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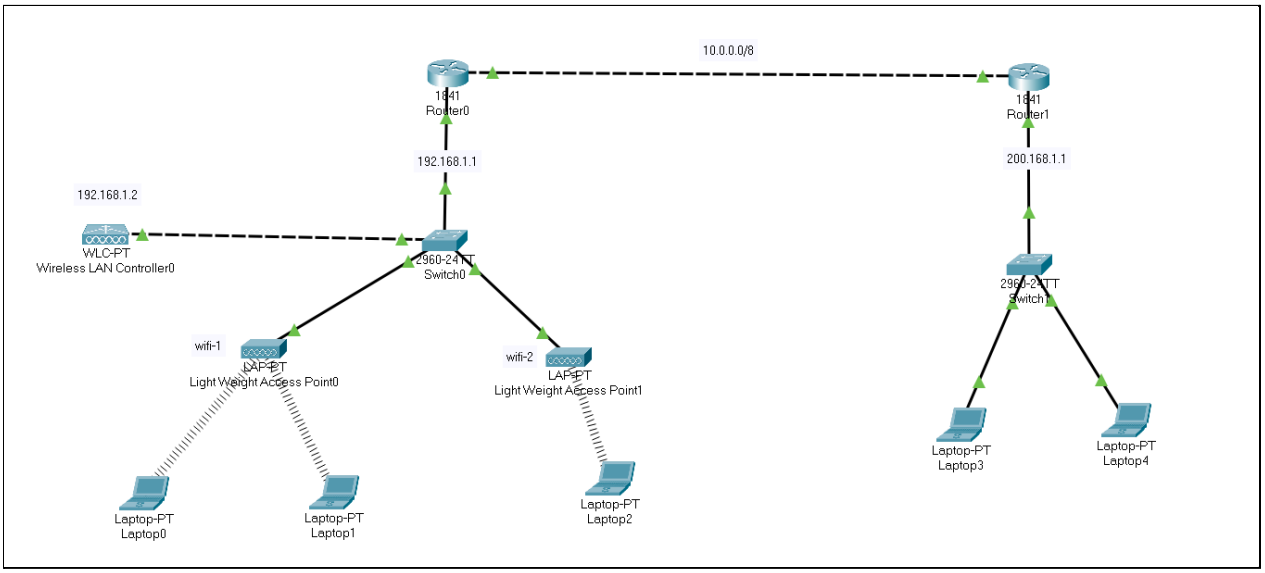
Experiment 6.1

AIM :

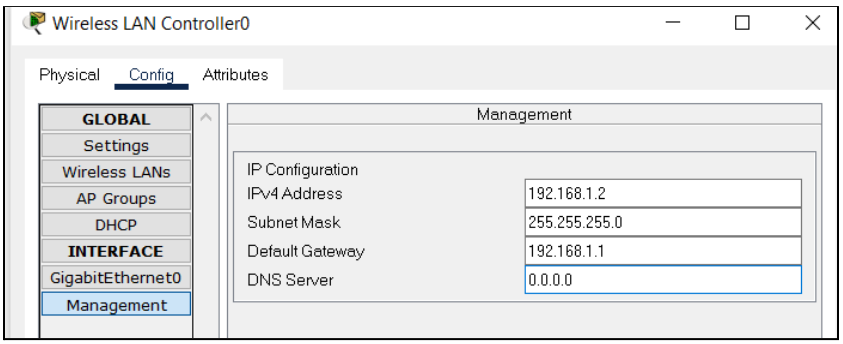
1. Considering a scenario network consisting of at least two LWAPP(lightweight Access Point) with WLC(Wireless Lan Controller), Design this network using packet tracer.
2. Design topology for implementing NAT(Network address Translation) using packet tracer.

