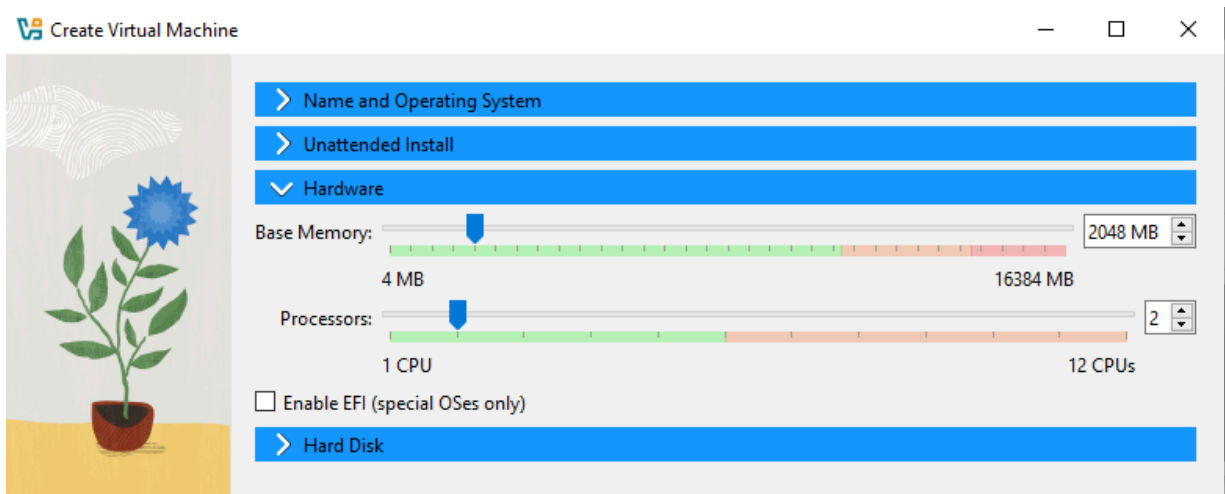
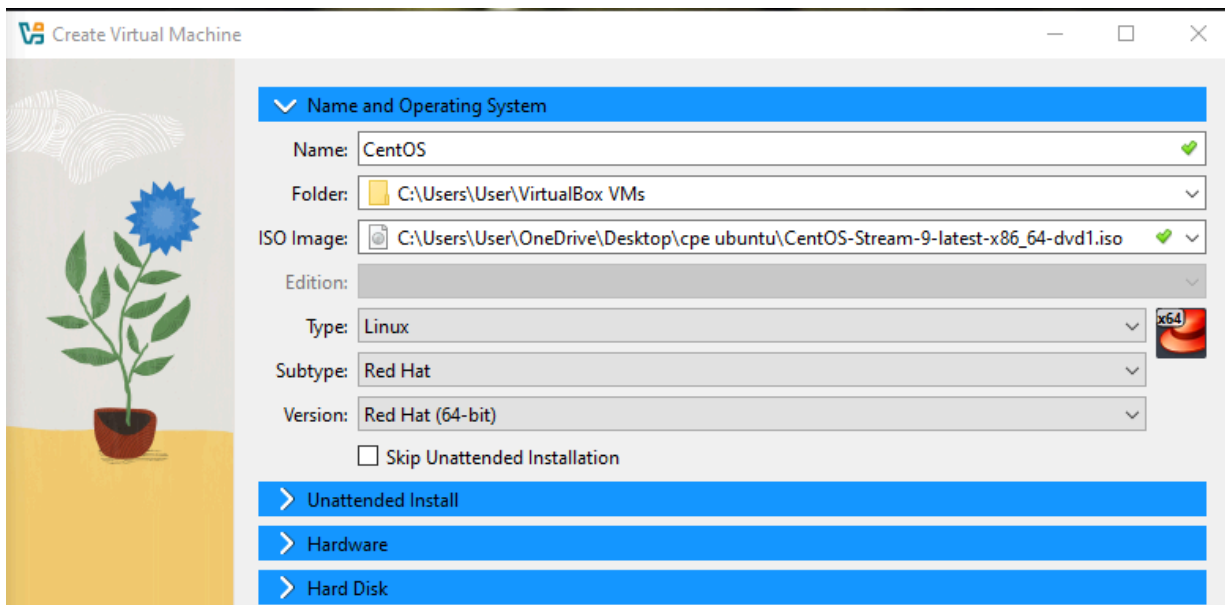


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Activity 3: Install SSH server on CentOS or RHEL 8	
1. Objectives: 1.1 Install Community Enterprise OS or Red Hat Linux OS 1.2 Configure remote SSH connection from remote computer to CentOS/RHEL-8	
2. Discussion: CentOS vs. Debian: Overview CentOS 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.



