Protocol Visualization with Packet Tracer

Learning Objectives:

1. Explore Packet Tracer Real-Time Mode and Simulation Mode
2. Explore logical workspace
3. To become familiar with building topologies in Packet Tracer

Step 1: Draw the following topology (make sure you are in Real-Time Mode)

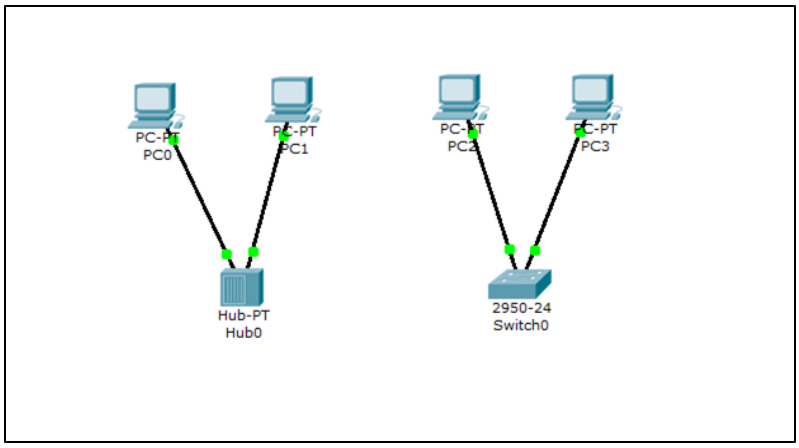

Figure 1

Step 2: Configure IP Addresses and Subnet Masks on the hosts. Use the following information to configure IP addresses, subnet masks and DNS Server

Host	IP Address	Subnet Mask	DNS Server
PC0	172.16.1.10	255.255.0.0	172.16.1.100
PC1	172.16.1.11	255.255.0.0	172.16.1.100
PC2	172.16.1.12	255.255.0.0	172.16.1.100
PC3	172.16.1.13	255.255.0.0	172.16.1.100

Step 3: Connect the Hub to the Switch using appropriate cable type.
Note: The link light for switch port will begin as amber and eventually change to green as the **Spanning Tree Protocol** transitions the port to ***forwarding***.

Step 4: Verify Connectivity in **Simulation Mode**

- Edit Filters
- Deselect **Show All/None** and choose only **ICMP**
- Click **Add Simple PDU**
- Click once on **PC0** and another one on **PC3**
- Continue clicking **Capture/Forward** button until the ICMP ping is completed.

Note: You should see the ICMP messages move between the hosts, hub and switch.

- The PDU Last Status should show as **Successful** (as per illustrated in figure 2 below).

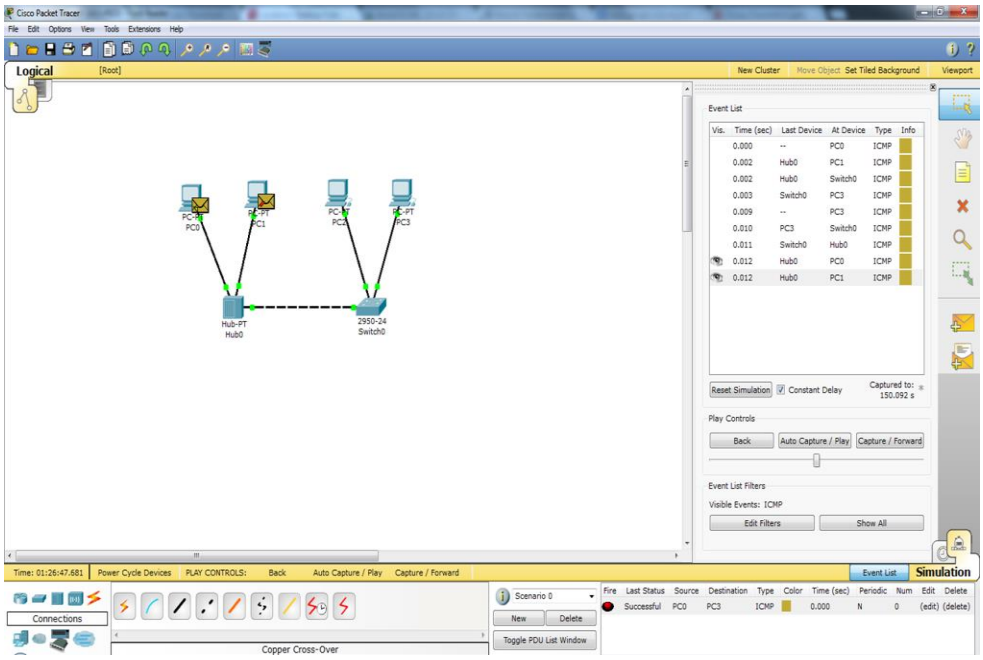

Figure 2

Step 5: Change the IP address of PC3 to **172.16.2.13**. Perform a ping from PC0 to PC3. What is the ping result?

