CompTIA Linux+

Using Repositories

- **Introduction**
- **Lab Topology**
- **Exercise 1 - Using Repositories**
- **Review**

Introduction

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

Repositories
CentOS
Nginx
Yum Repositories

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 - Using Repositories

After completing this lab, you will be able to:

- Configure network on CentOS
- Install Nginx
- Create a Yum repository

Exam Objectives

The following exam objectives are covered in this lab:

- LPI: 110.1 Perform security administration tasks
- LPI: 106.2 Graphical Desktops
- CompTIA: 2.1 Given a scenario, conduct software installations, configurations, updates, and removals.

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 l

Exercise 1 - Using Repositories

UFW originated from Ubuntu, and it provides an interface to iptables, which is a host-based firewall. It is also known as Uncomplicated Firewall, which means that the users who are not familiar with the firewall concepts can still use it.

In this exercise, you will learn to install and configure UFW.

Note: Depending on your screen size, some of the longer commands may appear on two lines on your screen. Please ensure you type as one line. You can widen your content pane to improve the view of the command.

Learning Outcomes

After completing this exercise, you will be able to:

- Log into a Linux System
- Configure Network on CentOS
- Install Nginx
- Create a Yum Repository

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 the 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 on Applications, select System Tools, and then select Settings.

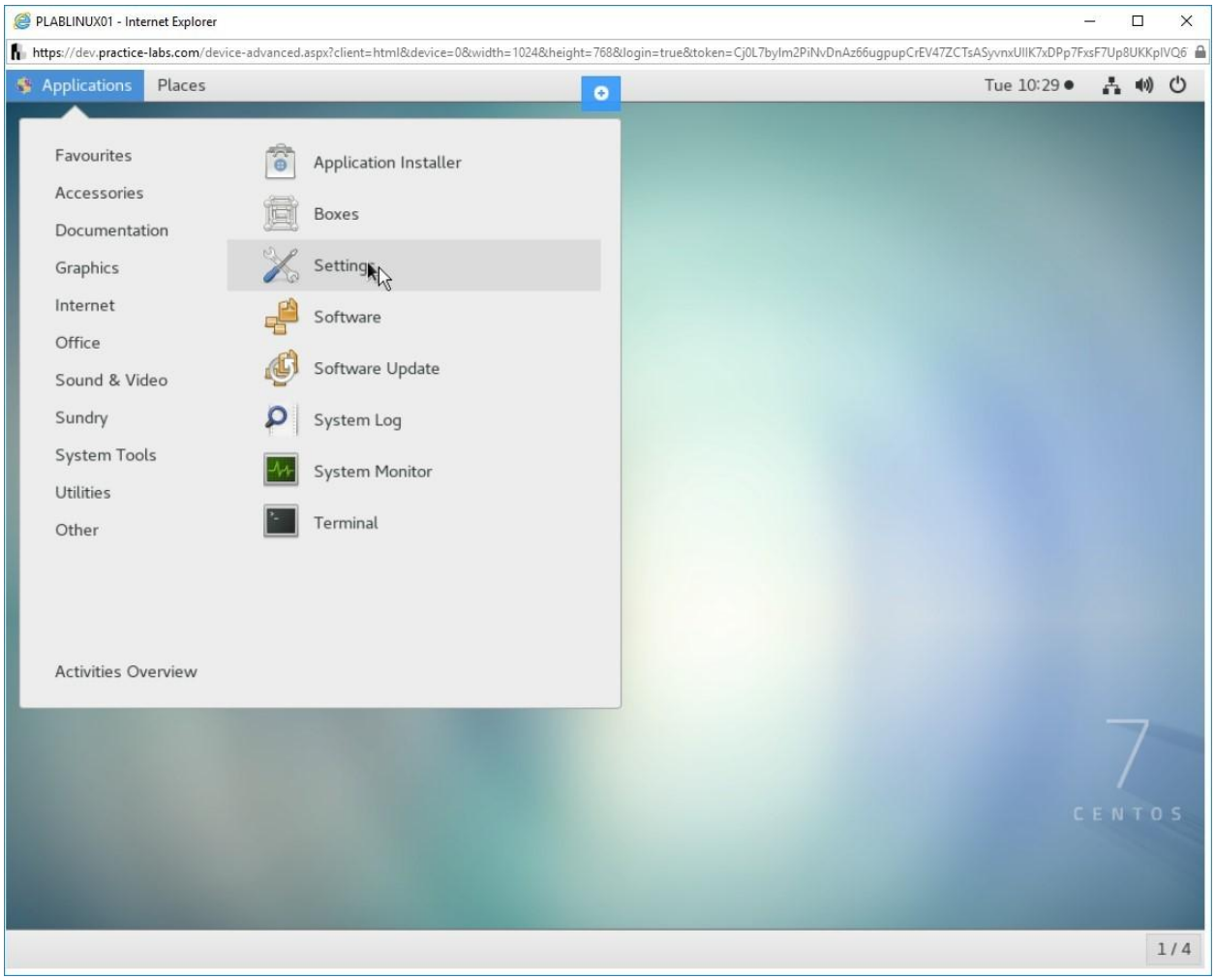

Figure 1.1 Screenshot of PLABLINUX01: Selecting the Settings option from the Applications > System Tools menu.

Step 2

Wired connection should be shown as ON.

From the Settings window, click Network in the left pane.

Then click the icon next to ON in the Wired section.

Note: If your wired connection is being shown as OFF then click the switch on the left of OFF to switch it to ON.

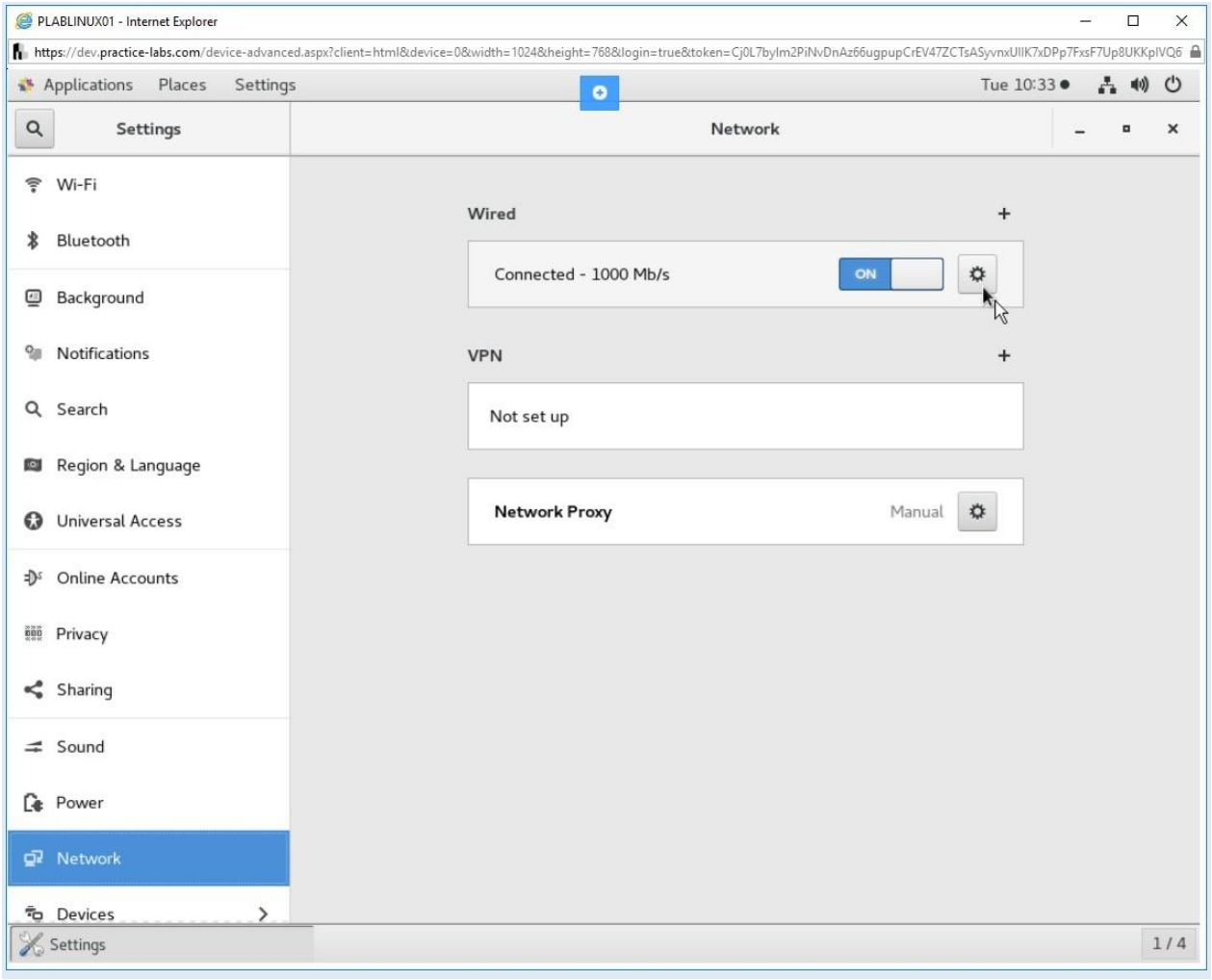

Figure 1.2 Screenshot of PLABLINUX01: Clicking the button to invoke the Wired dialog box.

Step 3

In the Wired dialog box, click the IPv4 tab.

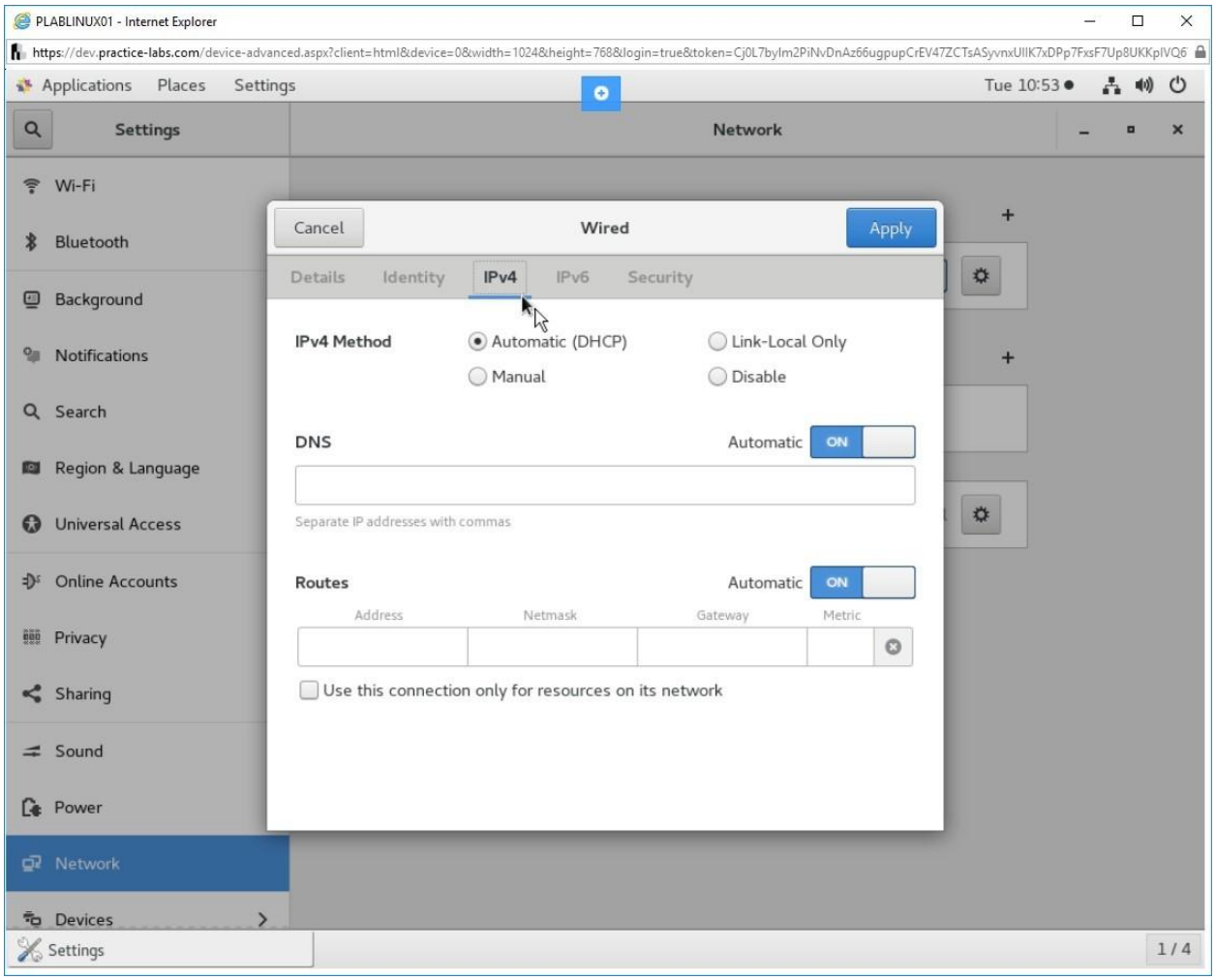

Figure 1.3 Screenshot of PLABLINUX01: Selecting the IPv4 tab in the Wired dialog box.

Step 4

Ensure Manual is selected and the following details have been entered:

Address: 192.168.0.2

Netmask: 255.255.255.0

Gateway: 192.168.0.250

Click Cancel.

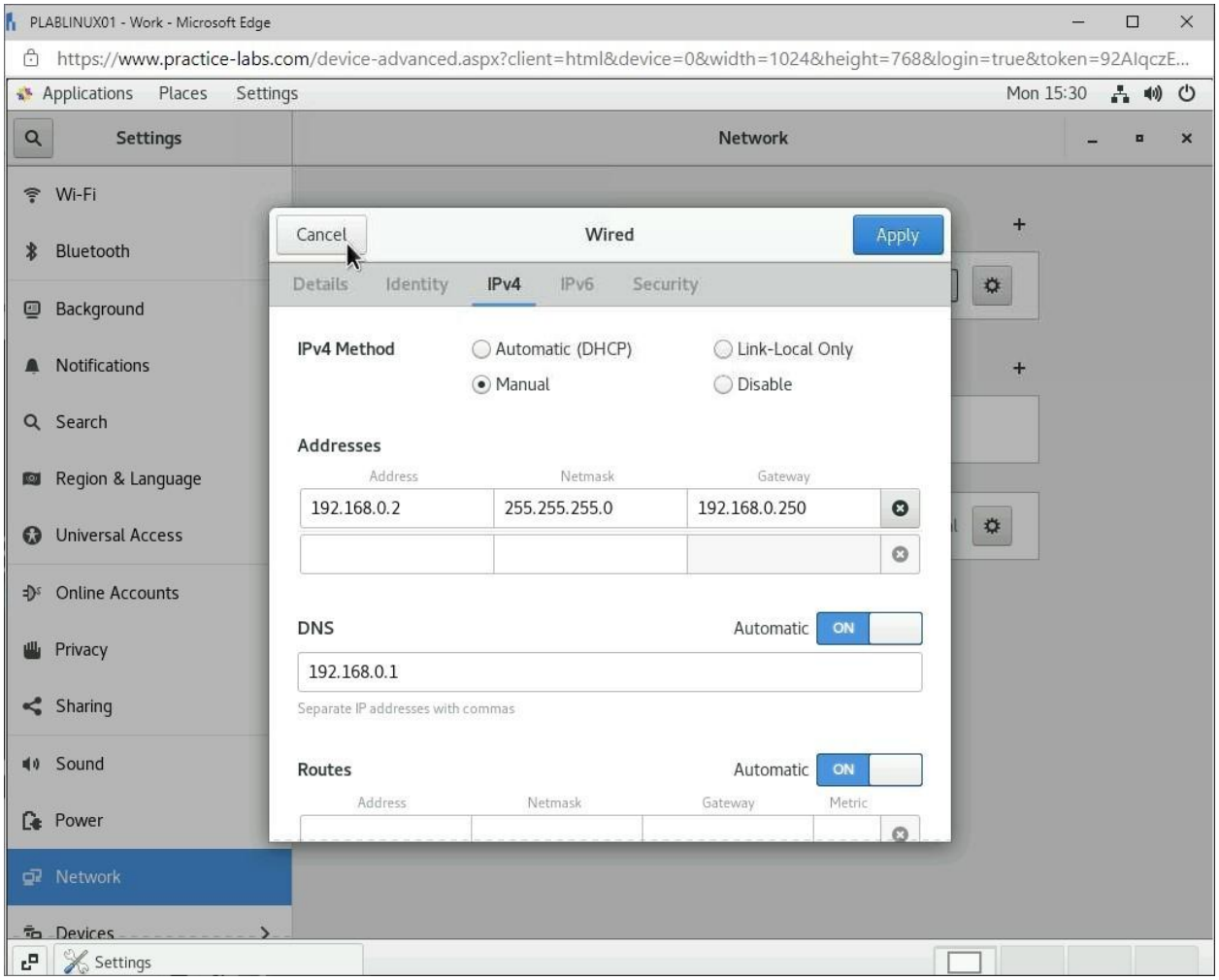

Figure 1.4 Screenshot of PLABLINUX01: Entering the network information and then clicking the Apply button.

