CompTIA Linux+

Find System Files and Place Files in the Correct Location

Introduction

Welcome to the **Find System Files and Place Files in the Correct Location** Practice Lab. In this module you will be provided with the instructions and devices needed to develop your hands-on skills.

FHS
Location
Linux System

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 - Find Files and Commands on a Linux System

After completing this lab, you will be able to:

- Locations of files under the FHS
- Find files and commands on a Linux system

Exam Objectives

The following exam objectives are covered in this lab:

- **LPI:** 104.7 Find system files and place files in the correct location
- **LPI:** 110.1 Perform security administration tasks

- **CompTIA:** 2.3 Given a scenario, create, modify, and redirect files.

Note: *Our main focus is to cover the practical, hands-on aspects of the exam objectives. We recommend referring to course material or a search engine to research theoretical topics in more detail.*

Lab Duration

It will take approximately **1 hour** to complete this lab.

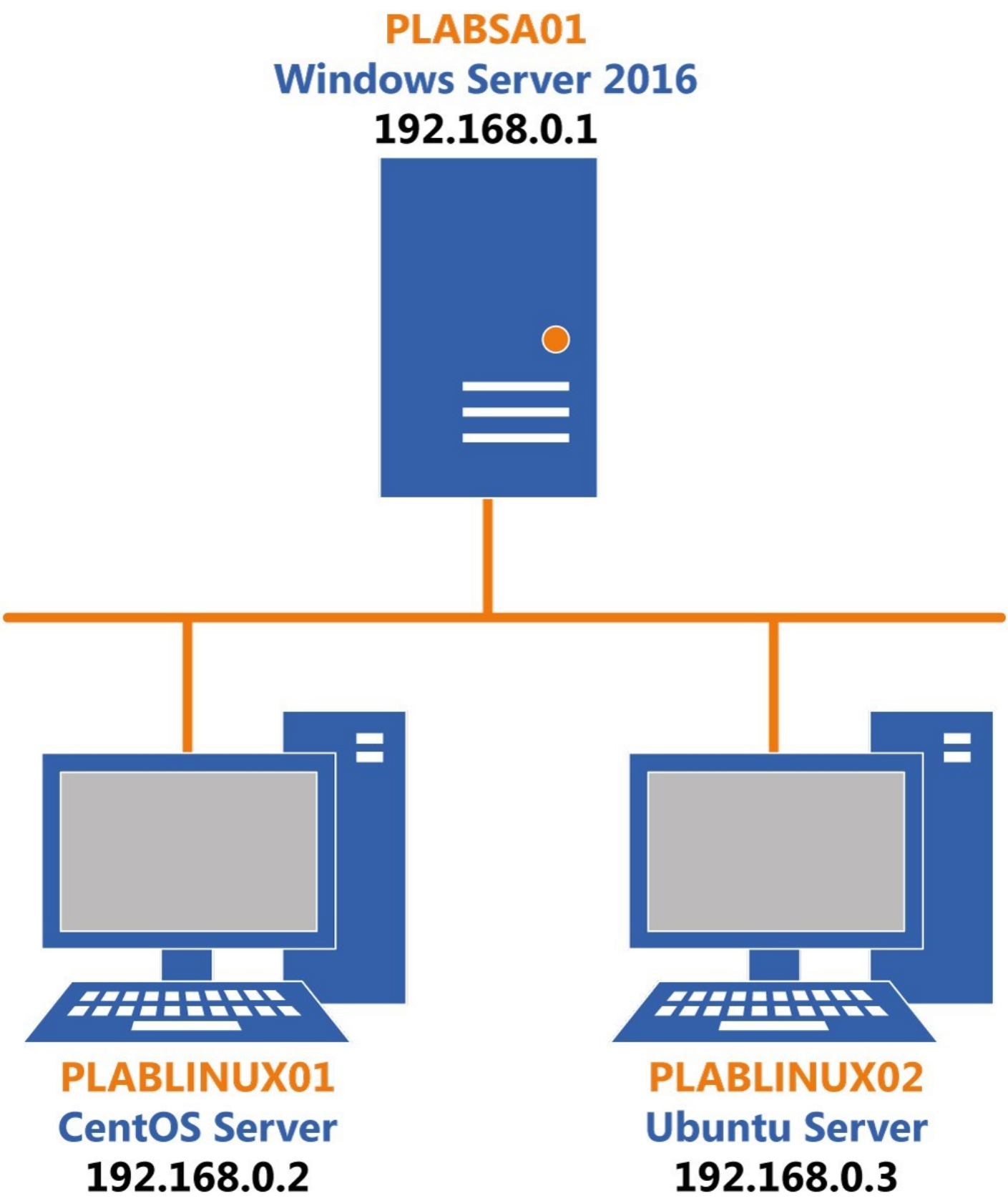
Help and Support

For more information on using Practice Labs, please see our **Help and Support** page. You can also raise a technical support ticket from this page.

Click Next to view the Lab topology used in this module.

Lab Topology

During your session, you will have access to the following lab configuration.



Depending on the exercises you may or may not use all of the devices, but they are shown here in the layout to get an overall understanding of the topology of the lab.

- **PLABSA01** (Windows Server 2016)
- **PLABLINUX01** (CentOS Server)
- **PLABLINUX02** (Ubuntu Server)

Click Next to proceed to the first exercise.

Exercise 1 - Find Files and Commands on a Linux System

Files and directories are placed in general places across different Linux distributions. However, for a Linux distribution that is FHS compliant, a user can very well predict the common locations for specific directories, such as **/etc** and **/var**. The Filesystem Hierarchy Standard or FHS specification specifies the file and directory layout in a Linux system.

In this exercise, you will understand how to find files and commands on the Linux system.

Learning Outcomes

After completing this exercise, you will be able to:

- Log into a Linux System
- Locations of files under the FHS
- Find files and commands on a Linux system

Your Devices

You will be using the following device in this lab. Please power these on now.

- **PLABLINUX01** (CentOS Server)

Task 1 - Locations of Files Under FHS

FHS can have two different types of directories and files:

- **Shareable and unshareable:** Shareable files can be located on one Linux system and shared with another Linux system. The **/usr** and **/opt** directories and files are an example of this. On the other hand, unshareable files cannot be shared across systems. The **/etc** and **/boot** directories and files are an example of this.
- **Static vs. variable:** Static files are the ones controlled by the administrator. An example of a static file is the **/root** directory. On the other hand, variable files can be changed by users as well as the system processes. **Logs** and **spool** files are the examples.

In this task, you will list the files included in these directories. To understand the correct locations of files under the FHS, perform the following steps:

Step 1

On the desktop, right-click and select **Open Terminal**.

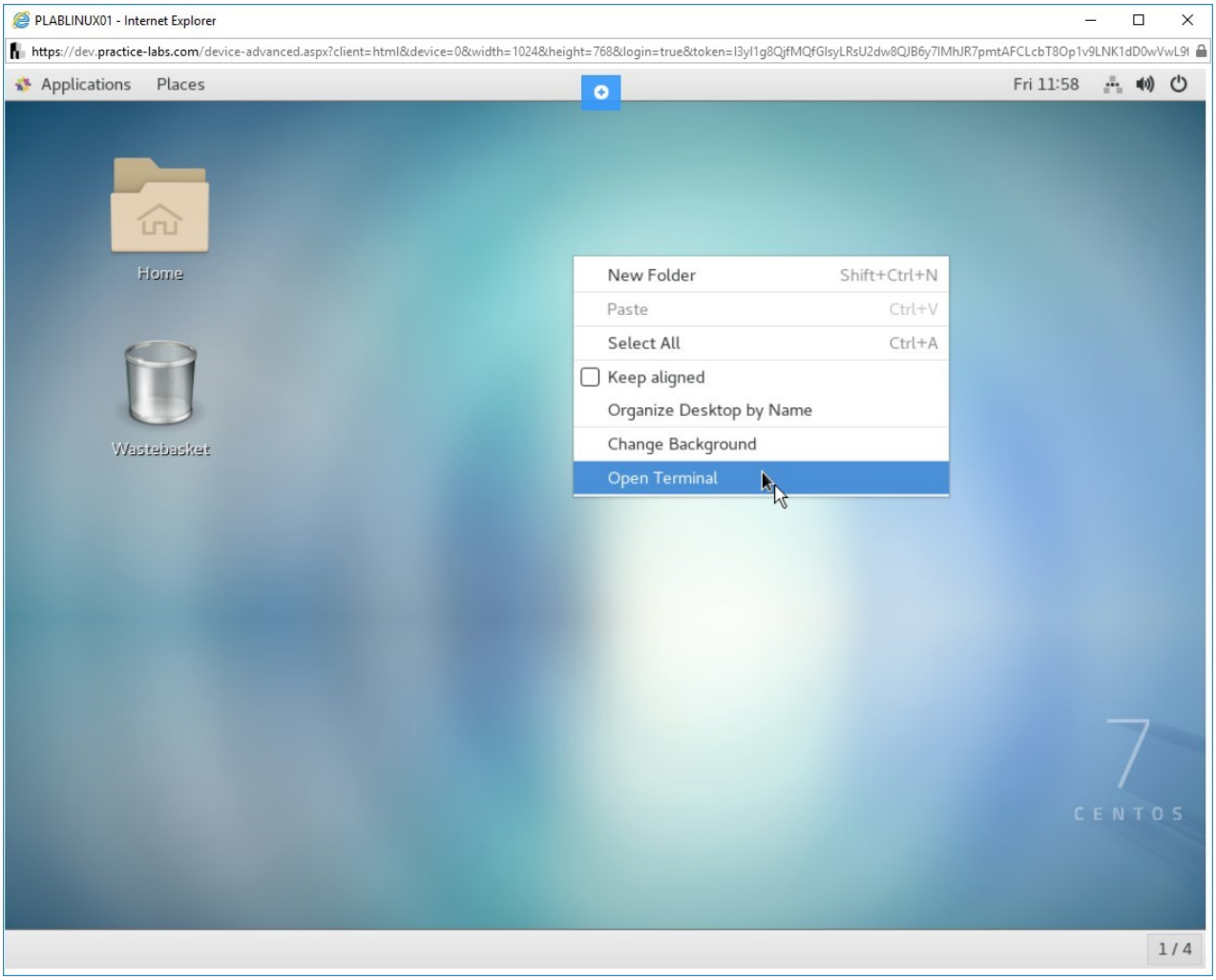


Figure 1.1 Screenshot of PLABLINUX01: Selecting the Open Terminal option from the context menu.

Step 2

The command prompt window is displayed. Type the following command:

```
su -
```

Press **Enter**.

At the **Password** prompt, type the following password:

`Passw0rd`

Press **Enter**.

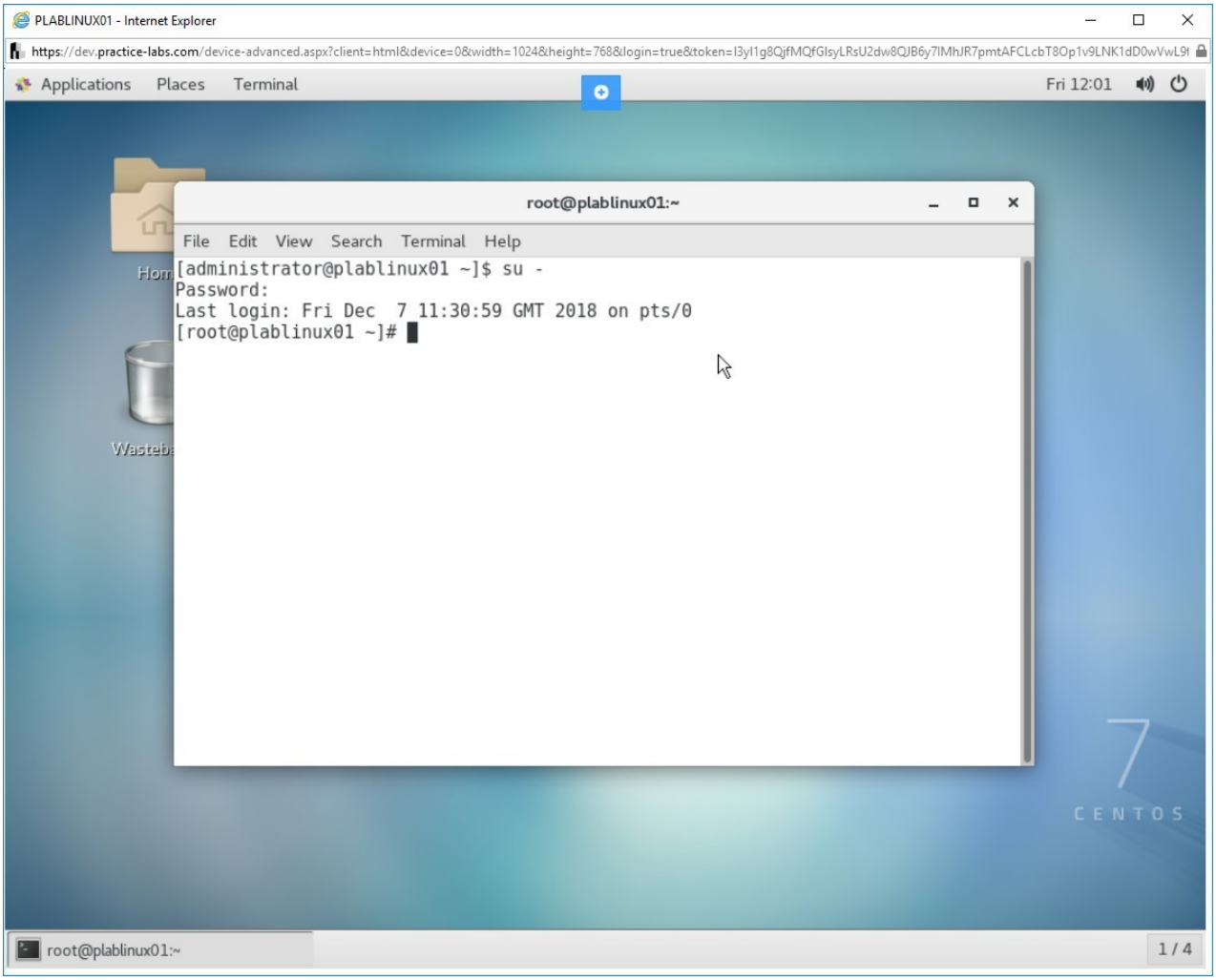


Figure 1.2 Screenshot of PLABLINUX01: Changing to the root account with the su command.

