CompTIA Linux+

Check and Repair Filesystems

Introduction

Welcome to the **Check and Repair Filesystems** Practice Lab. In this module you will be provided with the instructions and devices needed to develop your hands-on skills.

Filesystems
Linux System
Linux Environment

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 - Check and Repair Filesystems

After completing this lab, you will be able to:

- Use various methods to check and repair filesystems

Exam Objectives

The following exam objectives are covered in this lab:

- **LPI:** 104.1 Create partitions and filesystems
- **LPI:** 104.3 Control mounting and unmounting of filesystems
- **CompTIA:** 1.4 Given a scenario, manage storage in a Linux environment.

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.

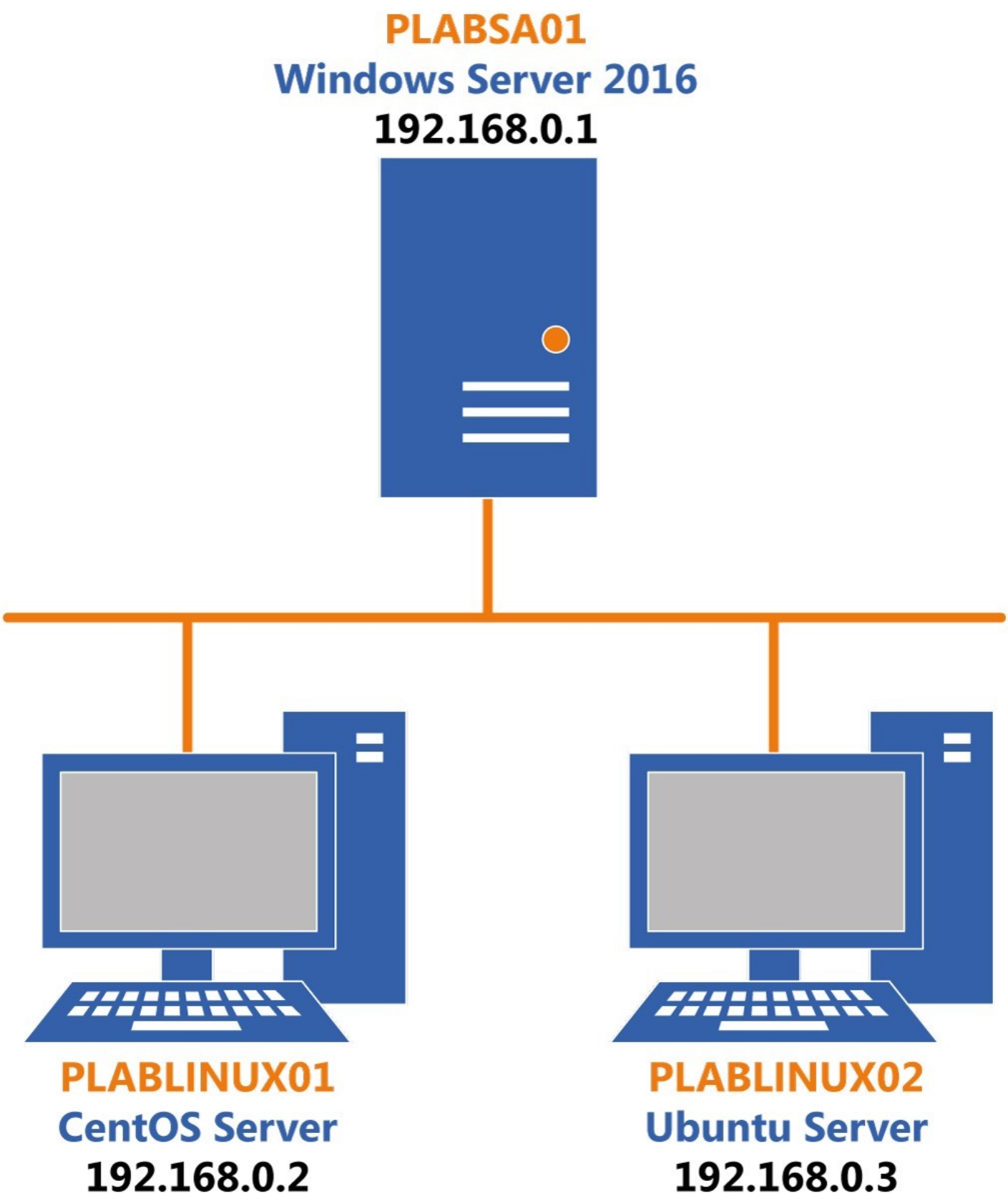
Help and Support

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 - Check and Repair Filesystems

A server can hold more than one hard drive. Due to an unforeseen error, there are changes that the server may crash, which can also impact the hard drive by making it unusable. The server administrator must regularly check the filesystem health, which is installed on the hard drive. CentOS provides several commands for this purpose.

In this exercise, you will learn to view the hard drive details.

Learning Outcomes

After completing this exercise, you will be able to:

- Log into a Linux System
- Use various methods to check and repair filesystems

Your Devices

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

- **PLABLINUX01** (CentOS Server)

Task 1 - Use various methods to check and repair filesystems

The fsck utility is considered to be a power utility. It can check and repair a damaged filesystem.

In this task, you will learn to view the hard drive details. To view the hard drive details, perform the following steps:

Step 1

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

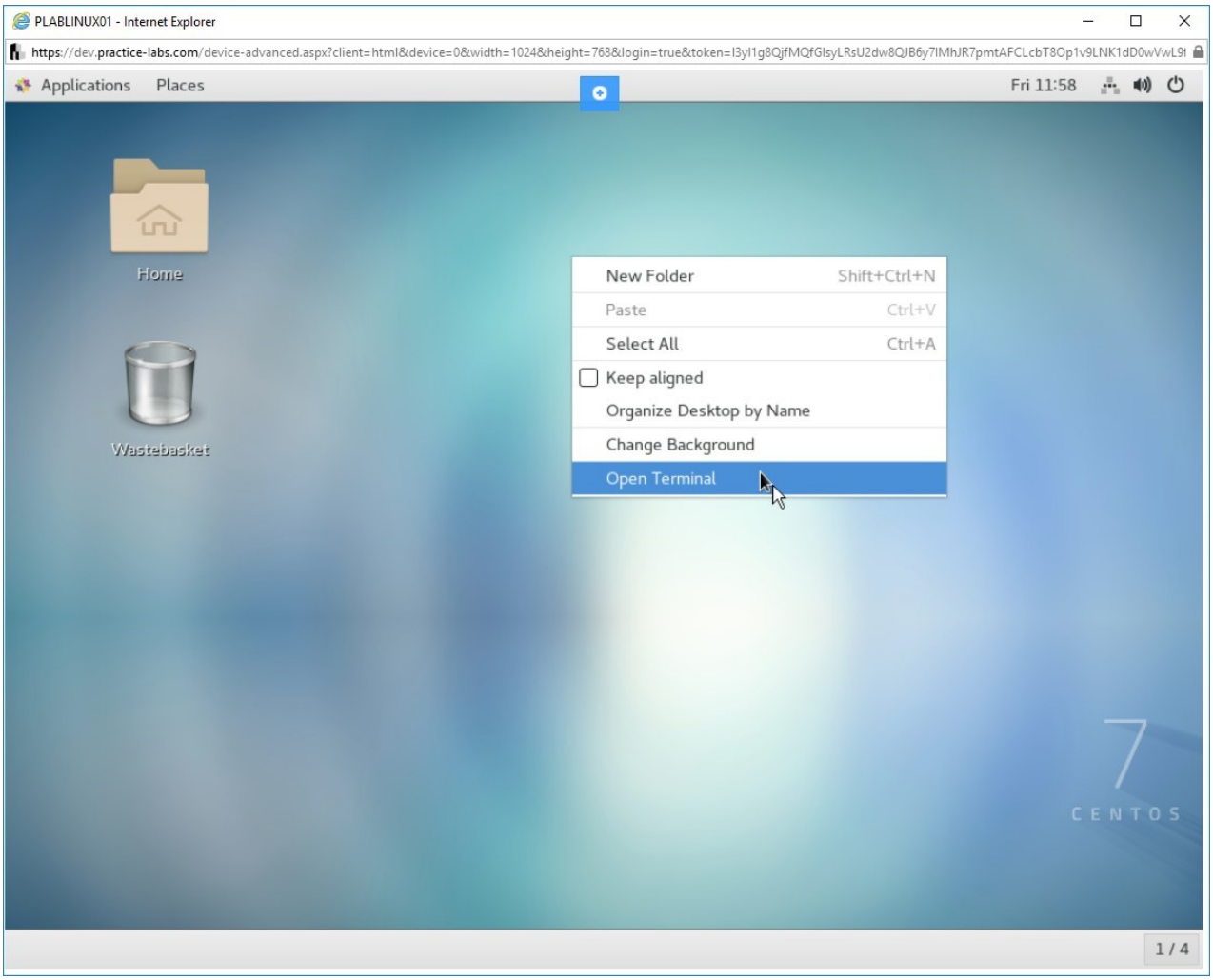


Figure 1.1 Screenshot of PLABLINUX01: Selecting the Open Terminal option from the context menu.

Step 2

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

```
su -
```

Press **Enter**.

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

`Passw0rd`

Press **Enter**.

