



# University of Asia Pacific

Department of Computer Science and Engineering

Final Exam report

**Course Title** : Computer Networking Lab  
**Course Code** : CSE 320

**Submitted By,**

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**Section : A1**

**Submitted To,**

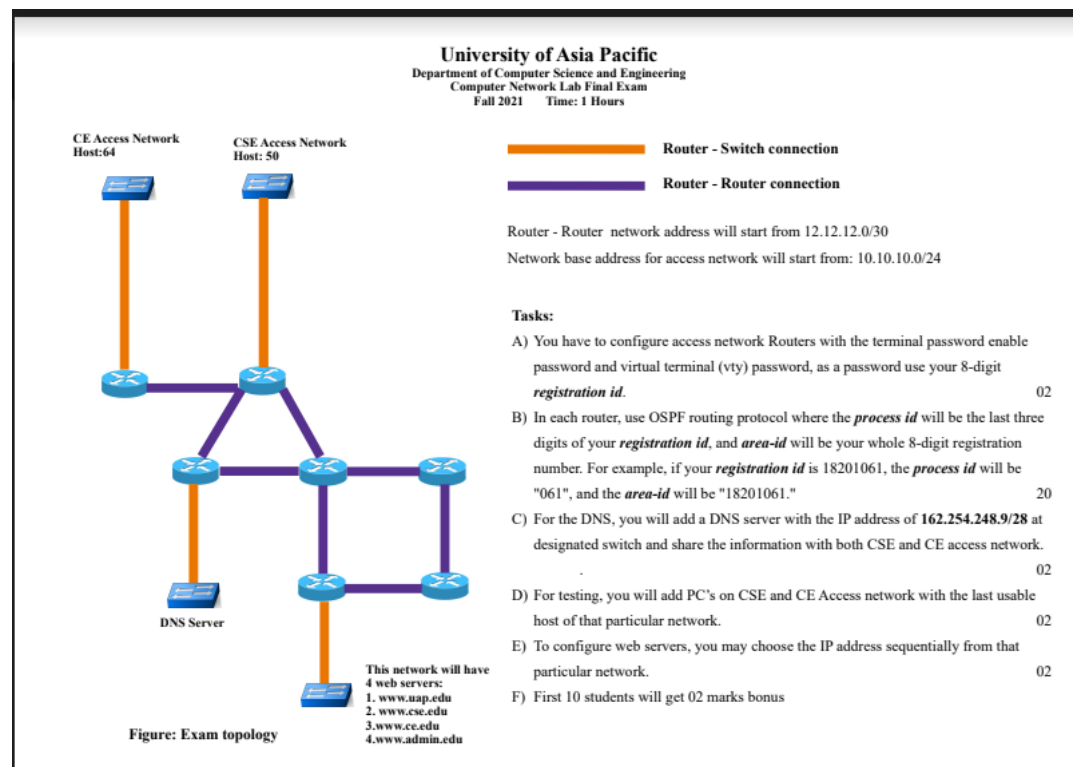
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University of Asia Pacific

## Starting Process:

Here we have to solve the question :



From this question we have some components for fulfil the circuit .

## Apparatus:

- Cisco Packet Tracer
- 4 Web Server
- 1 DNS
- 2 PCs
- 2 console
- 7 Router
- 1 switch
- Copper cross over
- Serial DTE
- Copper Straight Through

