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Course/Section: CpE212-CpE31S2	Date Submitted: August 25, 2024
Instructor:	Semester and SY: 2024-2025

Activity 1: Configure Network using Virtual Machines

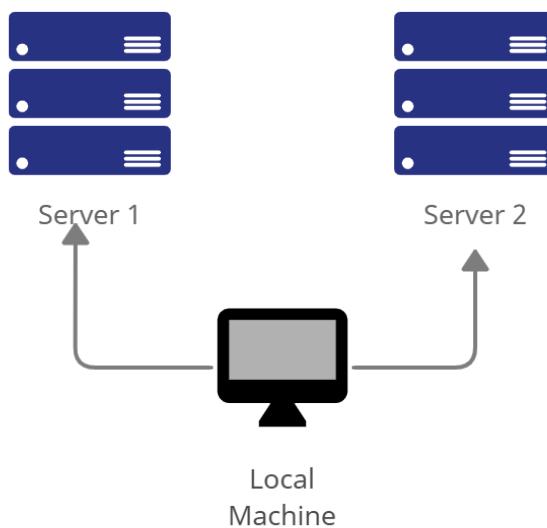
1. Objectives:

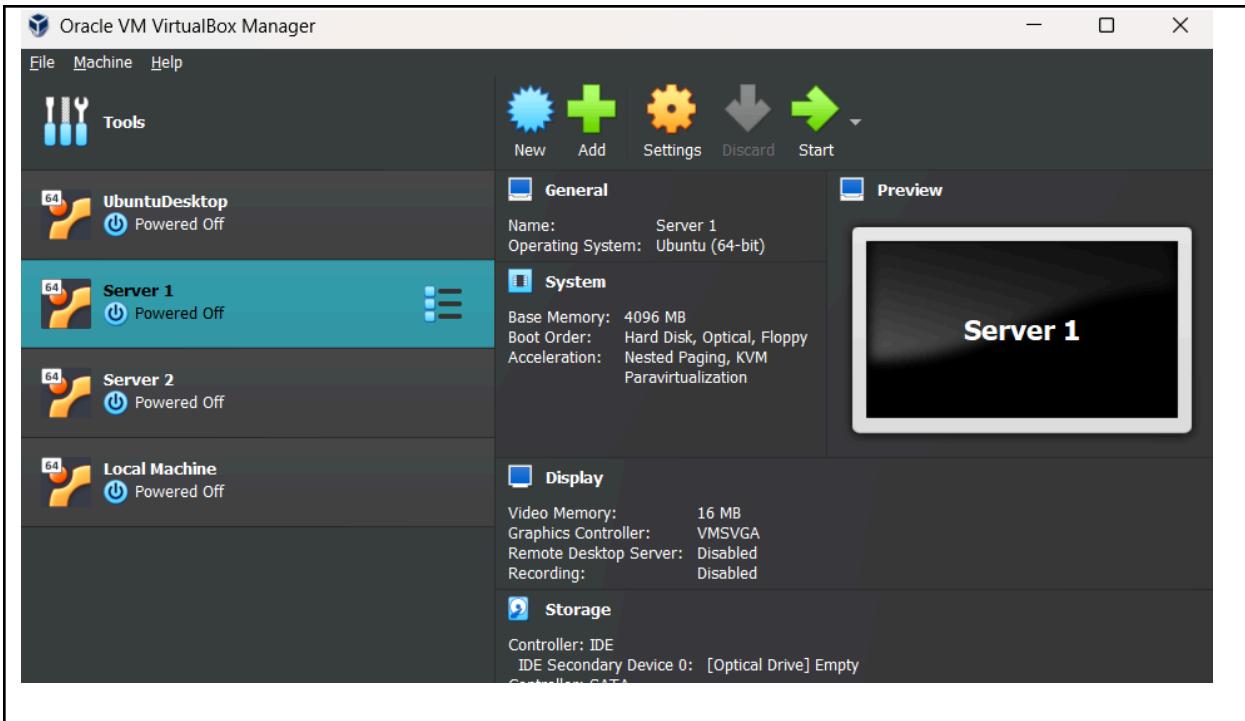
- 1.1. Create and configure Virtual Machines in Microsoft Azure or VirtualBox
- 1.2. Set-up a Virtual Network and Test Connectivity of VMs

2. Discussion:

Network Topology:

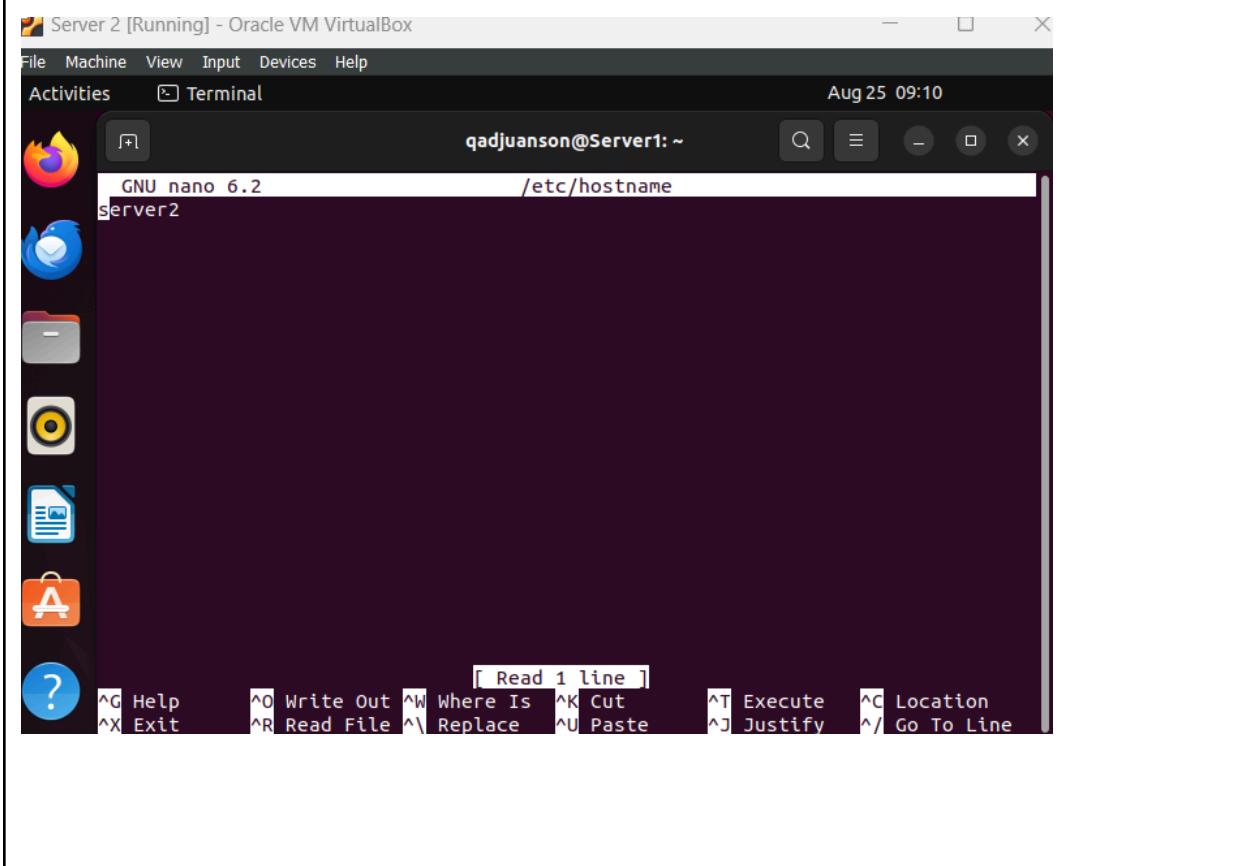
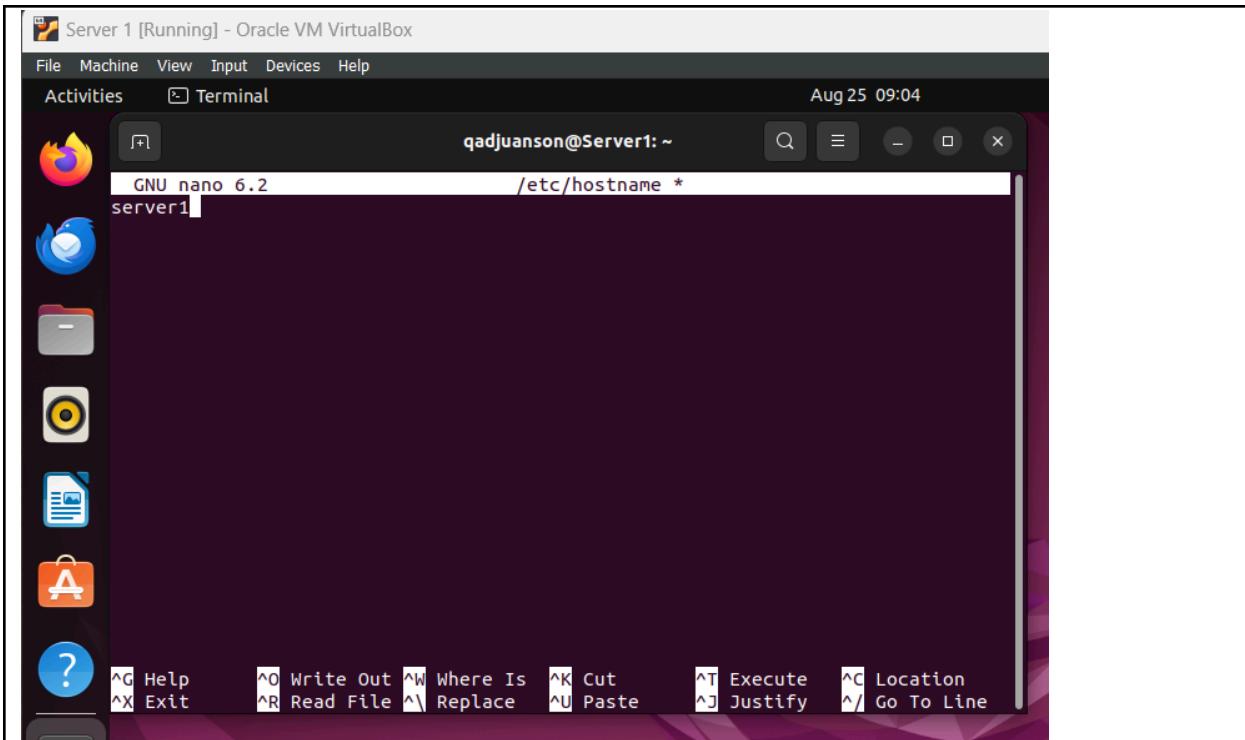
Assume that you have created the following network topology in Virtual Machines, **provide screenshots for each task**. (Note: *it is assumed that you have the prior knowledge of cloning and creating snapshots in a virtual machine*).

