

Application Layer Protocols (HTTP.SMTP/POP)**Examination Lab****Objectives:**

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

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.

(sec)	Last Device	At Device	Type	Info
--	PC1		DNS	
--	PC1		ARP	
	PC1	Switch0	ARP	
	Switch0	PC0	ARP	
	Switch0	Switch1	ARP	

- 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?

Ans : It is a HTTP request.

Click onto “Inbound PDU details” tab. Scroll down at the end, what do you see?

Ans : the client is open to receiving any content type (/ in User-Agent), requests the server to close the connection after the current interaction (Connection: close), and specifies that the intended host is "www.bracu.ac.bd" (Host: www.bracu.ac.bd).

For packet 2:

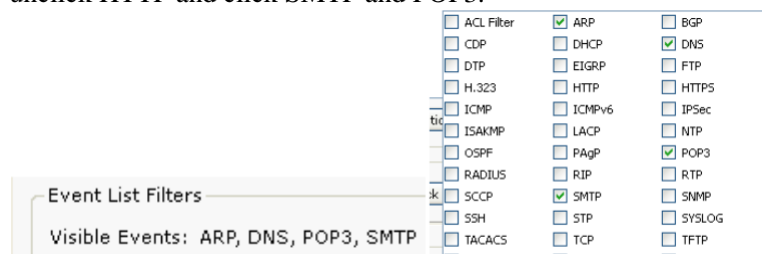
Click onto “Inbound PDU details” tab. Scroll down at the end, what do you see? What kind of HTTP packet is this?

Ans : It is a response packet. This HTTP packet is a server response instructing the client to close the connection. The response contains 151 bytes of HTML content generated by a server running PT-Server version 5.2.

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

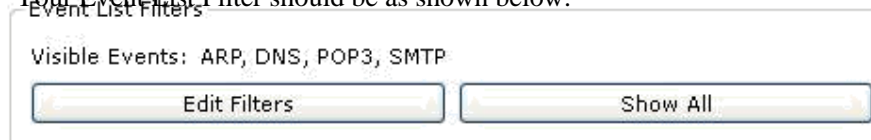
Step 1 – Run the simulation and capture the traffic.

- 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.



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

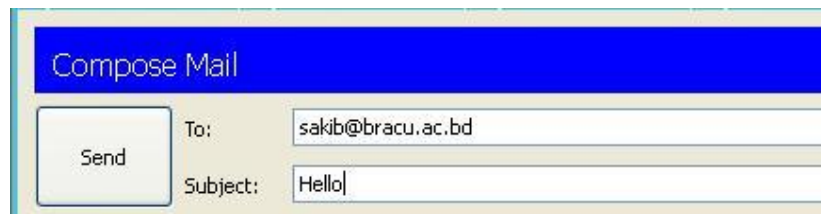


Event List Filters

Visible Events: ARP, DNS, POP3, SMTP

Edit Filters Show All

- 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.



Compose Mail

Send To: sakib@bracu.ac.bd

Subject: Hello

- 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 the IP address of the receiver email server PC! send a dns request to dns server and dns response with the IP address of bracu.ac.bd

For packet 5& 6::

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

_____ An SMTP packet was sent to the email server to initiate the process of sending an email. The server replied with an SMTP packet to acknowledge 250 and continue the email communication, following the SMTP standard. _____

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?

Ans : To retrieve the email PC0 send a dns request to get the ip address of bracu mail server and dns server responses with the ip address and it can make the connection to server.

For packet 7&8::

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

Ans : A POP packet was sent to the email server to retrieve emails from the server to the client's device. The server replied with a POP packet to provide the requested email content. This exchange follows the POP standard.

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