GIVED DATA ABOUT TWO BLOCKS

IT CENTER BLOCK

Data points :164

PLACE	NO OF PC /PRINTER
DIRECTOR OFFICE	2
NETWORK MANGER ROOM	1
TECHNICAL OFFICERS ROOM(2)	2
MEETING ROOM	2
LOBBY (WI-FI)	1
COM.LAB 01	60
COM.LAB	60
Digital learning	31
Printing room	2

DEPARTMENT BLOCK

Data points : 203

PLACE	NO OF PC /PRINTER
Lecture halls (4)	8
Staff rooms	1
Technical officers room	4
Meeting room	2
COM.LAB 1	50
COM.LAB 2	50
Network engineering lab	12
Computer vision and machine learning lab	12
Department office	3

- **IP allocation done by considering IT CENTER BLOCK and DEPARTMENT BLOCK as a whole.**
- **If we allocate it separately then it will be a waste of IP address allocation.**

- **To restrict the address of staff room and department office, it should be consider as separate VLANs.**

- **For the access of printers in IT centres accessed only by IT centre staffs.**

- **Passwords set for each node to restrict the access from others than administrators.**

Vlan name	**Vla N No**	**Nee ded Size**	**All Oca Ted Size**
Director office + Net.manager.+ Tech.officer room+ Staff office + Printing unit	1	12	14
Meeting room + lobby Com. Lab 01 (IT centre) + Com. Lab 02 (IT centre)	2	123	126
Digital learning unit + Lecture halls	3	31+8 =39	62
Staff room	5	14	14
Technical officer room	6	4	6
Com lab 01 (department block) Com lab 01 (department block)	7	100	126
Network engineering lab + Computer vision and ML lab	8	12+12 =24	30
Department office	9	3	6

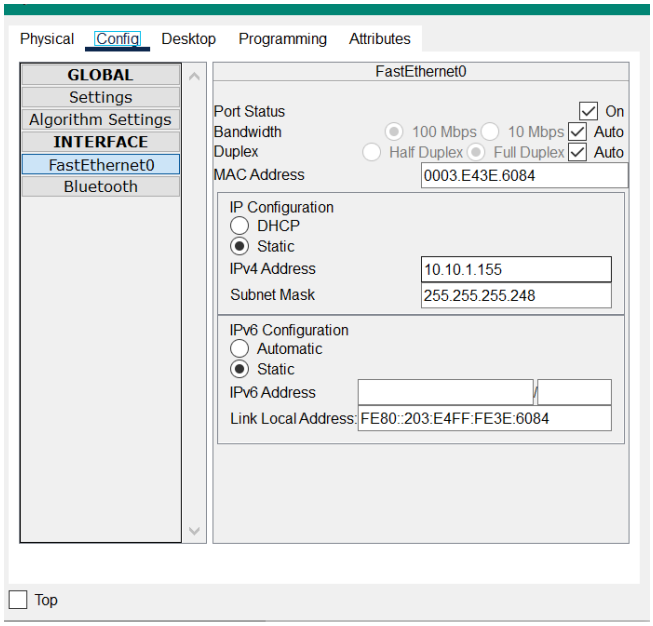
MEETING ROOM (and so)123	10.10.0.1 – 10.10.0.127
COM LAB (1,2) 100	10.10.0.141- 10.10.0.255
DIGITAL LEARNING AND SO… 39	10.10.1.76– 10.10.1.140
NETWORK EN. AND COM VISION LAB 24	10.10.1.43 – 10.10.1.75
STAFF ROOM 14	10.10.1.26- 10.10.1.42
DIRECTOR OFFC’ 12	10.10.1.9-10.10.1.25
TECH OFFICER ROOM 4	10.10.1.5-10.10.1.8
DEPARTMNT OFF. 3	10.10.1.1- 10.10.1.4

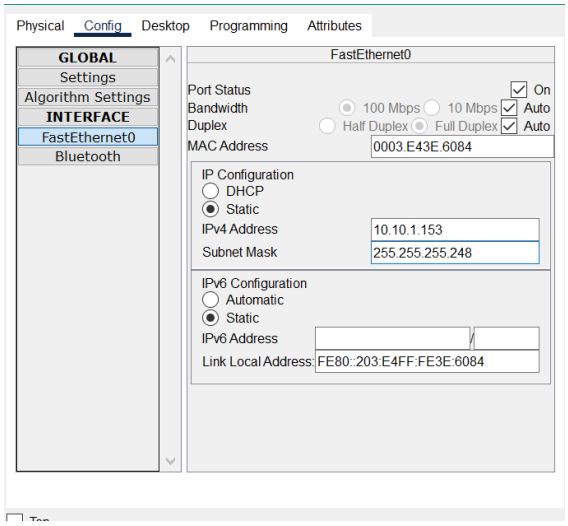
Vlan name	Vla N No	Needed Size	Allocated Size	Network address	Mask	Subnet mask	Assignable range	Broadcast
Meeting room + lobby Com. Lab 01 (IT centre) + Com. Lab 02 (IT centre)	1	123	126	10.10.0.0	25	255.255.255.128	10.10.0.1 – 10.10.0.126	10.10.0.127
Com lab 01 (department block) Com lab 02 (department block)	2	100	126	10.10.0.127	25	255.255.255.128	10.10.0.128-10.10.0.254	10.10.0.255
Digital learning unit + Lecture halls	3	31+8 =39	62	10.10.1.0	26	255.255.255.192	10.10.1.1-10.10.1.62	10.10.1.63
Network engineering lab + Computer vision and ML lab + Tech.officer(department)	4	12+12 +4 =28	30	10.10.1.64	27	255.255.255.224	10.10.1.65 - 10.10.1.95	10.10.1.96
Staff room	5	14	14	10.10.1.97	28	255.255.255.240	10.10.1.98 - 10.10.1.112	10.10.1.113
Staff office	6	5	6	10.10.1.114	29	255.255.255.248	10.10.1.115-10.10.1.119	10.10.1.120
Technical officer room	7	4	6	10.10.1.121	29	255.255.255.248	10.10.1.122-10.10.1.128	10.10.1.129
Department office	8	3	6	10.10.1.130	29	255.255.255.248	10.10.1.131-10.10.1.137	10.10.1.138
Printing unit	9	2	6	10.10.1.139	29	255.255.255.248	10.10.1.140-10.10.1.146	10.10.1.147
Director office(IT) +Net.manager room(IT) + meeting room(Department)	10	5	6	10.10.1.148	29	255.255.255.248	10.10.1.149-10.10.1.155	10.10.1.156

