

# Lab – 1: GNS3 and Cisco Packet Tracer Documentation

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## GNS3

### Configuring Virtual Environment:

```
# Terminal Commands to make a virtual environment:
python3 -m venv gns3env

# Activate the virtual environment:
source gns3env/bin/activate

# Install required libraries:
pip install pyqt5
pip install gns3-server
pip install gns3-gui

# Execute this under virtual environment:
gns3
```

### Configuring a virtual PC:

```
# In console, assign an IP to computer by running the following commands:
ip 192.168.1.1 255.255.255.0

# For Virtual PC 2 onwards:
ip 192.168.1.2/24 # Change last decimal for consecutive PCs.

# Ping a PC:
ping 192.168.1.2 # Assuming you are PC1 right now.

# To define number of packets to ping a PC:
ping 192.168.1.2 -c 5 # Sends 5 packets to PC2.

# Saving terminal commands:
save # Execute this while being inside terminal of any PC.

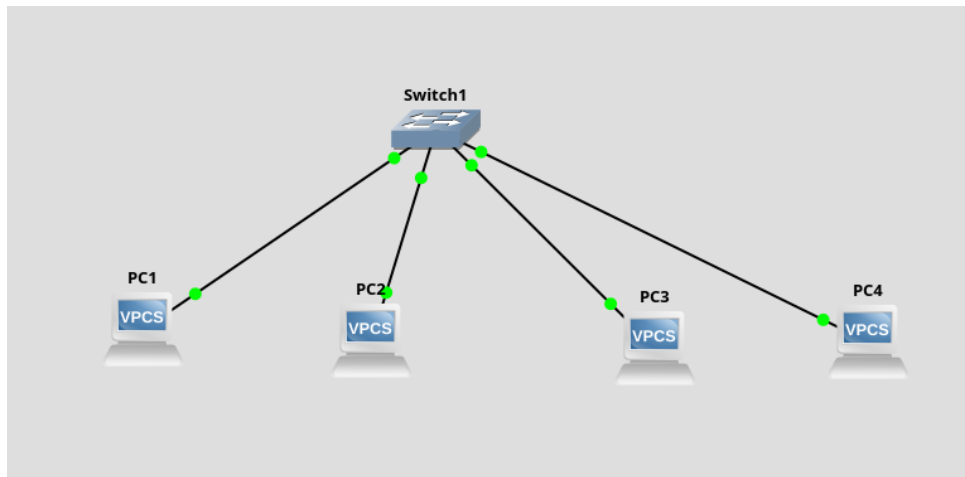
# View information about assigned commands to a PC:
show ip
```

## Configuring Virtual PC:

```
# Terminal Commands to configure a Virtual PC:  
ip 192.168.1.1 255.255.255.0 # <IP address> <mask address>  
  
# To show configurations:  
show ip
```

```
Escape character is '^['.  
  
VPCS> ip 192.168.1.1/24 192.168.1.254  
Checking for duplicate address...  
PC1 : 192.168.1.1 255.255.255.0 gateway 192.168.1.254  
  
VPCS> show ip  
  
NAME       : VPCS[1]  
IP/MASK    : 192.168.1.1/24  
GATEWAY    : 192.168.1.254  
DNS        :  
MAC        : 00:50:79:66:68:00  
LPORT     : 10000  
RHOST:PORT : 127.0.0.1:10001  
MTU        : 1500
```

## Virtual PC arrangement:



## Pinging a PC:

```

Trying ::1...
Connected to localhost.
Escape character is '^]'.

VPCS> ping 192.168.1.4 -c 5

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=0.655 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=0.782 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=0.502 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=0.435 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=0.757 ms

VPCS>

