

Packet Tracer - Troubleshoot Static and Default Routes (Instructor Version)

Instructor Note: Red font color or gray highlights indicate text that appears in the instructor copy only.

16.3.1 Packet Tracer – Troubleshoot Static and Default Routes Answer

Addressing Table

Device	Interface	IP Addresses
R1	G0/0	172.31.1.1/25
		2001:DB8:1::1/64
	S0/0/0	172.31.1.194/30
		2001:DB8:2::194/64
R2	G0/0	172.31.0.1/24
		2001:DB8:3::1/64
	S0/0/0	172.31.1.193/30
		2001:DB8:2::193/64
	S0/0/1	172.31.1.197/30
		2001:DB8:4::197/64
R3	G0/0	172.31.1.129/26
		2001:DB8:5::1/64
	S0/0/1	172.31.1.198/30
		2001:DB8:4::198/64
PC1	NIC	172.31.1.126/25
		2001:DB8:1::126/64
PC2	NIC	172.31.0.254/24
		2001:DB8:3::254/64
Server	NIC	172.31.1.190/26
		2001:DB8:5::190/64

Objectives

In this activity you will troubleshoot static and default routes and repair any errors that you find.

- Troubleshoot IPv4 static routes.
- Troubleshoot IPv4 default routes.
- Troubleshoot IPv6 static routes.
- Configure IPv4 static routes.
- Configure IPv4 default routes.
- Configure IPv6 static routes.

Background / Scenario

A newly hired network technician is attempting to preconfigure a simple topology that will be delivered to a customer. The technician has not been able to establish connectivity between the three LANs. You have been asked to troubleshoot the topology and verify connectivity between the hosts on the three LANs over IPv4 and IPv6.

Instructions

Step 1: Locate and document the problems.

Record your findings in a table like the one below.

Location	Problem	Solution
R1	IPv4 Default route next hop interface address is incorrect.	Change next hop address to 172.31.1.193
R2	IPv6 route to LAN 1 has the wrong network address for the destination network.	Change destination address from 2001:DB6:1::/64 to 2001:DB8:1::/64
R2	The next hop addresses in the two IPv4 routes are reversed.	Change the statements to <code>ip route 172.31.1.0 255.255.255.128 172.31.1.194</code> and <code>ip route 172.31.1.128 255.255.255.192 172.31.1.198</code>
R3	The IPv6 route to LAN 1 is missing.	Configure a directly connected static route to 2001:DB8:1::/64
R3	The IPv4 route to LAN 1 has the wrong mask for the network.	Change the mask to 255.255.255.128

Step 2: Repair the problems.

Configure the devices so that full connectivity exists between the hosts on the LANs over IPv4 and IPv6.

Note: Your task is to establish connectivity using the existing static route design. Changing the types of static routes used will result in a loss of points.

Answer Configurations

Router R1

```
enable
conf t
no ip route 0.0.0.0 0.0.0.0 172.31.1.195
ip route 0.0.0.0 0.0.0.0 172.16.1.193
end
```

Router R2

```
enable
conf t
no ip route 172.31.1.0 255.255.255.128 172.31.1.198
no ip route 172.31.1.128 255.255.255.192 172.31.1.194
ip route 172.31.1.0 255.255.255.128 172.31.1.194
ip route 172.31.1.128 255.255.255.192 172.31.1.198
no ipv6 route 2001:DB6:1::/64 2001:DB8:3::194
ipv6 route 2001:DB8:1::/64 2001:DB8:2::194
end
```

Router R3

```
enable
conf t
no ip route 172.31.1.0 255.255.255.240 Serial0/0/1
ip route 172.31.1.0 255.255.255.128 Serial0/0/1
ipv6 route 2001:DB8:1::/64 Serial0/0/1
end
```