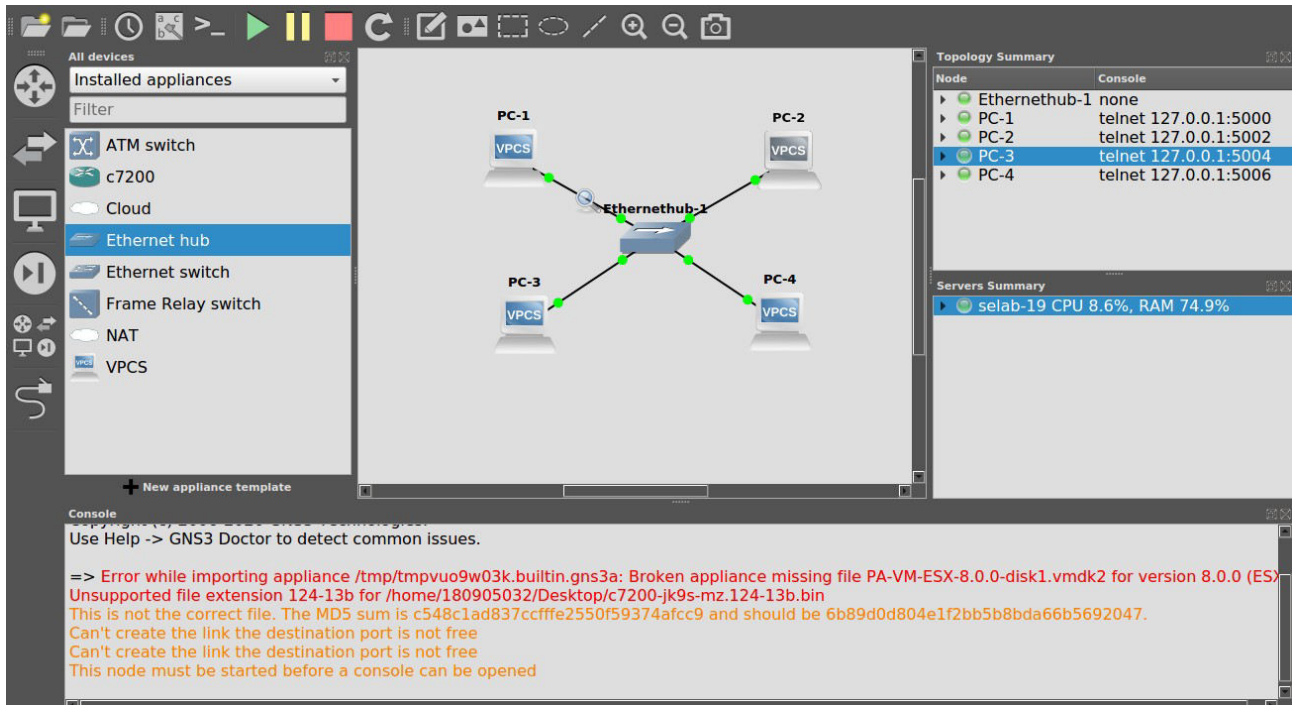# LAB SESSION 2   STUDY OF NETWORK DEVICES IN GNS3

1. Design network configuration shown in Figure 4.1 for all parts. Connect all four VMs to a single Ethernet segment via a single hub as shown in Figure 4.1. Configure the IP addressesfor the PCs as shown in Table4.1.

a.

```
PC-1> arp

arp table is empty

PC-1>
```

b,c.

No.	Time	Source	Destination	Protocol	Length	Info
9	50.665008	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x4f08, seq=1/256, ttl=64 (reply in 10)
10	50.665201	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x4f08, seq=1/256, ttl=64 (request in 9)
11	51.666199	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x5008, seq=2/512, ttl=64 (reply in 12)
12	51.666487	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x5008, seq=2/512, ttl=64 (request in 1...
13	52.667363	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x5108, seq=3/768, ttl=64 (reply in 14)
14	52.667611	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x5108, seq=3/768, ttl=64 (request in 1...
15	53.668476	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x5208, seq=4/1024, ttl=64 (reply in 16)
16	53.668734	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x5208, seq=4/1024, ttl=64 (request in ...
17	54.669639	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x5308, seq=5/1280, ttl=64 (reply in 18)
18	54.669872	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x5308, seq=5/1280, ttl=64 (request in ...

ip.addr==10.0.1.12

```
▶ Frame 9: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
▶ Ethernet II, Src: Private_66:68:00 (00:50:79:66:68:00), Dst: Private_66:68:01 (00:50:79:66:68:01)
▶ Internet Protocol Version 4, Src: 10.0.1.11, Dst: 10.0.1.12
▶ Internet Control Message Protocol
```

Arp:

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.11 (Request) [ETHERNET FRAME CHECK SE...
2	1.000198	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.11 (Request) [ETHERNET FRAME CHECK SE...
3	2.000752	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.11 (Request) [ETHERNET FRAME CHECK SE...
4	18.328000	Private_66:68:01	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.12 (Request) [ETHERNET FRAME CHECK SE...
5	19.328526	Private_66:68:01	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.12 (Request) [ETHERNET FRAME CHECK SE...
6	20.329087	Private_66:68:01	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.12 (Request) [ETHERNET FRAME CHECK SE...
7	50.663993	Private_66:68:00	Broadcast	ARP	64	Who has 10.0.1.12? Tell 10.0.1.11 [ETHERNET FRAME CHECK SEQUENC...
8	50.664314	Private_66:68:01	Private_66:68:00	ARP	64	10.0.1.12 is at 00:50:79:66:68:01 [ETHERNET FRAME CHECK SEQUENC...
9	50.665008	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x4f08, seq=1/256, ttl=64 (reply in 10)
10	50.665201	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x4f08, seq=1/256, ttl=64 (request in 9)
11	51.666199	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x5008, seq=2/512, ttl=64 (reply in 12)
12	51.666487	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x5008, seq=2/512, ttl=64 (request in 1...
13	52.667363	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x5108, seq=3/768, ttl=64 (reply in 14)
14	52.667611	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x5108, seq=3/768, ttl=64 (request in 1...
15	53.668476	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x5208, seq=4/1024, ttl=64 (reply in 16)
16	53.668734	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x5208, seq=4/1024, ttl=64 (request in ...
17	54.669639	10.0.1.11	10.0.1.12	ICMP	98	Echo (ping) request id=0x5308, seq=5/1280, ttl=64 (reply in 18)
18	54.669872	10.0.1.12	10.0.1.11	ICMP	98	Echo (ping) reply id=0x5308, seq=5/1280, ttl=64 (request in ...

MAC address:

No.	Time	Source	Destination	Protocol	Length	Info
3	2.000752	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.11 (Request) [ETHERNET FRAME CHECK S...
4	18.328000	Private_66:68:01	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.12 (Request) [ETHERNET FRAME CHECK S...
5	19.328526	Private_66:68:01	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.12 (Request) [ETHERNET FRAME CHECK S...

```
▶ Frame 3: 64 bytes on wire (512 bits), 64 bytes captured (512 bits) on interface 0
▼ Ethernet II, Src: Private_66:68:00 (00:50:79:66:68:00), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
  ▶ Destination: Broadcast (ff:ff:ff:ff:ff:ff)
  ▶ Source: Private_66:68:00 (00:50:79:66:68:00)
    Type: ARP (0x0806)
    Padding: 00000000000000000000000000000000000000
  ▶ Frame check sequence: 0x00000000 [incorrect, should be 0x7c5120f3]
    [FCS Status: Bad]
▼ Address Resolution Protocol (request/gratuitous ARP)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: request (1)
    [Is gratuitous: True]
    Sender MAC address: Private_66:68:00 (00:50:79:66:68:00)
    Sender IP address: 10.0.1.11
    Target MAC address: Broadcast (ff:ff:ff:ff:ff:ff)
    Target IP address: 10.0.1.11
```
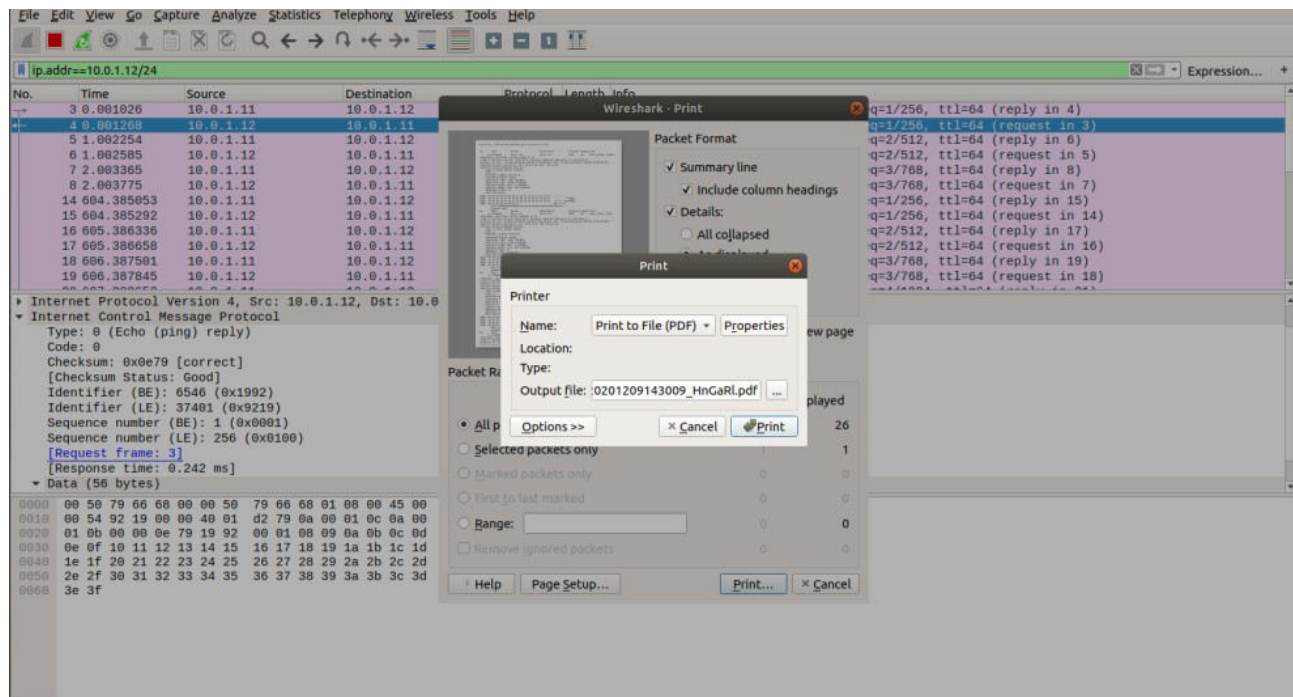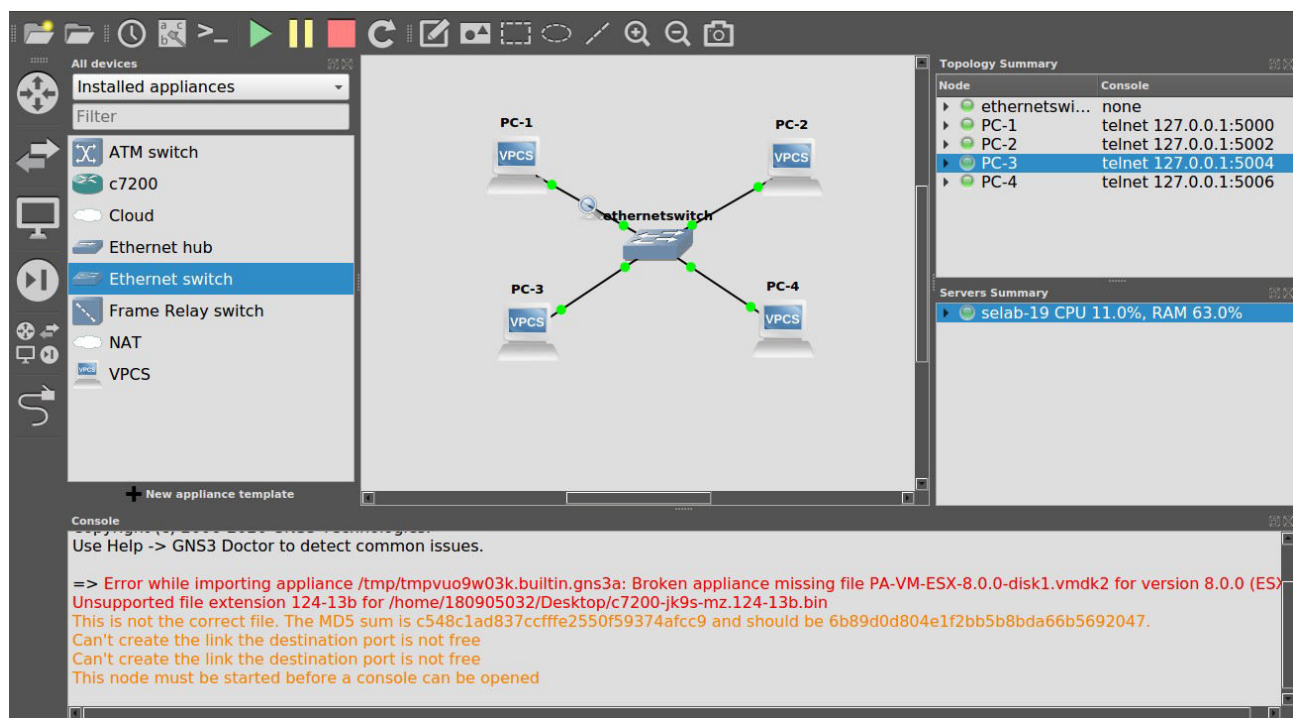
d. ARP:


```
PC1> show arp

00:50:79:66:68:01   10.0.1.12 expires in 49 seconds

PC1>
```