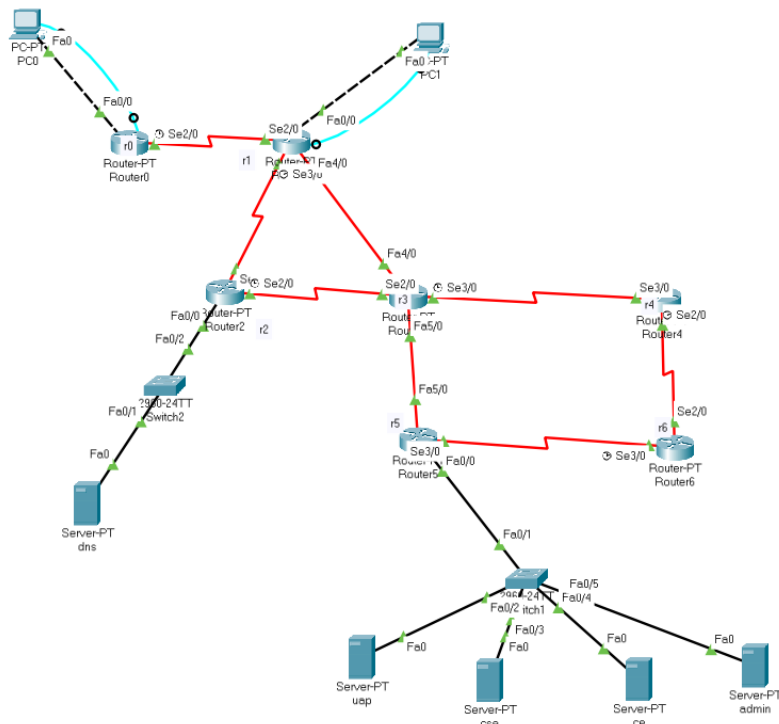
## Design process:

First we have to open Cisco packet tracer and log in with proper ID.

For designing this Network system first we need 7 routers , 5 Server and 2 PCs.

After adding the components , We will connect All PCs and Srever with the router .  
 For the connection here need deffrent type cable here. We will connect Server with switch through straight cable and pc with router through copper cross cable .Also we connect one router with others router through Serial DT Cable. When serial port is end we connect the router to router throuh fast-etharnet port and using fiber cable.

After following the steps ,The final design will be,



## IP Configuration :

Start Router - Router network address will start from 12.12.12.0/30  
 Network base address for access network will start from: 10.10.10.0/24. Here we use VLSM calculator for the table.

For router we need 16 host so we take here 12.12.12.0/27

$$32-27=5$$

$$\begin{aligned} \text{Total subnets} &= (2^5)-2 \\ &= 32-2 \\ &= 30 \end{aligned}$$

## Subnetting Successful

Major Network: **12.12.12.0/27**  
Available IP addresses in major network: **30**  
Number of IP addresses needed: **16**  
Available IP addresses in allocated subnets: **16**  
About **100%** of available major network address space is used  
About **100%** of subnetted network address space is used

Subnet Name	Needed Size	Allocated Size	Address	Mask	Dec Mask	Assignable Range	Broadcast
r0-r1	2	2	12.12.12.0	/30	255.255.255.252	12.12.12.1 - 12.12.12.2	12.12.12.3
r1-r2	2	2	12.12.12.4	/30	255.255.255.252	12.12.12.5 - 12.12.12.6	12.12.12.7
r1-r3	2	2	12.12.12.8	/30	255.255.255.252	12.12.12.9 - 12.12.12.10	12.12.12.11
r2-r3	2	2	12.12.12.12	/30	255.255.255.252	12.12.12.13 - 12.12.12.14	12.12.12.15
r3-r4	2	2	12.12.12.16	/30	255.255.255.252	12.12.12.17 - 12.12.12.18	12.12.12.19
r3-r5	2	2	12.12.12.20	/30	255.255.255.252	12.12.12.21 - 12.12.12.22	12.12.12.23
r4-r6	2	2	12.12.12.24	/30	255.255.255.252	12.12.12.25 - 12.12.12.26	12.12.12.27
r5-r6	2	2	12.12.12.28	/30	255.255.255.252	12.12.12.29 - 12.12.12.30	12.12.12.31

For the network base address we take 10.10.10.0/24

## Subnetting Successful

Major Network: **10.10.10.0/24**  
Available IP addresses in major network: **254**  
Number of IP addresses needed: **119**  
Available IP addresses in allocated subnets: **196**  
About **80%** of available major network address space is used  
About **61%** of subnetted network address space is used