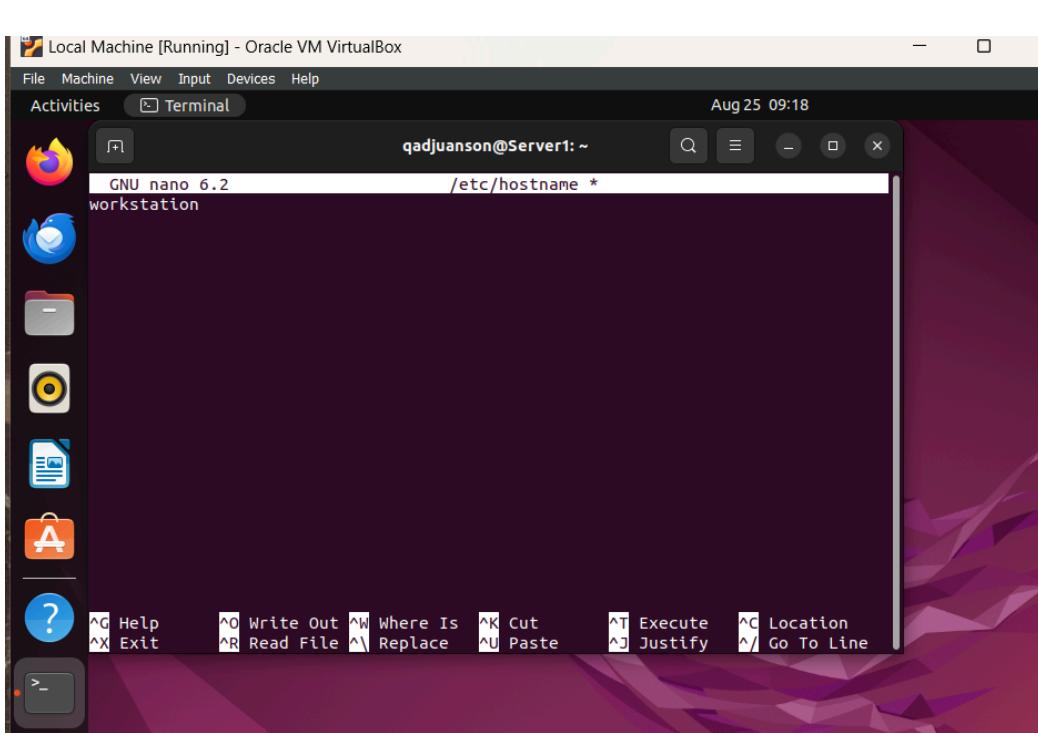




Task 1: Do the following on Server 1, Server 2, and Local Machine. In editing the file using nano command, press control + O to write out (save the file). Press enter when asked for the name of the file. Press control + X to end.

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





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

Server 1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Aug 25 09:25

```
GNU nano 6.2 /etc/hosts *
127.0.0.1 localhost
127.0.1.1 server 1

# 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
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line

Server 2 [Running] - Oracle VM VirtualBox

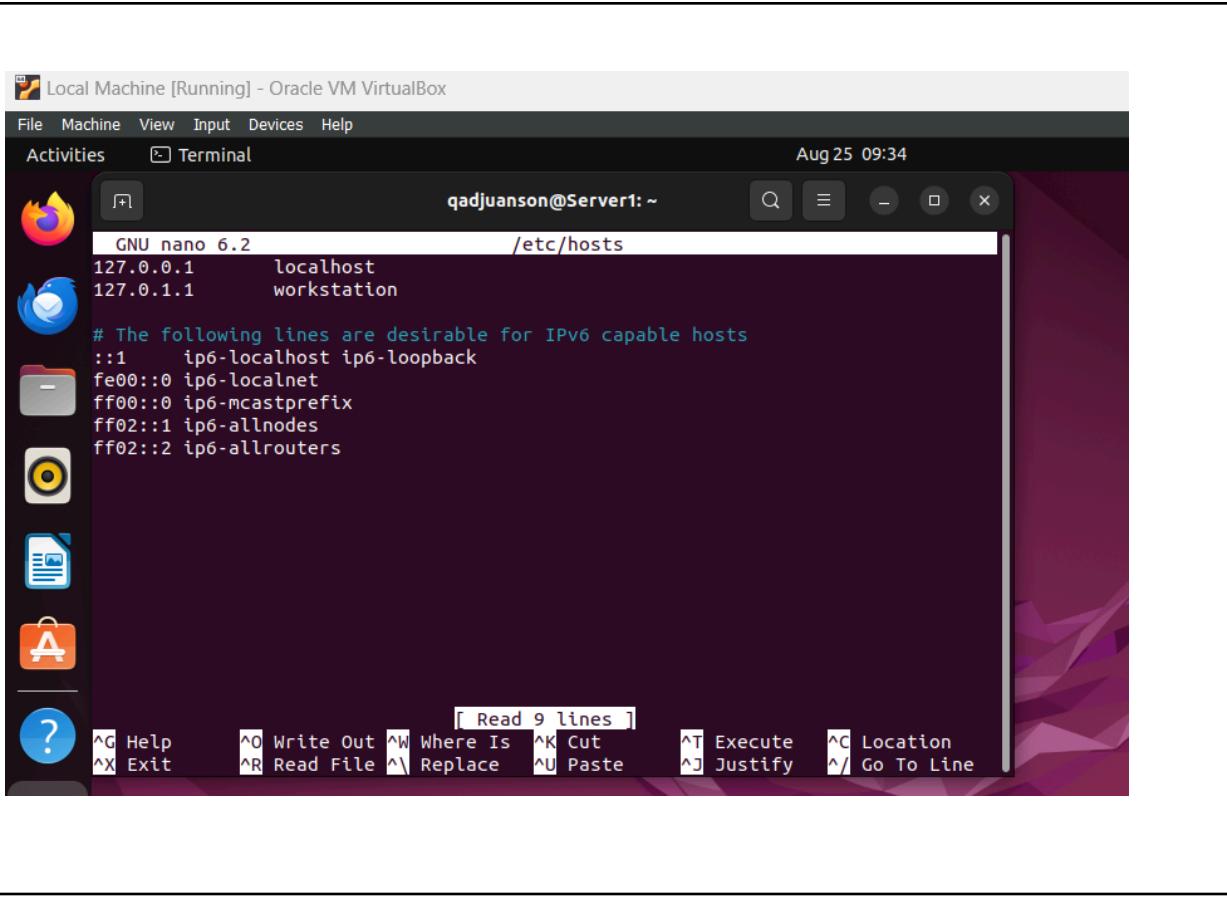
File Machine View Input Devices Help

Activities Terminal Aug 25 09:31