DIAGRAM :

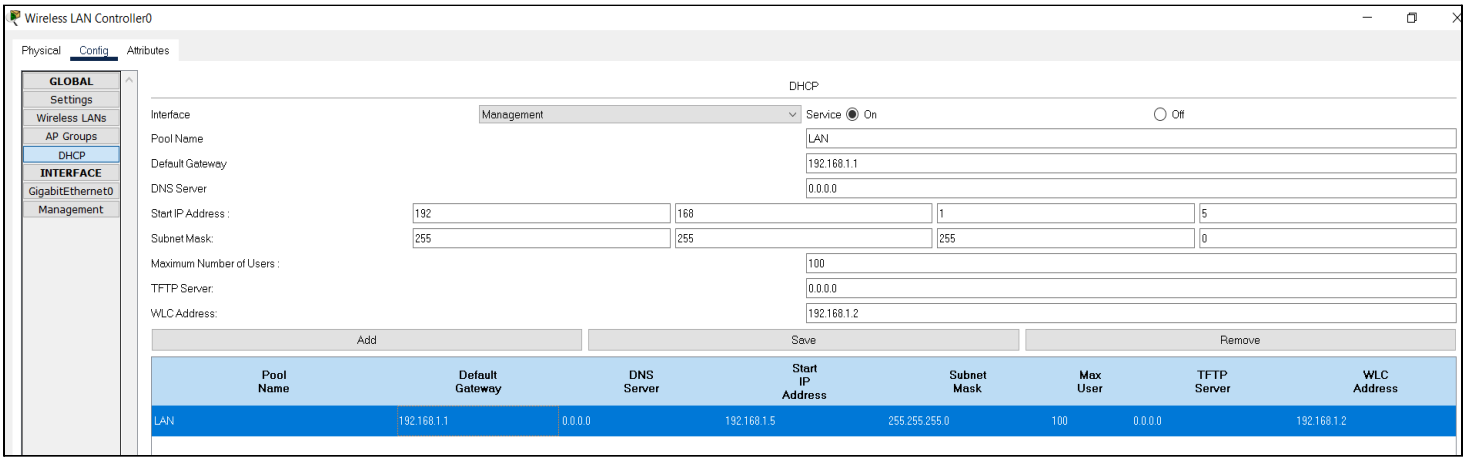


PROCEDURE :

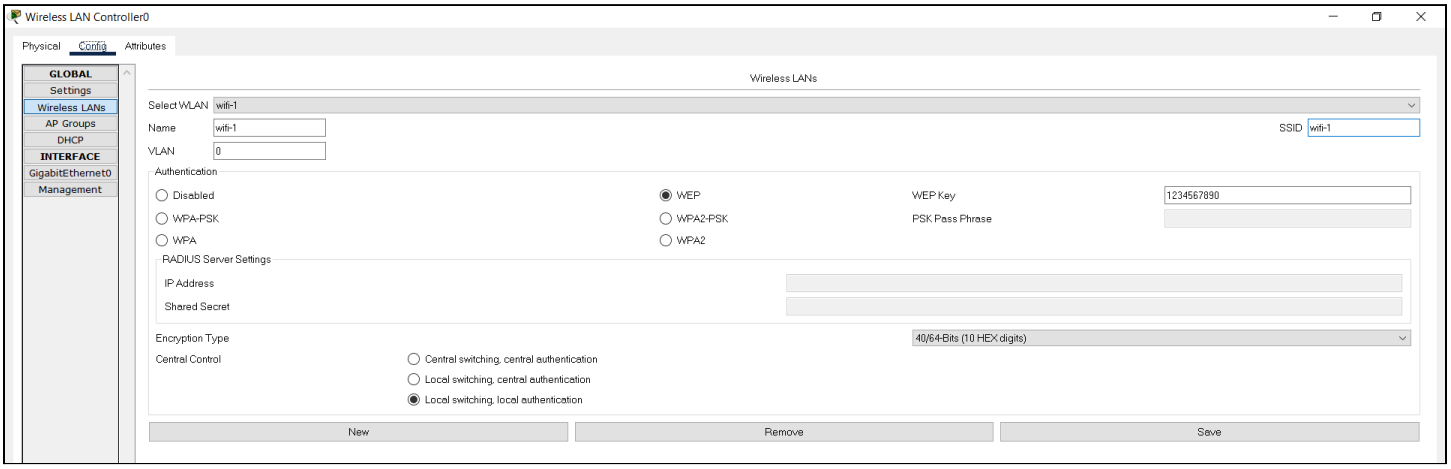
1. Select WLC(wireless lan controller) , two LAP-PT from wireless section. Select two switches (2960-24TT).Select 5 laptops .
2. Make the wired connections as shown above.
3. Now let's start working, click WLC
   -Click WLC>Config>Management , set ip,subnet.. As follows



