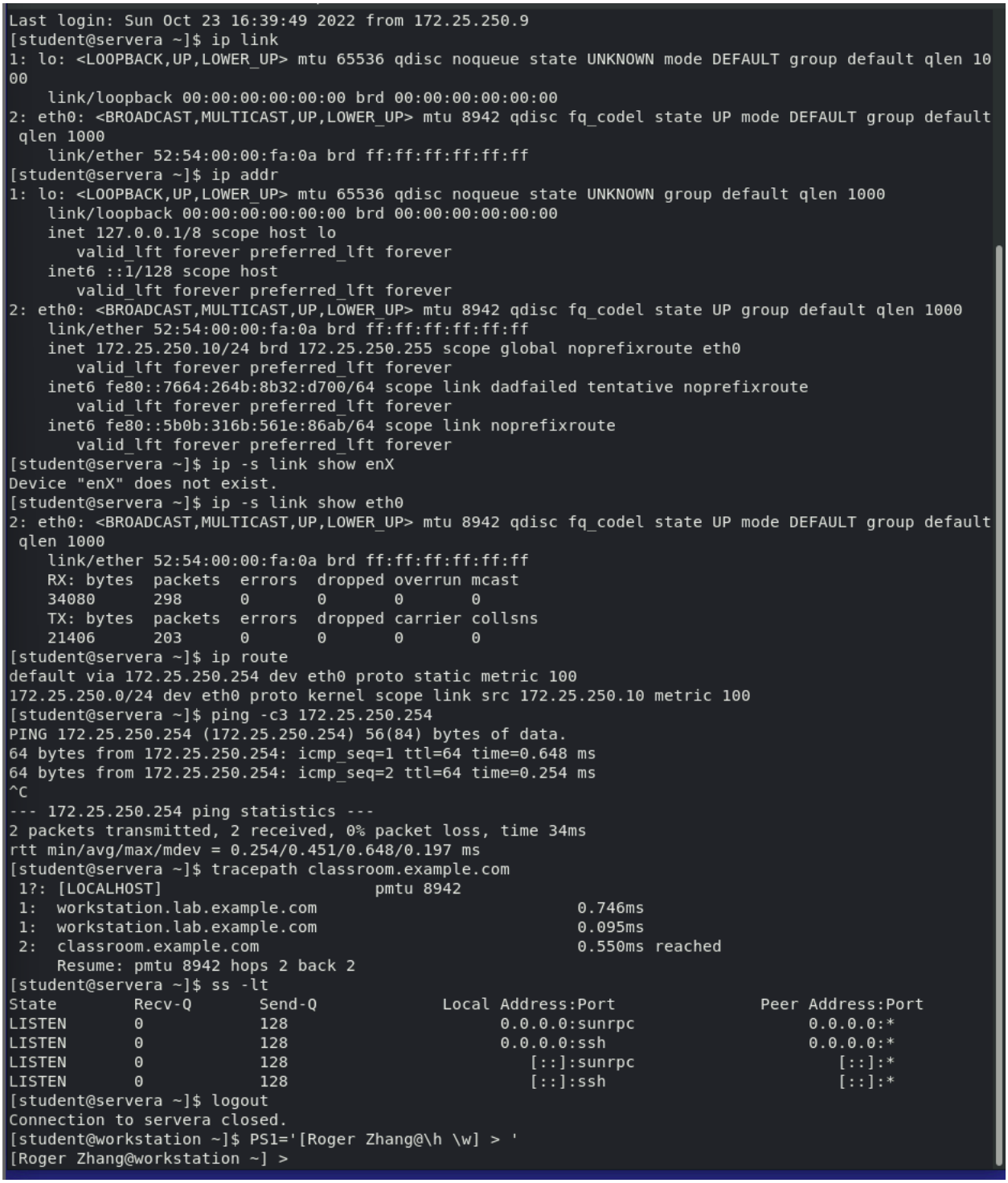
RH124 Report

Ruojia Zhang

Chapter 12

Figure 1

Guided exercise for network validation

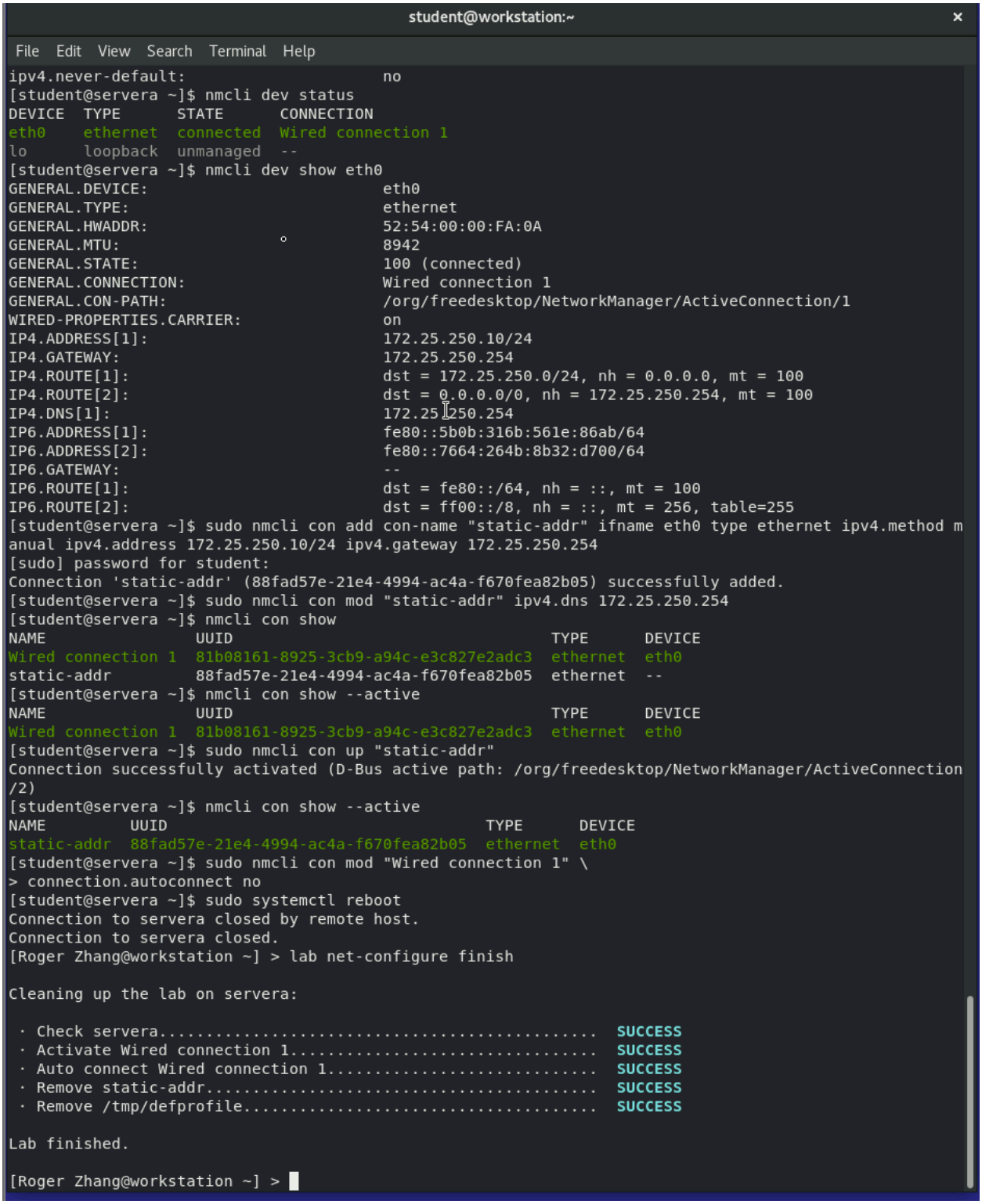


```
Last login: Sun Oct 23 16:39:49 2022 from 172.25.250.9
[student@servera ~]$ ip link
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN mode DEFAULT group default qlen 10
00
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 8942 qdisc fq_codel state UP mode DEFAULT group default
 qlen 1000
    link/ether 52:54:00:00:fa:0a brd ff:ff:ff:ff:ff:ff
[student@servera ~]$ ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 8942 qdisc fq_codel state UP group default qlen 1000
    link/ether 52:54:00:00:fa:0a brd ff:ff:ff:ff:ff:ff
    inet 172.25.250.10/24 brd 172.25.250.255 scope global noprefixroute eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::7664:264b:8b32:d700/64 scope link dadfailed tentative noprefixroute
       valid_lft forever preferred_lft forever
    inet6 fe80::5b0b:316b:561e:86ab/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
[student@servera ~]$ ip -s link show enX
Device "enX" does not exist.
[student@servera ~]$ ip -s link show eth0
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 8942 qdisc fq_codel state UP mode DEFAULT group default
 qlen 1000
    link/ether 52:54:00:00:fa:0a brd ff:ff:ff:ff:ff:ff
    RX: bytes  packets  errors  dropped overrun mcast
    34080      298      0       0       0       0
    TX: bytes  packets  errors  dropped carrier collsns
    21406      203      0       0       0       0
[student@servera ~]$ ip route
default via 172.25.250.254 dev eth0 proto static metric 100
172.25.250.0/24 dev eth0 proto kernel scope link src 172.25.250.10 metric 100
[student@servera ~]$ ping -c3 172.25.250.254
PING 172.25.250.254 (172.25.250.254) 56(84) bytes of data.
64 bytes from 172.25.250.254: icmp_seq=1 ttl=64 time=0.648 ms
64 bytes from 172.25.250.254: icmp_seq=2 ttl=64 time=0.254 ms
^C
--- 172.25.250.254 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 34ms
rtt min/avg/max/mdev = 0.254/0.451/0.648/0.197 ms
[student@servera ~]$ tracepath classroom.example.com
 1?: [LOCALHOST]                      pmtu 8942
 1:  workstation.lab.example.com                           0.746ms
 1:  workstation.lab.example.com                           0.095ms
 2:  classroom.example.com                                 0.550ms reached
     Resume: pmtu 8942 hops 2 back 2
[student@servera ~]$ ss -lt
State        Recv-Q       Send-Q             Local Address:Port               Peer Address:Port
LISTEN       0            128                      0.0.0.0:sunrpc                  0.0.0.0:*
LISTEN       0            128                      0.0.0.0:ssh                     0.0.0.0:*
LISTEN       0            128                         [::]:sunrpc                     [::]:*
LISTEN       0            128                         [::]:ssh                        [::]:*
[student@servera ~]$ logout
Connection to servera closed.
[student@workstation ~]$ PS1='[Roger Zhang@\h \w] > '
[Roger Zhang@workstation ~] >
```

