BLOCK 01 : IT CENTER

Number of data points 164

1. Director Office – 02
2. Network Manager Rom – 01
3. Technical Officers Room – 1*2
4. Staff office – 5
5. Meeting room – 2
6. Lobby a – 2
7. Computer Lab 01 -60
8. Computer lab 02 – 60
9. Digital learning media center – 30
10. Printers - 03

BLOCK 02 : DEPARTMENT BULIDING

Number of data points 203

1. Lecture hall – 08
2. Staff room – 14
3. Technical officers Room – 4
4. Department meeting Room -2
5. Computer lab 01 – 50
6. Computer lab 02 – 50
7. Network Engineering Lab – 10
8. Microprocessor Lab -12
9. Computer Vision and Machine Learning Lab – 50
10. Department Office – 2
11. WIFI – 01
12. Printer – 01

THE DETAILS OF THE SUBNET, DEVICES INCLUDED AND IP ADDRESSING

VLAN NAME	INSTALLED DEVICE	NEEDED SIZE	ALLOCATED SIZE	IP ADDRESS RANGE	SUBNET MASK	CIDR
1. COMPUTER LAB -01 IT CENTER BLOCK	60	61	64	10.20.0.0-10.20.0.63	255.255.255.192	26
2. COMPUTER LAB -02 IT CENTER BLOCK	60	61	64	10.20.0.64-10.20.0.127	255.255.255.192	26
3. COMPUTER LAB -01 DEPARTMENT BLOCK	50	51	64	10.20.0.128-10.20.0.191	255.255.255.192	26
4. COMPUTER LAB – 02 DEPARTMENT BLOCK	50	51	64	10.20.0.192-10.20.0.255	255.255.255.192	26
5. COMPUTER VISION AND MACHINE LEARNING LAB	50	51	64	10.20.1.0-10.20.1.63	255.255.255.192	26
6. MEETING ROOM	2 data points & assume 40 seating capacity for wifi	44	64	10.20.1.64-10.20.1.127	255.255.255.192	26
7. LOBBY AREA	40 seating capacity Wifi (Assumed)	42	64	10.20.1.128-10.20.1.191	255.255.255.192	26
8. DEPARTMENT MEETING ROOM	2 data points & assumed 35 seat capacity for wifi	39	64	10.20.1.192-10.20.1.255	255.255.255.192	26
9. DIGITAL LEARNING MEDIA CENTER	30 PC & 1 printer	32	64	10.20.2.0-10.20.2.63	255.255.255.192	26

10. STAFF ROOM-IT CENTER	14	15	16	10.20.2.64-10.20.2.79	255.255.255.240	28
11. MICRO PROCESS LAB	12	13	16	10.20.2.80-10.20.2.95	255.255.255.240	28
12. NETWORK ENGINEERING LAB	10	11	16	10.20.2.96-10.20.2.111	255.255.255.240	28
13. 4 LECTURE HALL	4 PC , 4 Projector	9	16	10.20.2.112-10.20.2.127	255.255.255.240	28
14. STAFF ROOM – DEPARTMENT BLOCK	5 PC	6	8	10.20.2.128-10.20.2.135	255.255.255.248	29
15. 4 T.O OFFICE-DEPARTMENT OFFICE	4PC	5	8	10.20.2.136-10.20.2.143	255.255.255.248	29
16. DEPARTMENT OFFICE	2 PC & 1 Printer	4	8	10.20.2.144-10.20.2.151	255.255.255.248	29
17. DIRECTOR OFFICE	2 PC	3	4	10.20.2.152-10.20.2.155	255.255.255.252	30
18. 2 TO OFFICE	2 PC	3	4	10.20.2.156-10.20.2.159	255.255.255.252	30
19. PRINTING ROOM	2 Printer	3	4	10.20.2.160-10.20.2.163	255.255.255.252	30
20. NETWORK MANAGER ROOM	1 PC	2	4	10.20.2.164-10.20.2.167	255.255.255.252	30

Assume the seating capacity randomly

Meeting room – 40

Lobby area – 40

Department meeting room – 35

According to the maximum number of seats, the Wifi router's maximum number of wireless devices connected to the network has been determined.

VLAN NAME	NETWORK ADDRESS	BROADCAS T
Computer lab -01 it center block	10.20.0.0	10.20.0.63
Computer lab -02 it center block	10.20.0.64	10.20.0.127
Computer lab -01 Department block	10.20.0.128	10.20.0.191
Computer lab – 02 department block	10.20.0.192	10.20.0.255
Computer vision and machine learning lab	10.20.1.0	10.20.1.63
Meeting room	10.20.1.64	10.20.1.127
Lobby area	10.20.1.128	10.20.1.191
Department meeting room	10.20.1.192	10.20.1.255
Digital learning media center	10.20.2.0	10.20.2.63
Staff room-IT CENTER	10.20.2.64	10.20.2.79
Micro process lab	10.20.2.80	10.20.2.95
Network engineering lab	10.20.2.96	10.20.2.111
4 lecture hall	10.20..112-	10.20.2.127
Staff room – DEPARTMENT BLOCK	10.20.2.128	10.20.2.135
4 t.o office- department office	10.20.2.136	10.20.2.143
Department office	10.20.2.144	10.20.2.151
Director office	10.20.2.152	10.20.2.155
2 to office	10.20.2.156	10.20.2.159
Printing room	10.20.2.160	10.20.2.163
Network manager room	10.20.2.164	10.20.2.167

THE DETAILS OF THE VLAN CREATED IN THE DESIGN

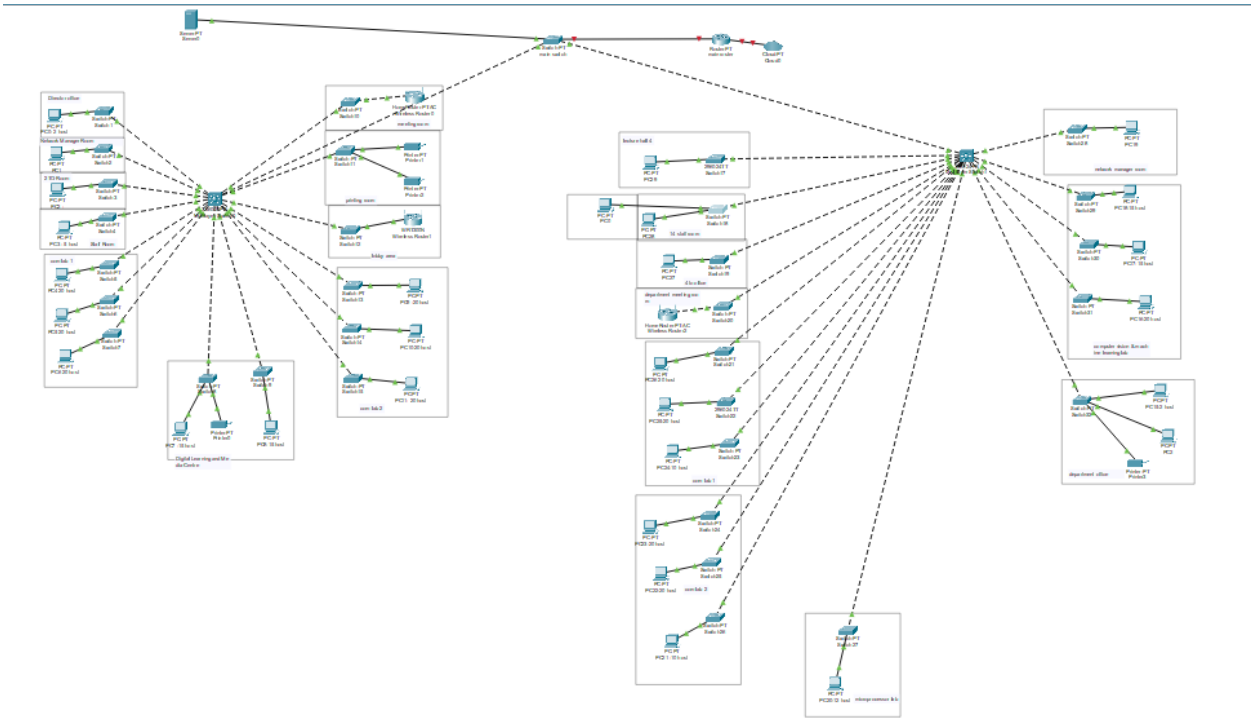
IT CENTER

Multi Layer switch 1	
2	Director office
3	Network manager room
4	TO office 2
5	Staff room
6	Meeting room
7	Lobby area
8	Com lab 1
9	Cam lab 2
10	Digital learning media center
11	Printing room

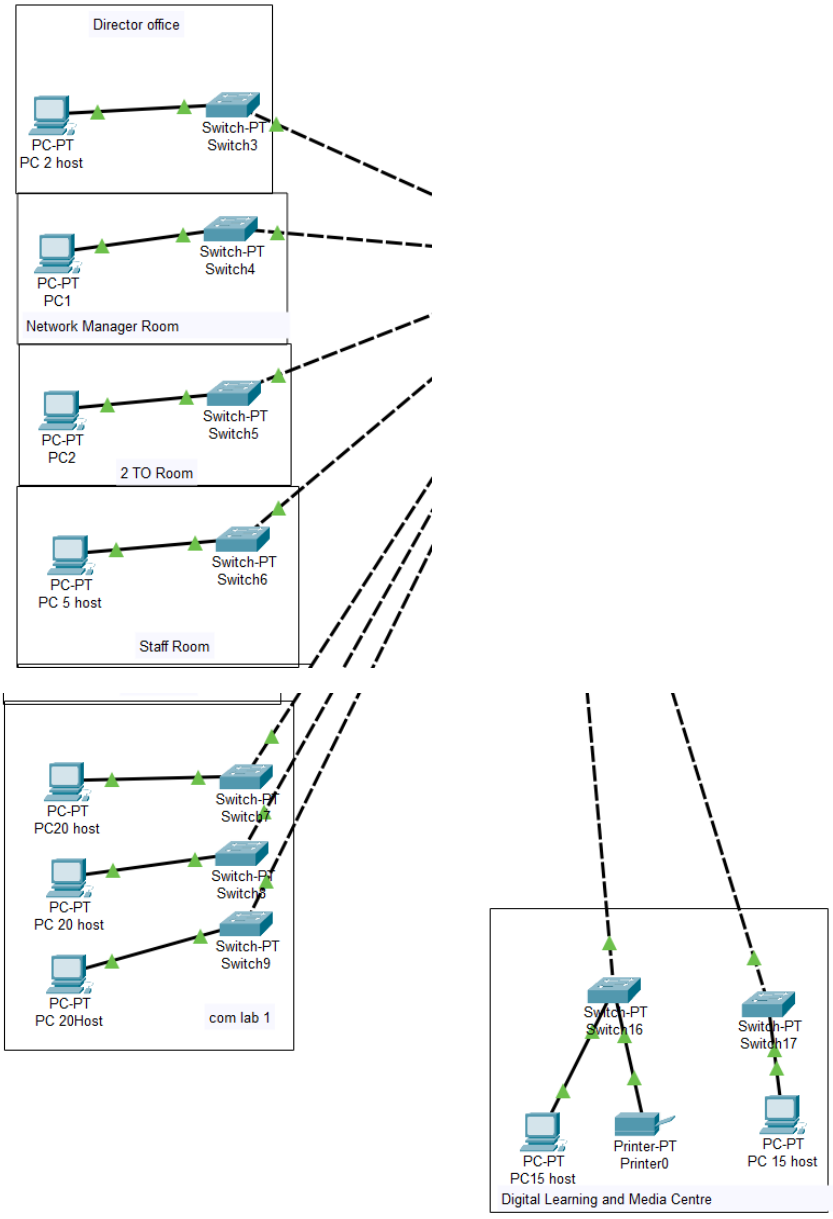
DEPARTMENT BLOCK

Multi layer switch 2	
12	Lecture hall 04
13	Staff room 14
14	TO office 4
`15	Department meeting room
16	Com lab 01
17	Com lab 2
18	Network engineer lab
19	Micro processing lab
20	Computer vison and machine learning lab
21	Department office