```
GNU nano 6.2 /etc/hosts *
127.0.0.1 localhost
127.0.1.1 server 2

# 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
```

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line

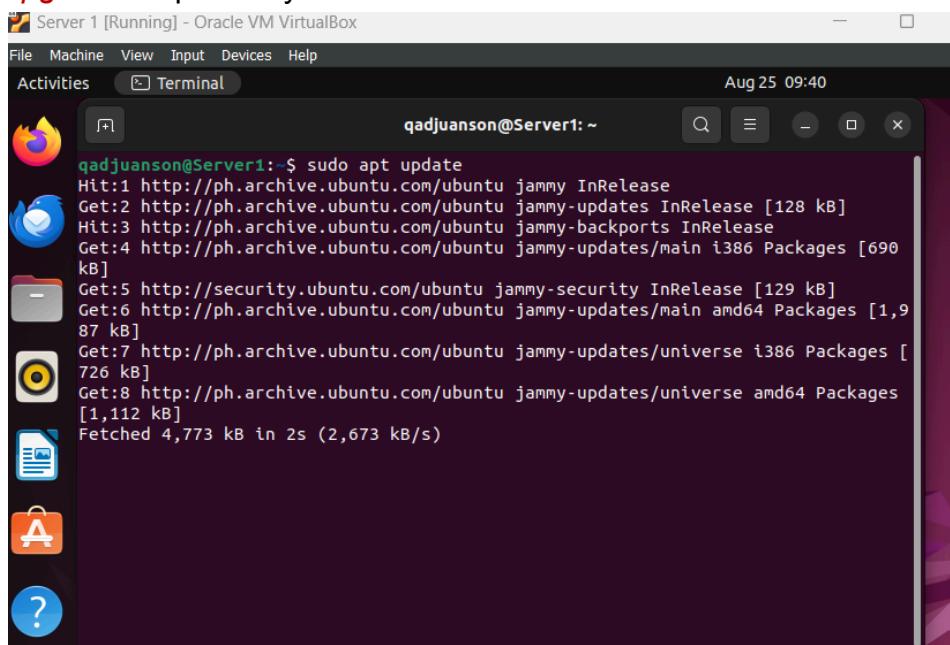


```
GNU nano 6.2          /etc/hosts
127.0.0.1      localhost
127.0.1.1      workstation

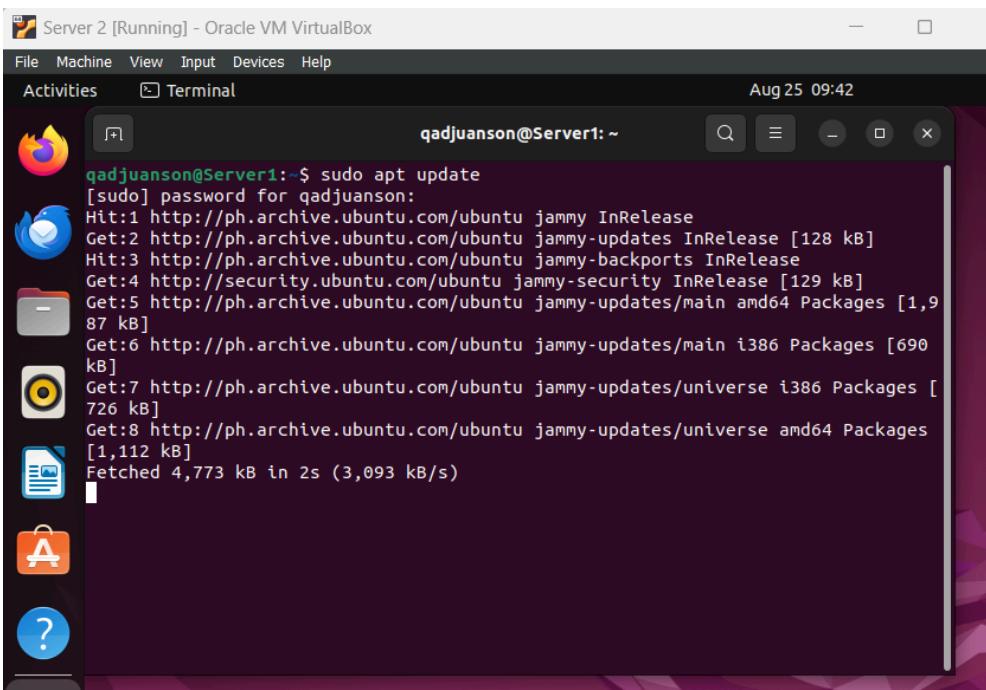
# The following lines are desirable for IPv6 capable hosts
::1      ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

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.



```
qadjuanson@Server1: ~$ sudo apt update
Hit:1 http://ph.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ph.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:3 http://ph.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [690 kB]
Get:5 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:6 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1,987 kB]
Get:7 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages [726 kB]
Get:8 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,112 kB]
Fetched 4,773 kB in 2s (2,673 kB/s)
```

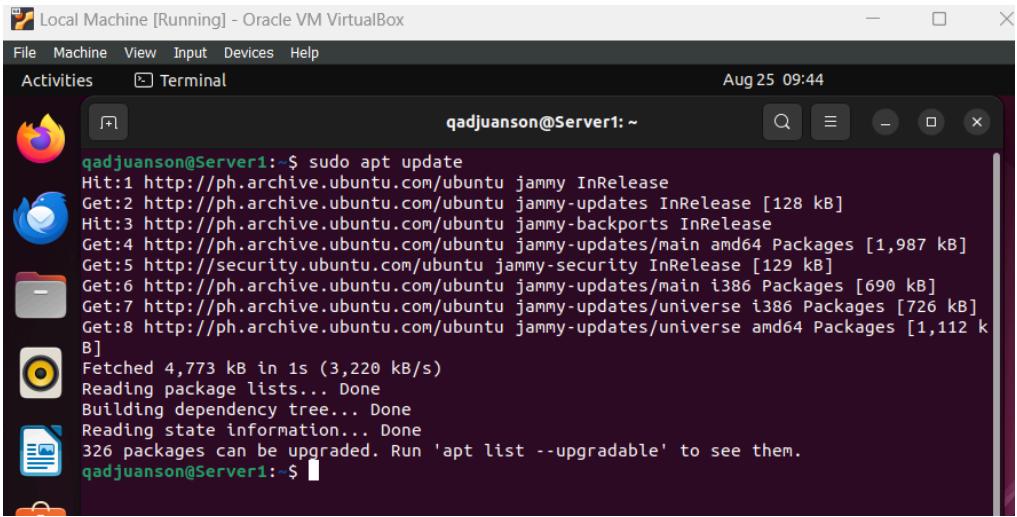


Server 2 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Aug 25 09:42

```
qadjuanson@Server1:~$ sudo apt update
[sudo] password for qadjuanson:
Hit:1 http://ph.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ph.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:3 http://ph.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:5 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1,987 kB]
Get:6 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [690 kB]
Get:7 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages [726 kB]
Get:8 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,112 kB]
Fetched 4,773 kB in 2s (3,093 kB/s)
```



Local Machine [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Aug 25 09:44

```
qadjuanson@Server1:~$ sudo apt update
Hit:1 http://ph.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ph.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:3 http://ph.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1,987 kB]
Get:5 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:6 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [690 kB]
Get:7 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages [726 kB]
Get:8 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,112 kB]
Fetched 4,773 kB in 1s (3,220 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
326 packages can be upgraded. Run 'apt list --upgradable' to see them.
qadjuanson@Server1:~$
```

