Topic 7.2.3:
Types of IPv6 Addresses

IPv6 Address Types

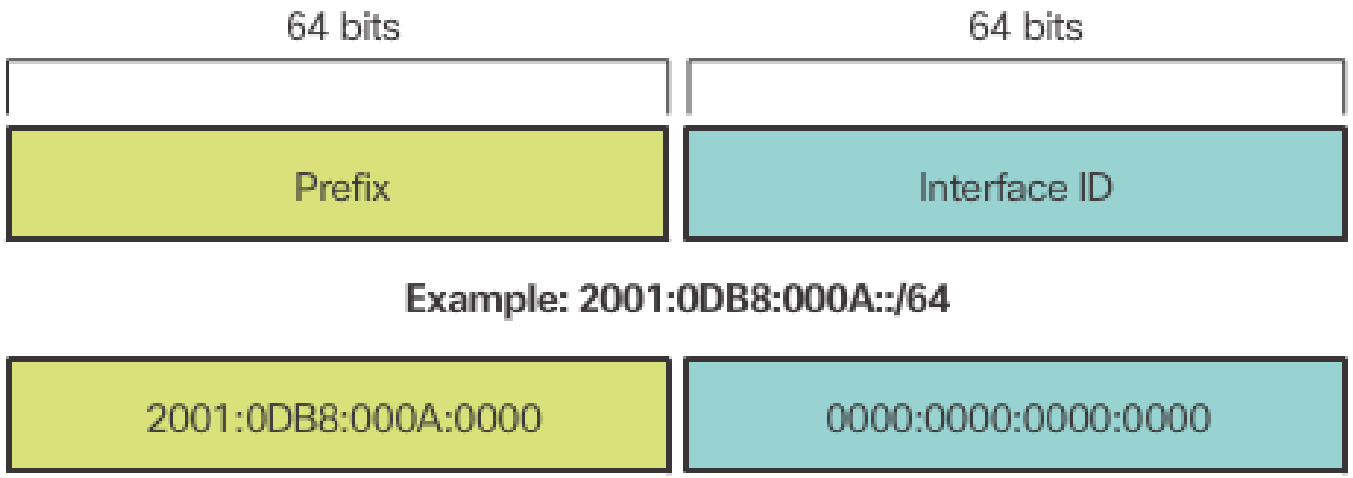
There are three types of IPv6 addresses:

- Unicast
- Multicast
- Anycast

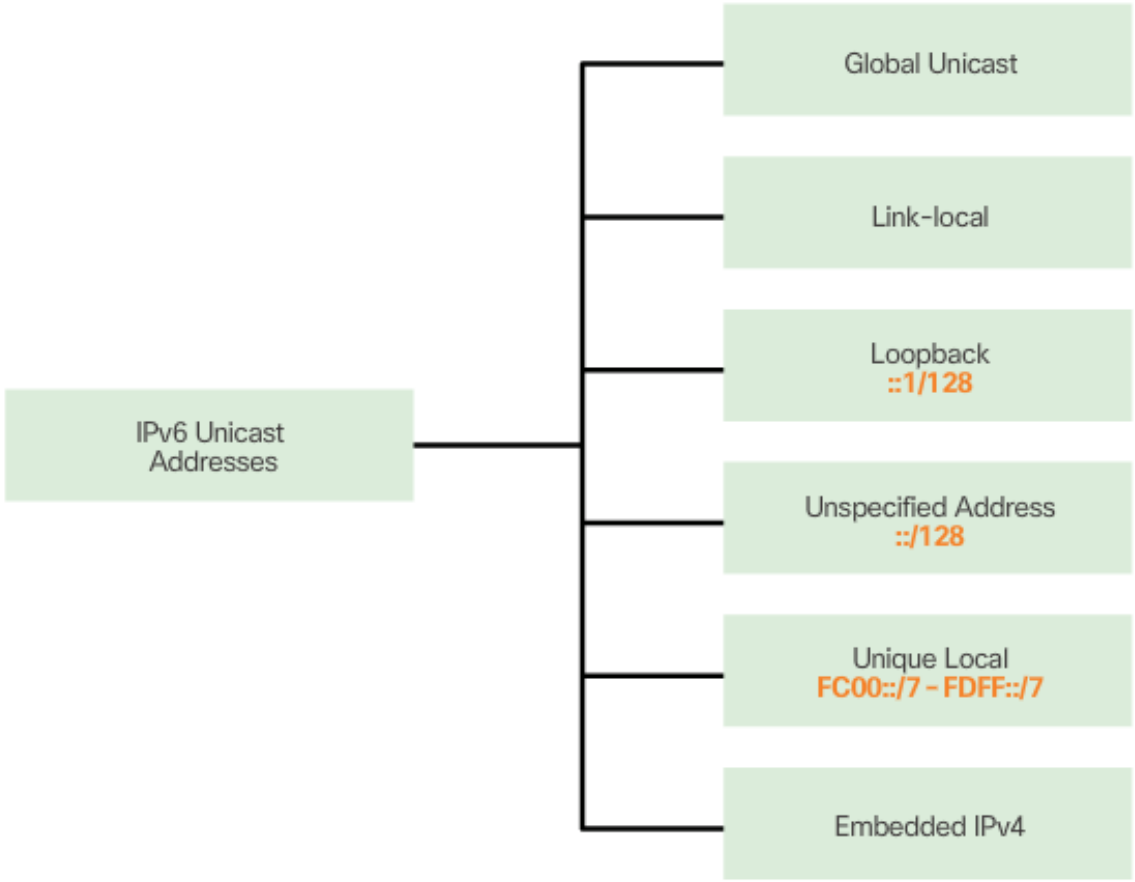
Note: IPv6 does not have broadcast addresses.

