EAST WEST UNIVERSITY

Project Report

Title: Design a full-fledged network for an organization with multiple subnets.

Course Code: CSE405
Course title: Computer Networks
Section: 02

Submitted to:

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> Assistant Professor
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Submitted by:

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Problem specification:

INTERNATIONAL APEX UNIVERSITY, is an enterprise like East West University owns a large number of computers, with a complex network infrastructure. Apart from wired internet access to all the classrooms, labs, employee PCs, library and other administrative and academic wings, the university also runs a number of complex networked system to support several of its business process like admissions, results, e-Tender, advising, key management and so on. The task is to create a complete model of the complex network by discovering the interconnectivity of the systems and subnetworks, which will reflect the INTERNATIONAL APEX UNIVERSITY's structure and facilities.
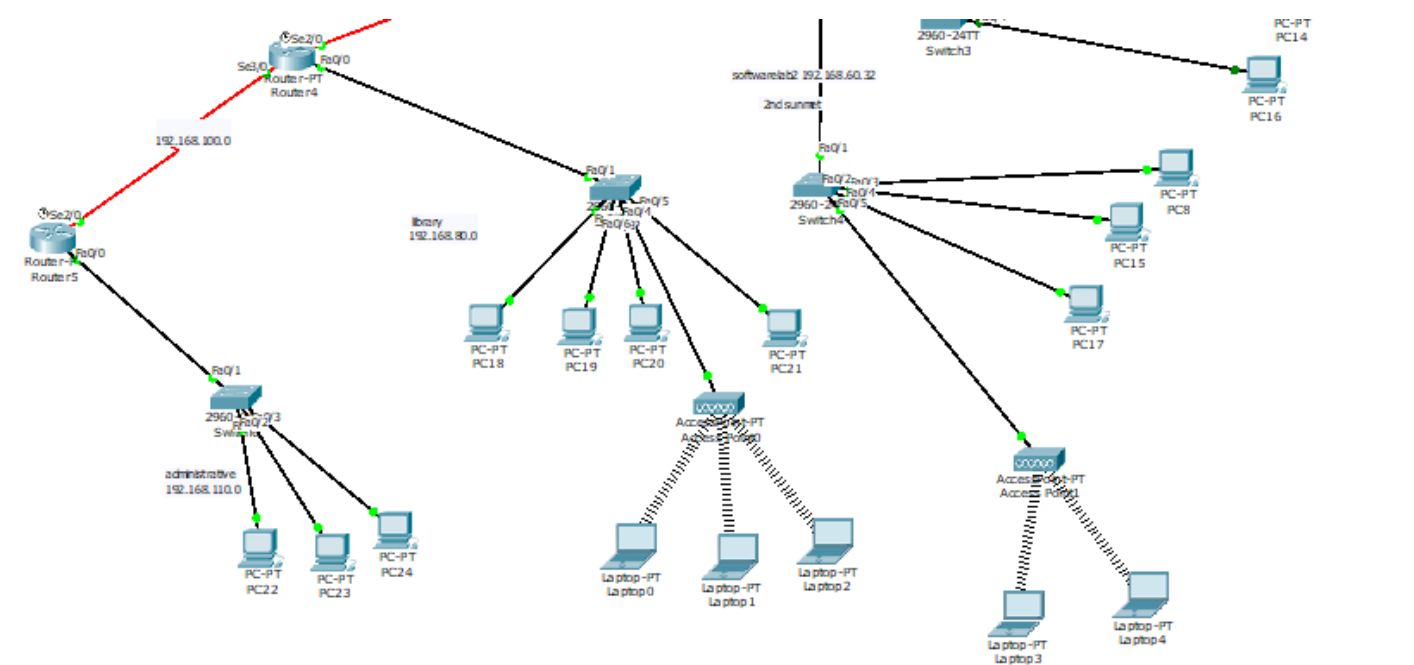
Introduction:

Multiple interconnected routes are used to keep the service continuous during any damaged has been occurs. Even this network is able to generating a web page. IP's are taken randomly and each host will get IP-v4 address from the DHCP server according to which subnet its belongs to. I have create a subnet where contain huge number of pc. Total project is designed to ensure the maximum user satisfaction. The proposed model will fulfill most the criteria and requirements of the INTERNATIONAL APEX University purpose.
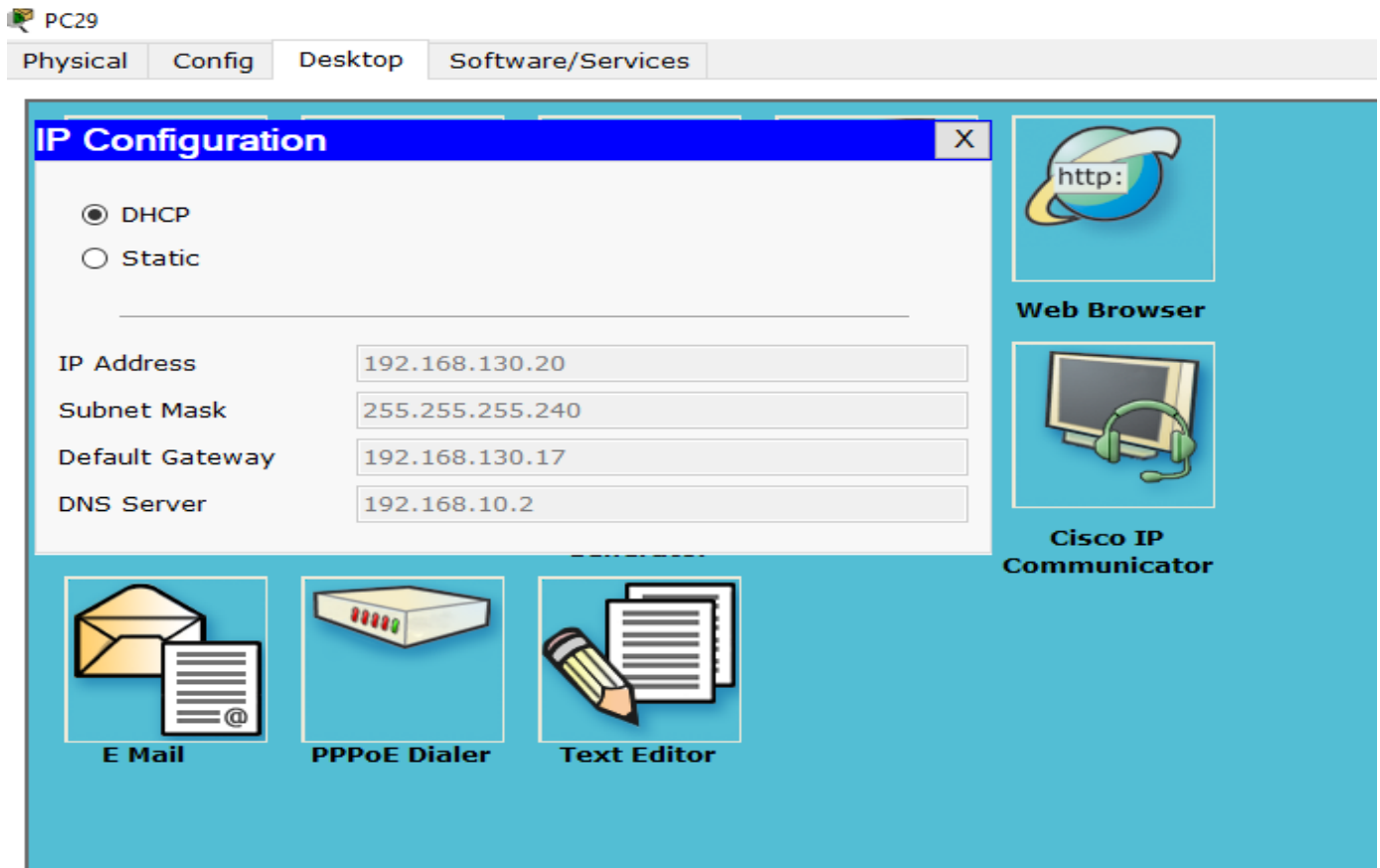
Components:

- Cisco Packet Tracer
- Notepad ++ : For designing html webpages.