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

Server 1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Aug 25 09:53

```
qadjuanson@Server1:~$ sudo dpkg --configure -a
qadjuanson@Server1:~$ sudo apt update
Hit:1 http://ph.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://ph.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://ph.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
220 packages can be upgraded. Run 'apt list --upgradable' to see them.
qadjuanson@Server1:~$ sudo apt install openssh-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libreoffice-ogltrans libwpe-1.0-1 libwpebackend-fdo-1.0-1
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  ncurses-term openssh-client openssh-sftp-server ssh-import-id
Suggested packages:
  keychain libpam-ssh monkeysphere ssh-askpass molly-guard
The following NEW packages will be installed:
  ncurses-term openssh-server openssh-sftp-server ssh-import-id
The following packages will be upgraded:
  openssh-client
1 upgraded, 4 newly installed, 0 to remove and 219 not upgraded.
Need to get 751 kB/1,657 kB of archives.
After this operation, 6,046 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Server 2 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

qadjuanson@Server1: ~

```
qadjuanson@Server1:~$ sudo dpkg --configure -a
qadjuanson@Server1:~$ sudo apt update
Hit:1 http://ph.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ph.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:3 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:4 http://ph.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:5 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1,987 kB]
Get:6 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [690 kB]
Get:7 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,112 kB]
Get:8 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages [726 kB]
Fetched 4,643 kB in 2s (2,935 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
183 packages can be upgraded. Run 'apt list --upgradable' to see them.
qadjuanson@Server1:~$ sudo apt install openssh-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libwpe-1.0-1 libwpebackend-fdo-1.0-1
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  ncurses-term openssh-client openssh-sftp-server ssh-import-id
Suggested packages:
  keychain libpam-ssh monkeysphere ssh-askpass molly-guard
The following NEW packages will be installed:
  ncurses-term openssh-server openssh-sftp-server ssh-import-id
The following packages will be upgraded:
  openssh-client
1 upgraded, 4 newly installed, 0 to remove and 182 not upgraded.
Need to get 751 kB/1,657 kB of archives.
After this operation, 6,046 kB of additional disk space will be used.
Do you want to continue? [Y/n] ■
```

Local Machine [Running] - Oracle VM VirtualBox

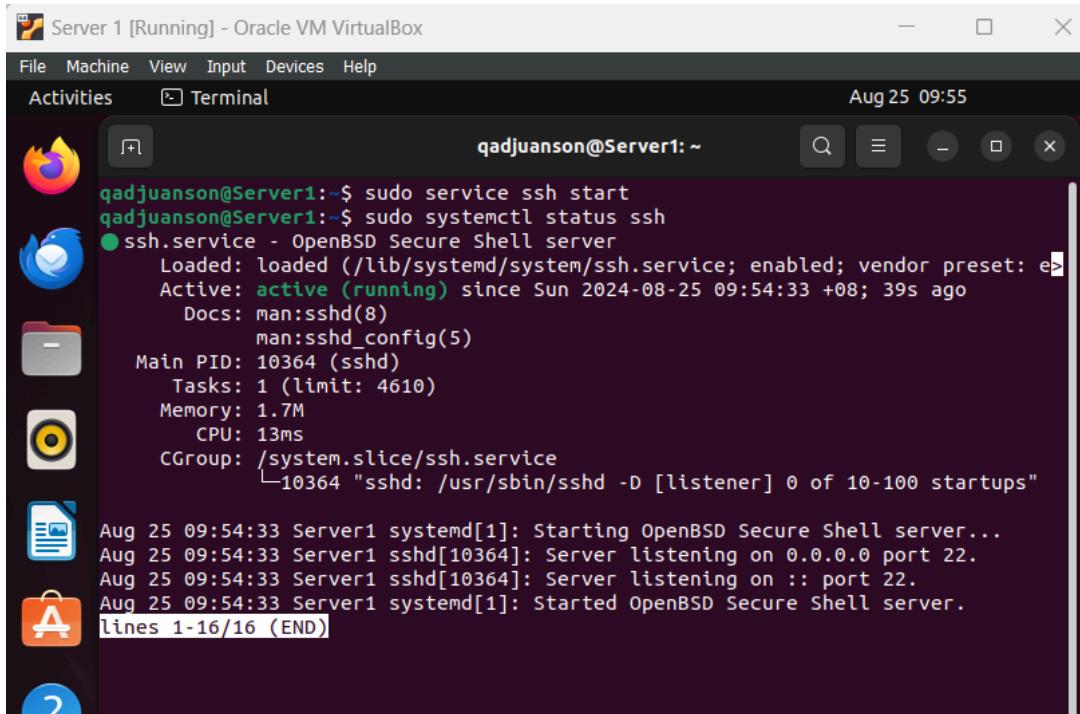
File Machine View Input Devices Help

qadjuanson@Server1:~\$ sudo dpkg --configure -a
[sudo] password for qadjuanson:
qadjuanson@Server1:~\$ sudo apt update
Hit:1 http://ph.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://ph.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:3 http://ph.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:5 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [690 kB]
Get:6 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1,987 kB]
Get:7 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages [726 kB]
Get:8 http://ph.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,112 kB]
Fetched 4,772 kB in 2s (2,867 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
326 packages can be upgraded. Run 'apt list --upgradable' to see them.
qadjuanson@Server1:~\$ sudo apt install openssh-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
 ncurses-term openssh-client openssh-sftp-server ssh-import-id
Suggested packages:
 keychain libpam-ssh monkeysphere ssh-askpass molly-guard
The following NEW packages will be installed:
 ncurses-term openssh-server openssh-sftp-server ssh-import-id
The following packages will be upgraded:
 openssh-client
1 upgraded, 4 newly installed, 0 to remove and 325 not upgraded.
Need to get 751 kB/1,657 kB of archives.
After this operation, 6,046 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main amd64 openssh-sftp-server amd64 1:8.9p1-3ubuntu0.10 [38.9 kB]
Get:2 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main amd64 openssh-server amd64 1:8.9p1-3ubuntu0.10 [435 kB]
Get:3 http://ph.archive.ubuntu.com/ubuntu jammy-updates/main amd64 ncurses-term all 6.3-2ubuntu0.1 [267 kB]

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

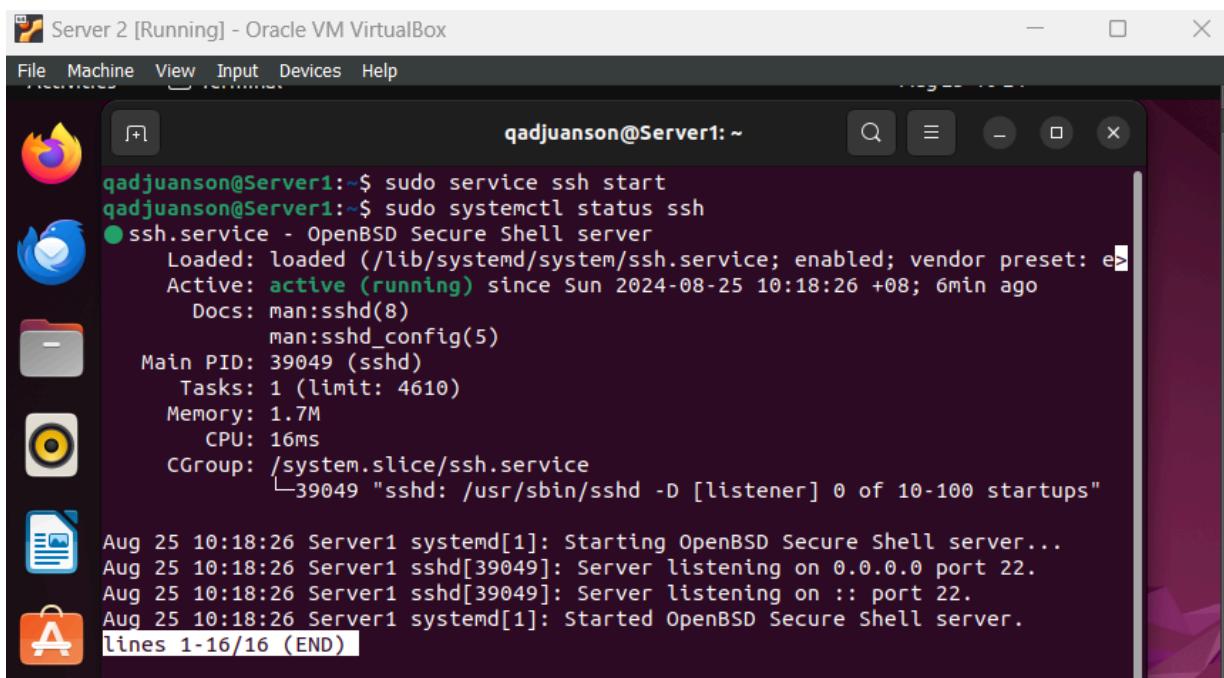
3.1 `sudo service ssh start`

3.2 `sudo systemctl status ssh`



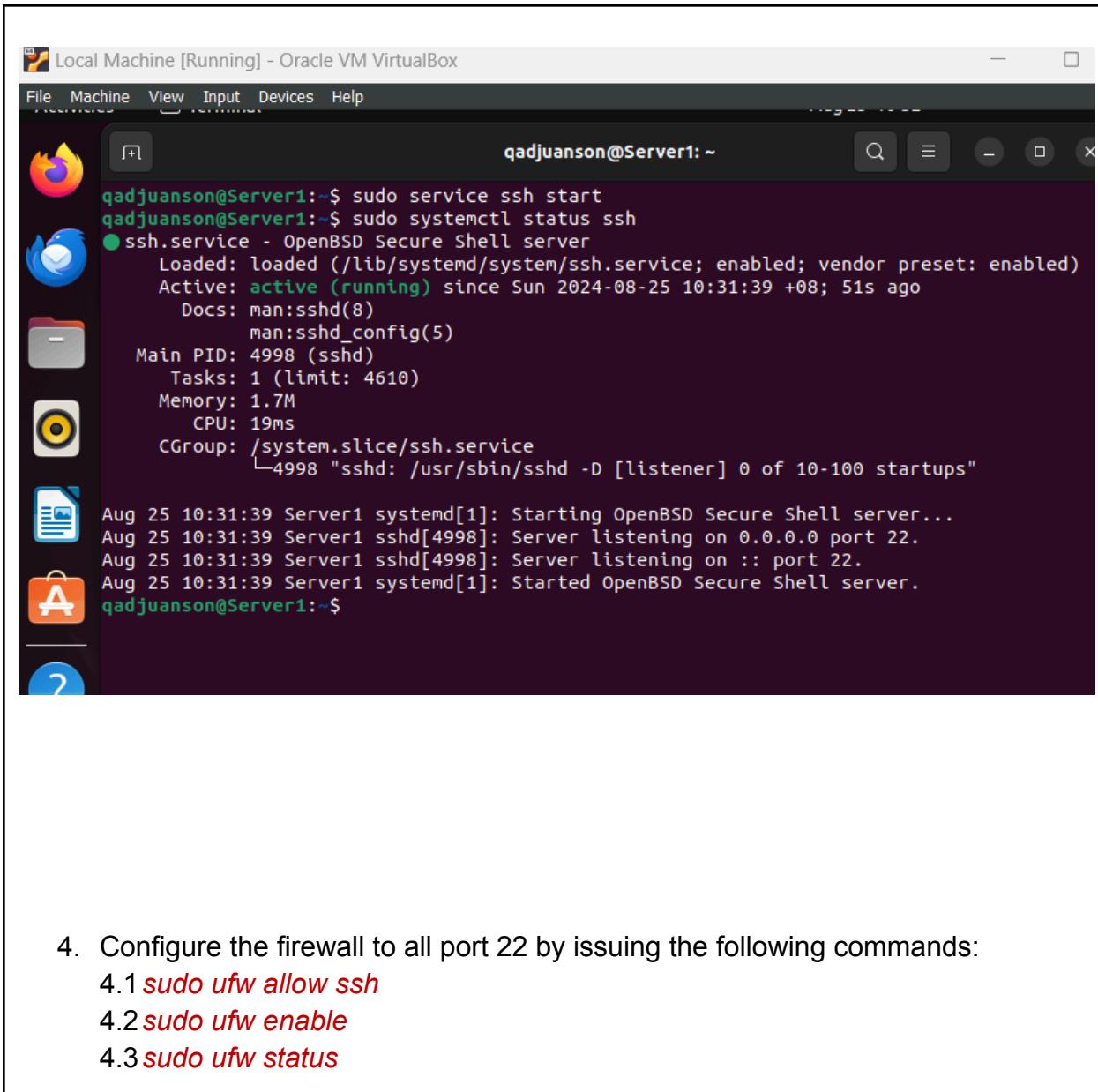
```
qadjuanson@Server1:~$ sudo service ssh start
qadjuanson@Server1:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2024-08-25 09:54:33 +08; 39s ago
     Docs: man:sshd(8)
           man:sshd_config(5)
     Main PID: 10364 (sshd)
        Tasks: 1 (limit: 4610)
       Memory: 1.7M
          CPU: 13ms
        CGroup: /system.slice/ssh.service
                └─10364 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Aug 25 09:54:33 Server1 systemd[1]: Starting OpenBSD Secure Shell server...
Aug 25 09:54:33 Server1 sshd[10364]: Server listening on 0.0.0.0 port 22.
Aug 25 09:54:33 Server1 sshd[10364]: Server listening on :: port 22.
Aug 25 09:54:33 Server1 systemd[1]: Started OpenBSD Secure Shell server.
lines 1-16/16 (END)
```



