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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.

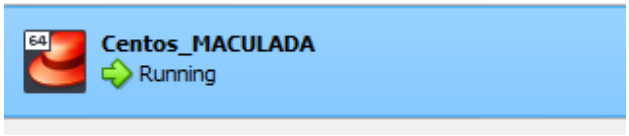
CentOS uses the RPM package format and YUM/DNF as the package manager.

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.



Task 2: Install the SSH server package *openssh*

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

```
[jai@localhost ~]$ sudo dnf install openssh-server -y
CentOS-7 - Base                                  2.0 MB/s |  10 MB     00:05
CentOS-7 - Updates                               2.1 MB/s |  28 MB     00:13
CentOS-7 - Extras                                669 kB/s | 360 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

```
[jai@localhost ~]$ systemctl start sshd
```

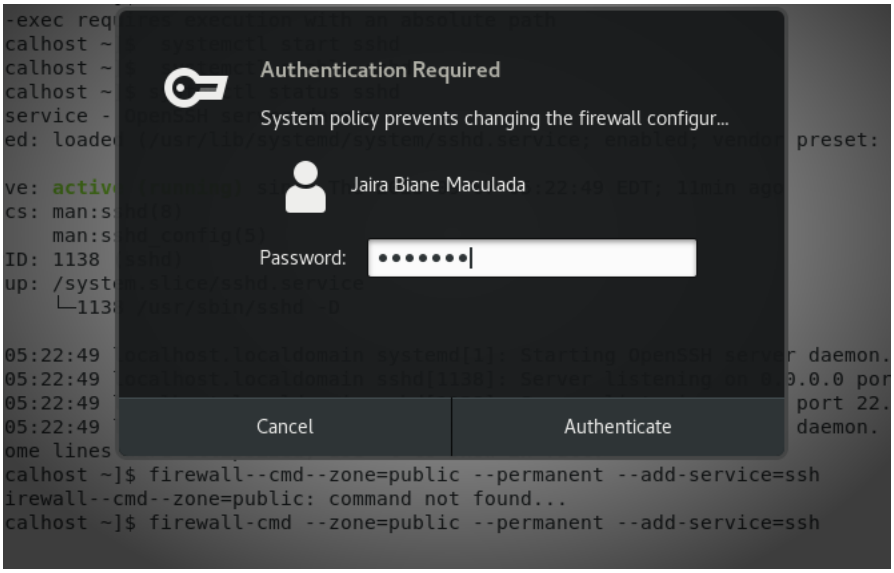
   $ systemctl enable sshd

```
[jai@localhost ~]$ systemctl enable sshd
```

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

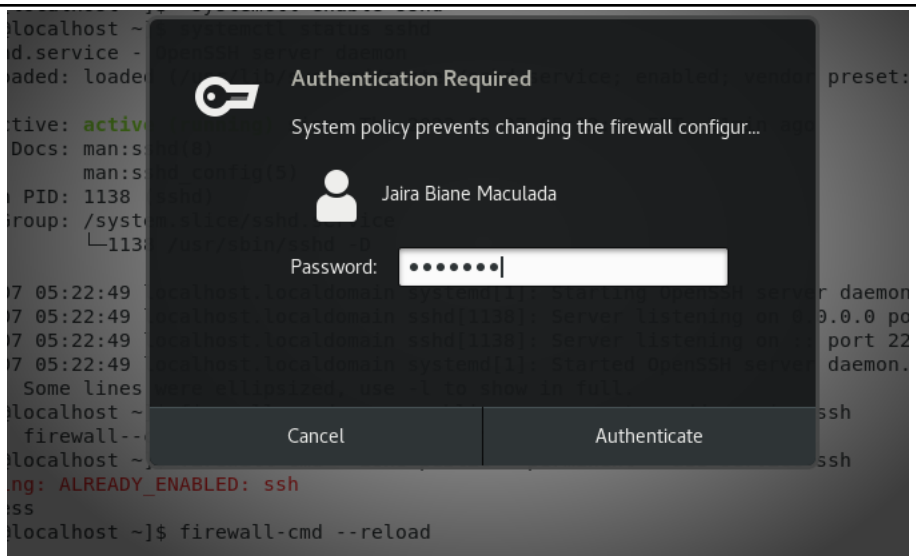
```
[jai@localhost ~]$ systemctl status sshd
● sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enabl
d)
   Active: active (running) since Thu 2023-09-07 05:22:49 EDT; 11min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
 Main PID: 1138 (sshd)
   CGroup: /system.slice/sshd.service
           └─1138 /usr/sbin/sshd -D