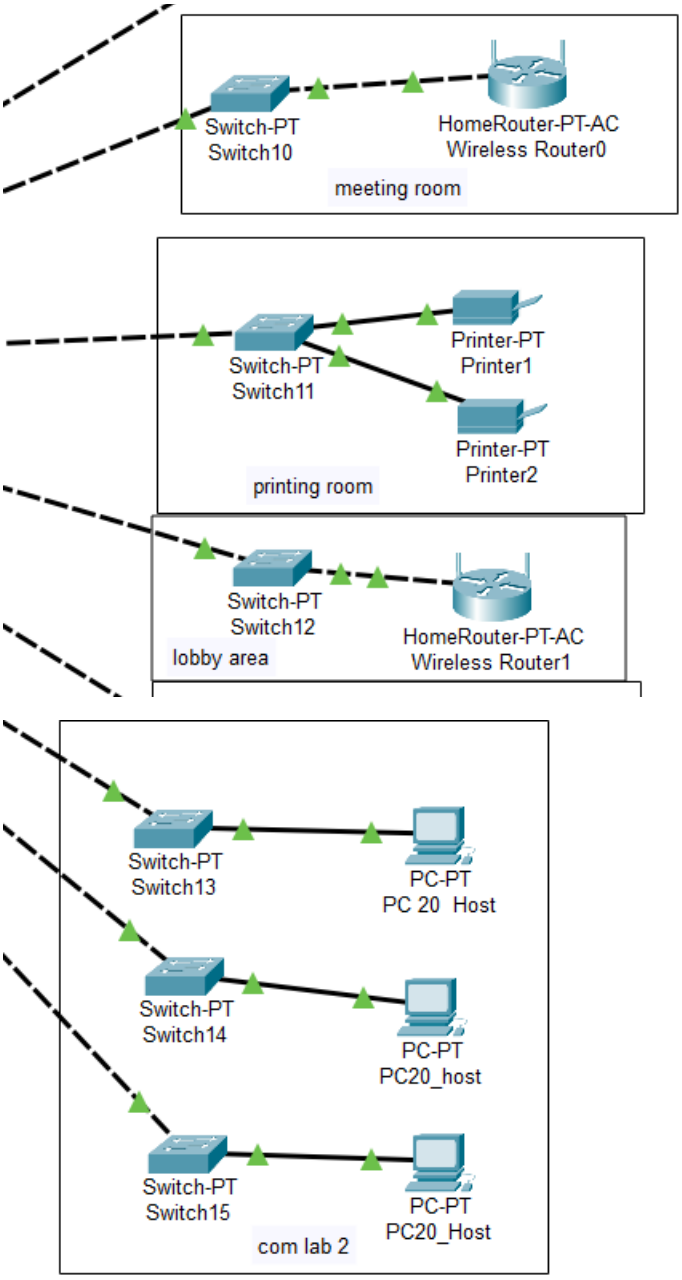
NETWORK DIAGRAM OF WHOLE SYSTEM



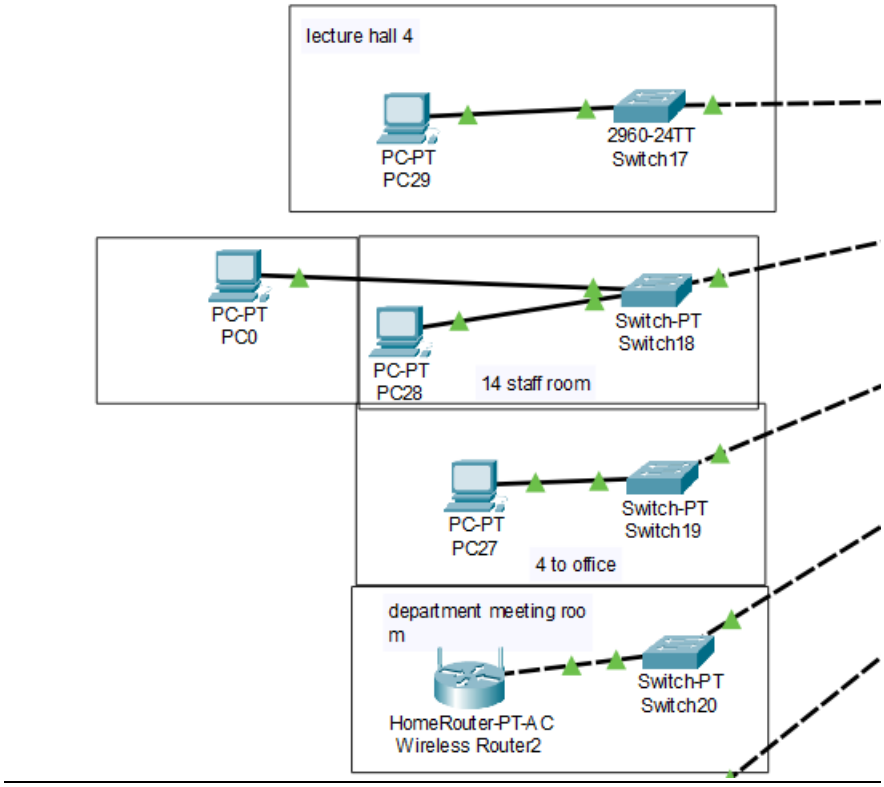
NETWORK DIAGRAM OF IT CENTER PART 1



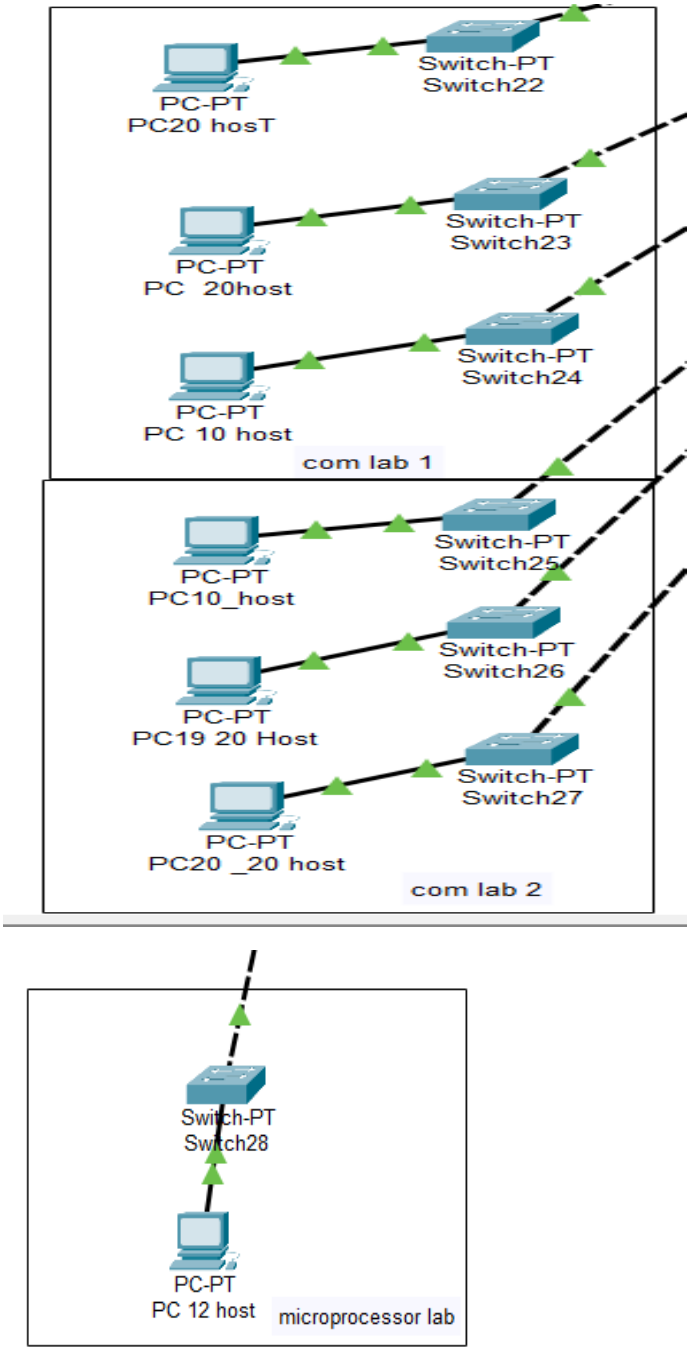
NETWORK DIAGRAM OF IT CENTER PART 2



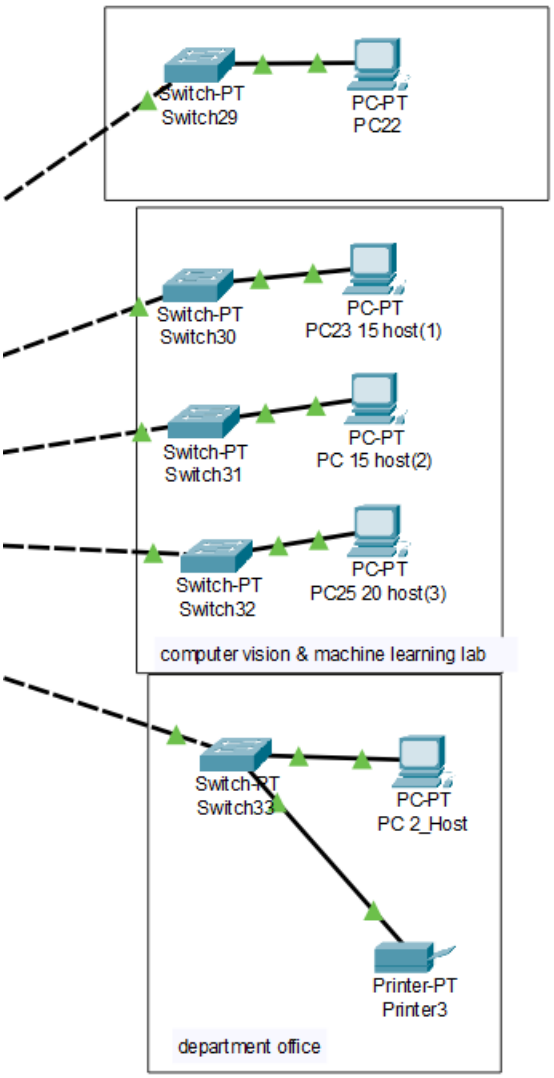
NETWORK DIAGRAM OF DEPARTMENT BLOCK PART 1



NETWORK DIAGRAM OF DEPARTMENT BLOCK PART 2

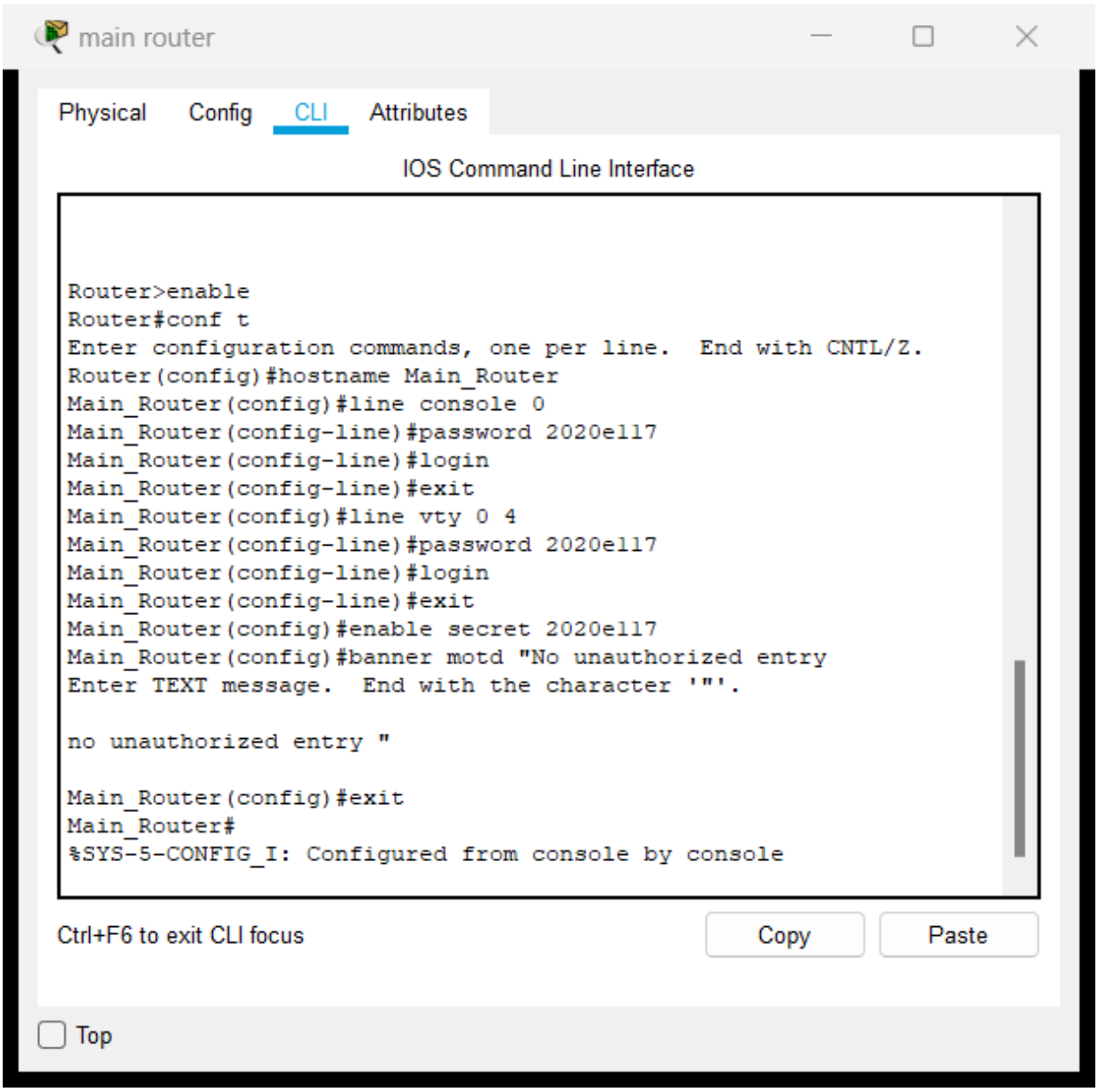


NETWORK DIAGRAM OF DEPARTMENT BLOCK PART 2



CONFUGURING ROUTER

Setting router name as Main_Router and giving password



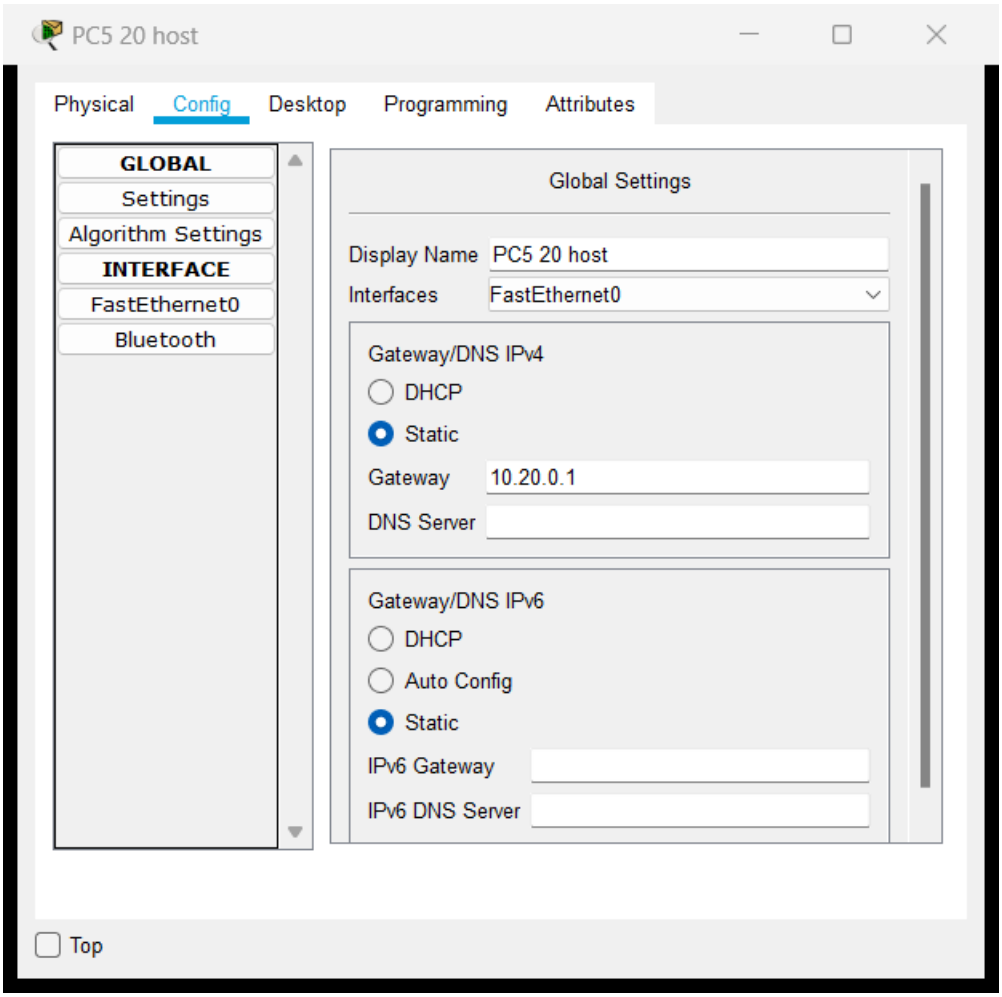
```
Main_Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Main_Router(config)#interface fa0/0.1
Main_Router(config-subif)#ip address 10.20.0.0 255.255.255.192

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.2
Main_Router(config-subif)#10.20.0.64 225.225.225.192
                          ^
% Invalid input detected at '^' marker.

Main_Router(config-subif)#ip address 10.20.0.64 255.255.255.192

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.3
Main_Router(config-subif)#ip address 10.20.0.128 255.255.255.128

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.4
