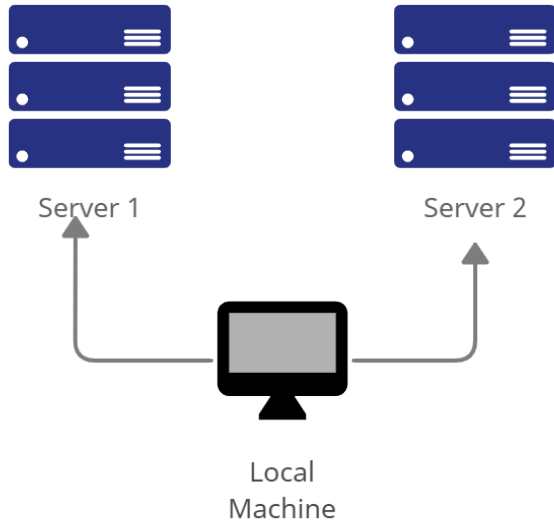
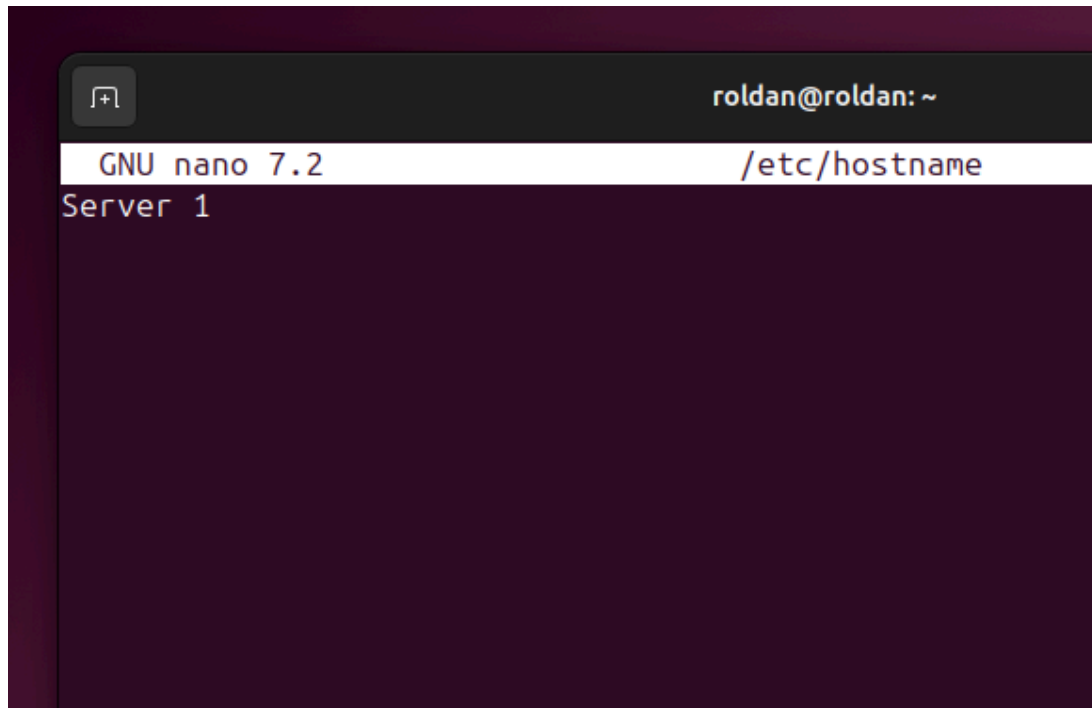