Note: use ip command to view different network interface

Figure 2

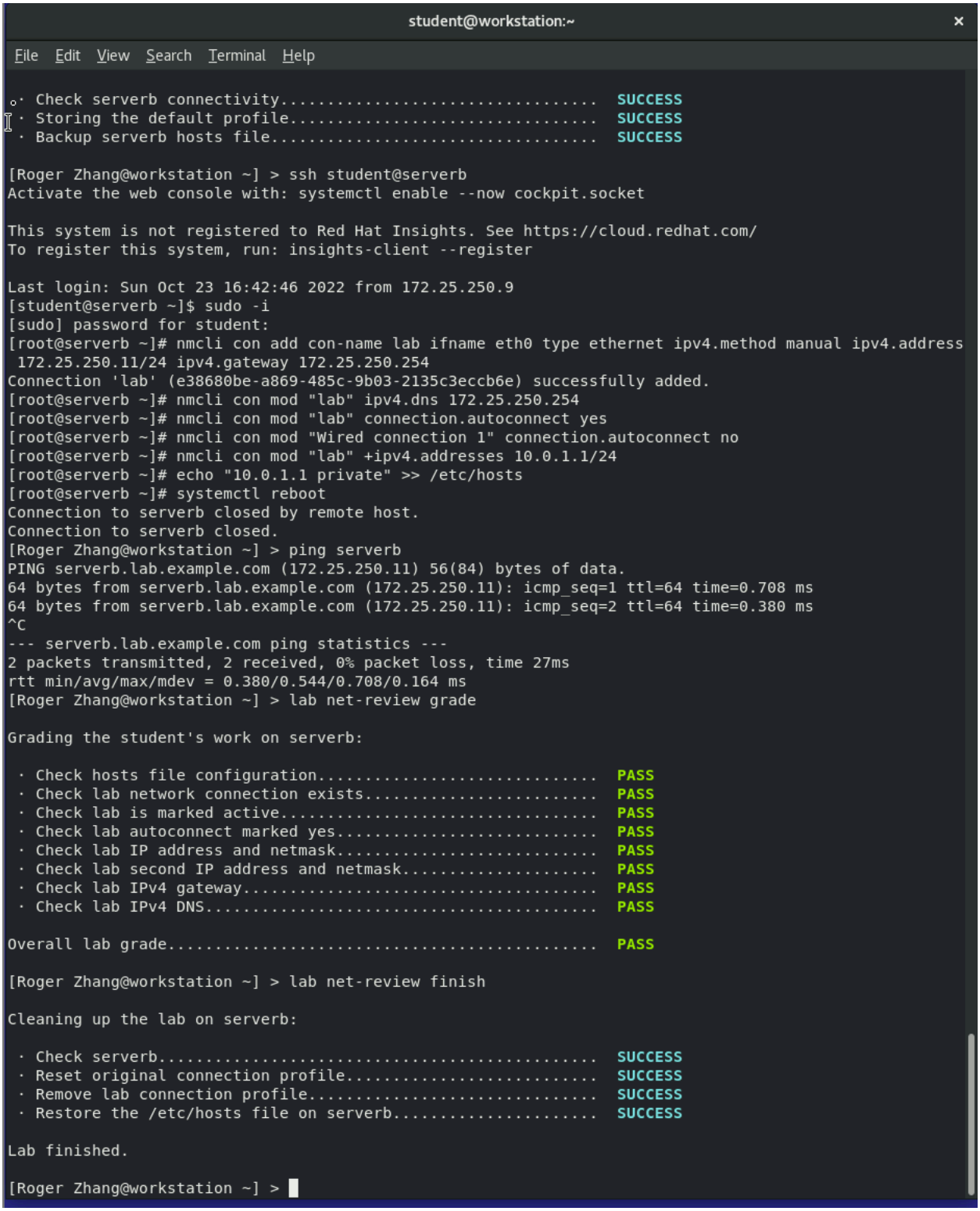
Guided exercise for network configuration



Note: create new network interface and switch to that interface

Figure 3

Finish Network Lab



Note: Create a network interface and add DNS config to it.

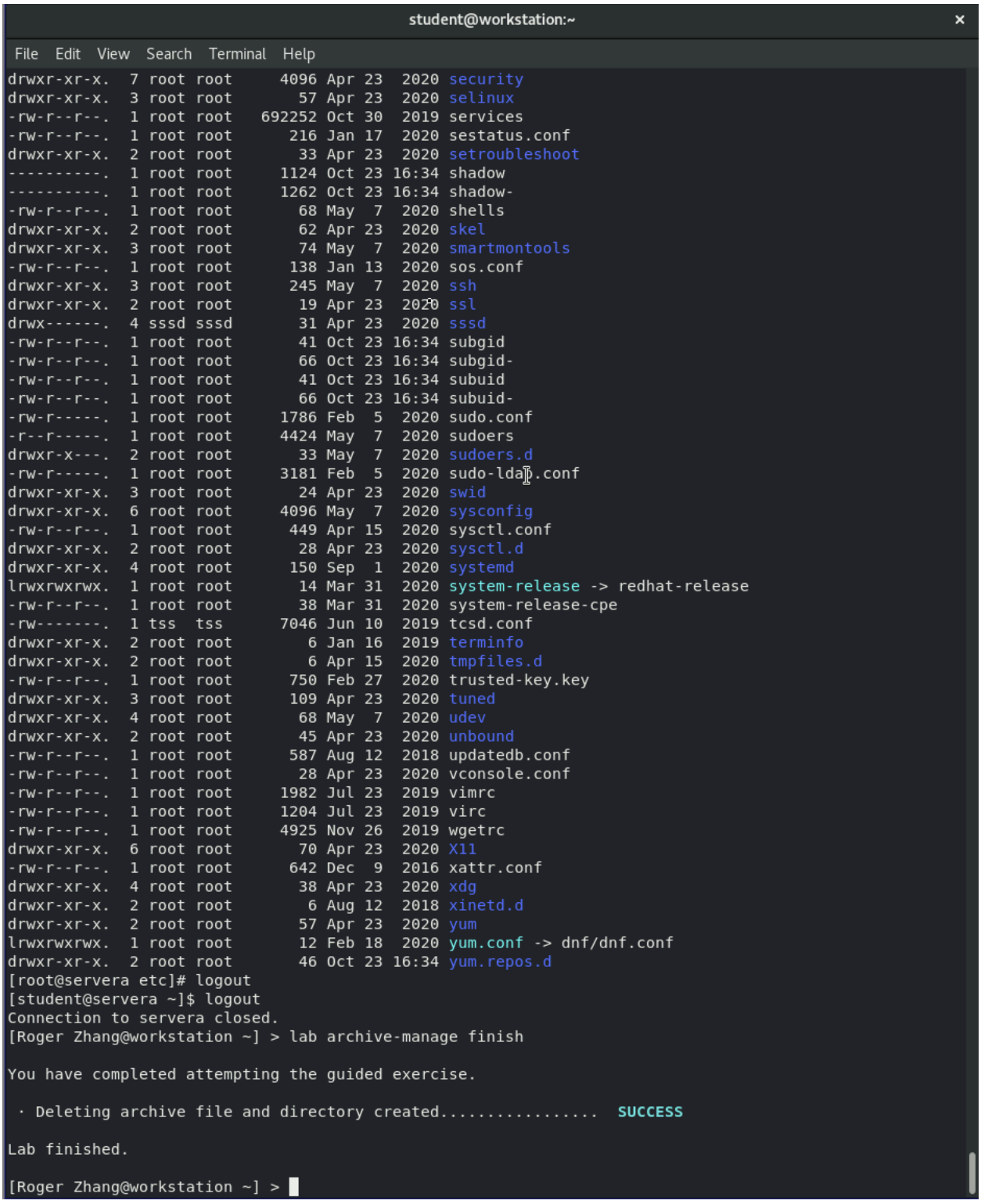
Chapter Review

In this chapter, I learnt the TCP/IP network model is a simplified, four-layered set of abstractions that describes how different protocols interoperate in order for computers to send traffic from one machine to another over the Internet. IPv4 is the primary network protocol used on the Internet today. IPv6 is intended as an eventual replacement for the IPv4 network protocol. By default, Red Hat Enterprise Linux operates in dual-stack mode, using both protocols in parallel. NetworkManager is a daemon that monitors and manages network configuration. The nmcli command is a command-line tool for configuring network settings with NetworkManager.

