

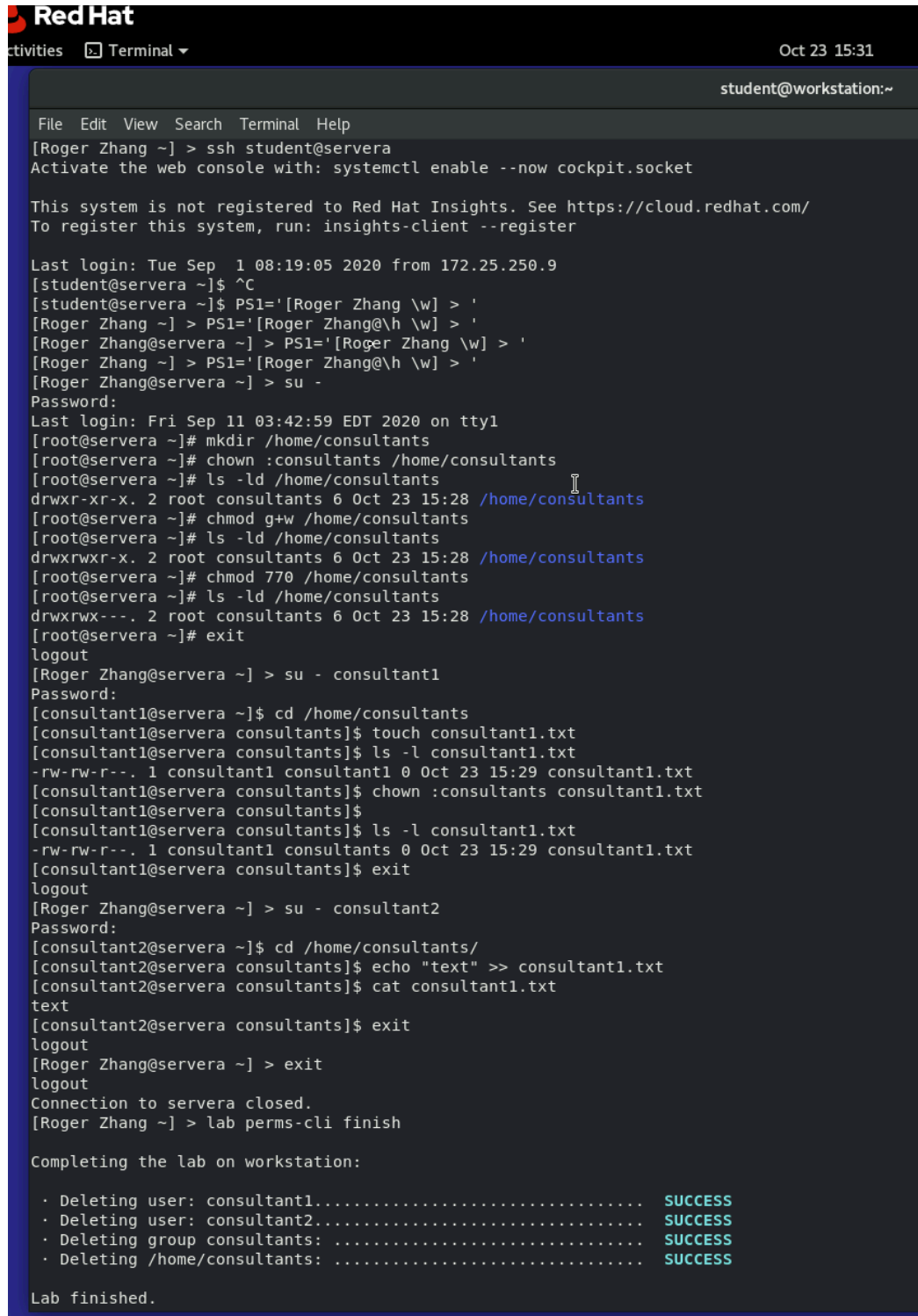
RH124 Report

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## Chapter 7

Figure 1

Execution of guided lab



```
Red Hat
activities Terminal Oct 23 15:31 student@workstation:~

File Edit View Search Terminal Help
[Roger Zhang ~] > ssh student@servera
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Tue Sep 1 08:19:05 2020 from 172.25.250.9
[student@servera ~]$ ^C
[student@servera ~]$ PS1='[Roger Zhang \w] > '
[Roger Zhang ~] > PS1='[Roger Zhang@\h \w] > '
[Roger Zhang@servera ~] > PS1='[Roger Zhang \w] > '
[Roger Zhang ~] > PS1='[Roger Zhang@\h \w] > '
[Roger Zhang@servera ~] > su -
Password:
Last login: Fri Sep 11 03:42:59 EDT 2020 on tty1
[root@servera ~]# mkdir /home/consultants
[root@servera ~]# chown :consultants /home/consultants
[root@servera ~]# ls -ld /home/consultants
drwxr-xr-x. 2 root consultants 6 Oct 23 15:28 /home/consultants
[root@servera ~]# chmod g+w /home/consultants
[root@servera ~]# ls -ld /home/consultants
drwxrwxr-x. 2 root consultants 6 Oct 23 15:28 /home/consultants
[root@servera ~]# chmod 770 /home/consultants
[root@servera ~]# ls -ld /home/consultants
drwxrwx---. 2 root consultants 6 Oct 23 15:28 /home/consultants
[root@servera ~]# exit
logout
[Roger Zhang@servera ~] > su - consultant1
Password:
[consultant1@servera ~]$ cd /home/consultants
[consultant1@servera consultants]$ touch consultant1.txt
[consultant1@servera consultants]$ ls -l consultant1.txt
-rw-rw-r--. 1 consultant1 consultant1 0 Oct 23 15:29 consultant1.txt
[consultant1@servera consultants]$ chown :consultants consultant1.txt
[consultant1@servera consultants]$
[consultant1@servera consultants]$ ls -l consultant1.txt
-rw-rw-r--. 1 consultant1 consultants 0 Oct 23 15:29 consultant1.txt
[consultant1@servera consultants]$ exit
logout
[Roger Zhang@servera ~] > su - consultant2
Password:
[consultant2@servera ~]$ cd /home/consultants/
[consultant2@servera consultants]$ echo "text" >> consultant1.txt
[consultant2@servera consultants]$ cat consultant1.txt
text
[consultant2@servera consultants]$ exit
logout
[Roger Zhang@servera ~] > exit
logout
Connection to servera closed.
[Roger Zhang ~] > lab perms-cli finish

Completing the lab on workstation:

· Deleting user: consultant1..... SUCCESS
· Deleting user: consultant2..... SUCCESS
· Deleting group consultants: ..... SUCCESS
· Deleting /home/consultants: ..... SUCCESS

Lab finished.
```