IPv6 Prefix Length

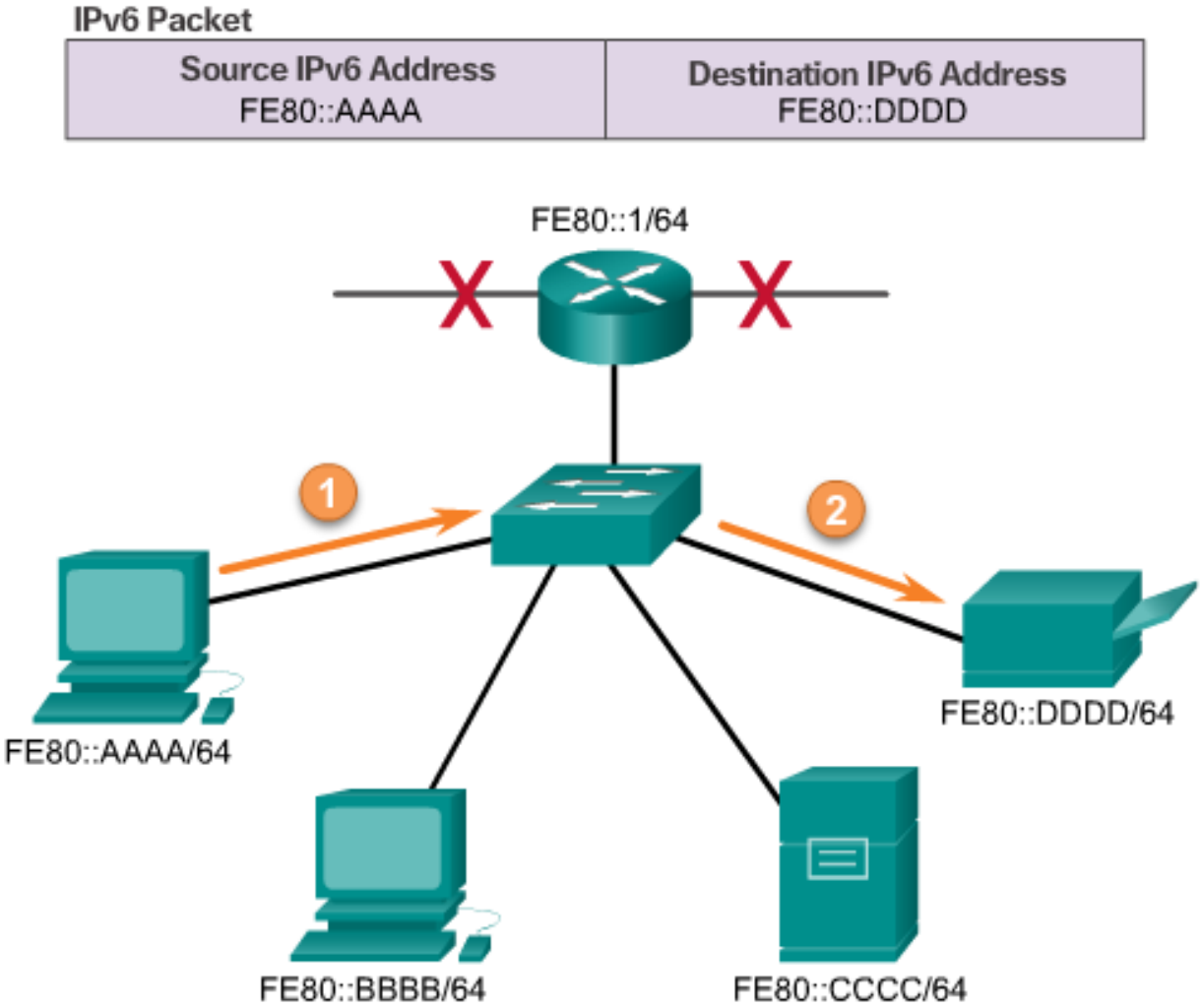
- IPv6 does not use the dotted-decimal subnet mask notation.
- Prefix length indicates the network portion of an IPv6 address using the following format:
  - IPv6 address /prefix length
  - Prefix length can range from 0 to 128
  - Typical prefix length is /64



