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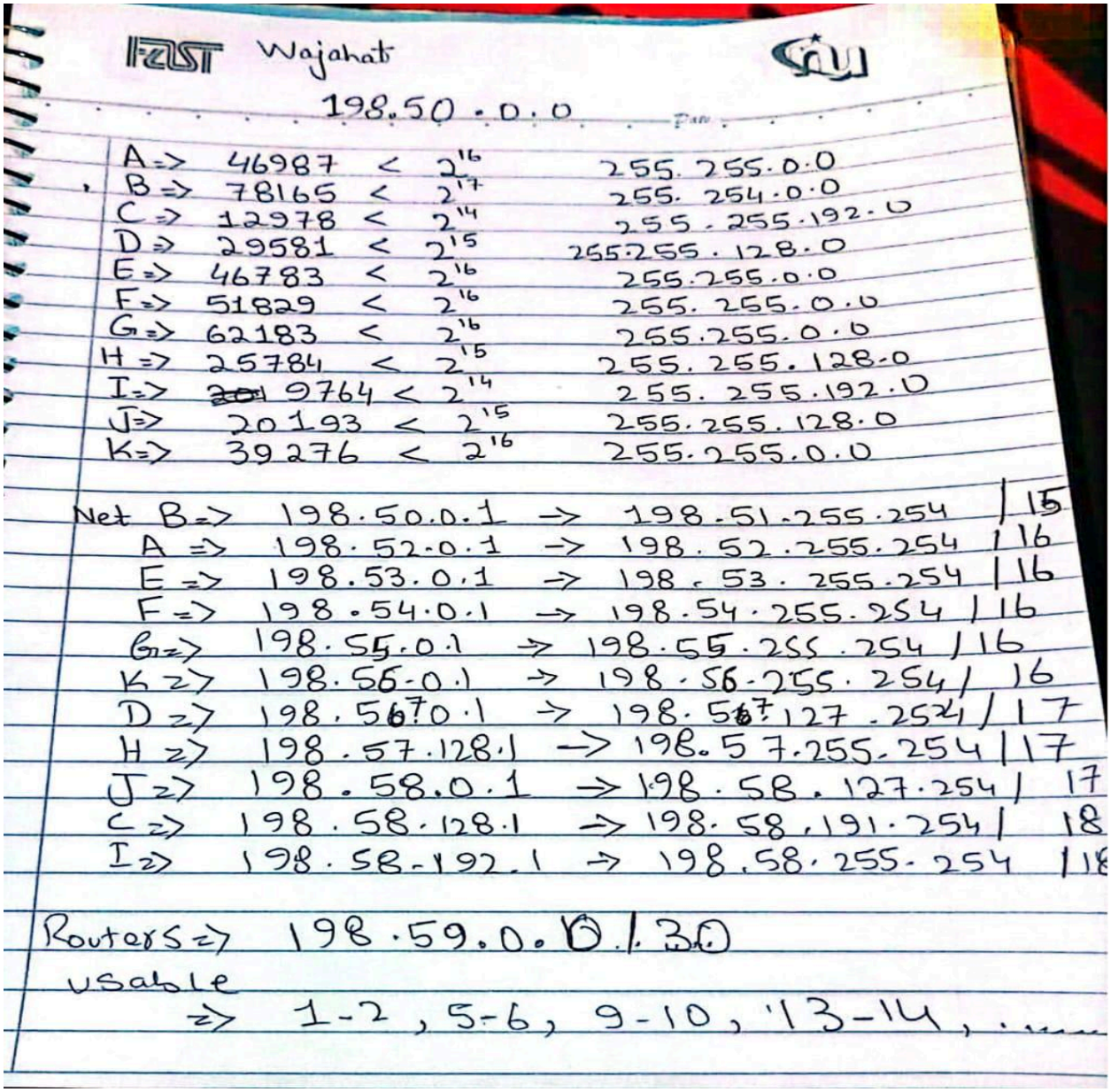
Section A

CNET PROJECT

Project Sequence

1.VLSM
2.Topology
3.Routing
4.EIGRP
5.OSPF
6.DHCP
7.ACL and Web Server
8.SMTP and Mail Server

VLSM:



FAST Wajahat

198.50.0.0

A => 46987 < 2^{16} 255.255.0.0
B => 78165 < 2^{17} 255.254.0.0
C => 12978 < 2^{14} 255.255.192.0
D => 29581 < 2^{15} 255.255.128.0
E => 46783 < 2^{16} 255.255.0.0
F => 51829 < 2^{16} 255.255.0.0
G => 62183 < 2^{16} 255.255.0.0
H => 25784 < 2^{15} 255.255.128.0
I => 9764 < 2^{14} 255.255.192.0
J => 20193 < 2^{15} 255.255.128.0
K => 39276 < 2^{16} 255.255.0.0

Net B => 198.50.0.1 -> 198.51.255.254 | 15
A => 198.52.0.1 -> 198.52.255.254 | 16
E => 198.53.0.1 -> 198.53.255.254 | 16
F => 198.54.0.1 -> 198.54.255.254 | 16
G => 198.55.0.1 -> 198.55.255.254 | 16
K => 198.56.0.1 -> 198.56.255.254 | 16
D => 198.56?0.1 -> 198.56?127.254 | 17
H => 198.57.128.1 -> 198.57.255.254 | 17
J => 198.58.0.1 -> 198.58.127.254 | 17
C => 198.58.128.1 -> 198.58.191.254 | 18
I => 198.58.192.1 -> 198.58.255.254 | 18

Routers => 198.59.0.0/30
usable
=> 1-2, 5-6, 9-10, 13-14, ...