Main_Router(config-subif)#ip address 10.20.0.192 225.225.225.192

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.3
Main_Router(config-subif)#ip address 10.20.0.128 255.255.255.192

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.5
Main_Router(config-subif)#ip address 10.20.1.0 255.255.255.192
```

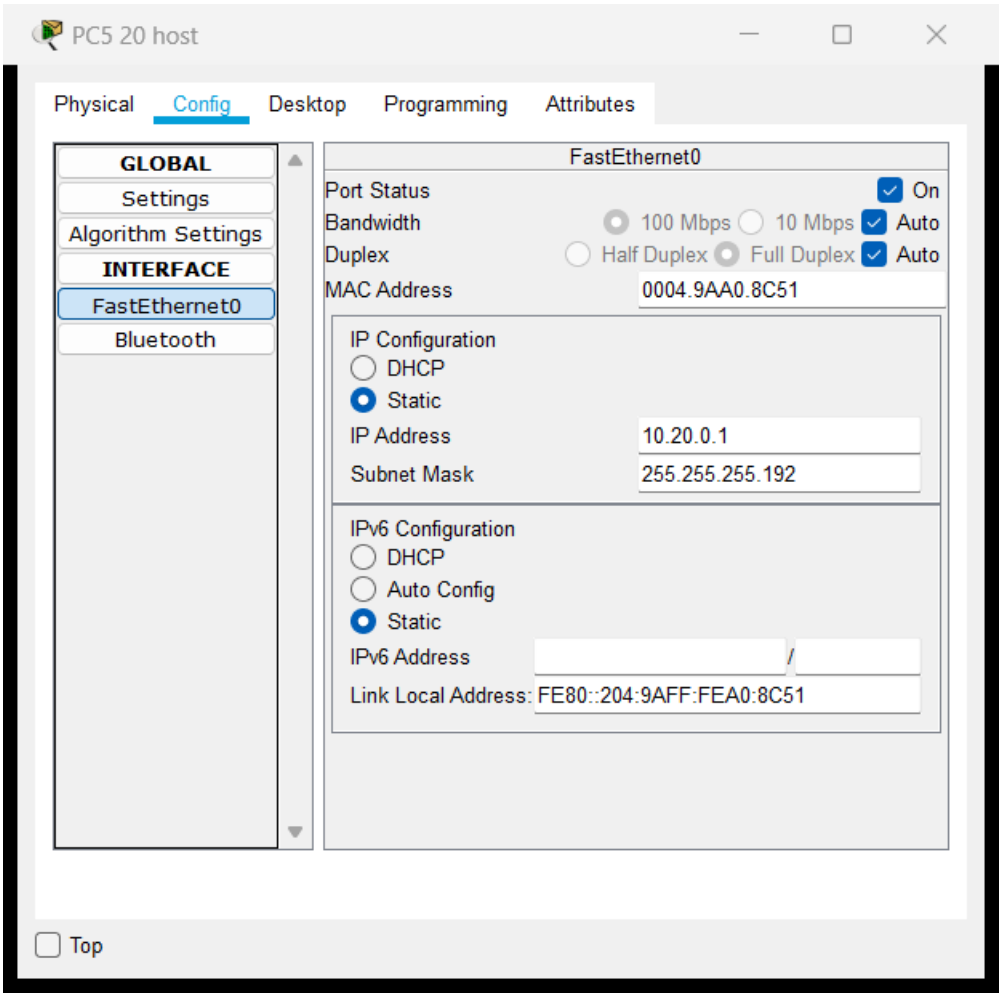
```
Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.6
Main_Router(config-subif)#ip address 10.20.1.64 255.255.255.192

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.7
Main_Router(config-subif)#ip address 10.20.1.128 255.255.255.192

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.8
Main_Router(config-subif)#ip address 10.20.1.192 255.255.255.192

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.9
Main_Router(config-subif)#ip address 10.20.2.0 255.255.255.192

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.10
Main_Router(config-subif)#ip address 10.20.2.64 255.255.255.240

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.11
Main_Router(config-subif)#ip address 10.20.2.80 255.255.255.240

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.
```

