

Seif Hendawy

RHCSA II Day 1

Q1. use systemctl to View the status of sshd services

```
Terminal
*DevOps Engineer: Docker * K8s Cloud @ seif RHA2 $ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2025-03-25 13:19:20 EET; 8s ago
     Docs: man:sshd(8)
           man:sshd_config(5)
   Main PID: 132236 (sshd)
    Tasks: 1 (limit: 18923)
   Memory: 1.7M
      CPU: 16ms
   CGroup: /system.slice/ssh.service
           └─132236 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Mar 25 13:19:20 seif-Alienware-17-R5 systemd[1]: Starting OpenBSD Secure Shell server...
Mar 25 13:19:20 seif-Alienware-17-R5 sshd[132236]: Server listening on 0.0.0.0 port 22.
Mar 25 13:19:20 seif-Alienware-17-R5 sshd[132236]: Server listening on :: port 22.
Mar 25 13:19:20 seif-Alienware-17-R5 systemd[1]: Started OpenBSD Secure Shell server.
*DevOps Engineer: Docker * K8s Cloud @ seif RHA2 $
```

Q2. use systemctl to view the status of all the system services

```
Terminal
*DevOps Engineer: Docker * K8s Cloud @ seif RHA2 $ systemctl list-units --all --type=service
UNIT                                LOAD    ACTIVE SUB    DESCRIPTION
accounts-daemon.service            loaded active running Accounts Service
acpid.service                      loaded active running ACPI event daemon
alsa-restore.service              loaded active exited Save/Restore Sound Card State
alsa-state.service                loaded inactive dead   Manage Sound Card State (restore and store)
anacron.service                   loaded inactive dead   Run anacron jobs
apparmor.service                  loaded active exited Load AppArmor profiles
apport-autoreport.service          loaded inactive dead   Process error reports when automatic reporting is enabled
apport.service                    loaded active exited LSB: automatic crash report generation
apt-daily-upgrade.service          loaded inactive dead   Daily apt upgrade and clean activities
apt-daily.service                 loaded inactive dead   Daily apt download activities
auditd.service                    not-found inactive dead   auditd.service
auto-cpufreq.service              not-found inactive dead   auto-cpufreq.service
avahi-daemon.service              loaded active running Avahi mDNS/DNS-SD Stack
bluetooth.service                 loaded active running Bluetooth service
colord.service                    loaded active running Manage, Install and Generate Color Profiles
connman.service                   not-found inactive dead   connman.service
console-screen.service             not-found inactive dead   console-screen.service
console-setup.service             loaded active exited Set console font and keymap
containerd.service                loaded active running containerd container runtime
cron.service                      loaded active running Regular background program processing daemon
cups-browsed.service              loaded active running Make remote CUPS printers available locally
cups.service                      loaded active running CUPS Scheduler
dbus.service                      loaded active running D-Bus System Message Bus
dmesg.service                     loaded inactive dead   Save initial kernel messages after boot
docker.service                    loaded active running Docker Application Container Engine
```

Q3.

a- Send mail to the root user and Verify that you have received this mail

```
*DevOps Engineer: Docker K8s Cloud @ seif RHA2 $ echo "Hi I am Seif Hendawy DevOps Engineer" | mail -s "RHCSA2 Lab 1" root
*DevOps Engineer: Docker K8s Cloud @ seif RHA2 $ sudo su
root@seif-Alienware-17-R5:/home/seif/Documents/RHA2# mail
"/var/mail/root": 5 messages 5 new
>N 1 Seif Hendawy Tue Feb 25 20:25 17/481 EMAIL
N 2 Seif Hendawy Tue Feb 25 20:33 17/481 EMAIL
N 3 Seif Hendawy Tue Feb 25 20:42 17/481 EMAIL
N 4 seif@seif-Alienwar Thu Feb 27 08:46 15/617 *** SECURITY information for seif-Alienware-17-R5 ***
N 5 Seif Hendawy Tue Mar 25 13:26 14/494 RHCSA2 Lab 1
?
```

```
Return-Path: <seif@seif-Alienware-17-R5>
X-Original-To: root
Delivered-To: root@seif-Alienware-17-R5
Received: by seif-Alienware-17-R5 (Postfix, from userid 1000)
        id EDB4F18BB7E; Tue, 25 Mar 2025 13:26:24 +0200 (EET)
Subject: RHCSA2 Lab 1
To: root@seif-Alienware-17-R5
User-Agent: mail (GNU Mailutils 3.14)
Date: Tue, 25 Mar 2025 13:26:24 +0200
Message-Id: <20250325112624.EDB4F18BB7E@seif-Alienware-17-R5>
From: Seif Hendawy <seif@seif-Alienware-17-R5>
```

