

Name: BONIFACIO, REDJ GUILLIAN F.	Date Performed: 8/6/2025
Course/Section: CPE3124	Date Submitted: 8/6/2025
Instructor: ROBIN VALENZUELA	Semester and SY: 1ST 2025

Activity 1: Configure Network using Virtual Machines

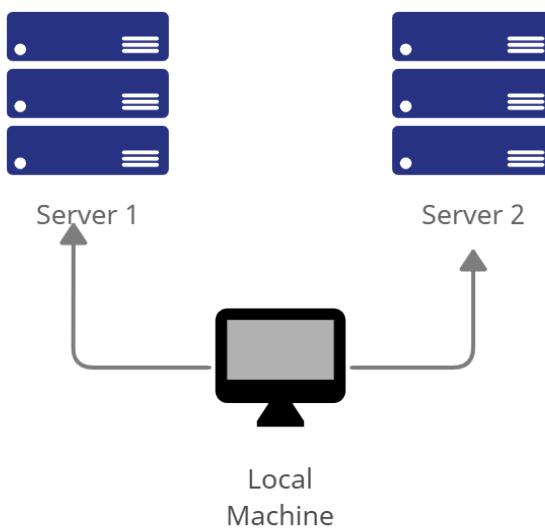
1. Objectives:

- 1.1. Create and configure Virtual Machines in Microsoft Azure or VirtualBox
- 1.2. Set-up a Virtual Network and Test Connectivity of VMs

2. Discussion:

Network Topology:

Assume that you have created the following network topology in Virtual Machines, **provide screenshots for each task**. (Note: *it is assumed that you have the prior knowledge of cloning and creating snapshots in a virtual machine*).



Task 1: Do the following on Server 1, Server 2, and Local Machine. In editing the file using nano command, press control + O to write out (save the file). Press enter when asked for the name of the file. Press control + X to end.

1. Change the hostname using the command ***sudo nano /etc/hostname***
 - 1.1 Use server1 for Server 1
 - 1.2 Use server2 for Server 2
 - 1.3 Use workstation for the Local Machine

The screenshot shows three separate Oracle VirtualBox windows, each running an instance of the nano text editor on the /etc/hostname file. The top window is titled 'bonifacio - Ubuntu (Control Node) [Running] - Oracle VirtualBox' and contains the text 'workstation'. The middle window is titled 'bonifacio - Ubuntu (MN1) [Running] - Oracle VirtualBox' and contains the text 'Server1'. The bottom window is titled 'bonifacio - Ubuntu (MN2) [Running] - Oracle VirtualBox' and contains the text 'server2'. All three windows have the same toolbar at the top with various nano editor commands.

2. Edit the hosts using the command ***sudo nano /etc/hosts***. Edit the second line.

2.1 Type 127.0.0.1 server 1 for Server 1

2.2 Type 127.0.0.1 server 2 for Server 2

2.3 Type 127.0.0.1 workstation for the Local Machine

The screenshot shows three separate Oracle VirtualBox windows, each running an instance of the nano text editor on the /etc/hosts file. The top window is titled 'bonifacio - Ubuntu (Control Node) [Running] - Oracle VirtualBox' and contains the line '127.0.0.1 localhost' followed by '# The following lines are desirable for IPv6 capable hosts'. The middle window is titled 'bonifacio - Ubuntu (MN1) [Running] - Oracle VirtualBox' and contains the line '127.0.0.1 localhost' followed by '127.0.0.1 server 1' and '# The following lines are desirable for IPv6 capable hosts'. The bottom window is titled 'bonifacio - Ubuntu (MN2) [Running] - Oracle VirtualBox' and contains the line '127.0.0.1 localhost' followed by '127.0.0.1 server 2' and '# The following lines are desirable for IPv6 capable hosts'. All three windows have the same toolbar at the top with various nano editor commands.