Note: Run several file create, policy operation and finished the guided Exercise

Figure2

## Guided exercise2

```
[Roger Zhang ~] > P$1='[Roger Zhang@h lw] > '
[Roger Zhang@workstation ~] > lab perms-default start

Starting lab.

Preparing server for lab exercise work:

- Verifying that server is running: ..... SUCCESS
- Creating group: operators..... SUCCESS
- Creating user: operator1..... SUCCESS

[Roger Zhang@workstation ~] > ssh student@servera
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 15:26:40 2022 from 172.25.250.9
[student@servera ~]$
[student@servera ~]$ su - operator1
Password:
[operator@servera ~]$ umask
0002
[operator@servera ~]$ mkdir /tmp/shared
[operator@servera ~]$ ls -ld /tmp/shared
drwxrwxr-x. 2 operator1 operator1 6 Oct 23 15:34 /tmp/shared
[operator@servera ~]$ touch /tmp/shared/defaults
[operator@servera ~]$ ls -l /tmp/shared/defaults
-rw-rw-r--. 1 operator1 operator1 0 Oct 23 15:34 /tmp/shared/defaults
[operator@servera ~]$ chown operators /tmp/shared
[operator@servera ~]$ ls -ld /tmp/shared
drwxrwxr-x. 2 operator1 operators 22 Oct 23 15:34 /tmp/shared
[operator@servera ~]$ touch /tmp/shared/group
[operator@servera ~]$ ls -l /tmp/shared/group
-rw-rw-r--. 1 operator1 operator1 0 Oct 23 15:35 /tmp/shared/group
[operator@servera ~]$ chmod g+s /tmp/shared
[operator@servera ~]$ touch /tmp/shared/operations_database.txt
[operator@servera ~]$ ls -l /tmp/shared/operations_database.txt
-rw-rw-r--. 1 operator1 operators 0 Oct 23 15:35 /tmp/shared/operations_database.txt
[operator@servera ~]$ touch /tmp/shared/operations_network.txt
[operator@servera ~]$ ls -l /tmp/shared/operations_network.txt
-rw-rw-r--. 1 operator1 operators 0 Oct 23 15:35 /tmp/shared/operations_network.txt
[operator@servera ~]$ umask 027
[operator@servera ~]$ umask
0027
[operator@servera ~]$ touch /tmp/shared/operations_production.txt
[operator@servera ~]$ ls -l /tmp/shared/operations_production.txt
-rw-r-----. 1 operator1 operators 0 Oct 23 15:36 /tmp/shared/operations_production.txt
[operator@servera ~]$ ssh operator@servera
The authenticity of host 'servera (172.25.250.10)' can't be established.
ECDSA key fingerprint is SHA256:1H687jfusVXYAUzAuByFfclU/1B4VS+6h04wRhXhmZU.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'servera,172.25.250.10' (ECDSA) to the list of known hosts.
operator@servera's password:
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 15:34:23 2022
[operator@servera ~]$ umask
0002
[operator@servera ~]$ echo "umask 007" >> ~/.bashrc
[operator@servera ~]$ source ~/.bashrc
[operator@servera ~]$ umask
0007
[operator@servera ~]$ exit
logout
Connection to servera closed.
[operator@servera ~]$ exit
logout
[student@servera ~]$ exit
Connection to servera closed.
[Roger Zhang@workstation ~] > lab perms-default finish

Completing the lab on servera:

- Deleting user: operator1..... SUCCESS
- Deleting group operators: ..... SUCCESS
- Deleting /tmp/shared: ..... SUCCESS

Lab finished.

[Roger Zhang@workstation ~] > 
```

Note: Completed Guided exercise2 with umask and file creation

Figure3

## Lab Execution

```
This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Tue Sep 1 08:19:05 2020 from 172.25.250.9
[student@serverb ~]$ su -
Password:
Last login: Fri Sep 11 03:42:59 EDT 2020 on tty1
[root@serverb ~]# mkdir /home/techdocs
[root@serverb ~]# chown :techdocs /home/techdocs
[root@serverb ~]# su - tech1
[tech1@serverb ~]$ touch /home/techdocs/test
touch: cannot touch '/home/techdocs/test': Permission denied
[tech1@serverb ~]$ logout
[root@serverb ~]# chmod 2770 /home/techdocs
[root@serverb ~]# su - tech1
Last login: Sun Oct 23 15:41:18 EDT 2022 on pts/0
[tech1@serverb ~]$ touch /home/techdocs/techdoc1.txt
[tech1@serverb ~]$ logout
[root@serverb ~]# su - tech2
[tech2@serverb ~]$ cd /home/techdocs
[tech2@serverb techdocs]$ echo "This is the first tech doc." > techdoc1.txt
[tech2@serverb techdocs]$ logout
[root@serverb ~]# su - databasel
[databasel@serverb ~]$ echo "This is the first tech doc." >> /home/techdocs/techdoc1.txt
-bash: /home/techdocs/techdoc1.txt: Permission denied
[databasel@serverb ~]$ logout
[root@serverb ~]# su - student
Last login: Sun Oct 23 15:40:32 EDT 2022 from 172.25.250.9 on pts/0
[student@serverb ~]$ umask
0002
[student@serverb ~]$ logout
[root@serverb ~]# vim /etc/profile.d/local-umask.sh
[root@serverb ~]# logout
[student@serverb ~]$ logout
Connection to serverb closed.
[Roger Zhang@workstation ~] > ssh student@serverb
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 15:42:57 2022
[student@serverb ~]$ umask
0007
[student@serverb ~]$ logout
Connection to serverb closed.
[Roger Zhang@workstation ~] > lab perms-review grade

Grading the lab:

  • Verifying permissions on /home/techdocs: ..... PASS
  • Verifying directory: /home/techdocs..... PASS
  • Verifying that tech1 can edit /home/techdocs: ..... PASS
  • Verifying that databasel cannot edit /home/techdocs: ..... PASS
  • Verifying umask: ..... PASS

Overall lab grade..... PASS

[Roger Zhang@workstation ~] > lab perms-review finish

Completing the lab on workstation:

  • Deleting tech1 user on serverb ..... SUCCESS
  • Deleting tech2 user on serverb ..... SUCCESS
  • Deleting databasel user on serverb ..... SUCCESS
  • Deleting techdocs group on serverb ..... SUCCESS
  • Deleting /home/techdocs: ..... SUCCESS
  • Setting umask to default: ..... SUCCESS

Lab finished.

[Roger Zhang@workstation ~] > █
```

Note: Passed the lab of creating file and permission groups

In this chapter, I've learnt to use `ls -l` to view permission, `chown` and `chmod` to change permission and use `umask` to modify overall permission mask. And the default `umask` values for Bash are defined in the `/etc/profile` and `/etc/bashrc` files.