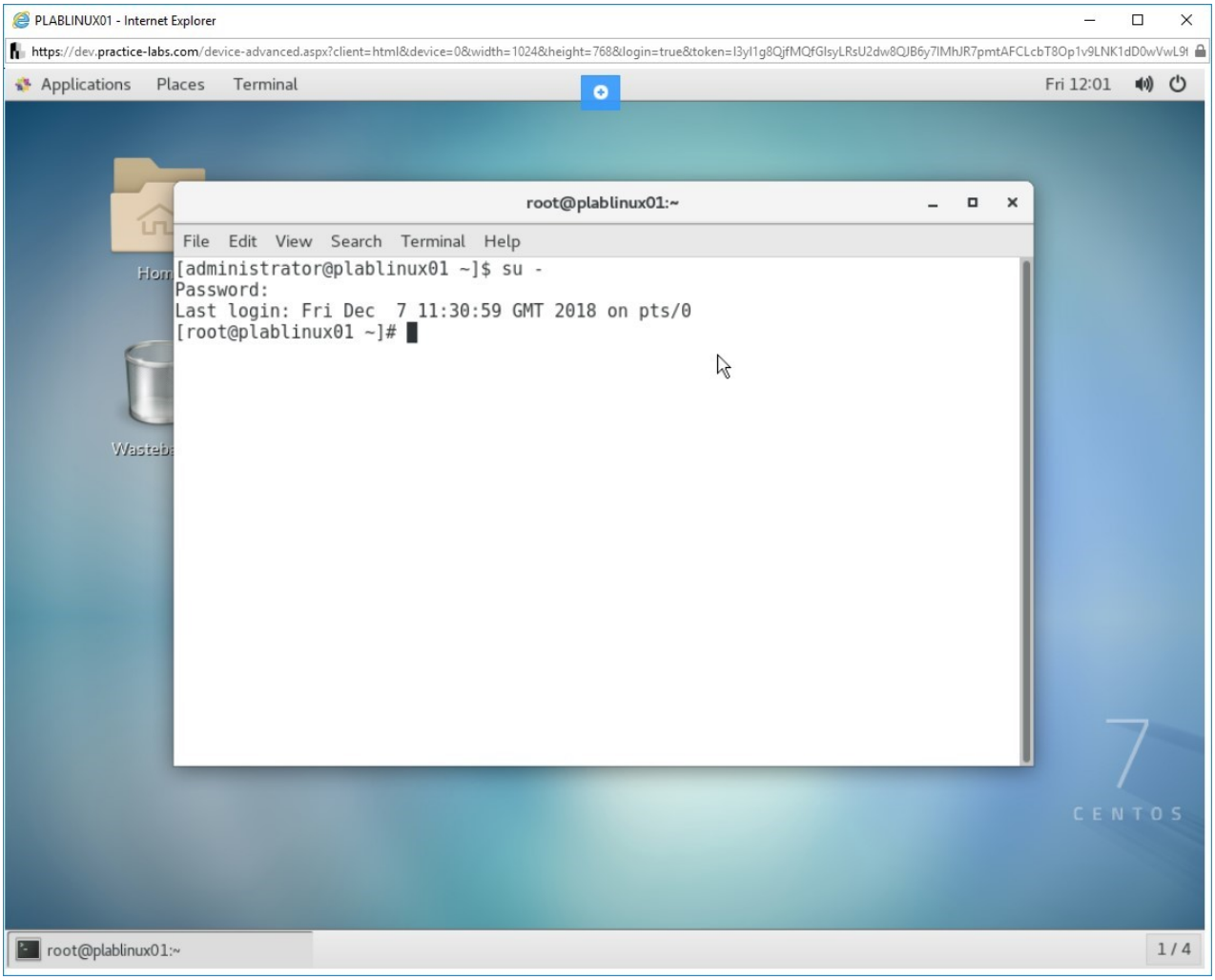


Figure 1.2 Screenshot of PLABLINUX01: Changing the account to the root account with the su command.

Step 3

Clear the screen by entering the following command:

```
clear
```

Type the following command:

```
fsck /dev/sdb1
```

Press **Enter**.

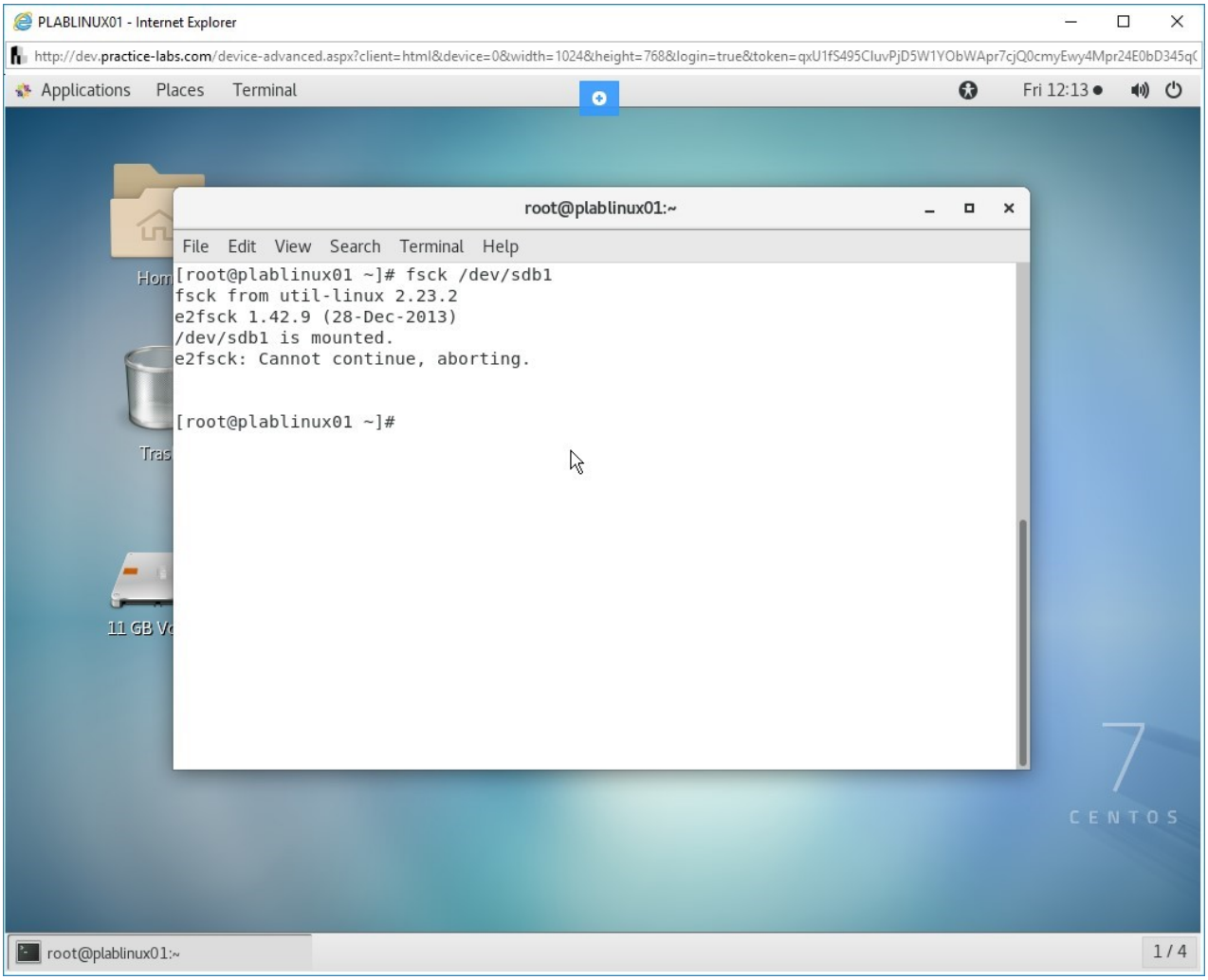


Figure 1.3 Screenshot of PLABLINUX01: Checking the /dev/sdb1 partition.

Step 4

Type the following command:

```
umount /dev/sdb1
```

Press **Enter**.

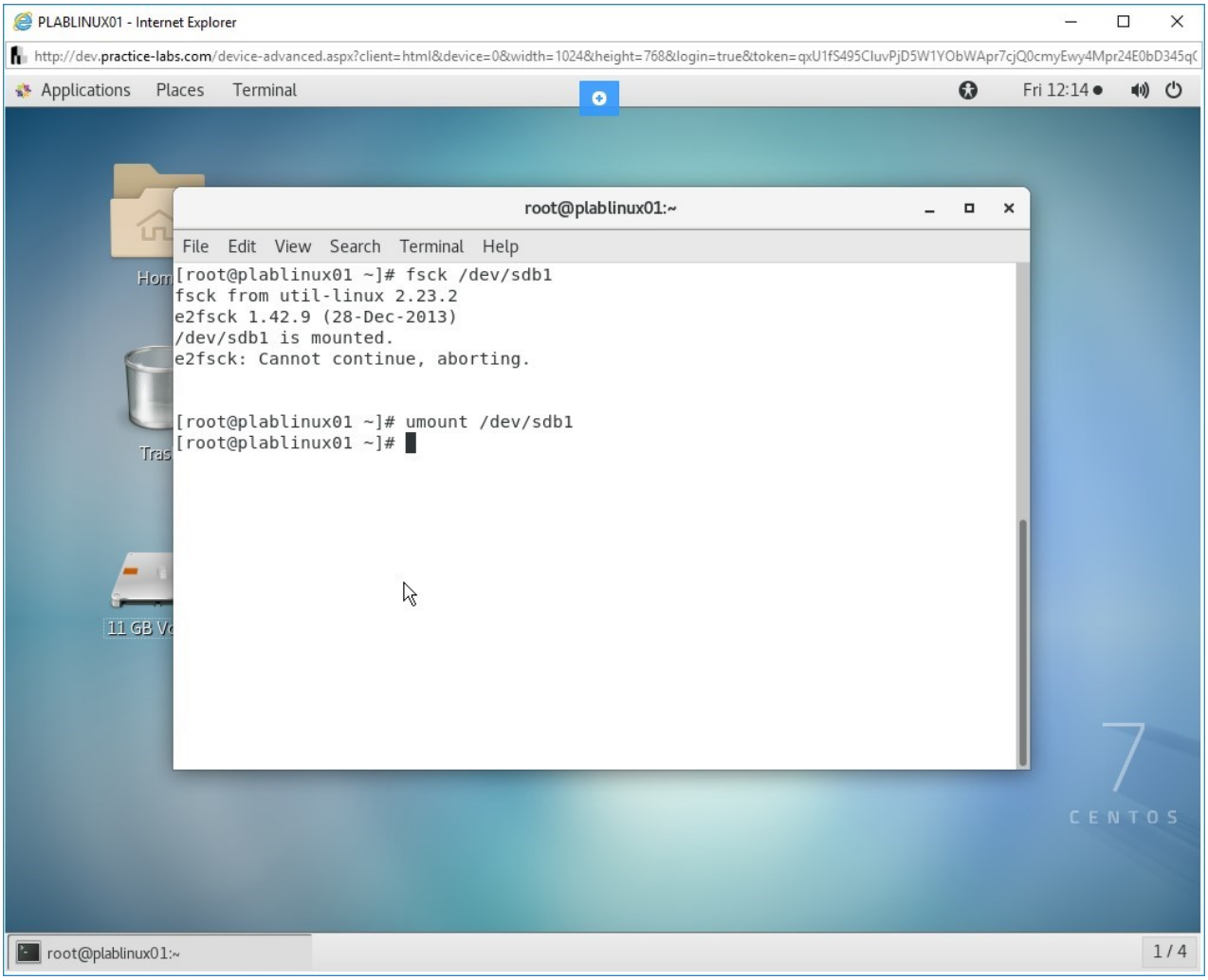


Figure 1.4 Screenshot of PLABLINUX01: Unmounting the filesystem.

Step 5

Clear the screen by entering the following command:

```
clear
```

Type the following command:

```
fsck /dev/sdb1
```

Press **Enter**.

