CompTIA Linux+

Using Repositories

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:** 4.3 Given a scenario, analyze and troubleshoot user issues.

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.

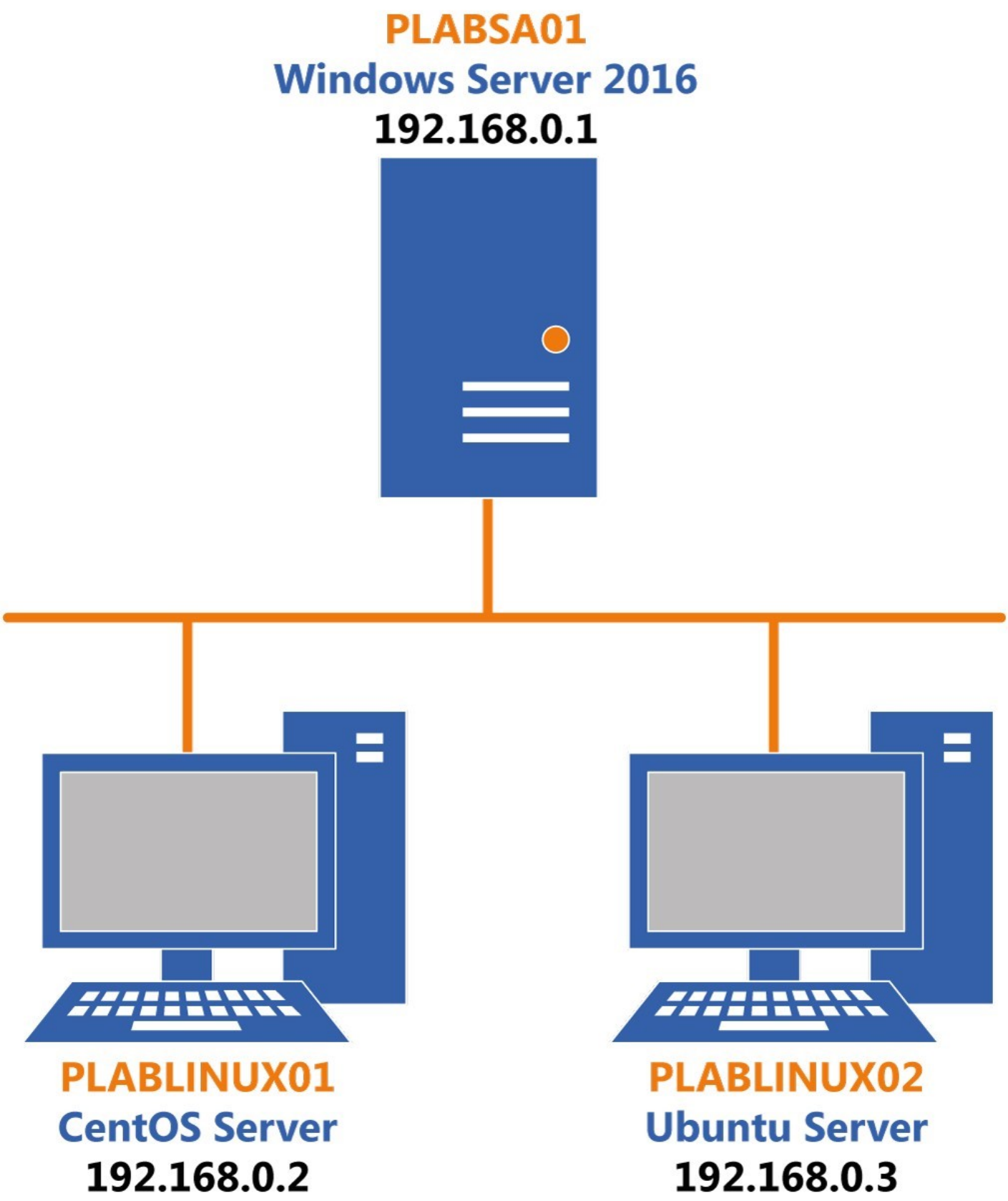
Help and Support

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 - 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.

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

Your Devices

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

- **PLABLINUX01** (CentOS 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 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:ftask

Step 1

Connect to **PLABLINUX01**.

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

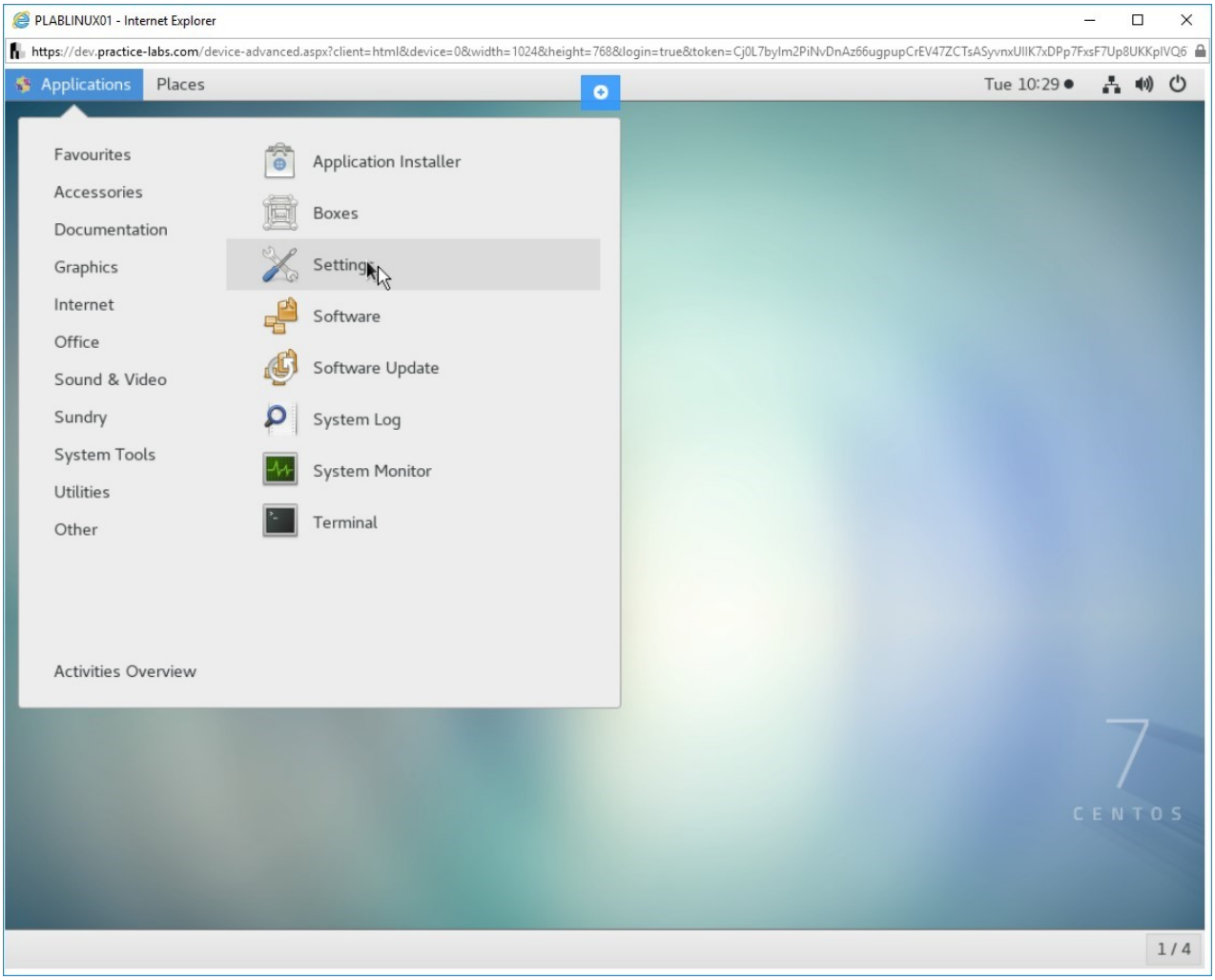


Figure 1.1 Screenshot of PLABLINUX01: Selecting the Settings option from the Applications > System Tools menu.

Step 2

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

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

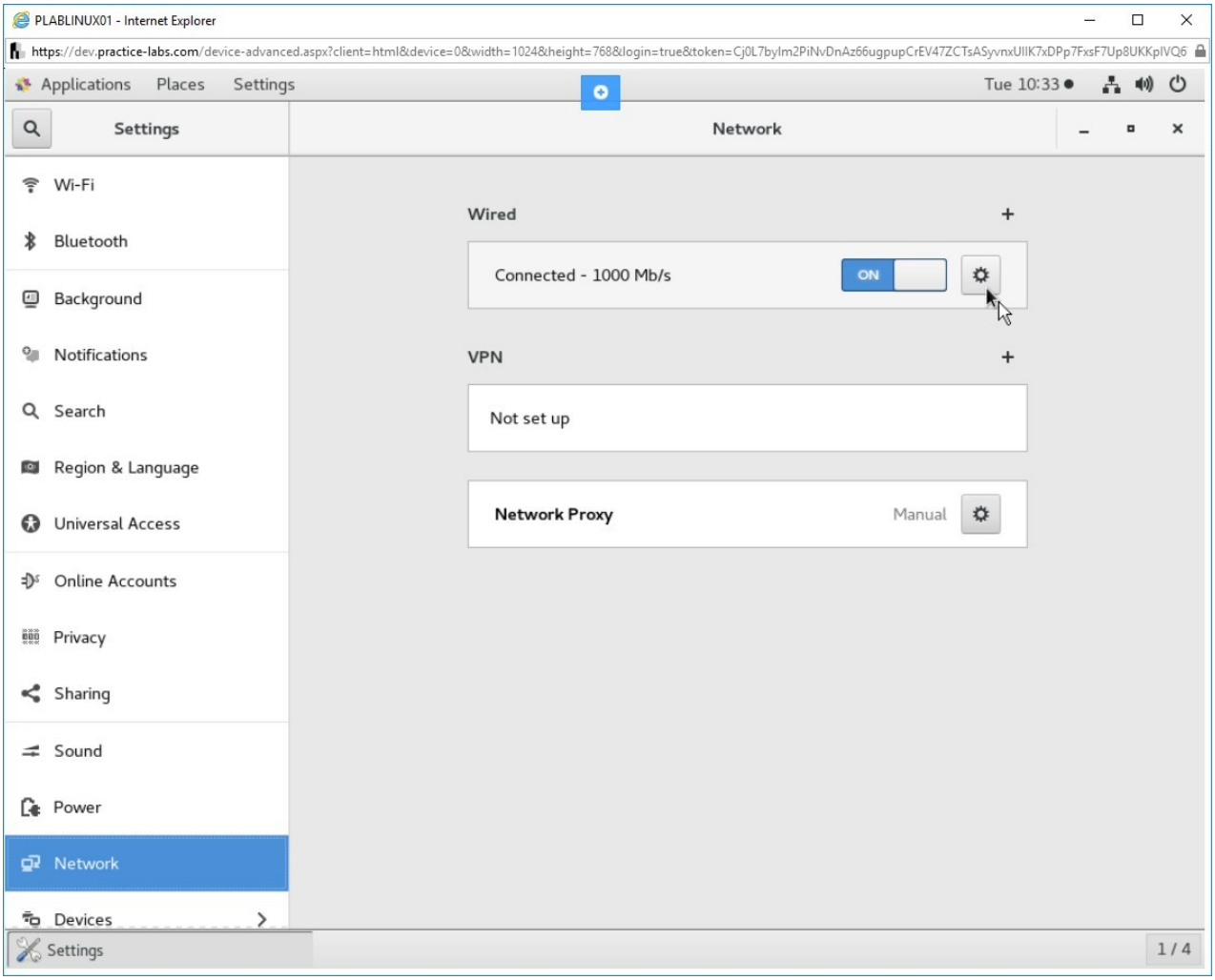


Figure 1.2 Screenshot of PLABLINUX01: Clicking the button to invoke the Wired dialog box.

Step 3

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

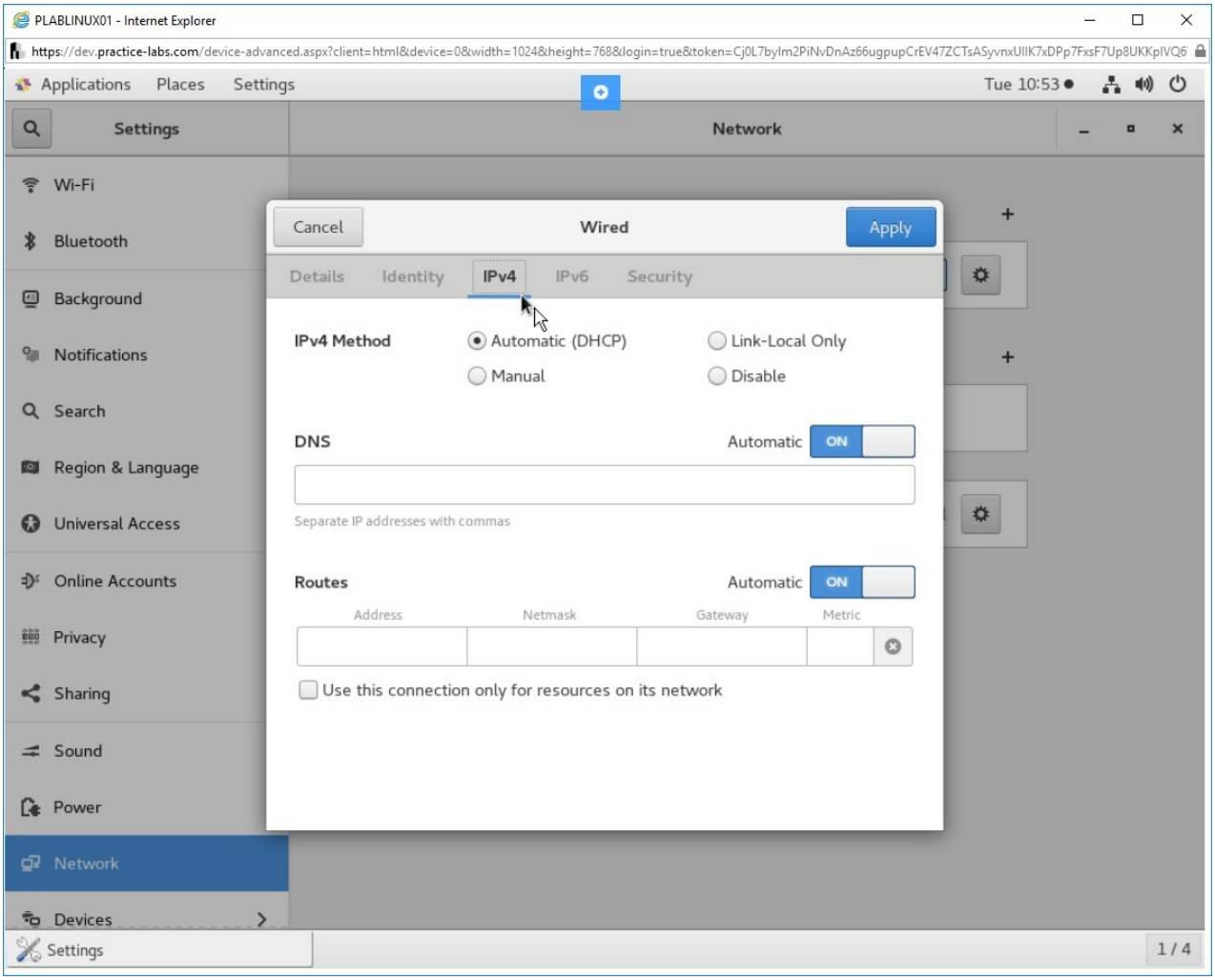


Figure 1.3 Screenshot of PLABLINUX01: Selecting the IPv4 tab in the Wired dialog box.

