

SZABIST Network Documentation

CSC3205 - COMPUTER NETWORKS AND DATA COMMUNICATIONS

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These are examples of inappropriate activity but the university reserves the right to take immediate action regarding activities (1) that create security and/or safety issues for the university, students, employees, network or computer resources, or (2) any other activities that are determined as inappropriate.

Violating any state or federal law or municipal ordinance, such as: Accessing or transmitting pornography of any kind, obscene depictions, harmful materials, materials that encourage others to violate the law, confidential information or copyrighted materials;

Criminal activities that can be punished under law;

Selling or purchasing illegal items or substances;

Obtaining and/or using anonymous email sites; spamming; spreading viruses;

Causing harm to others or damage to their property, such as:

1. Using profane, abusive, or impolite language; threatening, harassing, or making damaging or false statements about others or accessing, transmitting, or downloading offensive, harassing, or disparaging materials;
2. Deleting, copying, modifying, or forging other users' names, emails, files, or data; disguising one's identity, impersonating other users, or sending anonymous email;
3. Damaging computer equipment, files, data or the network in any way, including intentionally accessing, transmitting or downloading computer viruses or other harmful files or programs, or disrupting any computer system performance;
4. Using any Shaheed Zulfikar Ali Bhutto Institute of Science and Technology computer to pursue "hacking," internal or external to the Shaheed Zulfikar Ali Bhutto Institute of Science and Technology, or attempting to access information protected by privacy laws; or
5. Accessing, transmitting or downloading large files, including "chain letters" or any type of "pyramid schemes".

Engaging in uses that jeopardize access or lead to unauthorized access into others' accounts or other computer networks, such as:

1. Using another's account password(s) or identifier(s);
2. Interfering with other users' ability to access their account(s); or
3. Disclosing anyone's password to others or allowing them to use another's account(s).

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1. Using the Internet for personal financial gain;
2. Using the Internet for personal advertising, promotion, or financial gain; or
3. Conducting for-profit business activities and/or engaging in non-government related fundraising or public relations activities such as solicitation for religious purposes, lobbying for personal political purposes.

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1. Students under the age of eighteen should have a parent or legal guardian supervises their usage at all times. The student's parent or guardian is responsible for monitoring the minor's use;
2. Students shall not reveal on the Internet personal information about themselves or other persons. For example, students should not reveal their name, home address, telephone number, or display photographs of themselves or others;
3. Students shall not meet in person anyone they have met only on the Internet; and
4. Students must abide by all laws, this Acceptable Use Policy and all District security policies.

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The use of a university account is a privilege, not a right, and misuse will result in the restriction or cancellation of the account. Misuse may also lead to disciplinary and/or legal action for both students and employees, including suspension, expulsion, dismissal from the employment, or criminal prosecution by government authorities. The Shaheed Zulfikar Ali Bhutto Institute of Science and Technology will attempt to tailor any disciplinary action to the specific issues related to each violation.

