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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.

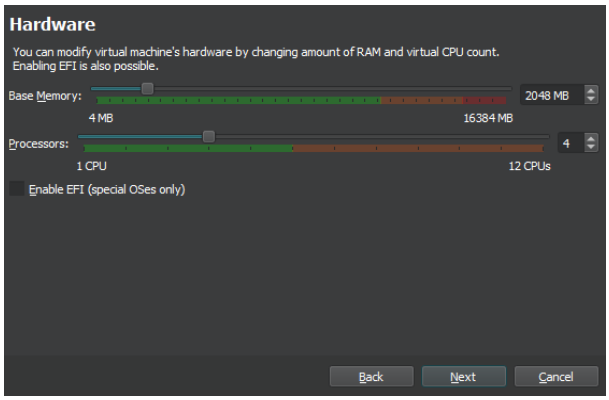
Debian uses the DEB package format and dpkg/APT as the package manager.

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

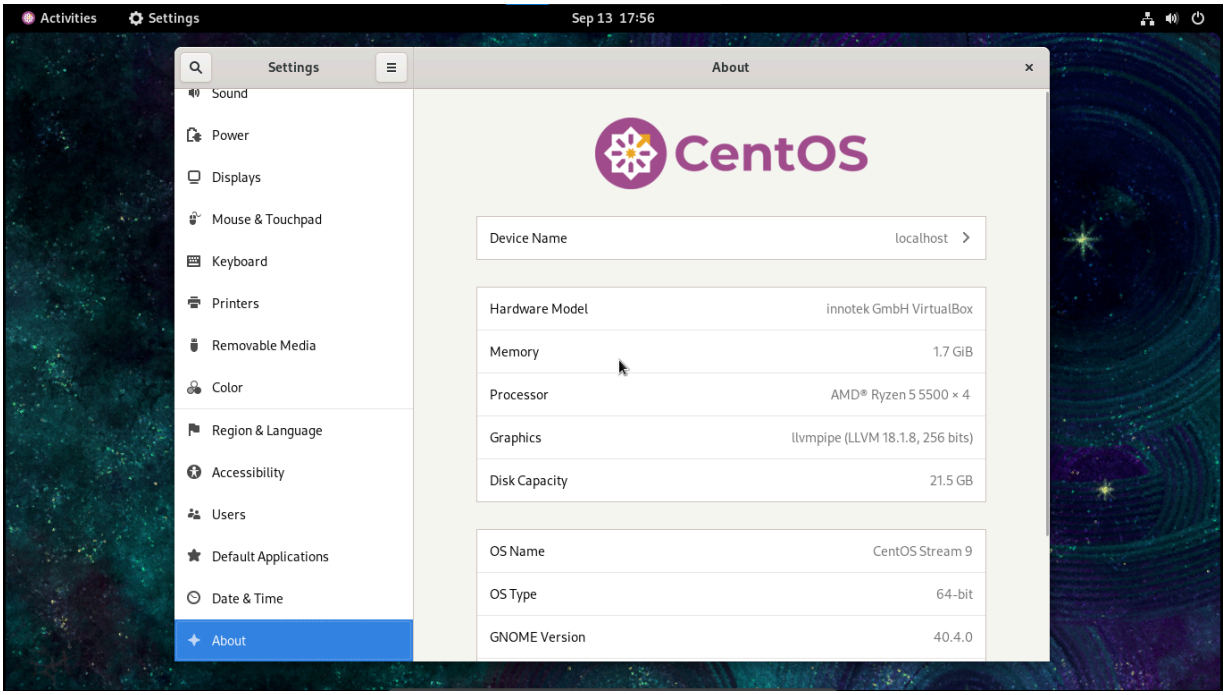
switching over, but they're not overwhelmingly different. They both have similar features, just available through a different interface.

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

```
[pbaltazar@localhost ~]$ $ dnf install openssh-server
bash: $: command not found...
[pbaltazar@localhost ~]$ dnf install openssh-server
Not root, Subscription Management repositories not updated
Error: This command has to be run with superuser privileges (under the root user on most systems).
[pbaltazar@localhost ~]$ sudo dnf install openssh-server

We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:

    #1) Respect the privacy of others.
    #2) Think before you type.
    #3) With great power comes great responsibility.

[sudo] password for pbaltaza:
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                        3.5 MB/s | 8.2 MB     00:02
CentOS Stream 9 - AppStream                     6.4 MB/s |  20 MB     00:03
CentOS Stream 9 - Extras packages               11 kB/s |  19 kB     00:01
Last metadata expiration check: 0:00:01 ago on Friday, 13 September, 2024 06:03:06 PM.
Package openssh-server-8.7p1-43.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[pbaltazar@localhost ~]$
```