Packet Tracer:

- Generic End Devices (for pc)
- Routers (Generic)
- AccessPoint-pt (for wireless devices)
- Server (DHCP, DNS, HTTP)
- Switch (2960)
- Connections (Twisted pair, Serial DC connections with clock)

Conceptual model:

Ip config:

PC29

| Physical | Config | Desktop | Software/Services |

IP Configuration   X

⊙ DHCP

○ Static

IP Address	192.168.130.20
Subnet Mask	255.255.255.240
Default Gateway	192.168.130.17
DNS Server	192.168.10.2

Web Browser

Cisco IP Communicator

E Mail   PPPoE Dialer   Text Editor

Router config:

Router 0:

enable

config t

interface fa0/0

 ip address 192.168.10.254 255.255.255.0

no shut

do wr

 exit

interface se2/0

 ip address 192.168.20.1 255.255.255.0

no shut

clock rate 64000

```
do wr
 exit
interface se3/0
 ip address 192.168.50.1  255.255.255.0
no shut
do wr
 exit
route table code:
 enable
config
ip route 192.168.30.0  255.255.255.0   192.168.20.2
ip route 192.168.40.0  255.255.255.0    192.168.20.2
ip route 192.168.60.16  255.255.255.240  192.168.50.2
ip route 192.168.60.32 255.255.255.240  192.168.50.2
ip route 192.168.70.0   255.255.255.0  192.168.50.2
ip route 192.168.80.0  255.255.255.0  192.168.50.2
ip route 192.168.100.0  255.255.255.0  192.168.50.2
ip route  192.168.110.0  255.255.255.0  192.168.50.2
ip route 192.168.120.0 255.255.255.0  192.168.20.2
ip route 192.168.130.16  255.255.255.240  192.168.20.2
ip route  192.168.130.32 255.255.255.240  192.168.20.2
exit
enable
show ip route
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to down


%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up


Router>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.10.0/24 is directly connected, FastEthernet0/0
C    192.168.20.0/24 is directly connected, Serial2/0
S    192.168.30.0/24 [1/0] via 192.168.20.2
S    192.168.40.0/24 [1/0] via 192.168.20.2
C    192.168.50.0/24 is directly connected, Serial3/0
     192.168.60.0/28 is subnetted, 2 subnets
S       192.168.60.16 [1/0] via 192.168.50.2
S       192.168.60.32 [1/0] via 192.168.50.2
S    192.168.70.0/24 [1/0] via 192.168.50.2
S    192.168.80.0/24 [1/0] via 192.168.50.2
S    192.168.100.0/24 [1/0] via 192.168.50.2
S    192.168.110.0/24 [1/0] via 192.168.50.2
S    192.168.120.0/24 [1/0] via 192.168.20.2
     192.168.130.0/28 is subnetted, 2 subnets
S       192.168.130.16 [1/0] via 192.168.20.2
S       192.168.130.32 [1/0] via 192.168.20.2
Router>
```

Router 7:

enable

config t

interface se2/0

 ip address 192.168.120.2 255.255.255.0

no shut

do wr

 exit

interface fa0/0

```
 ip address 192.168.130.17  255.255.255.240
no shut
do wr
 exit
interface fa1/0
 ip address 192.168.130.33  255.255.255.240
no shut
do wr
 exit
enable
config
ip route 192.168.30.0  255.255.255.0   192.168.120.1
ip route 192.168.40.0  255.255.255.0    192.168.120.1
ip route 192.168.60.16  255.255.255.240  192.168.120.1
ip route 192.168.60.32 255.255.255.240  192.168.120.1
ip route 192.168.70.0   255.255.255.0  192.168.120.1
ip route 192.168.80.0  255.255.255.0  192.168.120.1
ip route 192.168.100.0  255.255.255.0  192.168.120.1
ip route  192.168.110.0  255.255.255.0  192.168.120.1
ip route 192.168.10.0  255.255.255.0  192.168.120.1
ip route  192.168.20.0 255.255.255.0  192.168.120.1
ip route 192.168.50.0  255.255.255.0    192.168.120.1
exit
enable
show ip route
```