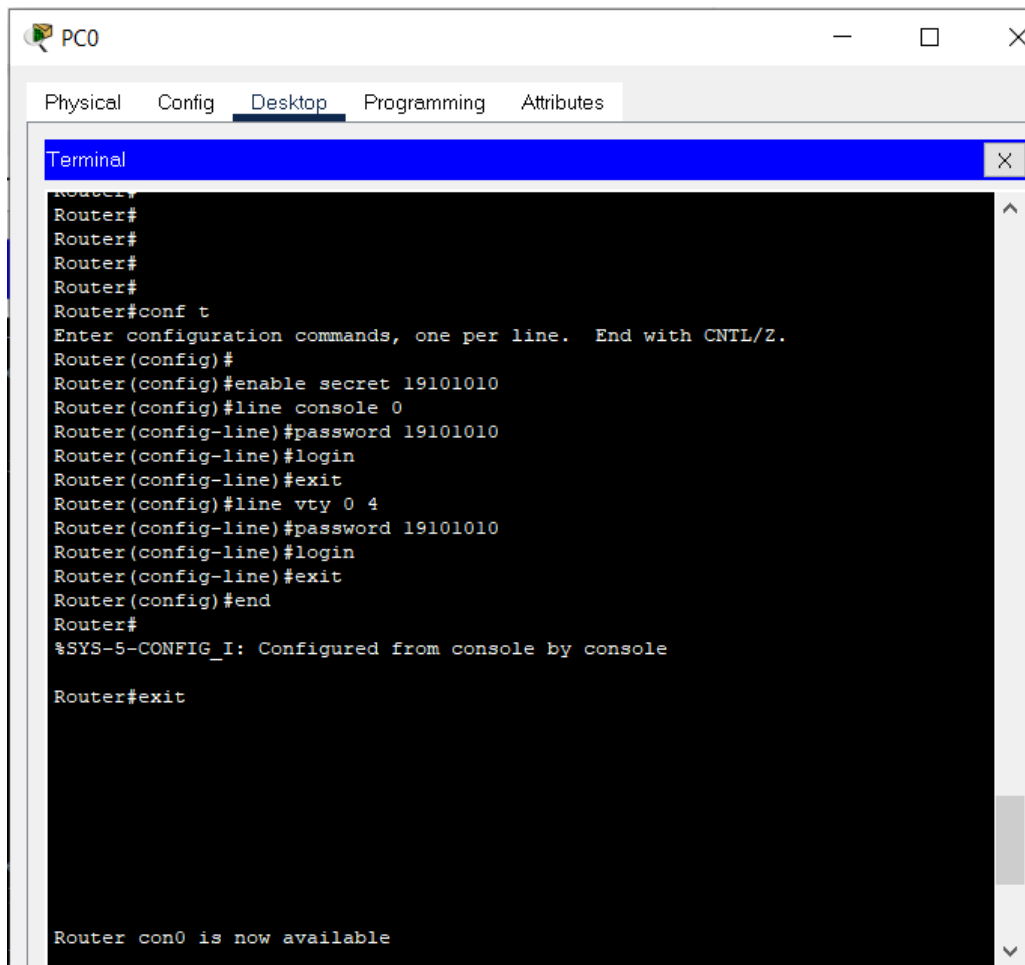
Subnet Name	Needed Size	Allocated Size	Address	Mask	Dec Mask	Assignable Range	Broadcast
CE	64	126	10.10.10.0	/25	255.255.255.128	10.10.10.1 - 10.10.10.126	10.10.10.127
CSE	50	62	10.10.10.128	/26	255.255.255.192	10.10.10.129 - 10.10.10.190	10.10.10.191
SERVERS	4	6	10.10.10.192	/29	255.255.255.248	10.10.10.193 - 10.10.10.198	10.10.10.199
DNS	1	2	10.10.10.200	/30	255.255.255.252	10.10.10.201 - 10.10.10.202	10.10.10.203

[Back to form](#) [New calculation](#)

## TASK A:

I configure access network Routers with the terminal password enable password and virtual terminal (vty) password, as a password i use my8-digit registration id 19101010. Command for password are

1. enable >> conf t >> enable secret 19101010 >> exit.
2. Enable >> conf t >> line console 0 >> password 19101010 >> login >> exit >> line vty 0(space)4 >> password 19101010>> login >> exit.



