REPORT PROJECT

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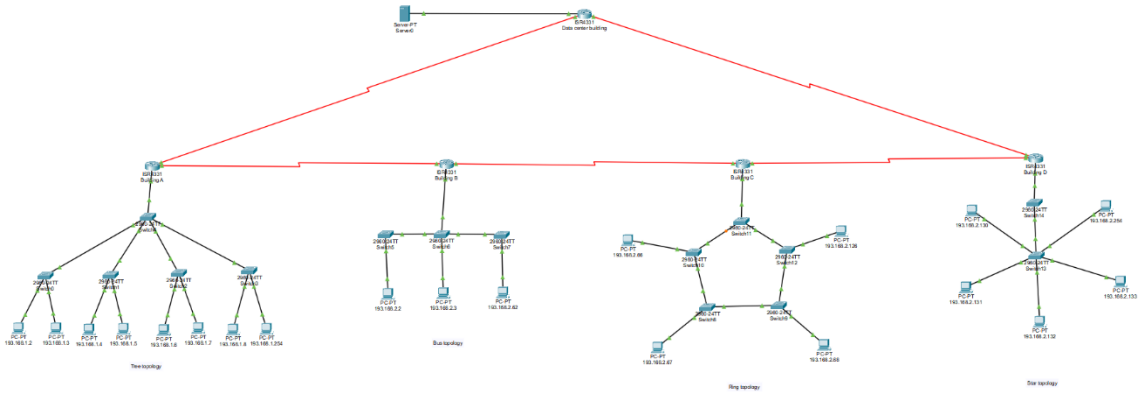
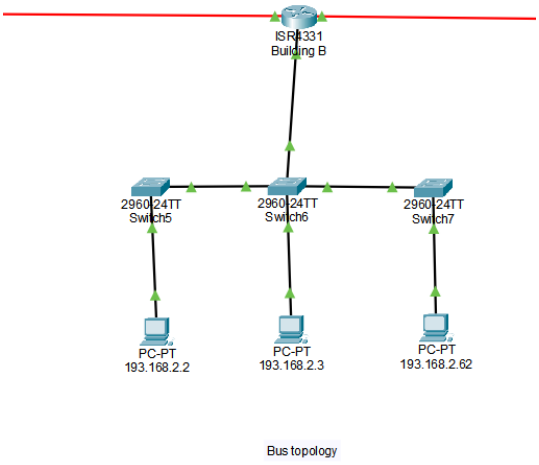
| computer network |

