



COE 371L

Computer Networks I

Fall 2019

Lab #7

Section #2

Title: Configuring Basic Router Settings with IOS CLI

Name : Amir Mohideen, Zayed Mohamed

ID: 74559, 75771

Lab – Configuring IPv4 Static/Default Routes

1. Set Up the Topology and Initialize Devices
2. Configure Basic Device Settings and Verify Connectivity
3. Configure Static Routes
   1. Configure a recursive static route.
   2. Configure a directly connected static route.
   3. [Report] Configure a static route.
      1. On the R1 router, configure a static route to the 198.133.219.0 network using one of the static route configuration options from the previous steps. Write the command you used in the space provided.

ip route 198.133.219.0 255.255.255.0 s0/0/1

* + 1. On the R1 router, configure a static route to the 209.165.200.224 network on R3 using the other static route configuration option from the previous steps. Write the command you used in the space provided.

ip route 209.165.200.224 255.255.255.224 10.1.1.2

* + 1. View the routing table to verify the new static route entry.

How is this new route listed in the routing table?

It is listed as a static route

* + 1. From host PC-A, is it possible to ping the R1 address 198.133.219.1? Yes

This ping should be successful.

* 1. [Report] Remove static routes for loopback addresses.
     1. On R1, use the **no** command to remove the static routes for the two loopback addresses from the routing table. Write the commands you used in the space provided.

no ip route 198.133.219.0 255.255.255.0 s0/0/1

no ip route Ip route 209.165.200.224 255.255.255.224 10.1.1.2

* + 1. View the routing table to verify the routes have been removed.

How many network routes are listed in the routing table on R1? 3

Is the Gateway of last resort set? No

1. [Report] Configure and Verify a Default Route

In Part 4, you will implement a default route, confirm that the route has been added to the routing table, and verify connectivity based on the introduced route.

A default route identifies the gateway to which the router sends all IP packets for which it does not have a learned or static route. A default static route is a static route with 0.0.0.0 as the destination IP address and subnet mask. This is commonly referred to as a “quad zero” route.

In a default route, either the next-hop IP address or exit interface can be specified. To configure a default static route, use the following syntax:

Router(config)# **ip route 0.0.0.0 0.0.0.0** {*ip-address or exit-intf*}

* + 1. Configure the R1 router with a default route using the exit interface of S0/0/1. Write the command you used in the space provided.

ip route 0.0.0.0 0.0.0.0 s0/0/1

* + 1. View the routing table to verify the new static route entry.

How is this new route listed in the routing table?

It is listed as static default route

What is the Gateway of last resort?

0.0.0.0 to network 0.0.0.0

* + 1. From host PC-A, is it possible to ping the 209.165.200.225? Yes
    2. From host PC-A, is it possible to ping the 198.133.219.1? Yes

These pings should be successful.

1. [Report] Reflection
   1. A new network 192.168.3.0/24 is connected to interface G0/0 on R1. What commands could be used to configure a static route to that network from R3?

ip route 192.168.3.0 255.255.255.0 10.1.1.1

ip route 192.168.3.0 255.255.255.0 s 0/0/0

* 1. Is there a benefit to configuring a directly connected static route instead of a recursive static route?

In a recursive router, only the IP addresses of the next hop are specified. This makes the router hop between addresses recursively to finally send the packets. But with directly connected router we can directly send the packets to the destination port and hence is efficient.

* 1. Why is it important to configure a default route on a router?

It is necessary as the router should be aware on where the packets need to be delivered to with the help of IP addresses. They do not have a specific static route. The default router sends these packets through a specific gateway.