The screenshot shows a window titled 'PC0' with a tabbed interface. The 'Desktop' tab is active, displaying a terminal window. The terminal shows a series of commands entered to configure a router, including enabling secret, setting console and vty passwords, and logging in. The output shows the configuration is successful and the console is now available.

```
Router#
Router#
Router#
Router#
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#enable secret 19101010
Router(config)#line console 0
Router(config-line)#password 19101010
Router(config-line)#login
Router(config-line)#exit
Router(config)#line vty 0 4
Router(config-line)#password 19101010
Router(config-line)#login
Router(config-line)#exit
Router(config)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#exit

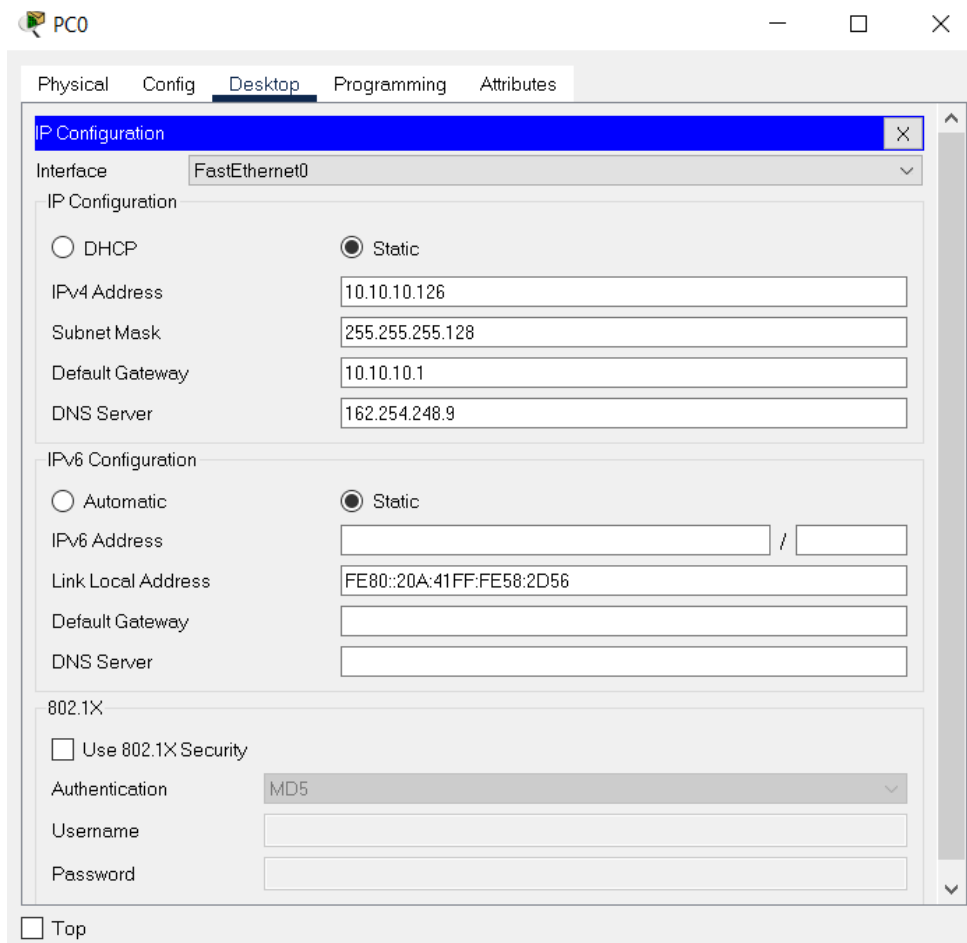
Router con0 is now available
```

## Task E and Ip configuration off all Connection :

### Pc and server configuration:

We start configure in pc0 configure start in ip 10.10.10.0/24 as follow the VLSM table we calculate .

**Step :** Go pc0 > Go Desktop--->IP Configuration > click static and give IP, Subnet mask, Default Gateway And DNS server.



All pc and servers configure follow this VLSM table.

