CompTIA Linux+

Set up SFTP to Chroot Jail only for Specific Group

Introduction

Welcome to the **Set up SFTP to Chroot Jail only for a Specific Group** Practice Lab. In this module you will be provided with the instructions and devices needed to develop your hands-on skills.

SFTP
Chroot Jail
CentOS
Ubuntu

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 - Set up SFTP to Chroot Jail only for a Specific Group

After completing this lab, you will be able to:

- Configure Network on CentOS
- Set up SFTP to Chroot Jail only for a Specific Group
- Configure Network on Ubuntu
- Verify the Chroot Configuration

Exam Objectives

The following exam objectives are covered in this lab:

- **LPI:** 110.3 Securing data with encryption
- **CompTIA:** 3.3 Summarize security best practices 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.

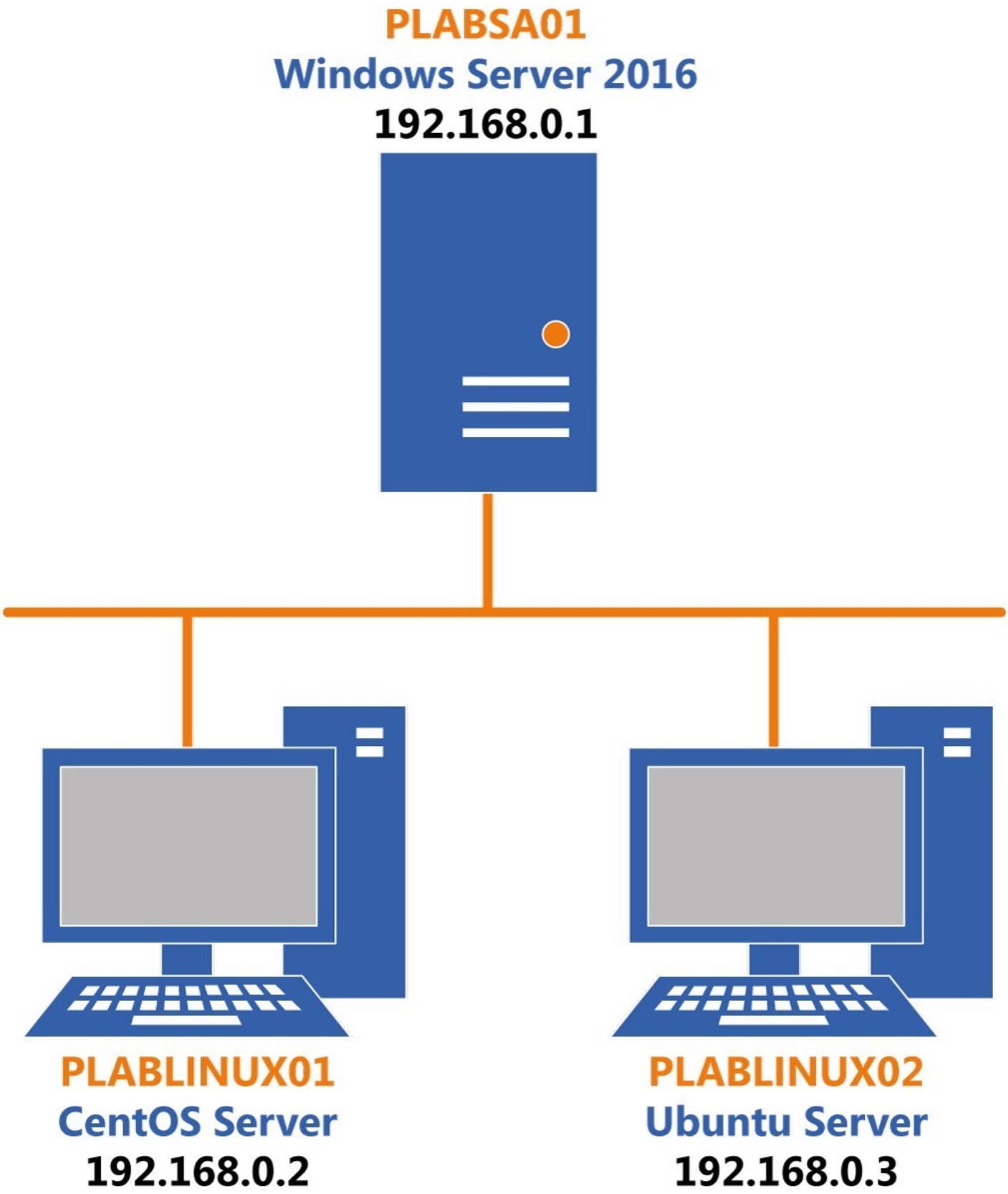
Help and Support

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 - Set Up SFTP to Chroot Jail only for a Specific Group

A chroot jail helps you to isolate a process and its children from the rest of the system. You can limit a process to run in its own confined space where the process does not have access to the remaining system. The root user, however, can break out of the chroot jail.

In this exercise, you will learn to setup SFTP to chroot jail only for a specific group.

Learning Outcomes

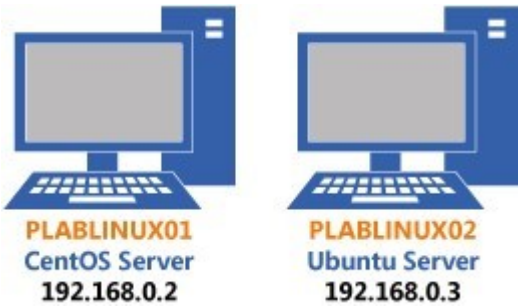
After completing this exercise, you will be able to:

- Log into a Linux System
- Configure Network on CentOS
- Set up SFTP to Chroot Jail only for a Specific Group
- Configure Network on Ubuntu
- Verify the Chroot Configuration

Your Devices

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

- **PLABLINUX01** (CentOS Server)
- **PLABLINUX02** (Ubuntu Server)



Task 1 - Configure Network on CentOS

For a client to communicate on the network, it needs to have an IP address. If the client exists on the IPv4 network, then the client must have an IPv4 address. On IPv6 network, the client must have IPv6 address.

In this task, you will configure an IP address on the client. To do this, perform the following steps:

Step 1

Connect to **PLABLINUX01**.

Click **Applications**, select **System Tools**, and then select **Settings**.

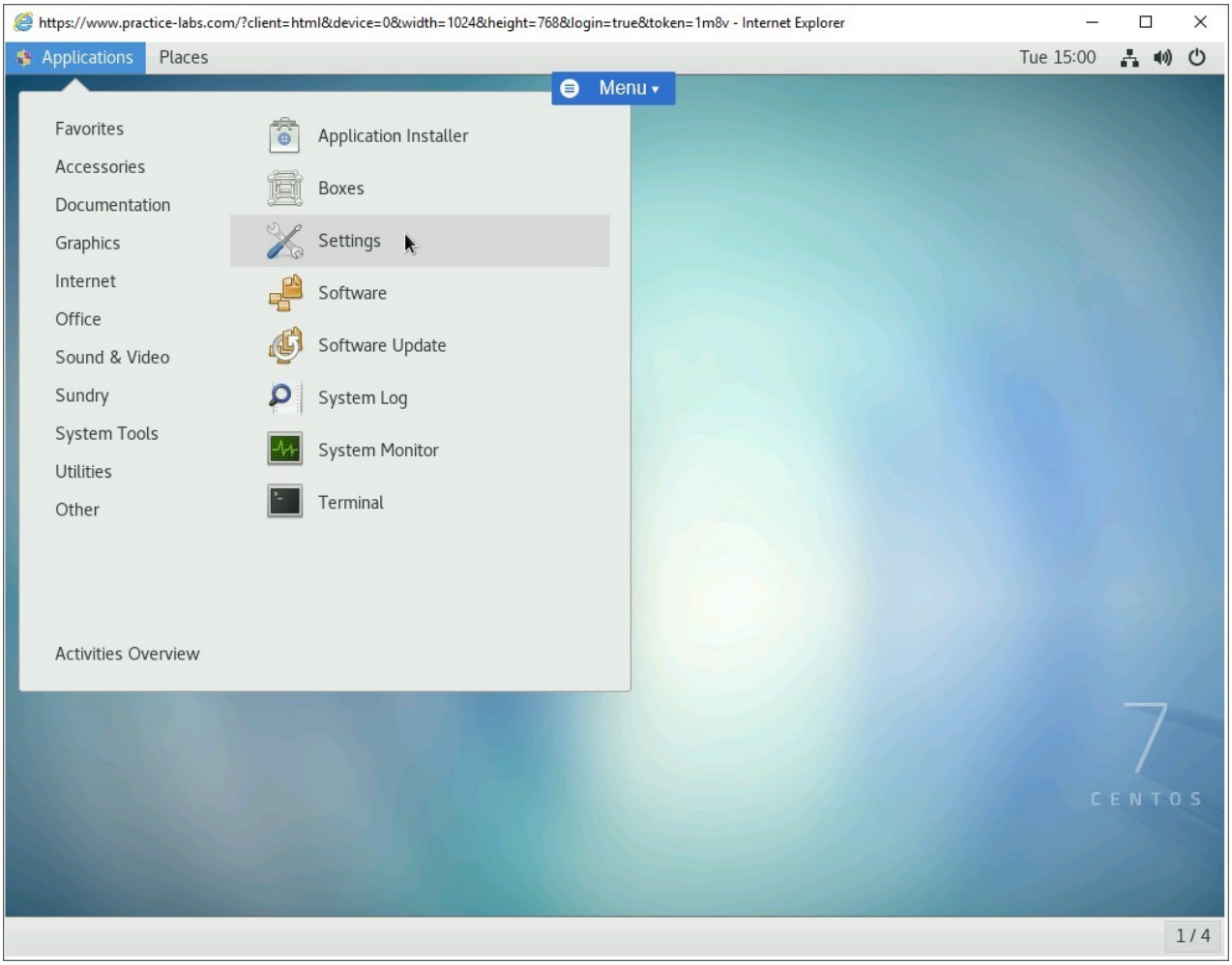


Figure 1.1 Screenshot of PLABLINUX01: Selecting the Settings option from the Applications > System Tools menu.

Step 2

From the **Settings** window, click **Network** in the left pane and then click the icon next to **ON** in the **Wired** section.

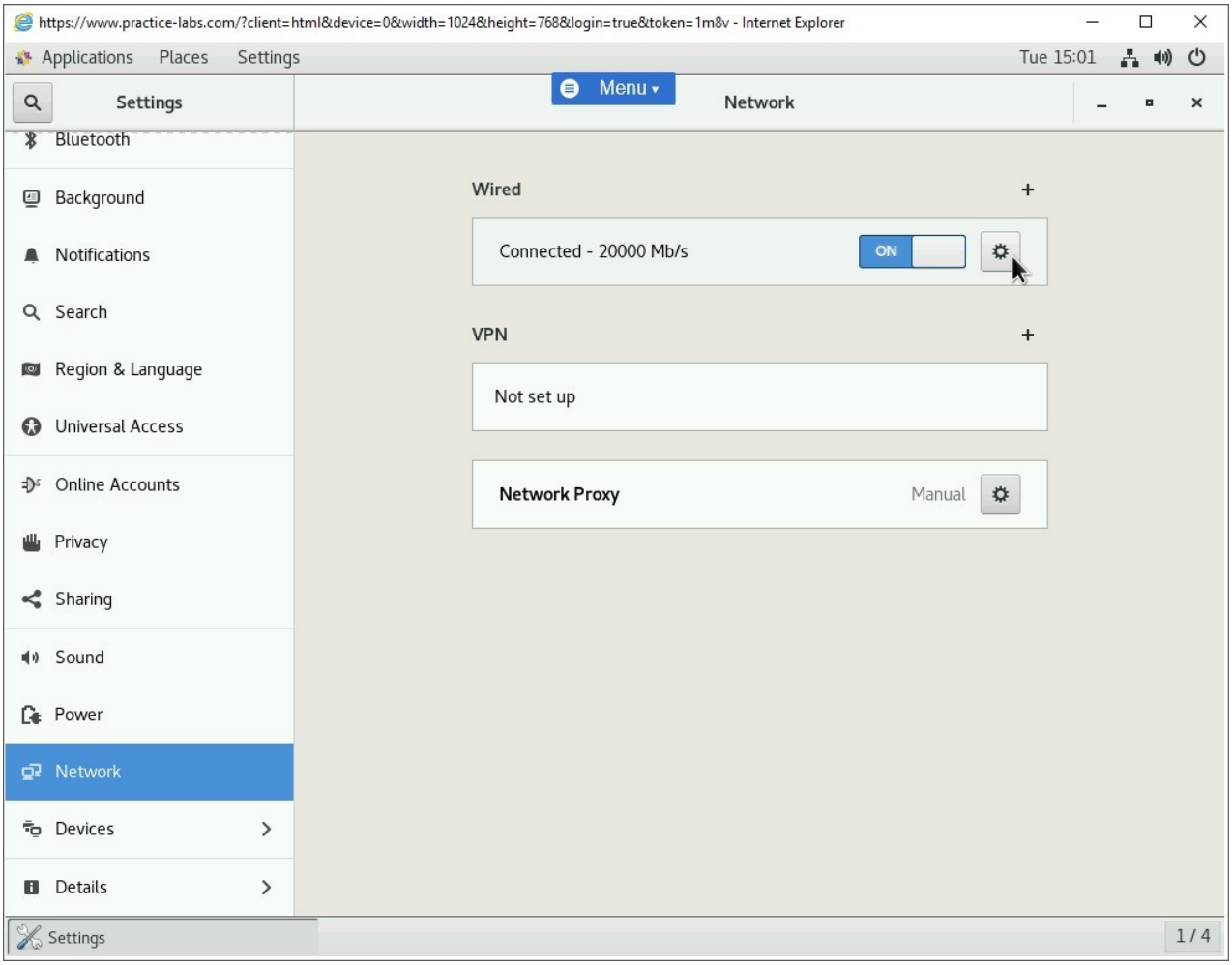


Figure 1.2 Screenshot of PLABLINUX01: Clicking the button to invoke the Wired dialog box.

Step 3

In the **Wired** dialog box, click the **IPv4** tab.

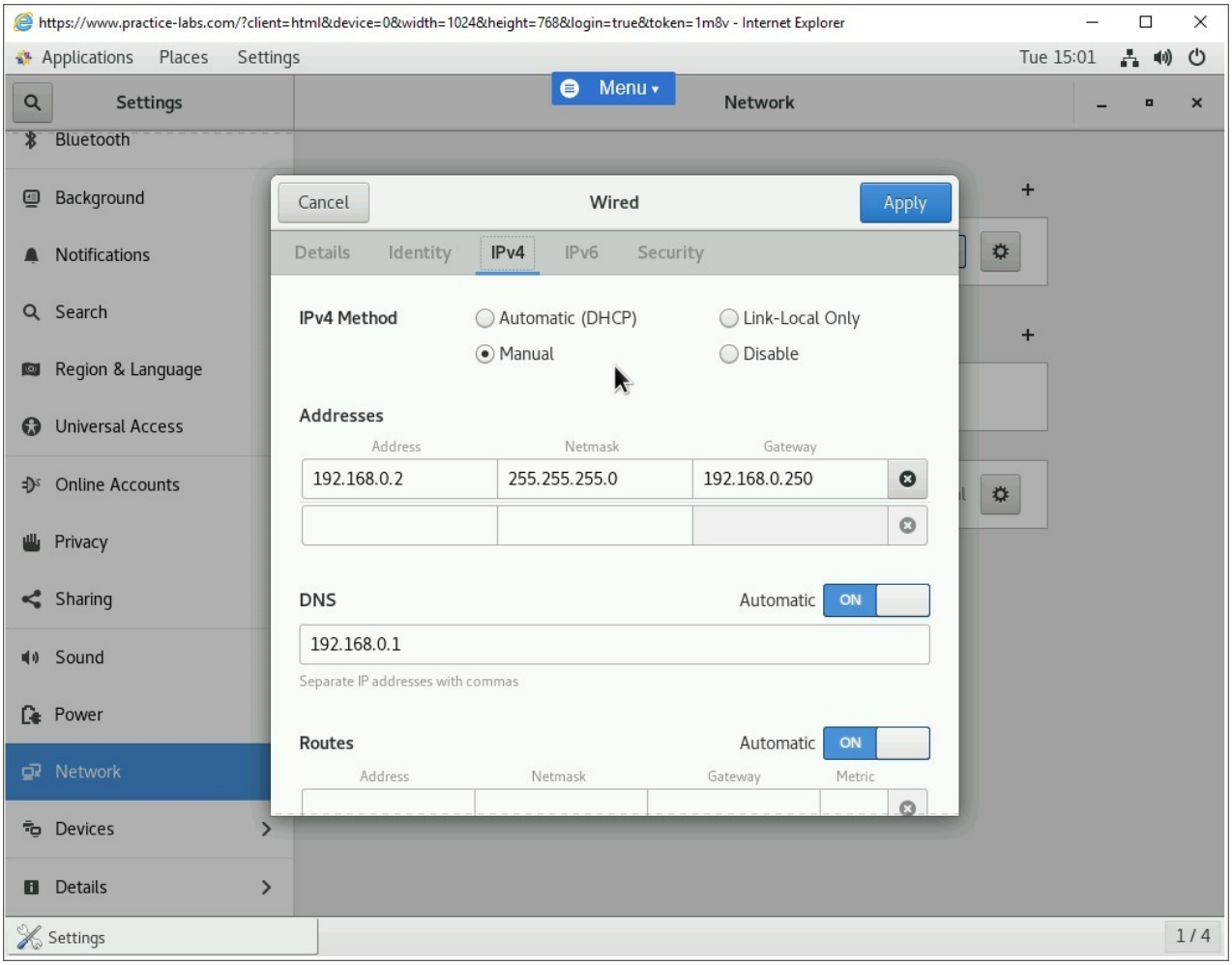


Figure 1.3 Screenshot of PLABLINUX01: Selecting the IPv4 tab in the Wired dialog box.

Step 4

Select **Manual** and provide the following details:

Address:

```
192.168.0.2
```

Netmask:

```
255.255.255.0
```

Gateway:

```
192.168.0.250
```

Click **Apply**.

