

Using RPM and YUM Package Management

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Introduction

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

RPM

YUM

Package Management

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 - Use RPM and YUM Package Management

After completing this lab, you will be able to:

- Manage Packages using YUM
- Obtain information on packages using YUM
- List the contents of a package
- Manage yum configuration options
- Browse RPM files
- Extract files from an RPM package

Exam Objectives

The following exam objectives are covered in this lab:

- **LPI:** 102.5 Use RPM and YUM package management
- **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

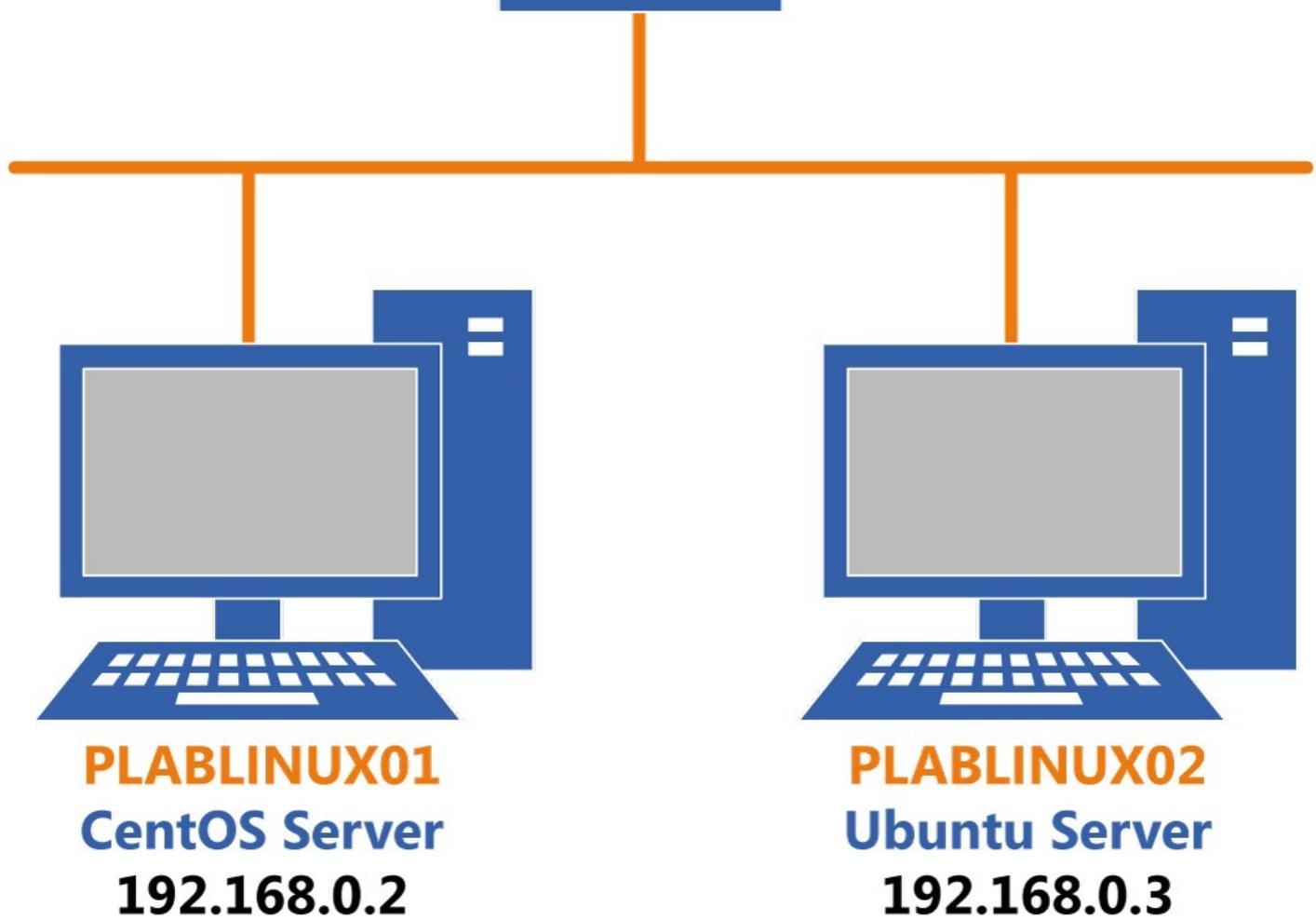
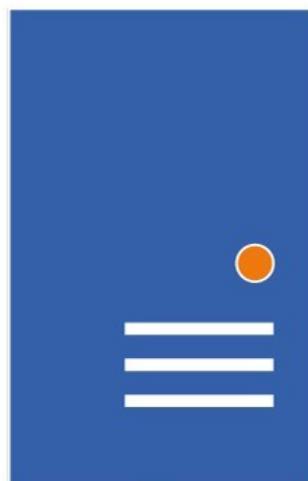
For more information on using Practice Labs, please see our **Help and Support** page. You can also raise a technical support ticket from this page.

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

Lab Topology

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

PLABSA01
Windows Server 2016
192.168.0.1



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 - Use RPM and YUM Package Management

YUM, short for Yellowdog Updater Modified, refers to RPM-based package-management utility used by Linux systems. It is an open-source application that is majorly run from the command-line.

In this exercise, you will understand how to manage installation packages using the YUM application.

Learning Outcomes

After completing this exercise, you will be able to:

- Log into a Linux System
- Manage Packages using YUM
- Obtain information on packages using YUM
- List the contents of a package
- Manage yum configuration options
- Browse RPM files
- Extract files from an RPM package

Your Devices

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

- **PLABSAo1** (Windows Server 2016)
- **PLABLINUXo1** (CentOS Server)
- **PLABLINUXo2** (Ubuntu Server)



Task 1 - Manage Packages Using YUM

You can use the YUM application to manage installation, re-installation, upgrade, and removal of packages. In this task, you will manage all these operations on the **httpd** package.

To use YUM to manage packages, perform the following steps:

Step 1

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

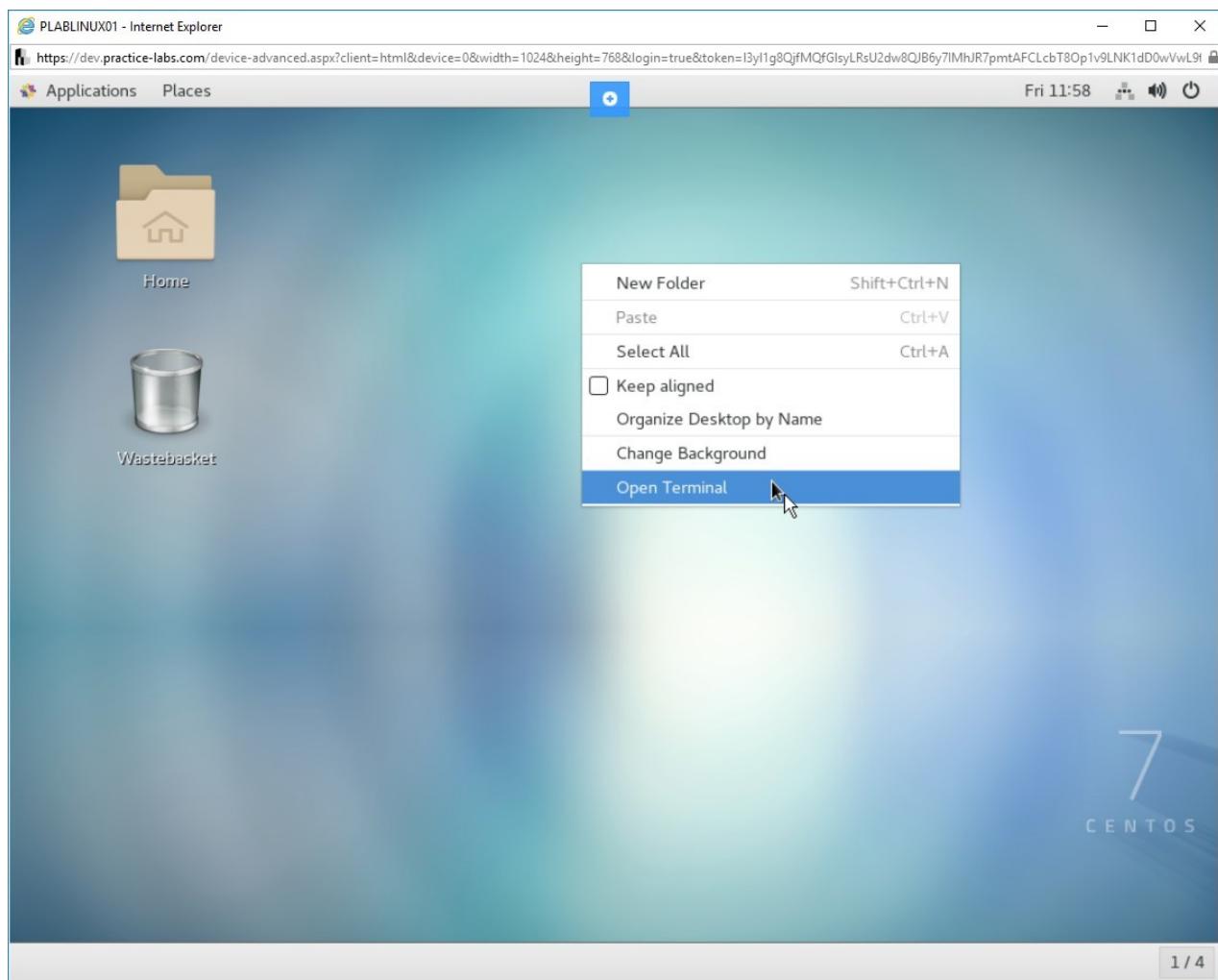


Figure 1.1 Screenshot of PLABLINUX01: Selecting the Open Terminal option from the context menu.