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Step 6: Return the IP address of PC3 to **172.16.1.13**. Change the IP address of PC2 to **172.17.1.12**. Perform a ping from PC0 to PC2. What is the ping result?

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Step 7: Save the topology

Exercise: Working with Application Layer: DHCP, DNS, HTTP, HTTPS and Email

Step 1: Draw the following network diagram and use the information given to configure the devices

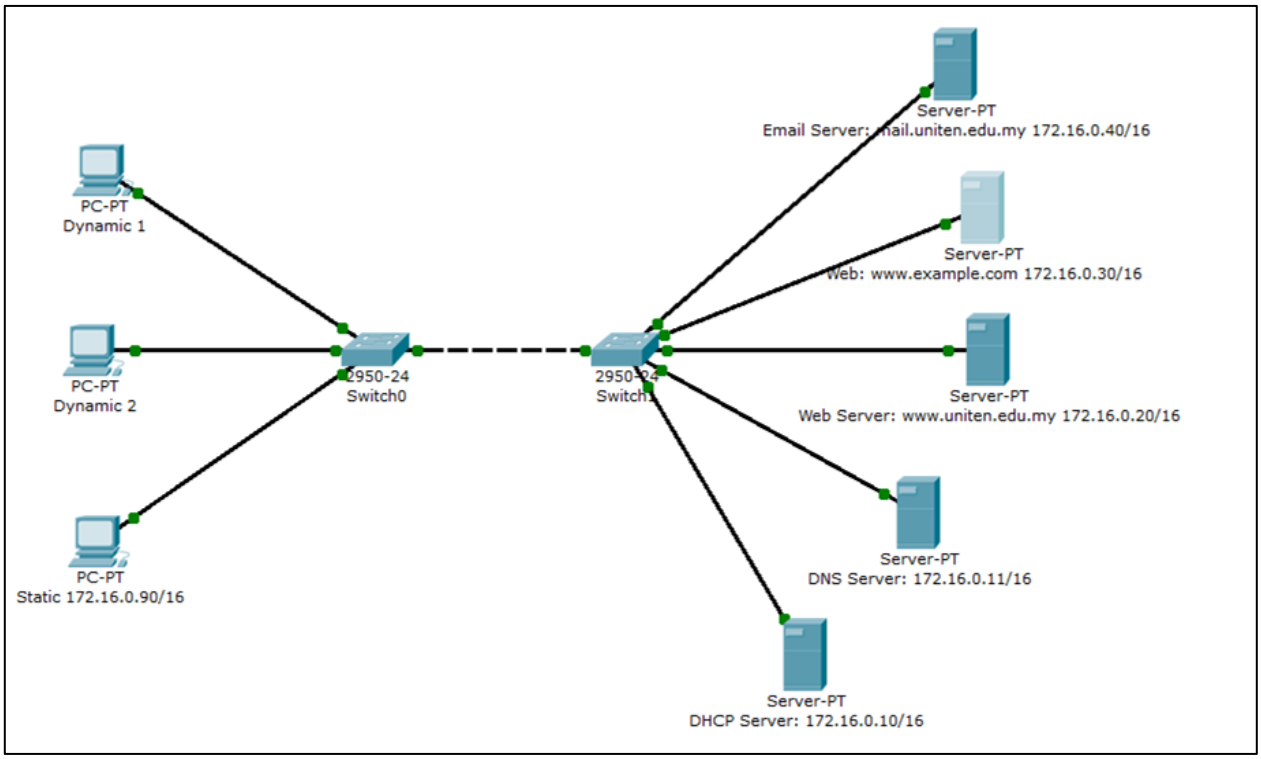

Figure 3

Note: This is an example of what your final topology should look like for this exercise. Follow the given instructions.