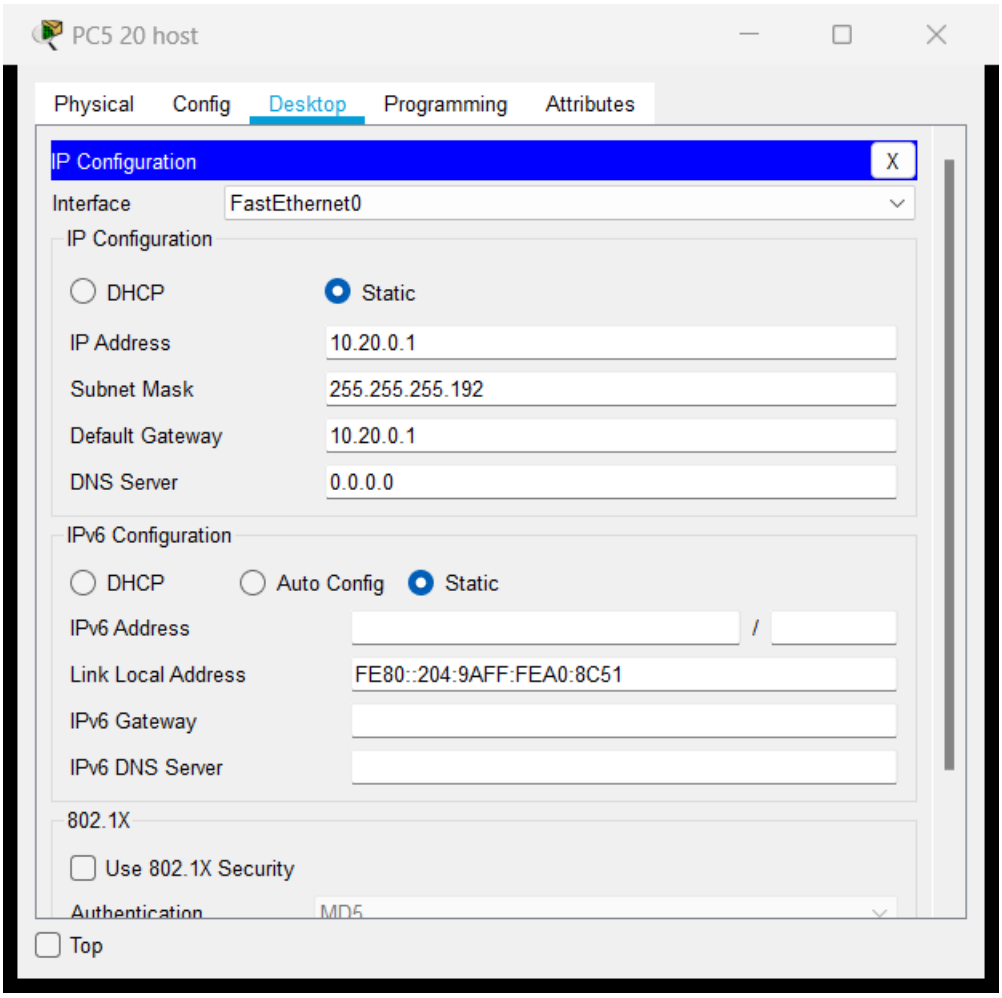
```
% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.12
Main_Router(config-subif)#ip address 10.20.2.96 255.255.255.240

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.13
Main_Router(config-subif)#ip address 10.20.2.112 255.255.255.240

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.14
Main_Router(config-subif)#ip address 10.20.2.128 255.255.255.248

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.15
Main_Router(config-subif)#ip address 10.20.2.136 255.255.255.248

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interdace fa0/0.16
                          ^
% Invalid input detected at '^' marker.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.16
Main_Router(config-subif)#ip address 10.20.2.144 255.255.255.248

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.
```

```
% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.17
Main_Router(config-subif)#ip address 10.20.2.152 255.255.255.252

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.18
Main_Router(config-subif)#ip address 10.20.2.156 255.255.255.252

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.19
Main_Router(config-subif)#ip address 10.20.2.160 255.255.255.252

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#interface fa0/0.20
Main_Router(config-subif)#ip address 10.20.2.164 255.255.255.252

% Configuring IP routing on a LAN subinterface is only allowed if that
subinterface is already configured as part of an IEEE 802.10, IEEE 802.1Q,
or ISL vLAN.

Main_Router(config-subif)#no shut
Main_Router(config-subif)#exit
Main_Router(config)#
Main_Router(config)#exit
Main_Router#
%SYS-5-CONFIG_I: Configured from console by console
```

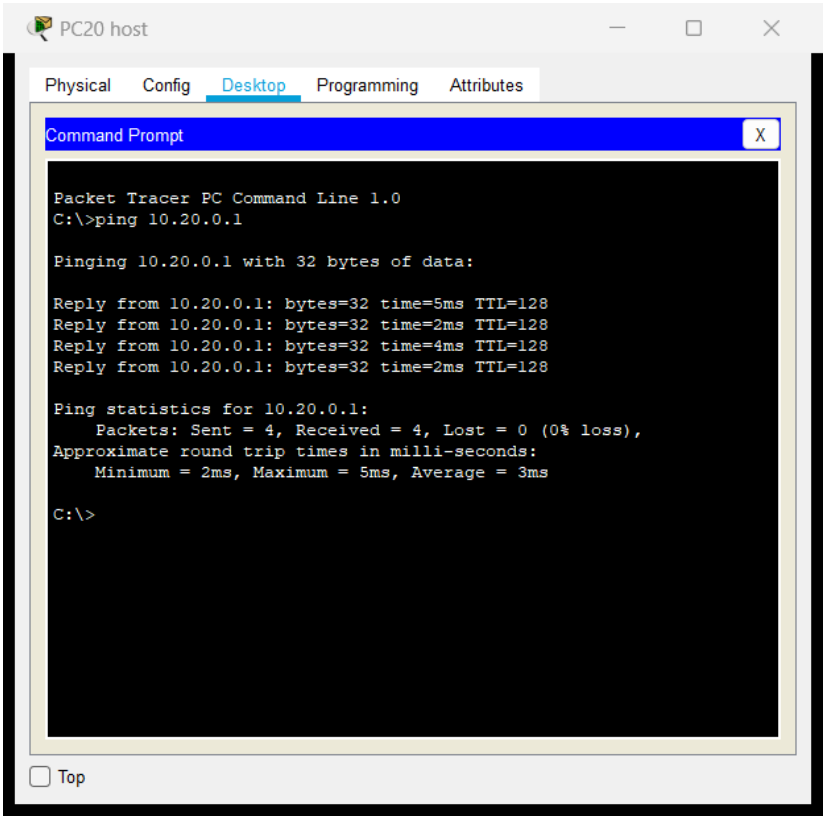
IP CONFIGURATION OF PC



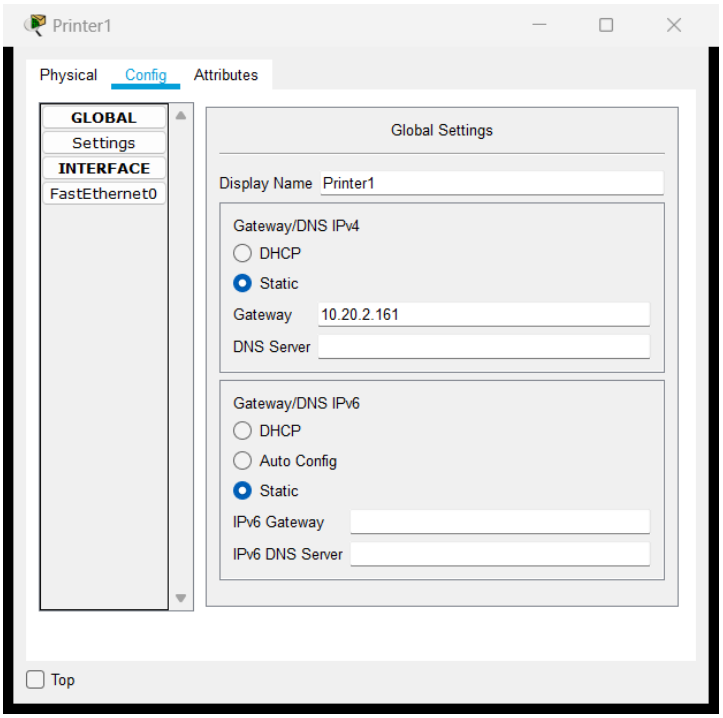

PC5 20 host
Physical
Config
Desktop
Programming
Attributes
GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth
FastEthernet0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0004.9AA0.8C51
IP Configuration
DHCP
Static
IP Address
10.20.0.1
Subnet Mask
255.255.255.192
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address:
FE80::204:9AFF:FEA0:8C51
Top

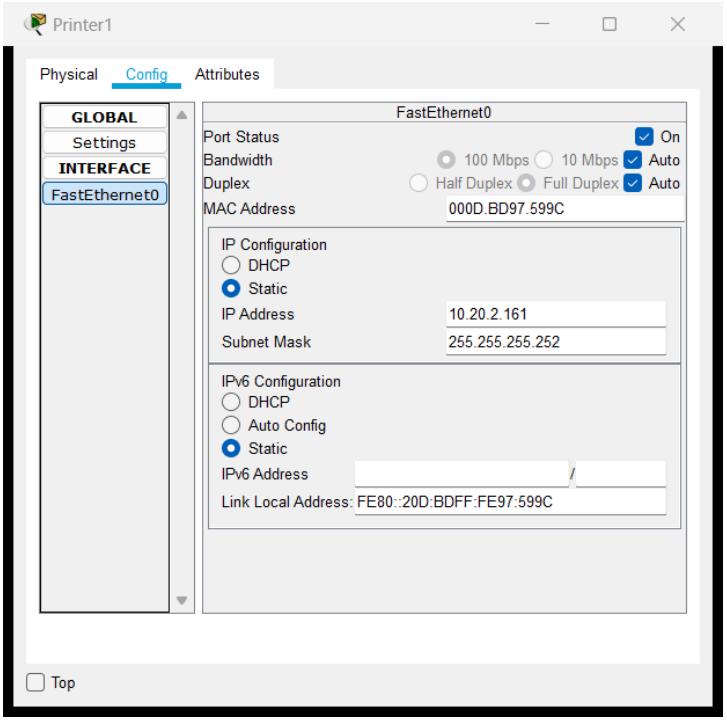

PC5 20 host
Physical
Config
Desktop
Programming
Attributes
IP Configuration
X
Interface
FastEthernet0
IP Configuration
DHCP
Static
IP Address
10.20.0.1
Subnet Mask
255.255.255.192
Default Gateway
10.20.0.1
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
/
Link Local Address
FE80::204:9AFF:FEA0:8C51
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Top

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Link-local IPv6 Address.....: FE80::2E0:8FFF:FE5A:7577
   IP Address......................: 10.20.0.1
   Subnet Mask.....................: 255.255.255.192
   Default Gateway.................: 10.20.0.1

Bluetooth Connection:

   Link-local IPv6 Address.....: ::
   IP Address......................: 0.0.0.0
   Subnet Mask.....................: 0.0.0.0
   Default Gateway.................: 0.0.0.0
```



IP CONFIGURATION OF PRINTERS

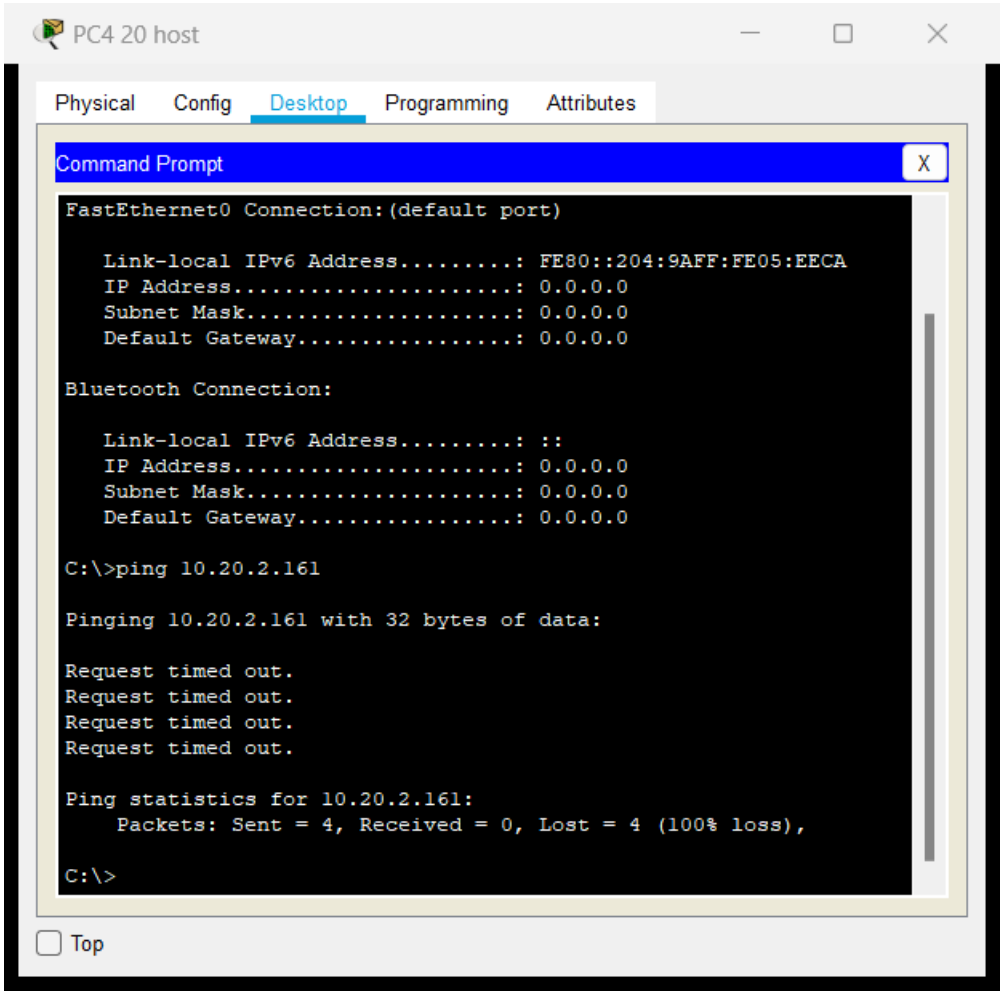




RESTRICT ACCESS OF PRINTERS BY NON-STAFFS

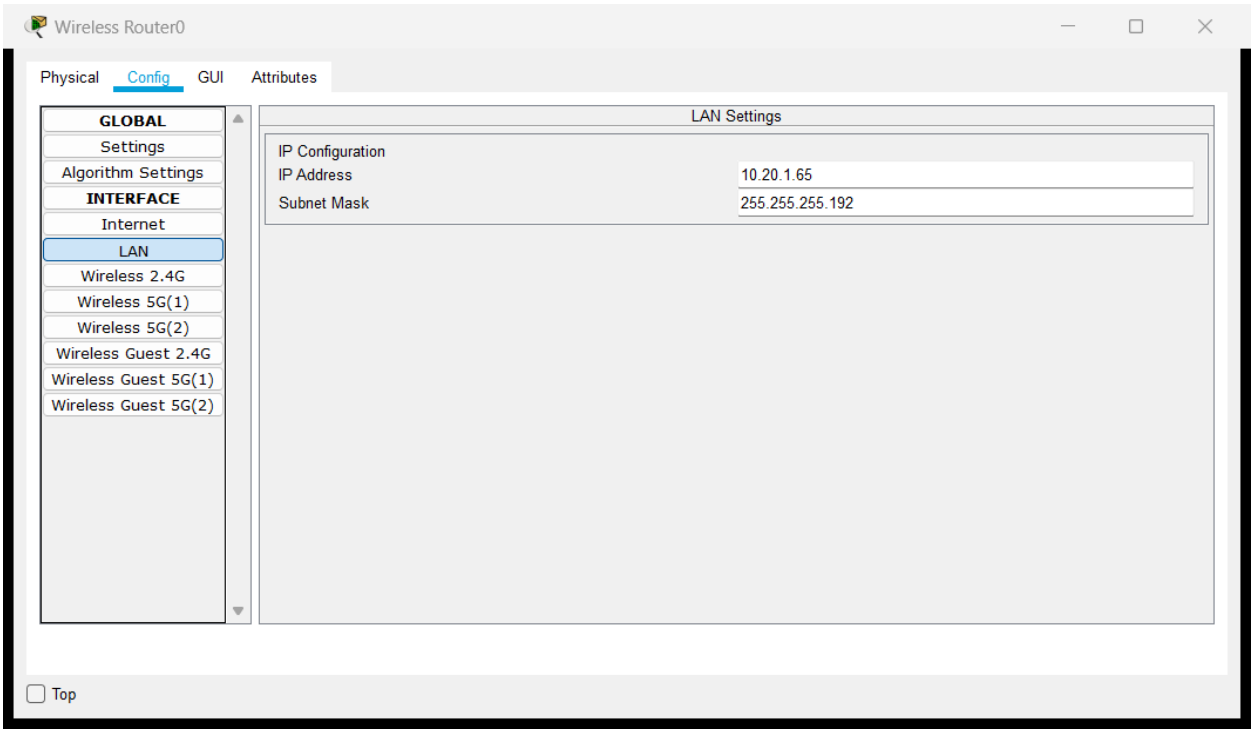
```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ip access-list extended Printer
Switch(config-ext-nacl)#permit ip host 10.20.2.64 host 10.20.2.161
Switch(config-ext-nacl)#permit ip host 10.20.2.64 host 10.20.2.162
Switch(config-ext-nacl)#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (1), with IT_CENTER FastEthernet0/5 (6).

Switch(config-ext-nacl)#deny ip host 10.20.2.64 host 10.20.2.162
Switch(config-ext-nacl)#deny ip host 10.20.2.64 host 10.20.2.164
Switch(config-ext-nacl)#deny ip host 10.20.2.64 host 10.20.0.0
Switch(config-ext-nacl)#deny ip host 10.20.2.64 host 10.20.0.64
Switch(config-ext-nacl)#deny ip host 10.20.2.64 host 10.20.2.0
Switch(config-ext-nacl)#deny ip host 10.20.2.64 host 10.20.1.64
Switch(config-ext-nacl)#deny ip host 10.20.2.64 host 10.20.1.128
Switch(config-ext-nacl)#
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (1), with IT_CENTER FastEthernet0/5 (6).

