Name: Davonn P. Escobilla	**Date Performed:9/03/2022**
Course/Section: CPE31S24	**Date Submitted:9/3/2022**
Instructor: Dr. Jonathan Taylar	**Semester and SY: 1st Sem, 2022-2023**

<div align="center">

Activity 3: Install SSH server on CentOS or RHEL 8

</div>

1. Objectives:

1.1 Install Community Enterprise OS or Red Hat Linux OS

1.2 Configure remote SSH connection from remote computer to CentOS/RHEL-8

2. Discussion:

CentOS vs. Debian: Overview

CentOS and Debian are Linux distributions that spawn from opposite ends of the candle.

CentOS is a free downstream rebuild of the commercial Red Hat Enterprise Linux distribution where, in contrast, Debian is the free upstream distribution that is the base for other distributions, including the Ubuntu Linux distribution.

As with many Linux distributions, CentOS and Debian are generally more alike than different; it isn't until we dig a little deeper that we find where they branch.

CentOS vs. Debian: Architecture

The available supported architectures can be the determining factor as to whether a distro is a viable option or not. Debian and CentOS are both very popular for x86_64/AMD64, but what other archs are supported by each?

Both Debian and CentOS support AArch64/ARM64, armhf/armhfp , i386 , ppc64el/ppc64le. (Note: armhf/armhfp and i386 are supported in CentOS 7 only.)

CentOS 7 additionally supports POWER9 while Debian and CentOS 8 do not. CentOS 7 focuses on the x86_64/AMD64 architecture with the other archs released through the AltArch SIG (Alternate Architecture Special Interest Group) with CentOS 8 supporting x86_64/AMD64, AArch64 and ppc64le equally.

Debian supports MIPSel, MIPS64el and s390x while CentOS does not. Much like CentOS 8, Debian does not favor one arch over another —all supported architectures are supported equally.

CentOS vs. Debian: Package Management

Most Linux distributions have some form of package manager nowadays, with some more complex and feature-rich than others.

CentOS uses the RPM package format and YUM/DNF as the package manager.

Debian uses the DEB package format and dpkg/APT as the package manager.

Both offer full-feature package management with network-based repository support, dependency checking and resolution, etc.. If you're familiar with one but not the other, you may have a little trouble switching over, but they're not overwhelmingly different. They both have similar features, just available through a different interface.

Task 1: Download the CentOS or RHEL-8 image (Create screenshots of the following)
1. Download the image of the CentOS here:
   http://mirror.rise.ph/centos/7.9.2009/isos/x86_64/
2. Create a VM machine with 2 Gb RAM and 20 Gb HD.
3. Install the downloaded image.
4. Show evidence that the OS was installed already.

Task 2: Install the SSH server package *openssh*
1. Install the ssh server package *openssh* by using the *dnf* command:
   $ dnf install openssh-server

```
[davonnescobilla@localhost ~]$ dnf install openssh-server
Error: This command has to be run under the root user.
[davonnescobilla@localhost ~]$ su
Password:
[root@localhost davonnescobilla]# dnf install openssh-server
CentOS-7 - Base                                    967 kB/s |   10 MB     00:10
CentOS-7 - Updates                                 1.0 MB/s |   21 MB     00:20
CentOS-7 - Extras                                  1.2 MB/s |  332 kB     00:00
Package openssh-server-7.4p1-22.el7_9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
```

2. Start the *sshd* daemon and set to start after reboot:
   $ systemctl start sshd
   $ systemctl enable sshd

```
[root@localhost davonnescobilla]# systemctl start sshd
[root@localhost davonnescobilla]# systemctl enable sshd
```

3. Confirm that the sshd daemon is up and running:
   $ systemctl status sshd

```
[root@localhost davonnescobilla]# systemctl status sshd
● sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enable
d)
   Active: active (running) since Sat 2022-09-03 09:02:53 PST; 11min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
 Main PID: 1163 (sshd)
   CGroup: /system.slice/sshd.service
           └─1163 /usr/sbin/sshd -D

Sep 03 09:02:52 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Sep 03 09:02:53 localhost.localdomain sshd[1163]: Server listening on 0.0.0.0 port 22.
Sep 03 09:02:53 localhost.localdomain sshd[1163]: Server listening on :: port 22.
Sep 03 09:02:53 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
Hint: Some lines were ellipsized, use -l to show in full.
```