IPv6 Unicast Addresses

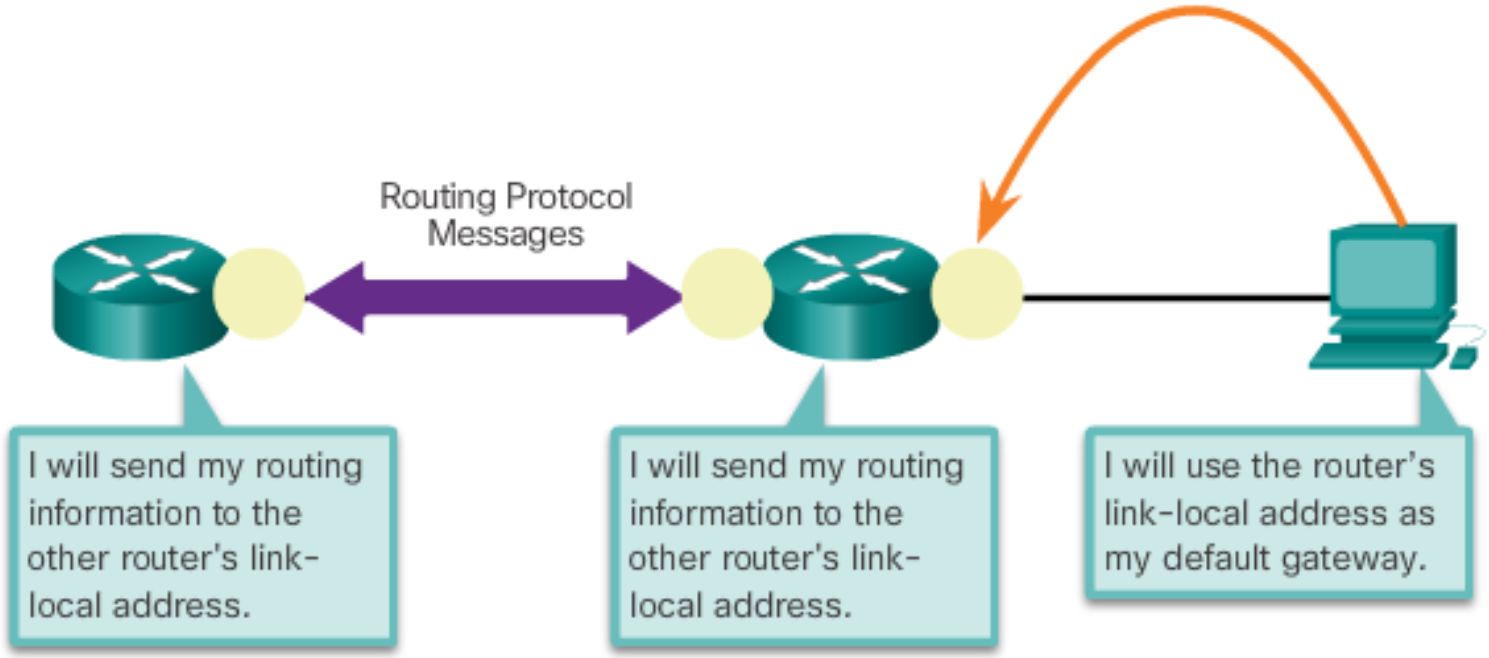


IPv6 Link-Local Unicast Addresses