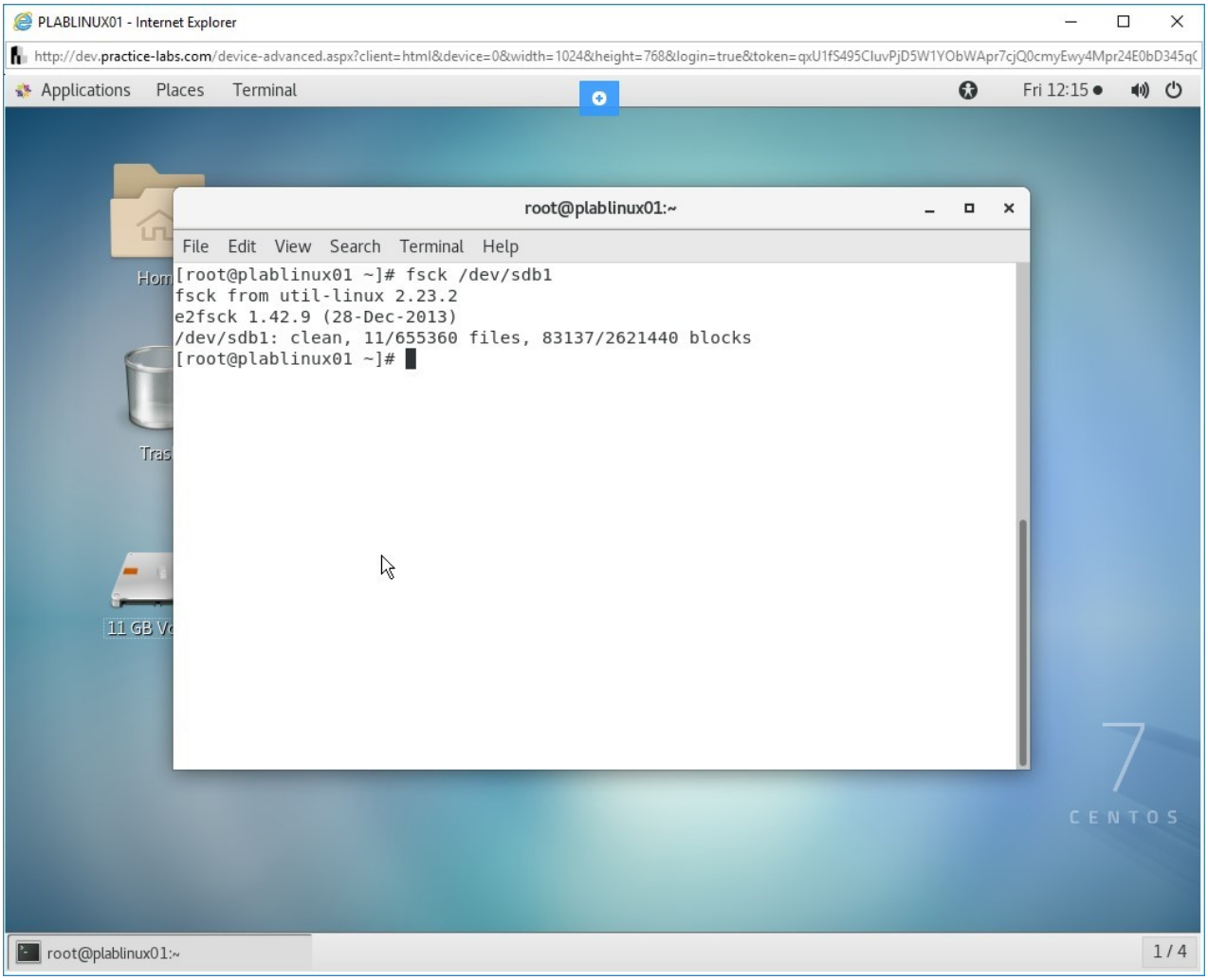


Figure 1.5 Screenshot of PLABLINUX01: Checking the /dev/sdb1 partition after unmounting.

Step 6

Clear the screen by entering the following command:

```
clear
```

When you are performing a filesystem check, you can auto repair the errors if they are detected. You will need to use the **-a** parameter. Type the following command:

```
fsck -a /dev/sdb1
```

Press **Enter**.

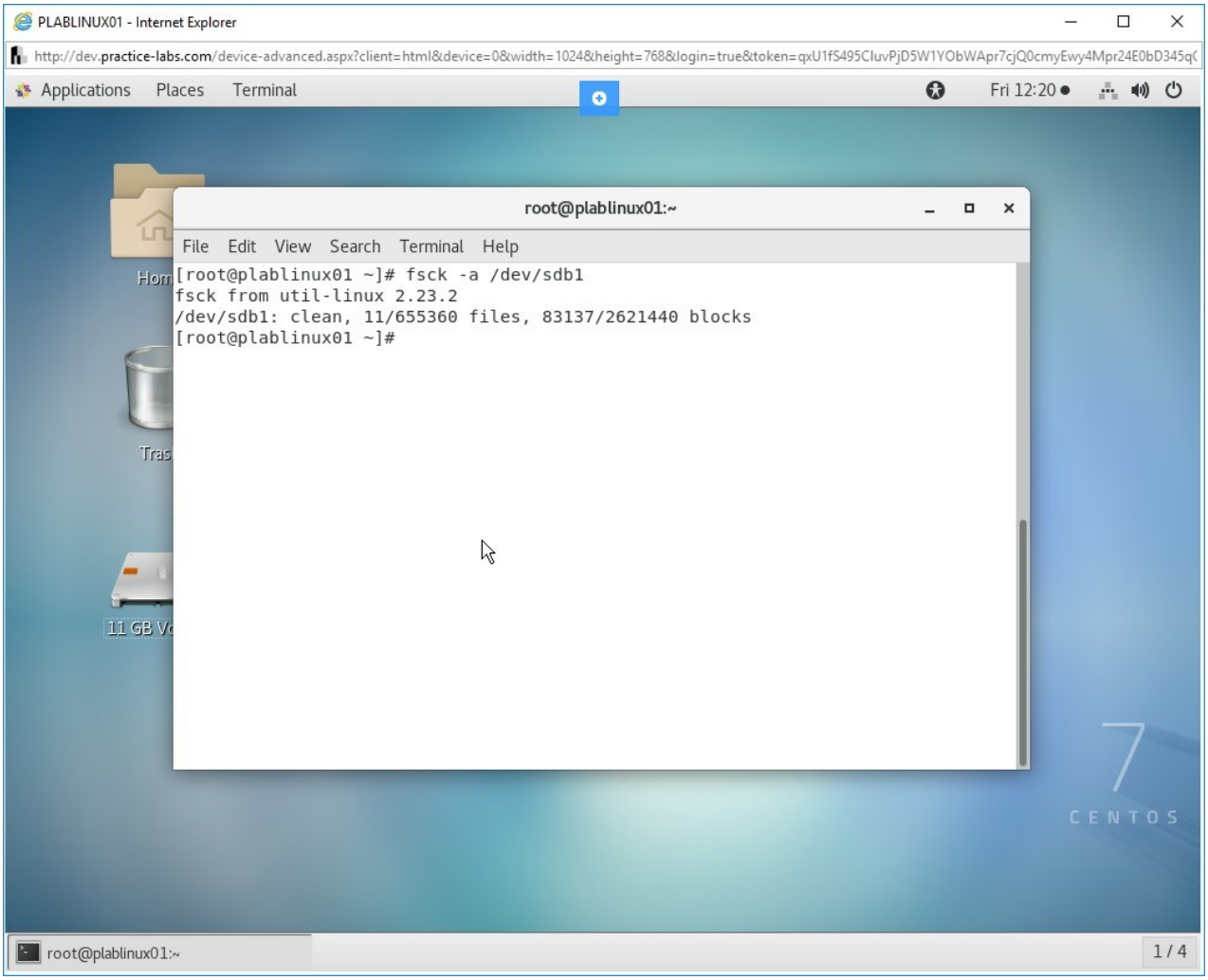


Figure 1.6 Screenshot of PLABLINUX01: Checking the filesystem with the auto repair parameter.

Step 7

Clear the screen by entering the following command:

```
clear
```

When you are performing a filesystem check, you can auto repair the errors if they are detected. You can also use the **-y** parameter. Type the following command:

```
fsck -y /dev/sdb1
```

Press **Enter**.

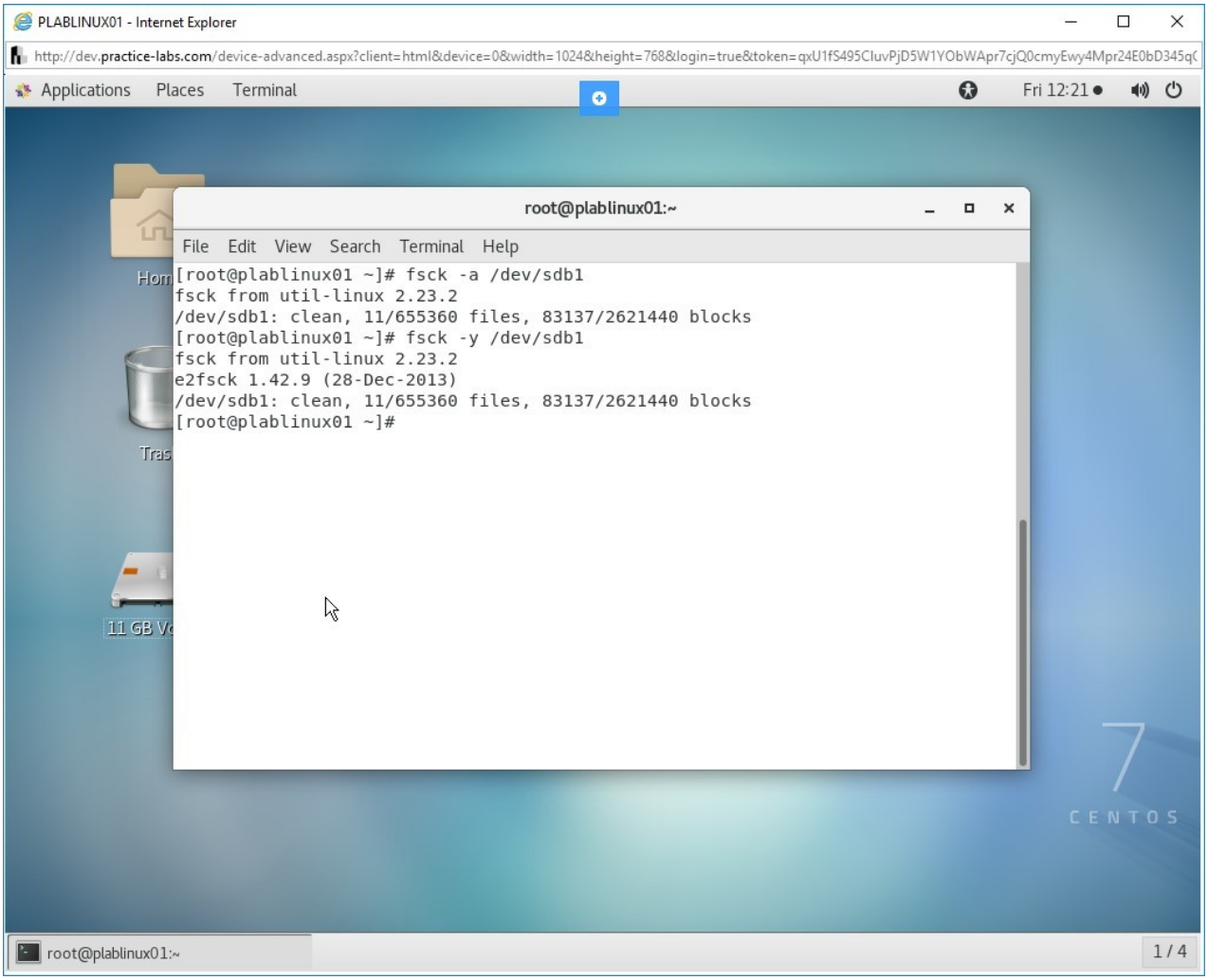


Figure 1.7 Screenshot of PLABLINUX01: Checking the filesystem with the auto repair parameter.

Step 8

You can also check the mounted file systems even though it is not recommended. Type the following command:

```
fsck -M /dev/sda1
```

Press **Enter**. Note that no response regarding the check is returned.

Type the following command:

```
echo $?
```

Press **Enter**. The value of 0 means that there are no errors.

