



## Cellular IPv6 Address

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This chapter provides an overview of the IPv6 addresses and describes how to configure Cellular IPv6 address on Cisco 4000 series ISRs.

This chapter includes this section:

- [Cellular IPv6 Address, on page 1](#)

## Cellular IPv6 Address

IPv6 addresses are represented as a series of 16-bit hexadecimal fields separated by colons (:) in the format: x:x:x:x:x:x:x:x. Following are two examples of IPv6 addresses:

- 2001:CDBA:0000:0000:0000:0000:3257:9652
- 2001:CDBA::3257:9652 (zeros can be omitted)

IPv6 addresses commonly contain successive hexadecimal fields of zeros. Two colons (::) may be used to compress successive hexadecimal fields of zeros at the beginning, middle, or end of an IPv6 address (the colons represent successive hexadecimal fields of zeros). The table below lists compressed IPv6 address formats.

An IPv6 address prefix, in the format ipv6-prefix/prefix-length, can be used to represent bit-wise contiguous blocks of the entire address space. The ipv6-prefix must be in the form documented in RFC 2373 where the address is specified in hexadecimal using 16-bit values between colons. The prefix length is a decimal value that indicates how many of the high-order contiguous bits of the address comprise the prefix (the network portion of the address). For example, 2001:cdba::3257:9652 /64 is a valid IPv6 prefix.

## IPv6 Unicast Routing

An IPv6 unicast address is an identifier for a single interface, on a single node. A packet that is sent to a unicast address is delivered to the interface identified by that address.

Cisco 4000 Series ISR supports the following address types:

- [Link-Lock Address , on page 2](#)
- [Global Address, on page 2](#)

## Link-Lock Address

A link-local address is an IPv6 unicast address that can be automatically configured on any interface using the link-local prefix FE80::/10 (1111 1110 10) and the interface identifier in the modified EUI-64 format. An link-local address is automatically configured on the cellular interface when an IPv6 address is enabled.

After the data call is established, the link-local address on the cellular interface is updated with the host generated link-local address that consists of the link-local prefix FF80::/10 (1111 1110 10) and the auto-generated interface identifier from the USB hardware address. The figure below shows the structure of a link-local address.

## Global Address

A global IPv6 unicast address is defined by a global routing prefix, a subnet ID, and an interface ID. The routing prefix is obtained from the PGW. The Interface Identifier is automatically generated from the USB hardware address using the interface identifier in the modified EUI-64 format. The USB hardware address changes after the router reloads.

## Configuring Cellular IPv6 Address

To configure the cellular IPv6 address, perform these steps:

### SUMMARY STEPS

1. **configure terminal**
2. **interface Cellular {type | number}**
3. ip address negotiated
4. encapsulation slip
5. load-interval *seconds*
6. dialer in-band
7. dialer idle-timeout *seconds*
8. dialer string *string*
9. dialer-group *group-number*
10. no peer default ip address
11. ipv6 address autoconfig
12. async mode interactive
13. routing dynamic
14. **dialer-list dialer-group protocol protocol-name {permit | deny} list | access-list-number | access-group }**
15. **ipv6 route ipv6-prefix/prefix-length 128**
16. **End**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.

	Command or Action	Purpose
<b>Step 2</b>	<b>interface Cellular {type   number}</b>  <b>Example:</b> Router(config)# interface cellular 0/1/0	Specifies the cellular interface.
<b>Step 3</b>	ip address negotiated  <b>Example:</b> Router(config-if)# ipv6 address negotiated	Specifies that the IP address for a particular interface is dynamically obtained.
<b>Step 4</b>	encapsulation slip  <b>Example:</b> Router(config-if)# encapsulation slip	Specifies Serial Line Internet Protocol (SLIP) encapsulation for an interface configured for dial-on-demand routing (DDR).
<b>Step 5</b>	load-interval <i>seconds</i>  <b>Example:</b> Router(config-if)# load-interval 30	Specifies the length of time for which data is used to compute load statistics.
<b>Step 6</b>	dialer in-band  <b>Example:</b> Router(config-if)# dialer in-band	Enables DDR and configures the specified serial interface to use in-band dialing.
<b>Step 7</b>	dialer idle-timeout <i>seconds</i>  <b>Example:</b> Router(config-if)# dialer idle-timeout 0	Specifies the dialer idle timeout period.
<b>Step 8</b>	dialer string <i>string</i>  <b>Example:</b> Router(config-if)# dialer string lte	Specifies the number or string to dial.
<b>Step 9</b>	dialer-group <i>group-number</i>  <b>Example:</b> Router(config-if)# dialer-group 1	Specifies the number of the dialer access group to which the specific interface belongs.
<b>Step 10</b>	no peer default ip address  <b>Example:</b> Router(config-if)# no peer default ip address	Removes the default address from your configuration.
<b>Step 11</b>	ipv6 address autoconfig  <b>Example:</b> Router(config-if)# ipv6 address autoconfig	Enables automatic configuration of IPv6 addresses using stateless autoconfiguration on an interface and enables IPv6 processing on the interface.
<b>Step 12</b>	async mode interactive  <b>Example:</b> Router(config-if)# async mode interactive	Please provide the inputs?

	Command or Action	Purpose
<b>Step 13</b>	routing dynamic <b>Example:</b> Router(config-if)#routing dynamic	Enables the router to pass routing updates to other routers through an interface.
<b>Step 14</b>	<b>dialer-list</b> dialer-group <b>protocol</b> protocol-name {permit  deny} <b>list</b>  access-list-number  access-group } <b>Example:</b> Router(config)# dialer-list 1 protocol ipv6 permit	Defines a dial-on-demand routing (DDR) dialer list for dialing by protocol or by a combination of a protocol and a previously defined access list.
<b>Step 15</b>	<b>ipv6 route</b> ipv6-prefix/prefix-length 128 <b>Example:</b> Router(config)#ipv6 route 2001:1234:1234::3/128 Cellular0/1/0	
<b>Step 16</b>	<b>End</b> <b>Example:</b> Router(config-if)#end	Exits to global configuration mode.

### Examples

The following example shows the Cellular IPv6 configuration .

```

Router(config)# interface Cellular0/0/0
ip address negotiated
encapsulation slip
load-interval 30
dialer in-band
dialer idle-timeout 0
dialer string lte
dialer-group 1
no peer default ip address
ipv6 address autoconfig
async mode interactive
routing dynamic
!
interface Cellular0/1/0
ip address negotiated
encapsulation slip
load-interval 30
dialer in-band
dialer idle-timeout 0
dialer string lte
dialer-group 1
no peer default ip address
ipv6 address autoconfig
async mode interactive
routing dynamic

dialer-list 1 protocol ipv6 permit
ipv6 route 2001:1234:1234::/64 Cellular0/1/0
ipv6 route 2001:4321:4321::5/128 Cellular0/1/1

```