Assigning IP address and sub net masks

1)IT CENTER

DIRECTOR OFFICE





CONFIGURING ROUTERS

ROUTER_01

Fast ethernet 0/0

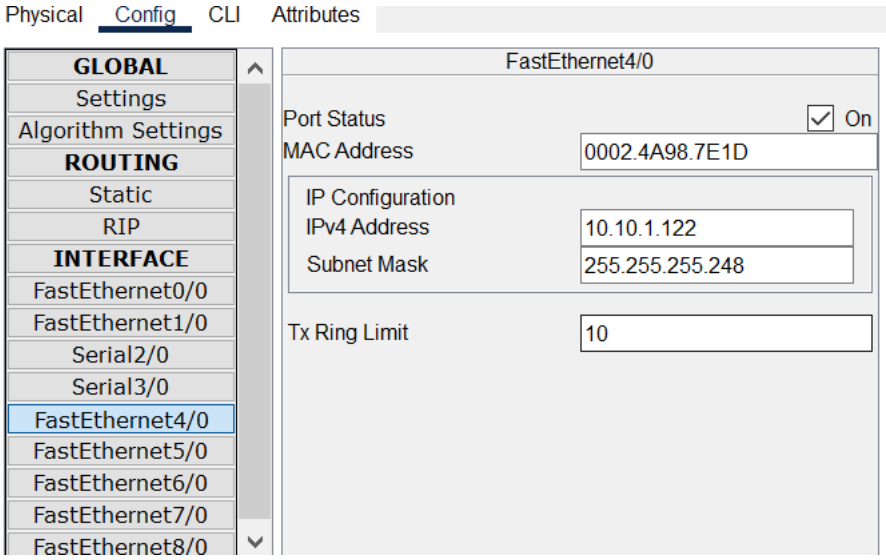
```
Press RETURN to get started.



Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 10.10.1.150 255.0.0.0
Router(config-if)#ip address 10.10.1.150 255.255.255.248
Router(config-if)#ip address 10.10.1.150 255.255.255.248
Router(config-if)#
```

Fast Ethernet 0/1

```
Router(config)#interface FastEthernet1/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet1/0
Router(config-if)#no ip address
Router(config-if)#no ip address
Router(config-if)#ip address 10.10.1.156 255.255.255.248
Router(config-if)#ip address 10.10.1.156 255.255.255.248
Router(config-if)#ip address 10.10.1.156 255.255.255.248
Router(config-if)#
```

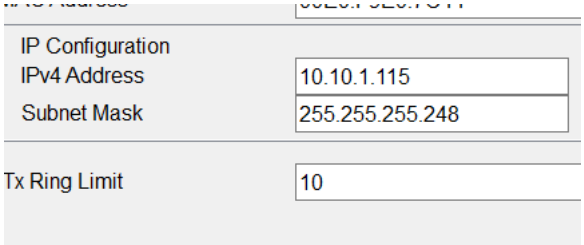
Fast Ethernet 0/4

```
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet4/0
Router(config-if)#ip address 10.10.1.122 255.255.255.248
Router(config-if)#ip address 10.10.1.122 255.255.255.248
Router(config-if)#ip address 10.10.1.122 255.255.255.248
Router(config-if)#
```



Fast Ethernet 0/5

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet5/0
Router(config-if)#ip address 10.10.1.115 255.255.255.248
Router(config-if)#ip address 10.10.1.115 255.255.255.248
Router(config-if)#
```



Router3

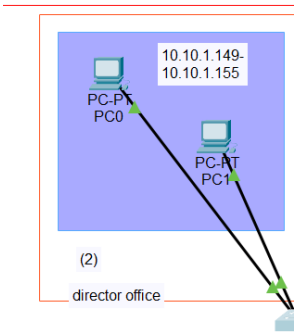
```
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 10.10.1.1 255.0.0.0
Router(config-if)#ip address 10.10.1.1 255.255.255.192
Router(config-if)#ip address 10.10.1.1 255.255.255.192
```

