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Course/Section: CPE31S2	Date Submitted: 09/05/25
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Activity 3: Install SSH server on CentOS or RHEL 8

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.

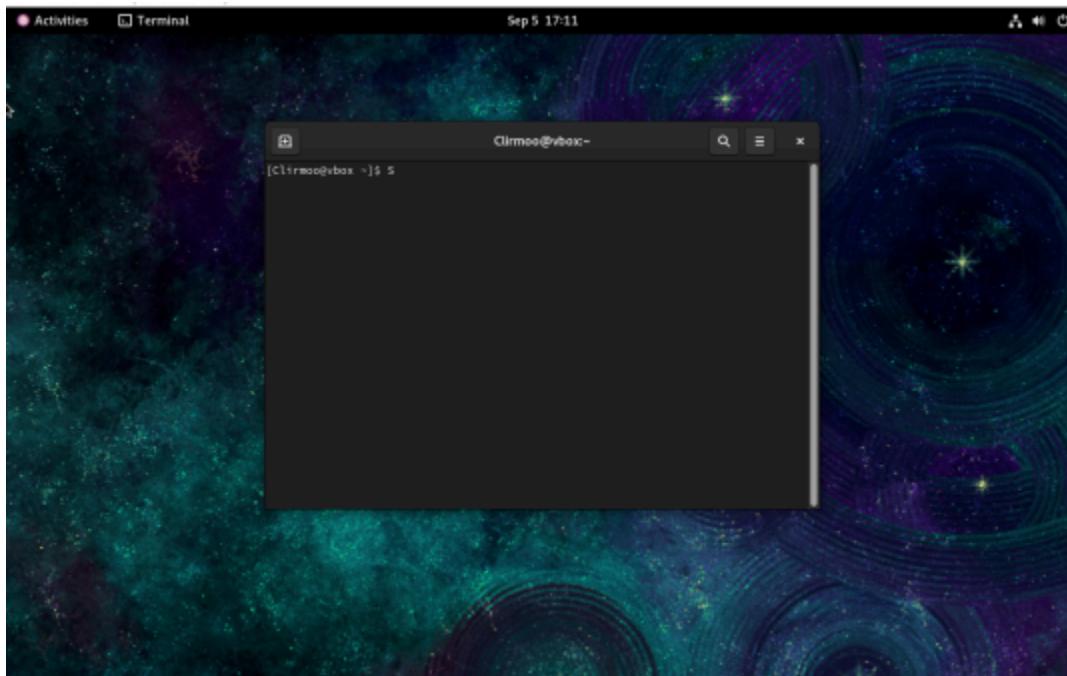
CentOS uses the RPM package format and YUM/DNF as the package manager.

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.



Terminal of the CentOS

Task 2: Install the SSH server package `openssh`

1. Install the ssh server package `openssh` by using the `dnf` command:
`$ dnf install openssh-server`

```
im@vbox ~]$ sudo dnf install openssh-server
Subscription Management repositories.
  o read consumer identity

  item is not registered with an entitlement server. You can use "rhc" or "subscription-manager" to register.

  metadata expiration check: 0:10:02 ago on Fri 05 Sep 2025 06:04:05 PM PST.
  openssh-server-8.7pl1-46.el9.x86_64 is already installed.
  Cities resolved.
  nothing to do.

```

2. Start the `sshd` daemon and set to start after reboot:

```
$ systemctl start sshd
$ systemctl enable sshd
```

```
@vbox ~]$ systemctl start sshd
@vbox ~]$ sudo systemctl enable sshd
```

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

```
$ systemctl status sshd
```

```
* sshd.service - OpenSSH server daemon
  Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
  Active: active (running) since Fri 2025-09-05 18:06:54 PST; 8min ago
    Docs: man:sshd(8)
          man:sshd_config(5)
  Main PID: 878 (sshd)
    Tasks: 1 (limit: 23007)
   Memory: 2.8M
      CPU: 18ms
     CGroup: /system.slice/sshd.service
             └─878 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Sep 05 18:06:54 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Sep 05 18:06:54 localhost.localdomain sshd[878]: Server listening on 0.0.0.0 port 22...
Sep 05 18:06:54 localhost.localdomain sshd[878]: Server listening on :: port 22.
Sep 05 18:06:54 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
```