Step 4

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

Address:

```
192.168.0.2
```

Netmask:

```
255.255.255.0
```

Gateway:

```
192.168.0.250
```

Click **Apply**.

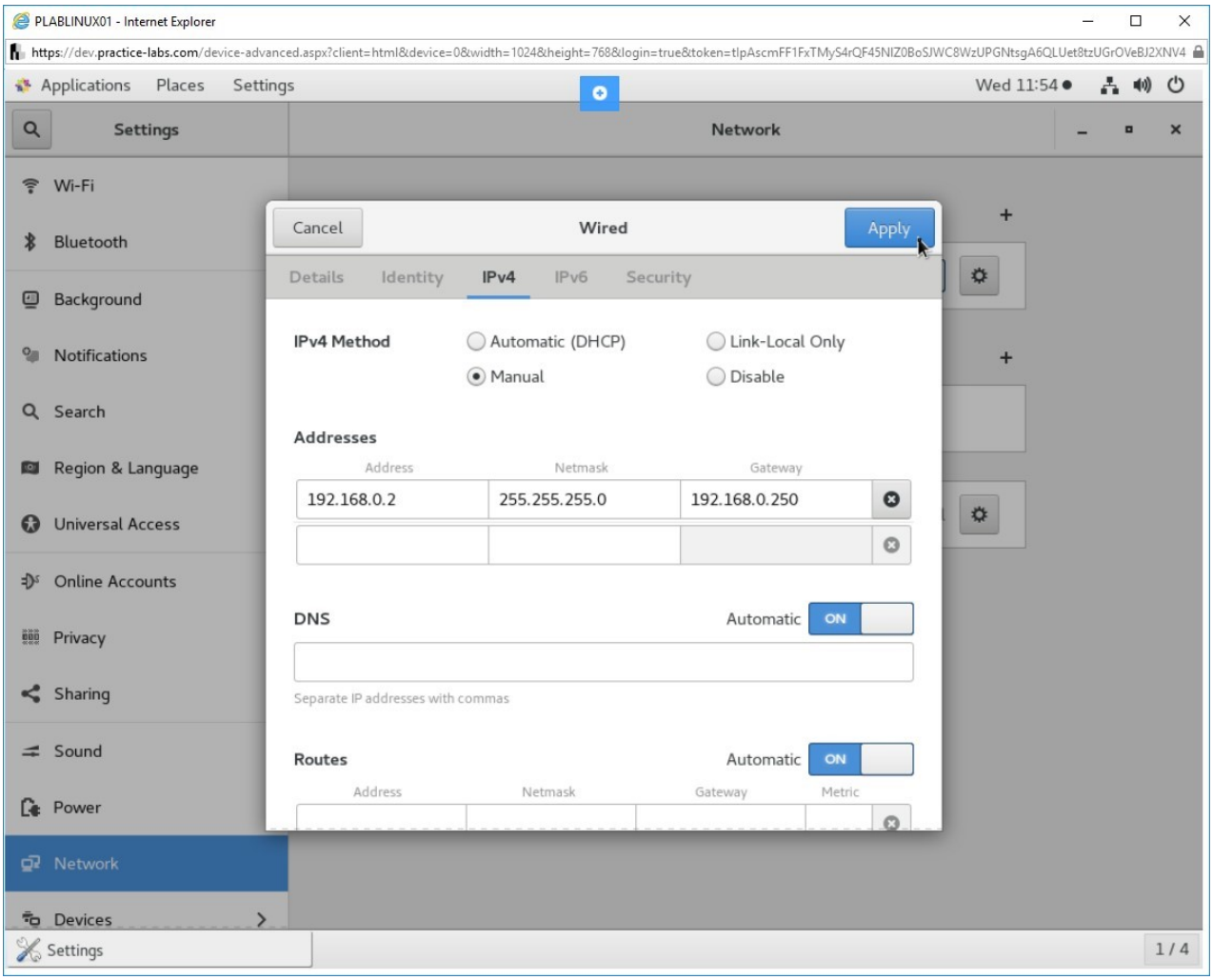


Figure 1.4 Screenshot of PLABLINUX01: Entering the network information and then clicking the Apply button.

Step 5

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

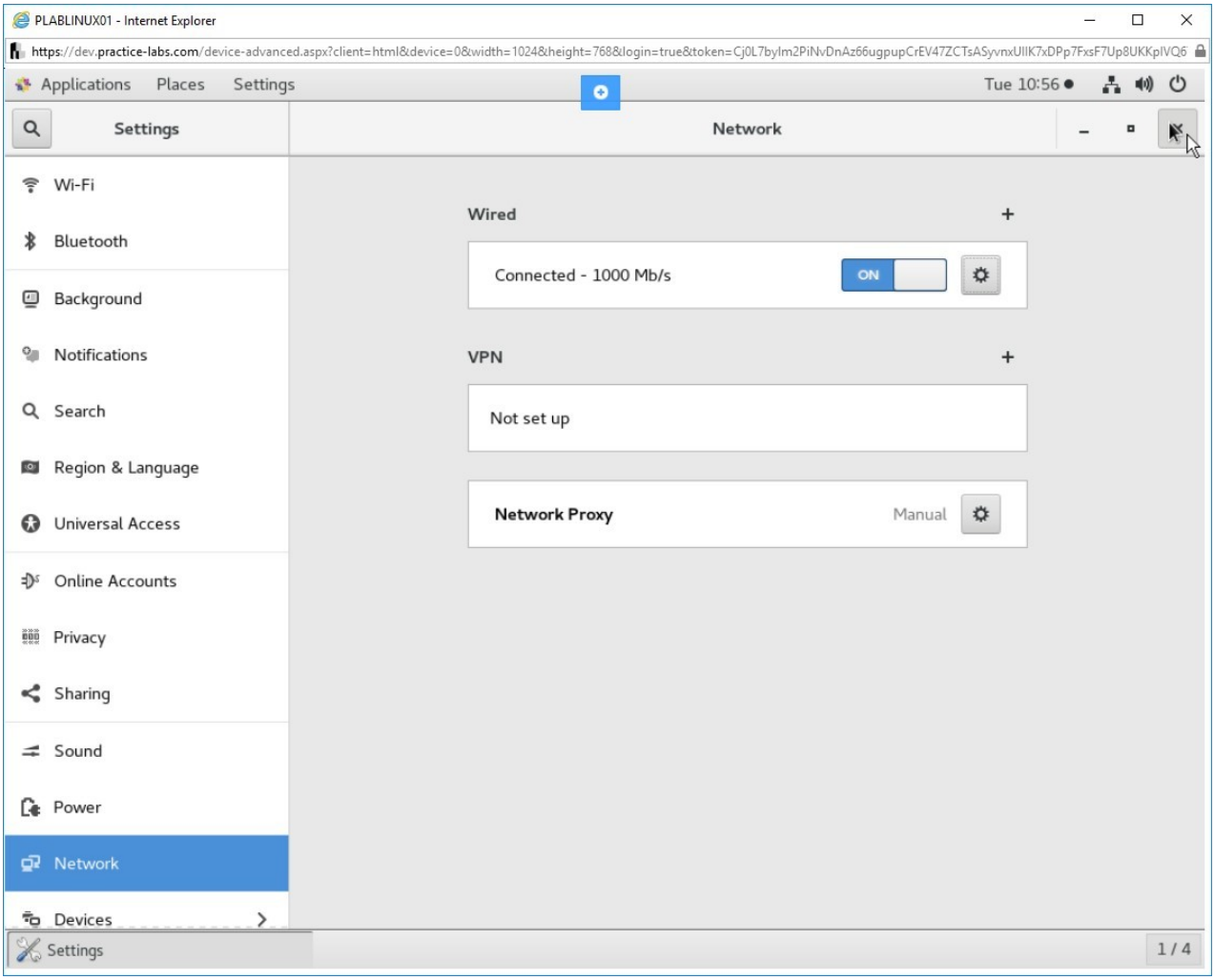


Figure 1.5 Screenshot of PLABLINUX01: Displaying the Settings window.

Task 2 - 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**.

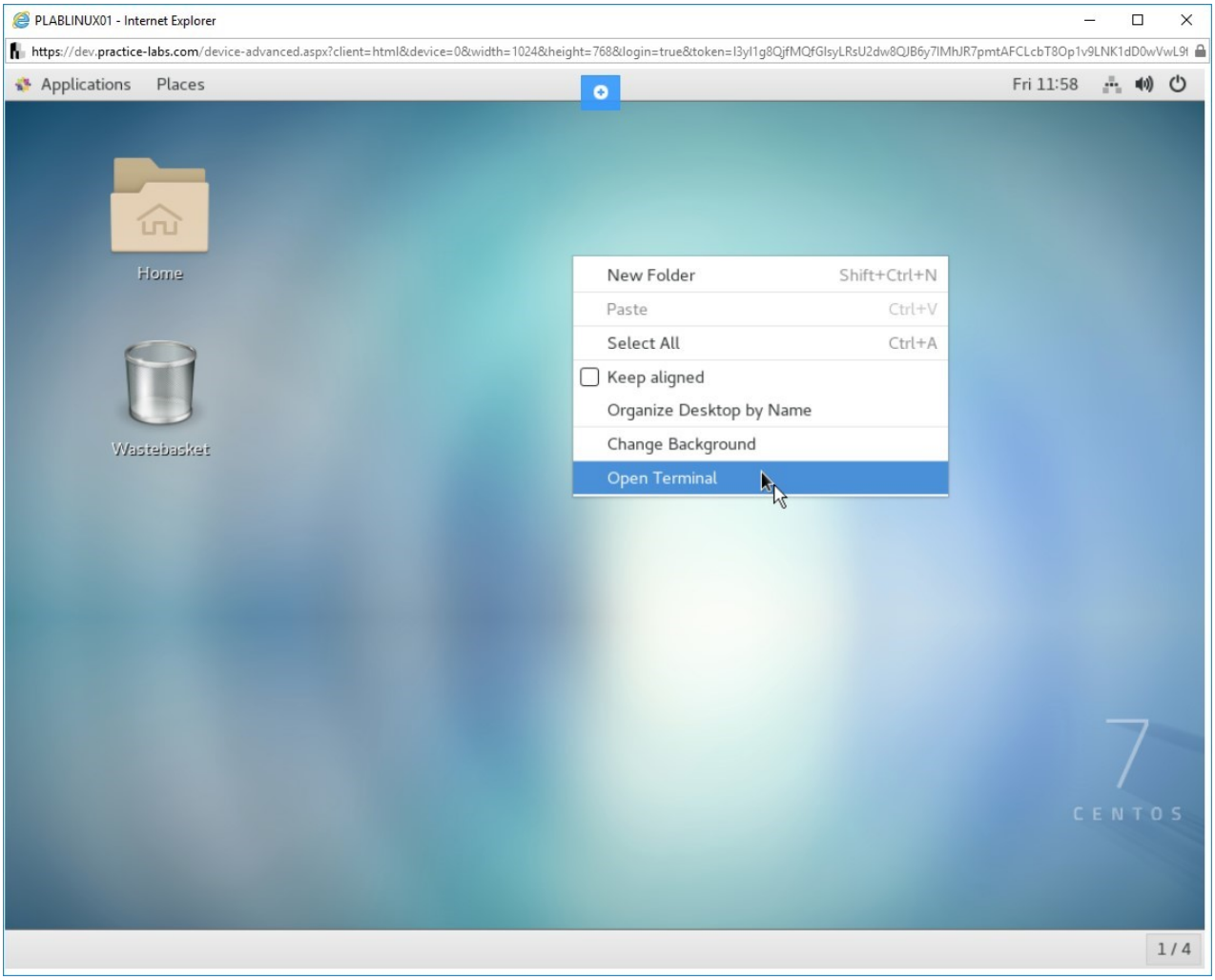


Figure 1.6 Screenshot of PLABLINUX01: Selecting the Open Terminal option from the context menu.

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**.