```
Router(config)#interface FastEthernet1/0
Router(config-if)#ip address 10.10.1.149 255.255.255.192
Router(config-if)#ip address 10.10.1.149 255.255.255.192
Router(config-if)#ip address 10.10.1.149 255.255.255.248
Router(config-if)#
```

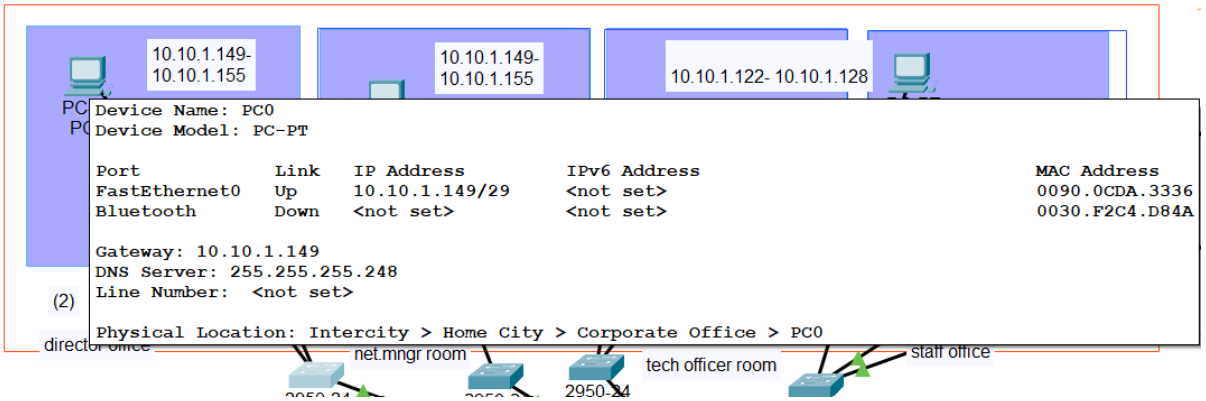
IP ADDRESS ALOCATIONS PER BUILDING

IT CENTER

1)Director offcie



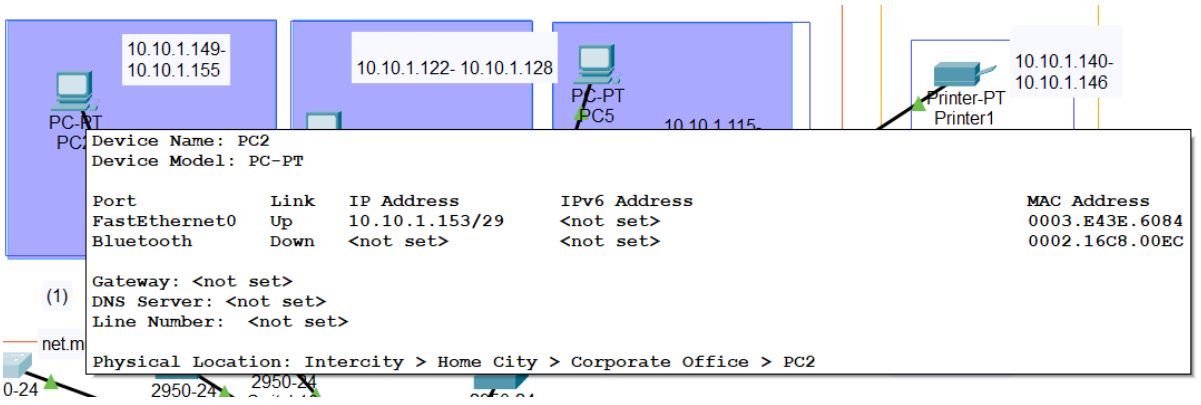
Ex: IP address for PC 0 in IT centre



2)Network manger room

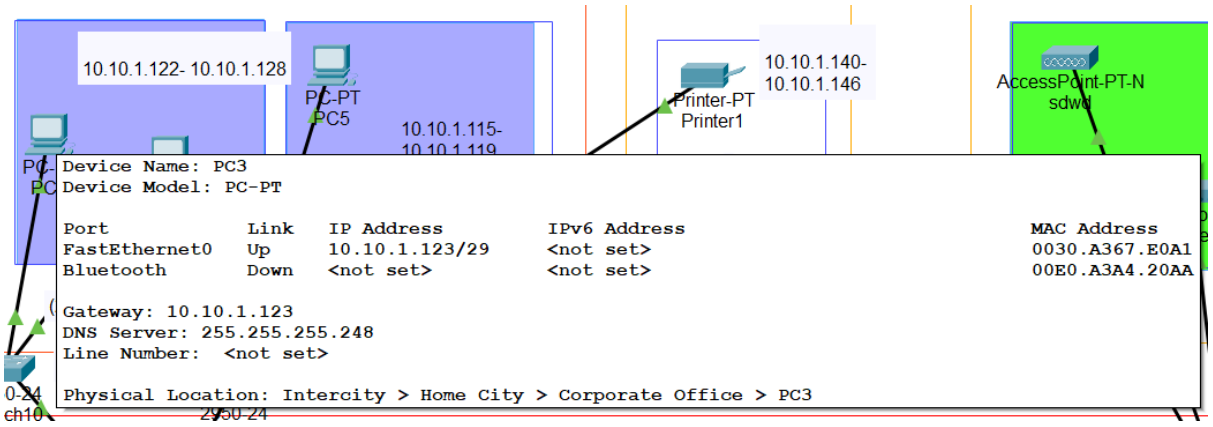
IP address range : 10.10.1.122 - 10.10.1.128

eX: PC 02 in NET.mananger room

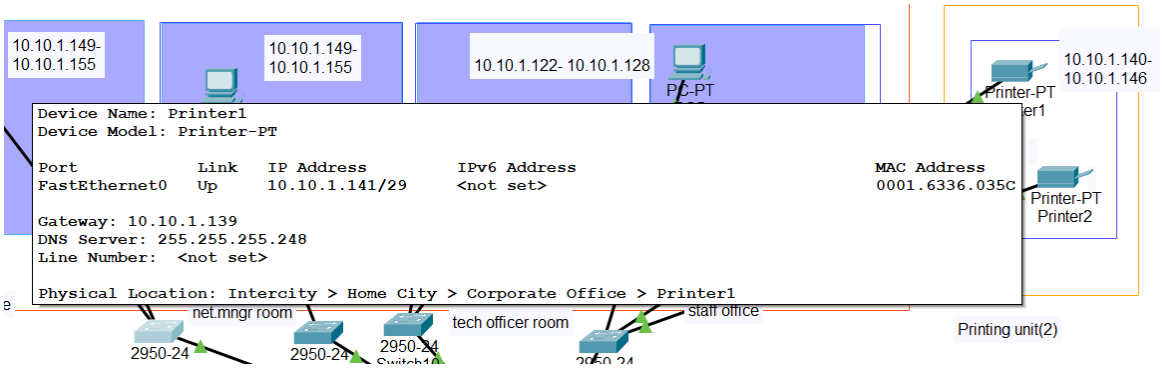


Similarly

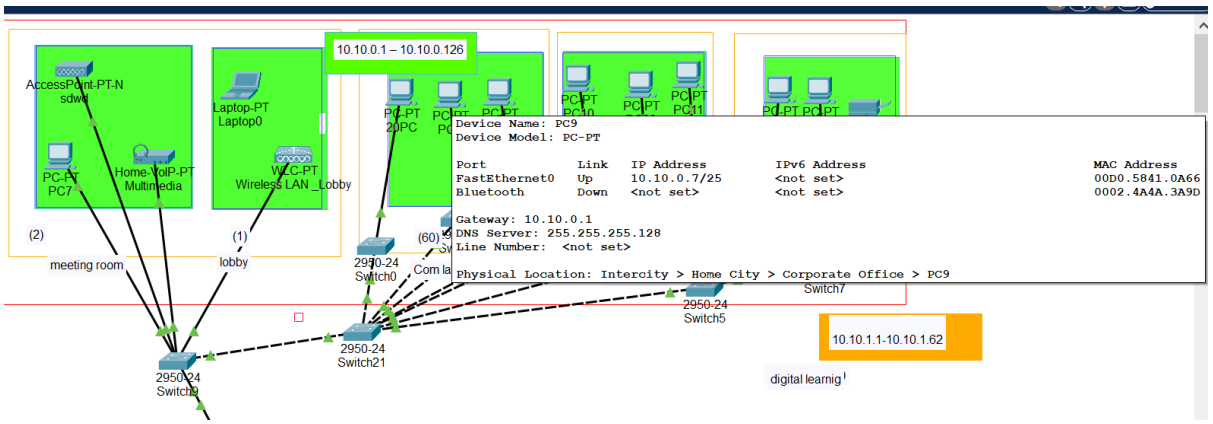
PC 3



Printer in printing unit



PC 9 in Com Lab 01



VLANs and allowed access

VLAN no	1	2	3	4	5	6	7	8	9	10	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

Configuring switch

For switch 02