Figure 4

```
student@workstation:~$ ssh student@servera
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
to register this system, run: insights-client --register

Last login: Sun Oct 23 15:34:13 2022 from 172.25.250.9
student@servera ~$ mkdir /home/student/bin
student@servera ~$ vi /home/student/bin/control
student@servera ~$ chmod wx /home/student/bin/control
student@servera ~$ control technical
^Z
[1]- Stopped control technical
student@servera ~$ jobs
[1]- Stopped control technical
student@servera ~$ bg
[1]+ control technical &
student@servera ~$ jobs
[1]- Running control technical &
student@servera ~$ control documents &
[2]- 2799
student@servera ~$ control database &
[3]- 2813
student@servera ~$ jobs
[1]- Running control technical &
[2]- Running control documents &
[3]- Running control database &
student@servera ~$ fg %1
control technical
^Z
[1]- Stopped control technical
student@servera ~$ jobs
[1]- Stopped control technical
[2]- Running control documents &
[3]- Running control database &
student@servera ~$ fg %2
control documents
^C
student@servera ~$ jobs
[1]- Stopped control technical
[3]- Running control database &
student@servera ~$ ps jT
PID PPID PID PCMD
2628 2629 2629 2629 pts/0 2934 Ss 1000 0:00 -bash
2629 2657 2657 2629 pts/0 2934 T 1000 0:00 /bin/bash /home/student/bin/control techn
2629 2813 2813 2629 pts/0 2934 S 1000 0:00 /bin/bash /home/student/bin/control databa
2657 2657 2629 pts/0 2934 T 1000 0:00 sleep 1
2813 2933 2813 2629 pts/0 2934 S 1000 0:00 sleep 1
2629 2934 2934 2629 pts/0 2934 R+ 1000 0:00 ps jT
student@servera ~$ jobs
[1]- Stopped control technical
[3]- Running control database &
student@servera ~$ fg %3
control database
^C
student@servera ~$ jobs
[1]- Stopped control technical
student@servera ~$ logout
There are stopped jobs.
student@servera ~$ logout
Connection to servera closed.
[roger Zhang@workstation ~]$ > lab processes-control finish

Completing the lab on workstation:

- Deleting outfile: /home/student/control_outfile..... SUCCESS
- Deleting directory: /home/student/bin:..... SUCCESS

Lab finished.

[roger Zhang@workstation ~]$ >
```

Note: Uses fg, bg command to bring process to foreground or background and use ctrl+z/c to kill process

Figure 5

### Excution of killing process

```
student@workstation:~  
File Edit View Search Terminal Help  
Roger Zhang@workstation -j> lab processes-kill start  
Starting lab.  
Preparing workstation for lab exercise work:  
- Verifying that servera is running: ..... SUCCESS  
Roger Zhang@workstation -j> ssh student@servera  
Activate the web console with: systemctl enable --now cockpit.socket  
this system is not registered to Red Hat Insights. See https://cloud.redhat.com/  
to register this system, run: insights-client --register  
Last login: Sun Oct 23 15:52:06 2022 from 172.25.250.9  
student@servera ~$ mkdir /home/student/bin  
student@servera ~$ vim /home/student/bin/killing  
student@servera ~$ cd /home/student/bin/killing  
student@servera bin$ kill network &  
11 3143  
student@servera bin$ kill interface &  
21 3146  
student@servera bin$ kill connection &  
31 3150  
student@servera bin$ jobs  
11- Running killing network &  
21- Running killing interface &  
31+ Running killing connection &  
student@servera bin$ kill -SIGSTOP %1  
11+ Stopped killing network  
student@servera bin$ kill -SIGTERM %2  
student@servera bin$ jobs  
11+ Stopped killing network  
21 Terminated killing interface  
31- Running killing connection &  
student@servera bin$ kill -SIGCONT %1  
student@servera bin$ jobs  
11+ Running killing network &  
31- Running killing connection &  
student@servera bin$ kill -SIGTERM %1  
student@servera bin$ kill -SIGTERM %3  
11+ Terminated killing network  
student@servera bin$ jobs  
31+ Terminated killing connection  
student@servera bin$ ps -ef | grep tail  
student 3155 3115 0 15:58 pts/1 00:00:00 tail -f /home/student/killing_outfile  
student 3175 3086 0 15:59 pts/0 00:00:00 grep --color=auto tail  
student@servera bin$ kill -SIGTERM tail  
student@servera bin$ logout  
connection to servera closed.  
Roger Zhang@workstation -j> lab processes-kill finish  
Completing the lab on workstation:  
- Deleting outfile: /home/student/killing_outfile..... SUCCESS  
- Deleting directory: /home/student/bin..... SUCCESS  
Lab finished.  
Roger Zhang@workstation -j>
```

```
student@workstation:~  
File Edit View Search Terminal Help  
student@workstation ~$ ssh student@servera  
Activate the web console with: systemctl enable --now cockpit.socket  
this system is not registered to Red Hat Insights. See https://cloud.redhat.com/  
to register this system, run: insights-client --register  
Last login: Sun Oct 23 15:57:19 2022 from 172.25.250.9  
student@servera ~$ tail -f ~/killing_outfile  
network network interface network interface connection network interface connection net  
work interface connection network interface connection network interface connection int  
erface connection connection connection network connection network connection connectio  
n Terminated  
student@servera ~$ logout  
connection to servera closed.  
student@workstation ~$
```

Note: Uses kill command to kill several processes.

Figure 6  
Execution of LAB in chapter 8

```

[roger.zhang@workstation ~] > ssh student@server
Activatd the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 15:44:29 2022
[student@server ~]$ vim /home/student/bin/process101
[student@server ~]$ chmod +x /home/student/bin/process101
[student@server ~]$ grep "model name" /proc/cpuinfo | wc -l
2
[student@server ~]$
[student@server ~]$ cd /home/student/bin/cc
[student@server ~]$ cd /home/student/bin
[student@server bin]$ process101 &
[1] 2699
[student@server bin]$ cp process101 process102
[student@server bin]$ vim process102
[student@server bin]$ process102 &
[2] 2795
[student@server bin]$ jobs
[1]-  Running                  process101 &
[2]+  Running                  process102 &
[student@server bin]$ cp process101 process103
[student@server bin]$ vim process103
[student@server bin]$ process103 &
[3] 2864
[student@server bin]$ su -
Password:
Last login: Sun Oct 23 15:40:37 EDT 2022 on pts/0
[root@server ~]# ps kill -SIGSTOP process101
[root@server ~]# ps -j
PPID    PID    PGID    SID    TTY      PGID    STAT    UID    TIME COMMAND
2638    2639    2639    2639    pts/0    2932    Ss      1000    0:00 -bash
2639    2699    2699    2639    pts/0    2932    T      1000    0:30 /bin/bash /home/student/bin/process101
2639    2795    2795    2639    pts/0    2932    Ss      1000    0:21 /bin/bash /home/student/bin/process102
2639    2864    2864    2639    pts/0    2932    R      1000    0:22 /bin/bash /home/student/bin/process103
2639    2881    2881    2639    pts/0    2932    Ss      0        0:00 su -
2881    2891    2891    2639    pts/0    2932    Ss      0        0:00 -bash
2699    2920    2699    2639    pts/0    2932    Z      1000    0:00 [sleep] <defunct>
2795    2931    2795    2639    pts/0    2932    Ss      1000    0:00 sleep 1
2891    2932    2932    2639    pts/0    2932+  R      0        0:00 ps -j
[root@server ~]# ps kill -SIGCONT process101
[root@server ~]# ps kill process101
[root@server ~]# ps kill process101
[1] Terminated                  process101
[2] Terminated                  process102
[3] Terminated                  process103
[student@server bin]$ logout
Connection to server closed.
[roger.zhang@workstation ~] > lab processes-review grade

Grading the lab:
- Verifying that /home/student/.config/props/toprc exists: .. PASS
- Verifying that process101 is not running: .. PASS
- Verifying that process102 is not running: .. PASS
- Verifying that process103 is not running: .. PASS

Overall lab grade..... PASS

[roger.zhang@workstation ~] > lab processes-review finish

Completing the lab on workstation:
- Deleting /home/student/bin/. SUCCESS
- Deleting /home/student/.config/props/toprc: .. SUCCESS

Lab finished.

[roger.zhang@workstation ~] >