Disclaimer

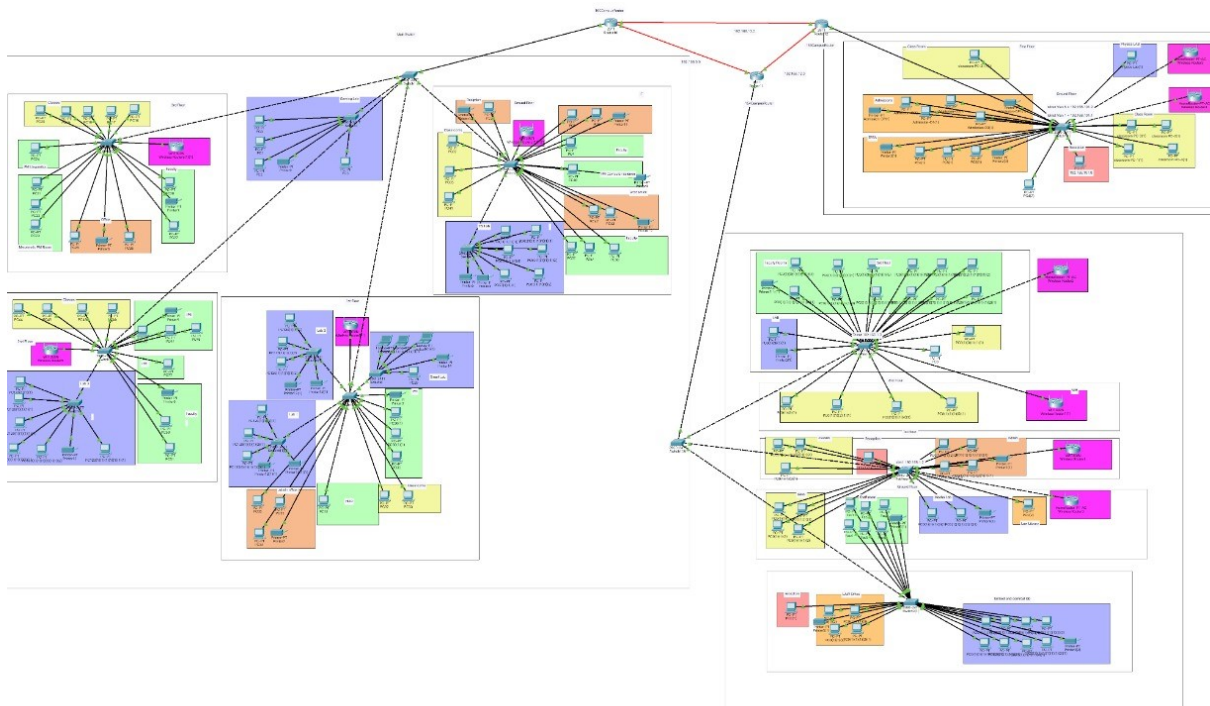
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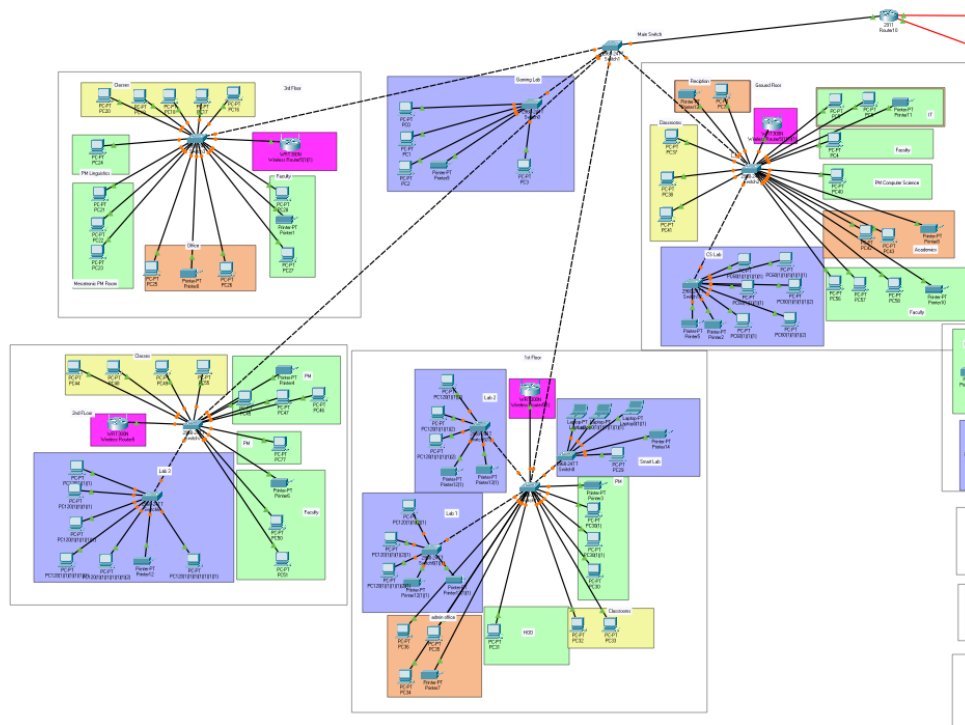
Networking Map & Topology

Hybrid topology is used as it is the only network topology that uses two or more differing network topologies. Campuses routers are connected using mesh topology (it looks like a ring topology as it is forming a circle/triangle but each router is connected point-to-point with other routers available in the network). Campus routers are connected with switch respectively and from switch, star topologies are used in building to connect different floors and its classes for sharing data and getting access to the internet.