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**.

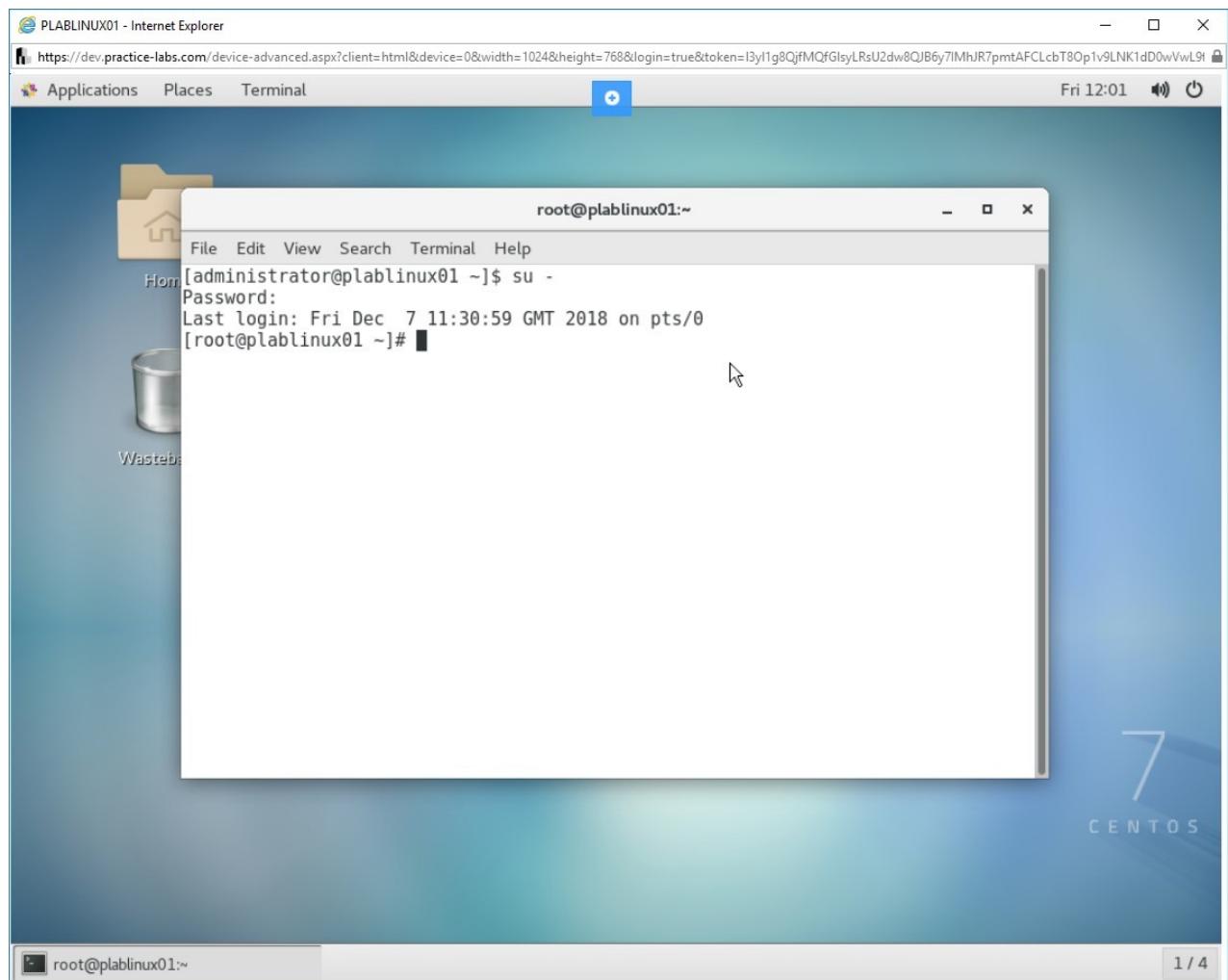


Figure 1.2 Screenshot of PLABLINUX01: Changing the account to the root account with the su command.

Step 3

Clear the screen by entering the following command:

```
clear
```

Note: The clear command is used before every step to enable the learners to get a clear view of the output of each command. Otherwise, it is not mandatory to use the clear command before every command.

You can use **YUM** to install a package. For example, here, you install the **httpd** package by entering the following command:

```
yum install httpd
```

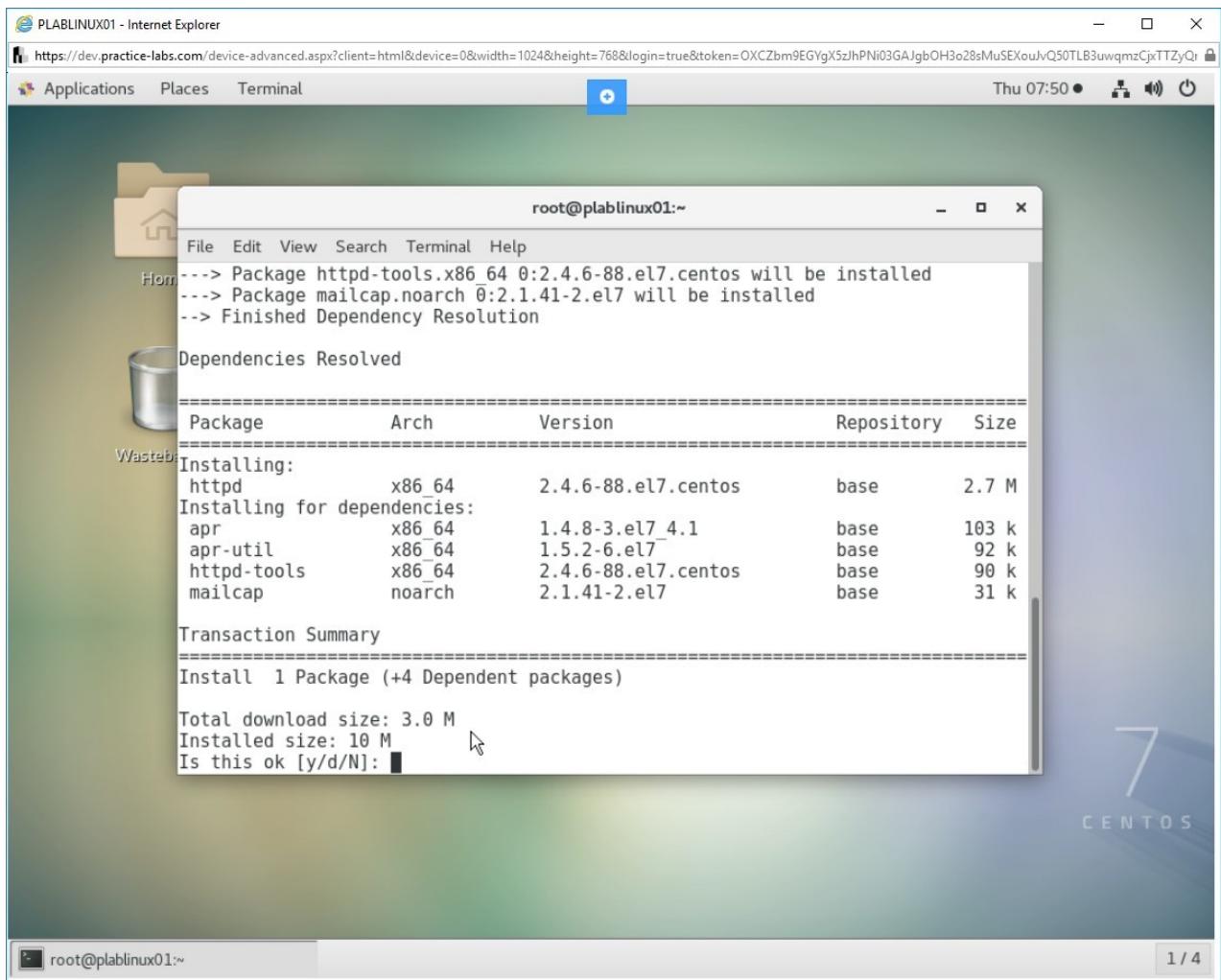


Figure 1.3 Screenshot of PLABLINUX01: Installing the httpd module using yum.

Step 4

Notice that the installation process proceeds by first listing the relevant updates, then resolving the dependencies for the **httpd** package, and then, giving the detailed description of the **httpd** package.

When prompted to confirm, type the following:

y

Press **Enter**.