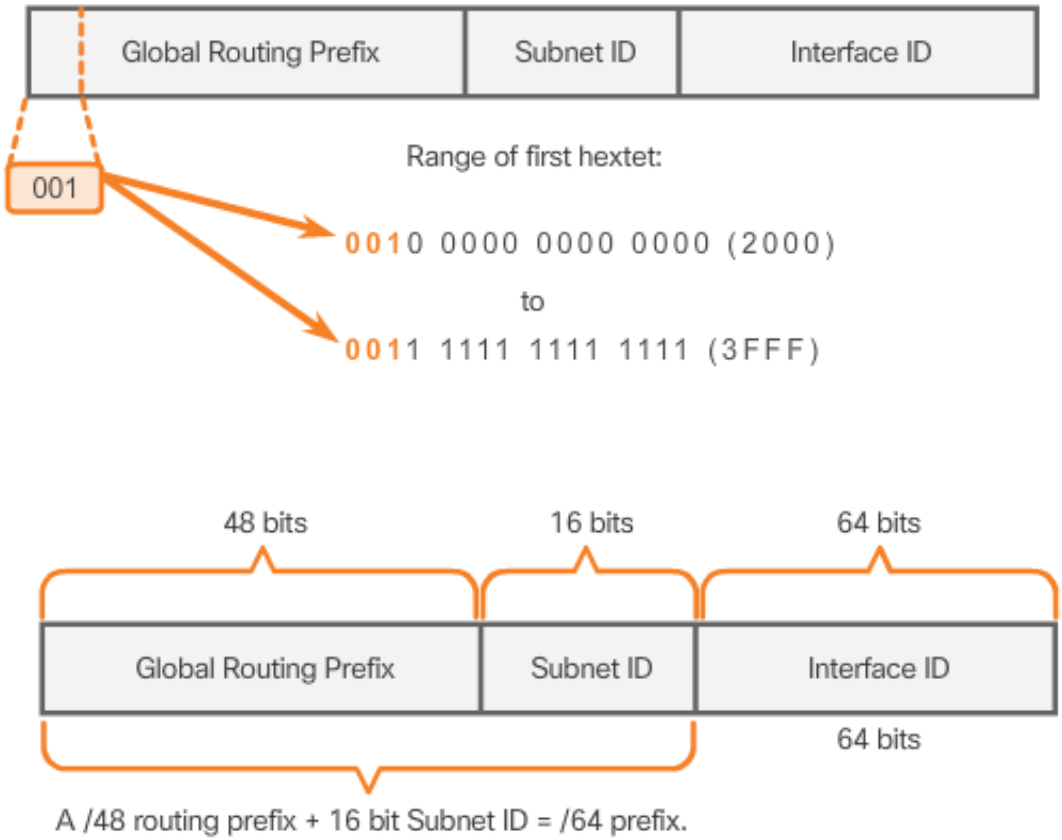


IPv6 Link-Local Unicast Addresses (cont.)

