

Configuring cellular IPv6 address

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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:DB8:FFFF:0000:0000:0000:0001
- 2001:DB8:0000:FFFF:FFFF:FFFF:FFFF:FFFF

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:DB8::1/64 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 8100 Series Secure Routers 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. 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. load-interval***seconds***
5. dialer in-band
6. dialer idle-timeout ***seconds***
7. dialer string **string**
8. dialer-group**group-number**
9. no peer default ip address
10. ipv6 address autoconfig
11. async mode interactive
12. routing dynamic
13. **dialer-listdialer-groupprotocolprotocol-name** {**permit** | deny|**list** | *access-list-number* | *access-group* }
14. **ipv6 route** *ipv6-prefix/prefix-length 128*
15. **End**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 2	**interface cellular** {**type**	**number**} **Example:** `Router(config)# interface cellular 0/1/0`	Specifies the cellular interface.

	Command or Action	Purpose
Step 3	ip address negotiated **Example:** `Router(config-if)# ipv6 address negotiated`	Specifies that the IP address for a particular interface is dynamically obtained.
Step 4	load-interval***seconds*** **Example:** `Router(config-if)# load-interval 30`	Specifies the length of time for which data is used to compute load statistics.
Step 5	dialer in-band **Example:** `Router(config-if)# dialer in-band`	Enables DDR and configures the specified serial interface to use in-band dialing.
Step 6	dialer idle-timeout ***seconds*** **Example:** `Router(config-if)# dialer idle-timeout 0`	Specifies the dialer idle timeout period.
Step 7	dialer string **string** **Example:** `Router(config-if)# dialer string lte`	Specifies the number or string to dial.
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 **Example:** `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.
Step 11	async mode interactive **Example:** `Router(config-if)# async mode interactive`	Please provide the inputs?
Step 12	routing dynamic **Example:** `Router(config-if)#routing dynamic`	Enables the router to pass routing updates to other routers through an interface.
Step 13	**dialer-listdialer-groupprotocolprotocol-name** {**permit** |deny|**list** |*access-list-number* | *access-group* } **Example:**	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.

	Command or Action	Purpose
	`Router(config)# dialer-list 1 protocol ipv6 permit`	
Step 14	**ipv6 route** *ipv6-prefix/prefix-length 128* **Example:** `Router(config)#ipv6 route 2001:1234:1234::3/128 Cellular0/1/0`	
Step 15	**End** **Example:** `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
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
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
```