```
qadjuanson@Server1:~$ sudo service ssh start
qadjuanson@Server1:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2024-08-25 10:18:26 +08; 6min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
     Main PID: 39049 (sshd)
        Tasks: 1 (limit: 4610)
       Memory: 1.7M
          CPU: 16ms
        CGroup: /system.slice/ssh.service
                └─39049 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Aug 25 10:18:26 Server1 systemd[1]: Starting OpenBSD Secure Shell server...
Aug 25 10:18:26 Server1 sshd[39049]: Server listening on 0.0.0.0 port 22.
Aug 25 10:18:26 Server1 sshd[39049]: Server listening on :: port 22.
Aug 25 10:18:26 Server1 systemd[1]: Started OpenBSD Secure Shell server.
lines 1-16/16 (END)
```



```
qadjuanson@Server1:~$ sudo service ssh start
qadjuanson@Server1:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2024-08-25 10:31:39 +08; 51s ago
     Docs: man:sshd(8)
           man:sshd_config(5)
     Main PID: 4998 (sshd)
        Tasks: 1 (limit: 4610)
       Memory: 1.7M
          CPU: 19ms
        CGroup: /system.slice/ssh.service
                  └─4998 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Aug 25 10:31:39 Server1 systemd[1]: Starting OpenBSD Secure Shell server...
Aug 25 10:31:39 Server1 sshd[4998]: Server listening on 0.0.0.0 port 22.
Aug 25 10:31:39 Server1 sshd[4998]: Server listening on :: port 22.
Aug 25 10:31:39 Server1 systemd[1]: Started OpenBSD Secure Shell server.
qadjuanson@Server1:~$
```

4. 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`

Server 1 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Aug 25 09:57

```
qadjuanson@Server1:~$ sudo ufw allow ssh
[sudo] password for qadjuanson:
Rules updated
Rules updated (v6)
qadjuanson@Server1:~$ sudo ufw enable
Firewall is active and enabled on system startup
qadjuanson@Server1:~$ sudo ufw status
Status: active

To                         Action      From
--                         --          --
22/tcp                      ALLOW      Anywhere
22/tcp (v6)                  ALLOW      Anywhere (v6)

qadjuanson@Server1:~$
```

Server 2 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

qadjuanson@Server1: ~

```
qadjuanson@Server1:~$ sudo ufw allow ssh
[sudo] password for qadjuanson:
Rules updated
Rules updated (v6)
qadjuanson@Server1:~$ sudo ufw enable
Firewall is active and enabled on system startup
qadjuanson@Server1:~$ sudo ufw status
Status: active