IP Address Allocation Table

Label	Network	Subnet Mask	IP Range	Used For
A	198.52.0.1	255.255.0.0 (/16)	198.52.0.1 – 198.52.255.254	Laptop0, Laptop1 (Network A)
B	198.50.0.1	255.255.0.0 (/15)	198.50.0.1 – 198.51.255.254	Laptop2, Laptop3 (Network B)
C	198.58.128.1	255.255.192.0 (/18)	198.58.128.1 – 198.58.191.254	PC0, PC1, Mail Server (Network C)
D	198.57.0.1	255.255.128.0 (/17)	198.58.0.1 – 198.58.127.254	PC2, Laptop4 (Network D)
E	198.53.0.1	255.255.0.0 (/16)	198.53.0.1 – 198.53.255.254	Accesspoints,Smartpone,2 tablets
F	198.54.0.1	255.255.0.0 (/16)	198.54.0.1 – 198.54.255.254	Network with PC3, Laptop5
G	198.55.0.1	255.255.0.0 (/16)	198.55.0.1 – 198.55.255.254	Access Point2 ,Smartphone3 (Network G)
H	198.57.128.1	255.255.128.0 (/17)	198.57.128.1 – 198.57.255.254	Web Server , Switch 5
I	198.58.192.1	255.255.192.0 (/18)	198.58.192.1 – 198.58.255.254	PC5,PC6
J	198.58.0.1	255.255.128.0 (/17)	198.58.0.1 – 198.58.127.254	2 smartphones0-1, Access point0
K	198.56.0.1	255.255.0.0 (/16)	198.56.0.1 – 198.56.255.254	Network with PC7, PC8, Server DHCP

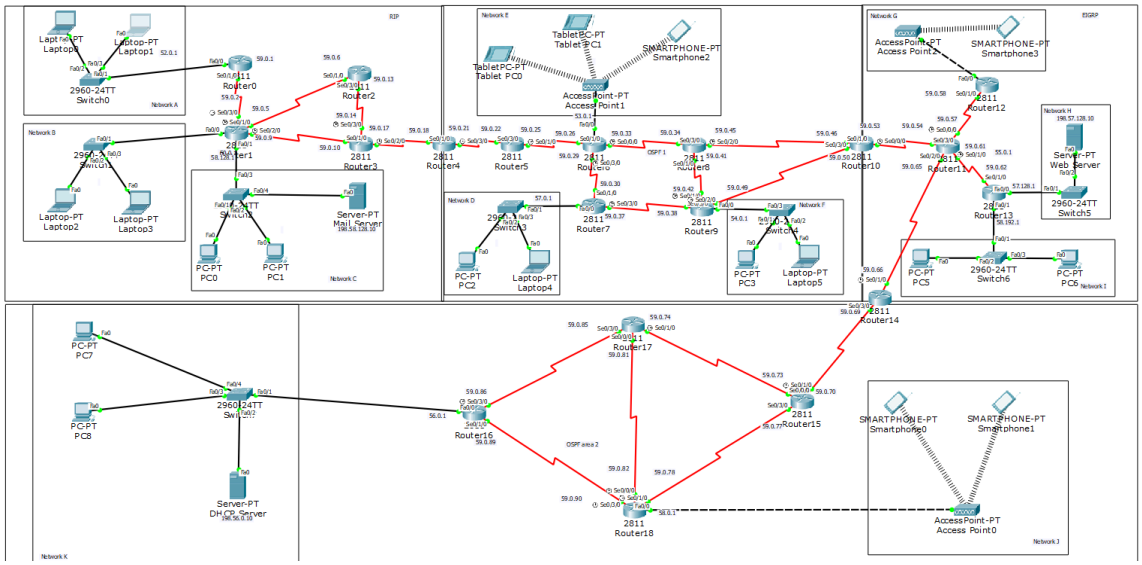
1. Network Design (from the diagram)

- **Multiple LANs segmented into different networks (A through K).**
- **A backbone network connecting multiple routers (Router0 to Router18).**
- **Use of different routing protocols (RIP, OSPF, EIGRP) visible in labeled routers.**
- **Wireless segments (Access Points with Smartphones and Tablets).**
- **Servers for Mail, DHCP, and Web functions.**

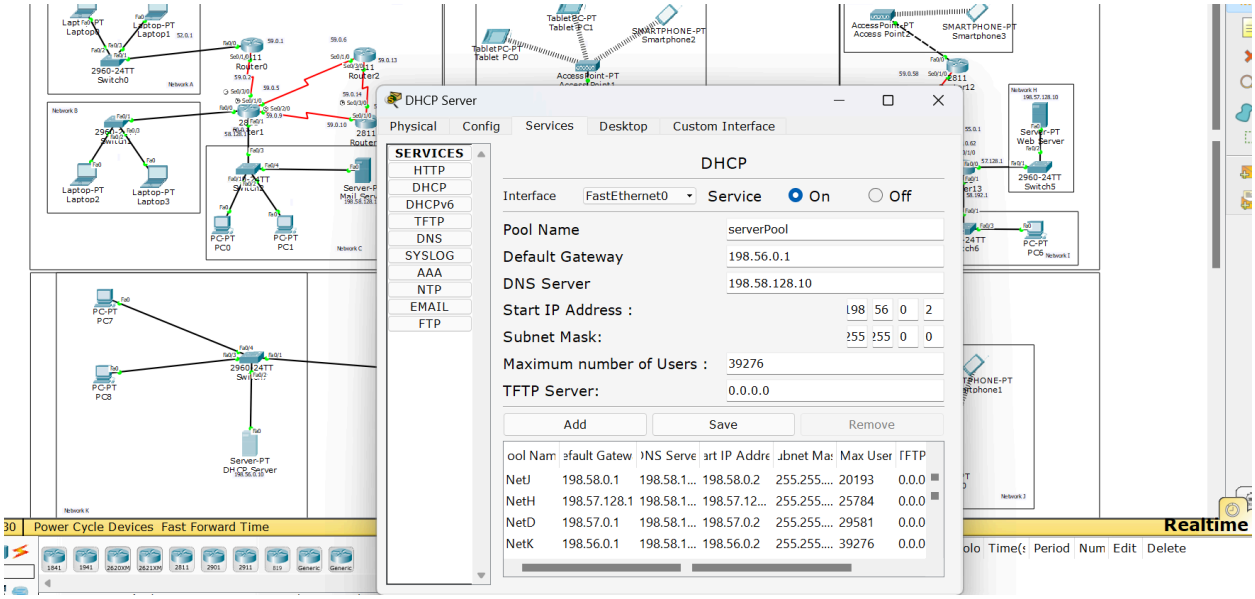
2. IP Planning and Subnetting (from the handwritten notes)