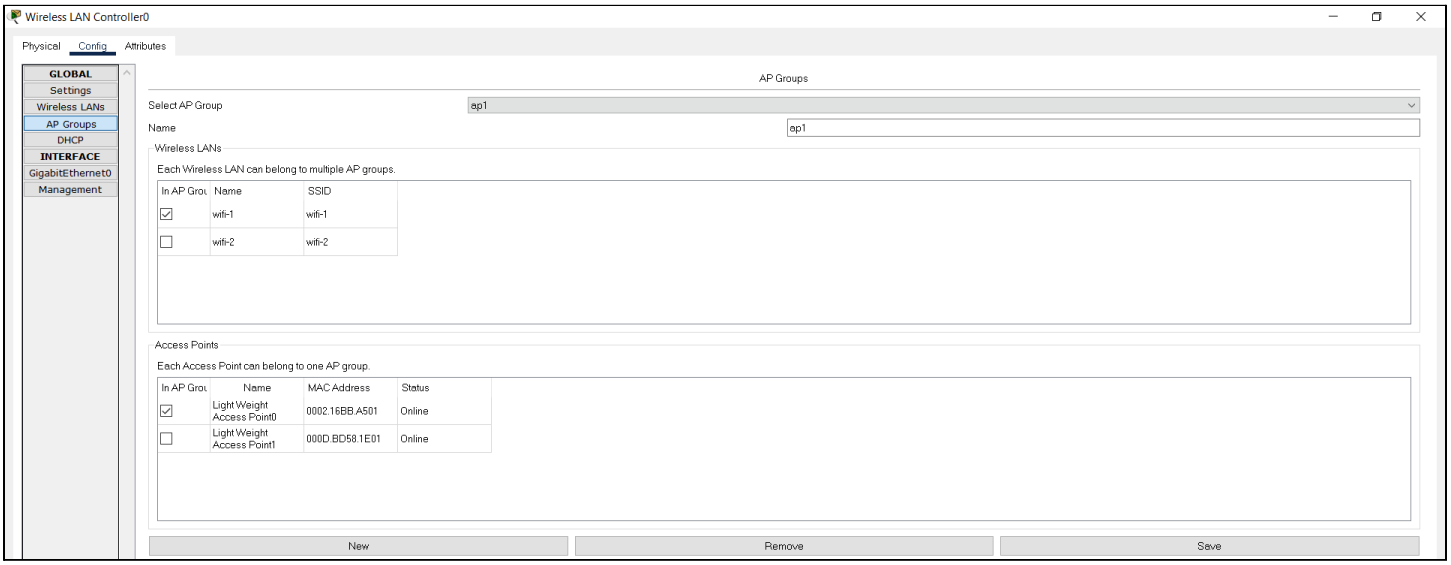
- goto GigabitEthernter and turn it on and keep others as auto
- goto DHCP and make a pool named LAN , do as shown in pic



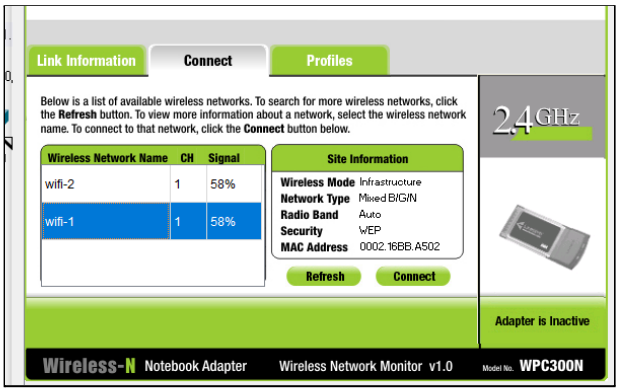
- Goto wireless lans section , here we'll configure our lwap(lightweight access points).
- Give a name ,ssid ,wep key for lwap0 as wifi-1 and click on save.
- Now click on new and do the same for lwap1 as wifi-2 , refer the pic below.
- Keeping wep key as 1234567890 for both for convenience.

