

Cisco Routers



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- **Configure Interfaces**

```
interface GigabitEthernet0/0
ip address 168.168.0.2 255.255.255.0
duplex full
speed 1000
media-type gbic
negotiation auto
ipv6 address 2001:abc:X:X::2/64
ipv6 enable
```

- **Notes**

- When ipv6 unicast-routing is enabled, router advertisements are automatically enabled on Ethernet interfaces. To disable RA messages, use the 'ipv6 nd ra suppress' command.

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- **Configure IPv6 Default Route**

```
ipv6 route ::/0 2001:abc:X:X::1
```

- **Configure Static Route**

```
ipv6 route 2001:abc:X:X::/64 2001:abc:X:X::1
```

- **DNS**

```
ip name-server 2001:abc:A0:F000::244  
ip name-server 2001:abc:B0:F000::244
```

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- **Verify Interfaces**

```
R1#sh ipv6 interface Gi0/0
GigabitEthernet0/0 is up, line protocol is up
IPv6 is enabled, link-local address is FE80::C800:14FF:FEE4:8
No Virtual link-local address(es):
Global unicast address(es):
  2001:abc:2480:1000::126, subnet is 2001:abc:2480:1000::/64
Joined group address(es):
  FF02::1
  FF02::2
  FF02::1:FF00:126
  FF02::1:FFE4:8
MTU is 1500 bytes
ICMP error messages limited to one every 100 milliseconds
ICMP redirects are enabled
ICMP unreachable are sent
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds (using 30000)
ND advertised reachable time is 0 (unspecified)
ND advertised retransmit interval is 0 (unspecified)
ND router advertisements are sent every 200 seconds
ND router advertisements live for 1800 seconds
ND advertised default router preference is Medium
Hosts use stateless autoconfig for addresses.
```

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- **Verify Static Routing**

```
R1#sh ipv6 static detail
IPv6 Static routes Table - default
Codes: * - installed in RIB, u/m - Unicast/Multicast only
       U - Per-user Static route, N - ND Static route
       P - DHCP-PD Static route
       R - Rhi Static route
* 2001:abc:2480:3000::/64 via 2001:abc:2480:1000::1, distance 1
  Resolves to 1 paths (max depth 1)
  via GigabitEthernet0/0
* ::/0 via 2001:abc:2480:1000::1, distance 1
  Resolves to 1 paths (max depth 1)
  via GigabitEthernet0/0
```

