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Course/Section: CPE232 - CPE31S4	**Date Submitted:** 09-04-23
Instructor: Dr. Jonathan V. Taylar	**Semester and SY:** 1st Sem '23 - '24

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.

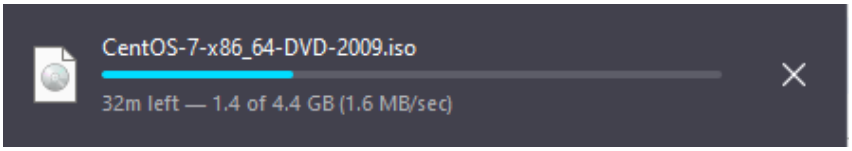
CentOS uses the RPM package format and YUM/DNF as the package manager.

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

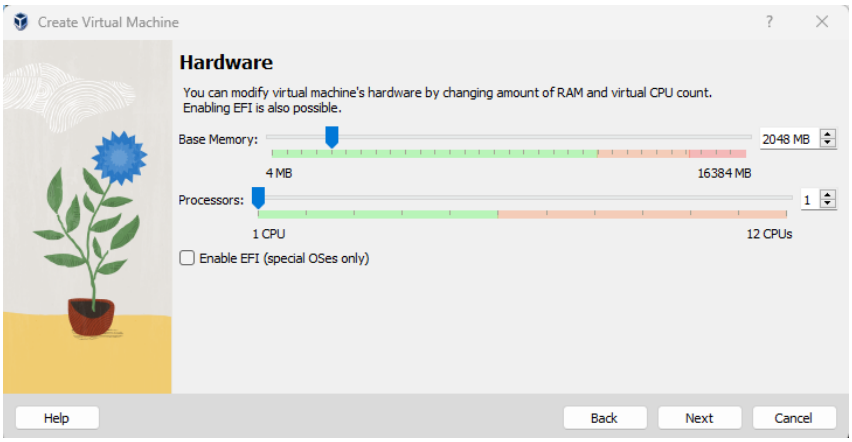
Both offer full-feature package management with network-based repository support, dependency checking and resolution, etc.. If you're familiar with one but not the other, you may have a little trouble switching over, but they're not overwhelmingly different. They both have similar features, just available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

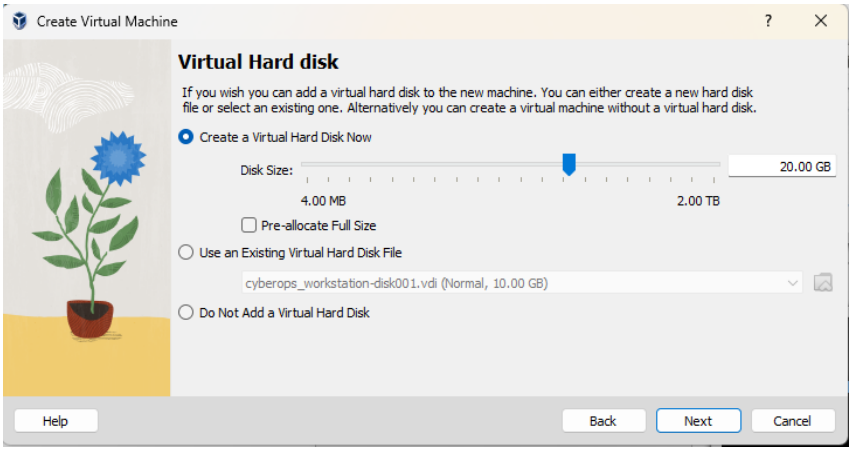
Task 1: Download the CentOS or RHEL-8 image

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



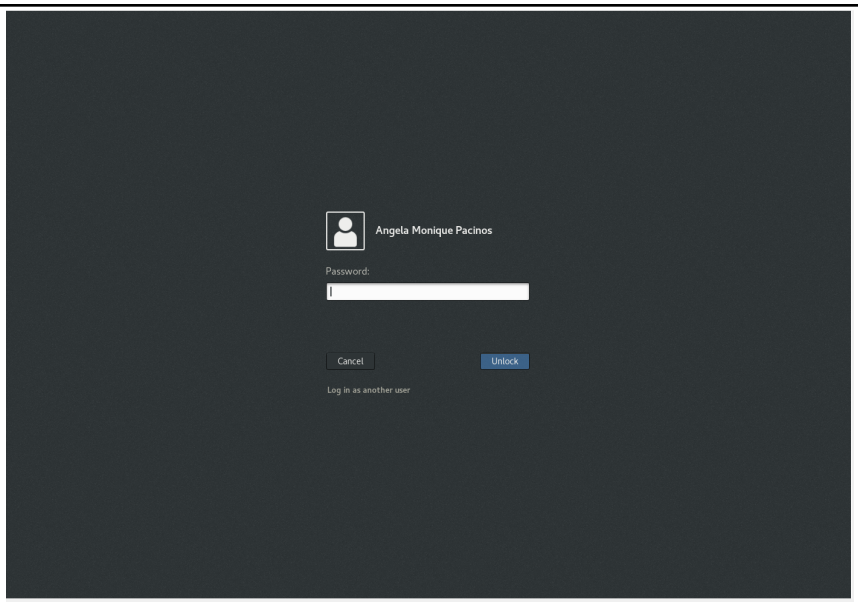
2. Create a VM machine with 2 Gb RAM and 20 Gb HD.