Switch(config-ext-nacl)#permit
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (1), with IT_CENTER FastEthernet0/5 (6).
% Incomplete command.
Switch(config-ext-nacl)#permit ip any any
Switch(config-ext-nacl)#
```

PRINTERS CAN'T BE ACCESSED COM LAB 1

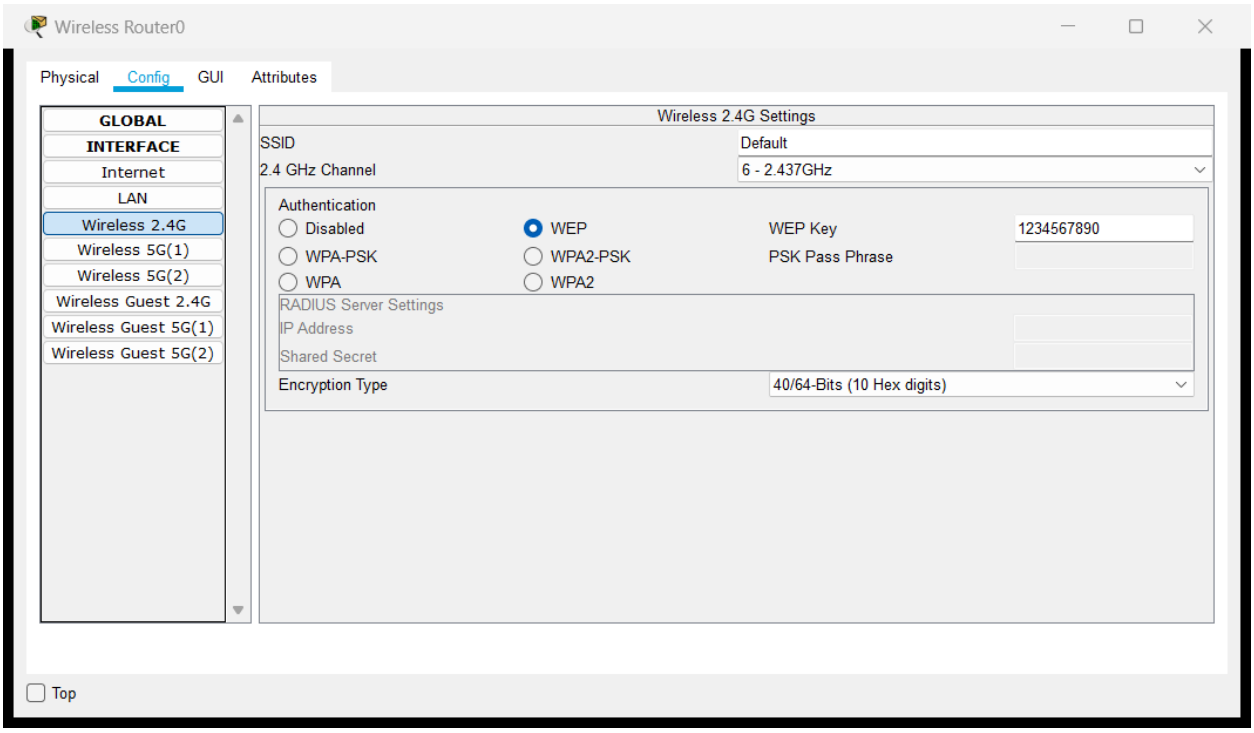


CONFIGURING WIRELESS ROUTER

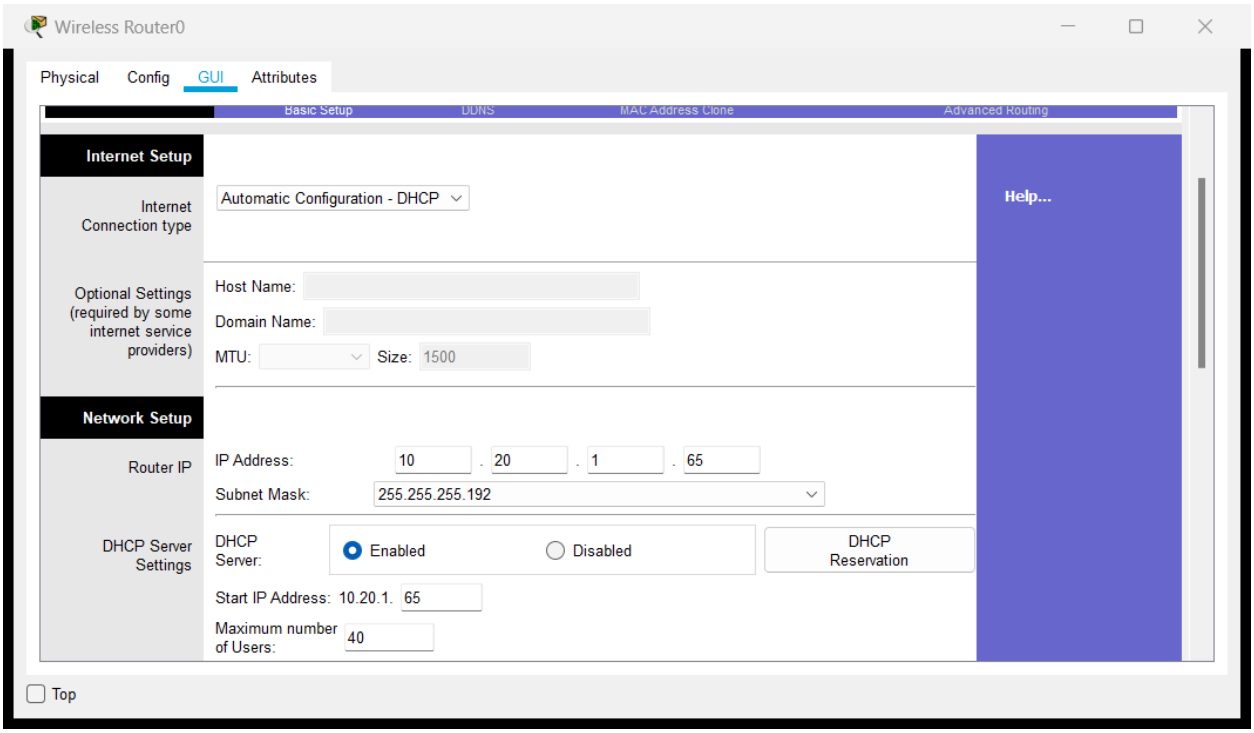
Setting IP address and setting password to the wireless router as it is only accessed by administration

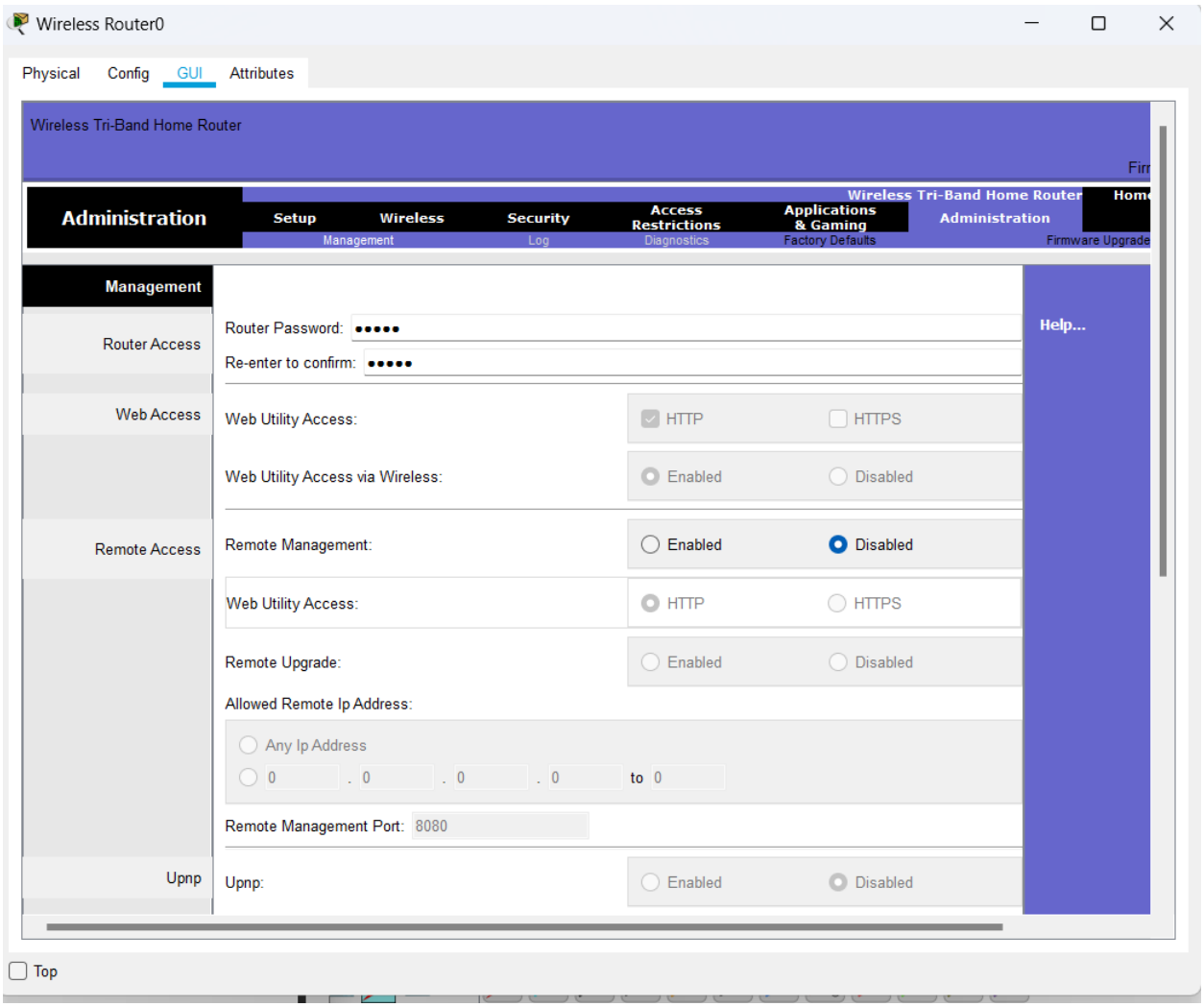


Assigning web key and SSID if required



Assigning start ip address and maximum no of users



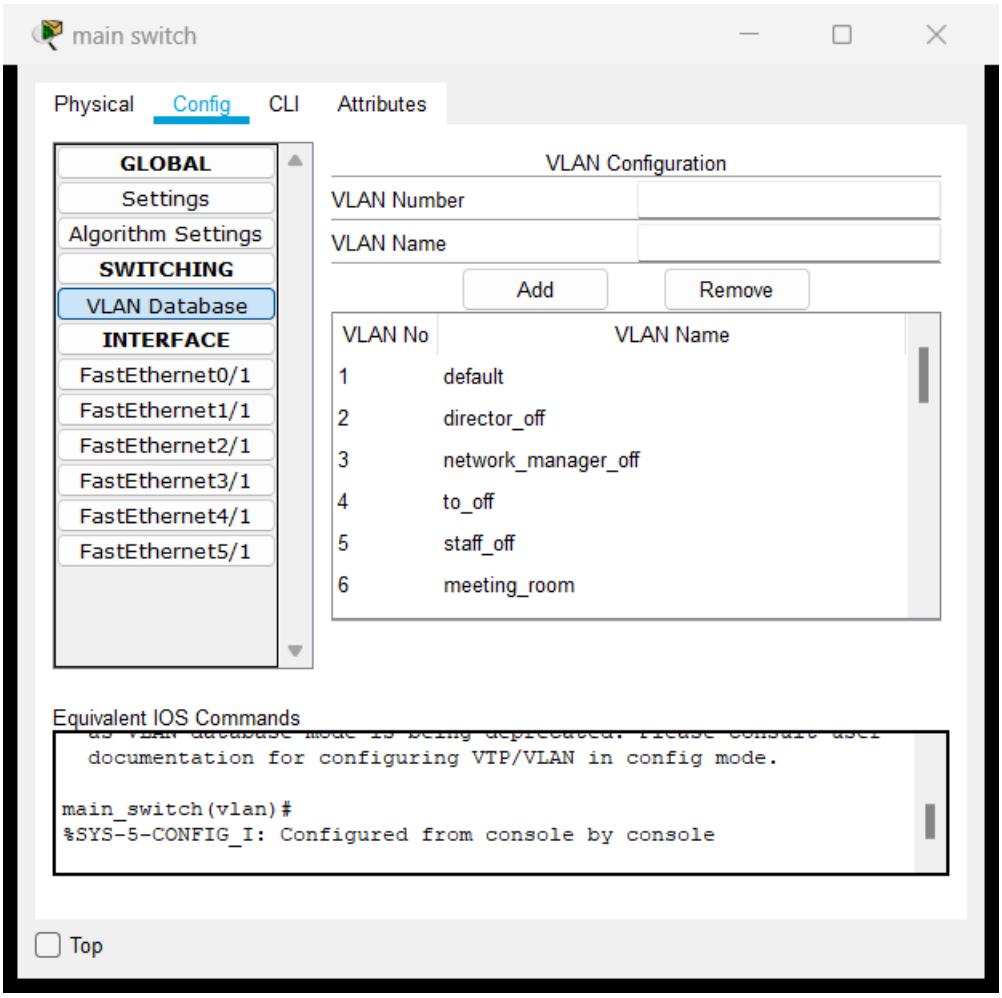

Wireless Router0
Physical
Config
GUI
Attributes
Wireless Tri-Band Home Router
Administration
Setup
Wireless
Security
Access Restrictions
Applications & Gaming
Administration
Management
Log
Diagnostics
Factory Defaults
Firmware Upgrade
Wireless Tri-Band Home Router
Management
Router Access
Router Password:
Re-enter to confirm:
Web Access
Web Utility Access:
HTTP
HTTPS
Web Utility Access via Wireless:
Enabled
Disabled
Remote Access
Remote Management:
Enabled
Disabled
Web Utility Access:
HTTP
HTTPS
Remote Upgrade:
Enabled
Disabled
Allowed Remote Ip Address:
Any Ip Address
0 . 0 . 0 . 0 to 0
Remote Management Port:
8080
Upnp
Upnp:
Enabled
Disabled
Help...
Top

CONFIGURATION OF MAIN SWITCH

Setting separate VLANs for each rooms and configure

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname main_switch
main_switch(config)#vlan 1
main_switch(config-vlan)#name main_switch
Default VLAN 1 may not have its name changed.
main_switch(config-vlan)#vlan 2
main_switch(config-vlan)#director_off
                         ^
% Invalid input detected at '^' marker.

main_switch(config-vlan)#name director_off
main_switch(config-vlan)#vlan 3
main_switch(config-vlan)#name network_manager_off
main_switch(config-vlan)#vlan 4
main_switch(config-vlan)#name to_off
main_switch(config-vlan)#vlan 5
main_switch(config-vlan)#name meeting_room
main_switch(config-vlan)#vlan 6
main_switch(config-vlan)#name lobby_area
main_switch(config-vlan)#vlan 7
main_switch(config-vlan)#name com_lab1
main_switch(config-vlan)#vlan 8
main_switch(config-vlan)#name com_lab2
main_switch(config-vlan)#vlan 9
main_switch(config-vlan)#name degital_lm_center
main_switch(config-vlan)#vlan 10
main_switch(config-vlan)#name printing_room
main_switch(config-vlan)#vlan 11
main_switch(config-vlan)#name lec_hall
main_switch(config-vlan)#vlan 12
main_switch(config-vlan)#name staff_room
main_switch(config-vlan)#vlan 5
main_switch(config-vlan)#name staff_off
main_switch(config-vlan)#vlan 6
main_switch(config-vlan)#name lobby_area
main_switch(config-vlan)#vlan 7
main_switch(config-vlan)#name com_lab1
main_switch(config-vlan)#vlan 8
main_switch(config-vlan)#vlan 6
main_switch(config-vlan)#name meeting_room
main_switch(config-vlan)#vlan 7
main_switch(config-vlan)#name lobby_area
main_switch(config-vlan)#vlan 8
main_switch(config-vlan)#name com_lab1
main_switch(config-vlan)#vlan 9
main_switch(config-vlan)#name com_lab2
main_switch(config-vlan)#vlan 10
main_switch(config-vlan)#name degital_lm_center
```

```
main_switch(config-vlan)#vlan 10
main_switch(config-vlan)#name printing_room
main_switch(config-vlan)#vlan 11
main_switch(config-vlan)#name lec_hall
main_switch(config-vlan)#vlan 12
main_switch(config-vlan)#name staff_room
main_switch(config-vlan)#vlan 5
main_switch(config-vlan)#name staff_off
main_switch(config-vlan)#vlan 6
main_switch(config-vlan)#name lobby_area
main_switch(config-vlan)#vlan 7
main_switch(config-vlan)#name com_lab1
main_switch(config-vlan)#vlan 8
main_switch(config-vlan)#vlan 6
main_switch(config-vlan)#name meeting_room
main_switch(config-vlan)#vlan 7
main_switch(config-vlan)#name lobby_area
main_switch(config-vlan)#vlan 8
main_switch(config-vlan)#name com_lab1
main_switch(config-vlan)#vlan 9
main_switch(config-vlan)#name com_lab2
main_switch(config-vlan)#vlan 10
main_switch(config-vlan)#name degital_lm_center
main_switch(config-vlan)#vlan 11
main_switch(config-vlan)#name printing_room
main_switch(config-vlan)#vlan 12
main_switch(config-vlan)#name lec_hall
main_switch(config-vlan)#vlan 13
main_switch(config-vlan)#name staff_room
main_switch(config-vlan)#vlan 14
main_switch(config-vlan)#name to_off_room
main_switch(config-vlan)#vlan 15
main_switch(config-vlan)#name dpt_meeting_room
main_switch(config-vlan)#vlan 16
main_switch(config-vlan)#name com_lab_1
main_switch(config-vlan)#vlan 17
main_switch(config-vlan)#name com_lan_2
main_switch(config-vlan)#vlan 18
main_switch(config-vlan)#name ntw_eng_lab
main_switch(config-vlan)#vlan 17
main_switch(config-vlan)#name com_lab_2
main_switch(config-vlan)#vlan 19
main_switch(config-vlan)#name micro_lab
main_switch(config-vlan)#vlan 20
main_switch(config-vlan)#name com_vision_ml_lab
main_switch(config-vlan)#vlan 21
main_switch(config-vlan)#name dpt_off
main_switch(config-vlan)#exit
main_switch(config)#
```


main switch
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/1
FastEthernet1/1
FastEthernet2/1
FastEthernet3/1
FastEthernet4/1
FastEthernet5/1
VLAN Configuration
VLAN Number
VLAN Name
Add
Remove
VLAN No
VLAN Name
1 default
2 director_off
3 network_manager_off
4 to_off
5 staff_off
6 meeting_room
Equivalent IOS Commands
documentation for configuring VTP/VLAN in config mode.
main_switch(vlan)#
%SYS-5-CONFIG_I: Configured from console by console
Top

CONFIGURATION OF IT CENTER BLOCK SWITCH

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname IT_CENTER
IT_CENTER(config)#vlan 1
IT_CENTER(config-vlan)#name it_center
Default VLAN 1 may not have its name changed.
IT_CENTER(config-vlan)#vlan 2
IT_CENTER(config-vlan)#name director_off
IT_CENTER(config-vlan)#vlan 3
IT_CENTER(config-vlan)#name network_manager_off
IT_CENTER(config-vlan)#vlan 4
IT_CENTER(config-vlan)#name to_off
IT_CENTER(config-vlan)#vlan 5
IT_CENTER(config-vlan)#name meeting_room
IT_CENTER(config-vlan)#vlan 5
IT_CENTER(config-vlan)#name staff_off
IT_CENTER(config-vlan)#vlan 6
IT_CENTER(config-vlan)#name meeting_room
IT_CENTER(config-vlan)#vlan 7
IT_CENTER(config-vlan)#name 10bby_area
IT_CENTER(config-vlan)#valan 8
                       ^
% Invalid input detected at '^' marker.