Step 3

To change to the root directory, type the following command:

```
cd ..
```

Press **Enter**.

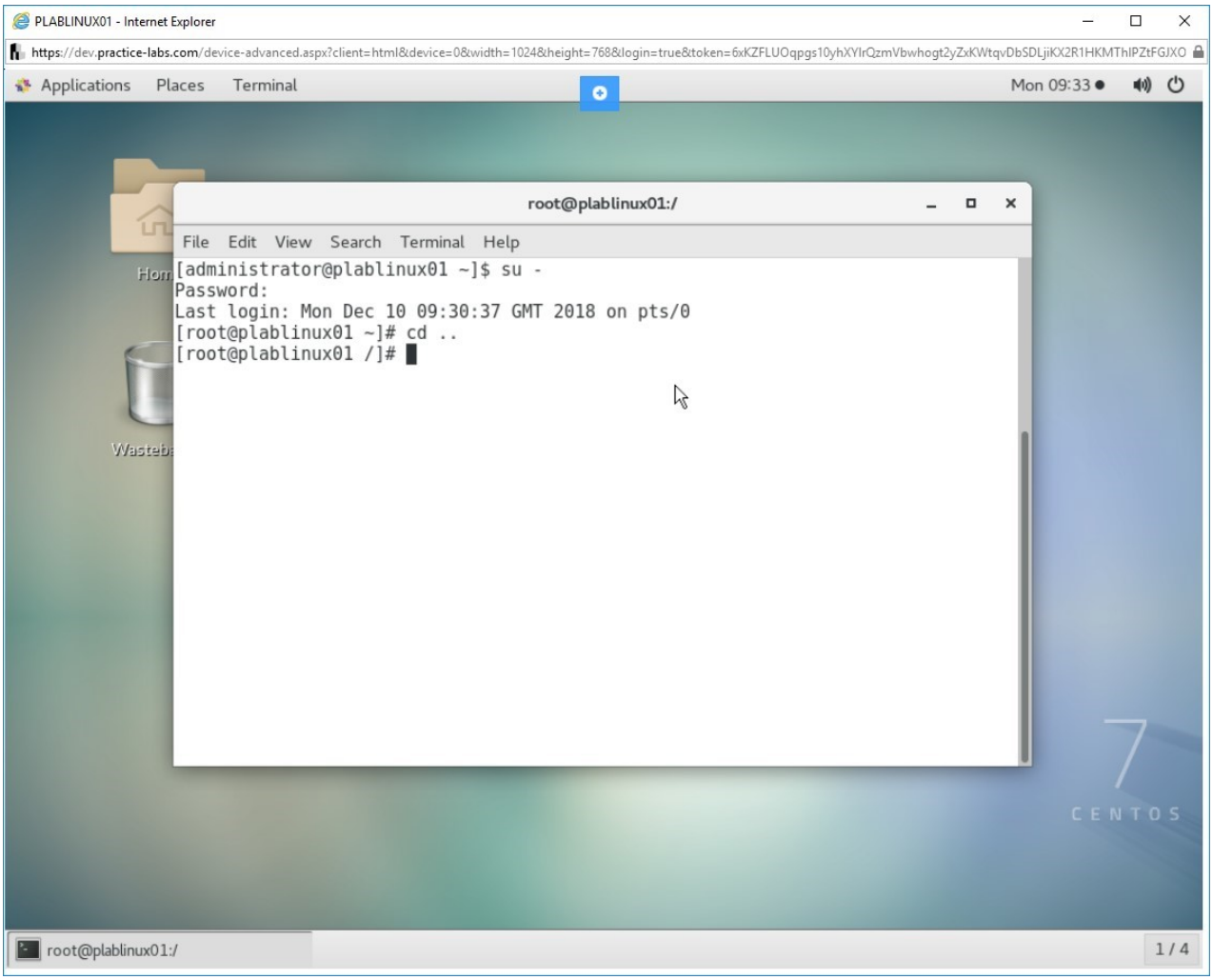


Figure 1.3 Screenshot of PLABLINUX01: Changing to the root directory using the cd .. command.

Step 4

Now, list the root directory structure by typing the following command:

```
ls -l
```

Press **Enter**.

Note that the root directory **(/)** contains the following directories:

- boot
- dev
- etc
- home
- lib
- lib64
- media
- mnt
- opt
- proc
- root
- run
- sbin
- srv
- sys
- tmp
- usr
- var

> ***Note**: Swap partition is a separate partition that moves items from computer memory to its hard drive.*

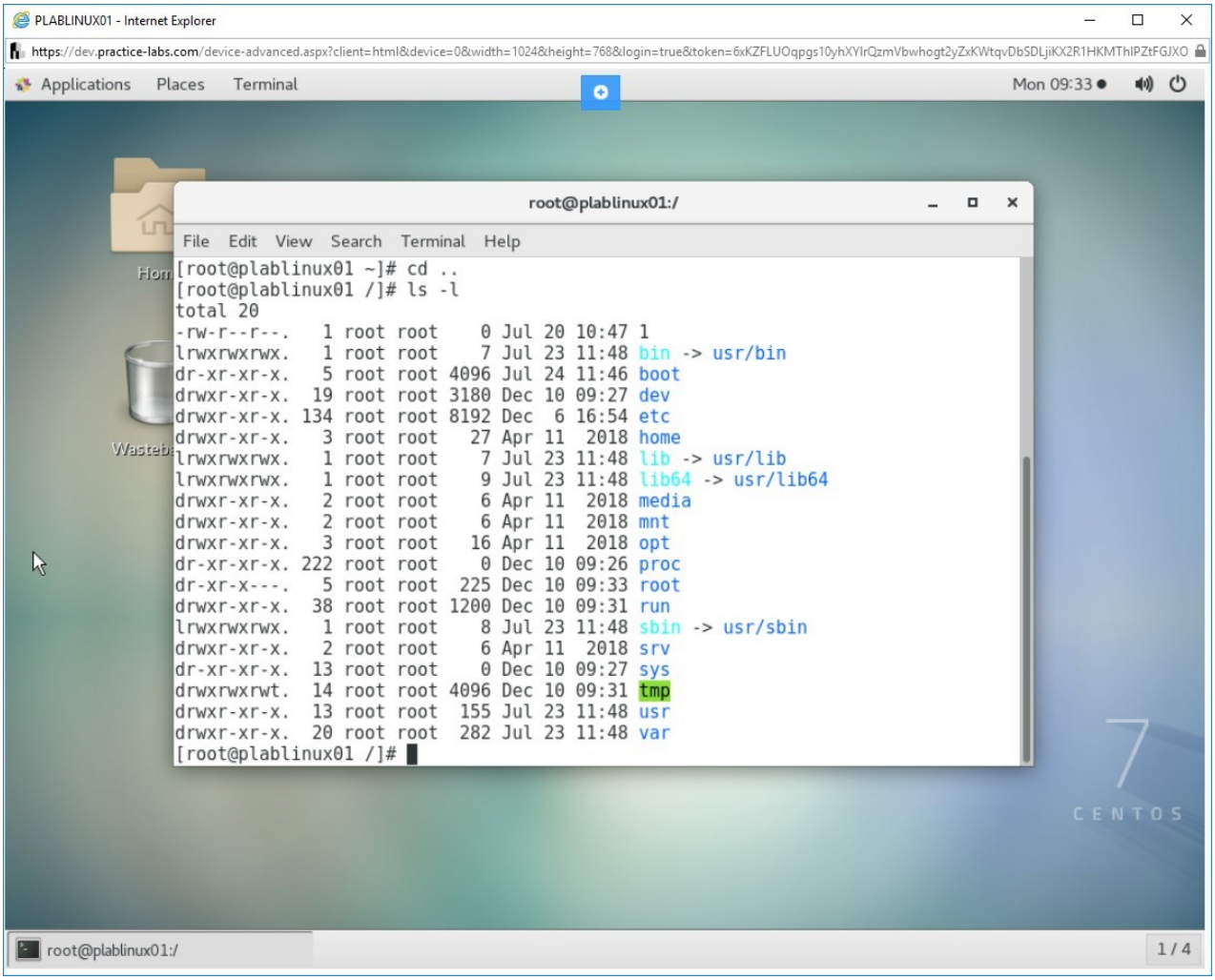


Figure 1.4 Screenshot of PLABLINUX01: Displaying the contents of the root directory.

Step 5

Clear the screen by entering the following command:

```
clear
```

As explained earlier, some of these directories will be static, and some will be variable. The **/etc** and **/boot** directories contain files that are static and cannot be changed by a user. Only an administrator, such as root, will be able to change them. For example, the **/etc** directory contains a large number of configuration files. Only the administrator, which is the **root** user, will have access to these files.

To view the configuration files, type the following command:

```
ls -l /etc/*.conf
```

Press **Enter**.

A set of configuration files are displayed.

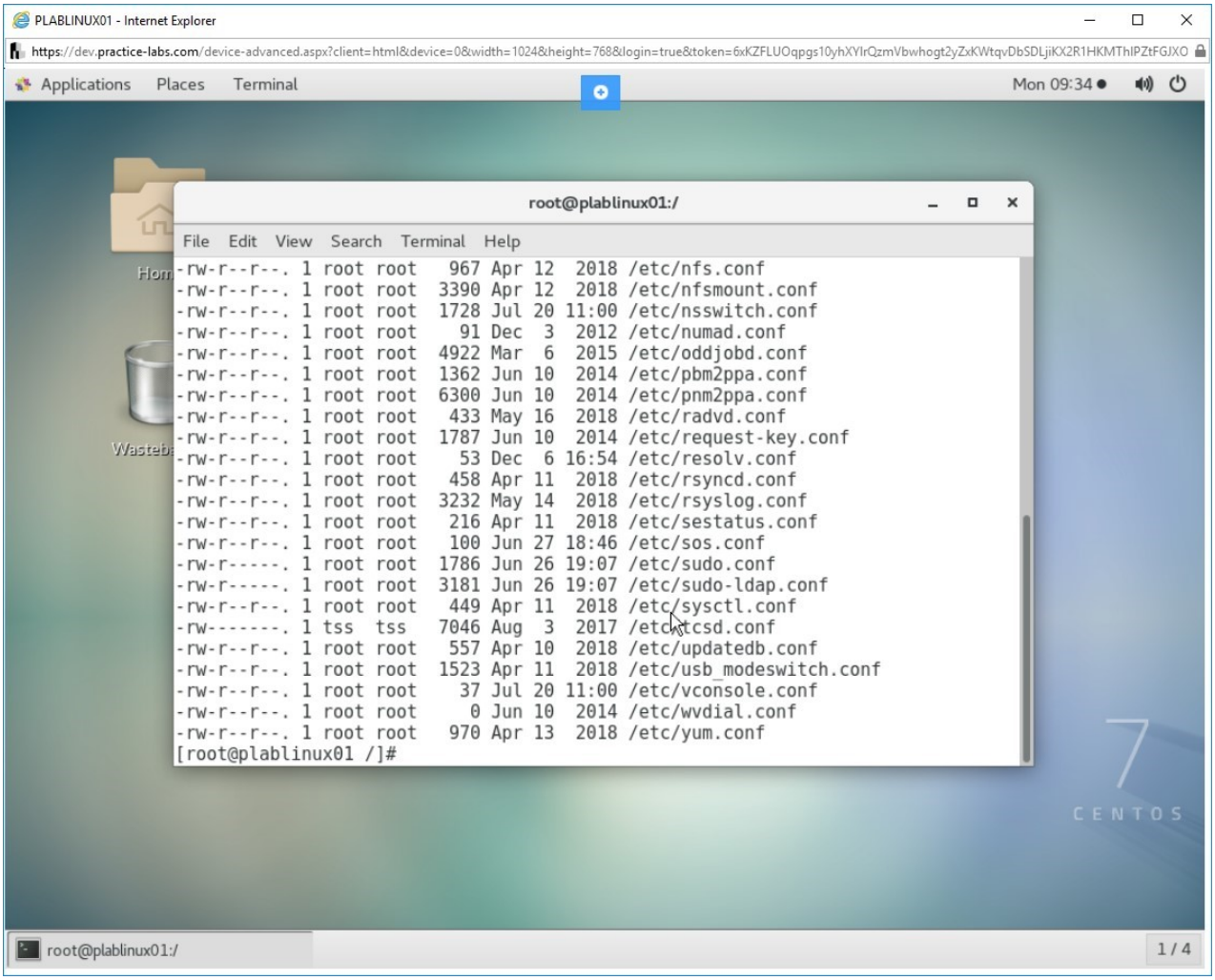


Figure 1.5 Screenshot of PLABLINUX01: Displaying the list of configuration files in the /etc directory.

