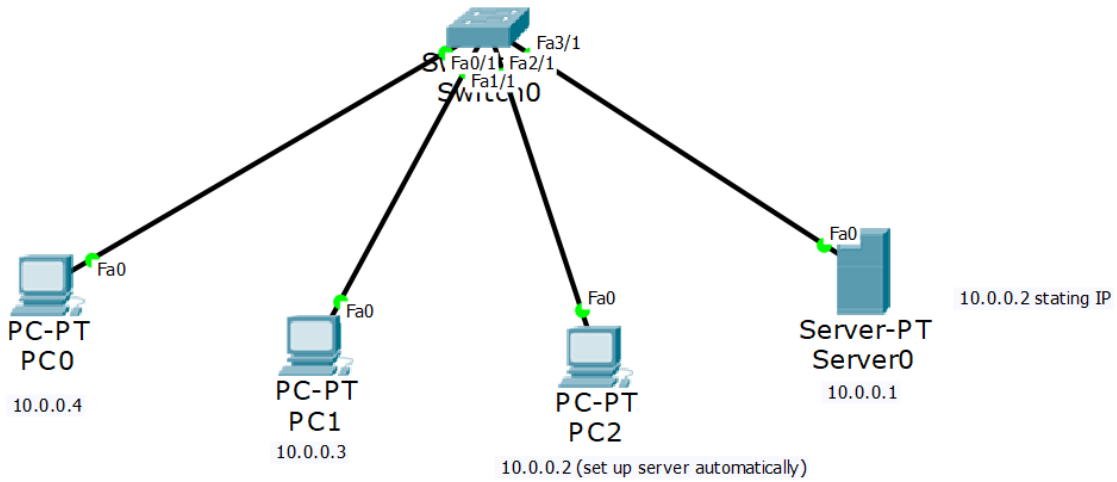
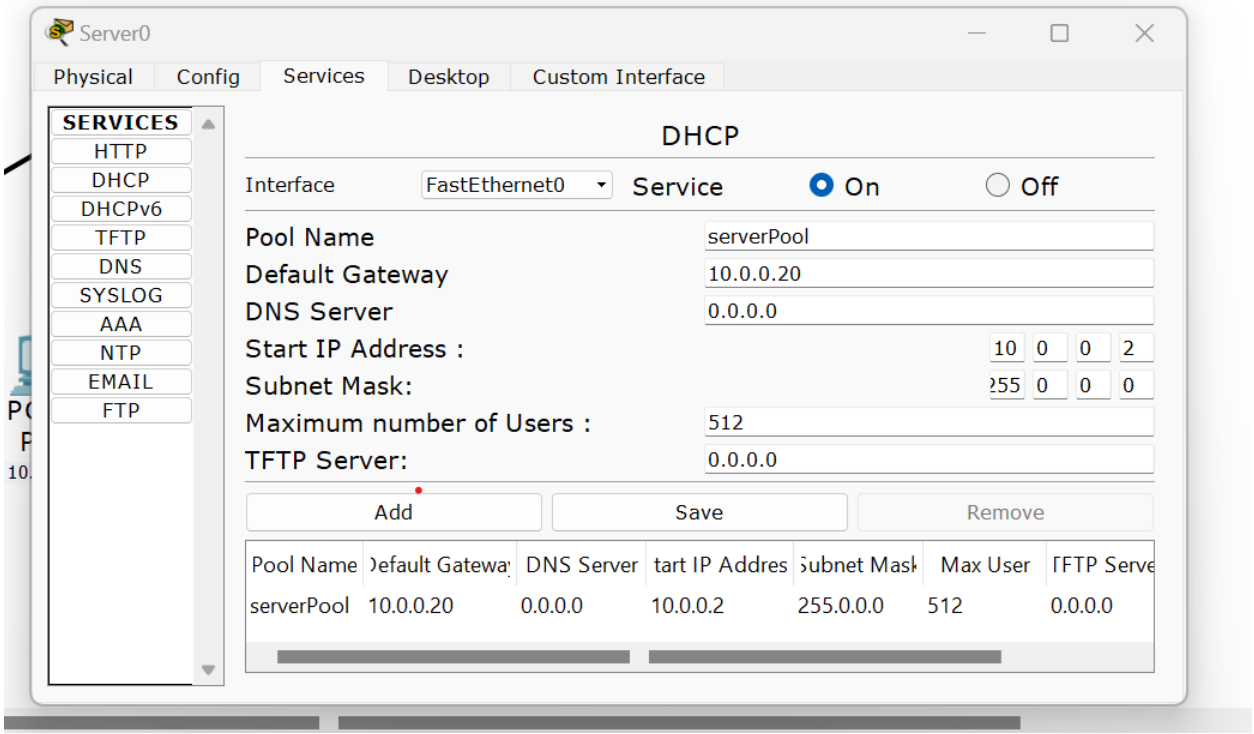
