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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.

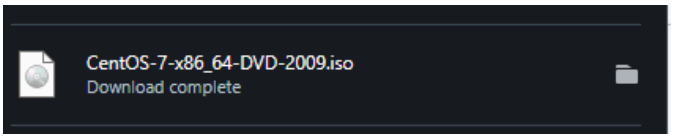
CentOS uses the RPM package format and YUM/DNF as the package manager.

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

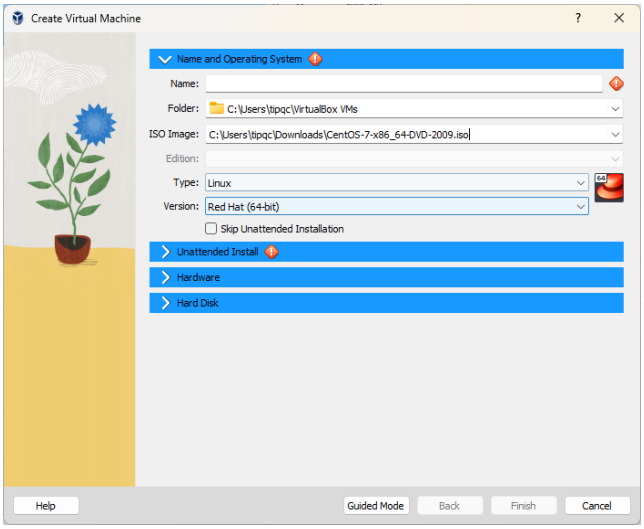
Both offer full-feature package management with network-based repository support, dependency checking and resolution, etc.. If you're familiar with one but not the other, you may have a little trouble switching over, but they're not overwhelmingly different. They both have similar features, just available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

Task 1: Download the CentOS or RHEL-8 image (Create screenshots of the following)

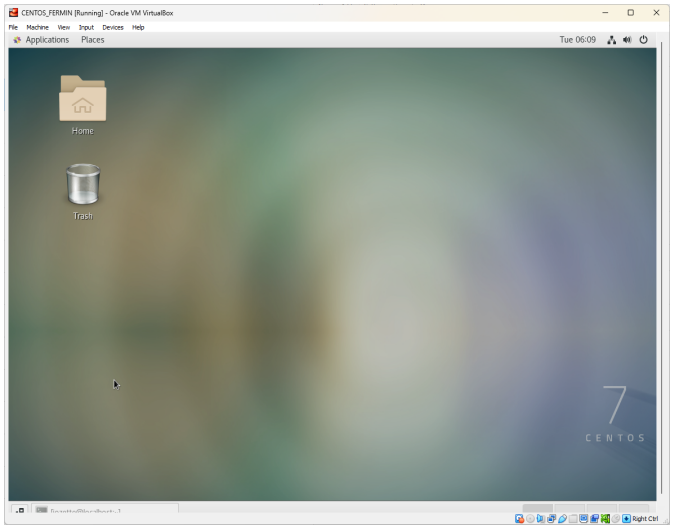
1. Download the image of the CentOS here: http://mirror.rise.ph/centos/7.9.2009/isos/x86_64/