Chapter 13

Figure 4

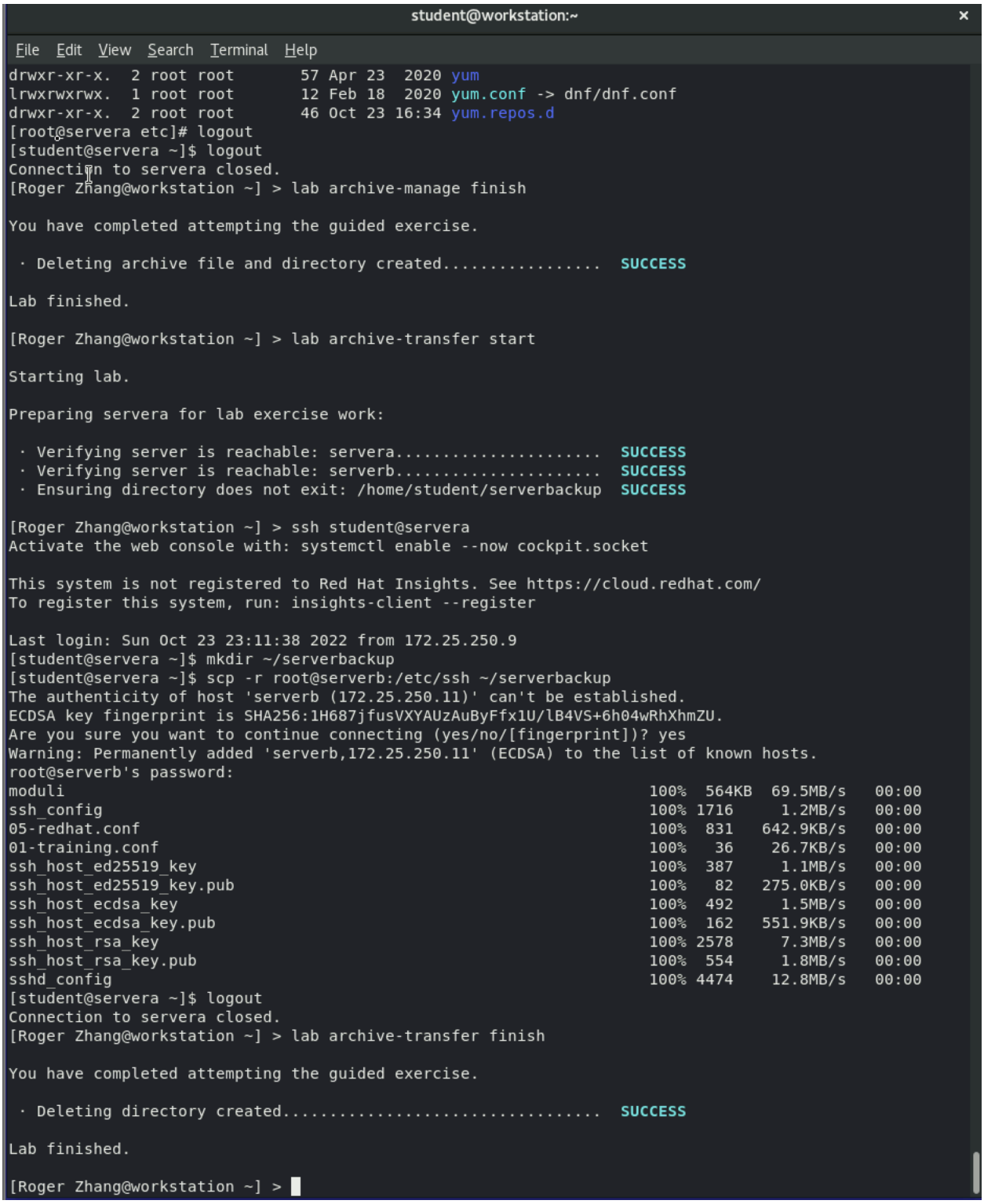
Finishes file archive guided exercise



Note: shows different ways of tar command using.

Figure 5

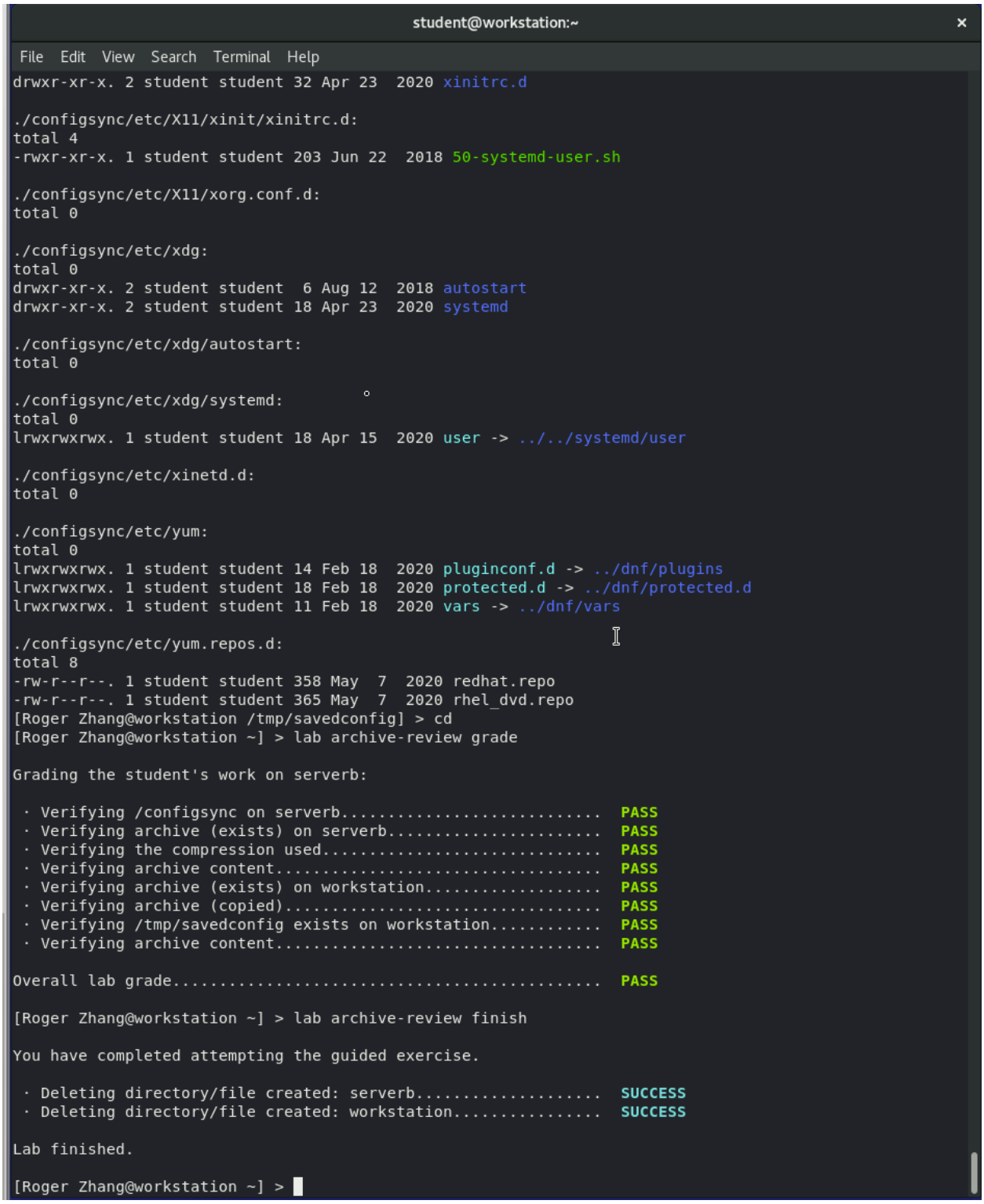
Guided Exercise: Transferring Files Between Systems Securely



Note: Uses scp command to transfer files between servers.

Figure 6

Lab: Archiving and Transferring Files



Note: uses rsync to sync file between server and use tar for archiving.