4. Open the SSH port 22 to allow incoming traffic:

```
$ firewall-cmd --zone=public --permanent --add-service=ssh
$ firewall-cmd --reload
```

```
[justinlim@vbox ~]$ 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
```

```
@vbox ~]$ sudo systemctl reload sshd
@vbox ~]$
```

Task 3: Copy the Public Key to CentOS

1. Make sure that `ssh` is installed on the local machine.

```
vboxuser@workstation:~$ sudo ssh -V
OpenSSH_9.6p1 Ubuntu-3ubuntu13.13, OpenSSL 3.0.13 30 Jan 2024
vboxuser@workstation:~$
```

2. Using the command `ssh-copy-id`, connect your local machine to CentOS.

```
vboxuser@workstation:~$ ssh -o StrictHostKeyChecking=ask 192.168.56.114
The authenticity of host '192.168.56.114 (192.168.56.114)' can't be established.
ED25519 key fingerprint is SHA256:xcyzk8b+lT+gWLx1730X2lbLPfeZ8gMcTGUR9sCWTU0.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.56.114' (ED25519) to the list of known hosts

Activate the web console with: systemctl enable --now cockpit.socket

Last failed login: Fri Sep  5 18:22:46 PST 2025 from 192.168.56.111 on ssh:notty
There were 2 failed login attempts since the last successful login.
Last login: Fri Sep  5 18:07:13 2025
```

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

```
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQACQ8FMr8gsSWPeND50CkzquisDM3xtdXasJyHsa+pQUY
vge0K+Ut/zIJLVsH7hIrgIHyrU1hI8lMBLHYLAPVK7G/f0LJosC7PCcdPjRCPIMcCNiZ+Q9TaaVPYkAj
fJBiGHQ5ze+zNWrixVCb3Y/Bbt+mlaBSau0j5ojCJUCpv0BWV0IzWKvSmMw2Urr4n9vyQVTQNjQBe0B0
N+vnoCt+PBQTFcIYwLxclCkEwNj5WcCjM6D9JTsx+2+SQW5NuHrRIlx6eJRSK73NiJg5hx7qNwboHzt
gDu0mdqDWpSYnkr/5xFaPDIyKeIxMDg2QiLyL8DcUbHvwc5GWnKlfVb7zm8rqpK1m03b90unrZ4d74HW
GYmwaaz606NouIBWLsdoDGFMN2/hT7PYpEmjaLS0FYGDSTBdNH35H4XydW0LfppQvAGQ45KKt1Z7+YEGr
i5Hl5NYhYxxXYA6Zqa0dUhMLOTEbcBZx4qG6i58rwGLNTDnA2SRiLfvbnaDZKhHOfrzST7RezLn5Y8kC
W0dFRbKyCMikx4ljrW0owWWwiAd7sD+e9uve68ck42D/tAaCnbyp5LycAAMmo/eQ68d+eRr0ZVCh4B+Pi
kT4WXjhWCULkcWEc/AynQ+mQZJX9rgE8Bo2Hf0B7SHQVN0zG6uc8phX3FJQB5LXjcHQjmdr9dyjCP/xT
7Q== vboxuser@workstation
```

Task 4: Verify ssh remote connection

1. Using your local machine, connect to CentOS using `ssh`.
2. Show evidence that you are connected.

```
vboxuser@workstation:~$ ping 192.168.56.114
PING 192.168.56.114 (192.168.56.114) 56(84) bytes of data.
64 bytes from 192.168.56.114: icmp_seq=1 ttl=64 time=0.622 ms
64 bytes from 192.168.56.114: icmp_seq=2 ttl=64 time=0.436 ms
64 bytes from 192.168.56.114: icmp_seq=3 ttl=64 time=0.400 ms
64 bytes from 192.168.56.114: icmp_seq=4 ttl=64 time=0.409 ms
64 bytes from 192.168.56.114: icmp_seq=5 ttl=64 time=0.354 ms
64 bytes from 192.168.56.114: icmp_seq=6 ttl=64 time=0.387 ms
64 bytes from 192.168.56.114: icmp_seq=7 ttl=64 time=0.500 ms
```

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?

-In choosing between Debian and Red Hat, we should consider factors like package management, stability, support, and the intended use of the system. Debian is ideal for flexibility and cost-free setups, while Red Hat is best for enterprises needing reliability and official support.

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

-The main differences between Debian and Red Hat are their package managers and support models. Debian uses apt with .deb packages and is community-supported, while Red Hat uses yum/dnf with .rpm packages and provides paid enterprise-level support with long-term stability.