Step 5

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

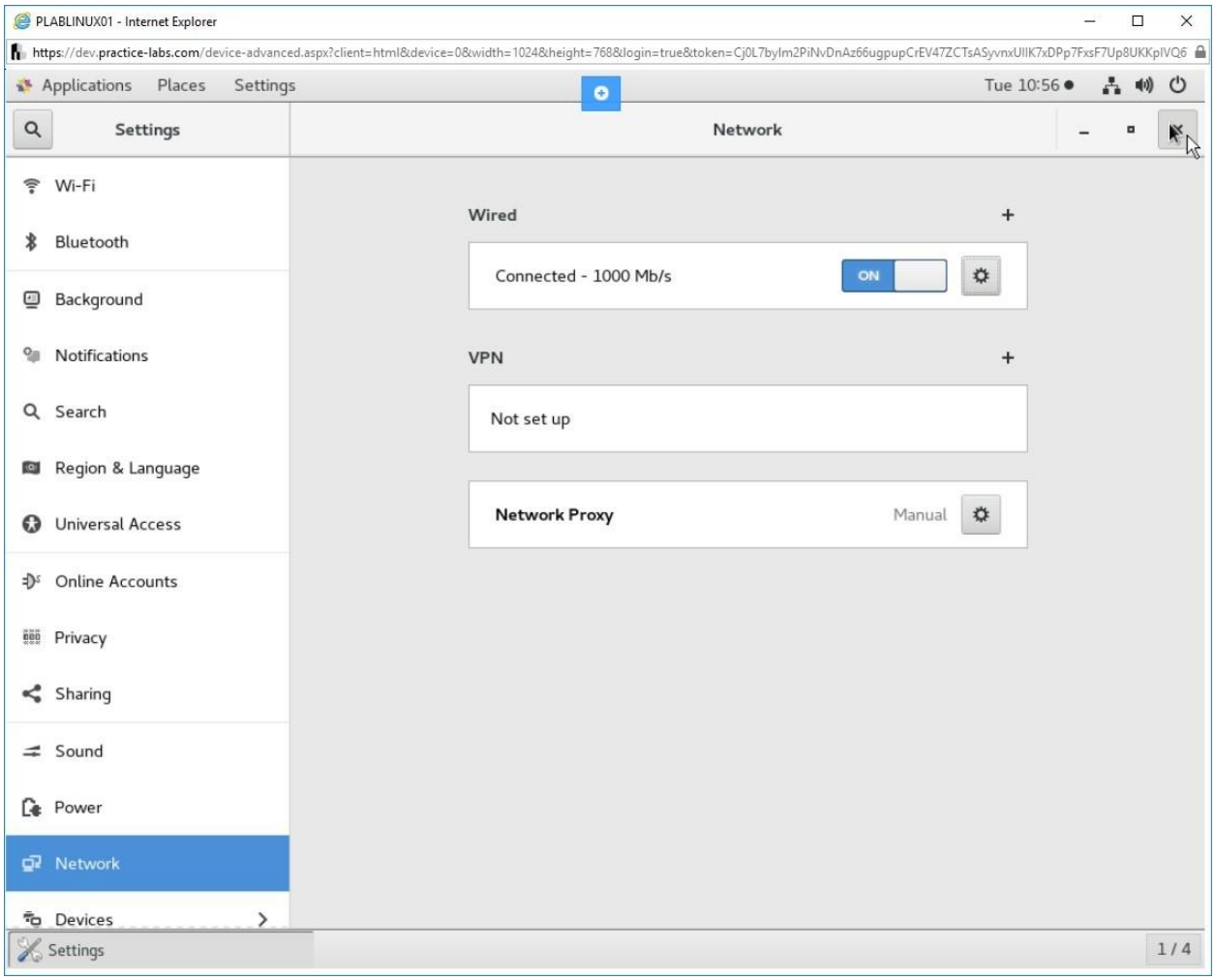

Figure 1.5 Screenshot of PLABLINUX01: Displaying the Settings window.

Task 2 - Install Nginx

Usually, you would download updates from the Internet-based repositories. However, you can configure a local repository as well so that updates can be downloaded once only and then deployed on multiple servers. You will install the Nginx Web server.

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

Step 1

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

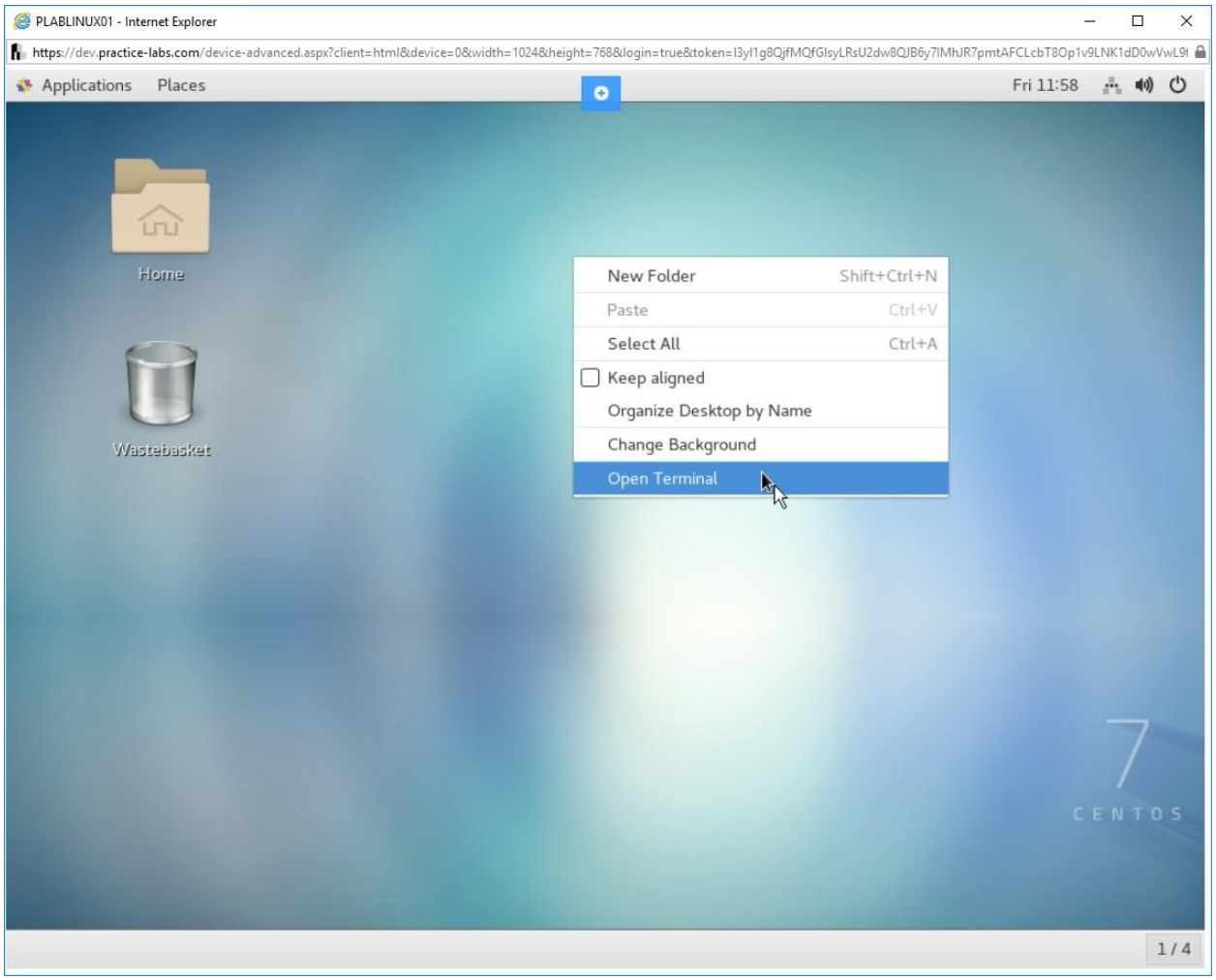

Figure 1.6 Screenshot of PLABLINUX01: Selecting the Open Terminal option from the context menu.

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.

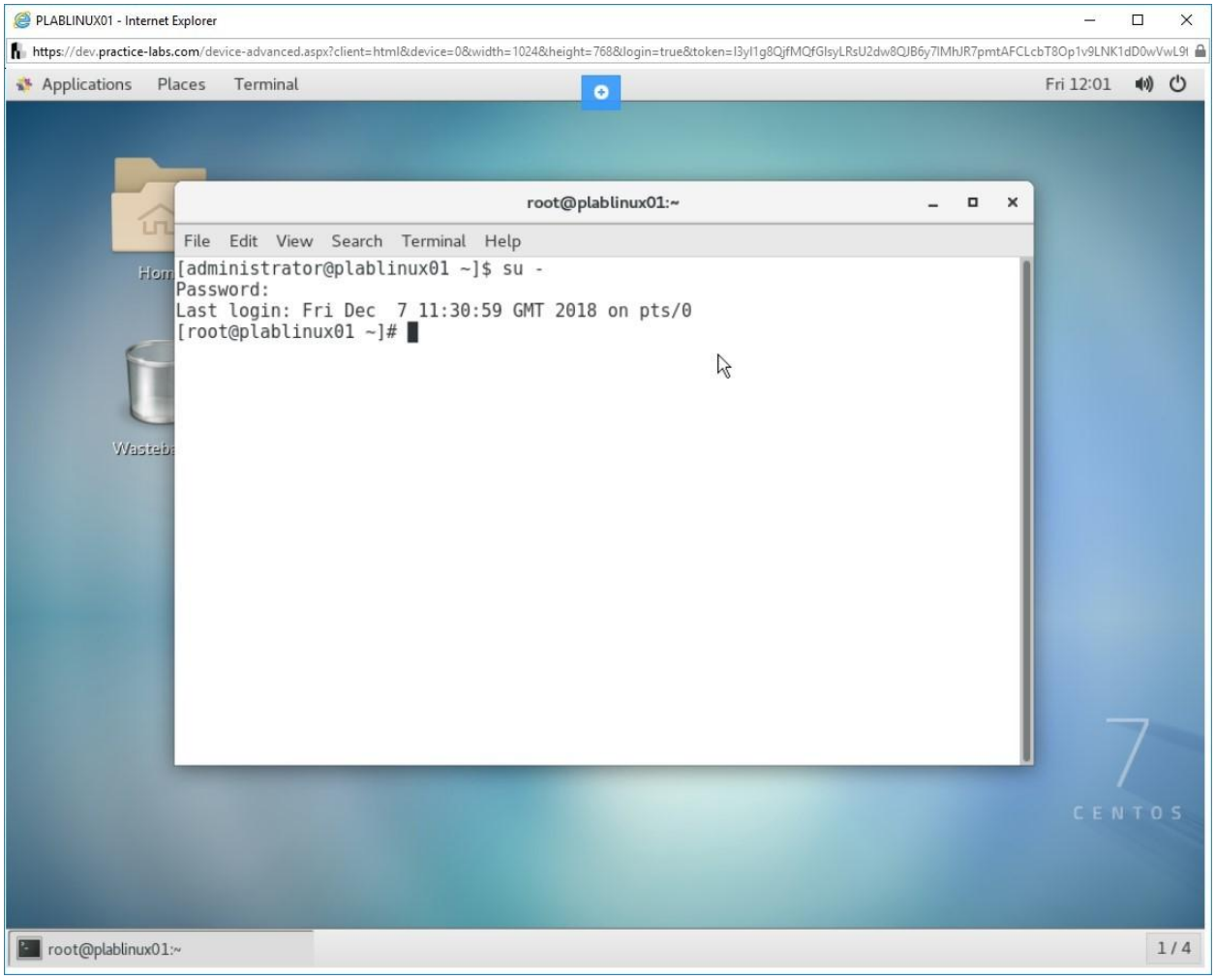

Figure 1.7 Screenshot of PLABLINUX01: Changing the account to the root account with the su command.

Step 3

Clear the screen by entering the following command:

```
clear
```

Before installing Nginx, you need to add it to the CentOS repository. For this, you are required to install the epel repository on your system. Type the following command:

```
yum install epel-release -y
```

Press Enter. Notice that when you add -y, the installation does not require any confirmation.

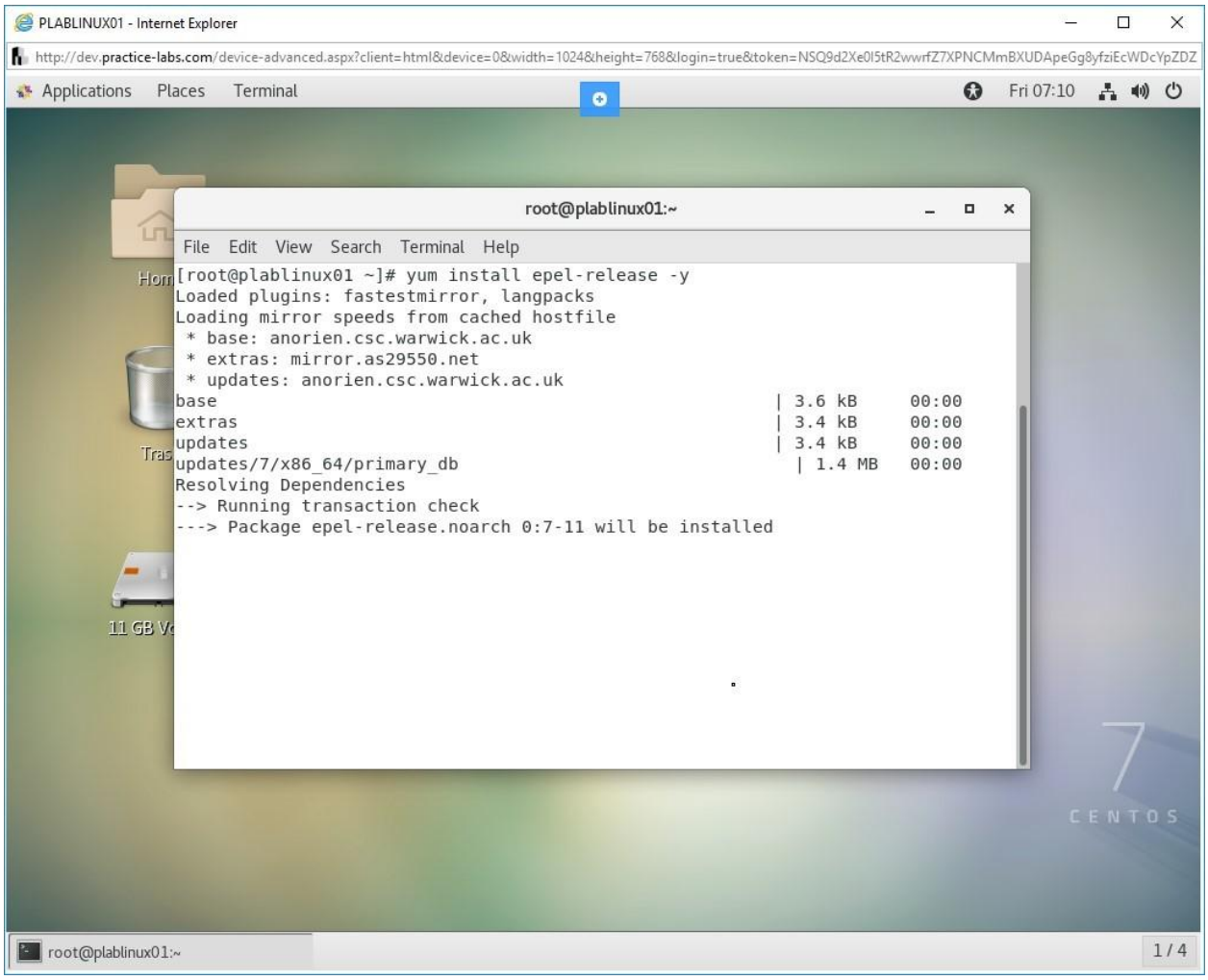

Figure 1.8 Screenshot of PLABLINUX01: Installing the epel repository.