Step 6

Clear the screen by entering the following command:

```
clear
```

The **/var/log** and **/proc** directories are unshareable but contain files that can be changed by a user or system process. To view the files in the **/var/log** directory, type the following command:

```
ls -l /var/log/
```

Press **Enter**.

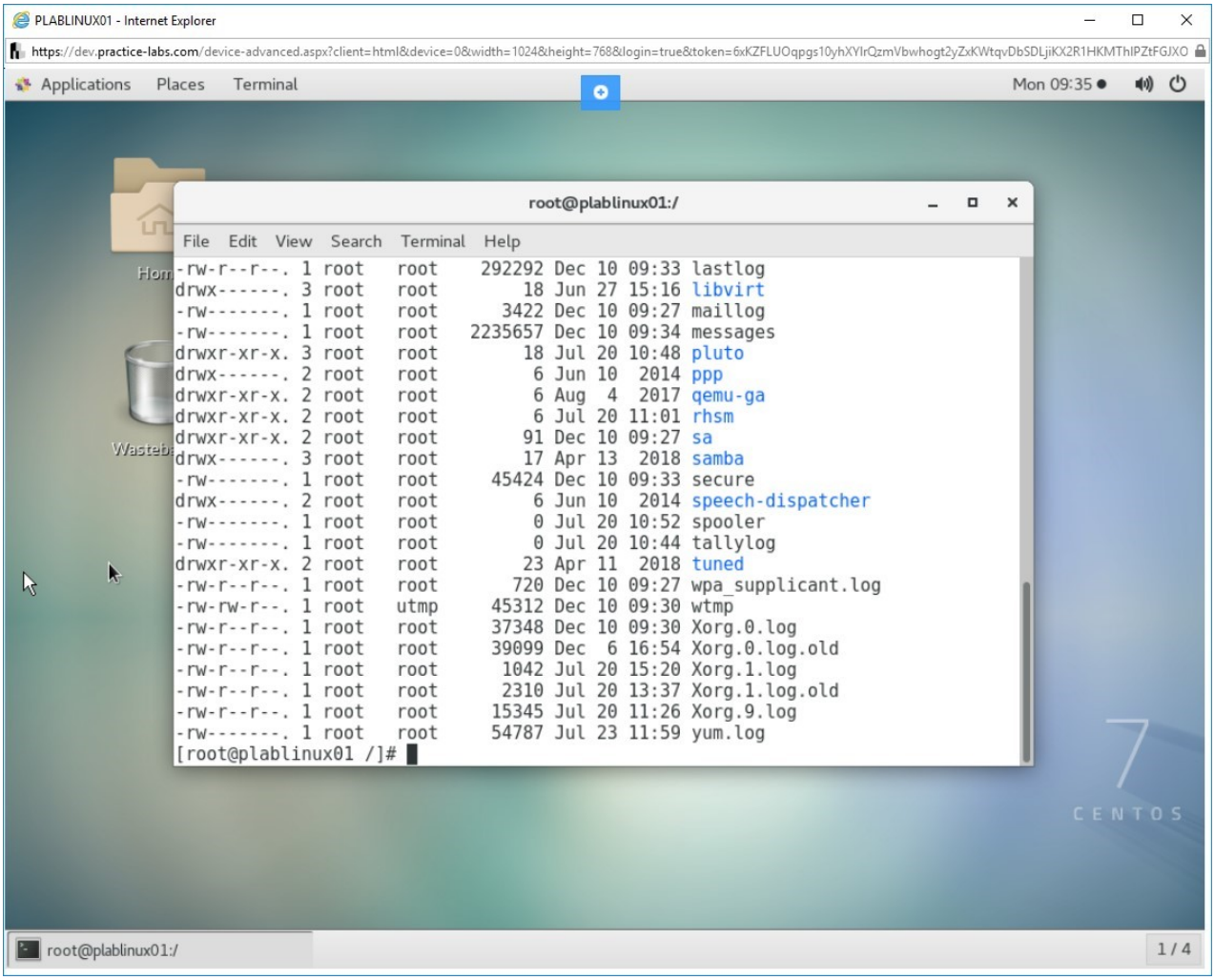


Figure 1.6 Screenshot of PLABLINUX01: Displaying the files in the /var/log directory.

Task 2 - Find files and commands on a Linux system

A small Linux distribution can contain thousands of files. For example, only the **/usr** directory of distribution can contain over 50,000 files. The complete installation may contain over 200,000 files. Locating a file can be difficult in a large number of files. Similarly, you can search for the path for a specific command and find out which

command will be executed when you enter a specific command. In this task, you will locate files and commands in various directories.

To find files and commands on a Linux system, perform the following steps:

Step 1

Clear the screen by entering the following command:

```
clear
```

To find a specific command and its location, type the following command:

```
which yum
```

Press **Enter**.

Note that the first occurrence where this command appears is displayed.

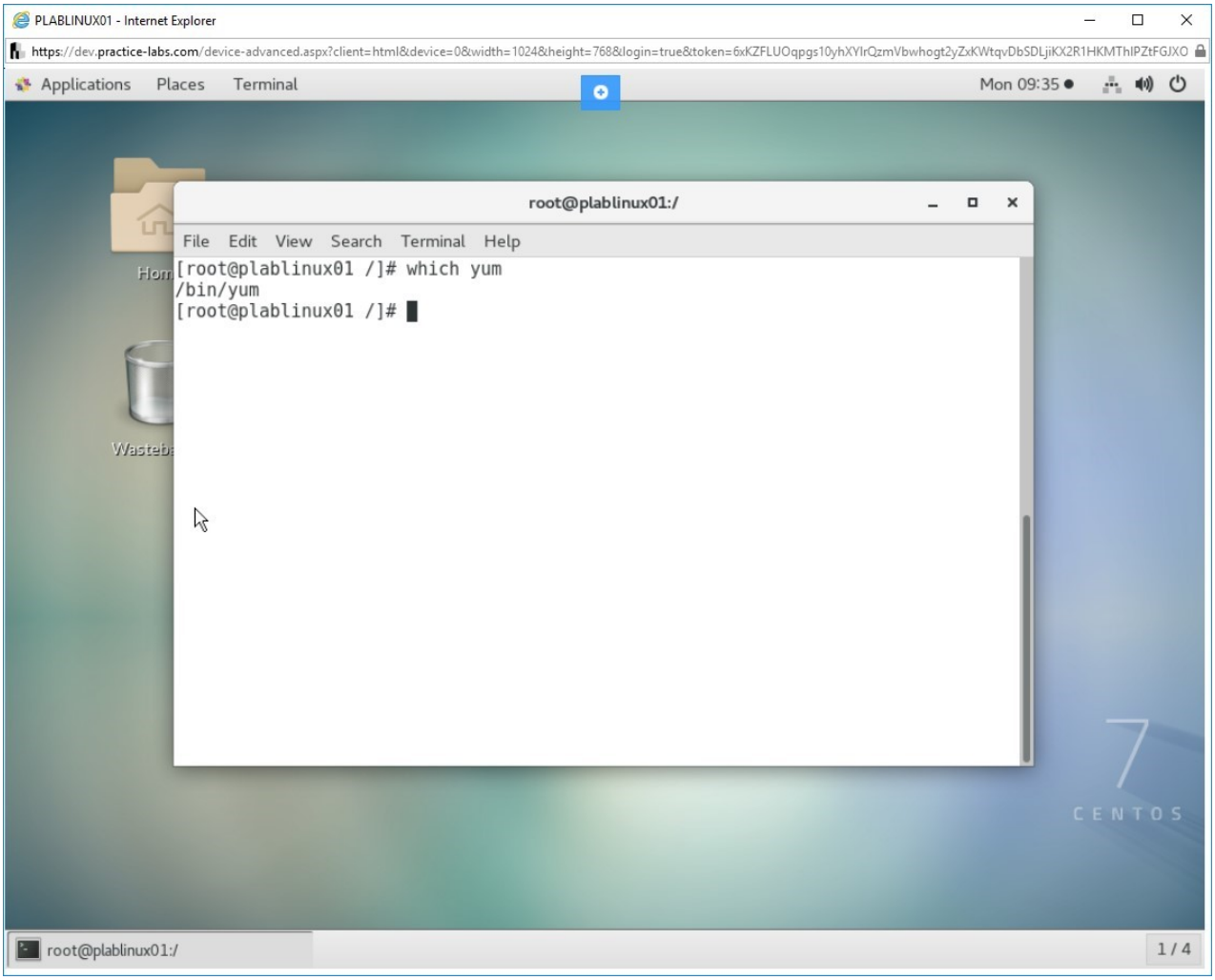


Figure 1.7 Screenshot of PLABLINUX01: Displaying the location of a command using the which command.

Step 2

To find the locations where a specific command occurs, type the following command:

```
which -a yum
```

Press **Enter**.

In this case, there is only one instance of the command.

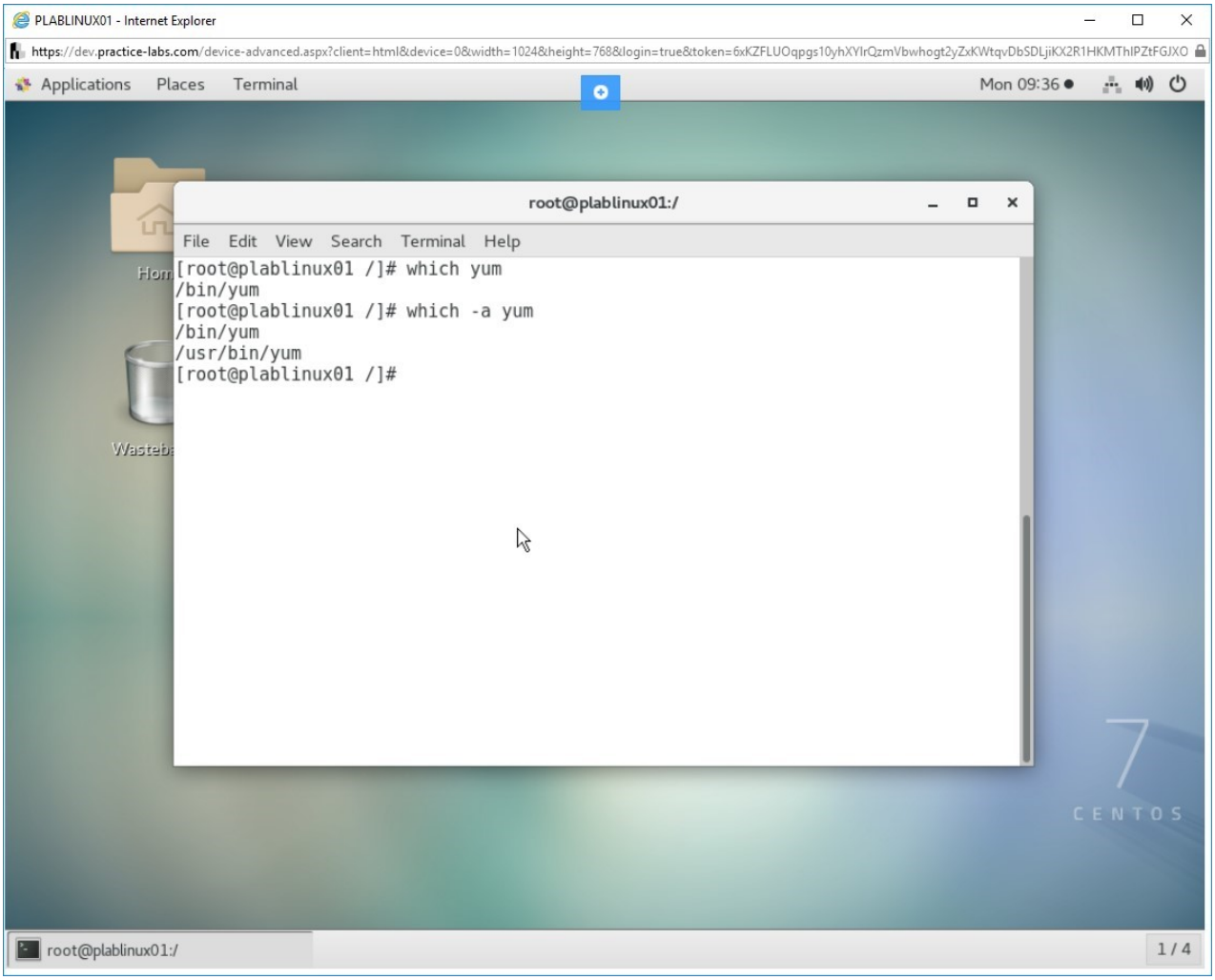


Figure 1.8 Screenshot of PLABLINUX01: Displaying the locations of a command using the which command.