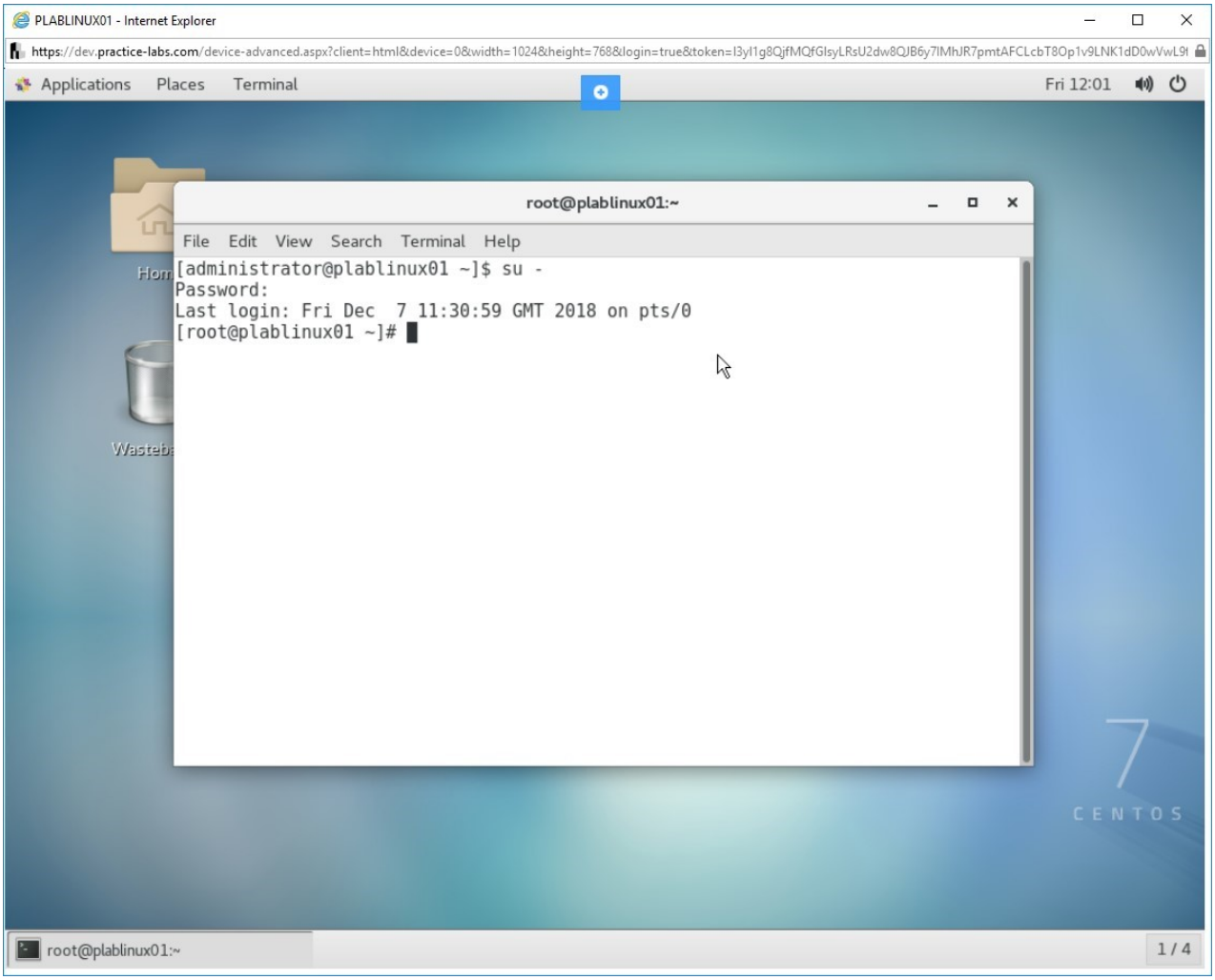


Figure 1.7 Screenshot of PLABLINUX01: Changing the account to the root account with the su command.

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.

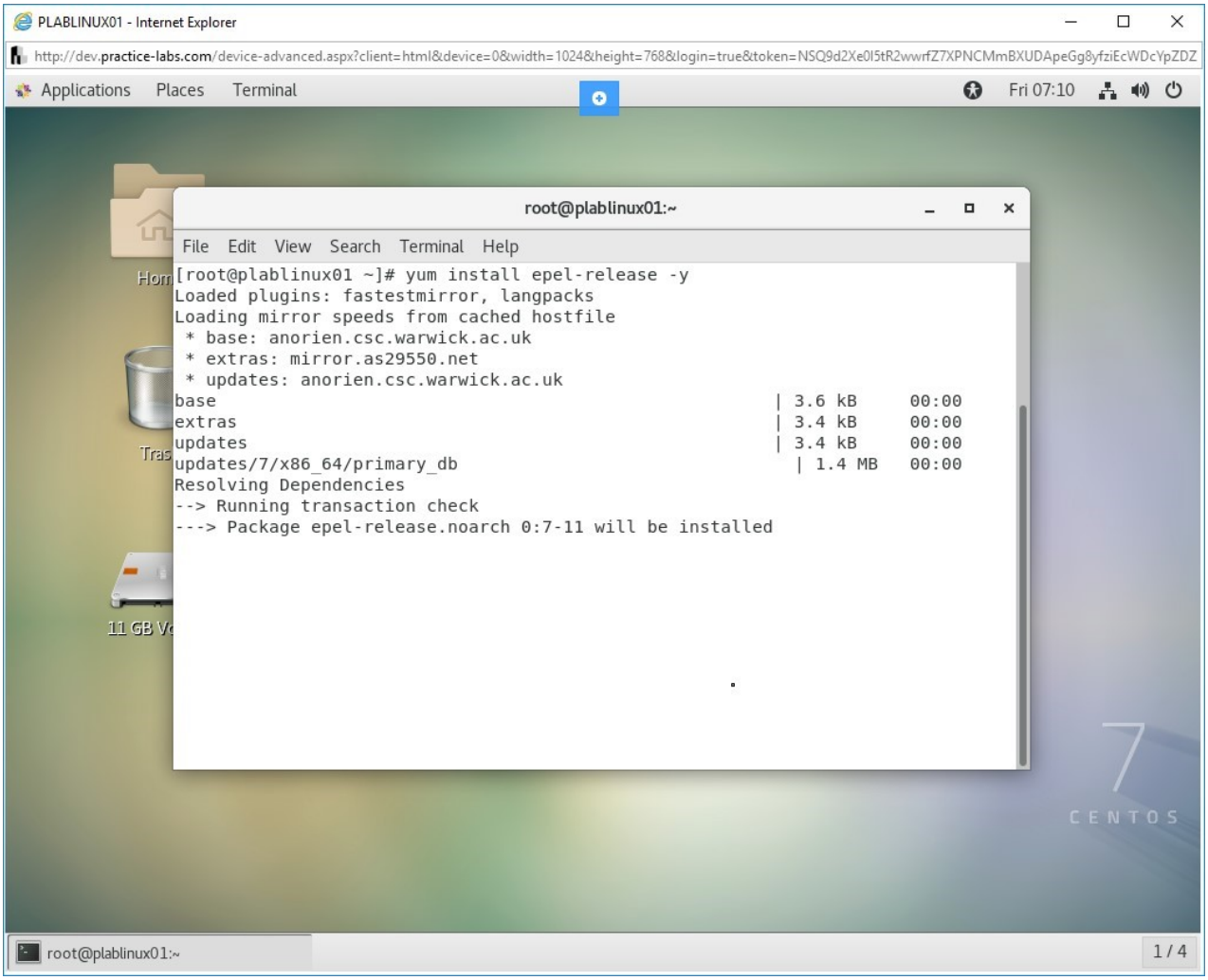


Figure 1.8 Screenshot of PLABLINUX01: Installing the epel repository.

Step 4

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

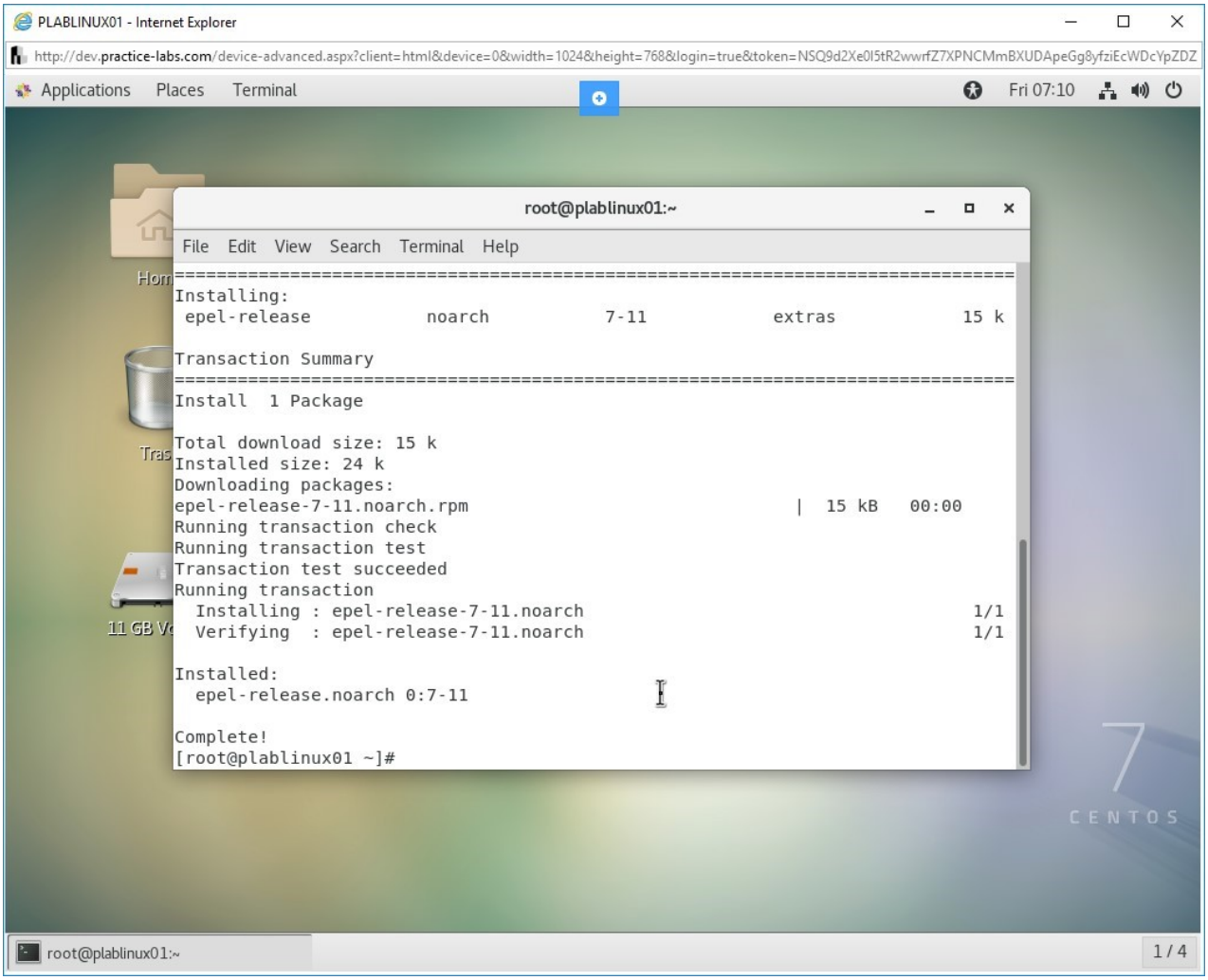


Figure 1.9 Screenshot of PLABLINUX01: Showing the installation completion of the epel repository.

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**.

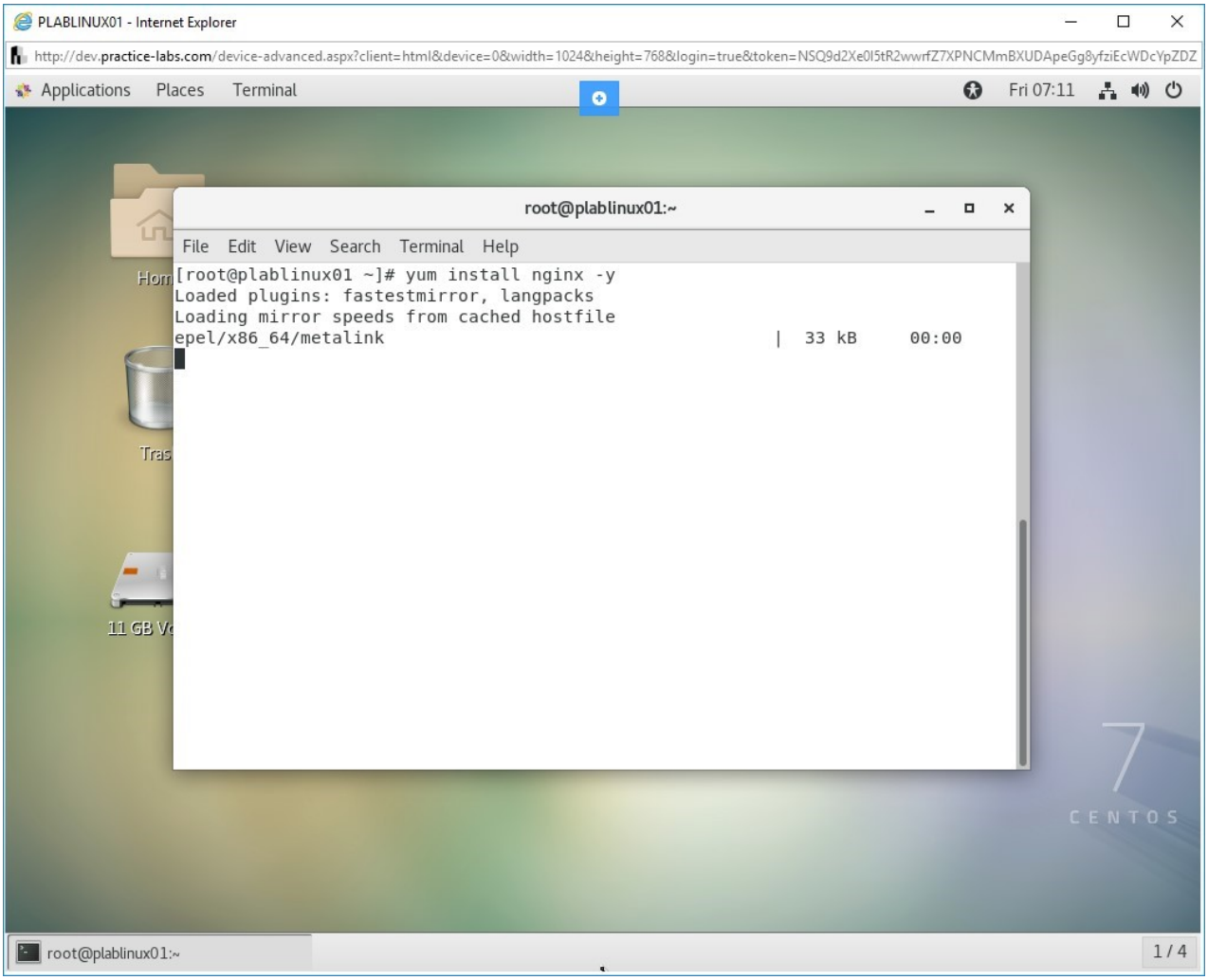


Figure 1.10 Screenshot of PLABLINUX01: Installing the Nginx Web server.