Step 4

When the installation is complete, you will see the Complete! message.

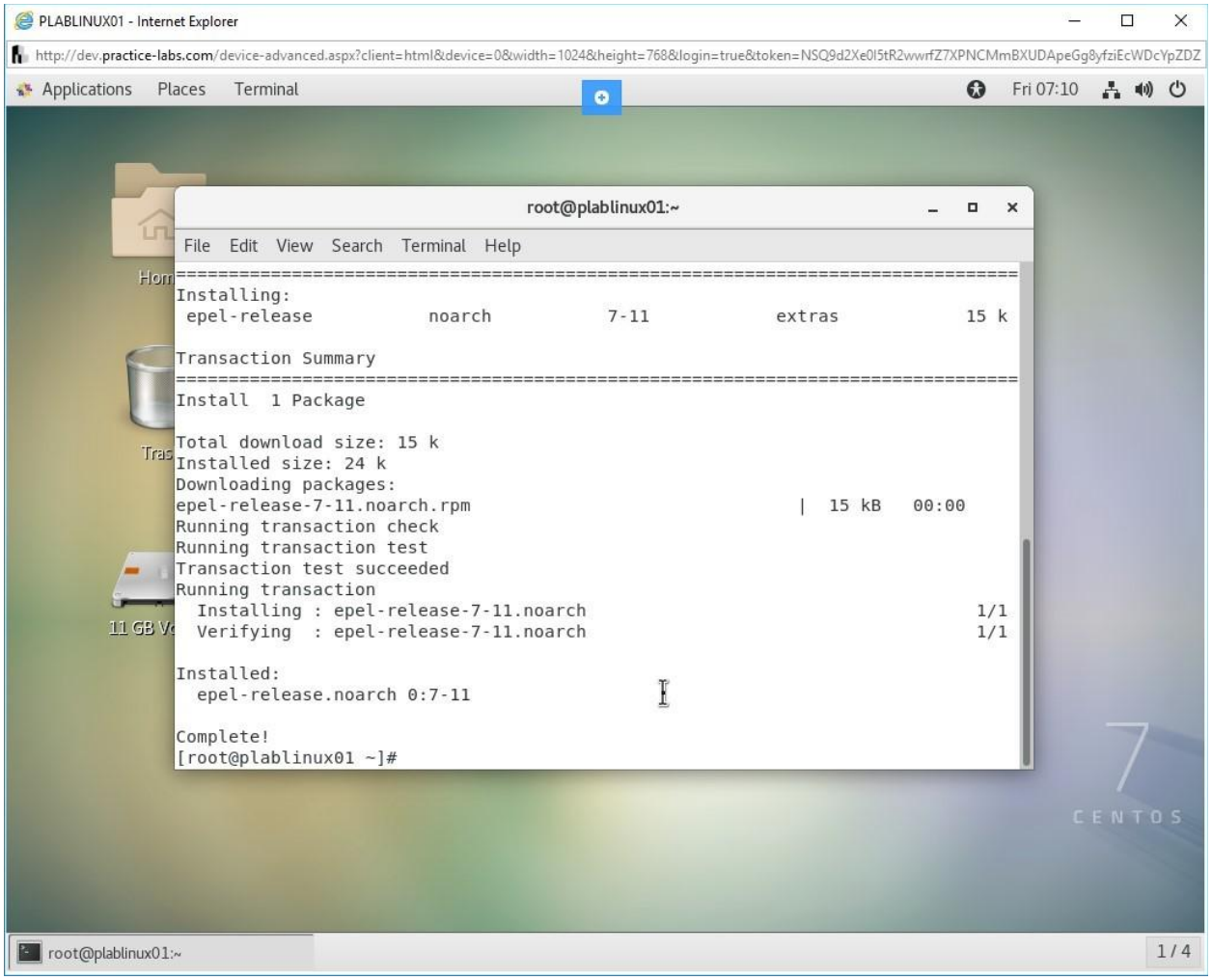

Figure 1.9 Screenshot of PLABLINUX01: Showing the installation completion of the epel repository.

Step 5

Clear the screen by entering the following command:

```
clear
```

After installing the epel repository, you need to install Nginx now. Type the following command:

```
yum install nginx -y
```

Press Enter.

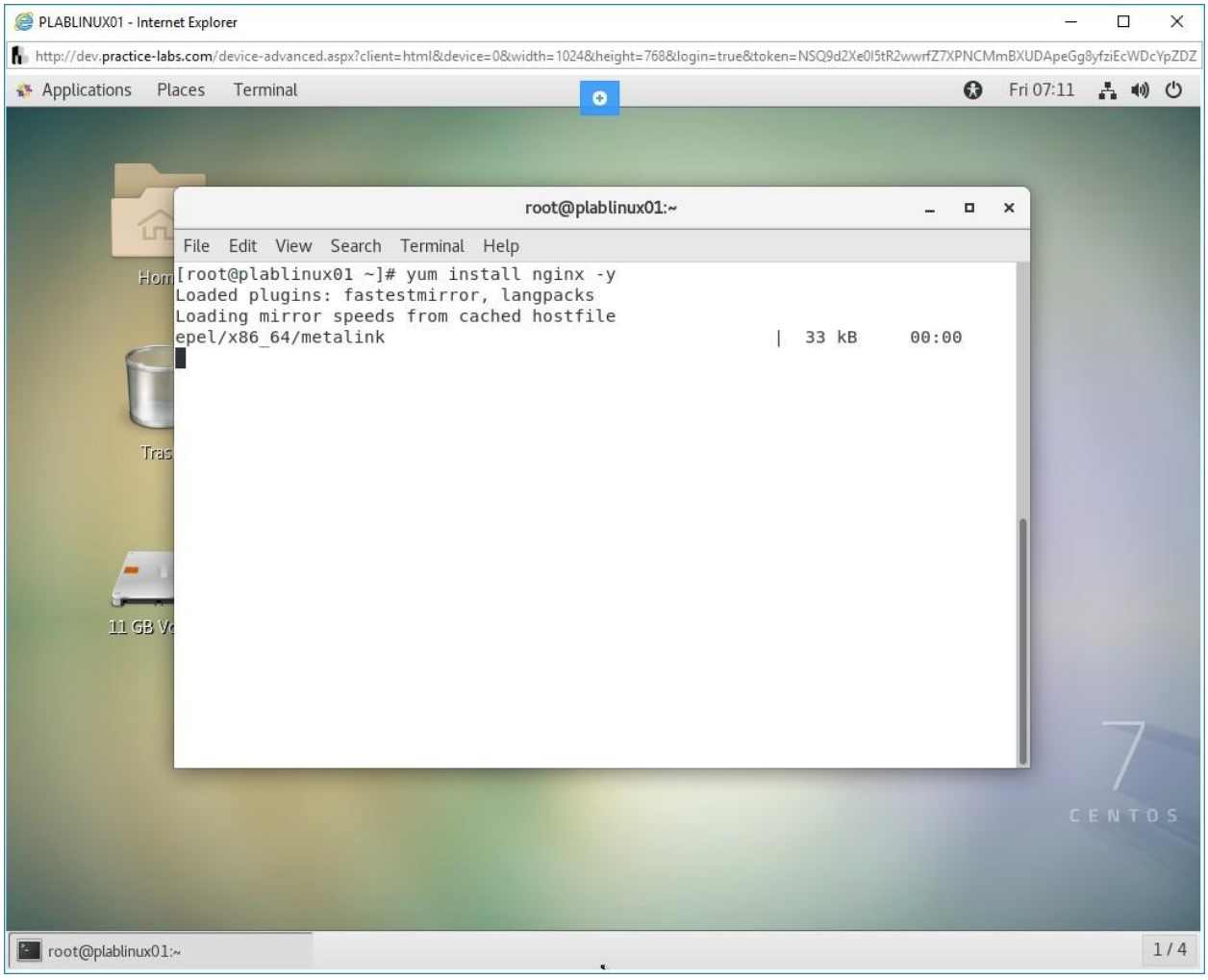

Figure 1.10 Screenshot of PLABLINUX01: Installing the Nginx Web server.

Step 6

When the installation is complete, you will see the Complete! message.

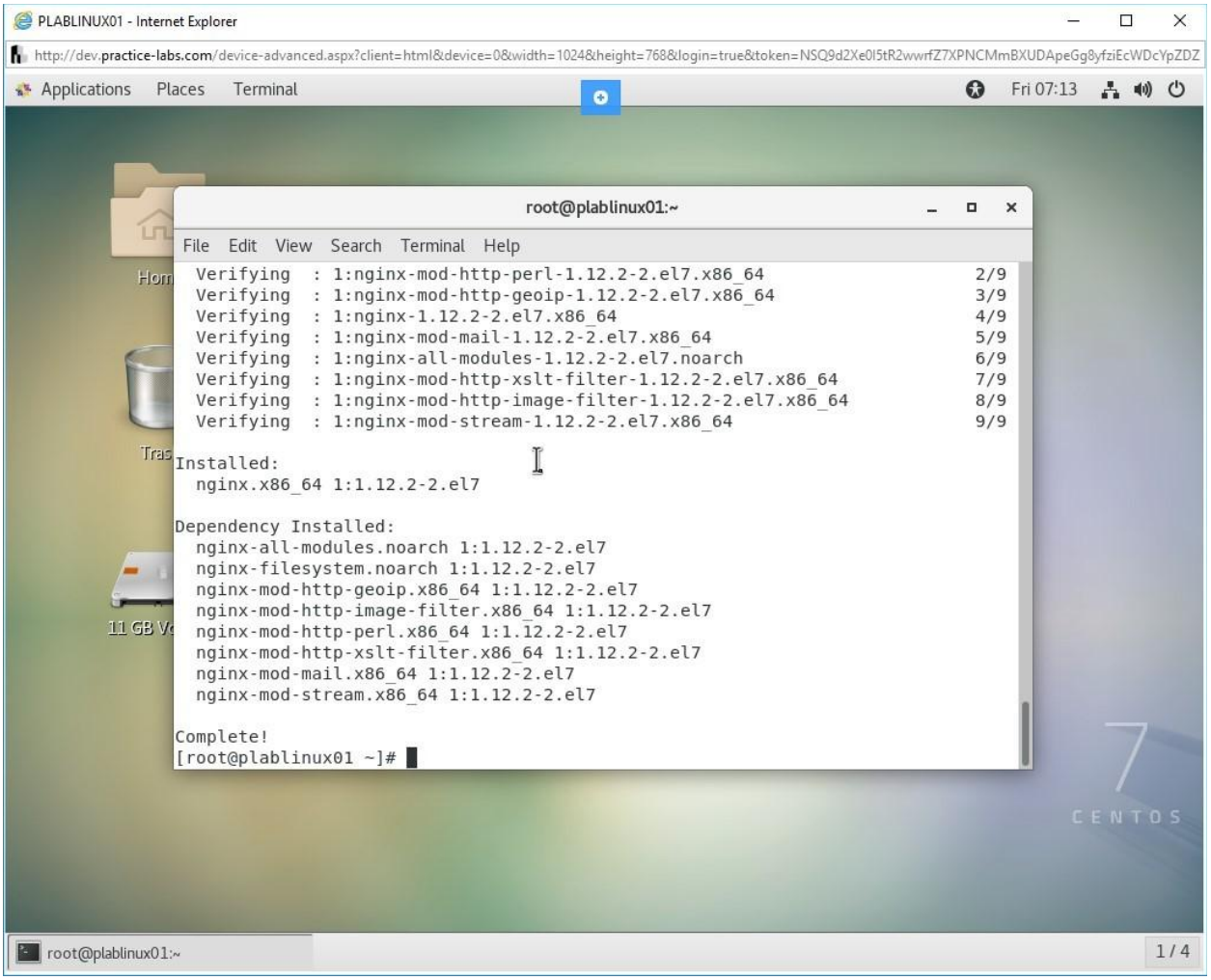

Figure 1.11 Screenshot of PLABLINUX01: Showing the installation completion of the Nginx web server.

Step 7

Clear the screen by entering the following command:

```
clear
```

After installing Nginx, you need to start it. Type the following command:

```
systemctl start nginx
```

Press Enter.