Step 3

Clear the screen by entering the following command:

```
clear
```

Some specific types of commands, such as **shell bullitins**, cannot be located by the **which** command. To verify this, type the following command:

```
which type
```

Press **Enter**.

The output displays that there is no type.

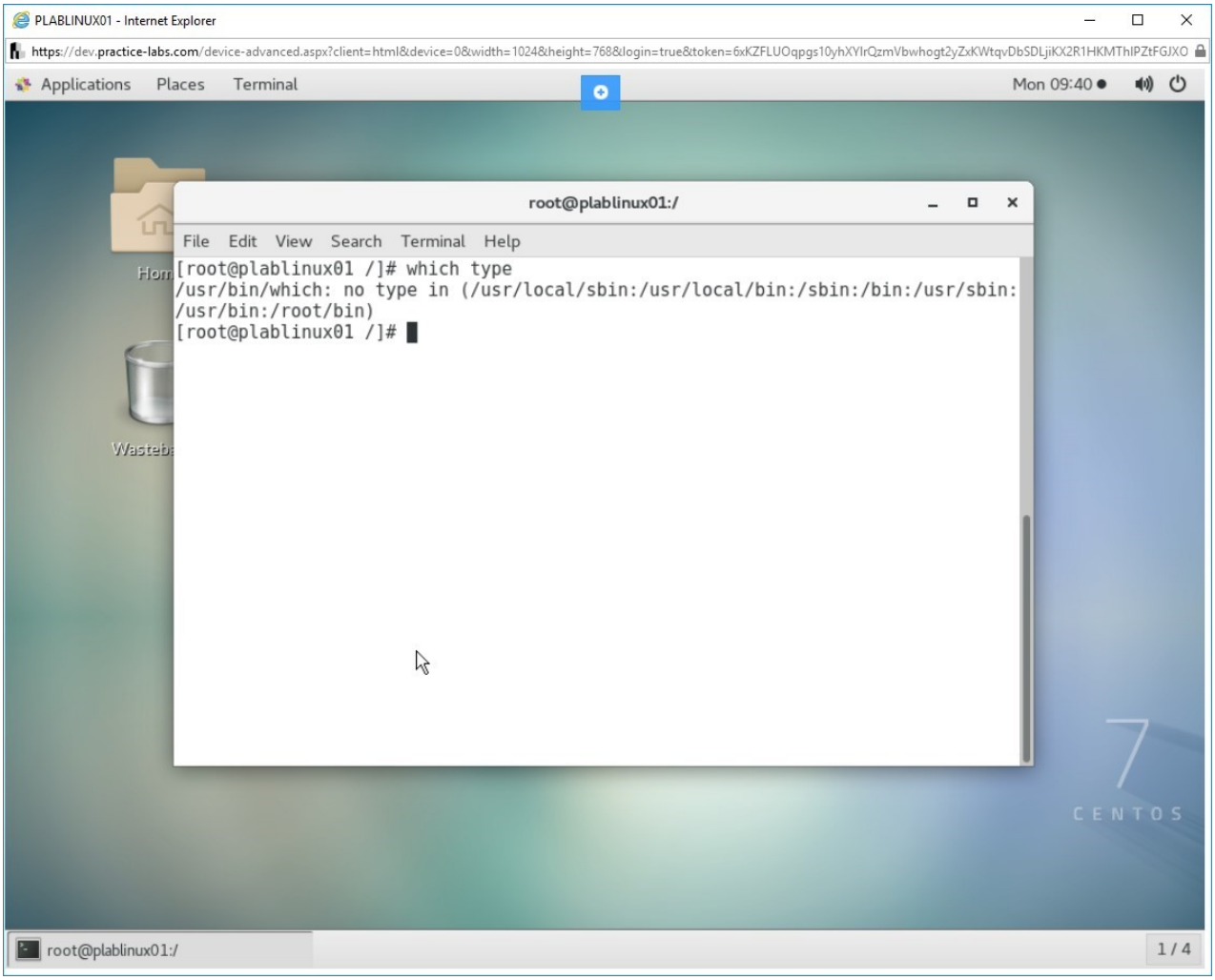


Figure 1.9 Screenshot of PLABLINUX01: Displaying the results of the which type command.

Step 4

The **type** command allows you to locate special commands, such as **shell bullitins**. To verify this, type the following command:

```
type type
```

Press **Enter**.

The output displays that it is a **shell bullitin**.

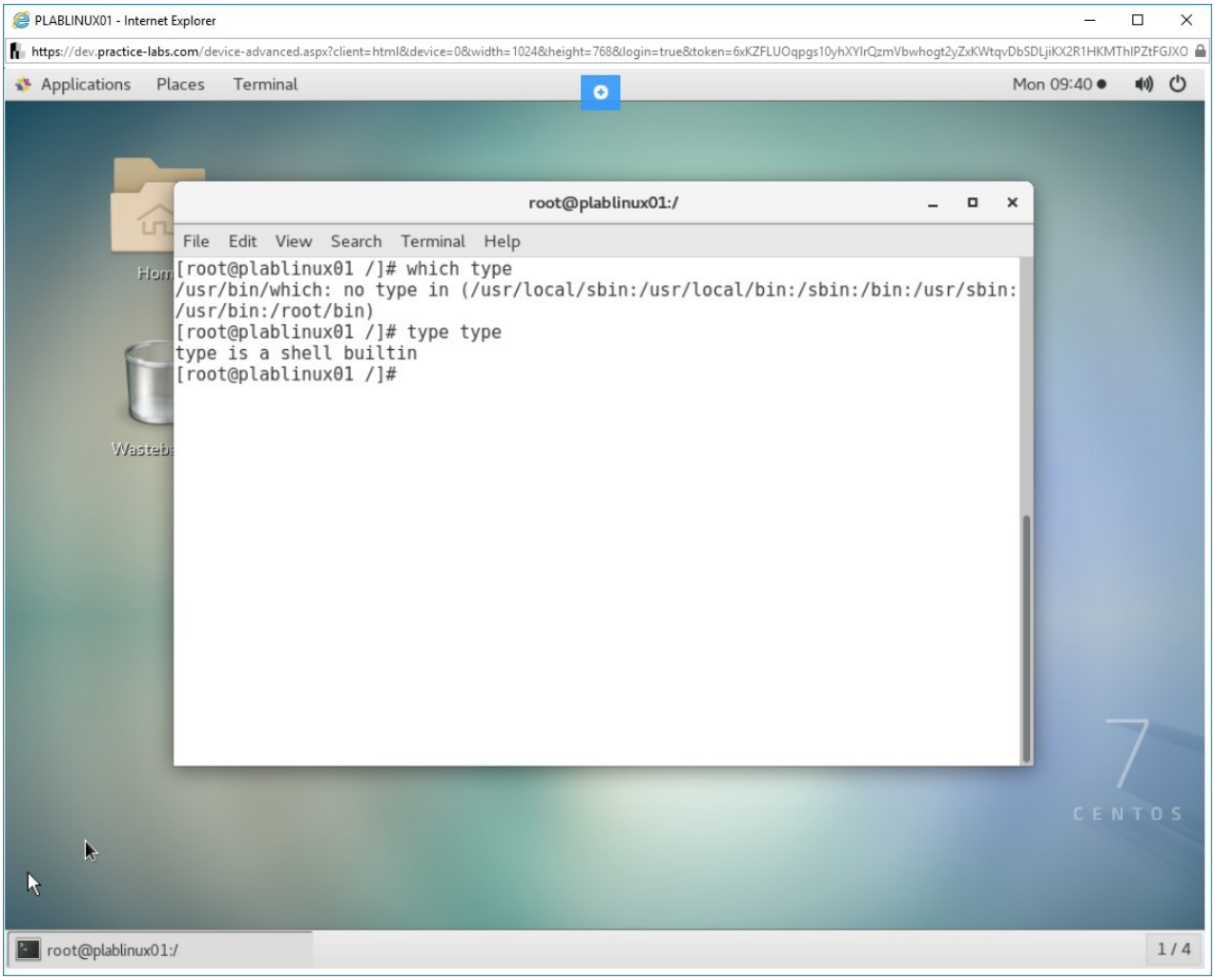


Figure 1.10 Screenshot of PLABLINUX01: Locating the special commands using the type type command.

Step 5

Clear the screen by entering the following command:

```
clear
```

The **whereis** command allows you to locate more information than just the location of the command. To find more details of a command, such as **yum**, type the following command:

```
whereis yum
```

Press **Enter**.

The output displays the location, the name of the configuration file, and the location of the man pages for the command.

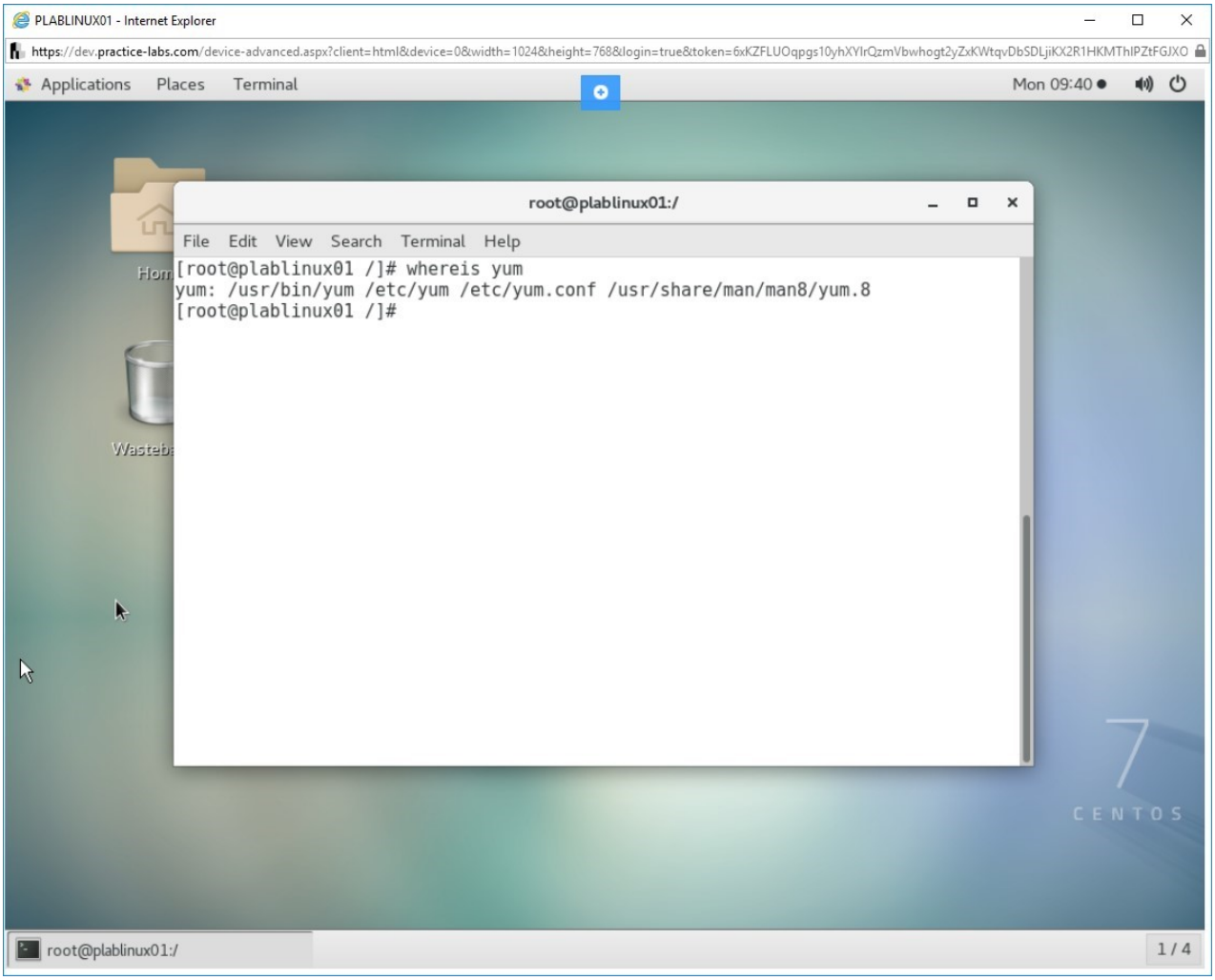


Figure 1.11 Screenshot of PLABLINUX01: Locating the information about the yum command.