```
Switch>en
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range fa0/1-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#swtichport access vlan 10
                       ^
% Invalid input detected at '^' marker.

Switch(config-if-range)#switchport access vlan 10
% Access VLAN does not exist. Creating vlan 10
Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#
```

For switch 01

```
Switch>en
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range fa0/1-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
% Access VLAN does not exist. Creating vlan 10
Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#
```

Copy Paste

For switch 09

```
Switch>en
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#switchport mode access
               ^
% Invalid input detected at '^' marker.

Switch(config)#switchport mode access
               ^
% Invalid input detected at '^' marker.

Switch(config)#switchport mode access
               ^
% Invalid input detected at '^' marker.

Switch(config)#int range fa0/1-14
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport mode access vlan 1
                                               ^
% Invalid input detected at '^' marker.

Switch(config-if-range)#switchport mode access vlan 1
                                               ^
% Invalid input detected at '^' marker.

Switch(config-if-range)#switchport access vlan 1
Switch(config-if-range)#do wr
Building configuration...
[OK]
```

Switch 11

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range fa0/1-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 3
% Access VLAN does not exist. Creating vlan 3
Switch(config-if-range)#do wr
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered
on FastEthernet0/6 (3), with Switch FastEthernet0/3 (1).

Building configuration...
[OK]
```

For switch 12

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#switchport mode access
               ^
% Invalid input detected at '^' marker.

