Assignment 2

Subnetting & Supernetting

A] Subnetting :

- It is a process of dividing the large network into the smaller networks based on Layer 3 IP Address. Every computer on network has an IP Address that represents its location on network.

- **Subnet mask :**

It is a 32 bits long address used to distinguish between network address and host address in IP Address. It is always used with IP Address. It has only one purpose, to identify which part of IP address in network address and which part is host address.

- **Advantages of Subnetting :**

1. It breaks larger network in smaller & smaller networks which are easy to manage
2. It reduces the network traffic by removing collision and broadcast traffic, that overall improve performance.
3. It allows you to apply network security

policies at the interconnection between subnets.

4. It allows you to save money by reducing requirement for IP range.

B] Supernetting :

- In Supernetting, multiple networks are combined into a bigger network, termed as a Supernetwork or Supernet.
- It is mainly used in Route Summarization, where routes to multiple networks with similar network prefixes are combined into a single routing entry.
- Rules for supernetting:

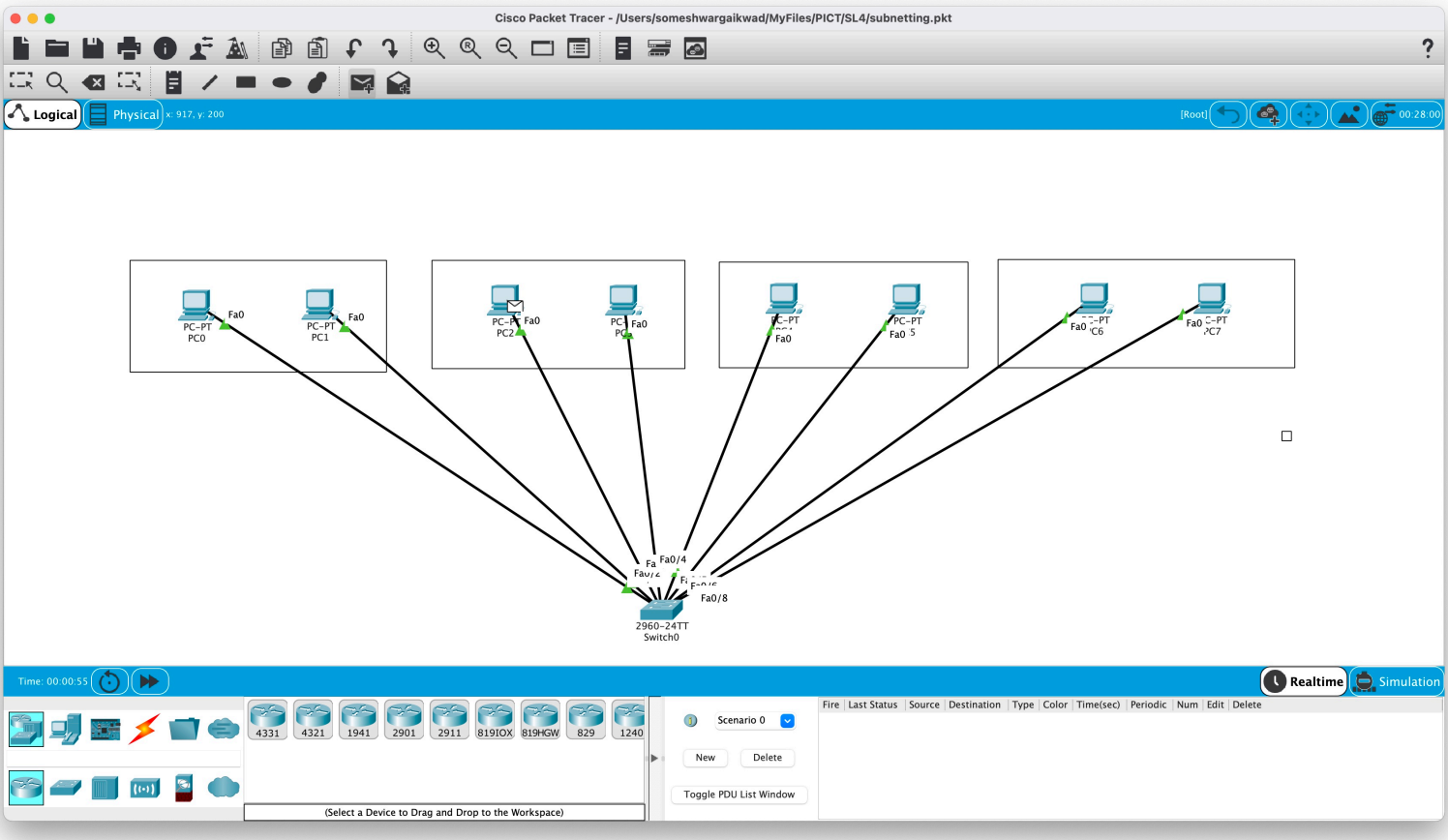
1. All the networks should be contiguous.
2. The block size of every networks should be equal & must be in the form of 2^n.
3. First network ID should exactly be divisible by whole size of supernet.