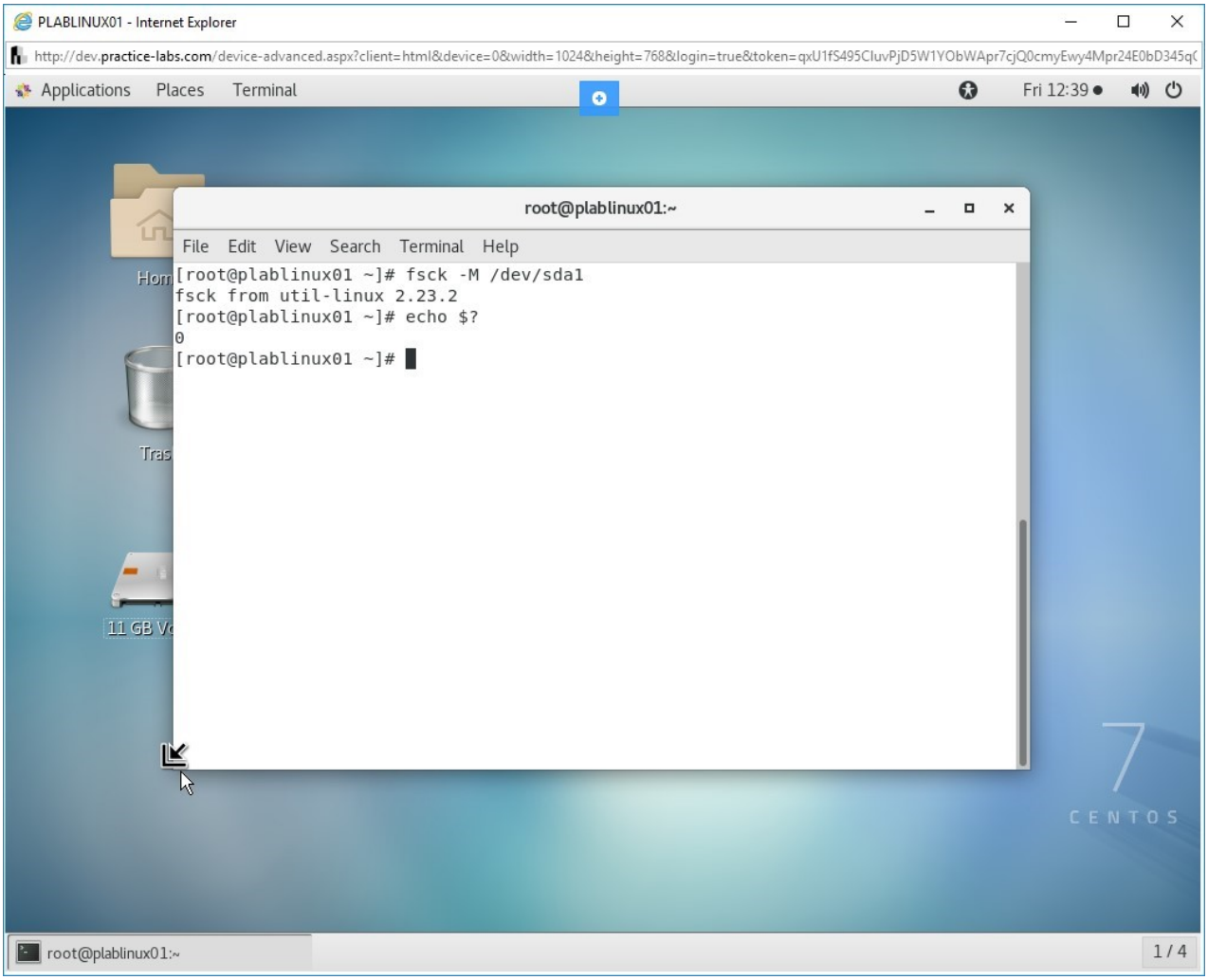


Figure 1.8 Screenshot of PLABLINUX01: Checking the mounted file systems and then verifying the response.

Step 9

You can also use the **-M** parameter with the unmounted system. Type the following command:

```
fsck -M /dev/sdb1
```

Press **Enter**. Note that this time response is returned.

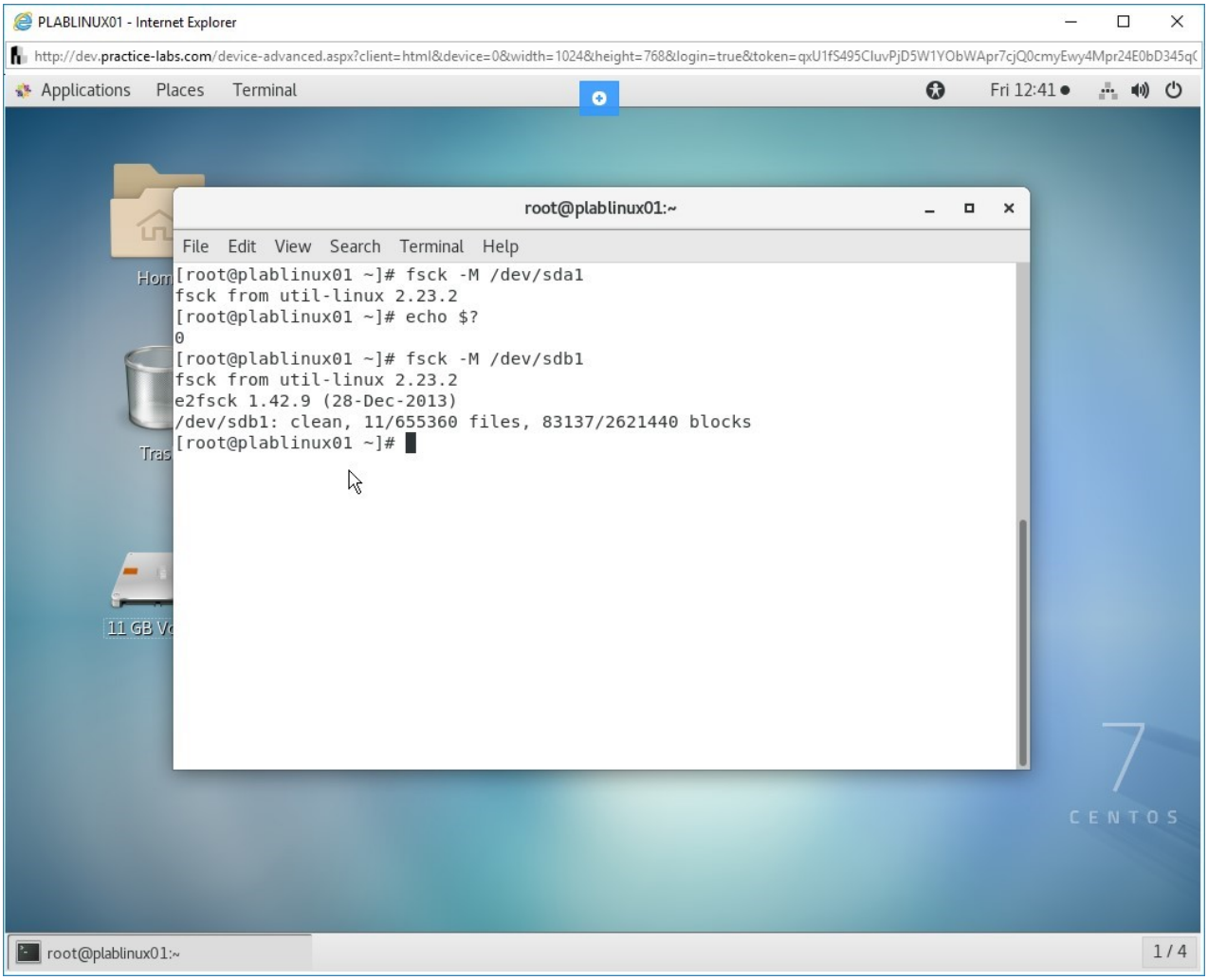


Figure 1.9 Screenshot of PLABLINUX01: Checking the unmounted filesystems.

Step 10

You can check a specific type of filesystem. Type the following command:

```
fsck -t ext4 /dev/sdb1
```

Press **Enter**.

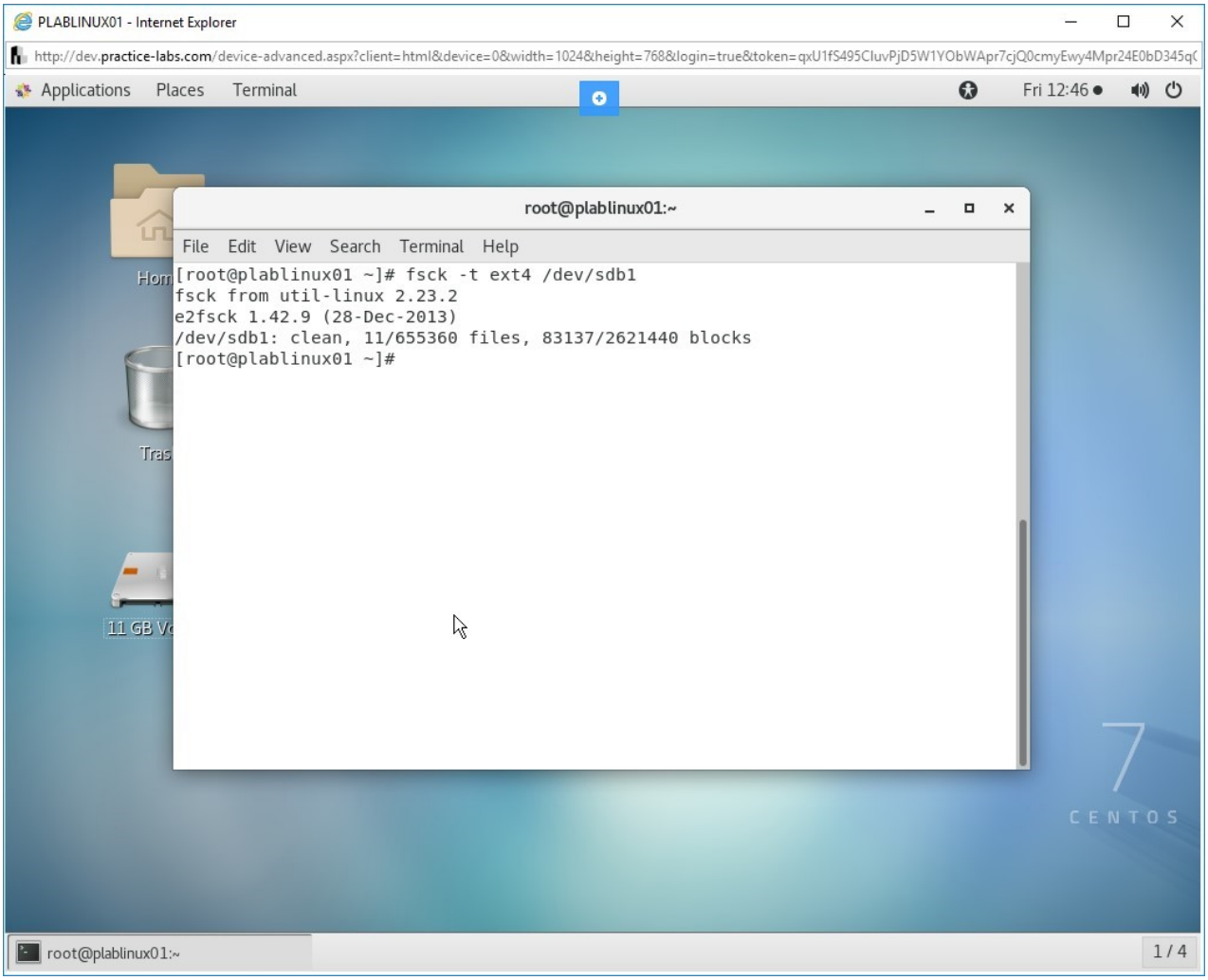


Figure 1.10 Screenshot of PLABLINUX01: Checking a specific type of filesystem.

