LINUX NETWORKING MODULE 5 ASSESSMENT SOLUTION

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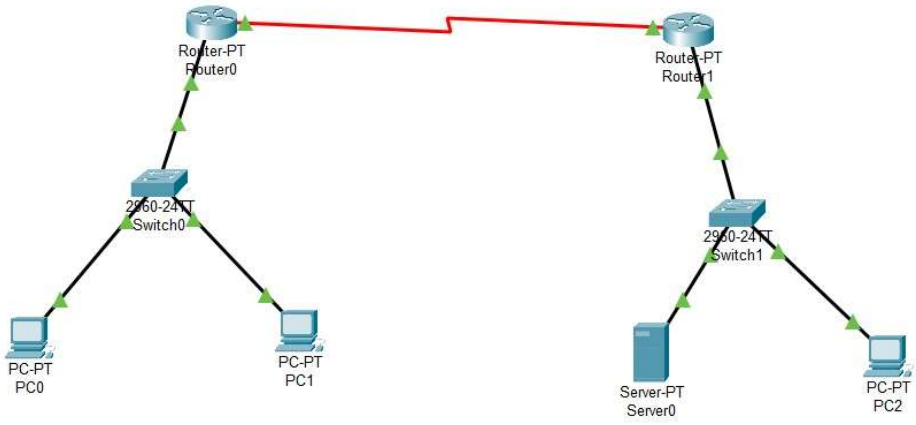
7) In Cisco Packet Tracer, create a small network with multiple devices. Use private IP addresses on the PCs and configure the router to perform NAT to allow the PCs to access the internet

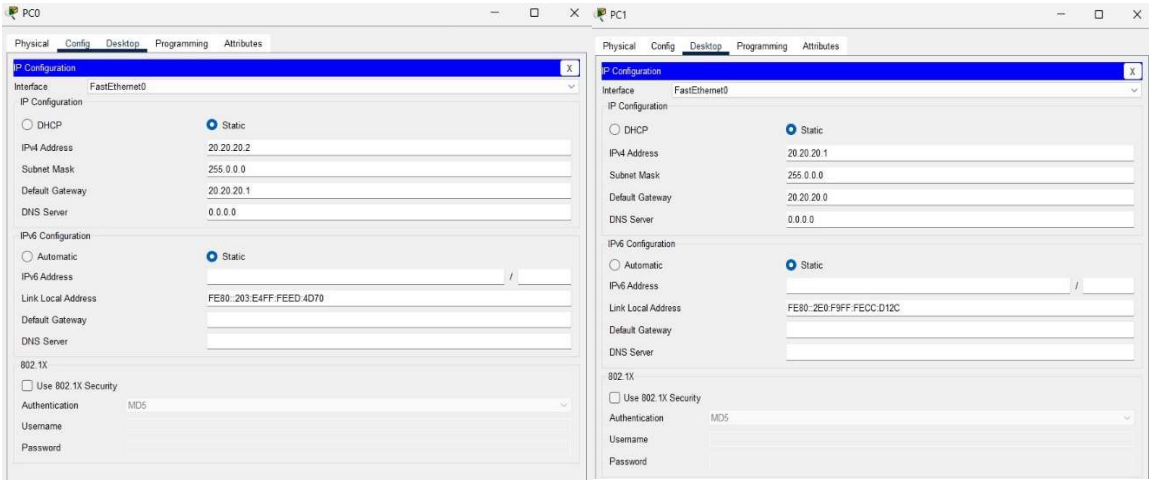
- Task: Test the NAT configuration by pinging an external IP address from the PCs and capture the traffic.
- What is the source IP address before and after NAT?