e. Save the results of Wireshark:

2. To test the effects of changing the netmask of a network configuration.Design the configuration as Q1 and replace the hub with a switch, twohosts (PC2 and PC4) have been assigned different network prefixes.

a. Ping from PC1 to PC3:


```
PC1> ping 10.0.1.120 -c3

84 bytes from 10.0.1.120 icmp_seq=1 ttl=64 time=0.949 ms
84 bytes from 10.0.1.120 icmp_seq=2 ttl=64 time=0.919 ms
84 bytes from 10.0.1.120 icmp_seq=3 ttl=64 time=0.769 ms
84 bytes from 10.0.1.120 icmp_seq=4 ttl=64 time=1.021 ms
84 bytes from 10.0.1.120 icmp_seq=5 ttl=64 time=0.750 ms
```

b. Ping from PC1 to PC2:

```
PC1> ping 10.0.1.101 -c3

84 bytes from 10.0.1.101 icmp_seq=1 ttl=64 time=0.645 ms
84 bytes from 10.0.1.101 icmp_seq=2 ttl=64 time=0.906 ms
84 bytes from 10.0.1.101 icmp_seq=3 ttl=64 time=1.006 ms
84 bytes from 10.0.1.101 icmp_seq=4 ttl=64 time=0.948 ms
84 bytes from 10.0.1.101 icmp_seq=5 ttl=64 time=0.810 ms
```