Hi I am Seif Hendawy DevOps Engineer

b- Use systemctl utility to stop postfix/sendmail service

```
Terminal
*DevOps Engineer: Docker K8s Cloud @ seif RHA2 $ sudo systemctl stop postfix
[sudo] password for seif:
*DevOps Engineer: Docker K8s Cloud @ seif RHA2 $ sudo systemctl status postfix
○ postfix.service - Postfix Mail Transport Agent
   Loaded: loaded (/lib/systemd/system/postfix.service; enabled; vendor preset: enabled)
   Active: inactive (dead) since Tue 2025-03-25 13:30:21 EET; 4s ago
     Docs: man:postfix(1)
    Main PID: 3105 (code=exited, status=0/SUCCESS)
      CPU: 931us

Mar 25 09:22:25 seif-Alienware-17-R5 systemd[1]: Starting Postfix Mail Transport Agent...
Mar 25 09:22:25 seif-Alienware-17-R5 systemd[1]: Finished Postfix Mail Transport Agent.
Mar 25 13:30:21 seif-Alienware-17-R5 systemd[1]: postfix.service: Deactivated successfully.
Mar 25 13:30:21 seif-Alienware-17-R5 systemd[1]: Stopped Postfix Mail Transport Agent.
*DevOps Engineer: Docker K8s Cloud @ seif RHA2 $
```

c- Send mail again to the root user and Verify that you have received this mail

```
*DevOps Engineer: Docker * K8s Cloud @ seif RHA2 $ echo "Hi This is a test mail from Seif Hendawy The DevOps Engineer" | mail -s "Test Mail" root
*DevOps Engineer: Docker * K8s Cloud @ seif RHA2 $ sudo su
root@seif-Alienware-17-R5:/home/seif/Documents/RHA2# mail
No mail for root
root@seif-Alienware-17-R5:/home/seif/Documents/RHA2# exit
exit
```

d- Use systemctl utility to start postfix/sendmail service

e- Verify that you have received this mail

```
root@seif-Alienware-17-R5: /home/seif/Documents/RHA2
*DevOps Engineer: Docker * K8s Cloud @ seif RHA2 $ sudo systemctl start postfix
*DevOps Engineer: Docker * K8s Cloud @ seif RHA2 $ sudo systemctl status postfix
● postfix.service - Postfix Mail Transport Agent
   Loaded: loaded (/lib/systemd/system/postfix.service; enabled; vendor preset: enabled)
   Active: active (exited) since Tue 2025-03-25 13:33:31 EET; 30s ago
     Docs: man:postfix(1)
   Process: 136022 ExecStart=/bin/true (code=exited, status=0/SUCCESS)
    Main PID: 136022 (code=exited, status=0/SUCCESS)
      CPU: 1ms

Mar 25 13:33:31 seif-Alienware-17-R5 systemd[1]: Starting Postfix Mail Transport Agent...
Mar 25 13:33:31 seif-Alienware-17-R5 systemd[1]: Finished Postfix Mail Transport Agent.
*DevOps Engineer: Docker * K8s Cloud @ seif RHA2 $ sudo su root
root@seif-Alienware-17-R5:/home/seif/Documents/RHA2# mail
"/var/mail/root": 1 message 1 new
>N  1 Seif Hendawy      Tue Mar 25 13:33  14/515  Test Mail
?
Return-Path: <seif@seif-Alienware-17-R5>
X-Original-To: root
Delivered-To: root@seif-Alienware-17-R5
Received: by seif-Alienware-17-R5 (Postfix, from userid 1000)
        id D7FD618BB6C; Tue, 25 Mar 2025 13:31:39 +0200 (EET)
Subject: Test Mail
To: root@seif-Alienware-17-R5
User-Agent: mail (GNU Mailutils 3.14)
Date: Tue, 25 Mar 2025 13:31:39 +0200
Message-Id: <20250325113331.D7FD618BB6C@seif-Alienware-17-R5>
From: Seif Hendawy <seif@seif-Alienware-17-R5>

Hi This is a test mail from Seif Hendawy The DevOps Engineer
```

Q4. switch to the multi-user target manually without rebooting

sudo systemctl isolate multi-user.target

the system logged off and went into tty mode

Then I ran this command to get back to the GUI mode

sudo systemctl isolate graphical.target

Q5. display default target

```
Terminal
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $ sudo systemctl get-default
[sudo] password for seif:
multi-user.target
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $
```

Q6. change the default target back to multi-user.target and reboot

I already changed it in the tty mode

Q7. set the default systemd target back to graphical.target

```
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $ sudo systemctl set-default graphical.target
Removed /etc/systemd/system/default.target.
Created symlink /etc/systemd/system/default.target → /lib/systemd/system/graphical.target.
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $ sudo systemctl get-default
graphical.target
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $
```

Q8.Display the status of sshd service, note the PID of the daemon.

```
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $ sudo systemctl status ssh | grep PID
Main PID: 951 (sshd)
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $
```