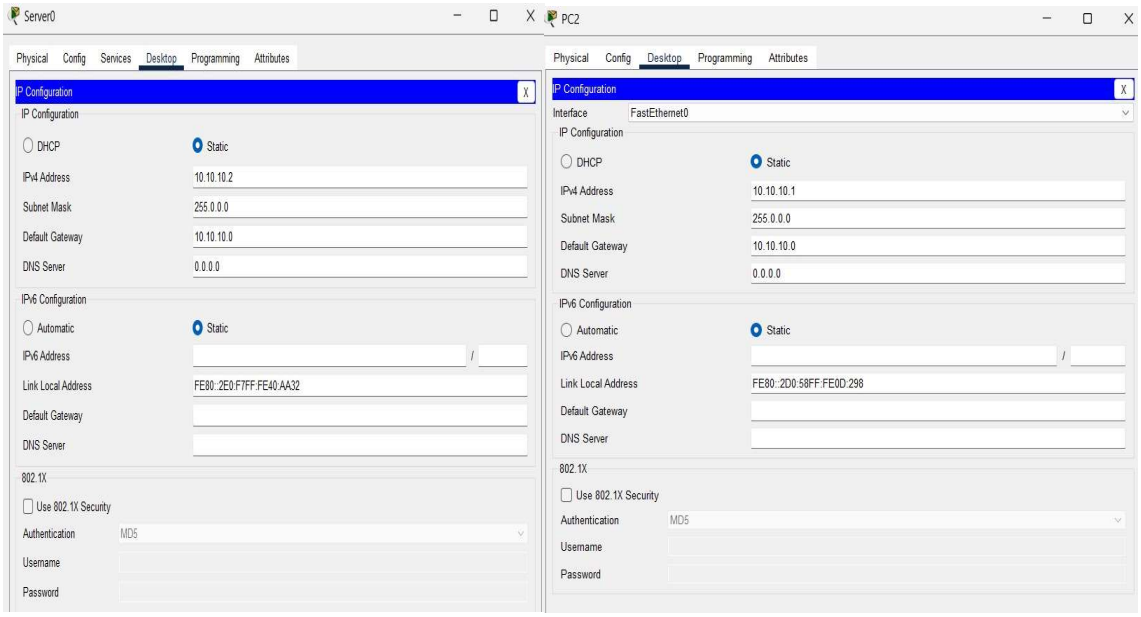
- **Private Network**: Uses IP addresses in the 20.x.x.x range.
- **Public Network**: Uses IP addresses in the 10.x.x.x range.
- NAT will be configured on **Router** to enable private-to-public communication.

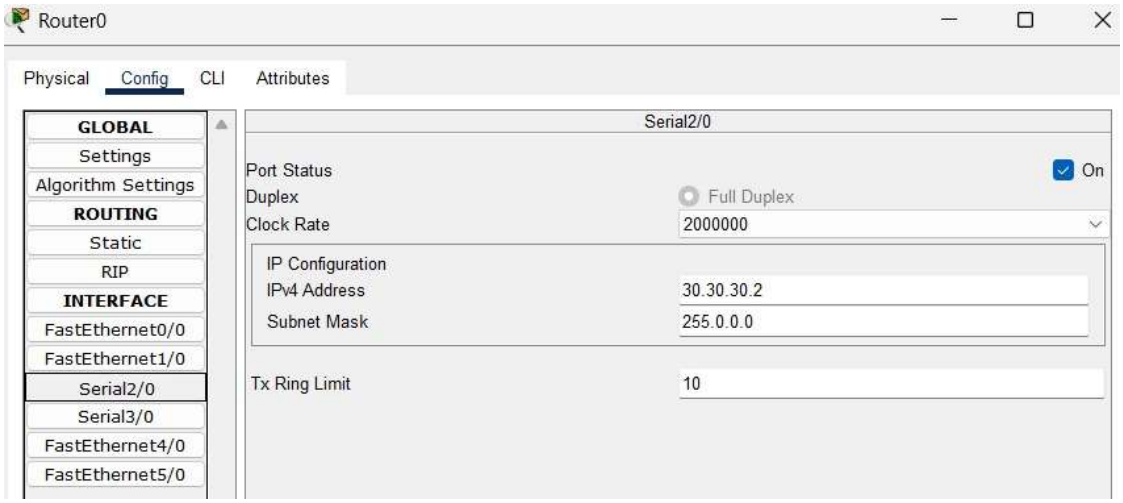
Topology:

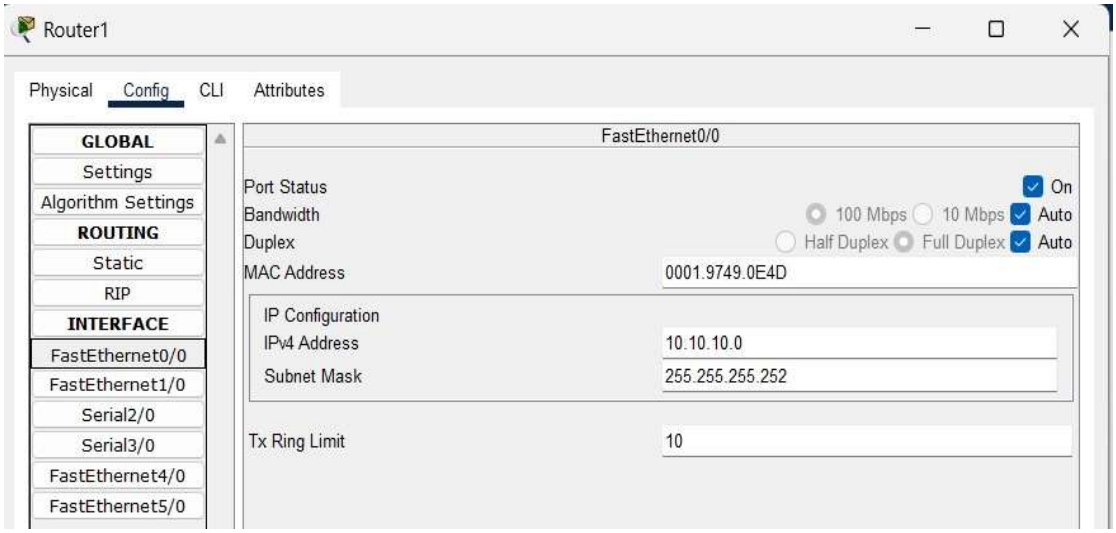


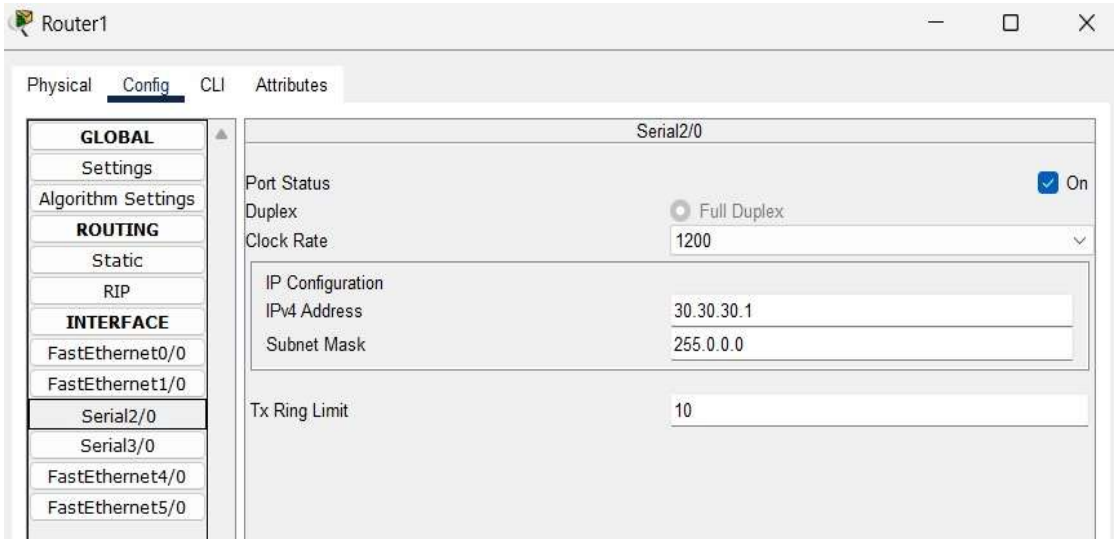
IP configuration:

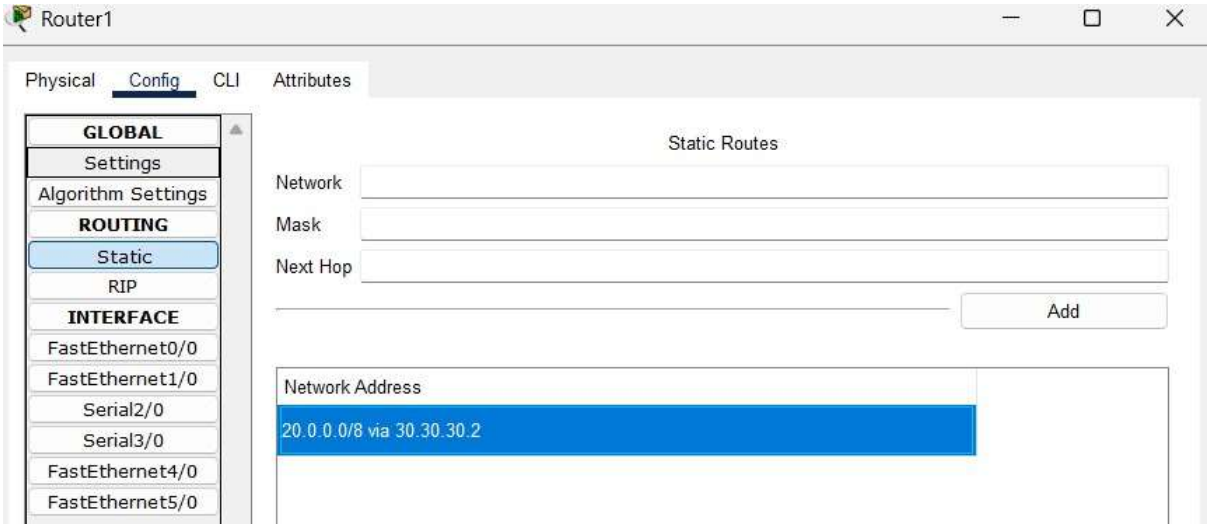





Router0
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
2000000
IP Configuration
IPv4 Address
30.30.30.2
Subnet Mask
255.0.0.0
Tx Ring Limit
10


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
FastEthernet0/0
Port Status
On
Bandwidth
100 Mbps
10 Mbps
Auto
Duplex
Half Duplex
Full Duplex
Auto
MAC Address
0001.9749.0E4D
IP Configuration
IPv4 Address
10.10.10.0
Subnet Mask
255.255.255.252
Tx Ring Limit
10


Router1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
INTERFACE
FastEthernet0/0
FastEthernet1/0
Serial2/0
Serial3/0
FastEthernet4/0
FastEthernet5/0
Serial2/0
Port Status
On
Duplex
Full Duplex
Clock Rate
1200
IP Configuration
IPv4 Address
30.30.30.1
Subnet Mask
255.0.0.0
Tx Ring Limit
10



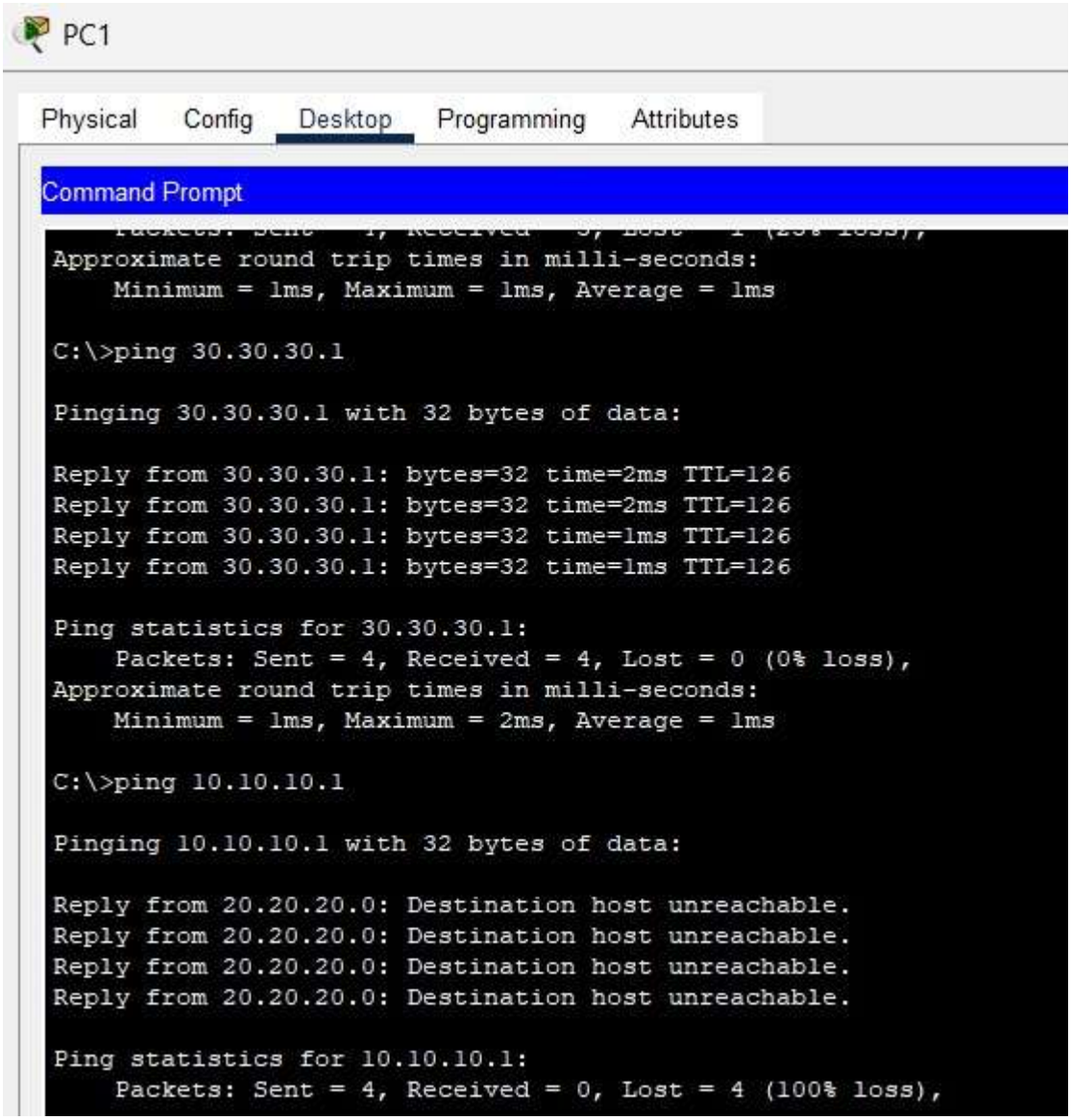
Nat inside and outside configuration:

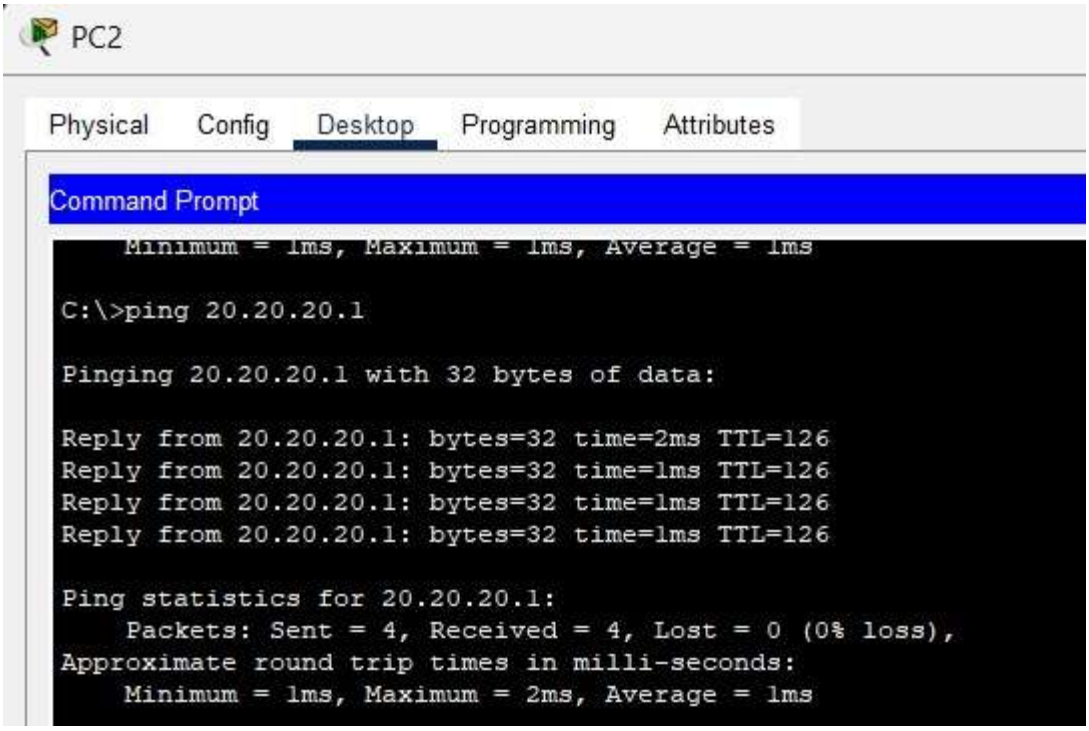
```
Router(config)#ip nat inside source static 10.10.10.1 30.30.30.1
Router(config)#ip nat inside source static 10.10.10.2 30.30.30.1
Router(config)#
Router(config)#
Router(config)#interface FastEthernet0/0
Router(config-if)#ip nat inside
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#ip nat outside
Router(config-if)#exit
```

Packet transmission Test:

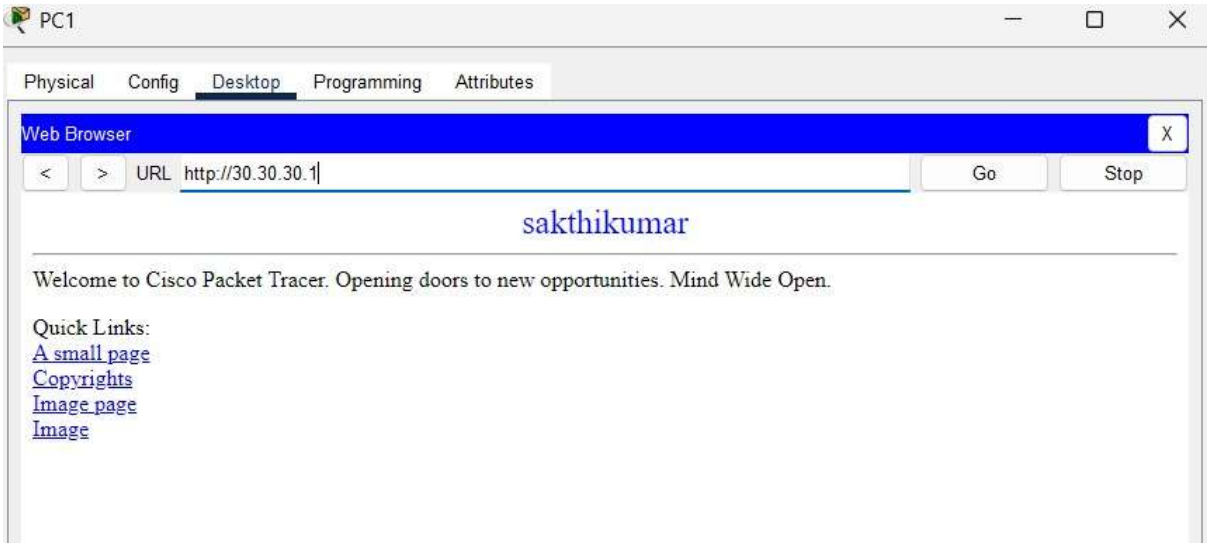
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Failed	PC2	PC1	ICMP		0.000	N	7	(edit)	(delete)
	Successful	PC2	PC1	ICMP		0.000	N	8	(edit)	(delete)
	Successful	PC2	PC1	ICMP		0.000	N	9	(edit)	(delete)

Ping test;


PC1
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 1ms, Average = 1ms
C:\>ping 30.30.30.1
Pinging 30.30.30.1 with 32 bytes of data:
Reply from 30.30.30.1: bytes=32 time=2ms TTL=126
Reply from 30.30.30.1: bytes=32 time=2ms TTL=126
Reply from 30.30.30.1: bytes=32 time=1ms TTL=126
Reply from 30.30.30.1: bytes=32 time=1ms TTL=126
Ping statistics for 30.30.30.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 2ms, Average = 1ms
C:\>ping 10.10.10.1
Pinging 10.10.10.1 with 32 bytes of data:
Reply from 20.20.20.0: Destination host unreachable.
Reply from 20.20.20.0: Destination host unreachable.
Reply from 20.20.20.0: Destination host unreachable.
Reply from 20.20.20.0: Destination host unreachable.
Ping statistics for 10.10.10.1:
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),



Server connectivity:



Nat table :

```
Router#show ip nat translations
Pro  Inside global     Inside local       Outside local      Outside global
---  30.30.30.1        10.10.10.2         ---                ---
tcp 30.30.30.1:80      10.10.10.2:80      20.20.20.1:1027    20.20.20.1:1027
tcp 30.30.30.1:80      10.10.10.2:80      20.20.20.1:1028    20.20.20.1:1028
tcp 30.30.30.1:80      10.10.10.2:80      20.20.20.1:1029    20.20.20.1:1029
```

NAT Table for Router1

Protocol	Inside Global	Inside Local	Outside Local	Outside Global
---	30.30.30.1	10.10.10.1	---	---
---	30.30.30.1	10.10.10.2	---	---
tcp	30.30.30.1:80	10.10.10.2:80	20.20.20.1:1027	20.20.20.1:1027
tcp	30.30.30.1:80	10.10.10.2:80	20.20.20.1:1028	20.20.20.1:1028

These tables shows the transitions of source IP before and after NAT.