

## Contents

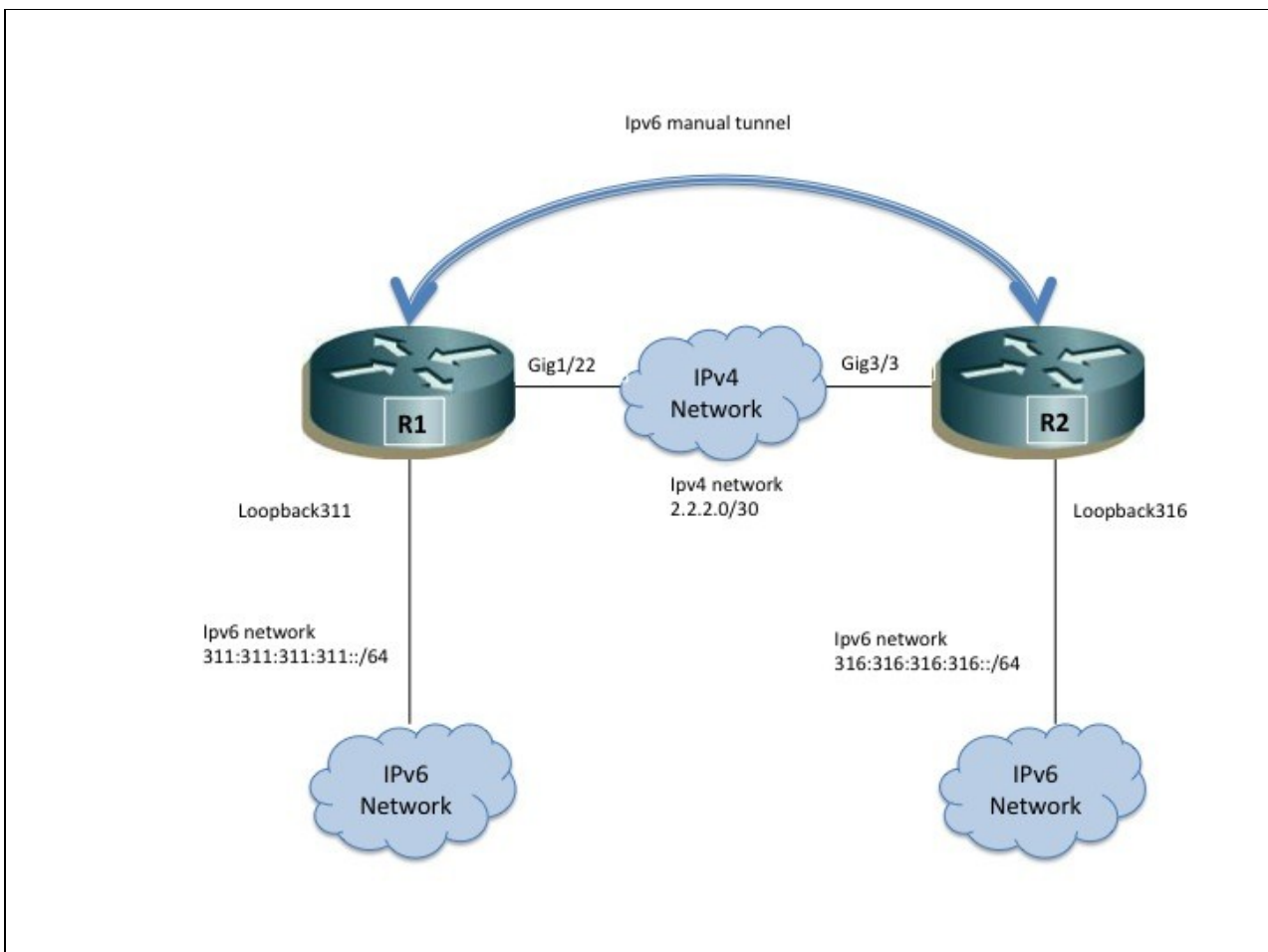
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## Introduction

To connect discontinuous ipv6 domains over existing ipv4 network, we need to enable tunnels. There are many types of configuring ipv6 tunnels over an existing ipv4 network viz manual tunnel, ISATAP, automatic 6to4 tunnel, GRE tunnel, automatic ipv4-compatible tunnel

The following configuration example provides information about how to configure and verify ipv6 manual tunnel over existing ipv4 network.