Q9. Restart the sshd service and view the status, The PID of the daemon has changed

```
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $ sudo systemctl status ssh | grep PID
Main PID: 8040 (sshd)
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $ sudo systemctl restart ssh
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $ sudo systemctl status ssh | grep PID
Main PID: 8060 (sshd)
❖DevOps Engineer: Docker K8s Cloud @ seif ~ $
```

Q10. Reload the sshd service and view the status, The PID of the daemon has not changed and connection has not be interrupted

```
Terminal
❖DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo systemctl status ssh | grep PID
Main PID: 8204 (sshd)
❖DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo systemctl reload ssh
❖DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo systemctl status ssh | grep PID
Process: 8218 ExecReload=/bin/kill -HUP $MAINPID (code=exited, status=0/SUCCESS)
Main PID: 8204 (sshd)
❖DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2025-03-25 13:54:51 EET; 21s ago
     Docs: man:sshd(8)
           man:sshd_config(5)
   Process: 8203 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Process: 8217 ExecReload=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Process: 8218 ExecReload=/bin/kill -HUP $MAINPID (code=exited, status=0/SUCCESS)
 Main PID: 8204 (sshd)
    Tasks: 1 (limit: 18923)
   Memory: 1.7M
      CPU: 35ms
   CGroup: /system.slice/ssh.service
           └─8204 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Mar 25 13:54:51 seif-Alienware-17-R5 systemd[1]: Starting OpenBSD Secure Shell server...
Mar 25 13:54:51 seif-Alienware-17-R5 sshd[8204]: Server listening on 0.0.0.0 port 22.
Mar 25 13:54:51 seif-Alienware-17-R5 sshd[8204]: Server listening on :: port 22.
Mar 25 13:54:51 seif-Alienware-17-R5 systemd[1]: Started OpenBSD Secure Shell server.
Mar 25 13:55:06 seif-Alienware-17-R5 systemd[1]: Reloading OpenBSD Secure Shell server...
Mar 25 13:55:06 seif-Alienware-17-R5 sshd[8204]: Received SIGHUP; restarting.
Mar 25 13:55:06 seif-Alienware-17-R5 systemd[1]: Reloaded OpenBSD Secure Shell server.
Mar 25 13:55:06 seif-Alienware-17-R5 sshd[8204]: Server listening on 0.0.0.0 port 22.
Mar 25 13:55:06 seif-Alienware-17-R5 sshd[8204]: Server listening on :: port 22.
❖DevOps Engineer: Docker * K8s Cloud @ seif ~ $
```

Q11. Verify that the chronyd service is running

```
❖DevOps Engineer: Docker * K8s Cloud @ seif ~ $ systemctl status chronyd
● chrony.service - chrony, an NTP client/server
   Loaded: loaded (/lib/systemd/system/chrony.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2025-03-25 13:57:36 EET; 21s ago
     Docs: man:chronyd(8)
           man:chronyc(1)
           man:chrony.conf(5)
   Process: 10022 ExecStart=/usr/lib/systemd/scripts/chronyd-starter.sh $DAEMON_OPTS (code=exited, status=0/SUCCESS)
 Main PID: 10031 (chronyd)
    Tasks: 2 (limit: 18923)
   Memory: 1.7M
      CPU: 67ms
   CGroup: /system.slice/chrony.service
           └─10031 /usr/sbin/chronyd -F 1
             └─10032 /usr/sbin/chronyd -F 1

Mar 25 13:57:36 seif-Alienware-17-R5 systemd[1]: Starting chrony, an NTP client/server...
Mar 25 13:57:36 seif-Alienware-17-R5 chronyd[10031]: chronyd version 4.2 starting (+CMDMON +NTP +REFCLOCK +RTC +PRIVDROP +SCFIL
Mar 25 13:57:36 seif-Alienware-17-R5 chronyd[10031]: Initial frequency -7.135 ppm
Mar 25 13:57:36 seif-Alienware-17-R5 chronyd[10031]: Using right/UTC timezone to obtain leap second data
Mar 25 13:57:36 seif-Alienware-17-R5 chronyd[10031]: Loaded seccomp filter (level 1)
Mar 25 13:57:36 seif-Alienware-17-R5 systemd[1]: Started chrony, an NTP client/server.
Mar 25 13:57:43 seif-Alienware-17-R5 chronyd[10031]: Selected source 185.125.190.56 (ntp.ubuntu.com)
Mar 25 13:57:43 seif-Alienware-17-R5 chronyd[10031]: System clock TAI offset set to 37 seconds
❖DevOps Engineer: Docker * K8s Cloud @ seif ~ $ systemctl stop chronyd
❖DevOps Engineer: Docker * K8s Cloud @ seif ~ $ systemctl status chronyd | grep Active
Active: inactive (dead) since Tue 2025-03-25 13:58:14 EET; 8s ago
❖DevOps Engineer: Docker * K8s Cloud @ seif ~ $
```


Q12.