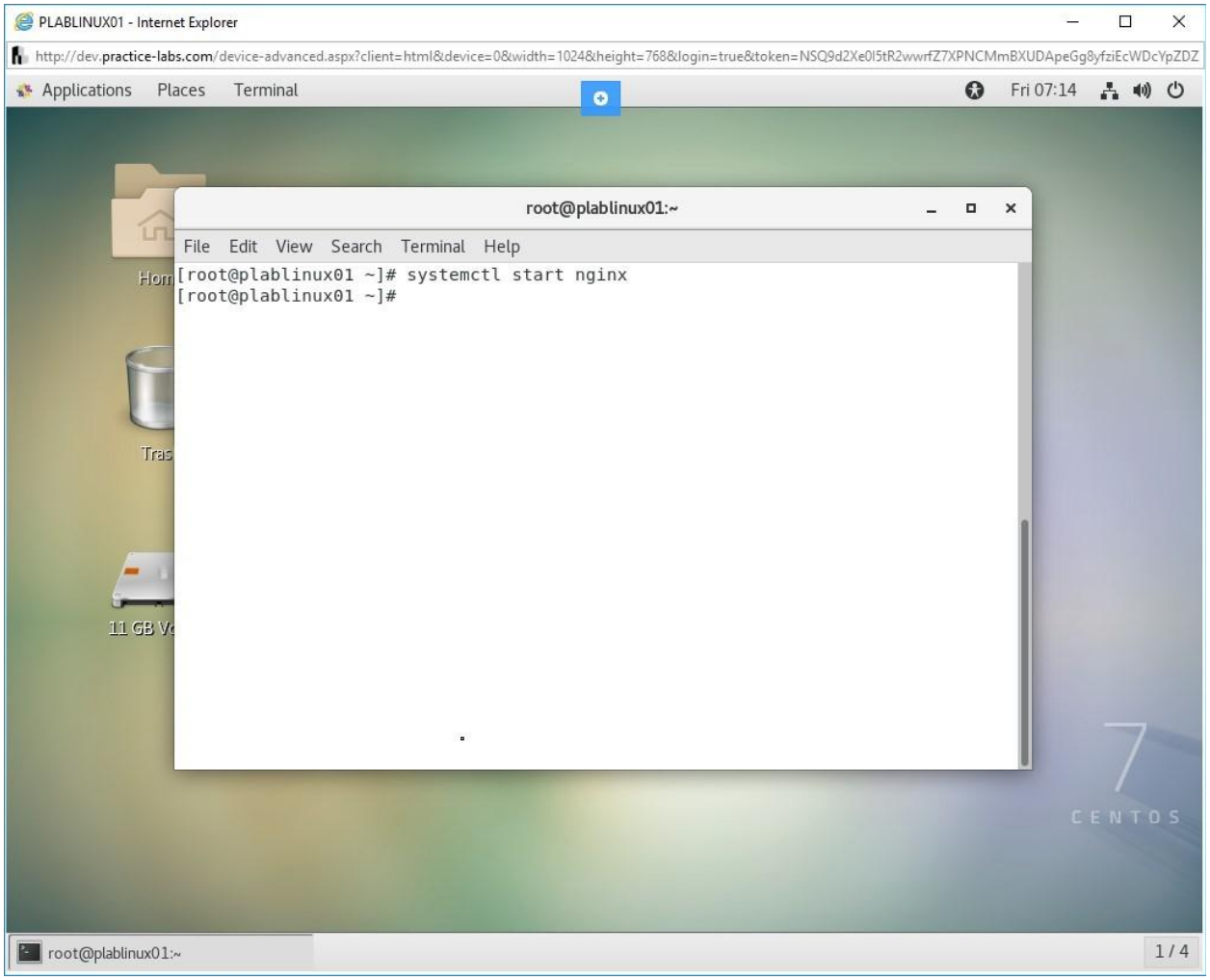

Figure 1.12 Screenshot of PLABLINUX01: Starting the Web server.

Step 8

After installing Nginx, you need to configure it to start automatically at the system boot. Type the following command:

```
systemctl enable nginx
```

Press Enter.

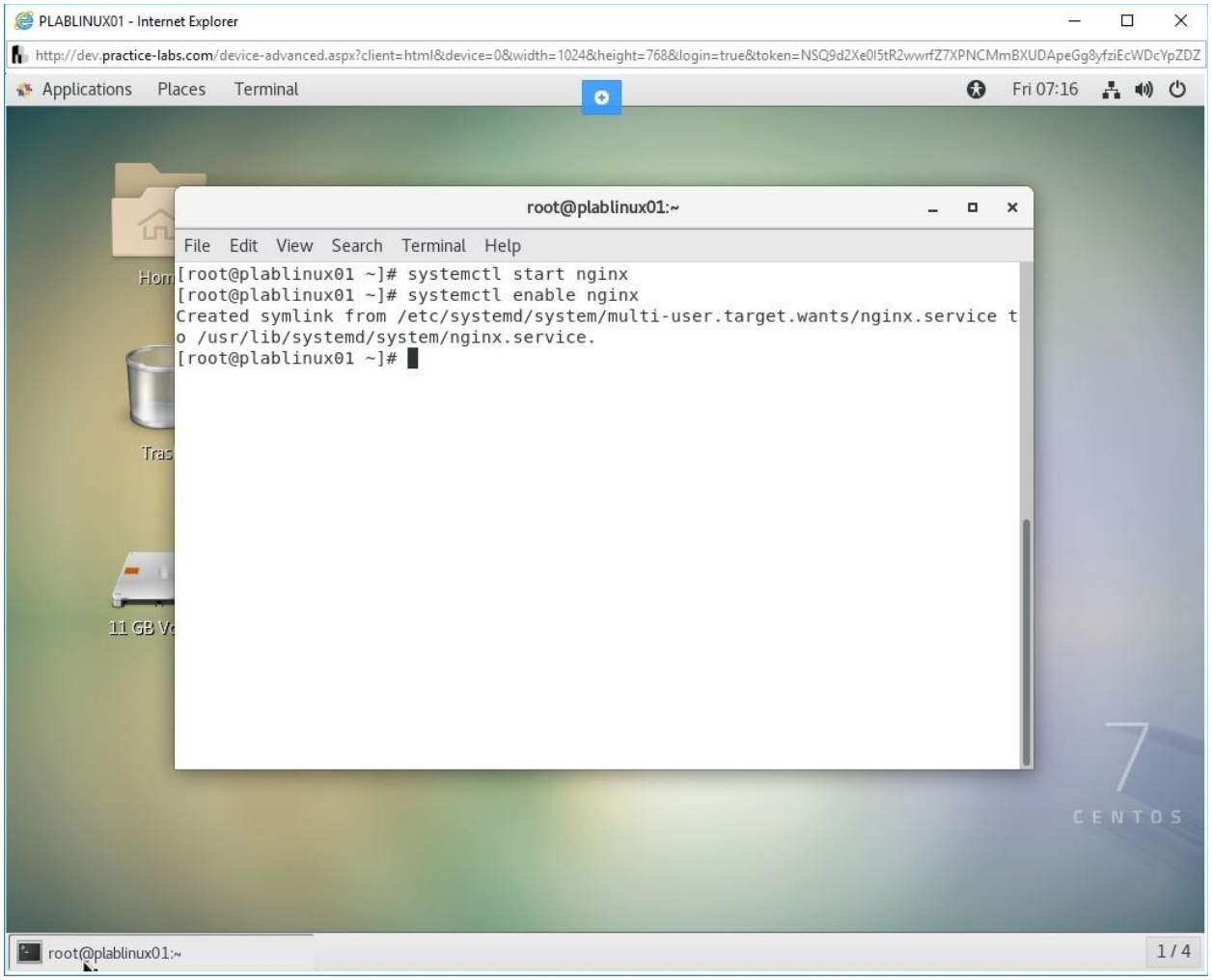

Figure 1.13 Screenshot of PLABLINUX01: Enabling the Nginx Web server to start at the bootup.

Step 9

You can now verify the status of Nginx. Type the following command:

```
systemctl status nginx
```

Press Enter. Notice that nginx is now active and enabled on system startup.

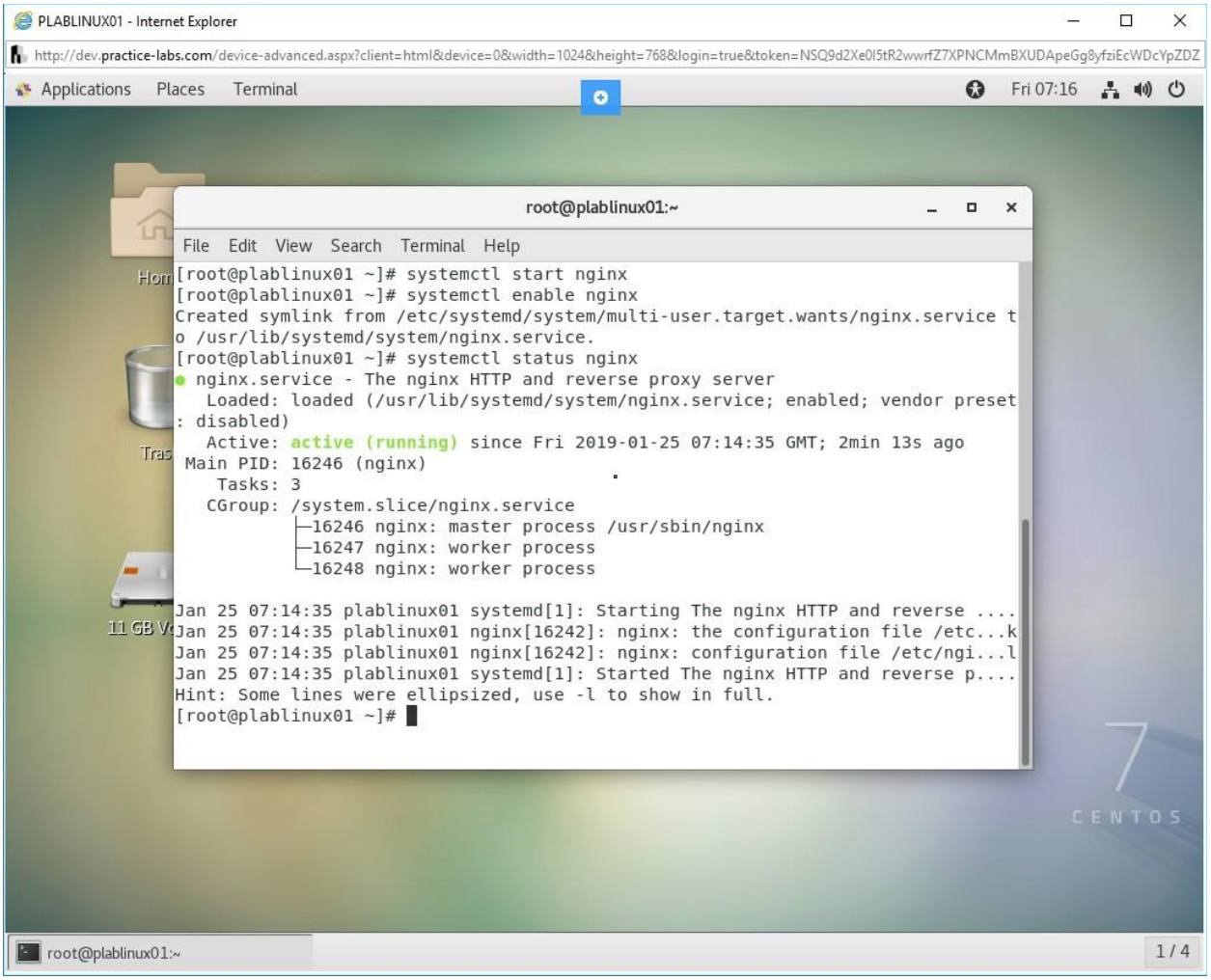

Figure 1.14 Screenshot of PLABLINUX01: Checking the Nginx Web server status.

Step 10

Clear the screen by entering the following command:

```
clear
```

You need to now create a rule in the firewall to allow the HTTP and HTTPS traffic. Type the following commands:

```
firewall-cmd --zone=public --permanent
--add-service=http
```

Press Enter.

```
firewall-cmd --zone=public --permanent
--add-service=https
```

Press Enter. Notice that you get to see the success message after each command.

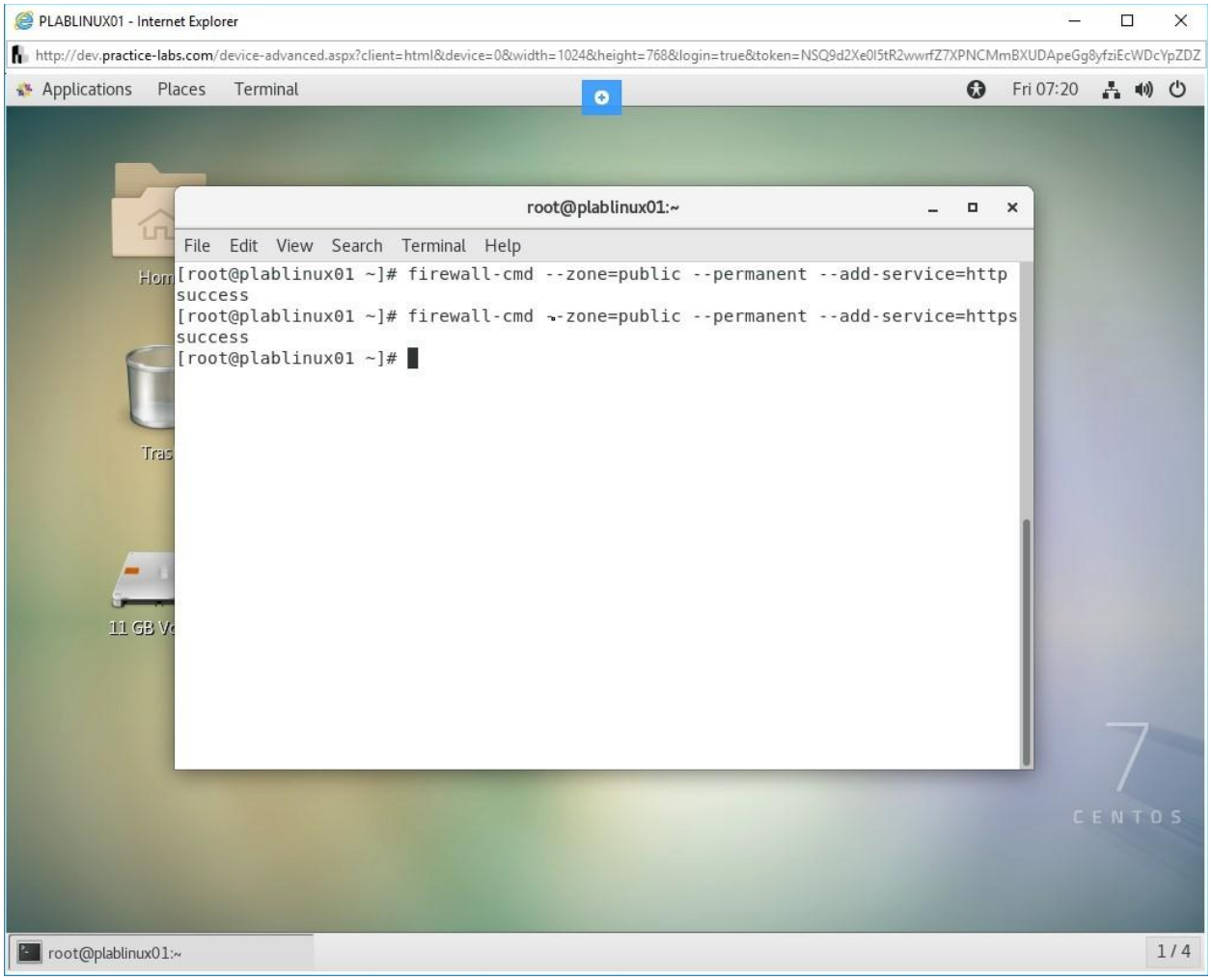

Figure 1.15 Screenshot of PLABLINUX01: Adding rules in the firewall for HTTP and HTTPS.

Step 11

Clear the screen by entering the following command:

```
clear
```

You need to update the firewall rules now. Type the following commands:

```
firewall-cmd --reload
```

Press Enter. Notice that you get to see the success message after this command.