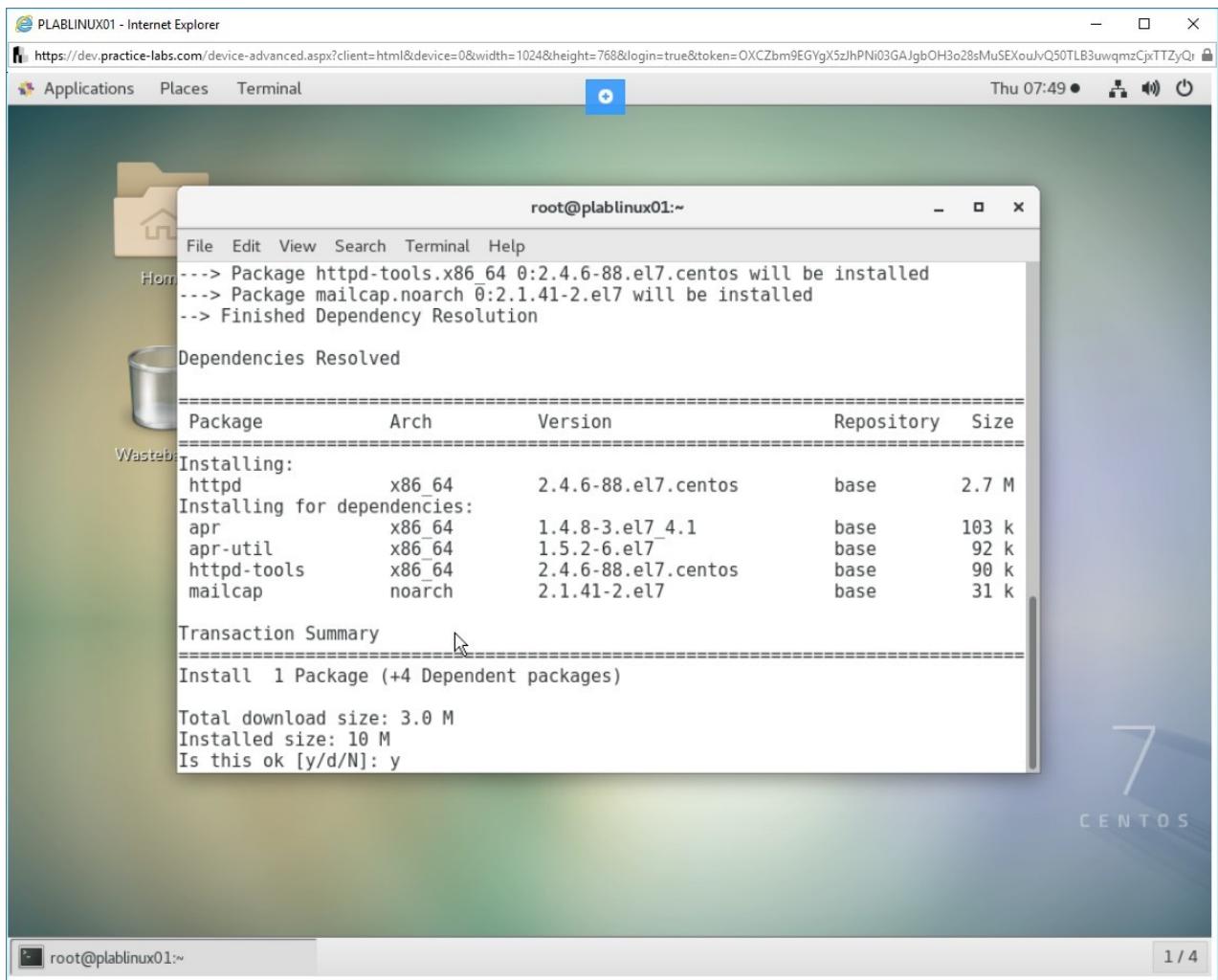


Figure 1.4 Screenshot of PLABLINUX01: Confirming the installation of httpd.

Step 5

Package downloading starts.

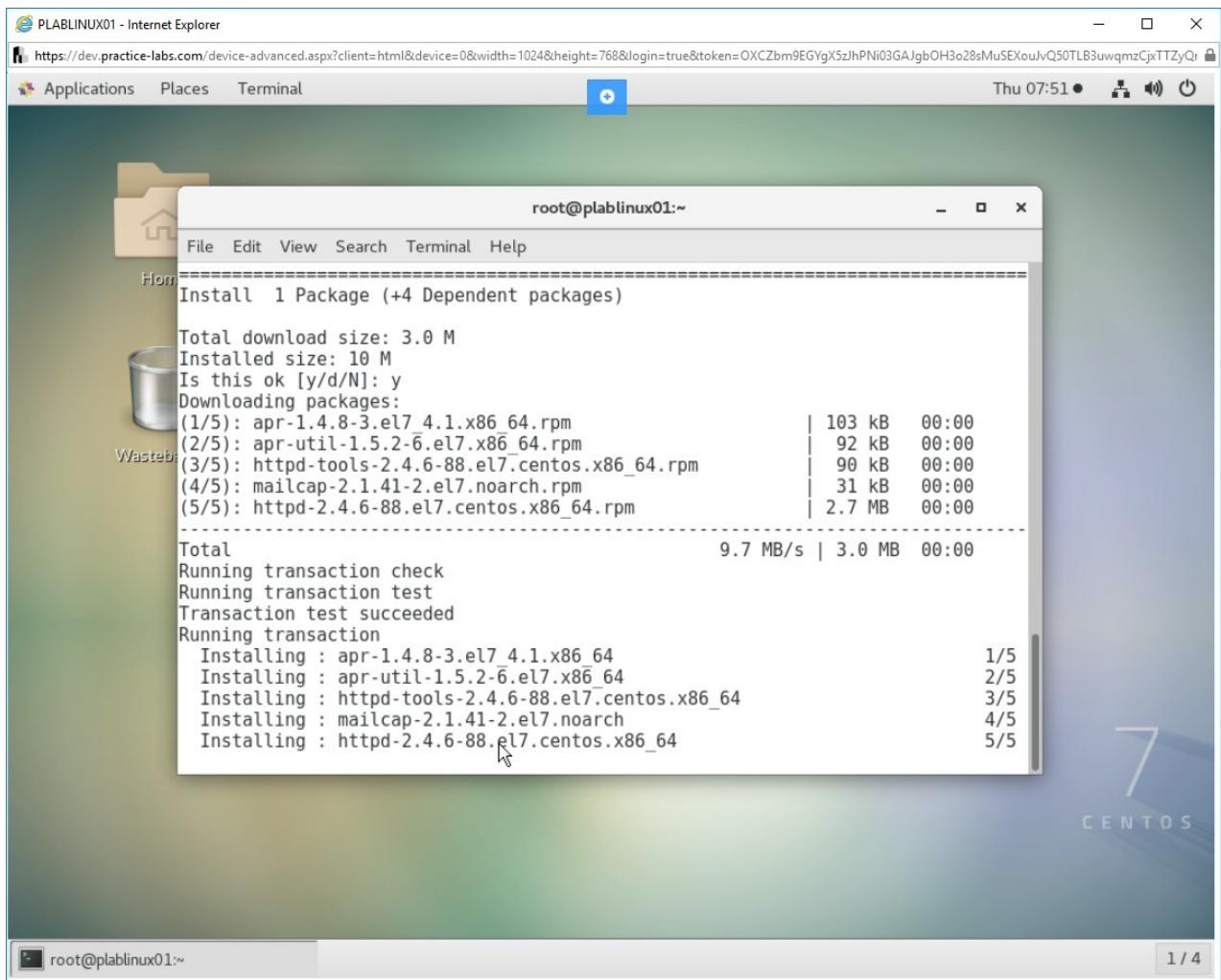


Figure 1.5 Screenshot of PLABLINUX01: Showing the installation progress.

Step 6

After all the packages are installed and verified, the **Complete!** message appears on the screen confirming the completion of the installation process.

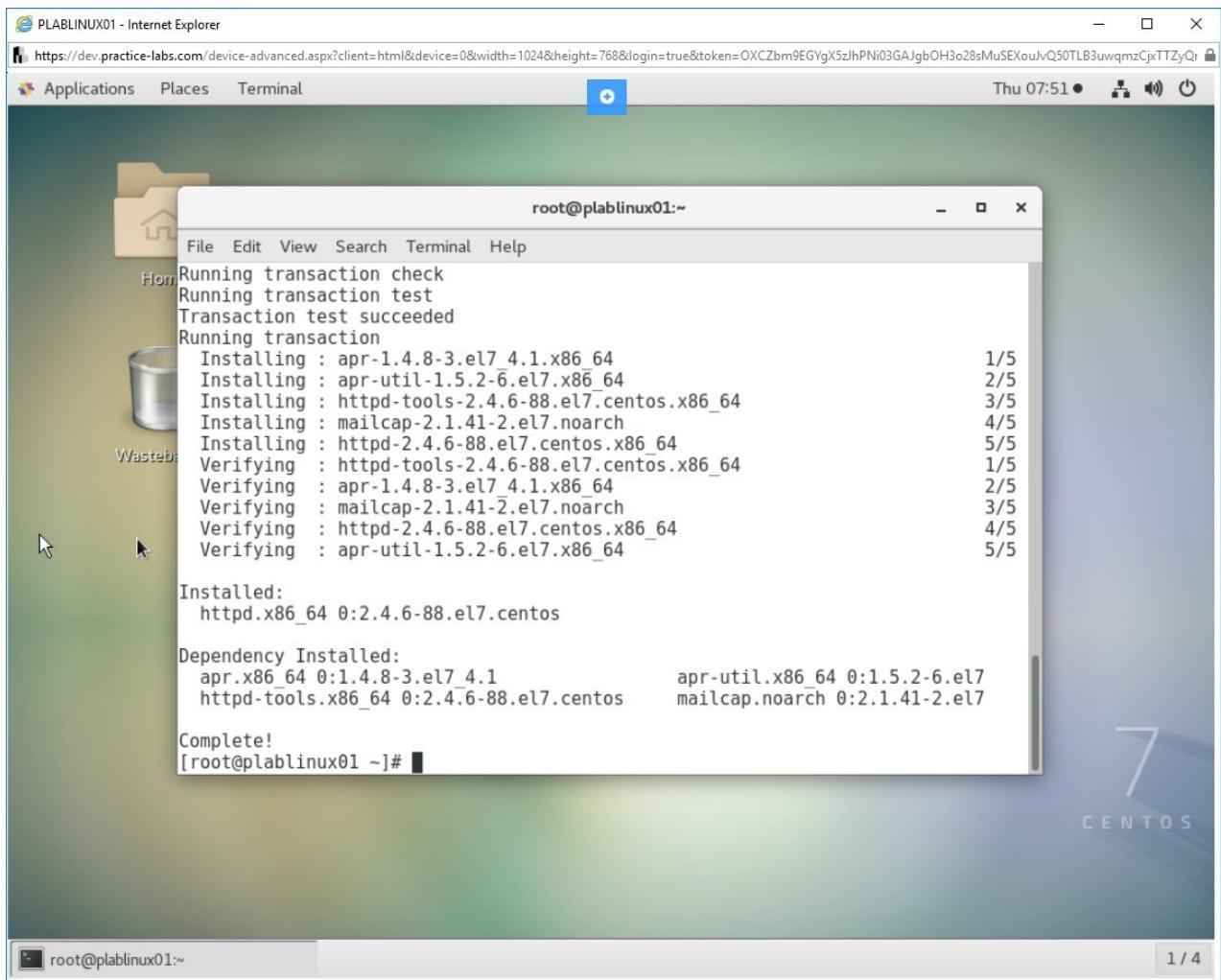


Figure 1.6 Screenshot of PLABLINUX01: Showing the completion status of the httpd installation.