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<b>Course/Section: CPE212 - CPE31S2</b>	<b>Date Submitted: 8/08/2025</b>
<b>Instructor: Engr. Robin Valenzuela</b>	<b>Semester and SY:</b>
<b>Activity 1: Configure Network using Virtual Machines</b>	
<b>1. Objectives:</b> 1.1. Create and configure Virtual Machines in Microsoft Azure or VirtualBox 1.2. Set-up a Virtual Network and Test Connectivity of VMs	
<b>2. Discussion:</b>  <b>Network Topology:</b> Assume that you have created the following network topology in Virtual Machines, <i>provide screenshots for each task</i> . (Note: <i>it is assumed that you have the prior knowledge of cloning and creating snapshots in a virtual machine</i> ).	
 <pre> graph TD     LocalMachine[Local Machine] --&gt; Server1[Server 1]     LocalMachine --&gt; Server2[Server 2]   </pre> <p>The diagram illustrates a network topology. At the bottom center is a computer icon labeled "Local Machine". Two lines extend upwards from the "Local Machine" to two server racks. The left server rack is labeled "Server 1" and the right server rack is labeled "Server 2". Each server rack consists of three blue rectangular units, each with a white dot and three horizontal lines on the right side.</p>	
<b>Task 1:</b> 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 <i>sudo nano /etc/hostname</i>	

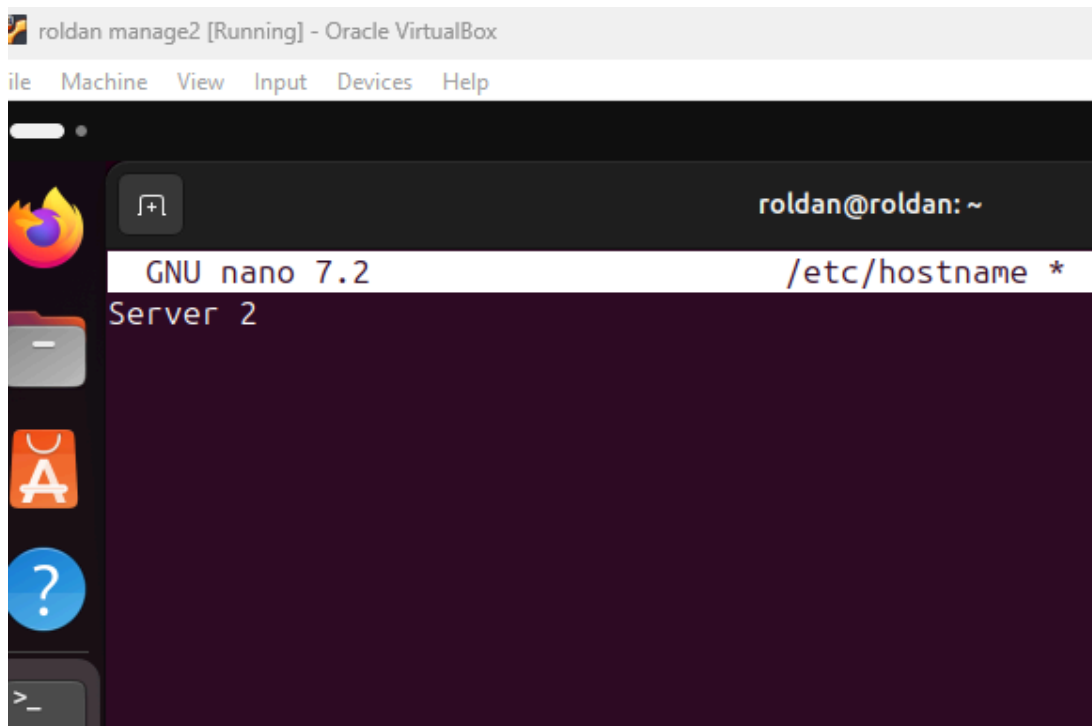
1.1 Use server1 for Server 1



A terminal window titled 'roldan@roldan: ~' showing the GNU nano 7.2 editor editing the file /etc/hostname. The text 'Server 1' is entered on the first line.

```
roldan@roldan: ~  
GNU nano 7.2 /etc/hostname  
Server 1
```