- a- Determine if the chronyd service is enabled to start at the system boot
- b- Reboot the system, then view the status of the chronyd service

```
Terminal
*DevOps Engineer: Docker * K8s Cloud @ seif ~ $ systemctl is-enabled chrony
enabled
*DevOps Engineer: Docker * K8s Cloud @ seif ~ $

*DevOps Engineer: Docker * K8s Cloud @ seif ~ $ systemctl status chronyd
● chrony.service - chrony, an NTP client/server
   Loaded: loaded (/lib/systemd/system/chrony.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2025-03-25 14:00:19 EET; 1min 31s ago
     Docs: man:chronyd(8)
           man:chronyc(1)
           man:chrony.conf(5)
  Process: 10658 ExecStart=/usr/lib/systemd/scripts/chronyd-starter.sh $DAEMON_OPTS (code=exited, status=0/SUCCESS)
 Main PID: 10667 (chronyd)
    Tasks: 2 (limit: 18923)
   Memory: 1.4M
      CPU: 74ms
   CGroup: /system.slice/chrony.service
           └─10667 /usr/sbin/chronyd -F 1
             10668 /usr/sbin/chronyd -F 1

Mar 25 14:00:18 seif-Alienware-17-R5 systemd[1]: Starting chrony, an NTP client/server...
Mar 25 14:00:19 seif-Alienware-17-R5 chronyd[10667]: chronyd version 4.2 starting (+CMDMON +NTP +REFCLOCK +RTC +SECCOMP +TSAI +TPS)
Mar 25 14:00:19 seif-Alienware-17-R5 chronyd[10667]: Frequency -7.135 +/- 1000000.000 ppm read from /var/lib/chrony/chrony.conf
Mar 25 14:00:19 seif-Alienware-17-R5 chronyd[10667]: Using right/UTC timezone to obtain leap second data
Mar 25 14:00:19 seif-Alienware-17-R5 chronyd[10667]: Loaded seccomp filter (level 1)
Mar 25 14:00:19 seif-Alienware-17-R5 systemd[1]: Started chrony, an NTP client/server.
Mar 25 14:00:25 seif-Alienware-17-R5 chronyd[10667]: Selected source 185.125.190.58 (ntp.ubuntu.com)
Mar 25 14:00:25 seif-Alienware-17-R5 chronyd[10667]: System clock TAI offset set to 37 seconds
*DevOps Engineer: Docker * K8s Cloud @ seif ~ $
```

Q13.

- a- Disable the chronyd service so that it doesn't start at system boot, then view the status of the service

```
Terminal
*DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo systemctl disable chrony
Synchronizing state of chrony.service with SysV service script with /lib/systemd/systemd-sysv-install
Executing: /lib/systemd/systemd-sysv-install disable chrony
*DevOps Engineer: Docker * K8s Cloud @ seif ~ $ systemctl status chrony
● chrony.service - chrony, an NTP client/server
   Loaded: loaded (/lib/systemd/system/chrony.service; disabled; vendor preset: enabled)
   Active: active (running) since Tue 2025-03-25 14:00:19 EET; 2min 31s ago
     Docs: man:chronyd(8)
           man:chronyc(1)
           man:chrony.conf(5)
 Main PID: 10667 (chronyd)
    Tasks: 2 (limit: 18923)
   Memory: 1.4M
      CPU: 76ms
   CGroup: /system.slice/chrony.service
           └─10667 /usr/sbin/chronyd -F 1
             10668 /usr/sbin/chronyd -F 1

Mar 25 14:00:18 seif-Alienware-17-R5 systemd[1]: Starting chrony, an NTP client/server...
Mar 25 14:00:19 seif-Alienware-17-R5 chronyd[10667]: chronyd version 4.2 starting (+CMDMON +NTP +REFCLOCK +RTC +SECCOMP +TSAI +TPS)
Mar 25 14:00:19 seif-Alienware-17-R5 chronyd[10667]: Frequency -7.135 +/- 1000000.000 ppm read from /var/lib/chrony/chrony.conf
Mar 25 14:00:19 seif-Alienware-17-R5 chronyd[10667]: Using right/UTC timezone to obtain leap second data
Mar 25 14:00:19 seif-Alienware-17-R5 chronyd[10667]: Loaded seccomp filter (level 1)
Mar 25 14:00:19 seif-Alienware-17-R5 systemd[1]: Started chrony, an NTP client/server.
Mar 25 14:00:25 seif-Alienware-17-R5 chronyd[10667]: Selected source 185.125.190.58 (ntp.ubuntu.com)
Mar 25 14:00:25 seif-Alienware-17-R5 chronyd[10667]: System clock TAI offset set to 37 seconds
*DevOps Engineer: Docker * K8s Cloud @ seif ~ $
```

b- Reboot the system, then view the status of the chronyd service

```
*DevOps Engineer: Docker K8s Cloud @ self ~ $ systemctl status chrony
○ chrony.service - chrony, an NTP client/server
   Loaded: loaded (/lib/systemd/system/chrony.service; disabled; vendor preset: enabled)
   Active: inactive (dead)
     Docs: man:chronyd(8)
           man:chronyc(1)
           man:chrony.conf(5)
*DevOps Engineer: Docker K8s Cloud @ self ~ $
```

