

NETW191

PROJECT

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IPv4 Addressing



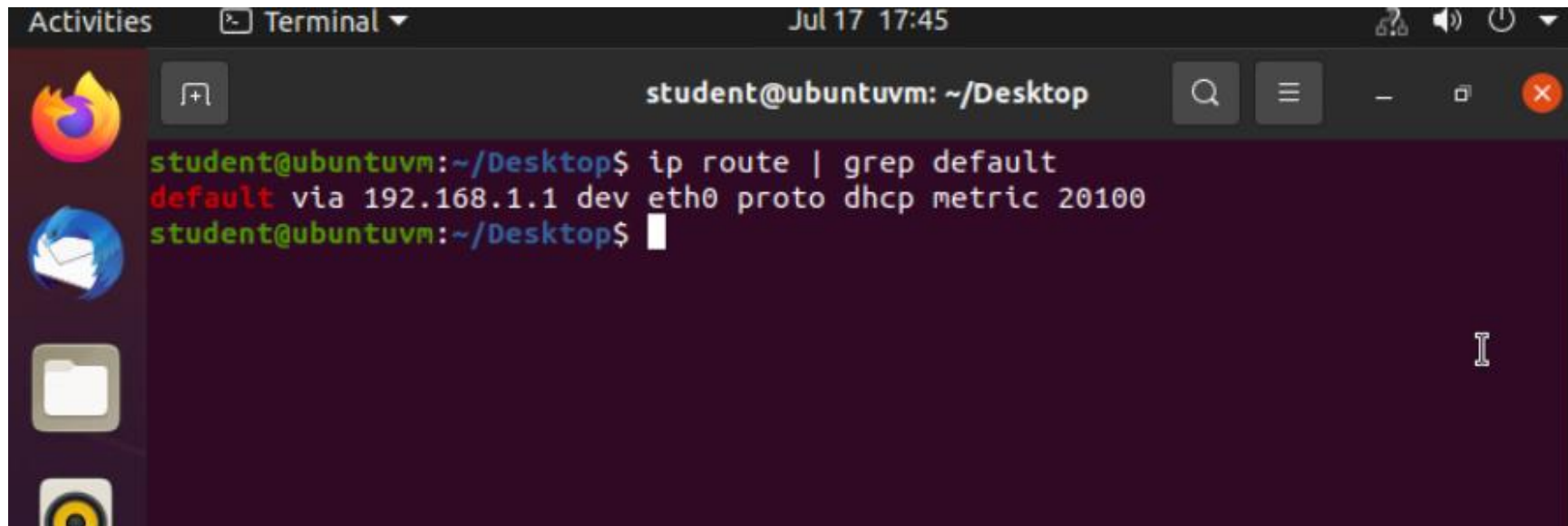
Preparation



Assignment

Preparation

This screenshot should include the terminal window that shows the default gateway IP address.



The screenshot shows a terminal window titled "student@ubuntuvvm: ~/Desktop". The terminal displays the command `ip route | grep default` and its output: `default via 192.168.1.1 dev eth0 proto dhcp metric 20100`. The terminal window is part of a desktop environment with a sidebar on the left containing icons for Firefox, a mail client, a file manager, and a music player. The top of the window shows the "Activities" button, the "Terminal" title bar, and the system clock displaying "Jul 17 17:45".

```
student@ubuntuvvm: ~/Desktop
student@ubuntuvvm:~/Desktop$ ip route | grep default
default via 192.168.1.1 dev eth0 proto dhcp metric 20100
student@ubuntuvvm:~/Desktop$
```

IPv4 Address Assignment

This screenshot should include the *Interfaces* page that shows the new IPv4 address on the LAN interface.

Interfaces

<div><div>LAN</div><div> br-lan</div></div>	<p>Protocol: Static address Uptime: 0h 4m 24s MAC: 00:15:5D:00:BA:01 RX: 493.96 KB (5935 Pkts.) TX: 1.08 MB (5580 Pkts.) IPv4: 192.168.105.1/24 IPv6: fd4:27c0:ac22::1/60</p>	<div><div>Restart</div><div>Stop</div><div>Edit</div><div>Delete</div></div>
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Connectivity Test



Dynamic IP Address Assignment



Connectivity Test

Dynamic IP Address Assignment

This screenshot should
show the IPv4 address
of the *Computer 1* VM.

```
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group def  
    link/ether 00:15:5d:00:ba:00 brd ff:ff:ff:ff:ff:ff  
    inet 192.168.105.228/24 brd 192.168.105.255 scope global dynamic noprefixroute eth0  
        valid_lft 43155sec preferred_lft 43155sec
```

