	Parameters
ADSL Bridged Ethernet	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> bridged-ethernet</code>	<p><i>adslx</i> The name of a Bridged Ethernet- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL Classical IPOA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> classical-ipoa</code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p>
ADSL PPPoA	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoa <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named pppoa0 to pppoa15.</p>

---

Interface Type	Syntax	Parameters
ADSL PPPoE	<code>adsl <i>adslx</i> pvc <i>pvc-id</i> pppoe <i>num</i></code>	<p><i>adslx</i> The name of a Classical IPoA- encapsulated DSL interface.</p> <p><i>pvc-id</i> The identifier for the PVC. It can either be the <i>vpi/vci</i> pair or the keyword <b>auto</b>, where <i>vpi</i> is a Virtual Path Index from 0 to 255, <i>vci</i> is a Virtual Circuit Index from 0 to 65535, and <b>auto</b> directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Bonding	<code>bonding <i>bondx</i></code>	<i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b> .
Bonding Vif	<code>bonding <i>bondx</i> vif <i>vlan-id</i></code>	<p><i>bondx</i> The identifier for the bonding interface. Supported values are <b>bond0</b> through <b>bond99</b>.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Bridge	<code>bridge <i>brx</i></code>	<i>brx</i> The name of a Bridge group. The range is <b>br0</b> through <b>br999</b> .
Ethernet	<code>ethernet <i>ethx</i></code>	<i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b> , depending on the physical interfaces available on your system.
Ethernet PPPoE	<code>ethernet <i>ethx</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Ethernet Vif	<code>ethernet <i>ethx</i> vif <i>vlan-id</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p>
Ethernet Vif PPPoE	<code>ethernet <i>ethx</i> vif <i>vlan-id</i> pppoe <i>num</i></code>	<p><i>ethx</i> The name of an Ethernet interface. The range is <b>eth0</b> through <b>eth23</b>, depending on the physical interfaces available on your system.</p> <p><i>vlan-id</i> The VLAN ID for the vif. The range is 0 to 4094.</p> <p><i>num</i> The name of a defined PPPoE unit. The range is 0 to 15.</p>
Loopback	<code>loopback <i>lo</i></code>	<i>lo</i> The name of the loopback interface.

Interface Type	Syntax	Parameters
Multilink	multilink <i>mlx</i> vif <i>1</i>	<i>mlx</i> The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are <b>ml0</b> (“em ell zero”) through <b>ml23</b> (“em ell twenty-three”). <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be 1. The vif must already have been defined.
OpenVPN	openvpn <i>vtunx</i>	<i>vtunx</i> The identifier for the OpenVPN interface. This may be <b>vtun0</b> to <b>vtunx</b> , where <i>x</i> is a non-negative integer.
Pseudo-Ethernet	pseudo-ethernet <i>pethx</i>	<i>pethx</i> The name of a pseudo-Ethernet interface. The range is <b>peth0</b> through <b>peth999</b> .
Serial Cisco HDLC	serial <i>wanx</i> cisco-hdlc vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for Cisco HDLC interfaces, and the identifier must be 1. The vif must already have been defined.
Serial Frame Relay	serial <i>wanx</i> frame-relay vif <i>dci</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>dci</i> The identifier of the virtual interface. For Frame Relay interfaces, this is the DLCI number for the interface. the range is 16 to 991. The vif must already have been defined.
Serial PPP	serial <i>wanx</i> ppp vif <i>1</i>	<i>wanx</i> The serial interface you are configuring: one of <b>wan0</b> through <b>wan23</b> . The interface must already have been defined. <i>1</i> The identifier of the virtual interface. Currently, only one vif is supported for point-to-point interfaces, and the identifier must be 1. The vif must already have been defined.
Tunnel	tunnel <i>tunx</i>	<i>tunx</i> An identifier for the tunnel interface you are defining. The range is <b>tun0</b> to <b>tun23</b> .
Wireless	wireless <i>wlanx</i>	<i>wlanx</i> The identifier for the wireless interface you are using. This may be <b>wlan0</b> to <b>wlan999</b> .
Wireless Modem	wirelessmodem <i>wlmx</i>	<i>wlmx</i> The identifier for the wirelessmodem interface you are using. This may be <b>wlm0</b> to <b>wlm999</b> .