Instruction:

1. Start Packet Tracer using Real-Time mode
   - Options → Preferences
   - Enable "**Show Link Lights**"
   - Disable "**Hide Device Label**"

2. Configure DHCP Server
   - On the Global Settings:
     - Change the Display Name to **DHCP Server**
     - Set the Gateway to **172.16.0.1**
   - FastEthernet:
     - Set the IP address to **172.16.0.10**
     - Set the subnet mask to **255.255.0.0**
   - HTTP:
     - Set HTTP service and HTTPS service to **OFF**

- DHCP:
  - Set the Default Gateway to **172.16.0.1**
  - Set the DNS Server to **172.16.0.11**
  - Set the Start IP Address to **172.16.0.100**
- DNS:
  - Set the service to **OFF**
- Email:
  - Set the SMTP service and POP3 service to **OFF**

3. Configuring DNS Server
- Global Settings:
  - Change the Display Name to **DNS Server**
  - Set the Gateway to **172.16.0.1**
- FastEthernet:
  - Set the IP address to **172.16.0.11**
  - Set the subnet mask to **255.255.0.0**
- HTTP:
  - Set HTTP service and HTTPS service to **OFF**
- DHCP:
  - Set the service to **OFF**
- DNS:
  - Entering the www.uniten.edu.my Domain Name
    - Enter for the Domain Name **www.uniten.edu.my**
    - Enter for the IP address **172.16.0.20**
    - Click **Add**
  - Entering the www.example.com Domain Name
    - Enter for the Domain Name **www.example.com**
    - Enter for the IP address **172.16.0.30**
    - Click **Add**
- Email:
  - Set the SMTP service and POP3 service to **OFF**

4. Configuring www.uniten.edu.my Web Server
- Global Settings:
  - Change the Display Name to **Web Server: www.uniten.edu.my**
  - Set the Gateway to **172.16.0.1**
- FastEthernet:
  - Set the IP address to **172.16.0.20**
  - Set the subnet mask to **255.255.0.0**
- DHCP:
  - Set the service to **OFF**
- DNS:
  - Set the service to **OFF**
- HTTP:
  - Set both HTTP and HTTPS Service to **ON**

- Change the sentence, "<hr> Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open." to "<hr> Welcome UNITEN's public Web Page!" You may add other information as well.

- Email
  - Set the SMTP service and POP3 service to **OFF**

5. Configuring the www.example.com Web Server
   - Global Settings:
     - Change the Display Name to **Web Server: www.example.com**
     - Set the Gateway to **172.16.0.1**
   - FastEthernet:
     - Set the IP address to **172.16.0.30**
     - Set the subnet mask to **255.255.0.0**
   - DHCP:
     - Set the service to **OFF**
   - DNS:
     - Set the service to **OFF**
   - HTTP:
     - Change the sentence, "<hr> Welcome to Cisco Packet Tracer. Opening doors to new opportunities. Mind Wide Open." to "<hr> This is the corporate internal network!". You may add other information as well.

6. Configuring the mail.uniten.edu.my Email Server
   - Global Settings:
     - Change the Display Name to **Email Server: mail.uniten.edu.my**
     - Set the Gateway to **172.16.0.1**
   - FastEthernet:
     - Set the IP address to **172.16.0.40**
     - Set the subnet mask to **255.255.0.0**
   - DHCP:
     - Set the service to **OFF**
   - DNS:
     - Set the service to **OFF**
   - HTTP:
     - Set HTTP Service and HTTPS Service to **OFF**
   - Email:
     - Set the SMTP service and POP3 service to **ON**
     - Set the domain name to **mail.uniten.edu.my**
     - Setup three user accounts as follows:

Users	Passwords
User1	Password1
User2	Password2
User3	Password3

7. Configure Two Client Computers using DHCP
   - Global settings (on every PC):
     - Change the Display Name to **Dynamic 1** and **Dynamic 2** respectively
     - Set the Gateway/DNS to **DHCP**
   - FastEthernet:
     - Set the IP Configuration to **DHCP**

8. Configure One Client Computer using Static IP Addressing
   - Global settings:
     - Change the Display Name to **Static**
     - Set the Gateway/DNS to **Static**
     - Set Gateway to **172.16.0.1**
     - Set the DNS Server to **172.16.0.11**
   - FastEthernet:
     - Be sure the configuration is set to **Static**
     - Set the IP address to **172.16.0.90**
     - Set the subnet mask to **255.255.0.0**

9. Configure Email for Clients. Click once on the Dynamic 1 (PC0). Enter the required information as shown in figure 4 below.