Switch(config)#int range fa0/1-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 5
% Access VLAN does not exist. Creating vlan 5
Switch(config-if-range)#do wr
Building configuration...
[OK]
```

Switch 22

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range fa0/1-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 8
% Access VLAN does not exist. Creating vlan 8
Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#ex
Switch(config)#
```

Switch 14

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range fa0/1-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
% Access VLAN does not exist. Creating vlan 10
Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#ex
Switch(config)#
```

Copy Paste

Switch 15

```
Switch>en
Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range fa0/1-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 2
% Access VLAN does not exist. Creating vlan 2
Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#ex
Switch(config)#
```

Copy Paste

Switch 12

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range fa0/1-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 5
% Access VLAN does not exist. Creating vlan 5
Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#ex
Switch(config)#
```

Copy Paste

Switch 17

```
Switch>en
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range fa0/1-24
Switch(config-if-range)#swtichport mode access
                       ^
% Invalid input detected at '^' marker.

Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 7
% Access VLAN does not exist. Creating vlan 7
Switch(config-if-range)#do wr
Building configuration...
[OK]
Switch(config-if-range)#ex
Switch(config)#
```

Computer
and ML lab

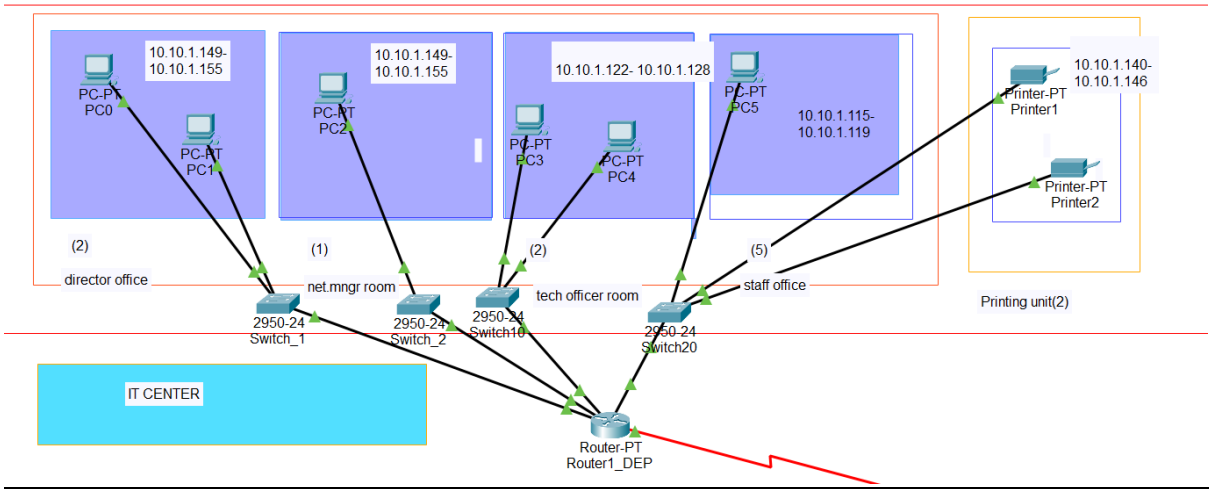
Switch 16

```
Switch#
%SYS-5-CONFIG_I: Configured from console by console

Switch#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int range fa0/1-24
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport  access vlan 4
```

