# 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 tightandobservethepacketsflowingthroughthenetwork.



* 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 |
| --- | --- | --- | --- |
| ١. | PC١ | Switch  ٠ | HTTP |
| ٢٠٠ | Local Web Server | Switch ١ | HTTP |

* Find the following packets given in the table above in the **Event List**, and click on the
  colored square in the **Info** column.
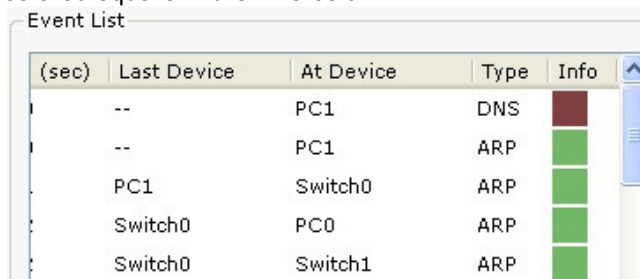


• When you click on the Info square for a packet in the event list the **PDU**
   **Information** window opens. If you click on these layers,the algorithm used by the device
   (in this case, the PC) is displayed. View what is going onat each layer.

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

<u>For packet ١٠١</u>

What kind of HTTP packet is packet no. 1?

<span style="color:red">HTTPS Request</span>

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

_____

<u>*For packet 2:*</u>

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

<span style="color:red">HTTP_Response</span>_____

_____

_____

_____

## 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.
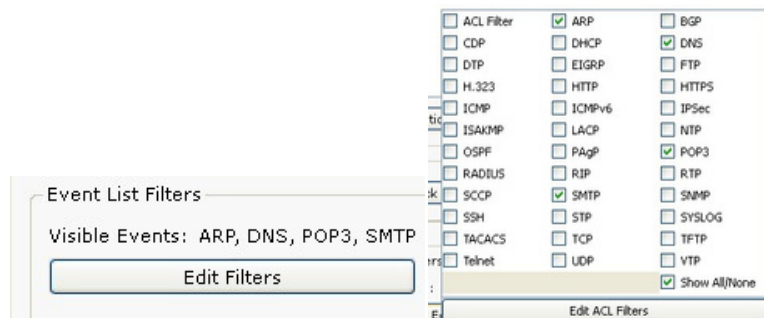


- Click a space anywhere outside the popup window, then it willdisappear.
- Your Event List Filter should be as shown below:

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", anotherwindow 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 – <u>Examine the following captured traffic.</u>

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

|   | Last Device | AtDevice | Type |
|---|-------------|----------|------|
| ٣ | PC١  PC١  Bracu | Switch ٠ | DNS |
| . | Email Server | Switch ٠ | SMTP |
| ٤ |  | Switch ١ | SMTP |

.

٥
.

- 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 3::*

What is the purpose of this DNS packet?

- Packet 3 is DNS Query type.  DNS query packet was sent out through Switch 0. This

  packet requests the IP address linked with the email server.

*For packet 4& 5::*
Explain why SMTP packet was sent to the email server and the server replied with an SMTP packet?

when you send an email your client sends SMTP packet to the server to transmit the message and the server replies with SMTP packets to confirm successful delivery or errors if any problem while sending.

## Step 3 – <u>Run the simulation and capture the traffic for POP.</u>

- 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 – <u>Examine the following captured traffic.</u>
Our objective in this lab is only to observe POP traffic.

| | Last Device | AtDevice | Type |
|---|---|---|---|
| ٦ | PC١ PC١ Bracu | Switch ٠ | DNS |
| ٠ | Email Server | Switch ٠ | POP٣ |
| ٧ | | Switch ١ | POP٣ |

- ٠
- ٨ • Find the following packets given in the table above in the **Event List**, and click on the
- ٠ • colored square in the **Info** column.
  - Examine the PDU information.

### *For packet 6::*

What is the purpose of this DNS packet?

<span style="color:red">Its a DNS query, basically pc0 is asking where the IP address of the email server is.</span>

### *For packet 7&8::*

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

<span style="color:red">it uses pop to send to the email server to ask if there are any email to recieve. if so then</span>

<span style="color:red">replied with a pop so that the mail to recieve gets recieved by the PC</span>

-