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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.

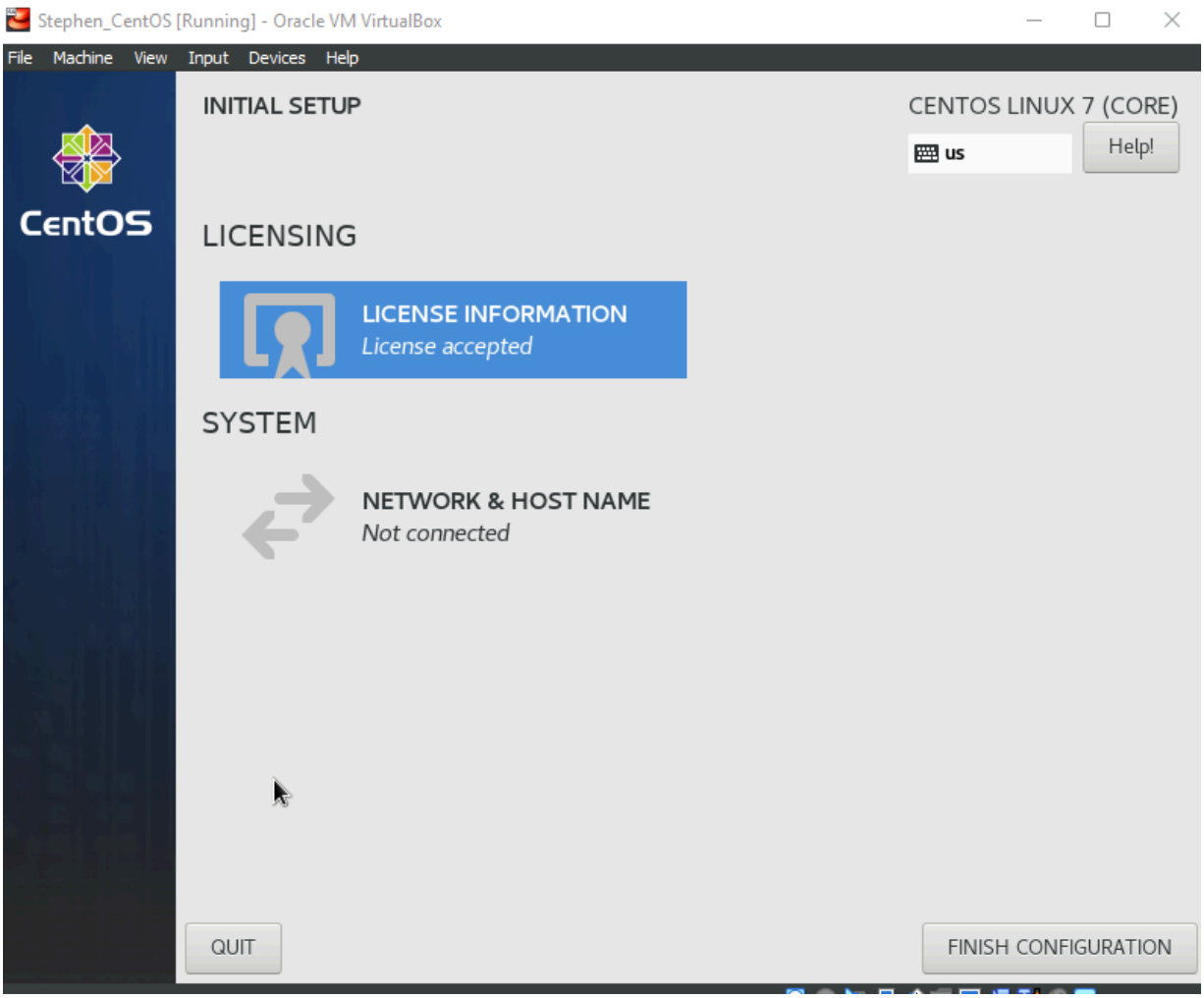
CentOS uses the RPM package format and YUM/DNF as the package manager.

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

```
[root@localhost stephen]# yum install openssh-server
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: download.nus.edu.sg
 * extras: download.nus.edu.sg
 * updates: download.nus.edu.sg
Package openssh-server-7.4p1-23.el7_9.x86_64 already installed and latest version
Nothing to do
[root@localhost stephen]#
```

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

```
[root@localhost stephen]# systemctl start sshd
[root@localhost stephen]# systemctl enable sshd
[root@localhost stephen]#
```

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

```
[root@localhost stephen]# systemctl status sshd
● sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset:
ad)
   Active: active (running) since Mon 2024-01-29 20:42:27 EST; 12min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
 Main PID: 11946 (sshd)
   CGroup: /system.slice/sshd.service
           └─11946 /usr/sbin/sshd -D

Jan 29 20:42:26 localhost.localdomain systemd[1]: Starting OpenSSH server daemon.
Jan 29 20:42:26 localhost.localdomain sshd[11946]: Server listening on 0.0.0.0 po
Jan 29 20:42:26 localhost.localdomain sshd[11946]: Server listening on :: port 22
Jan 29 20:42:27 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
Hint: Some lines were ellipsized, use -l to show in full.
[root@localhost stephen]#
```

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

```
[root@localhost stephen]# firewall-cmd --zone=public --permanent --add-service=
Warning: ALREADY_ENABLED: ssh
success
[root@localhost stephen]# firewall-cmd --reload
success
[root@localhost stephen]#
```

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*.

```
[stephen@localhost ~]$ cat ~/.ssh/authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQDdRUVCJXUNXE5ndHJbYScR07T1E/NkE9uoTwXRzwh
uWAMFSZxhzdrHWU/XMl3LEKwnQPwBCEHvK+NtNcwqYHMLovKrheRTR6rr7A9Z3kWrQ+u9f1lEszq9a
/tjl593q0Lh8br9XzhTrALatO7/VBrmH4eN5uioKN/ARQCoCD+FaHbPLyXj+kLKpnjdWcwxXegehZ41
0cY7EEh1Ark+EPAGtqVQbT0EOK4zf9jsjPeN3k+cL3Ts/XWI5TRWadInEyCawlJvaOtNlhAWd1EC5k3
wwG5Q28XP//JI4JpeIaNz3p2U4LKhU3P stephen@localhost.localdomain
[stephen@localhost ~]$
```

Task 4: Verify ssh remote connection

1. Using your local machine, connect to CentOS using ssh.
2. Show evidence that you are connected.

```
stephen@worksation:~$ ssh stephen@192.168.56.104
The authenticity of host '192.168.56.104 (192.168.56.104)' can't be establ
ED25519 key fingerprint is SHA256:ISaCOlrYn76ZJG0vMfv0i92AIE64tHpSt+8RqWDB
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.56.104' (ED25519) to the list of known

stephen@192.168.56.104's password:
Last login: Mon Jan 29 20:27:27 2024
[stephen@localhost ~]$
```

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?
   - There are several factors to think about while deciding between the Linux distributions Debian and Red Hat. In my opinion, though, the package manager is the deciding factor between Red Hat's ecosystem of tools and Debian's.deb packages and apt, as Red Hat uses.rpm packages and dnf.

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

   - The values of free software are upheld by the community-driven initiative known as Debian.
     - Setting up Debian on vanilla Debian can be challenging.
     - Older software versions are available in Debian.

   - The following are some things you should know about Red Hat:

- RHEL is an enterprise-level secure operating system and platform.
- Red Hat employs a package manager called dnf and its ecosystem of tools.
- There is a learning curve associated with Red Hat.

- Costly is Red Hat.