Q14. display all Static Services

```
Terminal
*DevOps Engineer: Docker K8s Cloud @ self ~ $ sudo systemctl list-unit-files --type=service --state=static
[sudo] password for self:
UNIT FILE                                STATE  VENDOR PRESET
-----
alsa-restore.service                    static -
alsa-state.service                      static -
apport-autoreport.service               static -
apport-forward@.service                 static -
apt-daily-upgrade.service               static -
apt-daily.service                      static -
apt-news.service                       static -
bolt.service                           static -
brltty-udev.service                    static -
chrony-dnssrv@.service                  static -
colord.service                          static -
configure-printer@.service              static -
container-getty@.service                static -
dbus.service                           static -
dpkg-db-backup.service                  static -
e2scrub@.service                        static -
e2scrub_all.service                    static -
e2scrub_fail@.service                   static -
emergency.service                       static -
esm-cache.service                       static -
fprintd.service                        static -
friendly-recovery.service               static -
fstirm.service                         static -
fwupd-offline-update.service            static -
fwupd-refresh.service                  static -
```

Q15. What difference Between enable,disable,static,mask Service

enable Automatic Start with booting

disable Automatic Start with booting

static services cannot be enabled manually because they are meant to be triggered by another service or dependency

mask Prevents a service from being started manually or automatically

Q16. Display all logs from the current boot

```
Terminal
*DevOps Engineer: Docker K8s Cloud @ self ~ $
*DevOps Engineer: Docker K8s Cloud @ self ~ $ journalctl -b
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: Linux version 6.8.0-52-generic (buildd@lcy02-amd64-099) (x86_64-linux-gnu-gcc
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: Command line: BOOT_IMAGE=/boot/vmlinuz-6.8.0-52-generic root=UUID=4c098252-4b
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: KERNEL supported cpus:
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: Intel GenuineIntel
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: AMD AuthenticAMD
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: Hygon HygonGenuine
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: Centaur CentaurHauls
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: zhaoxin Shanghai
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-provided physical RAM map:
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x0000000000000000-0x00000000000009efff] usable
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x00000000000009f000-0x0000000000000fffff] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x00000000000100000-0x000000000005901cfff] usable
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x000000000005901d000-0x000000000005b526fff] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x000000000005b527000-0x000000000005b5a3fff] ACPI data
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x000000000005b5a4000-0x000000000005b5a42fff] ACPI NVS
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x000000000005b5a43000-0x000000000005c40dfff] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x000000000005c40e000-0x000000000005c40efff] usable
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x000000000005c40f000-0x000000000005fffff] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x00000000000e0000000-0x00000000000e0000000] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x00000000000fe000000-0x00000000000fe010fff] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x00000000000fec00000-0x00000000000fec00fff] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x00000000000fed00000-0x00000000000fed03fff] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x00000000000fee00000-0x00000000000fee00fff] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x00000000000ff000000-0x00000000000ffffff] reserved
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: BIOS-e820: [mem 0x00000000100000000-0x0000000000049dffff] usable
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: NX (Execute Disable) protection: active
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: APIC: Static calls initialized
Mar 25 14:04:09 seif-Alienware-17-R5 kernel: e820: update [mem 0x4b552018-0x4b58c257] usable ==> usable
```