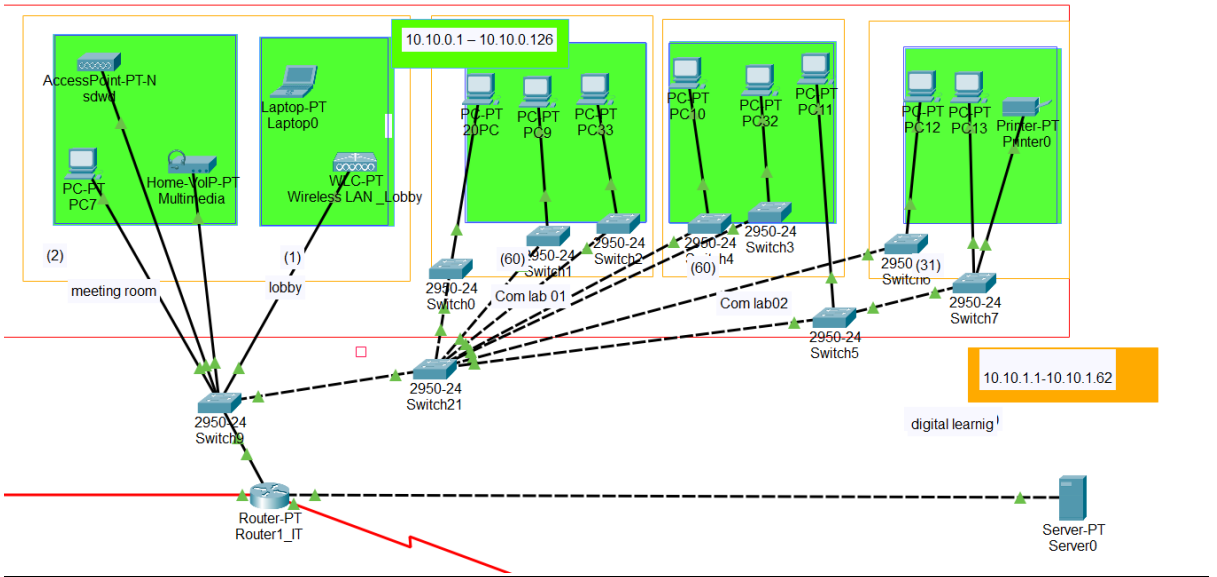
COMPLEATE NETWORK DIAGRAM

1)IT CENTRE

1. **Ground floor**

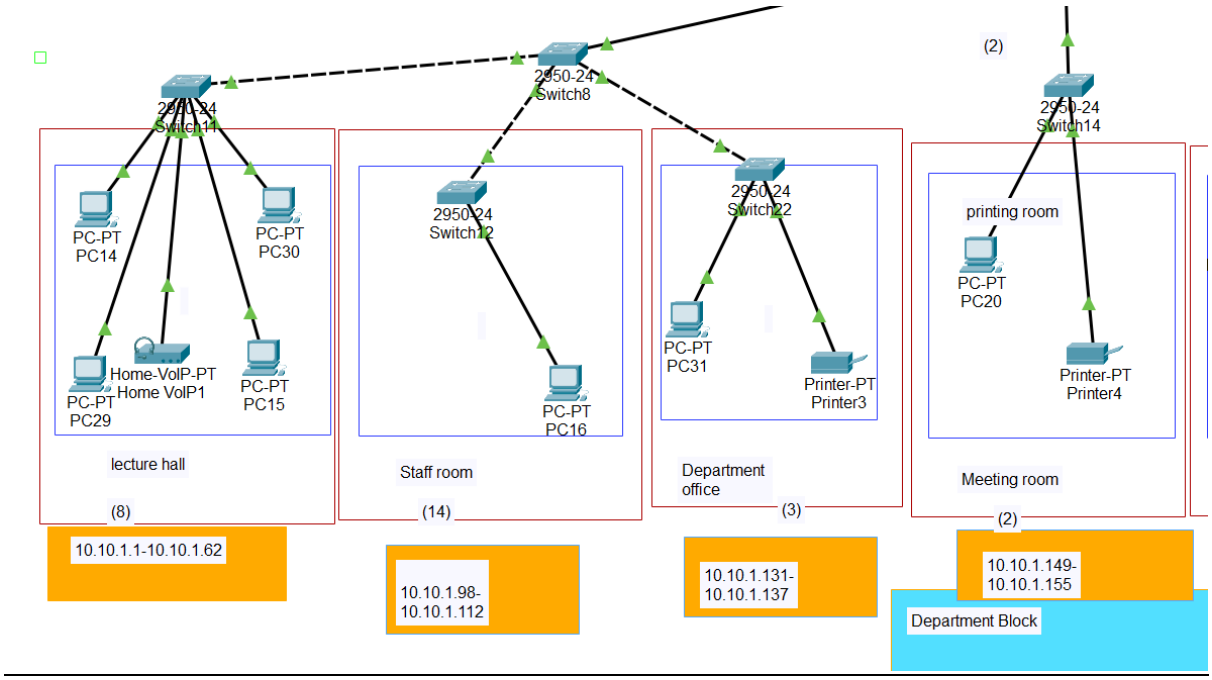


2. First floor

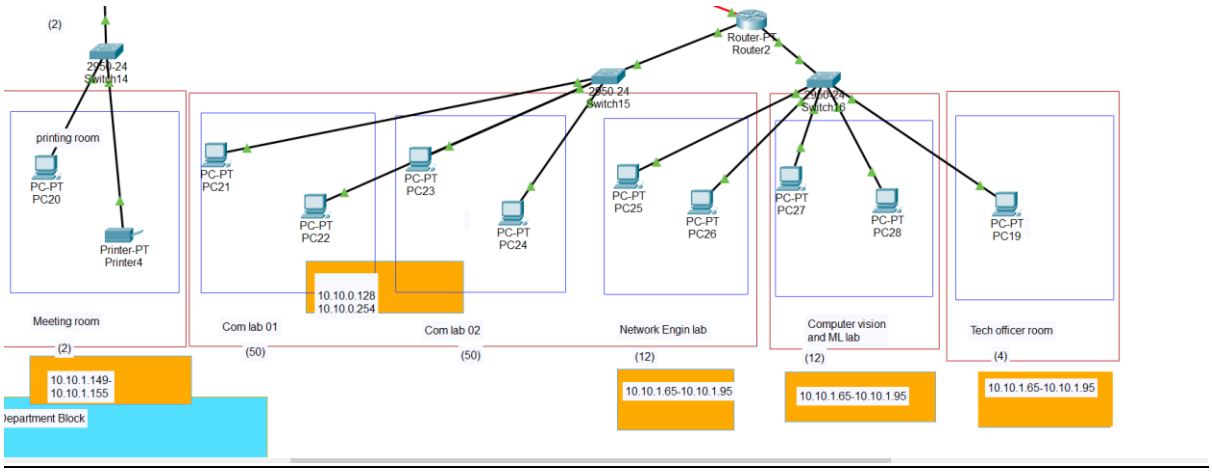


DEPARTMENT BLOCK

1. **Ground floor**



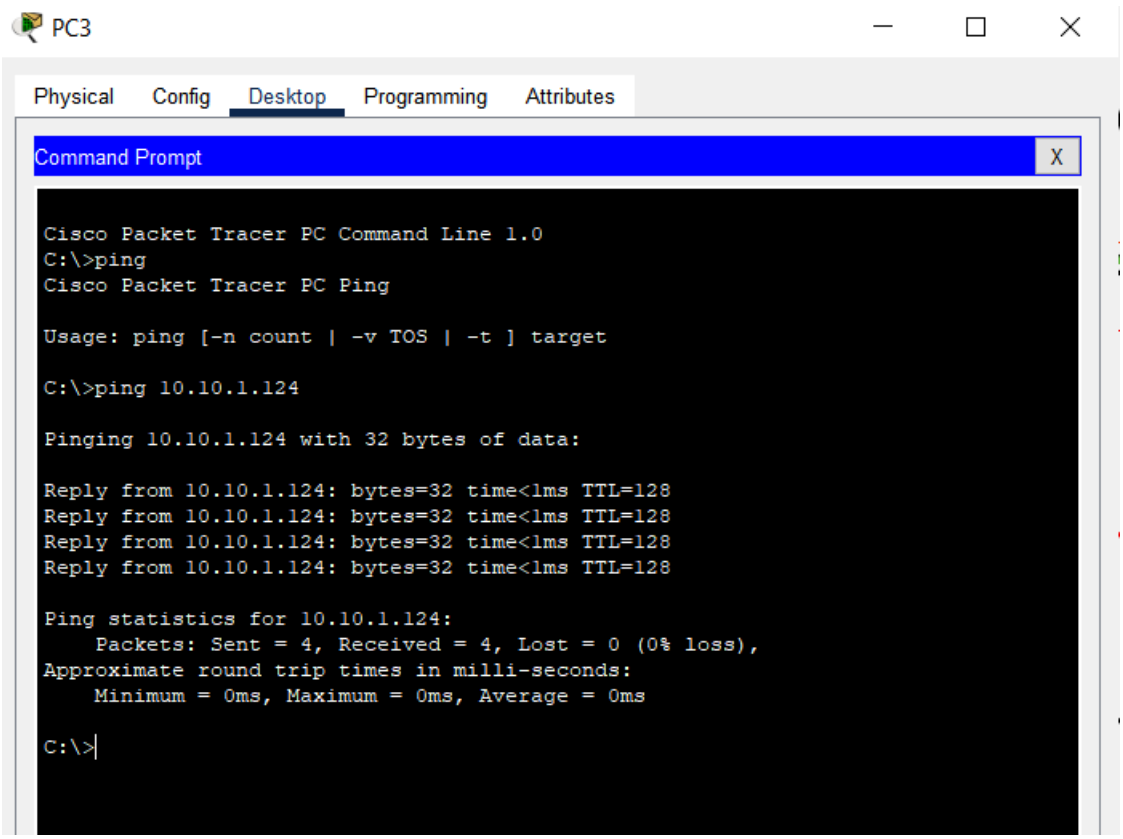
2. First floor



Router Configuration