Dynamic IP Address Assignment

This screenshot should
show the IPv4 address
of the *Computer 2* VM.

```
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group def  
ault qlen 1000  
    link/ether 00:15:5d:00:ba:02 brd ff:ff:ff:ff:ff:ff  
    inet 192.168.105.230/24 brd 192.168.105.255 scope global dynamic noprefixro  
ute eth0  
        valid_lft 42974sec preferred_lft 42974sec
```


Connectivity Test

This screenshot should show the connectivity tests between the *Computer 1* VM and the other two devices (i.e., the *SOHO Router* VM and *Computer 2* VM).

```
student@ubuntuvm:~/Desktop$ ping 192.168.105.1
PING 192.168.105.1 (192.168.105.1) 56(84) bytes of data.
64 bytes from 192.168.105.1: icmp_seq=1 ttl=64 time=1.37 ms
64 bytes from 192.168.105.1: icmp_seq=2 ttl=64 time=0.804 ms
64 bytes from 192.168.105.1: icmp_seq=3 ttl=64 time=0.911 ms
64 bytes from 192.168.105.1: icmp_seq=4 ttl=64 time=0.683 ms
64 bytes from 192.168.105.1: icmp_seq=5 ttl=64 time=1.26 ms
^C
--- 192.168.105.1 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4020ms
rtt min/avg/max/mdev = 0.683/1.006/1.372/0.266 ms
student@ubuntuvm:~/Desktop$ ping 192.168.105.230
PING 192.168.105.230 (192.168.105.230) 56(84) bytes of data.
64 bytes from 192.168.105.230: icmp_seq=1 ttl=64 time=0.909 ms
64 bytes from 192.168.105.230: icmp_seq=2 ttl=64 time=1.14 ms
64 bytes from 192.168.105.230: icmp_seq=3 ttl=64 time=0.930 ms
64 bytes from 192.168.105.230: icmp_seq=4 ttl=64 time=0.989 ms
64 bytes from 192.168.105.230: icmp_seq=5 ttl=64 time=0.566 ms

--- 192.168.105.230 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4006ms
rtt min/avg/max/mdev = 0.566/0.907/1.142/0.189 ms
^Cstudent@ubuntuvm:~/Desktop$
```

Connectivity Test

This screenshot should show the connectivity tests between the *Computer 2* VM and the other two devices (i.e., the *SOHO Router* VM and *Computer 1* VM).

```
valid_ttl forever preferred_ttl forever
student@ubuntuvirtual-machine:~/Desktop$ ping 192.168.105.1
PING 192.168.105.1 (192.168.105.1) 56(84) bytes of data:
64 bytes from 192.168.105.1: icmp_seq=1 ttl=64 time=0.795 ms
64 bytes from 192.168.105.1: icmp_seq=2 ttl=64 time=1.02 ms
64 bytes from 192.168.105.1: icmp_seq=3 ttl=64 time=0.663 ms
64 bytes from 192.168.105.1: icmp_seq=4 ttl=64 time=0.380 ms
64 bytes from 192.168.105.1: icmp_seq=5 ttl=64 time=1.06 ms
64 bytes from 192.168.105.1: icmp_seq=6 ttl=64 time=0.817 ms
^C
--- 192.168.105.1 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5047ms
rtt min/avg/max/mdev = 0.380/0.789/1.060/0.228 ms
student@ubuntuvirtual-machine:~/Desktop$ ping 192.168.105.228
PING 192.168.105.228 (192.168.105.228) 56(84) bytes of data:
64 bytes from 192.168.105.228: icmp_seq=1 ttl=64 time=0.766 ms
64 bytes from 192.168.105.228: icmp_seq=2 ttl=64 time=0.948 ms
64 bytes from 192.168.105.228: icmp_seq=3 ttl=64 time=1.00 ms
64 bytes from 192.168.105.228: icmp_seq=4 ttl=64 time=1.17 ms
^C
--- 192.168.105.228 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3025ms
rtt min/avg/max/mdev = 0.766/0.970/1.168/0.143 ms
student@ubuntuvirtual-machine:~/Desktop$
```

Subnetting and Loopback Interfaces



IP Subnetting



Loopback Interfaces



Connectivity Tests

Subnetting Table

This table should include two /25 subnets, listing the subnet notation, network address, first usable host address, last usable host address, and broadcast address of each subnet.

