CSE 320 ID: 18101617

Application Layer Protocols (HTTP.SMTP/POP and DHCP) Examination Lab

Objectives:

Capture traffic and observe the PDUS for HTTP, SMTP, POP and DHCP.

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

Step 1 – Run the simulation and capture the traffic.

- Enter Simulation mode.
- 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.
- Two packets appear in the Event List, a DNS request needed to resolve the URL to the IP address of the web server and an ARP request needed to resolve the IP address of the server to its hardware MAC address.
- Click the Auto Capture / Play button to run the simulation and capture events.
- Sit tight and observe the packets flowing through the network.

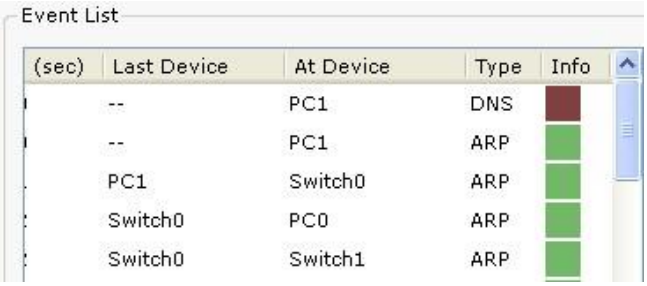
- When the above message appears Click "View Previous Events".
- Click on PC1. The web browser displays a web page appears.

Step 2 – Examine the following captured traffic.

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

	Last Device	At Device	Type
1.	PC1	Switch 0	HTTP
2..	Local Web Server	Switch 1	HTTP

- 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.
- Examine the PDU information for the remaining events in the exchange.

For packet 1::

What kind of HTTP packet is packet no. 1?
Non-persistent HTTP request packet.

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Click onto "Inbound PDU details" tab. Scroll down at the end, what do you see?
Box of HTTP requests containing HTTP data.

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For packet 2:

Click onto "Inbound PDU details" tab. Scroll down at the end, what do you see? What kind of HTTP packet is this?

A box of HTTP responses. Its non-persistent HTTP response packet.

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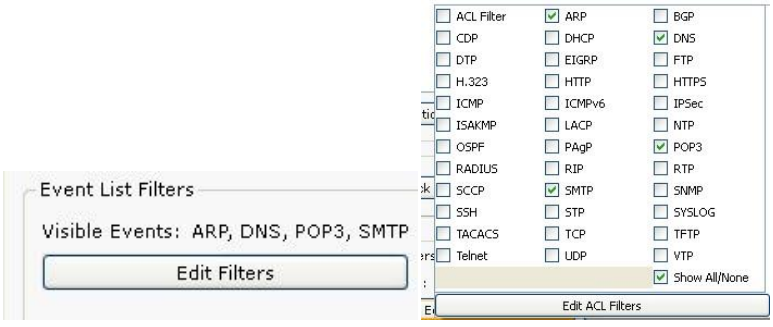
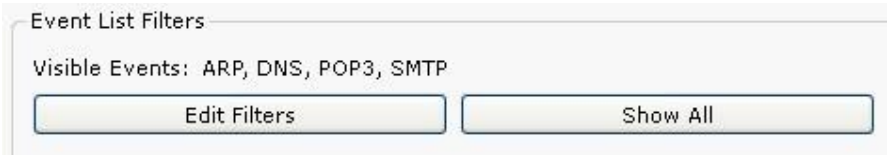
Task 2: Observe email traffic exchange between a client and email server using SMTP and POP3.

Step 1 – Run the simulation and capture the traffic.

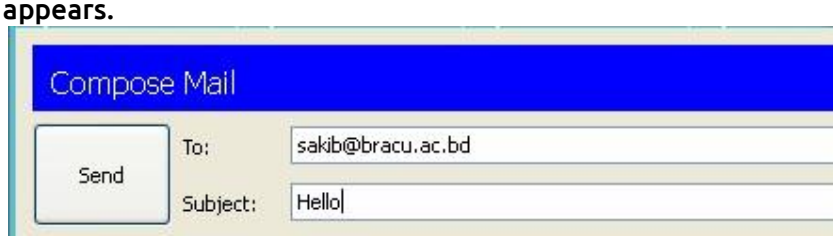
- On the Event List window click "Reset Simulation" button. All previous packets will disappear.
- At the bottom of the Event List window, there is a filter which filters the protocols that we want to see. Click Edit filters. Another window appears showing different protocols, unclick HTTP and click SMTP and POP3.



- Click a space anywhere outside the popup window, then it will disappear.
- Your Event List Filter should be as shown below:



- Now click on the PC1. Close the web browser window. Open the Email from the Desktop. A mail browser window will open. Click "compose", another window appears.



- Fill the window as shown and press send.
- Minimize the client window .
- Click the Auto Capture / Play button to run the simulation and capture events.
- Sit tight and observe the packets flowing through the network.
- This interaction is between the sender client and its email server.

Step 2 – Examine the following captured traffic.

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

	Last Device	At Device	Type
3.	PC1	Switch 0	DNS
4.	PC1	Switch 0	SMTP
5.	Bracu Email Server	Switch 1	SMTP

- Find the following packets given in the table above in the Event List, and click on the colored square in the Info column.
- Examine the PDU information.

For packet 4::

What is the purpose of this DNS packet?
To get IP address of local DNS server

For packet 5& 6::

Explain why SMTP packet was sent to the email server and the server replied with an SMTP packet?

SMTP packet was sent to email server since it contained email data and the server responded with SMTP packet as acknowledgement

Step 3 – Run the simulation and capture the traffic for POP.

- On the Event List window click "Reset Simulation" button. All previous packets will disappear.
- Now click on the PC0. Open the Email from the Desktop. A mail browser window will open. Click "receive", minimize the window.
- Click the Auto Capture / Play button to run the simulation and capture events.
- Sit tight and observe the packets flowing through the network.
- This interaction is between the sender client and its email server.

Step 2 – Examine the following captured traffic.

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

	Last Device	At Device	Type
6.	PC1	Switch 0	DNS
7.	PC1	Switch 0	POP3
8.	Bracu Email Server	Switch 1	POP3

- Find the following packets given in the table above in the Event List, and click on the colored square in the Info column.
- Examine the PDU information.

For packet 6::

What is the purpose of this DNS packet?
To get IP address of BRACU email server.

For packet 7&8::

Explain why POP packet was sent to the email server and the server replied with a POP packet?

Client shared his mail address with first POP packet and server sent the mails that mail address received using POP packet

Homework Task:

Observe DHCP Traffic and write down the steps for the DHCP process.

- Reset simulation. Change the Event Filter to show ARP and DHCP only.
- Click to PC2. Go to the Physical Tab and turn on the PC by clicking the power button on the CPU shown.
- Then go to the Desktop Tab and then to IP Configuration. Click DHCP. Wait for a while. Then the IP address and other data will appear in the boxes for this PC.
- Note: If the IP addresses do not appear, click the static radio button and again click the dhcp radio button again.