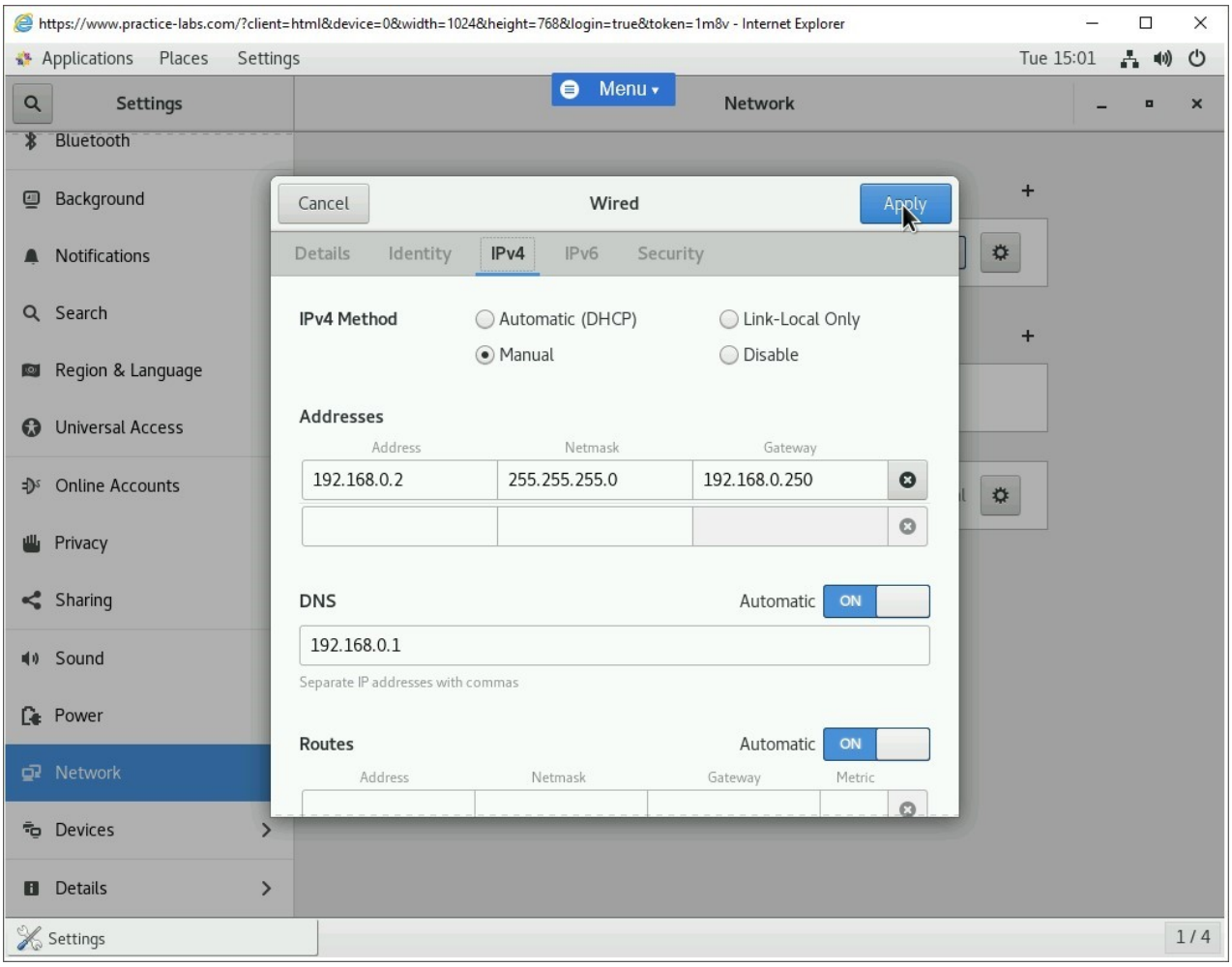


Figure 1.4 Screenshot of PLABLINUX01: Entering the network information and then clicking the Apply button.

Step 5

The **Wired** dialog box is closed automatically. Close the **Settings** window.

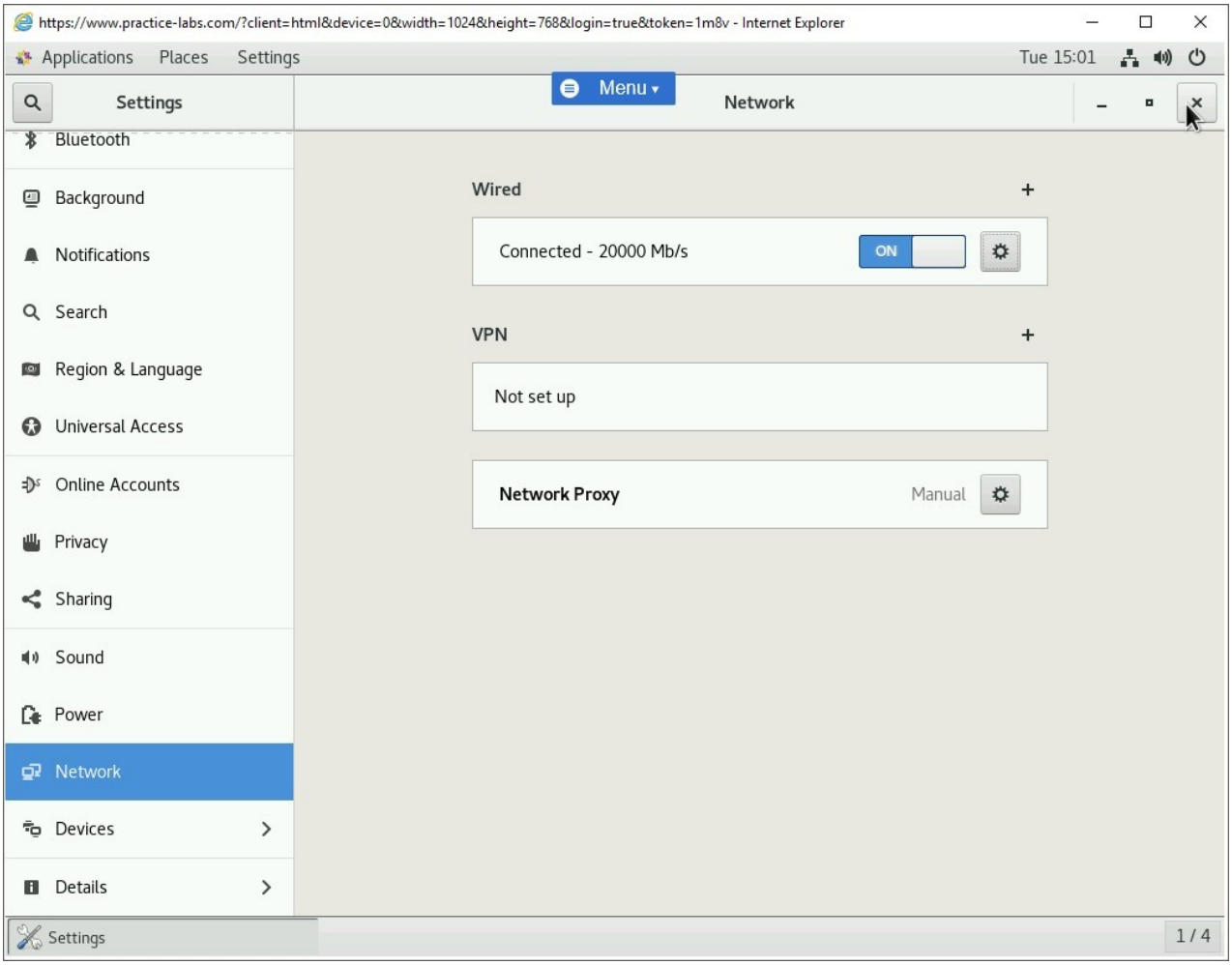


Figure 1.5 Screenshot of PLABLINUX01: Displaying the Settings window.

Task 2 - Set up SFTP to Chroot Jail only for a Specific Group

You can configure the ChrootDirectory functionality to ensure that the users are restricted only to their home directories after connecting through SFTP.

In this task, you will learn to install the Apache Web Server. To install the Apache Web Server, perform the following steps:

Step 1

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

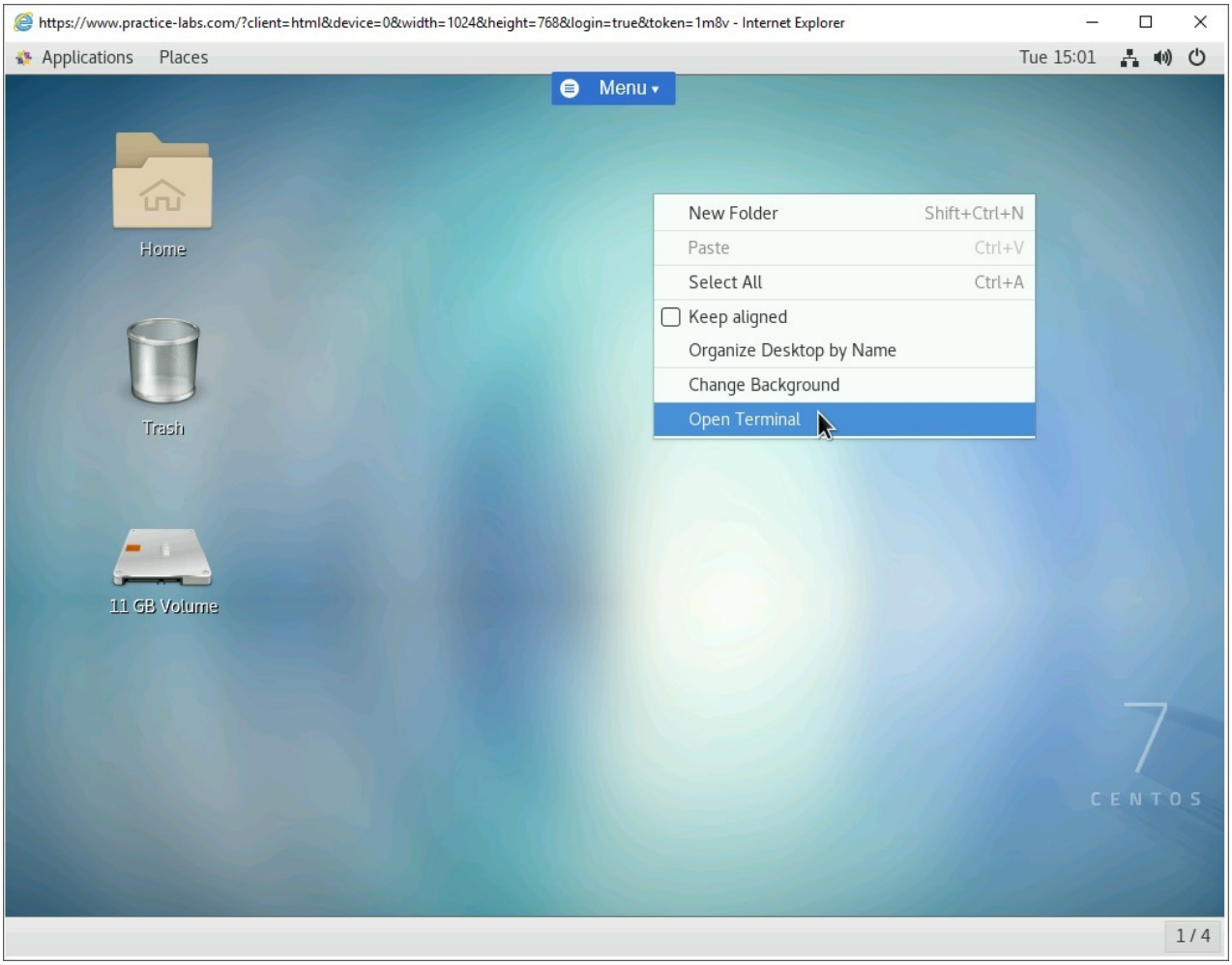


Figure 1.6 Screenshot of PLABLINUX01: Selecting the Open Terminal option from the context menu.

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**.

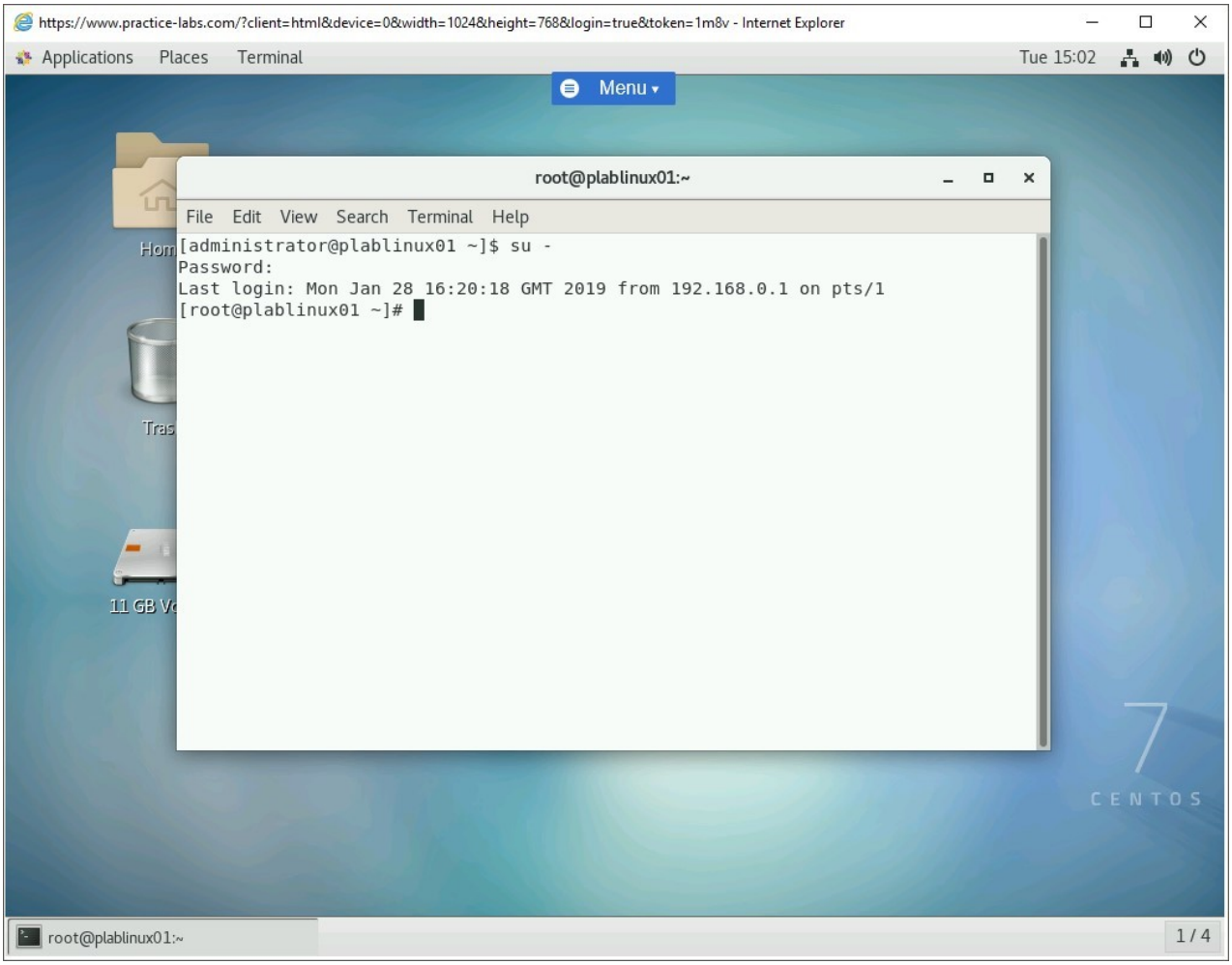


Figure 1.7 Screenshot of PLABLINUX01: Changing the account to the root account with the su command.

Step 3

Clear the screen by entering the following command:

```
clear
```

On the CentOS device, you need to create a group that needs to be chrooted. Type the following command:

```
groupadd plabFin
```

Press **Enter**.

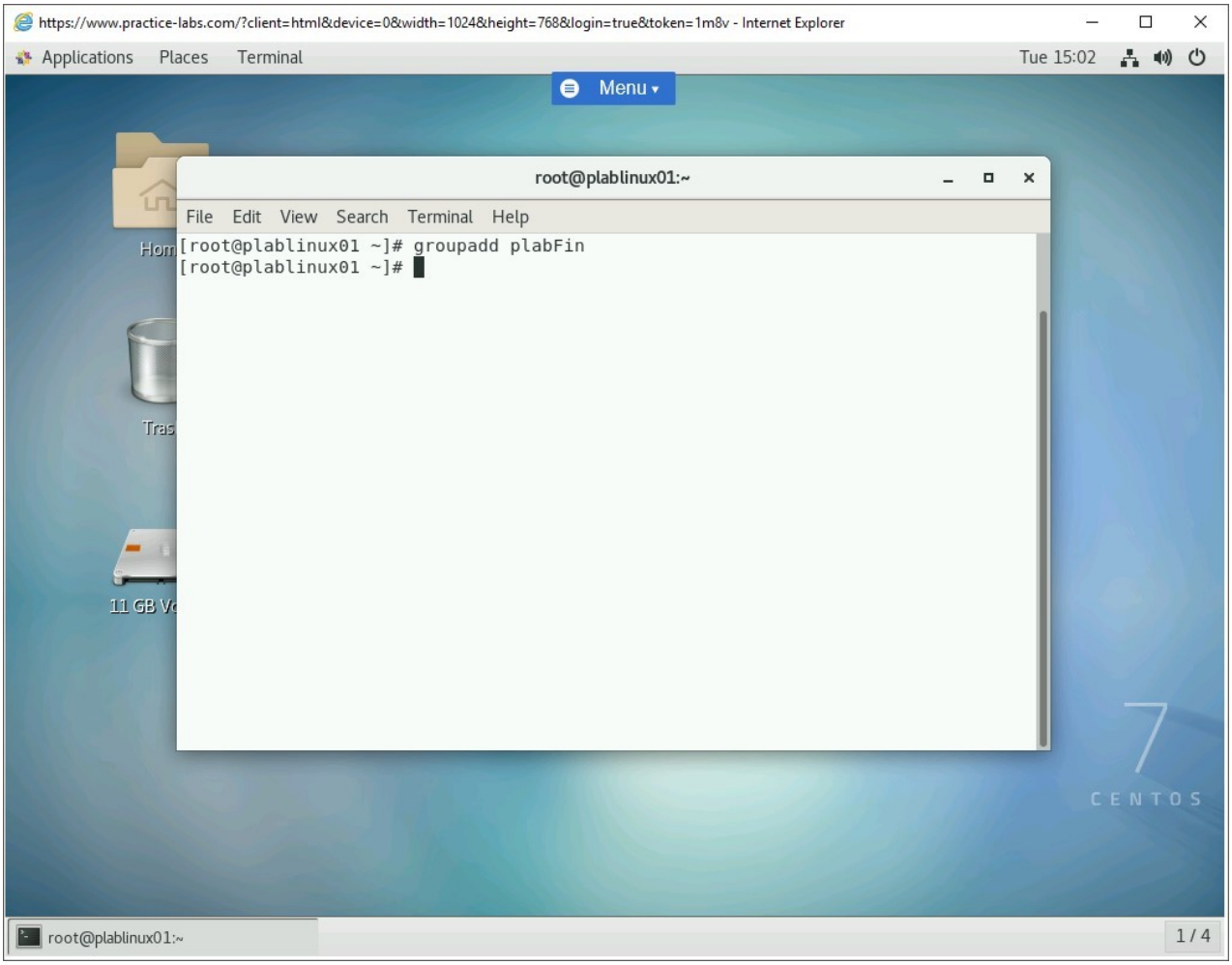


Figure 1.8 Screenshot of PLABLINUX01: Creating a new group.

Step 4

Clear the screen by entering the following command:

```
clear
```

Next, you need to create a user account for the plabFin group. Type the following command:

```
useradd roger
```

Press **Enter**.

