Lab 2.8.3: Troubleshooting Static Routes
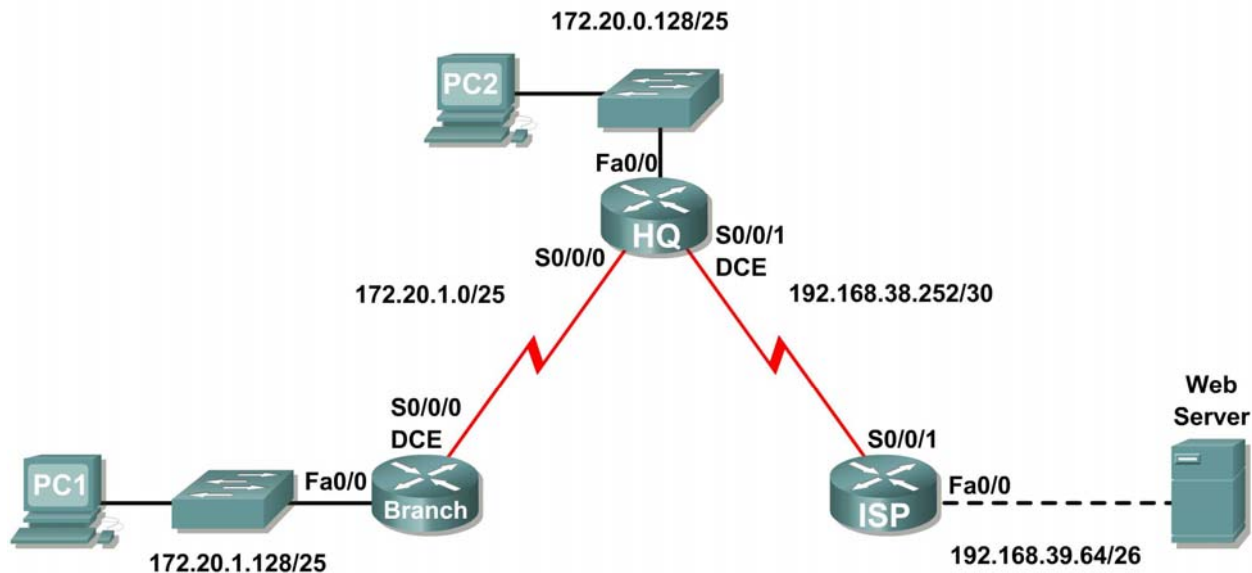
Topology Diagram

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
BRANCH	Fa0/0	172.20.1.129	255.255.255.128	N/A
	S0/0/0	172.20.1.1	255.255.255.128	N/A
HQ	Fa0/0	172.20.0.129	255.255.255.128	N/A
	S0/0/0	172.20.1.2	255.255.255.128	N/A
	S0/0/1	192.168.38.254	255.255.255.252	N/A
ISP	FA0/0	192.168.39.65	255.255.255.192	N/A
	S0/0/1	192.168.38.253	255.255.255.252	N/A
PC1	NIC	172.20.1.135	255.255.255.128	172.20.1.129
PC2	NIC	172.20.0.135	255.255.255.128	172.20.0.129
Web Server	NIC	192.168.39.70	255.255.255.192	192.168.39.65

Learning Objectives

Upon completion of this lab, you will be able to:

- Cable a network according to the Topology Diagram.
- Erase the startup configuration and reload a router to the default state.
- Load the routers with supplied scripts.
- Discover points where the network is not converged.

- Gather information about errors in the network.
- Propose solutions to network errors.
- Implement solutions to network errors.
- Document the corrected network.

Scenario

In this lab, you will begin by loading configuration scripts on each of the routers. These scripts contain errors that will prevent end-to-end communication across the network. You will need to troubleshoot each router to determine the configuration errors, and then use the appropriate commands to correct the configurations. When you have corrected all of the configuration errors, all of the hosts on the network should be able to communicate with each other.