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

```
[pbaltazar@localhost ~]$ systemctl start sshd
[pbaltazar@localhost ~]$ systemctl enable sshd
[pbaltazar@localhost ~]$ systemctl status sshd
● sshd.service - OpenSSH server daemon
     Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
     Active: active (running) since Fri 2024-09-13 17:54:44 PST; 9min ago
       Docs: man:sshd(8)
             man:sshd_config(5)
   Main PID: 874 (sshd)
      Tasks: 1 (limit: 10946)
     Memory: 2.8M
        CPU: 15ms
     CGroup: /system.slice/sshd.service
             └─874 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Sep 13 17:54:44 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Sep 13 17:54:44 localhost.localdomain sshd[874]: Server listening on 0.0.0.0 port 22.
Sep 13 17:54:44 localhost.localdomain sshd[874]: Server listening on :: port 22.
Sep 13 17:54:44 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
[pbaltazar@localhost ~]$
```

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

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

Task 3: Copy the Public Key to CentOS

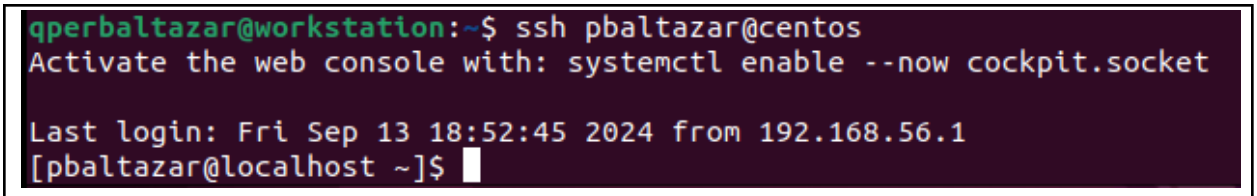
1. Make sure that *ssh* is installed on the local machine.
2. Using the command *ssh-copy-id*, connect your local machine to CentOS.
3. On CentOS, verify that you have the *authorized_keys*.

```
qperbaltazar@workstation:~$ ssh-copy-id -i ~/.ssh/id_rsa pbaltazar@CentOS
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/qperbaltaza
r/.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: INFO: 1 key(s) remain to be installed -- if you are prompt
ed now it is to install the new keys
pbaltazar@centos's password:

Number of key(s) added: 1

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

qperbaltazar@workstation:~$ ssh pbaltazar@CentOS
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Sep 13 18:49:48 2024 from 192.168.56.1
[pbaltazar@localhost ~]$
```

```
qperbaltazar@workstation:~$ ssh pbaltazar@CentOS
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Fri Sep 13 18:49:48 2024 from 192.168.56.1
[pbaltazar@localhost ~]$ cat ~/.ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAACAQDP0LXZGT4sUbRzCOIlrVQ5ZidYXlLBRHZFuklHlh9B
YAczkG1/3w4wyhHrcKMRsPB5AkeH3fOHVwIhI3nuf9KQHJF8dhC6E6PobkrGKDqvlOk399bCHNfW6cEa
2rlQJzc9HnhaWRUgy1UMTFkMmbiCssOW8t040DKCTn9dzF4+Cx/J/ESkIkCrBwJtwDmsNf01IGcrtHMk
lvwzVkJoMyvBtpDwr80kW/ac6H8YYOcKwRupVc2olnas5jMjC+D4DOdiNxW+wxlUdFmz/+us7DnV46e4
6NlzDwoCIx+zJ6T+10ruJzHU3PNZeMVYSwvnn+R9gj50PI34ofJWkFmZAcCOdJnDOOW7WzmhI2A4+P+y
e4Dr5HLpcc8biNqew3F2HeQSvZqHzEhdJ4jDCQ0fgYrfRSC+6VPz3/FtsS3/yaKeb7YvUu1sP67zPDrd
1K5mXAvGYkN7vKkC2WWe0GBThZITUpcJe2dKag1zb8Q6V/lspu54iMDJ15uRaGkuVr0OYHrf7zdRThdf
paOzSfYOOxQ++kEbrYVdyaBtl6Ew98lzzUj8XELS1xx/VXpNgaOnE2arpp/6YmLhWsX9947z02sgl3z7
VQUAes5oRurC5gBadh3i23vp0s70TlZON2ui52uqz28yZVEotfG/EUZj5YcDZ365SKhKkH7fuy+2Vpx+
gQ== qperbaltazar@workstation
[pbaltazar@localhost ~]$
```

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?

   – Choosing between Debian and RedHat will depend on what you need. Debian is good for personal use or development which offers a lot of software and flexibility. Red Hat, on the other hand, is built for businesses, with strong support and security for enterprise environments. Debian is more community driven, while Red Hat provides professional help if needed.

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

   – Debian and RedHat differ mainly in package management and support. Debian uses APT for installing software, while Red Hat uses YUM or DNF. Debian is community supported, while Red Hat offers paid professional support for businesses. Debian focuses on being stable and free to use while RedHat is more focused on enterprise use with strong security and structured updates.