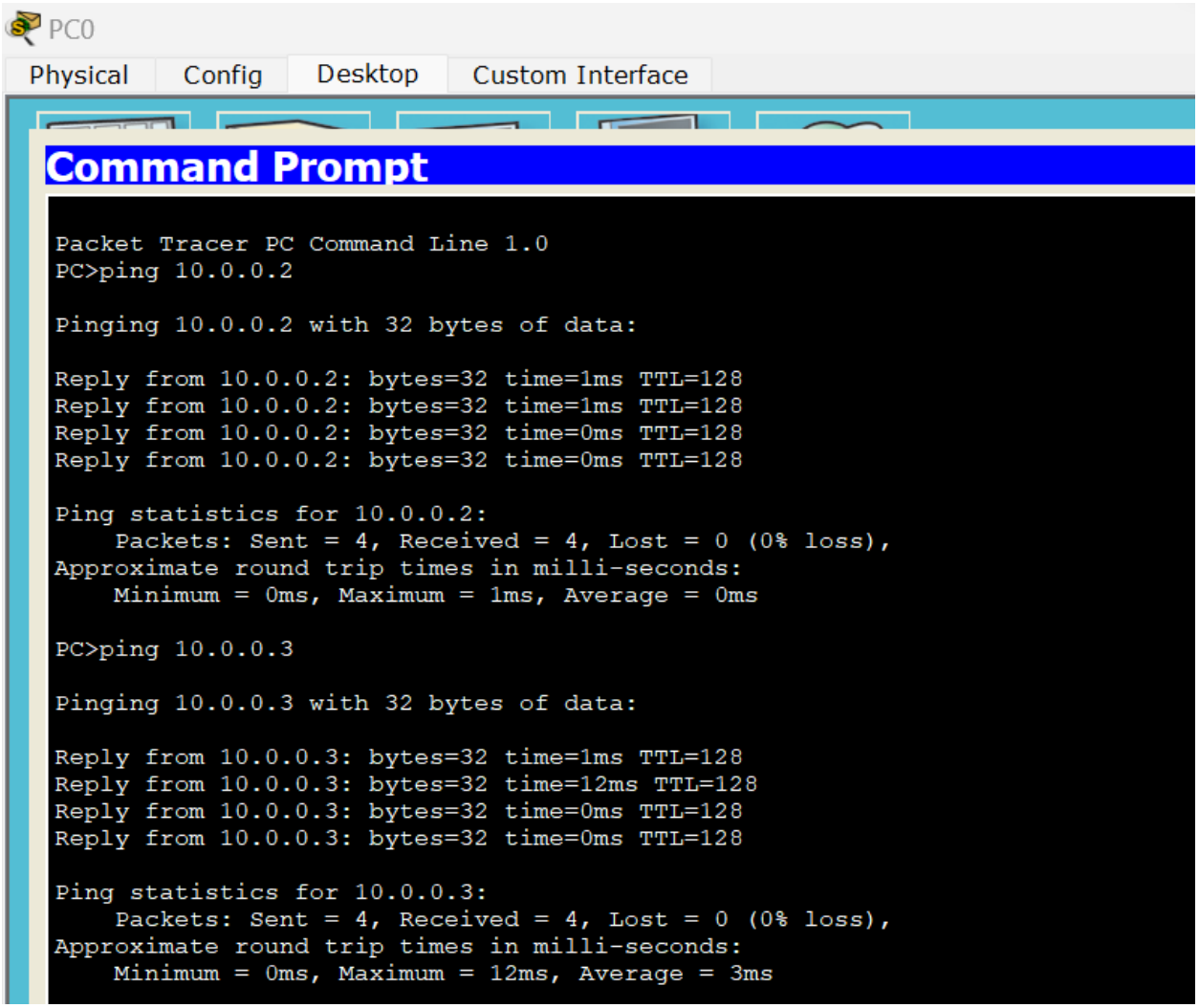
LAB4: Configure DHCP within a LAN and outside LAN.
4A: Within a LAN.

