

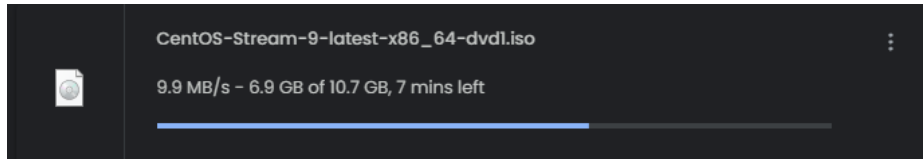
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Course/Section: CPE212 - CPE31S21	Date Submitted: 9/15/2024
Instructor: Engr. Robin Valenzuela	Semester and SY: 2024 - 2025
Activity 3: Install SSH server on CentOS or RHEL 8	
1. Objectives: 1.1 Install Community Enterprise OS or Red Hat Linux OS 1.2 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.

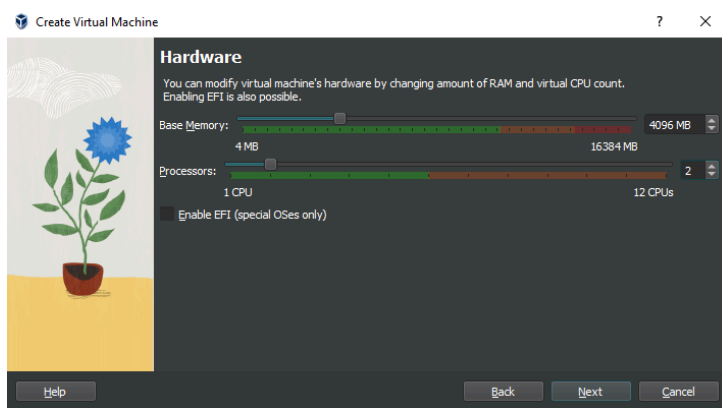
Task 1: Download the CentOS or RHEL-8 image (Create screenshots of the following)

1. Download the image of the CentOS here:

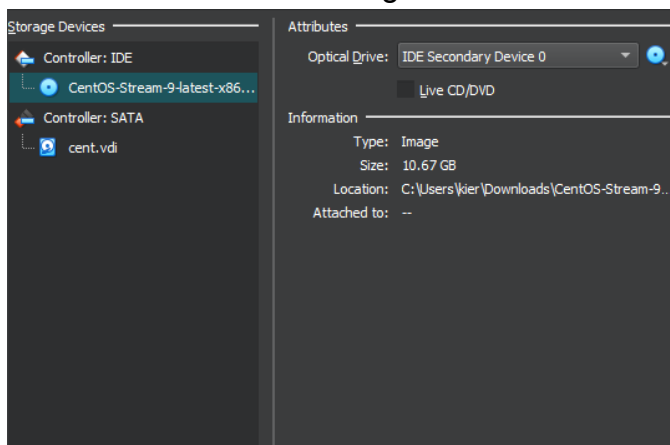
http://mirror.rise.ph/centos/7.9.2009/isos/x86_64/



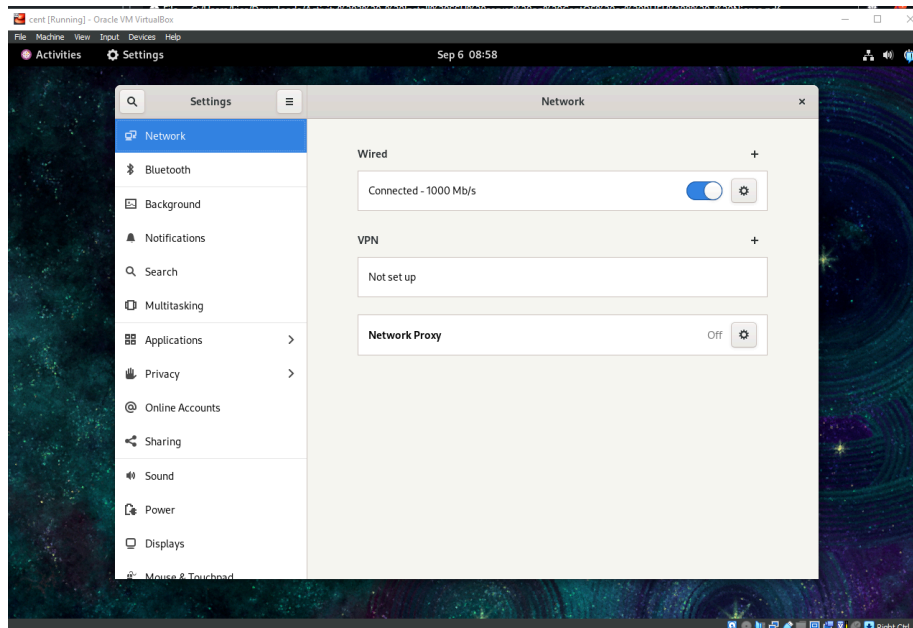
2. Create a VM machine with 2 Gb RAM and 20 Gb HD.



