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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.

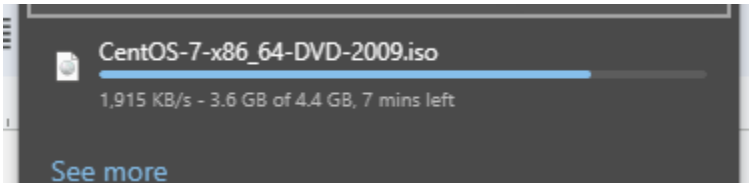
CentOS uses the RPM package format and YUM/DNF as the package manager.

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

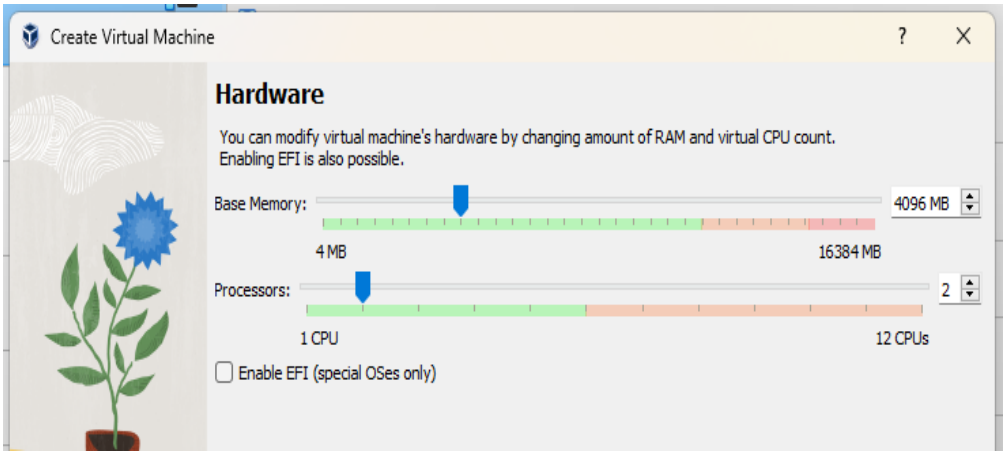
Both offer full-feature package management with network-based repository support, dependency checking and resolution, etc.. If you're familiar with one but not the other, you may have a little trouble switching over, but they're not overwhelmingly different. They both have similar features, just available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

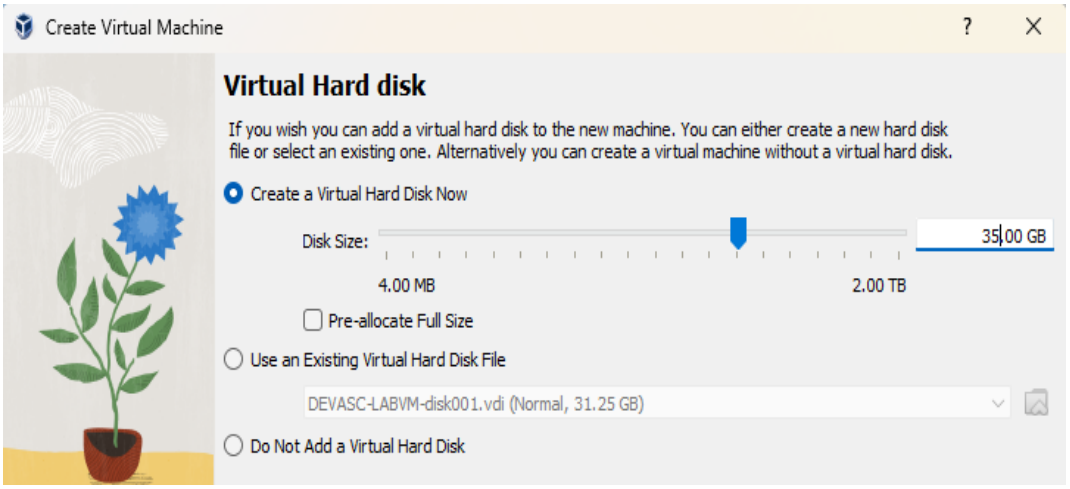
Task 1: Download the CentOS or RHEL-8 image (Create screenshots of the following)