Step 6

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

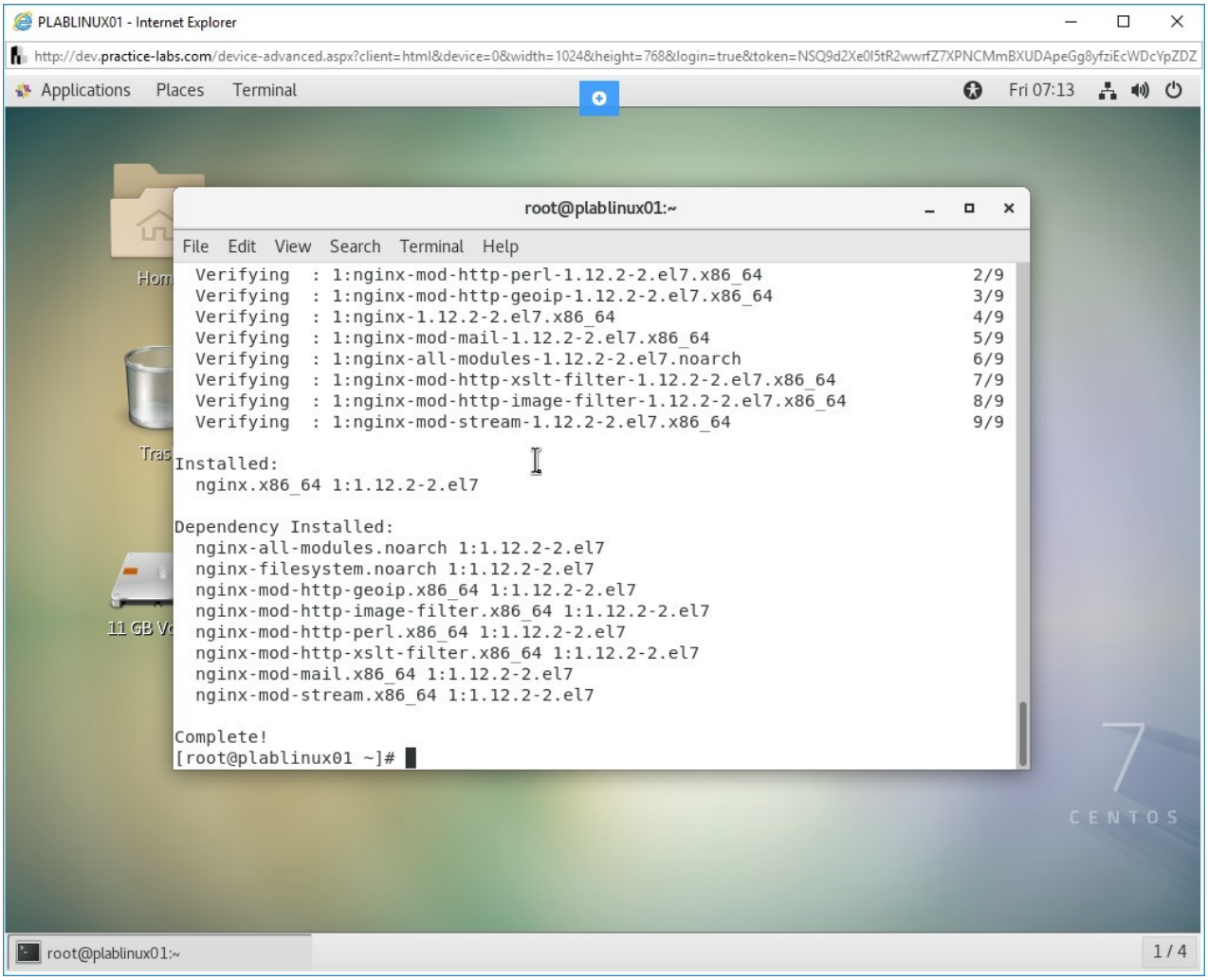


Figure 1.11 Screenshot of PLABLINUX01: Showing the installation completion of the Nginx firewall.

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**.

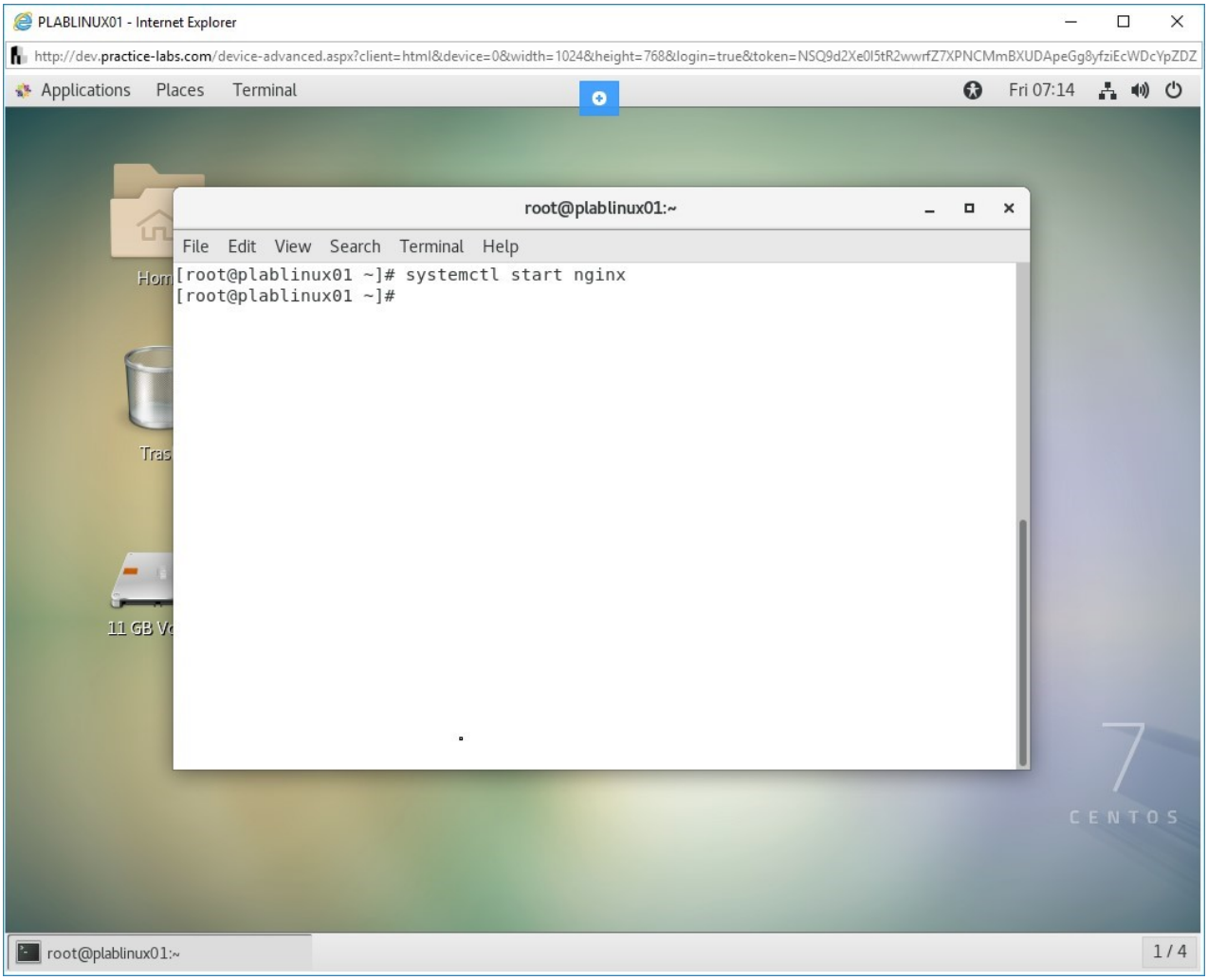


Figure 1.12 Screenshot of PLABLINUX01: Starting the Web server.

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**.

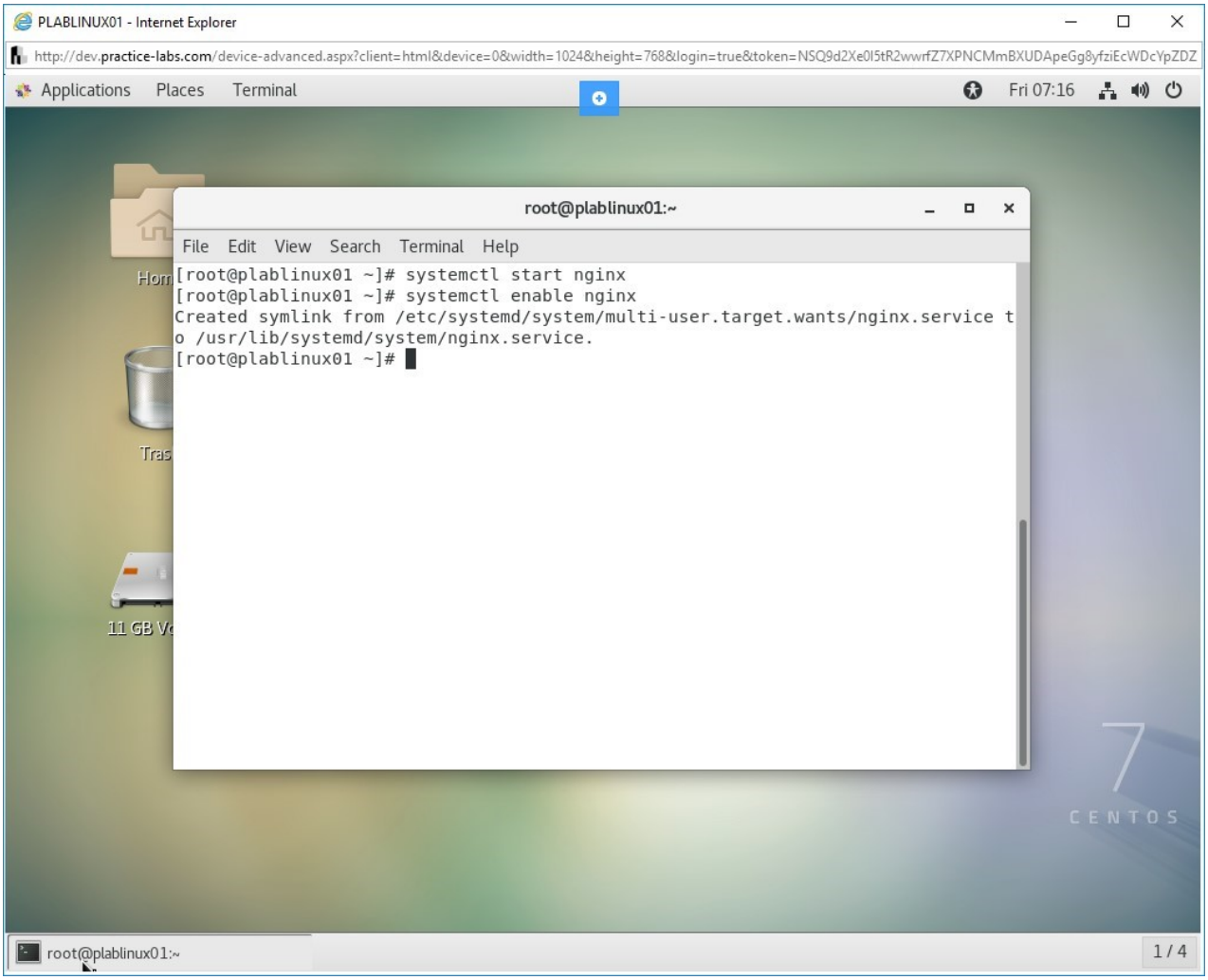


Figure 1.13 Screenshot of PLABLINUX01: Enabling the Nginx Web server to start at the bootup.

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.

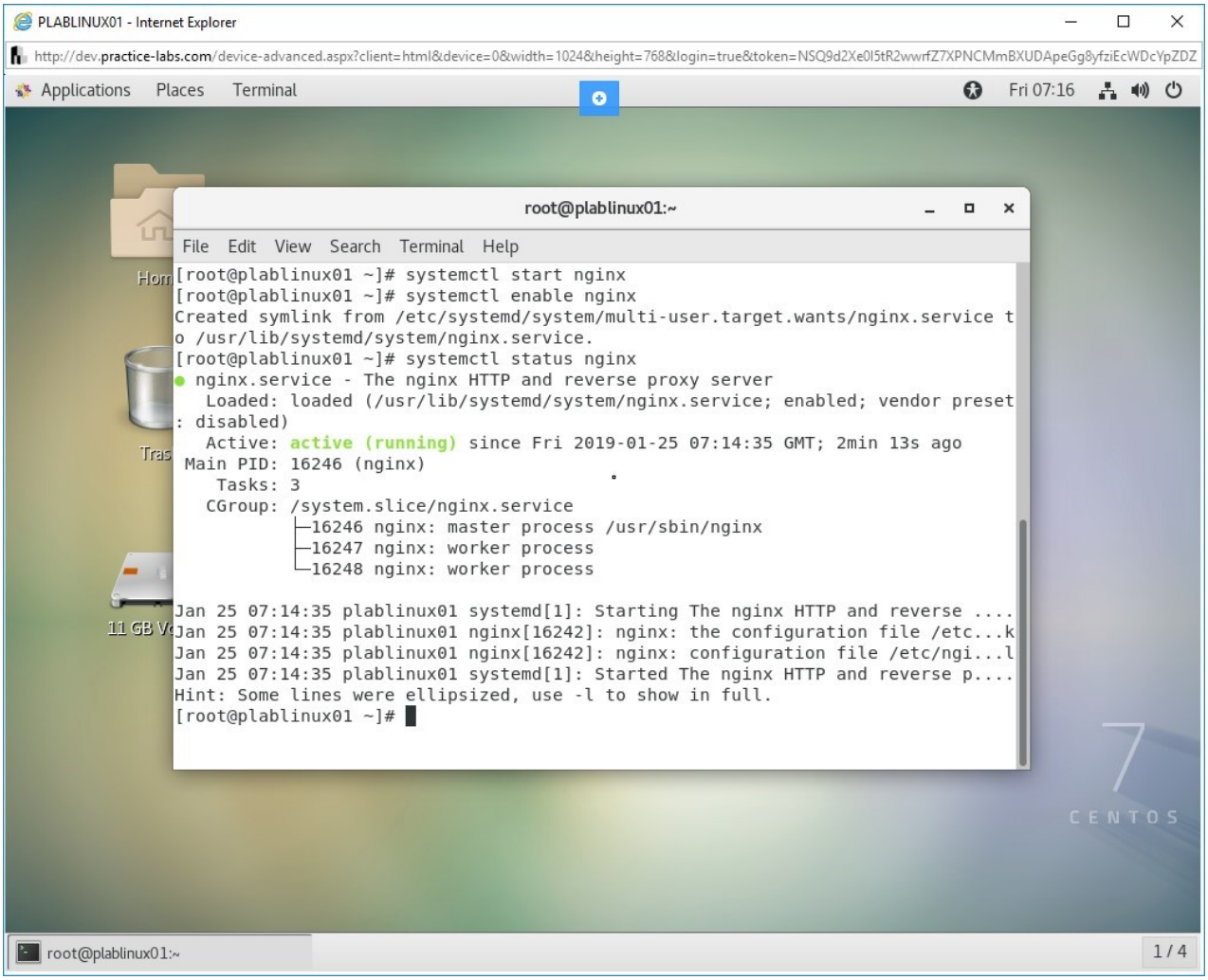


Figure 1.14 Screenshot of PLABLINUX01: Checking the Nginx Web server status.

