

Explore Troubleshooting Methodology

Introduction

Nerlify Enterprises has a new client named Maven Mortgage who is having multiple network and client connectivity issues. The boss's nephew is an aspiring IT technician who made changes on their network and wants to learn from this experience to understand how to troubleshoot. You've been called in to determine what has gone wrong and correct it to get the office up and running again.



Objectives

In this lab the student will:

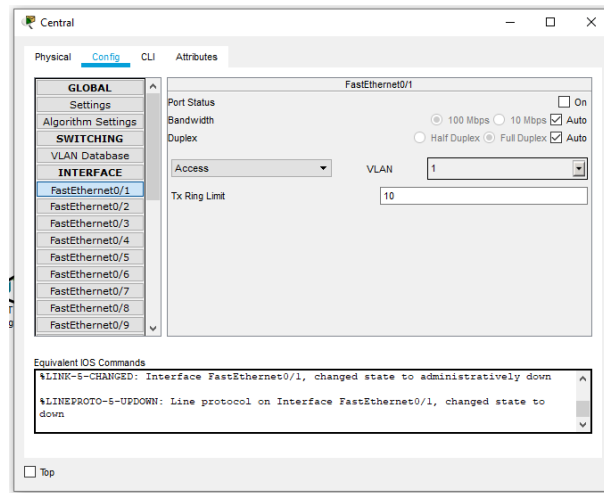
- Troubleshoot Layer 1,2 and 3 networking issues.

Equipment/Supplies Needed

- Cisco Packet Tracer
- Maven Mortgage.pkt downloaded from [HERE](#)

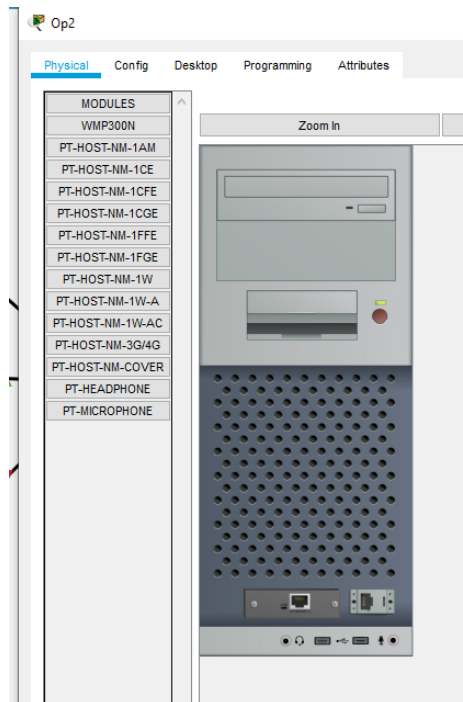
Procedure

1. Open the Mortgage Maven Packet Tracer file. Notice that the office is segmented into a few organizational groups – Sales, Operating, and Accounting. The address for MavenServ is 192.168.1.1. All workstations need to be able to connect to this IP to ensure full network connectivity.
2. Ticket A: No one on the network can access MavenServ.
 - a. Notice the link from the Central Router to MavenServ is down. This gives us a Layer 1, physical indication that the connection is down.
 - b. Click the Central router, then click the config tab.
 - c. Click the GigabitEthernet0/1 label and look to the right of the window.
 - d. The switch port connected to MavenServ has been turned off.



- a. Click the checkbox next to On. You should see the red down arrows on the connection turn to a green up arrow and an amber circle. The amber circle indicates the connection is setting up. In a few moments, it will turn into a green up arrow.
 - b. Now ensure connectivity to MavenServ. Click Acc1. Click the Desktop tab, then click Web Browser.
 - c. In the URL field, type 192.168.1.1 and press Enter. You should receive a message indicating you can access MavenServ.
3. Ticket B: Acc2 can't access MavenServ.
 - a. Open the Web Browser on Acc2 and attempt to enter the IP address 192.168.1.1 and press Enter. Nothing happens. Since we have green up arrows on the line, we know Layer 1 is functioning and layer 2 is as well because the correct straight through cable is plugged in on both sides.
 - b. Let's check layer 3 functionality. Click Acc2, click the desktop tab, then click IP information. Notice that the IP address information is blank. The IP configuration has been moved from DHCP to Static, but no address has been entered.
 - c. To correct this, click the radio button next to DHCP. The computer will contact the DHCP server and attempt to get an IP address. When you get a message that says the DHCP request is successful, attempt to use the web browser again. You should be able to reach the server.
 4. Ticket C: Op2 can't connect to anything on the network

