Answers: 12.1.9 Packet Tracer - Identify Packet Flow

Objectives

In this activity, you will observe packet flow in a LAN and WAN topology. You will also observe how the packet flow path may change when there is a change in the network topology.

Part 1: Verify Connectivity

Part 2: Remote LAN Network Topology

Part 3: WAN Network Topology

Background / Scenario

Packet Tracer allows the design and creation of a simulated networking topology. In this activity, you are presented with a simplified topology to observe packet flow. You will explore how packets travel through the network using the simulation mode in Packet Tracer. You will also observe the changes in packet flow when there is a change in the network topology.

Required Resources

- Latest version of Packet Tracer installed

Instructions

Part 1: Verifying Connectivity

In this part, you will verify that you can access the other networks from devices on the Home Network.

a. Click **PC0**. Select the **Desktop** tab and open the **Web Browser**.

b. In the URL field, enter **www.cisco.pka** and press **Go**. Be sure to use the .pka domain, not the .com domain. It should be successful. You can click **Fast Forward Time** to speed up the process.

c. Repeat this for **www.web.pka**. It should be successful.

d. Exit the web browser when finished.

Part 2: Remote LAN Network Topology

In this part, you will use the simulation mode in Packet Tracer to observe how packets flow through a remote LAN network.

a. Switch to Simulation mode (Shift + S). Click **Show All/None** to clear all the selected event list filters.

b. Click **Edit Filters**. Select **DNS** under the IPv4 tab and **HTTP** under **Misc** tab.

c. Open a web browser on **PC0**. Enter **www.web.pka** and press **Go**.

Predict the packet path to resolve **www.web.pka** to an IP address. Record your prediction.

d. Click **Capture / Forward** until the webpage is displayed on PC0 to view the packet flow. Click **View Previous Events** when prompted by the Buffer Full dialog box.

After the IP address has been resolved, which path did HTTP packets travel to display the webpage? Record your observations.

e. Switch to Real time mode (Shift + R). Click the X icon in the right tool panel to select the Delete tool. Remove the link between Switch0 and Switch 1 from the Public Network to simulate a broken link. After 30 seconds, the network will learn of the broken link. You can click Fast Forward to speed up the process.

f. Select the Arrow tool above the Delete tool to de-select Delete.

g. Switch to Simulation mode (Shift + S). Open a web browser in **Tablet0** and navigate to **www.web.pka**. You can click Auto Capture/Play to have Packet Tracer forward the packets without your interaction. You can also move the Play Slider to the right to speed up the packet forwarding.

   With a broken link in the LAN, how did the path change? Record your observation.

Part 3: WAN Network Topology

Step 1: PC0 to websites.

a. Remaining in Simulation mode, open a web browser on **PC0**. Enter **www.cisco.pka** and press **Go**.

   Predict the packet path to resolve **www.cisco.pka** to an IP address. Record your prediction.

b. Click **Capture / Forward** until the webpage is displayed on PC0 to view the packet flow. Click **View Previous Events** when prompted by the Buffer Full dialog box.

   After the IP address has been resolved, which path did HTTP packets travel to display the webpage? Record your observations.

c. Switch to Real time mode (Shift + R). Remove the link between Router4 and Router2 from the topology to simulate an inaccessible path. The routers are using Enhanced Interior Gateway Routing Protocol (EIGRP) to dynamically adjust routing tables to account for the deleted link.

d. Switch to Simulation mode (Shift + S). Open a web browser in **Tablet0** and navigate to **www.cisco.pka**.

   With a broken link in the WAN, how would the path change? Record your observation.

e. Switch to Real time mode (Shift + R).

Step 2: PC1 to websites.

a. Click PC1 > Desktop and open a command prompt.

b. Enter **tracert www.web.pka** at the command.

   ```
   PC> tracert www.web.pka
   ```

c. Match the IP addresses in the **tracert** results to the devices in the topology. Hover over the routers in the topology to view the IP addresses of the interfaces on the routers. If the popup does not stay active long

enough, you can access router IP addresses in the following manner: Click the router > CLI > press Enter. Now enter the command **show ip interface brief** to getting a listing of the interfaces and IP addresses.

Trace Number	Device	Interface	IP Address
6	East	Serial 0/0/0	209.165.202.130
7	www.web.pka	NIC	209.165.202.132 / 192.168.2.254

Network address translation (NAT) is used to translate the private www.web.pka IP address of 192.168.2.254 to a routable IPv4 address of 209.165.202.132. In the tracert result, the first line of IPv4 address of 209.165.202.132 is for the G0/1 interface of East. The second line of IPv4 address of 209.165.202.132 displays the public IPv4 address of the web server.

d. Switch to Simulation mode (Shift + S). Open the web browser on PC1 and enter www.web.pka as the URL. Click **Go**.

e. Click **Capture / Forward** to load the web page.

Compare the **tracert** results to the simulation results for the HTTP packets. Record your observations.