Computer Practical – Week 5

Objectives

The aim of this week's computer practical includes:

- Examine and understand the functionality of the TCP and UDP protocols
- Understand the configurations that need to be done on servers and clients in order to establish and access various network applications and services

Tasks

Accordingly, you will need to complete the following tasks in this week's computer practical class:

a. Packet Tracer - TCP and UDP Communications
b. Packet Tracer - Web and Email
c. Packet Tracer - DHCP and DNS Servers

Instructions of the activities are given on the next pages.

Assessment

This week's Computer Practical is assessed in class, and it is worth 2% of the total score of the course.

Notes:

- To be awarded marks for this computer practical, a student must attend this week's Computer Practical class and submit the following 3 files using the "Computer Practical-Week 5-Submission" link in Week 5 section of Learnonline course site:
  - The Word document with your answers for Packet Tracer activity – TCP and UDP Communications (see next page for details of the Word document)
  - The completed .pka file for Packet Tracer activity - Web and Email
  - The completed .pka file for Packet Tracer activity – DHCP and DNS Servers
- Students are expected to make the submission in your Computer Practical class in Week 5, but if you cannot finish all the activities in class, you can complete them and submit the files as required by Sunday 11:59 pm of Week 5.

Packet Tracer - TCP and UDP Communications

Before start:

1. Go through Week 5 slides, especially slides no. 7-17 to understand port numbers and their use, and how TCP uses the 3-way handshake to establish a connection.
2. Download from Learnonline course website (**Computer Practical-Week5** folder) the Packet Tracer activity file: `wk5-computer-prac-PKA-a-TCP-UDP-Communications.pka`
3. Open the Packet Tracer activity file downloaded
4. Download from Learnonline course website **(Computer Practical-Week5** folder**) the Word file:** `week5-computer-prac-PKA-a-TCP-UDP-Instruction-Questions.docx`

Reminder

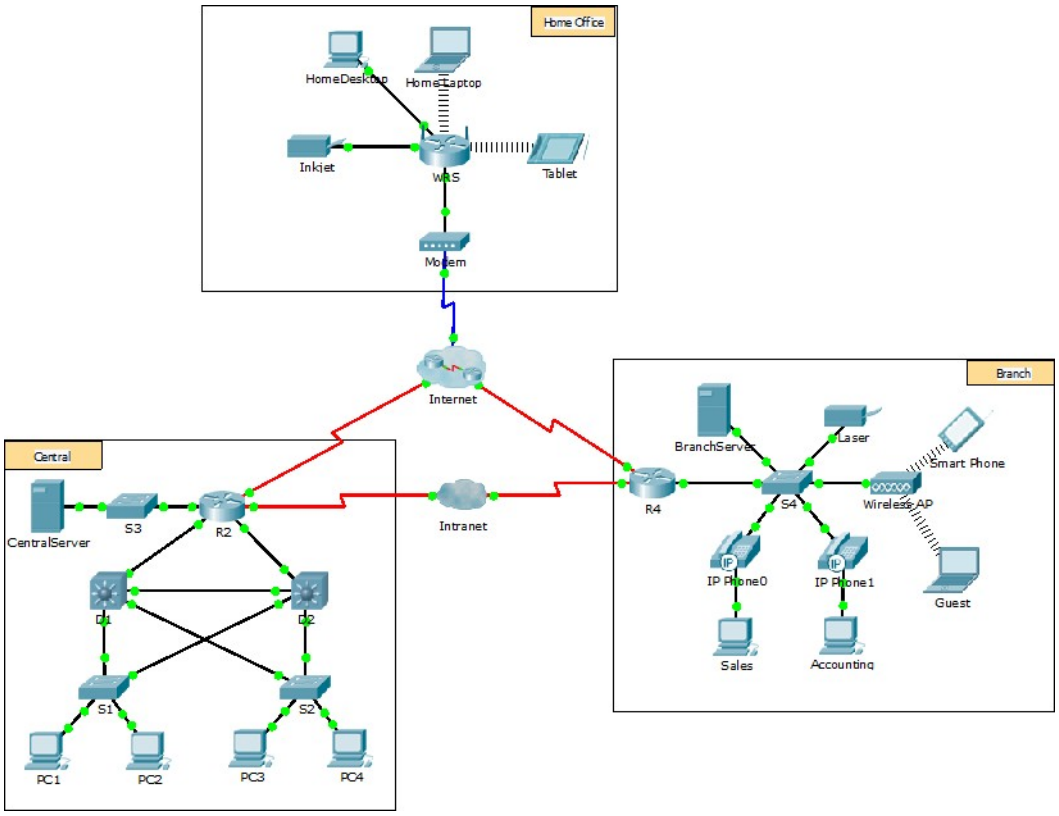
1. Follow the instruction in the Word document to complete this Packet Tracer activity. Answer ALL questions in the word document by typing your answers in the space provided in the Word document.
2. Save the Word document with your answers and submit the Word document as part of your Week 5 computer practical submission.