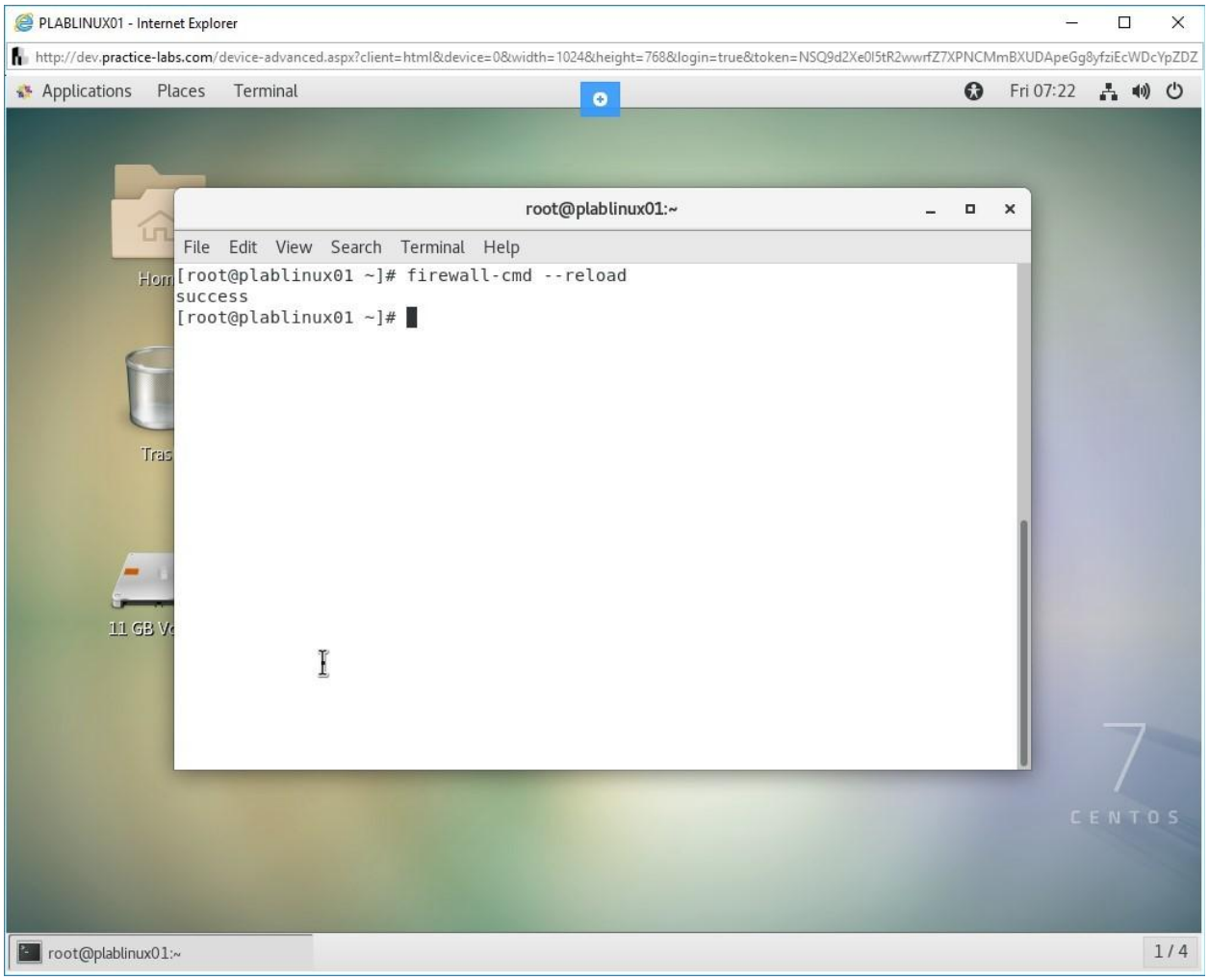

Figure 1.16 Screenshot of PLABLINUX01: Reloading the firewall.

Step 12

Start Firefox from Applications > Favorites.

Wait a moment for the browser to launched.

In the address bar of Firefox, type the following URL:

```
localhost
```

Press Enter.

Notice that you get to see Default server homepage.

Close the Firefox window now.

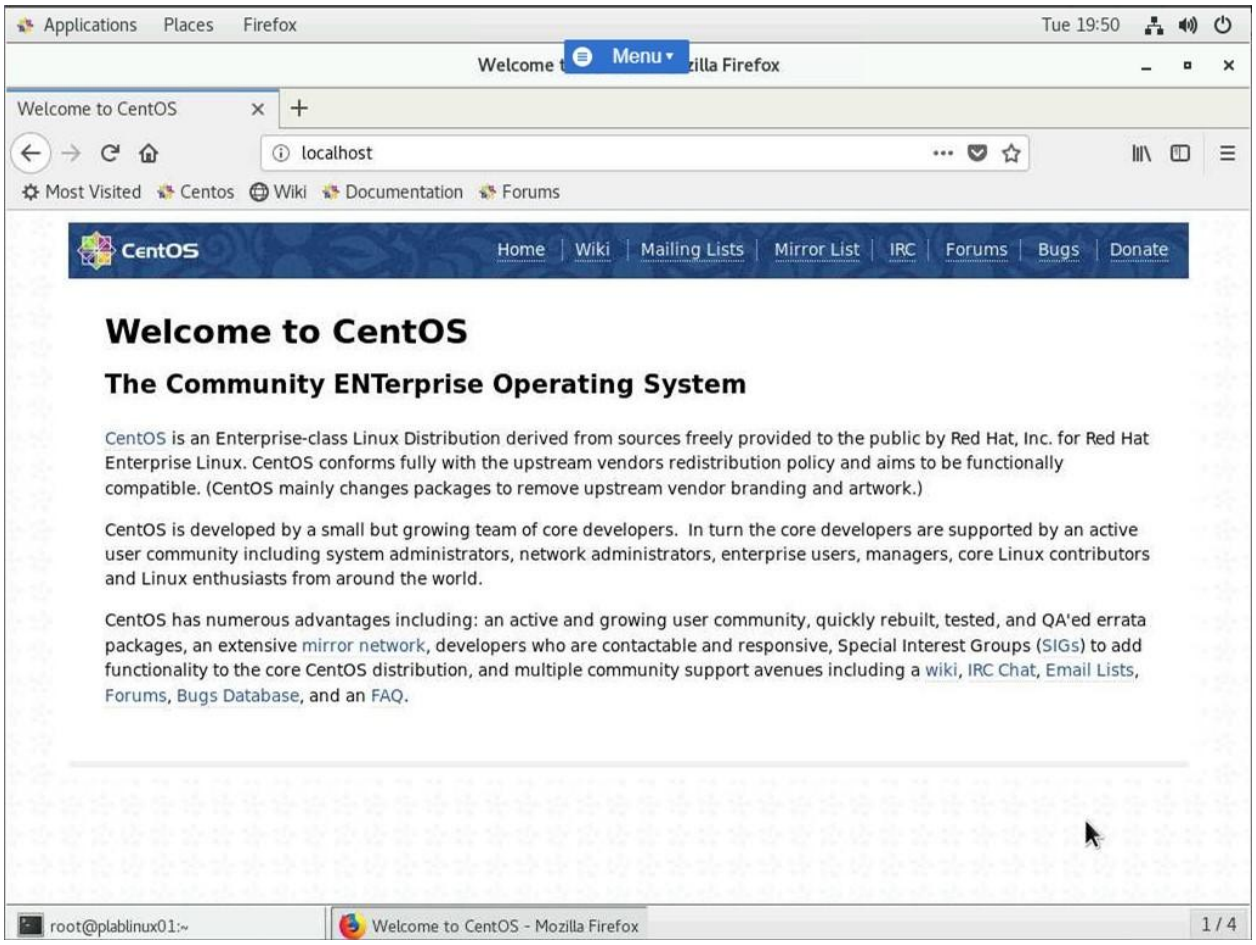

Figure 1.17 Screenshot of PLABLINUX01: Checking the Nginx Web server homepage.

Task 3 - Create a Yum Repository

After setting up the Web server, you will now create the local repository.

In this task, you will learn to create a local repository. To create the local repository, perform the following steps:

Step 1

Return to terminal and clear the screen by entering the following command:

```
clear
```

Press Enter. You should have a createrepo package on your system for creating, configuring, and managing the local repository. Before you install, you can check if this package exists on the CentOS system.

Type the following command:

```
rpm -qa | grep createrepo
```

Press Enter. Notice the createrepo package is already installed.

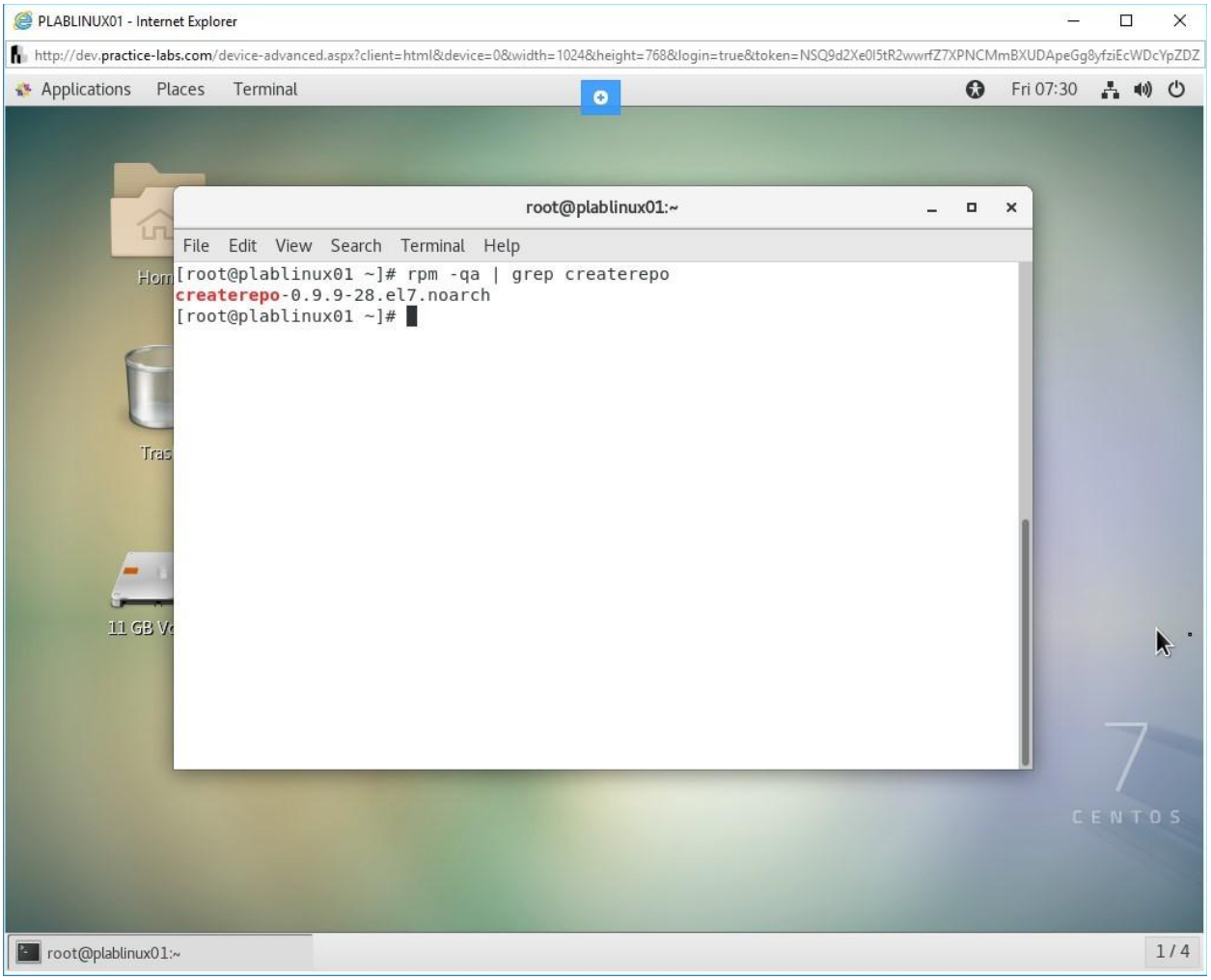

Figure 1.18 Screenshot of PLABLINUX01: Checking if createrepo is installed.

Step 2

You need to create directories that will store the updates and their related information. Type the following command:

```
mkdir -p
/var/www/html/repos/{base,centosplus,extras,updat
es}
```

Press Enter.

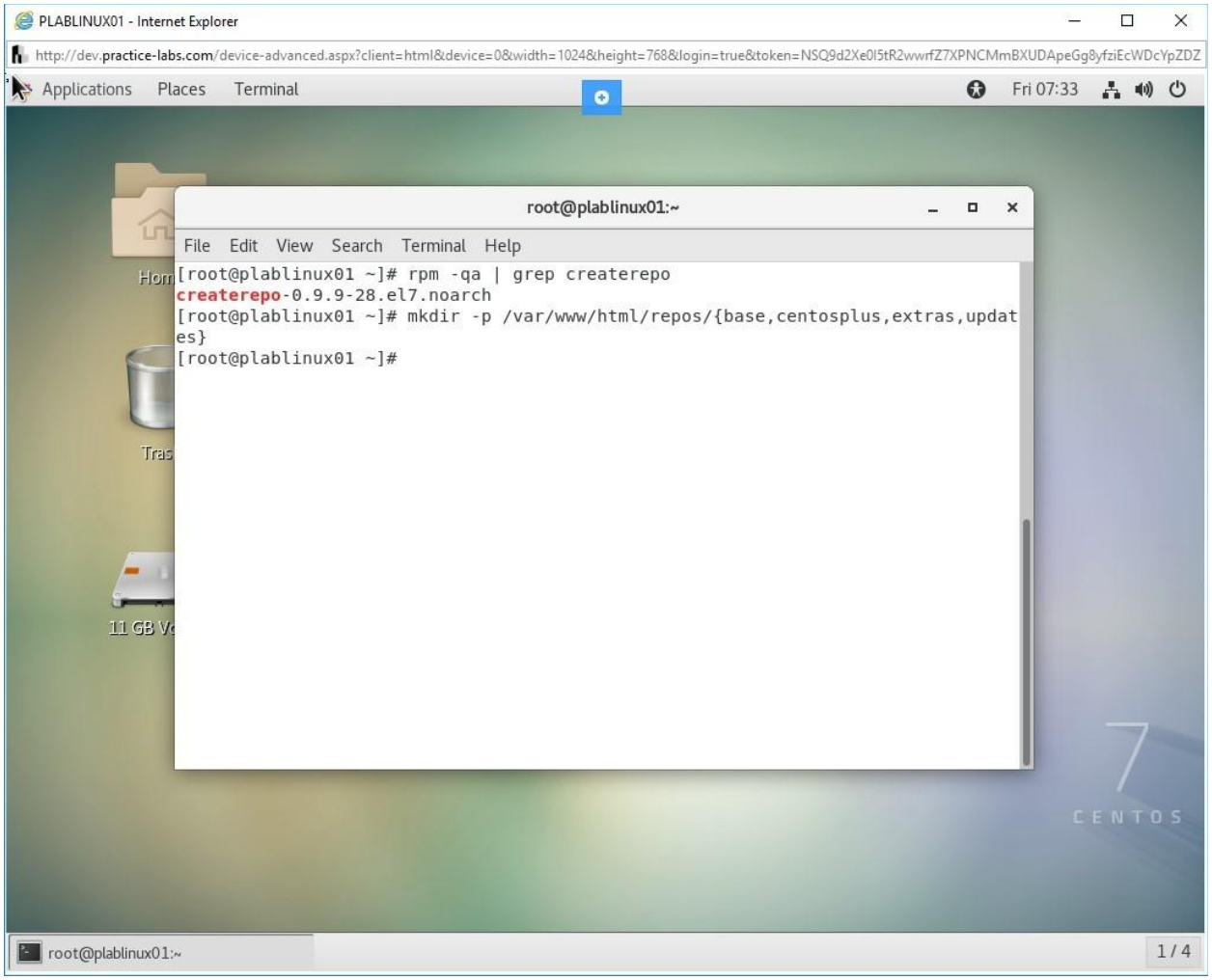

Figure 1.19 Screenshot of PLABLINUX01: Making directories for the local repository.

Step 3

Notice that the directories are now created.

Clear the screen by entering the following command:

```
clear
```

Press Enter. You need to verify that these directories are created. Type the following command:

```
ls -l /var/www/html/repos/
```

Press Enter.