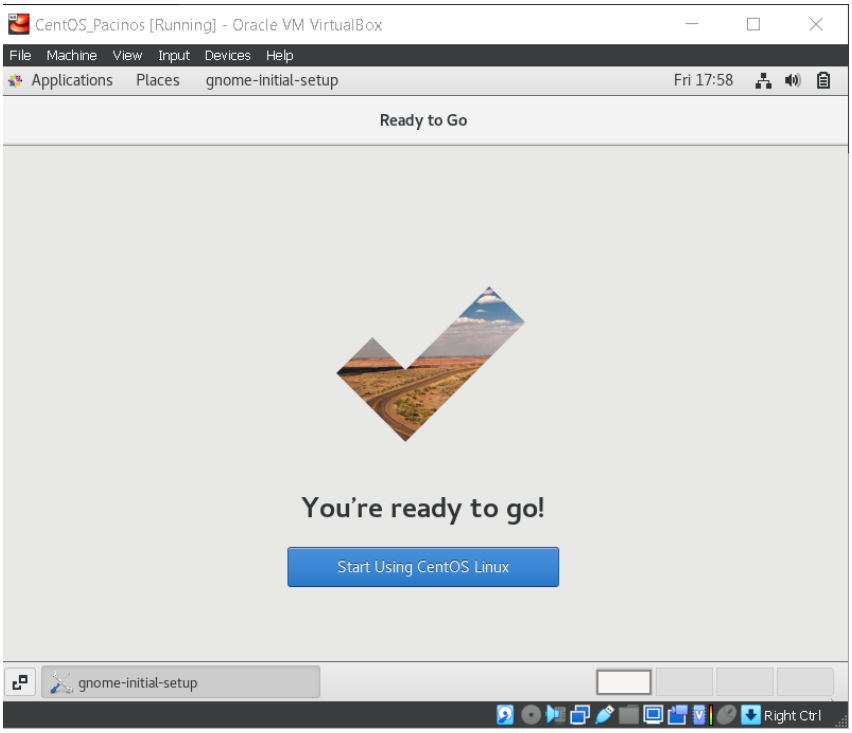




3. Install the downloaded image.

4. Show evidence that the OS was installed already.

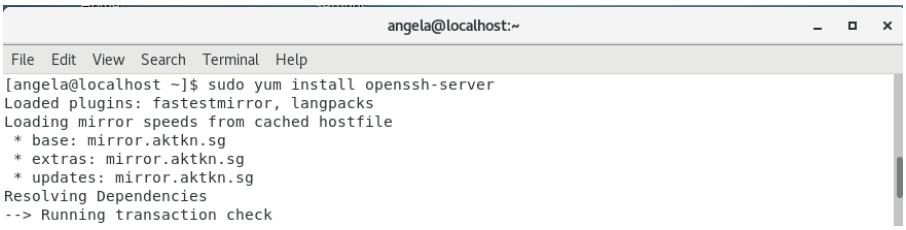

Angela Monique Pacinos
Password:
Cancel
Unlock
Log in as another user


CentOS_Pacinos [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Applications Places gnome-initial-setup
Fri 17:58
Ready to Go
You're ready to go!
Start Using CentOS Linux
gnome-initial-setup
Right Ctrl

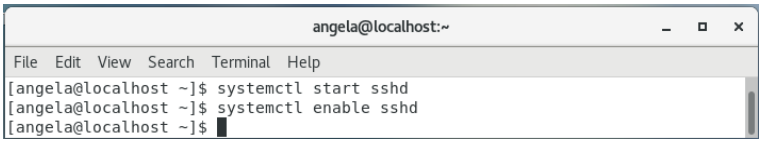
Task 2: Install the SSH server package *openssh*