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

```
[root@localhost workstation]# sudo dnf install openssh-server
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                705 kB/s | 8.2 MB    00:11
CentOS Stream 9 - AppStream             1.5 MB/s | 20 MB    00:13
CentOS Stream 9 - Extras packages       3.0 kB/s | 19 kB    00:06
Package openssh-server-8.7p1-43.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@localhost workstation]#
```

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

\$ systemctl start sshd

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

\$ systemctl enable sshd

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

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

\$ systemctl status sshd

```
[workstation@localhost ~]$ systemctl status sshd
• sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: ena
   Active: active (running) since Fri 2024-09-06 08:55:57 PST; 12min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
    Main PID: 903 (sshd)
      Tasks: 1 (limit: 23008)
     Memory: 2.3M
        CPU: 11ms
    CGroup: /system.slice/ssh.service
            └─903 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"
```

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

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

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

\$ firewall-cmd --reload

```
[workstation@localhost ~]$ 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

```
GNU nano 5.6.1 /etc/ssh/sshd_config
# To modify the system-wide sshd configuration, create a *.conf file under
# /etc/ssh/sshd_config.d/ which will be automatically included below
Include /etc/ssh/sshd_config.d/*.conf

# If you want to change the port on a SELinux system, you have to tell
# SELinux about this change.
# semanage port -a -t ssh_port_t -p tcp #PORTNUMBER
#
#Port 22
#AddressFamily any
#ListenAddress 0.0.0.0
#ListenAddress ::

#HostKey /etc/ssh/ssh_host_rsa_key
#HostKey /etc/ssh/ssh_host_ecdsa_key
#HostKey /etc/ssh/ssh_host_ed25519_key

# Ciphers and keying
#RekeyLimit default none
```

Task 3: Copy the Public Key to CentOS

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

```
kier@workstation:~$ ssh-keygen -t rsa -b 4096
Generating public/private rsa key pair.
Enter file in which to save the key (/home/kier/.ssh/id_rsa):
/home/kier/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/kier/.ssh/id_rsa
Your public key has been saved in /home/kier/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:USKdu6R6ilSQunp/Vk3nerZ8dXRjBi5SbyndaV20/cQ kier@worksta
The key's randomart image is:
+---[RSA 4096]-----+
|          .ooooo ..+=+ |
|       .   .oo. + ==0 |
|      o    .o o B.+E |
|     . .   o.o = +.o |
|    . .   oS+ o . o. |
|   . .   . o . o o   |
|  . .   . .         o |
|..... +             |
|....O=              |
+-----[SHA256]-----+
```

2. Using the command `ssh-copy-id`, connect your local machine to CentOS.
3. On CentOS, verify that you have the `authorized_keys`.

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?
 - When choosing between the Linux distributions from Red Hat and Debian, it's crucial should take into account elements like your unique use case, the degree of assistance you need, your experience with package tracking systems, and the equilibrium between modern features and stability, licensing choices, and integration ecosystems, community support as opposed to commercial sponsorship, financial restraints, security factors and hardware interoperability. In the end, it's your decision should be in line with your unique requirements and preferences, as both Red Hat and Debian.

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

- Debian and Red Hat Linux distributions differ in their origins and licensing, package management systems, support structures, stability versus cutting-edge features, ecosystems, costs, security approaches, community versus commercial backing, and their release cycles, with Debian being community-driven and emphasizing free software principles, while Red Hat offers a commercial product, such as Red Hat Enterprise Linux (RHEL), with a balanced approach to stability and new features, backed by commercial support options and a well-established ecosystem.