```

Note: create 3 processes and run/terminate using the command we've learnt in this chapter

## Chapter review

In this chapter, I learned: ps, jobs, pkill, kill, top, uptime commands. And how to bring process to foreground/background. And also I've learnt how to estimate load average up on a system using the top command.

## Chapter 9

Figure 7

## Completing the guided exercise for systemctl



```
student@workstation:~  
File Edit View Search Terminal Help  
cloud-config.service disabled  
cloud-final.service disabled  
cloud-init-local.service disabled  
cloud-init.service disabled  
cockpit-motd.service static  
cockpit-wsinstance-http-redirect.service static  
cockpit-wsinstance-http.service static  
cockpit-wsinstance-https-factory@.service static  
cockpit-wsinstance-https@.service static  
cockpit.service static  
console-getty.service disabled  
container-getty@.service static  
cpupower.service disabled  
crond.service enabled  
dbus-org.fedoraproject.FirewallD1.service enabled  
dbus-org.freedesktop.hostname1.service static  
dbus-org.freedesktop.locale1.service static  
dbus-org.freedesktop.login1.service static  
dbus-org.freedesktop.nm-dispatcher.service enabled  
dbus-org.freedesktop.portable1.service static  
dbus-org.freedesktop.timedate1.service enabled  
dbus.service static  
dbxtool.service disabled  
debug-shell.service disabled  
dm-event.service static  
dnf-makecache.service static  
dracut-cmdline.service static  
dracut-initqueue.service static  
dracut-mount.service static  
dracut-pre-mount.service static  
dracut-pre-pivot.service static  
dracut-pre-trigger.service static  
dracut-pre-udev.service static  
dracut-shutdown.service static  
ebtables.service disabled  
emergency.service static  
firewalld.service enabled  
fprintd.service static  
fstrim.service static  
getty@.service enabled  
gpm.service enabled  
grub-boot-indeterminate.service static  
gssproxy.service disabled  
halt-local.service static  
import-state.service enabled  
initrd-cleanup.service static  
initrd-parse-etc.service static  
initrd-switch-root.service static  
initrd-udevadm-cleanup-db.service static  
insights-client.service static  
irqbalance.service enabled  
kdump.service disabled  
kmod-static-nodes.service static  
kpatch.service disabled  
ldconfig.service static  
ledmon.service disabled  
libstoragemgmt.service enabled  
loadmodules.service enabled  
lvm2-lvmpolld.service static  
lvm2-monitor.service enabled  
lvm2-pvscan@.service static  
man-db-cache-update.service static  
[student@servera ~]$ logout  
Connection to servera closed.  
[Roger Zhang@workstation ~] > lab services-identify finish  
  
You have completed attempting the guided exercise.  
  
· Cleaning servera..... SUCCESS  
  
Lab finished.  
  
[Roger Zhang@workstation ~] > █
```

Note: Use systemctl command to view all the daemon status.



Figure 8

## Systemctl disable/enable daemons

```

student@workstation:~
File Edit View Search Terminal Help
Connection to servera closed by remote host.
Connection to servera closed.
[Roger Zhang@workstation ~] > ssh student@servera
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 16:14:05 2022 from 172.25.250.9
[student@servera ~]$ systemctl status chronyd
● chronyd.service - NTP client/server
   Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2022-10-23 16:15:37 EDT; 8s ago
     Docs: man:chronyd(8)
           man:chrony.conf(5)
   Process: 851 ExecStartPost=/usr/libexec/chrony-helper update-daemon (code=exited, status=0/SUCCESS)
   Process: 831 ExecStart=/usr/sbin/chronyd $OPTIONS (code=exited, status=0/SUCCESS)
  Main PID: 842 (chronyd)
    Tasks: 1 (limit: 11345)
   Memory: 1.2M
   CGroup: /system.slice/chronyd.service
           └─842 /usr/sbin/chronyd

Oct 23 16:15:37 servera.lab.example.com systemd[1]: Starting NTP client/server...
Oct 23 16:15:37 servera.lab.example.com chronyd[842]: chronyd version 3.5 starting (+CMDMON +NTP +REFCLO
Oct 23 16:15:37 servera.lab.example.com chronyd[842]: commandkey directive is no longer supported
Oct 23 16:15:37 servera.lab.example.com chronyd[842]: generatecommandkey directive is no longer supporte
Oct 23 16:15:37 servera.lab.example.com chronyd[842]: Frequency -24.004 +/- 0.139 ppm read from /var/lib
Oct 23 16:15:37 servera.lab.example.com systemd[1]: Started NTP client/server.
Oct 23 16:15:45 servera.lab.example.com chronyd[842]: Selected source 172.25.254.254
Oct 23 16:15:45 servera.lab.example.com chronyd[842]: System clock wrong by 0.630958 seconds, adjustment

[student@servera ~]$ sudo systemctl disable chronyd
[sudo] password for student:
Removed /etc/systemd/system/multi-user.target.wants/chronyd.service.
[student@servera ~]$ systemctl status chronyd
● chronyd.service - NTP client/server
   Loaded: loaded (/usr/lib/systemd/system/chronyd.service; disabled; vendor preset: enabled)
   Active: active (running) since Sun 2022-10-23 16:15:37 EDT; 27s ago
     Docs: man:chronyd(8)
           man:chrony.conf(5)
  Main PID: 842 (chronyd)
    Tasks: 1 (limit: 11345)
   Memory: 1.2M
   CGroup: /system.slice/chronyd.service
           └─842 /usr/sbin/chronyd

Oct 23 16:15:37 servera.lab.example.com systemd[1]: Starting NTP client/server...
Oct 23 16:15:37 servera.lab.example.com chronyd[842]: chronyd version 3.5 starting (+CMDMON +NTP +REFCLO
Oct 23 16:15:37 servera.lab.example.com chronyd[842]: commandkey directive is no longer supported
Oct 23 16:15:37 servera.lab.example.com chronyd[842]: generatecommandkey directive is no longer supporte
Oct 23 16:15:37 servera.lab.example.com chronyd[842]: Frequency -24.004 +/- 0.139 ppm read from /var/lib
Oct 23 16:15:37 servera.lab.example.com systemd[1]: Started NTP client/server.
Oct 23 16:15:45 servera.lab.example.com chronyd[842]: Selected source 172.25.254.254
Oct 23 16:15:45 servera.lab.example.com chronyd[842]: System clock wrong by 0.630958 seconds, adjustment
[student@servera ~]$ sudo systemctl reboot
Connection to servera closed by remote host.
Connection to servera closed.
[Roger Zhang@workstation ~] > lab services-control finish

You have completed attempting the guided exercise.

servera cannot be reached
[Roger Zhang@workstation ~] > lab services-control finish

You have completed attempting the guided exercise.

• Ensuring enabled/started on servera: sshd..... SUCCESS
• Ensuring enabled/started on servera: chronyd..... SUCCESS

Lab finished.

[Roger Zhang@workstation ~] >