To           Action   From
--           ----    ---
22/tcp        ALLOW   Anywhere
22/tcp (v6)  ALLOW   Anywhere (v6)

qadjuanson@Server1:~$
```

Local Machine [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

qadjuanson@Server1: ~

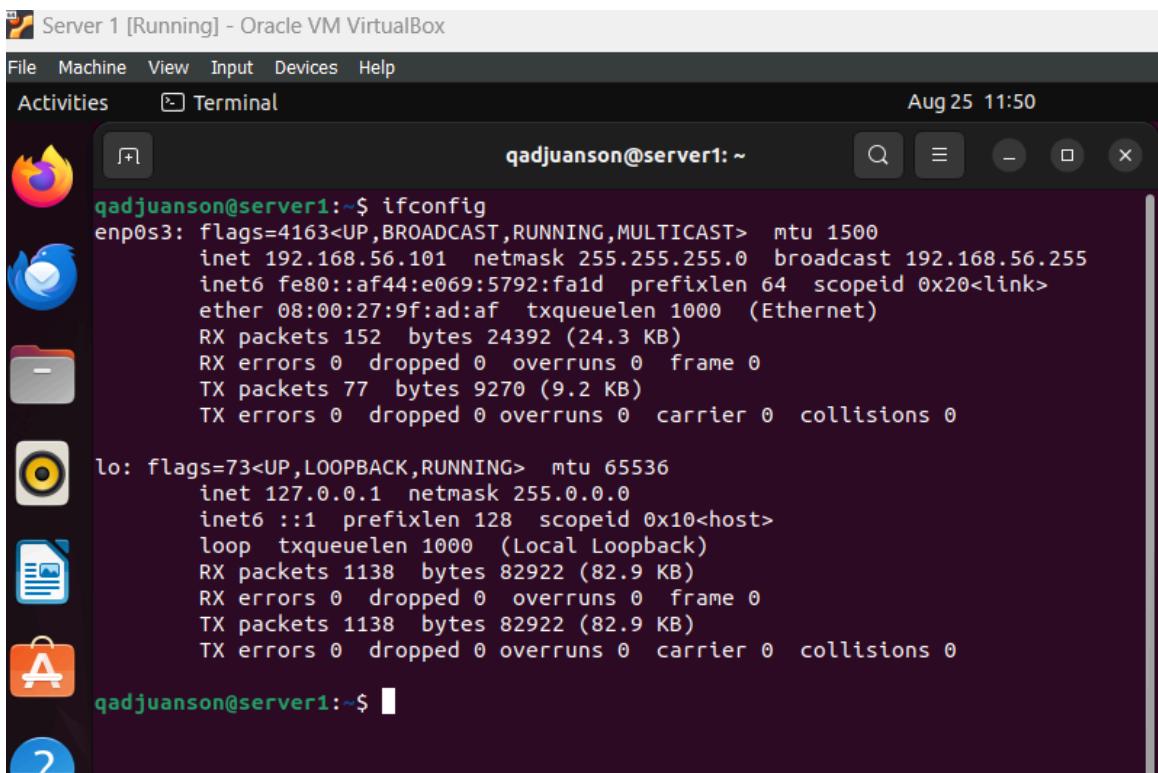
```
qadjuanson@Server1:~$ sudo ufw allow ssh
Rules updated
Rules updated (v6)
qadjuanson@Server1:~$ sudo ufw enable
Firewall is active and enabled on system startup
qadjuanson@Server1:~$ sudo ufw status
Status: active

To           Action   From
--           ----    ---
22/tcp        ALLOW   Anywhere
22/tcp (v6)  ALLOW   Anywhere (v6)

qadjuanson@Server1:~$
```

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

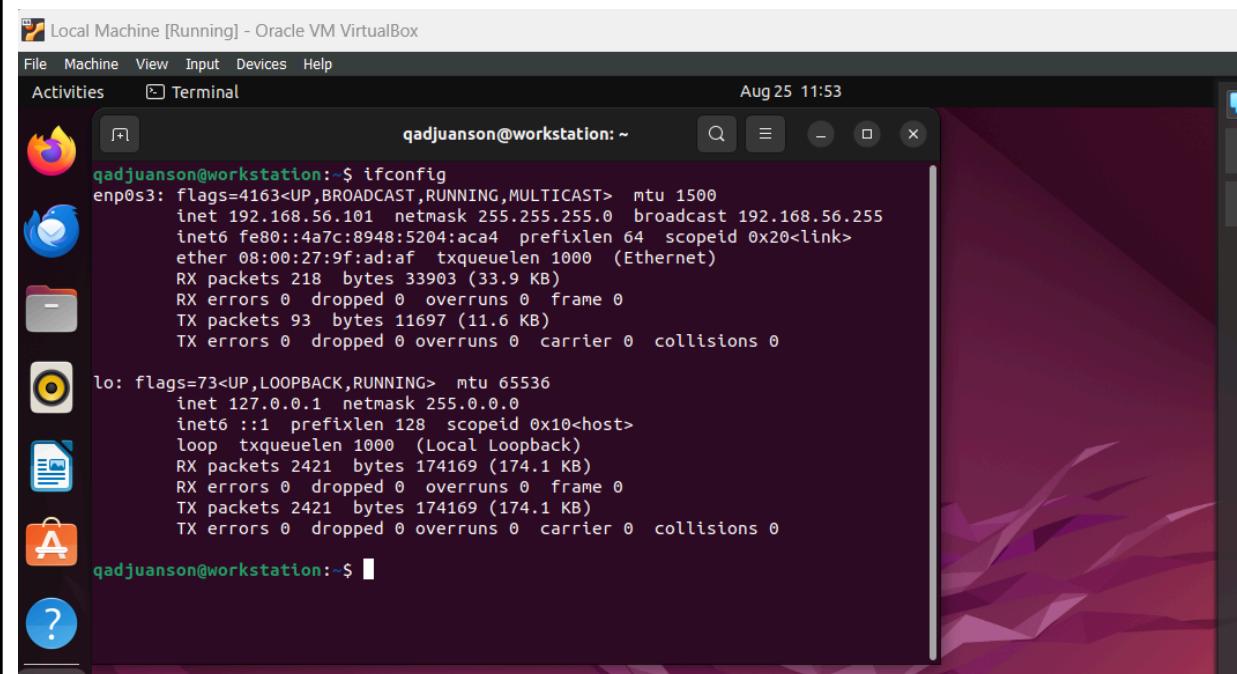
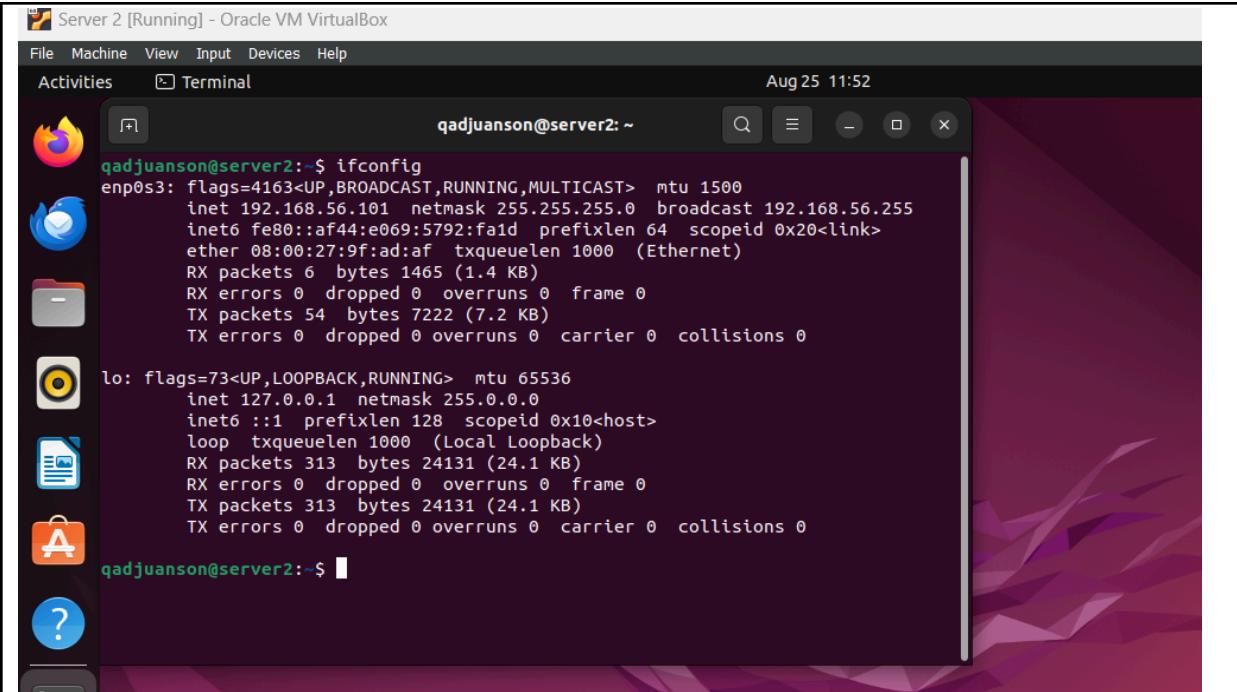
1. Record the ip address of Server 1, Server 2, and Local Machine. Issue the command ***ifconfig*** and check network settings. Note that the ip addresses of all the machines are in this network 192.168.56.XX.
 - 1.1 Server 1 IP address: 192.168.56._101_
 - 1.2 Server 2 IP address: 192.168.56._101_
 - 1.3 Server 3 IP address: 192.168.56._15_