Q17. View logs for the sshd service

```
*DevOps Engineer: Docker K8s Cloud @ self ~ $ journalctl -u ssh
Mar 25 13:19:20 seif-Alienware-17-R5 systemd[1]: Starting OpenBSD Secure Shell server...
Mar 25 13:19:20 seif-Alienware-17-R5 sshd[132236]: Server listening on 0.0.0.0 port 22.
Mar 25 13:19:20 seif-Alienware-17-R5 sshd[132236]: Server listening on :: port 22.
Mar 25 13:19:20 seif-Alienware-17-R5 systemd[1]: Started OpenBSD Secure Shell server.
Mar 25 13:45:27 seif-Alienware-17-R5 sshd[132236]: Received signal 15; terminating.
Mar 25 13:45:27 seif-Alienware-17-R5 systemd[1]: Stopping OpenBSD Secure Shell server...
Mar 25 13:45:27 seif-Alienware-17-R5 systemd[1]: ssh.service: Deactivated successfully.
Mar 25 13:45:27 seif-Alienware-17-R5 systemd[1]: Stopped OpenBSD Secure Shell server.
-- Boot 3e2377c8ba834219adbfd7d699be4777 --
Mar 25 13:45:30 seif-Alienware-17-R5 systemd[1]: Starting OpenBSD Secure Shell server...
Mar 25 13:45:30 seif-Alienware-17-R5 sshd[951]: Server listening on 0.0.0.0 port 22.
Mar 25 13:45:30 seif-Alienware-17-R5 sshd[951]: Server listening on :: port 22.
Mar 25 13:45:30 seif-Alienware-17-R5 systemd[1]: Started OpenBSD Secure Shell server.
Mar 25 13:53:53 seif-Alienware-17-R5 sshd[951]: Received signal 15; terminating.
Mar 25 13:53:53 seif-Alienware-17-R5 systemd[1]: Stopping OpenBSD Secure Shell server...
Mar 25 13:53:53 seif-Alienware-17-R5 systemd[1]: ssh.service: Deactivated successfully.
Mar 25 13:53:53 seif-Alienware-17-R5 systemd[1]: Stopped OpenBSD Secure Shell server.
Mar 25 13:53:53 seif-Alienware-17-R5 systemd[1]: Starting OpenBSD Secure Shell server...
Mar 25 13:53:53 seif-Alienware-17-R5 sshd[8040]: Server listening on 0.0.0.0 port 22.
Mar 25 13:53:53 seif-Alienware-17-R5 sshd[8040]: Server listening on :: port 22.
Mar 25 13:53:53 seif-Alienware-17-R5 systemd[1]: Started OpenBSD Secure Shell server.
Mar 25 13:54:12 seif-Alienware-17-R5 systemd[1]: Stopping OpenBSD Secure Shell server...
Mar 25 13:54:12 seif-Alienware-17-R5 systemd[1]: ssh.service: Deactivated successfully.
Mar 25 13:54:12 seif-Alienware-17-R5 systemd[1]: Stopped OpenBSD Secure Shell server.
Mar 25 13:54:12 seif-Alienware-17-R5 systemd[1]: Starting OpenBSD Secure Shell server...
```


Q18. Follow (live-tail) new log entries

```
✧DevOps Engineer: 🐳 Docker • K8s ☁ Cloud @ self ~ $ journalctl -f
Mar 25 14:14:49 self-Alienware-17-R5 dbus-daemon[3231]: [session uid=1000 pid=3231] Activating via systemd: service name='org.freedesktop.Tracker3' is already active.
ed by ':1.88' (uid=1000 pid=4062 comm="/usr/libexec/tracker-miner-fs-3 " label="unconfined")
Mar 25 14:14:49 self-Alienware-17-R5 systemd[3191]: Starting Tracker metadata extractor...
Mar 25 14:14:49 self-Alienware-17-R5 dbus-daemon[3231]: [session uid=1000 pid=3231] Successfully activated service 'org.freedesktop.Tracker3'
Mar 25 14:14:49 self-Alienware-17-R5 systemd[3191]: Started Tracker metadata extractor.
Mar 25 14:14:49 self-Alienware-17-R5 org.flameshot.Flameshot.desktop[5988]: flameshot: info: Capture saved to clipboard.
Mar 25 14:14:51 self-Alienware-17-R5 code-tunnel[3198]: [2025-03-25 14:14:51] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 14:14:56 self-Alienware-17-R5 code-tunnel[3198]: [2025-03-25 14:14:56] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 14:15:01 self-Alienware-17-R5 code-tunnel[3198]: [2025-03-25 14:15:01] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 14:15:07 self-Alienware-17-R5 code-tunnel[3198]: [2025-03-25 14:15:07] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 14:15:12 self-Alienware-17-R5 code-tunnel[3198]: [2025-03-25 14:15:12] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 14:15:17 self-Alienware-17-R5 code-tunnel[3198]: [2025-03-25 14:15:17] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 14:15:19 self-Alienware-17-R5 dbus-daemon[3231]: [session uid=1000 pid=3231] Activating via systemd: service name='org.freedesktop.Tracker3' is already active.
ed by ':1.88' (uid=1000 pid=4062 comm="/usr/libexec/tracker-miner-fs-3 " label="unconfined")
Mar 25 14:15:19 self-Alienware-17-R5 systemd[3191]: Starting Tracker metadata extractor...
Mar 25 14:15:19 self-Alienware-17-R5 dbus-daemon[3231]: [session uid=1000 pid=3231] Successfully activated service 'org.freedesktop.Tracker3'
Mar 25 14:15:19 self-Alienware-17-R5 systemd[3191]: Started Tracker metadata extractor.
Mar 25 14:15:21 self-Alienware-17-R5 variety.desktop[3782]: ERROR: 2025-03-25 14:15:21,809: download_one_from() 'Could not download wallpaper from https://www.flickr.com/photos/14811470@N01/10000000000/'
Mar 25 14:15:21 self-Alienware-17-R5 variety.desktop[3782]: Traceback (most recent call last):
Mar 25 14:15:21 self-Alienware-17-R5 variety.desktop[3782]:   File "/usr/lib/python3/dist-packages/variety/VarietyWindow.py", line 1164, in
Mar 25 14:15:21 self-Alienware-17-R5 variety.desktop[3782]:     file = downloader.download_one()
Mar 25 14:15:21 self-Alienware-17-R5 variety.desktop[3782]:   File "/usr/lib/python3/dist-packages/variety/plugins/downloaders/DefaultDownloader.py", line 116, in
Mar 25 14:15:21 self-Alienware-17-R5 variety.desktop[3782]:     items = self.fill_queue()
Mar 25 14:15:21 self-Alienware-17-R5 variety.desktop[3782]:   File "/usr/lib/python3/dist-packages/variety/FlickrDownloader.py", line 163, in
Mar 25 14:15:21 self-Alienware-17-R5 variety.desktop[3782]:     raise Exception("Flickr returned error message: " + resp["message"])
Mar 25 14:15:21 self-Alienware-17-R5 variety.desktop[3782]: Exception: Flickr returned error message: Invalid API Key (Key has expired)
Mar 25 14:15:22 self-Alienware-17-R5 code-tunnel[3198]: [2025-03-25 14:15:22] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 14:15:24 self-Alienware-17-R5 variety.desktop[3782]: ERROR: 2025-03-25 14:15:24,097: download_one_from() 'Could not download wallpaper from https://www.flickr.com/photos/14811470@N01/10000000000/'
Mar 25 14:15:24 self-Alienware-17-R5 variety.desktop[3782]: Traceback (most recent call last):
Mar 25 14:15:24 self-Alienware-17-R5 variety.desktop[3782]:   File "/usr/lib/python3/dist-packages/variety/VarietyWindow.py", line 1164, in
Mar 25 14:15:24 self-Alienware-17-R5 variety.desktop[3782]:     file = downloader.download_one()
Mar 25 14:15:36 self-Alienware-17-R5 org.flameshot.Flameshot.desktop[5988]: flameshot: info: Capture saved to clipboard.
Mar 25 14:15:38 self-Alienware-17-R5 code-tunnel[3198]: [2025-03-25 14:15:38] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 14:15:43 self-Alienware-17-R5 code-tunnel[3198]: [2025-03-25 14:15:43] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
✧DevOps Engineer: 🐳 Docker • K8s ☁ Cloud @ self ~ $
```