```

Note: Uses systemctl command to enable/disable several services

Figure 9

### Execution of Lab for chapter 9

```
[Roger Zhang@workstation ~] > lab services-review start
Starting lab.
Preparing serverb for lab exercise work:
  · Verifying server is reachable: serverb..... SUCCESS
  · Ensuring disabled/stopped: psacct..... SUCCESS
  · Ensuring enabled/started: rsyslog..... SUCCESS

[Roger Zhang@workstation ~] > ssh student@serverb
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 16:01:50 2022 from 172.25.250.9
[student@serverb ~]$ systemctl status psacct
● psacct.service - Kernel process accounting
   Loaded: loaded (/usr/lib/systemd/system/psacct.service; disabled; vendor preset: disabled)
   Active: inactive (dead)
[student@serverb ~]$ sudo systemctl start psacct
[sudo] password for student:
[student@serverb ~]$ sudo systemctl enable psacct
Created symlink /etc/systemd/system/multi-user.target.wants/psacct.service → /usr/lib/systemd/system/psacct.service.
[student@serverb ~]$ sudo systemctl stop rsyslog
[student@serverb ~]$ sudo systemctl disable rsyslog
Removed /etc/systemd/system/syslog.service.
Removed /etc/systemd/system/multi-user.target.wants/rsyslog.service.
[student@serverb ~]$ sudo systemctl reboot
Connection to serverb closed by remote host.
Connection to serverb closed.
[Roger Zhang@workstation ~] > lab services-review grade

Grading the student's work on serverb:
  · Verifying psacct: running..... PASS
  · Verifying psacct: enabled..... PASS
  · Verifying rsyslog: stopped..... PASS
  · Verifying rsyslog: disabled..... PASS

Overall lab grade..... PASS

[Roger Zhang@workstation ~] > █
```

Note: Finishes using systemctl to disable and enable several services

## Chapter Review

In this chapter, I learned: systemd provides a method for activating system resources, server daemons, and other processes, both at boot time and on a running system. Use the systemctl to start, stop, reload, enable, and disable services. Use the systemctl status command to determine the status of system daemons and network services started by systemd. The systemctl list-dependencies command lists all service units upon which a specific service unit depends. systemd can mask a service unit so that it does not run even to satisfy dependencies.

## Chapter 10

Figure 10

### Guided exercise to Use ssh

```

· Ensuring known_hosts file does not exist on servera..... SUCCESS

[Roger Zhang@workstation ~] > ssh student@servera
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 16:15:42 2022 from 172.25.250.9
[student@servera ~]$ ssh student@serverb
The authenticity of host 'serverb (172.25.250.11)' can't be established.
ECDSA key fingerprint is SHA256:1H687jfusVXYAUzAuByFfx1U/lB4VS+6h04wRhXhmZU.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'serverb,172.25.250.11' (ECDSA) to the list of known hosts.
student@serverb's password:
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 16:18:19 2022 from 172.25.250.9
[student@serverb ~]$ w
 16:22:19 up 3 min,  1 user,  load average: 0.02, 0.03, 0.00
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
student pts/0    172.25.250.10   16:22    0.00s  0.03s  0.01s w
[student@serverb ~]$ logout
Connection to serverb closed.
[student@servera ~]$ ssh root@serverb
root@serverb's password:
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 16:06:41 2022
[root@serverb ~]# w
 16:22:33 up 3 min,  1 user,  load average: 0.01, 0.03, 0.00
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU WHAT
root pts/0    172.25.250.10   16:22    1.00s  0.01s  0.00s w
[root@serverb ~]# logout
Connection to serverb closed.
[student@servera ~]$ rm /home/student/.ssh/known_hosts
[student@servera ~]$ ssh student@serverb
The authenticity of host 'serverb (172.25.250.11)' can't be established.
ECDSA key fingerprint is SHA256:1H687jfusVXYAUzAuByFfx1U/lB4VS+6h04wRhXhmZU.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'serverb,172.25.250.11' (ECDSA) to the list of known hosts.
student@serverb's password:
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 16:22:15 2022 from 172.25.250.10
[student@serverb ~]$ logout
Connection to serverb closed.
[student@servera ~]$ ls -l /home/student/.ssh/known_hosts
-rw-r--r--. 1 student student 183 Oct 23 16:22 /home/student/.ssh/known_hosts
[student@servera ~]$ ssh student@serverb hostname
student@serverb's password:
serverb.lab.example.com
[student@servera ~]$ logout
Connection to servera closed.
[Roger Zhang@workstation ~] > lab ssh-access finish

Completing the lab on servera:

· Deleting known_hosts file from servera..... SUCCESS

Lab finished.

[Roger Zhang@workstation ~] > █