Step 7

Clear the screen by entering the following command:

```
clear
```

To verify that the **httpd** package is installed, type the following command:

```
yum list httpd
```

Press **Enter**.

The output displays the details of the installed package.

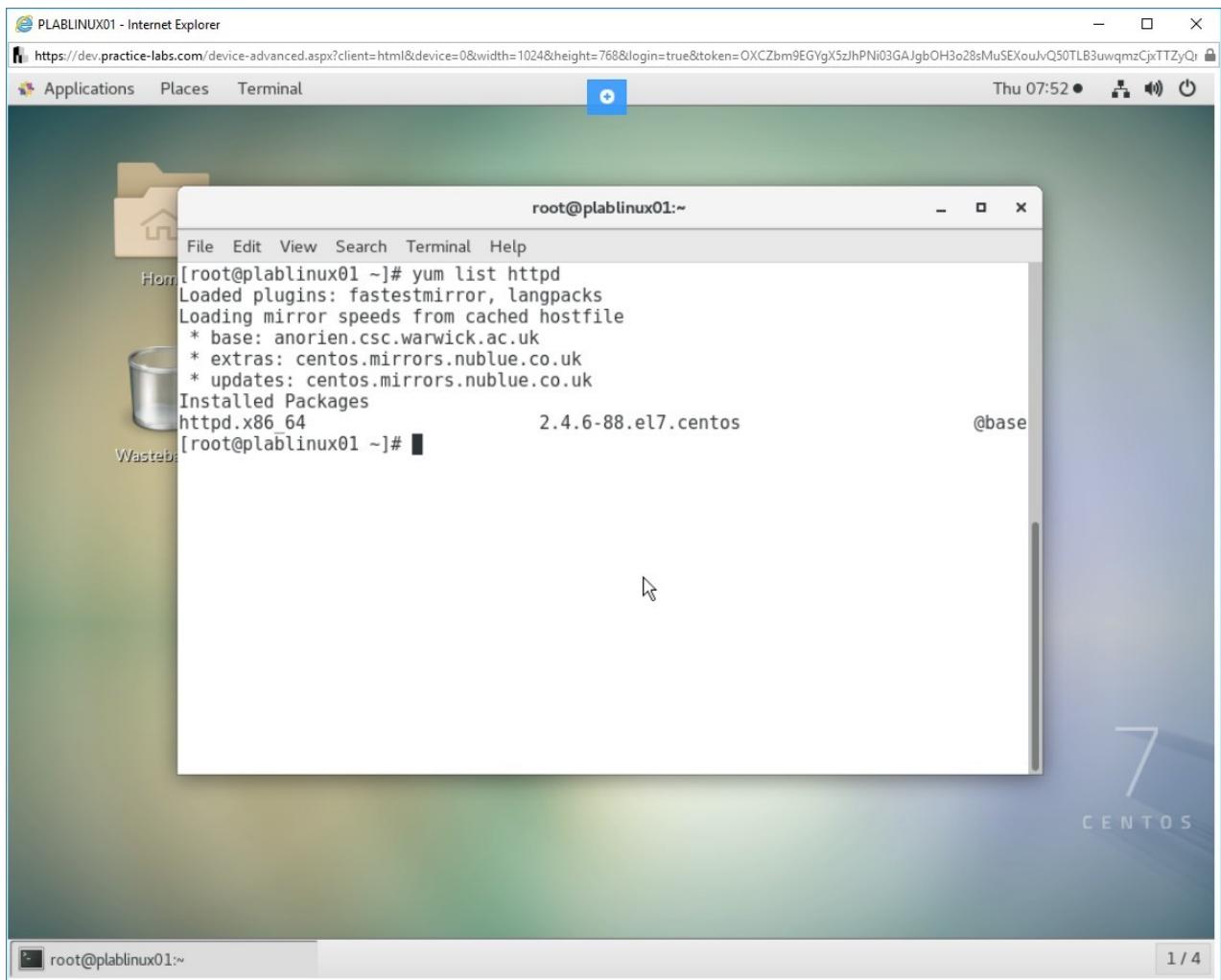


Figure 1.7 Screenshot of PLABLINUX01: Verifying the **httpd** package installation.

Step 8

You can use YUM to update a package. For example, to update the **httpd** package, type the following package:

```
yum update httpd
```

Press **Enter**.

Recall that the package has been updated recently, during installation. Therefore, currently, there are no updates to be installed.

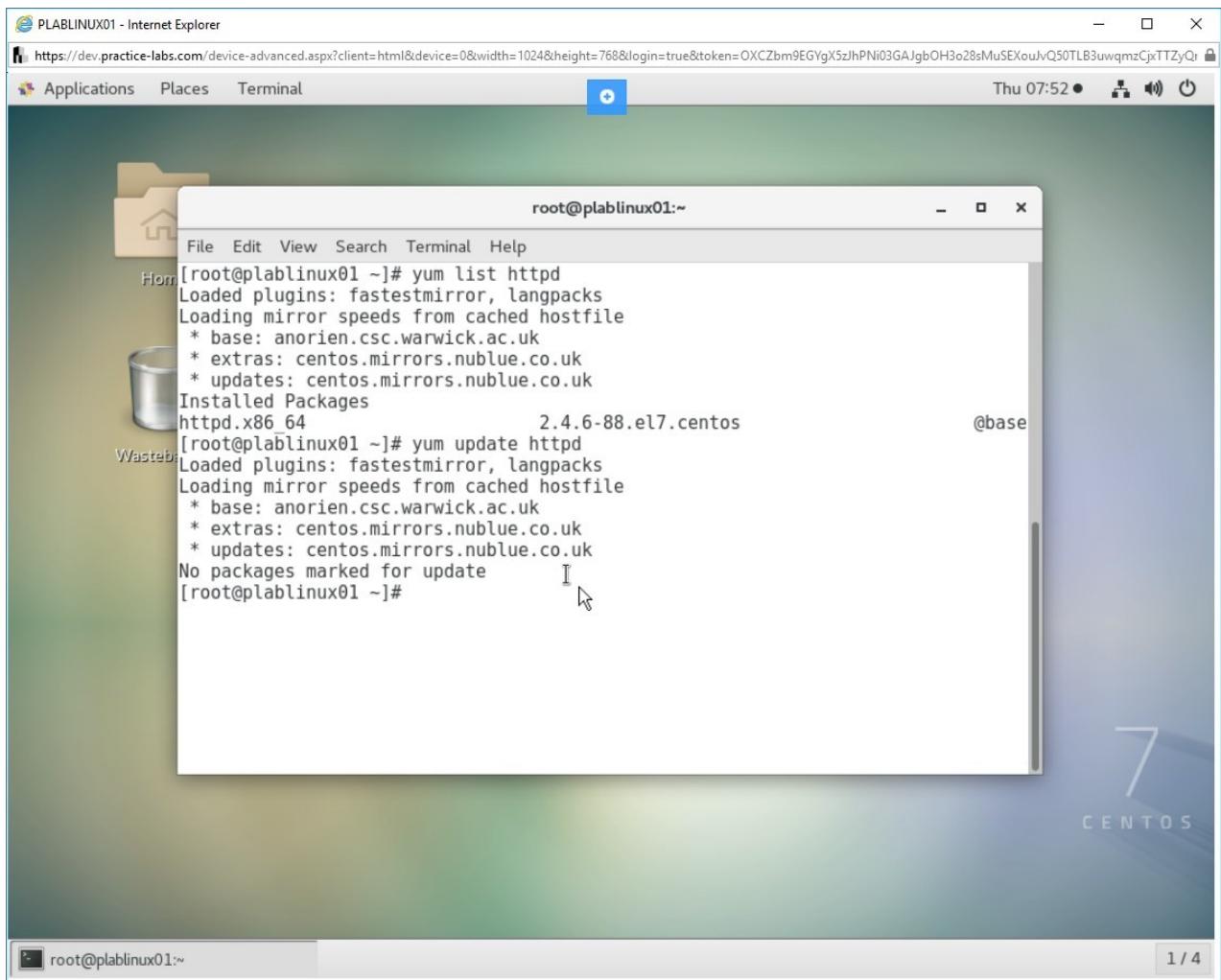


Figure 1.8 Screenshot of PLABLINUX01: Updating the httpd module.