Q19. Show logs from the last 30 minutes

```
✧DevOps Engineer: 🐳 Docker • K8s ☁ Cloud @ self ~ $ journalctl --since "30"
Failed to parse timestamp: 30
✧DevOps Engineer: 🐳 Docker • K8s ☁ Cloud @ self ~ $ journalctl --since "30 minutes"
Failed to parse timestamp: 30 minutes
✧DevOps Engineer: 🐳 Docker • K8s ☁ Cloud @ self ~ $ journalctl --since "30 minutes ago"
Mar 25 13:47:28 self-Alienware-17-R5 code-tunnel[2836]: [2025-03-25 13:47:28] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 13:47:34 self-Alienware-17-R5 code-tunnel[2836]: [2025-03-25 13:47:34] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 13:47:39 self-Alienware-17-R5 code-tunnel[2836]: [2025-03-25 13:47:39] trace refresh poll failed, retrying: Error getting authorization: authorization_pending The authorization request is still pending.
Mar 25 13:47:43 self-Alienware-17-R5 sudo[3026]: self : TTY=ttty1 ; PWD=/home/self ; USER=root ; COMMAND=/usr/bin/systemctl isolate graphical.target
Mar 25 13:47:43 self-Alienware-17-R5 sudo[3026]: pam_unix(sudo:session): session opened for user root(uid=0) by self(uid=1000)
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: Started Dispatch Password Requests to Console Directory Watch.
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: Condition check resulted in Timer to automatically fetch and run repair assertions being skipped.
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: Stopped target Bluetooth Support.
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: Condition check resulted in First Boot Complete being skipped.
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: Reached target User and Group Name Lookups.
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: Stopped target Sound Card.
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: Condition check resulted in Unix socket for apport crash forwarding being skipped.
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: system-rfkill.socket: Deactivated successfully.
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: Closed Load/Save RF Kill Switch Status /dev/rfkill Watch.
Mar 25 13:47:43 self-Alienware-17-R5 systemd[1]: Starting Accounts Service...
```