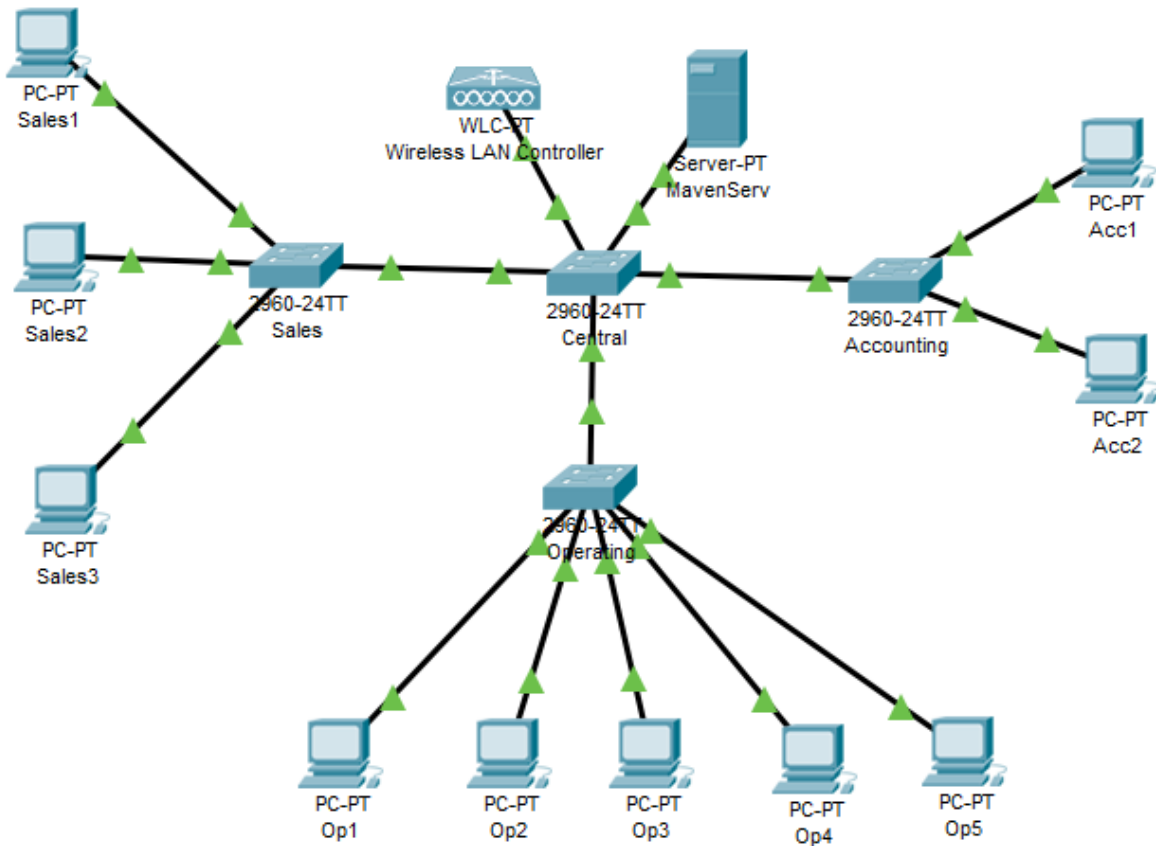
- a. A quick glance at this PC in Packet Tracer shows that it has no physical layer 1 connection to the Operating switch.
- b. We are unable to place a cable from this PC to the switch. Click Op2, go to the Physical tab and scroll down. Notice that there is no RJ45 jack to plug a cable into because the layer 2 device, the network interface card, has been removed.
- c. Turn the PC off with the red button and drag a PT-HOST-NM-1CE module into the blank rectangle at the bottom of the tower. Use the power button to turn it back on.