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

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

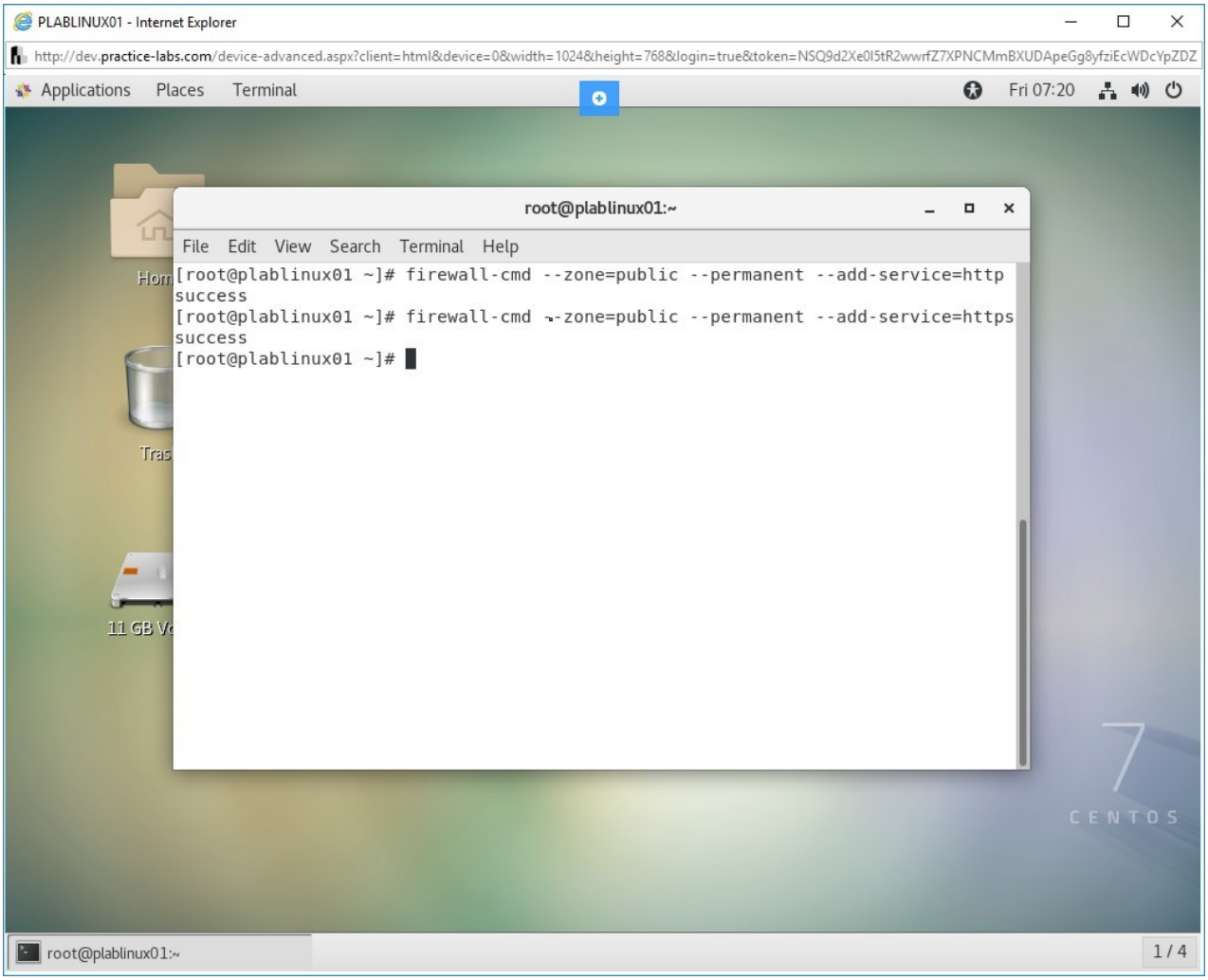


Figure 1.15 Screenshot of PLABLINUX01: Adding rules in the firewall for HTTP and HTTPS.

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

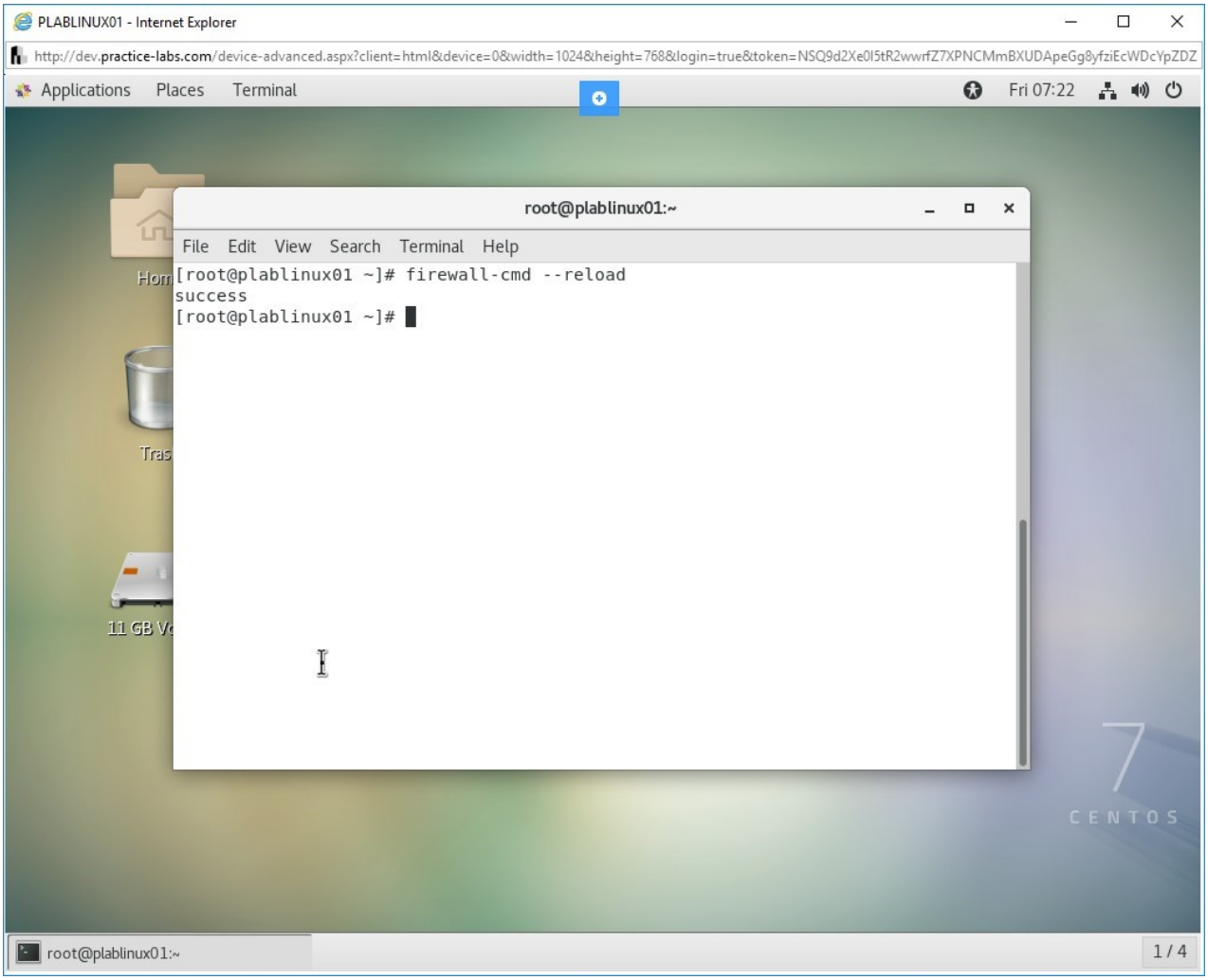


Figure 1.16 Screenshot of PLABLINUX01: Reloading the firewall.

Step 12

Start Firefox from Applications > Favorites.

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

http://localhost

Press **Enter**. Notice that you get to see Default server homepage. Close the Firefox window now.

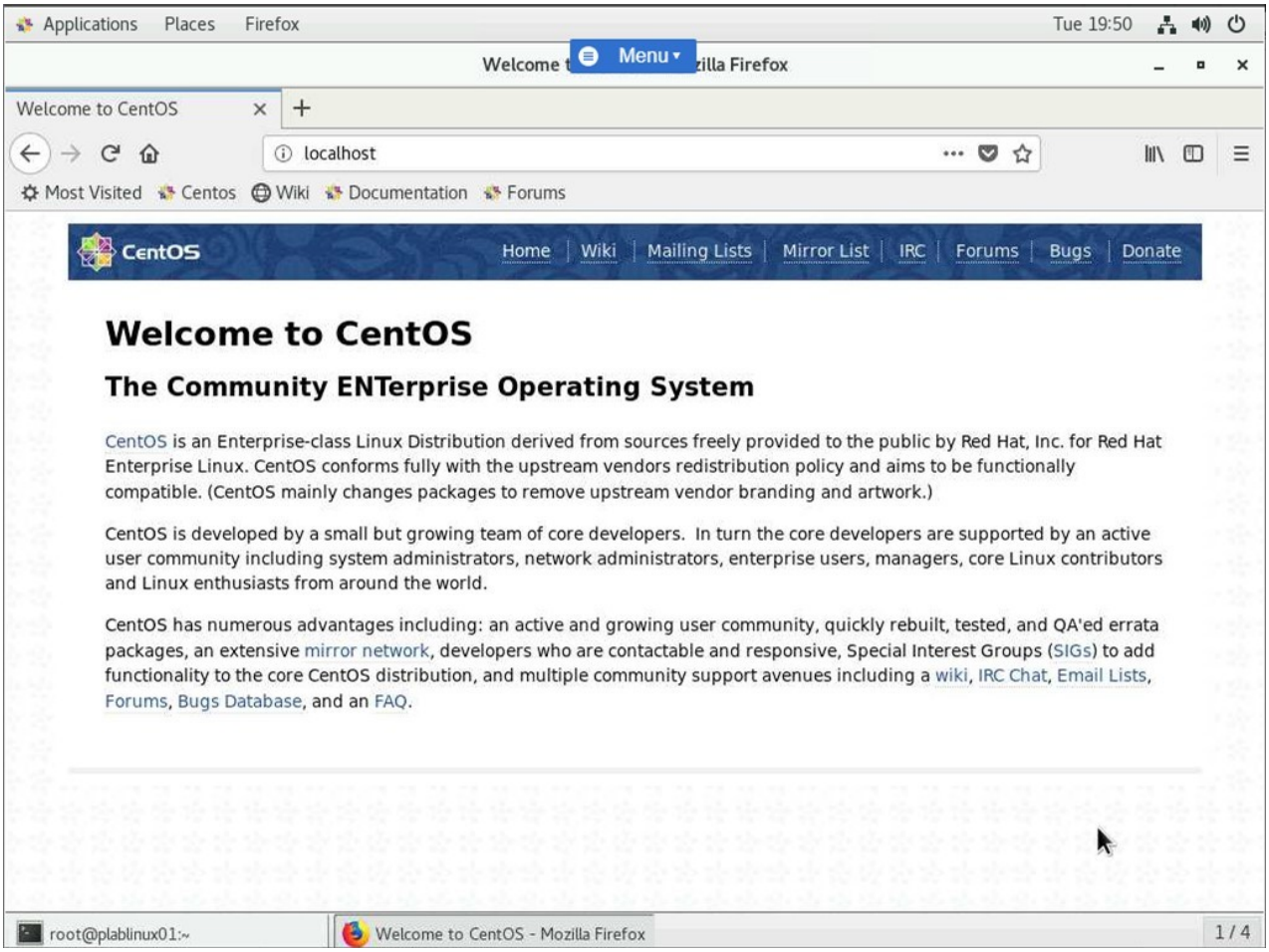


Figure 1.17 Screenshot of PLABLINUX01: Checking the Nginx Web server homepage.

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

Clear the screen by entering the following command:

```
clear
```

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.