Step 9

Clear the screen by entering the following command:

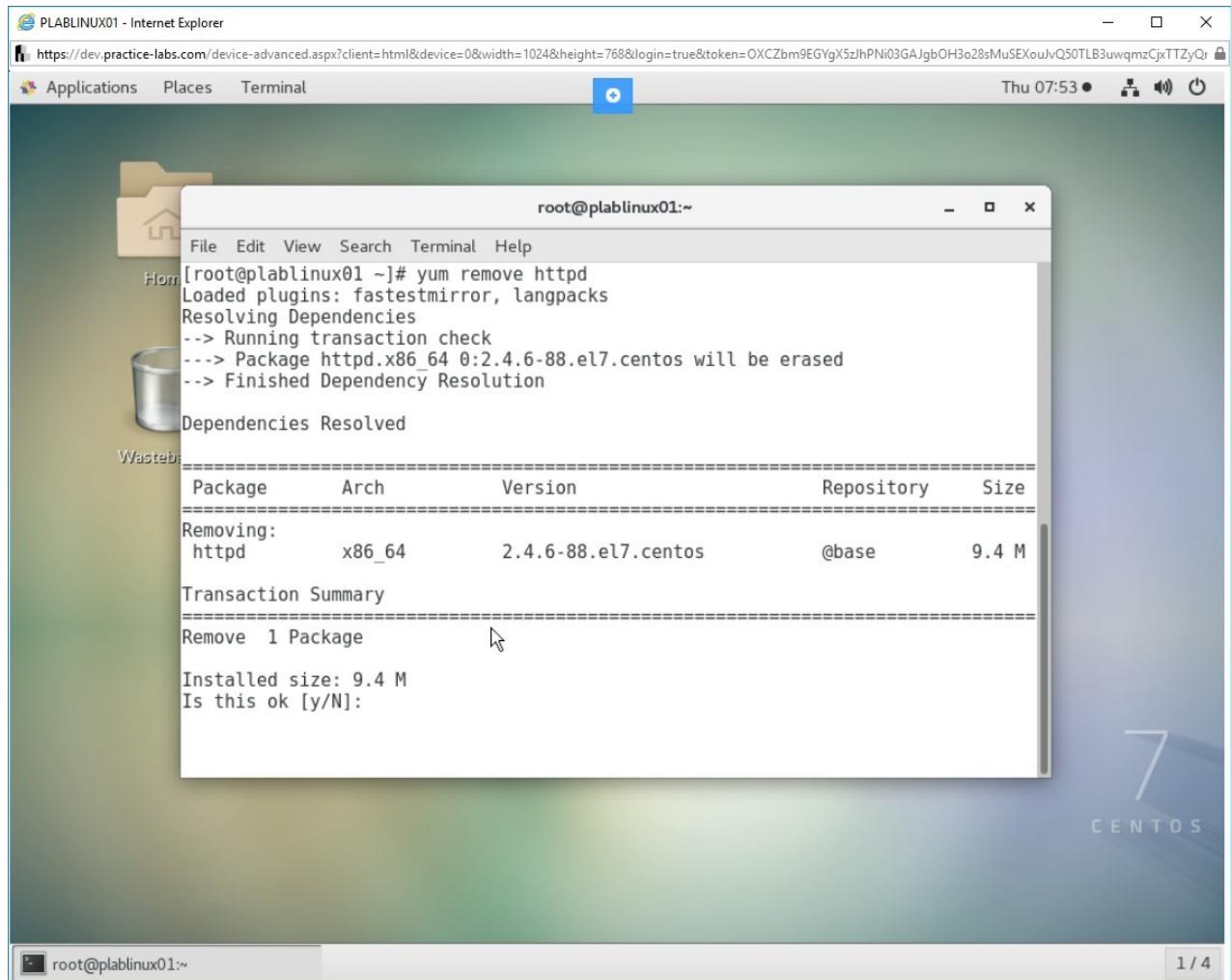
```
clear
```

You can use the YUM application to uninstall a package. For example, to uninstall the **httpd** package, type the following command:

```
yum remove httpd
```

Press **Enter**.

Notice that the uninstallation process proceeds by first resolving the dependencies and then giving the details of the installed package.



The screenshot shows a Linux desktop environment with a terminal window open. The terminal window title is "root@plablinux01:~". The terminal content shows the command "yum remove httpd" being run, followed by the output of the transaction check and dependency resolution. It then lists the package being removed, its details, and a summary of the transaction. Finally, it asks for confirmation of the removal.

```
[root@plablinux01 ~]# yum remove httpd
Loaded plugins: fastestmirror, langpacks
Resolving Dependencies
--> Running transaction check
---> Package httpd.x86_64 0:2.4.6-88.el7.centos will be erased
--> Finished Dependency Resolution

Dependencies Resolved

Transaction Summary
=====
Remove 1 Package

Removing:
httpd           x86_64        2.4.6-88.el7.centos      @base       9.4 M

Installed size: 9.4 M
Is this ok [y/N]:
```

Figure 1.9 Screenshot of PLABLINUX01: Uninstalling the httpd module.

Step 10

You are prompted to confirm the removal of the **httpd** package. Enter **y**.

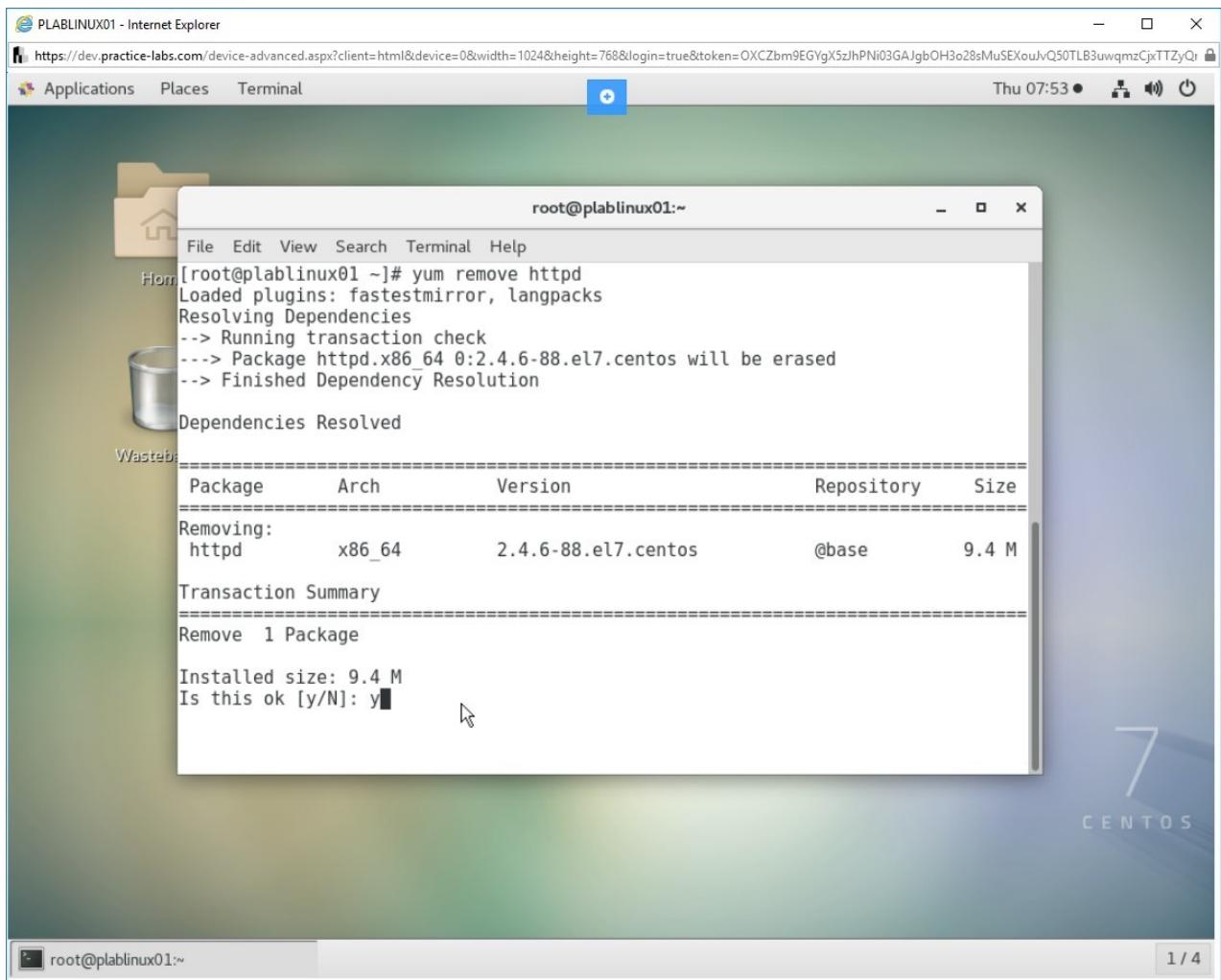


Figure 1.10 Screenshot of PLABLINUX01: Confirming the uninstallation of httpd.

Step 11

The **httpd** package is now removed.

Notice that all the dependencies are removed along with the package. At the end of the process, the **complete** message confirms that the removal process is completed.