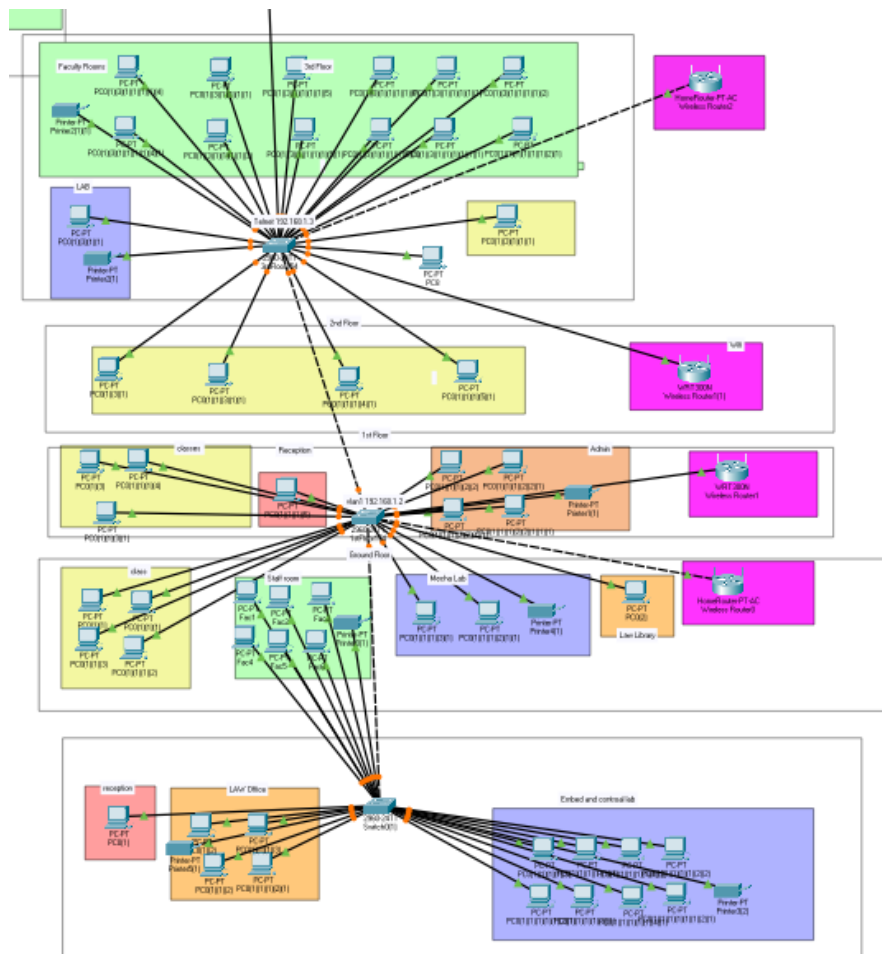
100 Campus

Switch is connected with floor switches which are forming star topology, and those switches are connected with rest of the devices forming another star topology making it a Hybrid topology.