```

Note: Use ssh to go to remote server and run command directly

Figure 11

Finishes Exercise with guided exercise of using ssh key to run ssh command



```
student@workstation:~  
File Edit View Search Terminal Help  
[student@server ~]$ su - production1  
Password:  
[production1@server ~]$ ssh-keygen  
Generating public/private rsa key pair.  
Enter file in which to save the key (/home/production1/.ssh/id_rsa):  
Created directory /home/production1/.ssh.  
Enter passphrase (empty for no passphrase):  
Enter same passphrase again:  
Your identification has been saved in /home/production1/.ssh/id_rsa.  
Your public key has been saved in /home/production1/.ssh/id_rsa.pub.  
The key fingerprint is:  
SHA256:h1Ld8Zu9Adn2h3R3MtrJEGy5v8xuulYKqg2bbro production1@server.lab.example.com  
The key's randomart image is:  
+--[RSA 3072]-----+  
| . . . . .  
| . = 0 . .  
| . 0 . . . +  
| . + 0 = +  
| . S . o *oX.  
| . . . B *  
| . . 0 + .  
| = . . + . 0 .  
| E . . . + . 0 . .  
+-----+  
[production1@server ~]$ ssh-copy-id production1@serverb  
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/production1/.ssh/id_rsa.pub"  
The authenticity of host 'serverb (172.25.250.11)' can't be established.  
ECDSA key fingerprint is SHA256:1M687jFusVXYAUzauByFfxIU/184VS+6h04wRbXnm2U.  
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 prompted now it is to install the new keys  
production1@serverb's password:  
Number of key(s) added: 1  
Now try logging into the machine, with: "ssh 'production1@serverb'"  
and check to make sure that only the key(s) you wanted were added.  
[production1@server ~]$ ssh production1@serverb  
Activate the web console with: systemctl enable --now cockpit.socket  
This system is not registered to Red Hat Insights. See https://cloud.redhat.com/  
To register this system, run: insights-client --register  
[production1@serverb ~]$ su -  
Password:  
Last login: Sun Oct 23 16:22:32 EDT 2022 from 172.25.250.10 on pts/0  
[root@serverb ~]# systemctl reload sshd.service  
[root@serverb ~]# systemctl reload sshd  
[root@serverb ~]# vim /etc/ssh/sshd_config  
[root@serverb ~]# systemctl reload sshd  
[root@serverb ~]# vim /etc/ssh/sshd_config  
[root@serverb ~]# logout  
[production1@serverb ~]$ logout  
Connection to serverb closed.  
[production1@server ~]$ logout  
[student@server ~]$ logout  
Connection to servera closed.  
[Roger Zhang@workstation ~] > lab ssh-review grade  
Grading the student's work on serverb:  
- Verifying SSH key-based authentication on serverb..... PASS  
- Verifying prevention of root user's SSH login on serverb.... PASS  
- Verifying prevention of SSH password-based login on serverb. PASS  
Overall lab grade..... PASS  
[Roger Zhang@workstation ~] > lab ssh-review finish  
Completing the lab on servera and serverb:  
- Restoring original /etc/ssh/sshd config on serverb.....
```

Note: Uses ssh and keys and modify sshd config in this lab.

Chapter Review

In this chapter, I learned: The ssh command allows users to access remote systems securely using the SSH protocol. A client system stores remote servers' identities in ~/.ssh/known\_hosts and /etc/ssh/ssh\_known\_hosts.

Chapter 11

Figure 13

Using logger to send log message to system logs

```

[Roger Zhang@workstation ~] > lab log-configure start

Starting lab.

Preparing servera for lab exercise work:

· Ensuring /etc/rsyslog.d/debug.conf does not exist on servera SUCCESS
· Ensuring /var/log/messages-debug does not exist on servera.. SUCCESS

[Roger Zhang@workstation ~] > ssh student@servera
Activate the web console with: systemctl enable --now cockpit.socket

This system is not registered to Red Hat Insights. See https://cloud.redhat.com/
To register this system, run: insights-client --register

Last login: Sun Oct 23 16:30:10 2022 from 172.25.250.9
[student@servera ~]$ sudo -i
[sudo] password for student:
[root@servera ~]# vim /etc/rsyslog.d/debug.conf
[root@servera ~]# systemctl restart rsyslog
[root@servera ~]# logger -p user.debug "Debug Message Test"
[root@servera ~]# tail /var/log/messages-debug
Oct 23 16:38:10 servera systemd[1]: Stopping System Logging Service...
Oct 23 16:38:11 servera rsyslogd[985]: [origin software="rsyslogd" swVersion="8.1911.0-3.el8" x-pid="985" x-info="https://www.rsyslog.com"] exiting on signal 15.
Oct 23 16:38:11 servera systemd[1]: Stopped System Logging Service.
Oct 23 16:38:11 servera systemd[1]: Starting System Logging Service...
Oct 23 16:38:11 servera rsyslogd[25953]: [origin software="rsyslogd" swVersion="8.1911.0-3.el8" x-pid="25953" x-info="https://www.rsyslog.com"] start
Oct 23 16:38:11 servera systemd[1]: Started System Logging Service.
Oct 23 16:38:11 servera rsyslogd[25953]: imjournal: journal files changed, reloading... [v8.1911.0-3.el8 try https://www.rsyslog.com/e/0 ]
Oct 23 16:38:19 servera student[25957]: Debug Message Test
[root@servera ~]# ^C
[root@servera ~]# logout
[student@servera ~]$ logout
Connection to servera closed.
[Roger Zhang@workstation ~] > lab log-configure finish

Completing the lab on servera:

· Deleting /etc/rsyslog.d/debug.conf from servera..... SUCCESS
· Deleting /var/log/messages-debug from servera..... SUCCESS

Lab finished.

[Roger Zhang@workstation ~] > 