Task 2: Configure SSH on Server 1, Server 2, and Local Machine. Do the following:

1. Upgrade the packages by issuing the command ***sudo apt update*** and ***sudo apt upgrade*** respectively.

```

[bonifacio - Ubuntu (M1) [Running] - Oracle VirtualBox]
File Machine View Input Devices Help
bonifacio@server1:~$ sudo nano /etc/hosts
[bonifacio@server1:~$ sudo apt update
Hit:1 http://ph.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ph.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://ph.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
1 package can be upgraded. Run 'apt list --upgradable' to see it.
bonifacio@server1:~$ ]]

[bonifacio - Ubuntu (M2) [Running] - Oracle VirtualBox]
File Machine View Input Devices Help
bonifacio@server1:~$ sudo nano /etc/hosts
[bonifacio@server1:~$ sudo apt update
Hit:1 http://ph.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ph.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://ph.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
1 package can be upgraded. Run 'apt list --upgradable' to see it.
bonifacio@server1:~$ ]]

[sudo apt update]
[bonifacio - Ubuntu (Control Node) [Running] - Oracle VirtualBox]
File Machine View Input Devices Help
bonifacio@server1:~$ sudo apt update
[sudo] password for bonifacio:
[bonifacio@server1:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
  libgl1-amber-dri libglapi-mesa
Use 'sudo apt autoremove' to remove them.
The following packages have been kept back:
  libgl1-amber-dri
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
bonifacio@server1:~$ ]]

[bonifacio - Ubuntu (M1) [Running] - Oracle VirtualBox]
File Machine View Input Devices Help
bonifacio@server1:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
  libgl1-amber-dri libglapi-mesa
Use 'sudo apt autoremove' to remove them.
The following packages have been kept back:
  libgl1-amber-dri
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
bonifacio@server1:~$ ]]

[bonifacio - Ubuntu (M2) [Running] - Oracle VirtualBox]
File Machine View Input Devices Help
bonifacio@server1:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
  libgl1-amber-dri libglapi-mesa
Use 'sudo apt autoremove' to remove them.
The following packages have been kept back:
  libgl1-amber-dri
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
bonifacio@server1:~$ ]

```

sudo apt update

sudo apt upgrade

- Install the SSH server using the command ***sudo apt install openssh-server***.

The screenshot shows three terminal windows side-by-side. The top window shows the command `sudo apt install openssh-server` being run, with the output indicating that the package is already at its newest version. The middle window shows the command `sudo apt autoremove` being run, with the output showing 0 upgraded, 0 newly installed, and 0 to remove and 1 not upgraded. The bottom window shows the command `sudo apt update` being run, with the output showing the creation of a new config file for /etc/ssh/sshd_config and various dependencies being updated.

- Verify if the SSH service has started by issuing the following commands:

3.1 `sudo service ssh start`

3.2 `sudo systemctl status ssh`

The screenshot shows two terminal windows. The left window displays the command `sudo systemctl status ssh`, which shows the service is active (running) with a process ID of 3968. The right window displays the command `ps aux | grep sshd`, which shows the sshd process running with a PID of 3968. Both windows show the same output, indicating the service is active and the process is running.

The screenshot shows three terminal windows running on a Linux desktop environment. Each window displays the command-line interface with the following log entries:

```

man:sshd_config(5)
Process: 3967 ExecStartPre=/usr/sbin/sshd -t (code=exited, status 0)
Main PID: 3968 (sshd)
Tasks: 1 (limit: 5547)
Memory: 1.2M (peak: 1.6M)
CPU: 17ms
CGroup: /system.slice/sshd.service
└─ 3968 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-16>

Aug 08 07:27:43 server1 systemd[1]: Starting ssh.service - OpenBSD's
Aug 08 07:27:43 server1 sshd[3968]: Server listening on 0.0.0.0 po
Aug 08 07:27:43 server1 sshd[3968]: Server listening on :: port 22.
Aug 08 07:27:43 server1 systemd[1]: Started ssh.service - OpenBSD's

```

The desktop background features a dark theme with yellow hexagonal patterns.