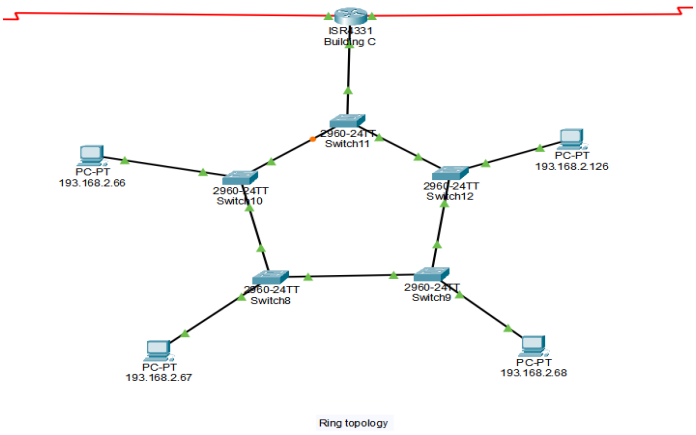
Lan network topologies



1)bus shall with 3 switches



2)ring with 5 switches



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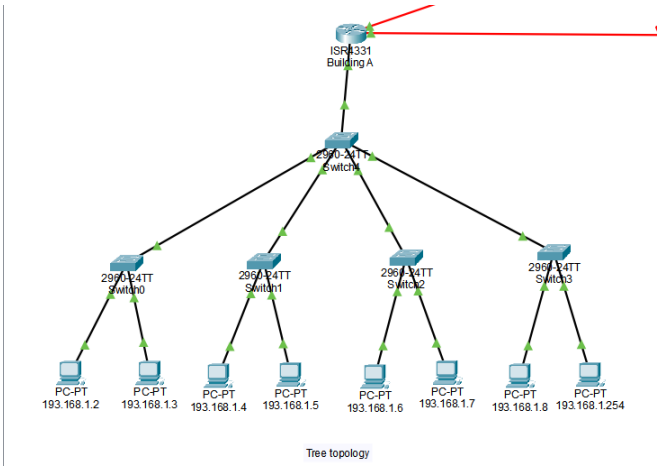
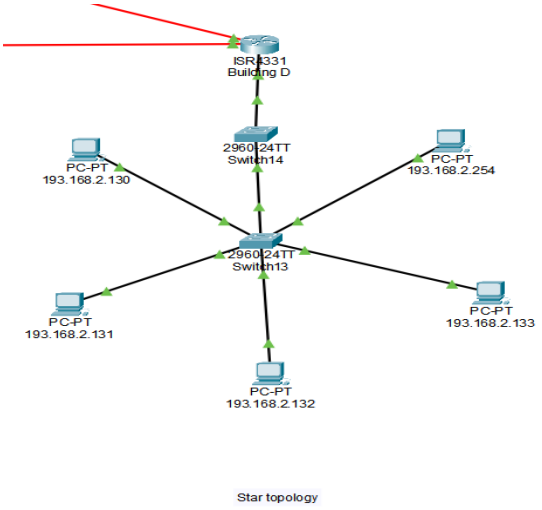
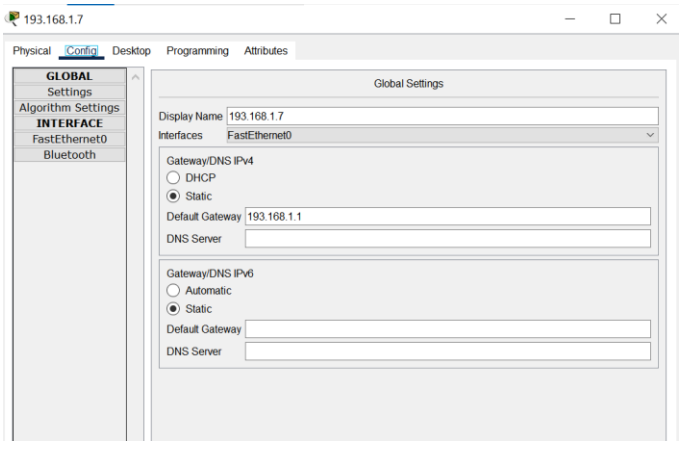
3)tree with 5 switches