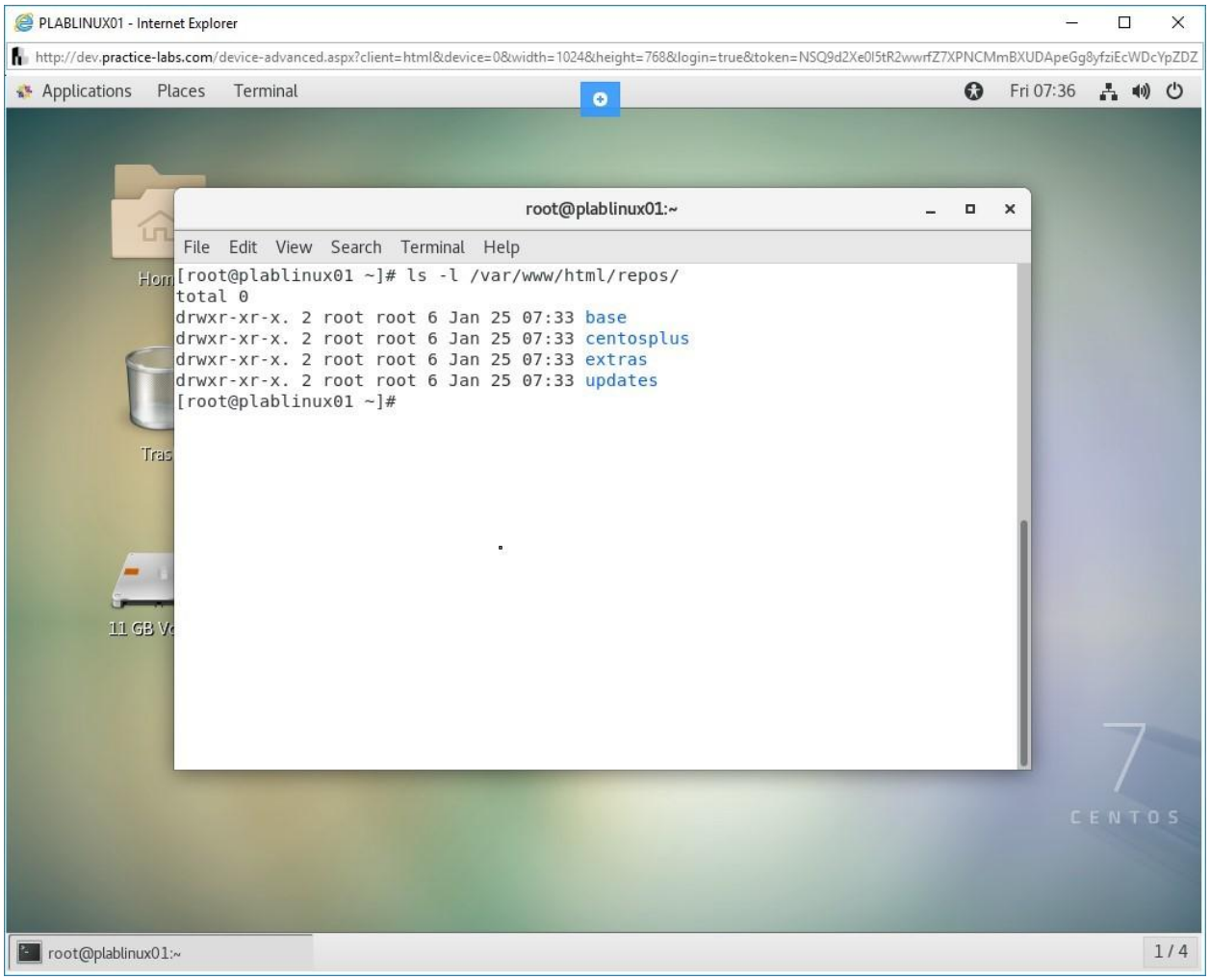

Figure 1.20 Screenshot of PLABLINUX01: Verifying the creation of directories.

Step 4

Clear the screen by entering the following command:

```
clear
```

Press Enter. Next, you need to use the reposync tool, which will synchronize CentOS yum repositories with the local directories. You may find maximizing the terminal window useful when typing the longer commands in the following steps.

Type the following command line:

```
reposync -g -l -d -m --repoid=base --newest-only
--download-metadata
--download_path=/var/www/html/repos/
```

Press Enter.

Notice that the update synchronization starts. There are more than 10000 updates. For the time being, you can stop the synchronization by pressing the Ctrl+c command after around 500 updates are downloaded.

Alert: Do not download all updates. You will run out of space and will have issues in running rest of the commands.

Note: The number of updates may differ in your lab environment. It may take some time to receive output on the terminal after entering the reposync command.

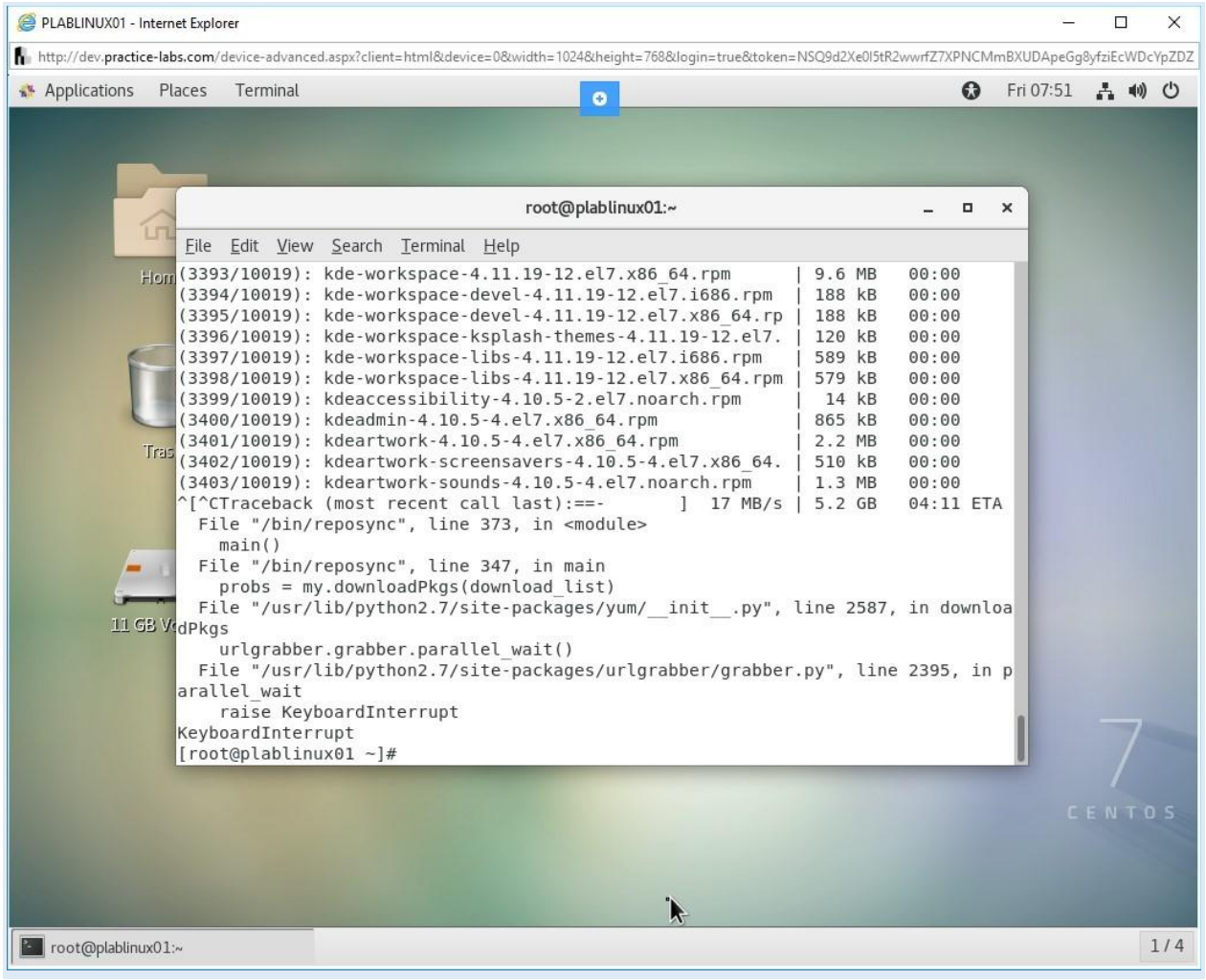

Figure 1.21 Screenshot of PLABLINUX01: Synchronizing CentOS yum repositories with the local directories.

Step 5

Clear the screen by entering the following command:

```
clear
```

Press Enter. Now, run one more command. Type the following command line:

```
reposync -g -l -d -m --repoid=centosplus
--newest-only --download-metadata
--download_path=/var/www/html/repos/
```

Press Enter. Notice that in the current environment there were around 15 updates and therefore, the synchronization was quick.

Note: The number of updates may differ in your lab environment. It may take some time to receive output on the terminal after entering the reposync command.

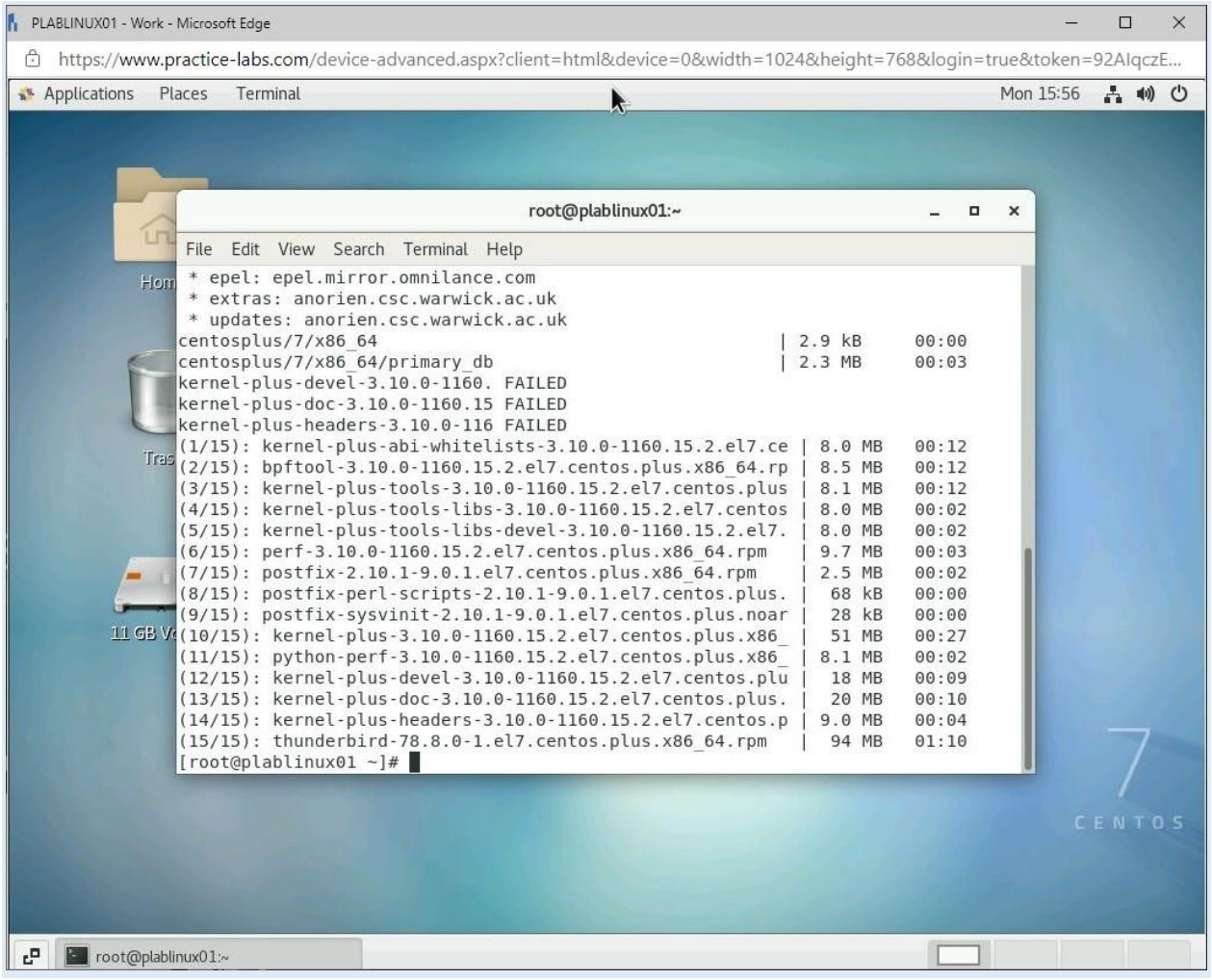

Figure 1.22 Screenshot of PLABLINUX01: Synchronizing CentOS yum repositories with the local directories.

Step 6

Clear the screen by entering the following command:

```
clear
```

Press Enter. Now, run one more command. Type the following command:

```
reposync -g -l -d -m --repoid=extras
--newest-only --download-metadata
--download_path=/var/www/html/repos/
```

Press Enter. Notice that in the current environment there were only around 274 updates and therefore, the synchronization only takes a few minutes.

Note: The number of updates may differ in your lab environment. It may take some time to receive output on the terminal after entering the reposync command.

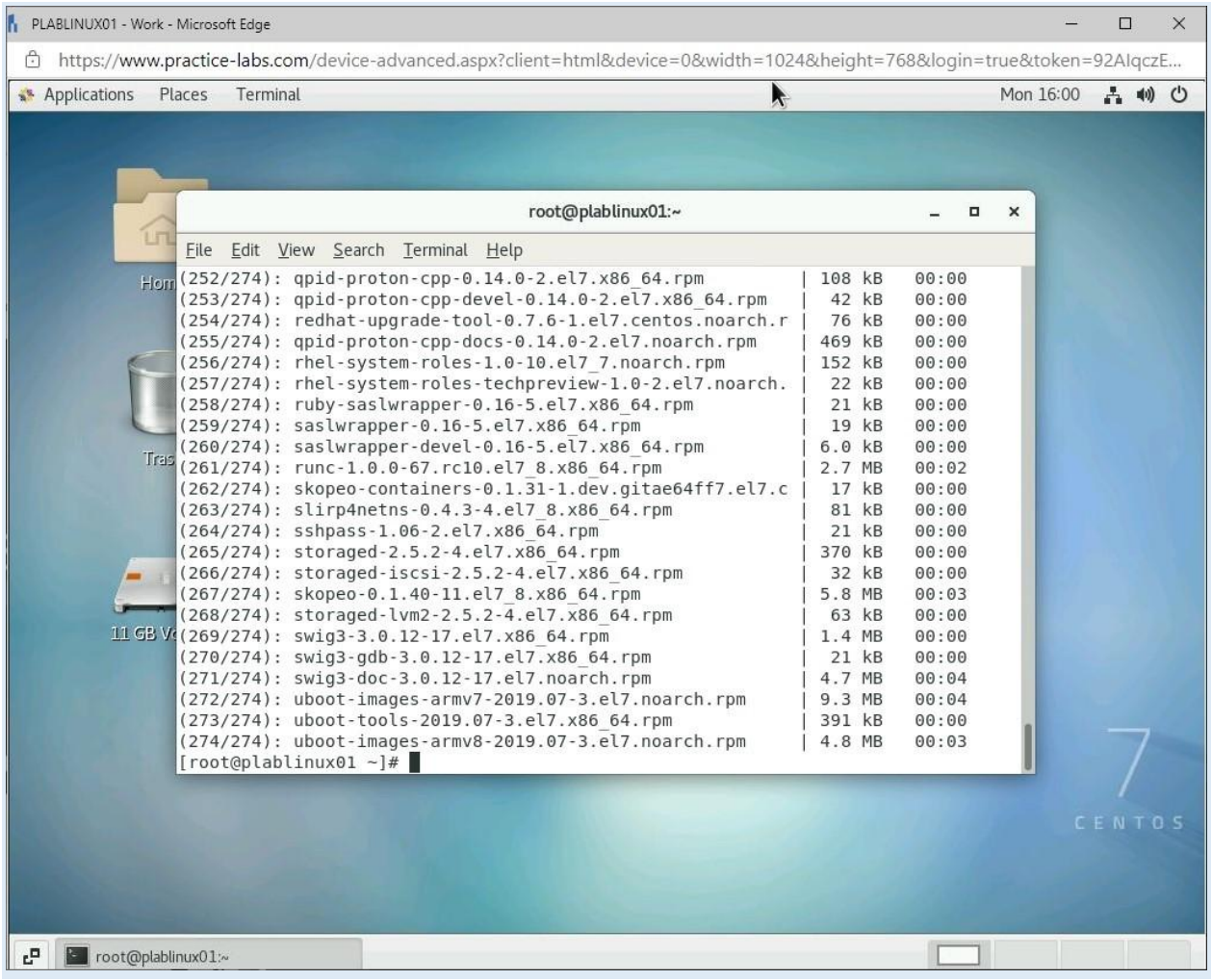

Figure 1.23 Screenshot of PLABLINUX01: Synchronizing CentOS yum repositories with the local directories.