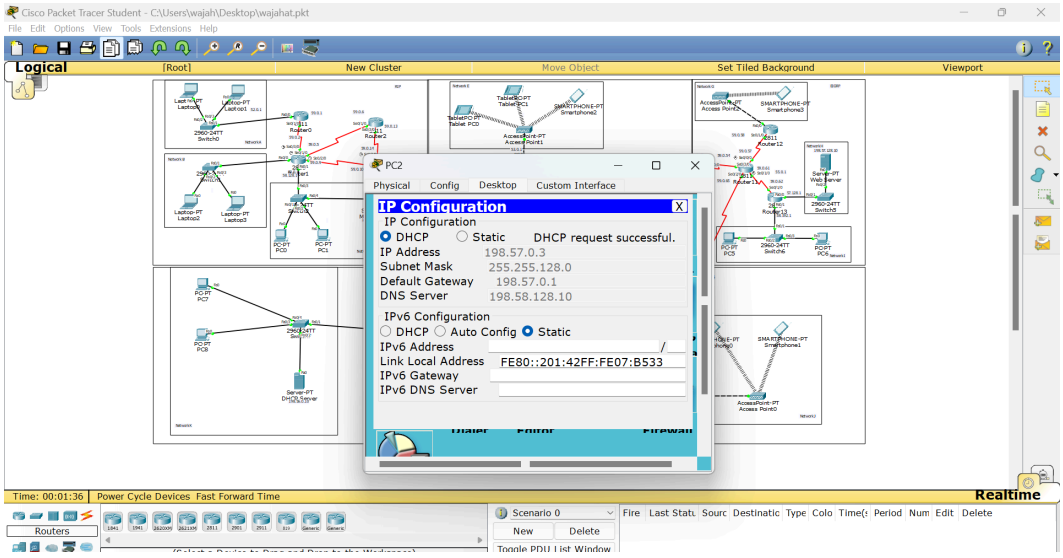
- **Major network: `198.50.0.0`**
- **Subnetting based on host requirements:**
    - **Example: Network A uses `198.52.0.1` to `198.52.255.254` with a `/16` subnet.**
- **Point-to-point router networks use `198.59.0.0/30`.**
    - **Usable interfaces shown: e.g., Router pairs (1-2, 5-6, 9-10…).**

Topology :

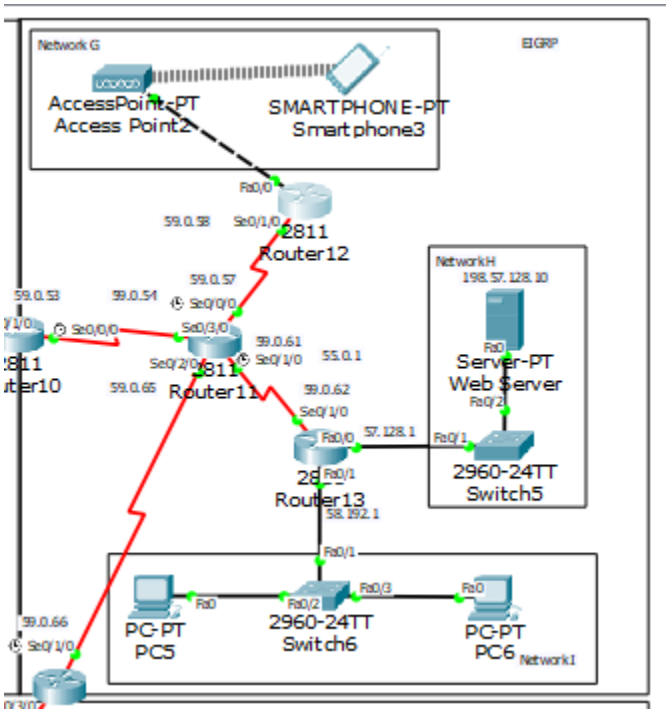

RIP
EIGRP
Laptop-PT Laptop0
Laptop-PT Laptop1
2960-24TT Switch0
Router0
Router1
Router2
Router3
Router4
Router5
Router6
Router7
Router8
Router9
Router10
Router11
Router12
Router13
Router14
Router15
Router16
Router17
Router18
2960-24TT Switch1
2960-24TT Switch2
2960-24TT Switch3
2960-24TT Switch4
2960-24TT Switch5
2960-24TT Switch6
Laptop-PT Laptop2
Laptop-PT Laptop3
Server-PT Mail Server
PC-PT PC0
PC-PT PC1
Tablet PC-PT Tablet PC1
Tablet PC-PT Tablet PC0
SMARTPHONE-PT Smartphone2
Access Point-PT Access Point1
PC-PT PC2
Laptop-PT Laptop4
PC-PT PC3
Laptop-PT Laptop5
Access Point-PT Access Point2
SMARTPHONE-PT Smartphone3
Server-PT Web Server
PC-PT PC5
PC-PT PC6
PC-PT PC7
PC-PT PC8
Server-PT DHCP Server
SMARTPHONE-PT Smartphone0
SMARTPHONE-PT Smartphone1
Access Point-PT Access Point0
OSPF area 2
OSPF 1