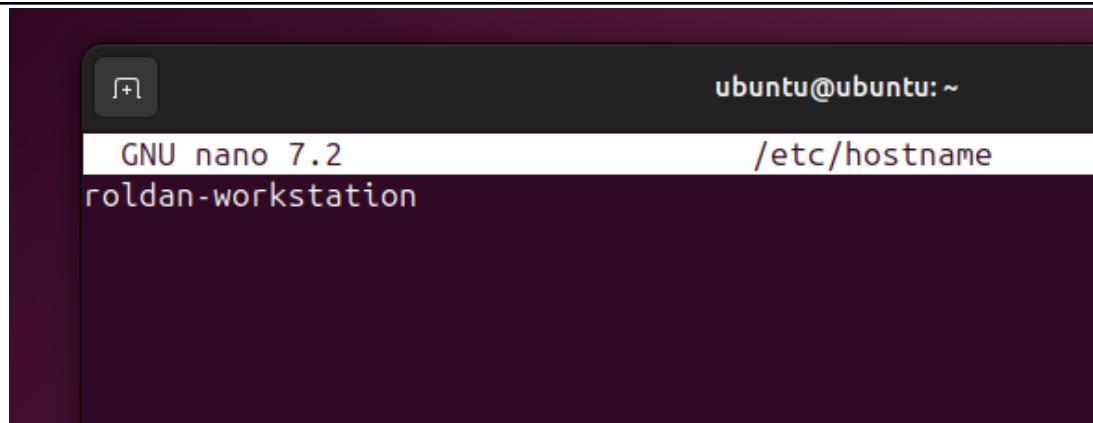
1.2 Use server2 for Server 2



A screenshot of an Oracle VM VirtualBox window titled 'roldan manage2 [Running] - Oracle VirtualBox'. It shows a terminal window with the GNU nano 7.2 editor editing /etc/hostname. The text 'Server 2' is entered on the first line. The terminal window has a sidebar with icons for Firefox, a file manager, the Ubuntu Software Center, and a help icon.

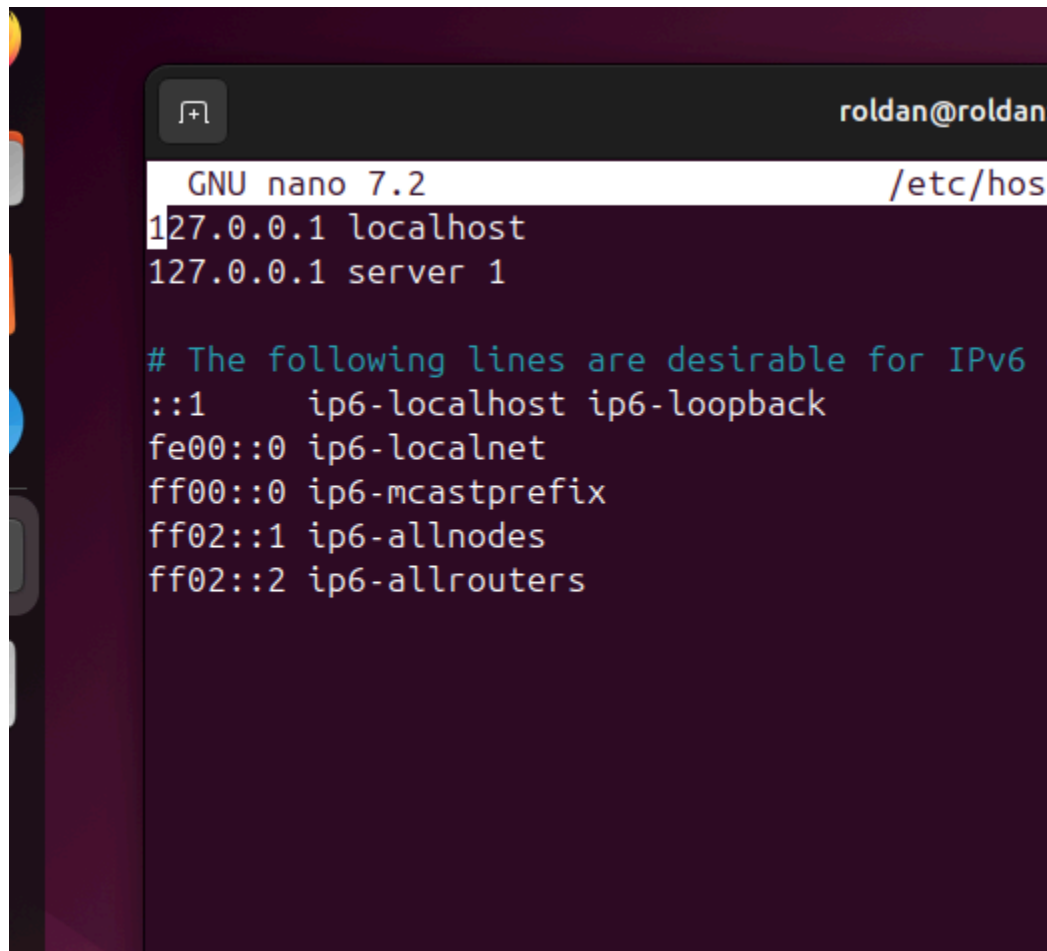
```
roldan manage2 [Running] - Oracle VirtualBox  
file Machine View Input Devices Help  
roldan@roldan: ~  
GNU nano 7.2 /etc/hostname *  
Server 2
```