Use the **set** form of this command to specify whether or not router advertisements are sent from this interface.

Use the **delete** form of this command to return the option to its default value.

Use the **show** form of this command to view the configuration.

## Glossary of Acronyms

ACL	access control list
ADSL	Asymmetric Digital Subscriber Line
API	Application Programming Interface
AS	autonomous system
ARP	Address Resolution Protocol
BGP	Border Gateway Protocol
BIOS	Basic Input Output System
BPDU	Bridge Protocol Data Unit
CA	certificate authority
CCMP	AES in counter mode with CBC-MAC
CHAP	Challenge Handshake Authentication Protocol
CLI	command-line interface
DDNS	dynamic DNS
DHCP	Dynamic Host Configuration Protocol
DHCPv6	Dynamic Host Configuration Protocol version 6
DLCI	data-link connection identifier
DMI	desktop management interface
DMZ	demilitarized zone
DN	distinguished name
DNS	Domain Name System

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DSCP	Differentiated Services Code Point
DSL	Digital Subscriber Line
eBGP	external BGP
EGP	Exterior Gateway Protocol
ECMP	equal-cost multipath
ESP	Encapsulating Security Payload
FIB	Forwarding Information Base
FTP	File Transfer Protocol
GRE	Generic Routing Encapsulation
HDLC	High-Level Data Link Control
I/O	Input/Output
ICMP	Internet Control Message Protocol
IDS	Intrusion Detection System
IEEE	Institute of Electrical and Electronics Engineers
IGP	Interior Gateway Protocol
IPS	Intrusion Protection System
IKE	Internet Key Exchange
IP	Internet Protocol
IPOA	IP over ATM
IPsec	IP security
IPv4	IP Version 4
IPv6	IP Version 6
ISP	Internet Service Provider
L2TP	Layer 2 Tunneling Protocol
LACP	Link Aggregation Control Protocol
LAN	local area network

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LDAP	Lightweight Directory Access Protocol
LLDP	Link Layer Discovery Protocol
MAC	medium access control
MIB	Management Information Base
MLPPP	multilink PPP
MRRU	maximum received reconstructed unit
MTU	maximum transmission unit
NAT	Network Address Translation
ND	Neighbor Discovery
NIC	network interface card
NTP	Network Time Protocol
OSPF	Open Shortest Path First
OSPFv2	OSPF Version 2
OSPFv3	OSPF Version 3
PAM	Pluggable Authentication Module
PAP	Password Authentication Protocol
PAT	Port Address Translation
PCI	peripheral component interconnect
PKI	Public Key Infrastructure
PPP	Point-to-Point Protocol
PPPoA	PPP over ATM
PPPoE	PPP over Ethernet
PPTP	Point-to-Point Tunneling Protocol
PVC	permanent virtual circuit
QoS	quality of service
RADIUS	Remote Authentication Dial-In User Service

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RIB	Routing Information Base
RIP	Routing Information Protocol
RIPng	RIP next generation
Rx	receive
SLAAC	Stateless Address Auto-Configuration
SNMP	Simple Network Management Protocol
SMTP	Simple Mail Transfer Protocol
SONET	Synchronous Optical Network
SSH	Secure Shell
SSID	Service Set Identifier
STP	Spanning Tree Protocol
TACACS+	Terminal Access Controller Access Control System Plus
TCP	Transmission Control Protocol
TKIP	Temporal Key Integrity Protocol
ToS	Type of Service
Tx	transmit
UDP	User Datagram Protocol
vif	virtual interface
VLAN	virtual LAN
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
WAN	wide area network
WAP	wireless access point
WPA	Wired Protected Access

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