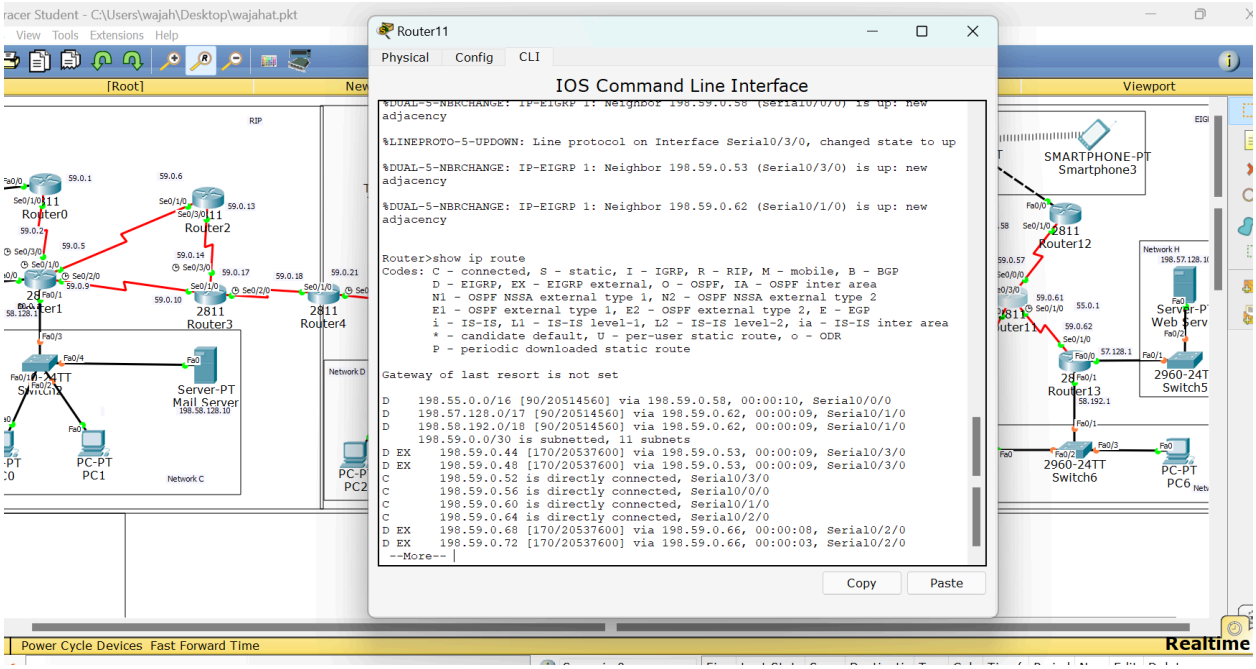
DHCP pool and Request Successful :



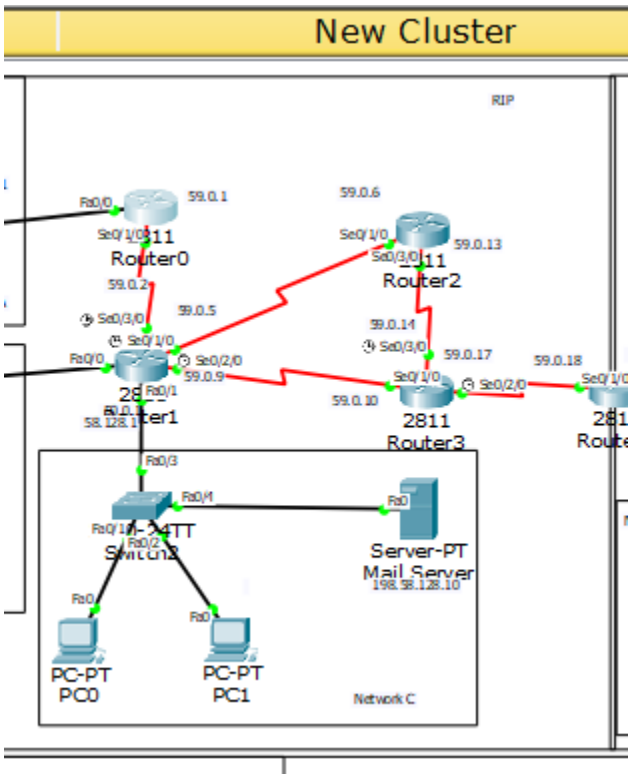


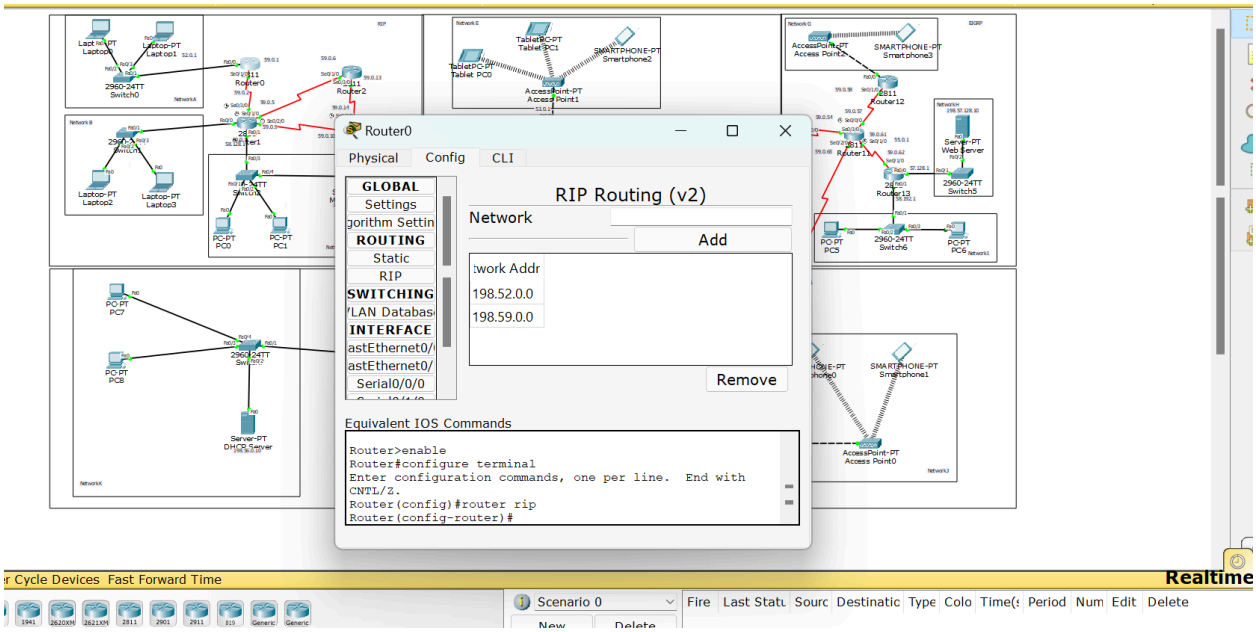
EIGRP:


Network G
EIGRP
AccessPoint-PT
Access Point2
SMARTPHONE-PT
Smartphone3
Fa0/0
59.0.58
Se0/1/0
2811
Router12
59.0.57
59.0.53
59.0.54
Se0/2/0
Se0/0/0
Se0/3/0
59.0.61
Se0/1/0
55.0.1
Router11
59.0.65
59.0.62
Network H
198.57.128.10
Server-PT
Web Server
Fa0/2
57.128.1
Fa0/1
2960-24TT
Switch5
Router13
58.192.1
Fa0/3
PC-PT
PC5
2960-24TT
Switch6
PC-PT
PC6
Network I
59.0.66

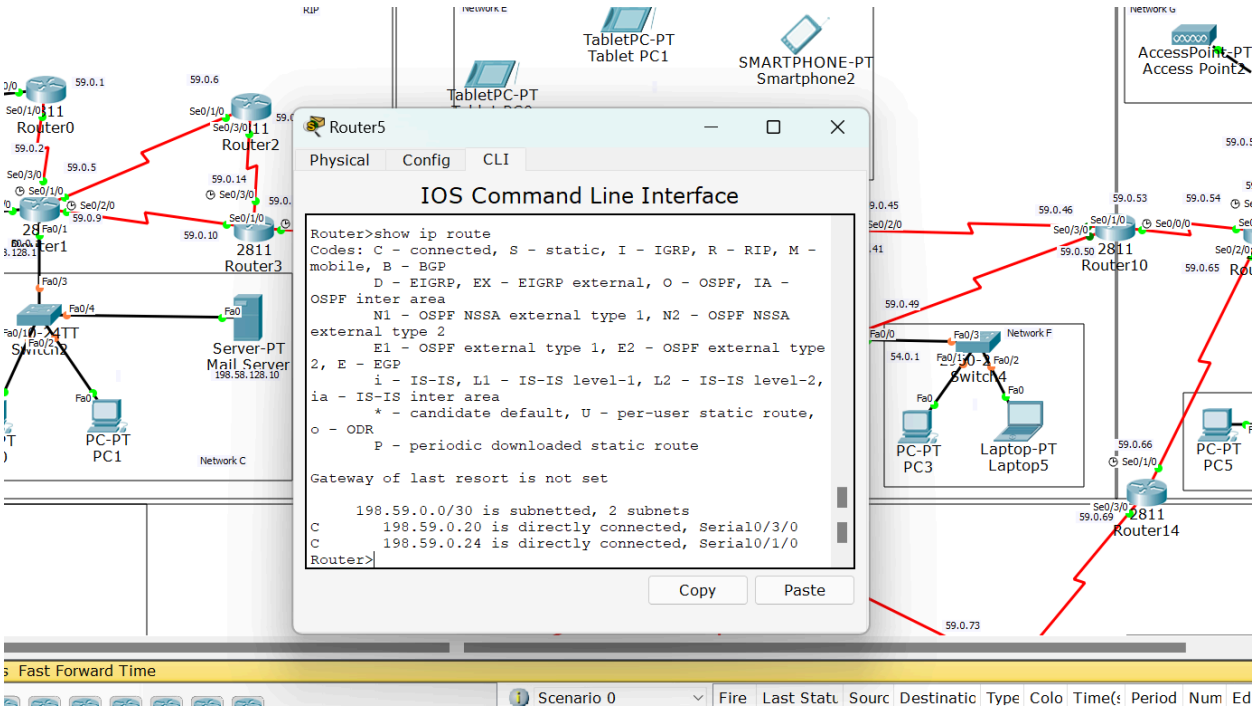

Router11
Physical
Config
CLI
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/3/0, changed state to up
%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 198.59.0.53 (Serial0/3/0) is up: new adjacency
%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 198.59.0.62 (Serial0/1/0) is up: new adjacency
Router>show ip route
Codes: C - connected, S - static, I - IGRP, 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
D 198.55.0.0/16 [90/20514560] via 198.59.0.58, 00:00:10, Serial0/0/0
D 198.57.128.0/17 [90/20514560] via 198.59.0.62, 00:00:09, Serial0/1/0
D 198.58.192.0/18 [90/20514560] via 198.59.0.62, 00:00:09, Serial0/1/0
198.59.0.0/30 is subnetted, 11 subnets
D EX 198.59.0.44 [170/20537600] via 198.59.0.53, 00:00:09, Serial0/3/0
D EX 198.59.0.48 [170/20537600] via 198.59.0.53, 00:00:09, Serial0/3/0
C 198.59.0.52 is directly connected, Serial0/3/0
C 198.59.0.56 is directly connected, Serial0/0/0
C 198.59.0.60 is directly connected, Serial0/1/0
C 198.59.0.64 is directly connected, Serial0/2/0
D EX 198.59.0.68 [170/20537600] via 198.59.0.66, 00:00:08, Serial0/2/0
D EX 198.59.0.72 [170/20537600] via 198.59.0.66, 00:00:03, Serial0/2/0
--More--
Copy
Paste
Power Cycle Devices
Fast Forward Time
Realtime

