CSE 320 ID: _18101617__

Transport Layer Protocols (TCP) Examination Lab

Objectives:

Capture traffic and observe the PDUS for TCP when a HTTP request is made.

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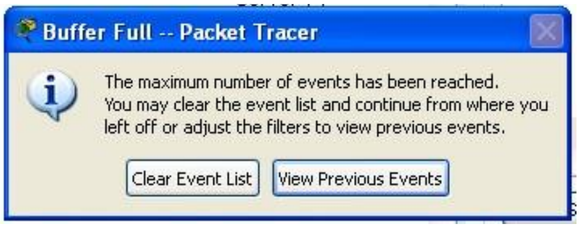
Task 1: Observe TCP traffic exchange between a client and server.

Step 1 – Run the simulation and capture the traffic.

- Enter Simulation mode.
- Check that your Event List Filters shows only HTTP and TCP.
- Click on the PC1. Open the Web Browser from the Desktop.
- Enter www.bracu.ac.bd into the browser. Clicking on Go will initiate a web server request. Minimize the Web Client configuration window.
- A TCP packet appears in the Event List, as we will only focus on TCP the DNS and ARP packets are not shown.
- Click the Auto Capture / Play button to run the simulation and capture events.
- Sit tight and observe the packets flowing through the network.



The maximum number of events has been reached. You may clear the event list and continue from where you left off or adjust the filters to view previous events.

- When the above message appears Click "View Previous Events".
- Click on PC1. The web browser displays a web page appears.

Step 2 – Examine the following captured traffic.

Our objective in this lab is only to observe TCP traffic.

	Last Device	At Device	Type
1.	PC1	Switch 0	TCP
2.	Local Web Server	Switch 1	TCP
3.	PC1	Switch 0	HTTP
4.	Local Web Server	Switch 1	HTTP
5.	PC1 (after HTTP response)	Switch 0	TCP
6.	Local Web Server	Switch 1	TCP
7.	PC1	Switch 0	TCP

- As before find the following packets given in the table above in the Event List, and click on the colored square in the Info column.
- When you click on the Info square for a packet in the event list the PDU Information window opens. If you click on these layers, the algorithm used by the device (in this case, the PC) is displayed. View what is going on at each layer.

For packet 1::

Click onto “Inbound PDU details” tab. Scroll down and observe the TCP header.

A. What is this TCP segment created by PC1 for? How do you know what is it for?

This TCP segment is created by PC1 for establishing connection with local server. I know that since TCP header shows flag bit of SYN as 1.

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B. What control flags are visible?

__SYN____

C. What are the sequence and acknowledgement numbers?

__0, 0____

For packet 2:

Click onto “Inbound PDU details” tab. Scroll down and observe the TCP header.

A. Why is this TCP segment created by the Local Web Server?

For second step of 3 way handshake where the server responds with acknowledgement of client request.

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B. What control flags are visible?

_ACK,SYN____

C. Why is the acknowledgement number “ 1”?
Because server is expecting data of sequence number 1.

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For packet 3:

This HTTP PDU is actually the third packet of the “Three Way Handshake” process, along with the HTTP request.

A. Explain why control flags ACK(Acknowledgement) and PSH (Push) are visible in the TCP header?

ACK flag is visible as client is acknowledging the server’s response and PSH flag is visible since it demands data to be transmitted immediately.

For packet 5:

After PC1 receives the HTTP response from the Local Web Server, it again sends a TCP packet to the Local Web server why?

_For termination of connection___________________________________

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Click onto “Inbound PDU details” tab. Scroll down and observe the TCP header.

A. What control flags are visible?

_ACK,FIN____________________________________

B. Why the sequence number is 104 and acknowledge number 254? Note this packet is created after PC1 receives the HTTP response from the server.

Seq no of 104 is for sending next data byte starting from 104 and ACK no is 254 for expecting 254 no byte data.

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For packet 6:

Click onto “Inbound PDU details” tab. Scroll down and observe the TCP header.

What is this packet sent from the webserver to PC1 for?

_To confirm termination of connection and acknowledgement of last data.___

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What control flags are visible?

_ACK,FIN___________________________________

Why the sequence number is 254?

_It is sending data byte of sequence 254 along with termination_________

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