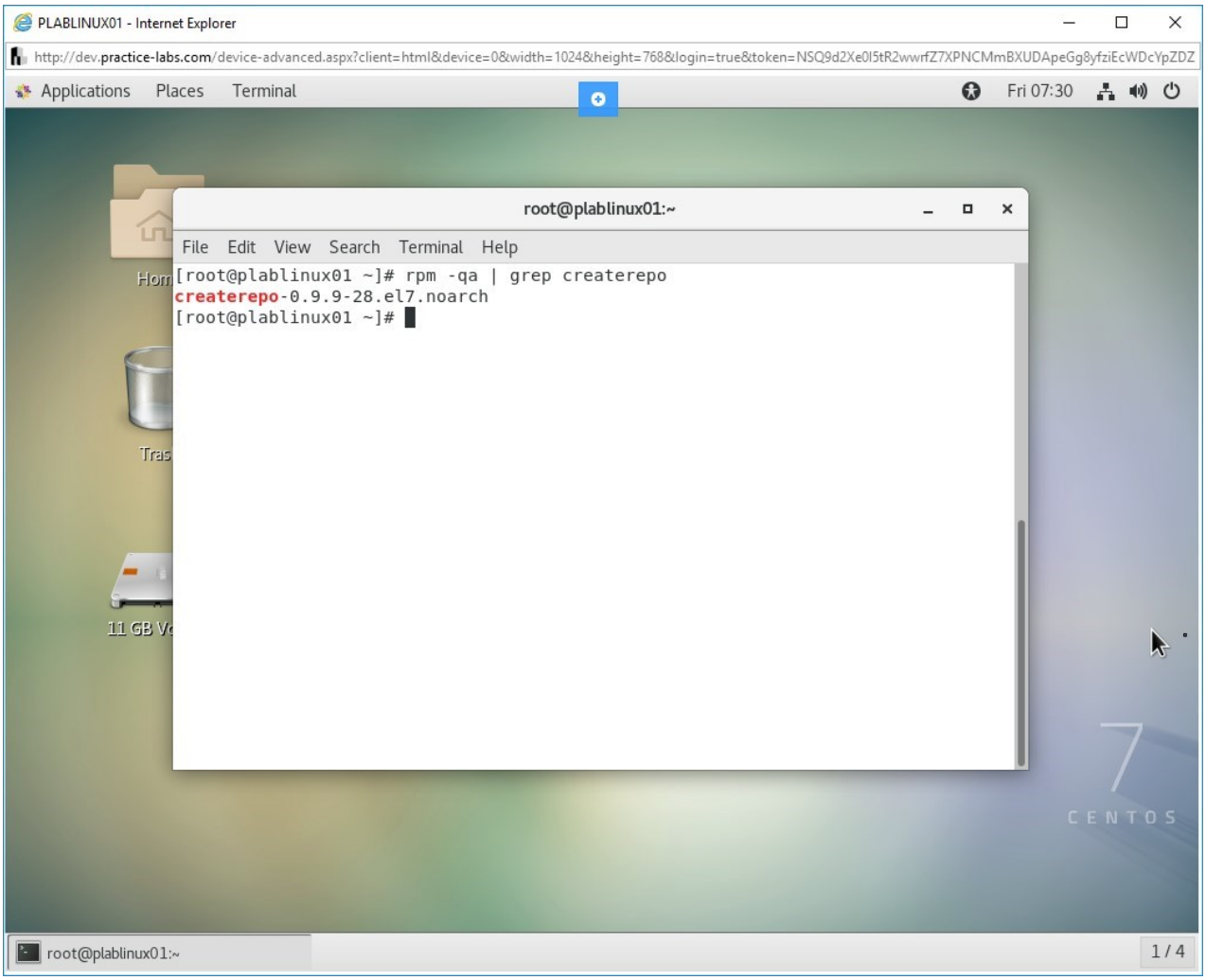


Figure 1.18 Screenshot of PLABLINUX01: Checking if createrepo is installed.

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,updates}
```

Press **Enter**. Notice that the directories are now created.

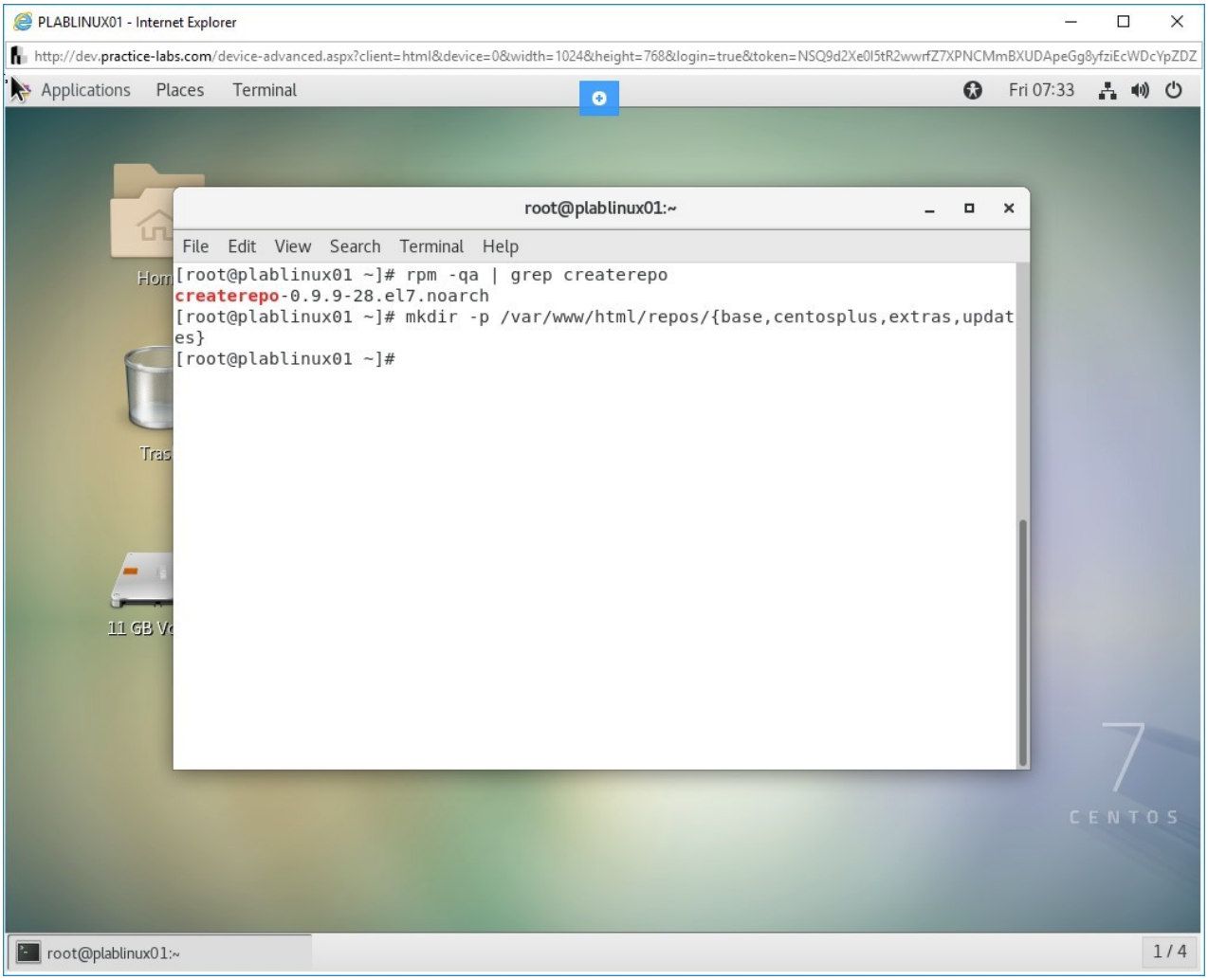


Figure 1.19 Screenshot of PLABLINUX01: Making directories for the local repository.

Step 3

Clear the screen by entering the following command:

```
clear
```

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

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

Press **Enter**.

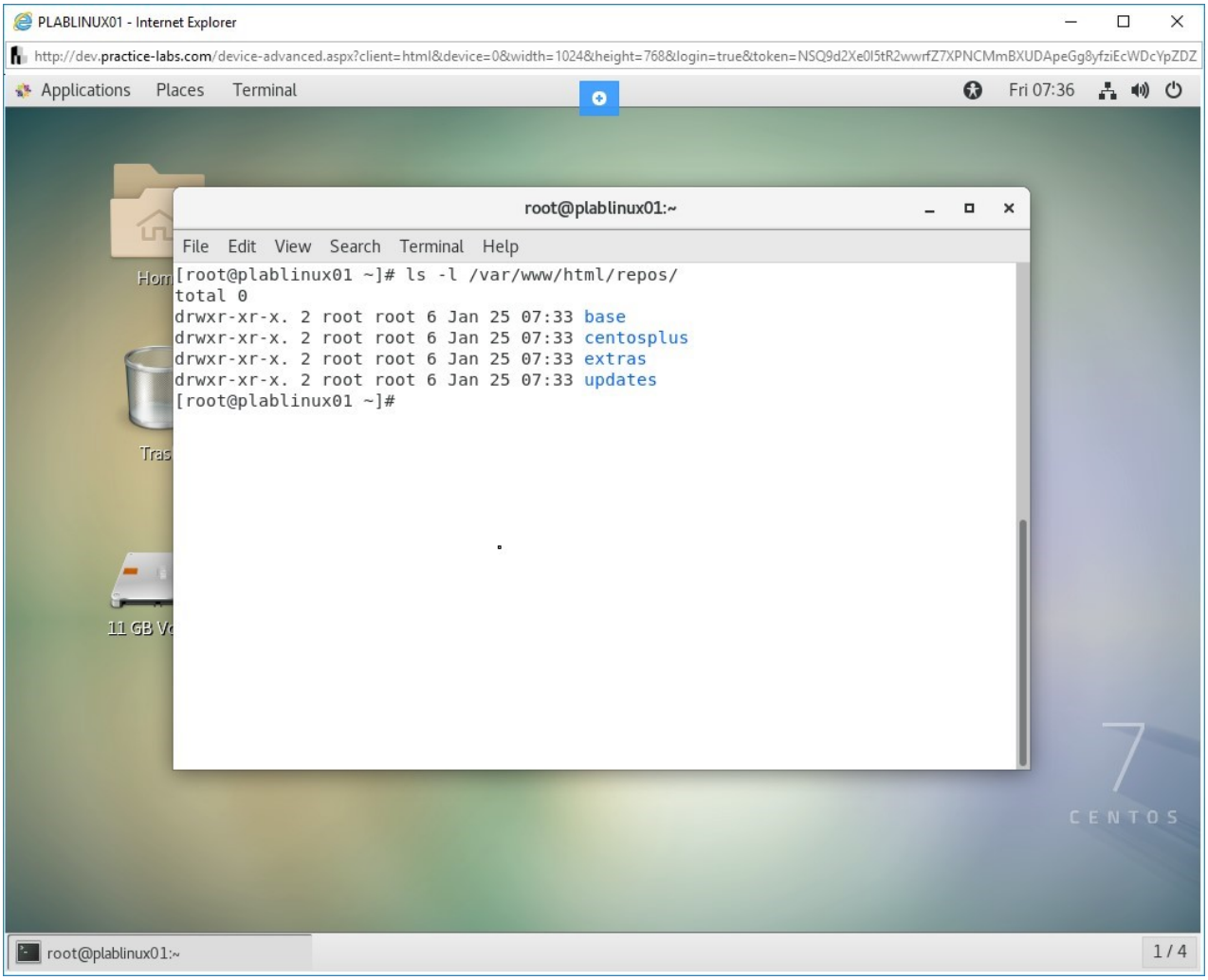


Figure 1.20 Screenshot of PLABLINUX01: Verifying the creation of directories.

Step 4

Clear the screen by entering the following command:

```
clear
```

Next, you need to use the **reposync** tool, which will synchronize CentOS YUM repositories with the local directories. Type the following command:

```
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 break the synchronization by pressing the **Ctrl+c** command after around **4000** 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.*

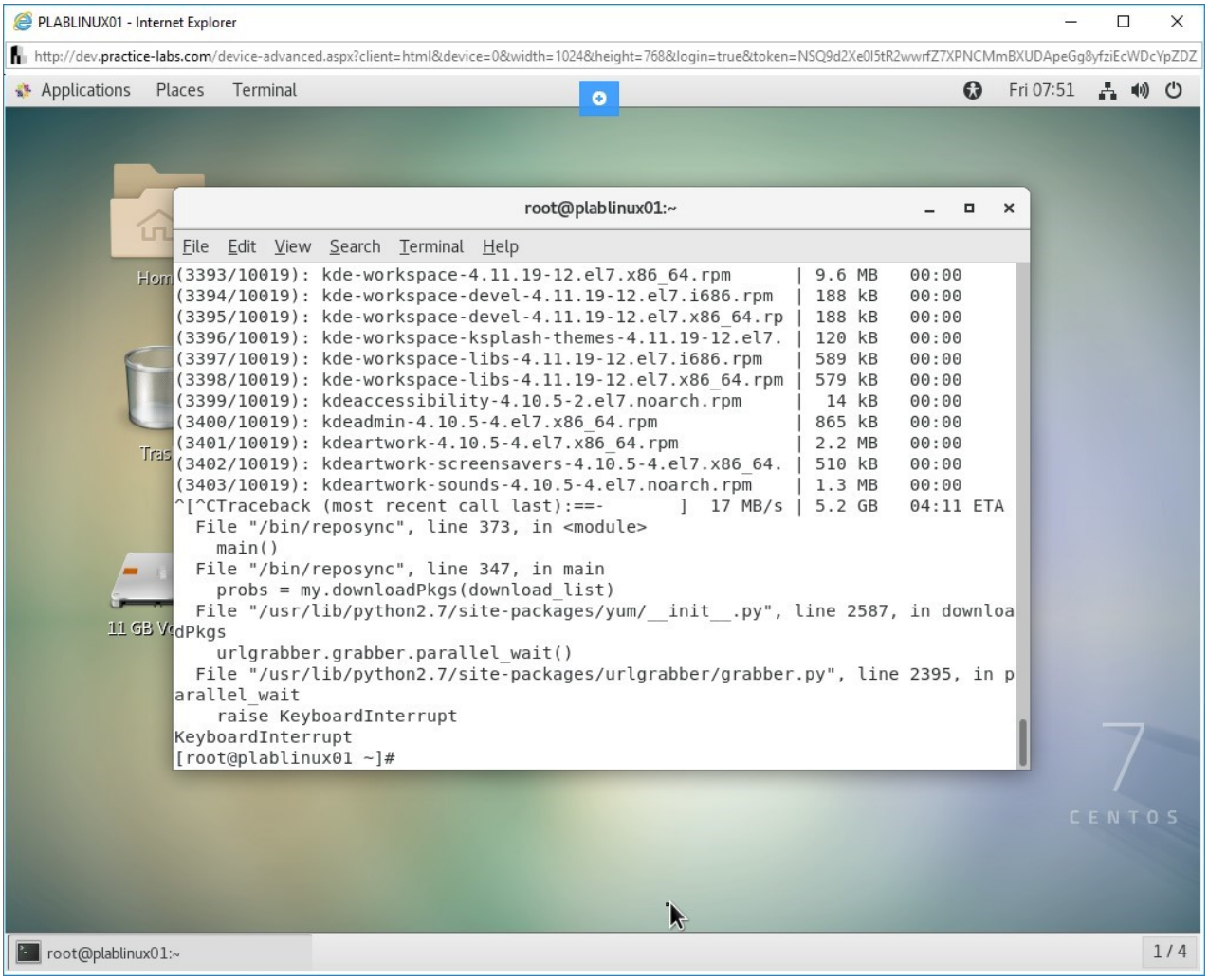


Figure 1.21 Screenshot of PLABLINUX01: Synchronizing CentOS YUM repositories with the local directories.