Figure 7

Guided Exercise: Explaining and Investigating RPM Software Packages

```
/opt/rhcsa-script/mymotd
[student@servera ~]$ rpm -q -p rhcsa-script-1.0.0-1.noarch.rpm --scripts
preinstall scriptlet (using /bin/sh):
if [ "$1" == "2" ]; then
   if [ -e /etc/motd.orig ]; then
     mv -f /etc/motd.orig /etc/motd
   fi
fi
postinstall scriptlet (using /bin/sh):
##############################################################################
# Set up MOTD scripts                                                        #
##############################################################################
cd /etc
# Save the old MOTD if it exists
if [ -e motd ]
then
   cp motd motd.orig
fi
# create the MOTD for the first time
cat /opt/rhcsa-script/mymotd > /etc/motd
postuninstall scriptlet (using /bin/sh):
# Restore the original MOTD if it was backed up
if [ -e /etc/motd.orig ]
then
   mv -f /etc/motd.orig /etc/motd
fi
[student@servera ~]$ rpm2cpio rhcsa-script-1.0.0-1.noarch.rpm | cpio -tv
-rw-r--r--   1 root     root         1056 Mar  6  2019 ./opt/rhcsa-script/mymotd
3 blocks
[student@servera ~]$ rpm2cpio rhcsa-script-1.0.0-1.noarch.rpm | cpio -idv
./opt/rhcsa-script/mymotd
3 blocks
[student@servera ~]$ ls -lR opt
opt:
total 0
drwxrwxr-x. 2 student student 20 Oct 23 23:30 rhcsa-script

opt/rhcsa-script:
total 4
-rw-r--r--. 1 student student 1056 Oct 23 23:30 mymotd
[student@servera ~]$ sudo rpm -ivh rhcsa-script-1.0.0-1.noarch.rpm
[sudo] password for student:
Verifying...                          ################################# [100%]
Preparing...                          ################################# [100%]
Updating / installing...
   1:rhcsa-script-1.0.0-1             ################################# [100%]
[student@servera ~]$ rpm -q rhcsa-script
rhcsa-script-1.0.0-1.noarch
[student@servera ~]$ logout
Connection to servera closed.
[Roger Zhang@workstation ~] > lab software-rpm finish

You have completed attempting the guided exercise.

 · Removing package: rhcsa-script.............................  SUCCESS
 · Removing files: servera....................................  SUCCESS

Lab finished.

[Roger Zhang@workstation ~] >
```

Note: Use rpm to install packet

Figure 8

Guided Exercise: Installing and Updating Software Packages with Yum

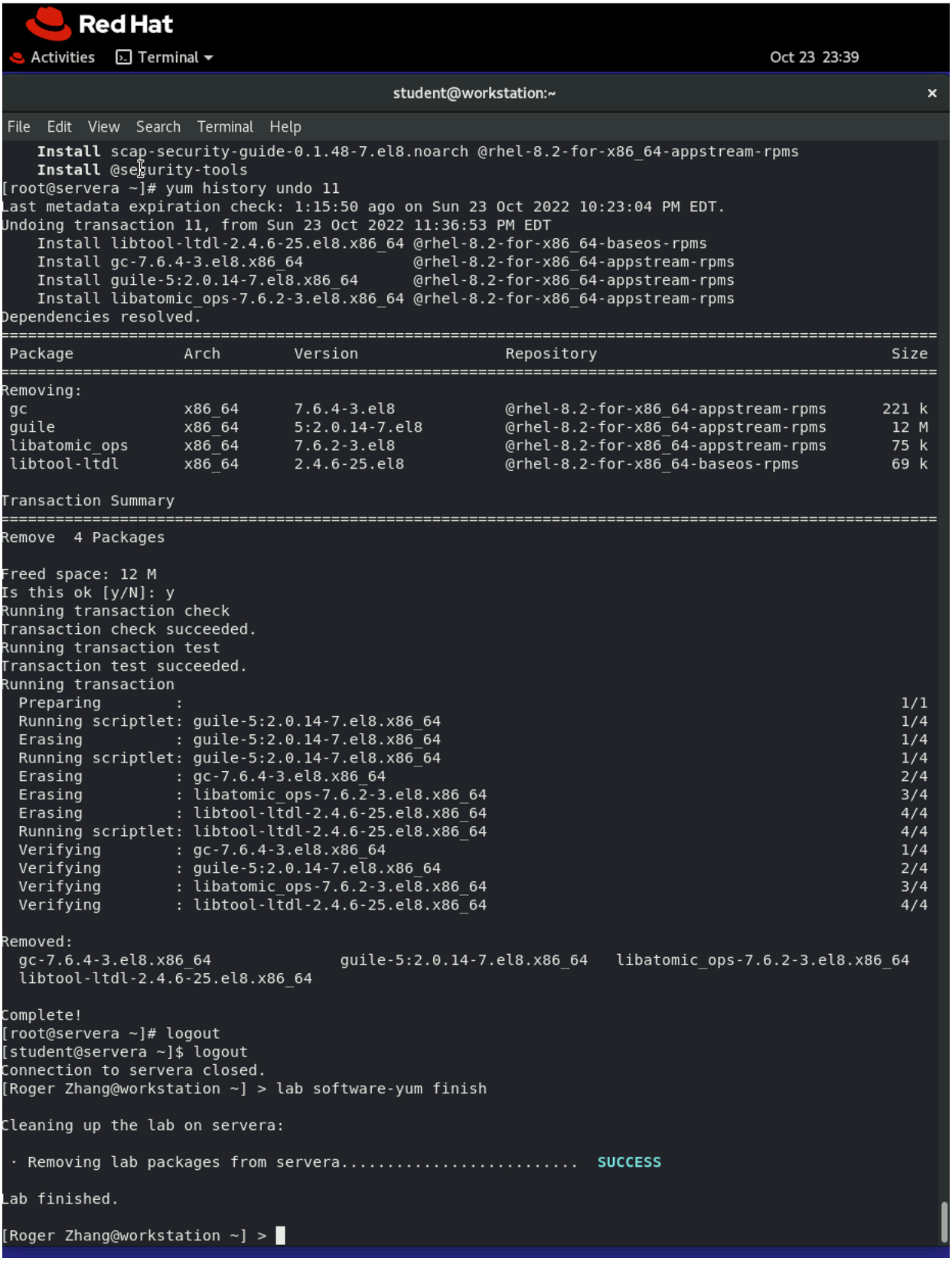
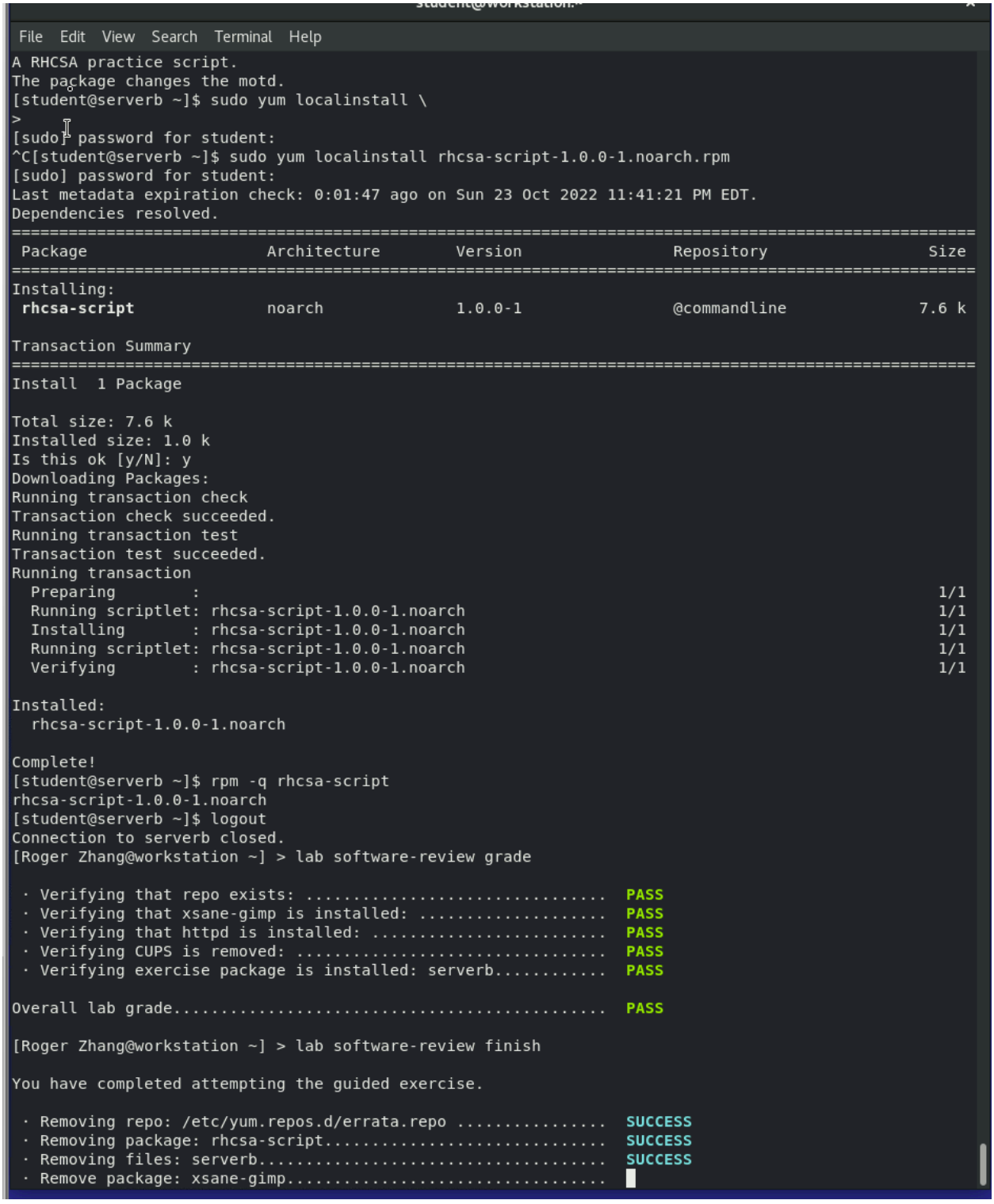