4)star with 2 switches



Ip of pc



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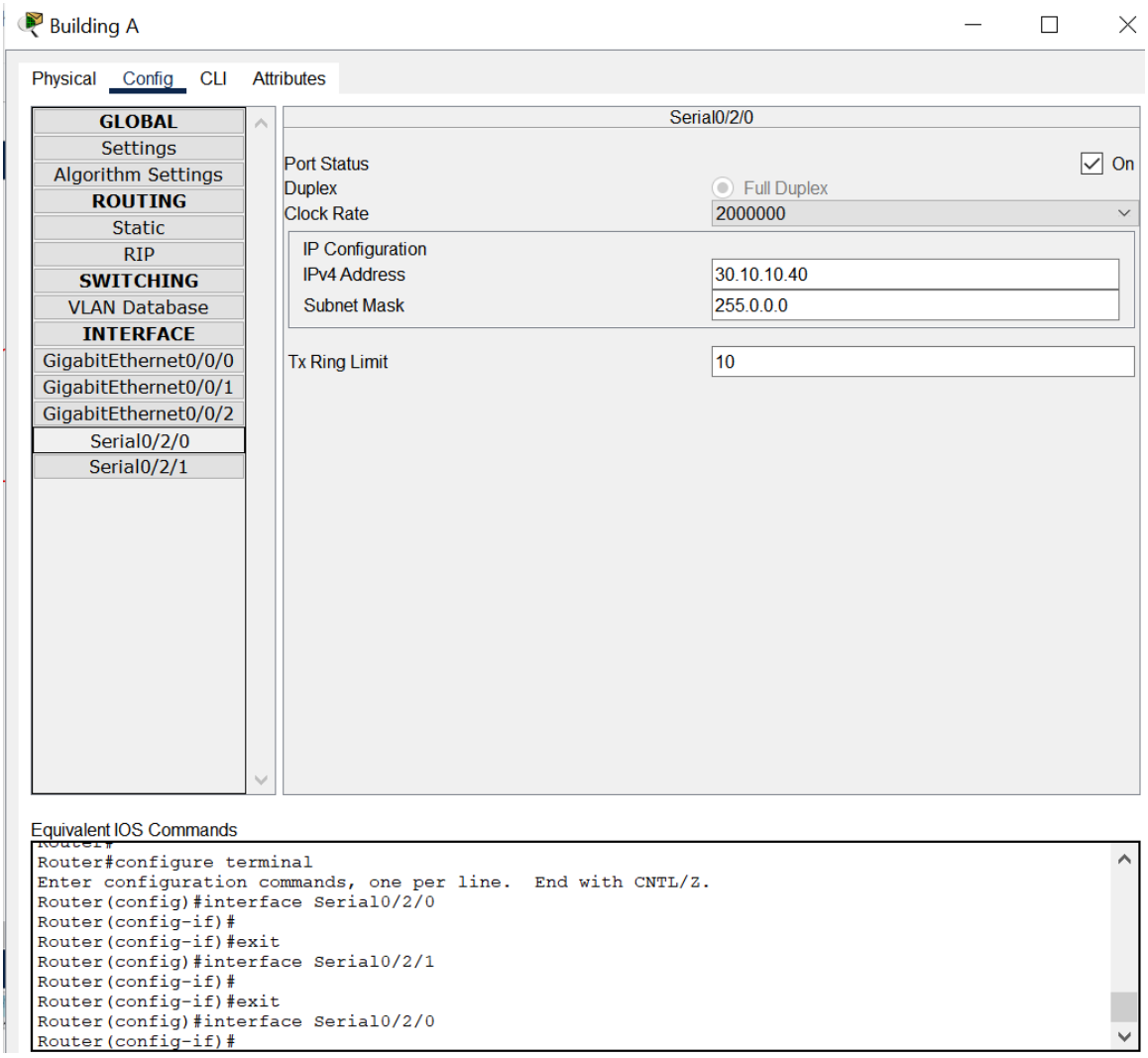
Ip of router



Sub-net

Bulding A

193.168.1.0 /24

2^8 → 8 bit

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Sub net mask: 255.255.255.0

Network ip : 193.168.1.0

DG: 193.168.1.1

Fristv : 193.168.1.2

BC: 2^8+0-1 = 255

Lastv: 193.168.1.254

Bulding B

193.168.2.0 /24

2^6 → 6 bit

Sub net mask: 255.255.255.192

Network ip : 193.168.2.0

DG: 193.168.2.1

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Fristv : 193.168.2.2

BC: 2^6+0-1 = 63

Lastv: 193.168.2.62

Bulding c

193.168.2.0 /24

2^6 → 6 bit

Sub net mask: 255.255.255.192

Network ip : 193.168.2.64

DG: 193.168.2.65

Fristv : 193.168.2.66

BC: 2^6+64-1 = 127

Lastv: 193.168.2.126

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Bulding d

193.168.2.0 /24

2^7→ 7 bit

Sub net mask:

255.255.255.128

Network ip : 193.168.2.128

DG: 193.168.2.129

Fristv : 193.168.2.130

BC: 2^7+128-1 = 255

Lastv: 193.168.2.254

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WE did NAT overload or port address transilation PAT

```
Router(config-if)#interface g0/0/0
Router(config-if)#exit
Router(config)#interface g0/0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface serial0/2/1
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#access-list 5 permit 193.168.1.0 0.0.0.255
Router(config)#ip nat inside source list 5 interface serial0/2/1 overload
Router(config)#
```