Step 5

Clear the screen by entering the following command:

```
clear
```

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

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

Press **Enter**. Notice that there were only **14** updates and therefore, the synchronization was quick.

> ***Note:*** *The number of updates may differ in your lab environment.*

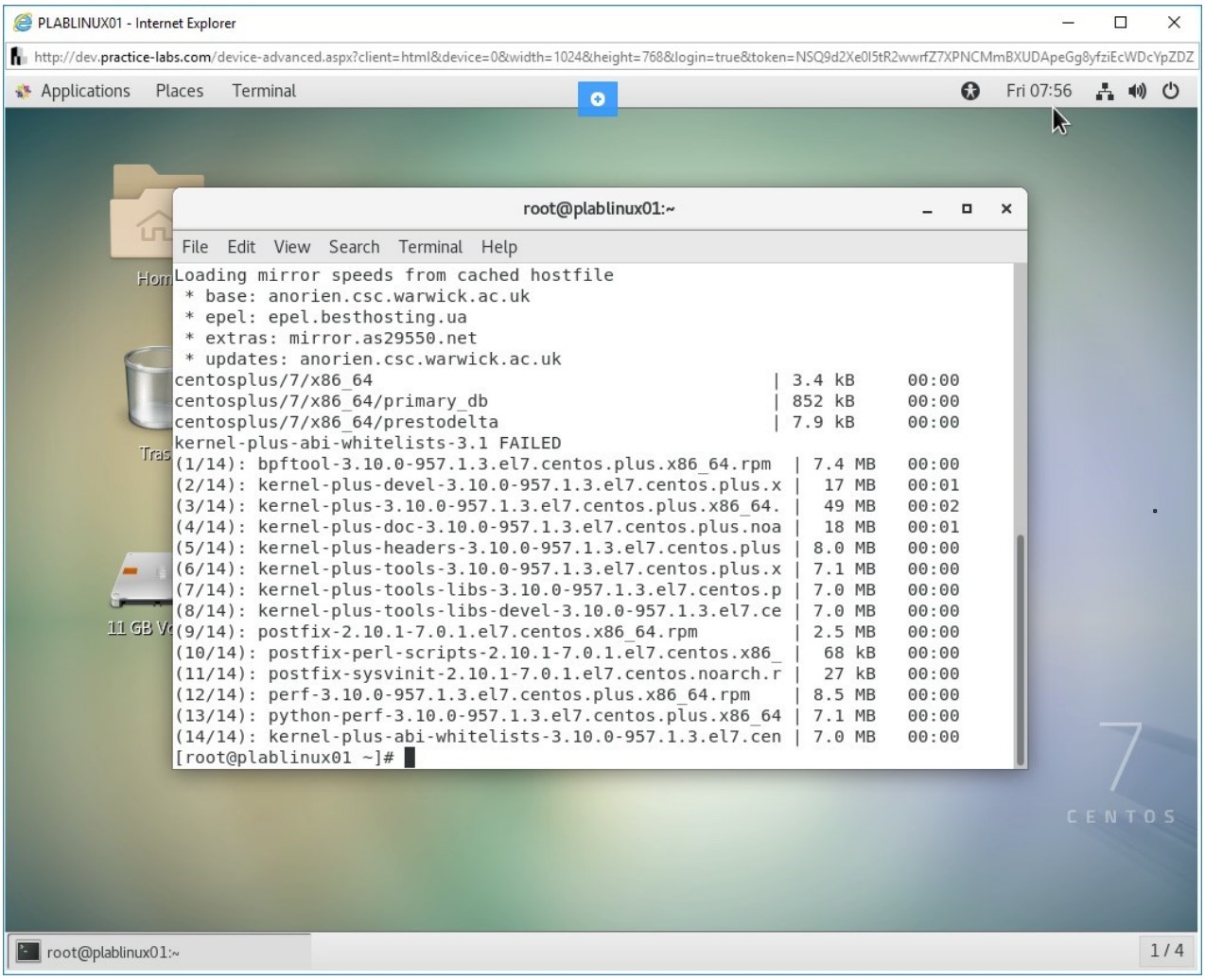


Figure 1.22 Screenshot of PLABLINUX01: Synchronizing CentOS YUM repositories with the local directories.

Step 6

Clear the screen by entering the following command:

```
clear
```

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 there were only 252 updates and therefore, the synchronization was quick.

> ***Note:*** *The number of updates may differ in your lab environment.*

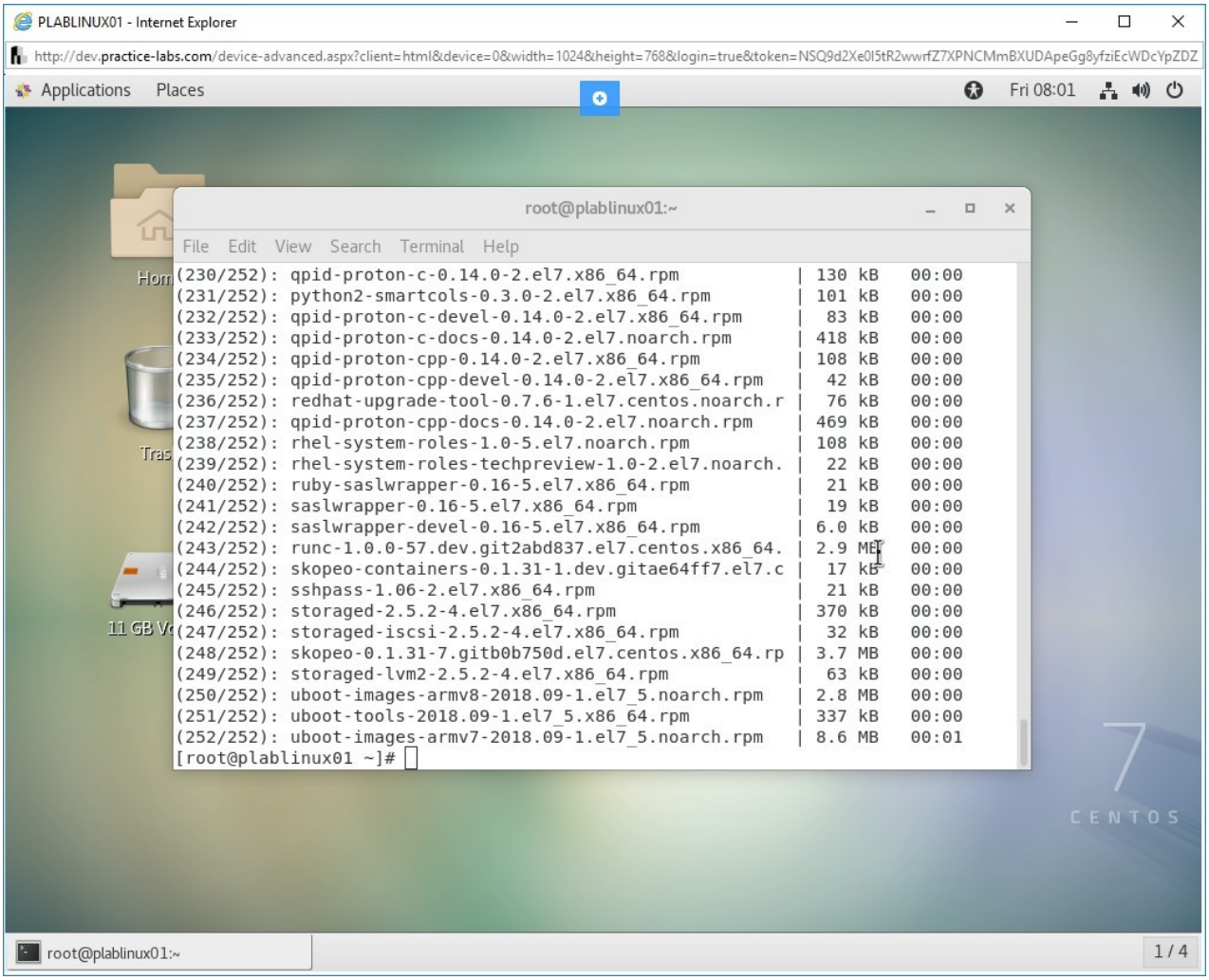


Figure 1.23 Screenshot of PLABLINUX01: Synchronizing CentOS YUM repositories with the local directories.

Step 7

Clear the screen by entering the following command:

```
clear
```

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**. Notice that there were only 509 updates and therefore, the synchronization was quick.

> ***Note:*** *The number of updates may differ in your lab environment.*

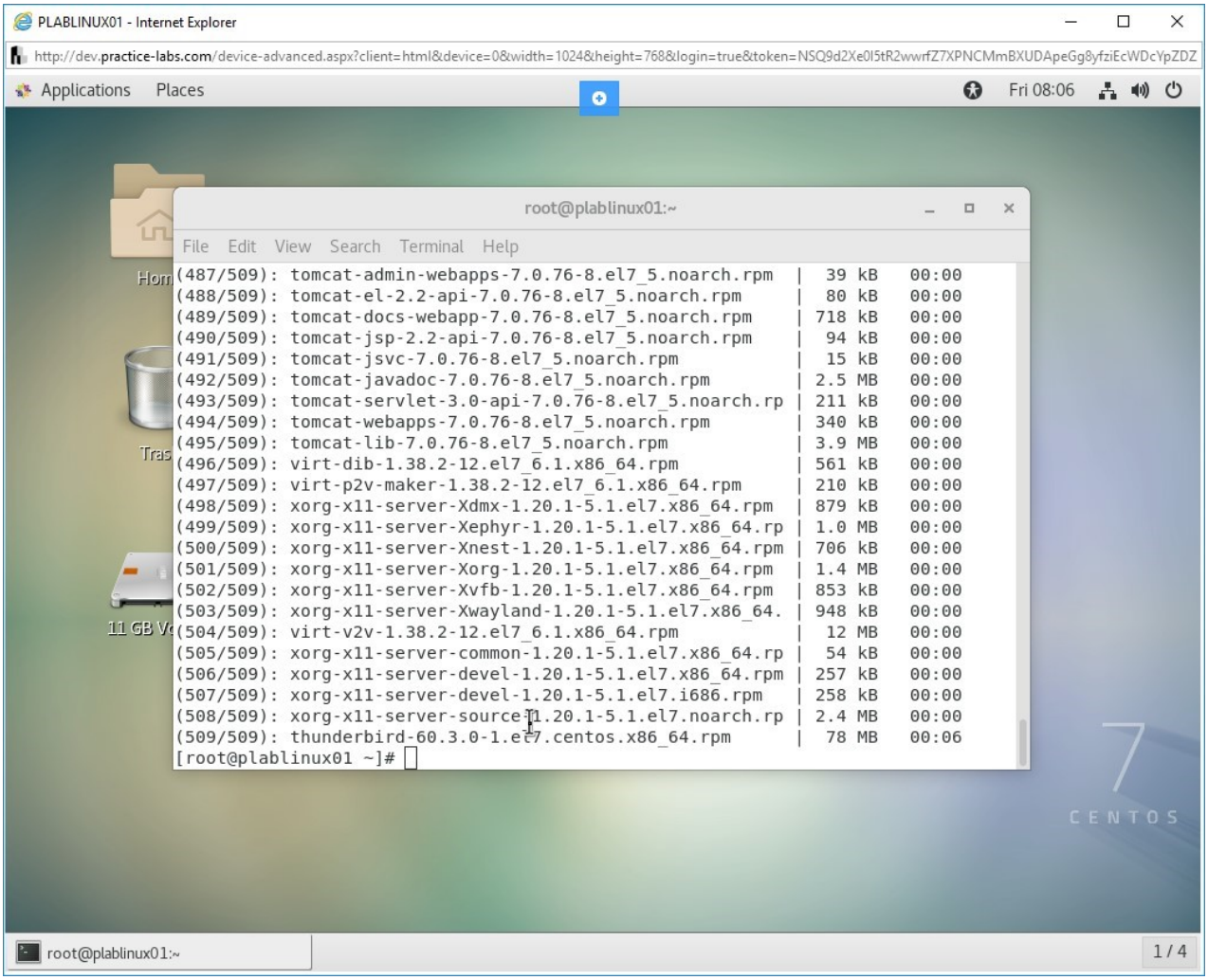


Figure 1.24 Screenshot of PLABLINUX01: Synchronizing CentOS YUM repositories with the local directories.