Topology:



Server 0 :




PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.2
Pinging 10.0.0.2 with 32 bytes of data:
Reply from 10.0.0.2: bytes=32 time=1ms TTL=128
Reply from 10.0.0.2: bytes=32 time=1ms TTL=128
Reply from 10.0.0.2: bytes=32 time=0ms TTL=128
Reply from 10.0.0.2: bytes=32 time=0ms TTL=128
Ping statistics for 10.0.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms
PC>ping 10.0.0.3
Pinging 10.0.0.3 with 32 bytes of data:
Reply from 10.0.0.3: bytes=32 time=1ms TTL=128
Reply from 10.0.0.3: bytes=32 time=12ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Reply from 10.0.0.3: bytes=32 time=0ms TTL=128
Ping statistics for 10.0.0.3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 12ms, Average = 3ms

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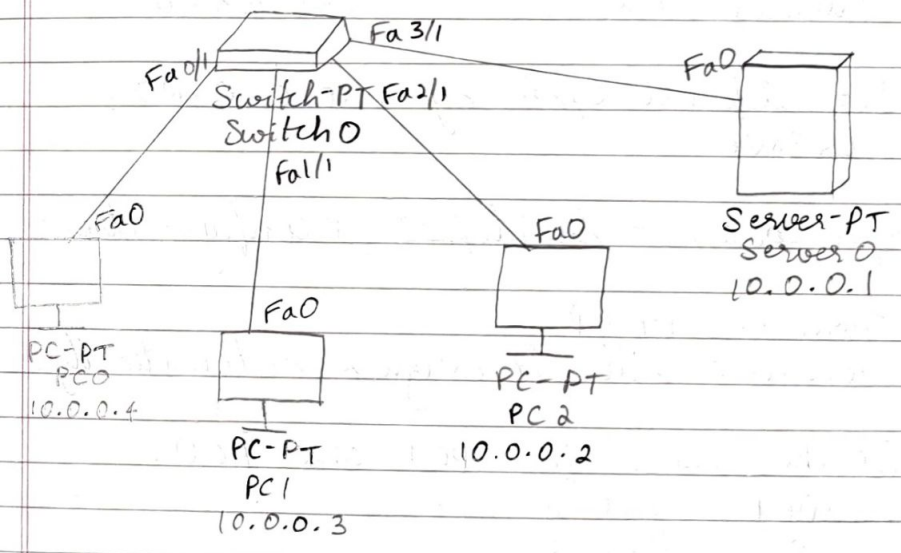
Lab 4:

Aim: Configure DHCP within a LAN and outside LAN.

4A :-

Topology :



Procedure

1. The network is started by selecting end devices PC-PTs, PC0, PC1 and PC2. Select Server-PT too.

2. Select a generic switch / Switch-PT and place all of them on the workspace.

3. Connect PCs and Server to switch using copper Straight-Through cable.

4. Set the IP address of server 0
Desktop → IP configuration → IP Address = 10.0.0.1
Click on subnet mask.

5. Server 0 → Services → DHCP → On

Set start IP address as 10.0.0.2
Subnet Mask: 255.0.0.0

6. Set default Gateway : 10.0.0.20.
↳ Save

7. Open PC2, → Desktop → IP configuration

Turn on DHCP
10.0.0.2 will be assigned automatically.

8. Do the same for PC1 and PC0.
PC1 : 10.0.0.3
PC0 : 10.0.0.4

Ping Output:
In PC0
PC > ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2 : bytes = 32 time = 1ms TTL = 128

Reply from 10.0.0.2: bytes = 32 time = 1ms : TTL = 128
Reply from 10.0.0.2: bytes = 32 time = 0ms TTL = 128
Reply from 10.0.0.2: bytes = 32 time = 0ms TTL = 128

Ping statistics for 10.0.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0 ms.

Observation :-

→ We observe that IP addresses are set automatically to PC0, PC1 and PC2 when we enable DNCP IP configuration.

→ This is useful for large networks with 100s of PCs.

→ For all PCs Gateway is automatically set to 10.0.0.20.