IT_CENTER(config-vlan)#vlan 8
IT_CENTER(config-vlan)#name com_lab1
IT_CENTER(config-vlan)#vlan 9
IT_CENTER(config-vlan)#name com_lab2
IT_CENTER(config-vlan)#vlan 10
IT_CENTER(config-vlan)#name degital_lm_center
IT_CENTER(config-vlan)#vlan 11
IT_CENTER(config-vlan)#name lec_hall
IT_CENTER(config-vlan)#exit
IT_CENTER(config)#
```

After creating Separate VLANs

We can communicate with each VLANs by using multilayer switch

By using show vlan can identify the created vlans

```
IT_CENTER#show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                 Fa0/18, Fa0/19, Fa0/20
                                                 Fa0/22, Fa0/23, Fa0/24
                                                 Gig0/2
2    director_off                      active
3    network_manager_off               active
4    to_off                            active
5    staff_off                         active
6    meeting_room                      active
7    l0bby_area                        active
8    com_lab1                          active
9    com_lab2                          active
10   degital_lm_center                 active

1002 fddi-derault                      active
1003 token-ring-default                active
 --More--
```

```
IT_CENTER#conf t
Enter configuration commands, one per line.  End
IT_CENTER(config)#interface FastEthernet0/1
IT_CENTER(config-if)#switchport mode access
IT_CENTER(config-if)#switchport access vlan 2
IT_CENTER(config-if)#exit

IT_CENTER(config-if)#interface FastEthernet0/2
IT_CENTER(config-if)#switch mode access
IT_CENTER(config-if)#switchport mode access
IT_CENTER(config-if)#switch access vlan 3
IT_CENTER(config-if)#exit

IT_CENTER(config)#interface FastEthernet0/3
IT_CENTER(config-if)#switchport mode access
IT_CENTER(config-if)#switchport access vlan 4
IT_CENTER(config-if)#exit

T_CENTER(config-if)#interface FastEthernet0/4
T_CENTER(config-if)#switchport mode access
T_CENTER(config-if)#switchport access vlan 5
T_CENTER(config-if)#exit

IT_CENTER(config-if)#interface FastEthernet0/5
IT_CENTER(config-if)#switchport mode access
IT_CENTER(config-if)#switchport access vlan 6
IT_CENTER(config-if)#exit
IT_CENTER(config)#interface FastEthernet0/6
IT_CENTER(config-if)#switchport mode access
IT_CENTER(config-if)#switchport access vlan 7
IT_CENTER(config-if)#exit

IT_CENTER(config)#interface FastEthernet0/7
IT_CENTER(config-if)#switchport mode access
IT_CENTER(config-if)#switchport access vlan 8
IT_CENTER(config-if)#exit
```

```
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch
IT_CENTER(config-if)#interface FastEthernet0/8
IT_CENTER(config-if)#switchport mode access
IT_CENTER(config-if)#switchport access vlan 9
IT_CENTER(config-if)#exit
IT_CENTER(config)#interface FastEthernet0/9
IT_CENTER(config-if)#switchport mode access
IT_CENTER(config-if)#switchport access vlan 10
IT_CENTER(config-if)#exit
```

By using show vlan can identify the created vlans

```
IT_CENTER#show vlan

VLAN Name                             Status    Ports
---- -------------------------------- --------- -------------------------------
1    default                          active    Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                                Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                                Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                                Fa0/23, Fa0/24, Gig0/1, Gig0/2
2    director_off                     active    Fa0/1
3    network_manager_off              active    Fa0/2
4    to_off                           active    Fa0/3
5    staff_off                        active    Fa0/4
6    meeting_room                     active    Fa0/5
7    l0bby_area                       active    Fa0/6
8    com_lab1                         active    Fa0/7
9    com_lab2                         active    Fa0/8
10   degital_lm_center                active    Fa0/9
1002 fddi-default                     active
1003 token-ring-default               active
1004 fddinet-default                  active
1005 trnet-default                    active
```

CONFIGURATION OF DEPARTMENT BLOCK SWITCH

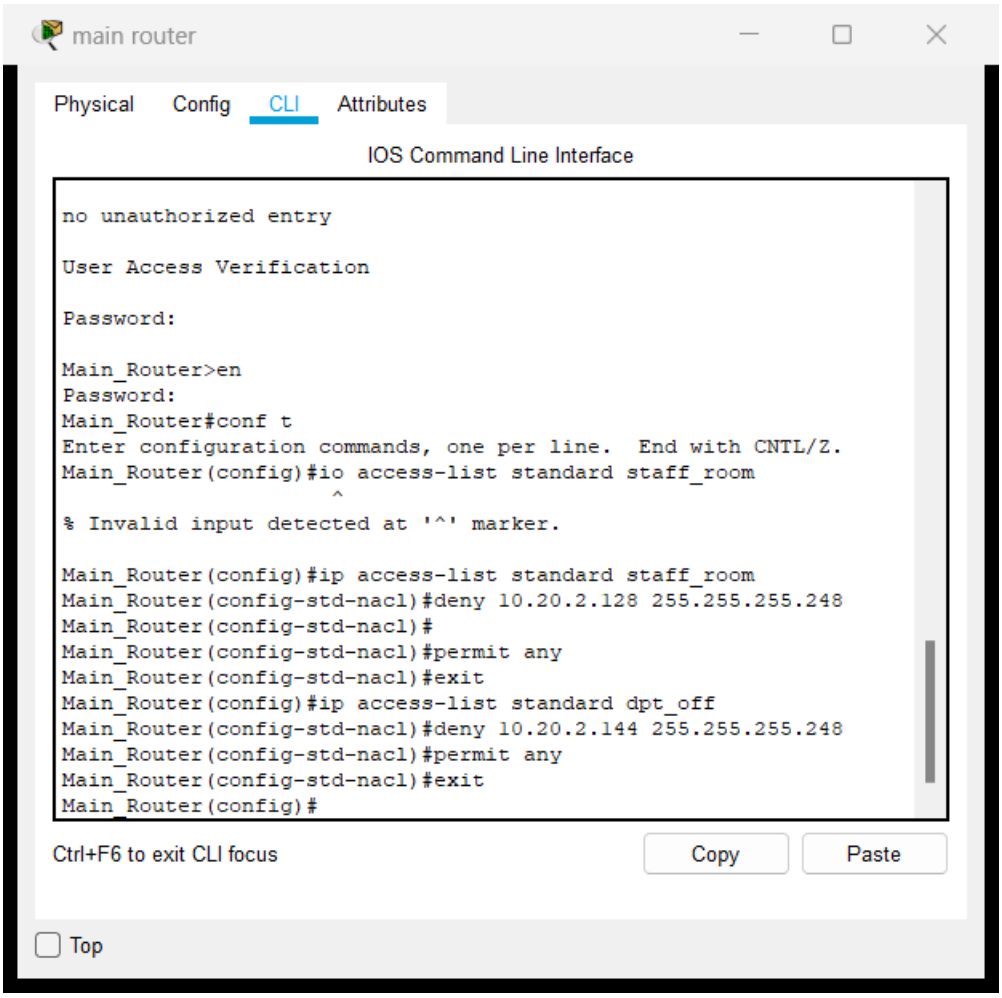
Separate the staff room and department office from other rooms by VLANs to restrict the access from other rooms

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname DEPARTMENT_BLOCK
DEPARTMENT_BLOCK(config)#vlan 1
DEPARTMENT_BLOCK(config-vlan)#name department_block
Default VLAN 1 may not have its name changed.
DEPARTMENT_BLOCK(config-vlan)#vlan 12
DEPARTMENT_BLOCK(config-vlan)#name lec_hall
DEPARTMENT_BLOCK(config-vlan)#vlan 13
DEPARTMENT_BLOCK(config-vlan)#name staff_room
DEPARTMENT_BLOCK(config-vlan)#vlan 14
DEPARTMENT_BLOCK(config-vlan)#name to_off_room
DEPARTMENT_BLOCK(config-vlan)#vlan 15
DEPARTMENT_BLOCK(config-vlan)#name dpt_meeting_room
DEPARTMENT_BLOCK(config-vlan)#vlan 116
DEPARTMENT_BLOCK(config-vlan)#vlan 16
DEPARTMENT_BLOCK(config-vlan)#name com_lab_1
DEPARTMENT_BLOCK(config-vlan)#vlan 17
DEPARTMENT_BLOCK(config-vlan)#name com_lab_2
DEPARTMENT_BLOCK(config-vlan)#vlan 18
DEPARTMENT_BLOCK(config-vlan)#name ntw_eng_lab
DEPARTMENT_BLOCK(config-vlan)#vlan 19
DEPARTMENT_BLOCK(config-vlan)#name micro_lab
DEPARTMENT_BLOCK(config-vlan)#vlan 20
DEPARTMENT_BLOCK(config-vlan)#name com_vision_ml_lab
DEPARTMENT_BLOCK(config-vlan)#vlan 21
DEPARTMENT_BLOCK(config-vlan)#name dpt_off
DEPARTMENT_BLOCK(config-vlan)#exit
DEPARTMENT_BLOCK(config)#
```

```
DEPARTMENT_BLOCK#show vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                 Gig0/1, Gig0/2
12   lec_hall                          active
13   staff_room                        active
14   to_off_room                       active
15   dpt_meeting_room                  active
16   com_lab_1                         active
17   com_lab_2                         active
18   ntw_eng_lab                       active
19   micro_lab                         active
20   com_vision_ml_lab                 active
21   dpt_off                           active
1002 fddi-default                      active
1003 token-ring-default                active
 --More--
```

```
DEPARTMENT_BLOCK(config-if)#switchport mode access
DEPARTMENT_BLOCK(config-if)#switchport access vlan 21
DEPARTMENT_BLOCK(config-if)#exit
DEPARTMENT_BLOCK(config)#interface FastEthernet0/3
DEPARTMENT_BLOCK(config-if)#switchport mode access
DEPARTMENT_BLOCK(config-if)#switchport access vlan 13
DEPARTMENT_BLOCK(config-if)#exit
```