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- **Verify IPv6 Neighbors**

```
R1#sh ipv6 neighbors
IPv6 Address                Age      Link-layer Addr      State      Interface
FE80::7069:5DAF:A5F5:FDB3   124      000c.297d.bbe3       STALE      Gi0/0
2001:abc:2480:1000::1       170      0010.dbc9.a695       STALE      Gi0/0
2001:abc:2480:1000:6021:A03E:3762:8078  25       d067.e539.1ae5       STALE      Gi0/0
2001:abc:2480:1000:E88A:8590:19C0:3CD3  10       b8ac.6fc6.16e6       STALE      Gi0/0
FE80::FCD3:3EAA:2E93:61     2        d067.e539.1b3e       STALE      Gi0/0
2001:abc:2480:1000:6DE3:3F29:209A:CA4B  0        f04d.a26a.08cf       STALE      Gi0/0
2001:abc:2480:1000:55FC:66B7:AEE7:49B0  6        d067.e539.1b3e       STALE      Gi0/0
2001:abc:2480:1000::23     18       d067.e539.140d       STALE      Gi0/0
FE80::C5B:A874:4C18:EF9F    0        101f.74ce.2a53       REACH      Gi0/0
FE80::D267:E5FF:FE39:140D   2        d067.e539.140d       STALE      Gi0/0
2001:abc:2480:1000:EDAF:8655:6764:47AF  2        0026.b9ed.e6e2       STALE      Gi0/0
FE80::210:DBFF:FEC9:A695    194      0010.dbc9.a695       STALE      Gi0/0
FE80::41CE:5ABD:EDDD:7216   3        0026.b9ec.e541       STALE      Gi0/0
FE80::8C9C:AEA8:328E:E37A   0        0026.b9ec.c0df       REACH      Gi0/0
2001:abc:2480:1000::62     15       0050.56b2.2e74       STALE      Gi0/0
FE80::E88A:8590:19C0:3CD3   9        b8ac.6fc6.16e6       STALE      Gi0/0
2001:abc:2480:1000:5D9A:9B99:C584:5008  6        0026.b9ec.e615       STALE      Gi0/0
FE80::C525:65E8:98F4:BC20   23       d067.e539.1ae5       STALE      Gi0/0
2001:abc:2480:1000:80CB:CE47:8FFC:C4EB   4        000c.29b9.803a       STALE      Gi0/0
2001:abc:2480:1000:257B:29AE:C513:775C  7        0026.b9ec.e541       STALE      Gi0/0
2001:abc:2480:1000:C5B:A874:4C18:EF9F   32       101f.74ce.2a53       STALE      Gi0/0
2001:abc:2480:1000:9104:A739:627F:D1F7   2        0026.b9ec.c0df       STALE      Gi0/0
2001:abc:2480:1000:89A3:5936:efd7:DAFE   4        0026.b9ed.e32f       STALE      Gi0/0
FE80::3138:66CC:EC8A:9631   5        0026.b9ec.e615       STALE      Gi0/0
FE80::87F:33E8:94BC:CB7F    11       000c.29b9.803a       STALE      Gi0/0
FE80::EC96:55E7:E603:A910   2        0026.b9ed.e6e2       STALE      Gi0/0
2001:abc:2480:1000:F856:AF4B:C9B8:B14C  46       b8ac.6f79.61ca       STALE      Gi0/0
2001:abc:2480:1000:8D60:E9E:FDB5:86B8   34       d067.e539.1ae5       STALE      Gi0/0
```

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- **Verify IPv6 Reachability**

- Ping

```
R1#ping ipv6 ipv6.google.com
Translating "ipv6.google.com"...domain server (2001:4860:A0:F000::244) [OK]

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 2001:4860:800A::63, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/138/156 ms
```

- Traceroute

```
R1#traceroute ipv6 ipv6.google.com
Type escape sequence to abort.
Tracing the route to ipv6.l.google.com (2001:4860:800A::63)

 0 10.10.10.10 0 msec 0 msec 0 msec
 1 host1.abc.test.net (2001:abc:2480:1000::1) 48 msec 32 msec 32 msec
 2 2001:abc:5000:842::1 12 msec 32 msec 32 msec
 3 google-1-lo-std-703.lsanca.pacificwave.net (2001:504:B:21::147) 44 msec 100 msec 60 msec
 4 * 72 msec 68 msec
 5 2001:4860::1:0:29B3 84 msec
   2001:4860::1:0:991 60 msec
   2001:4860::1:0:29B3 72 msec
 6 2001:4860::8:0:2996 84 msec 76 msec 100 msec
 7 2001:4860::8:0:2F03 128 msec 136 msec 144 msec
 8 2001:4860::2:0:A7 120 msec 148 msec 188 msec
 9 2001:4860:0:1::10D 140 msec 132 msec
   2001:4860:0:1::10F 132 msec
10 ipv6.l.google.com (2001:4860:800A::63) 128 msec 168 msec 128 msec
```

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- **To Summarize**
 - Enable IPv6 on interface
 - Enable IPv6 unicast routing
 - Configure interface with IPv6 address
 - Enter IPv6 default route
 - Enter static IPv6 routes

- **Verify IPv6 Settings**

- **Verify IPv6 Reachability**

NOTE: These commands were run using Cisco IOS Software, 7200 Software (C7200-ADVENTERPRISEK9-M), Version 15.1(4)M3a, RELEASE SOFTWARE (fc1)