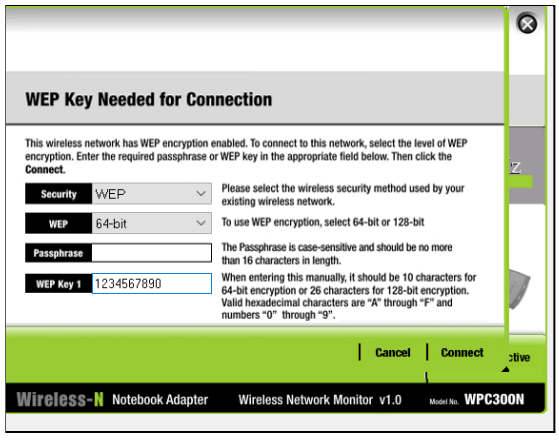


- Now click the lwap0 goto physical tab and insert the **acces_point_power_adapter** module. Do the same for lwap1.
- After doing this goto AP groups and white for a while until you can see some records under the access points section.
- Now in name we have a default-group , deselect all those check boxes and click on save.
- Now click on new give a name ap1 , select wifi1 , lwap0 ,by doing this we mean if someone wants to connect to wifi-1 he will be connected to lwap0.
- Make a similar entry for lwap1 as ap2..



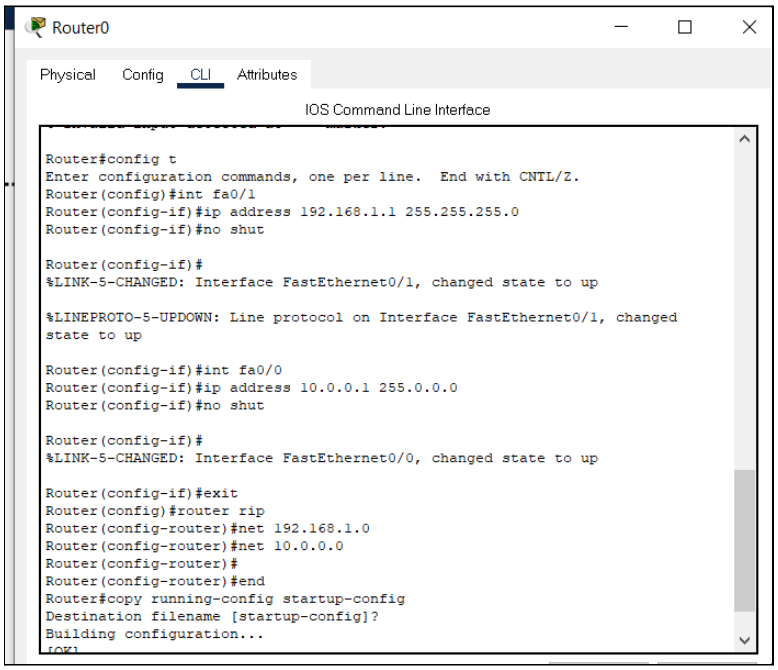
- Now insert WCC300N modules in all the laptops which are not connected with wire. , turn off > insert>turn on.
- Now click laptop0>Desktop>PC wireless>connect>refresh>wifi-1 and enter password 1234567890. Click on connect after doing so we have successfully connected our laptop wirelessly.
-



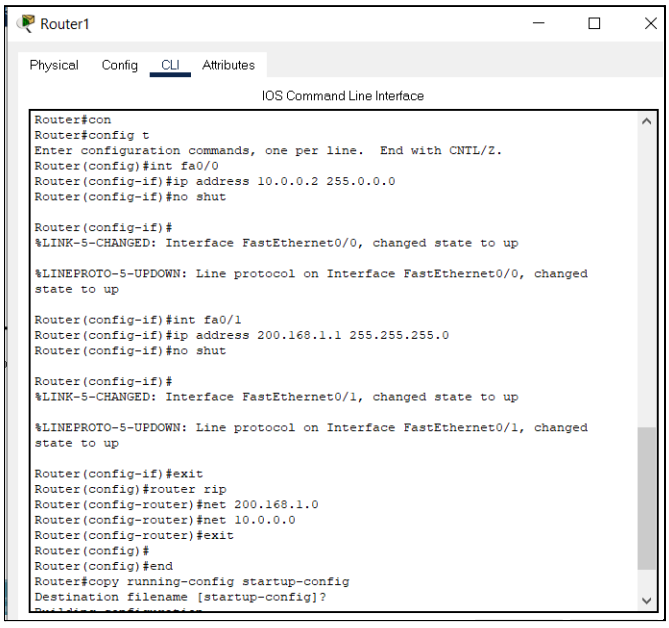


- do the same for laptop1 , connect laptop 2 to wifi-2.