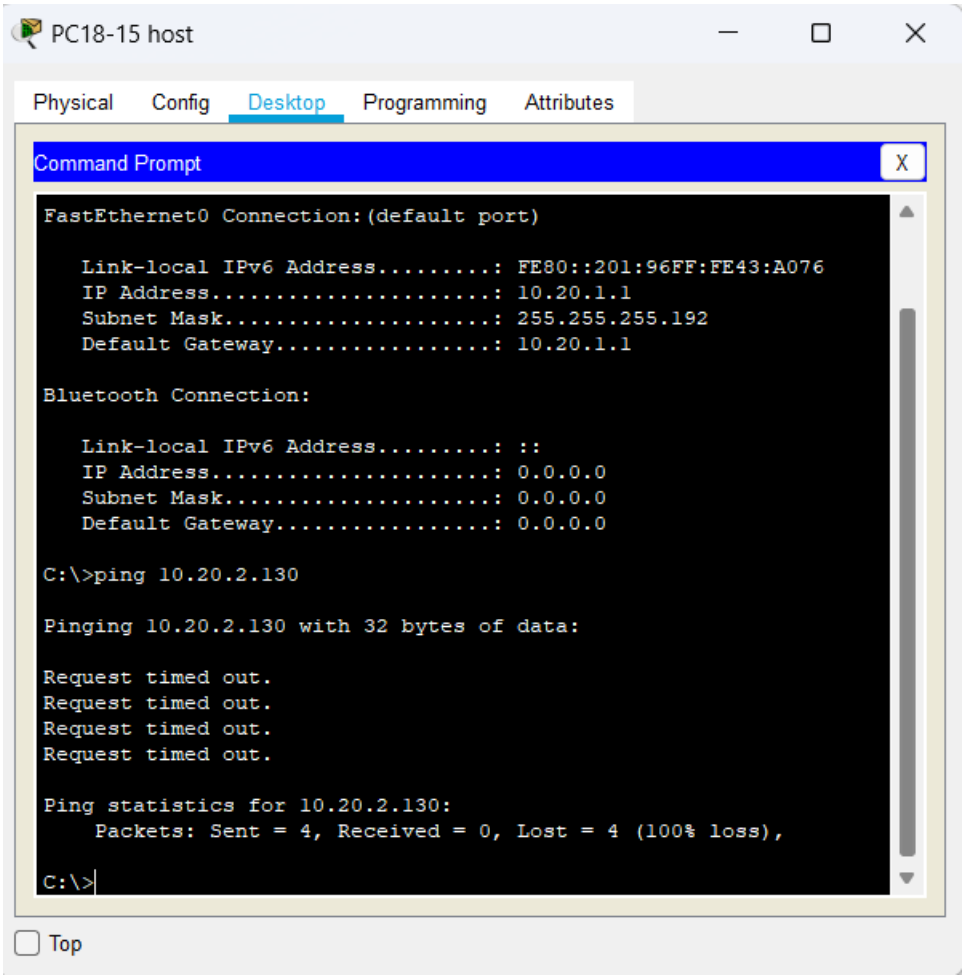
```
VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/4, Fa0/5, Fa0/6
                                                 Fa0/7, Fa0/8, Fa0/9, Fa0/10
                                                 Fa0/11, Fa0/12, Fa0/13, Fa0/14
                                                 Fa0/15, Fa0/16, Fa0/17, Fa0/18
                                                 Fa0/19, Fa0/20, Fa0/21, Fa0/22
                                                 Fa0/23, Fa0/24, Gig0/1, Gig0/2
12   lec_hall                          active
13   staff_room                        active    Fa0/3
14   to_off_room                       active
15   dpt_meeting_room                  active
16   com_lab_1                         active
17   com_lab_2                         active
18   ntw_eng_lab                       active
19   micro_lab                         active
20   com_vision_ml_lab                 active
21   dpt_off                           active    Fa0/2
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
```


main router
Physical
Config
CLI
Attributes
IOS Command Line Interface
no unauthorized entry
User Access Verification
Password:
Main_Router>en
Password:
Main_Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Main_Router(config)#io access-list standard staff_room
^
% Invalid input detected at '^' marker.
Main_Router(config)#ip access-list standard staff_room
Main_Router(config-std-nacl)#deny 10.20.2.128 255.255.255.248
Main_Router(config-std-nacl)#
Main_Router(config-std-nacl)#permit any
Main_Router(config-std-nacl)#exit
Main_Router(config)#ip access-list standard dpt_off
Main_Router(config-std-nacl)#deny 10.20.2.144 255.255.255.248
Main_Router(config-std-nacl)#permit any
Main_Router(config-std-nacl)#exit
Main_Router(config)#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

Computer in staff room can be accessed by another computer in staff room

```
C:\>ping 10.20.2.129

Pinging 10.20.2.129 with 32 bytes of data:

Reply from 10.20.2.129: bytes=32 time<1ms TTL=128
Reply from 10.20.2.129: bytes=32 time=1ms TTL=128
Reply from 10.20.2.129: bytes=32 time<1ms TTL=128
Reply from 10.20.2.129: bytes=32 time<1ms TTL=128

Ping statistics for 10.20.2.129:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

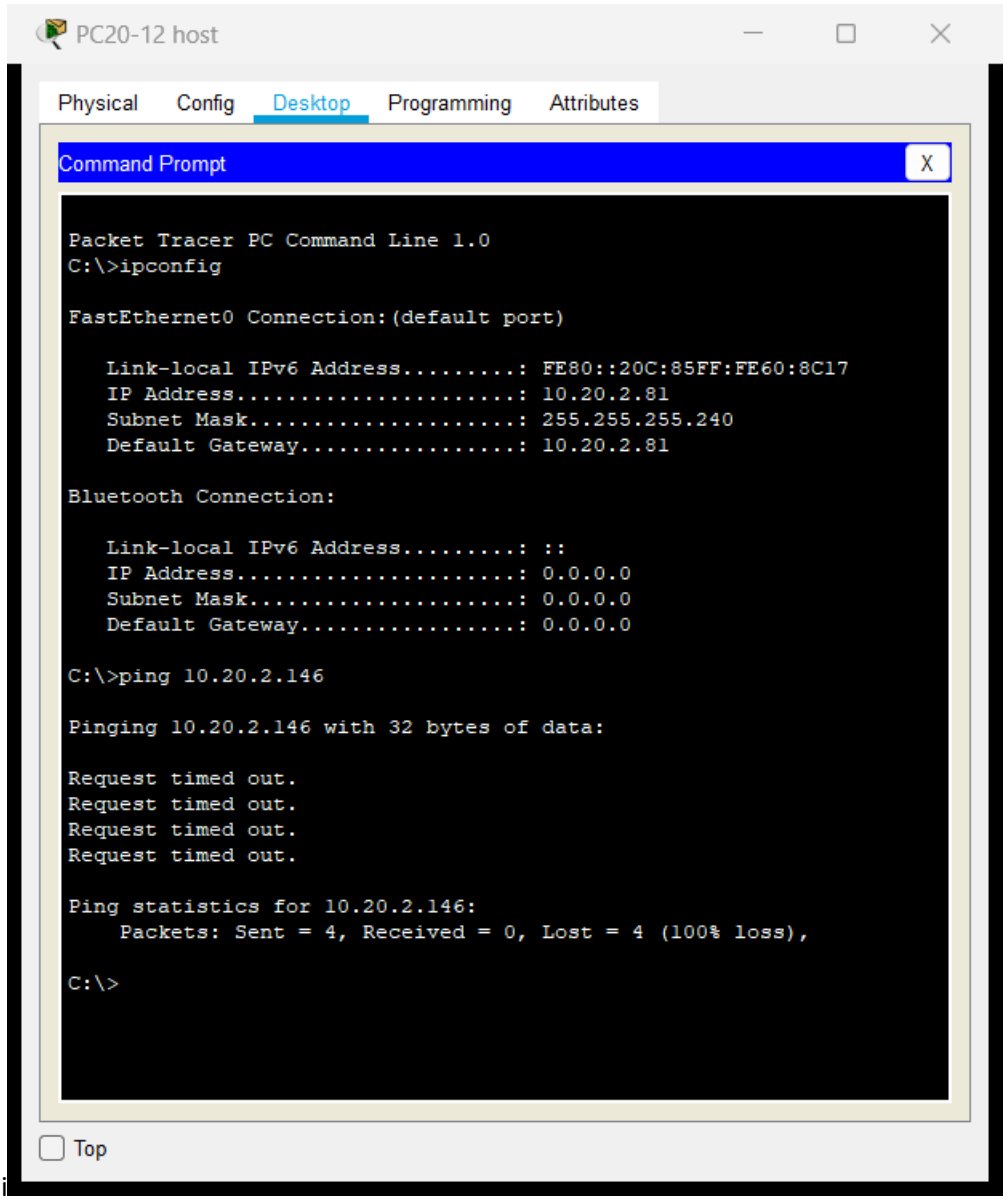
Computer from Computer Vision and Machine Learning Lab cannot accessed the computer in the staff room



Computer in department office can be accessed by another computer in department office

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Link-local IPv6 Address.........: FE80::260:70FF:FE8B:EDA2
   IP Address......................: 10.20.2.146
   Subnet Mask.....................: 255.255.255.248
   Default Gateway.................: 10.20.2.146

Bluetooth Connection:

   Link-local IPv6 Address.........: FE80::240:BFF:FEE7:9B96
   IP Address......................: 0.0.0.0
   Subnet Mask.....................: 0.0.0.0
   Default Gateway.................: 0.0.0.0

C:\>ping 10.20.2.145

Pinging 10.20.2.145 with 32 bytes of data:

Reply from 10.20.2.145: bytes=32 time<1ms TTL=128
Reply from 10.20.2.145: bytes=32 time<1ms TTL=128
Reply from 10.20.2.145: bytes=32 time=3ms TTL=128
Reply from 10.20.2.145: bytes=32 time<1ms TTL=128

Ping statistics for 10.20.2.145:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 3ms, Average = 0ms
```

Computer from micro processing Lab cannot accessed the computer in the department office



Printer available at the depratment office can only be accessed by the depratment staffs.

```
Switch#
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#ip access-list extended printer
Switch(config-ext-nacl)#permit ip host 10.20.2.128 host 10.20.2.147
Switch(config-ext-nacl)#permit ip host 10.20.2.128 host 10.20.2.129
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (1), with DEPARTMENT_BLOCK FastEthernet0/3 (

Switch(config-ext-nacl)#permit ip host 10.20.2.128 host 10.20.2.129
Switch(config-ext-nacl)#permit ip host 10.20.2.128 host 10.20.2.130
Switch(config-ext-nacl)#deny ip host 10.20.2.128 host 10.20.2.136
Switch(config-ext-nacl)#deny ip host 10.20.2.128 host 10.20.2.
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (1), with DEPARTMENT_BLOCK FastEthernet0/3 (

                                                ^
% Invalid input detected at '^' marker.

Switch(config-ext-nacl)#deny ip host 10.20.2.128 host 10.20.2.136
Switch(config-ext-nacl)#deny ip host 10.20.2.128 host 10.20.2.112
Switch(config-ext-nacl)#deny ip host 10.20.2.128 host 10.20.2.96
Switch(config-ext-nacl)#deny ip host 10.20.2.128 host 10.20.2.80
Switch(config-ext-nacl)#deny ip host 10.20.2.128 host 10.20.1.192
Switch(config-ext-nacl)#deny ip host 10.20.2.128 host 10.20.1.0
Switch(config-ext-nacl)#permit ip any any
Switch(config-ext-nacl)#exit
```

Printer available at the depratment office can not use by micro processing lab

```
C:\>
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Link-local IPv6 Address.........: FE80::20C:85FF:FE60:8C17
   IP Address......................: 10.20.2.81
   Subnet Mask.....................: 255.255.255.240
   Default Gateway.................: 10.20.2.81

Bluetooth Connection:

   Link-local IPv6 Address.........: ::
   IP Address......................: 0.0.0.0
   Subnet Mask.....................: 0.0.0.0
   Default Gateway.................: 0.0.0.0

C:\>ping 10.20.2.147

Pinging 10.20.2.147 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.20.2.147:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```