Uses of an IPv6 Link-local address

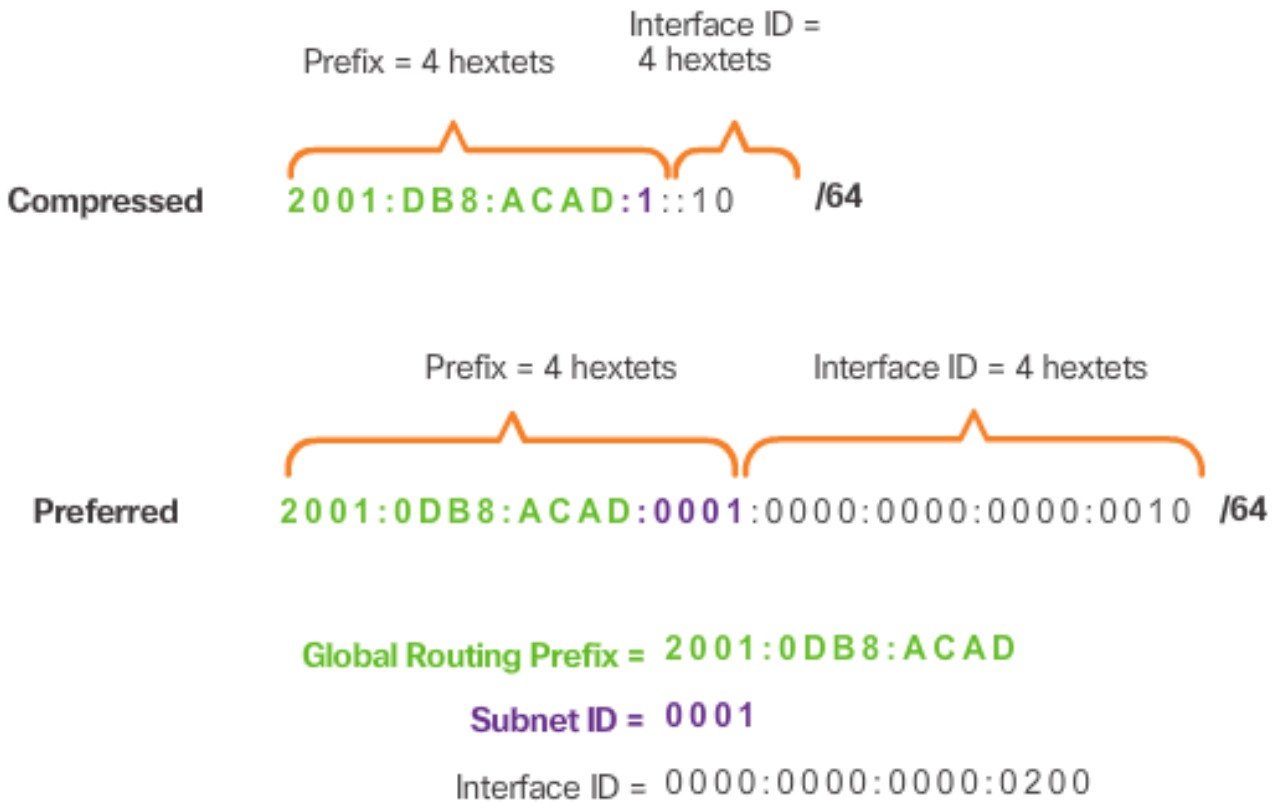


Structure of an IPv6 Global Unicast Address

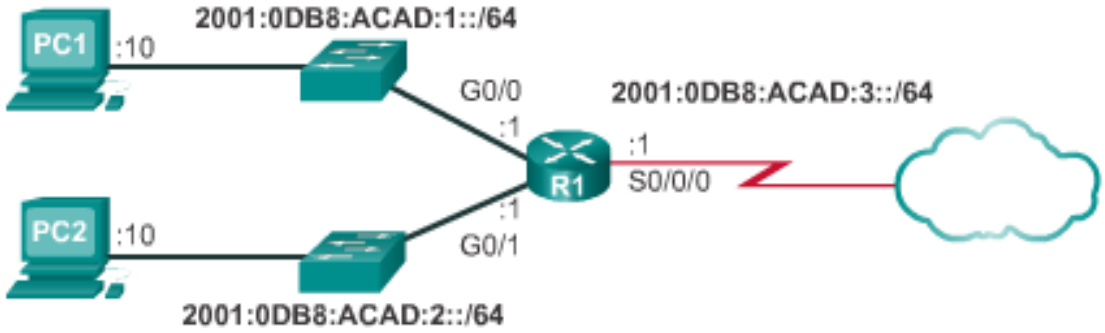


Structure of an IPv6 Global Unicast Address (cont.)