Q20. List all running services

```
Terminal
DevOps Engineer: Docker @ K8s Cloud @ self ~ $ sudo systemctl list-units --type=service --state=running
UNIT                                LOAD    ACTIVE SUB    DESCRIPTION
accounts-daemon.service            loaded active running Accounts Service
acpid.service                      loaded active running ACPI event daemon
avahi-daemon.service               loaded active running Avahi mDNS/DNS-SD Stack
bluetooth.service                  loaded active running Bluetooth service
colord.service                      loaded active running Manage, Install and Generate Color Profiles
containerd.service                 loaded active running containerd container runtime
cron.service                       loaded active running Regular background program processing daemon
cups-browsed.service               loaded active running Make remote CUPS printers available locally
cups.service                       loaded active running CUPS Scheduler
dbus.service                       loaded active running D-Bus System Message Bus
docker.service                     loaded active running Docker Application Container Engine
fwupd.service                      loaded active running Firmware update daemon
gdm.service                        loaded active running GNOME Display Manager
irqbalance.service                loaded active running irqbalance daemon
kerneloops.service                loaded active running Tool to automatically collect and submit kernel crash signatures
ModemManager.service              loaded active running Modem Manager
mongod.service                     loaded active running MongoDB Database Server
networkd-dispatcher.service        loaded active running Dispatcher daemon for systemd-networkd
NetworkManager.service            loaded active running Network Manager
nvidia-persistenced.service        loaded active running NVIDIA Persistence Daemon
packagekit.service                loaded active running PackageKit Daemon
polkit.service                     loaded active running Authorization Manager
postfix@-.service                  loaded active running Postfix Mail Transport Agent (instance -)
power-profiles-daemon.service       loaded active running Power Profiles daemon
rsyslog.service                    loaded active running System Logging Service
rtkit-daemon.service               loaded active running RealtimeKit Scheduling Policy Service
snap.canonical-livepatch.canonical-livepatchd.service loaded active running Service for snap application canonical-livepatch.canonical-livepatchd
snapd.service                      loaded active running Snap Daemon
ssh.service                        loaded active running OpenBSD Secure Shell server
switcheroo-control.service         loaded active running Switcheroo Control Proxy service
systemd-journald.service            loaded active running Journal Service
systemd-logind.service              loaded active running User Login Management
systemd-oomd.service                loaded active running Userspace Out-Of-Memory (OOM) Killer
systemd-resolved.service            loaded active running Network Name Resolution
systemd-udevd.service               loaded active running Rule-based Manager for Device Events and Files
thermald.service                   loaded active running Thermal Daemon Service
udisks2.service                    loaded active running Disk Manager
unattended-upgrades.service         loaded active running Unattended Upgrades Shutdown
upower.service                     loaded active running Daemon for power management
user@1000.service                  loaded active running User Manager for UID 1000
wpa_supplicant.service              loaded active running WPA supplicant
zookeeper.service                  loaded active running LSB: centralized coordination service

LOAD    = Reflects whether the unit definition was properly loaded.
ACTIVE  = The high-level unit activation state, i.e. generalization of SUB.
SUB     = The low-level unit activation state, values depend on unit type.
42 loaded units listed.
DevOps Engineer: Docker @ K8s Cloud @ self ~ $
```

Q21. Create Customer Service

```
Terminal
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo nano customer.sh
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $ cat customer.sh
#!/bin/bash
echo "This Is A Customer Service"
echo "Thanks For Using My Service"
echo "Seif Hendawy"
echo "DevOps Engineer"
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $ chmod +x customer.sh
chmod: changing permissions of 'customer.sh': Operation not permitted
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo chmod +x customer.sh
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo nano /etc/systemd/system/customer.service
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo cat /etc/systemd/system/customer.service
[Unit]
Description=Customer Service By Seif Hendawy
After=network.target

[Service]
ExecStart=/home/seif/customer.sh
Restart=no
User=root
StandardOutput=journal
StandardError=journal

[Install]
WantedBy=multi-user.target
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo systemctl daemon-reload
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo systemctl start customer.service
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $ sudo systemctl status customer.service
○ customer.service - Customer Service By Seif Hendawy
   Loaded: loaded (/etc/systemd/system/customer.service; disabled; vendor preset: enabled)
   Active: inactive (dead)

Mar 25 14:34:59 seif-Alienware-17-R5 customer.sh[12981]: Thanks For Using My Service
Mar 25 14:34:59 seif-Alienware-17-R5 customer.sh[12981]: Seif Hendawy
Mar 25 14:34:59 seif-Alienware-17-R5 customer.sh[12981]: DevOps Engineer
Mar 25 14:34:59 seif-Alienware-17-R5 systemd[1]: customer.service: Deactivated successfully.
Mar 25 14:36:42 seif-Alienware-17-R5 systemd[1]: Started Customer Service By Seif Hendawy.
Mar 25 14:36:42 seif-Alienware-17-R5 customer.sh[13346]: This Is A Customer Service
Mar 25 14:36:42 seif-Alienware-17-R5 customer.sh[13346]: Thanks For Using My Service
Mar 25 14:36:42 seif-Alienware-17-R5 customer.sh[13346]: Seif Hendawy
Mar 25 14:36:42 seif-Alienware-17-R5 customer.sh[13346]: DevOps Engineer
Mar 25 14:36:42 seif-Alienware-17-R5 systemd[1]: customer.service: Deactivated successfully.
❖ DevOps Engineer: Docker * K8s Cloud @ seif ~ $
```