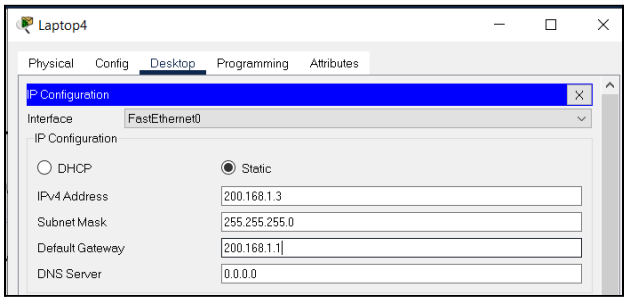
4. Now let's configure the router0
    - Set ips to all interfaces and implement RIP protocol.



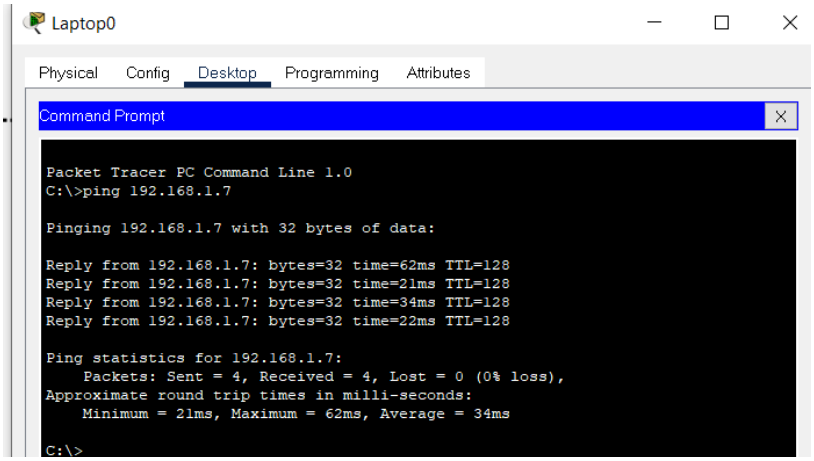
5. Configure the router1



6. Set static ip configuration to laptop3/laptop4 under (200.168.1.0 ntwk).

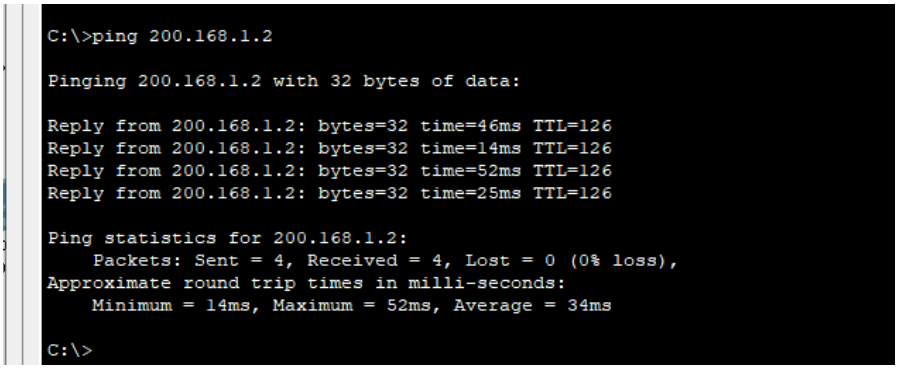


7. Now that we have everything setup, lets test it.
8. From laptop0 ping laptop2 (these two are from different access points)



- This shows that lwaps are working correctly.