- Configure the firewall to all port 22 by issuing the following commands:

4.1 sudo ufw allow ssh

4.2 sudo ufw enable

4.3 sudo ufw status

The screenshot shows three terminal windows running on a Linux desktop environment. The middle window is focused and displays the following command-line session:

```

bonifacio@server1:~$ sudo ufw enable
Firewall is active and enabled on system startup
bonifacio@server1:~$ sudo ufw status
Status: active
To                         Action      From
--                         ----      --
22/tcp                      ALLOW      Anywhere
22/tcp (v6)                  ALLOW      Anywhere (v6)

bonifacio@server1:~$ sudo nano /etc/hostname
bonifacio@server1:~$ sudo nano /etc/hosts
bonifacio@server1:~$ 

```

The desktop background features a dark theme with yellow hexagonal patterns.

Task 3: Verify network settings on Server 1, Server 2, and Local Machine. On each device, do the following:

1. Record the ip address of Server 1, Server 2, and Local Machine. Issue the command **ifconfig** and check network settings. Note that the ip addresses of all the machines are in this network 192.168.56.XX.
 - 1.1 Server 1 IP address: 192.168.56.107
 - 1.2 Server 2 IP address: 192.168.56.110
 - 1.3 Server 3 IP address: 192.168.56.111

```
bonifacio@server1:~$ ifconfig
inet6 fd00::a00:27ff:fed:270e  prefixlen 64  scopeid 0x0<global>
inet6 fd00::4f6e:f41f:37e5:f943  prefixlen 64  scopeid 0x0<global>
      ether 08:00:27:fd:27:0e  txqueuelen 1000  (Ethernet)
      RX packets 1310  bytes 1157735 (1.1 MB)
      RX errors 0  dropped 0  overruns 0  frame 0
      TX packets 689  bytes 61578 (61.5 KB)
      TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
      inet 192.168.56.111  netmask 255.255.255.0  broadcast 192.1
                  68.56.255

bonifacio@server1:~$ ifconfig
inet6 fd00::a00:27ff:fee2:c3e8  prefixlen 64  scopeid 0x0<global>
inet6 fd00::c612:0ecc:c840:6fa9  prefixlen 64  scopeid 0x0<global>
      ether 08:00:27:e2:c3:e8  txqueuelen 1000  (Ethernet)
      RX packets 1389  bytes 1171386 (1.1 MB)
      RX errors 0  dropped 0  overruns 0  frame 0
      TX packets 748  bytes 68052 (68.0 KB)
      TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
      inet 192.168.56.107  netmask 255.255.255.0  broadcast 192.1
                  68.56.255

bonifacio@server1:~$ ifconfig
inet6 fd00::a00:27ff:fee2:c3e8  prefixlen 64  scopeid 0x0<global>
      ether 08:00:27:e2:c3:e8  txqueuelen 1000  (Ethernet)
      RX packets 1302  bytes 1156987 (1.1 MB)
      RX errors 0  dropped 0  overruns 0  frame 0
      TX packets 689  bytes 61137 (61.1 KB)
      TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
      inet 192.168.56.110  netmask 255.255.255.0  broadcast 192.1
                  68.56.255
```