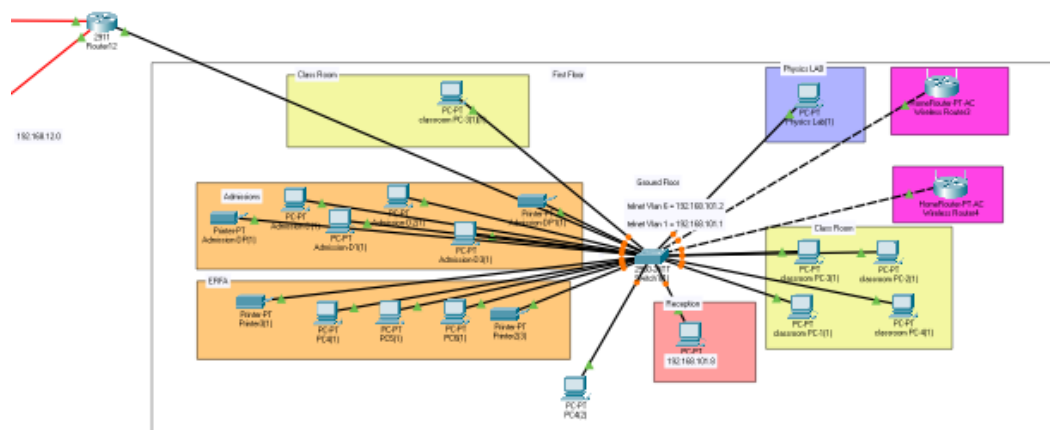
154 Campus

Switch is connected with floor switches which are forming star topology, and those switches are connected with rest of the devices forming another star topology making it a Hybrid topology.



153 Campus

Switch is connected with floor switches which are forming star topology, and those switches are connected with rest of the devices forming another star topology making it a Hybrid topology.



NETWORKING HARDWARE AND DEVICES

100 Campus

Ground Floor:

- 1 Switch and 1 Wireless Router
- Reception: 1 PC and 1 Printer
- 3 Classrooms: 1 PC per class (3 PCs)
- CS Lab: 6 PCs, 2 Printers and 1 Switch
- Academics: 2 PCs and 1 Printer
- Faculty (1): 1 PC
- Faculty (2): 3 PCs and 1 Printer
- PM Computer Science: 1 PC
- IT: 2 PC and 1 Printer

1st Floor:

- 1 Switch and 1 Wireless Router
- Lab 1: 3 PCs, 2 Printers and 1 Switch
- Lab 2: 3 PCs, 2 Printers and 1 Switch
- Smart Lab: 1 PC, 3 Laptops, 1 Printer and 1 Switch
- PM: 3 PCs and 1 Printer
- 2 Classrooms: 1 PC per class (2 PCs)
- Admin Office: 3 PCs and 1 Printer
- HOD: 1 PC

2nd Floor:

- 1 Switch and 1 Wireless Router
- Lab 3: 6 PCs, 1 Printer and 1 Switch
- 4 Classrooms: 1 PC per class (4 PCs)
- PM: 3 PCs and 1 Printer
- PM: 1 PC
- Faculty: 2 PCs and 1 Printer

3rd Floor:

- 1 Switch and 1 Wireless Router
- 5 Classrooms: 1 PC per class (5 PCs)
- Mechatronic PM Room: 3 PCs
- PM Linguistics: 1 PC
- Faculty: 2 PCs and 1 Printer
- Office: 2 PCs and 1 Printer

Roof/Top Floor:

- 1 Wireless Router
- Gaming Lab: 4 PCs and 1 Printer

154 Campus

Ground Floor:

- 1 Switch and 1 Wireless Router
- Reception: 1 PC
- 4 Classrooms: 1 PC per class (4 PCs)
- Embed and control Lab: 8 PCs, 1 Printers
- Staff Room: 6 PCs and 1 Printer
- Mecha Lab: 2 PCs and 1 Printer
- LAW Office: 4 PCs and 1 Printer
- LAW Library: 1 PC

1st Floor:

- 1 Switch and 1 Wireless Router
- Reception: 1 PC
- 3 Classrooms: 1 PC per class (3 PCs)
- Admin: 4 PCs and 1 Printer

2nd Floor:

- 1 Wireless Router
- 4 Classrooms: 4 PC per class (3 PCs)

3rd Floor:

- 1 Switch and 1 Wireless Router
- 1 PC
- Lab: 1 PC and 1 Printer
- Classroom: 1 PC
- Faculty Room: 12 PCs and 1 Printer