2. Create a VM machine with 2 Gb RAM and 20 Gb HD.

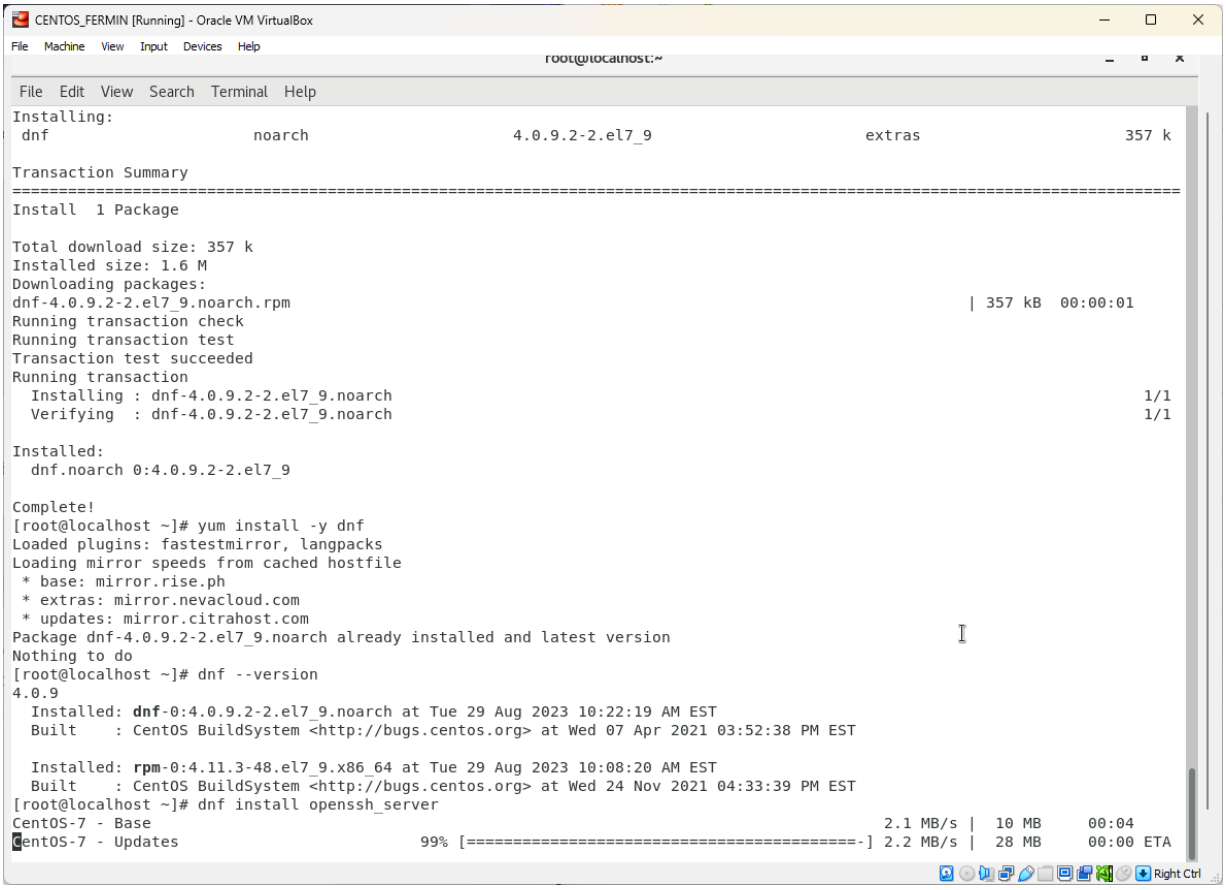


3. Install the downloaded image.
4. Show evidence that the OS was installed already.

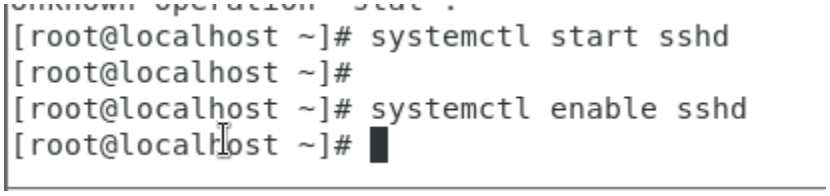


Task 2: Install the SSH server package *openssh*

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



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



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

```
[root@localhost ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2023-08-29 06:09:37 EDT; 15min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
 Main PID: 18469 (sshd)
   CGroup: /system.slice/sshd.service
           └─18469 /usr/sbin/sshd -D

Aug 29 06:09:37 localhost.localdomain systemd[1]: Stopped OpenSSH server daemon.
Aug 29 06:09:37 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Aug 29 06:09:37 localhost.localdomain sshd[18469]: Server listening on 0.0.0.0 port 22.
Aug 29 06:09:37 localhost.localdomain sshd[18469]: Server listening on :: port 22.
Aug 29 06:09:37 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
[root@localhost ~]#
```

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

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

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 ~]# systemctl reload sshd
```

Task 3: Copy the Public Key to CentOS

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

```
jozette@ManageNode:~$ ssh -V
OpenSSH_7.6p1 Ubuntu-4ubuntu0.7, OpenSSL 1.0.2n  7 Dec 2017
```

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

```
jozette@ManageNode:~$ ssh-copy-id -i ~/.ssh/id_rsa jozette@192.168.36.5
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/jozette/.ssh/id_rsa.pub"
The authenticity of host '192.168.36.5 (192.168.36.5)' can't be established.
ECDSA key fingerprint is SHA256:TXHD0KXRi4pQyWTdbudasOiak5c6owV9pzdWEqbDISI.
Are you sure you want to continue connecting (yes/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 prompted now it is to install the new keys
jozette@192.168.36.5's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'jozette@192.168.36.5'"
and check to make sure that only the key(s) you wanted were added.
```

```
jozette@ManageNode:~$ ssh jozette@CentOS
The authenticity of host 'centos (192.168.36.5)' can't be established.
ECDSA key fingerprint is SHA256:TXHD0KXRi4pQyWTdbudasOiak5c6owV9pzdWEqbDISI.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'centos' (ECDSA) to the list of known hosts.
Last login: Tue Sep  5 04:42:45 2023
```

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