```
qadjuanson@server1:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
        inet 192.168.56.101 netmask 255.255.255.0 broadcast 192.168.56.255
              inet6 fe80::af44:e069:5792:fa1d prefixlen 64 scopeid 0x20<link>
                ether 08:00:27:9f:ad:af txqueuelen 1000 (Ethernet)
                  RX packets 152 bytes 24392 (24.3 KB)
                  RX errors 0 dropped 0 overruns 0 frame 0
                  TX packets 77 bytes 9270 (9.2 KB)
                  TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

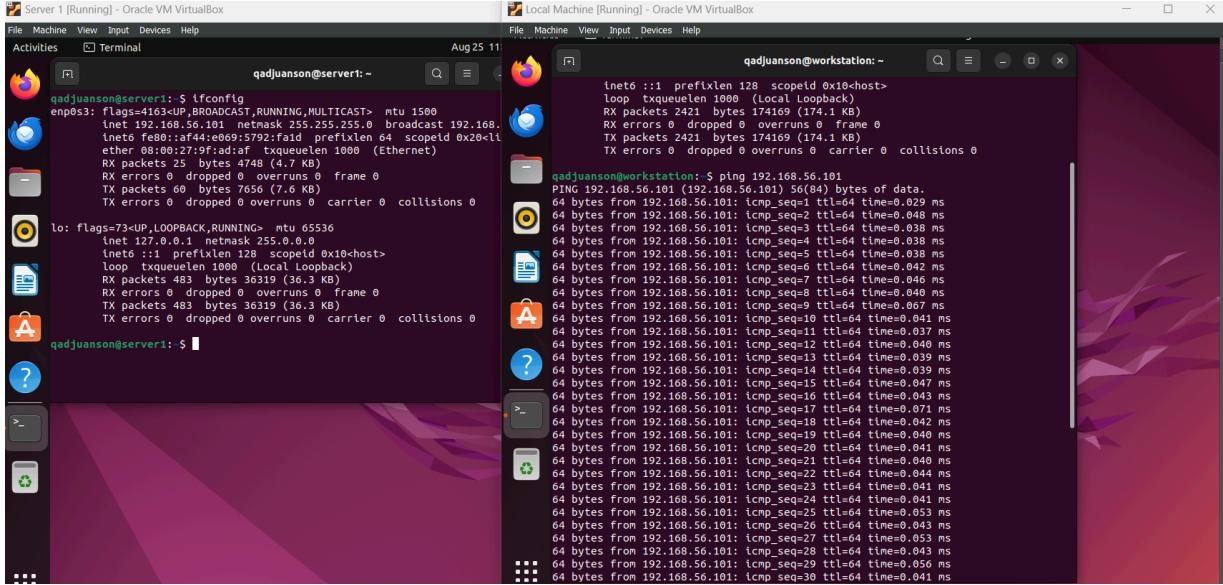
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
        inet 127.0.0.1 netmask 255.0.0.0
              inet6 ::1 prefixlen 128 scopeid 0x10<host>
                loop txqueuelen 1000 (Local Loopback)
                  RX packets 1138 bytes 82922 (82.9 KB)
                  RX errors 0 dropped 0 overruns 0 frame 0
                  TX packets 1138 bytes 82922 (82.9 KB)
                  TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