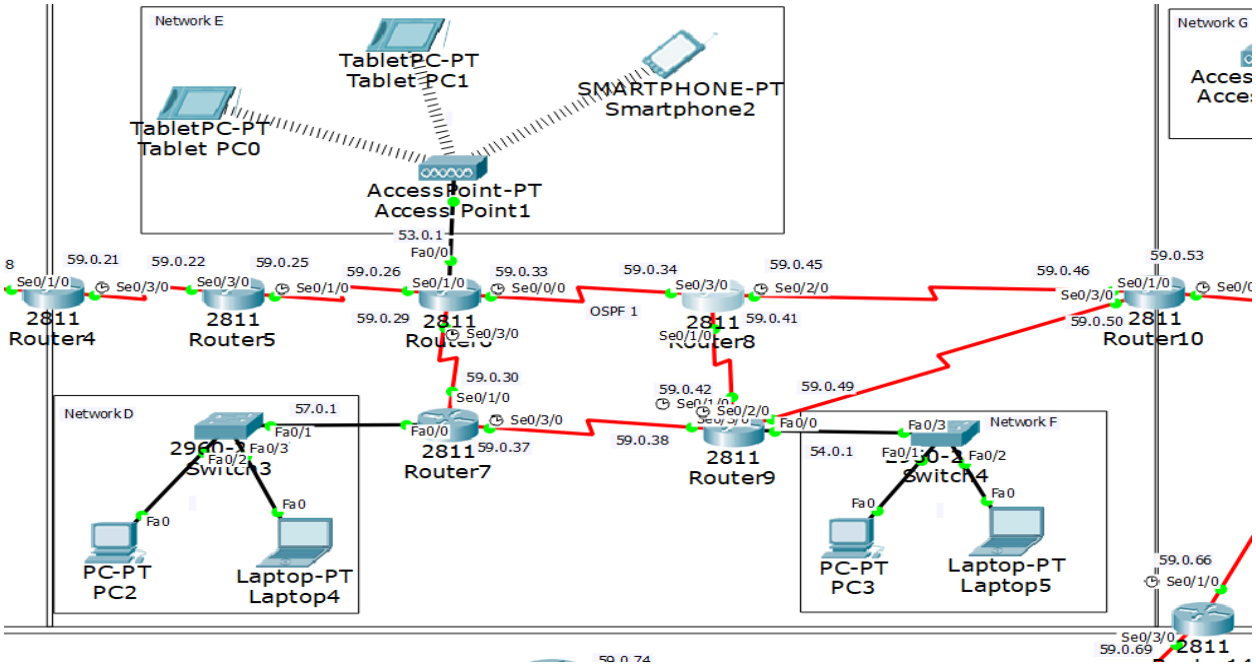
RIP Routing :


New Cluster
RIP
59.0.1
59.0.6
59.0.13
Router0
Router2
59.0.2
59.0.5
59.0.14
59.0.17
59.0.18
59.0.9
59.0.10
2811
Router3
Server-PT
Mail Server
198.58.128.10
PC-PT
PC0
PC-PT
PC1
Network C

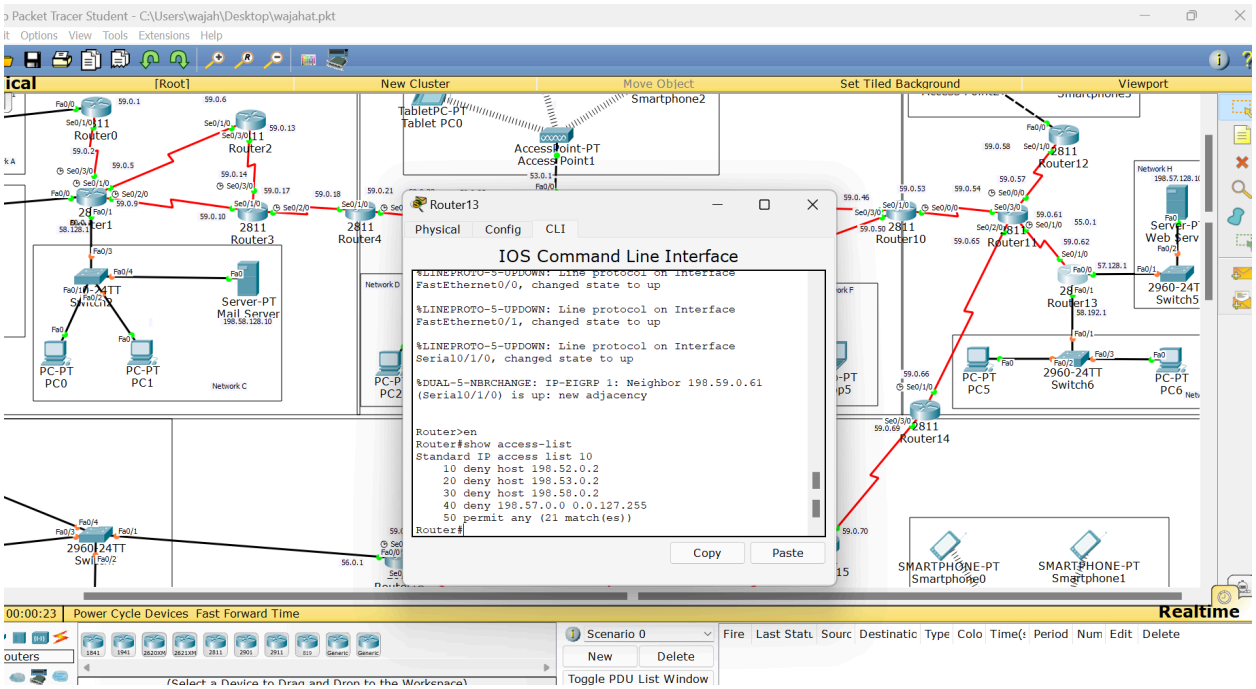

Router0
Physical
Config
CLI
GLOBAL
Settings
ROUTING
Static
RIP
SWITCHING
INTERFACE
RIP Routing (v2)
Network
Add
198.52.0.0
198.59.0.0
Remove
Equivalent IOS Commands
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/2.
Router(config)#router rip
Router(config-router)#
Realtime
Scenario 0