9. Now ping laptop3 (of 200.168.1.0 ntwk) .



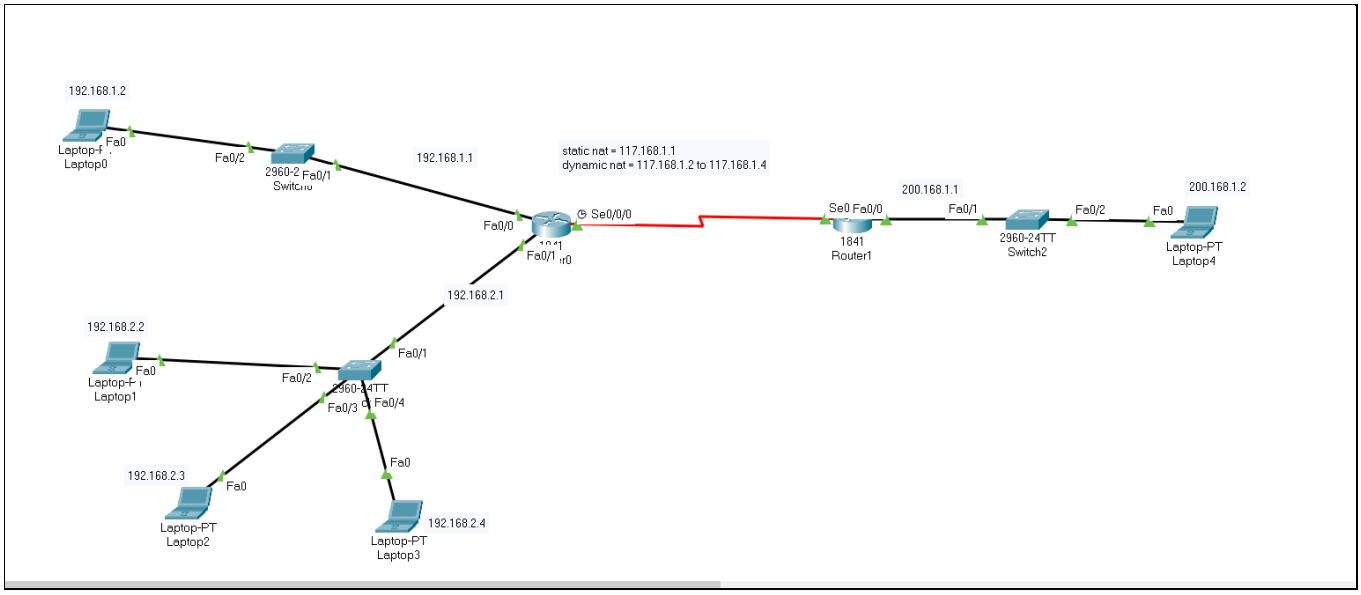
- This proves that the above diagram is working properly

CONCLUSION : A network using at least two LWAPs and one WLC was implemented successfully.

Experiment : 6.2

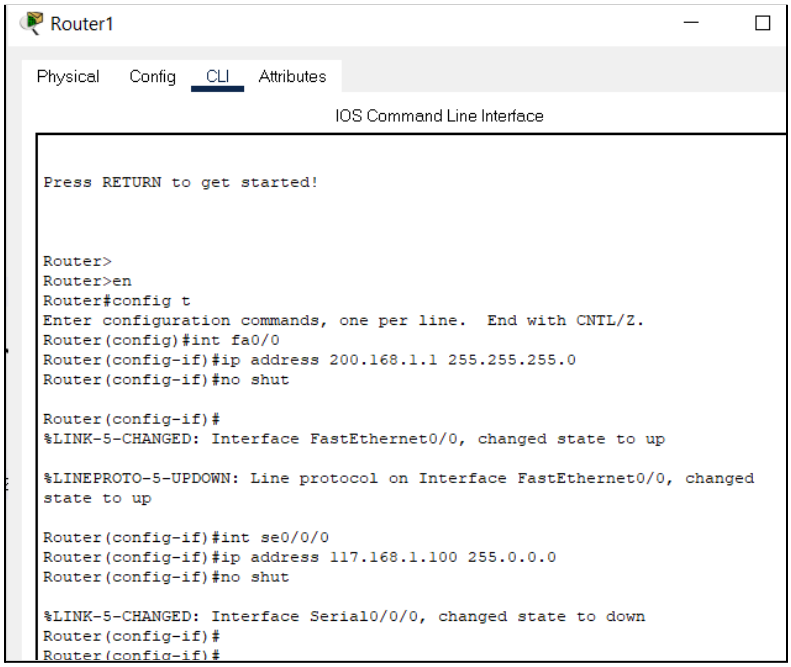
AIM : Design topology for implementing NAT(Network address Translation) using packet tracer.

DIAGRAM :

