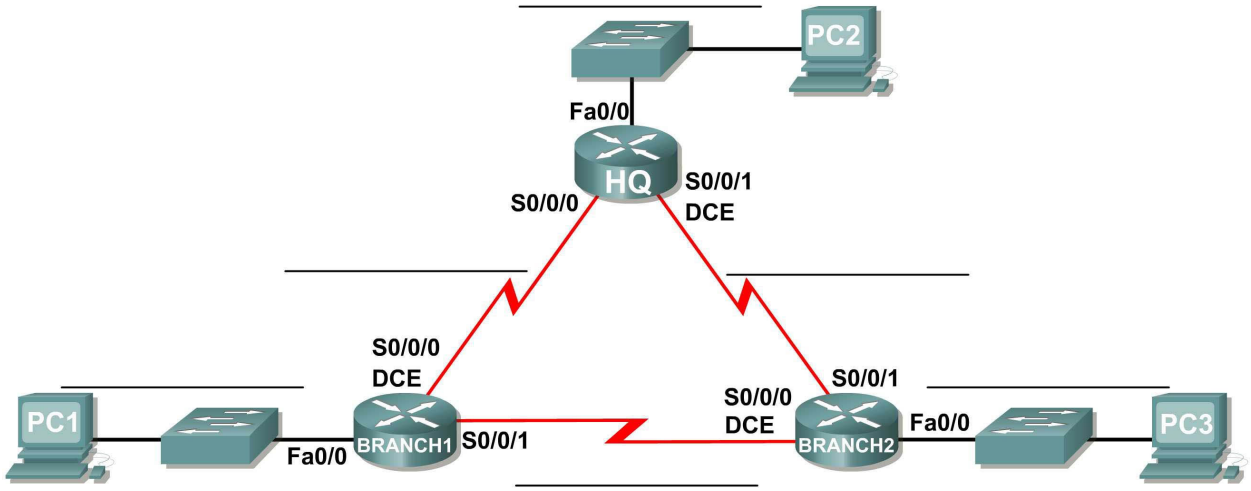
# Lab 9.6.3: EIGRP Troubleshooting Lab

## Topology Diagram




## Addressing Table

| Device | Interface | IP Address | Subnet Mask | Default Gateway |
|---|---|---|---|---|
| HQ | Fa0/0 | 172.18.64.1 | 255.255.192.0 | N/A |
| | S0/0/0 | 209.165.202.129 | 255.255.255.252 | N/A |
| | S0/0/1 | 209.165.202.133 | 255.255.255.252 | N/A |
| BRANCH1 | Fa0/0 | 172.18.129.1 | 255.255.255.240 | N/A |
| | S0/0/0 | 209.165.202.130 | 255.255.255.252 | N/A |
| | S0/0/1 | 209.165.202.137 | 255.255.255.252 | N/A |
| BRANCH2 | Fa0/0 | 172.18.128.1 | 255.255.255.0 | N/A |
| | S0/0/0 | 209.165.202.138 | 255.255.255.252 | N/A |
| | S0/0/1 | 209.165.202.134 | 255.255.255.252 | N/A |
| PC1 | NIC | 172.18.129.14 | 255.255.255.240 | 172.18.129.1 |
| PC2 | NIC | 172.18.100.100 | 255.255.192.0 | 172.18.64.1 |
| PC3 | NIC | 172.18.128.10 | 255.255.255.0 | 172.18.128.1 |

## 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 where communication is not possible.
- Gather information about the misconfigured portion of the network along with any other errors.
- Analyze information to determine why communication is not possible.
- 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.

The network should also have the following requirements met:

- EIGRP routing is configured on the BRANCH1 router.
- EIGRP routing is configured on the BRANCH2 router.
- EIGRP routing is configured on the HQ router.
- EIGRP updates must be disabled on the BRANCH1, BRANCH2, and HQ LAN interfaces.
- All EIGRP routers must use a process ID of 1.

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

#### Step 1: Cable a network.

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 the routers using the e**rase 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 BRANCH1 router:

```
hostname BRANCH1
!
no ip domain-lookup
!
interface FastEthernet0/0
 ip address 172.18.129.1 255.255.255.240
 duplex auto
 speed auto
 !
```

```
interface Serial0/0/0
 ip address 209.165.202.130 255.255.255.252
 clock rate 64000
 no shutdown
!
interface Serial0/0/1
 ip address 209.165.202.137 255.255.255.252
 no shutdown
!
router eigrp 2
  passive-interface FastEthernet0/0
 network 209.165.202.128 0.0.0.3
 network 209.165.202.136 0.0.0.3
 network 172.18.129.0 0.0.0.7
 no auto-summary
!
ip classless
!
line con 0
line vty 0 4
 login
!
end
```

**Step 2: Load the following script onto the BRANCH2 router:**

```
hostname BRANCH2
!
no ip domain-lookup
!
interface FastEthernet0/0
 ip address 172.18.128.1 255.255.255.0
 duplex auto
 speed auto
 no shutdown
!
interface Serial0/0/0
 ip address 209.165.202.138 255.255.255.252
 clock rate 64000
 no shutdown
!
interface Serial0/0/1
 ip address 209.165.202.134 255.255.255.252
 no shutdown
!
router eigrp 1
 passive-interface FastEthernet0/0
 network 172.18.128.0 0.0.0.255
 network 209.165.202.132 0.0.0.3
 network 209.165.202.136 0.0.0.3
 !
ip classless
!
line con 0
line vty 0 4
 login
```

```
!
end
```