Step 8

Clear the screen by entering the following command:

```
clear
```

You should randomly check a directory to see if the packages have been synchronized. Type the following command:

```
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/
```

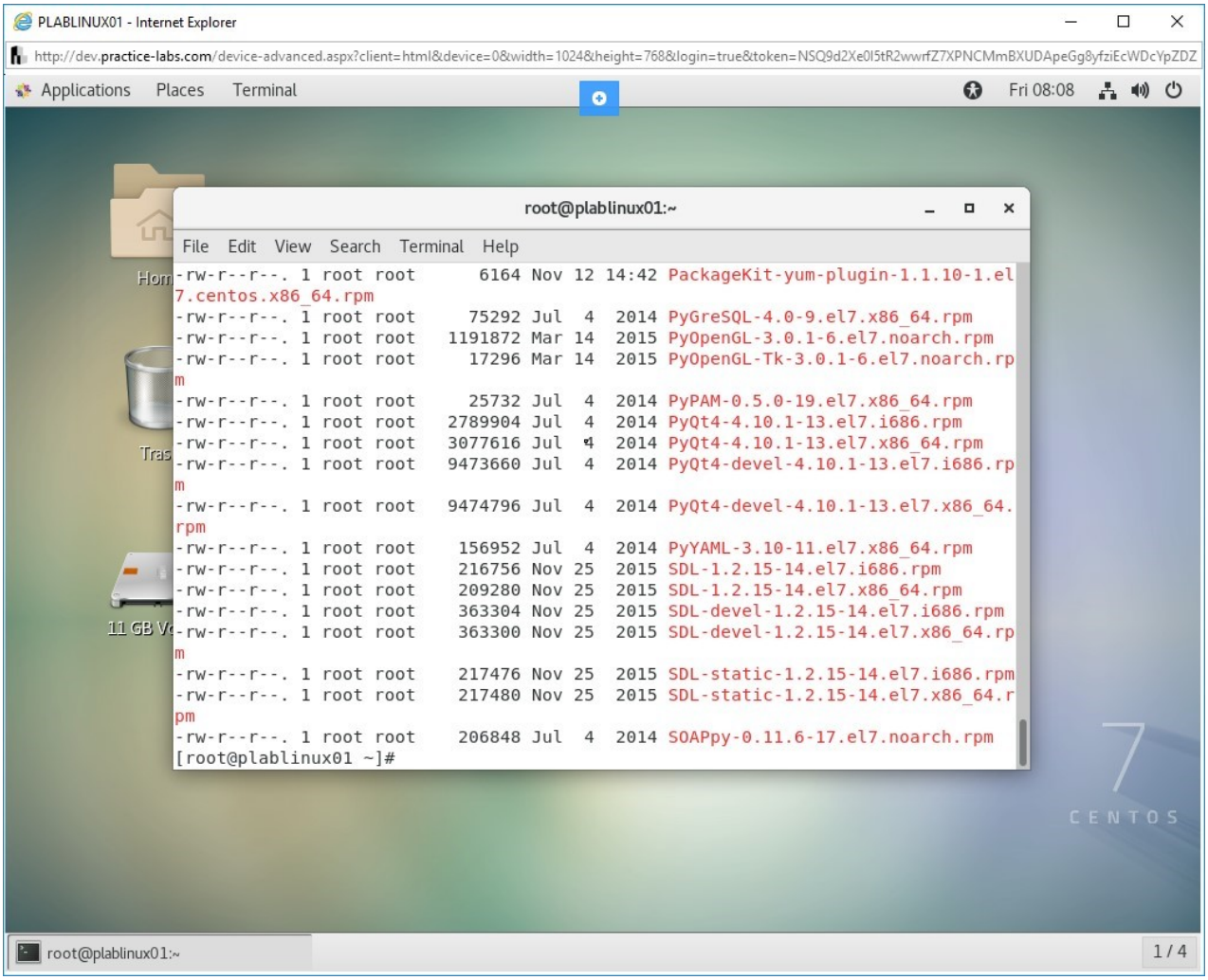


Figure 1.25 Screenshot of PLABLINUX01: Listing the local repository packages.

Step 9

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.

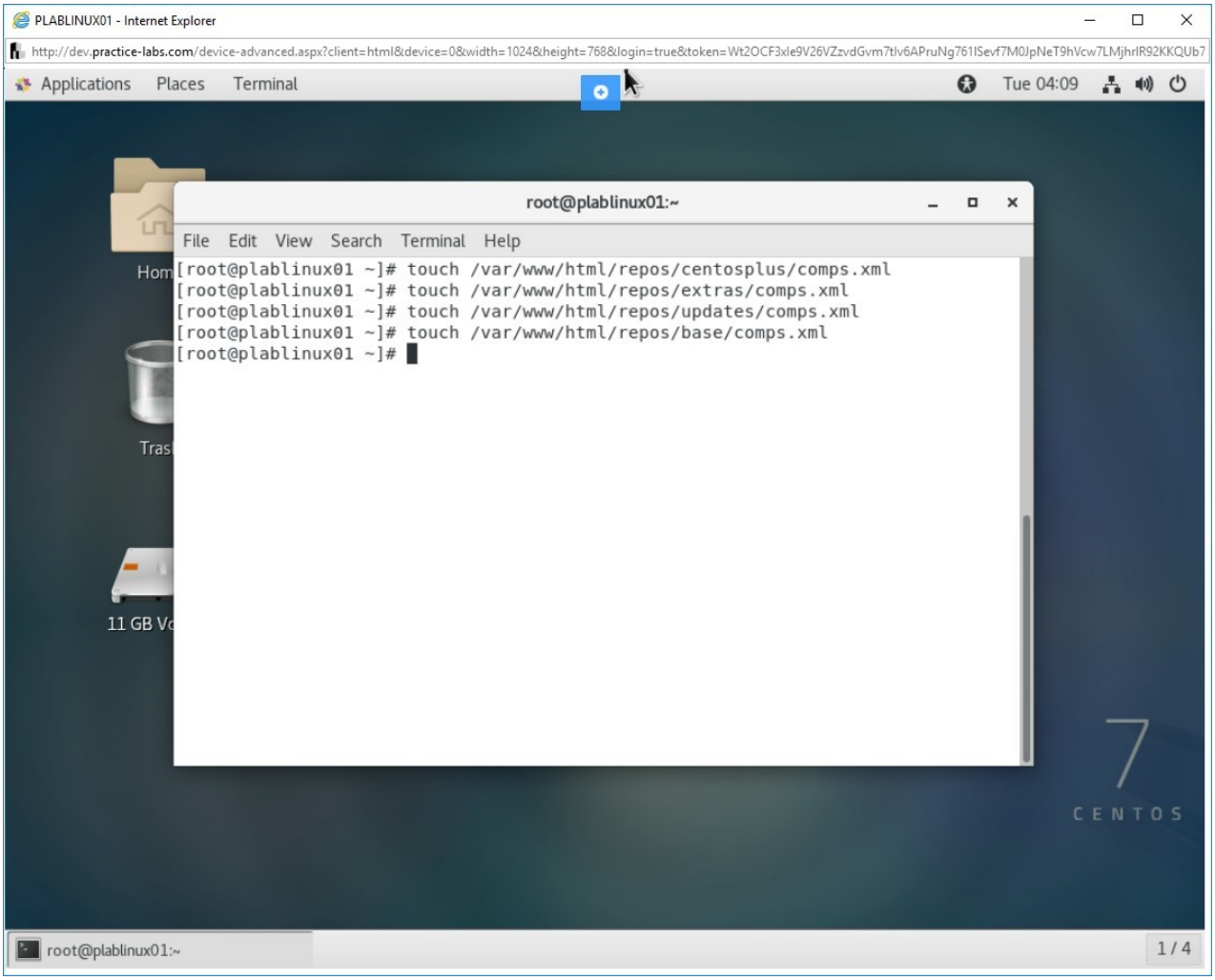


Figure 1.26 Screenshot of PLABLINUX01: Creating the comps.xml in each directory.

Step 10

Clear the screen by entering the following command:

```
clear
```

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**.

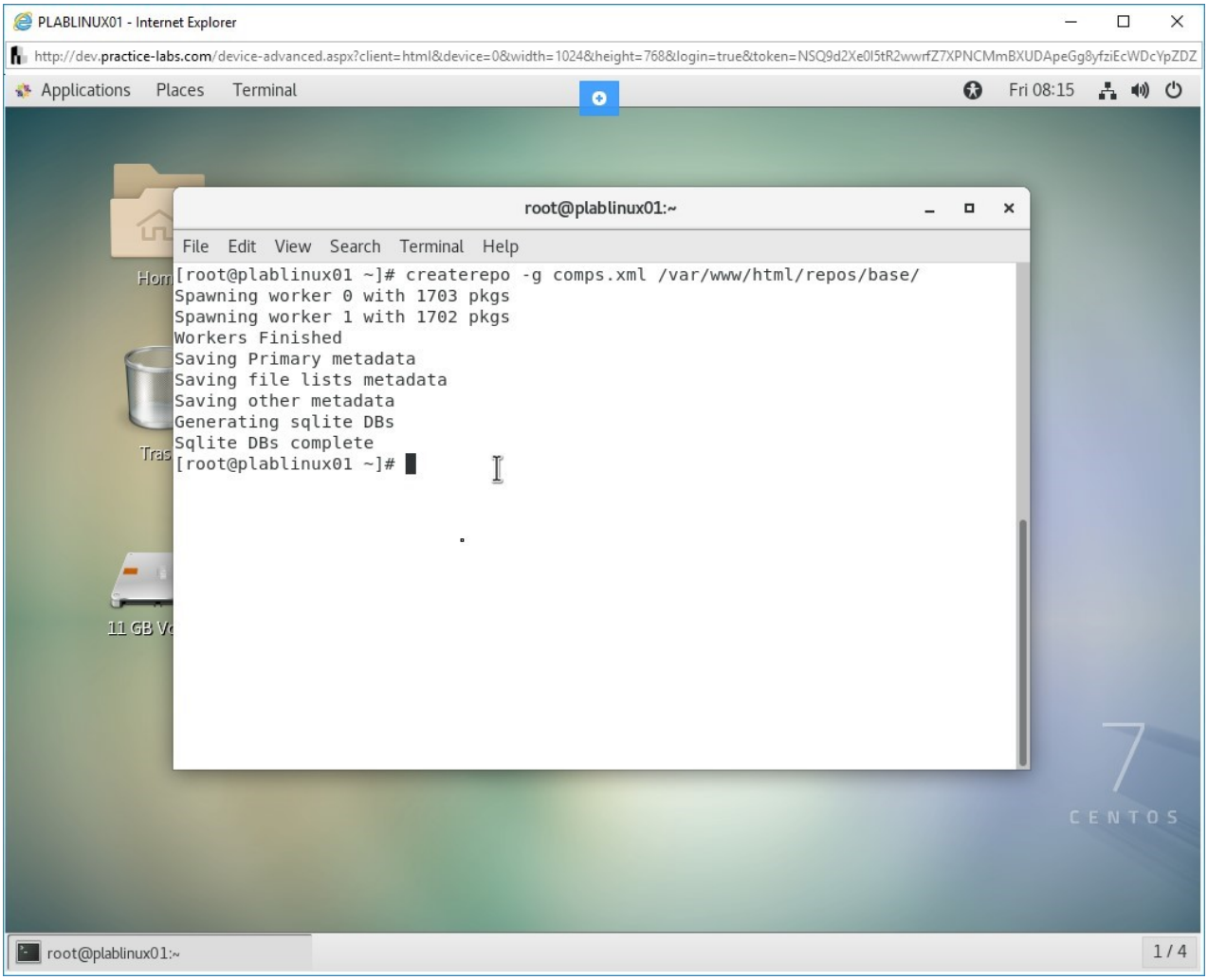


Figure 1.27 Screenshot of PLABLINUX01: Creating a new repodata for the local repositories.

Step 11

Clear the screen by entering the following command:

```
clear
```

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/
```

Press Enter after each command. You have now successfully configured the repository on a local server.

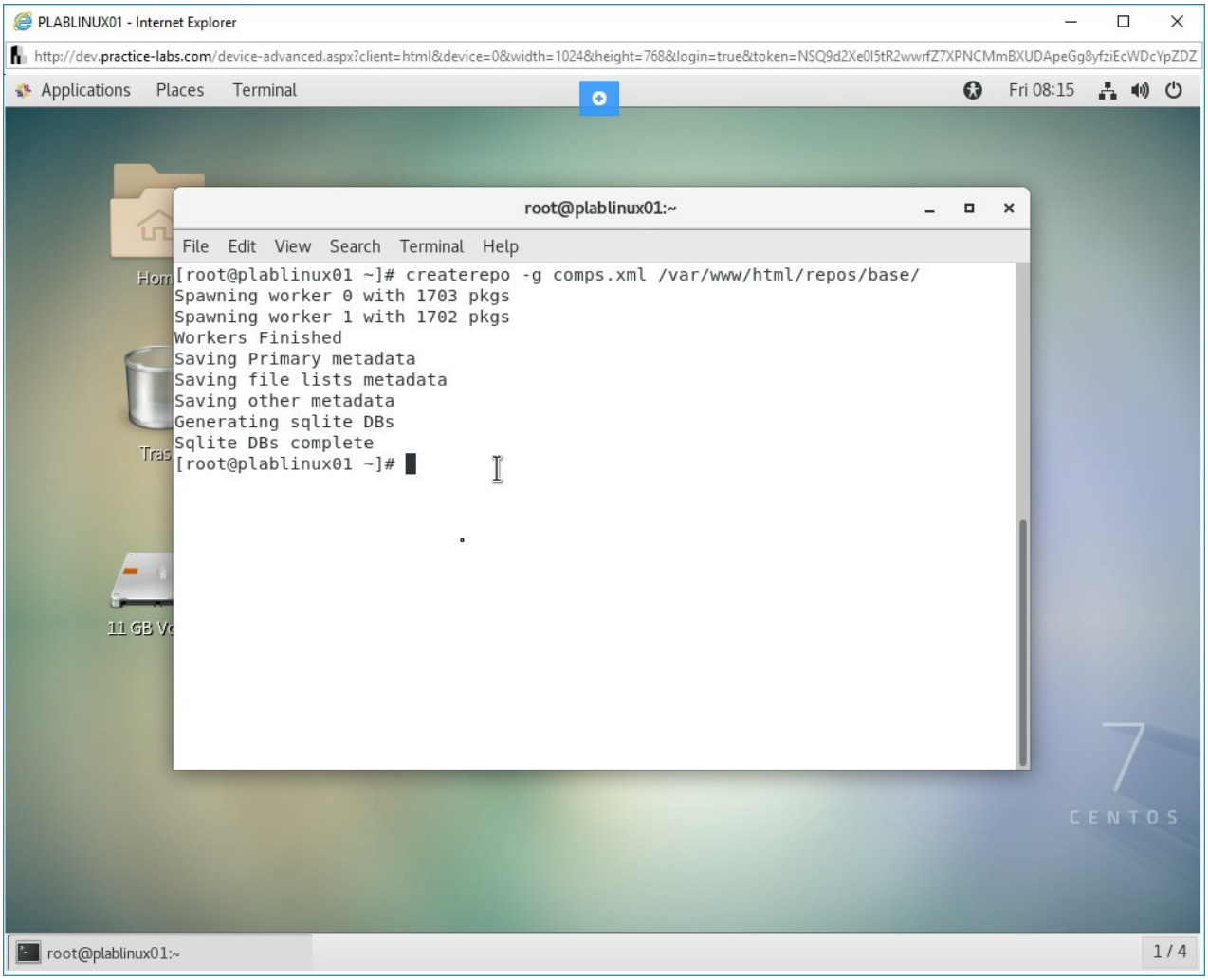


Figure 1.28 Screenshot of PLABLINUX01: Creating a new repodata for the local repositories.

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
```

To save the file, press **ESC** and then type the following command:

```
:wq
```

Assign the execute permission:

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

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

Feedback

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