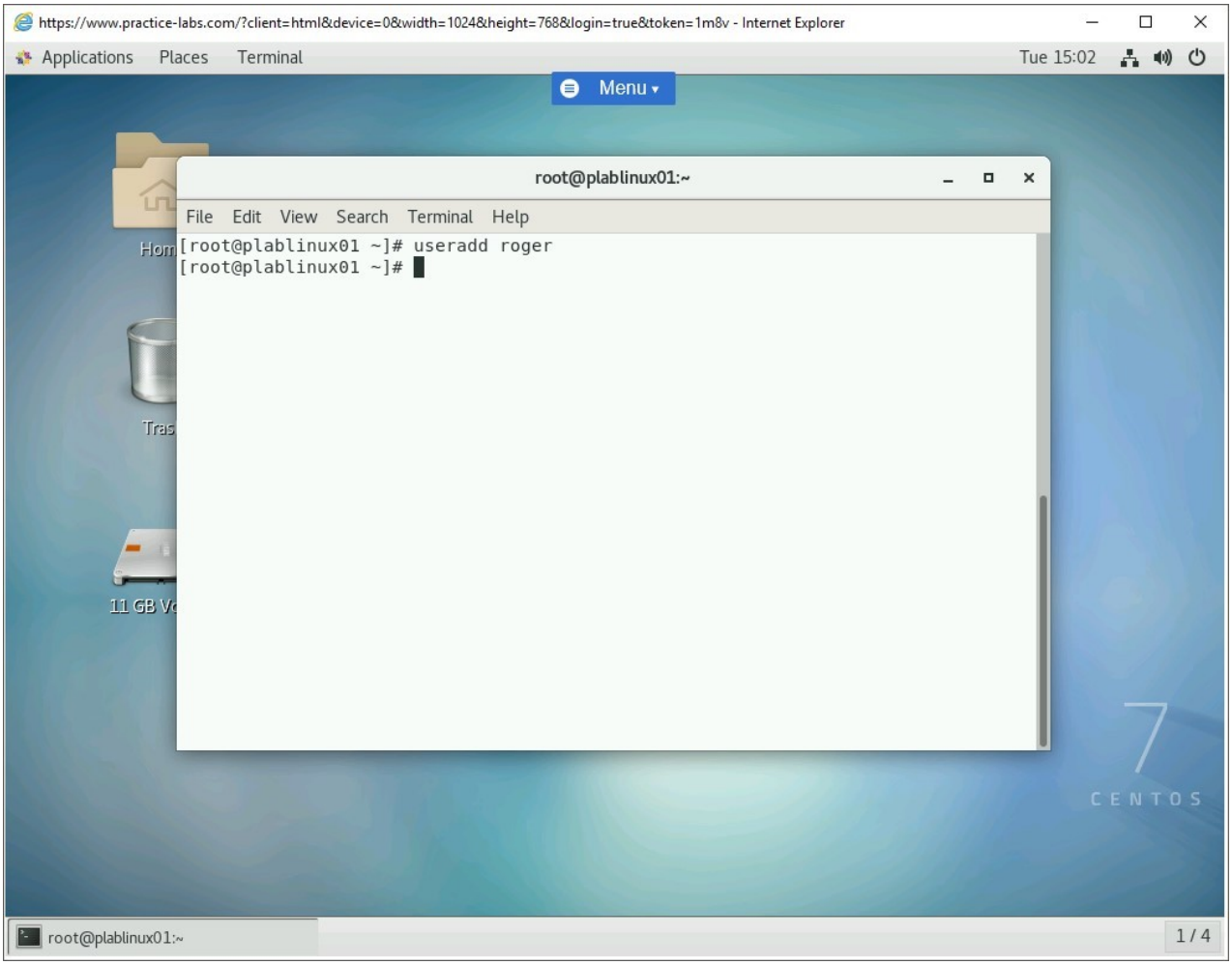


Figure 1.9 Screenshot of PLABLINUX01: Creating a new user.

Step 5

Next, you need to set the password for the user account. Type the following command:

```
passwd roger
```

Press **Enter**.

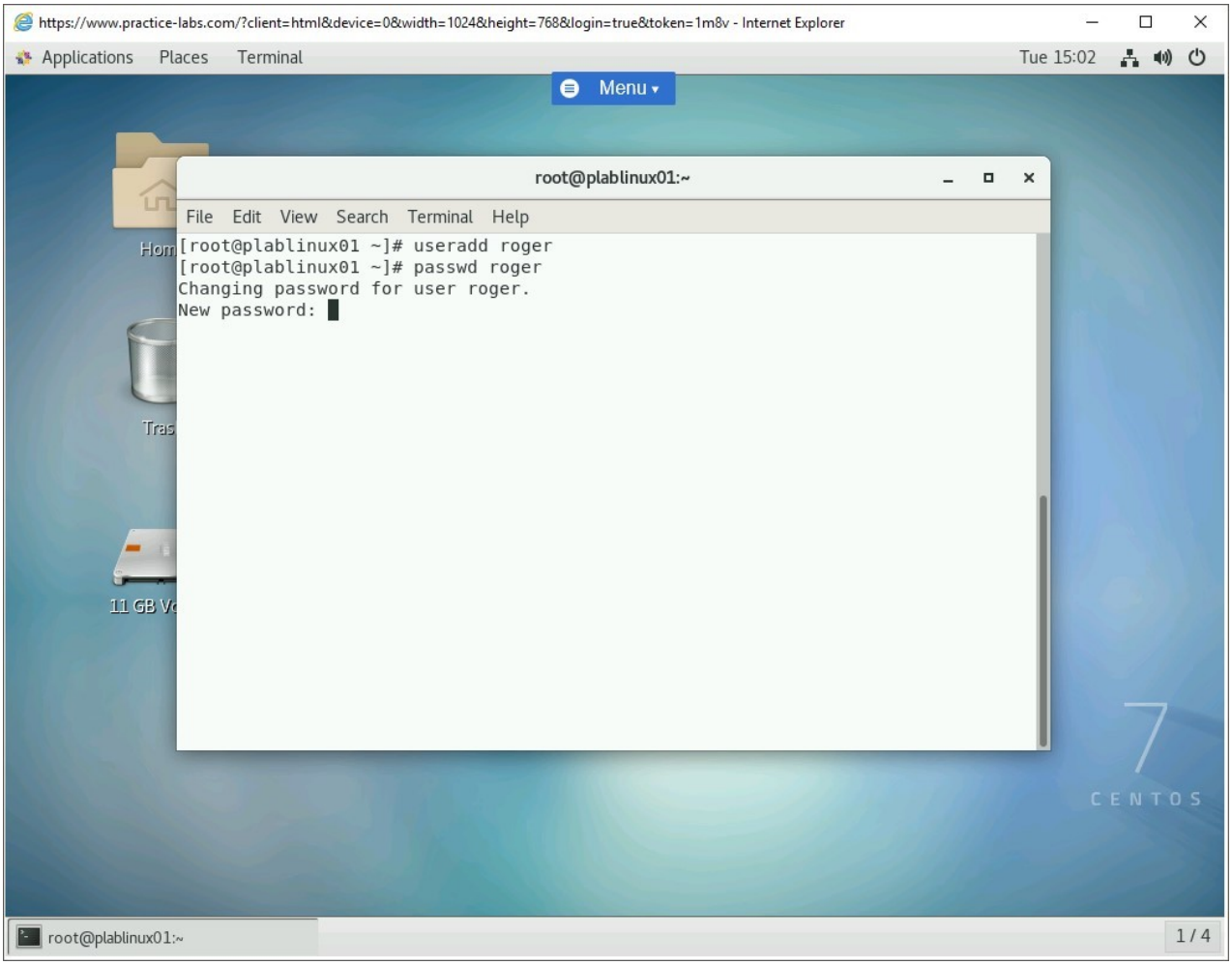


Figure 1.10 Screenshot of PLABLINUX01: Setting a password for the newly created user.

Step 6

When prompted, type the following password:

`Passw0rd`

Press **Enter**.

When prompted to confirm, type the same password and press **Enter**.

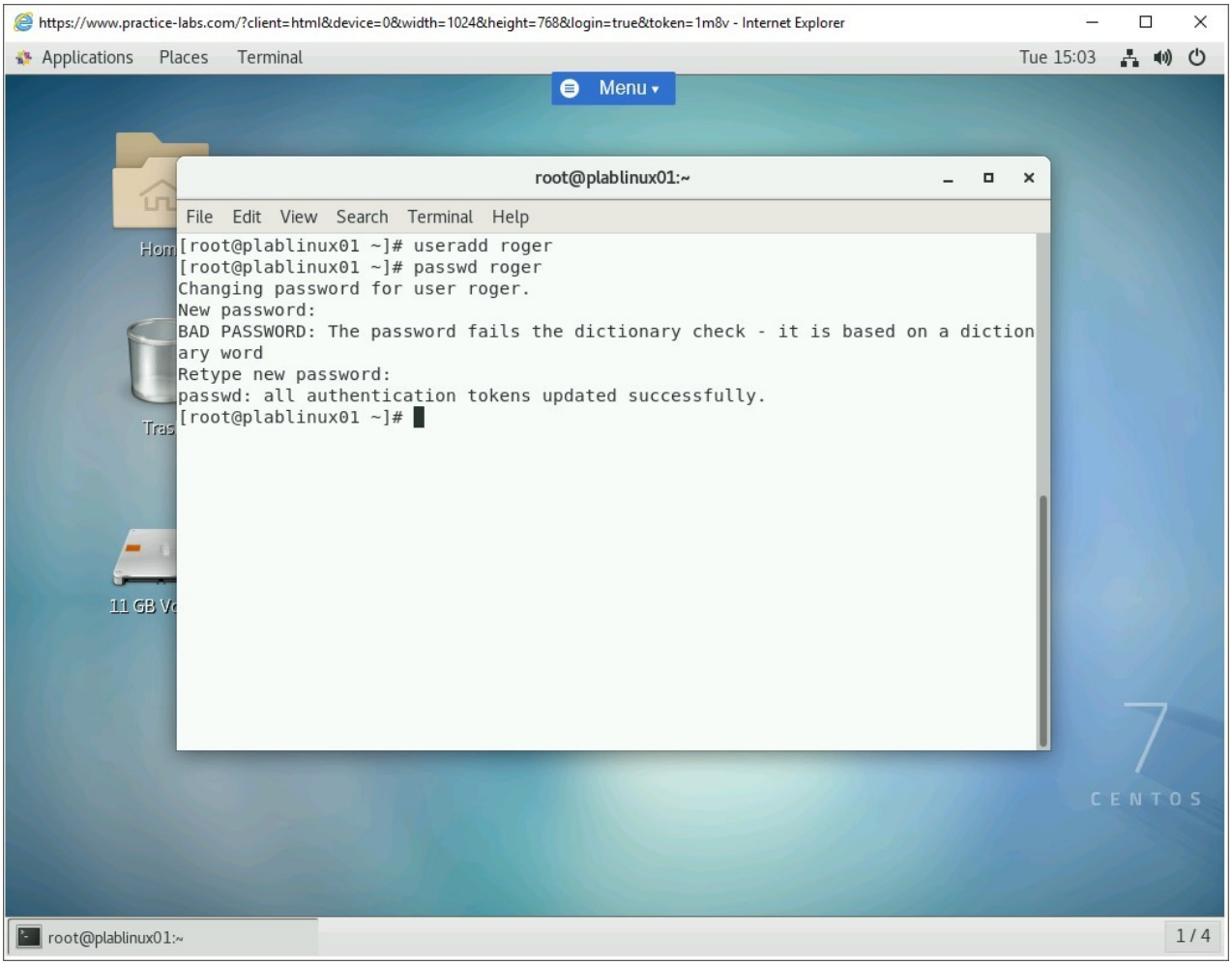


Figure 1.11 Screenshot of PLABLINUX01: Setting the password for the user.

Step 7

You will now need to add **roger** to the **plabFin** group. Type the following command:

```
usermod -g plabFin -s /bin/false roger
```

Press **Enter**.

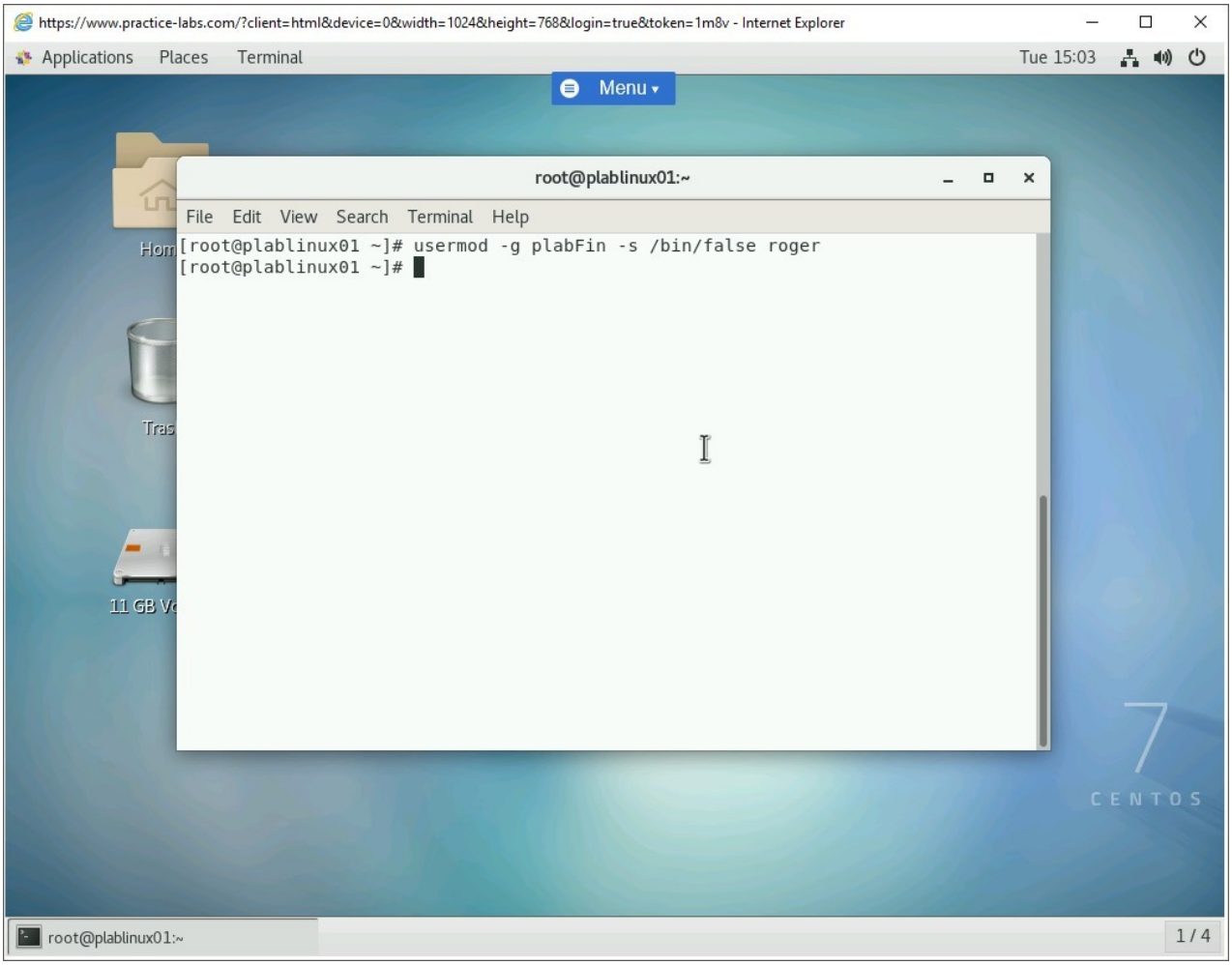


Figure 1.12 Screenshot of PLABLINUX01: Changing the account to the root account with the su command.

Step 8

Clear the screen by entering the following command:

```
clear
```

Check for the id of user account, **roger**. Type the following command:

```
id roger
```

Press **Enter**.

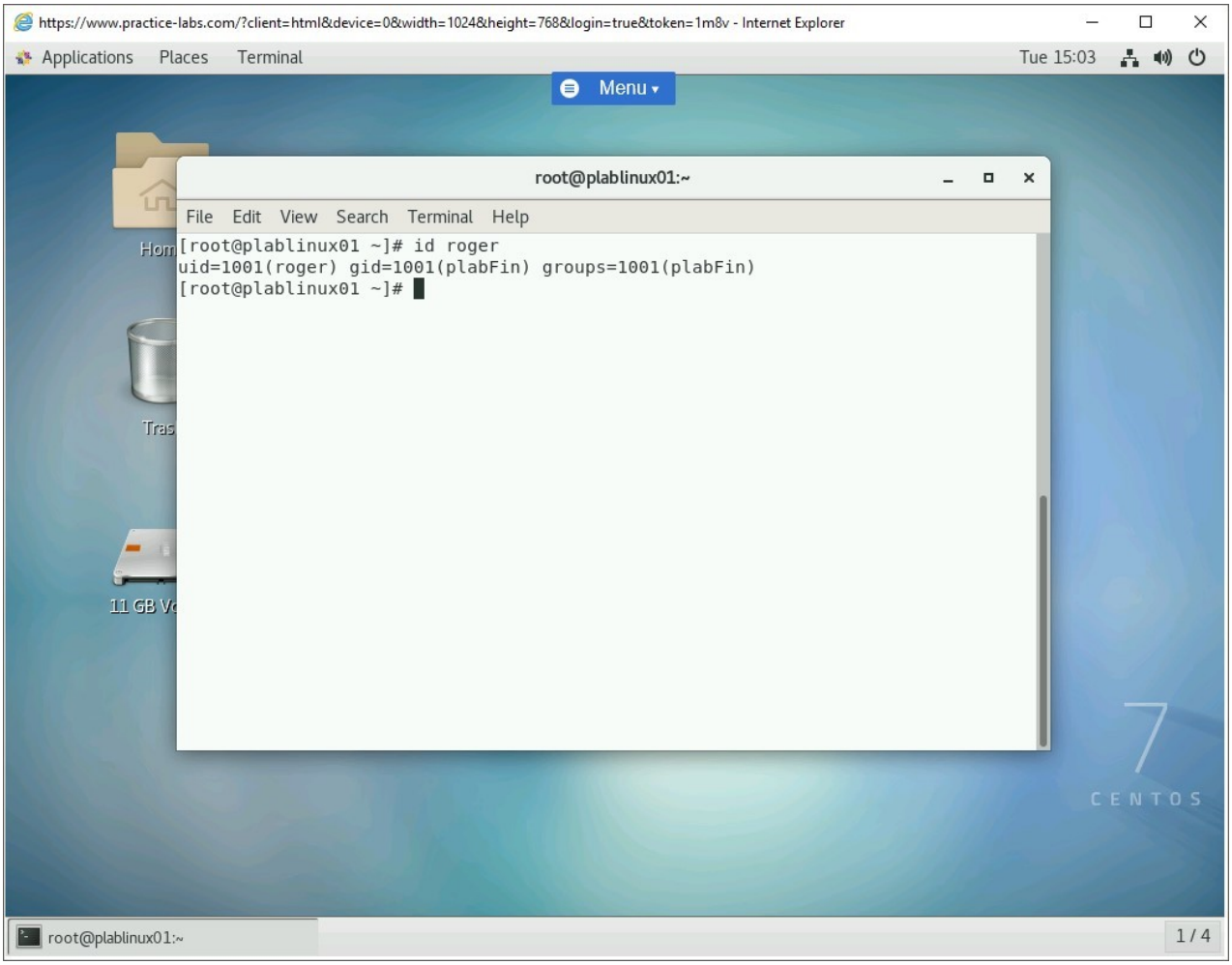


Figure 1.13 Screenshot of PLABLINUX01: Verifying the id of the user.

Step 9

You will now need to configure the sshd config file configure SFTP. Type the following command:

```
vi /etc/ssh/sshd_config
```

Press **Enter**.