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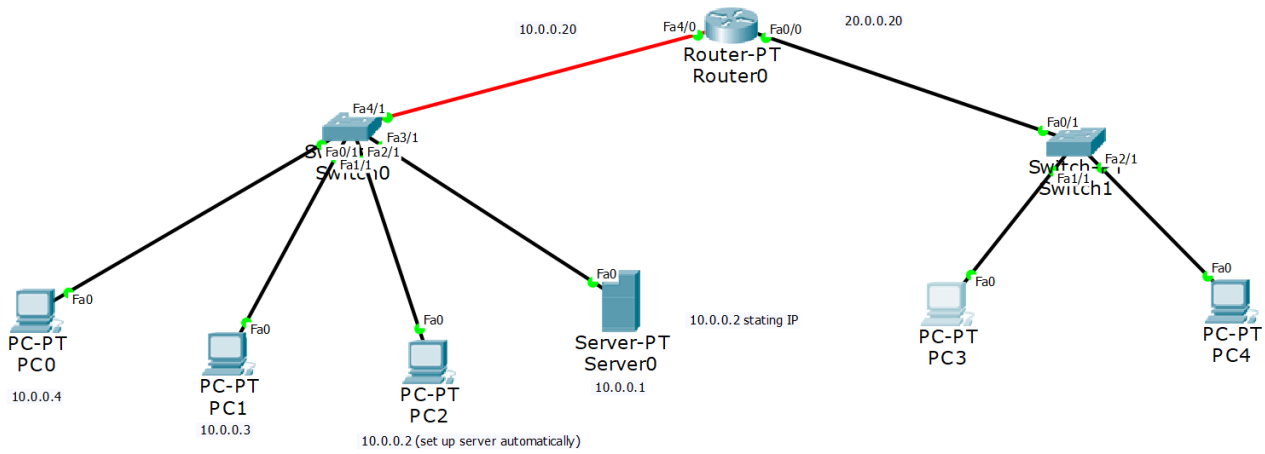
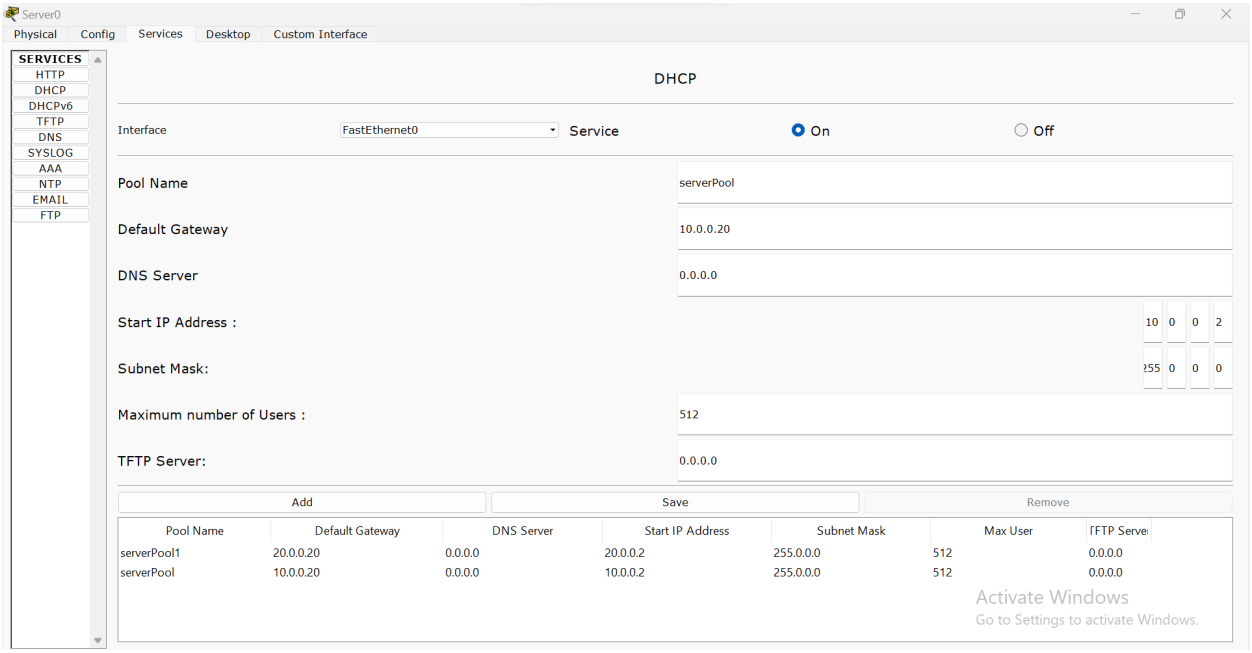
4A: Outside a LAN.