```
[jozette@localhost ~]$ cat ~/.ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAACAQC4etpC76HtEaWWUhpm0n9hY3snXsQ0prBWULJQt2C8cvWj9OZeJrhbg+6mVvnfSk8CcW/VTmv2jl03B2CraVtTWp
4NVPbPI5NN44NbSr65ZxhCcpVJE5BpFVV2bbwyWNMDt1XZqTi7+aMQlHU24YXO8Lx4IxssVkd+hJudd7r23b6y+zlD5aue5GwfLTuplq46ORVqYvc6RxSqJJokhCRd
rhUwj3NS6Jge5hfIWNt8mIOV+E998yzruCz4iueNyOTiV2qga5QhY0o4o5GlgVt4WfbH+LuyneTGR1MRrxZMBvlizCiyODz6KSNteRiyQz7NPW9g6ApM4wUlwFQI2w
Q54Qc34ei/RmHO12FuL0BSZy5zxVbuQxr09aoS/GgskrizxSTNmU41pFk5IGl+IsSAUt118tc1WGDsRdesyfMKJalbvPVVyMKfOFjlztePhUOJgcyte7FZZZzXb+9e
WbI8iqhIw+FCzVYC7m1jsZPj4T4Zz8AB56DUKb8uB00tIMKqsig7YBhZWCK7Dm/WFpPS4SwdDYWfseK3N3S7gALW60WfBBWUdzo4LGKK86mgOjJy4d1wQ38TvElc8i
CTIlerrRyqqnLicBTvIvKtOuvIhlhwQw00LnqVqt+80JSg5w5jAQO3+RsLTKiQhqDy8qEtNgbXRz0KLteYwyMHE7ilZQ== jozette@ManageNode
[jozette@localhost ~]$
```

Task 4: Verify ssh remote connection

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

```
jozette@ManageNode:~$ ssh jozette@CentOS
Last login: Tue Sep  5 04:55:23 2023 from 192.168.36.1
[jozette@localhost ~]$
```

2. Show evidence that you are connected.

```
[jozette@localhost ~]$ ls -a
.   .bash_history  .bash_profile  .cache   .dbus    Documents  .esd_auth      .local    Music     Public  Templates
..  .bash_logout   .bashrc        .config  Desktop  Downloads  .ICEauthority  .mozilla  Pictures  .ssh    Videos
[jozette@localhost ~]$ cat ~/.ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAACAQC4etpC76HtEaWWUhpm0n9hY3snXsQ0prBWULJQt2C8cvWj9OZeJrhbg+6mVvnfSk8CcW/VTmv2jl03B2CraVtTWp4NVPbPI
5NN44NbSr65ZxhCcpVJE5BpFVV2bbwyWNMDt1XZqTi7+aMQlHU24YXO8Lx4IxssVkd+hJudd7r23b6y+zlD5aue5GwfLTuplq46ORVqYvc6RxSqJJokhCRdrhUwj3NS6Jge5h
fIWNt8mIOV+E998yzruCz4iueNyOTiV2qga5QhY0o4o5GlgVt4WfbH+LuyneTGR1MRrxZMBvlizCiyODz6KSNteRiyQz7NPW9g6ApM4wUlwFQI2wQ54Qc34ei/RmHO12FuL0B
SZy5zxVbuQxr09aoS/GgskrizxSTNmU41pFk5IGl+IsSAUt118tc1WGDsRdesyfMKJalbvPVVyMKfOFjlztePhUOJgcyte7FZZZzXb+9eWbI8iqhIw+FCzVYC7m1jsZPj4T4Z
z8AB56DUKb8uB00tIMKqsig7YBhZWCK7Dm/WFpPS4SwdDYWfseK3N3S7gALW60WfBBWUdzo4LGKK86mgOjJy4d1wQ38TvElc8iCTIlerrRyqqnLicBTvIvKtOuvIhlhwQw00L
nqVqt+80JSg5w5jAQO3+RsLTKiQhqDy8qEtNgbXRz0KLteYwyMHE7ilZQ== jozette@ManageNode
[jozette@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?

   Debian and RedHat are actually both good distributions to work with, but if I were going to choose I would pick Debian for now. Because Debian is a free and open-source distribution that does not require payment to use its software and community support. Debian is also known for its stability, compatibility, usability, and security despite the cost-free feature of Debian.

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

   After researching I have found that Debian and RedHat differ in different kind of categories such as software licensing, software packaging, and more but I think the main difference between the two is the cost-free option of Debian distribution that they offer to the users.

Conclusion:

In this Hands-on Activity, we Install Community Enterprise OS or Red Hat Linux OS and Configure remote SSH connection from the local machine we did last

activity to CentOS. I also learned about the difference between the two best distributions; Debian and RedHat. Installing an SSH server on CentOS allows users to securely connect to their machine remotely. Overall, this activity helps me understand the importance of using SSH in managing and administering servers.