



IPv6 Rapid Deployment

The IPv6 rapid deployment feature allows a service provider to provide a unicast IPv6 service to customers over its IPv4 network by using encapsulation of IPv6 in IPv4.

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Information About IPv6 Rapid Deployment

IPv6 Rapid Deployment Tunnels

The IPv6 Rapid Deployment (6RD) feature is an extension of the 6to4 feature. The 6RD feature allows a service provider to provide a unicast IPv6 service to customers over its IPv4 network by using encapsulation of IPv6 in IPv4.

The main differences between 6RD and 6to4 tunneling are as follows:

- 6RD does not require addresses to have a 2002::/16 prefix; therefore, the prefix can be from the service provider's own address block. This function allows the 6RD operational domain to be within the SP network. From the perspective of customer sites and the general IPv6 Internet connected to a 6RD-enabled service provider network, the IPv6 service provided is equivalent to the native IPv6.
- All 32 bits of the IPv4 destination need not be carried in the IPv6 payload header. The IPv4 destination is obtained from a combination of bits in the payload header and information on the router. Furthermore, the IPv4 address is not at a fixed location in the IPv6 header as it is in 6to4.

How to Configure IPv6 Rapid Deployment

Configuring 6RD Tunnels

Perform this task to configure 6RD tunnels.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface tunnel** *tunnel-number*
4. **tunnel source** *{ip-address| interface-type interface-number}*
5. **tunnel mode ipv6ip** *[6rd | 6to4 | auto-tunnel | isatap]*
6. **tunnel 6rd prefix** *ipv6-prefix / prefix-length*
7. **tunnel 6rd ipv4** *{prefix-length length} {suffix-length length}*

DETAILED STEPS

Procedure		
	Command or Action	Purpose
Step 1	enable Example: <pre>Router> enable</pre>	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: <pre>Router# configure terminal</pre>	Enters global configuration mode.
Step 3	interface tunnel <i>tunnel-number</i> Example: <pre>Router(config)# interface tunnel 1</pre>	Specifies a tunnel interface and number, and enters interface configuration mode.
Step 4	tunnel source <i>{ip-address interface-type interface-number}</i> Example: <pre>Router(config-if)# tunnel source Ethernet2/0</pre>	Specifies the source interface type and number for the tunnel interface.
Step 5	tunnel mode ipv6ip <i>[6rd 6to4 auto-tunnel isatap]</i> Example: <pre>Router(config-if)# tunnel mode ipv6ip 6rd</pre>	Configures a static IPv6 tunnel interface.
Step 6	tunnel 6rd prefix <i>ipv6-prefix / prefix-length</i> Example: <pre>Router(config-if)# tunnel 6rd prefix 2001:B000::/32</pre>	Specifies the common IPv6 prefix on IPv6 rapid 6RD tunnels.

	Command or Action	Purpose
Step 7	tunnel 6rd ipv4 {prefix-length length} {suffix-length length} Example: Router(config-if)# tunnel 6rd ipv4 prefix-length 16 suffix 8	Specifies the prefix length and suffix length of the IPv4 transport address common to all the 6RD routers in a domain.

Configuration Examples for IPv6 Rapid Deployment

Example: Configuring 6RD Tunnels

The following example shows the running configuration of a 6RD tunnel and the corresponding output of the **show tunnel 6rd** command:

```
interface Tunnell
  ipv6 address 2001:B000:100::1/32
  tunnel source Ethernet2/1
  tunnel mode ipv6ip 6rd
  tunnel 6rd prefix 2001:B000::/32
  tunnel 6rd ipv4 prefix-len 16 suffix-len 8
end
Router# show tunnel 6rd tunnel 1
Interface Tunnell:
  Tunnel Source: 10.1.1.1
  6RD: Operational, V6 Prefix: 2001:B000::/32
      V4 Common Prefix Length: 16, Value: 10.1.0.0
      V4 Common Suffix Length: 8, Value: 0.0.0.1
```

Feature Information for IPv6 Rapid Deployment

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for IPv6 Rapid Deployment

Feature Name	Releases	Feature Information
IP Tunneling: 6RD IPv6 Rapid Deployment	15.1(3)T	The 6RD feature allows a service provider to provide a unicast IPv6 service to customers over its IPv4 network by using encapsulation of IPv6 in IPv4. The following commands were introduced or modified: tunnel 6rd ipv4, tunnel 6rd prefix, tunnel mode ipv6ip, tunnel source.