153 Campus

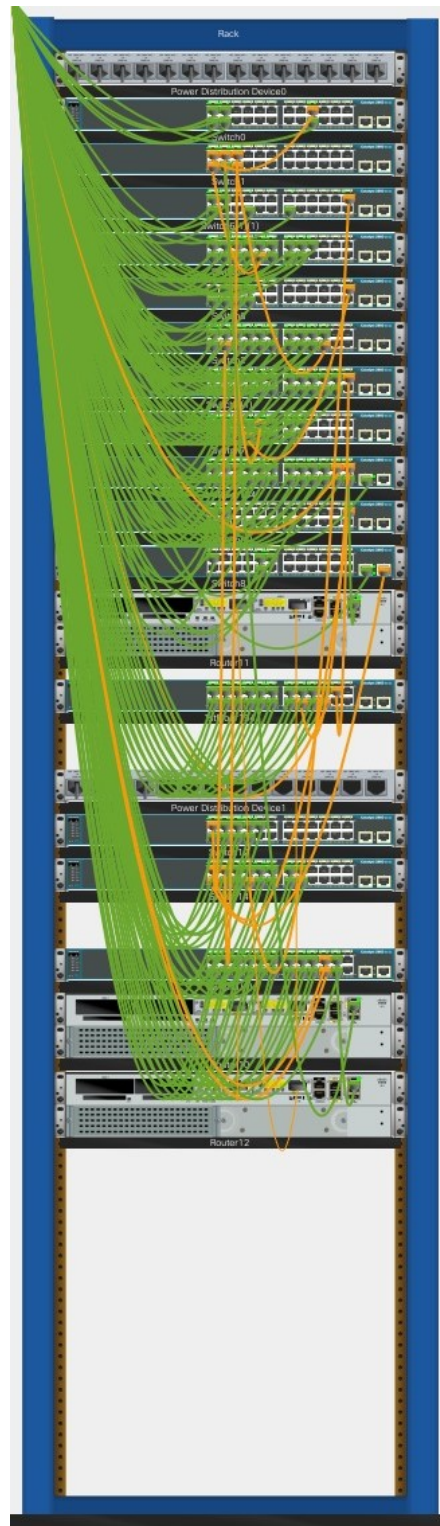
Ground Floor:

- 1 Switch and 1 Wireless Router
- 1 PC
- Reception: 1 PC
- 4 Classrooms: 1 PC per class (4 PCs)
- Admissions: 4 PCs, 2 Printers
- ERFA: 3 PCs and 2 Printers

1st Floor:

- 1 Wireless Router
- Physics Lab: 1 PC
- Classroom: 1 PC

Cabinet Plan



Rack Diagram

Configuration Information

Colour Scheme

- staff room ----> Green #b9ffb9
- Classes ----> Yellow #f3f7a1
- admin ----> Orange #f7ba8e
- Labs ----> Blue #afb3ff
- reception ----> red #ff9e9e
- wifi ----> pink #f3f7a1
- Law ----> dark Orange #ffc87b

Vlans

- Vlan 2 --> faculty_office
- vlan 3 --> labs
- vlan 4 --> classrooms
- vlan 5 --> wifi
- vlan 6 --> admin
- vlan 7 --> academics
- Vlan 8 --> law_office
- Vlan 9 --> admission_depart
- Vlan 10--> erfa
- Vlan 11-->IT

154 Campus

1. Reception
2. 3 classes on each floor
3. staff room ground floor
4. Mecha Lab
5. Control Lab

3rd Floor 154 Switch

1. Vlans Made
2. Assigned ports to vlan
3. Set password for line console
4. configure telnet
5. ip 192.168.1.3
6. Set vty password abc123
7. Set lineconsole password abc123
8. Configure telnet

- Vlan 2 --> faculty_office 192.168.2.0
- vlan 3 --> labs 192.168.3.0
- vlan 4 --> classrooms 192.168.4.0
- vlan 5 --> wifi 192.168.5.0
- vlan 6 --> admin 192.168.6.0
- vlan 7 --> academics 192.168.7.0
- Vlan 8 --> law_office 192.168.8.0
- Vlan 9 --> admission_depart 192.168.9.0
- Vlan 10--> erfa 192.168.10.0

1st Floor 154 Switch

- Vlans Made
- Assigned ports to vlan
- Set password for line console
- configure telnet
- ip 192.168.1.2
- Set vty password abc123
- Set lineconsole password abc123
- Configure telnet

Ground Floor 154 Switch

1. Vlans Made
2. Assigned ports to vlan
3. Set password for line console
4. Set vty password abc123
5. Set lineconsole password abc123