1.3 Use workstation for the Local Machine

A terminal window with a dark purple background. The title bar shows a window icon, the text 'ubuntu@ubuntu: ~', and a close button. The terminal content shows 'GNU nano 7.2' in the top left, '/etc/hostname' in the top right, and 'roldan-workstation' on the main line.

```
ubuntu@ubuntu: ~  
GNU nano 7.2 /etc/hostname  
roldan-workstation
```

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

A terminal window with a dark purple background. The title bar shows a window icon, the text 'roldan@roldan', and a close button. The terminal content shows 'GNU nano 7.2' in the top left, '/etc/hos' in the top right, and the following text on the main line:

```
roldan@roldan  
GNU nano 7.2 /etc/hos  
127.0.0.1 localhost  
127.0.0.1 server 1  
  
# The following lines are desirable for IPv6  
::1 ip6-localhost ip6-loopback  
fe00::0 ip6-localnet  
ff00::0 ip6-mcastprefix  
ff02::1 ip6-allnodes  
ff02::2 ip6-allrouters
```

2.2 Type 127.0.0.1 server 2 for Server 2

2.3 Type 127.0.0.1 workstation for the Local Machine

Aug 8

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roldan@roldan: ~

GNU nano 7.2

/etc/hosts \*

127.0.0.1 localhost  
127.0.0.1 roldan-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

ash

**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.

```
roldan@Server1:~$ sudo apt update && sudo apt upgrade
[sudo] password for roldan:
Hit:1 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:3 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
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 libllvm17t64 python3-netifaces
Use 'sudo apt autoremove' to remove them.
The following packages have been kept back:
  libgl1-amber-dri libglapi-mesa
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
roldan@Server1:~$
```

```
roldan manage2 [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Aug 8 09:46
roldan@Server2:~$ sudo apt update && sudo apt upgrade
[sudo] password for roldan:
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:3 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
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 libllvm17t64 python3-netifaces
Use 'sudo apt autoremove' to remove them.
The following packages have been kept back:
  libgl1-amber-dri libglapi-mesa
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
roldan@Server2:~$
```

```
roldan@workstation: ~  
roldan@workstation:~$ sudo apt update && sudo apt upgrade  
[sudo] password for roldan:  
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease  
Hit:2 http://archive.ubuntu.com/ubuntu noble-updates InRelease  
Hit:3 http://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  
2 packages can be upgraded. Run 'apt list --upgradable' to see them  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
Calculating upgrade... Done  
The following packages were automatically installed and are now  
  libgl1-amber-dri libglapi-mesa libllvm17t64 python3-netifaces  
Use 'sudo apt autoremove' to remove them.  
The following packages have been kept back:  
  libgl1-amber-dri libglapi-mesa  
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.  
roldan@workstation:~$
```