Step 6

Clear the screen by entering the following command:

```
clear
```

There will be scenarios in which you will need to find files on your Linux system using their names or path. To find files, type the following command:

```
find . -name "yum*"
```

Press **Enter**.

*Note: This command works only when you are in the **root** directory. Change to the **root** directory using the following command, if not already done: cd ..*

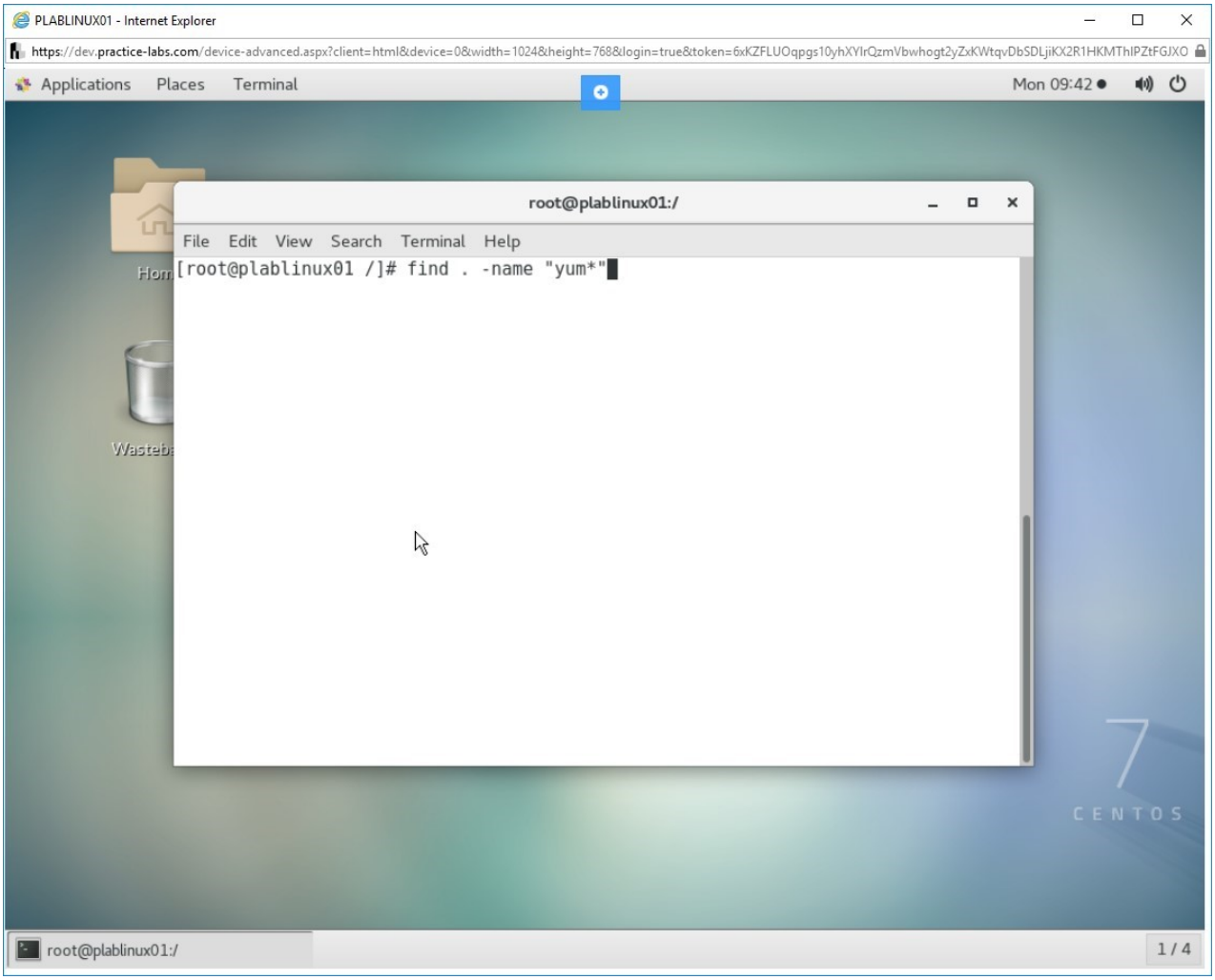


Figure 1.12 Screenshot of PLABLINUX01: Finding the yum command in the root directory.

Step 7

The output displays the names of the files and their locations.

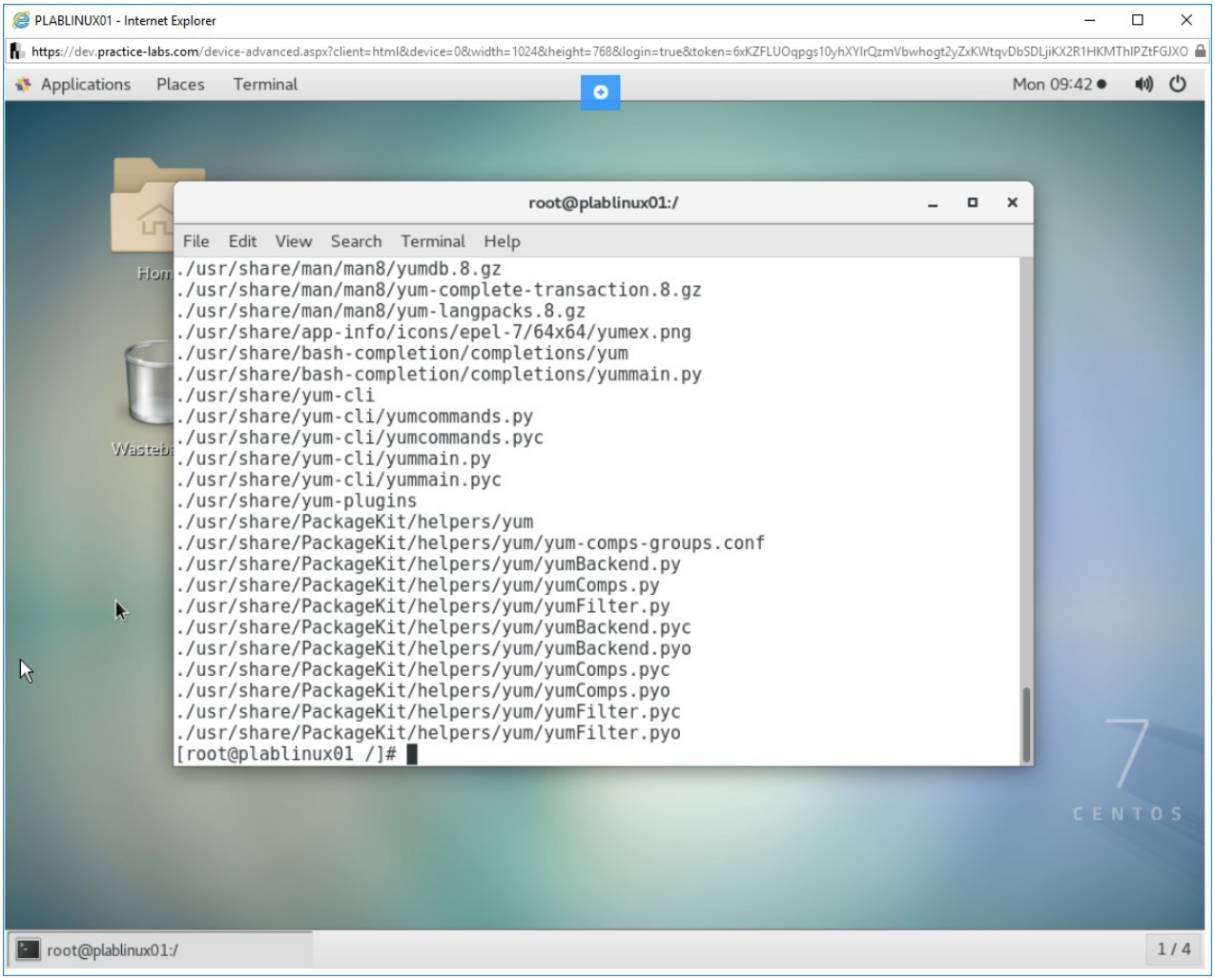


Figure 1.13 Screenshot of PLABLINUX01: Displaying the output of the find command.

Step 8

Clear the screen by entering the following command:

```
clear
```

Using the **find** command, you can also find all the directories. To find all the directories, type the following command:

```
find . -type d
```

Press **Enter**.

Note that the **d** signifies directories. **d** is an argument for the **-type** parameter. Therefore, the **-type** parameter allows you to specify that you are searching for the type “directories”.

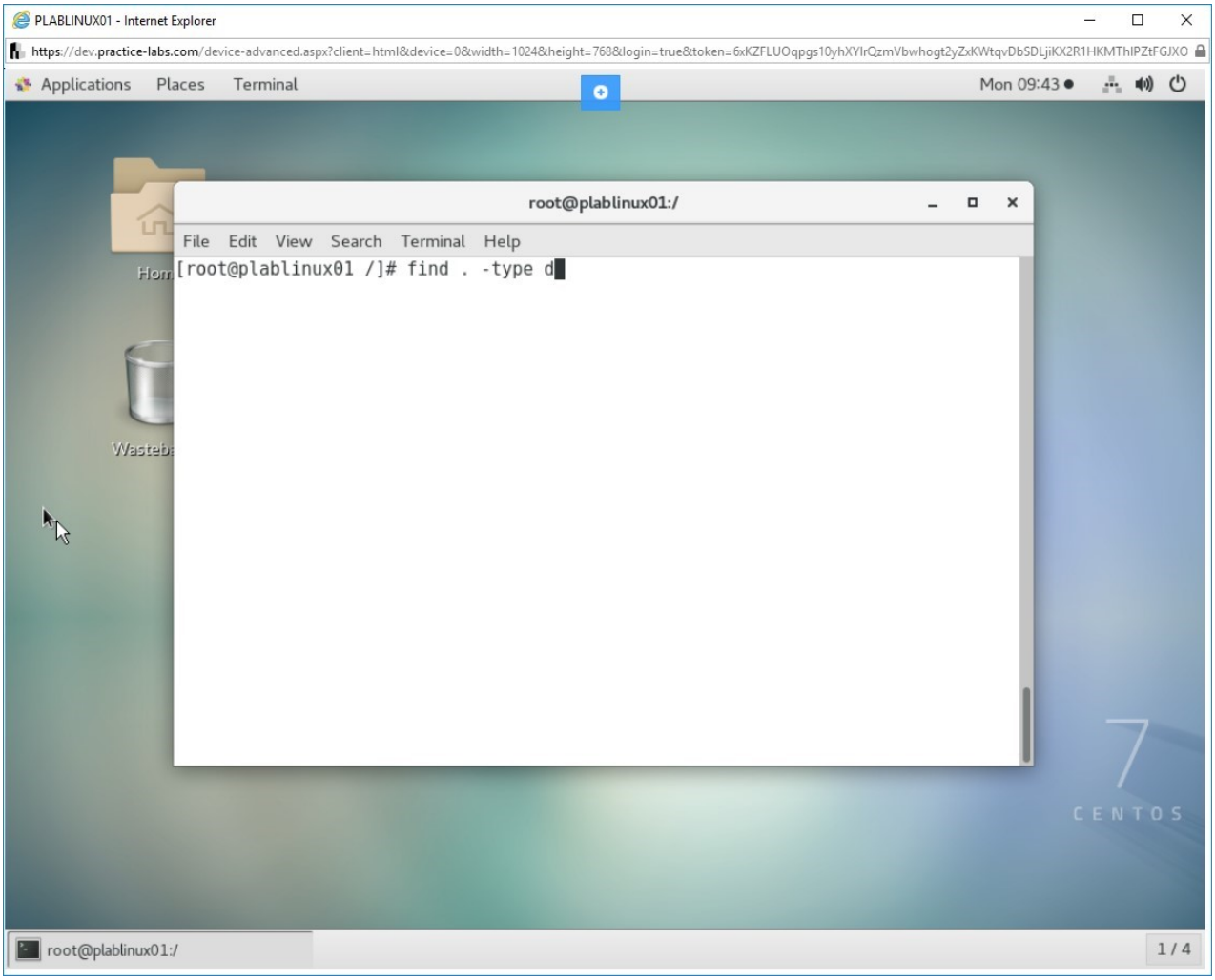


Figure 1.14 Screenshot of PLABLINUX01: Locating the list of directories in the root directory.