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```
Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface Serial0/2/0
Router(config-if)#interface g0/0/0
Router(config-if)#exit
Router(config)#interface g0/0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface serial0/2/1
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#access-list 5 permit 193.168.1.0 0.0.0.255
Router(config)#ip nat inside source list 5 interface serial0/2/1 overload
Router(config)#
Router(config)#do sh ip nat translation
Router(config)#
Router#
%SYS-5-CONFIG_I: Configured from console by console
config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#do sh ip nat translation
Router(config)#do sh ip nat translation
Router(config)#do sh ip nat translation
Router(config)#interface g0/0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#interface serial0/2/1
Router(config-if)#exit
Router(config)#access-list 5 permit 193.168.1.0 0.0.0.255
Router(config)#ip nat inside source list 5 interface serial0/2/1 overload
Router(config)#
Router(config)#
Router(config)#
Router(config)#do sh ip nat translation
Pro  Inside global     Inside local       Outside local      Outside global
icmp 10.0.0.10:2       193.168.1.3:2      193.168.2.2:2      193.168.2.2:2
icmp 10.0.0.10:3       193.168.1.3:3      193.168.2.2:3      193.168.2.2:3
icmp 10.0.0.10:4       193.168.1.3:4      193.168.2.2:4      193.168.2.2:4
icmp 10.0.0.10:5       193.168.1.3:5      193.168.2.2:5      193.168.2.2:5

Router(config)#
```

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NAT Overload or Port Address Translation (PAT) – translates the

outbound traffic of clients to unique port numbers off of a single global

address.

PAT is necessary when the number of internal clients exceeds the

available global addresses.

Recall that NAT Overload (or PAT) is necessary when the number of

internal clients exceed the available global addresses. Each internal host is

translated to a unique port number off of a single global address.

Dynamic routing: open shortest path first

>>>>>>>>>Building A<<<<<<<<<

>>>en

>>>conf t

>>>router ospf 1

>>>router-id 1.1.1.1

>>>network 193.168.1.0 0.0.0.255 area 1

>>>network 10.0.0.0 0.255.255.255 area 0

>>>network 30.0.0.0 0.255.255.255 area 0

>>>>>>>>>Building B<<<<<<<<<

>>>en

>>>conf t

>>>router ospf 1

>>>router-id 1.1.1.2

>>>network 193.168.2.0 0.0.0.255 area 1

>>>network 10.0.0.0 0.255.255.255 area 0

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>>>network 20.0.0.0 0.255.255.255 area 0

>>>>>>>>>Building C<<<<<<<<<

>>>en

>>>conf t

>>>router ospf 1

>>>router-id 1.1.1.3

>>>network 193.168.2.64 0.0.0.255 area 1

>>>network 10.0.0.0 0.255.255.255 area 0

>>>network 20.0.0.0 0.255.255.255 area 0

>>>>>>>>>Building D<<<<<<<<<

>>>en

>>>conf t

>>>router ospf 1

>>>router-id 1.1.1.4

>>>network 193.168.2.128 0.0.0.255 area 1

>>>network 10.0.0.0 0.255.255.255 area 0

s

>>>network 20.0.0.0 0.255.255.255 area 0

>>>>>>>>>Data center Building<<<<<<<<<

>>>en

>>>conf t

>>>router ospf 1

>>>router-id 1.1.1.5

>>>network 172.125.12.9 0.0.255.255 area 1

>>>network 20.0.0.0 0.255.255.255 area 0

>>>network 30.0.0.0 0.255.255.255 area 0

```
Router#show ip route
Codes: L - local, C - connected, S - static, 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

     10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.0.0.0/8 is directly connected, Serial0/2/1
L       10.0.0.10/32 is directly connected, Serial0/2/1
O    20.0.0.0/8 [110/128] via 30.10.10.10, 02:00:28, Serial0/2/0
                [110/128] via 10.10.10.20, 02:00:28, Serial0/2/1
     30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       30.0.0.0/8 is directly connected, Serial0/2/0
L       30.10.10.40/32 is directly connected, Serial0/2/0
O IA 172.125.0.0/16 [110/65] via 30.10.10.10, 02:00:28, Serial0/2/0
     193.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       193.168.1.0/24 is directly connected, GigabitEthernet0/0/0
L       193.168.1.1/32 is directly connected, GigabitEthernet0/0/0
```

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```
Router#show ip protocol

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 1.1.1.1
  Number of areas in this router is 2. 2 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    193.168.1.0 0.0.0.255 area 1
    10.0.0.0 0.255.255.255 area 0
    30.0.0.0 0.255.255.255 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    1.1.1.1              110      00:01:03
    1.1.1.2              110      00:01:06
    1.1.1.3              110      00:01:03
    1.1.1.4              110      00:01:04
    1.1.1.5              110      00:01:04
  Distance: (default is 110)
```

End of the report