OSPF:

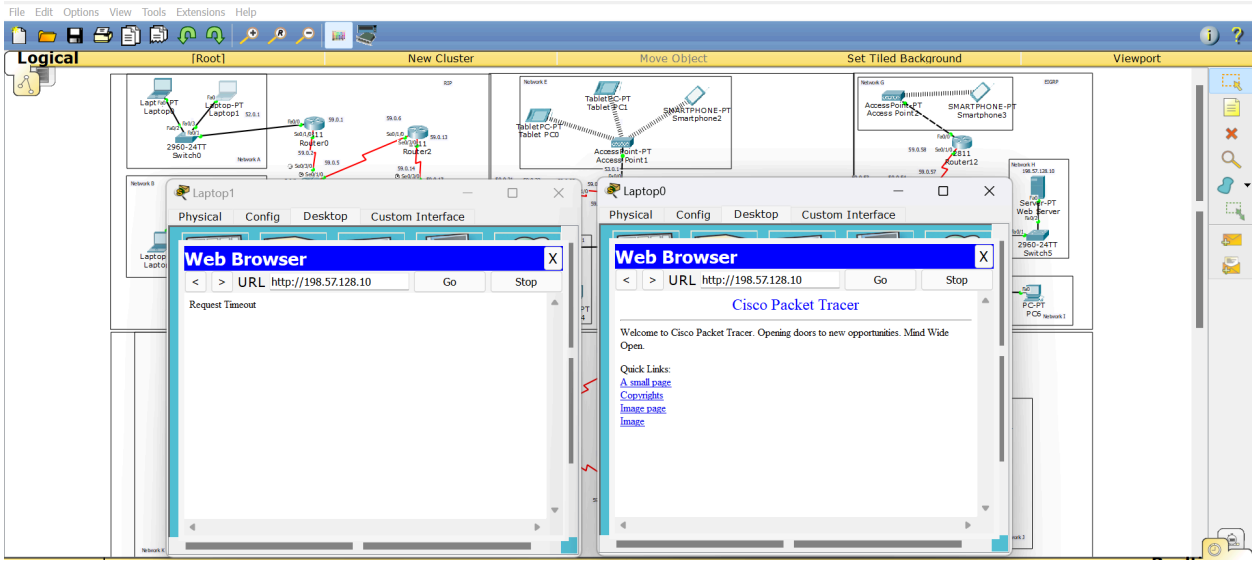

Router5
Physical
Config
CLI
IOS Command Line Interface
Router>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, 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
198.59.0.0/30 is subnetted, 2 subnets
C 198.59.0.20 is directly connected, Serial0/3/0
C 198.59.0.24 is directly connected, Serial0/1/0
Router>
Copy
Paste
TabletPC-PT Tablet PC1
SMARTPHONE-PT Smartphone2
AccessPoint-PT Access Point2
Router0
Router2
Router3
Router10
Router14
Server-PT Mail Server
PC-PT PC1
PC-PT PC3
Laptop-PT Laptop5
PC-PT PC5
Fast Forward Time
Scenario 0


Network E
TabletPC-PT
Tablet PC1
SMARTPHONE-PT
Smartphone2
TabletPC-PT
Tablet PC0
AccessPoint-PT
Access Point1
Network G
53.0.1
Fa0/0
59.0.21
59.0.22
59.0.25
59.0.26
59.0.33
59.0.34
59.0.45
59.0.46
59.0.53
Se0/1/0
Se0/3/0
Se0/1/0
Se0/1/0
Se0/0/0
Se0/3/0
Se0/2/0
Se0/3/0
Se0/1/0
2811
Router4
2811
Router5
59.0.29
2811
Router6
OSPF 1
2811
Router8
59.0.41
59.0.50
2811
Router10
59.0.30
Se0/1/0
59.0.42
59.0.49
Network D
57.0.1
Fa0/1
Fa0/0
Se0/3/0
59.0.37
59.0.38
Fa0/0
Fa0/3
Network F
54.0.1
Fa0/2
Fa0
Fa0
Fa0
Fa0
PC-PT
PC2
Laptop-PT
Laptop4
2811
Router7
2811
Router9
PC-PT
PC3
Laptop-PT
Laptop5
59.0.66
Se0/1/0
Se0/3/0
59.0.69
2811

ACL:

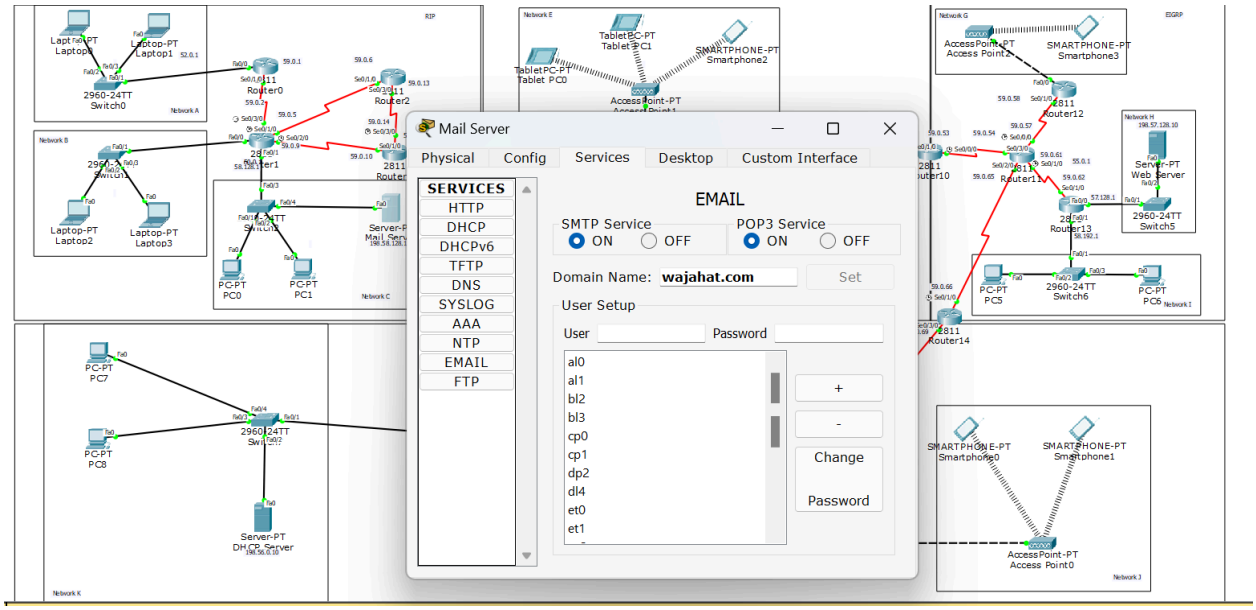

Packet Tracer Student - C:\Users\wajah\Desktop\wajahat.pkt
Options View Tools Extensions Help
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Router13
Physical
Config
CLI
IOS Command Line Interface
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up
%DUAL-5-NBRCHANGE: IP-EIGRP 1: Neighbor 198.59.0.61 (Serial0/1/0) is up: new adjacency
Router>en
Router#show access-list
Standard IP access list 10
10 deny host 198.52.0.2
20 deny host 198.53.0.2
30 deny host 198.58.0.2
40 deny 198.57.0.0 0.0.127.255
50 permit any (21 match(es))
Router#
Copy
Paste
Router0
Router1
Router2
Router3
Router4
Router10
Router11
Router12
Router13
Router14
Server-PT
Mail Server
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
PC-PT
PC5
PC-PT
PC6
2960-24TT
Switch5
2960-24TT
Switch6
SMARTPHONE-PT
Smartphone0
SMARTPHONE-PT
Smartphone1
00:00:23
Power Cycle Devices Fast Forward Time
Realtime
Scenario 0
New
Delete
Toggle PDU List Window

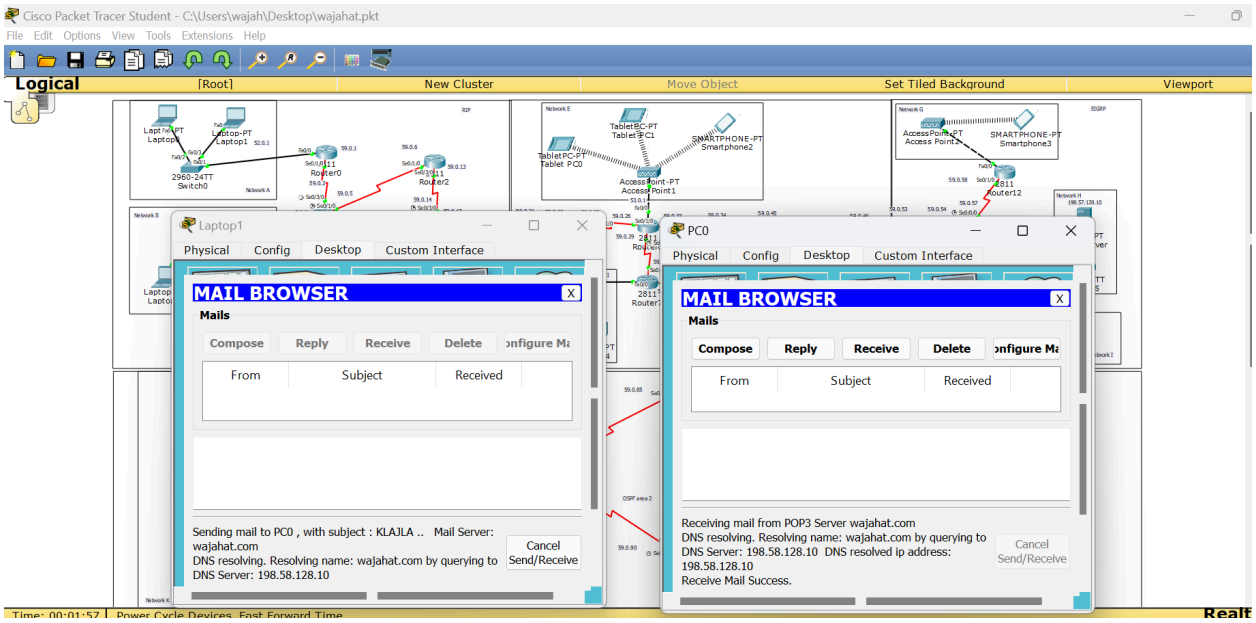
The access list blocks the first usable of IP of Network A (198.57.128.10) laptop0 and laptop1



SMTP:

Email pool and email verifying




Cisco Packet Tracer Student - C:\Users\wajah\Desktop\wajahat.pkt
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Laptop1
Physical Config Desktop Custom Interface
MAIL BROWSER
Mails
Compose Reply Receive Delete
From Subject Received
Sending mail to PC0 , with subject : KLAJLA .. Mail Server: wajahat.com
DNS resolving. Resolving name: wajahat.com by querying to DNS Server: 198.58.128.10
Cancel Send/Receive
PC0
Physical Config Desktop Custom Interface
MAIL BROWSER
Mails
Compose Reply Receive Delete
From Subject Received
Receiving mail from POP3 Server wajahat.com
DNS resolving. Resolving name: wajahat.com by querying to DNS Server: 198.58.128.10 DNS resolved ip address: 198.58.128.10
Receive Mail Success.
Cancel Send/Receive