## Design



## Configuration

### R1 Configs:

```
!  
ipv6 unicast routing  
!  
interface GigabitEthernet1/22  
ip address 2.2.2.1 255.255.255.252  
!  
interface Tunnel223  
no ip address  
no ip redirects  
ipv6 address 2002:1:2:223::22/64  
ipv6 enable  
tunnel source 2.2.2.1  
tunnel mode ipv6ip  
tunnel destination 2.2.2.2  
!  
interface Loopback311  
no ip address  
ipv6 address 311:311:311:311::1/64  
ipv6 enable  
!
```

### R2 Configs:

```
!  
ipv6 unicast routing  
!  
interface GigabitEthernet3/3  
ip address 2.2.2.2 255.255.255.252  
!  
interface Tunnel223  
no ip address  
ipv6 address 2002:1:2:223::3/64  
ipv6 enable  
ipv6 traffic-filter tin out  
tunnel source 2.2.2.2  
tunnel mode ipv6ip  
tunnel destination 2.2.2.1  
!  
interface Loopback316  
no ip address  
ipv6 address 316:316:316:316::1/64  
ipv6 enable  
!
```

## Related show Commands

This section provides information you can use to confirm your configuration is working properly.

## Ipv6\_manual\_tunnel\_Configuration\_Example

Certain show commands are supported by the Output Interpreter Tool (registered customers only), which allows you to view an analysis of show command output.

Show commands for connectivity:

### On R1:

```
R1#show ipv6 interface tunnel 223
Tunnel223 is up, line protocol is up
IPv6 is enabled, link-local address is FE80::202:201
No Virtual link-local address(es):
Global unicast address(es):
  2002:1:2:223::22, subnet is 2002:1:2:223::/64
Joined group address(es):
  FF02::1
  FF02::2
  FF02::D
  FF02::16
  FF02::1:FF00:22
  FF02::1:FF02:201
MTU is 1480 bytes
ICMP error messages limited to one every 100 milliseconds
ICMP redirects are enabled
ICMP unreachable are sent
Output features: HW Shortcut Installation
Post_Encap features: HW shortcut
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds (using 30000)
ND RAs are suppressed (periodic)
Hosts use stateless autoconfig for addresses.
```

```
R1#show ipv6 route 316:316:316:316::1
Routing entry for 316:316:316:316::/64
Known via "static", distance 1, metric 0
Route count is 1/1, share count 0
Routing paths:
  directly connected via Tunnel223
  Last updated 00:14:27 ago
```

```
R1#ping 316:316:316:316::1 source lo 311
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 316:316:316:316::1, timeout is 2 seconds:
Packet sent with a source address of 311:311:311:311::1
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/20/40 ms
R1#
```

```
R1#trace 316:316:316:316::1
Type escape sequence to abort.
Tracing the route to 316:316:316:316::1
 0 2002:1:2:223::3 4 msec 0 msec 0 msec
R1#
```

## Ipv6\_manual\_tunnel\_Configuration\_Example

### On R6:

```
R6#show ipv6 interface tunnel 223
Tunnel223 is up, line protocol is up
IPv6 is enabled, link-local address is FE80::202:202
No Virtual link-local address(es):
Global unicast address(es):
  2002:1:2:223::3, subnet is 2002:1:2:223::/64
Joined group address(es):
  FF02::1
  FF02::2
  FF02::D
  FF02::16
  FF02::1:FF00:3
  FF02::1:FF02:202
MTU is 1480 bytes
ICMP error messages limited to one every 100 milliseconds
ICMP redirects are enabled
ICMP unreachable are sent
Output features: Access List HW Shortcut Installation
Post_Encap features: HW shortcut
Outgoing access list tin
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds (using 30000)
Hosts use stateless autoconfig for addresses.
```

```
R6#show ipv6 route 311:311:311:311::1
Routing entry for 311:311:311:311::/64
Known via "static", distance 1, metric 0
Route count is 1/1, share count 0
Routing paths:
  directly connected via Tunnel223
  Last updated 00:14:23 ago
```

```
R6#ping 311:311:311:311::1 source lo 316
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 311:311:311:311::1, timeout is 2 seconds:
Packet sent with a source address of 316:316:316:316::1
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/32/100 ms
R6#
```

```
R6#trace 311:311:311:311::1
Type escape sequence to abort.
Tracing the route to 311:311:311:311::1
 0 2002:1:2:223::22 0 msec 0 msec 0 msec
R6#
```

## Related Information

[Technical Support & Documentation - Cisco Systems](#)