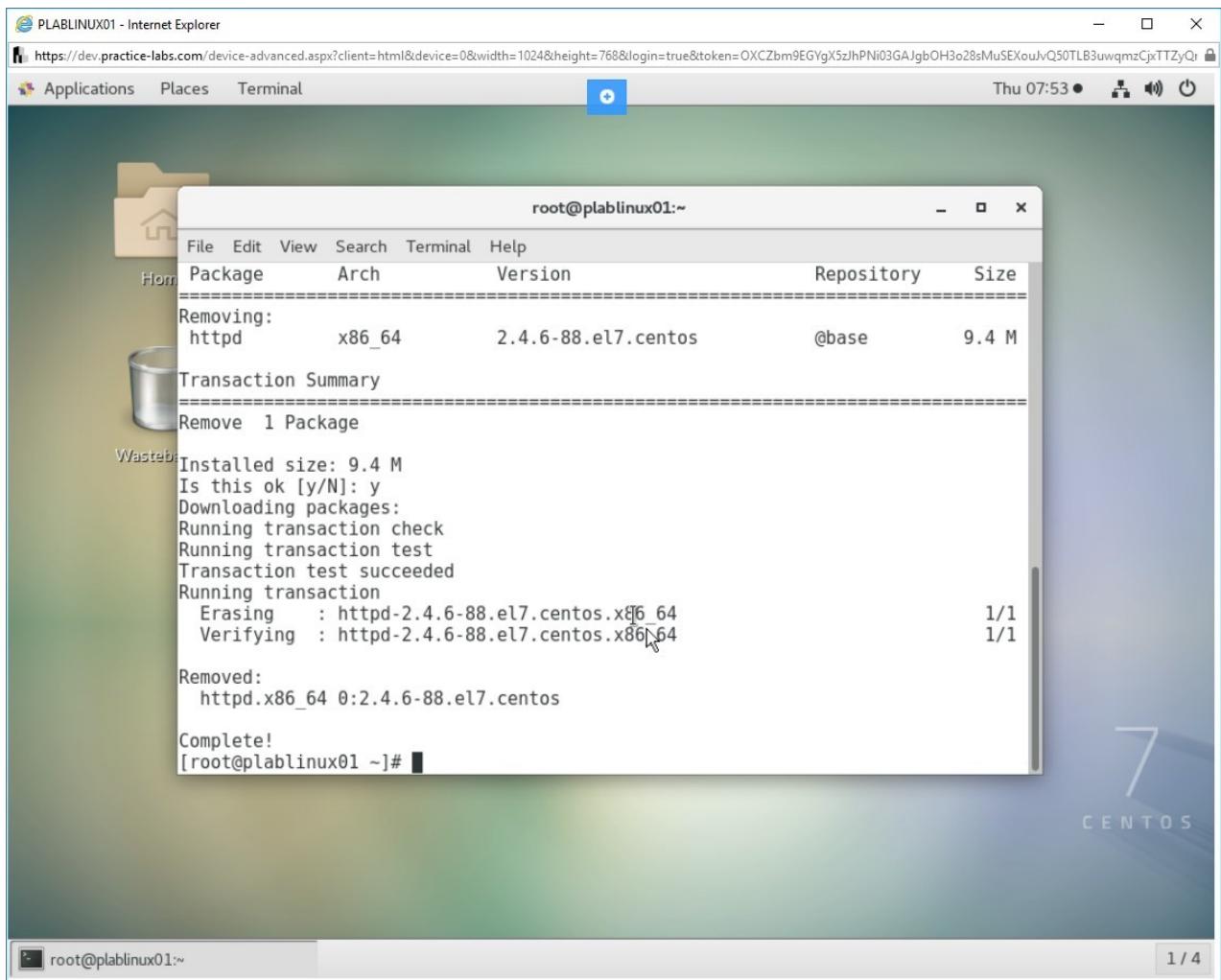


Figure 1.11 Screenshot of PLABLINUX01: Showing the confirmation of httpd module uninstallation.

Task 2 - Obtain Information on Packages Using YUM

You can use YUM to obtain information, such as version, status, dependencies, integrity, and signatures of packages. In this task, you will obtain all this information on the **httpd** package.

To obtain information on packages, perform the following steps:

Step 1

Clear the screen by entering the following command:

```
clear
```

To check the **httpd** package information, type the following command:

```
yum list httpd
```

Press **Enter**.

The available **httpd** package details, such as version and update status, are displayed.

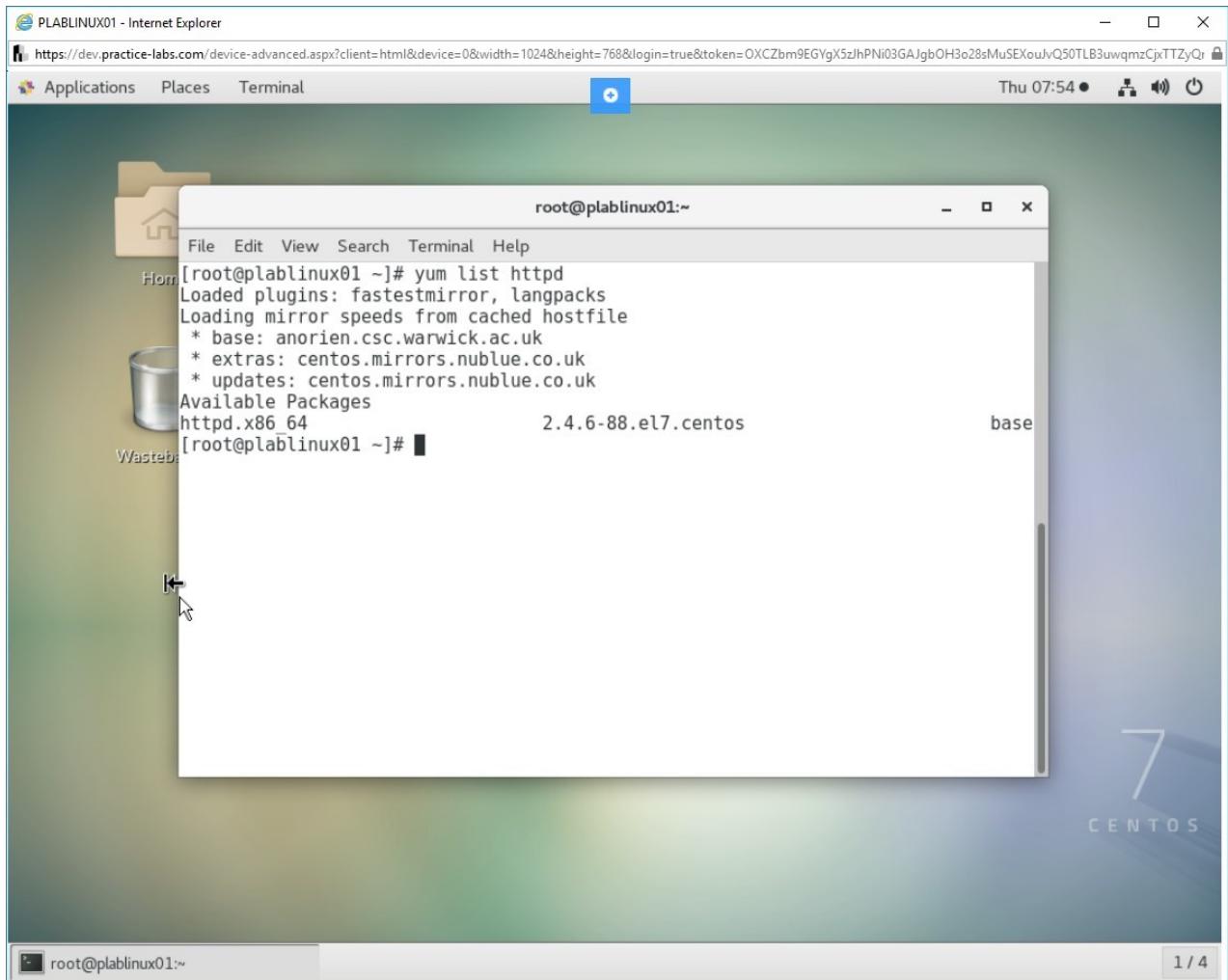


Figure 1.12 Screenshot of PLABLINUX01: Displaying the available httpd module details.

Ensure that you re-install httpd package using the yum command as shown in the previous task.

