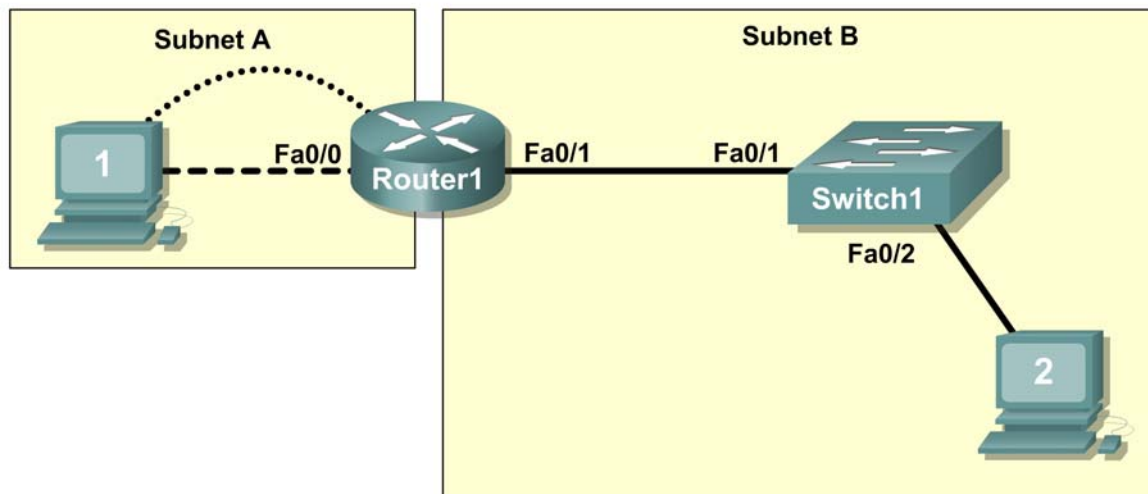# PT Activity 1.3.3: Troubleshooting a Small Network

Topology Diagram

NOTE TO USER: This activity is a variation of lab 1.3.3. This Packet Tracer Activity is not a companion for the above named lab. The instructions for completing this activity are found within this activity.

Learning Objectives

- Examine the logical LAN topology.
- Troubleshoot network connections.

Introduction

The configuration contains design and configuration errors that conflict with stated requirements and prevent end-to-end communication. You will troubleshoot the connectivity problems to determine where the errors are occurring and correct them using the appropriate commands. When all errors have been corrected, each host should be able to communicate with all other configured network elements and with the other host.

Task 1: Examine the Logical LAN Topology

Step 1. Design an IP addressing scheme.

The IP address block of **172.16.30.0 /23** is subnetted to meet the following requirements:

Subnet	Number of Hosts
Subnet A	174
Subnet B	60

Additional requirements and specifications:

- Subnet zero is used.
- The smallest possible number of subnets that satisfy the requirements for hosts should be used, keeping the largest possible block in reserve for future use.
- Assign the first usable subnet to Subnet A.
- Host computers use the first IP address in the subnet.
- The network router uses the last network host address.

Based on these requirements, the following addressing requirements have been provided to you:

Subnet A	
IP mask (decimal)	**255.255.255.0**
IP address	**172.16.30.0**
First IP host address	**172.16.30.1**
Last IP host address	**172.16.30.254**
Subnet B	
IP mask (decimal)	**255.255.255.128**
IP address	**172.16.31.0**
First IP host address	**172.16.31.1**
Last IP host address	**172.16.31.126**

Examine each of the values in the tables above and verify that this topology meets all requirements and specifications. Are any of the given values incorrect?

_____

If yes, make note of the corrected values.

_____

_____

Task 2: Troubleshoot Network Connections

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

From host PC1, is it possible to ping PC2?

_____

From host PC1, is it possible to ping the router fa0/1 interface?

_____

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

_____

From host PC1, is it possible to ping itself?

_____

Where is the most logical place to begin troubleshooting the PC1 connection problems?

_____

_____

_____

Step 2. Examine the 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 problems with the status of the interfaces, record any commands that are necessary to correct the configuration errors.

_____

Step 3. Use the necessary commands to correct the router configuration.

Step 4. View a 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.

Does the information in the interface status summary indicate any configuration errors on Router1?

_____

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

_____

_____

Has connectivity been restored?

_____

Step 5. Verify the logical configuration.

Examine the full status of Fa 0/0 and 0/1. Is the IP addresses and subnet mask information in the interface status consistent with the configuration table?

_____

If there are differences between the configuration table and the router interface configuration, record any commands that are necessary to correct the router configuration.

_____

_____

Has connectivity been restored?

_____

Why is it useful for a host to ping its own address?

_____

_____

Step 6. Check results.

Your completion percentage should be 100%. If not, click **Check Results** to see which required components are not yet completed.