

Tanner Kaczmarek

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Lab 8: GSN3 Network Emulator

NAT Table:

R2#ping 10.1.1.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 4/10/12 ms

R2#ping 10.1.1.3

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.1.1.3, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 8/10/12 ms

R2#ping 10.2.1.2

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.2.1.2, timeout is 2 seconds:

.!!!!

Success rate is 80 percent (4/5), round-trip min/avg/max = 20/272/1020 ms

Steps:

Installing GSN3:

1. GSN3 is used to create Network topologies. First download from online: <https://www.gns3.com/software/download>
2. Next open it up and choose to run it with virtual machine if you have a virtual machine downloaded. If not just run it on your own desktop.
3. Next download the virtual router online. The TA provided us with a link I no longer have.

4. Lastly create a new template and upload the router through the template. Now you should be ready to setup our network!

Setup:

1. First thing you need to do is configure the network as seen in the lab document:
Two PC's <-> Switch <-> Router <-> Router <-> PC... The two PC's to the first router is the access network and the Rest is part of the ISP.
2. Right click on the router connected to the switch and select console. Now enter configure mode by typing "config t"
3. Next we need to select f0/0 by typing "interface FastEthernet0/0". Then assign the IP address with a mask of 24 by typing "ip addr 10.1.1.1 255.255.255.0"
4. Type in "no shut" to bring the interface up
5. Next we need to exit configure mode so type in "exit" twice. Once for exiting the selected interface and another to exit configure mode.
6. Type "show ip interface brief" to check the assigned ip addresses.
7. Next we need to setup the first PC connected to the switch and assign its interface an dress and a gateway to the router we just set to 10.1.1.1
8. Right click on a PC connected to the switch, and select console. Then type "ip 10.1.1.2/24"
9. Next setup the gateway for its interface by typing "ip 10.1.1.2/24 10.1.1.1". After this type "show ip" to check assigned IP address and gateway.
10. Next right click on the other PC connected to the switch and select console. Type "ip 10.1.1.3/24" to assign it a IP address. Next we need to assign it a gateway as well. Type "ip 10.1.1.3/24 10.1.1.1". Type "show ip" to check assigned IP address and gateway.
11. Next we will be giving the other interface of the router that is a part of the access network an IP address. Usually this IP address can be assigned through DHCP or assigned a static one which what we will be doing.
12. To assign the second interface of the router in the access network right click on that router and select console. Next type "config t", then "interface FastEthernet0/1". Next type "ip addr 192.1.1.1 255.255.255.0" to give it a mask of 24. Type "no shut", then "exit" twice to exit configure mode. Lastly check the assigned ip addresses by using the command "show ip interface brief".
13. Following we need to assign the first interface of the router in the ISP. To assign the first interface of the router in the ISP right click on that router and select console. Next type "config t", then "interface FastEthernet0/0". Next type "ip addr 192.1.1.2 255.255.255.0" to give it a mask of 24. Type "no shut", then "exit" twice to exit configure mode. Lastly check the assigned ip addresses by using the command "show ip interface brief".
14. After this we need to assign the second interface of the router in the ISP. To assign the second interface of the router in the ISP right click on that router and select console. Next type "config t", then "interface FastEthernet0/1". Next type "ip addr 10.2.1.1 255.255.255.0" to give it a mask of 24. Type "no shut", then "exit" twice to exit configure mode. Lastly check the assigned ip addresses by using the command "show ip interface brief".

15. The last part of setup is assigning the interface of the PC in the ISP. To do this, it is just like before. Right click of the PC and select console. Next type in “ip 10.2.1.2/24”. Then setup its gateway by typing “ip 10.2.1.2/24 10.2.1.1.”. Now type “show ip” to check the assigned IP address.

Ping:

1. Next verify which devices can be pinged by PC1. Right click on the PC, then select console. The IP address of this PC should be 10.1.1.2. Type “ping <ip address>”. Replace IP address with the following IP addresses: {10.1.1.1, 10.1.1.3, 192.1.1.1, 192.1.1.2, 10.2.1.1, 10.2.1.2}.
2. It should be noticed that **it cannot ping the last three of these above addresses**. We will need to fix this by setting up a routing protocol.
3. To do this Router in the Access network needs to setup a route to the router in the ISP. To do so, go into the console of the router of the access network and type “config t” then “interface FastEthernet0/1”. Setup its default route to the other router by typing in “ip route 0.0.0.0 0.0.0.0 192.1.1.2.”.
4. Next setup the default route for the router in the ISP by doing a similar method. To do so, go into the console of the router of the ISP and type “config t” then “interface FastEthernet0/0”. Setup its default route to the other router by typing in “ip route 0.0.0.0 0.0.0.0 192.1.1.1.”.
5. Run ping again and you will notice that the previous issues do not occur anymore.

Observations- I noticed that when I first pinged from PC1, it could not reach 192.1.1.2, 10.2.1.1 or 10.2.1.2. After pinging after I fixed the default routes, PC1 was able to reach all addresses and PC3 was also able to reach all addresses.

NAT inside the access network:

1. Right click on the router in the access network and select console. Then type “configure t”, then “interface f0/0”
2. To setup the router table type in “ip nat inside”. Then type in “exit”. Now enter the other interface by typing “interface f0/1” and then type in “ip nat outside”.
3. Next type in “exit” then type in “access-list 10 permit 10.1.1.0 0.0.0.255”. Lastly type in “ip nat inside source list 10 interface f0.1 overload”. Now it is ready to be debugged.
4. Type in “debug ip nat” to start debugging the NAT table. Then ping all the PCs in this network topology. My NAT table is up top.

lab8 - GNS3

Filter

c3600

New template

Use Help -> GNS3 Doctor to detect common issues.

=> VMware vmrun tool could not be found, VMware or

=> You have unsaved preferences in IOS routers.

Continue without saving?

=>

=> config t

*** Unknown syntax: config t

=> R2

*** Unknown syntax: R2

=> open R2

*** Unknown syntax: open R2

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

Topology Summary

Node	Console
PC1	telnet localhost:5000
PC2	telnet localhost:5002
PC3	telnet localhost:5007
R2	telnet localhost:5005
R3	telnet localhost:5006
Switch1	none

Servers Summary

Tanners-MacBook-Pro.local CP...

PC1

PC2

Switch1

PC3

R2

R3

PC3> ping 10.1.1.2

84 bytes from 10.1.1.2 icmp_seq=1 ttl=62 time=31.661 ms

84 bytes from 10.1.1.2 icmp_seq=2 ttl=62 time=31.993 ms

84 bytes from 10.1.1.2 icmp_seq=3 ttl=62 time=34.790 ms

^C

PC3>

1 error 2 warnings