Reading a Global Unicast Address

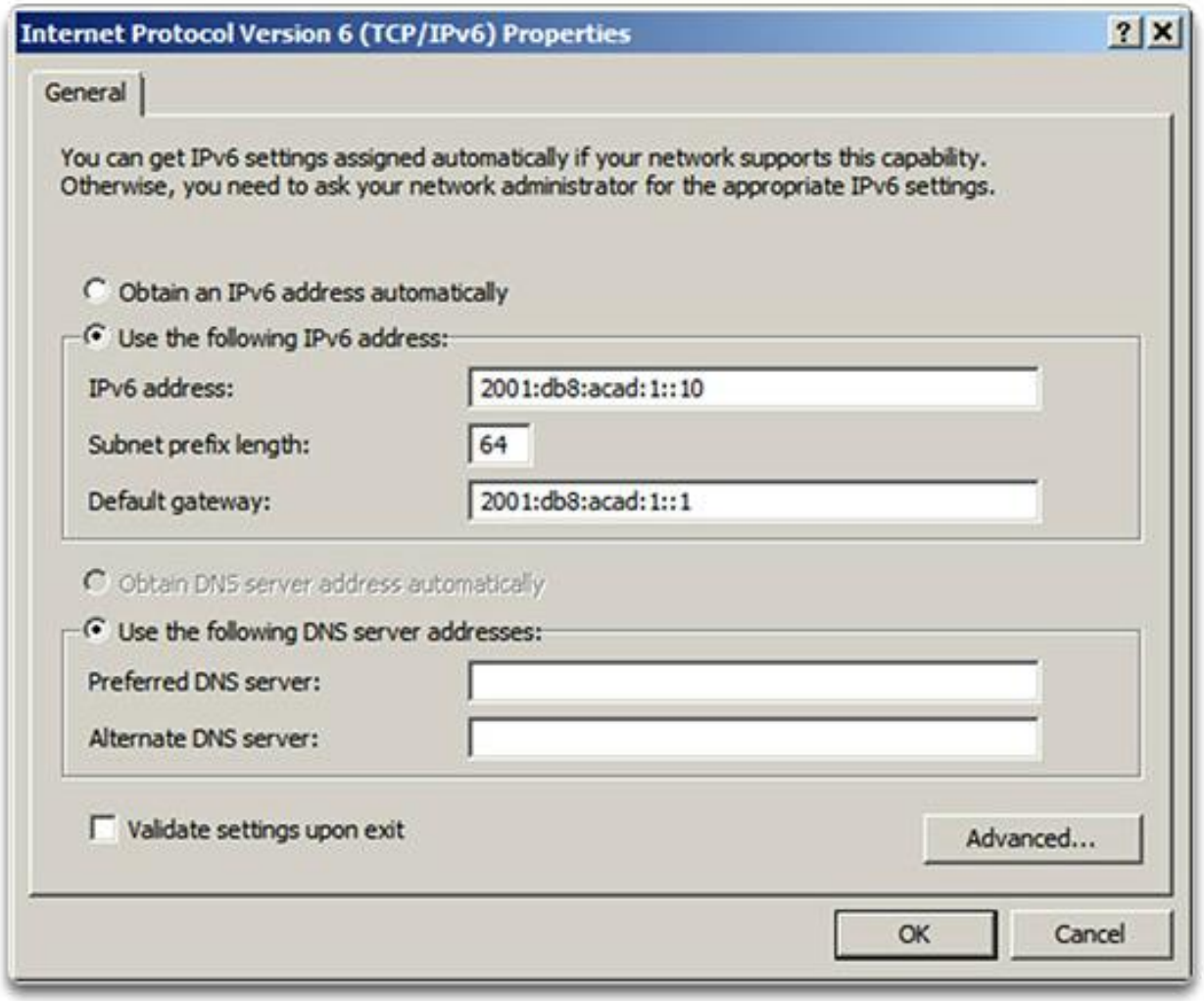


Static Configuration of a Global Unicast Address



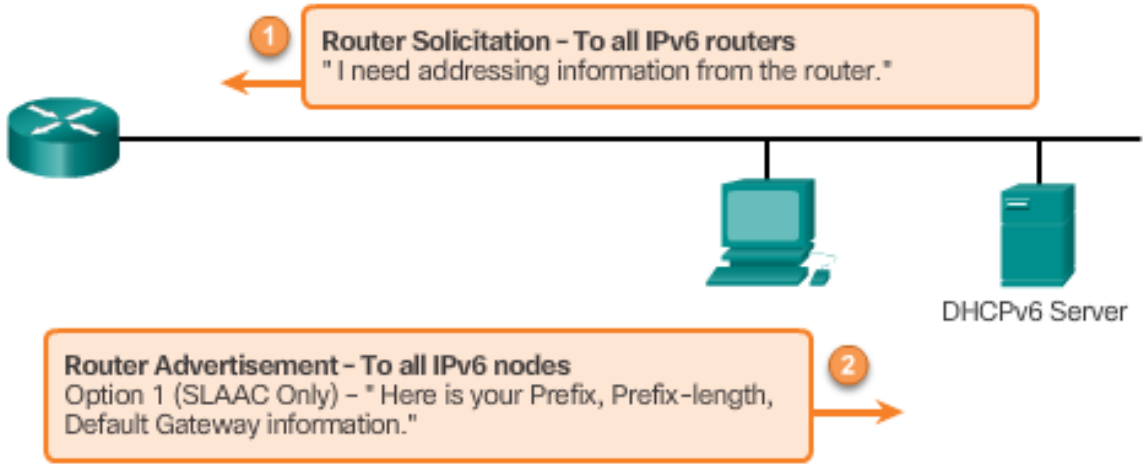

```
R1(config)#interface gigabitethernet 0/0
R1(config-if)#ipv6 address 2001:db8:acad:1::1/64
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface gigabitethernet 0/1
R1(config-if)#ipv6 address 2001:db8:acad:2::1/64
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface serial 0/0/0
R1(config-if)#ipv6 address 2001:db8:acad:3::1/64
R1(config-if)#clock rate 56000
R1(config-if)#no shutdown
```

Static Configuration of a Global Unicast Address (cont.)