Packet Tracer - Web and Email

Before start:

1. **Review** the contents related to this lab by answering the following questions:
   - What is the main protocol supporting web applications?
   - What are the full names of SMTP and POP respectively?
   - What are SMTP and POP used for?
2. Download from Learnonline course website (**Computer Practical-Week 5** folder) the Packet Tracer activity file: **`wk5-computer-prac-PKA-b-Web-and-Email.pka`**
3. Open the downloaded pka file and set up your user profile.
4. Follow the instruction **given below** to complete this Packet Tracer activity

Topology



Objectives

Part 1: Configure and Verify Web Services

Part 2: Configure and Verify Email Services

Background

In this activity, you will configure web and email services using the simulated server in Packet Tracer. You will then configure clients to access the web and email services.

Note: Packet Tracer only simulates the process for configuring these services. Web and email software packages each have their own unique installation and configuration instructions.

Part 1: Configure and Verify Web Services

Step 1: Configure web services on CentralServer and BranchServer.

a. Click **CentralServer** and click the **Services** tab > **HTTP**.

b. Click **On** to enable HTTP and HTTP Secure (HTTPS).

c. Optional. Personalize the HTML code.

d. Repeat Step1a – 1c on **BranchServer**.

Step 2: Verify the web servers by accessing the web pages.

There are many endpoint devices in this network, but for the purposes of this step, use **PC3**.

a. Click **PC3** and click the **Desktop** tab > **Web Browser**.

b. In the browser opened,

(i) In the URL box, enter **10.10.10.2** as the IP address and click **Go**. The **CentralServer** website displays.

(ii) In the URL box, enter **64.100.200.1** as the IP address and click **Go**. The **BranchServer** website displays.

(iii) In the URL box, enter **centralserver.pt.pka** and click **Go**. The **CentralServer** website displays.

(iv) In the URL box, enter **branchserver.pt.pka** and click **Go**. The **BranchServer** website displays.

c. What protocol is translating the **centralserver.pt.pka** and **branchserver.pt.pka** names to IP addresses?

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Part 2: Configure and Verify Email Services on Servers

Step 1: Configure CentralServer to send (SMTP) and receive (POP3) Email.

a. Click **CentralServer**, and then select the **Services** tab,

b. In the service window opened, press the **EMAIL** button on the left.

c. In the EMAIL window shown on the right:

(i) Click **On** to enable the SMTP and POP3.

(ii) In the Domain Name text field, type **centralserver.pt.pka** and click **Set**.

(iii) Create a user named **central-user** with password **cisco**. Click **+** to add the user.

Step 2: Configure BranchServer to send (SMTP) and receive (POP3) Email.

a. Click **BranchServer** and click the **Services** tab

b. In the service window opened, press the **EMAIL** button on the left.

c. In the EMAIL window shown on the right:

(i) Click **On** to enable SMTP and POP3.

(ii) In the Domain Name text field**,** type **branchserver.pt.pka** and click **Set**.

(iii) Create a user named **branch-user** with password **cisco**. Click **+** to add the user.

Step 3: Configure PC3 to use the CentralServer email service.

a. Click **PC3** and click the **Desktop** tab > **Email**.

b. Enter the following values into their respective fields:
   1) Your Name: **Central User**
   2) Email Address: **central-user@centralserver.pt.pka**
   3) Incoming Mail Server: **10.10.10.2**
   4) Outgoing Mail Server: **10.10.10.2**
   5) User Name: **central-user**
   6) Password: **cisco**
c. Click **Save**. The Mail Browser window displays.

Step 4: Configure Sales to use the Email service of BranchServer.

a. Click **Sales** and click the **Desktop** tab > **Email**.
b. Enter the following values into their respective fields:
   1) Your Name: **Branch User**
   2) Email Address: **branch-user@branchserver.pt.pka**
   3) Incoming Mail Server: **172.16.0.3**
   4) Outgoing Mail Server: **172.16.0.3**
   5) User Name: **branch-user**
   6) Password: **cisco**
c. Click **Save**. The Mail Browser window displays.
d. The activity should be 100% complete. Do not close the Sales configuration window or the Mail Browser window.