> ***Note:*** *If you need help in using the vi editor, you may refer to the* ***Perform Basic File Editing Operations Using vi*** *module.*

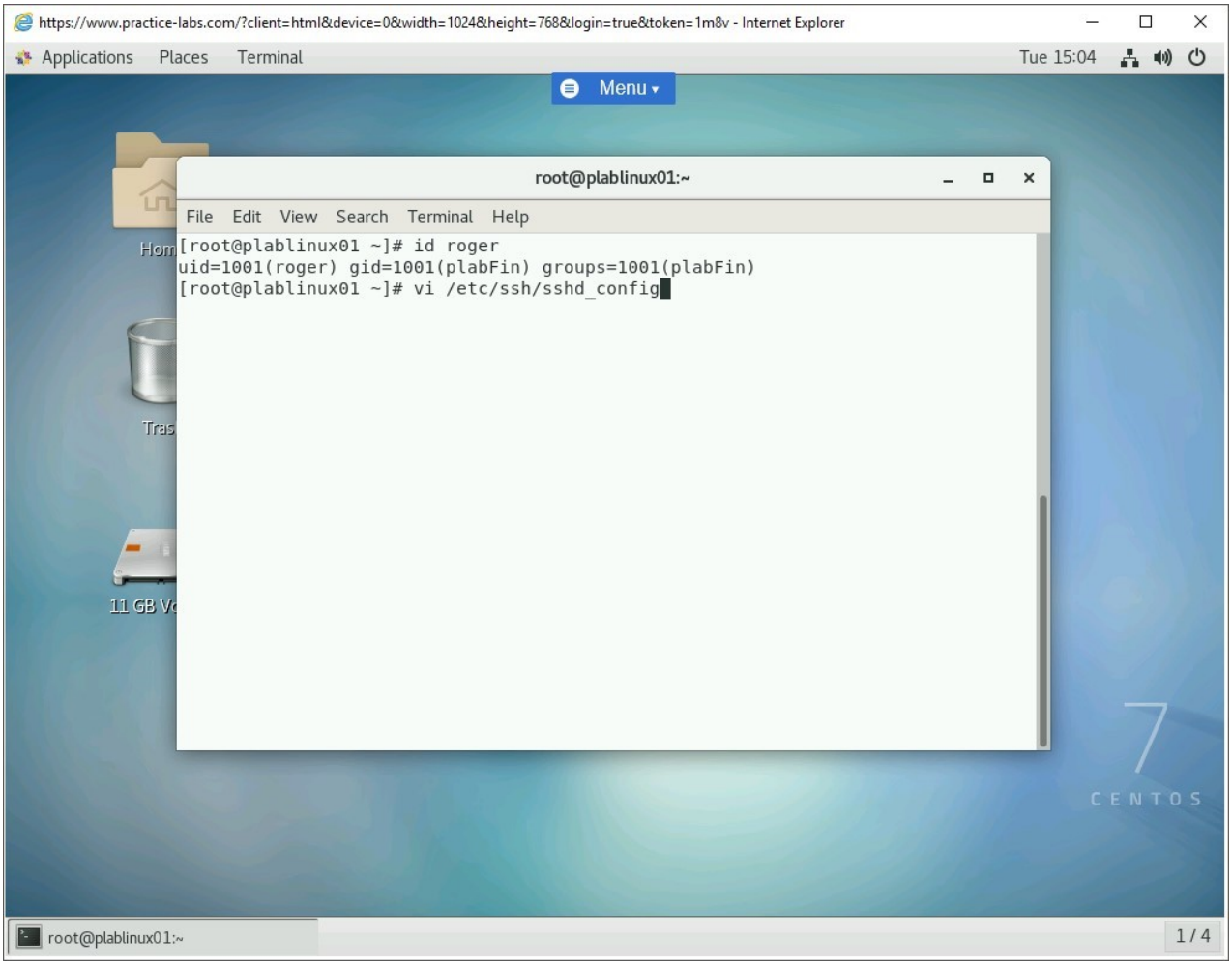


Figure 1.14 Screenshot of PLABLINUX01: Opening the sshd_config file in the vi editor.

Step 10

The **sshd_config** file is now opened. Press **i** to start the insert mode. You need to change the following line:

```
Subsystem sftp /usr/libexec/openssh/sftp-server
```

To:

```
Subsystem sftp internal-sftp
```

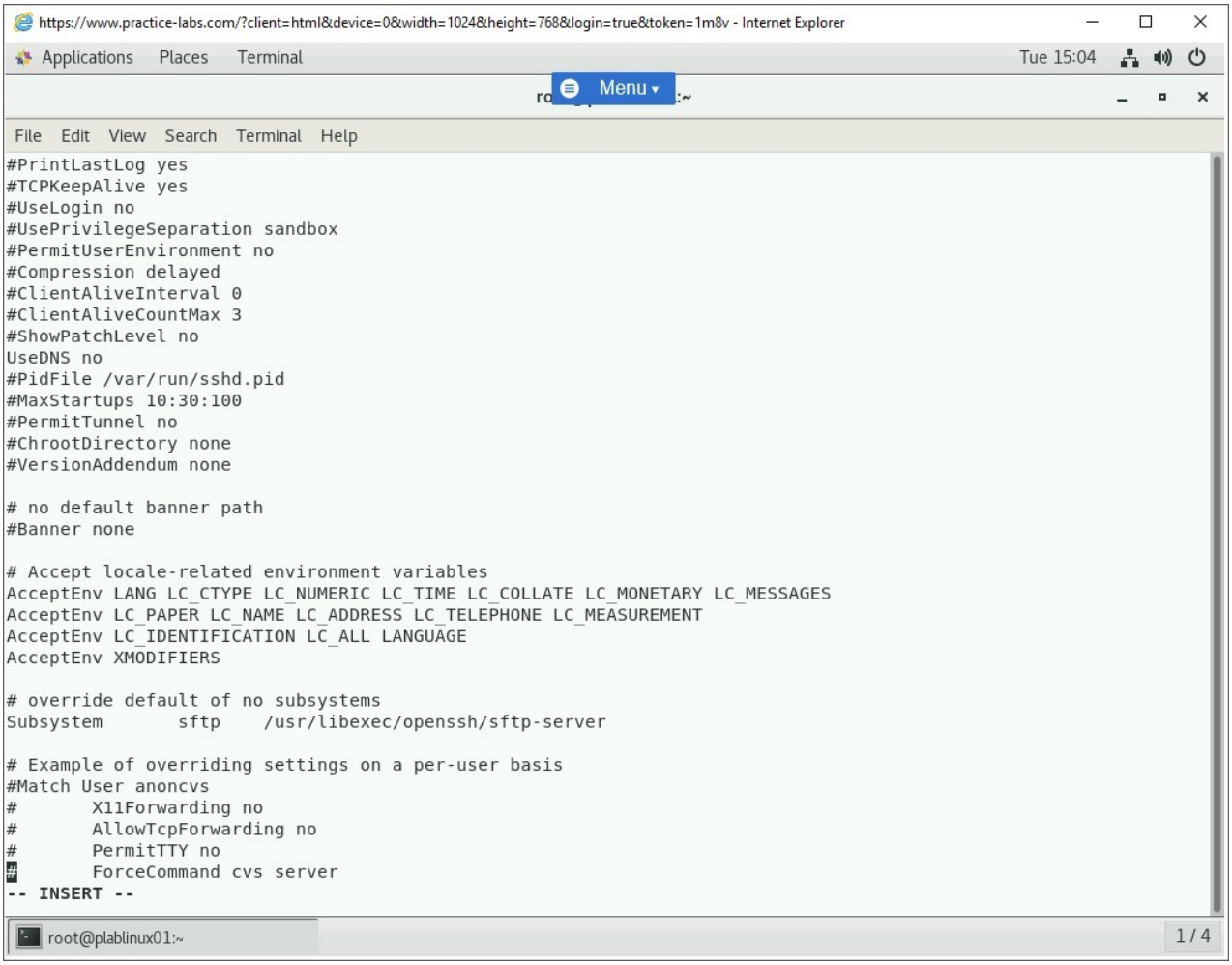


Figure 1.15 Screenshot of PLABLINUX01: Changing the Subsystem parameter in the sshd_config file.

Step 11

Move to the end of the file and add the following content:

```
Match Group plabFin
X11Forwarding no
AllowTcpForwarding no
ChrootDirectory /home
ForceCommand internal-sftp
```

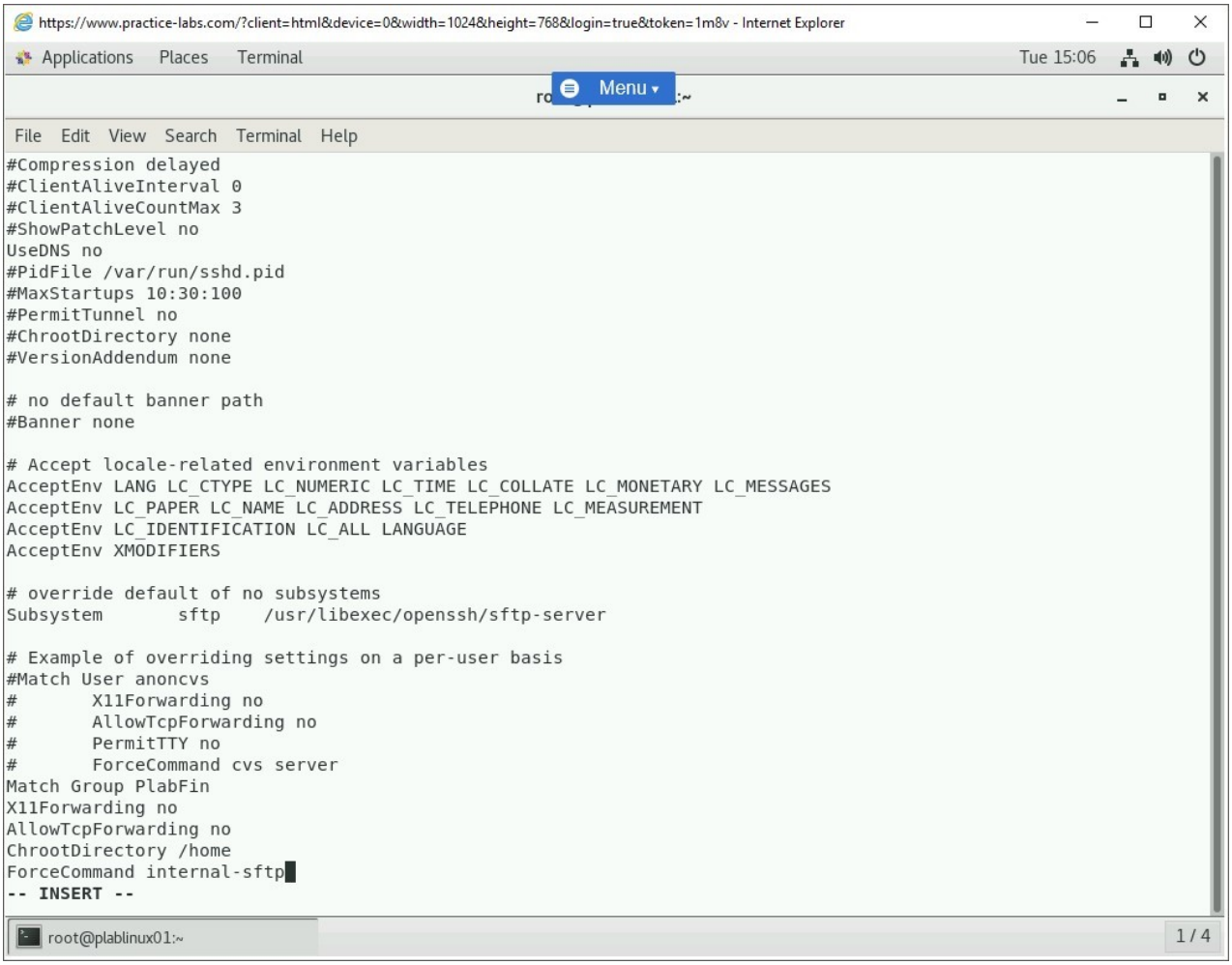


Figure 1.16 Screenshot of PLABLINUX01: Adding configuration for SFTP in the sshd_config file.

Step 12

Press **ESC**. Type the following:

```
:wq
```

Press **Enter**.

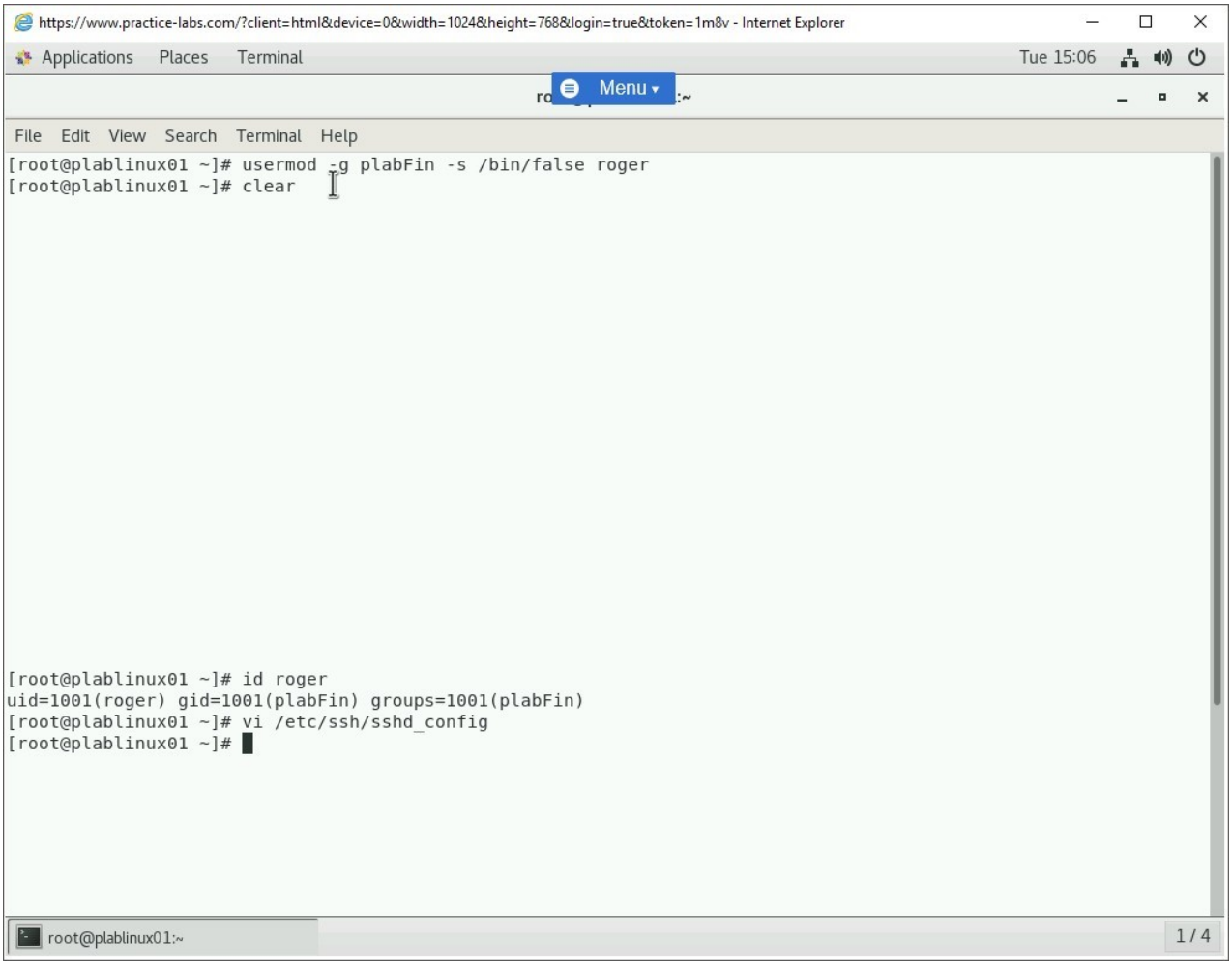


Figure 1.17 Screenshot of PLABLINUX01: Saving the sshd_config file.

Step 13

You are back on the terminal window. You need to restart the sshd service. Type the following command:

```
systemctl restart sshd
```

Press **Enter**.

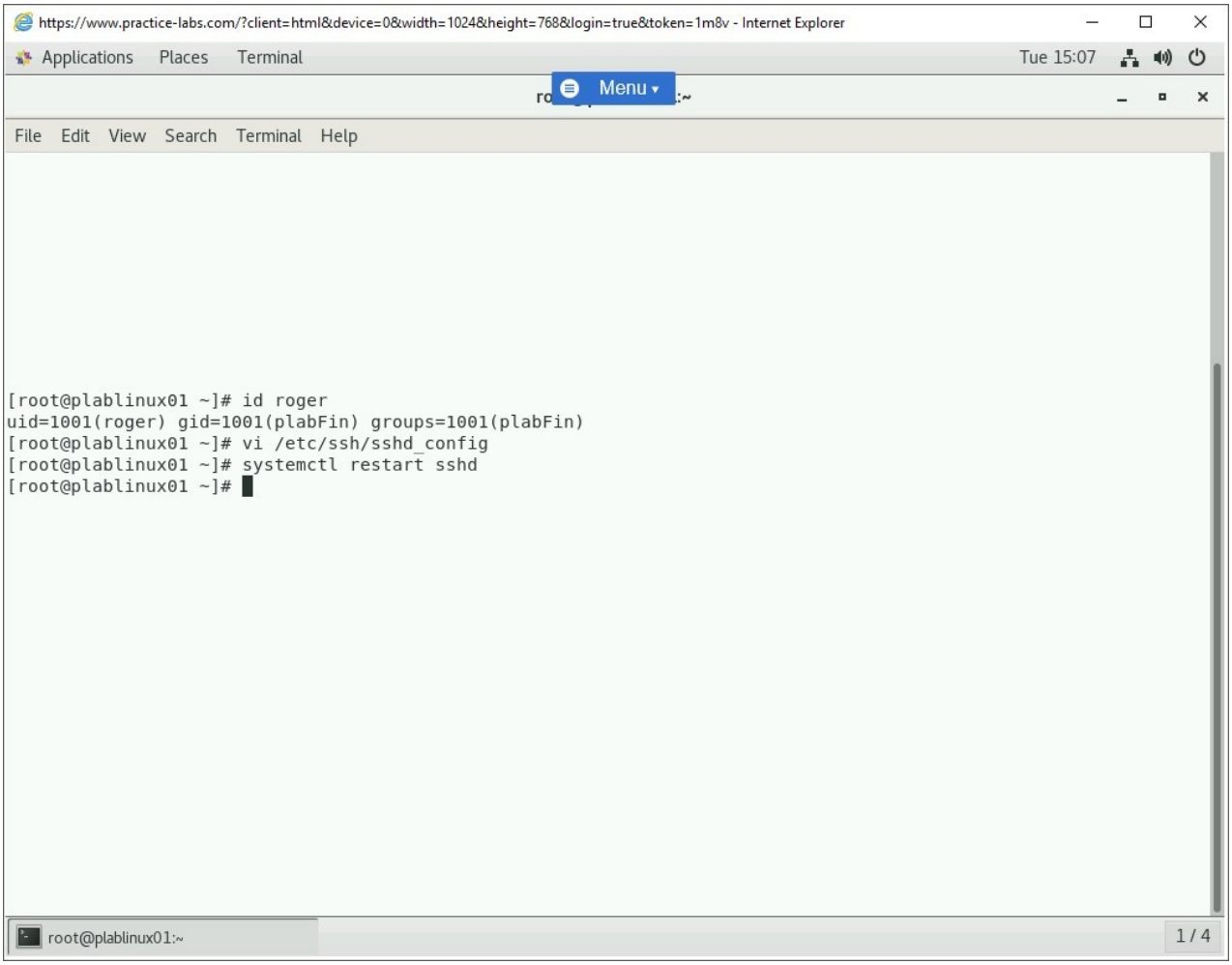


Figure 1.18 Screenshot of PLABLINUX01: Restarting the sshd service.