Dynamic Configuration - SLAAC

Router Solicitation and Router Advertisement Messages



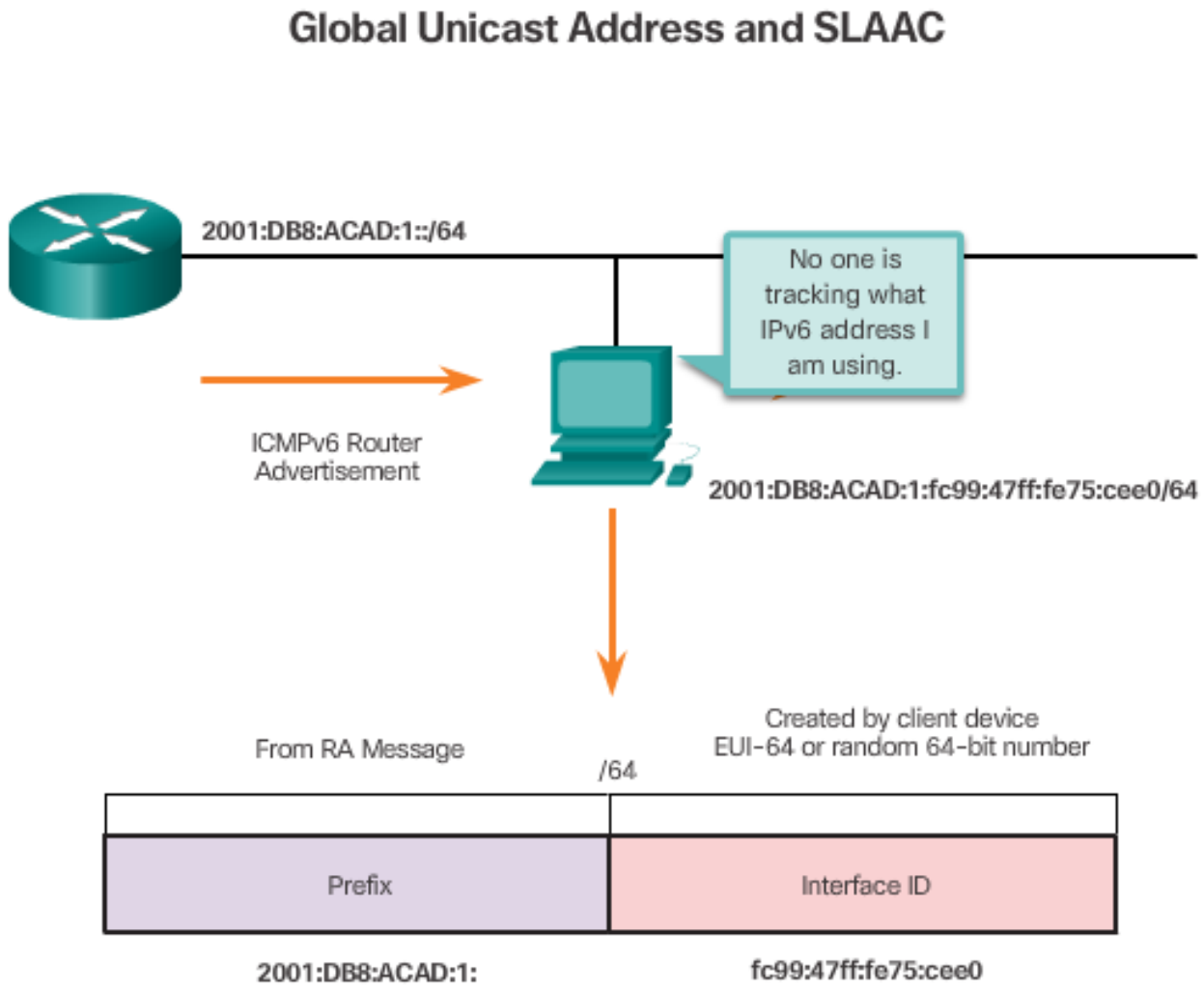
Router Advertisement Options

Option 1 (SLAAC Only) – " I'm everything you need (Prefix, Prefix-length, Default Gateway)"

Option 2 (SLAAC and DHCPv6) – " Here is my information but you need to get other information such as DNS addresses from a DHCPv6 server."

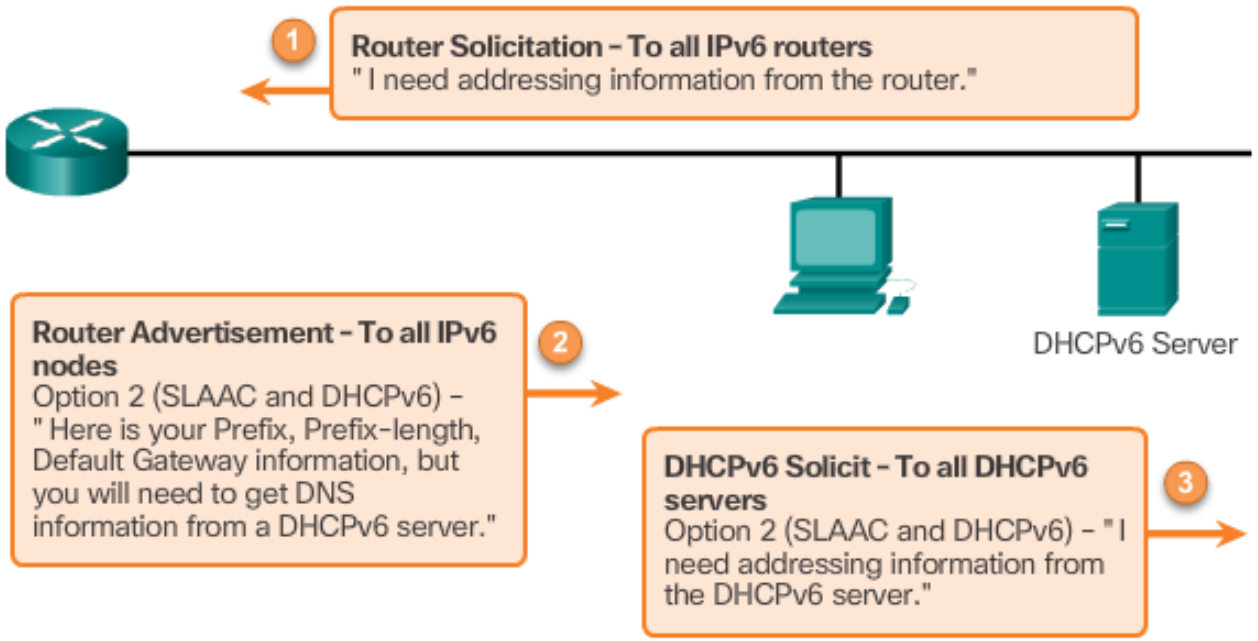
Option 3 (DHCPv6 Only) – " I can't help you. Ask a DHCPv6 server for all your

Dynamic Configuration – SLAAC (cont.)



Dynamic Configuration – DHCPv6

Router Solicitation and Router Advertisement Messages



Note: An RA with option 3 (DHCPv6 Only) enabled will require the client to obtain all information from the DHCPv6 server except the default gateway address. The default gateway address is the RA's source IPv6 address.