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

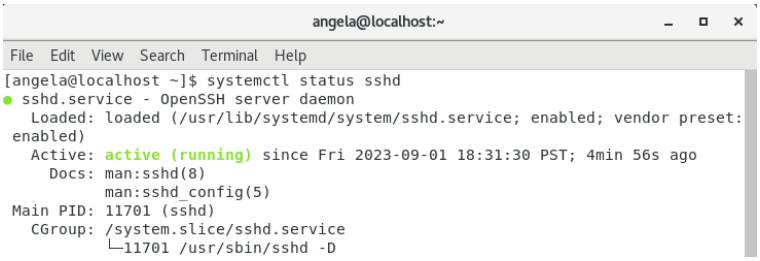
```
Updated:
  openssh-server.x86_64 0:7.4p1-23.el7_9

Dependency Updated:
  openssh.x86_64 0:7.4p1-23.el7_9    openssh-clients.x86_64 0:7.4p1-23.el7_9

Complete!
```



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

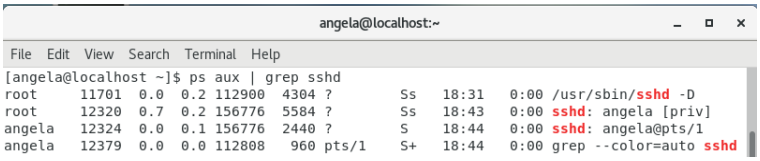


4. Open the SSH port 22 to allow incoming traffic:
   $ firewall-cmd --zone=public --permanent --add-service=ssh
   $ firewall-cmd --reload

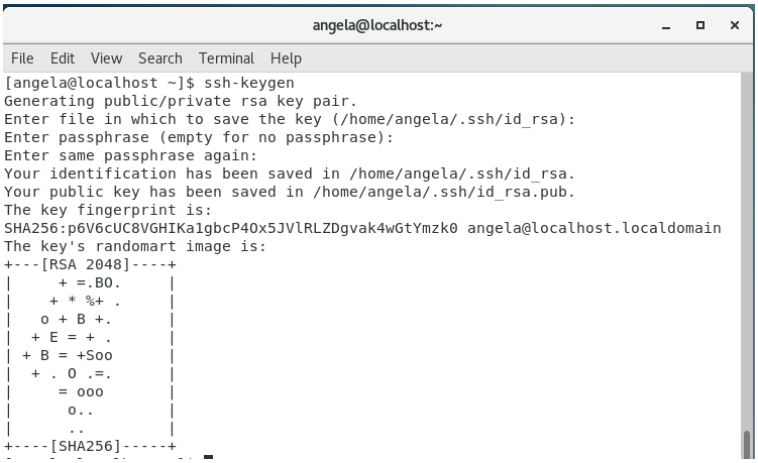
5. Locate the ssh server man config file */etc/ssh/sshd_config* and perform custom configuration. Every time you make any change to the */etc/ssh/sshd_config* configuration file reload the *sshd* service to apply changes:
   $ systemctl reload sshd

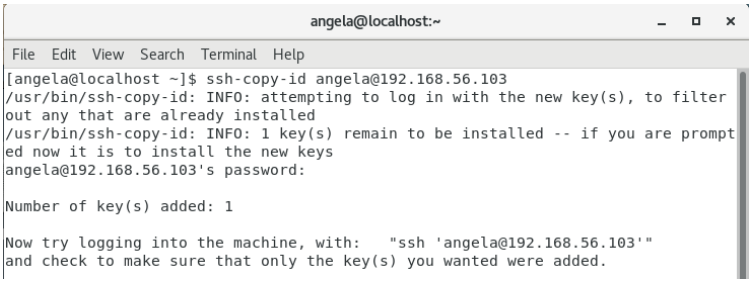
Task 3: Copy the Public Key to CentOS

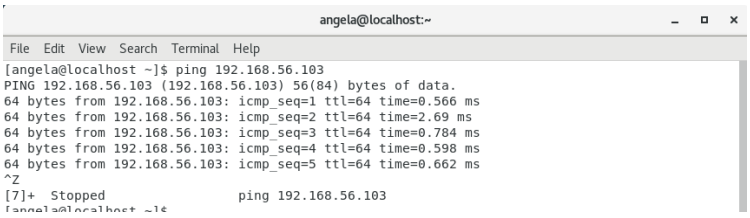
1. Make sure that *ssh* is installed on the local machine.