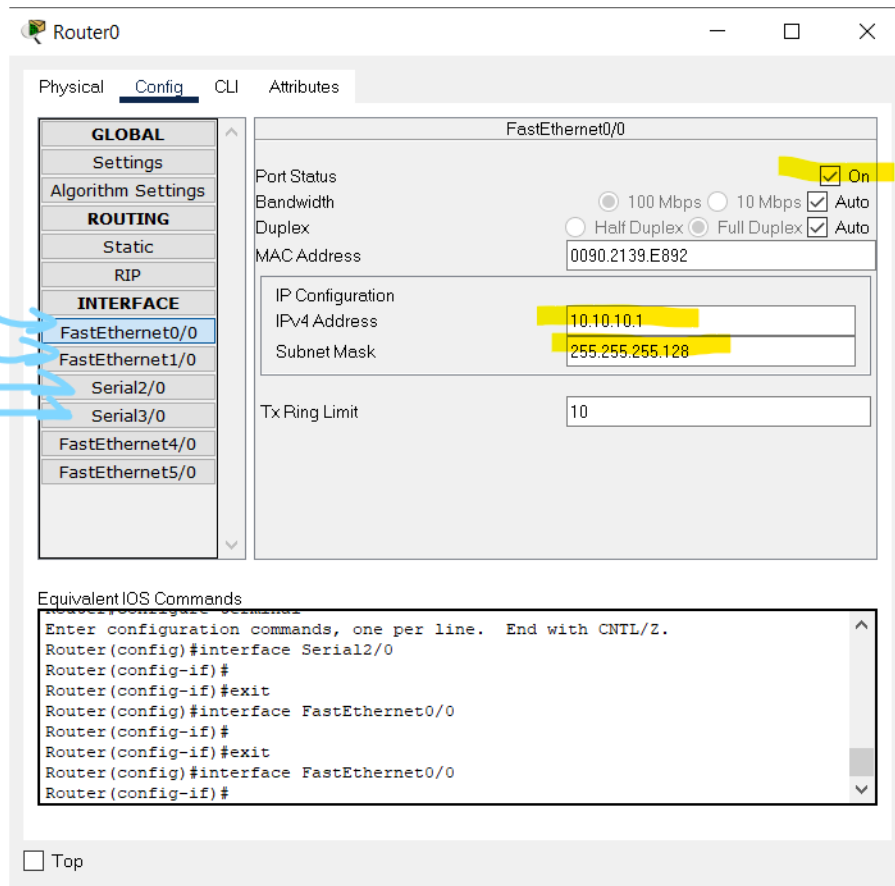
**Note:** DNS server address we get from the question paper.

## Router configuration :

I can configure routers in two ways,

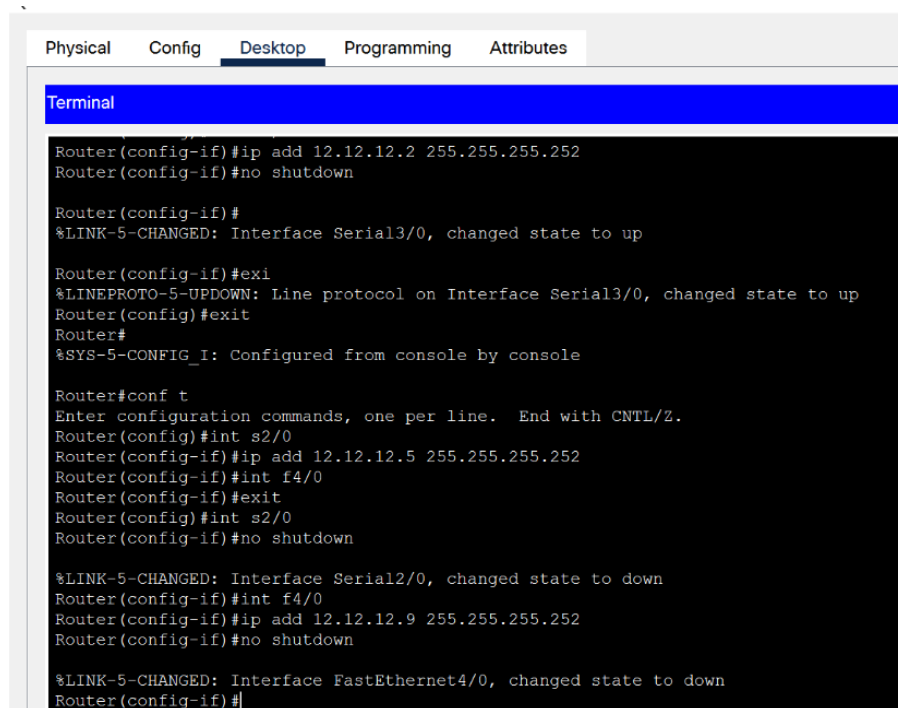
### 1. First method is manually :

Step : Go to config >> FastEthernet0/0 >> On the port >> give Ip corresponding connecting >> configure all connection port .