Step 7

Clear the screen by entering the following command:

```
clear
```

Press Enter. Now, run one last command. Type the following command:

```
reposync -g -l -d -m --repoid=updates
--newest-only --download-metadata
--download_path=/var/www/html/repos/
```

Press Enter. For the time being, you can stop the synchronization by pressing the Ctrl+c command after around 300 updates are downloaded.

Note: The number of updates may differ in your lab environment. It may take some time to receive output on the terminal after entering the reposync command.

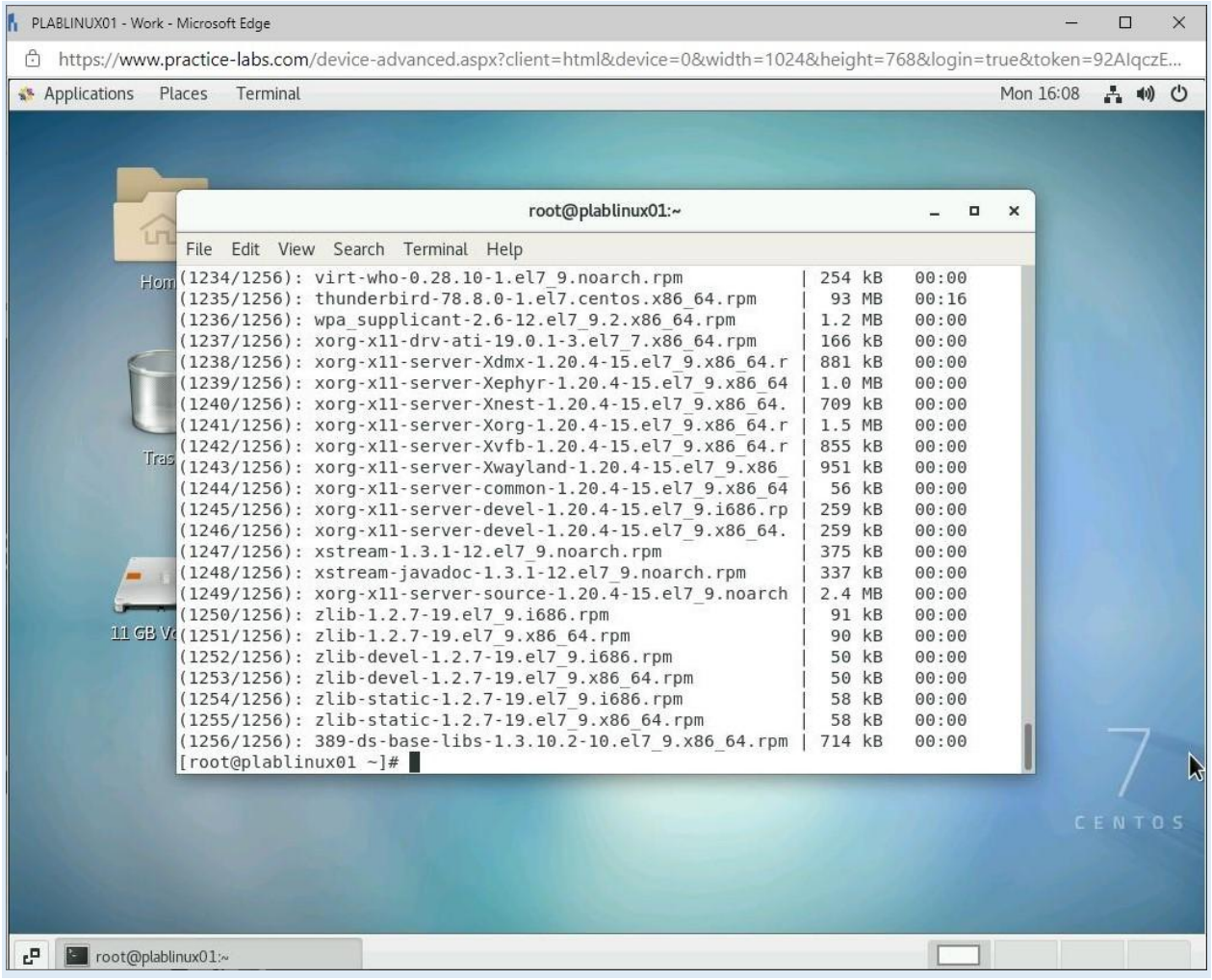

Figure 1.24 Screenshot of PLABLINUX01: Synchronizing CentOS yum repositories with the local directories.

Step 8

Clear the screen by entering the following command:

```
clear
```

Press Enter.

You should check the directories to see if the packages have been synchronized successfully. Type the following command line:

```
ls -l /var/www/html/repos/base/Packages/
```

Press Enter. Similarly, you should check the following directories:

```
ls -l /var/www/html/repos/centosplus/Packages/
ls -l /var/www/html/repos/extras/Packages/
ls -l /var/www/html/repos/updates/Packages/
```

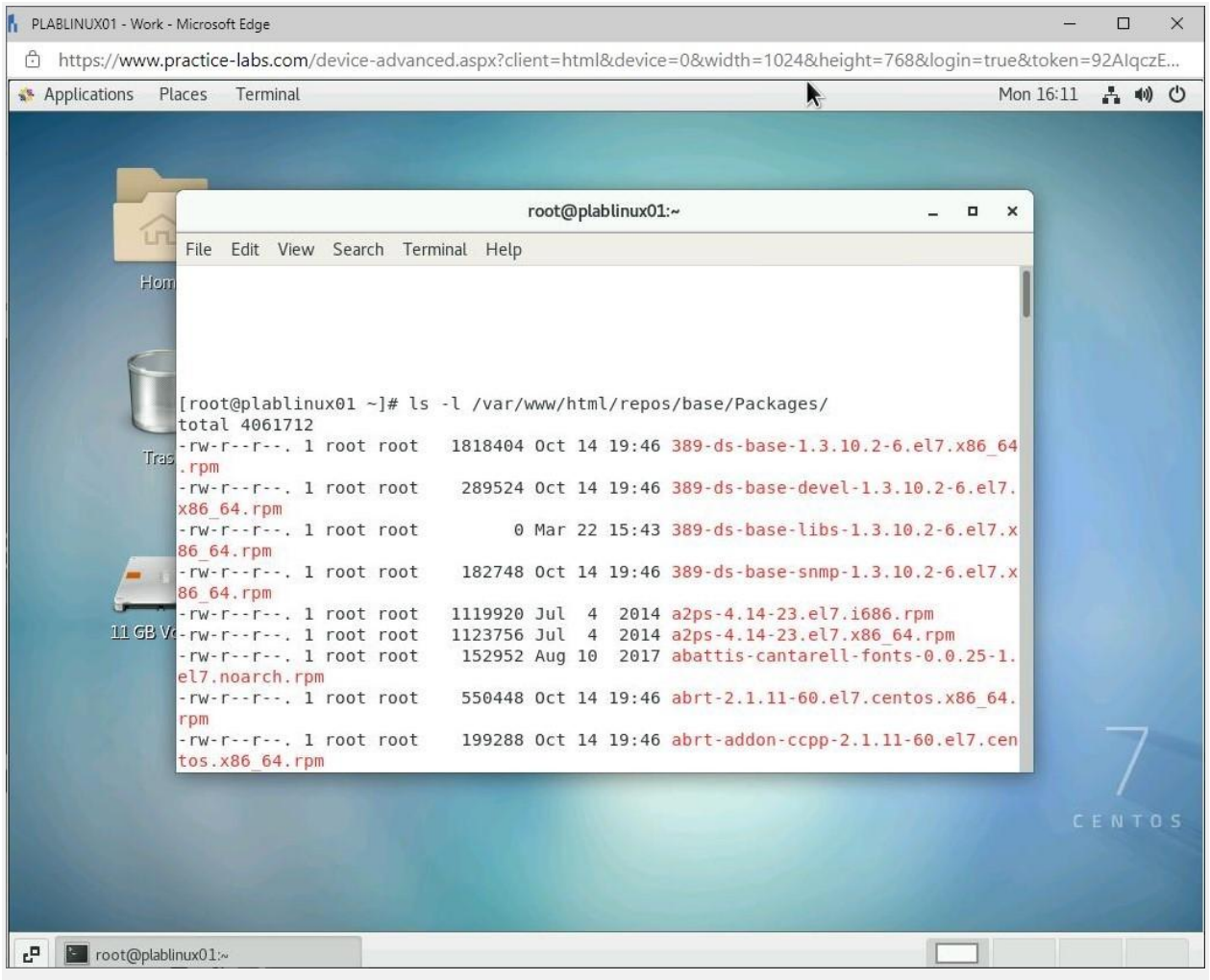

Figure 1.25 Screenshot of PLABLINUX01: Listing the local repository packages.

Step 9

Clear the screen by entering the following command:

```
clear
```

Press Enter. You need to create the comps.xml files. Type the following commands:

```
touch /var/www/html/repos/centosplus/comps.xml
```

```
touch /var/www/html/repos/extras/comps.xml
touch /var/www/html/repos/updates/comps.xml
touch /var/www/html/repos/base/comps.xml
```

Press Enter after each command.

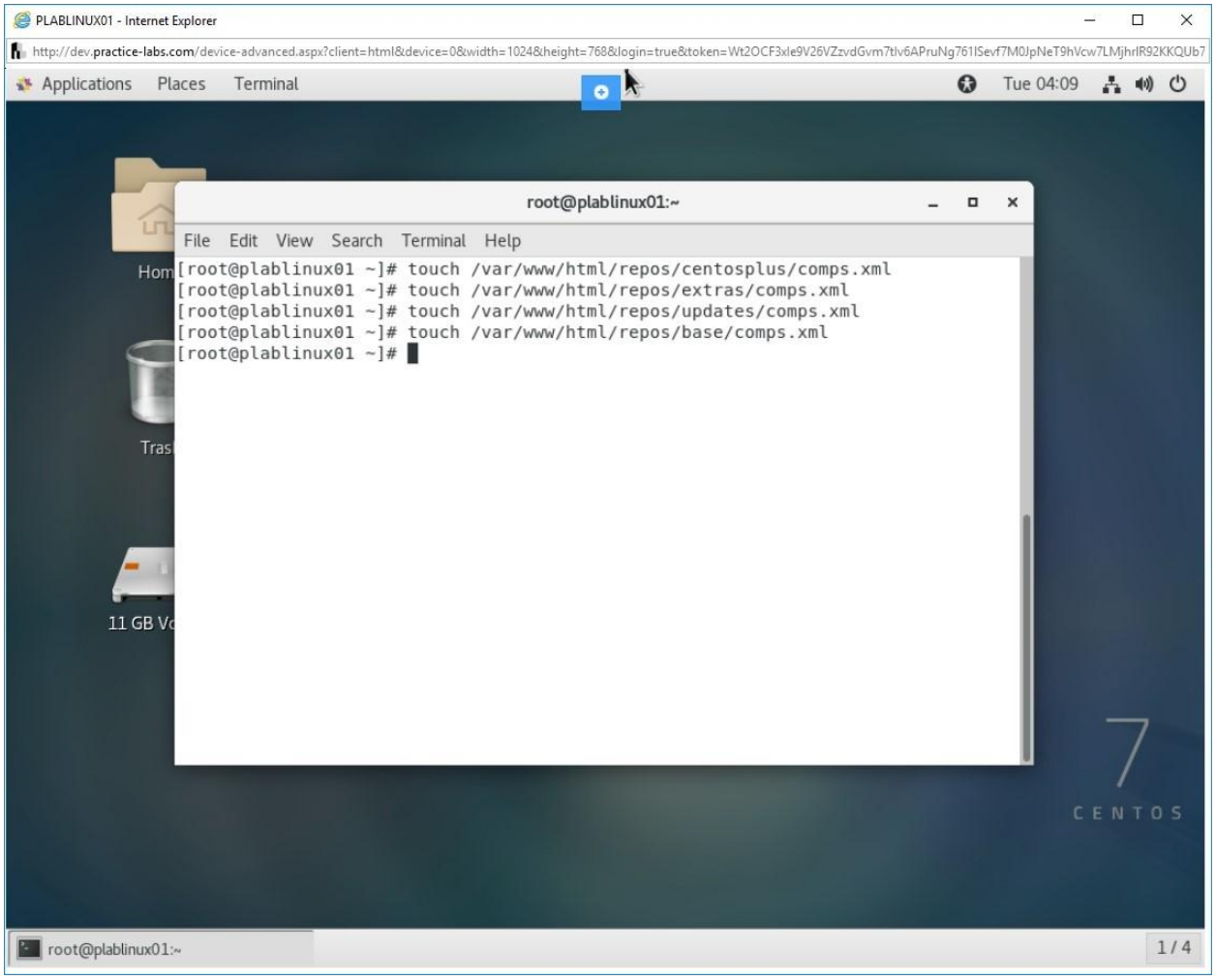

Figure 1.26 Screenshot of PLABLINUX01: Creating the comps.xml in each directory.

Step 10

Clear the screen by entering the following command:

```
clear
```

Press Enter. You need to create a new repodata for the local repositories now. Type the following command:

```
createrepo -g comps.xml /var/www/html/repos/base/
```

Press Enter.