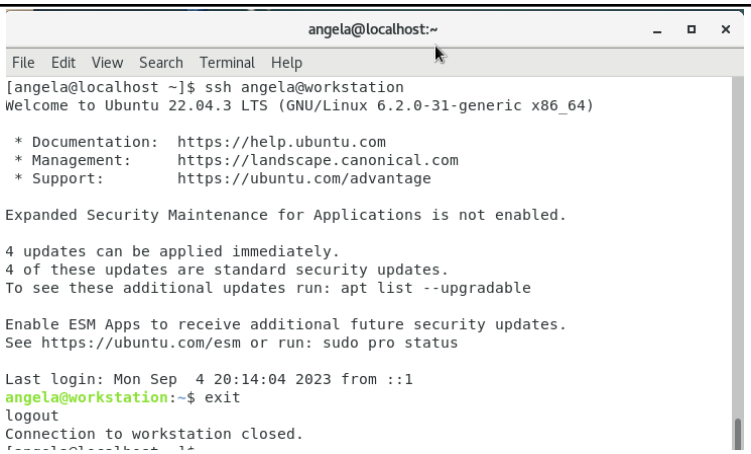


2. Using the command *ssh-copy-id*, connect your local machine to CentOS.

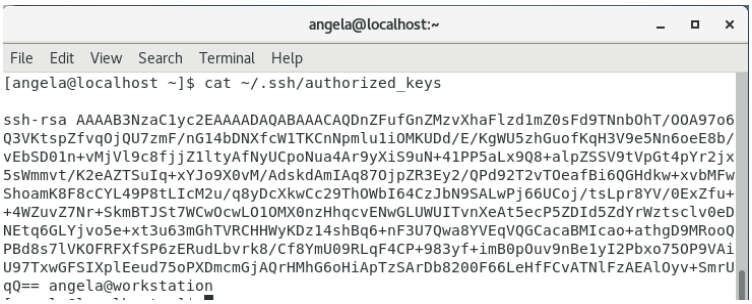






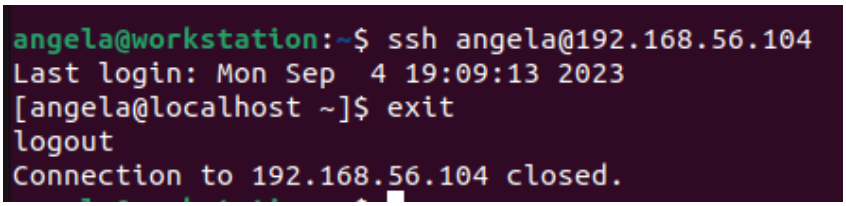


3. On CentOS, verify that you have the *authorized_keys*.

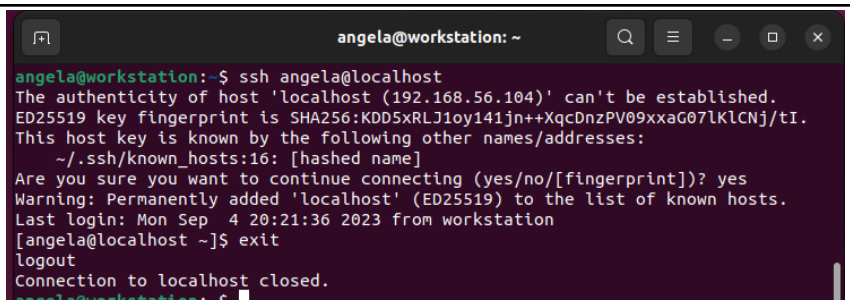


Task 4: Verify ssh remote connection

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?**

   I think one thing that we should consider is what the software is for. It is for company, enterprise, if so then Red Hat should be the one to consider since it provides enterprise level of software. It is primarily for a larger community support. If it is for a much more general audience then Debian is the one to consider. It is a primarily community supported to a wider audience that can be catered.

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

   One of the most noticeable differences that we encountered is within the package management. Debian uses APT package manager while Red Hat uses the RPM or YUM / DNF package manager. Another one is that Debian is an open-source software on the other hand Red hat has some proprietary software because it focuses on providing enterprise software.

Conclusion / Learnings:

This is the first time that I have encountered CentOS as well as operating it. After the download of the image there were things to modify and change accordingly to be able to function properly which was pretty easy to follow as the instruction was on the module. Some of the syntax that we used for the terminal was a little different since this was not the same as ubuntu. The process of installing the SSH server package for CentOS was pretty much the same with how we did it in Ubuntu. There were errors that I have encountered like my username not being a sudoer and I have to figure that out and “Remote host identification has changed.” where I wasn’t able to use the hostname “localhost” if I wanted to ssh the CentOS. But eventually I was able to figure it out and was able to connect my CentOS to my Ubuntu Desktop. Overall, the activity was good because there are detailed and general directions that we can use and some things that we have to figure out.

I used my own laptop for this that’s why the ip address for the Servers are different from the previous activities

"I affirm that I will not give or receive any unauthorized help on this activity and that all work will be my own."