Step 11

The checking for a specific filesystem is dependent on the command files that are available in the **/sbin** directory. If you do not have the command file for a specific file type and you check for that filesystem, you will receive an error. To list the command files, type the following command:

```
ls /sbin/fsck*
```

Press **Enter**.

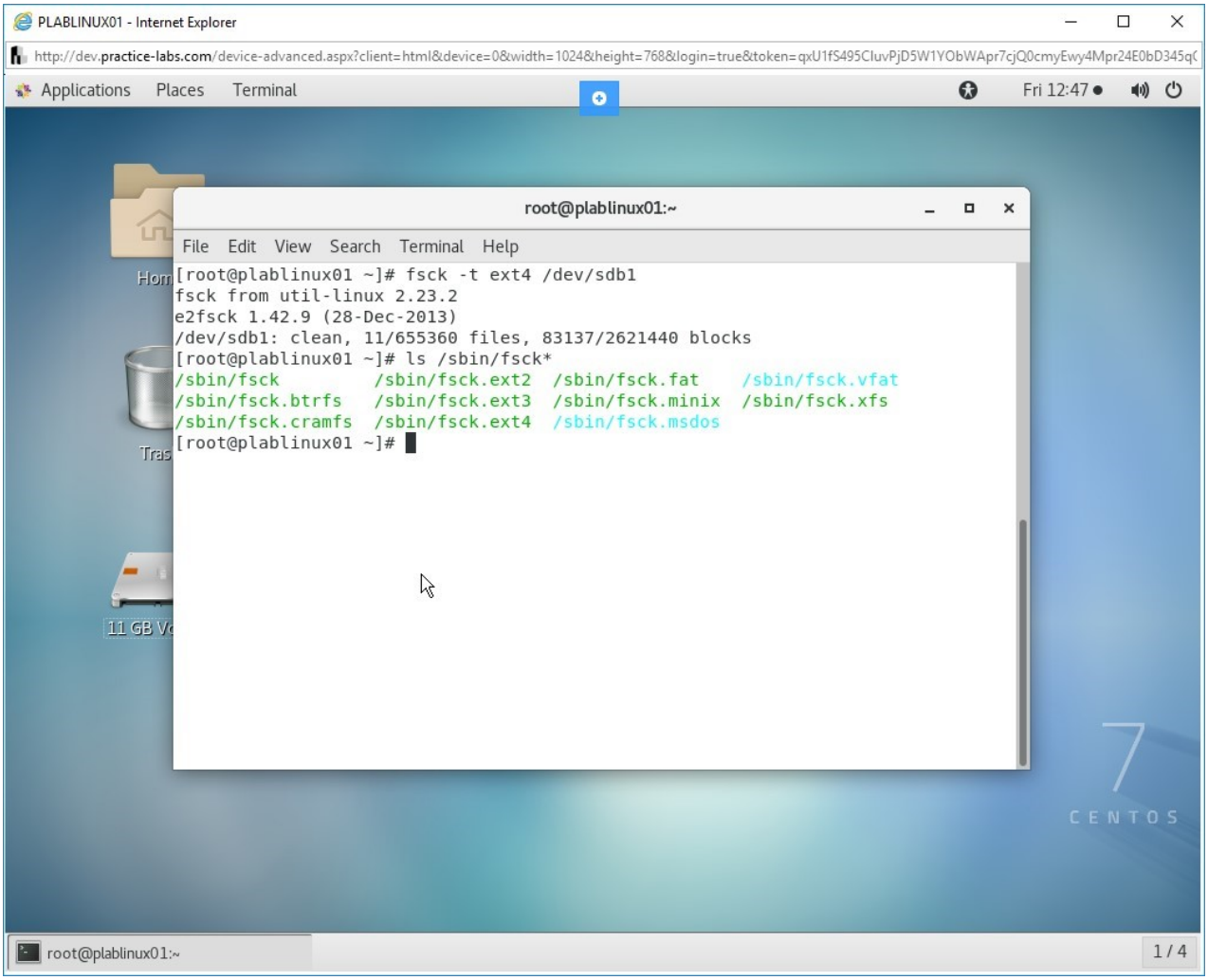


Figure 1.11 Screenshot of PLABLINUX01: Displaying the command files in the /sbin directory.

Step 12

When a filesystem is clean, the **fsck** command will run quickly and generate the report. You can use the **-f** command to force it to check the filesystem. Type the following command:

```
fsck /dev/sdb1 -f
```

Press **Enter**.

> ***Note:*** *Keep /dev/sdb1 unmounted. You will next try it out with the tune2fs command.*

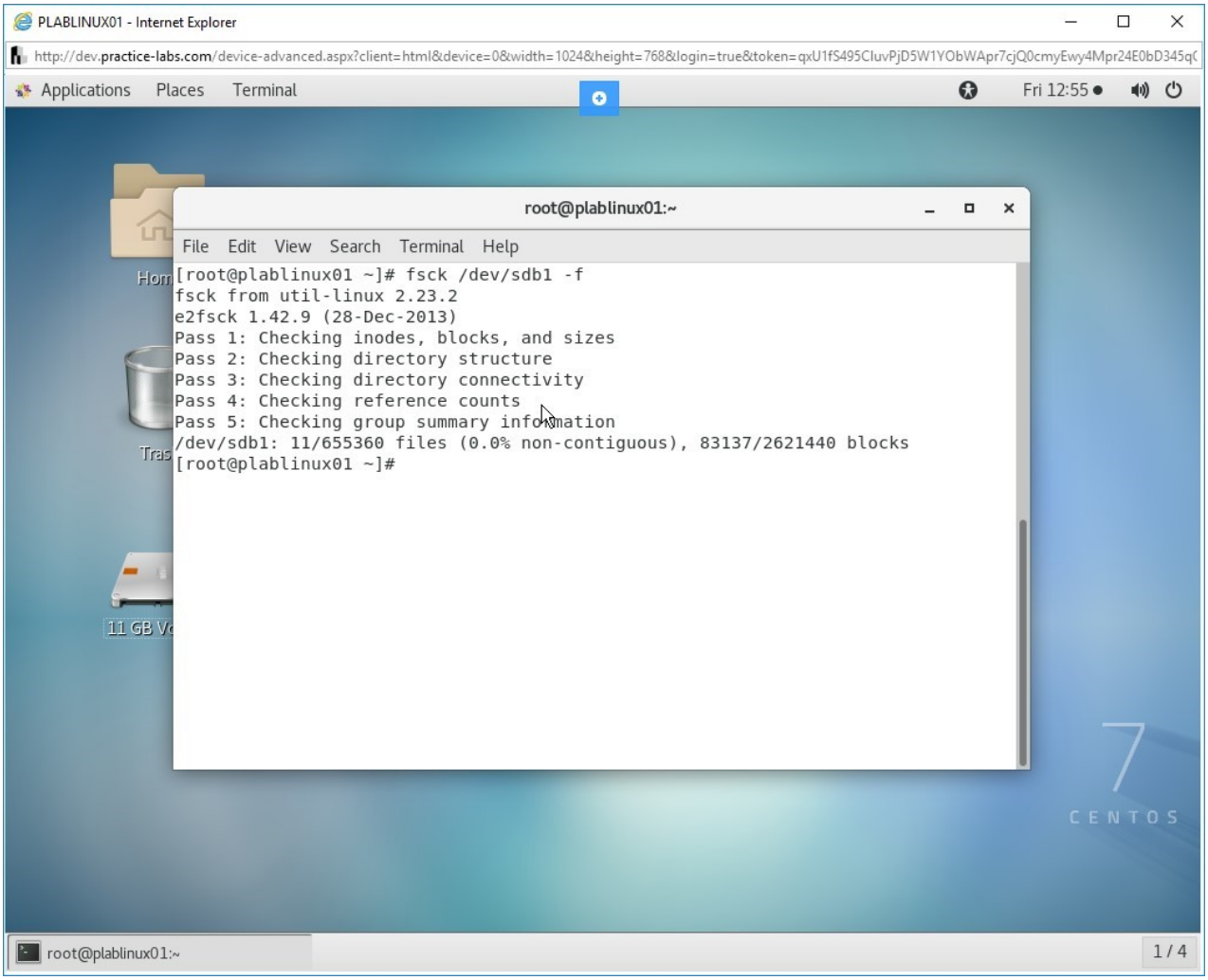


Figure 1.12 Screenshot of PLABLINUX01: Using the -f parameter with the fsck command.

Step 13

You can use the tune2fs command to manipulate the filesystem parameters. To list the parameters, type the following command:

```
tune2fs -l /dev/sdb1
```

Press **Enter**.

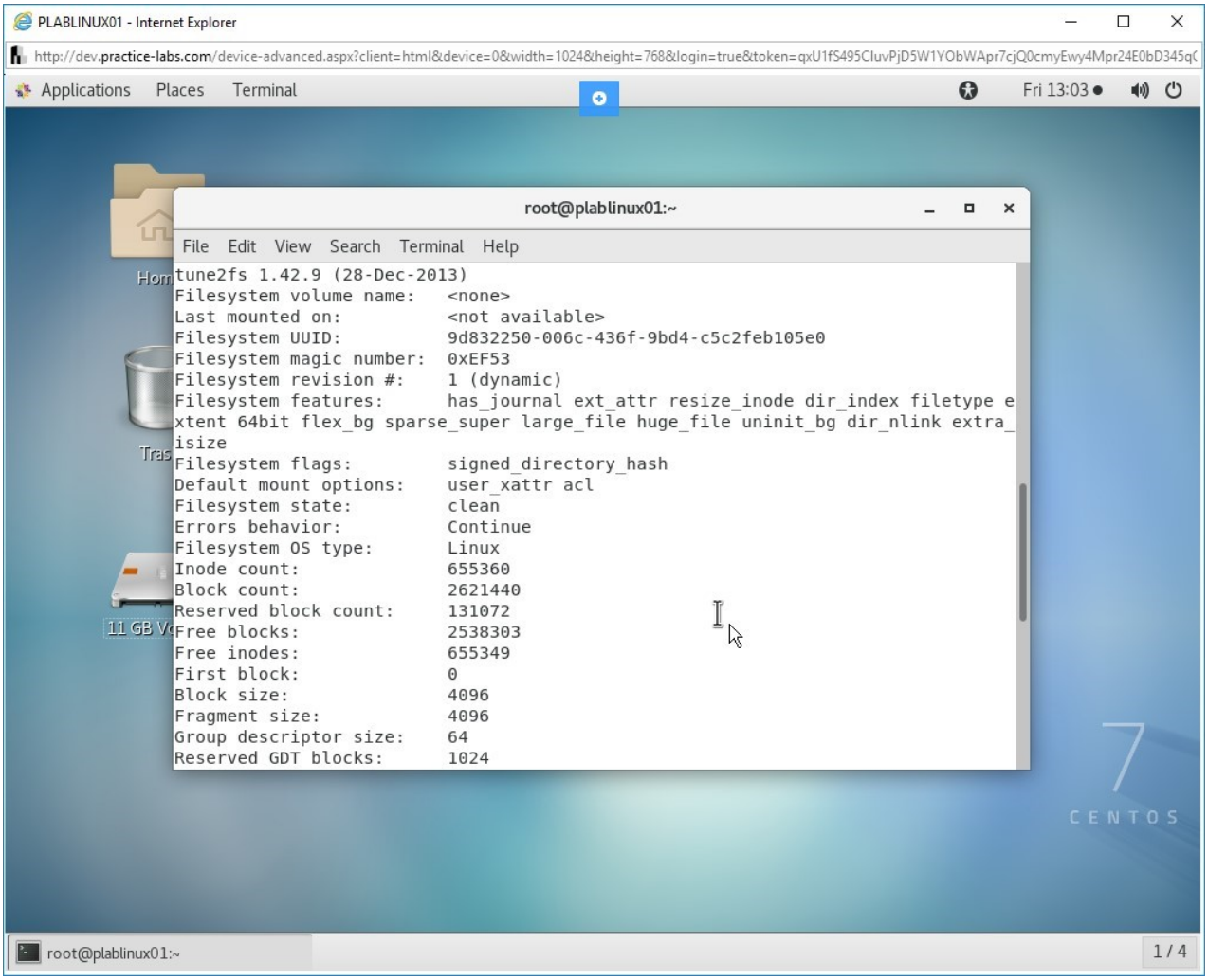


Figure 1.13 Screenshot of PLABLINUX01: Displaying the /dev/sdb1 parameters.