```

Note: Uses logger, rsyslog to send log

Figure 14

Finishes guided exercise log-query



```

Oct 23 16:16:44 servera.lab.example.com sshd[1088]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:16:44 servera.lab.example.com sshd[1088]: pam_unix(sshd:session): session closed for user root
Oct 23 16:16:44 servera.lab.example.com sshd[1124]: Accepted publickey for root from 172.25.250.9 port 50736 ssh2: RSA SHA256:
Oct 23 16:16:44 servera.lab.example.com sshd[1124]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:16:45 servera.lab.example.com sshd[1124]: pam_unix(sshd:session): session closed for user root
Oct 23 16:16:45 servera.lab.example.com sshd[1160]: Accepted publickey for root from 172.25.250.9 port 50738 ssh2: RSA SHA256:
Oct 23 16:16:45 servera.lab.example.com sshd[1160]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:16:45 servera.lab.example.com sshd[1160]: pam_unix(sshd:session): session closed for user root
Oct 23 16:16:45 servera.lab.example.com sshd[1223]: Accepted publickey for root from 172.25.250.9 port 50740 ssh2: RSA SHA256:
Oct 23 16:16:45 servera.lab.example.com sshd[1223]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:16:45 servera.lab.example.com sshd[1223]: pam_unix(sshd:session): session closed for user root
Oct 23 16:22:00 servera.lab.example.com sshd[1279]: Accepted publickey for root from 172.25.250.9 port 50790 ssh2: RSA SHA256:
Oct 23 16:22:00 servera.lab.example.com sshd[1279]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:22:00 servera.lab.example.com sshd[1279]: pam_unix(sshd:session): session closed for user root
Oct 23 16:22:00 servera.lab.example.com sshd[1306]: Accepted publickey for root from 172.25.250.9 port 50792 ssh2: RSA SHA256:
Oct 23 16:22:00 servera.lab.example.com sshd[1306]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:22:00 servera.lab.example.com sshd[1306]: pam_unix(sshd:session): session closed for user root
Oct 23 16:22:01 servera.lab.example.com sshd[1342]: Accepted publickey for root from 172.25.250.9 port 50794 ssh2: RSA SHA256:
Oct 23 16:22:01 servera.lab.example.com sshd[1342]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:22:01 servera.lab.example.com sshd[1342]: pam_unix(sshd:session): session closed for user root
Oct 23 16:22:01 servera.lab.example.com sshd[1378]: Accepted publickey for root from 172.25.250.9 port 50796 ssh2: RSA SHA256:
Oct 23 16:22:01 servera.lab.example.com sshd[1378]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:22:01 servera.lab.example.com sshd[1378]: pam_unix(sshd:session): session closed for user root
Oct 23 16:22:06 servera.lab.example.com sshd[1423]: Accepted publickey for student from 172.25.250.9 port 50798 ssh2: RSA SHA256:
Oct 23 16:22:06 servera.lab.example.com sshd[1423]: pam_unix(sshd:session): session opened for user student by (uid=0)
Oct 23 16:23:28 servera.lab.example.com sshd[1482]: Accepted publickey for root from 172.25.250.9 port 50800 ssh2: RSA SHA256:
Oct 23 16:23:28 servera.lab.example.com sshd[1482]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:23:28 servera.lab.example.com sshd[1482]: pam_unix(sshd:session): session closed for user root
Oct 23 16:23:28 servera.lab.example.com sshd[1509]: Accepted publickey for root from 172.25.250.9 port 50802 ssh2: RSA SHA256:
Oct 23 16:23:28 servera.lab.example.com sshd[1509]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:23:29 servera.lab.example.com sshd[1509]: pam_unix(sshd:session): session closed for user root
Oct 23 16:24:59 servera.lab.example.com sshd[1556]: Accepted publickey for root from 172.25.250.9 port 50810 ssh2: RSA SHA256:
Oct 23 16:24:59 servera.lab.example.com sshd[1556]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:24:59 servera.lab.example.com sshd[1556]: pam_unix(sshd:session): session closed for user root
Oct 23 16:25:00 servera.lab.example.com sshd[1594]: Accepted publickey for root from 172.25.250.9 port 50814 ssh2: RSA SHA256:
Oct 23 16:25:00 servera.lab.example.com sshd[1594]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:25:00 servera.lab.example.com sshd[1594]: pam_unix(sshd:session): session closed for user root
Oct 23 16:25:00 servera.lab.example.com sshd[1621]: Accepted publickey for root from 172.25.250.9 port 50816 ssh2: RSA SHA256:
Oct 23 16:25:00 servera.lab.example.com sshd[1621]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:25:01 servera.lab.example.com sshd[1621]: pam_unix(sshd:session): session closed for user root
Oct 23 16:25:01 servera.lab.example.com sshd[1663]: Accepted publickey for root from 172.25.250.9 port 50818 ssh2: RSA SHA256:
Oct 23 16:25:01 servera.lab.example.com sshd[1663]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:25:01 servera.lab.example.com sshd[1663]: pam_unix(sshd:session): session closed for user root
Oct 23 16:25:01 servera.lab.example.com sshd[1704]: Accepted publickey for root from 172.25.250.9 port 50820 ssh2: RSA SHA256:
Oct 23 16:25:01 servera.lab.example.com sshd[1704]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:25:01 servera.lab.example.com sshd[1704]: pam_unix(sshd:session): session closed for user root
Oct 23 16:25:01 servera.lab.example.com sshd[1740]: Accepted publickey for root from 172.25.250.9 port 50822 ssh2: RSA SHA256:
Oct 23 16:25:02 servera.lab.example.com sshd[1740]: pam_unix(sshd:session): session opened for user root by (uid=0)
Oct 23 16:25:02 servera.lab.example.com sshd[1740]: pam_unix(sshd:session): session closed for user root
Oct 23 16:25:42 servera.lab.example.com sshd[1788]: Connection closed by authenticating user operator1 172.25.250.11 port 48464 ssh2
Oct 23 16:25:44 servera.lab.example.com sshd[1790]: Accepted password for operator1 from 172.25.250.11 port 48464 ssh2
Oct 23 16:25:44 servera.lab.example.com sshd[1790]: pam_unix(sshd:session): session opened for user operator1 by (uid=0)
Oct 23 16:25:44 servera.lab.example.com sshd[1790]: pam_unix(sshd:session): session closed for user operator1
Oct 23 16:25:55 servera.lab.example.com sshd[1836]: Accepted publickey for operator1 from 172.25.250.11 port 48466 ssh2: RSA SHA256:
Oct 23 16:25:55 servera.lab.example.com sshd[1836]: pam_unix(sshd:session): session opened for user operator1 by (uid=0)
Oct 23 16:25:55 servera.lab.example.com sshd[1836]: pam_unix(sshd:session): session closed for user operator1
Oct 23 16:26:26 servera.lab.example.com sshd[1876]: Connection closed by authenticating user operator1 172.25.250.11 port 48472 ssh2
Oct 23 16:26:26 servera.lab.example.com sshd[1878]: Connection closed by authenticating user operator1 172.25.250.11 port 48472 ssh2
Oct 23 16:26:26 servera.lab.example.com sshd[1880]: Accepted publickey for operator1 from 172.25.250.11 port 48472 ssh2: RSA SHA256:
Oct 23 16:26:26 servera.lab.example.com sshd[1880]: pam_unix(sshd:session): session opened for user operator1 by (uid=0)
Oct 23 16:26:26 servera.lab.example.com sshd[1880]: pam_unix(sshd:session): session closed for user operator1
Oct 23 16:26:37 servera.lab.example.com sshd[1926]: Accepted publickey for operator1 from 172.25.250.11 port 48474 ssh2: RSA SHA256:
[student@servera ~]$ logout
Connection to servera closed.
[Roger Zhang@workstation ~] > lab log-query finish

Completing the lab on servera:

• Ensuring that the required environment is clean on servera.. SUCCESS

Lab finished.

[Roger Zhang@workstation ~] >

```

Note: Uses journalctl with several parameters to query all kind/level/time of logs.