Subnet	Subnet Notation	Network Address	First Usable Host Address	Last Useable Host Address	Broadcast Address
The First Subnet	192.168.5.0/25	192.168.5.0	192.168.5.1	192.168.5.126	192.168.5.127
The Second Subnet	192.168.5.1/25	192.168.5.128	192.168.5.129	192.168.5.254	192.168.5.255

✔ Challenge #1

› network address of the first subnet? A:

✔ Challenge #2

› network address of the second subnet

✔ Challenge #3

› first usable host address of the first sui

✔ Challenge #4

› last usable host address of the second



✔ Challenge #5

› broadcast address of the first subnet?

✔ Challenge #6

Loopback Interfaces

This screenshot should show both Loopback1 and Loopback2 interfaces and their correct IPv4 addresses.

<div><div>LOOPBACK1</div><div>eth0</div></div>	<div>Protocol: Static address</div> <div>Uptime: 0h 9m 18s</div> <div>MAC: 00:15:5D:00:BA:01</div> <div>RX: 4.34 MB (44234 Pkts.)</div> <div>TX: 6.19 MB (43840 Pkts.)</div> <div>IPv4: 192.168.5.1/25</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>
<div><div>LOOPBACK2</div><div>eth0</div></div>	<div>Protocol: Static address</div> <div>Uptime: 0h 0m 35s</div> <div>MAC: 00:15:5D:00:BA:01</div> <div>RX: 4.34 MB (44234 Pkts.)</div> <div>TX: 6.19 MB (43840 Pkts.)</div> <div>IPv4: 192.168.5.129/25</div>	<div>Restart</div> <div>Stop</div> <div>Edit</div> <div>Delete</div>

Connectivity Tests

This screenshot should show two successful ping tests from the *Computer 1* VM to the *Loopback 1* and *Loopback 2* interfaces.

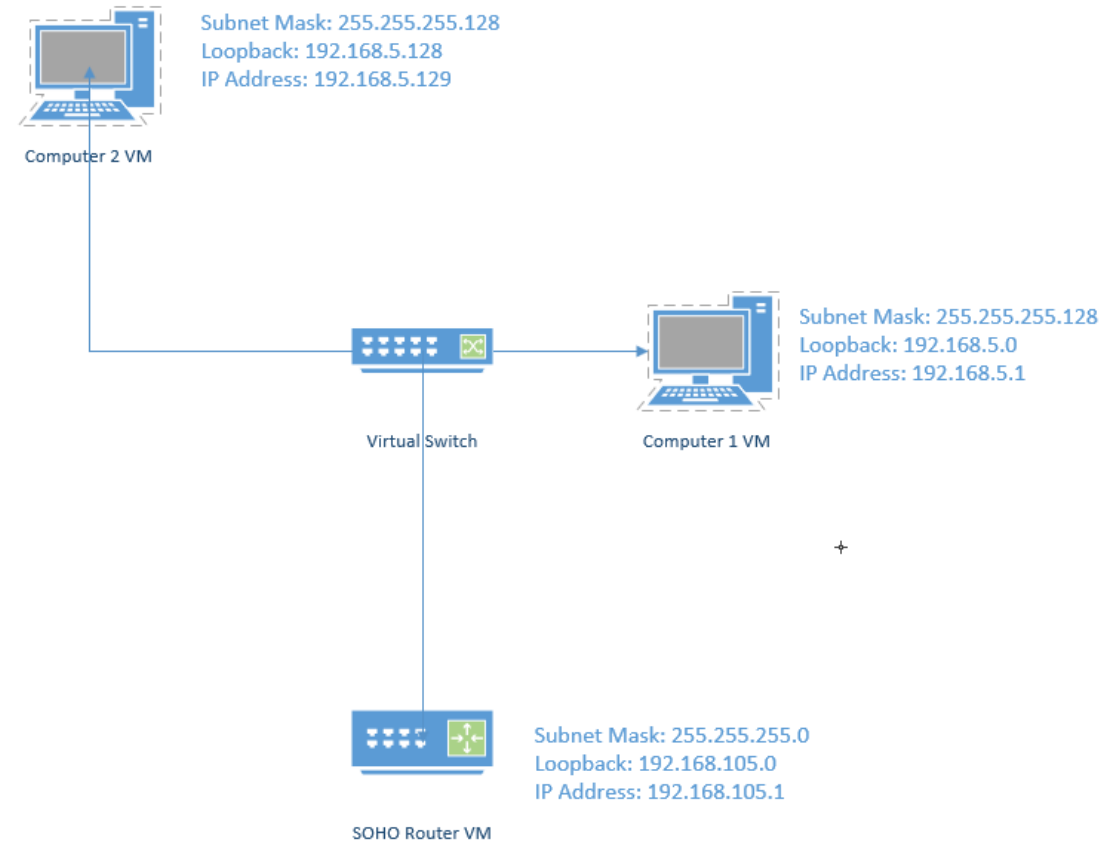
```
student@ubuntuvm:~/Desktop$ ping 192.168.5.1
PING 192.168.5.1 (192.168.5.1) 56(84) bytes of data.
64 bytes from 192.168.5.1: icmp_seq=1 ttl=64 time=0.998 ms
64 bytes from 192.168.5.1: icmp_seq=2 ttl=64 time=1.15 ms
64 bytes from 192.168.5.1: icmp_seq=3 ttl=64 time=1.05 ms
64 bytes from 192.168.5.1: icmp_seq=4 ttl=64 time=1.07 ms
^C
--- 192.168.5.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 0.998/1.065/1.146/0.053 ms
student@ubuntuvm:~/Desktop$ ping 192.168.5.129
PING 192.168.5.129 (192.168.5.129) 56(84) bytes of data.
64 bytes from 192.168.5.129: icmp_seq=1 ttl=64 time=0.746 ms
64 bytes from 192.168.5.129: icmp_seq=2 ttl=64 time=1.01 ms
64 bytes from 192.168.5.129: icmp_seq=3 ttl=64 time=0.541 ms
64 bytes from 192.168.5.129: icmp_seq=4 ttl=64 time=0.796 ms
^C
--- 192.168.5.129 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3044ms
rtt min/avg/max/mdev = 0.541/0.772/1.005/0.165 ms
student@ubuntuvm:~/Desktop$
```