Step 14

You can check for the maximum number of times the filesystem can be mounted. Type the following command:

```
tune2fs -l /dev/sdb1 | grep -i mount
```

Press **Enter**.

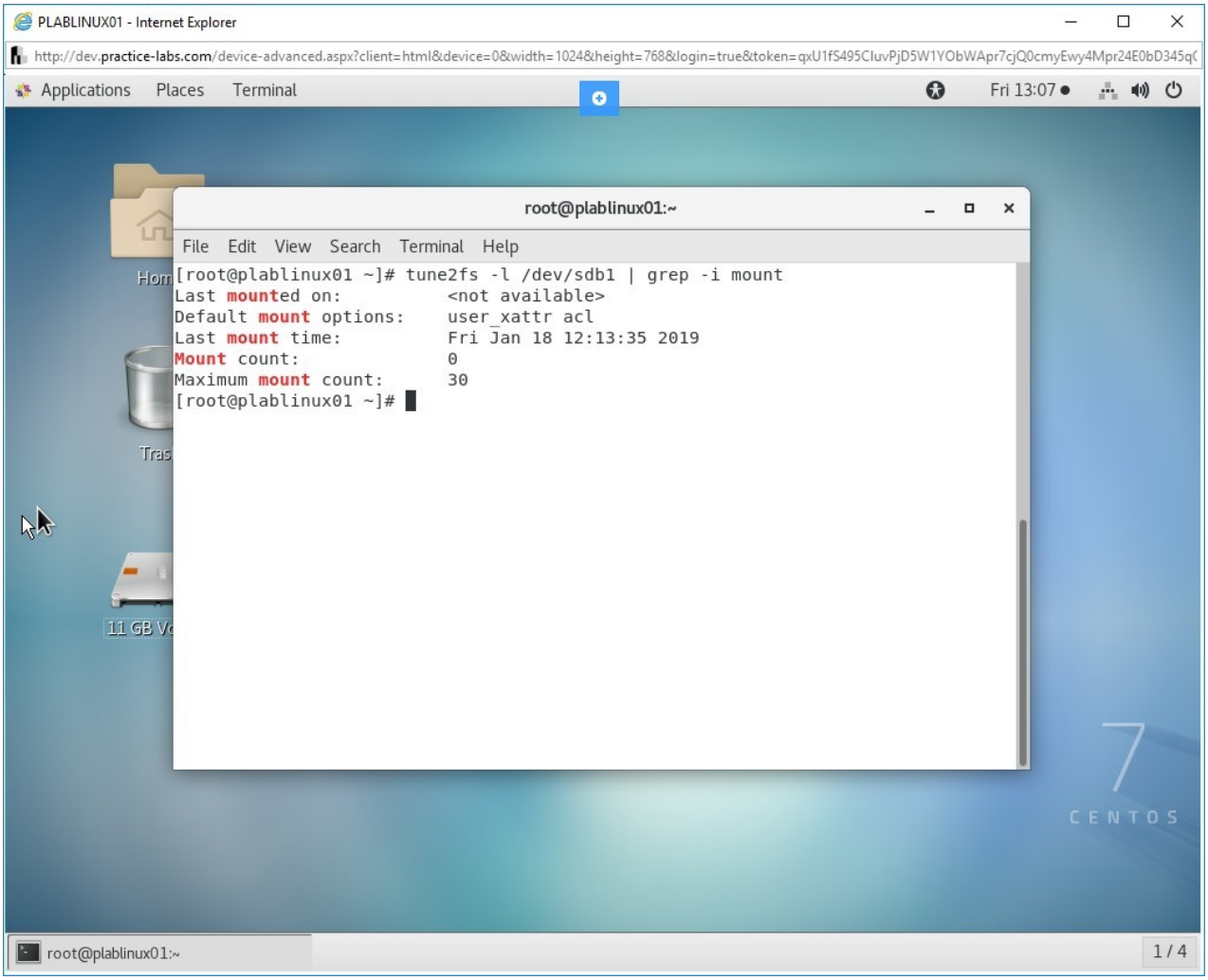


Figure 1.14 Screenshot of PLABLINUX01: Checking for the maximum number of times the filesystem can be mounted.

Step 15

To change the number of mount times, type the following command:

```
tune2fs -c 20 /dev/sdb1
```

Press **Enter**.

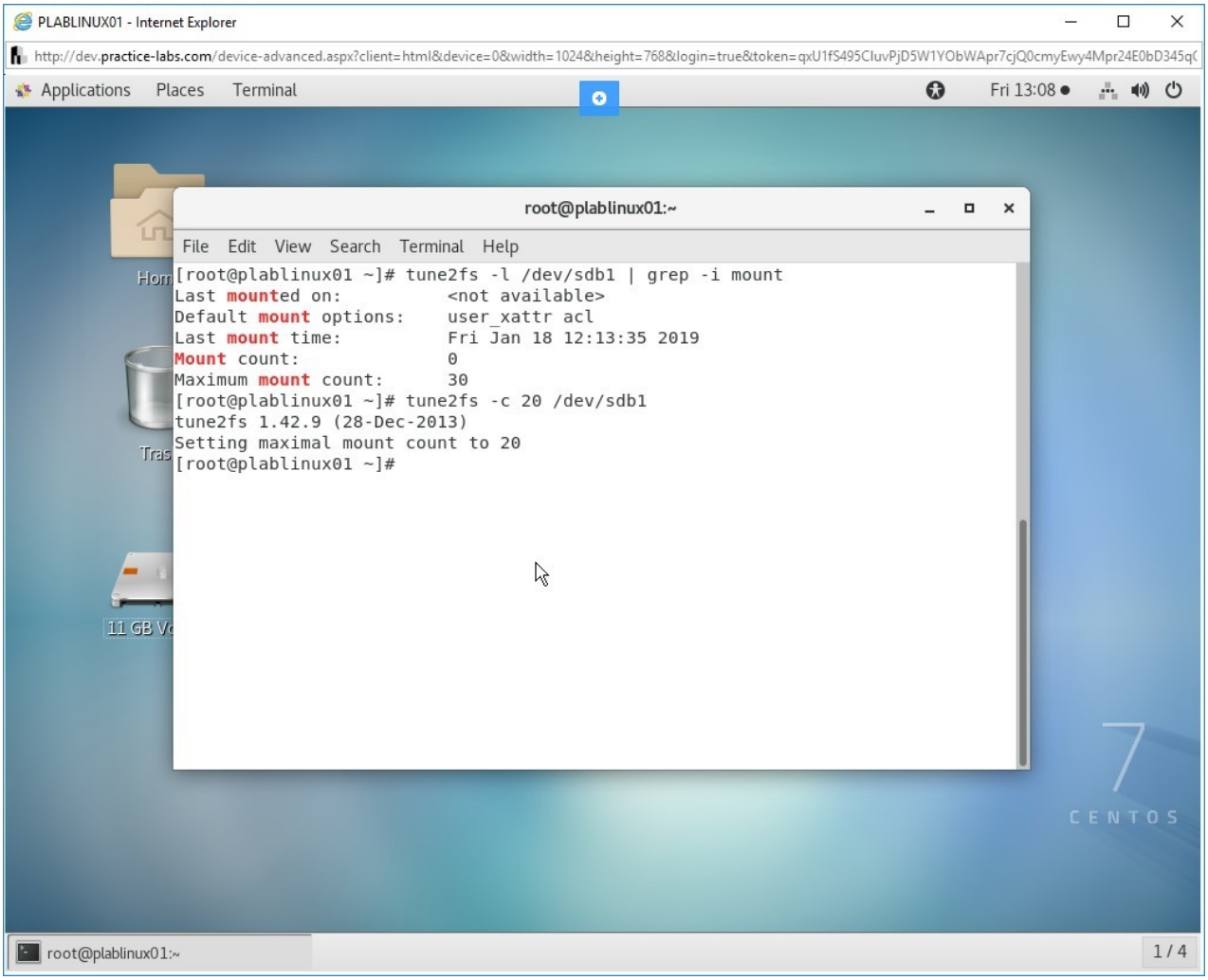


Figure 1.15 Screenshot of PLABLINUX01: Changing the number of mount times.

Step 16

To see the volume label, type the following command:

```
tune2fs -l /dev/sdb1 | grep -i name
```

Press **Enter**. Notice that the volume does not have a name.