Step 9

The output displays all the directories.

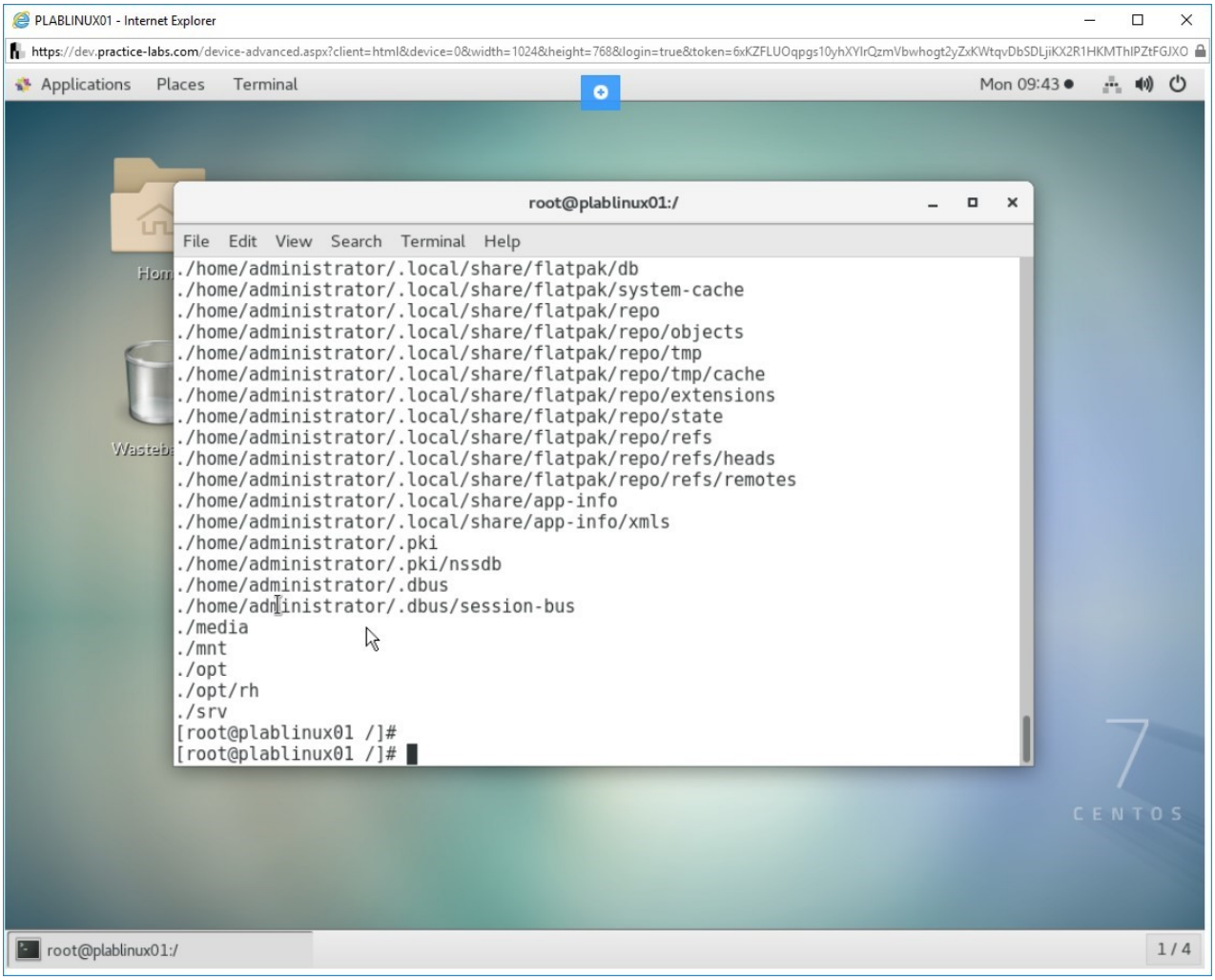


Figure 1.15 Screenshot of PLABLINUX01: Displaying the list of directories in the root directory.

Step 10

Clear the screen by entering the following command:

```
clear
```

Using the **find** command, you can also find files based on their file size. To find all the files based on their file size, type the following command:

```
find -type f -empty
```

Press **Enter**.

***Note**: The **empty** switch signifies the files with 0 bytes. The **-type** parameter here allows you to set the search type, which in this case is empty files.*

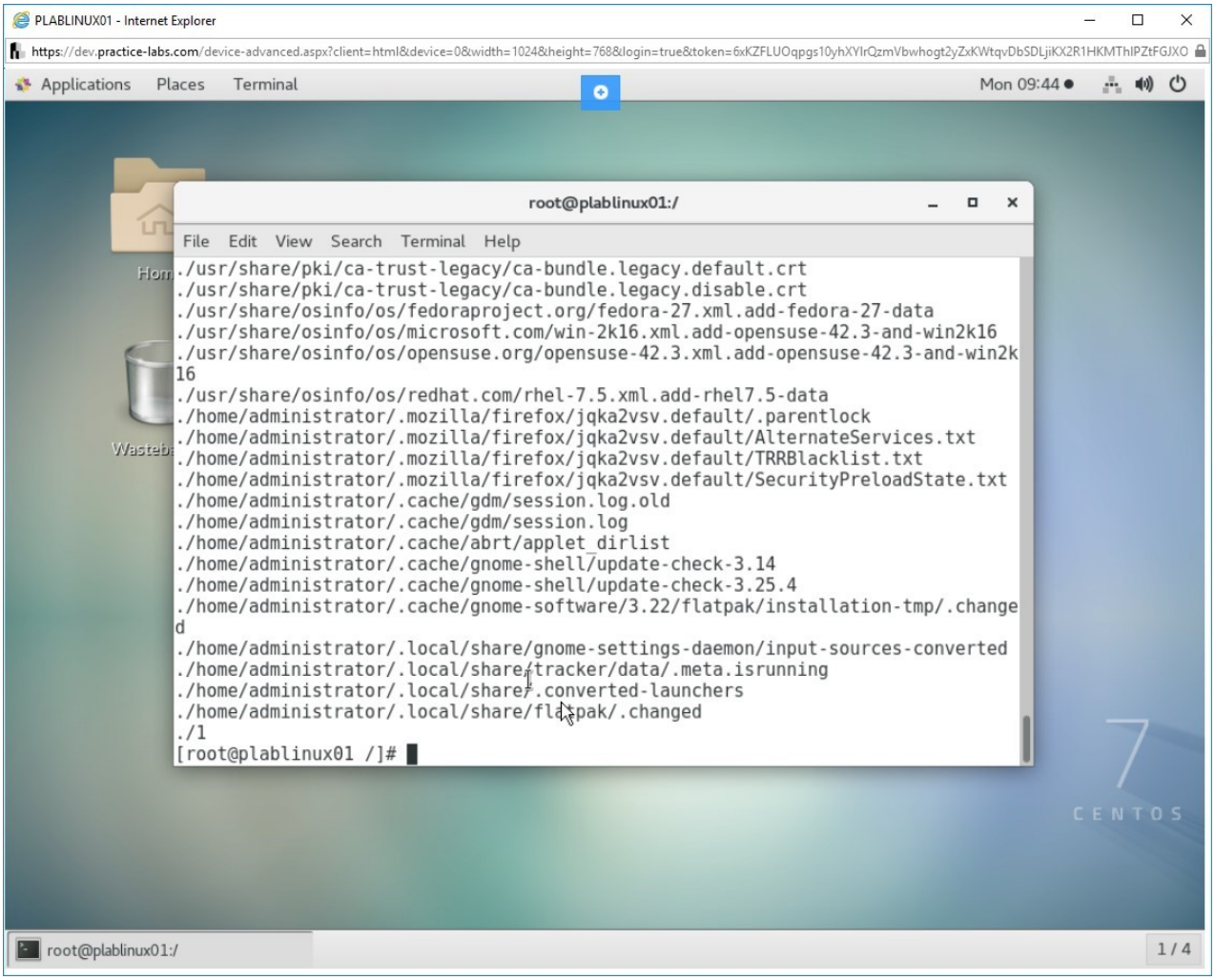


Figure 1.16 Screenshot of PLABLINUX01: Finding the empty files.

Step 11

Clear the screen by entering the following command:

```
clear
```

Using the **find** command, you can also find files by user and group. For example, to find all the files by the user root, type the following command:

```
find /etc -user root
```

Press **Enter**.

Note that **/etc** is the name of the directory, which is where you will search for the files. The **-user** parameter specifies the name of the user, which is **root** in this case.

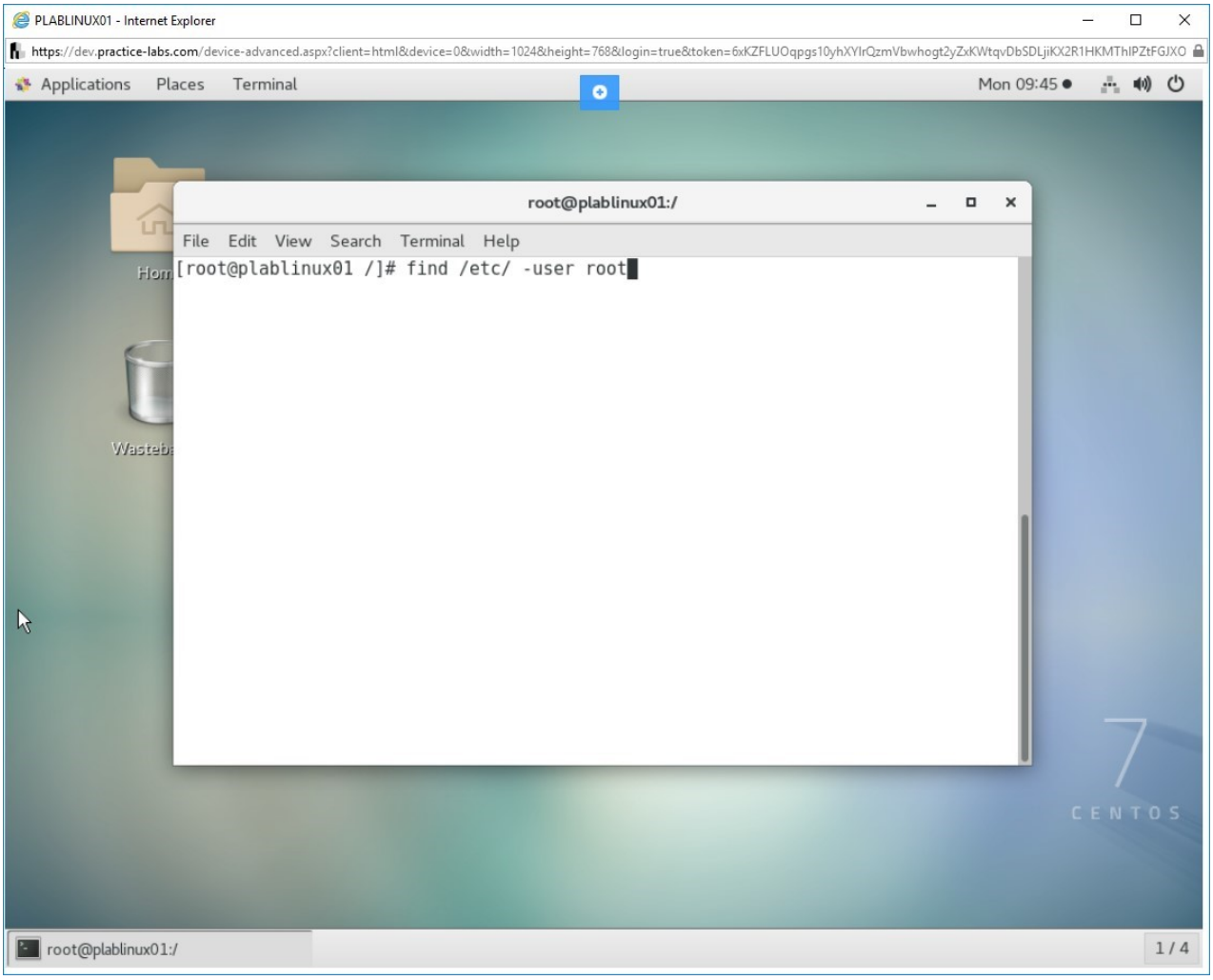


Figure 1.17 Screenshot of PLABLINUX01: Executing the find command on the /etc directory for the root user.