2. Make sure that they can ping each other.

2.1 Connectivity test for Local Machine 1 to Server 1: Successful Not Successful

The screenshot shows a dual-monitor setup. The left monitor displays a black desktop environment with a large yellow triangle graphic in the top right corner. The right monitor displays two terminal windows side-by-side. Both terminals are running on an Ubuntu system (version 16.04 LTS) with a dark theme. The top terminal window shows the command `ping 10.0.2.15` being run, with the output indicating a successful ping to the local machine. The bottom terminal window shows the output of the `ifconfig` command, listing the interface `enp0s3` with its IP configuration.

```
[1]+ Stopped ping 10.0.2.15
bonifacio@server1:~$ ping 10.0.2.15 -c 4
PING 10.0.2.15 (10.0.2.15) 56(84) bytes of data.
64 bytes from 10.0.2.15: icmp_seq=1 ttl=64 time=0.025 ms
64 bytes from 10.0.2.15: icmp_seq=2 ttl=64 time=0.036 ms
64 bytes from 10.0.2.15: icmp_seq=3 ttl=64 time=0.037 ms
64 bytes from 10.0.2.15: icmp_seq=4 ttl=64 time=0.036 ms

--- 10.0.2.15 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3119ms
rtt min/avg/max/mdev = 0.025/0.033/0.037/0.005 ms
bonifacio@server1:~$ 

Aug 8 08:01
File Machine View Input Devices Help
bonifacio@server1:~ x bonifacio@server1:~ x bonifacio@server1:~ x
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.15  netmask 255.255.255.0 broadcast 10.0.2.255
        inet6 fe80::a00:27ff:fee2:c3e8  prefixlen 64  scopeid 0x20<brd
          link>
          inet6 fd00::6212:bc4a:65ea:a24  prefixlen 64  scopeid 0x0<brd
          local>
          inet6 fd00::a00:27ff:fee2:c3e8  prefixlen 64  scopeid 0x0<brd
          local>
            ether 08:00:27:e2:c3:e8  txqueuelen 1000  (Ethernet)
              RX packets 1389  bytes 1171386 (1.1 MB)
              RX errors 0  dropped 0  overruns 0  frame 0
              TX packets 748  bytes 68052 (68.0 KB)
              TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

```

2.2 Connectivity test for Local Machine 1 to Server 2: Successful Not Successful

```

bonifacio@server1:~$ ping 127.0.0.1 -c 4
PING 127.0.0.1 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.029 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.036 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.035 ms

--- 127.0.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3119ms
rtt min/avg/max/mdev = 0.025/0.033/0.037/0.005 ms

bonifacio@server1:~$ ping 127.0.0.1 -c 4
PING 127.0.0.1 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.029 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.036 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.035 ms

--- 127.0.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3113ms
rtt min/avg/max/mdev = 0.029/0.032/0.036/0.003 ms

bonifacio@server1:~$ ip a

```

2.3 Connectivity test for Server 1 to Server 2: Successful Not Successful

```

TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

bonifacio@server1:~$ ping 127.0.0.1 -c 4
PING 127.0.0.1 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.034 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.030 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.029 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.030 ms

--- 127.0.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3054ms
rtt min/avg/max/mdev = 0.029/0.030/0.034/0.002 ms

bonifacio@server1:~$ ip a

```

Task 4: Verify SSH connectivity on Server 1, Server 2, and Local Machine.

1. On the Local Machine, issue the following commands:

- 1.1 `ssh username@ip_address_server1` for example, `ssh jvtaylor@192.168.56.120`
- 1.2 Enter the password for server 1 when prompted

bonifacio - Ubuntu (Control Node) [Running] - Oracle VirtualBox

File Machine View Input Devices Help

Aug 8 08:14

bonifacio@server1:~

```
bonifacio@server1:~$ ssh bonifacio@192.168.56.107
The authenticity of host '192.168.56.107 (192.168.56.107)' can't be established.
ED25519 key fingerprint is SHA256:B112Sr0gBnigp3qgyAkohztVeWIZg7a/cUoEdZIx/h8.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.56.107' (ED25519) to the list of known hosts.
bonifacio@192.168.56.107's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-27-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
```

local machine

1.3 Verify that you are in server 1. The user should be in this format user@server1. For example, *jvtaylor@server1*

```
bonifacio - Ubuntu (Control Node) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Aug 8 08:14
bonifacio@server1:~ bonifacio@server1:~ bonifacio@server1:~
bonifacio@server1:~$ ssh bonifacio@192.168.56.107
The authenticity of host '192.168.56.107 (192.168.56.107)' can't be established.
ED25519 key fingerprint is SHA256:B112Sr0gBnigp3qgyAkohztVeWIzg7a/cUoEdZIx/h8.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.56.107' (ED25519) to the list of known hosts.
bonifacio@192.168.56.107's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-27-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
```