Figure 15

Finishes Lab for log chapter



```
student@workstation:~  
File Edit View Search Terminal Help  
Oct 23 15:19:20 serverb.lab.example.com systemd-journal[705]: Runtime journal (/run/log/journal/f874df04639f474cb0a988104...  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Started Flush Journal to Persistent Storage.  
Oct 23 15:19:20 serverb.lab.example.com systemd-udev[733]: Network interface NamePolicy= disabled on kernel command line.  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Started udev Kernel Device Manager.  
Oct 23 15:19:20 serverb.lab.example.com kernel: piix4_smbus 0000:00:01.3: SMBus Host Controller at 0x700, revision 0  
Oct 23 15:19:20 serverb.lab.example.com kernel: input: PC Speaker as /devices/platform/pcspkr/input/input6  
Oct 23 15:19:20 serverb.lab.example.com systemd-udev[743]: link config: autonegotiation is unset or enabled, the speed and...  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Started Monitoring of LVM2 mirrors, snapshots etc. using dmeventd or p...  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Reached target Local File Systems (Pre).  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Starting File System Check on /dev/disk/by-uuid/399C-0F7D...  
Oct 23 15:19:20 serverb.lab.example.com systemd-udev[745]: link config: autonegotiation is unset or enabled, the speed and...  
Oct 23 15:19:20 serverb.lab.example.com kernel: bochs-drm 0000:00:02.0: vgaarb: deactivate vga console  
Oct 23 15:19:20 serverb.lab.example.com systemd-fsck[754]: fsck.fat 4.1 (2017-01-24)  
Oct 23 15:19:20 serverb.lab.example.com systemd-fsck[754]: /dev/vda2: 14 files, 3441/51091 clusters  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Started File System Check on /dev/disk/by-uuid/399C-0F7D.  
Oct 23 15:19:20 serverb.lab.example.com kernel: Console: switching to colour dummy device 80x25  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Mounting /boot/efi...  
Oct 23 15:19:20 serverb.lab.example.com kernel: [drm] Found bochs VGA, ID 0xb0c0.  
Oct 23 15:19:20 serverb.lab.example.com kernel: [drm] Framebuffer size 16384 kB @ 0xfdb00000, mmio @ 0xfdbd0000.  
Oct 23 15:19:20 serverb.lab.example.com kernel: [TTM] Zone kernel: Available graphics memory: 935282 KiB  
Oct 23 15:19:20 serverb.lab.example.com kernel: [TTM] Initializing pool allocator  
Oct 23 15:19:20 serverb.lab.example.com kernel: [TTM] Initializing DMA pool allocator  
Oct 23 15:19:20 serverb.lab.example.com kernel: [drm] Initialized bochs-drm 1.0.0 20130925 for 0000:00:02.0 on minor 0  
Oct 23 15:19:20 serverb.lab.example.com kernel: fbcon: bochs-drmfb (fb0) is primary device  
Oct 23 15:19:20 serverb.lab.example.com kernel: Console: switching to colour frame buffer device 128x48  
Oct 23 15:19:20 serverb.lab.example.com kernel: bochs-drm 0000:00:02.0: fb0: bochs-drmfb frame buffer device  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Mounted /boot/efi.  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Reached target Local File Systems.  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Starting Import network configuration from initramfs...  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Starting Restore /run/initramfs on shutdown...  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Starting Tell Plymouth To Write Out Runtime Data...  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Started Restore /run/initramfs on shutdown.  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Started Tell Plymouth To Write Out Runtime Data.  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Started Import network configuration from initramfs.  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Starting Create Volatile Files and Directories...  
Oct 23 15:19:20 serverb.lab.example.com systemd-tmpfiles[800]: [/usr/lib/tmpfiles.d/subscription-manager.conf:1] Line refe...  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Started Create Volatile Files and Directories.  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Starting RPC Bind...  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Starting Security Auditing Service...  
Oct 23 15:19:20 serverb.lab.example.com auditd[806]: audit dispatcher initialized with q_depth=400 and 1 active plugins  
Oct 23 15:19:20 serverb.lab.example.com auditd[806]: Init complete, auditd 3.0 listening for events (startup state enable)  
Oct 23 15:19:20 serverb.lab.example.com systemd[1]: Started RPC Bind.  
Oct 23 15:19:20 serverb.lab.example.com augenrules[811]: /sbin/augenrules: No change  
Oct 23 15:19:20 serverb.lab.example.com augenrules[811]: No rules  
[student@serverb ~]$ sudo vim /etc/rsyslog.d/auth-errors.conf  
[student@serverb ~]$ sudo systemctl restart rsyslog  
[student@serverb ~]$ logger -p authpriv.alert "Logging test authpriv.alert"  
[student@serverb ~]$ sudo tail /var/log/auth-errors  
Oct 23 15:44:47 serverb student[3944]: Logging test authpriv.alert  
[student@serverb ~]$ ^C  
[student@serverb ~]$ logout  
Connection to serverb closed.  
[Roger Zhang@workstation ~] > lab log-review grade  
  
Grading the student's work on serverb:  
  
· Verifying the time zone on serverb..... PASS  
· Verifying the auth-errors config file on serverb..... PASS  
  
Overall lab grade..... PASS  
  
[Roger Zhang@workstation ~] > lab log-review finish  
  
Completing the lab on serverb:  
  
· Ensuring that the required environment is clean on serverb.. SUCCESS  
· Restoring original time zone on serverb..... SUCCESS  
· Deleting auth-errors config file from serverb..... SUCCESS  
· Deleting auth-errors log file from serverb..... SUCCESS  
  
Lab finished.  
[Roger Zhang@workstation ~] > 
```

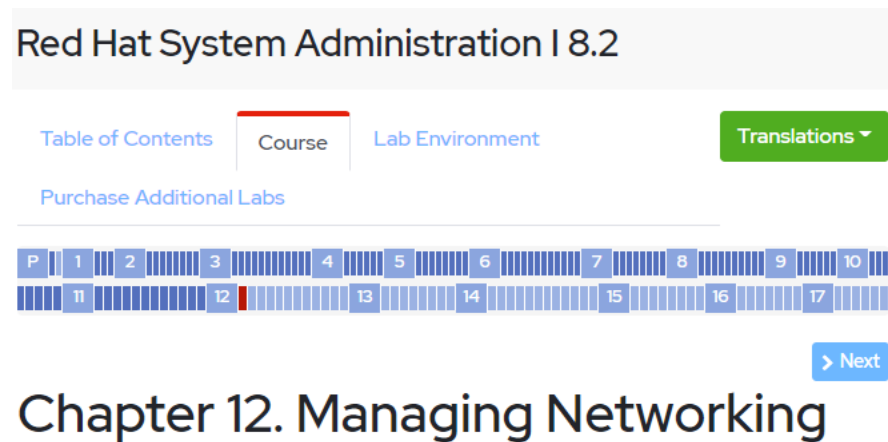
Note: Uses logger, change date etc to do server log maintenance

## Chapter Review

In this chapter, I mainly leant how to deal with logs. The systemd-journald and rsyslog services capture and write log messages to the appropriate files. The /var/log directory contains log files. Periodic rotation of log files prevent them from filling up the file system space. The systemd journals are temporary and do not persist across reboot. The chronyd service helps to synchronize time settings with a time source. The time zone of the server can be updated based on its location.

Figure 16

Screen shot of current progress



## Chapter 12. Managing Networking

Note: currently finished everything before chapter 12.