Task 1: Cable, Erase, and Reload the Routers.

Step 1: Cable a network that is similar to the one in the Topology Diagram.

Step 2: Clear the configuration on each router.

Clear the configuration on each of routers using the **erase startup-config** command and then **reload** the routers. Answer **no** if asked to save changes.

Task 2: Load Routers with the Supplied Scripts.

Step 1: Load the following script onto the BRANCH router:

```
hostname BRANCH
!
!
no ip domain-lookup
!
interface FastEthernet0/0
 ip address 172.20.1.129 255.255.255.128
 duplex auto
 speed auto
 no shutdown
!
interface Serial0/0/0
 ip address 172.20.1.1 255.255.255.128
 clock rate 64000
 no shutdown
!
ip route 0.0.0.0 0.0.0.0 172.20.0.129
!
line con 0
line vty 0 4
password cisco
 login
!
end
```

Step 2: Load the following script onto the HQ router:

```
hostname HQ
```

```
!
no ip domain-lookup
!
interface FastEthernet0/0
 ip address 172.20.0.129 255.255.255.128
 duplex auto
 speed auto
 no shutdown
!
interface Serial0/0/0
 ip address 172.20.1.2 255.255.255.128
 no shutdown
!
interface Serial0/0/1
 ip address 192.168.38.254 255.255.255.252
 clock rate 64000
 no shutdown
!
ip route 192.168.39.64 255.255.255.192 192.168.38.253
!
line con 0
line vty 0 4
password cisco
 login
!
end
```

Step 3: Load the following script onto the ISP router:

```
hostname ISP
!
no ip domain-lookup
!
interface FastEthernet0/0
 ip address 192.168.39.65 255.255.255.192
!
interface Serial0/0/1
 ip address 192.168.38.253 255.255.255.252
 no shutdown
!
ip route 172.20.0.0 255.255.255.0 192.168.38.254
!
line con 0
line vty 0 4
password cisco
 login
!
end
```

Task 3: Troubleshoot the BRANCH Router.

Step 1: Begin troubleshooting at the host connected to the BRANCH router.

From the host PC1, is it possible to ping PC2? _____

From the host PC1, is it possible to ping the Web Server on the ISP LAN? _____

From the host PC1, is it possible to ping the default gateway? _____

Step 2: Examine the BRANCH router to find possible configuration errors.

Begin by viewing the summary of status information for each interface on the router.

Are there any problems with the status of the interfaces?

_____

_____

_____

If there are any problems with the status of the interfaces, record any commands that will be necessary to correct the configuration errors.

_____

_____

_____

Step 3: If you have recorded any commands above, apply them to the router configuration now.

Step 4: View summary of the status information.

If any changes were made to the configuration in the previous step, view the summary of the status information for the router interfaces again.

Does the information in the interface status summary indicate any configuration errors? _____

If the answer is **yes**, troubleshoot the interface status of the interfaces again.

Step 5: Troubleshoot the static routing configuration on the BRANCH router.

Begin by viewing the routing table.

What routes are shown in the routing table?

_____

_____

_____

Are there any problems with the routing table?

_____

_____

_____

If there are any problems with the routing table, record any commands that will be necessary to correct the configuration errors.

_____

_____

_____

Step 6: If you have recorded any commands above, apply them to the router configuration now.

Step 7: View routing information.

If any changes were made to the configuration in the previous step, view routing table again.

Does the information in the routing table indicate any configuration errors? _____

If the answer is **yes**, troubleshoot the routing table again.

Step 8: Attempt to ping between the hosts again.

From the host PC1, is it possible to ping PC2? _____

From the host PC1, is it possible to ping the web server on the ISP LAN? _____

From the host PC1, is it possible to ping the Serial 0/0/0 interface of HQ? _____

Task 4: Troubleshoot the HQ Router.

Step 1: Begin troubleshooting at the host connected to the HQ router.