## 2. From CLI and also from terminal :

From terminal >>



From CLI >> Same command just interface change.

```
LOADING to FULL, Loading Done

Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#ip add 12.12.12.13 255.255.255.252
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#int s3/0
Router(config-if)#ip add
% Incomplete command.
```

## TASK C:

### DNS IP CONFIGURATION:

Here I input the ip address of DNS server that mentioned in the question.

DNS

Physical Config Services **Desktop** Programming Attributes

IP Configuration

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 162.254.248.9

Subnet Mask: 255.255.255.252

Default Gateway: 10.10.10.201

DNS Server: 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address: /

Link Local Address: FE80::260:5CFF:FE63:9CA4

Default Gateway:

Then go to service >> dns >> on the dns service >> add the 4 server with the ip address from vlsn table and server name [www.admin.edu](http://www.admin.edu), [www.ce.edu](http://www.ce.edu), [www.cse.edu](http://www.cse.edu) and [www.uap.edu](http://www.uap.edu).

DNS

Physical Config **Services** Desktop Programming Attributes

**SERVICES**

- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS**
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP

DNS

DNS Service ☒ On ☐ Off

Resource Records

Name: Type: A Record

Address:

Add Save Remove

No.	Name	Type	Detail
0	www.admin.edu	A Record	10.10.10.197
1	www.ce.edu	A Record	10.10.10.196
2	www.cse.edu	A Record	10.10.10.195
3	www.uap.edu	A Record	10.10.10.194



## TASK B:

### OSPF connection :

enable>show ip route>conf t>router ospf 010>network ip address(space) Wild class mask (space)area 19101010.

```
Router>
Router>
Router>
Router>enable
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router ospf 010
Router(config-router)#network 12.12.12.8 0.0.0.3 area 19101010
```

Ctrl+F6 to exit CLI focus

Copy Paste

☐ Top

### Connection check:

First ping from any pc's command prompt .

In first ping here lost a packet cause of security . After input the password and enable router there is no packet loss.

PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
Approximate round trip times in milli-seconds:
  Minimum = 3ms, Maximum = 12ms, Average = 6ms

C:\>ping 10.10.10.195

Pinging 10.10.10.195 with 32 bytes of data:

Request timed out.
Reply from 10.10.10.195: bytes=32 time=4ms TTL=124
Reply from 10.10.10.195: bytes=32 time=13ms TTL=124
Reply from 10.10.10.195: bytes=32 time=14ms TTL=124

Ping statistics for 10.10.10.195:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 4ms, Maximum = 14ms, Average = 10ms