qadjuanson@server1:~$
```

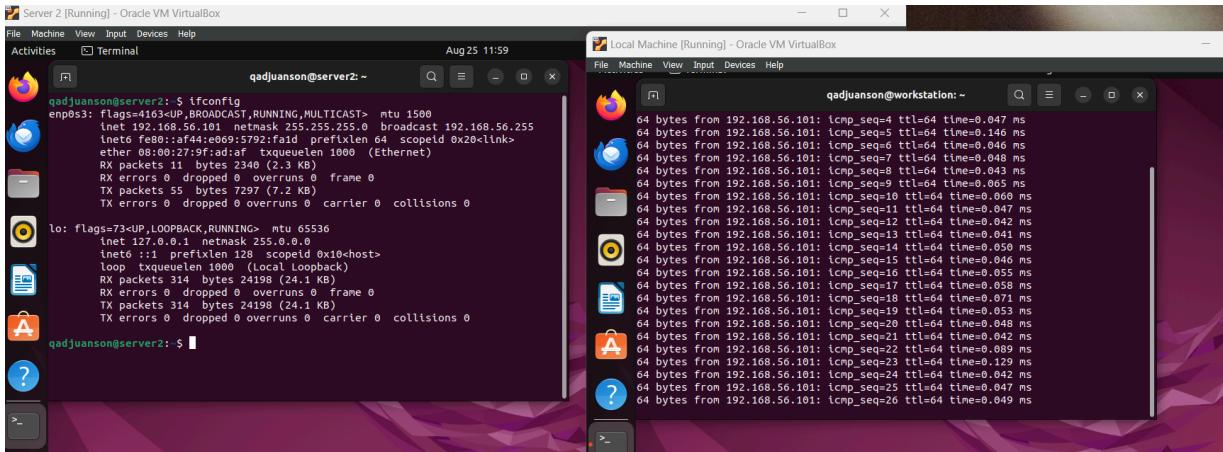


2. Make sure that they can ping each other.

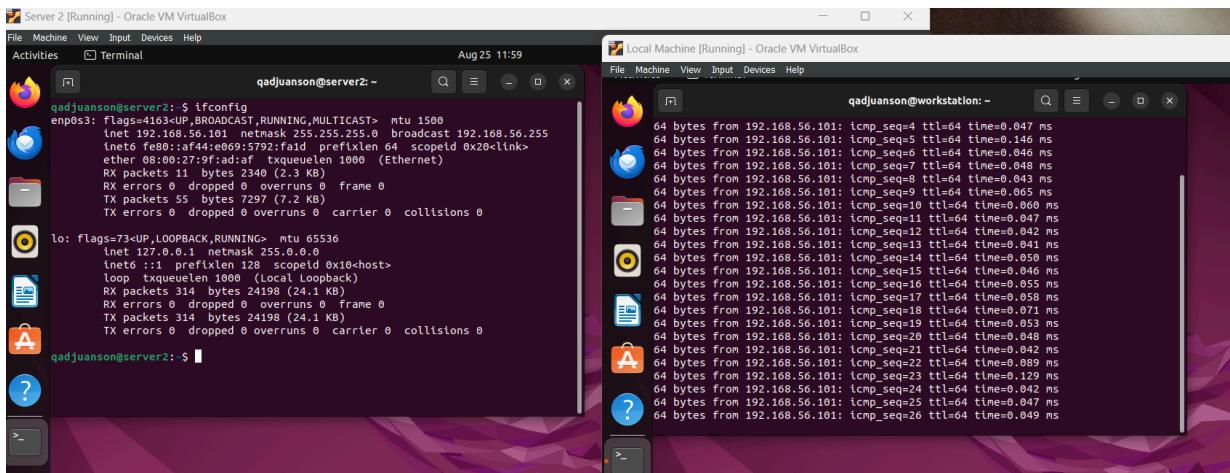
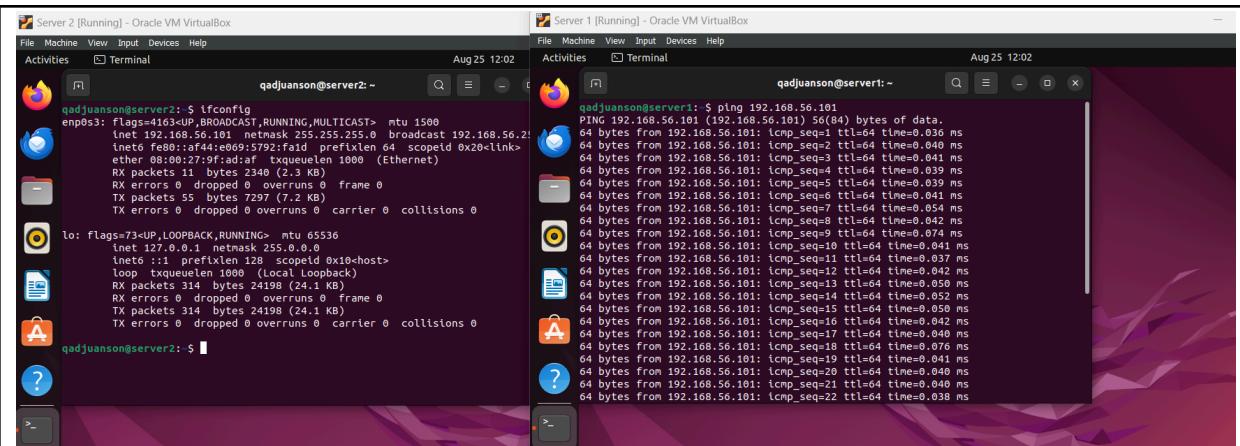
2.1 Connectivity test for Local Machine 1 to Server 1: Successful Not Successful



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



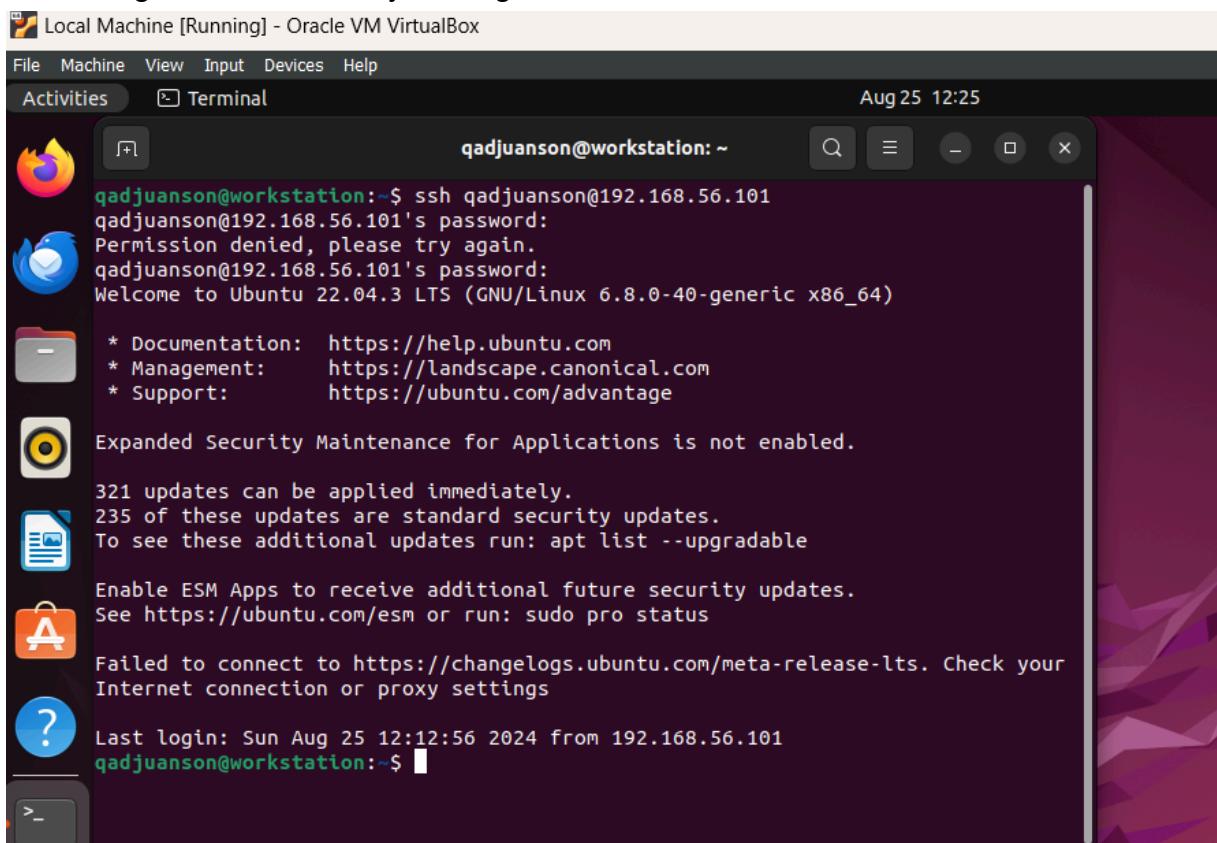
2.3 Connectivity test for Server 1 to Server 2: Successful Not Successful



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

- 1.3 Verify that you are in server 1. The user should be in this format user@server1.
For example, *jvtaylor@server1*
2. Logout of Server 1 by issuing the command *control + D*.



The screenshot shows a terminal window titled "qadjuanson@workstation: ~". The window is part of a desktop environment with a dark theme. The terminal output is as follows:

```
qadjuanson@workstation:~$ ssh qadjuanson@192.168.56.101
qadjuanson@192.168.56.101's password:
Permission denied, please try again.
qadjuanson@192.168.56.101's password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.8.0-40-generic x86_64)

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

Expanded Security Maintenance for Applications is not enabled.

321 updates can be applied immediately.
235 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

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

Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your
Internet connection or proxy settings

Last login: Sun Aug 25 12:12:56 2024 from 192.168.56.101
qadjuanson@workstation:~$
```

3. Do the same for Server 2.

```
qadjuanson@workstation:~$ ssh qadjuanson@192.168.56.101
qadjuanson@192.168.56.101's password:
Permission denied, please try again.
qadjuanson@192.168.56.101's password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.8.0-40-generic x86_64)

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

[...]
Expanded Security Maintenance for Applications is not enabled.

321 updates can be applied immediately.
235 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

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

Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your
Internet connection or proxy settings

Last login: Sun Aug 25 12:25:04 2024 from 192.168.56.101
qadjuanson@workstation:~$ logout
Connection to 192.168.56.101 closed.
qadjuanson@workstation:~$
```

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)
 - 4.3 Save the file and exit.

Local Machine [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Aug 25 12:30

Firefox Web Browser

GNU nano 6.2 /etc/hosts

```
127.0.0.1 localhost
127.0.1.1 workstation

# 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
192.168.56.101 server1
192.168.56.101 server2
```

[Read 12 lines]

^G Help ^O Write Out ^W Where Is ^K Cut ^T Execute ^C Location
^X Exit ^R Read File ^\ Replace ^U Paste ^J Justify ^/ Go To Line

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.

Local Machine [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Aug 25 12:32

```
qadjuanson@workstation:~$ sudo nano /etc/hosts
[sudo] password for qadjuanson:
qadjuanson@workstation:~$ sudo nano /etc/hosts
qadjuanson@workstation:~$ ssh qadjuanson@server1
The authenticity of host 'server1 (192.168.56.101)' can't be established.
ED25519 key fingerprint is SHA256:jloywammaiXEnSrEfSkp3EdUsiZn1V9njvTlqvWYOWI.
This host key is known by the following other names/addresses:
  ~/.ssh/known_hosts:1: [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.
qadjuanson@server1's password:
Permission denied, please try again.
qadjuanson@server1's password:
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See https://ubuntu.com/esm or run: sudo pro status
```

Local Machine [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Activities Terminal Aug 25 12:35

```
qadjuanson@workstation:~$ ssh qadjuanson@server2
The authenticity of host 'server2 (192.168.56.101)' can't be established.
ED25519 key fingerprint is SHA256:jloywammaiXEnSrEfSkp3EdUsiZn1V9njvTlqvWYOWI.
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 'server2' (ED25519) to the list of known hosts.
qadjuanson@server2's password:
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```

Reflections:

Answer the following:

1. How are we able to use the hostname instead of IP address in SSH commands?
 - When you use a hostname in an SSH command, your computer translates the hostname into an IP address using DNS or a local hosts file. This makes it easier to connect to devices, as you only need to remember names instead of numerical IP addresses.
2. How secured is SSH?
 - SSH is secure because it encrypts data and uses strong authentication methods, making remote access safe from an unauthorized access.