Physical   Config   CLI

IOS Command Line In

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down


%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up


Router>
Router>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    192.168.10.0/24 [1/0] via 192.168.120.1
S    192.168.20.0/24 [1/0] via 192.168.120.1
S    192.168.30.0/24 [1/0] via 192.168.120.1
S    192.168.40.0/24 [1/0] via 192.168.120.1
S    192.168.50.0/24 [1/0] via 192.168.120.1
     192.168.60.0/28 is subnetted, 2 subnets
S       192.168.60.16 [1/0] via 192.168.120.1
S       192.168.60.32 [1/0] via 192.168.120.1
S    192.168.70.0/24 [1/0] via 192.168.120.1
S    192.168.80.0/24 [1/0] via 192.168.120.1
S    192.168.100.0/24 [1/0] via 192.168.120.1
S    192.168.110.0/24 [1/0] via 192.168.120.1|
C    192.168.120.0/24 is directly connected, Serial2/0
     192.168.130.0/28 is subnetted, 2 subnets
C       192.168.130.16 is directly connected, FastEthernet0/0
C       192.168.130.32 is directly connected, FastEthernet1/0
Router>
```

Router 5:

enable

config

ip route 192.168.30.0 255.255.255.0   192.168.100.1

ip route 192.168.40.0 255.255.255.0   192.168.100.1

ip route 192.168.60.16 255.255.255.240 192.168.100.1

ip route 192.168.60.32 255.255.255.240 192.168.100.1

ip route 192.168.70.0   255.255.255.0 192.168.100.1

ip route 192.168.80.0 255.255.255.0 192.168.100.1

ip route 192.168.120.0 255.255.255.0 192.168.100.1

ip route 192.168.10.0 255.255.255.0 192.168.100.1

ip route 192.168.20.0 255.255.255.0 192.168.100.1

ip route 192.168.50.0 255.255.255.0   192.168.100.1

ip route 192.168.130.16 255.255.255.240 192.168.100.1

ip route 192.168.130.32 255.255.255.240 192.168.100.1

exit

enable

show ip route

Router5

| Physical | Config | CLI |

IOS Command Line Ir