**Step 3: Load the following script onto the HQ router:**

```
hostname HQ
!
no ip domain-lookup
!
interface FastEthernet0/0
 ip address 172.18.64.1 255.255.192.0
 duplex auto
 speed auto
 no shutdown
!
interface Serial0/0/0
 ip address 209.165.202.129 255.255.255.252
 no shutdown
!
interface Serial0/0/1
 ip address 209.165.202.133 255.255.255.252
 clock rate 64000
 no shutdown
!
router eigrp 1
 passive-interface Serial0/0/0
  network 172.18.64.0
 network 209.165.202.128 0.0.0.3
 network 209.165.202.132 0.0.0.3
 no auto-summary
!
ip classless
!
line con 0
line vty 0 4
 login
!
end
```

## Task 3: Troubleshoot the BRANCH1 Router.

**Step 1: Begin troubleshooting at the Host connected to the BRANCH1 router.**

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

From the host PC1, is it possible to ping PC3? _____

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

**Step 2: Examine the BRANCH1 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 configuration of the interfaces?

_____

_____

If there are any problems with the configuration 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 on the BRANCH1 router? _____

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

**Step 5: Troubleshoot the routing configuration on the BRANCH1 router.**

What routes are shown in the routing table?

_____

_____

Are there any problems with the routing table or the EIGRP configuration?

_____

_____

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

_____

_____

_____

_____

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_____

Are there any connectivity problems that could be due to errors on other parts of the network?

_____

_____

 

What connected networks are shown in the EIGRP topology table of the BRANCH1 router?

_____

_____

Are there any problems with the connected networks in the EIGRP topology table?

_____

_____

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

**Step 7: View the routing information.**

If any changes were made to the configuration in the previous steps, view the routing information again.

Does the information in routing table indicate any configuration errors on the BRANCH1 router? _____

Does the information in the EIGRP topology table indicate any configuration errors on the BRANCH1 router? _____

If the answer to either of these questions is **yes**, troubleshoot the routing configuration again.

What routes are shown in the routing table?

_____

_____

_____

_____

**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 PC3? _____

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

From the host PC1, is it possible to ping the Serial 0/0/1 interface of the HQ router? _____

## Task 4: Troubleshoot the HQ Router

**Step 1: Begin troubleshooting at the host PC2.**

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

From the host PC2, is it possible to ping PC3? _____

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 configuration of the interfaces?

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

 

Are there any problems with the configuration of the interfaces?

_____

_____

_____

If there are any problems with the configuration 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 on the HQ router?

_____

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

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

What routes are shown in the routing table?

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Are there any problems with the routing table or the EIGRP configuration?

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

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Are there any connectivity problems that could be due to errors on other parts of the network?

_____

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What connected networks are shown in the EIGRP topology table of the HQ router?

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Are there any problems with the connected networks in the EIGRP topology table?

_____

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

**Step 7: View the routing information.**

If any changes were made to the configuration in the previous steps, view the routing information again.

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

Does the information in the EIGRP topology table indicate any configuration errors on the HQ router? _____

If the answer to either of these questions is **yes**, troubleshoot the routing configuration 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 PC3? _____

From the host PC2, is it possible to ping the Serial 0/0/0 interface of the BRANCH2 router? _____

From the host PC2, is it possible to ping the Serial 0/0/1 interface of the BRANCH2 router? _____

## Task 5: Troubleshoot the BRANCH2 Router

**Step 1: Begin troubleshooting at the Host PC3.**

From the host PC3, is it possible to ping PC1? _____

From the host PC3, is it possible to ping PC2? _____

 

From the host PC3, is it possible to ping the default gateway? _____

**Step 2: Examine the BRANCH2 router to find possible configuration errors.**

Are there any problems with the configuration of the interfaces?

_____

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

_____

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**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 on the BRANCH2 router? _____

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

**Step 5: Troubleshoot the routing configuration on the BRANCH2 router.**

What routes are shown in the routing table?

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Are there any problems with the routing table or the EIGRP configuration?

_____

_____

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

_____

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_____

 

Are there any connectivity problems that could be due to errors on other parts of the network?

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What connected networks are shown in the EIGRP topology table of the BRANCH2 router?

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_____

Are there any problems with the connected networks in the EIGRP topology table?

_____

_____

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

**Step 7: View the routing information.**

If any changes were made to the configuration in the previous steps, view the routing information again.

Does the information in routing table indicate any configuration errors on the BRANCH2 router? _____

Does the information in the EIGRP topology table indicate any configuration errors on the BRANCH2 router? _____

If the answer to either of these questions is **yes**, troubleshoot the routing configuration again.

What routes are shown in the routing table?

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**Step 8: Attempt to ping between the hosts again.**

From the host PC3, is it possible to ping PC1? _____

From the host PC3, is it possible to ping PC2? _____

From the host PC3, is it possible to ping the Serial 0/0/0 interface of the BRANCH1 router? _____

From the host PC3, is it possible to ping the Serial 0/0/1 interface of the BRANCH1 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.

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_____

 

_____

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## 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`**
- **`show ip protocols`**

If you need to review the procedures for capturing command output, refer to Lab 1.5.1

## Task 8: Clean Up

Erase the configurations and reload the routers. Disconnect and store the cabling. For PC hosts that are normally connected to other networks (such as the school LAN or to the Internet), reconnect the appropriate cabling and restore the TCP/IP settings.

 