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

```
roldan@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:
  libgl1-amd-gpu-dri libglapi-mesa libllvm17t64 python3-netifaces
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  ncurses-term openssh-sftp-server ssh-import-id
Help
Suggested packages:
  molly-guard monkeysphere ssh-askpass
The following NEW packages will be installed:
  ncurses-term openssh-server openssh-sftp-server ssh-import-id
0 upgraded, 4 newly installed, 0 to remove and 2 not upgraded.
Need to get 832 kB of archives.
After this operation, 6,743 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssh-sftp-
ver amd64 1:9.6p1-3ubuntu13.13 [37.1 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssh-server
amd64 1:9.6p1-3ubuntu13.13 [510 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble/main amd64 ncurses-term all 6.4+
40113-1ubuntu2 [275 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 ssh-import-id
l 5.11-0ubuntu2.24.04.1 [10.1 kB]
Fetched 832 kB in 5s (169 kB/s)
Preconfiguring packages ...
Selecting previously unselected package openssh-sftp-server.
(Reading database ... 188075 files and directories currently installed.)
Preparing to unpack .../openssh-sftp-server_1%3a9.6p1-3ubuntu13.13_amd64.deb
Unpacking openssh-sftp-server (1:9.6p1-3ubuntu13.13) ...
Selecting previously unselected package openssh-server.
```

```
roldan@Server2: ~  
roldan@Server2:~$ sudo apt install openssh-server  
[sudo] password for roldan:  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following packages were automatically installed and are no longer required:  
  libgl1-amd-gpu-dri libglapi-mesa libllvm17t64 python3-netifaces  
Use 'sudo apt autoremove' to remove them.  
The following additional packages will be installed:  
  ncurses-term openssh-sftp-server ssh-import-id  
Suggested packages:  
  molly-guard monkeysphere ssh-askpass  
The following NEW packages will be installed:  
  ncurses-term openssh-server openssh-sftp-server ssh-import-id  
0 upgraded, 4 newly installed, 0 to remove and 2 not upgraded.  
Need to get 832 kB of archives.  
After this operation, 6,743 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssh-sftp-se  
ver amd64 1:9.6p1-3ubuntu13.13 [37.1 kB]  
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 openssh-server  
amd64 1:9.6p1-3ubuntu13.13 [510 kB]  
Get:3 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 ncurses-term  
amd64 6.4+20240113-1ubuntu2 [275 kB]  
-
```



```

roldan@workstation:~$ 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
libgl1-amd-gpu-dri libglapi-mesa libllvm17t64 python3-netif
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
ncurses-term openssh-sftp-server ssh-import-id
Suggested packages:
molly-guard monkeysphere ssh-askpass
The following NEW packages will be installed:
ncurses-term openssh-server openssh-sftp-server ssh-import
0 upgraded, 4 newly installed, 0 to remove and 2 not upgrad
Need to get 832 kB of archives.
After this operation, 6,743 kB of additional disk space will
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main a
ver amd64 1:9.6p1-3ubuntu13.13 [37.1 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main a
md64 1:9.6p1-3ubuntu13.13 [510 kB]
47% [2 openssh-server 400 kB/510 kB 78%]

```

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*

```

roldan@Server1:~$ sudo service ssh start
roldan@Server1:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; preset: ena
   Active: active (running) since Fri 2025-08-08 10:04:22 UTC; 6s ago
   TriggeredBy: ● ssh.socket
   Docs: man:sshd(8)
         man:sshd_config(5)
   Process: 3613 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 3614 (sshd)
   Tasks: 1 (limit: 4604)
   Memory: 1.2M (peak: 1.7M)
   CPU: 17ms
   CGroup: /system.slice/ssh.service
           └─3614 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Aug 08 10:04:22 Server1 systemd[1]: Starting ssh.service - OpenBSD Secure Shell
Aug 08 10:04:22 Server1 sshd[3614]: Server listening on 0.0.0.0 port 22.
Aug 08 10:04:22 Server1 sshd[3614]: Server listening on :: port 22.
Aug 08 10:04:22 Server1 systemd[1]: Started ssh.service - OpenBSD Secure Shell
lines 1-18/18 (END)