Red Hat
Activities
Terminal
Oct 23 23:39
student@workstation:~
File Edit View Search Terminal Help
Install scap-security-guide-0.1.48-7.el8.noarch @rhel-8.2-for-x86_64-appstream-rpms
Install @security-tools
[root@servera ~]# yum history undo 11
Last metadata expiration check: 1:15:50 ago on Sun 23 Oct 2022 10:23:04 PM EDT.
Undoing transaction 11, from Sun 23 Oct 2022 11:36:53 PM EDT
Install libtool-ltdl-2.4.6-25.el8.x86_64 @rhel-8.2-for-x86_64-baseos-rpms
Install gc-7.6.4-3.el8.x86_64 @rhel-8.2-for-x86_64-appstream-rpms
Install guile-5:2.0.14-7.el8.x86_64 @rhel-8.2-for-x86_64-appstream-rpms
Install libatomic_ops-7.6.2-3.el8.x86_64 @rhel-8.2-for-x86_64-appstream-rpms
Dependencies resolved.
Package Arch Version Repository Size
Removing:
gc x86_64 7.6.4-3.el8 @rhel-8.2-for-x86_64-appstream-rpms 221 k
guile x86_64 5:2.0.14-7.el8 @rhel-8.2-for-x86_64-appstream-rpms 12 M
libatomic_ops x86_64 7.6.2-3.el8 @rhel-8.2-for-x86_64-appstream-rpms 75 k
libtool-ltdl x86_64 2.4.6-25.el8 @rhel-8.2-for-x86_64-baseos-rpms 69 k
Transaction Summary
Remove 4 Packages
Freed space: 12 M
Is this ok [y/N]: y
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : 1/1
Running scriptlet: guile-5:2.0.14-7.el8.x86_64 1/4
Erasing : guile-5:2.0.14-7.el8.x86_64 1/4
Running scriptlet: guile-5:2.0.14-7.el8.x86_64 1/4
Erasing : gc-7.6.4-3.el8.x86_64 2/4
Erasing : libatomic_ops-7.6.2-3.el8.x86_64 3/4
Erasing : libtool-ltdl-2.4.6-25.el8.x86_64 4/4
Running scriptlet: libtool-ltdl-2.4.6-25.el8.x86_64 4/4
Verifying : gc-7.6.4-3.el8.x86_64 1/4
Verifying : guile-5:2.0.14-7.el8.x86_64 2/4
Verifying : libatomic_ops-7.6.2-3.el8.x86_64 3/4
Verifying : libtool-ltdl-2.4.6-25.el8.x86_64 4/4
Removed:
gc-7.6.4-3.el8.x86_64 guile-5:2.0.14-7.el8.x86_64 libatomic_ops-7.6.2-3.el8.x86_64
libtool-ltdl-2.4.6-25.el8.x86_64
Complete!
[root@servera ~]# logout
[student@servera ~]$ logout
Connection to servera closed.
[Roger Zhang@workstation ~] > lab software-yum finish
Cleaning up the lab on servera:
· Removing lab packages from servera..... SUCCESS
Lab finished.
[Roger Zhang@workstation ~] >

Figure 9

Lab: Installing and Updating Software Packages



Note: modify repo and install using rpm and yum.

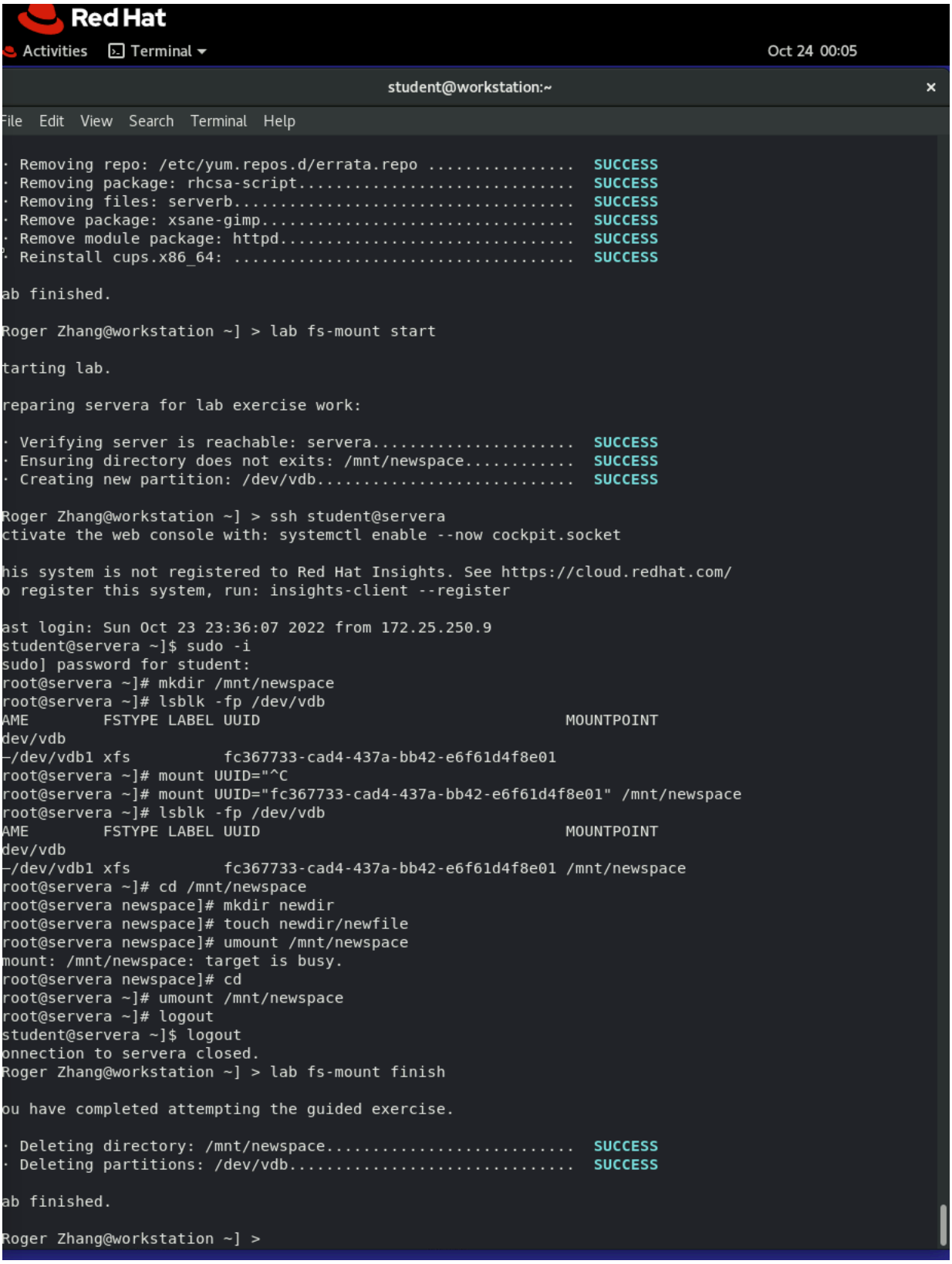
Chapter Review

In this chapter, I learned: Red Hat Subscription Management provides tools to entitle machines to product subscriptions, get updates to software packages, and track information about support contracts and subscriptions used by the systems. Software is provided as RPM packages, which make it easy to install, upgrade, and uninstall software from the system. The rpm command can be used to query a local database to provide information about the contents of installed packages and install downloaded package files. yum is a powerful command-line tool that can be used to install, update, remove, and query software packages. Red Hat Enterprise Linux 8 uses Application Streams to provide a single repository to host multiple versions of an application's packages and its dependencies.

Chapter 15

Figure 10

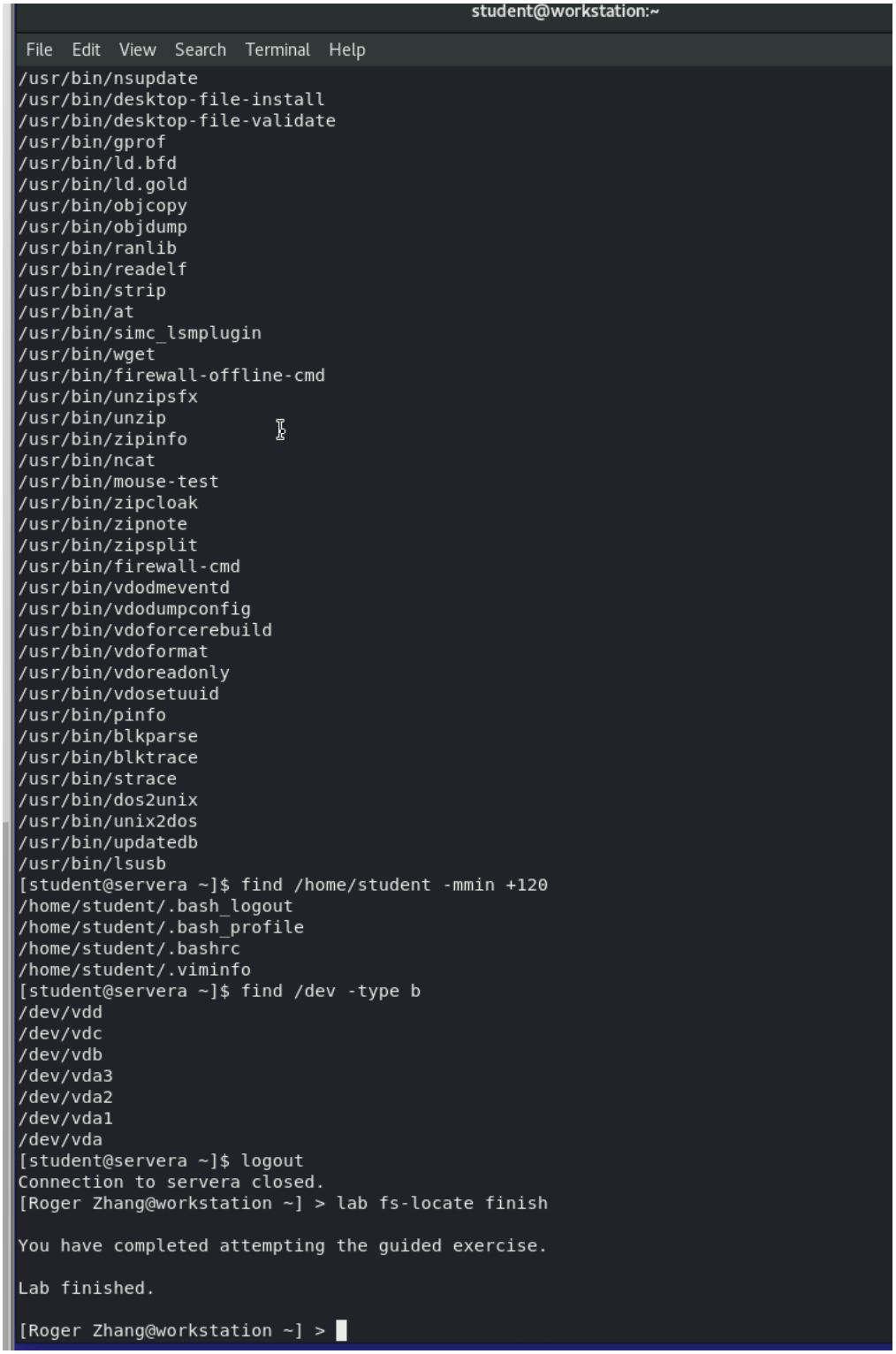
Guided Exercise: Mounting and Unmounting File Systems