Step 5: Send an Email from the Sales client and the PC3 client.

a. From the **Sales Mail Browser** window, click **Compose**.
b. Enter the following values into their respective fields:
   1) To: **central-user@centralserver.pt.pka**
   2) Subject: *Personalize the subject line*.
   3) **Email** Body: *Personalize the email*.
c. Click **Send**.
d. Verify that **PC3** received the email. Click **PC3**. If the Mail Browser window is closed, click **E Mail**.
e. Click **Receive**. An email from Sales displays. Double-click the email.
f. Click **Reply**, personalize a response, and click **Send**.
g. Verify that **Sales** received the reply.

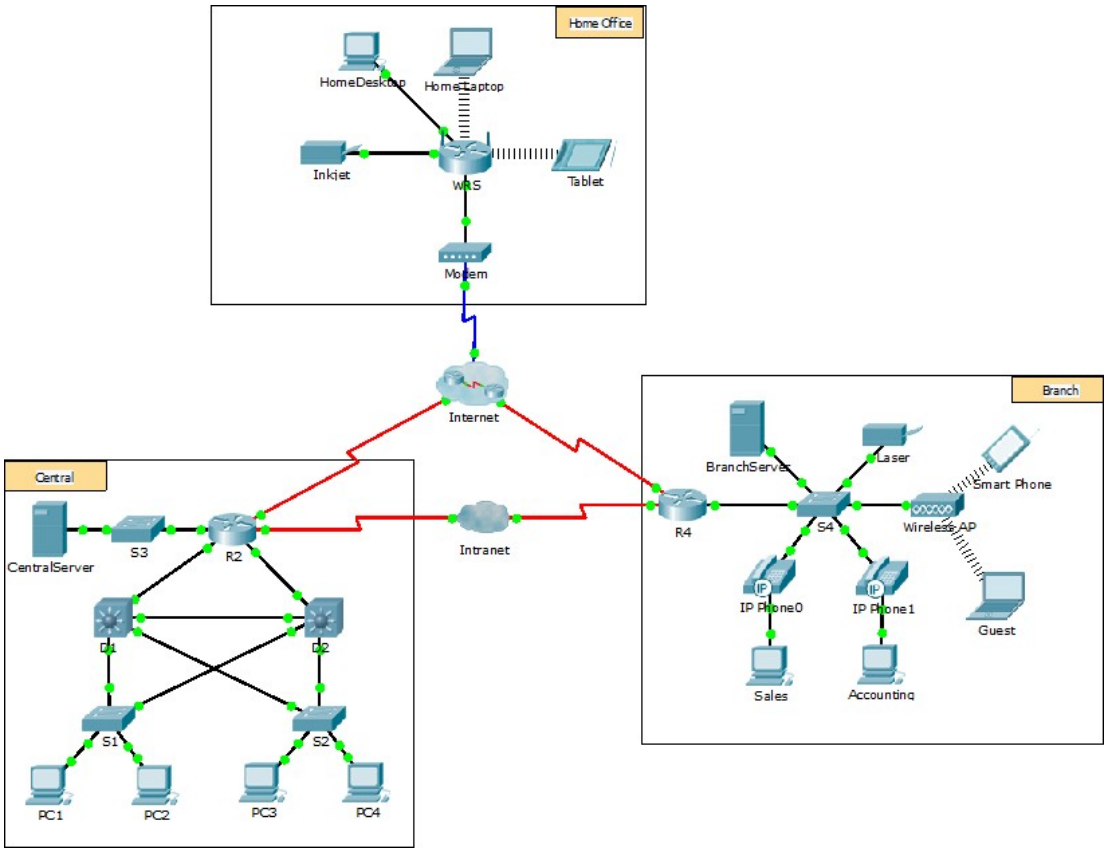
(NOTE: if the above steps do not work, go back and check that you have entered all of the information correctly, and followed the steps correctly. If it still will not work, ask your supervisor for assistance

Packet Tracer - DHCP and DNS Servers

Before start:

1. **Review** the contents related to this lab by answering the following questions:
   - What is the full name of DHCP?
   - What is the purpose of DHCP?
   - What is the full name of DNS?
   - What is the purpose of DNS?
2. Download from Learnonline course website (**Computer Practical-Week 5** folder) the Packet Tracer activity file: **`wk5-computer-prac-PKA-c-DHCP-and-DNS.pka`**
3. Open the downloaded pka file and set up your user profile.
4. Follow the instruction **given below** to complete this Packet Tracer activity

Topology



Objectives

Part 1: Configure Static IPv4 Addressing

Part 2: Configure and Verify DNS Records

Background

In this activity, you will configure and verify static IP addressing and DHCP addressing. You will then configure a DNS server to map IP addresses to the website names.

