Department of Computer Science and Engineering
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Lab Report 02

CSE 4512 : Computer Networks Lab

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Packet Tracer - Investigating the TCP/IP and OSI Models in Action

Part 1: Examine HTTP Web Traffic

Step 1: Switch from Realtime to Simulation mode.

Step 2: Generate web (HTTP) traffic.

Step 3: Explore the contents of the HTTP packet.

a. Click the first colored square box under the **Event List** > **Info** column. It may be necessary to expand the **Simulation Panel** or use the scrollbar directly below the **Event List**.

b. Ensure that the **OSI Model** tab is selected. Under the **Out Layers** column, ensure that the **Layer 7** box is highlighted. What is the text displayed next to the **Layer 7** label? **The HTTP Client sends a HTTP Request to the HTTP Server**

c. What information is listed in the numbered steps directly below the **In Layers** and **Out Layers** boxes? **The numbered steps mostly hold the information of what each OSI layer is doing to establish a connection between the server and the client**

d. Click **Next Layer**. Layer 4 should be highlighted. What is the **Dst Port** value? **DST PORT : 80**

e. Click **Next Layer**. Layer 3 should be highlighted. What is the **Dest. IP** value? **DEST IP : 192.168.1.254**

f. Click **Next Layer**. What information is displayed at this layer? **Information about the Ethernet II Header**

g. Click the **Outbound PDU Details** tab.

Information listed under the **PDU Details** is reflective of the layers within the TCP/IP model.

What is the common information listed under the **IP** section of **PDU Details** as compared to the information listed under the **OSI Model** tab? With which layer is it associated? **DST IP : 192.168.1.1, IP: 192.168.1.254**

h. What is the common information listed under the **TCP** section of **PDU Details**, as compared to the information listed under the **OSI Model** tab, and with which layer is it associated? **SEQUENCE NUMBER: 1, ACKNOWLEDGEMENT NUMBER : 103**

i. What is the **Host** listed under the **HTTP** section of the **PDU Details**? What layer would this information be associated with under the **OSI Model** tab? **Connection-length : 170**

j. Advance to the next HTTP **Info** box within the **Event List** and click the colored square box. This window contains both **In Layers** and **Out Layers**. Notice the direction of the arrow directly under the **In Layers** column; it is pointing upward, indicating the direction the information is traveling. Scroll through these layers making note of the items previously viewed. At the top of the column the arrow points to the right. This denotes that the server is now sending the

information back to the client. Comparing the information displayed in the **In Layers** column with that of the **Out Layers** column, what are the major differences? **Major differences are that the DST and DEST, as well as the IP are being swapped**

k. Click the Outbound PDU Details tab. Scroll down to the HTTP section. What is the first line in the HTTP message that displays? **HTTP Data: Connection : Close**

l. Click the last colored square box under the **Info** column. How many tabs are displayed with this event and why? **Three tabs are displayed in this event, OSI Model, Inbound PDU, Outbound PDU**

Part 2: Display Elements of the TCP/IP Protocol Suite

Step 1: View Additional Events

a. Click the **Outbound PDU Details** tab. What information is listed in the **NAME**: in the DNS QUERY section? **www.osi.local**

b. Click the last DNS **Info** colored square box in the event list. Which device is displayed? **Web Client**

What is the value listed next to **ADDRESS**: in the DNS ANSWER section of the **Inbound PDU Details**? **TTL : 86400**

c. Find the first **HTTP** event in the list and click the colored square box of the **TCP** event immediately following this event. Highlight **Layer 4** in the **OSI Model** tab. In the numbered list directly below the **In Layers** and **Out Layers**, what is the information displayed under items 4 and 5? **4. The TCP connection is successful. 5. The device sets the connection to ESTABLISHED**

d. Click the last TCP event. Highlight Layer 4 in the **OSI Model** tab. Examine the steps listed directly below **In Layers** and **Out Layers**. What is the purpose of this event, based on the information provided in the last item in the list (should be item 4)? **4. The TCP connection was reset.**

Challenge

This simulation provided an example of a web session between a client and a server on a local area network (LAN). The client makes requests to specific services running on the server. The server must be set up to listen on specific ports for a client request. (Hint: Look at Layer 4 in the **OSI Model** tab for port information.)

Based on the information that was inspected during the Packet Tracer capture, what port number is the **Web Server** listening on for the web request? **HTTP PORT : 1026**

What port is the **Web Server** listening on for a DNS request? **DNS PORT : 1026**