153 Campus

Ground Floor 153 Switch

- 2 admissiondepartment active Fa0/1, Fa0/2, Fa0/3, Fa0/4
- Fa0/5, Fa0/6
- 3 erfa active Fa0/7, Fa0/8, Fa0/9, Fa0/10
- Fa0/11v
- 4 classrooms active Fa0/12, Fa0/13, Fa0/14, Fa0/15
- Fa0/16

Router Campus

- Password on all routers is abc123

Router 154 Campus

- GigabitEthernet0/0.3 192.168.3.1 YES manual up up

- GigabitEthernet0/0.4 192.168.4.1 YES manual up up
- GigabitEthernet0/0.5 192.168.5.1 YES manual up up
- GigabitEthernet0/0.6 192.168.6.1 YES manual up up
- GigabitEthernet0/0.7 192.168.7.1 YES manual up up
- GigabitEthernet0/0.8 192.168.8.1 YES manual up up
- GigabitEthernet0/0.9 192.168.9.1 YES manual up up
- GigabitEthernet0/0.10 192.168.10.1 YES manual up up
- GigabitEthernet0/1 unassigned YES unset administratively down down
- GigabitEthernet0/2 unassigned YES unset administratively down down
- GigabitEthernet0/0/0 192.168.0.2 YES manual up up
- GigabitEthernet0/1/0 192.168.12.1 YES manual up up
- Vlan1 unassigned YES unset administratively down down
-

Router 100 Campus

- Protocol
- GigabitEthernet0/0 unassigned YES unset up up
- GigabitEthernet0/0.2 192.168.2.1 YES manual up up
- GigabitEthernet0/0.3 192.168.3.1 YES manual up up
- GigabitEthernet0/0.4 192.168.4.1 YES manual up up
- GigabitEthernet0/0.5 192.168.5.1 YES manual up up
- GigabitEthernet0/0.6 192.168.6.1 YES manual up up
- GigabitEthernet0/0.7 192.168.7.1 YES manual up up
- GigabitEthernet0/0.11 192.168.11.1 YES manual up up
- GigabitEthernet0/1 unassigned YES unset administratively down down
- GigabitEthernet0/2 unassigned YES unset administratively down down
- GigabitEthernet0/0/0 192.168.0.1 YES manual up up
- GigabitEthernet0/1/0 192.168.13.2 YES manual up up
- Vlan1 unassigned YES unset administratively down down
- 100CampusRouter#

Router 153 Campus

- GigabitEthernet0/0 unassigned YES unset up up
- GigabitEthernet0/0.3 192.168.3.1 YES manual up up
- GigabitEthernet0/0.4 192.168.4.1 YES manual up up
- GigabitEthernet0/0.5 192.168.5.1 YES manual up up
- GigabitEthernet0/0.6 192.168.6.1 YES manual up up
- GigabitEthernet0/0.7 192.168.7.1 YES manual up up
- GigabitEthernet0/0.9 192.168.9.1 YES manual up up
- GigabitEthernet0/0.10 192.168.10.1 YES manual up up
- GigabitEthernet0/1 unassigned YES unset administratively down down
- GigabitEthernet0/2 unassigned YES unset administratively down down
- GigabitEthernet0/0/0 192.168.12.2 YES manual up up
- GigabitEthernet0/1/0 192.168.13.1 YES manual up up
- Vlan1 unassigned YES unset administratively down down