Task 3 - Configure Network on Ubuntu

Similar to CentOS, you will now configure network on Ubuntu.

In this task, you will configure an IP address on Ubuntu. To do this, perform the following steps:

Step 1

Ensure all the required devices are powered on. Connect to **PLABLINUX02**.

Press **Enter** and click **Administrator**.

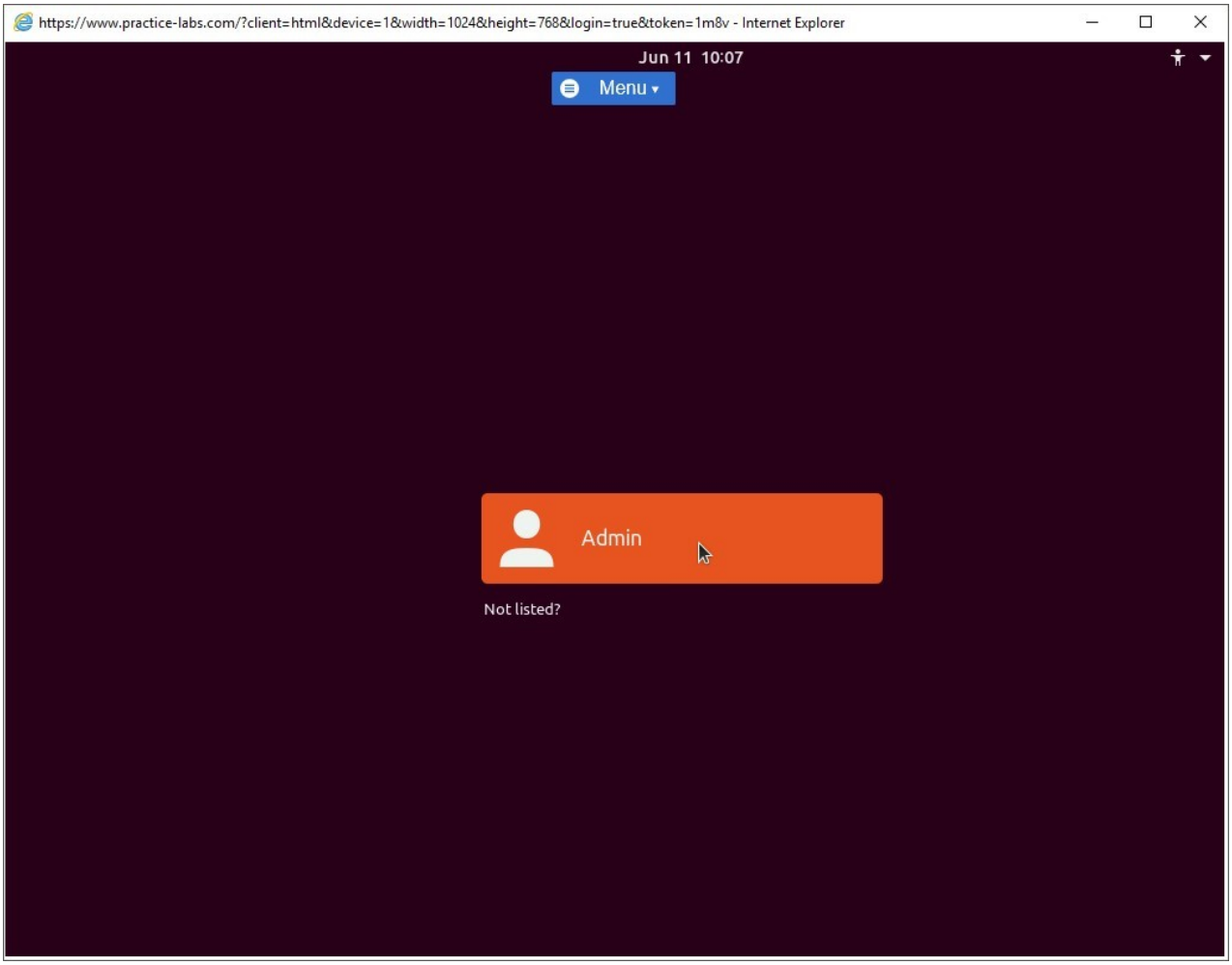


Figure 1.19 Screenshot of PLABLINUX02: Clicking the Administrator account on the login screen.

Step 2

When prompted, type the following password in the **Password** field:

`Passw0rd`

Click **Sign In**.

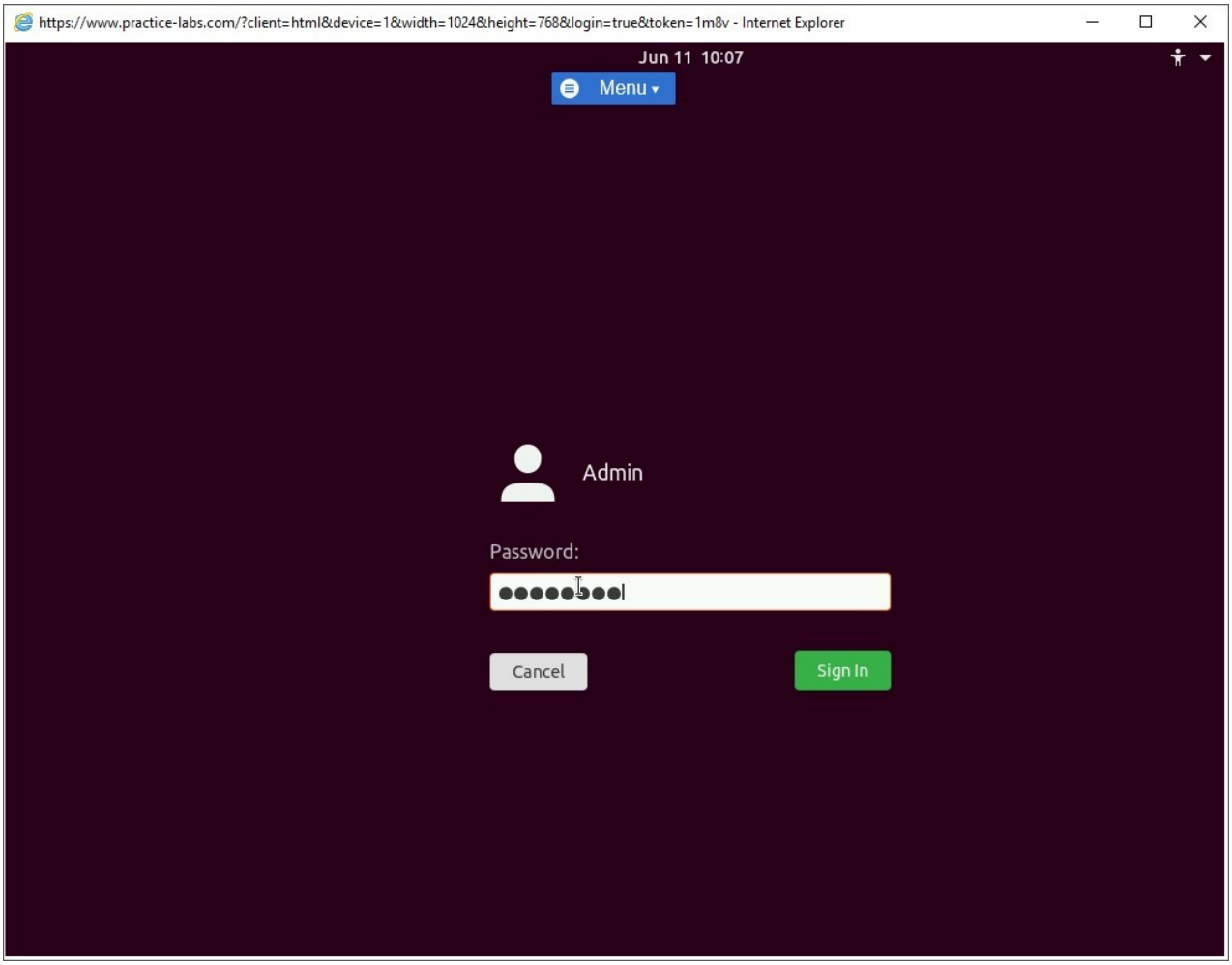


Figure 1.20 Screenshot of PLABLINUX02: Entering the password in the Password text box and then clicking Sign In.

After a successful login, the desktop is displayed.

> ***Note:*** *If you are prompted with Software Updater dialog box, click* ***Remind Me Later****.*

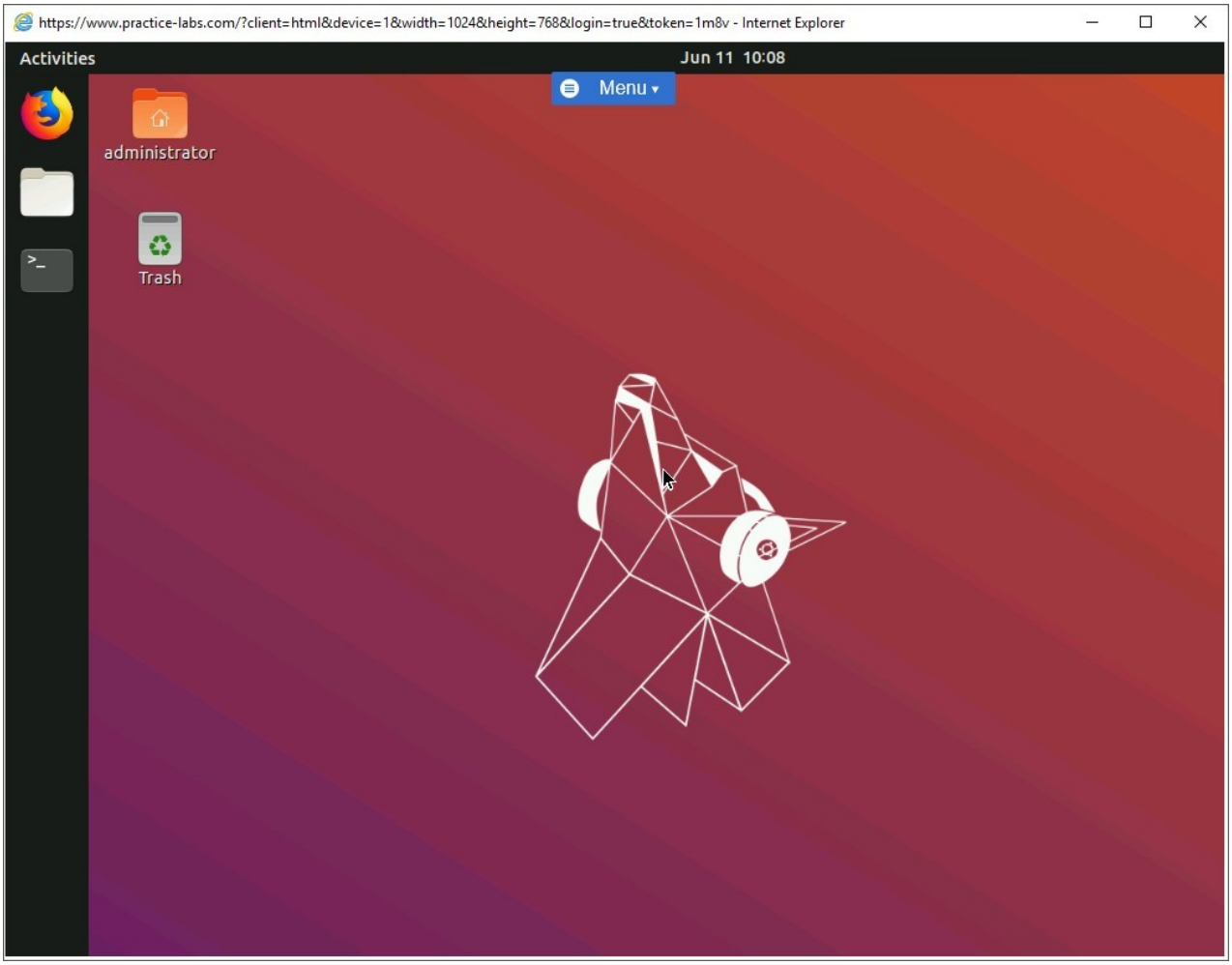


Figure 1.21 Screenshot of PLABLINUX02: Displaying the desktop after the successful login.

Step 3

Right click the screen and click **Settings**.

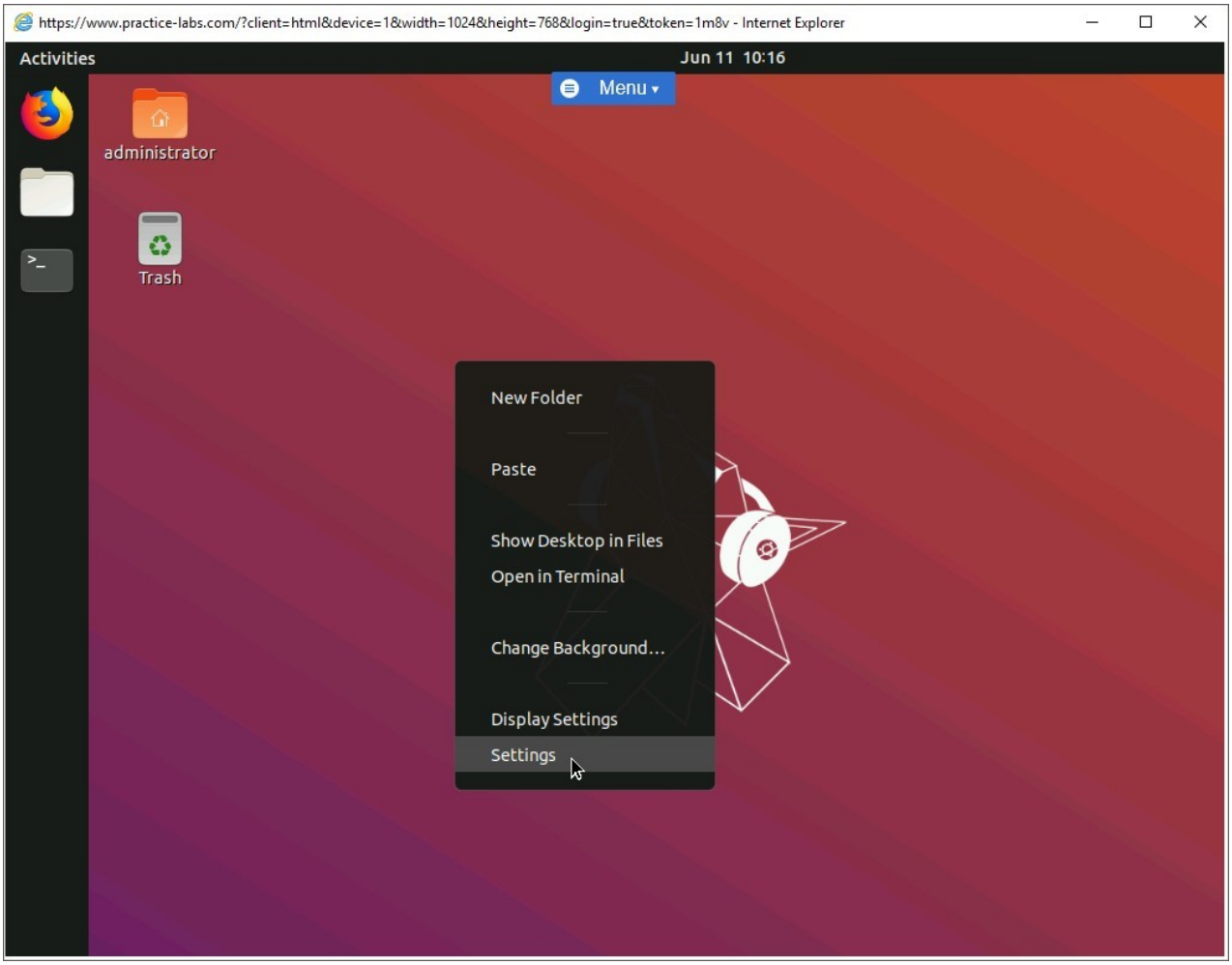


Figure 1.22 Screenshot of PLABLINUX02: Clicking the Show Applications icon.

Step 4

The **Settings** menu opens.

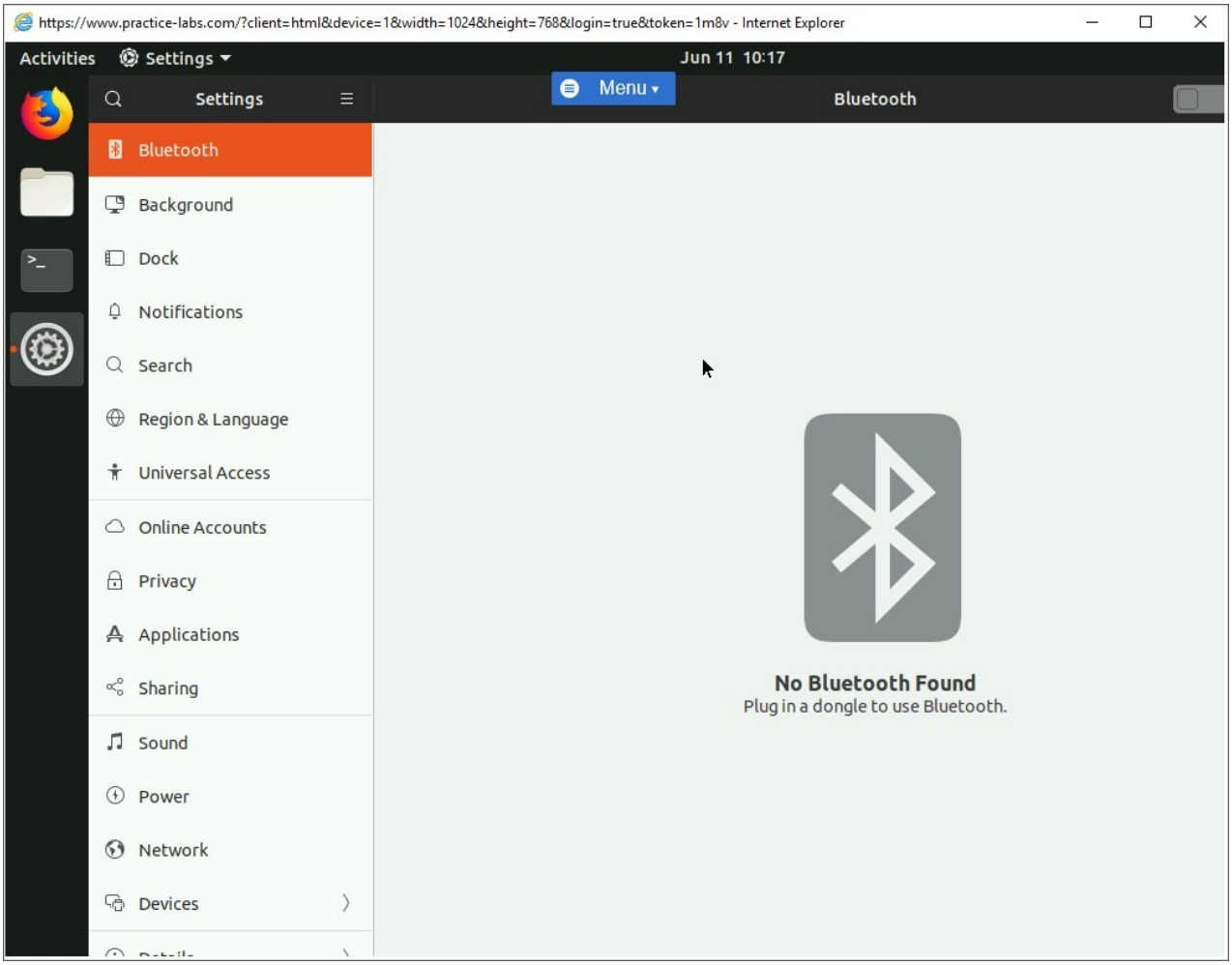


Figure 1.23 Screenshot of PLABLINUX02: Clicking the All button and navigating to the second page.