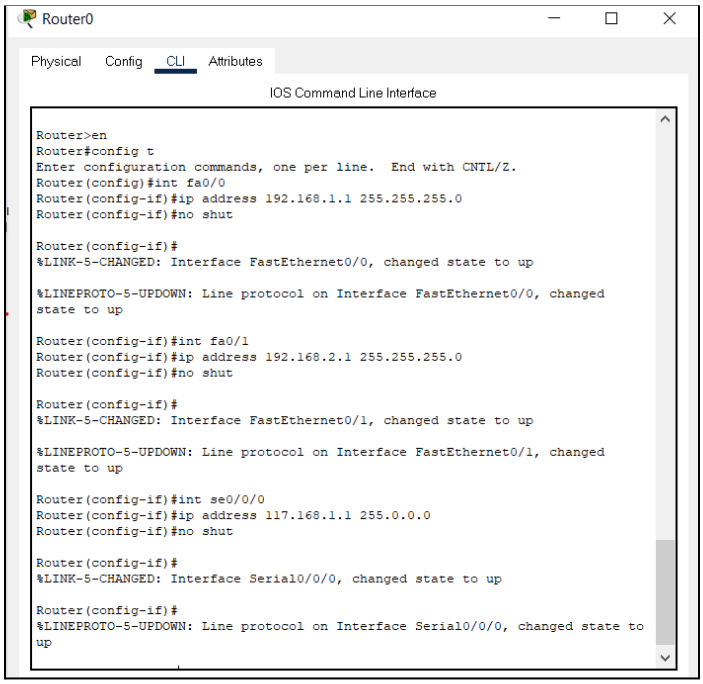


PROCEDURE :

1. Select two 1841 routers , 3 switches, laptops.
2. Insert WIC-2T modules in routers and make the connections as shown above.
3. Make ip address assumptions as shown above.
4. NAT can be done in two ways i) Static NAT ii) Dynamic NAT
5. Let's do Static NAT first
6. Lets configure router1 also implement RIP protocol.



7. Let's configure router0, also implement RIP protocol



8. Now set ip configuration for all the laptops manually (static ips). Be careful with gateway enter properly for each network laptop.
9. Do this for static NAT on router0
    - Coding on interfaces, creating a source static.

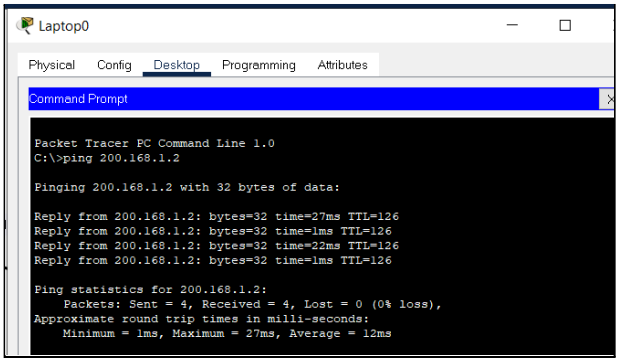
```
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#int fa0/0
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#int se0/0/0
Router(config-if)#ip nat outside
Router(config-if)#exit
Router(config)#ip nat inside source static 192.168.1.2 117.168.1.1
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show ip nat show transaltion
                    ^
% Invalid input detected at '^' marker.

Router#show ip nat tran
Router#show ip nat translations
Pro  Inside global     Inside local       Outside local      Outside global
---  117.168.1.1       192.168.1.2        ---                ---

Router#
```

10. Now let's configure Dynamic NAT.
    - Enter this commands in router0

```
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#
Router(config-if)#int fa0/1
Router(config-if)#ip nat inside
Router(config-if)#exit
Router(config)#acc
Router(config)#access-list 1 permit 192.168.2.1 0.0.0.255
Router(config)#ip nat pool mypool 117.168.1.2 117.168.1.4 netmask 255.0.0.0
Router(config)#ip nat inside source list 1 pool mypool
Router(config)#
```

Ctrl+F6 to exit CLI focus Copy Paste

11. Now that we have everything configured ,we'll test this.
    - From every laptop on the left side of router0 ping the laptop on the right of router1.
    - By doing so we can see if ip's of all laptops are getting translated or not.



- Do the same for all laptops on the left or send a packet using GUI..
- Now click router0 CLI and
    - type show ip nat translations

```
Router#
Router#
Router#show ip nat trans
Router#show ip nat translations
Pro  Inside global     Inside local       Outside local      Outside global
icmp 117.168.1.1:7     192.168.1.2:7      200.168.1.2:7      200.168.1.2:7
icmp 117.168.1.2:1     192.168.2.2:1      200.168.1.2:1      200.168.1.2:1
icmp 117.168.1.3:2     192.168.2.3:2      200.168.1.2:2      200.168.1.2:2
icmp 117.168.1.4:1     192.168.2.4:1      200.168.1.2:1      200.168.1.2:1
---  117.168.1.1       192.168.1.1        ---                ---

Router#
```

- this proves that all laptop ip's were translated properly.

CONCLUSION : A Topology involving NAT was implemented successfully.