Microsoft Visio Network Diagram

Diagram

Microsoft Visio Network Diagram

This diagram should illustrate the interconnection of the *Computer 1* VM, the *Computer 2* VM, and the *SOHO* Router VM.





SOHO Wireless Network Security

- Q & A

SOHO Wireless Network Security

1. What are the factory default username and password of a TP-Link router? Why is it important to change the default username and password of a SOHO router?

Answer: admin; because you can find the default username and password of a SOHO router online.

2. To protect a SOHO wireless network with a small number of devices, which address management method provides more control, configuring the device IP addresses manually (static IP) or using a DHCP server (dynamic IP)? Why?

Answer: In terms of control, a static IP will give you more control as it is configured manually. Although DHCP is cheaper, it automatically assigns a vacant IP address to the network, eliminating the need to track which device has which IP by the admin.

3. What does MAC filtering do? If needed, when would you use deny filtering rules and when would you use allow filtering rules? What happens to devices that want to connect, if the “Allow the stations specified by any enabled entries in the list to access” function is enabled but there are no entries in the list?

Answer: Filtering allows you to control the wireless stations accessing the AP. You would deny filtering devices when you don't want that device on your Wi-Fi; likewise, when you need to troubleshoot a device, is when you want it to connect or just to monitor specific devices. It will turn on but until there entries in the list it won't do anything.

SOHO Wireless Network Security

1. What wireless security settings are displayed on the Wireless Security page? Which one is recommended by the vendor? Why?

Answer: WPA/WPA2 – Personal(Recommended), WPA/WPA2-Enterprise, WEP. It is recommended because it offers the best security.

2. Among the configurations you explored in this module, which one is a true security function? Why?

Answer: I consider Wireless Security as a true security function. The reasoning behind this is that it offers Encryption.

3. What would you do to protect your wireless network at home? Why?

Answer: In the case that someone is brave enough to try and log into my “CIA Mobile” network. They would have to crack a 32-character password protected router.

- First time using the InfoSec Website
- Understanding Subnetting

NETW191

CHALLENGES

- Subnetting
- CLI in Linux
- Networking Concepts
- Visio Diagram

NETW191

Skills Obtained

Networking does not mean to socialize. It is in fact a powerful tool in the Information Technology field. It's the platform that the entire internet runs on top of. Networking just means a set of computers sharing resources with each other. Whether that is printers, faxes or accessing the World Wide Web.

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CONCLUSION