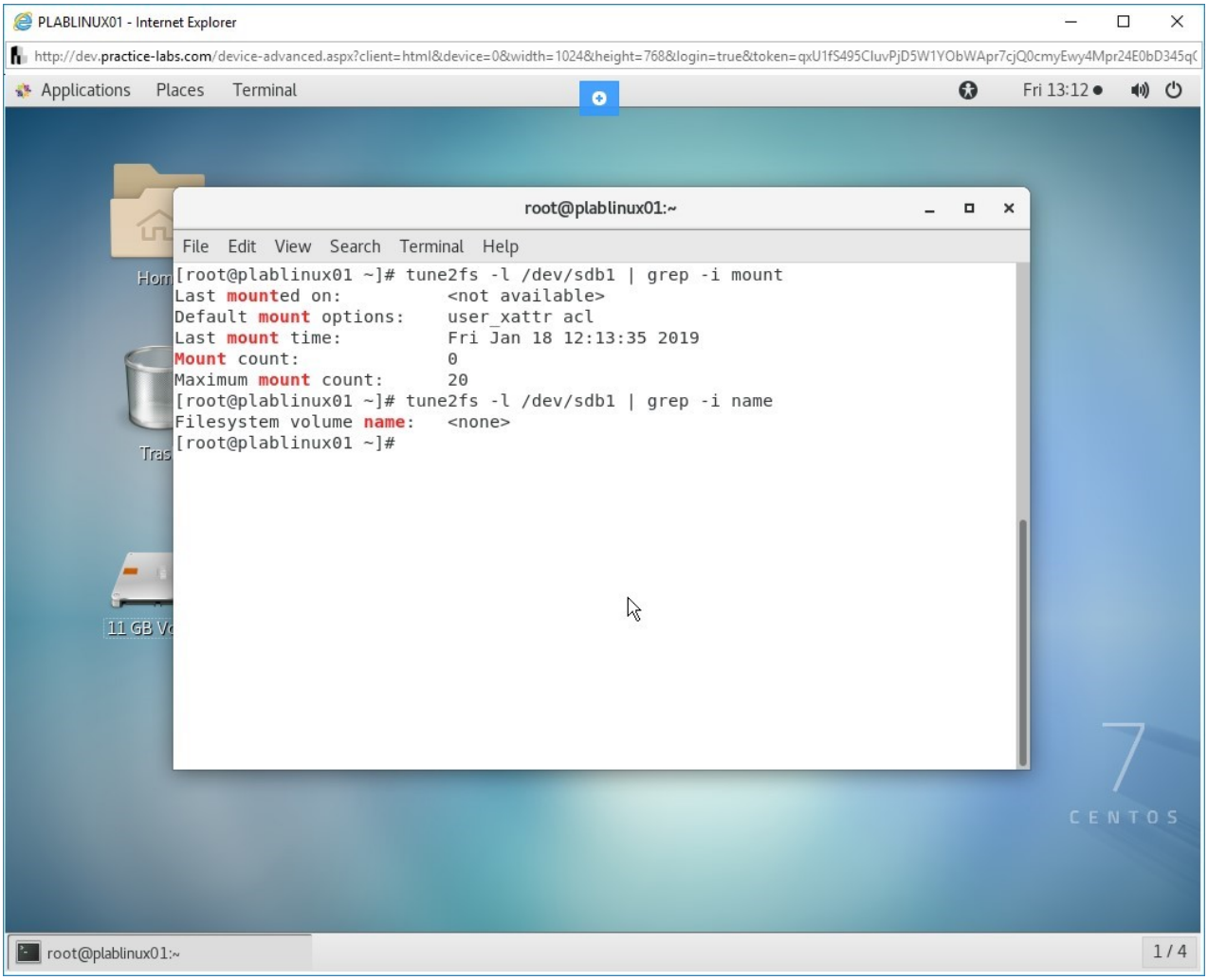


Figure 1.16 Screenshot of PLABLINUX01: Displaying the volume label.

Step 17

Clear the screen by entering the following command:

```
clear
```

To verify when was the last time filesystem was checked, type the following command:

```
tune2fs -l /dev/sdb1 | grep -i check
```

Press **Enter**.

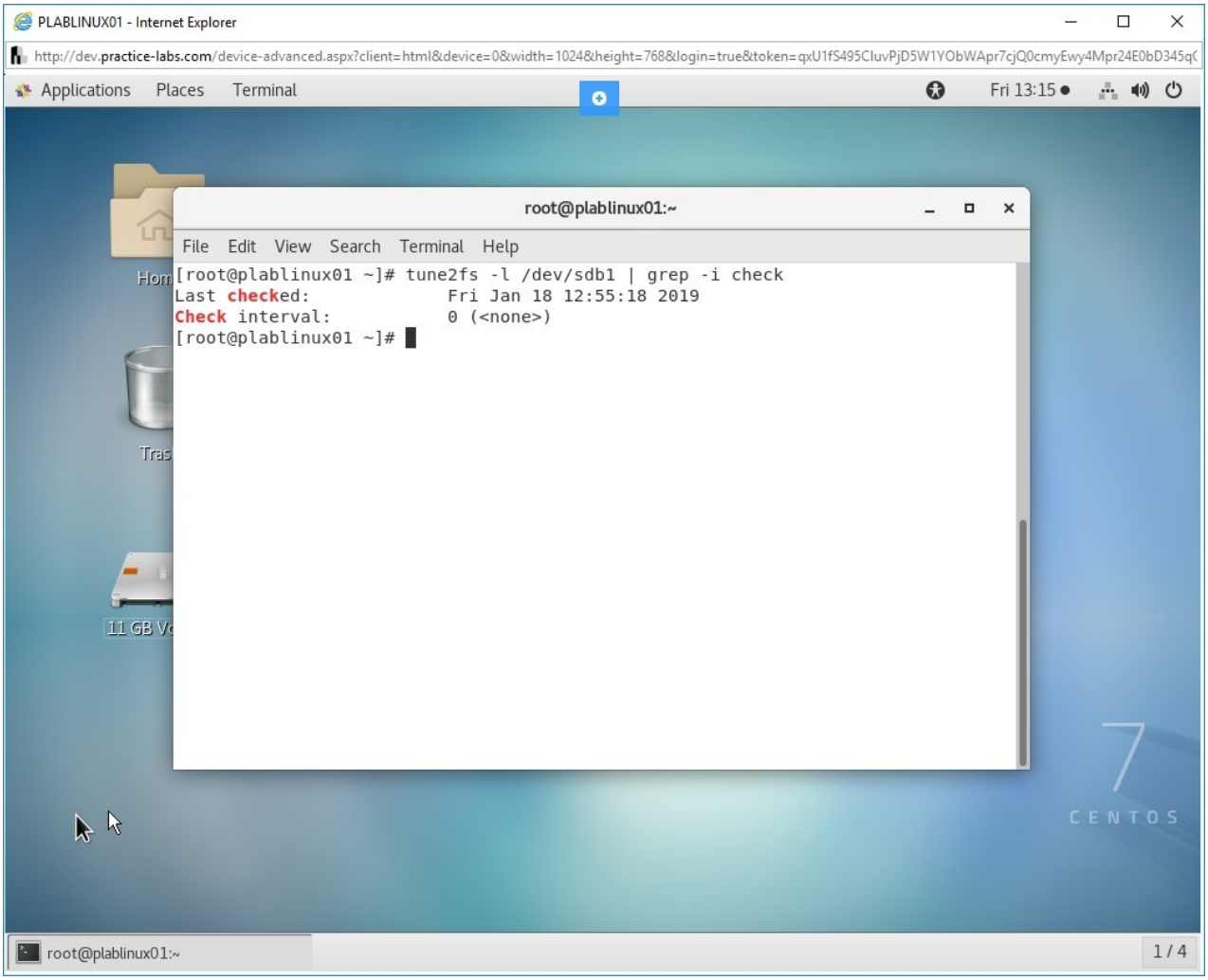


Figure 1.17 Screenshot of PLABLINUX01: Verifying when was the last time filesystem was checked.

Step 18

Clear the screen by entering the following command:

```
clear
```

To set the time-based checking, type the following command:

```
tune2fs -i 5d /dev/sdb1
```

Press **Enter**.

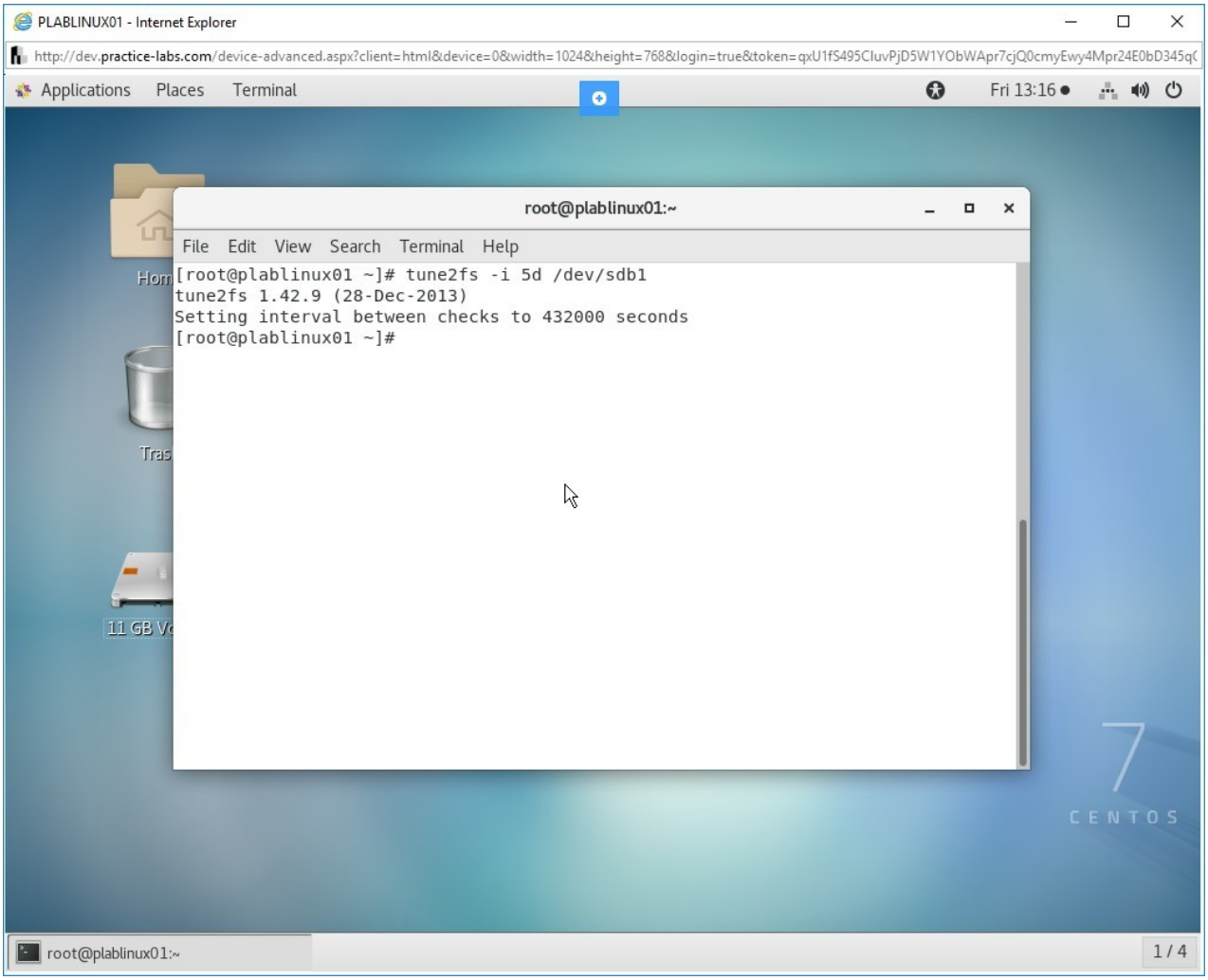


Figure 1.18 Screenshot of PLABLINUX01: Setting the time-based checking.

Step 19

Clear the screen by entering the following command:

```
clear
```

To set the label of a volume or partition, you can use the **e2label** command. Let's first check for the volume label. Type the following command:

```
e2label /dev/sdb1
```

Press **Enter**. Notice that the partition does not have a label.