Step 12

The output displays all files in the **/etc** directory that belong to the user **root**.

> ***Note**: There are a lot more combinations that you can use to find files. The above-shown examples are just a few of them.*

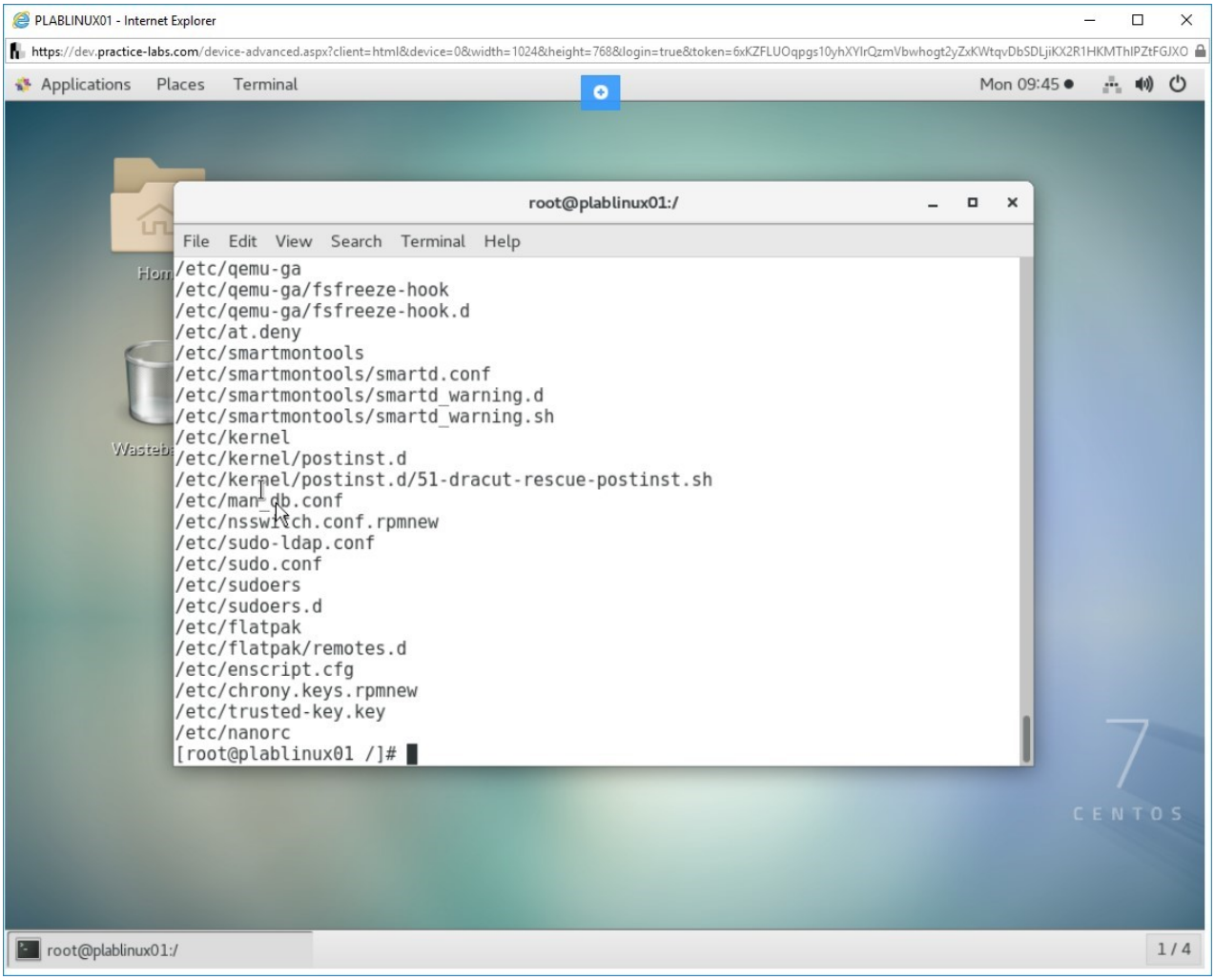


Figure 1.18 Screenshot of PLABLINUX01: Displaying the output of the find command in the /etc directory.

Step 13

Clear the screen by entering the following command:

```
clear
```

When you use the find command, it searches for the files and directories based on a given condition of the filesystem. You can speed up the search using the locate command, which searches the location of files from a specific database.

For example, to find all the files that include "/**etc**", type the following command:

```
locate /etc
```

Press **Enter**.

Note that **/etc** is the name of the directory where you want to search for the files.

> ***Note**: In case you get an error, run the updatedb command.*

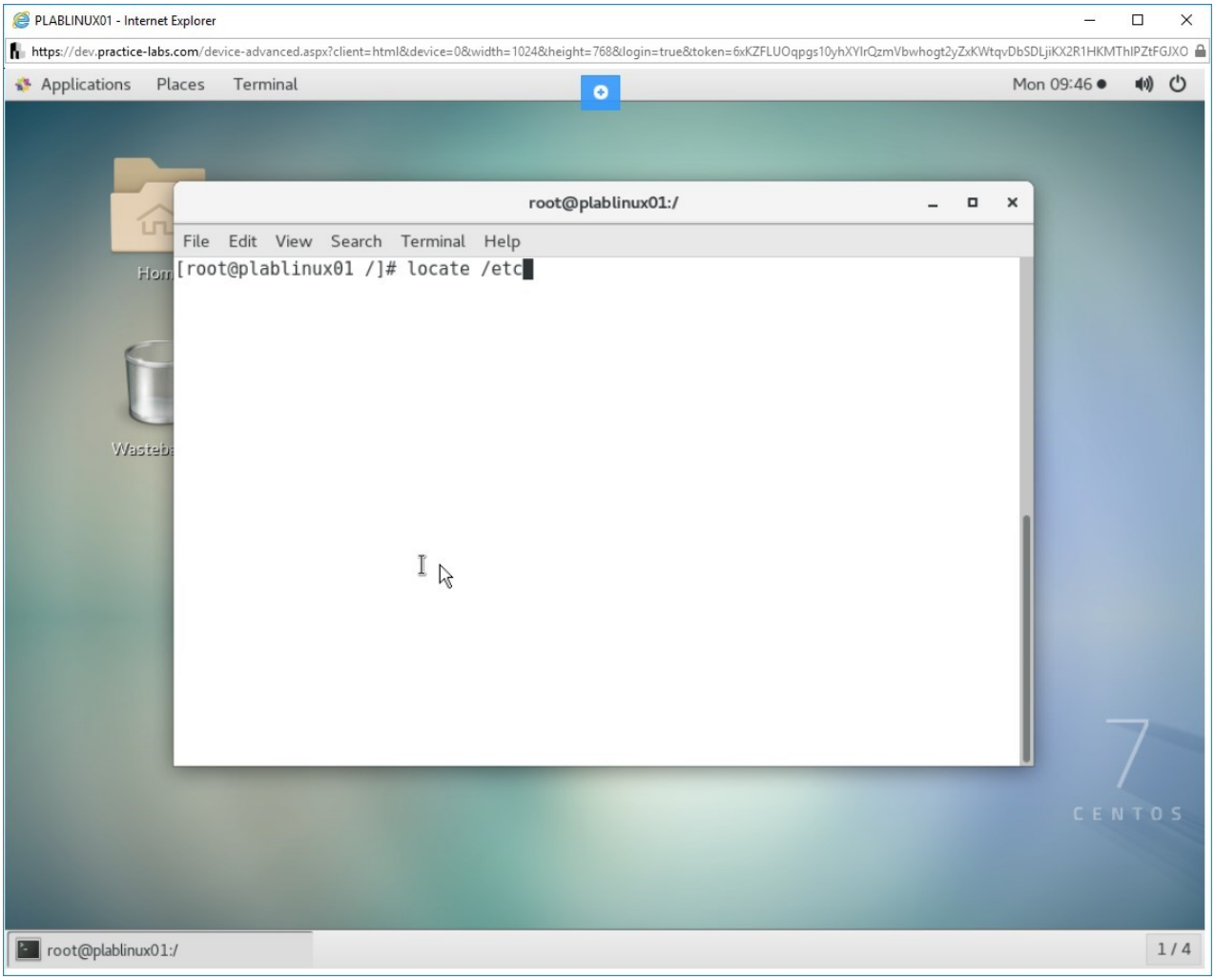


Figure 1.19 Screenshot of PLABLINUX01: Execute the locate command on the /etc directory.

Step 14

Note that all the files that incude "**/etc**" are now listed.

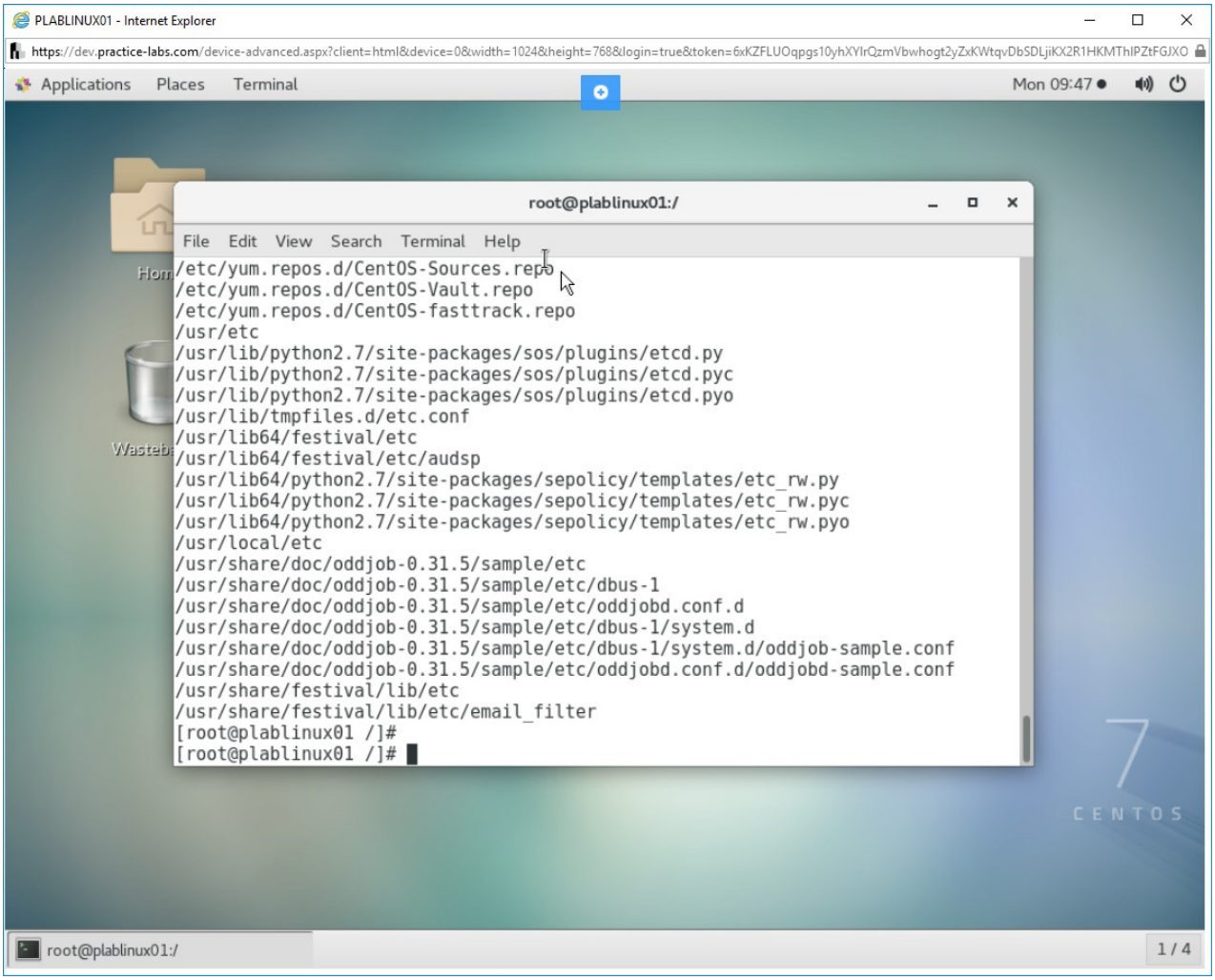


Figure 1.20 Screenshot of PLABLINUX01: Displaying output of the locate command on the /etc directory.

Step 15

Clear the screen by entering the following command:

```
clear
```

You can find the database that locates command uses to find files and directories. To find the location of the database, type the following command:

```
locate -S
```

Press **Enter**.

The database name is **mlocate.db** and it is stored in the **/var/lib/mlocate** directory.