No.	Time	Source	Destination	Protocol	Length	Info
→ 1	0.000000	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xd30c, seq=1/256, ttl=64 (reply in 2)
← 2	0.000256	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xd30c, seq=1/256, ttl=64 (request in 1)
3	1.001149	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xd40c, seq=2/512, ttl=64 (reply in 4)
4	1.001400	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xd40c, seq=2/512, ttl=64 (request in 3)
5	2.002320	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xd50c, seq=3/768, ttl=64 (reply in 6)
6	2.002537	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xd50c, seq=3/768, ttl=64 (request in 5)
7	3.003514	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xd60c, seq=4/1024, ttl=64 (reply in 8)
8	3.003796	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xd60c, seq=4/1024, ttl=64 (request in …)
9	4.004590	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xd70c, seq=5/1280, ttl=64 (reply in 10)
10	4.004906	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xd70c, seq=5/1280, ttl=64 (request in …)

```
▶ Frame 1: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
▶ Ethernet II, Src: Private_66:68:00 (00:50:79:66:68:00), Dst: Private_66:68:01 (00:50:79:66:68:01)
▶ Internet Protocol Version 4, Src: 10.0.1.100, Dst: 10.0.1.101
▶ Internet Control Message Protocol
```

Ready to load or capture   Packets: 10 · Displayed: 10 (100.0%)   Profile: Default

c. Ping from PC1 to PC4:

```
PC-1> ping 10.0.1.121
10.0.1.121 icmp_seq=1 timeout
10.0.1.121 icmp_seq=2 timeout
10.0.1.121 icmp_seq=3 timeout
10.0.1.121 icmp_seq=4 timeout
10.0.1.121 icmp_seq=5 timeout

PC-1>
```

d. Ping from PC4 to PC1:

```
PC-4> ping 10.0.1.100
No gateway found

PC-4>
```

e. Ping from PC2 to PC3:

```
PC-2> ping 10.0.1.120
No gateway found

PC-2>
```

f. Ping from PC2 to PC4:

```
PC2> ping 10.0.1.121 -c3

No gateway found

PC2>
```

Wireshark O/P for PC1:

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

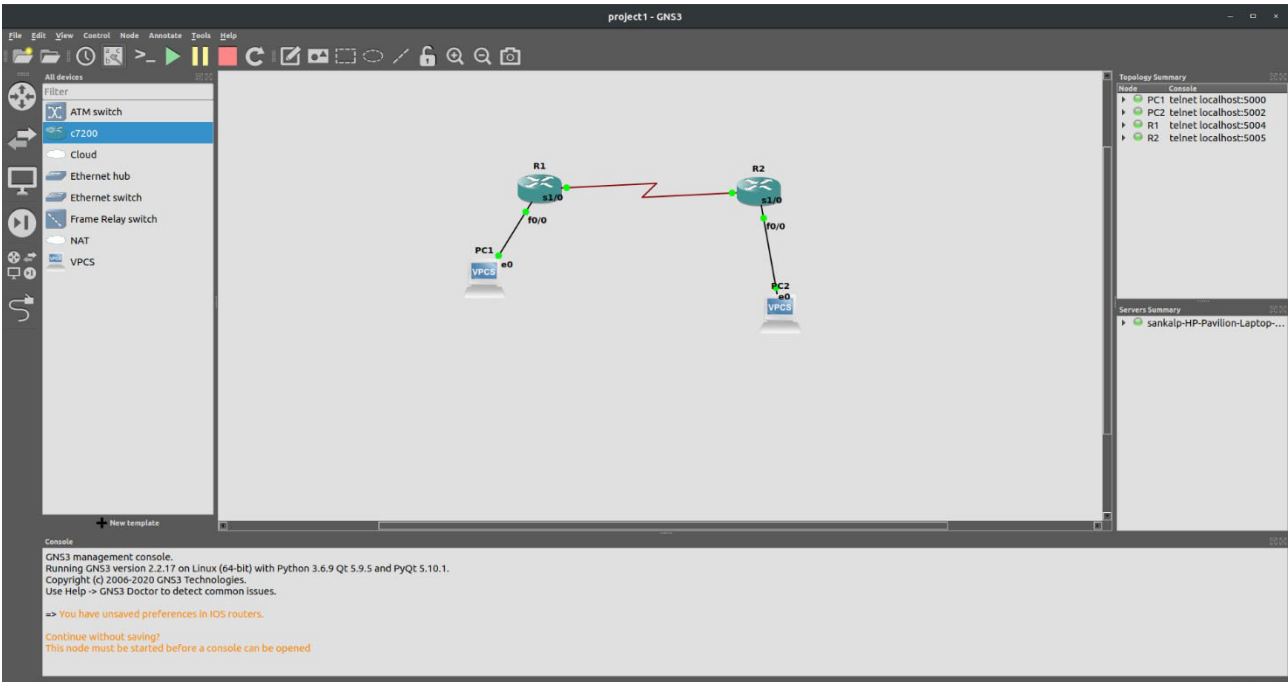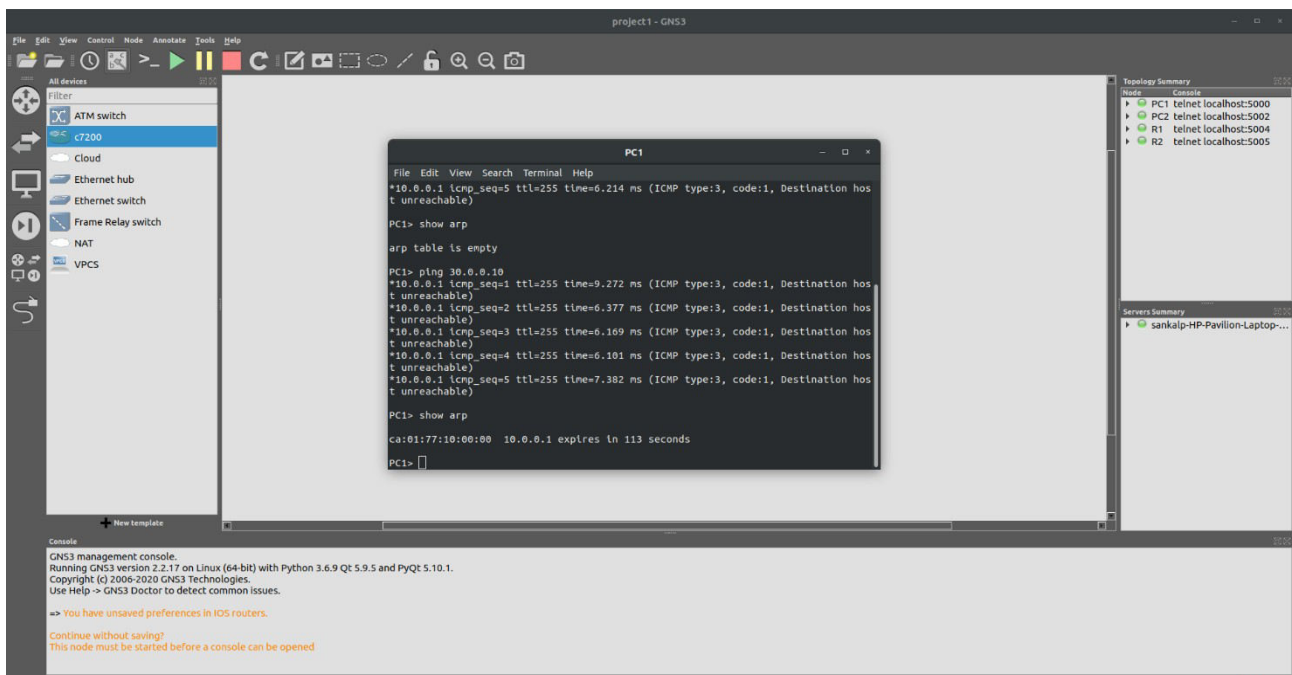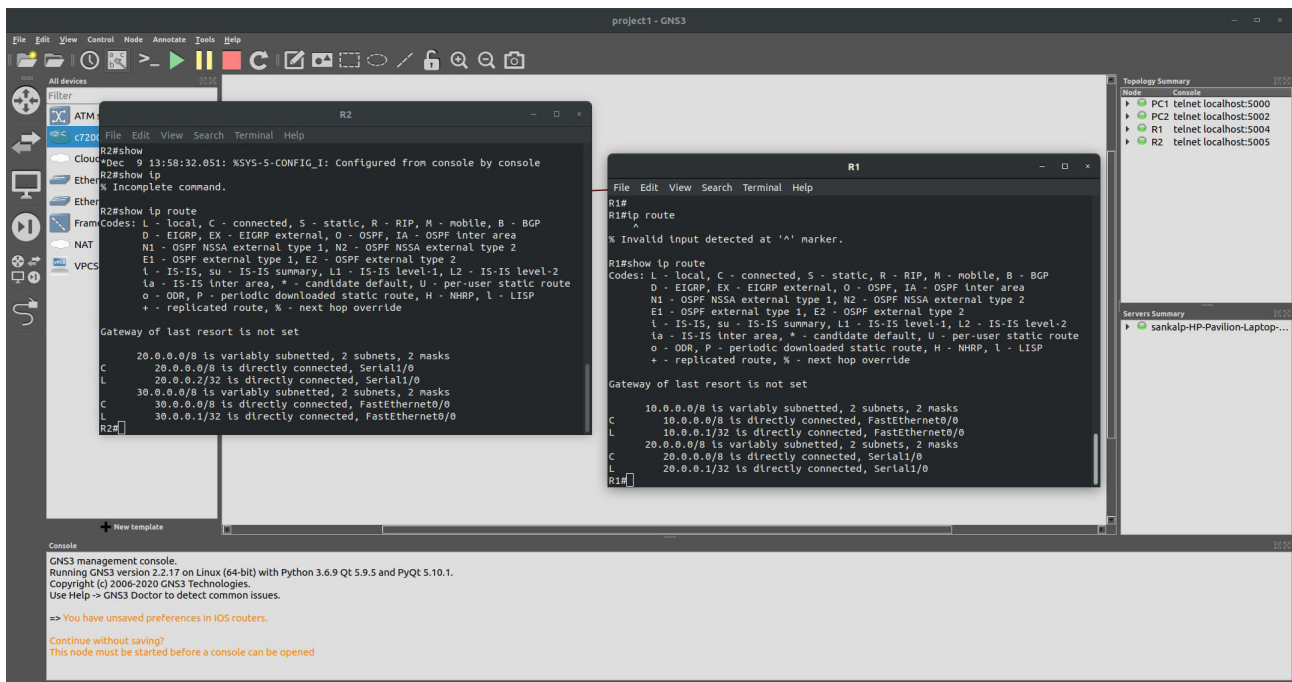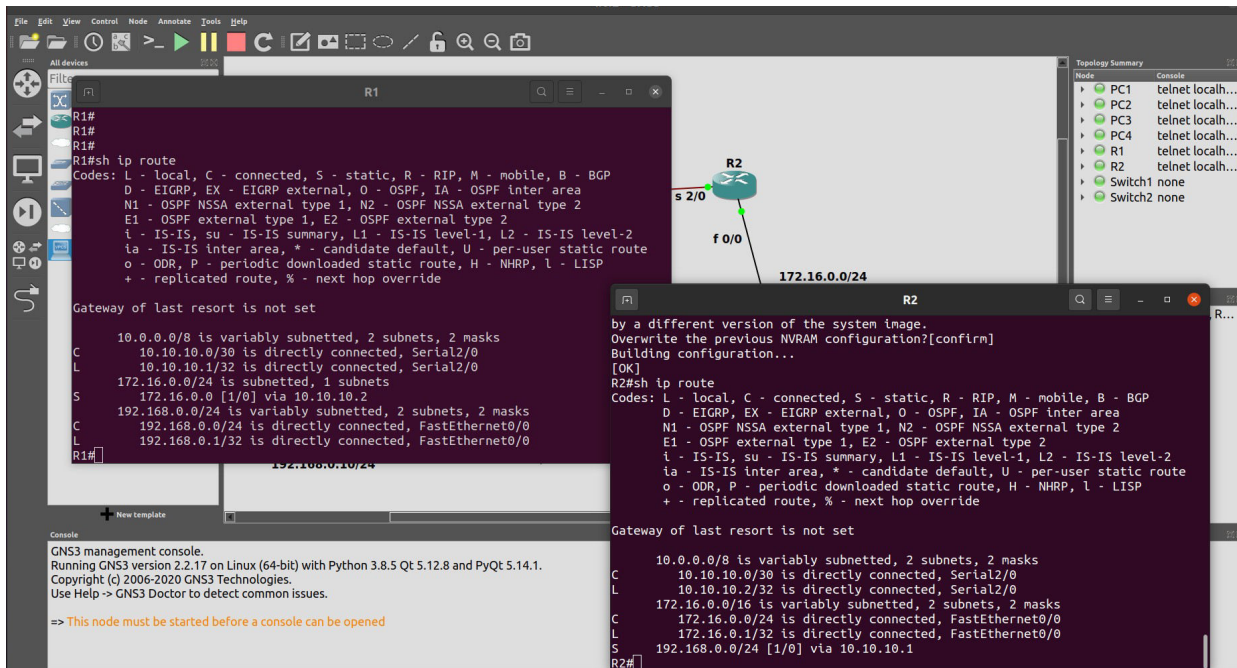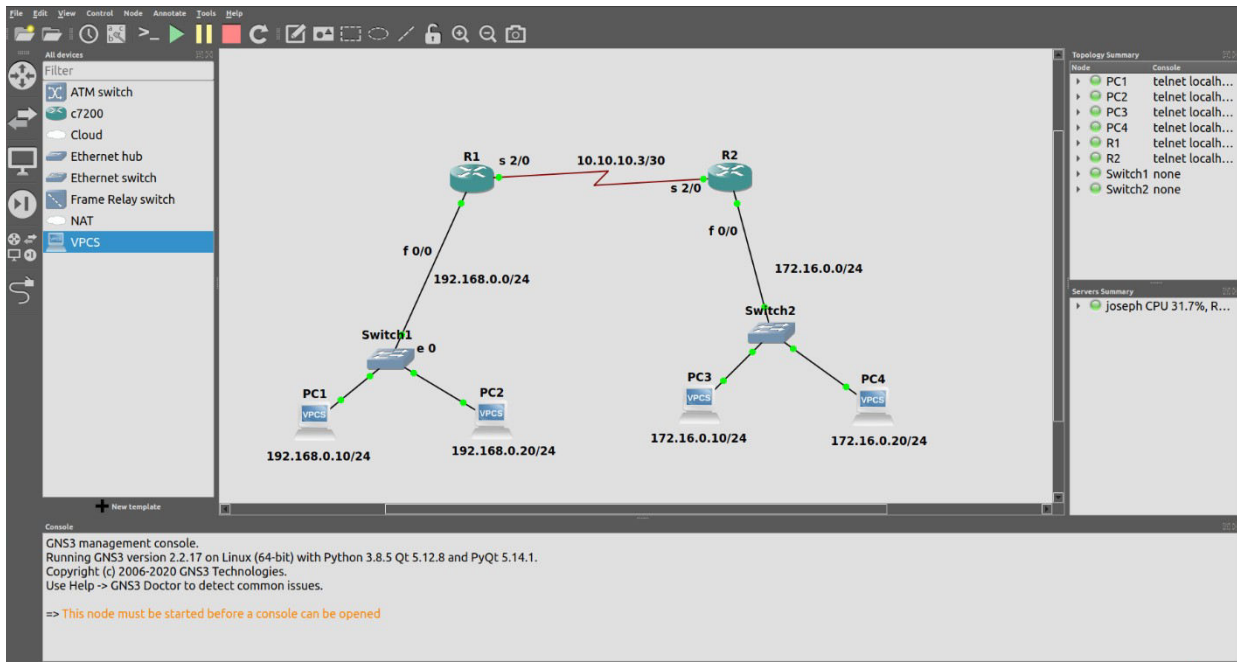| Time	Source	Destination	Protocol	Length	Info
1 0.000000	Private_66:68:01	Broadcast	ARP	64	Who has 10.0.1.120? Tell 10.0.1.100 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
2 0.000311	Private_66:68:02	Private_66:68:01	ARP	64	10.0.1.120 is at 00:50:79:66:68:02 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
3 0.001065	10.0.1.100	10.0.1.120	ICMP	98	Echo (ping) request id=0x8a96, seq=1/256, ttl=64 (reply in 4)
4 0.001501	10.0.1.120	10.0.1.100	ICMP	98	Echo (ping) reply id=0x8a96, seq=1/256, ttl=64 (request in 3)
5 1.002190	10.0.1.100	10.0.1.120	ICMP	98	Echo (ping) request id=0x8b96, seq=2/512, ttl=64 (reply in 6)
6 1.002354	10.0.1.120	10.0.1.100	ICMP	98	Echo (ping) reply id=0x8b96, seq=2/512, ttl=64 (request in 5)
7 2.003444	10.0.1.100	10.0.1.120	ICMP	98	Echo (ping) request id=0x8c96, seq=3/768, ttl=64 (reply in 8)
8 2.003738	10.0.1.120	10.0.1.100	ICMP	98	Echo (ping) reply id=0x8c96, seq=3/768, ttl=64 (request in 7)
9 3.004485	10.0.1.100	10.0.1.120	ICMP	98	Echo (ping) request id=0x8d96, seq=4/1024, ttl=64 (reply in 10)
10 3.004655	10.0.1.120	10.0.1.100	ICMP	98	Echo (ping) reply id=0x8d96, seq=4/1024, ttl=64 (request in 9)
11 4.005768	10.0.1.100	10.0.1.120	ICMP	98	Echo (ping) request id=0x8e96, seq=5/1280, ttl=64 (reply in 12)
12 4.006037	10.0.1.120	10.0.1.100	ICMP	98	Echo (ping) reply id=0x8e96, seq=5/1280, ttl=64 (request in 11)
13 95.447960	Private_66:68:01	Broadcast	ARP	64	Who has 10.0.1.101? Tell 10.0.1.100 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
14 95.448281	Private_66:68:00	Private_66:68:01	ARP	64	10.0.1.101 is at 00:50:79:66:68:00 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
15 95.449009	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xea96, seq=1/256, ttl=64 (reply in 16)