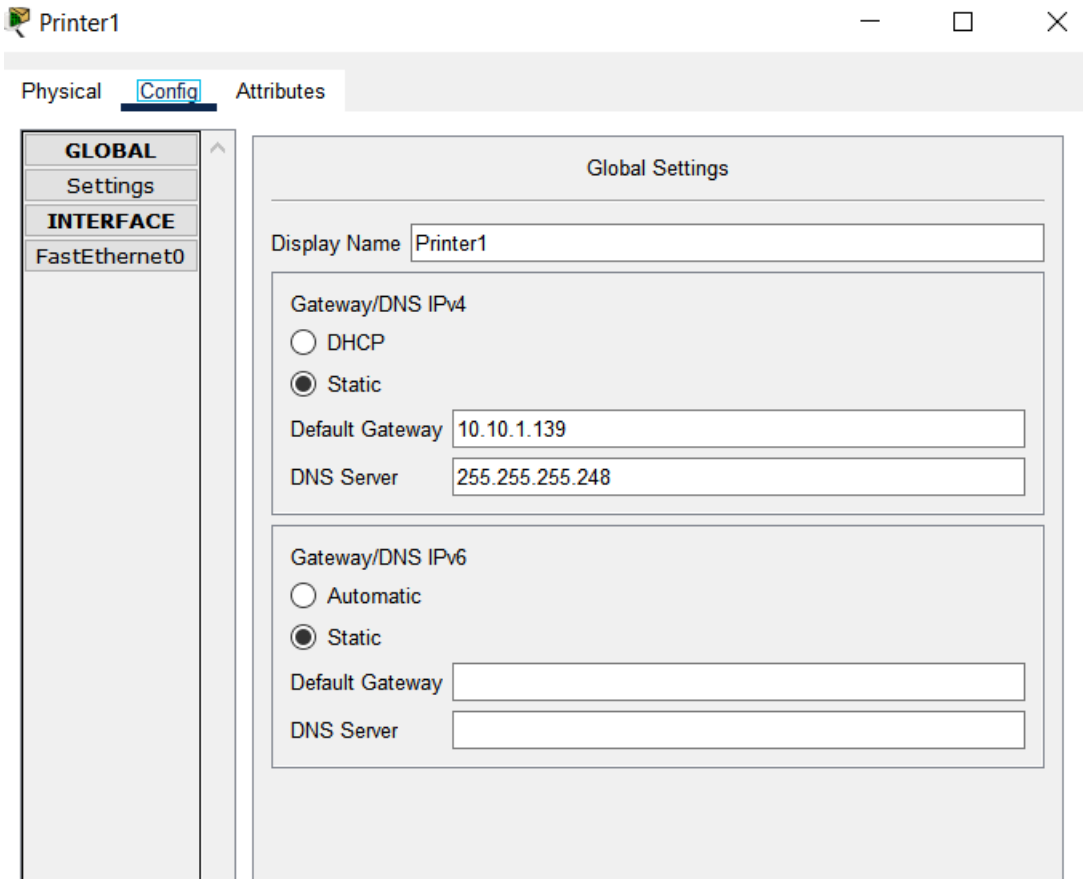
```
Router>en
Router#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa 0/0
Router(config-if)#no sh
Router(config-if)#int fa 0/0
Router(config-if)#no sh
Router(config-if)#do w
Building configuration...
[OK]
Router(config-if)#do wr
Building configuration...
[OK]
Router(config-if)#
```

