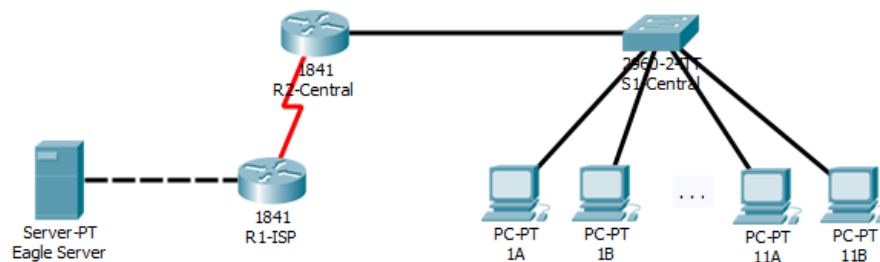# LAB5-2 PRACTICE
EXAMINING A DEVICE'S GATEWAY

Learning Objectives

- Understand and explain the purpose of a gateway address
- Understand how network information is configured on a Windows computer
- Troubleshoot a hidden gateway address problem

Topology Diagram

Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
R1-ISP	S0/0/0	10.10.10.6	255.255.255.252	N/A
	Fa0/0	192.168.254.253	255.255.255.0	N/A
R2-Central	S0/0/0	10.10.10.5	255.255.255.252	N/A
	Fa0/0	172.168.255.254	255.255.0.0	N/A
Eagle Server	FastEthernet	192.168.254.254	255.255.255.0	192.168.254.253
Host 1A	FastEthernet	172.16.1.1	255.255.0.0	172.16.255.254
Host 1B	FastEthernet	172.16.1.2	255.255.0.0	172.16.255.254
Host 11A	FastEthernet	172.16.11.1	255.255.0.0	172.16.255.254
Host 11B	FastEthernet	172.16.11.2	255.255.0.0	172.16.255.254
S1-Central	N/A	172.16.254.1	255.255.0.0	172.16.255.254

Introduction:

An IP address is composed of a network portion and a host portion. A computer that communicates with another device must first know how to reach the device. For devices on the same local area network (LAN), the IP address's host portion is used as the identifier. The network portion of the destination device is the same as the network portion of the host device.

However, devices on different networks have different source and destination network numbers. The IP address network is used to identify when a packet must be sent to a gateway address, which is assigned to a network device that forwards packets between distant networks.

A router is assigned the gateway address for all the devices on the LAN. One purpose of a router is to serve as an entry point for packets coming into the network and an exit point for packets leaving the network.

Gateway addresses are very important to users. Cisco estimates that 80 percent of network traffic will be destined to devices on other networks, and only 20 percent of network traffic will go to local devices. This is called the 80/20 rule. Therefore, if a gateway cannot be reached by the LAN devices, users will not be able to perform their job.

Task 1: Understand and Explain the Purpose of a Gateway Address.

Step 1. Open a command prompt window on a pod host computer.
- Issue the **ipconfig** command.
- What is the default gateway address?

Step 2. Use the ping command to verify connectivity with IP address 192.168.254.254.
- Was the ping successful?

Step 3. Use the ping command to ping different IP addresses on the 172.16.0.0/16 network, 192.168.254.0/24, and 10.10.10.4/30.
- Were responses successful? If not, why?

Task 2: Understand how Network Information is Configured.

Many times connectivity issues are attributed to wrong network settings. In troubleshooting connectivity issues, several tools are available to determine the network configuration quickly.

Step 1. Examine network IP address properties:
- By Clicking on the **PC** > **Desktop** Tab> **IP Configuration**

Step 2. To examine network properties using the ipconfig command:
- Click on the PC > Desktop Tab > Command Prompt
- Then type ipconfig or ipconfig /all

Task 3: Troubleshoot a Hidden Gateway Address Problem.

When troubleshooting network issues, a thorough understanding of the network can often assist in identifying the real problem.

As the 3rd shift help desk Cisco engineer, you are asked for assistance from the help desk technician. The technician received a trouble ticket from a user on computer host-1A, complaining that computer host-11B, host-11B.example.com, does not respond to pings. The technician verified the cables and network settings on both computers, but nothing unusual was found. You check with the corporate network engineer, who reports that R2-Central has been temporarily brought down for a hardware upgrade. Nodding your head in understanding, you ask the technician to ping the IP address for host-11B, 172.16.11.2 from host-1A. The pings are successful. Then, you ask the technician to ping the gateway IP address, 172.16.254.254, and the pings fail.

Your task is to find and fix the problem that is occurring within this network.

HINT: In Order to Solve This Problem, Check R2-Central's Interfaces