16 95.449254	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xea96, seq=1/256, ttl=64 (request in 15)
17 96.450134	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xeb96, seq=2/512, ttl=64 (reply in 18)
18 96.450382	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xeb96, seq=2/512, ttl=64 (request in 17)
19 97.451318	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xec96, seq=3/768, ttl=64 (reply in 20)
20 97.451618	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xec96, seq=3/768, ttl=64 (request in 19)
21 98.452395	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xed96, seq=4/1024, ttl=64 (reply in 22)
22 98.452476	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xed96, seq=4/1024, ttl=64 (request in 21)
23 99.453575	10.0.1.100	10.0.1.101	ICMP	98	Echo (ping) request id=0xee96, seq=5/1280, ttl=64 (reply in 24)
24 99.453742	10.0.1.101	10.0.1.100	ICMP	98	Echo (ping) reply id=0xee96, seq=5/1280, ttl=64 (request in 23)
25 399.031969	Private_66:68:01	Broadcast	ARP	64	Who has 10.0.1.121? Tell 10.0.1.100 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
26 399.032369	Private_66:68:03	Private_66:68:01	ARP	64	10.0.1.121 is at 00:50:79:66:68:03 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
27 399.033008	10.0.1.100	10.0.1.121	ICMP	98	Echo (ping) request id=0x1998, seq=1/256, ttl=64 (reply in 32)
28 399.033263	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
29 400.033345	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
30 401.033330	10.0.1.100	10.0.1.121	ICMP	98	Echo (ping) request id=0x1b98, seq=2/512, ttl=64 (reply in 38)
31 401.033686	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
32 402.033923	10.0.1.121	10.0.1.100	ICMP	98	Echo (ping) reply id=0x1998, seq=1/256, ttl=64 (request in 27)
33 402.034023	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
34 403.034254	10.0.1.100	10.0.1.121	ICMP	98	Echo (ping) request id=0x1d98, seq=3/768, ttl=64 (reply in 43)
35 403.034655	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