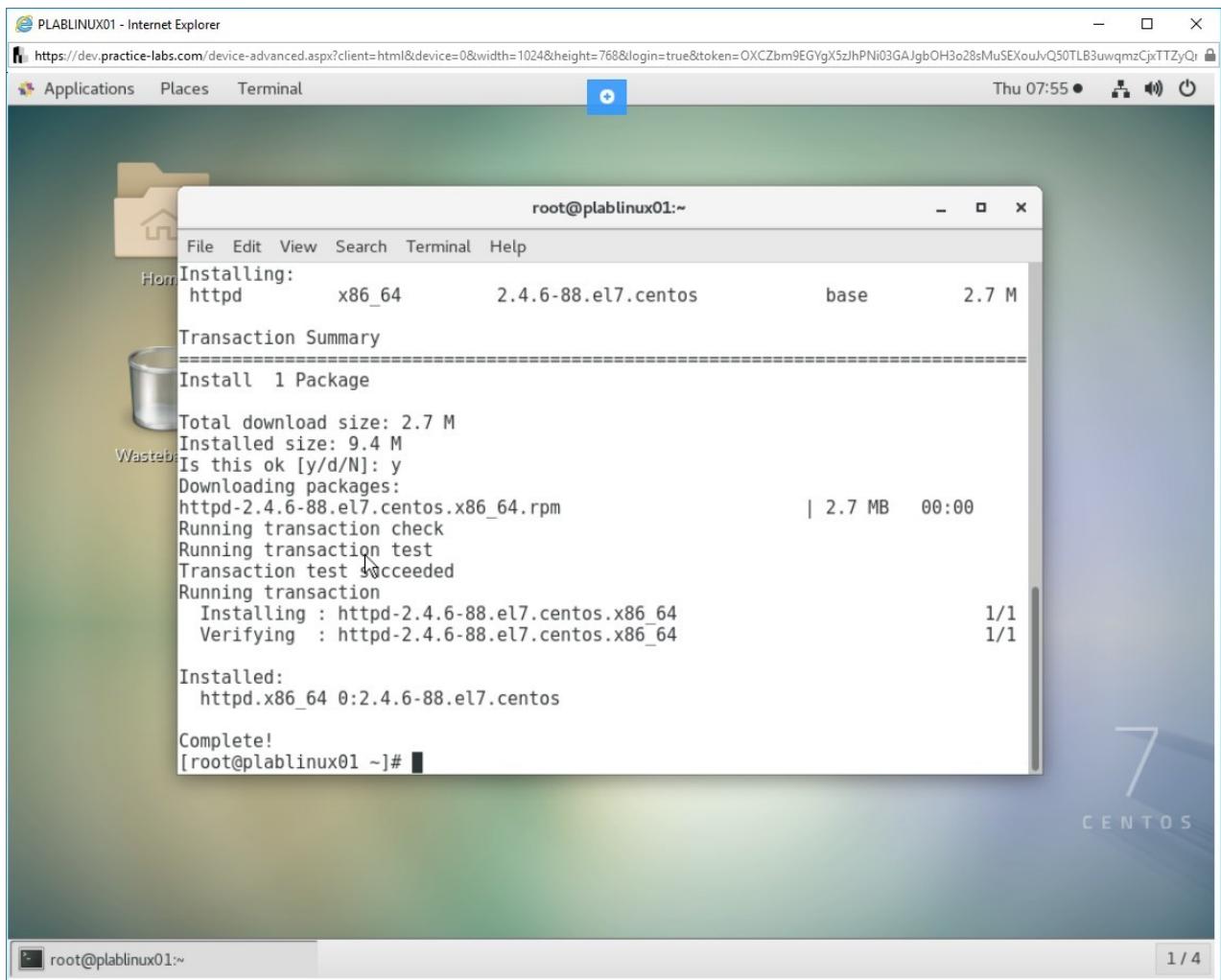


Figure 1.13 Screenshot of PLABLINUX01: Showing the completion status of httpd module installation.

Step 2

Clear the screen by entering the following command:

```
clear
```

To find more details about the **httpd** package, type the following command:

```
yum info httpd
```

Press **Enter**.

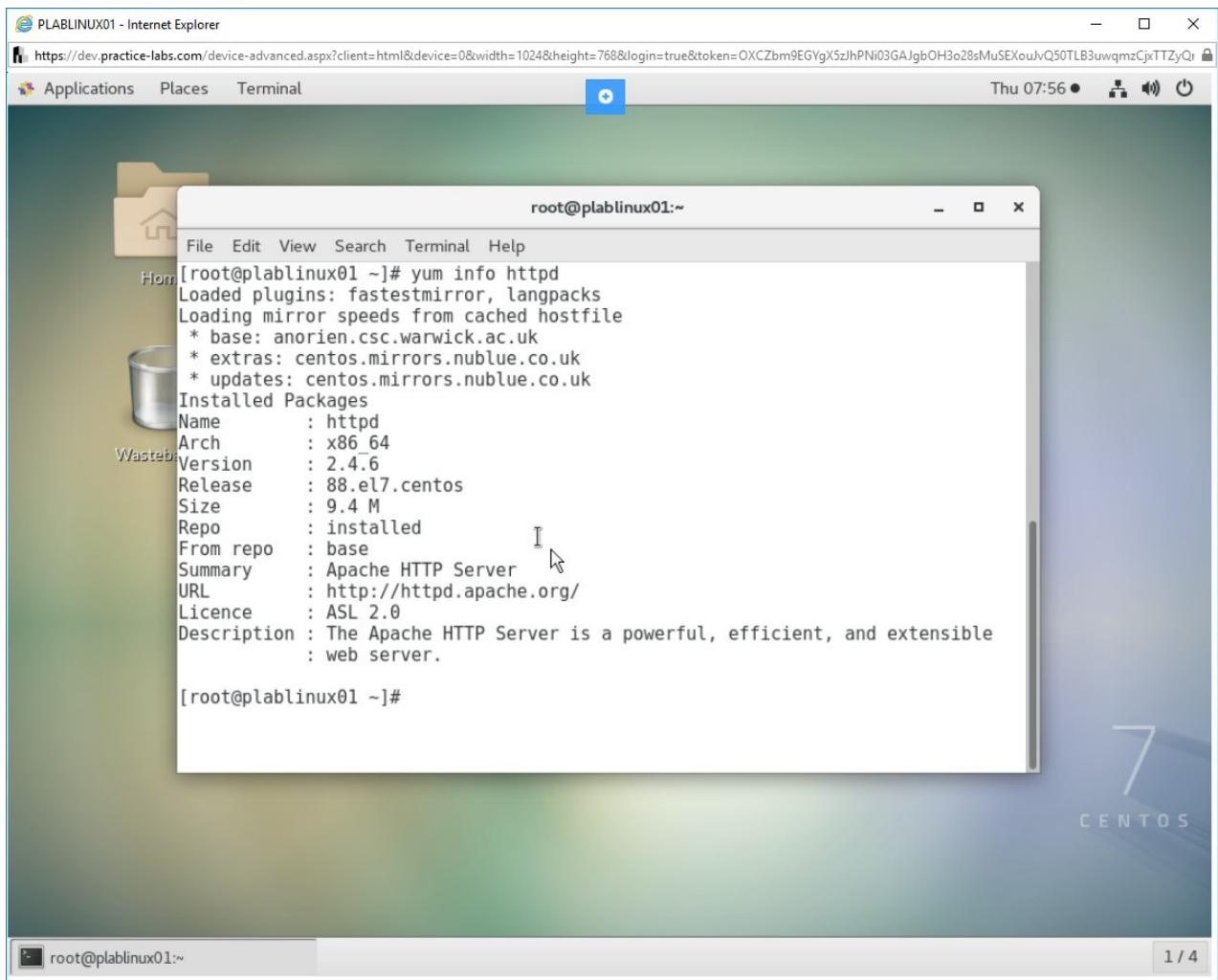


Figure 1.14 Screenshot of PLABLINUX01: Finding the full details of the httpd module.

Step 3

Clear the screen by entering the following command:

```
clear
```

You can also use the rpm command to obtain the details of an installed package.

For example, to view the details of the **httpd** package using rpm command, type the following command:

```
rpm -q httpd
```

Press **Enter**

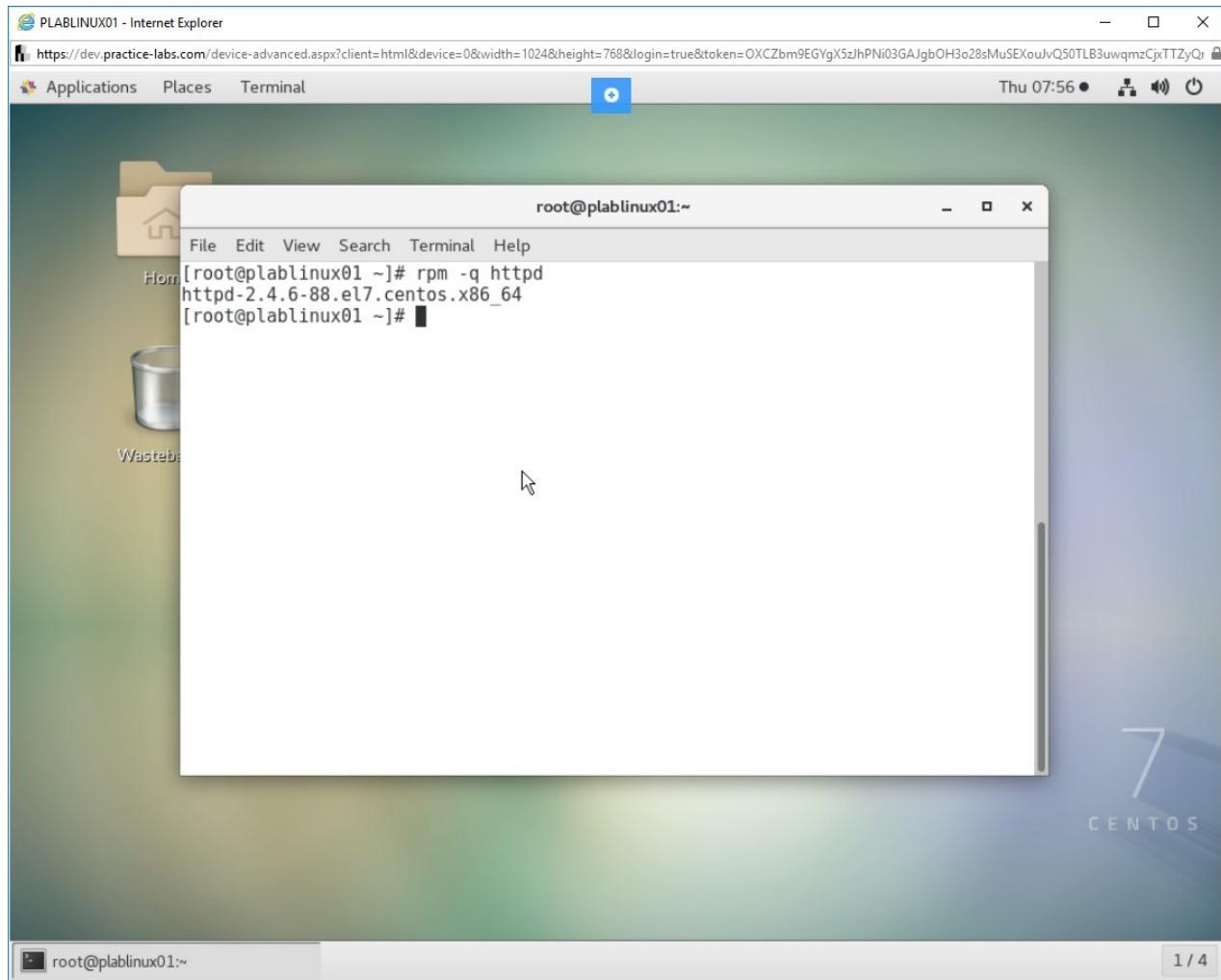


Figure 1.15 Screenshot of PLABLINUX01: Viewing the httpd module details using the rpm command.

