



East West University

## **Mini Project**

### **CSE405 (Computer Networks)**

**Design a full-fledged network for an organization with  
multiple subnets**

*A project submitted  
in partial fulfillment of the requirements for the degree of  
Bachelor of Science in Computer Science and Engineering*

**by**

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Section 2

**to**

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## **UNDERTAKING**

This is to declare that the project entitled “Design a full-fledged network for an organization with multiple subnets” is an original work done by undersigned, in partial fulfillment of the requirements for the degree “Bachelor of Science in Computer Science and Engineering” at Computer Science Department, East West University.

All the analysis, design and system development have been accomplished by the undersigned. Moreover, this project has not been submitted to any other college or university.

Raiyan Rashid Prodhan

## **ABSTRACT**

*In this project I created a network design for International APEX University, where I showed how a server room, administrative office, computer lab and class room network devices could be organized.*

## Introduction

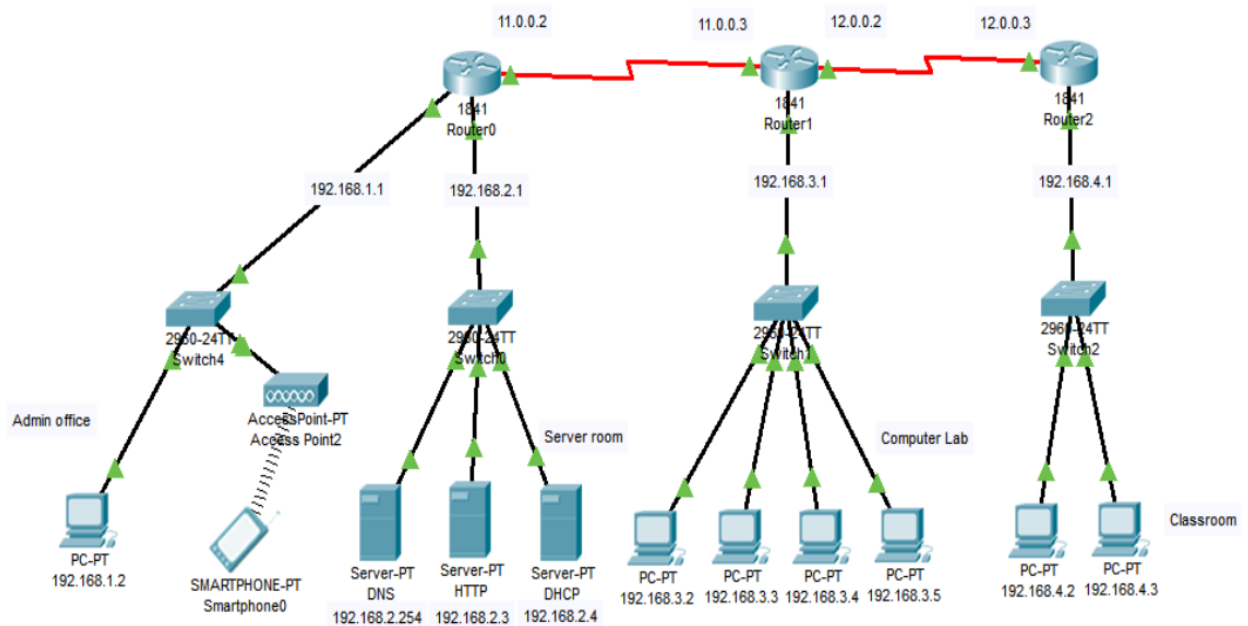
INTERNATIONAL APEX UNIVERSITY like any other large educational institution requires a complex networked system to deal with its business processes like admissions, advising, results, eTender, library management, accounts and so on. In this project I have tried to provide a simple and minimalistic network design to handle these complex tasks.

## List of Components Used

7 PCs, 4 switches, 3 routers, 1 DHCP server, 1 HTTP server, 1 DNS server, straight through wires, 1 smartphone, 1 Access Point-PT

## Network Design

Full Design:



PC:

192.168.1.2

Physical Config **Desktop** Programming Attributes

☒ DHCP ☐ Static

IP Address: 192.168.1.11

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.1.1

DNS Server: 192.168.2.254

IPv6 Configuration

☐ DHCP ☐ Auto Config ☒ Static

IPv6 Address: /

Link Local Address: FE80::20C:CFFF:FE0B:5905

IPv6 Gateway:

IPv6 DNS Server:

802.1X

☐ Use 802.1X Security

Authentication: MD5

Username:

Password:

☐ Top

DHCP server:

DHCP

Physical Config **Services** Desktop Programming Attributes

**SERVICES**

- HTTP
- DHCP**
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DHCP

Interface: FastEthernet0 Service: ☒ On ☐ Off

Pool Name: serverPool

Default Gateway: 192.168.2.1

DNS Server: 192.168.2.2

Start IP Address: 192 168 2 2

Subnet Mask: 255 255 255 0

Maximum Number of Users: 100

TFTP Server: 0.0.0.0


WLC Address: 0.0.0.0

Add Save Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
serverPool	192.168.2.1	192.168.2.2	192.168.2.2	255.255.255.0	100	0.0.0.0	0.0.0.0

☐ Top

## Web server:

 HTTP

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

File Name: index.html


```
<html>
<center><font size="+2" color="blue">INTERNATIONAL APEX University</font></center>
<hr>Welcome to INTERNATIONAL APEX University's website. Opening doors to new opportunities. Mind Wide Open.
<p>Quick Links:
<br><a href="helloworld.html">A small page</a>
<br><a href="copyrights.html">Copyrights</a>
<br><a href="image.html">Image page</a>
<br><a href="cscoptlogo177x111.jpg">Image</a>
</html>
```

File Manager

Save

☐ Top

## DNS server:

 DNS

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DNS

DNS Service ☒ On ☐ Off

Resource Records

Name  Type 

A Record

Address

Add

Save

Remove

No.	Name	Type	Detail
0	www.apexinternational.edu	A Record	192.168.2.3

DNS Cache

☐ Top

## Smartphone:

Smartphone0

Physical **Config** Desktop Programming Attributes

**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

Wireless0

3G/4G Cell1

Bluetooth

**Wireless0**

Port Status ☒ On

Bandwidth 54 Mbps

MAC Address 000C.85CE.A070

SSID Default

Authentication

☐ Disabled ☒ WEP ☐ WPA-PSK ☐ WPA2-PSK

☐ WPA ☐ WPA2

☐ 802.1X

Method:

WEK Key 1234567890

PSK Pass Phrase

User ID

Password

MD5

User Name

Password

Encryption Type 40/64-Bits (10 Hex digits)

IP Configuration

☐ DHCP ☒ Static

IP Address 192.168.1.3

Subnet Mask 255.255.255.0

☐ Top

## Access point:

Access Point2

Physical **Config** Attributes

**GLOBAL**

Settings

**INTERFACE**

Port 0

Port 1

**Port 1**

Port Status ☒ On

SSID Default

2.4 GHz Channel 6

Coverage Range (meters) 140.00

Authentication

☐ Disabled ☒ WEP ☐ WPA-PSK ☐ WPA2-PSK

WEK Key 1234567890

PSK Pass Phrase

User ID

Password

Encryption Type 40/64-Bits (10 Hex digits)

## **Conclusion**

The project helped me to understand Network analysis and design in more depth, allowing me to become more comfortable and confident in designing networks.