Hard Disk

☒ Create a Virtual Hard Disk Now

Hard Disk File Location and Size

C:\Users\User\VirtualBox VMs\CentOS\CentOS.vdi

20.00 GB

4.00 MB 2.00 TB

Hard Disk File Type and Variant

VDI (VirtualBox Disk Image)

☐ Pre-allocate Full Size

☐ Split Into 2GB Parts

Task 2: Install the SSH server package *openssh*

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

\$ dnf install openssh-server

```

abegailfrias@vbox:~$ sudo dnf install openssh-server
[sudo] password for abegailfrias:
Updating Subscription Management repositories.
Unable to read consumer identity

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

CentOS Stream 9 - BaseOS                923 kB/s | 8.2 MB    00:09
CentOS Stream 9 - AppStream              904 kB/s | 20 MB    00:23
CentOS Stream 9 - Extras packages        4.2 kB/s | 19 kB    00:04
Package openssh-server-8.7p1-43.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[abegailfrias@vbox ~]$

```

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

\$ systemctl start sshd

\$ systemctl enable sshd

```
abegailfrias@vbox:~  
[abegailfrias@vbox ~]$ sudo dnf install openssh-server  
[sudo] password for abegailfrias:  
Updating Subscription Management repositories.  
Unable to read consumer identity  
  
This system is not registered with an entitlement server. You can use "rhc" or "  
subscription-manager" to register.  
  
CentOS Stream 9 - BaseOS                923 kB/s | 8.2 MB      00:09  
CentOS Stream 9 - AppStream             904 kB/s | 20 MB      00:23  
CentOS Stream 9 - Extras packages       4.2 kB/s | 19 kB      00:04  
Package openssh-server-8.7p1-43.el9.x86_64 is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[abegailfrias@vbox ~]$
```

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

\$ systemctl status sshd

```
abegailfrias@vbox:~ — systemctl status sshd  
Package openssh-server-8.7p1-43.el9.x86_64 is already installed.  
Dependencies resolved.  
Nothing to do.  
Complete!  
[abegailfrias@vbox ~]$ systemctl start sshd  
[abegailfrias@vbox ~]$ systemctl enable sshd  
[abegailfrias@vbox ~]$ systemctl status sshd  
● sshd.service - OpenSSH server daemon  
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: ena  
   Active: active (running) since Sun 2024-09-15 20:43:30 PST; 12min ago  
     Docs: man:sshd(8)  
           man:sshd_config(5)  
  Main PID: 871 (sshd)  
    Tasks: 1 (limit: 10949)  
  Memory: 152.0K  
    CPU: 14ms  
   CGroup: /system.slice/ssh.service  
           └─871 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"  
  
Sep 15 20:43:29 localhost.localdomain systemd[1]: Starting OpenSSH server daemo  
Sep 15 20:43:29 localhost.localdomain sshd[871]: Server listening on 0.0.0.0 po  
Sep 15 20:43:29 localhost.localdomain sshd[871]: Server listening on :: port 22.  
Sep 15 20:43:30 localhost.localdomain systemd[1]: Started OpenSSH server daemon.  
lines 1-16/16 (END)
```

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

\$ firewall-cmd --zone=public --permanent --add-service=ssh

\$ firewall-cmd --reload

```
[abegailfrias@vbox ~]$ firewall -cmd --zone=public --permanent --add-service=ssh
bash: firewall: command not found...
[abegailfrias@vbox ~]$ firewall-cmd --zone=public --permanent --add-service=ssh
Warning: ALREADY_ENABLED: ssh
success
[abegailfrias@vbox ~]$ firewall-cmd --reload
success
[abegailfrias@vbox ~]$
```

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

```
success
[abegailfrias@vbox ~]$ firewall-cmd --reload
success
[abegailfrias@vbox ~]$ systemctl reload sshd
[abegailfrias@vbox ~]$
```

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

```
abegailfrias@abegailfrias: ~
refused

abegailfrias@abegailfrias:~$ ssh abegailfrias@10.0.2.15
ssh: connect to host 10.0.2.15 port 22: Connection refused
abegailfrias@abegailfrias:~$ ping 10.0.2.15
PING 10.0.2.15 (10.0.2.15) 56(84) bytes of data.
64 bytes from 10.0.2.15: icmp_seq=1 ttl=64 time=0.027 ms
64 bytes from 10.0.2.15: icmp_seq=2 ttl=64 time=0.038 ms
64 bytes from 10.0.2.15: icmp_seq=3 ttl=64 time=0.031 ms
^C
--- 10.0.2.15 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2047ms
rtt min/avg/max/mdev = 0.027/0.032/0.038/0.004 ms
abegailfrias@abegailfrias:~$ ssh-copy-id -i ~/.ssh/id_rsa.pub abegailfrias@10.0.2.15
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/abegailfrias/.ssh/id_rsa.pub"
/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: ERROR: ssh: connect to host 10.0.2.15 port 22: Connection refused
```

Task 4: Verify ssh remote connection

1. Using your local machine, connect to CentOS using ssh.
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?
 - Make sure the mirror links are still up to date in order for the operating system to continue receiving updates when searching for the best distribution between Red Hat Linux and Debian. During this exercise, I used CentOS 7 and I discovered that the mirror links are down and that you can't download anything. But with CentOS 9, Red Hat Linux's assistance allows CentOS to continue downloading, running, and performing updates, completing this task.
2. What are the main difference between Debian and Red Hat Linux distributions?
 - Using APT and .deb packages, Debian prioritizes community support and flexibility. Red Hat emphasizes enterprise stability and commercial support through the use of RPM and .rpm packages.