Note: Use mount to mount virtual block device and umount afterwards

Figure 11

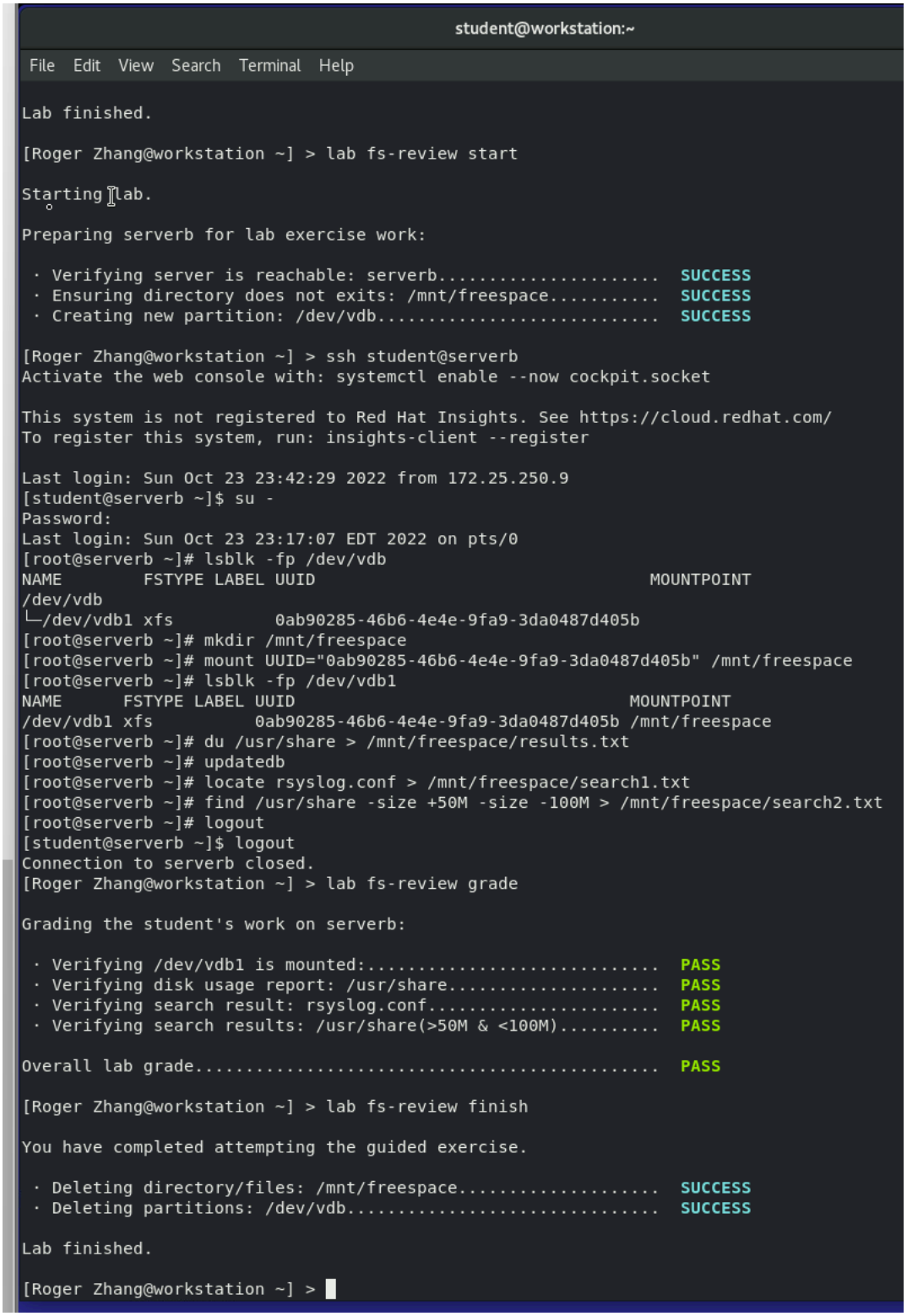
Guided Exercise: Locating Files on the System



Note: Use find and locate to perform various file finding procedures.

Figure 12

Lab: Accessing Linux File Systems



Note: Use du,lsblk, mount to mount , find files.

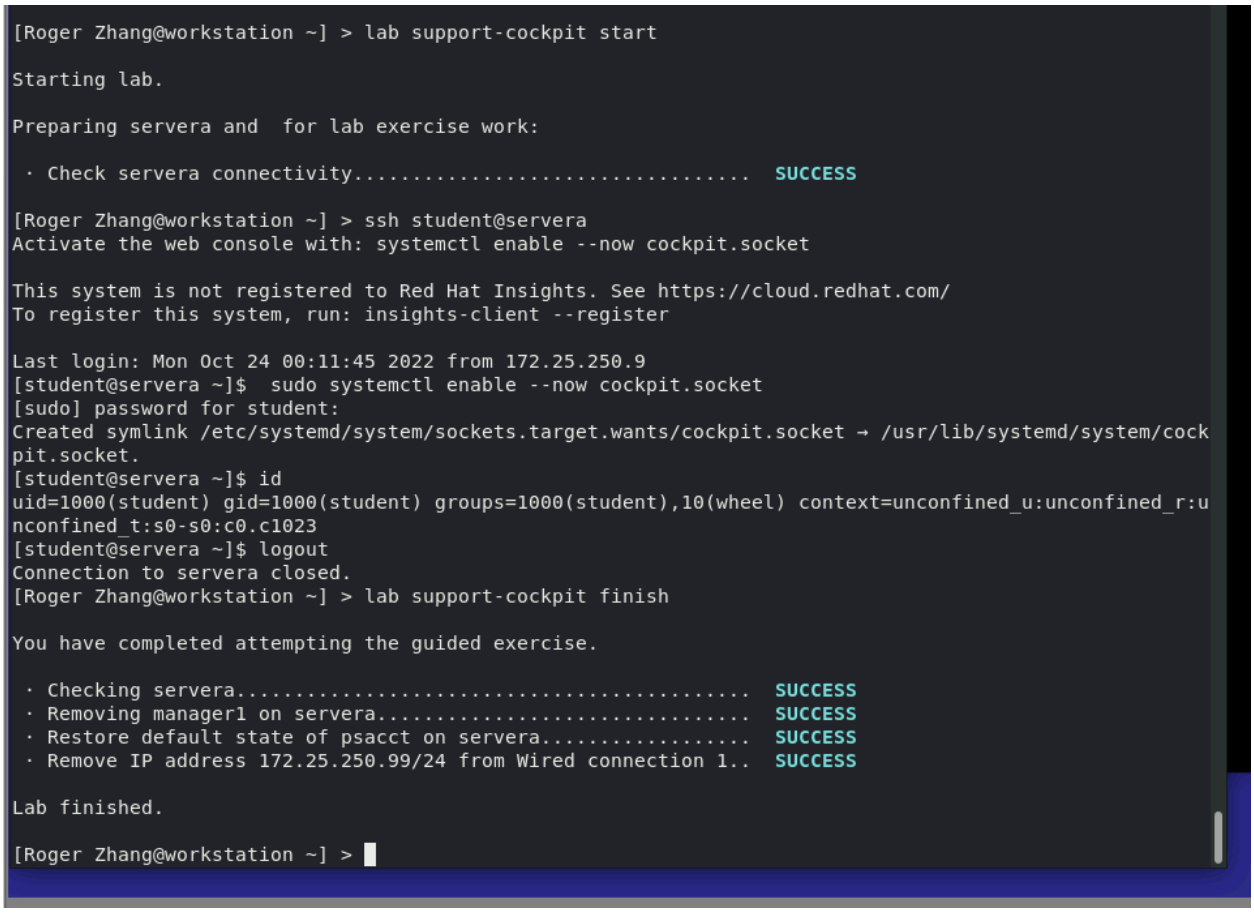
Chapter Review

In this chapter, I learned: Storage devices are represented by a special file type called block device. The df command reports total disk space, used disk space, and free disk space on all mounted regular file systems. The mount command allows the root user to manually mount a file system. All processes need to stop accessing the mount point in order to successfully unmount the device. The removable storage devices are mounted in the /run/media directory when using the graphical environment. The find command performs a real-time search in the local file systems to find files based on search criteria.