```

```

roldan@Server2:~$ sudo service ssh start
roldan@Server2:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; vendor preset: enabled)
   Active: active (running) since Fri 2025-08-08 10:10:30 UTC; 5s ago
     TriggeredBy: ● ssh.socket
   Docs: man:sshd(8)
         man:sshd_config(5)
  Process: 3240 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
 Main PID: 3241 (sshd)
    Tasks: 1 (limit: 4604)
   Memory: 1.2M (peak: 1.7M)
      CPU: 20ms
   CGroup: /system.slice/ssh.service
           └─3241 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100-100-100

Aug 08 10:10:30 Server2 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server:
Aug 08 10:10:30 Server2 sshd[3241]: Server listening on 0.0.0.0 port 22.
Aug 08 10:10:30 Server2 sshd[3241]: Server listening on :: port 22.
Aug 08 10:10:30 Server2 systemd[1]: Started ssh.service - OpenBSD Secure Shell server:
roldan@Server2:~$

```

```

roldan@workstation:~$ sudo service ssh start
roldan@workstation:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; disabled; vendor preset: enabled)
   Active: active (running) since Fri 2025-08-08 10:17:10 UTC; 1min 1s ago
     TriggeredBy: ● ssh.socket
   Docs: man:sshd(8)
         man:sshd_config(5)
  Process: 3590 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
 Main PID: 3592 (sshd)
    Tasks: 1 (limit: 4604)
   Memory: 1.2M (peak: 1.6M)
      CPU: 14ms
   CGroup: /system.slice/ssh.service
           └─3592 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100-100-100

Aug 08 10:17:10 workstation systemd[1]: Starting ssh.service - OpenBSD Secure Shell server:
Aug 08 10:17:10 workstation sshd[3592]: Server listening on 0.0.0.0 port 22.
Aug 08 10:17:10 workstation sshd[3592]: Server listening on :: port 22.
Aug 08 10:17:10 workstation systemd[1]: Started ssh.service - OpenBSD Secure Shell server:
lines 1-18/18 (END)

```

q 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*

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

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

```
Aug 08 10:10:30 Server2 systemd[1]: Started ssh.service -
roldan@Server2:~$ sudo ufw allow ssh
Rules updated
Rules updated (v6)
roldan@Server2:~$ sudo ufw enable
Firewall is active and enabled on system startup
roldan@Server2:~$ sudo ufw status
Status: active

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

roldan@Server2:~$
```

**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: 192.168.56.118

```

roldan@Server1:~$ ifconfig
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:fe50:8336 prefixlen 64 scopeid 0x20<link>
    inet6 fd00::a00:27ff:fe50:8336 prefixlen 64 scopeid 0x0<global>
    inet6 fd00::2b81:848d:d0b5:4cc0 prefixlen 64 scopeid 0x0<global>
    ether 08:00:27:50:83:36 txqueuelen 1000 (Ethernet)
    RX packets 1547 bytes 1396952 (1.3 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 768 bytes 63011 (63.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.56.118 netmask 255.255.255.0 broadcast 192.168.56.255
    inet6 fe80::a00:27ff:fead:68c5 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:ad:68:c5 txqueuelen 1000 (Ethernet)
    RX packets 64 bytes 10815 (10.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 77 bytes 9515 (9.5 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 245 bytes 24585 (24.5 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 245 bytes 24585 (24.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

1.2 Server 2 IP address: 192.168.56.119

```
Processing triggers for man-db (2.12.0-4build2) ...
roldan@Server2:~$
roldan@Server2:~$ ifconfig
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:fecc:35e8 prefixlen 64 scopeid 0x20<link>
    inet6 fd00::f558:e69:9808:5d4d prefixlen 64 scopeid 0x0<global>
    inet6 fd00::a00:27ff:fecc:35e8 prefixlen 64 scopeid 0x0<global>
    ether 08:00:27:cc:35:e8 txqueuelen 1000 (Ethernet)
    RX packets 1291 bytes 1117899 (1.1 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 681 bytes 54048 (54.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.56.119 netmask 255.255.255.0 broadcast 192.168.56.255
    inet6 fe80::a00:27ff:fe88:49aa prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:88:49:aa txqueuelen 1000 (Ethernet)
    RX packets 62 bytes 10598 (10.5 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 74 bytes 9286 (9.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