Sep 07 05:22:49 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Sep 07 05:22:49 localhost.localdomain sshd[1138]: Server listening on 0.0.0.0 port 22.
Sep 07 05:22:49 localhost.localdomain sshd[1138]: Server listening on :: port 22.
Sep 07 05:22:49 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

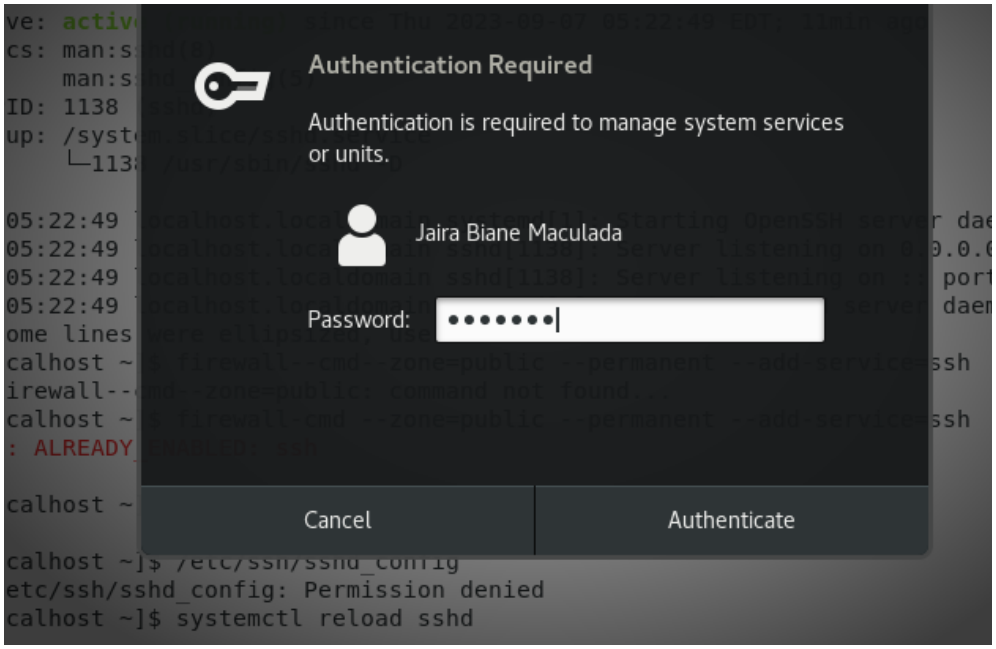



```
[jai@localhost ~]$ firewall-cmd --zone=public --permanent --add-service=ssh
Warning: ALREADY_ENABLED: ssh
success
```

$ firewall-cmd --reload



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



Task 3: Copy the Public Key to CentOS

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

```
jai@workstation:~$ ssh
usage: ssh [-46AaCfGgKkMNnqsTtVvXxYy] [-b bind_address] [-c cipher_spec]
           [-D [bind_address:]port] [-E log_file] [-e escape_char]
           [-F configfile] [-I pkcs11] [-i identity_file]
           [-J [user@]host[:port]] [-L address] [-l login_name] [-m mac_spec]
           [-O ctl_cmd] [-o option] [-p port] [-Q query_option] [-R address]
           [-S ctl_path] [-W host:port] [-w local_tun[:remote_tun]]
           [user@]hostname [command]
```

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

```
jai@workstation:~$ ssh-copy-id -i ~/.ssh/id_rsa jai@192.168.56.105
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/jai/.ssh/i
d_rsa.pub"
The authenticity of host '192.168.56.105 (192.168.56.105)' can't be established
.
ECDSA key fingerprint is SHA256:CeezhgaXl12v4JahDXzens0kJt7woKxQiiI9pdfxPiI.
Are you sure you want to continue connecting (yes/no)? y
Please type 'yes' or 'no': 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
jai@192.168.56.105's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'jai@192.168.56.105'"
and check to make sure that only the key(s) you wanted were added.
```

