EAST WEST UNIVERSITY

Mini Project Report

Course Title: **Computer Networks**

Course Code: **CSE405**

Section No: **3**

Submitted To:

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Title

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

Requirements

- PCs
- Wireless End Devices
- Switches (Model 2960)
- Routers
- Wireless Routers (Linksys-WRT300N)
- DNS Server
- Web Server
- DHCP Server
- Copper Straight-Through Cable
- Copper Cross-Over Cable
- Serial DCE Cable

Design Specifications

The design consists of six wired routers denoting each campus. Each campus contains different networks. Every campus network is of A class network. Every campus is connected with a switch to their respective router. Classrooms, labs, employee PCs, library and other administrative and academic wings are branched from the main switch. There is also a wireless network for each campus, which creates a subnetwork of its own.

There is a server room network situated in campus 1. This network is of B class network. This network contains DHCP, DNS and Web servers. Only a single DHCP server is used for the whole network. The DHCP server provides IP to every campus. The web server contains the website of the institute which include admissions, advising, results, eTender, library management, accounts etc.

The network among routers' is of C class network.

The design is very flexible. Since sub-switches are branched from the main switches and sub-switches represent different academic wings, more academic wings can be added for future expansion for each of the subnets by adding sub-switches.

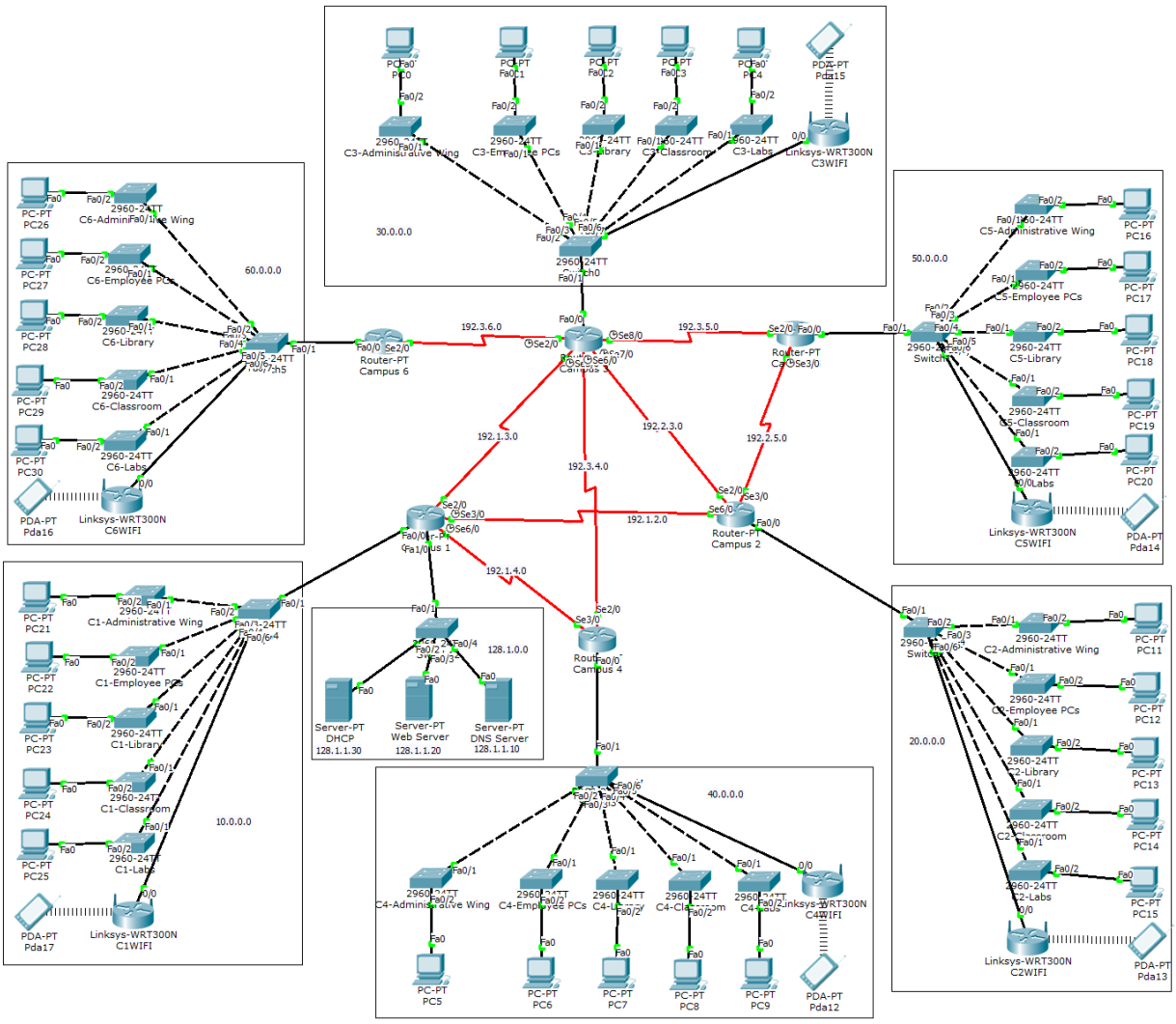

Figure 1: Diagram of the network

Number of hosts: 36

Number of networks: 7 + 8 = 15

Limitations: Since this is a very small project, no limitations were found.