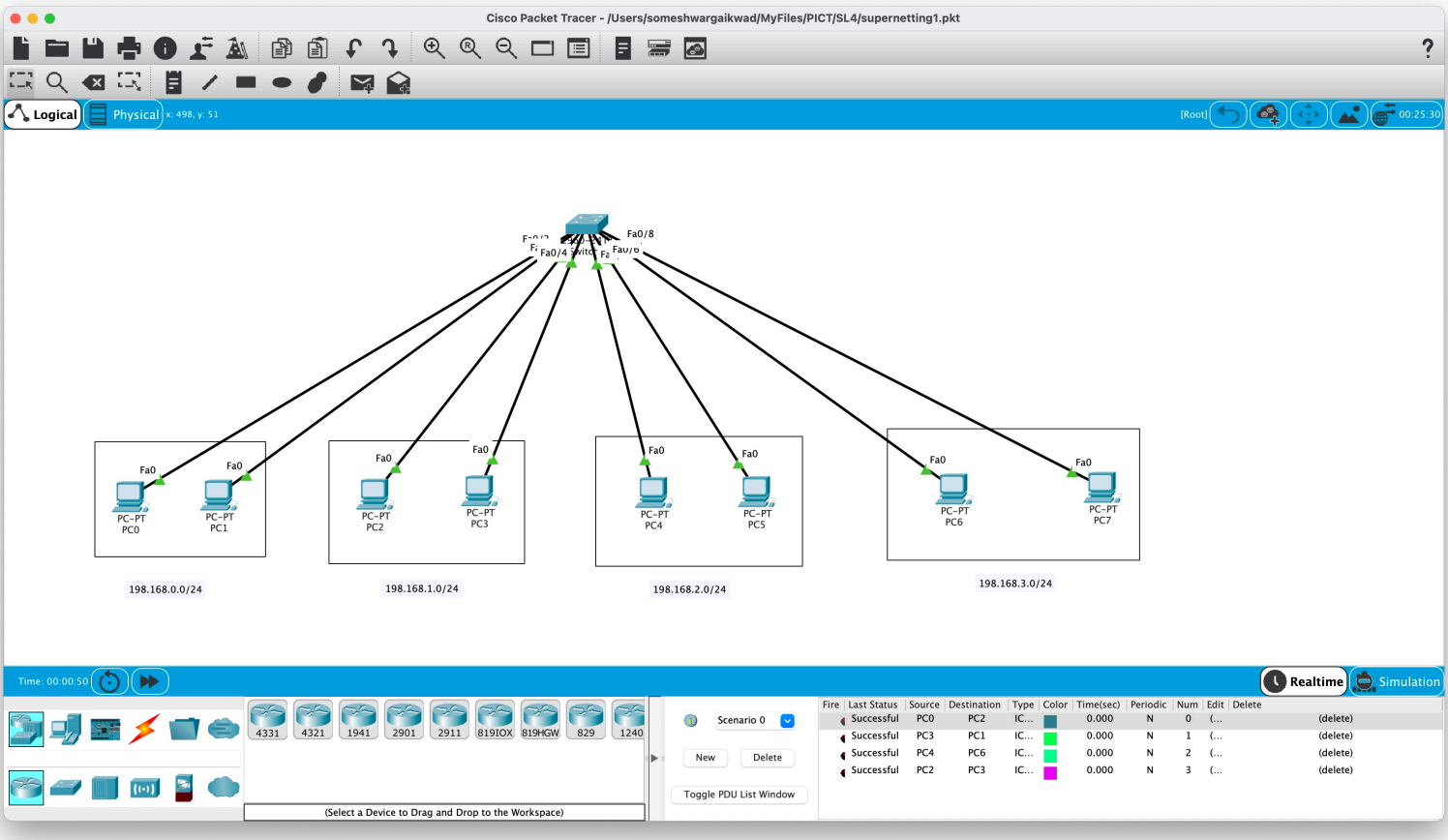
- Advantages

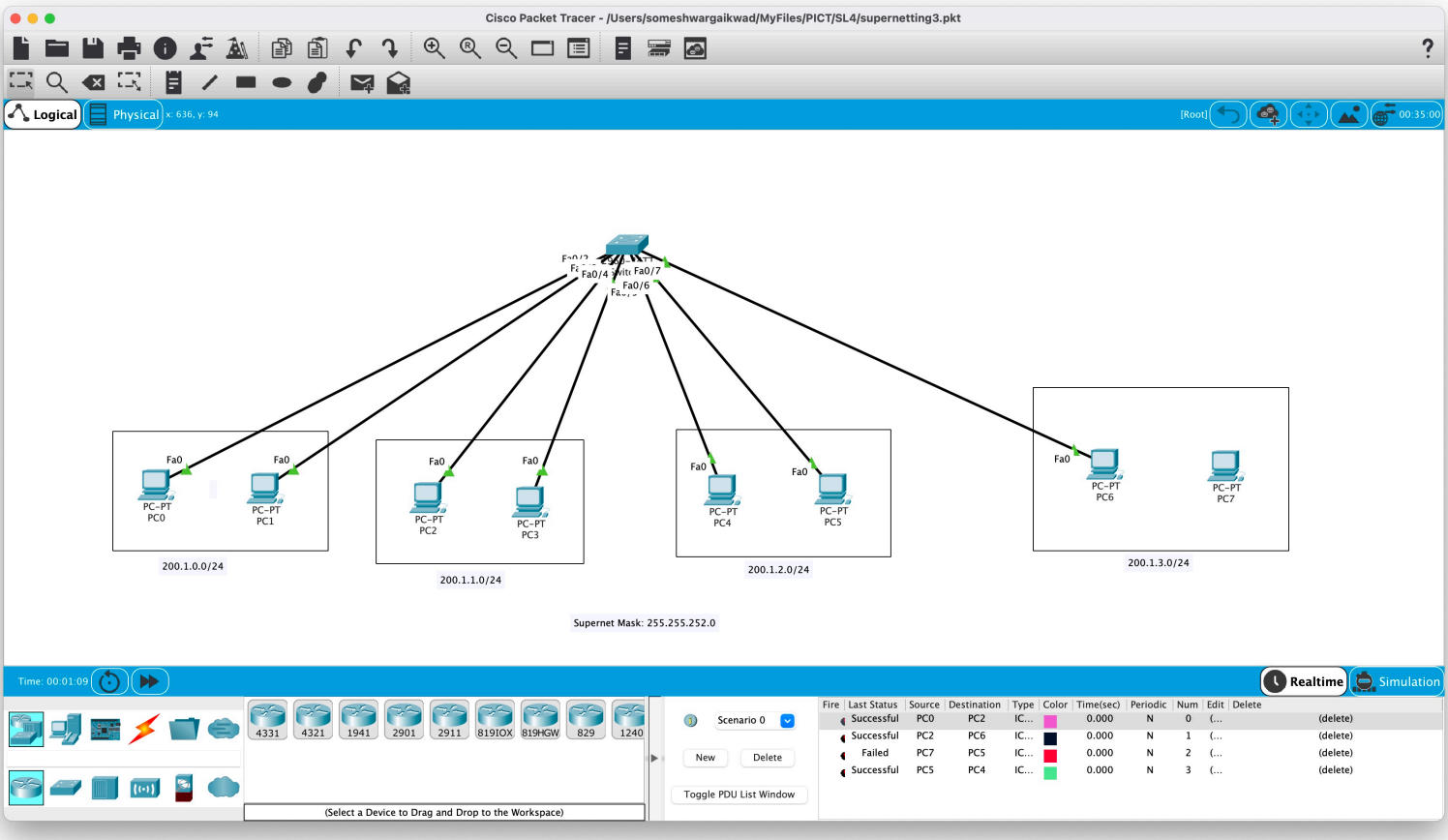
1. Control and reduce network traffic.
2. Helpful to solve the problem of lacking IP Address.
3. Minimizes the routing table.

- Disadvantages.

1. It cannot cover the different areas of network when combined.
2. All networks should be in same class and all IP should be contiguous.


Cisco Packet Tracer - /Users/someshwargaikwad/MyFiles/PICT/SL4/subnetting.pkt
Logical
Physical
[Root]
PC-PT PC0
PC-PT PC1
PC-PT PC2
Fa0
Fa0/4
Fa0/8
2960-24TT Switch0
Time: 00:00:55
Realtime
Simulation
4331
4321
1941
2901
2911
819IOX
819HGW
829
1240
(Select a Device to Drag and Drop to the Workspace)
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete


Cisco Packet Tracer - /Users/someshwargaikwad/MyFiles/PICT/SL4/supernetting1.pkt
Logical
Physical
Fa0/8
Fa0
PC-PT PC0
PC-PT PC1
PC-PT PC2
PC-PT PC3
PC-PT PC4
PC-PT PC5