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

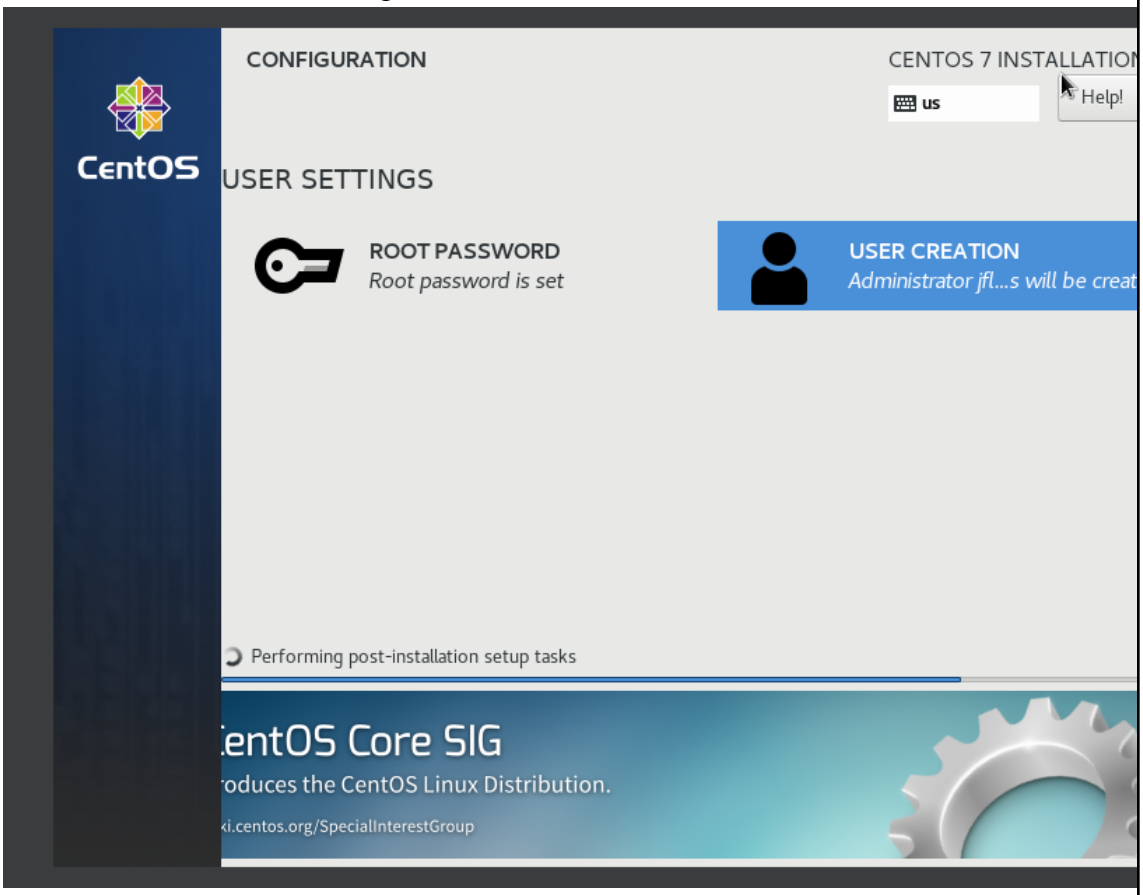


2. Create a VM machine with 2 Gb RAM and 20 Gb HD.

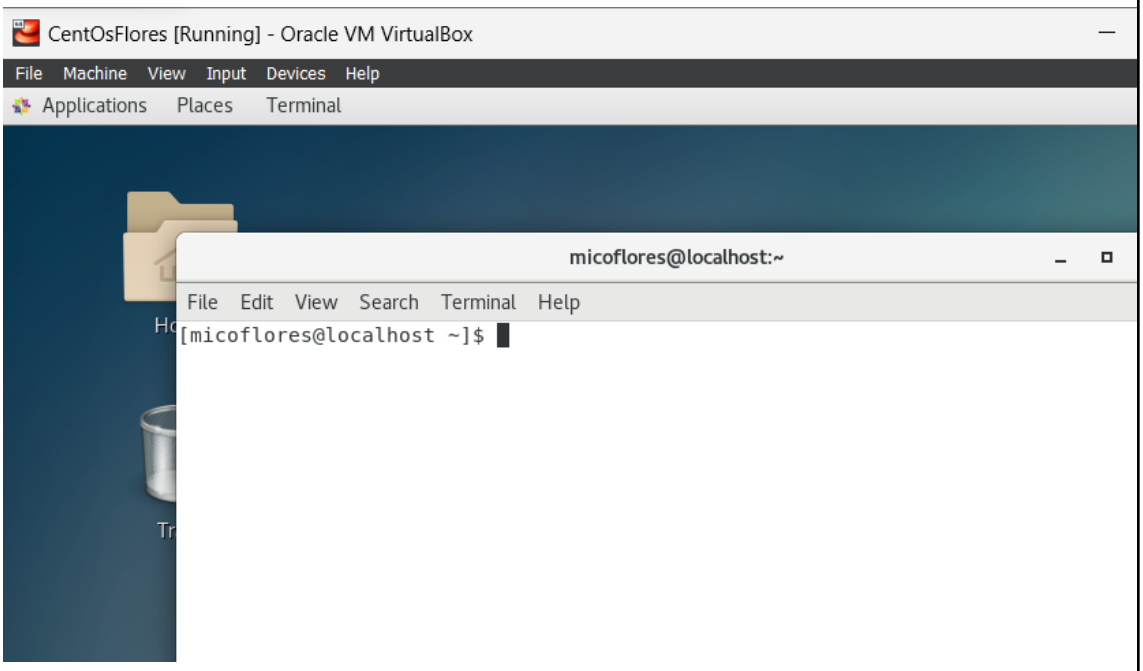




3. Install the downloaded image.

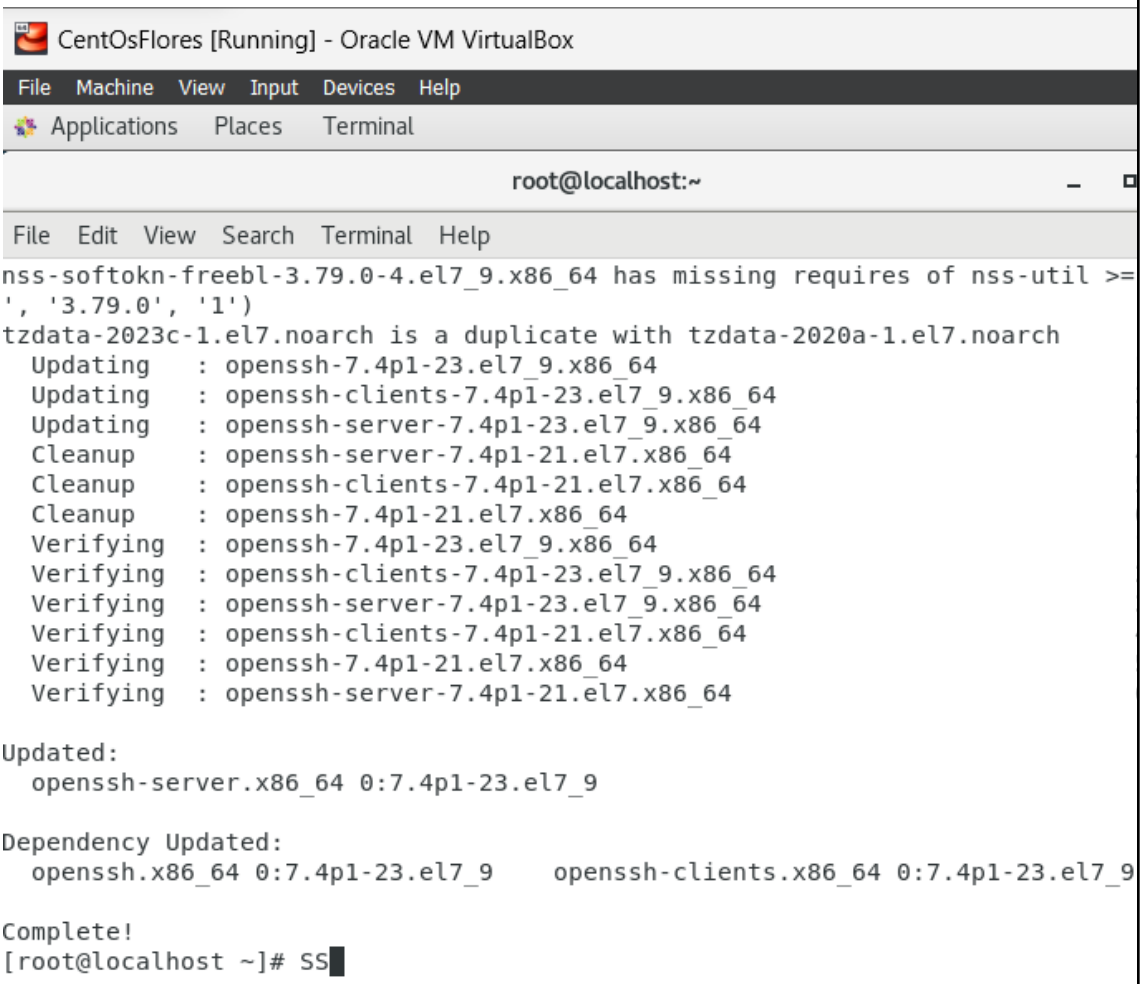


4. Show evidence that the OS was installed already.

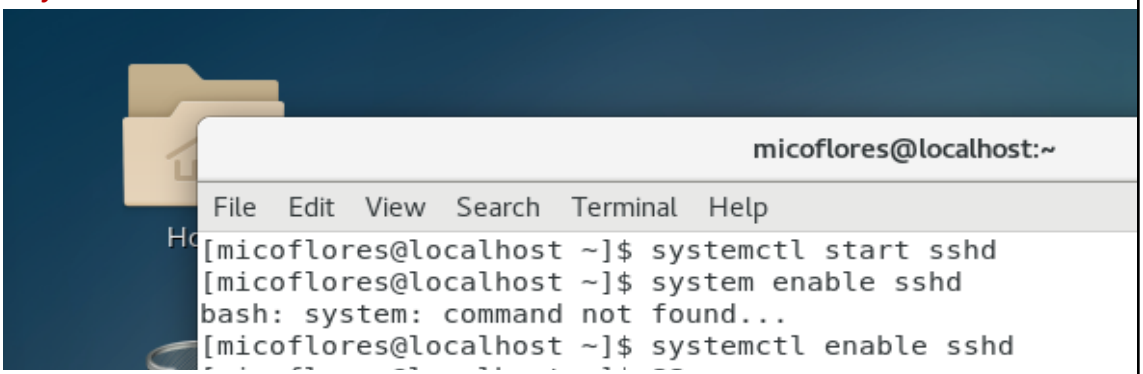


Task 2: Install the SSH server package *openssh*

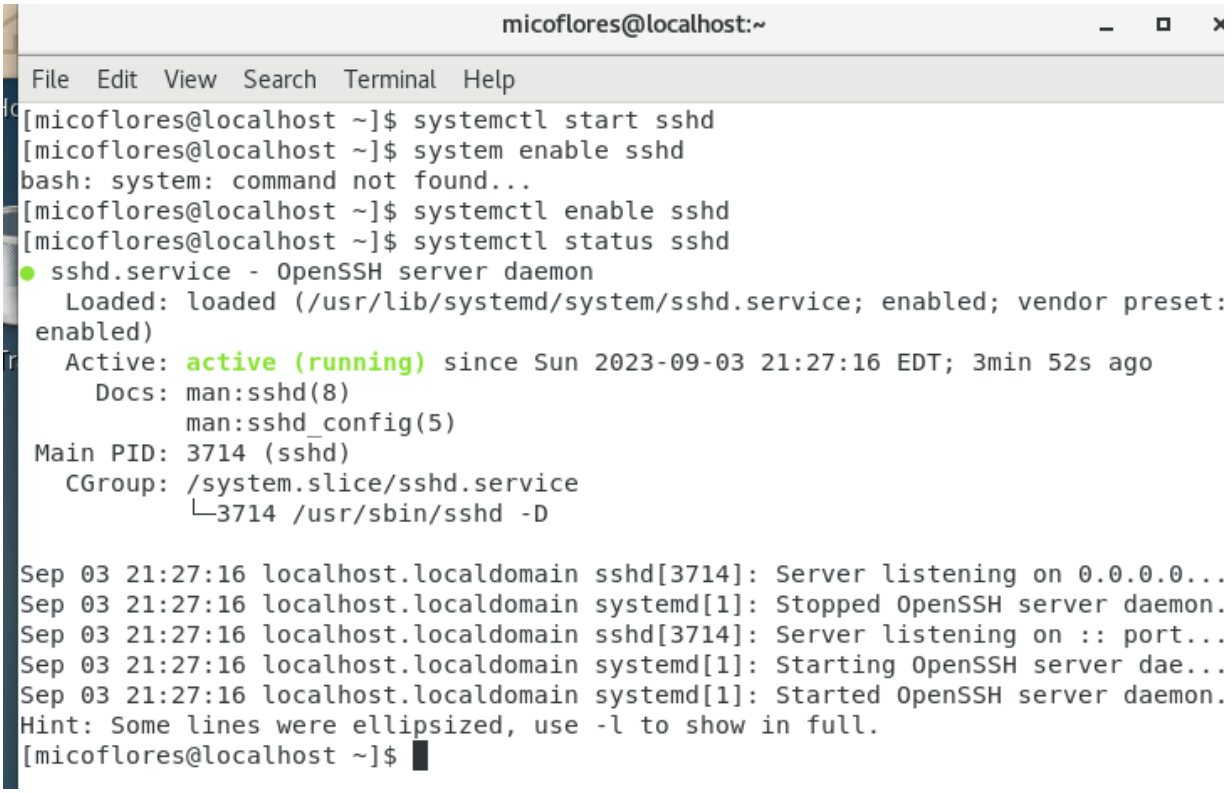
1. Install the ssh server package *openssh* by using the *dnf* command:
   $ dnf install openssh-server



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



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