```
o up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down


%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up


Router>
Router>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

S    192.168.10.0/24 [1/0] via 192.168.100.1
S    192.168.20.0/24 [1/0] via 192.168.100.1
S    192.168.30.0/24 [1/0] via 192.168.100.1
S    192.168.40.0/24 [1/0] via 192.168.100.1
S    192.168.50.0/24 [1/0] via 192.168.100.1
     192.168.60.0/28 is subnetted, 2 subnets
S       192.168.60.16 [1/0] via 192.168.100.1
S       192.168.60.32 [1/0] via 192.168.100.1
S    192.168.70.0/24 [1/0] via 192.168.100.1
S    192.168.80.0/24 [1/0] via 192.168.100.1
C    192.168.100.0/24 is directly connected, Serial2/0
C    192.168.110.0/24 is directly connected, FastEthernet0/0
S    192.168.120.0/24 [1/0] via 192.168.100.1
     192.168.130.0/28 is subnetted, 2 subnets
S       192.168.130.16 [1/0] via 192.168.100.1
S       192.168.130.32 [1/0] via 192.168.100.1
Router>
```

DHCP configuration:

One DHCP server is used for all network.

Service	● On	○ Off

Pool Name	serverPool
Default Gateway	192.168.10.254
DNS Server	192.168.10.2

Start IP Address :	192	168	10	10
Subnet Mask:	255	255	255	0

Maximum number of Users :	246
TFTP Server:	0.0.0.0

Add	Save	Remove

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max Number	TFTP Sever
employee	192.168.30.254	192.168.10.2	192.168.30.1	255.255.255.0	246	0.0.0.0
classroom	192.168.40.254	192.168.10.2	192.168.40.1	255.255.255.0	246	0.0.0.0
serverPool	192.168.10.254	192.168.10.2	192.168.10.10	255.255.255.0	246	0.0.0.0
softwarelab1	192.168.60.17	192.168.10.2	192.168.60.17	255.255.255.240	15	0.0.0.0
softwarelab2	192.168.60.33	192.168.10.2	192.168.60.33	255.255.255.240	15	0.0.0.0
library	192.168.80.254	192.168.10.2	192.168.80.10	255.255.255.0	246	0.0.0.0
admini	192.168.110.254	192.168.10.2	192.168.110.10	255.255.255.0	246	0.0.0.0
icslab	192.168.130.17	192.168.10.2	192.168.130.17	255.255.255.240	15	0.0.0.0
icslab2	192.168.130.33	192.168.10.2	192.168.130.33	255.255.255.240	15	0.0.0.0

DNS configuration:

DNS Service	● On	○ Off

Resource Records

Name		Type	A Record ▼

Address	

Add	Save	Remove

No.	Name	Type	Details
1	www.iau.com	A Record	192.168.10.3

Webpage:
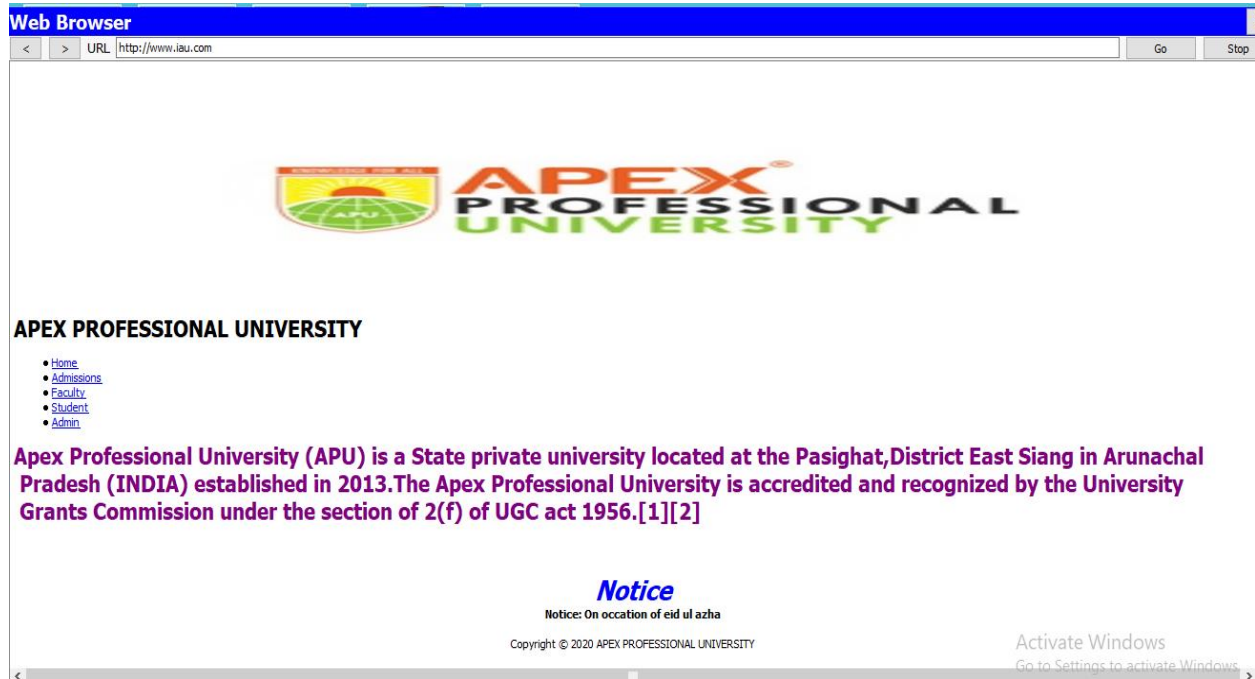
Conclusion:

In my project, I have create a complex network. I use a DHCP server for all network. I use class c ip address in this project. The web server generates the web page .And the web page is reflects the university's profile. Among the host wireless links to the networks are available.