Cellular IPv6 Address

This chapter provides an overview of the IPv6 addresses and describes how to configure Cellular IPv6 address on Cisco Catalyst 8000 Series Edge Platform.

This chapter includes this section:

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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 Catalyst 8300 Edge Platform support the following address types:

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 celluar 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.

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. **ipv6 unicast-routing**
3. **interface Cellular** {**type** | **number**}
4. ip address negotiated
5. load-interval***seonds***
6. dialer in-band
7. dialer idle-timeout ***seonds***
8. dialer-group**group-number**
9. no peer default ip address
10. ipv6 address autoconfig or ipv6 enable
11. **dialer-listdialer-groupprotocolprotocol-name** {**permit** | deny|**list** | *access-list-number* | *access-group* }
12. **ipv6 route** *ipv6-prefix/prefix-length 128*
13. **End**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 2	**ipv6 unicast-routing** **Example:** `Router(config)# ipv6 unicast-routing`	Enables forwarding of IPv6 unicast data packets.

	Command or Action	Purpose
Step 3	**interface Cellular** {**type** | **number**} **Example:** `Router(config)# interface cellular 0/1/0`	Specifies the cellular interface.
Step 4	ip address negotiated **Example:** `Router(config-if)# ip address negotiated`	Specifies that the IP address for a particular interface is dynamically obtained.
Step 5	load-interval***seonds*** **Example:** `Router(config-if)# load-interval 30`	Specifies the length of time for which data is used to compute load statistics.
Step 6	dialer in-band **Example:** `Router(config-if)# dialer in-band`	Enables DDR and configures the specified serial interface to use in-band dialing.
Step 7	dialer idle-timeout ***seonds*** **Example:** `Router(config-if)# dialer idle-timeout 0`	Specifies the dialer idle timeout period.
Step 8	dialer-group**group-number** **Example:** `Router(config-if)# dialer-group 1`	Specifies the number of the dialer access group to which the specific interface belongs.
Step 9	no peer default ip address **Example:** `Router(config-if)# no peer default ip address`	Removes the default address from your configuration.

Step 10	ipv6 address autoconfig or ipv6 enable
	Example:
	`Router(config-if)# ipv6 address autoconfig`
	or
	`Router(config-if)# ipv6 enable`
		Enables automatic configuration of IPv6 addresses using stateless autoconfiguration on an interface and enables IPv6 processing on the interface.

Step 11	**dialer-listdialer-groupprotocolprotocol-name** {**permit** |deny|**list** |*access-list-number* | *access-group* } **Example:** `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.
Step 12	**ipv6 route** *ipv6-prefix/prefix-length 128* **Example:** `Router(config)#ipv6 route 2001:1234:1234::3/128 Cellular0/1/0`	

	Command or Action	Purpose
Step 13	**End** **Example:** `Router(config-if)#end`	Exits to global configuration mode.

Examples

The following example shows the Cellular IPv6 configuration for NIM-LTEA-EA and NIM-LTEA-LA modules.

```
Router(config)# interface Cellular0/1/0
ip address negotiated
load-interval 30
dialer in-band
dialer idle-timeout 0
lte dialer-group 1
no peer default ip address
ipv6 address autoconfig
!
interface Cellular0/1/1
ip address negotiated
load-interval 30
dialer in-band
dialer idle-timeout 0
dialer-group 1
no peer default ip address
ipv6 address autoconfig
```

The following example shows the Cellular IPv6 configuration for P-LTEAP18-GL, P-LTEA-XX, and P-LTE-XX modules.

```
Router(config)# interface Cellular0/2/0
ip address negotiated
load-interval 30
dialer in-band
dialer idle-timeout 0
lte dialer-group 1
no peer default ip address
ipv6 enable
!
interface Cellular0/2/1
ip address negotiated
load-interval 30
dialer in-band
dialer idle-timeout 0
dialer-group 1
no peer default ip address
ipv6 enable
```