

18 Connectivity Troubleshooting

- Answer Key

In this lab you will troubleshoot a connectivity issue.

Troubleshoot Connectivity

- 1) Use ping to test connectivity from PC1 to PC3.

Connectivity is down.

```
PC1> ping 10.1.2.10
*10.1.0.1 icmp_seq=1 ttl=253 time=55.202 ms (ICMP type:3, code:1,
Destination host unreachable)
*10.1.0.1 icmp_seq=2 ttl=253 time=48.034 ms (ICMP type:3, code:1,
Destination host unreachable)
*10.1.0.1 icmp_seq=3 ttl=253 time=47.082 ms (ICMP type:3, code:1,
Destination host unreachable)
*10.1.0.1 icmp_seq=4 ttl=253 time=44.030 ms (ICMP type:3, code:1,
Destination host unreachable)
*10.1.0.1 icmp_seq=5 ttl=253 time=46.652 ms (ICMP type:3, code:1,
Destination host unreachable)
```

- 2) Use traceroute to determine where the problem is likely to be.

Traceroute is making it as far as 10.1.0.1 on R3 so that is a good place to continue troubleshooting.

```
PC1> trace 10.1.2.10
trace to 10.1.2.10, 8 hops max, press Ctrl+C to stop
 1  10.0.1.1    16.013 ms   8.007 ms   8.507 ms
 2  10.0.0.2    49.535 ms  30.019 ms  28.018 ms
 3  10.1.0.1    49.533 ms  50.032 ms  49.533 ms
 4  *10.1.0.1   49.532 ms (ICMP type:3, code:1,
Destination host unreachable)
```

- 3) Determine the issue and fix it to restore connectivity between PC1 and PC3.

The first thing to do is check that R3 has a route to PC3's network 10.1.2.0/24

```
R3#sh ip route
```

```
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
```

i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
+ - replicated route, % - next hop override

Gateway of last resort is not set

```
10.0.0.0/8 is variably subnetted, 9 subnets, 2 masks
S      10.0.0.0/24 [1/0] via 10.1.0.2
S      10.0.1.0/24 [1/0] via 10.1.0.2
S      10.0.2.0/24 [1/0] via 10.1.0.2
S      10.0.3.0/24 [1/0] via 10.1.0.2
C      10.1.0.0/24 is directly connected, FastEthernet1/0
L      10.1.0.1/32 is directly connected, FastEthernet1/0
C      10.1.1.0/24 is directly connected, FastEthernet0/0
L      10.1.1.2/32 is directly connected, FastEthernet0/0
S      10.1.3.0/24 [1/0] via 10.1.1.1
```

The network is not in the routing table. From the 'show ip route' command we can also see that static routes are being used. We need to add a static route for the 10.1.2.0/24 network with R4 as the next hop.

```
R3(config)#ip route 10.1.2.0 255.255.255.0 10.1.1.1
```

Lastly we need to verify connectivity is restored.

```
PC1> ping 10.1.2.10
84 bytes from 10.1.2.10 icmp_seq=1 ttl=60 time=149.841 ms
84 bytes from 10.1.2.10 icmp_seq=2 ttl=60 time=73.551 ms
84 bytes from 10.1.2.10 icmp_seq=3 ttl=60 time=73.058 ms
84 bytes from 10.1.2.10 icmp_seq=4 ttl=60 time=79.553 ms
84 bytes from 10.1.2.10 icmp_seq=5 ttl=60 time=79.551 ms
```