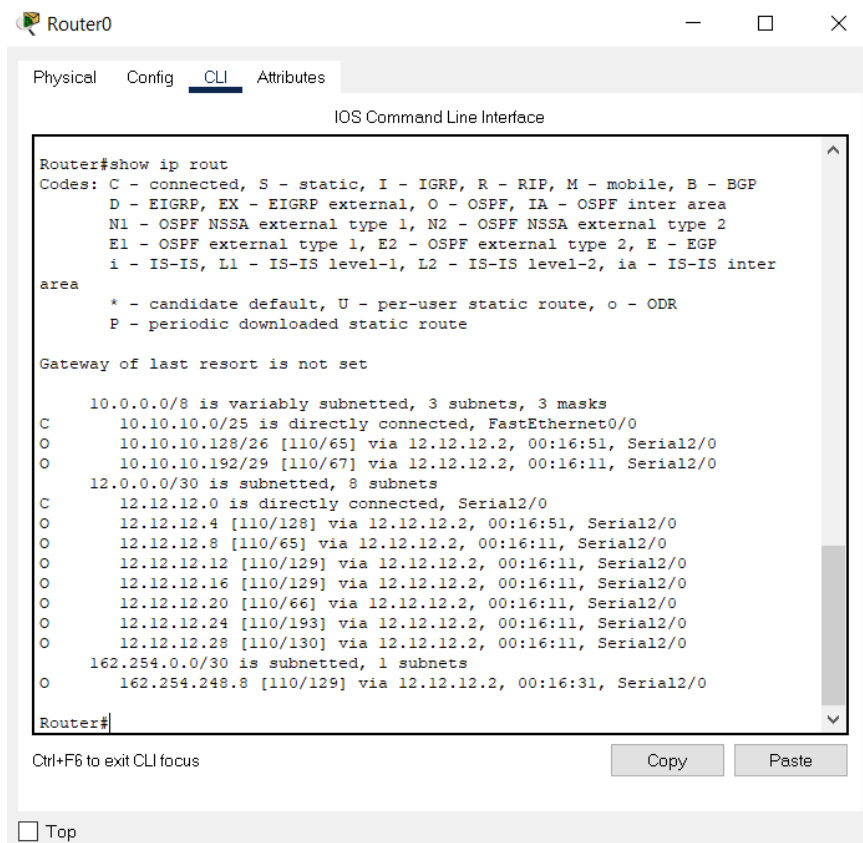
C:\>ping 10.10.10.194

Pinging 10.10.10.194 with 32 bytes of data:

Reply from 10.10.10.194: bytes=32 time=17ms TTL=124
Reply from 10.10.10.194: bytes=32 time=13ms TTL=124
Reply from 10.10.10.194: bytes=32 time=13ms TTL=124
Reply from 10.10.10.194: bytes=32 time=12ms TTL=124

