Labs

During the Red Hat exams, the tasks will be presented electronically. Therefore, this book presents most of the labs electronically as well. For more information, see the "Lab Questions" section toward the end of Chapter 5.

For Lab 4, you'll need to execute a script from the Chapter5/ directory of the DVD included with the book on the server1.example.com test system. The following steps assume the system is on a KVM-based virtual machine. Don't look at the contents of the copied scripts or files, or the files in the /root/backup directory, until the lab is complete. The following are steps common to those in the first four labs.

1. Open the KVM Virtual Machine Manager from a GUI command line with the **virt-manager** command.

2. Connect to the **localhost (QEMU)** system.

3. Double-click the virtual machine with the server1.example.com system. In the window that appears, click View | Details.

4. Insert the DVD for the book. Use the options that appear to connect the CD/DVD drive to the virtual machine. Return to the console for the virtual machine by clicking View | Console.

5. Boot the server1.example.com system. Mount the book's DVD with the **mount /dev/cdrom /media** command.

6. Log in to the root administrative account.

7. Make sure you're in the /root directory with the **cd /root** command. Copy the noted scripts (and associated test files) from the DVD to the root user's home directory with the **cp /media/Chapter5/Ch5Lab* ~** command.

8. These labs should work even if the /root/backup directory exists, though you'll see an error message if it does.

9. Make sure the scripts are executable; run the **chmod +x Ch5Lab?** command.

Lab 1

This lab is focused on targets and the boot process. You'll boot a system into the emergency target, with a full display of all boot messages. You'll then set up the system to boot into the multi-user target by default.

1. On what part of the boot hard drive is the first stage of the GRUB 2 bootloader typically located?

2. Power up the local system. During the boot process, when you see the following message (the operating system name and version number may vary), press a key:

```
The selected entry will be started automatically in 5 seconds....
```

3. Press E to edit the current menu entry.

4. Scroll down to locate the line starting with **linux16**.

5. What do you need to change and add to that command line to boot into the emergency target?

6. Make the required changes and then proceed with booting into the emergency target.

7. Reboot the system into the graphical target. What's the default target?

8. Change the /etc/systemd/system/default.target symbolic link so that the system boots normally into the multi-user target.

9. Reboot the system. How do you confirm that the changes worked?

10. Restore the original default target.

Lab 2

In this lab you'll change the root administrative password. But here's a twist: assume that you don't know the current version of that password. What do you do?

Lab 3

In this lab, you'll set the timeout of GRUB 2 to 10 seconds. Before getting started, it's best to back up the file. For example, the following command backs up the file to the root user's home directory (/root):

```
# cp /boot/grub2/grub.cfg ~
```

As a bonus task, change the configuration of GRUB 2 to enable verbose boot messages at boot. To prove the result, reboot the system.

Lab 4

Be careful with this lab. The steps may render this system unbootable, unless you understand the skills described in this chapter. There's always the risk that key configuration files will not be properly backed up, which means there's a risk of losing all data on the system. If you understand these risks, proceed with this lab.

This lab is based on the Ch5Lab4 script described earlier. If you followed the instructions at the beginning of this section, the script should be available in your /root directory. Navigate to that directory and take the following steps:

1. Log in to the root account. If you're not already there, navigate to the /root directory. Execute the script for this lab with the **./Ch5Lab4** command.

2. Reboot the system.

3. When you see the **grub>** prompt, use the skills described in this chapter to identify the drive and partition with the /boot directory.

4. Where applicable, take advantage of the command completion features at the **grub>** prompt. That's especially useful with the **linux /** and **initrd /** commands.

5. Remember that the top-level root directory is specified by the **root** directive with the **kernel** command.

6. Don't forget to import the LVM module.

7. After entering the location of the initial RAM disk, run the **boot** command at the **grub>** prompt.

8. If your efforts are successful, the system will boot normally. In the "Lab Answers" section, you'll see how to restore the backed-up GRUB 2 configuration file.

9. If your efforts are not successful, boot the system from the installation DVD or the network boot CD and select Troubleshooting, as described in the main body of the chapter.

Lab 5

This lab is focused on active terminals. Normally, Linux includes six active terminals. If a GUI is installed and active with a graphical display manager, that system is run in place of the first active terminal. To review, you can switch between active terminals with the ALT key and the function key associated with a terminal number, such as ALT-F1. If you're in the GUI, you'll need to add the CTRL key to the combination.

1. Back up the current versions of the /etc/systemd/logind.conf configuration file. A logical location is the current user's home directory. If you make a serious mistake, you'll be able to restore the system from the backup. In the worst case, you'll be able to restore these files from backup by booting into the rescue or emergency target, as described in Lab 1 and in the body of the chapter.

2. Now limit the active consoles to terminals 1 and 2.

3. If successful, you'll be able to access only those two terminals on the local system. Can you restore the original configuration?