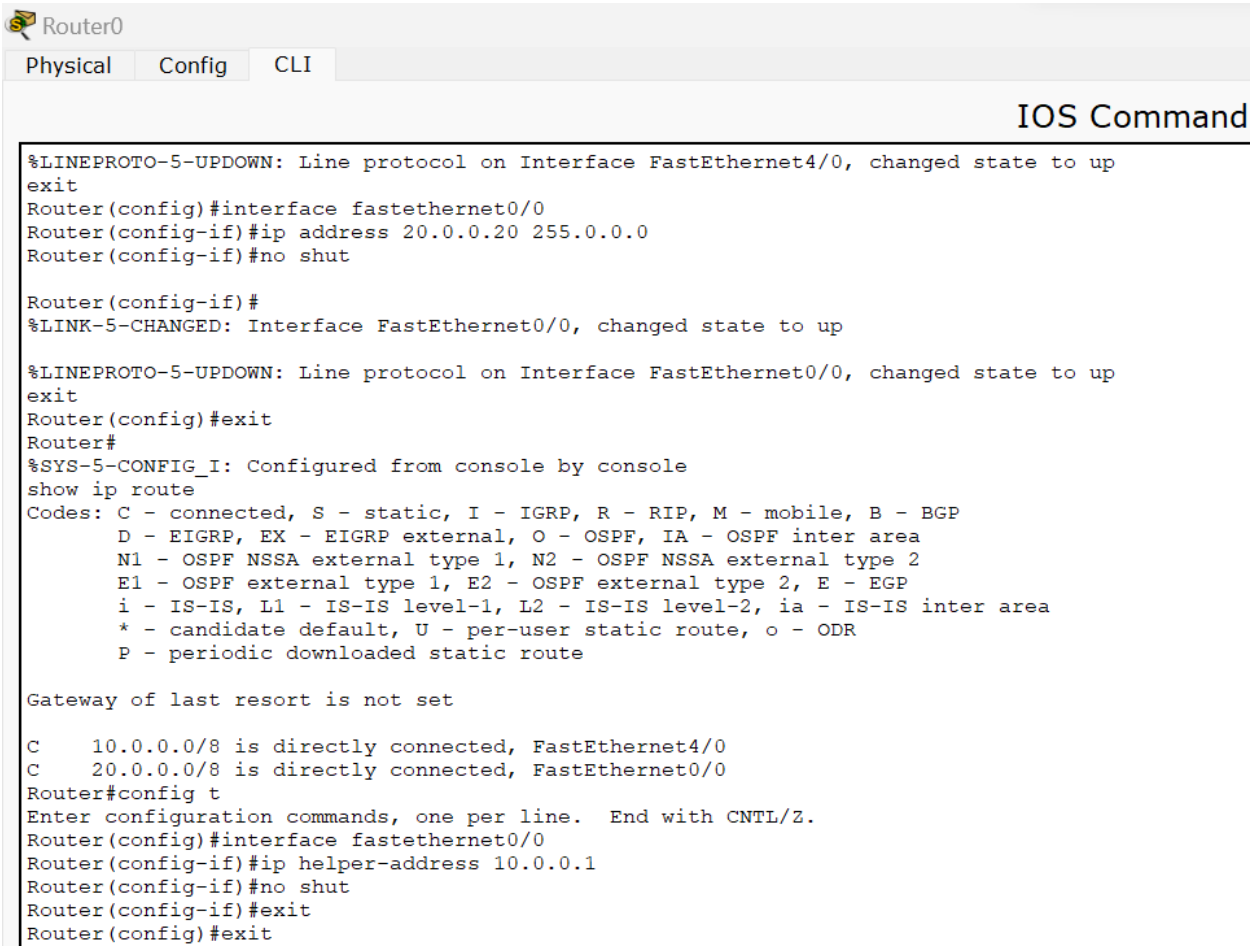
Topology:



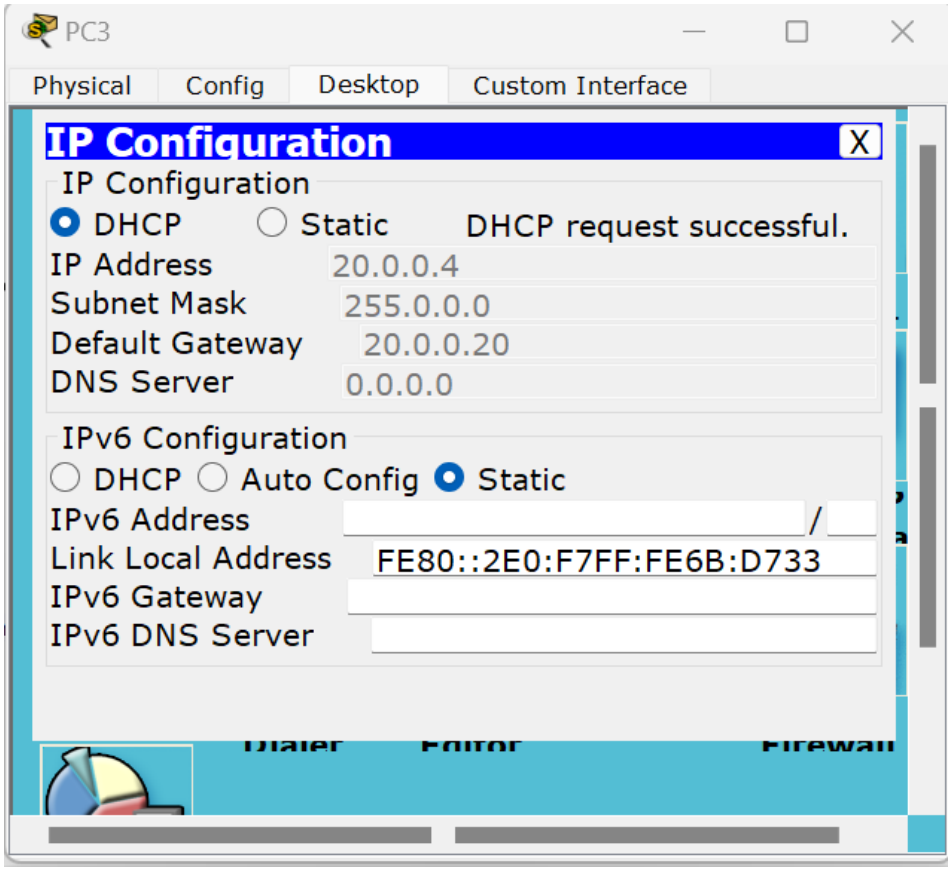
Server 0 :



Router 0 :



Automation IP is assigned in the PCs by Server 0 via DHCP:



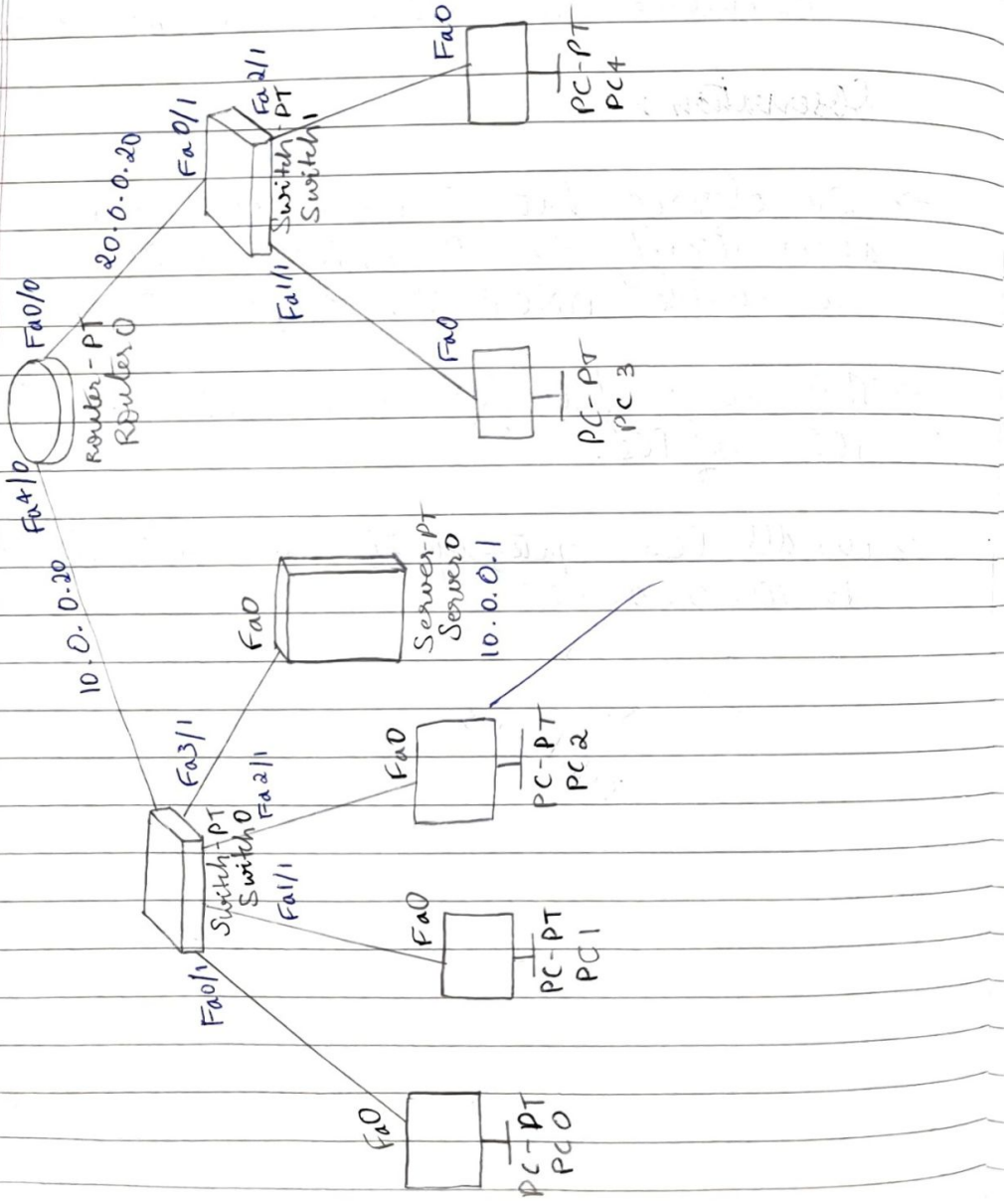
Command Prompt:

```
PC>ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data:

Reply from 20.0.0.2: bytes=32 time=1ms TTL=127
Reply from 20.0.0.2: bytes=32 time=0ms TTL=127
Reply from 20.0.0.2: bytes=32 time=0ms TTL=127
Reply from 20.0.0.2: bytes=32 time=0ms TTL=127

Ping statistics for 20.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

4B: (Continuation of 4A)

Aim: Configure DHCP ~~with~~ outside LAN.

Topology:



Procedure :-

1. To the topology created in 4A, connect a ~~Ro~~ Generic Router 0 using copper Straight through wire.

2. To a Switch 1, connect 2 PCs, PC0 and PC1.

3. Connect the step 2 topology to Router 0.

4. In Router 0, open CLI.
   Set IP addresses for interfaces.
   Fa 4/0 : 10.0.0.20
   Fa 0/0 : 20.0.0.20

5. In Router 0,
   interface fastethernet 0/0
   Router (config-if) # ip helper-address 10.0.0.1
   Router (config-if) # no shoshut

6. In Server 0,
   ↳ Config → Settings → Gateway: 10.0.0.20

7. In server 0,
   ↳ Services → DHCP → Pool Name: serverPool1
   Set Default Gateway : 20.0.0.20

   Start IP Address : 20.0.0.2
   Subnet Mask : 255.0.0.0

   ↳Add.

8. PC 3
↳ Desktop ↳ IP Configuration ↳ DHCP
20.0.0.2 set automatically for PC 3

PC 4
20.0.0.3 set automatically.

Ping Output
on PC 0

PC> ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data:

Reply from 20.0.0.2: bytes=32 time=1ms TTL=127
Reply from 20.0.0.2: bytes=32 time=0ms TTL=127
Reply from 20.0.0.2: bytes=32 time=0ms TTL=127
Reply from 20.0.0.2: bytes=32 time=0ms TTL=127

~~Observation:~~

→ ~~IP address is set Automa~~
Ping statistics for 20.0.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 1ms, Average = 0ms

Observation:

→ IP addresses are set automatically on PC3 & PC4 by Server 0.

→ PC3 : 20.0.0.2
PC4 : 20.0.0.3

→ We can successfully ping PC3 from PC0 with no loss.