Note: Packet Tracer only simulates the process for configuring these services. DHCP and DNS software packages each have their own unique installation and configuration instructions.

Part 1: Configure Static IPv4 Addressing

Step 1: Configure the Inkjet printer with static IPv4 addressing.

The home office computers need to know the printer's IPv4 address to send information to it. The printer, therefore, must use a static (unchanging) IPv4 address.

a. Click **Inkjet** and click the **Config** tab, which displays the Global Settings.

b. Statically assign the Gateway address as **192.168.0.1** and the DNS Server address as **64.100.8.8**.

c. Click **FastEthernet0** and statically assign the IP address as **192.168.0.2** and the Subnet Mask address as **255.255.255.0**.

d. Close the Inkjet window.

Step 2: Configure WRS to provide DHCP services.

a. Click **WRS** and click the **GUI** tab, and maximize the window.

b. The Basic Setup window displays, by default. Configure the following settings in the Network Setup section:

1) Change the IP Address to **192.168.0.1**.

2) Set the Subnet Mask to **255.255.255.0**.

3) Enable the DHCP Server.

4) Set the Static DNS 1 address to **64.100.8.8**.

5) Scroll to the bottom and click **Save**.

c. Close the **WRS** window.

Step 3: Request DHCP addressing for the home laptop.

This activity focuses on the home office. The clients that you will configure with DHCP are **Home Laptop** and **Tablet**.

a. Click **Home Laptop** and click the **Desktop** tab > **IP Configuration**.

b. Click **DHCP** and wait until the DHCP request is successful.

c. **Home Laptop** should now have a full IP configuration. If not, return to Step 2 and verify your configurations on **WRS**.

d. Close the IP Configuration window and then close the **Home Laptop** window.

Step 4: Request DHCP addressing for the tablet.

a. Click **Tablet** and click the **Desktop** tab > **IP Configuration**.

b. Click **DHCP** and wait until the DHCP request is successful.

c. **Tablet** should now have a full IP configuration. If not, return to Step 2 and verify your configurations on **WRS**.

Step 5: Test access to websites.

a. Close the **IP Configuration** window, and then click Web Browser.

b. In the URL box, type **10.10.10.2** (for the **CentralServer** website) or **64.100.200.1** (for the **BranchServer** website) and click **Go**. Both websites should appear.

c. Reopen the web browser. Test the names for those same websites by entering **centralserver.pt.pka** and **branchserver.pt.pka**. Do the websites appear? The websites would not show. Why? (You will find out the answer after completing Part 2 below)

Part 2: Configure Records on the DNS Server

Step 1: Configure famous.dns.pka with records for CentralServer and BranchServer.

Typically, DNS records are registered with companies, but for the purposes of this activity you control the **famous.dns.pka** server on the Internet.

a. Click the **Internet** cloud. A new network displays.

b. Click **famous.dns.pka** and click the **Services** tab > **DNS**.

c. Add the following resource records:

Resource Record Name	Address
centralserver.pt.pka	10.10.10.2
branchserver.pt.pka	64.100.200.1

d. Close the famous.dns.pka window.

e. Click **Back** (the return arrow close to the top right corner) to exit the **Internet** cloud.

Step 2: Verify the ability of client computers to use DNS.

Now that you have configured DNS records, **Home Laptop** and **Tablet** should be able to access the websites by using the names instead of the IP addresses. First, check that the DNS client is working properly and then verify access to the website.

a. Click **Home Laptop** or **Tablet**.

b. If the web browser is open, close it and select **Command Prompt**.

Verify the IPv4 addressing by entering the command **ipconfig /all**. You should see the IP address for the DNS server.

c. Ping the DNS server at **64.100.8.8** to verify connectivity.

Note: The first two or three pings may fail as Packet Tracer simulates all the various processes that must occur for successful connectivity to a remote resource.

Test the functionality of the DNS server by entering the commands

```
nslookup centralserver.pt.pka
```

```
nslookup branchserver.pt.pka
```

You should get a name resolution showing the IP address for each.

d. Close the Command Prompt window and click **Web Browser**. Verify that **Home Laptop** or **Tablet** can now access the web pages for **CentralServer** and **BranchServer** by entering **centralserver.pt.pka** and **branchserver.pt.pka** in the browser respectively.

(**Note**: if you save the file, close it, then re-open it, you may note that the score initially shows 88% even if you have previously achieved 100%. WAIT for a few minutes, and when the DHCP process is complete, your result should show 100% again)