1.3 workstation IP address: 192.168.56.**120**

```
roldan@workstation: ~  
roldan@workstation:~$ ifconfig  
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 fd00::a00:27ff:fe80:2d6c prefixlen 64 scopeid 0x0<br/>    inet6 fd00::f42e:5265:de44:6785 prefixlen 64 scopeid 0x0<br/>    inet6 fe80::a00:27ff:fe80:2d6c prefixlen 64 scopeid 0x20<br/>    ether 08:00:27:80:2d:6c txqueuelen 1000 (Ethernet)  
    RX packets 56 bytes 7934 (7.9 KB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 140 bytes 17898 (17.8 KB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
enp0s8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.56.120 netmask 255.255.255.0 broadcast 192.168.56.255  
    inet6 fe80::a00:27ff:fe80:2d6c prefixlen 64 scopeid 0x20<br/>    ether 08:00:27:fb:cb:45 txqueuelen 1000 (Ethernet)  
    RX packets 3 bytes 758 (758.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 64 bytes 8406 (8.4 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<br/>    ether 00:00:00:00:00:00 txqueuelen 1000 (Ethernet)  
    RX packets 0 bytes 0 (0.0 B)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 0 bytes 0 (0.0 B)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

2. Make sure that they can ping each other. pi

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`

```
roldan@workstation:~$ ssh roldan@192.168.56.120
The authenticity of host '192.168.56.120 (192.168.56.120)' can't be established
ED25519 key fingerprint is SHA256:d5hZMHW08PhGxEac3AlZfbwZ2nzcCRtP7swICRQe
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? y
Please type 'yes', 'no' or the fingerprint: yes
Warning: Permanently added '192.168.56.120' (ED25519) to the list of known hosts.
roldan@192.168.56.120'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.

1 update can be applied immediately.
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
```

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*



```
roldan@Server1:~$ roldan@server1
roldan@server1: command not found
roldan@Server1:~$ ssh roldan@server1
The authenticity of host 'server1 (fd00::ec:6dfc:79ee:a0c2)' c
d.
ED25519 key fingerprint is SHA256:eg7RpM3NS0tvH7QjukZy8IEanpQU
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])
Warning: Permanently added 'server1' (ED25519) to the list of
roldan@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.

1 update can be applied immediately.
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
```

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

```
applicable law.

roldan@Server1:~$
logout
Connection to server1 closed.
roldan@Server1:~$
```

3. Do the same for Server 2.



```
roldan@Server2: ~  
roldan@Server2:~$ ssh roldan@server2  
The authenticity of host 'server2 (fd00::a00:27ff:fecc:35e8)' can't be established.  
ED25519 key fingerprint is SHA256:Gv3LKU+uyq0Ty6j0PMXySjAoSxKk9jahm1Ub2ZSw3  
This key is not known by any other names.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added 'server2' (ED25519) to the list of known hosts.  
roldan@server2's password:  
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-27-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com  
Terminal element:  https://landscape.canonical.com  
* Support:        https://ubuntu.com/pro  
  
Expanded Security Maintenance for Applications is not enabled.  
  
A update can be applied immediately.  
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  
  
The programs included with the Ubuntu system are free software;
```

```
applicable law.  
  
roldan@Server2:~$  
logout  
Connection to server2 closed.  
roldan@Server2:~$
```

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.

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.

**Reflections:**

Answer the following:

1. How are we able to use the hostname instead of IP address in SSH commands?
  - DNS (Domain Name System), where instead of remembering the IP address of a host you refer to a hostname that is easier to remember, rather than entering the numbers yourself.
2. How secured is SSH?
  - The level of SSH security is highly high. It encrypts messages, applies authentication and keeps you and your connection confidential and secure, which is particularly true when configuration is done well.