36 404.035220	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
37 405.034443	10.0.1.100	10.0.1.121	ICMP	98	Echo (ping) request id=0x1f98, seq=4/1024, ttl=64 (reply in 47)
38 405.035259	10.0.1.121	10.0.1.100	ICMP	98	Echo (ping) reply id=0x1b98, seq=2/512, ttl=64 (request in 30)
39 405.035326	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
40 406.036214	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
41 407.035028	10.0.1.100	10.0.1.121	ICMP	98	Echo (ping) request id=0x2198, seq=5/1280, ttl=64 (reply in 51)
42 407.037138	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
43 408.037320	10.0.1.121	10.0.1.100	ICMP	98	Echo (ping) reply id=0x1d98, seq=3/768, ttl=64 (request in 34)
44 408.037405	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
45 409.037399	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
46 410.037794	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
47 411.039041	10.0.1.121	10.0.1.100	ICMP	98	Echo (ping) reply id=0x1f98, seq=4/1024, ttl=64 (request in 37)
48 411.039261	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
49 412.039490	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
50 413.039740	Private_66:68:03	Broadcast	ARP	64	Who has 0.0.0.0? Tell 10.0.1.121 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
51 414.039846	10.0.1.121	10.0.1.100	ICMP	98	Echo (ping) reply id=0x2198, seq=5/1280, ttl=64 (request in 41)
52 695.535936	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.121 (Request) (duplicate use of 10.0.1.121 detected!) [ETHERNET FRAME CHECK SEQUENCE INCORRECT
53 723.383973	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.101 (Request) [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
54 724.384778	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.101 (Request) [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
55 725.385364	Private_66:68:00	Broadcast	ARP	64	Gratuitous ARP for 10.0.1.101 (Request) [ETHERNET FRAME CHECK SEQUENCE INCORRECT]