Chapter 16

Figure 13

Guided Exercise: Analyzing and Managing Remote Servers



Note: This exercise uses the web gui for fixing linux related issue.

Chapter review

In this chapter, I learned: Web Console is a web-based management interface to your server based on the open source Cockpit service. Web Console provides graphs of system performance, graphical tools

to manage system configuration and inspect logs, and an interactive terminal interfaces. Red Hat Customer Portal provides you with access to documentation, downloads, optimization tools, support case management, and subscription and entitlement management for your Red Hat products. redhat-support-tool is a command-line tool to query Knowledgebase and work with support cases from the server's command line. Red Hat Insights is a SaaS-based predictive analytics tool to help me identify and remediate threats to my systems' security, performance, availability, and stability.

Chapter 17

Figure 14

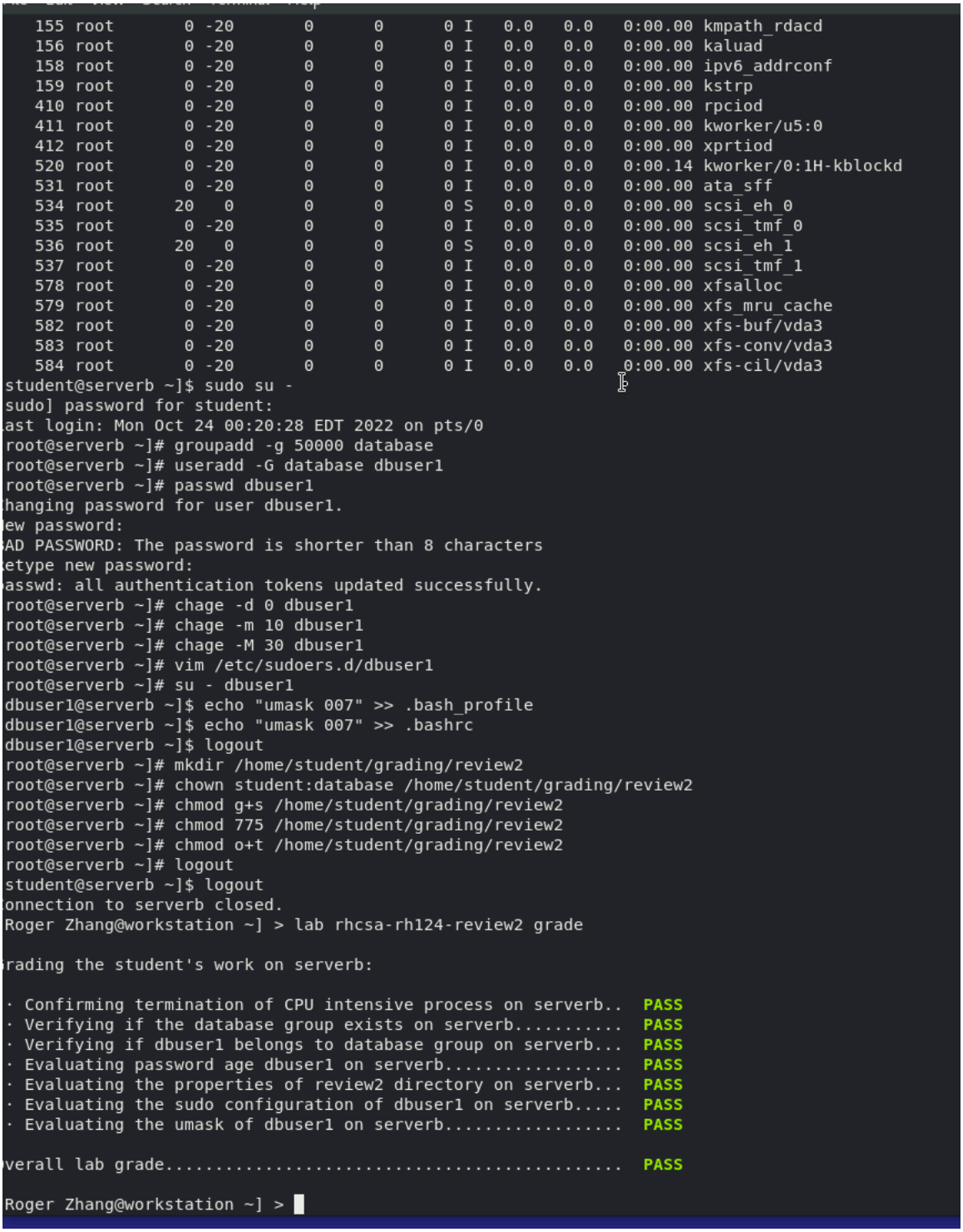
Lab: Managing Files from the Command Line

```
Starting lab.

Preparing serverb for lab exercise work:

 · Creating /home/student/bin/manage-files on serverb.........  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: Mon Oct 24 00:20:17 2022 from 172.25.250.9
[student@serverb ~]$ mkdir grading
[student@serverb ~]$ touch grading/grade{1,2,3}
[student@serverb ~]$ head -5 bin/manage-files > grading/manage-files.txt
[student@serverb ~]$ tail -3 bin/manage-files >> grading/manage-files.txt
[student@serverb ~]$ cd grading/
[student@serverb grading]$ cp manage-files.txt manage-files-copy.txt
[student@serverb grading]$ cd
[student@serverb ~]$ vim grading/manage-files-copy.txt
[student@serverb ~]$ vim grading/manage-files-copy.txt
[student@serverb ~]$ vim grading/manage-files-copy.txt
[student@serverb ~]$ ln grading/grade1 hardlink
[student@serverb ~]$ ln -s grading/grade2 softlink
[student@serverb ~]$ ls -l /boot > grading/longlisting.txt
[student@serverb ~]$ logout
Connection to serverb closed.
[Roger Zhang@workstation ~] > lab rhcsa-rh124-review1 grade

Grading the student's work on serverb:

 · Verifying original files on serverb.........................  PASS
 · Verifying if /home/student/grading exists on serverb........  PASS
 · Verifying if the empty files exist on serverb..............  PASS
 · Evaluating the hard link on serverb.........................  PASS
 · Evaluating the soft link on serverb.........................  PASS
 · Evaluating the longlisting.txt file on serverb..............  PASS
 · Evaluating the manage-files-copy.txt on serverb.............  PASS

Overall lab grade.............................................  PASS

[Roger Zhang@workstation ~] > lab rhcsa-rh124-review1 finish

Completing the lab on serverb:

 · Ensuring that the required environment is clean on serverb..  SUCCESS
 · Deleting md5sum.txt from serverb............................  SUCCESS
 · Deleting /home/student/bin recursively from serverb.........  SUCCESS
 · Deleting links from serverb................................
```

Note: Uses vim, ln , mkdir to perform several file operations

Figure 15

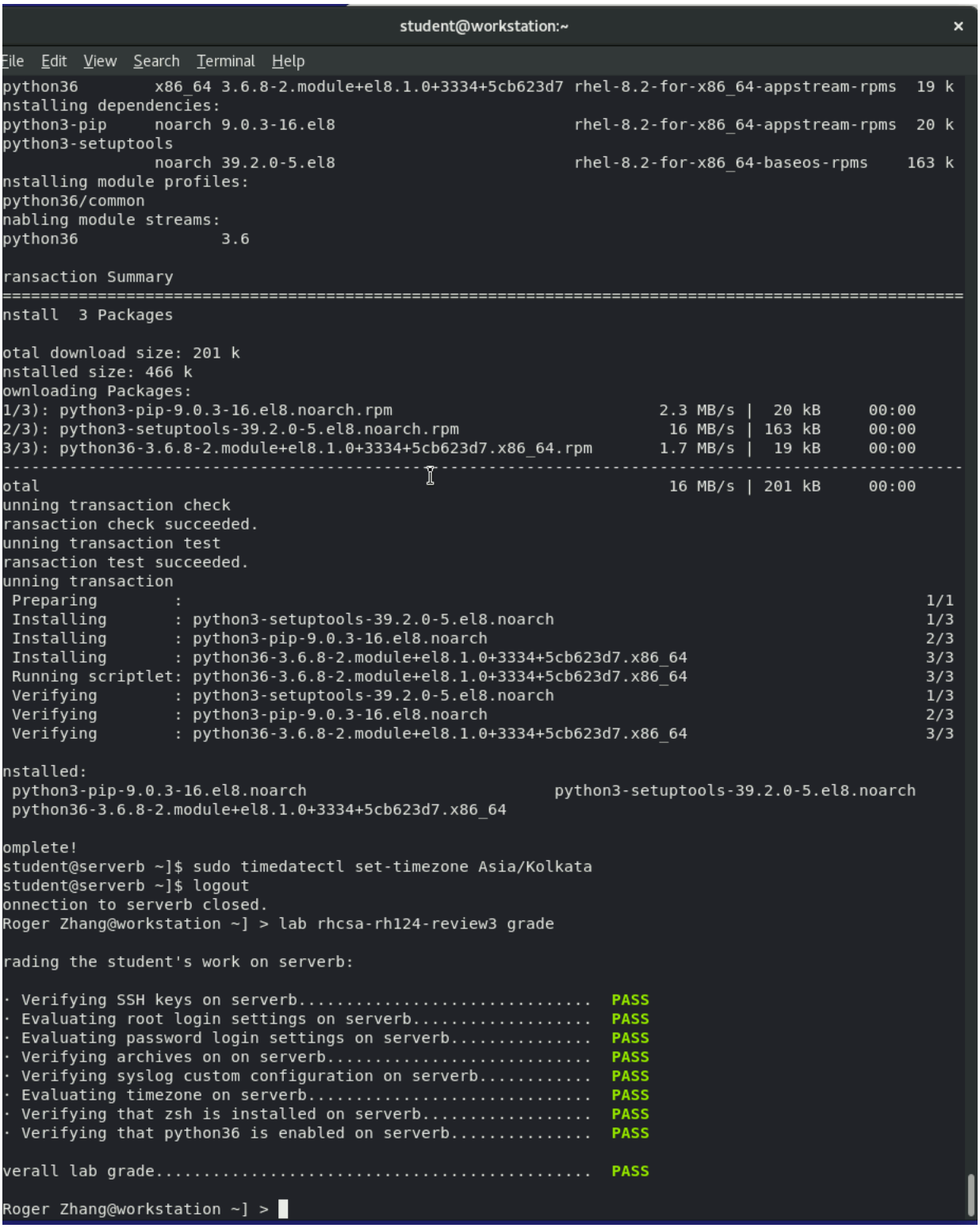
Lab: Managing Users and Groups, Permissions and Processes