```

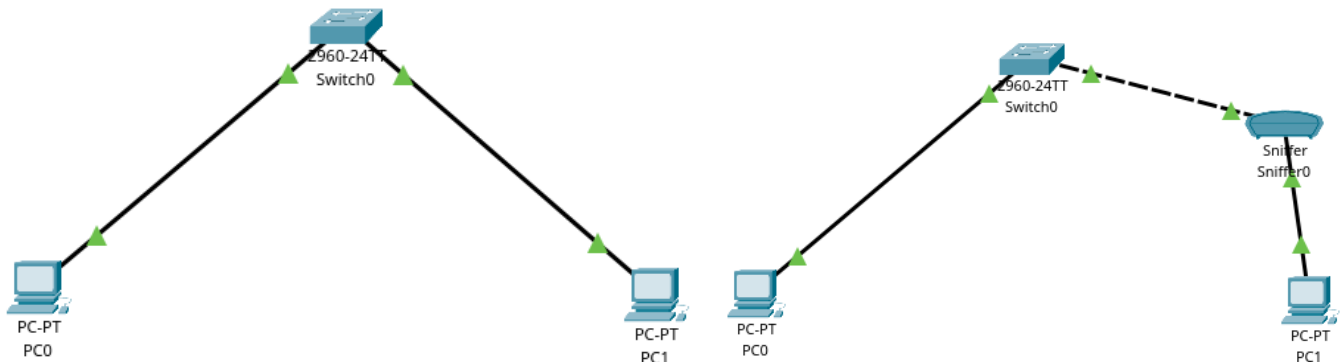
No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	Private 66:68:00	Broadcast	ARP	64	64 who has 192.168.1.4? tell 192.168.1.1
2	0.000338	Private 66:68:02	Private 66:68:00	ARP	64	192.168.1.4 is at 00:50:79:66:68:02
3	0.001096	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) request id=0x2269, seq=1/256, ttl=64 (reply in 4)
4	0.001342	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply id=0x2269, seq=1/256, ttl=64 (request in 3)
5	1.002264	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) request id=0x2369, seq=2/512, ttl=64 (reply in 6)
6	1.002632	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply id=0x2369, seq=2/512, ttl=64 (request in 5)
7	2.003345	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) request id=0x2469, seq=3/768, ttl=64 (reply in 8)
8	2.003632	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply id=0x2469, seq=3/768, ttl=64 (request in 7)
9	3.004476	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) request id=0x2569, seq=4/1024, ttl=64 (reply in 10)
10	3.004703	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply id=0x2569, seq=4/1024, ttl=64 (request in 9)
11	4.005863	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) request id=0x2669, seq=5/1280, ttl=64 (reply in 12)
12	4.006220	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply id=0x2669, seq=5/1280, ttl=64 (request in 11)

Frame 1: 64 bytes on wire (512 bits), 64 bytes captured (512 bits) on interface 0	0000	ff ff ff ff ff ff 00 50	79 66 68 00 08 06 00 01	.....P yrh.....
Ethernet II, Src: Private 66:68:00 (00:50:79:66:68:00), Dst: Broadcast (01:00:00:00:00:00)	0010	08 00 06 04 00 01 00 50	79 66 68 00 c0 a8 01 01	.....P yrh.....
Address Resolution Protocol (request)	0020	ff ff ff ff ff c0 a8	01 04 00 00 00 00 00 00	.....P yrh.....
	0030	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00	.....P yrh.....

## Cisco Packet Tracer

Configuration of PCs (without and with sniffer):



Configuring PC:

PC0

Physical

Config

Desktop

Programming

Attributes

IP Configuration

Interface: FastEthernet0

DHCP

Static

IPv4 Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

Automatic

Static

Pinging a PC:

```

C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time=11ms TTL=128
Reply from 192.168.1.2: bytes=32 time=9ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 11ms, Average = 5ms

C:\>

```

Physical
Config
**GUI**
Attributes

Service
☒ On
☐ Off

Incoming Packets
☒ Port0
☐ Port1

Buffer Size
 256

ARP
ARP
ICMP
ICMP
ICMP
ICMP

EthernetII
0 4 8 Bytes

PREAMBLE: 101010..10
DEST ADDR:FFFF.FF  
FF.FFFF

SRC ADDR:0090.217C
TY  
PE:
DATA (VARI  
ABLE LENG
FCS:0x000  
00000

Arp
0 8 16 Bits

HARDWARE TYPE:0x0001
PROTOCOL TYPE:0x0800

HLEN:0x06
PLEN:0x04
OPCODE:0x0001

SOURCE MAC :0090.217C.BBBE

SOURCE IP :192.168.1.2

Clear