4.6.

a.

b.

GNS3 management console.
Running GNS3 version 2.2.17 on Linux (64-bit) with Python 3.8.5 Qt 5.12.8 and PyQt 5.14.1.
Copyright (c) 2006-2020 GNS3 Technologies.
Use Help -> GNS3 Doctor to detect common issues.

=> This node must be started before a console can be opened

R1 topology: R1 — s 2/0 — 10.10.10.3/30 — s 2/0 — R2
f 0/0 — 192.168.0.0/24 — Switch1 — e 0 — PC1 (192.168.0.10/24), PC2 (192.168.0.20/24)
f 0/0 — 172.16.0.0/24 — Switch2 — PC3 (172.16.0.10/24), PC4 (172.16.0.20/24)

R1 terminal:

```
R1#
R1#
R1#
R1#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        10.10.10.0/30 is directly connected, Serial2/0
L        10.10.10.1/32 is directly connected, Serial2/0
      172.16.0.0/24 is subnetted, 1 subnets
S        172.16.0.0 [1/0] via 10.10.10.2
      192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
C        192.168.0.0/24 is directly connected, FastEthernet0/0
L        192.168.0.1/32 is directly connected, FastEthernet0/0
R1#
```

R2 terminal:

```
by a different version of the system image.
Overwrite the previous NVRAM configuration?[confirm]
Building configuration...
[OK]
R2#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is not set

      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        10.10.10.0/30 is directly connected, Serial2/0
L        10.10.10.2/32 is directly connected, Serial2/0
      172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C        172.16.0.0/24 is directly connected, FastEthernet0/0
L        172.16.0.1/32 is directly connected, FastEthernet0/0
S     192.168.0.0/24 [1/0] via 10.10.10.1
R2#
```

GNS3 management console.
Running GNS3 version 2.2.17 on Linux (64-bit) with Python 3.8.5 Qt 5.12.8 and PyQt 5.14.1.
Copyright (c) 2006-2020 GNS3 Technologies.
Use Help -> GNS3 Doctor to detect common issues.

=> This node must be started before a console can be opened

Topology Summary

Node	Console
PC1	telnet localh...
PC2	telnet localh...
PC3	telnet localh...
PC4	telnet localh...
R1	telnet localh...
R2	telnet localh...
Switch1	none
Switch2	none

PC2

```
For more information, please visit wiki.freecode.com.cn.

Press '?' to get help.

Executing the startup file

PC2> ip 192.168.0.20/24 192.168.0.1
Checking for duplicate address...
PC2 : 192.168.0.20 255.255.255.0 gateway 192.168.0.1

PC2> ping 172.16.0.10

84 bytes from 172.16.0.10 icmp_seq=1 ttl=62 time=50.461 ms
84 bytes from 172.16.0.10 icmp_seq=2 ttl=62 time=27.924 ms
84 bytes from 172.16.0.10 icmp_seq=3 ttl=62 time=26.902 ms
84 bytes from 172.16.0.10 icmp_seq=4 ttl=62 time=26.477 ms
84 bytes from 172.16.0.10 icmp_seq=5 ttl=62 time=26.711 ms

PC2> show arp

ca:01:a2:68:00:00  192.168.0.1 expires in 112 seconds

PC2>
```

R2

3/30

s 2/0

VPCS

192.168.0.10/24

VPCS

192.168.0.20/24

New template

PC3

```
Press '?' to get help.

Executing the startup file

PC3> ip 172.16.0.10/24 172.16.0.1
Checking for duplicate address...
PC3 : 172.16.0.10 255.255.255.0 gateway 172.16.0.1

PC3> ping 172.16.0.1

84 bytes from 172.16.0.1 icmp_seq=1 ttl=255 time=19.558 ms
84 bytes from 172.16.0.1 icmp_seq=2 ttl=255 time=7.147 ms
84 bytes from 172.16.0.1 icmp_seq=3 ttl=255 time=7.261 ms
84 bytes from 172.16.0.1 icmp_seq=4 ttl=255 time=7.593 ms
84 bytes from 172.16.0.1 icmp_seq=5 ttl=255 time=7.120 ms

PC3>
```

Console

GNS3 management console.
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