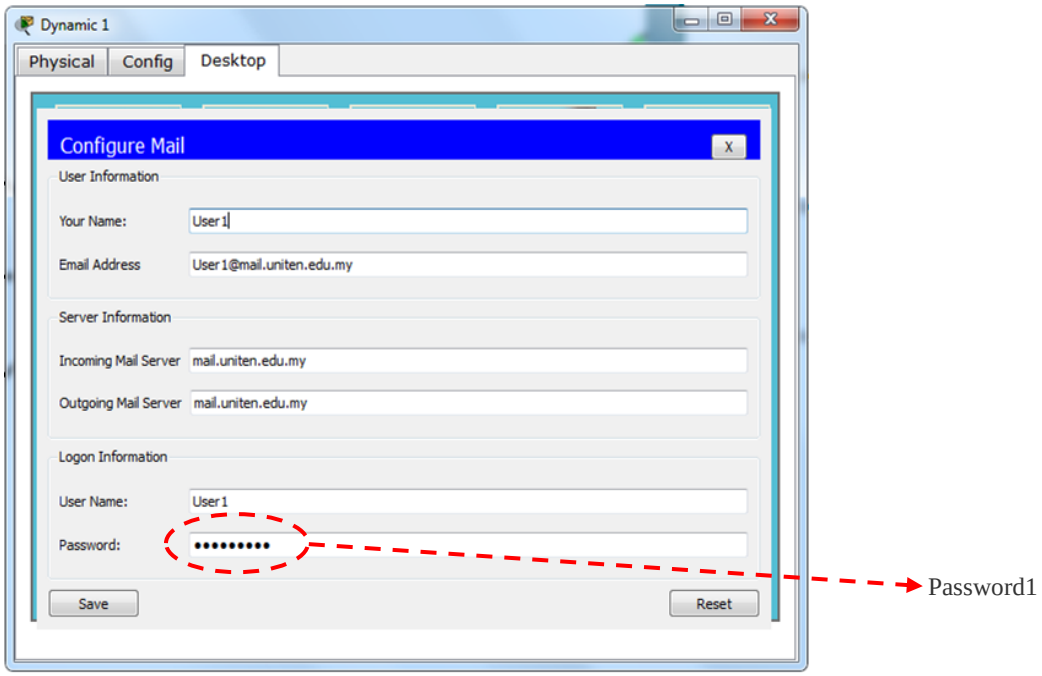

Figure 4

10. Save the configuration
11. Do the same for **User2** and **User3**

12. Verify Connectivity
    - Ping (ICMP)
        - From a client computer use the Desktop Command prompt to ping the other client computers and the servers
        - Example: From Dynamic 1, C> **ping 172.16.0.20**
        - The first or two pings may fail, but you should receive a reply on the later pings. This is due to the ping timing out while the ARP process takes place.
    - Web Browser (HTTP)
        - On the client computers use the Desktop Web Browser, enter the URLs of the Web Servers www.uniten.edu.my and www.example.com.
        - You should see the web pages that you created on these servers.

    - Email (SMTP)
        - From client computer (**Dynamic 1**), compose an email (from Desktop tab) to another client computer (**Static**).
        - i.e: To: User3@mail.uniten.edu.my
        - Upon sending the email, check if email was received by the Static PC by clicking the Email icon (Desktop tab), then click the Receive button.
    - Verify your work (either the email has been received or not)

13. On Simulation Mode
    - Click "**Reset Simulation"**
        - Edit Filters
        - Only choose the following protocols: **DHCP, ICMP, HTTP, DNS, HTTPS, SMTP**
    - Web Browser (HTTP)
        - On client computers use Desktop Web Browser, enter the URLs of the Web Servers http://www.uniten.edu.my or http://www.example.com
        - Click on **Auto Capture/Play**
    - DHCP:
        - **Reset the simulation**
        - To view DHCP, on one of the Dynamic client computers, go to the Desktop Command prompt.
        - To have the client computer ask for new IP address and other information from the DHCP server, enter the command: C> ipconfig/renew
    - Email:
        - **Reset the simulation**
        - To view email, click on one of the client computers sending email to another client computer
        - Click on **Auto Capture/Play**

14. Save your work. This exercise shall be used for next lab session.