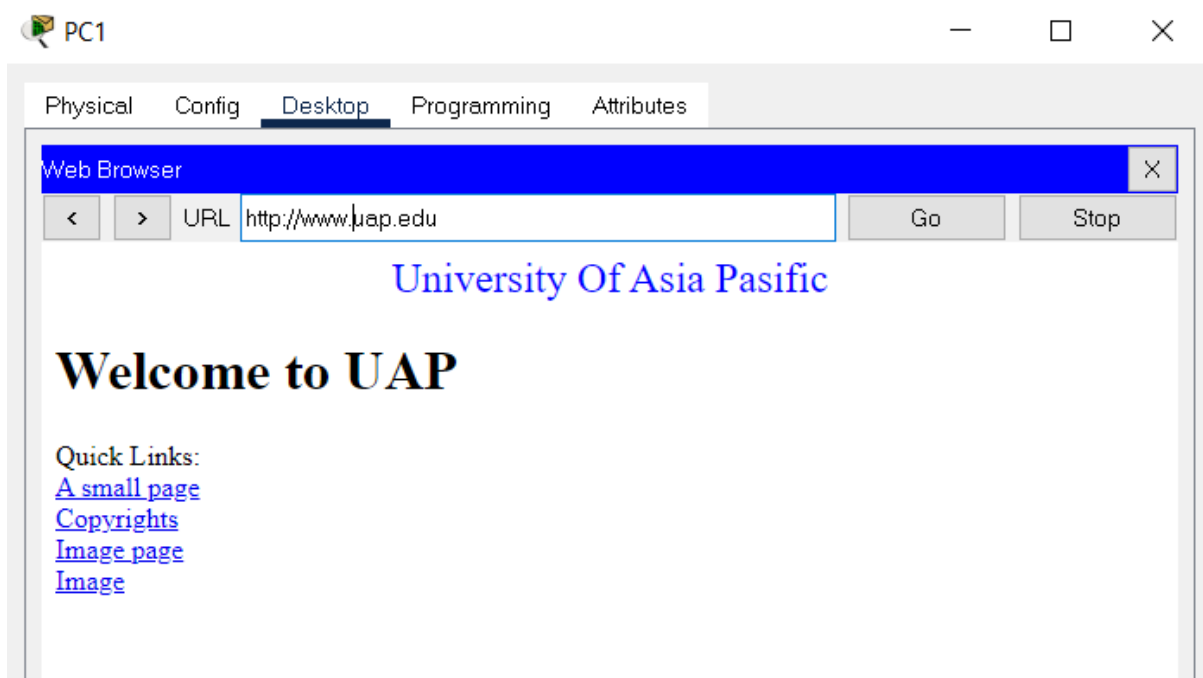
Ping statistics for 10.10.10.194:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 12ms, Maximum = 17ms, Average = 13ms
```

## Network connection check:



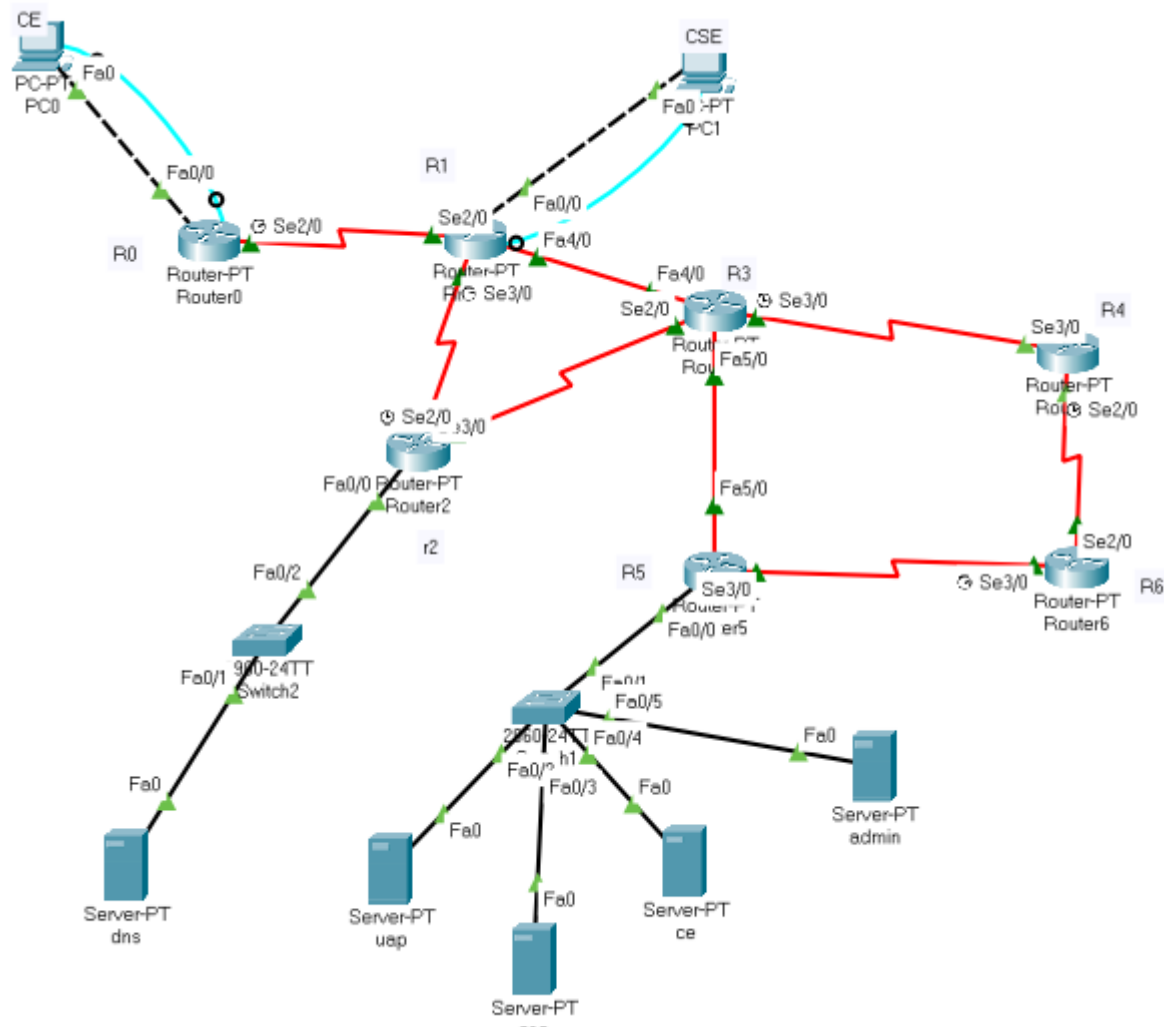
So, the network build properly.

Now we brows for The servers.



## Final design:

After finish All Task the design is ,



**Conclusion:** Final exam Question was Easy , but quite hard to solve and build that network during that time. As usual I see from my last trial , I could complete the network If I got 15 minutes extra . However I enjoy the networking with cisco environment .