Cisco Routers

• 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::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:FE4:8
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:FF4:8
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
### Verify IPv6 Neighbors

<table>
<thead>
<tr>
<th>IPv6 Address</th>
<th>Age</th>
<th>Link-layer Addr</th>
<th>State</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>FE80::7069:5DAF:A5F5:FDB3</td>
<td>124</td>
<td>000c.297d.bbe3</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000::1</td>
<td>170</td>
<td>0010.dbc9.a695</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:6021:A03E:3762:8078</td>
<td>25</td>
<td>d067.e539.1ae5</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:E88A:8590:19C0:3CD3</td>
<td>10</td>
<td>b8ac.6fc6.16e6</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::FCDF:3EAA:2E93:61</td>
<td>2</td>
<td>d067.e539.1b3e</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:6DE3:3F29:209A:CA4B</td>
<td>0</td>
<td>f04d.a26a.08cf</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:55FC:66B7:AEF7:49B0</td>
<td>6</td>
<td>d067.e539.1b3e</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000::23</td>
<td>18</td>
<td>d067.e539.140d</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::C5B:A874:4C18:EF9F</td>
<td>0</td>
<td>101f.74ce.2a53</td>
<td>REACH</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::D267:E5FF:FE39:140D</td>
<td>2</td>
<td>d067.e539.140d</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::210:DBFF:FE0C:4695</td>
<td>194</td>
<td>0010.dbc9.a695</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::41CE:5ABD:EDDD:7216</td>
<td>3</td>
<td>0026.b9ec.e541</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::8C9C:AE8:328E:E37A</td>
<td>0</td>
<td>0026.b9ec.c0df</td>
<td>REACH</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000::62</td>
<td>15</td>
<td>0050.56b2.2e74</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::E88A:8590:19C0:3CD3</td>
<td>9</td>
<td>b8ac.6fc6.16e6</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::C525:65E8:98FF:4B20</td>
<td>23</td>
<td>d067.e539.1ae5</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:80CB:CE47:8FC:4CEB</td>
<td>4</td>
<td>000c.29b9.803a</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:257B:29AE:C513:775C</td>
<td>7</td>
<td>0026.b9ec.e541</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:C5B:A874:4C18:EF9F</td>
<td>32</td>
<td>101f.74ce.2a53</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:9104:A739:627F:D1F7</td>
<td>2</td>
<td>0026.b9ec.c0df</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::3138:66CC:EC8A:96B1</td>
<td>5</td>
<td>0026.b9ec.e615</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::87F:33EB:94BC:CB7F</td>
<td>11</td>
<td>000c.29b9.803a</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>FE80::E9C6:55E7:6E03:9A10</td>
<td>2</td>
<td>0026.b9ed.e6e2</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:F856:AF4B:C988:B14C</td>
<td>46</td>
<td>28ac.6f79.61ca</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
<tr>
<td>2001:abc:2480:1000:8D60:E9E:FDB5:86B8</td>
<td>34</td>
<td>d067.e539.1ae5</td>
<td>STALE</td>
<td>Gi0/0</td>
</tr>
</tbody>
</table>
## Cisco Routers

### • 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)

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: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
```
Cisco Routers

• 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)