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

   $ firewall-cmd --reload

```
[micoflores@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

```
micflores@localhost:~
File  Edit  View  Search  Terminal  Help
  GNU nano 2.3.1          File: /etc/ssh/sshd_config

#       $OpenBSD: sshd_config,v 1.100 2016/08/15 12:32:04 naddy Exp $

# This is the sshd server system-wide configuration file.  See
# sshd_config(5) for more information.

# This sshd was compiled with PATH=/usr/local/bin:/usr/bin

# The strategy used for options in the default sshd_config shipped wi
# OpenSSH is to specify options with their default value where
# possible, but leave them commented.  Uncommented options override t
# default value.

# If you want to change the port on a SELinux system, you have to tel
# SELinux about this change.
# semanage port -a -t ssh_port_t -p tcp #PORTNUMBER
#
#Port 22
#AddressFamily any
#ListenAddress 0.0.0.0
                              [ Read 139 lines ]
^G Get Help  ^O WriteOut  ^R Read File ^Y Prev Page ^K Cut Text  ^C C
^X Exit      ^J Justify   ^W Where Is  ^V Next Page ^U UnCut Text^T T
```

Task 3: Copy the Public Key to CentOS

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

```
vboxuser@manageNode: ~
File  Edit  View  Search  Terminal  Help
vboxuser@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.

```
micoflores@workstation:~$ ssh-copy-id -i ~/.ssh/id_rsa micoflores@192.168.56.109
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/micoflores/
.ssh/id_rsa.pub"
The authenticity of host '192.168.56.109 (192.168.56.109)' can't be established.
ED25519 key fingerprint is SHA256:/LajSuBwxOa7nISRW5npcO9i8vH1xH+6q1H/Mx8gS9E.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? 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 prompt
ed now it is to install the new keys
micoflores@192.168.56.109's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'micoflores@192.168.56.109'"
and check to make sure that only the key(s) you wanted were added.
```