Lines of Codes:

Codes for Routers:

Router-1 (Campus-1):
enable
config

interface fa0/0
ip address 10.255.255.254 255.0.0.0
no shut
do wr

exit

interface fa1/0
ip address 128.1.255.254 255.255.0.0
no shut
do wr
exit

interface se2/0
ip address 192.1.3.2 255.255.255.0
no shut
do wr
exit

interface se3/0
ip address 192.1.2.1 255.255.255.0
clock rate 64000
no shut
do wr
exit

interface se6/0
ip address 192.1.4.1 255.255.255.0
clock rate 64000
no shut
do wr
exit

Router-2 (Campus-2):
enable
config

interface fa0/0
ip address 20.255.255.254 255.0.0.0
no shut
do wr
exit

interface se2/0
ip address 192.2.3.2 255.255.255.0
no shut
do wr
exit

interface se6/0
ip address 192.1.2.2 255.255.255.0
no shut

do wr
exit

interface se3/0
ip address 192.2.5.2 255.255.255.0
no shut
do wr
exit

Router-3 (Campus-3):
enable
config

interface fa0/0
ip address 30.255.255.254 255.0.0.0
no shut
do wr
exit

interface se2/0
ip address 192.3.6.1 255.255.255.0
clock rate 64000
no shut
do wr
exit

interface se3/0
ip address 192.1.3.1 255.255.255.0
clock rate 64000
no shut
do wr
exit

interface se6/0
ip address 192.3.4.1 255.255.255.0
clock rate 64000
no shut
do wr
exit

interface se7/0
ip address 192.2.3.1 255.255.255.0
clock rate 64000
no shut
do wr
exit

interface se8/0
ip address 192.3.5.1 255.255.255.0
clock rate 64000
no shut
do wr
exit

Router-4 (Campus-4):
enable
config

interface fa0/0
ip address 40.255.255.254 255.0.0.0
no shut
do wr
exit

interface se2/0
ip address 192.3.4.2 255.255.255.0
no shut
do wr
exit

interface se3/0
ip address 192.1.4.2 255.255.255.0
no shut
do wr

Router-5 (Campus-5):
enable
config

interface fa0/0
ip address 50.255.255.254 255.0.0.0
no shut
do wr
exit

interface se2/0
ip address 192.3.5.2 255.255.255.0
no shut
do wr
exit

interface se3/0
ip address 192.2.5.1 255.255.255.0

clock rate 64000
no shut
do wr

Router-6 (Campus-6):
enable
config

interface fa0/0
ip address 60.255.255.254 255.0.0.0
no shut
do wr
exit

interface se2/0
ip address 192.3.6.2 255.255.255.0
no shut
do wr
exit

Codes for Routing Table:

Router-1 (Campus-1):
enable
config

router OSPF 1
network 10.0.0.0 0.255.255.255 area 1
network 128.1.0.0 0.0.255.255 area 1
network 192.1.4.0 0.0.0.255 area 1
network 192.1.2.0 0.0.0.255 area 1
network 192.1.3.0 0.0.0.255 area 1
exit

Router-2 (Campus-2):
enable
config

router OSPF 2
network 20.0.0.0 0.255.255.255 area 1
network 192.1.2.0 0.0.0.255 area 1
network 192.2.3.0 0.0.0.255 area 1

network 192.2.5.0 0.0.0.255 area 1
exit

Router-3 (Campus-3):
enable
config

router OSPF 3
network 30.0.0.0 0.255.255.255 area 1
network 192.3.6.0 0.0.0.255 area 1
network 192.1.3.0 0.0.0.255 area 1
network 192.3.4.0 0.0.0.255 area 1
network 192.2.3.0 0.0.0.255 area 1
network 192.3.5.0 0.0.0.255 area 1
exit

Router-4 (Campus-4):
enable
config

router OSPF 4
network 40.0.0.0 0.255.255.255 area 1
network 192.1.4.0 0.0.0.255 area 1
network 192.3.4.0 0.0.0.255 area 1
exit

Router-5 (Campus-5):
enable
config

router OSPF 5
network 50.0.0.0 0.255.255.255 area 1
network 192.3.5.0 0.0.0.255 area 1
network 192.2.5.0 0.0.0.255 area 1
exit

Router-6 (Campus-6):
enable
config

router OSPF 6
network 60.0.0.0 0.255.255.255 area 1
network 192.3.6.0 0.0.0.255 area 1
exit

Codes for single DHCP setup:

For all Routers:

```
enable
config terminal

interface fa0/0
ip helper-address 128.1.1.30
exit
exit
```