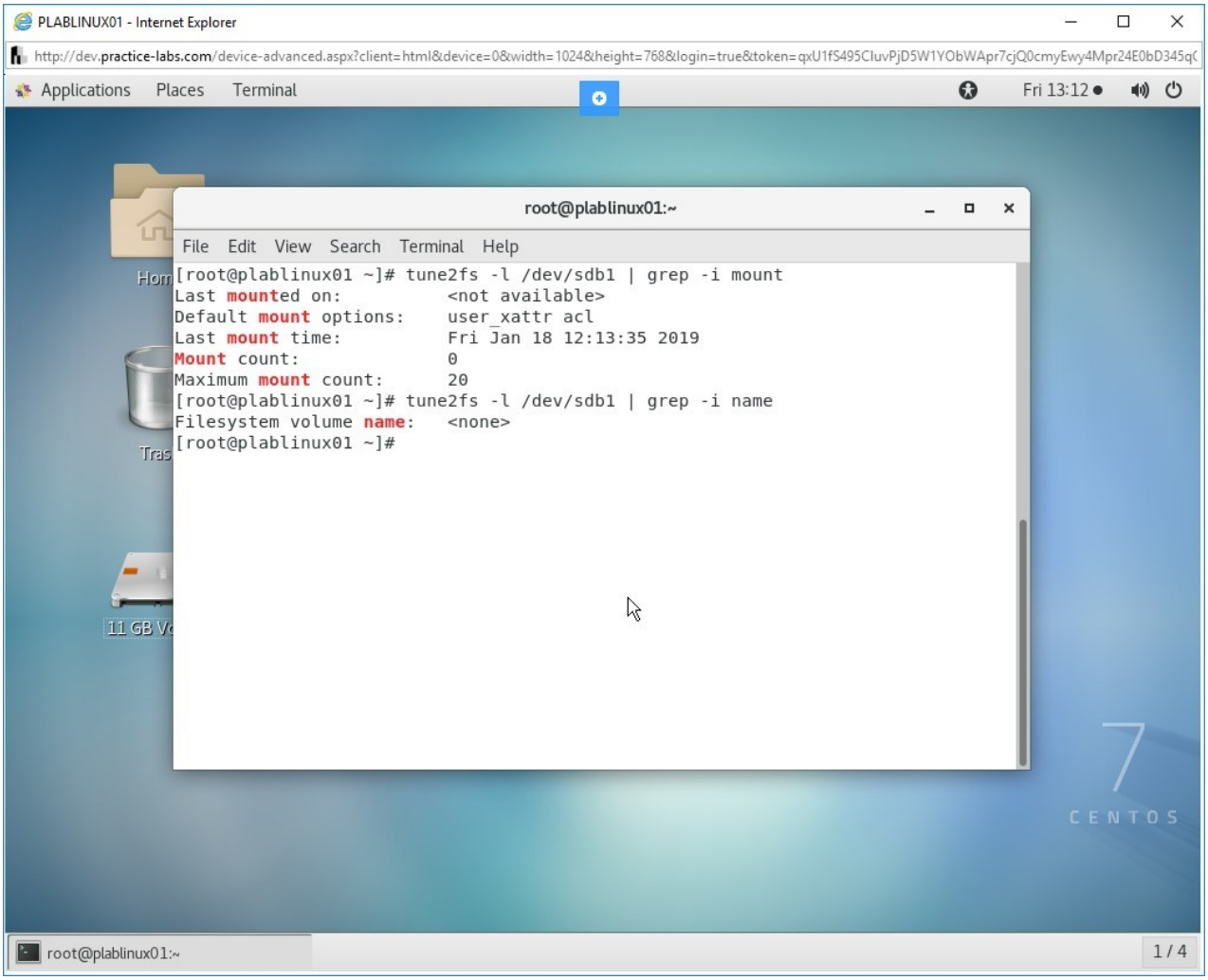


Figure 1.19 Screenshot of PLABLINUX01: Checking the label of a volume or partition.

Step 20

To assign a label to the partition, type the following command:

```
e2label /dev/sdb1 Data
```

Press **Enter**.

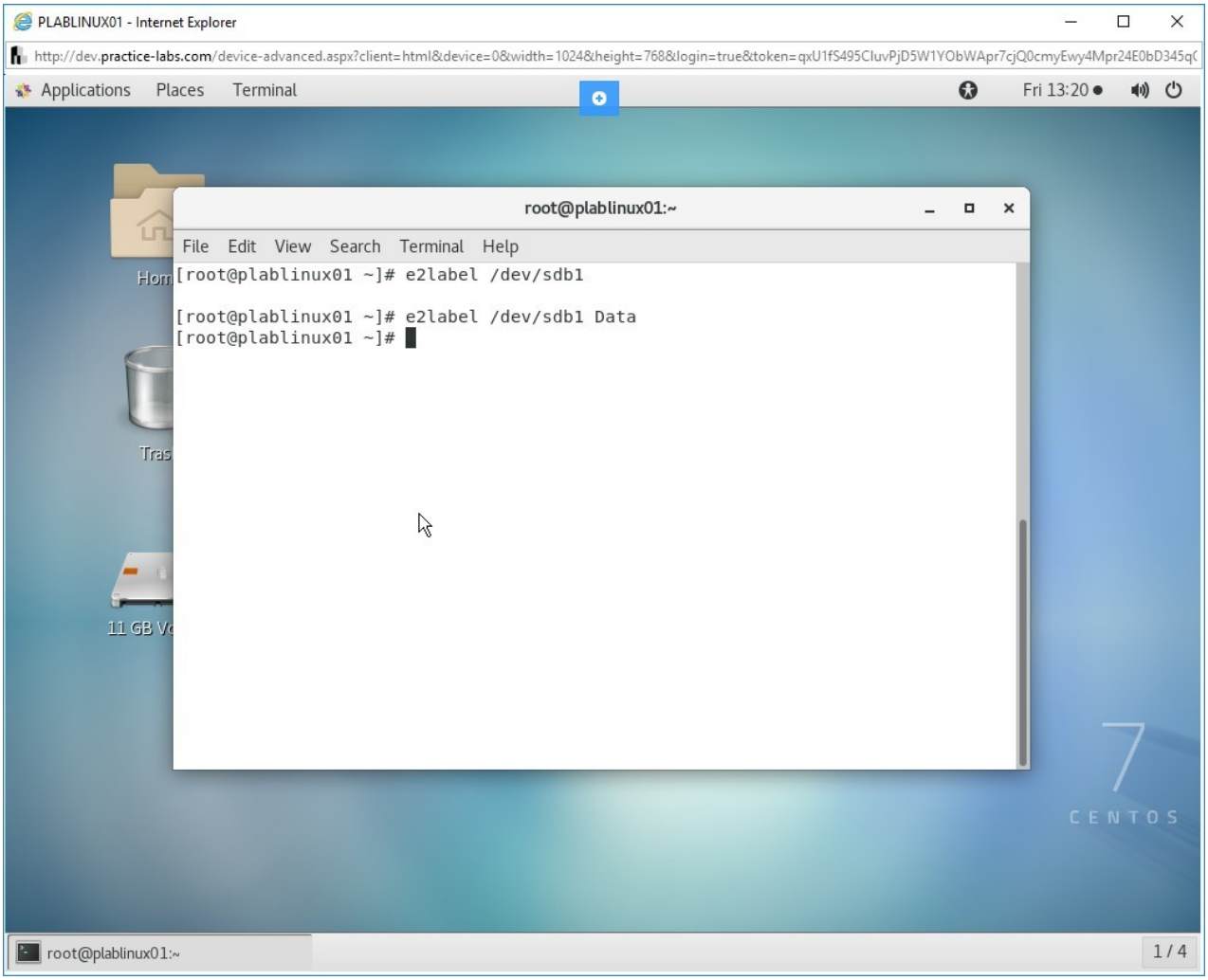


Figure 1.20 Screenshot of PLABLINUX01: Assigning a label to the partition.

Step 21

To check for the volume label, type the following command:

```
e2label /dev/sdb1
```

Press **Enter**. Notice that the partition has been assigned the label named **Data**.

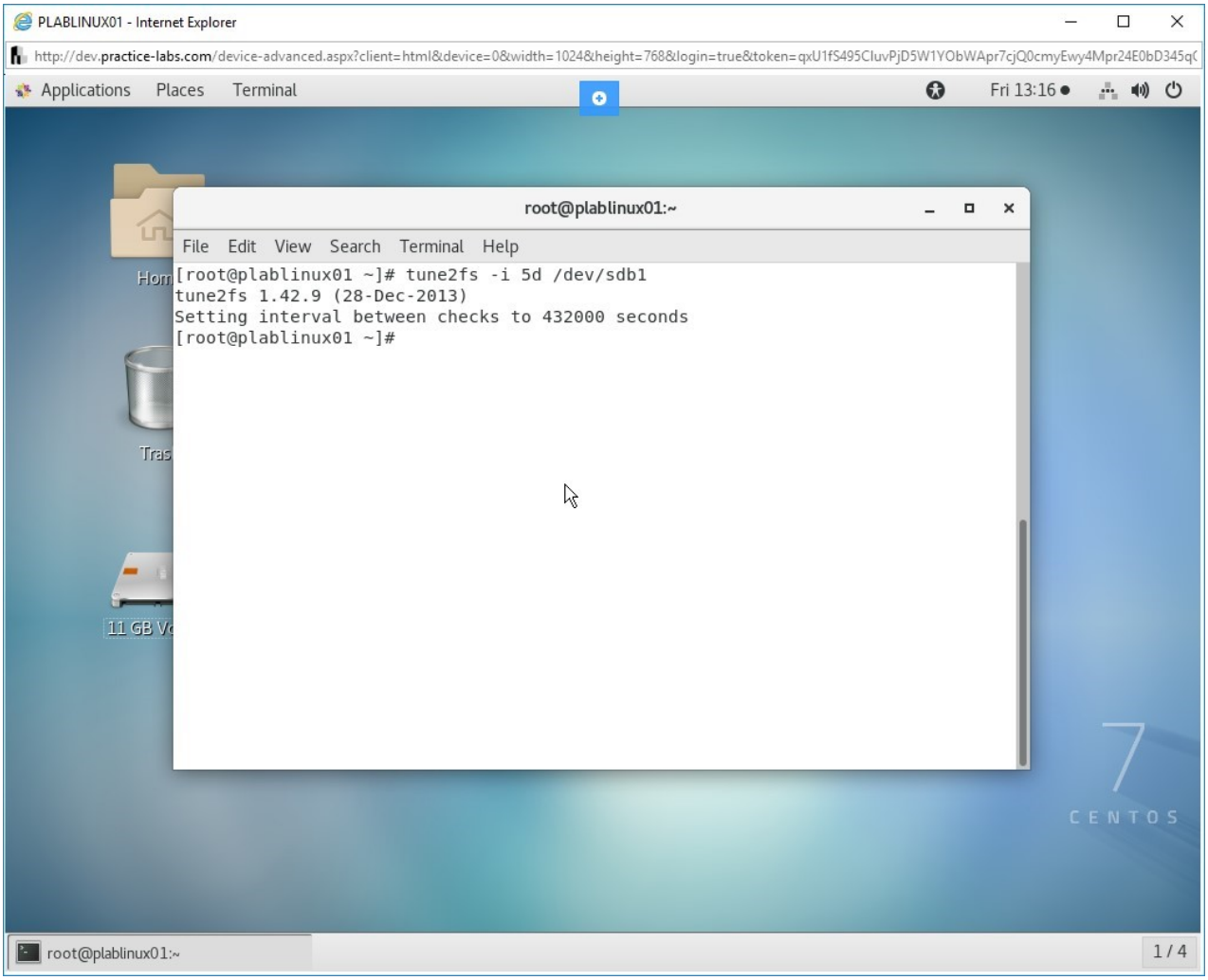


Figure 1.21 Screenshot of PLABLINUX01: Checking the label of a volume or partition.

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

Review

Well done, you have completed the **Check and Repair Filesystems** Practice Lab.

Summary

You completed the following exercise:

- Exercise 1 - Check and Repair Filesystems

You should now be able to:

- Use various methods to check and repair filesystems

Feedback

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