DHCP configuration On All Routers

- All routers password
- password abc123
- ip dhcp excluded-address 192.168.2.1
- ip dhcp excluded-address 192.168.3.1
- ip dhcp excluded-address 192.168.4.1
- ip dhcp excluded-address 192.168.5.1
- ip dhcp excluded-address 192.168.6.1
- ip dhcp excluded-address 192.168.7.1
- ip dhcp excluded-address 192.168.8.1
- ip dhcp excluded-address 192.168.9.1
- ip dhcp excluded-address 192.168.10.1
- ip dhcp excluded-address 192.168.11.1
- !
- ip dhcp pool 2.0
- network 192.168.2.0 255.255.255.0
- default-router 192.168.2.1
- dns-server 8.8.8.8
- ip dhcp pool 3.0
- ip dhcp pool faculty_office
- network 192.168.2.0 255.255.255.0
- default-router 192.168.2.1
- dns-server 8.8.8.8
- ip dhcp pool labs
- network 192.168.3.0 255.255.255.0
- default-router 192.168.3.1
- dns-server 8.8.8.8
- ip dhcp pool classrooms
- network 192.168.4.0 255.255.255.0
- default-router 192.168.4.1
- dns-server 8.8.8.8
- ip dhcp pool wifi
- network 192.168.5.0 255.255.255.0
- default-router 192.168.5.1
- dns-server 8.8.8.8
- ip dhcp pool admin
- network 192.168.6.0 255.255.255.0
- default-router 192.168.6.1
- dns-server 8.8.8.8
- ip dhcp pool academica
- network 192.168.7.0 255.255.255.0
- default-router 192.168.7.1
- dns-server 8.8.8.8
- ip dhcp pool law_office

- network 192.168.8.0 255.255.255.0
- default-router 192.168.8.1
- dns-server 8.8.8.8
- ip dhcp pool admission_depart
- network 192.168.9.0 255.255.255.0
- default-router 192.168.9.1
- dns-server 8.8.8.8
- ip dhcp pool erfa
- network 192.168.10.0 255.255.255.0
- default-router 192.168.10.1
- dns-server 8.8.8.8
- ip dhcp pool IT
- network 192.168.11.0 255.255.255.0
- default-router 192.168.11.1
- dns-server 8.8.8.8

100 Campus

Gaming Lab switch

- Vlan 3 labs
- Line console password abc123
- Telnet 192.168.10.1 password abc123
- Hostname GamingLabswitch

3rd floor switch

- VLAN 6 admin
- VLAN 2 Faculty_office
- VLAN 4 classrooms
- Hostname 3rdfloorswitch
- Line console 0 password abc123
- Line vty 0 15 password abc123
- Vlan 1 ip 192.168.10.1 255.255.255.0

2nd floor switch

- VLAN 2 Faculty_office
- VLAN 4 classrooms
- Hostname 2ndfloorswitch
- Line console 0 password abc123
- Line vty 0 15 password abc123
- Vlan 1 ip 192.168.10.1 255.255.255.0

lab3 Switch

- VLAN 3 labs
- Hostname lab3 Switch
- Line console 0 password abc123
- Line vty 0 15 password abc123
- Vlan 1 ip 192.168.10.1 255.255.255.0

1st Floor Switch

- VLAN 2 Faculty_office
- VLAN 4 Classroom
- VLAN 6 Admin
- Line console 0 password abc123
- Line vty 0 15 password abc123

Lab1 switch

- VLAN 3 labs
- Hostname lab1
- Line console 0 password abc123
- Line vty 0 15 password abc123

Lab2 switch

- VLAN 3 labs
- Hostname lab1
- Line console 0 password abc123
- Line vty 0 15 password abc123

SmartLab

- VLAN 3 labs
- Hostname lab1
- Line console 0 password abc123
- Line vty 0 15 password abc123

GroundFloorSwitch

- VLAN 2 Faculty_Office
- VLAN 6 Admin
- VLAN 7 Academics
- VLAN 9 IT
- VLAN 4 Classrooms
- Line console 0 password abc123

- Line vty 0 15 password abc123

CSLAB

- VLAN 3 labs
- Line console 0 password abc123
- Line vty 0 15 password abc123

100 Router

- Encap DotQ 2-7
- GigabitEthernet0/0/0 unassigned YES unset up up
- GigabitEthernet0/0/0.2 192.168.2.1 YES manual up up
- GigabitEthernet0/0/0.3 192.168.3.1 YES manual up up
- GigabitEthernet0/0/0.4 192.168.4.1 YES manual up up
- GigabitEthernet0/0/0.5 192.168.5.1 YES manual up up
- GigabitEthernet0/0/0.6 192.168.6.1 YES manual up up
- GigabitEthernet0/0/0.7 192.168.7.1 YES manual up up