PC-PT PC6
PC-PT PC7
198.168.0.0/24
198.168.1.0/24
198.168.2.0/24
198.168.3.0/24
Realtime
Simulation
4331
4321
1941
2901
2911
819IOX
819HGW
829
1240
(Select a Device to Drag and Drop to the Workspace)
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Time(sec)
Periodic
Num
Edit
Delete
Successful PC0 PC2 0.000 N 0 (delete)
Successful PC3 PC1 0.000 N 1 (delete)
Successful PC4 PC6 0.000 N 2 (delete)
Successful PC2 PC3 0.000 N 3 (delete)


Cisco Packet Tracer - /Users/someshwargaikwad/MyFiles/PICT/SL4/supernetting3.pkt
Logical
Physical
Fa0/4
Fa0/7
Fa0/6
Fa0
PC-PT PC0
PC-PT PC1
PC-PT PC2
PC-PT PC3
PC-PT PC4
PC-PT PC5
PC-PT PC6
PC-PT PC7
200.1.0.0/24
200.1.1.0/24
200.1.2.0/24
200.1.3.0/24
Supernet Mask: 255.255.252.0
Realtime
Simulation
Scenario 0
New
Delete
Toggle PDU List Window
(Select a Device to Drag and Drop to the Workspace)

→ Conclusion :

Concepts of Subnetting & Supernetting covered.