Step 5

Click **Network** in the left pane and then in the right pane, click the icon next to **OFF** in the **Wired** section.

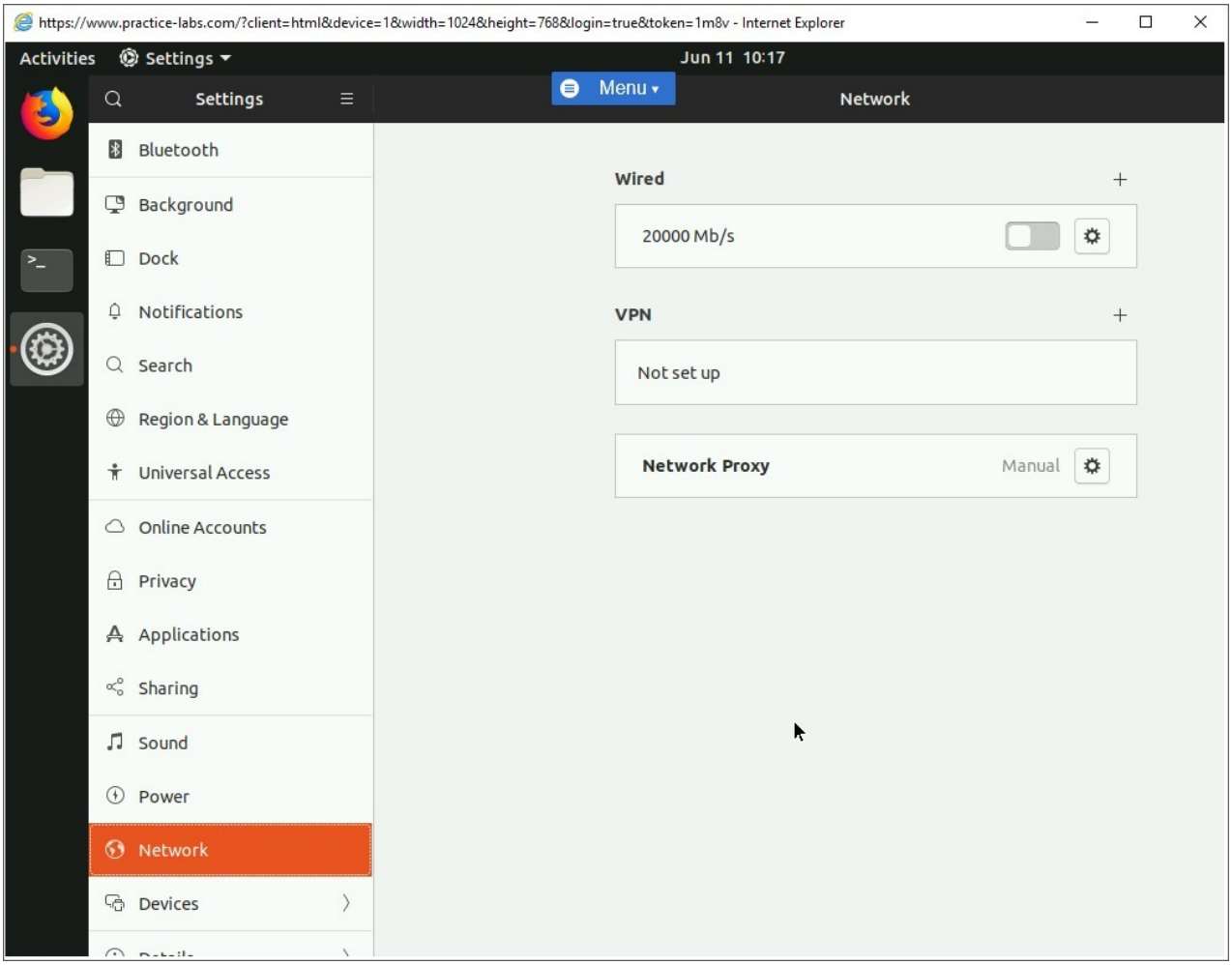


Figure 1.24 Screenshot of PLABLINUX02: Clicking the button to invoke the Wired dialog box.

Step 6

In the **Wired** dialog box, click the **IPv4** tab.

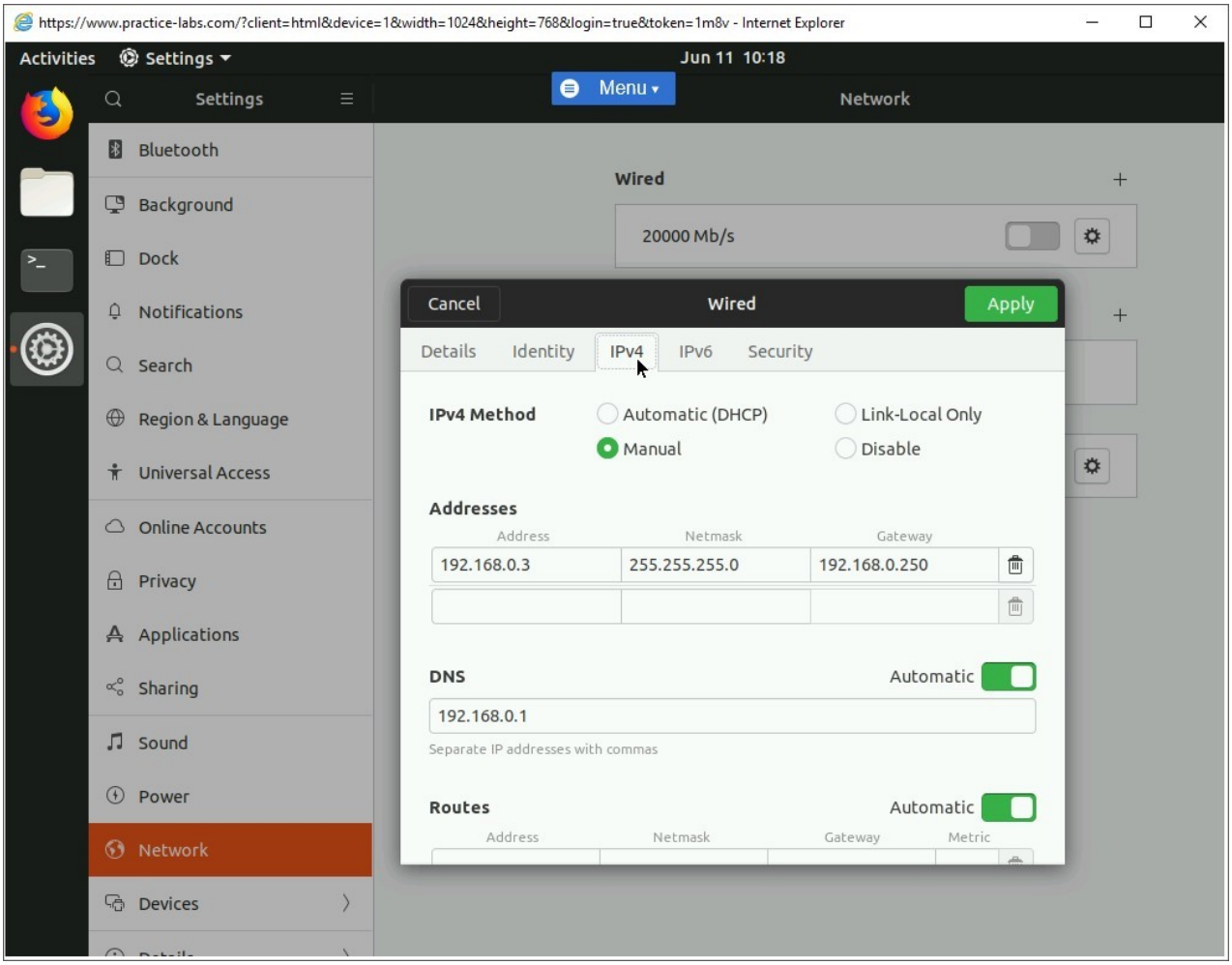


Figure 1.25 Screenshot of PLABLINUX02: Selecting the IPv4 tab in the Wired dialog box.

Step 7

Select **Manual** and provide the following details:

Address:

```
192.168.0.3
```

Netmask:

```
255.255.255.0
```

Gateway:

```
192.168.0.250
```

Click **Apply**.

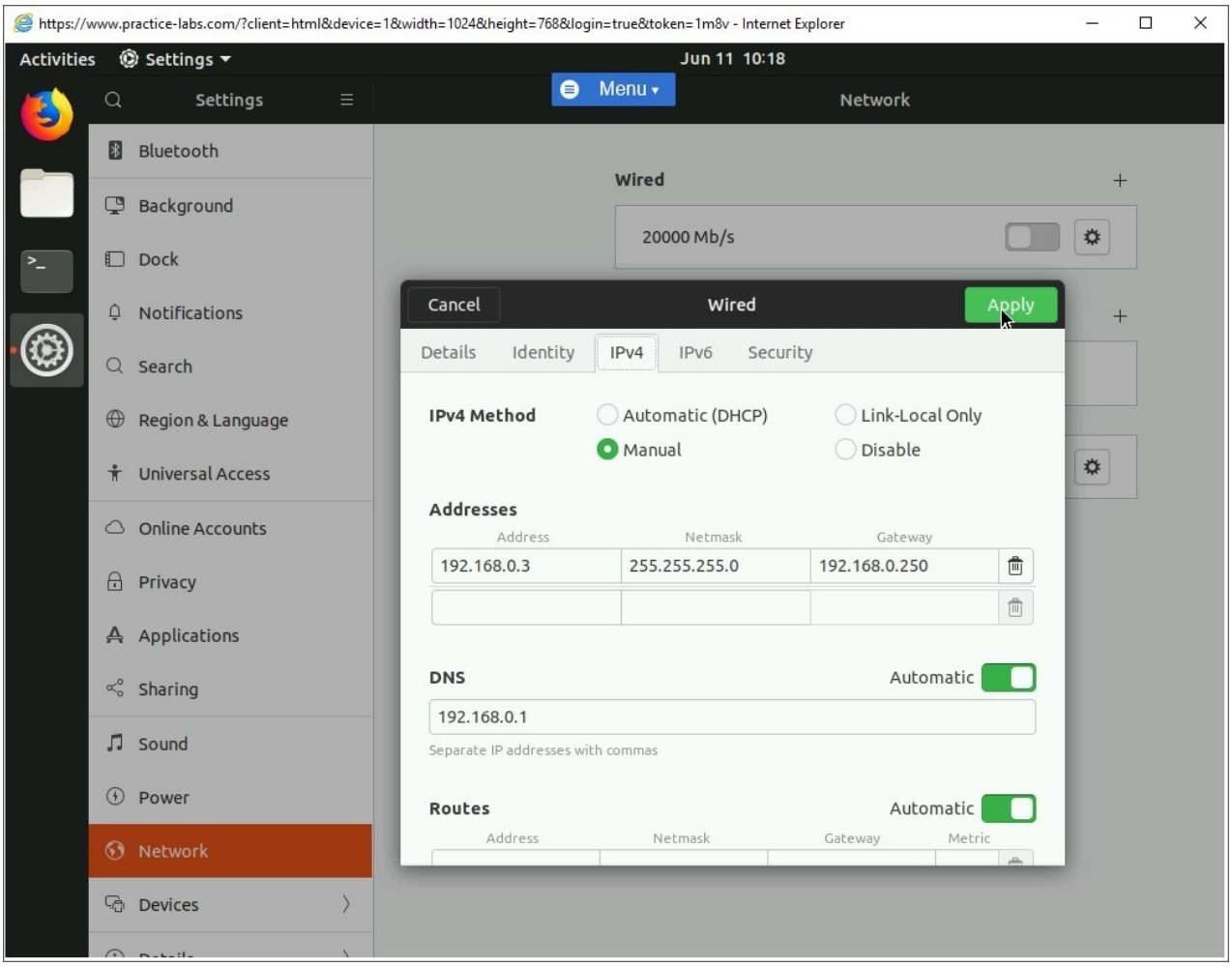


Figure 1.26 Screenshot of PLABLINUX02: Entering the network information and then clicking the Apply button.

Step 8

The **Wired** dialog box is closed automatically. Close the **Settings** window.

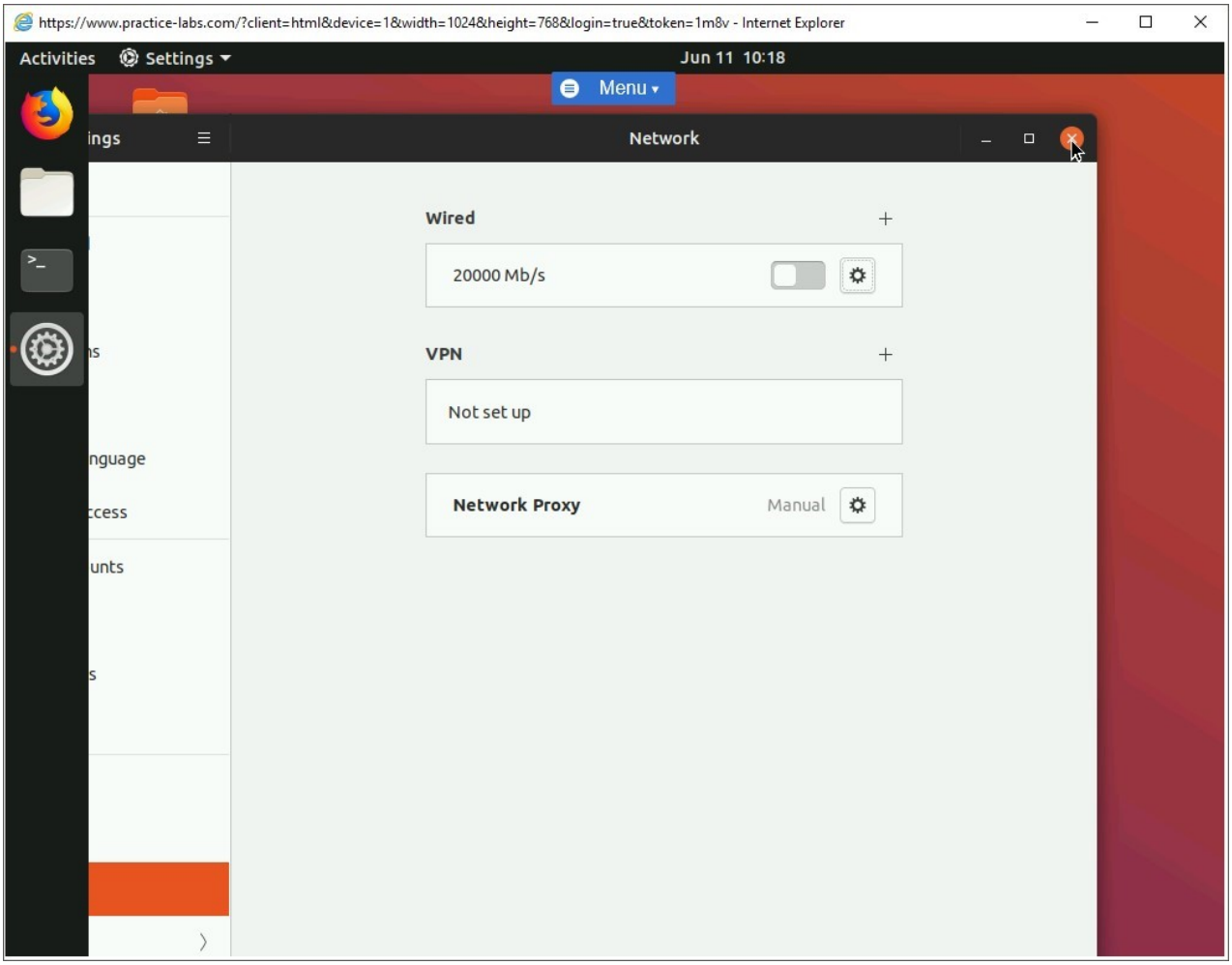


Figure 1.27 Screenshot of PLABLINUX02: Displaying the Settings window.

Task 4 - Verify the Chroot Configuration

Debian packages are operating system and CPU neutral. This means that a Debian package can work with any kind of Debian distribution and CPU type. The extension for Debian packages is **.deb**. In this task, you will install, upgrade, and remove a **gcl** package.

