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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 ~]# dnf install openssh-server
Extra Packages for Enterprise Linux 7 - x86_64  1.4 MB/s |  17 MB     00:11
CentOS-7 - Base                                 2.1 MB/s |  10 MB     00:04
CentOS-7 - Updates   74% [==============-     ] 2.4 MB/s |  21 MB     00:02 ETA
```

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

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

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

```
CentOS-7 - Extras                                    779 kB/s | 360 kB     00:00
Package openssh-server-7.4p1-23.el7_9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@localhost ~]# systemctl start sshd
[root@localhost ~]# systemctl enable sshd
[root@localhost ~]# systemctl status sshd
● sshd.service - OpenSSH server daemon
   Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; vendor preset: e
d)
   Active: active (running) since Sat 2023-09-02 10:17:26 EDT; 5min ago
     Docs: man:sshd(8)
           man:sshd_config(5)
 Main PID: 26432 (sshd)
   CGroup: /system.slice/sshd.service
           └─26432 /usr/sbin/sshd -D

Sep 02 10:17:26 localhost.localdomain systemd[1]: Stopped OpenSSH server daemon.
Sep 02 10:17:26 localhost.localdomain systemd[1]: Starting OpenSSH server daemon..
Sep 02 10:17:26 localhost.localdomain sshd[26432]: Server listening on 0.0.0.0 por
Sep 02 10:17:26 localhost.localdomain sshd[26432]: Server listening on :: port 22.
Sep 02 10:17:26 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
Hint: Some lines were ellipsized, use -l to show in full.
[root@localhost ~]#
```

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

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

   $ firewall-cmd --reload

```
[root@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

```
[root@localhost ~]# systemctl reload sshd
```

Task 3: Copy the Public Key to CentOS

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

```
amadeocentos@localhost:~
File  Edit  View  Search  Terminal  Help
[amadeocentos@localhost ~]$ ssh -V
OpenSSH_7.4p1, OpenSSL 1.0.2k-fips  26 Jan 2017
```

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

```
amadeocentos@localhost:~
File  Edit  View  Search  Terminal  Help
[amadeocentos@localhost ~]$ ssh-copy-id amadeoubuntu@192.168.56.102
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/amadeocentos/
id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter ou
 that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted
it is to install the new keys
amadeoubuntu@192.168.56.102's password:
Permission denied, please try again.
amadeoubuntu@192.168.56.102's password:

Number of key(s) added: 1

Now try logging into the machine, with:   "ssh 'amadeoubuntu@192.168.56.102'"
and check to make sure that only the key(s) you wanted were added.

[amadeocentos@localhost ~]$
```

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

```
[amadeocentos@localhost ~]$ ssh amadeoubuntu@192.168.56.102
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-31-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

Expanded Security Maintenance for Applications is not enabled.

13 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Sun Sep  3 17:02:39 2023 from 192.168.56.104
amadeoubuntu@manageNode:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  snap  Templates  Vide
amadeoubuntu@manageNode:~$
```

Task 4: Verify ssh remote connection

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

```
amadeoubuntu@manageNode:~$ ssh amadeocentos@192.168.56.104
The authenticity of host '192.168.56.104 (192.168.56.104)' can't be establi
.
ED25519 key fingerprint is SHA256:sTkj1aITcdLjD/N4um89wkJ9Z5KdzEcD7ZkuiYg3q
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
s.
amadeocentos@192.168.56.104's password:
Last login: Sun Sep  3 05:08:10 2023 from 192.168.56.104
[amadeocentos@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?

   for me Red Hat Linux is the best distribution because it provides enterprise support and an excellent security but the downside is it has a subscription fee but it gives excellent services.

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

   The main difference between Debian and Red Hat Linux is Debian is used by the community while the Red Hat Linux is used for Businesses and Organizations and the reason why is Debian is free to use and distribute while Red Hat Linux you there's a subscription fee.