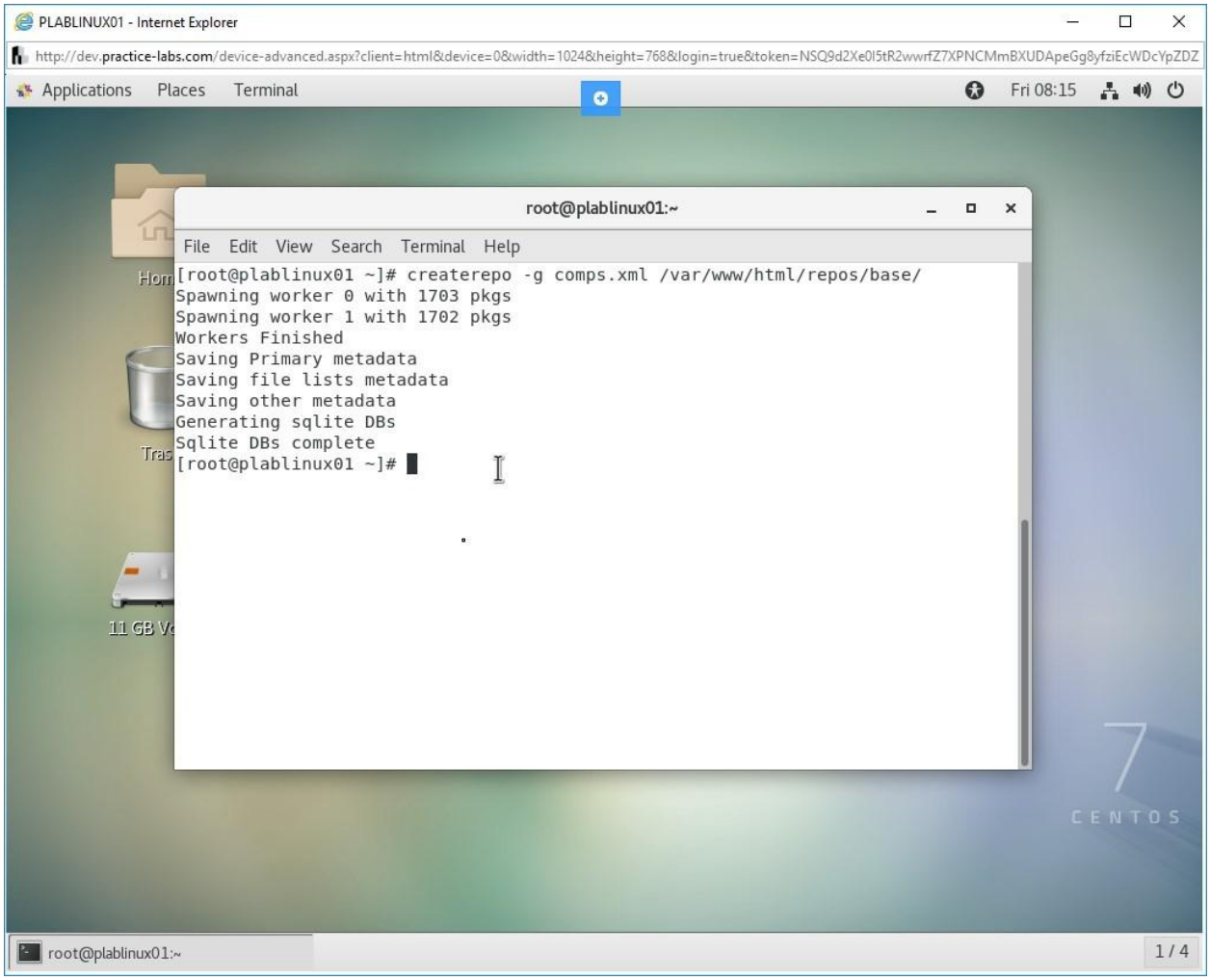

Figure 1.27 Screenshot of PLABLINUX01: Creating a new repodata for the local repositories.

Step 11

Clear the screen by entering the following command:

```
clear
```

Press Enter.

You need to now create a new repodata for the local repositories. Type the following command:

```
createrepo -g comps.xml
/var/www/html/repos/centosplus/
```

Press Enter. Repeat the following commands:

```
createrepo -g comps.xml
/var/www/html/repos/extras/
createrepo -g comps.xml
/var/www/html/repos/updates/
```

You'll need to press Enter after both commands. You have now successfully configured the repository on a local server.

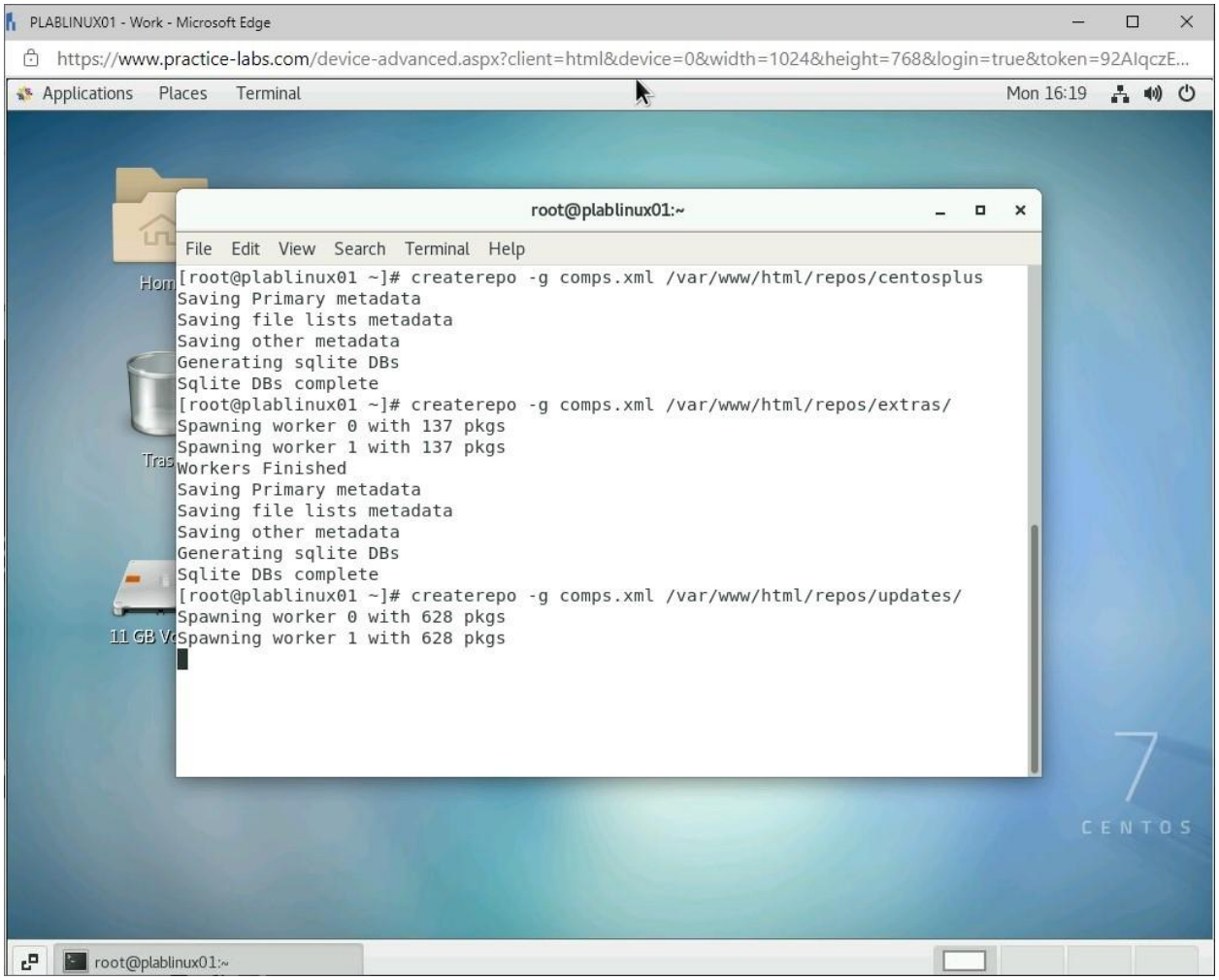

Figure 1.28 Screenshot of PLABLINUX01: Creating a new repodata for the local repositories.

Step 12

If you want to regularly update this repository without manual intervention, then you can create a cron job. Sample configuration can be:

Create a script:

```
vi /etc/cron.daily/updaterepos
```

Press i to invoke the insert mode and add the following statements in the script and then save it:

```
#!/bin/bash
LOCAL_REPOS=”base centosplus extras updates”
for REPO in ${LOCAL_REPOS}; do
reposync -g -l -d -m --repoid=$REPO --newest-only
--download-metadata
--download_path=/var/www/html/repos/
createrepo -g comps.xml
/var/www/html/repos/$REPO/
done
```

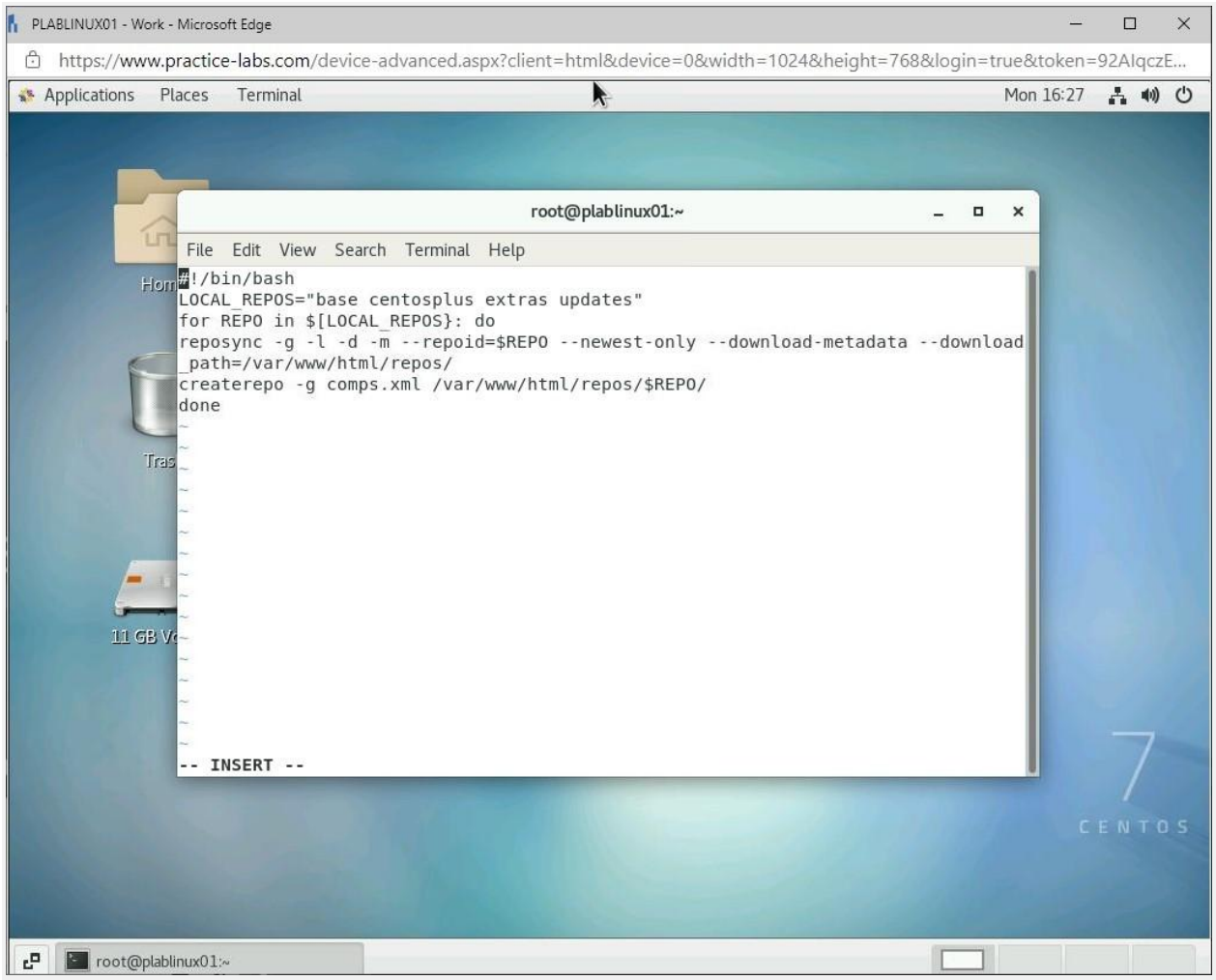

Figure 1.29 Screenshot of PLABLINUX01: Creating a new cron job by typing a statement into the script file.

Step 13

To save the file, press ESC.

Then type the following command:

```
:wq
```

Press Enter.

Assign the execute permission:

```
chmod 755 /etc/cron.daily/updaterepos
```

Press Enter.

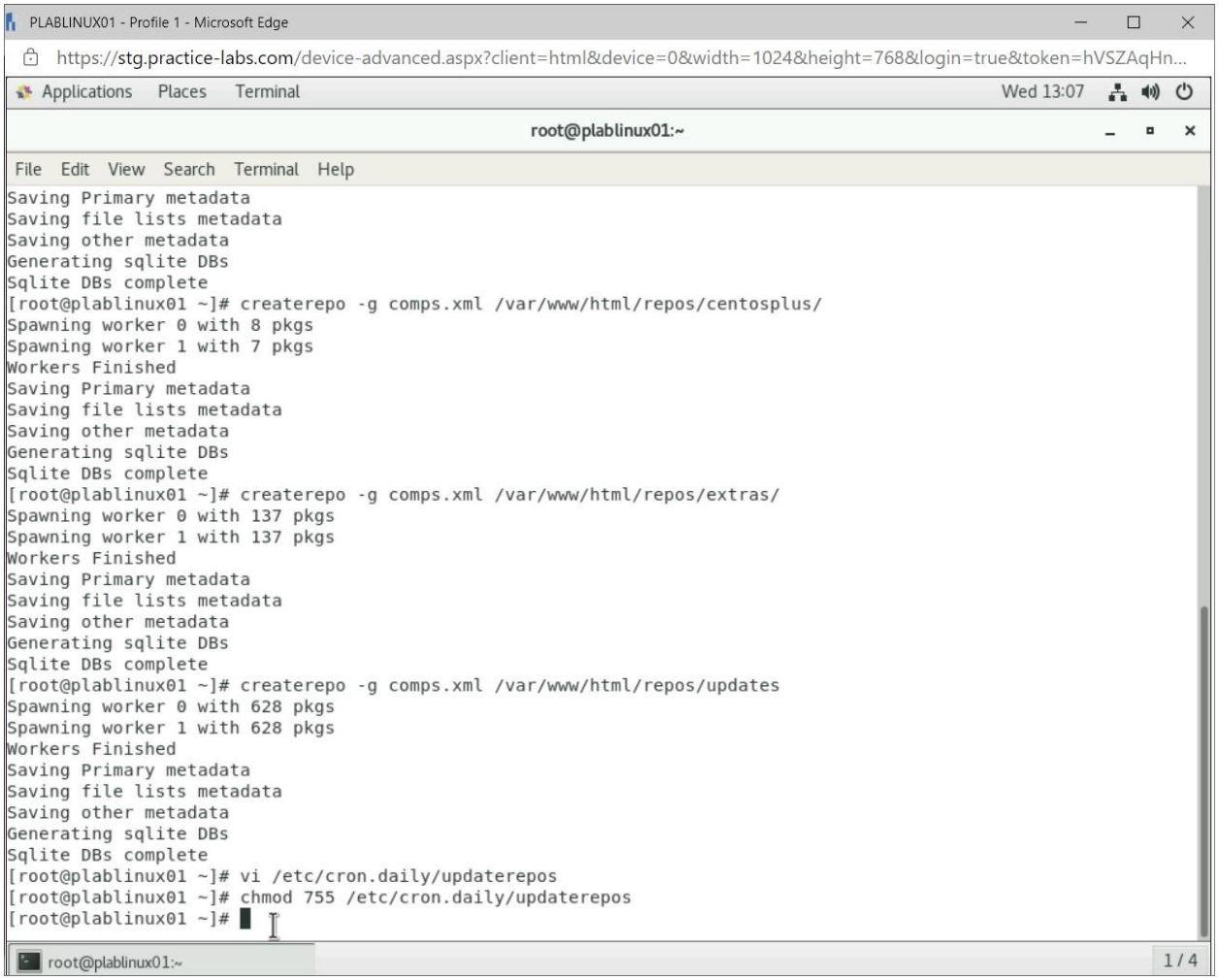

Figure 1.30 Screenshot of PLABLINUX01: Displaying changing the file permissions of the created script file.

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

Review

Well done, you have completed the Using Repositories Practice Lab.

Summary

You completed the following exercise:

- Exercise 1 - Using Repositories

You should now be able to:

- Configure Network on CentOS
- Install Nginx
- Create a Yum Repository