To manage Debian binary packages, perform the following steps:

Step 1

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

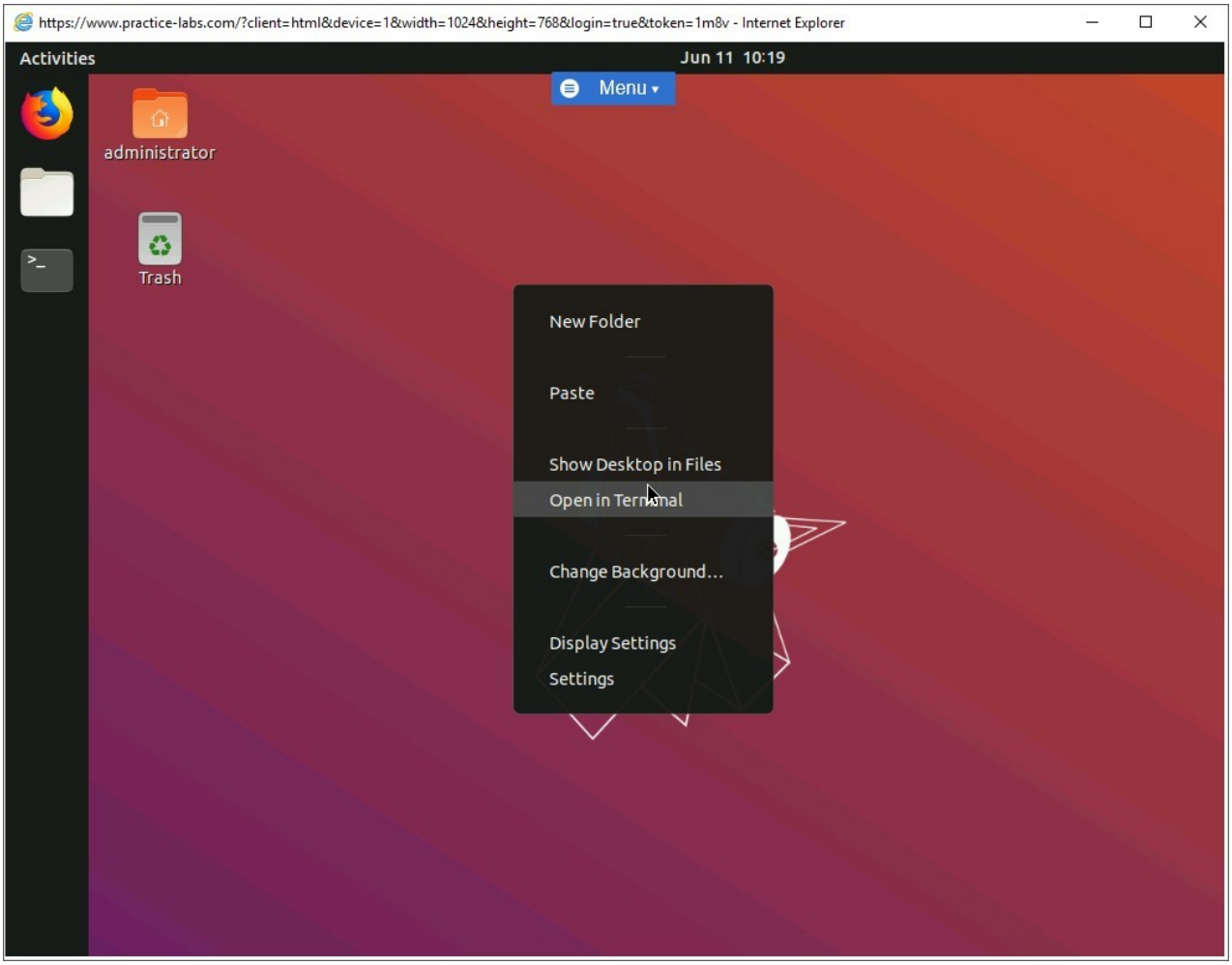


Figure 1.28 Screenshot of PLABLINUX02: Selecting the Open Terminal option from the context menu.

Step 2

The terminal window is displayed. If necessary, clear the screen by entering the following command:

```
clear
```

You will attempt to access PLABLINUX01 using its IP address through SSH. Type the following command:

```
ssh roger@192.168.0.2
```

Press **Enter**.

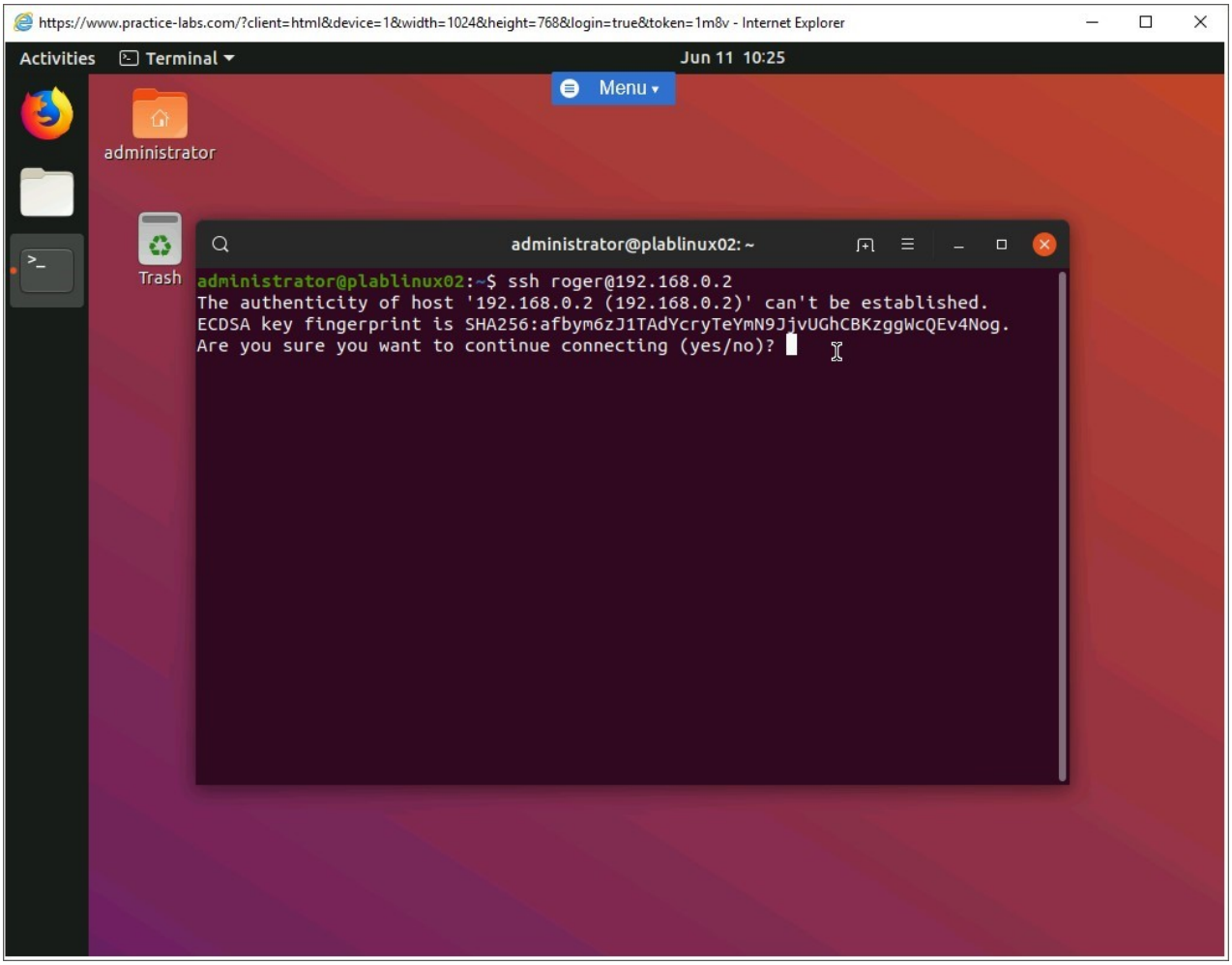


Figure 1.29 Screenshot of PLABLINUX02: Initiating the ssh connection.

Step 3

When prompted for confirmation, type the following:

```
yes
```

Press **Enter**.

Note: If the system's authenticity is established once, it will not be required. This message appears only once.

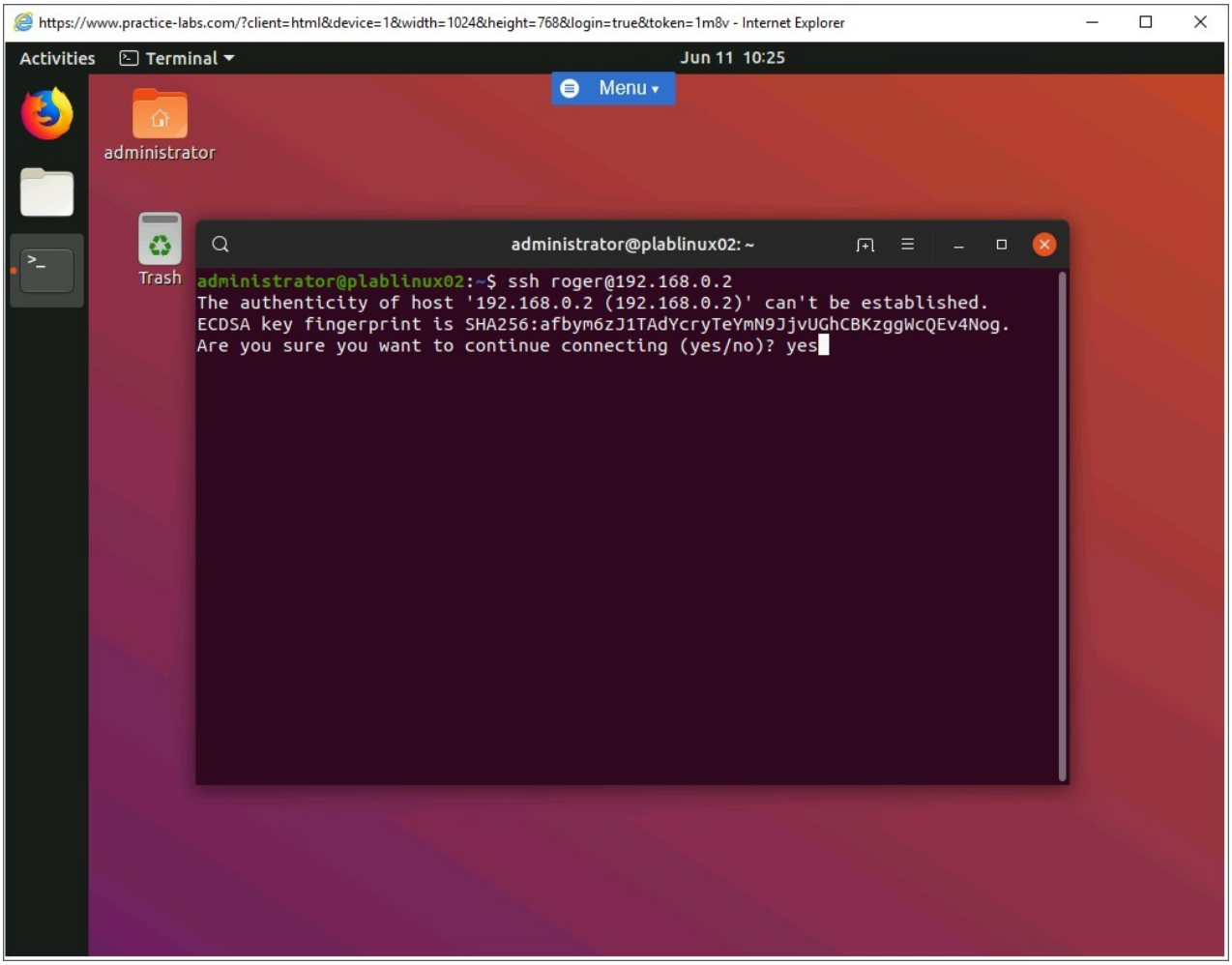


Figure 1.30 Screenshot of PLABLINUX02: Establishing the remote system's authenticity.

Step 4

When prompted, type the following password:

`Passw0rd`

Press **Enter**.

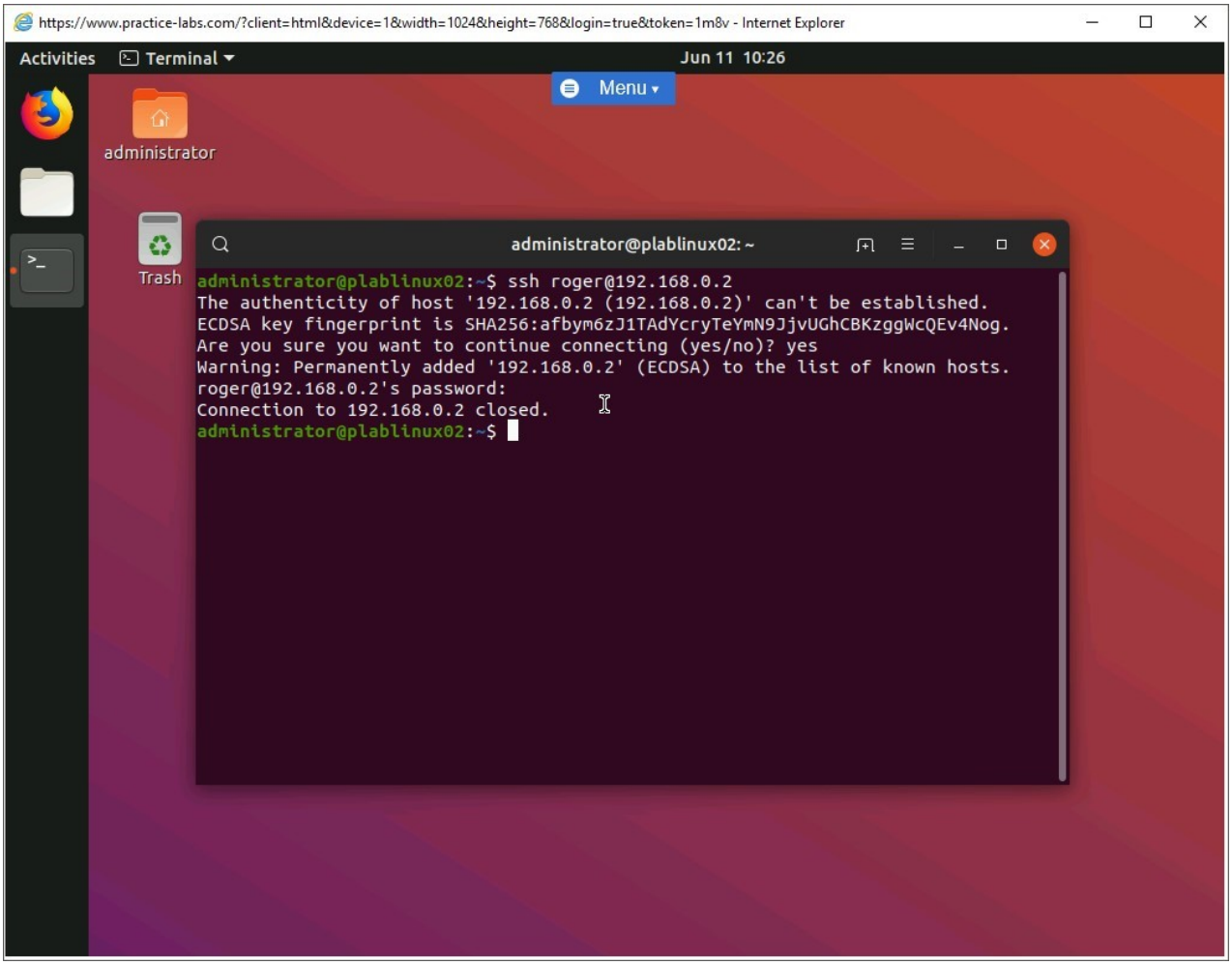


Figure 1.31 Screenshot of PLABLINUX01: Entering the password on the password prompt.

Step 5

Notice that you cannot connect through **ssh**. You are prompted to connect only through **SFTP**.

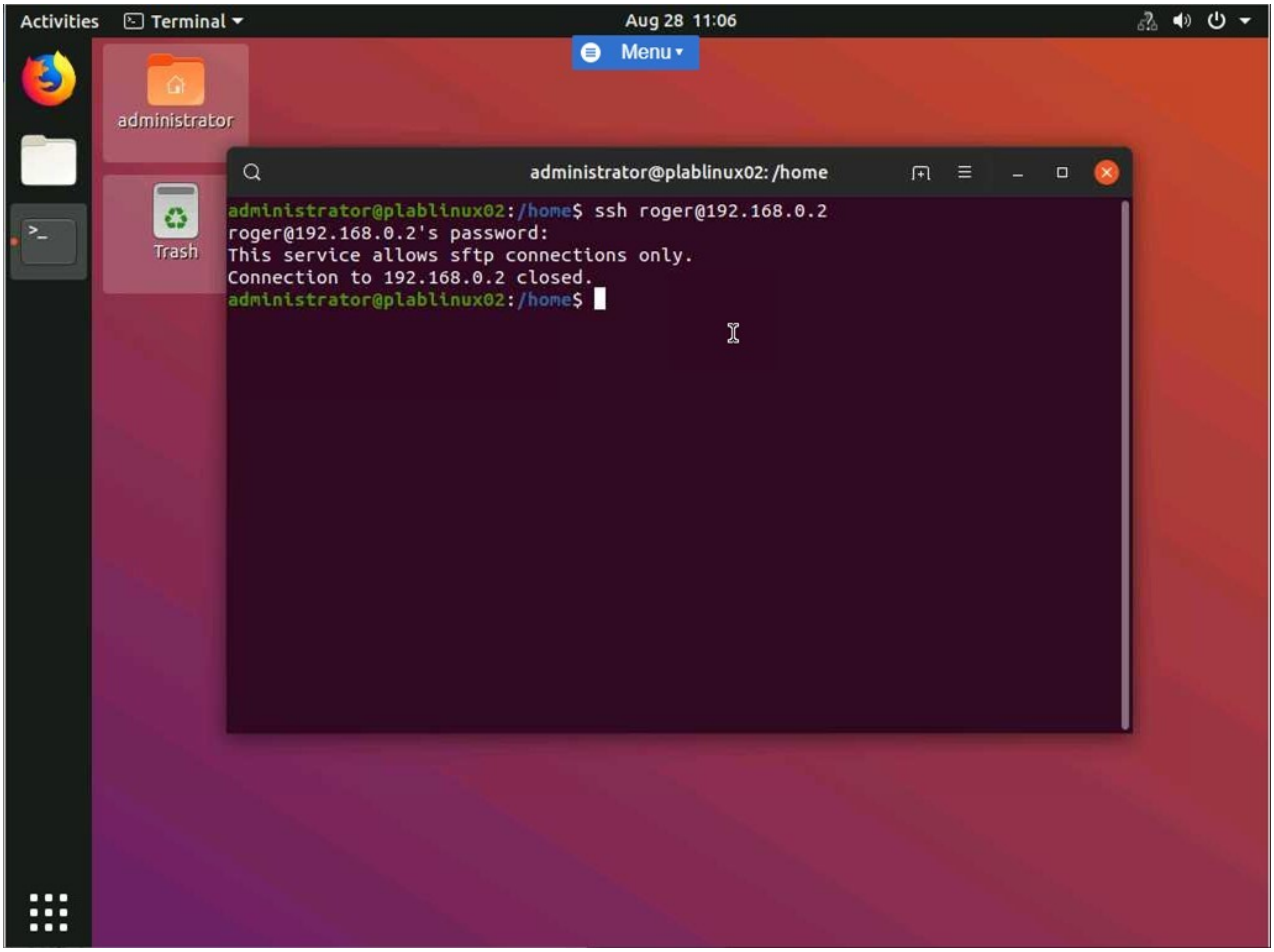


Figure 1.32 Screenshot of PLABLINUX01: Showing the failed ssh connection.

Step 6

The terminal window is displayed. Clear the screen by entering the following command:

```
clear
```

You will attempt to access **PLABLINUX01** using its IP address through **SFTP**. Type the following command:

```
sftp roger@192.168.0.2
```

Press **Enter**.