4. Open the SSH port 22 to allow incoming traffic:
   $ firewall-cmd --zone=public --permanent --add-service=ssh

```
[root@localhost davonnescobilla]# firewall-cmd --zone=public --permanent --add-service=
ssh
Warning: ALREADY_ENABLED: ssh
success
```

   $ firewall-cmd --reload

```
[root@localhost davonnescobilla]# firewall-cmd --reload
success
```

5. Locate the ssh server man config file */etc/ssh/sshd_config* and perform custom configuration. Every time you make any change to the */etc/ssh/sshd-config* configuration file reload the *sshd* service to apply changes:
   $ systemctl reload sshd

```
[root@localhost davonnescobilla]# systemctl reload sshd
```

Task 3: Copy the Public Key to CentOS
1. Make sure that *ssh* is installed on the local machine.
2. Using the command *ssh-copy-id*, connect your local machine to CentOS.

```
davonn@davonn-VirtualBox:~$ ssh-copy-id -i ~/.ssh/id_rsa davonnescobilla@192.16
8.56.102
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/davonn/.ss
h/id_rsa.pub"
The authenticity of host '192.168.56.102 (192.168.56.102)' can't be established
.
ED25519 key fingerprint is SHA256:s2dULN0PbwPHH6hGHdAlfS972fNuBCUZRRbOv8LSWvc.
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
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter
 out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are promp
ted now it is to install the new keys
davonnescobilla@192.168.56.102's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'davonnescobilla@192.168.56.102'
"
and check to make sure that only the key(s) you wanted were added.
```

3. On CentOS, verify that you have the *authorized_keys*.

```
[davonnescobilla@localhost ~]$ cd .ssh
[davonnescobilla@localhost .ssh]$ ls
authorized_keys
[davonnescobilla@localhost .ssh]$ cat authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQCpBuP6dAyieI7N+ypgkF5P6FNaJW6Ey07prkDXFsjwQlQ5UiO
luqYJ55ZY7tgoOkm9CSX99mwtxWG3UOZ/GUW68lyEYJQfvOLolMf6wOd2lWOzBlF1MYahBTdzHqrVcpADhokBkx
RoY3RbmfR/2TMI1OuOYeK3nQ+Gy30qo9wd2A8t3J+jOdXa4EE0imRJl7CzS5b3f/g7mmZBCYd7UJi1oDmRg7MTt
7e4Mx8jPwbSFPJJm+L0wKvc/ul38vfd0MjMl3i1Z9TRkZ7BinAZ/FFMEHhDxCZ13j5YYLc1yHLfAJC3xnVGHT9N
SsKZ1QZCSy+6hYaVYjfixOHH1aVIl462lqfnYif4ABF1cnyAZ07RJ1W3w3/nNCtBJO7y1zS9j3cOTrYwvl1kxow
ZUZ1SdYXTCMcv6aQlyQR7l6sFctFFJmGHdvZdmRNDC8P5/x75Am2FUBorW46gP2X/8nePTjXkw+SiDm7ESnFpFB
cXwZkP1hlXYUA7DiB21KJ3+tK14r0= davonn@davonn-VirtualBox
```

Task 4: Verify ssh remote connection
1. Using your local machine, connect to CentOS using ssh.
2. Show evidence that you are connected.

```
davonn@davonn-VirtualBox:~$ ssh davonnescobilla@192.168.56.102
Last login: Sat Sep  3 09:03:21 2022
[davonnescobilla@localhost ~]$
```

Reflections:
Answer the following:
1. What do you think we should look for in choosing the best distribution between Debian and Red Hat Linux distributions?

Both distributions are mostly similar in all aspects, the best option you should look for is where your knowledge settles. The more familiar you are, the easier for you to troubleshoot.

2. What are the main difference between Debian and Red Hat Linux distributions?

Red Hat Linux distributions are more stable after continuous testing while Debian contains stable, unstable, and testing repositories. Some companies prefer Debian since it is non-commercial and they don't have to spend thousands of money. Even though Debian is not really stable, it is a good distribution as long as there is a group and supportive community.

Conclusion:

Both distributions are equal in most aspects, it boils down to what is the user's preference about these setups. Red Hat Linux Enterprise offers stable versions but you have to pay for support, while Debian is more like a community driven distribution, as long as community supports the system it will survive.