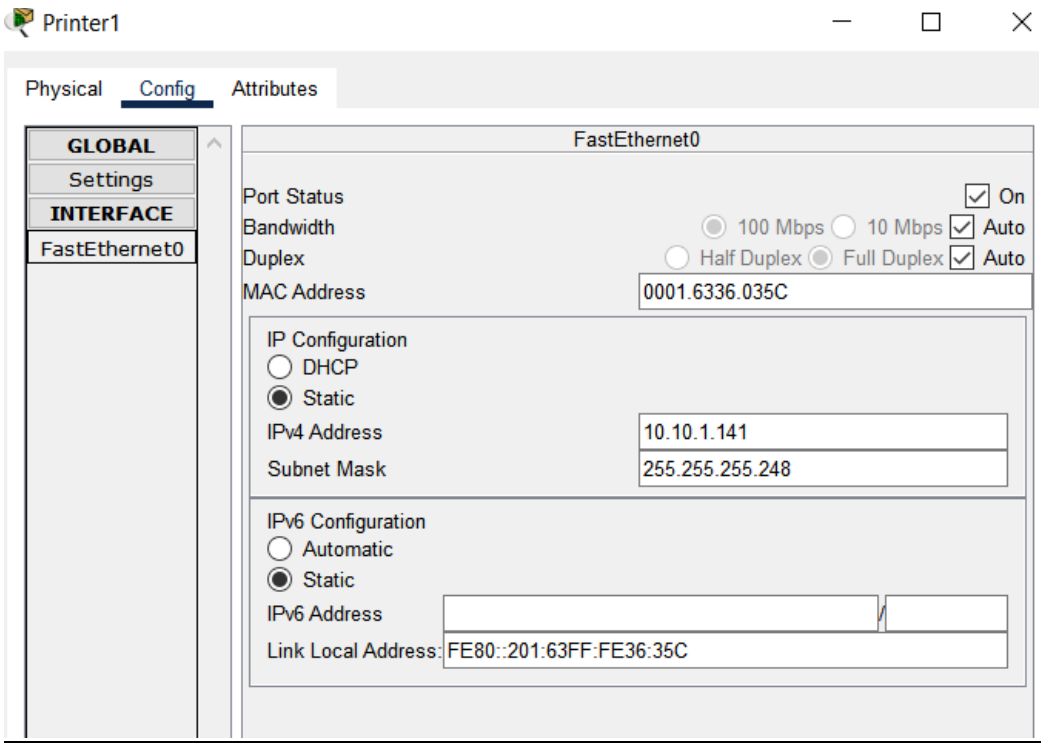
Configuration of PC



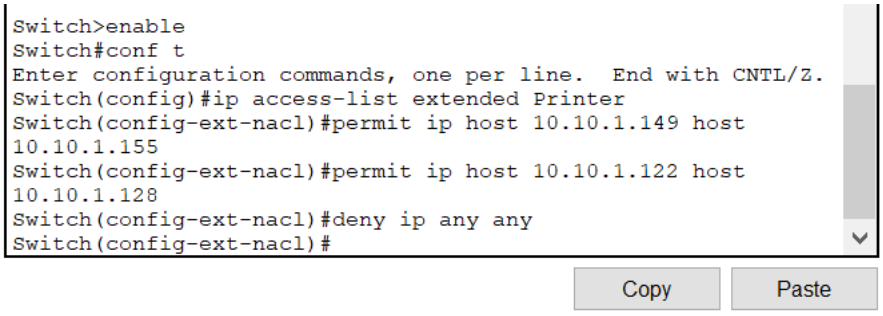
```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: FE80::230:A3FF:FE67:E0A1
   IPv6 Address.....: ::
   IPv4 Address.....: 10.10.1.123
   Subnet Mask.....: 255.255.255.248
   Default Gateway.....: ::
                                 10.10.1.123

Bluetooth Connection:

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: ::
   IPv6 Address.....: ::
   IPv4 Address.....: 0.0.0.0
   Subnet Mask.....: 0.0.0.0
   Default Gateway.....: ::
                                 0.0.0.0

C:\>
```

Configuration of Printers





DENYINIG PRINTERS ROOM



Ping from a PC in Staff room to a printer in printing room