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

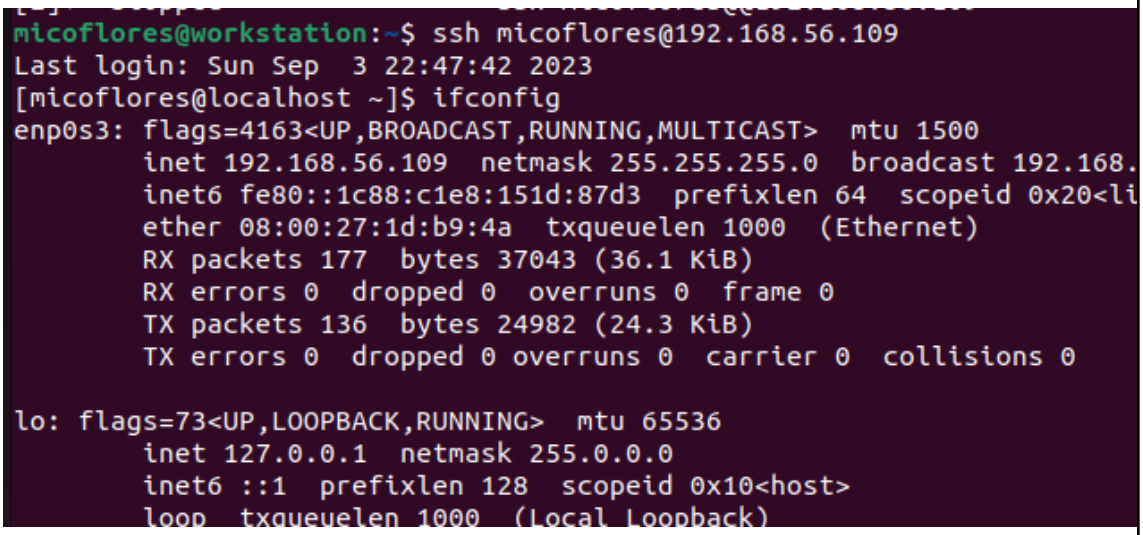
```
[micoflores@localhost ~]$ cat ~/.ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAACAQCz1BEqbxHuN+UYe+gC1hVSG6X2ytWPBCBNxem
dn4caBqqSEXadAWOUr7fnLmCwvrVdwY/6M2CYUT64Uzo1HfyPOq5i9X2NQOte9DKVnJfE+lJ0EH
am5mgmgRrnqqnPoK0zkNPfy587DIP9PitG+eimAMzMFcFAU/s/lRUGtZPG7YbFmvSvKsedQaSbE
cOYJSeTOZI7CrDD+SL9L0ByFXnQUwA9r4kggqtLUhLSeJogOaszjM7Jgz3WeJXgO4Jo0xkvr1F3
hfmlhSvf0gCq0+HeCzz/zNZuwOUdRMrYKWWX/AdynKp678qbARSqICuvZ1A6hS+NHLmlQvvdLBy
248ynhczRwgQ4b0q+9SmpGVA/tuXpmWjyELtyIoeEX3WPp1H9PMqZEjbFmiUFnXI5fg6YmDdbyM
NZEaJrIs+p73z+NhYe3WoV8TuDIUyYpP/cTYQV4m0+Ny5vXMkiSp5RD3Cw8i6EeCeETYXC5Sxvc
X3UBxgM2fCx5S5yeQSkJh18hk3+leHa0oBnu8xY4So7XP82gqDS1CA5qZ3MqXz29sgVcH131uuu
S4kC7+ypoFypvJhtOClEYqWD9neiHc9ZqRPLjaHxnrahWfta7R0V4HF9txga2juemJVFYzFKn0I
rQ== micoflores@workstation
```

Task 4: Verify ssh remote connection

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

```
micoflores@workstation:~$ ssh micoflores@192.168.56.109
Last login: Sun Sep  3 22:47:42 2023
[micoflores@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?

   - Red Hat is more suitable for enterprise use because it has excellent enterprise support and robust security which ensures data and application security to the highest degree. Debian is more suitable for personal use because it prioritizes user autonomy, open-source software, and personalization.

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

   - Red Hat is considered more stable due to its excellent enterprise support and robust security which ensures data and application security to the highest degree. Debian is also stable and well-tested.

Conclusions

- In this activity, I learned how to install the CentOS 7 operating system. I observed that it shares similar command syntax with Ubuntu Linux, which is advantageous for me as I possess sufficient expertise to perform manipulations and modifications in the Linux environment. Additionally, I successfully established an SSH connection from my Ubuntu Linux system to CentOS by transferring the public key from Ubuntu to CentOS.