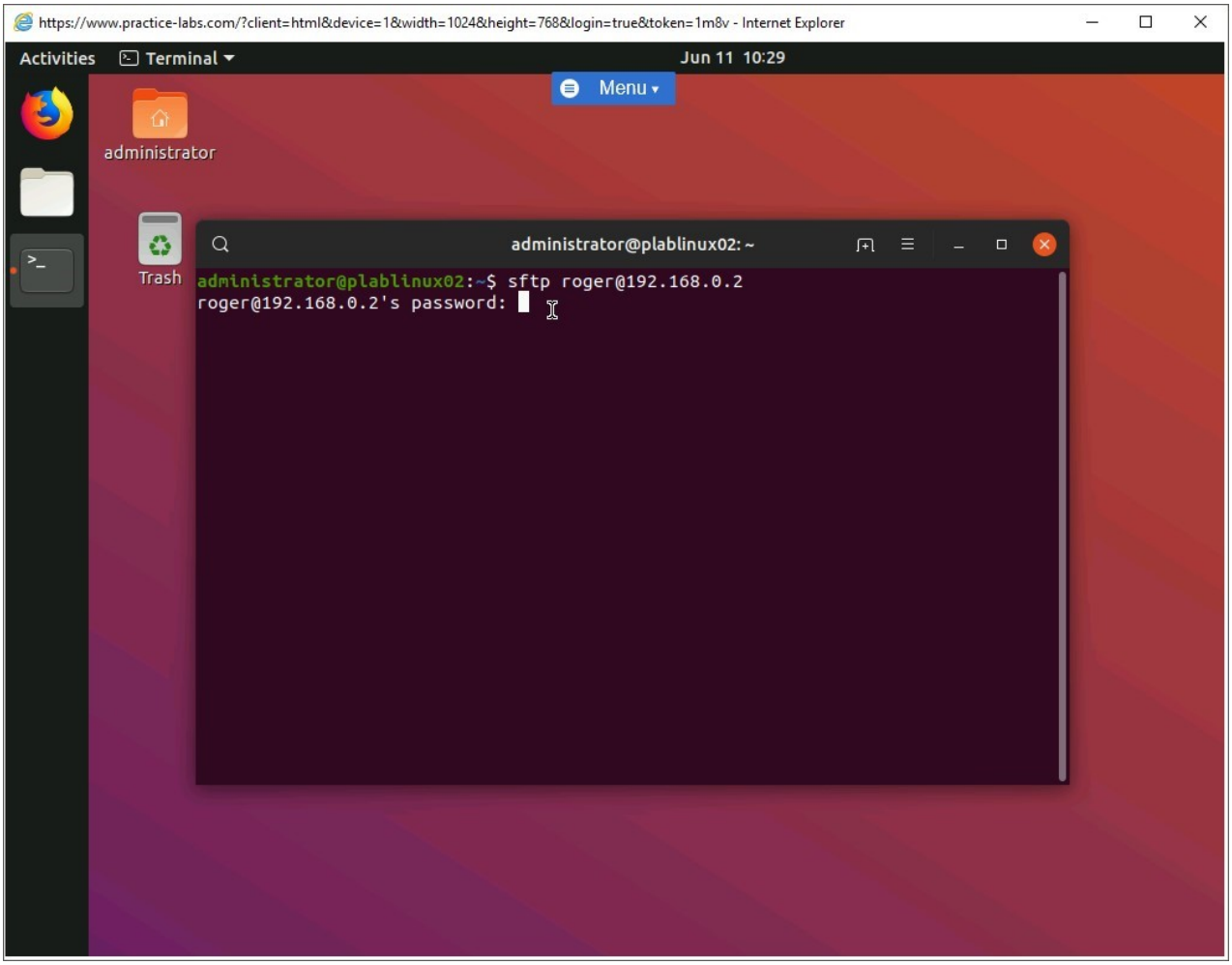


Figure 1.33 Screenshot of PLABLINUX01: Initiating the SFTP connection.

Step 7

When prompted, type the following password:

`Passw0rd`

Press **Enter**.

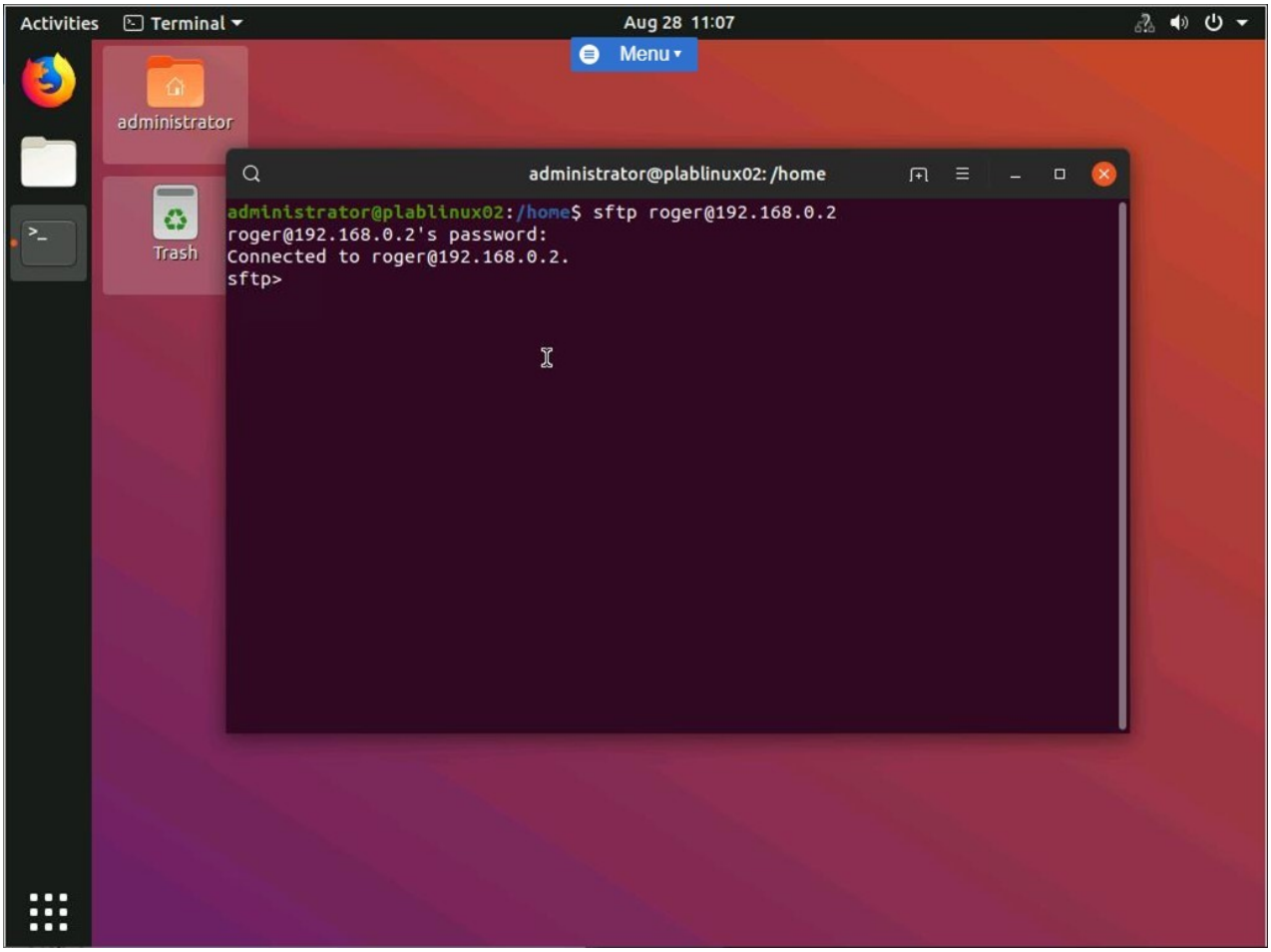


Figure 1.34 Screenshot of PLABLINUX01: Entering the password on the password prompt.

Step 8

To check the current working directory, type the following command:

```
pwd
```

Press **Enter**.

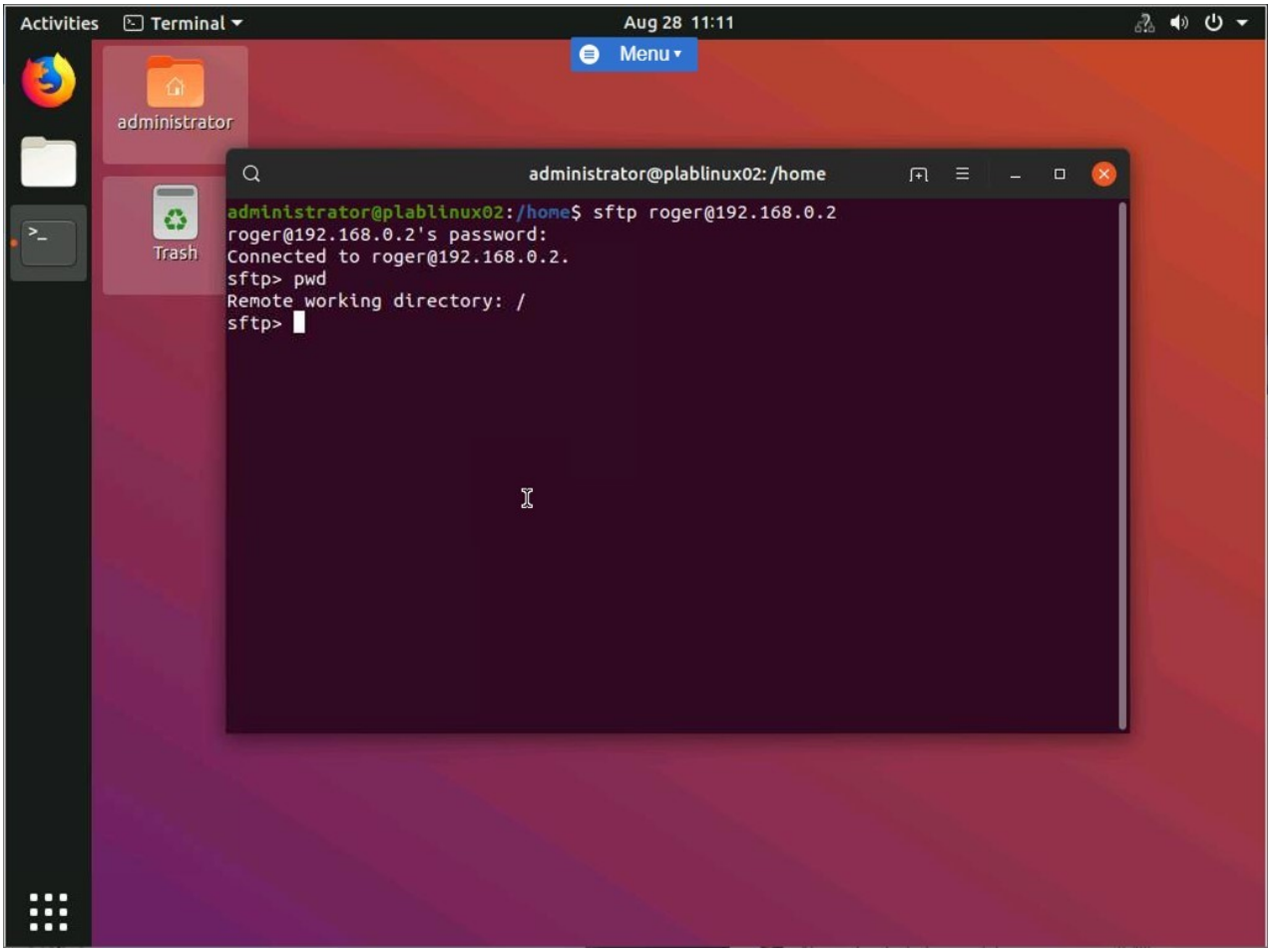


Figure 1.35 Screenshot of PLABLINUX01: Printing the current working directory.

Step 9

To print the directory listing, type the following command:

```
ls
```

Press **Enter**.

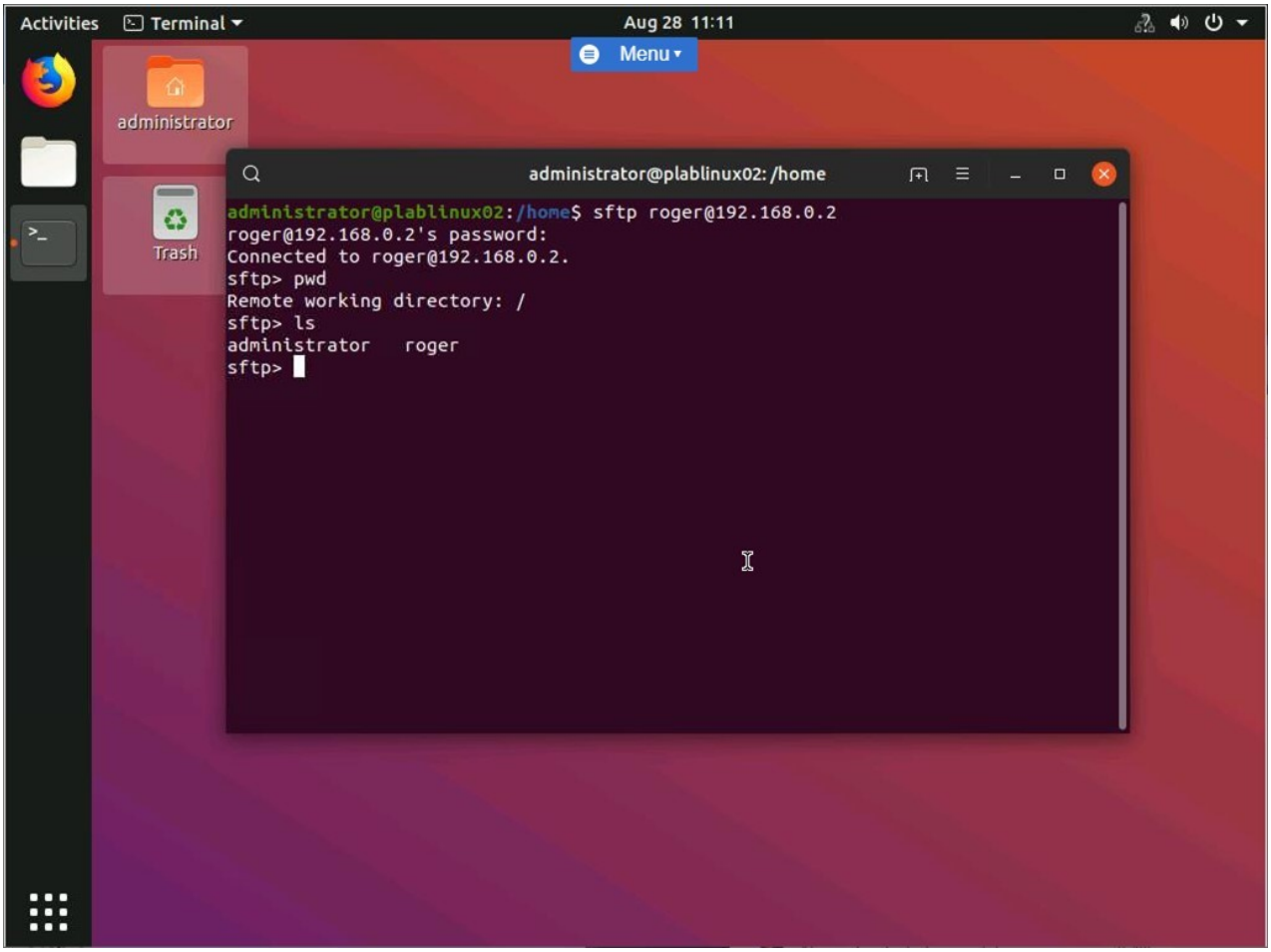


Figure 1.36 Screenshot of PLABLINUX01: Listing the files in the current working directory.

Step 10

To attempt to change to the **/home** directory, type the following command:

```
cd /home
```

Press **Enter**. Notice that you are prompted with an error and does not allow the user to change the directory. This is because of the chroot environment.

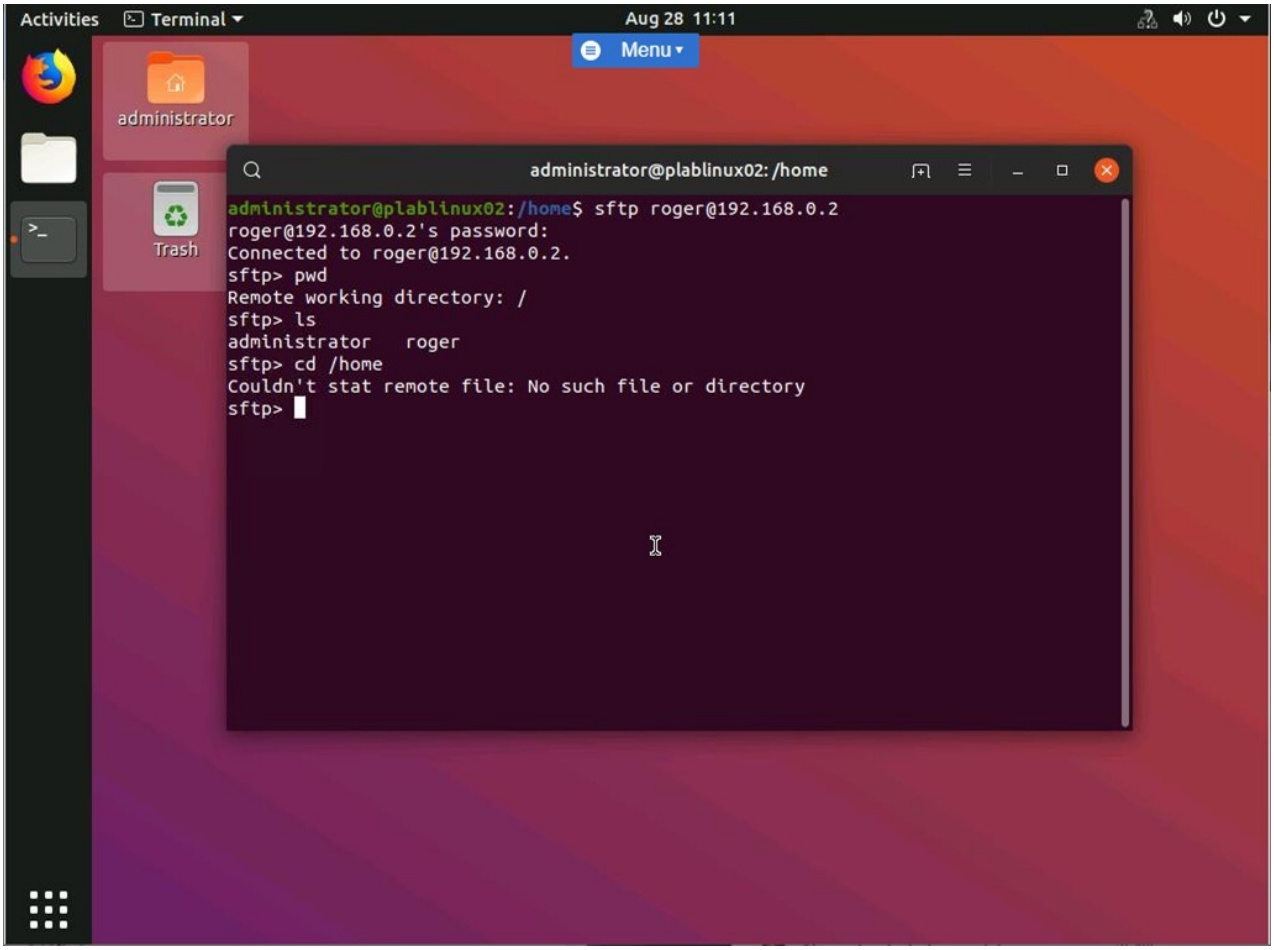


Figure 1.37 Screenshot of PLABLINUX01: Executing the command to change to /home directory.

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

Review

Well done, you have completed the **Set up SFTP to Chroot Jail only for a Specific Group** Practice Lab.

Summary

You completed the following exercise:

- Exercise 1 - Set up SFTP to Chroot Jail only for a Specific Group

You should now be able to:

- Configure Network on CentOS

- Set up SFTP to Chroot Jail only for a Specific Group
- Configure Network on Ubuntu
- Verify the Chroot Configuration

Feedback

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