2. Logout of Server 1 by issuing the command **control + D**.

```
bonifacio - Ubuntu (Control Node) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Aug 8 08:18
bonifacio@server1: ~
Warning: Permanently added '192.168.56.107' (ED25519) to the list of known hosts.
bonifacio@192.168.56.107's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-27-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

bonifacio@server1:~$ logout
Connection to 192.168.56.107 closed.
bonifacio@server1:~$
```

3. Do the same for Server 2.

```
bonifacio - Ubuntu (Control Node) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Aug 8 08:21
bonifacio@server1:~ bonifacio@server1:~ bonifacio@server1:~
Warning: Permanently added '192.168.56.110' (ED25519) to the list of known hosts.
bonifacio@192.168.56.110's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-27-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

bonifacio@server1:~$ logout
Connection to 192.168.56.110 closed.
bonifacio@server1:~$
```

4. Edit the hosts of the Local Machine by issuing the command ***sudo nano /etc/hosts***. Below all texts type the following:
 - 4.1 **IP_address server 1** (provide the ip address of server 1 followed by the hostname)
 - 4.2 **IP_address server 2** (provide the ip address of server 2 followed by the hostname)

```
bonifacio@server1:~$ nano /etc/hosts
bonifacio@server1:~$ bonifacio@server1:~$ bonifacio@server1:~$ [ Wrote 11 lines ]
```

The screenshot shows a terminal window titled "bonifacio - Ubuntu (Control Node) [Running] - Oracle VirtualBox". The window has three tabs open, all showing the command line prompt "bonifacio@server1:~\$". The central tab is active and displays the contents of the "/etc/hosts" file. The file contains the following entries:

```
127.0.0.1 localhost
127.0.0.1 workstation
192.168.56.110 server1
192.168.56.111 server2

# The following lines are desirable for IPv6 capable hosts
::1      ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

The status bar at the bottom of the terminal window shows "[Wrote 11 lines]". The terminal window is part of a desktop environment with icons for a browser, file manager, and other applications visible on the left.

4.3 Save the file and exit.

5. On the local machine, verify that you can do the SSH command but this time, use the hostname instead of typing the IP address of the servers. For example, try to do **ssh jvtaylor@server1**. Enter the password when prompted. Verify that you have entered Server 1. Do the same for Server 2.

```
bonifacio - Ubuntu (Control Node) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Aug 8 08:25
bonifacio@server1: ~
Connection to 192.168.56.110 closed.
bonifacio@server1:~$ sudo nano /etc/hosts
[sudo] password for bonifacio:
bonifacio@server1:~$ ssh bonifacio@server1
The authenticity of host 'server1 (192.168.56.110)' can't be established.
ED25519 key fingerprint is SHA256:B112Sr0gBnigp3qgyAkohztVeWIZg7a/cUoEdZIx/h8.
This host key is known by the following other names/addresses:
    ~/.ssh/known_hosts:1: [hashed name]
    ~/.ssh/known_hosts:4: [hashed name]
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'server1' (ED25519) to the list of known hosts.
bonifacio@server1's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-27-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Fri Aug  8 08:20:40 2025 from 192.168.56.111
bonifacio@server1:~$ S
```

Reflections:

Answer the following:

1. How are we able to use the hostname instead of IP address in SSH commands?

In SSH commands, you can use the hostname instead of an IP address because the SSH client depends on the operating system's name resolution system to translate the hostname into its corresponding IP address. This resolution is typically handled through DNS servers, the local `/etc/hosts` file, or other network name resolution services. When you enter `ssh user@hostname`, your system first looks up the IP address associated with the hostname using these methods before establishing a connection to the SSH daemon on the remote machine.

2. How secured is SSH?

When configured correctly, SSH is considered highly secure. It encrypts authentication credentials, preventing eavesdropping and protecting against man-in-the-middle attacks by securing all communication between the client and server. SSH supports advanced authentication methods like public-key authentication and multi-factor authentication. With its strong encryption algorithms and secure key exchange processes, it ensures both data confidentiality and integrity. The security of SSH depends on best practices such as disabling root login, using strong passwords or keys, keeping the server updated, and managing user access carefully. When implemented properly, SSH is a reliable and trusted solution for secure remote services and system administration.