From the host PC2, is it possible to ping PC1? _____

From the host PC2, is it possible to ping the Web Server on the ISP LAN? _____

From the host PC2, is it possible to ping the default gateway? _____

Step 2: Examine the HQ router to find possible configuration errors.

Begin by viewing the summary of status information for each interface on the router.

Are there any problems with the status of the interfaces?

_____

_____

_____

If there are any problems with the status of the interfaces, record any commands that will be necessary to correct the configuration errors.

_____

_____

_____

Step 3: If you have recorded any commands above, apply them to the router configuration now.

Step 4: View summary of the status information.

If any changes were made to the configuration in the previous step, view the summary of the status information for the router interfaces again.

Does the information in the interface status summary indicate any configuration errors? _____

If the answer is **yes**, troubleshoot the interface status of the interfaces again.

Step 5: Troubleshoot the static routing configuration on the HQ router.

Begin by viewing the routing table.

What routes are shown in the routing table?

_____

_____

_____

Are there any problems with the routing table?

_____

_____

_____

If there are any problems with the routing table, record any commands that will be necessary to correct the configuration errors.

_____

_____

_____

Step 6: If you have recorded any commands above, apply them to the router configuration now.

Step 7: View routing information.

If any changes were made to the configuration in the previous step, view the routing table again.

Does the information in the routing table indicate any configuration errors? _____

If the answer is **yes**, troubleshoot the routing table again.

Step 8: Attempt to ping between the hosts again.

From the host PC2, is it possible to ping PC1? _____

From the host PC2, is it possible to ping the Serial 0/0/1 interface of the ISP router? _____

From the host PC1, is it possible to ping the Web Server on the ISP LAN? _____

Task 5: Troubleshoot the ISP Router.

Step 1: Begin troubleshooting at the host connected to the ISP router.

From the Web Server on the ISP LAN, is it possible to ping PC1? _____

From the Web Server on the ISP LAN, is it possible to ping PC2? _____

From the Web Server on the ISP LAN, is it possible to ping the default gateway? _____

Step 2: Examine the ISP router to find possible configuration errors.

Begin by viewing the summary of status information for each interface on the router.

Are there any problems with the status of the interfaces?

_____

_____

_____

If there are any problems with the status of the interfaces, record any commands that will be necessary to correct the configuration errors.

_____

_____

_____

Step 3: If you have recorded any commands above, apply them to the router configuration now.

Step 4: View summary of status information.

If any changes were made to the configuration in the previous step, view the summary of the status information for the router interfaces again.

Does the information in the interface status summary indicate any configuration errors? _____

If the answer is **yes**, troubleshoot the interface status of the interfaces again.

Step 5: Troubleshoot the static routing configuration on the ISP router.

Begin by viewing the routing table.

What routes are shown in the routing table?

_____

_____

_____

Are there any problems with the routing table?

_____

_____

_____

If there are any problems with the routing table, record any commands that will be necessary to correct the configuration errors.

_____

_____

_____

Step 6: If you have recorded any commands above, apply them to the router configuration now.

Step 7: View routing information.

If any changes were made to the configuration in the previous step, view the routing table again.

Does the information in the routing table indicate any configuration errors? _____

If the answer is **yes**, troubleshoot the routing table again.

Step 8: Attempt to ping between the hosts again.

From the Web Server on the ISP LAN, is it possible to ping PC1? _____

From the Web Server on the ISP LAN, is it possible to ping PC2? _____

From the Web Server on the ISP LAN, is it possible to the WAN interface of the BRANCH router? _____

Task 6: Reflection

There were a number of configuration errors in the scripts that were provided for this lab. Use the space below to write a brief description of the errors that you found.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Task 7: Documentation

On each router, capture the following command output to a text (.txt) file and save for future reference.

- **show running-config**
- **show ip route**
- **show ip interface brief**

If you need to review the procedures for capturing command output, see Lab 1.5.1, "Cabling a Network and Basic Router Configuration."