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

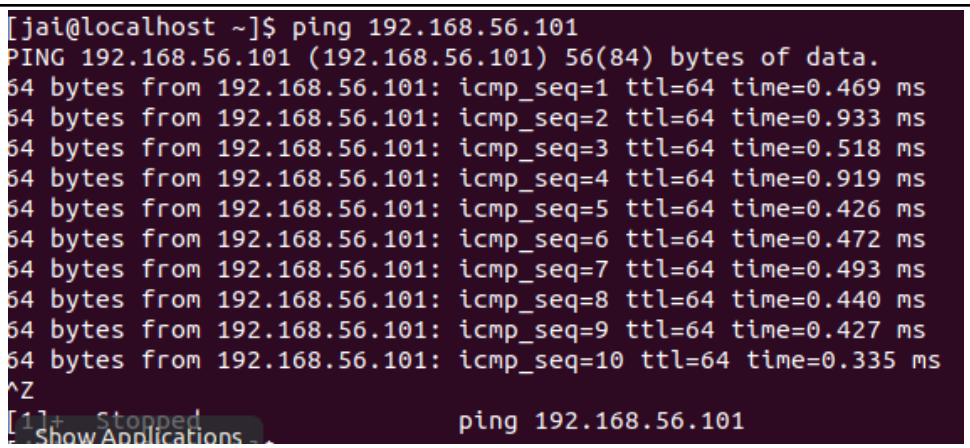
```
[jai@localhost ~]$ cat ~/.ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAACAQDhdL8tkm0rCb/iug87bqNcjA5f3wAUCxWMxw3cA1S+lol/01x
Nw8W1/fF7uy5Co6u/7u+w1oBRqIv8+R6hNARwGB3OB/xLTtgrdhLIvf/xE9fbfc0LxkZUkYJYWSjeE2tw6x26Qa
Nq2MSfgbX11ac+kVu/vqhA68WyvuaFNOWyqbHy+HtViYGx8w6vf3ePhqsWmDLSqPeAdjjW9S+doKUIG1/1aAyOb
m3Jyrb1jnjq06daCBa/gIOqR2Frn4EeEffiAV3D4+aXjcFJGDd0wFOlO2pG9mdLN1V631jtrWD1OAHzfcYdjxJa
Jbq0eIxwMue2nPTZsTu7YVUY0zihRpTKOIPPhlLGaytQ8JQfE8r0mmHfMpzbJGzdsCA8Os8GG9FNr51PqEoMbXs
XAtcZFwQvpEGxxhDgwOnKTRbOLqVU9dcYlxghWtnrFnM+0cwGE4H+vnjX+N5owghtC8VEBMzlGJRZBC3d965xPA
8tdsxFo0H9aglYHo7zhxvS1m+YV1iR+JdizRcQY0AnLrdAezDxmKiej4OP14Rygbftt0UR/SeDx0pqGEmE1Bz0F
2zIrYAI12yKdjgYHOCDNMa2XPi/Ud0vxNu7vQ2SB/bAR32BnM+d+fj5e6dHLyuDkHLSnIw8+NNdU4EJdrJhjor8
kwfuu1Pnck1zuPhWtWQvGtsTrQ== jai@workstation
```

Task 4: Verify ssh remote connection

1. Using your local machine, connect to CentOS using ssh.

```
jai@workstation:~$ ssh jai@192.168.56.105
Last login: Thu Sep  7 05:23:16 2023
[jai@localhost ~]$
```

2. Show evidence that you are connected.



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?

   Consider your demands while selecting a Linux distribution from the Debian or Red Hat family. Debian is a community-driven, dependable, and adaptable system that is great for both casual users and enthusiasts. Enterprise support, security, and certifications are provided by Red Hat and are appropriate for use with important applications by enterprises. Depending on your needs, you might prefer Red Hat for its dependability and expert support or Debian for its adaptability and community support.

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

   Consider your demands while selecting a Linux distribution from the Debian or Red Hat family. Debian is a community-driven, dependable, and adaptable system that is great for both casual users and enthusiasts. Enterprise support, security, and certifications are provided by Red Hat and are appropriate for use with important applications by enterprises. Depending on your needs, you might prefer Red Hat for its dependability and expert support or Debian for its adaptability and community support.

Conclusion:

After performing this Activity, I was able to familiarize myself with CentOS. I had fun connecting my ubuntu workstation and my CentOS. It was so fascinating. Furthermore, this activity clearly showed bridging the gap between Ubuntu and

CentOS has allowed ud to harness thr strength ov both Linux distribution which fosters a mofe versatile. I also learned that CentOS provides a solid foundation for us future System Administrator due to the fact that it is more stable and has long-term support. I hope that next activity, we can explore more about CentOS.