- a. Close the window and attempt to plug a straight through cable in from Ethernet0 of Op2 to port FastEthernet0/2 on the Operating switch. After a few moments when you see two green up arrows, ensure you have an IP address and you can connect to MavenServ.
5. Ticket D: Sales 3 can't connect to anyone on the network.
- a. Sales 3 has a cable (layer 1) which is plugged in (layer 2) and has an IP address (layer 3) but still can't access the network. Click on the Sales switch and click on FastEthernet0/3. Notice the port is turned off.
 - b. Click the checkbox next to On. You should see the status of the lines change in the next few moments.
 - c. Click the Sales 3 PC, the Desktop tab, then click IP configuration. Notice the computer has an APIPA address, since it could not contact the DHCP server. Click the radio button

in front of Static to clear the IP, then click the radio button in front of DHCP to request a new IP address. Ensure you can connect to MavenServ.

6. Your network should once again be completely operational and you should be able to ping MavenServ from any device on the network. All links should indicate green up arrows.



Reflection

1. Step 1 of the troubleshooting methodology is “gather information.” What information did you gather about Tickets A, B, C, and D?
2. Step 2 is to identify the affected areas of the network. Were the tickets you resolved affecting only one workstation, a segment of the network, or the whole network?

3. Step 3 is to determine if anything has changed. What recent changes caused issues on the network?
4. Step 4 is to establish probable cause. If you wouldn't have been able to rely on this lab to guide you, what are three other resources you could have used?
5. Step 5 is to determine if escalation is necessary. As an entry level tech, name an example of something that could have gone wrong with this network that would be outside of your area of knowledge that would have required escalation.
6. Step 6 is to create an action plan and solution identifying potential effects. In this scenario, it made sense to complete ticket A first. Why?
7. Step 7 is to implement and test the solution. Was your first attempt to correct each ticket successful?
8. Step 8 is to identify the results and effects of the solution. Step 9 is to document the solution and process for the future. Pick one of the tickets you resolved and write a few sentences about the troubleshooting methodology you went through to correct it just like you write on your ticket before you closed it.

Rubric

- Packet Tracer file with correctly functioning network (20 points)
- Submit answers to the reflections questions (80 points)

Standards for This Competency	EXEMPLARY	ACCOMPLISHED	DEVELOPING	BEGINNING
Packet Tracer	Has a correctly functioning network (20 pt)			Does not have a functioning network (0 pt)

Reflection Question #1	Answer is fully developed. (10 pt)	Answer is partially developed. (8 pt)	Answer lacks adequate support. (5 pt)	Answer shows a lack of understanding. (0 pt)
Reflection Question #2	Answer is fully developed. (10 pt)	Answer is partially developed. (8 pt)	Answer lacks adequate support. (5 pt)	Answer shows a lack of understanding. (0 pt)
Reflection Question #3	Answer is fully developed. (10 pt)	Answer is partially developed. (8 pt)	Answer lacks adequate support. (5 pt)	Answer shows a lack of understanding. (0 pt)
Reflection Question #4	Answer is fully developed. (10 pt)	Answer is partially developed. (8 pt)	Answer lacks adequate support. (5 pt)	Answer shows a lack of understanding. (0 pt)
Reflection Question #5	Answer is fully developed. (10 pt)	Answer is partially developed. (8 pt)	Answer lacks adequate support. (5 pt)	Answer shows a lack of understanding. (0 pt)
Reflection Question #6	Answer is fully developed. (10 pt)	Answer is partially developed. (8 pt)	Answer lacks adequate support. (5 pt)	Answer shows a lack of understanding. (0 pt)
Reflection Question #7	Answer is fully developed. (10 pt)	Answer is partially developed. (8 pt)	Answer lacks adequate support. (5 pt)	Answer shows a lack of understanding. (0 pt)
Reflection Question #8	Answer is fully developed. (10 pt)	Answer is partially developed. (8 pt)	Answer lacks adequate support. (5 pt)	Answer shows a lack of understanding. (0 pt)