> ***Note**: The database may differ in different Linux distributions. For example, in some of the Linux distributions, you may find the database name to be **slocate** or **mlocate**.*

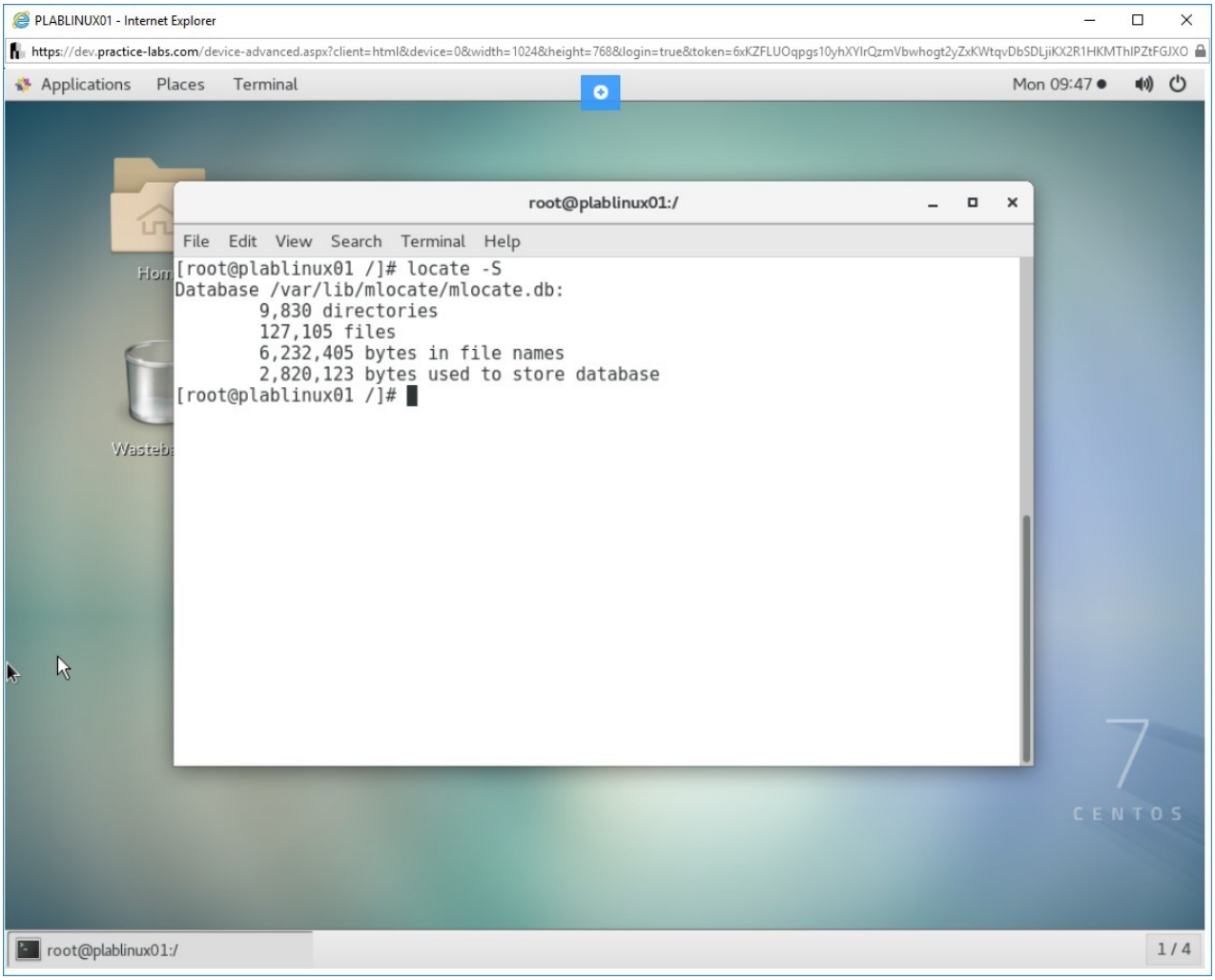


Figure 1.21 Screenshot of PLABLINUX01: Executing the locate -S command and displaying its output.

Step 16

To update the database, type the following command:

```
updatedb
```

Press **Enter**.

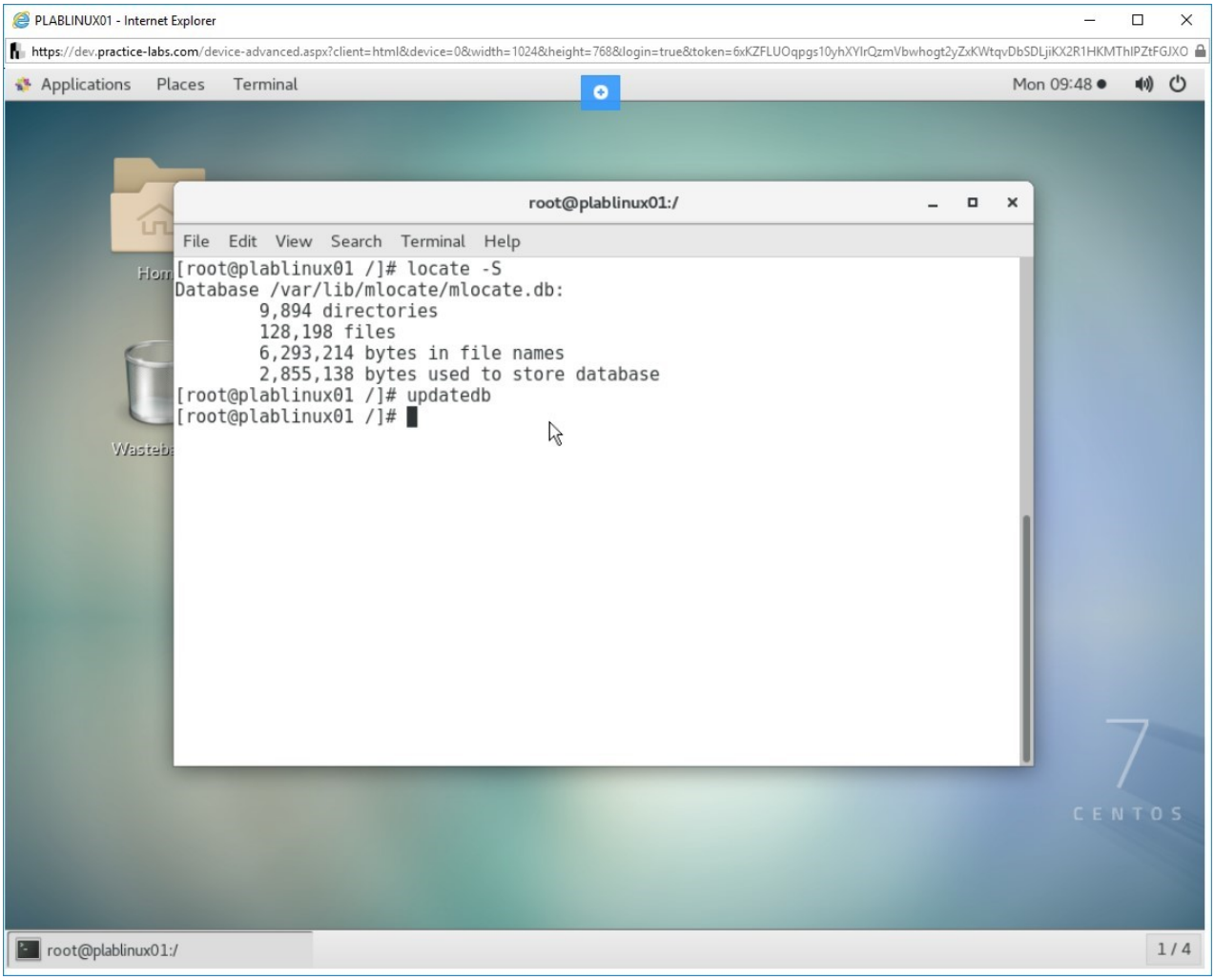


Figure 1.22 Screenshot of PLABLINUX01: Executing the updated command.

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Step 17

The **updatedb** command usually runs as a cron job on a daily basis. You can set the **DAILY_UPDATE=yes** parameter in the **/etc/updatedb.conf** file if it is not already set.

To view the **/etc/updatedb.conf** file, type the following command:

```
cat /etc/updatedb.conf
```

Press **Enter**.

The **DAILY_UPDATE=yes** parameter is not set. If you want, you can edit the file using the **vi** editor and set this parameter.

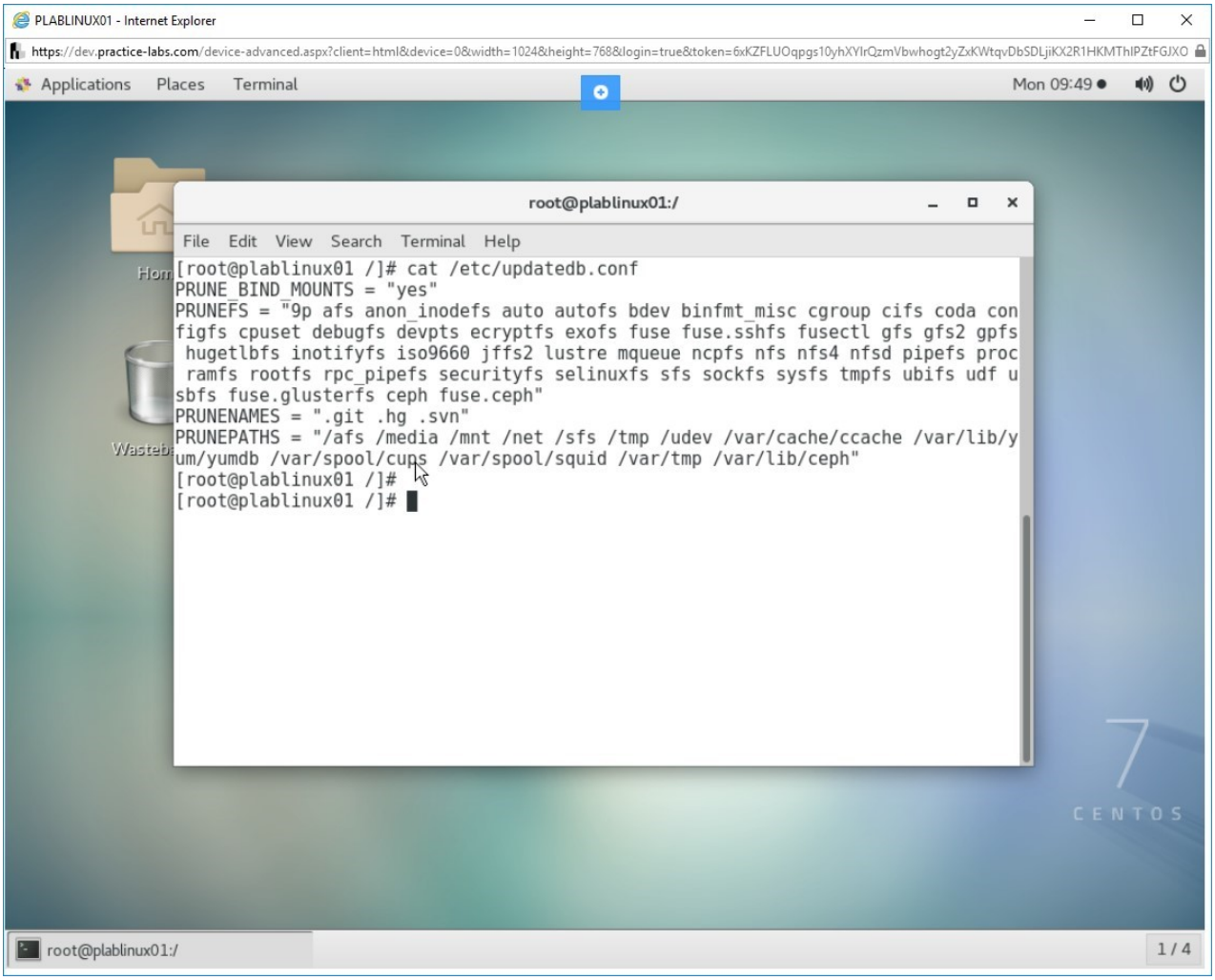

Figure 1.23 Screenshot of PLABLINUX01: Viewing the contents of the /etc/updatedb.conf file.

Keep all devices in their current state and proceed to the next exercise.

Review

Well done, you have completed the **Find System Files and Place Files in the Correct Location** Practice Lab.

Summary

You completed the following exercise:

- Exercise 1 - Find Files and Commands on a Linux System

You should now be able to:

- Locations of files under the FHS
- Find files and commands on a Linux system

Feedback

Shutdown all virtual machines used in this lab. Alternatively, you can log out of the lab platform.