Note: use top to find cpu consuming process and kill. Add user to sudoer file.

Figure 16

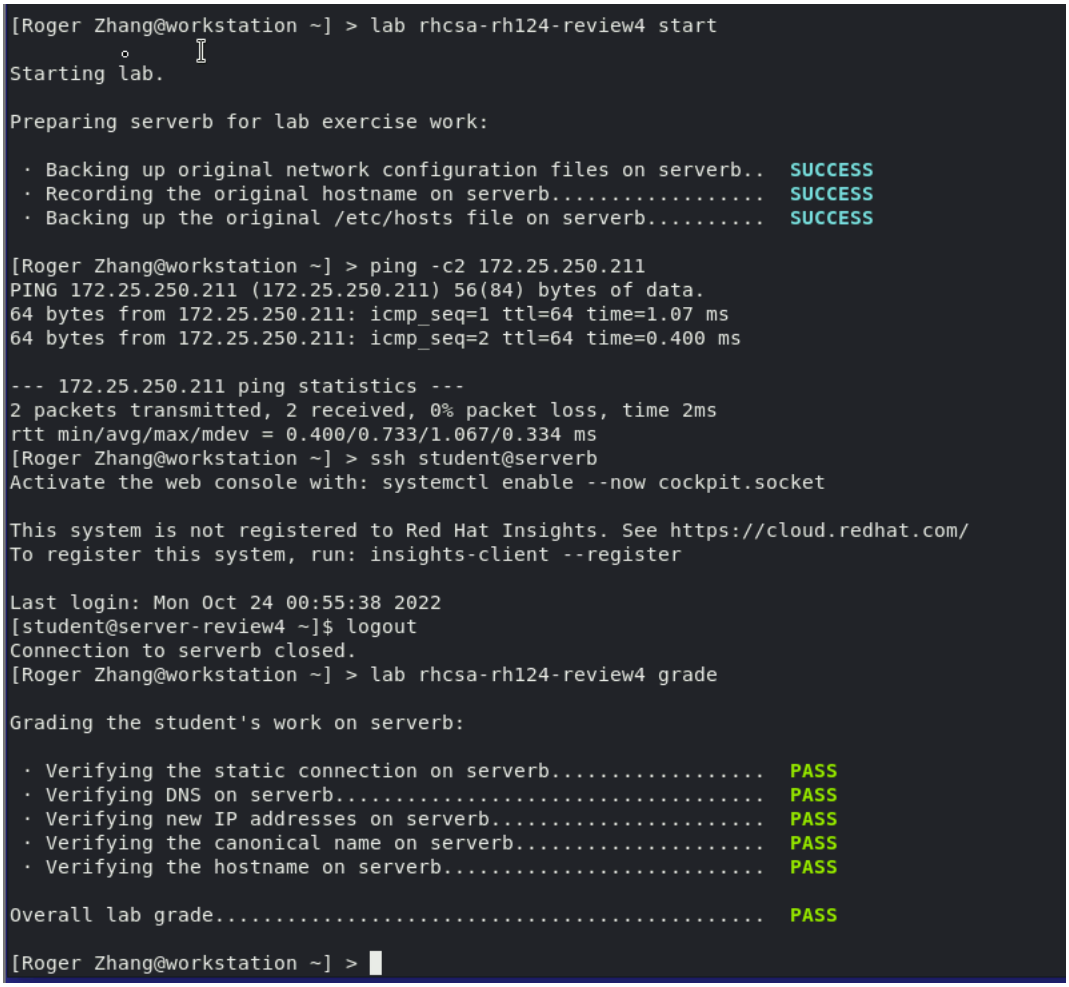
Lab: Configuring and Managing a Server



Note: Uses scp, tar to archive files. Change ssh config and reload sshd. Use yum to install packages.

Figure 17:

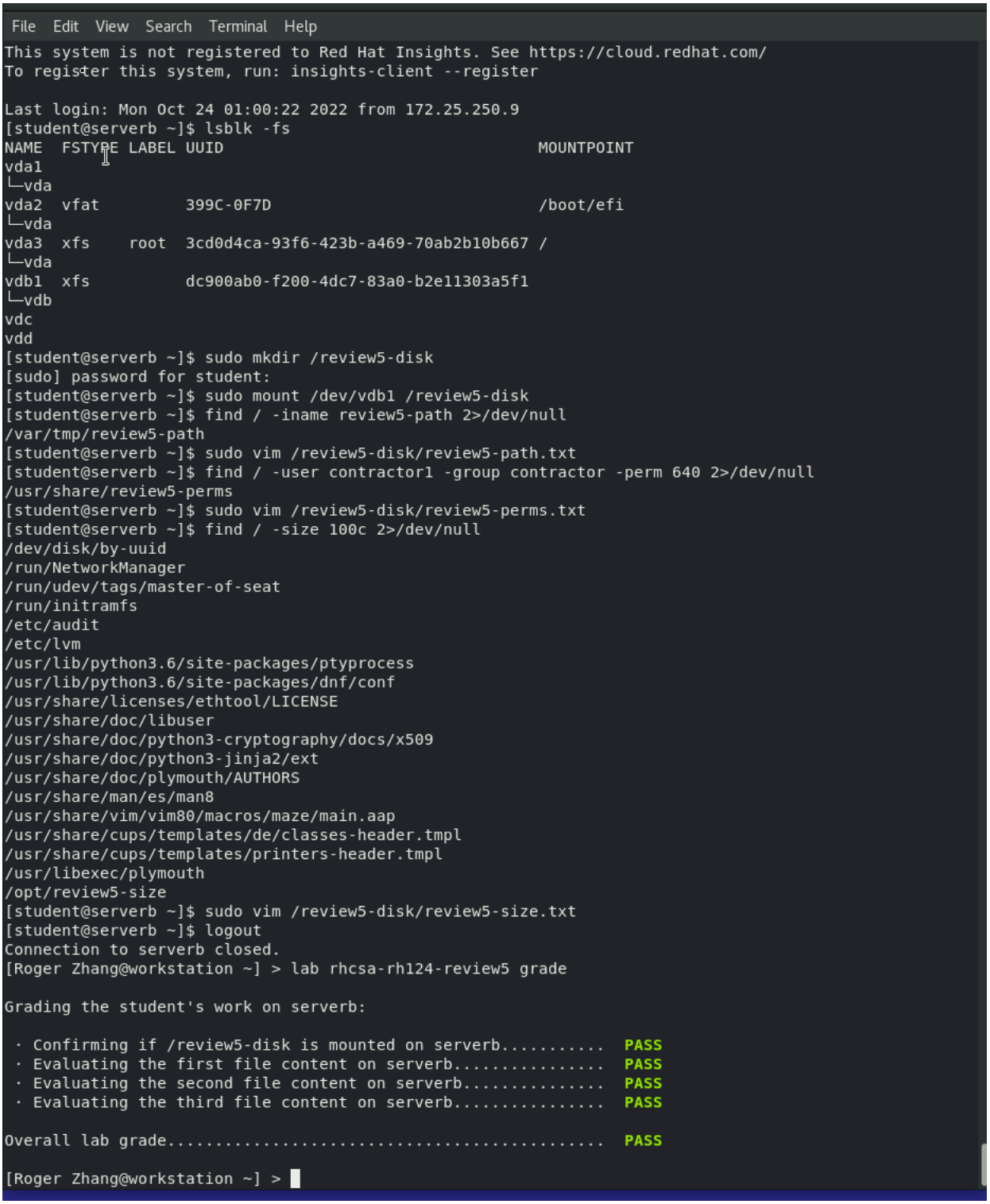
Lab: Managing Networks



Note: Uses command line interface to setup network configurations and connect to the server.

Figure 18

Lab: Mounting Filesystems and Finding Files



Note: mount filesystem and use find to search for files that are 100 bytes in size.

Chapter Review

CERTIFICATE OF ATTENDANCE

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NAME

George Washington University

SCHOOL/UNIVERSITY

Red Hat System Administration I **(RH124)**

COURSE

2022年10月24日

DATE

KEN GOETZ
Vice president, Global Training Services at Red Hat

Red Hat Training and Certification