Step 4

To list the dependencies of the **httpd** package, type the following command:

```
yum deplist httpd
```

Press **Enter**.

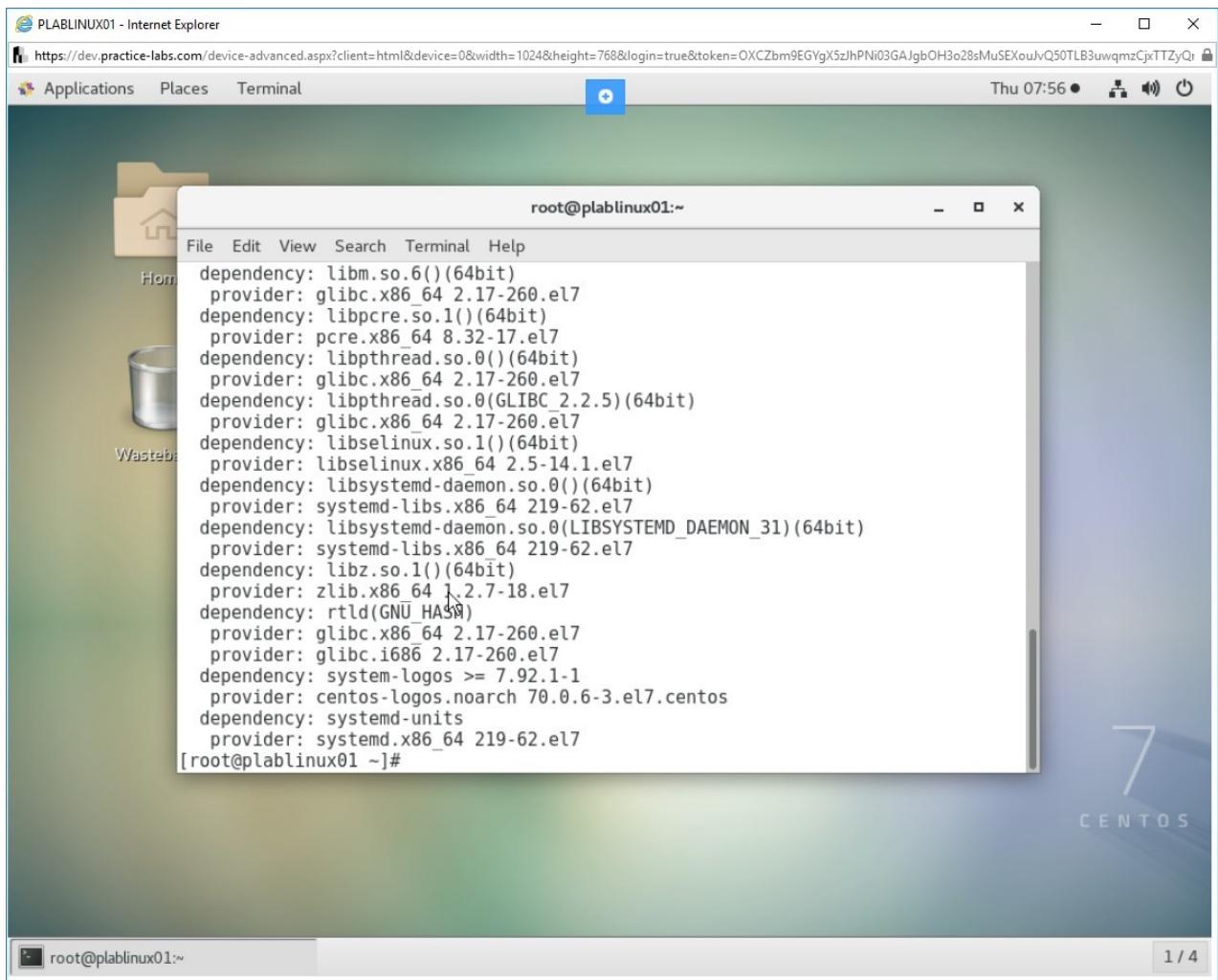


Figure 1.16 Screenshot of PLABLINUX01: Listing the dependencies of the httpd module.

Task 3 - List the Contents of a Package

You can use the YUM application to determine what files a package provides. You can also find out the origin-package of a specific file. To list the contents of a package, you use the **repoquery** command. This command is a part of the **yum-utils** package. To be able to run this command, you need to have the **yum-utils** package installed. For this task, we list the contents of the **httpd** package. To list the contents of a package, perform the following steps:

Step 1

Clear the screen by entering the following command:

```
clear
```

Before listing the contents of a file, verify that the **yum-utils** package is installed by entering the following command:

```
yum list yum-utils
```

The output of the command confirms that the **yum-utils** package is installed.

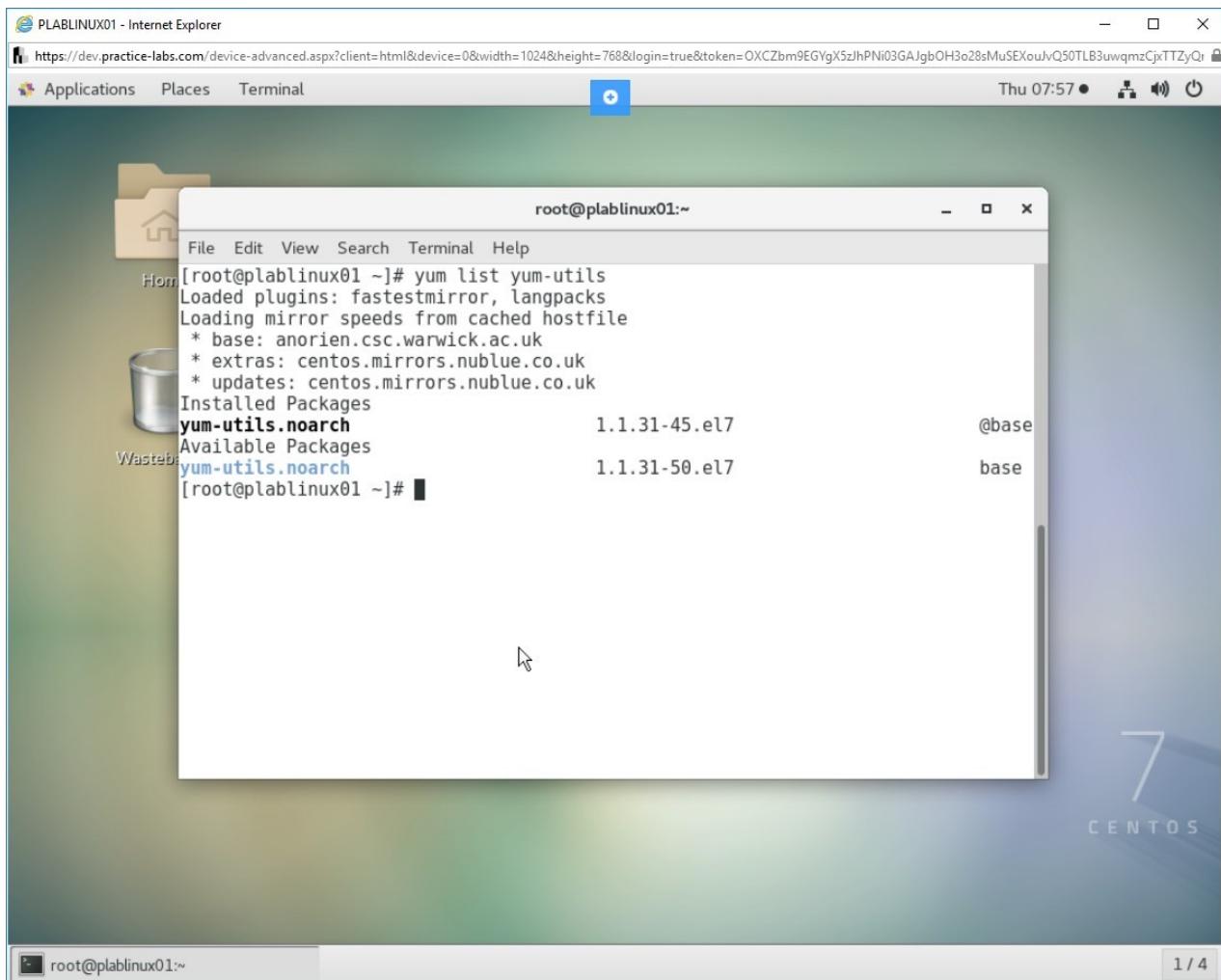


Figure 1.17 Screenshot of PLABLINUX01: Verifying whether the httpd module is installed or not.

Step 2

To list the files contained in the **httpd** package, type the following command:

```
repoquery --list httpd
```

Press **Enter**.

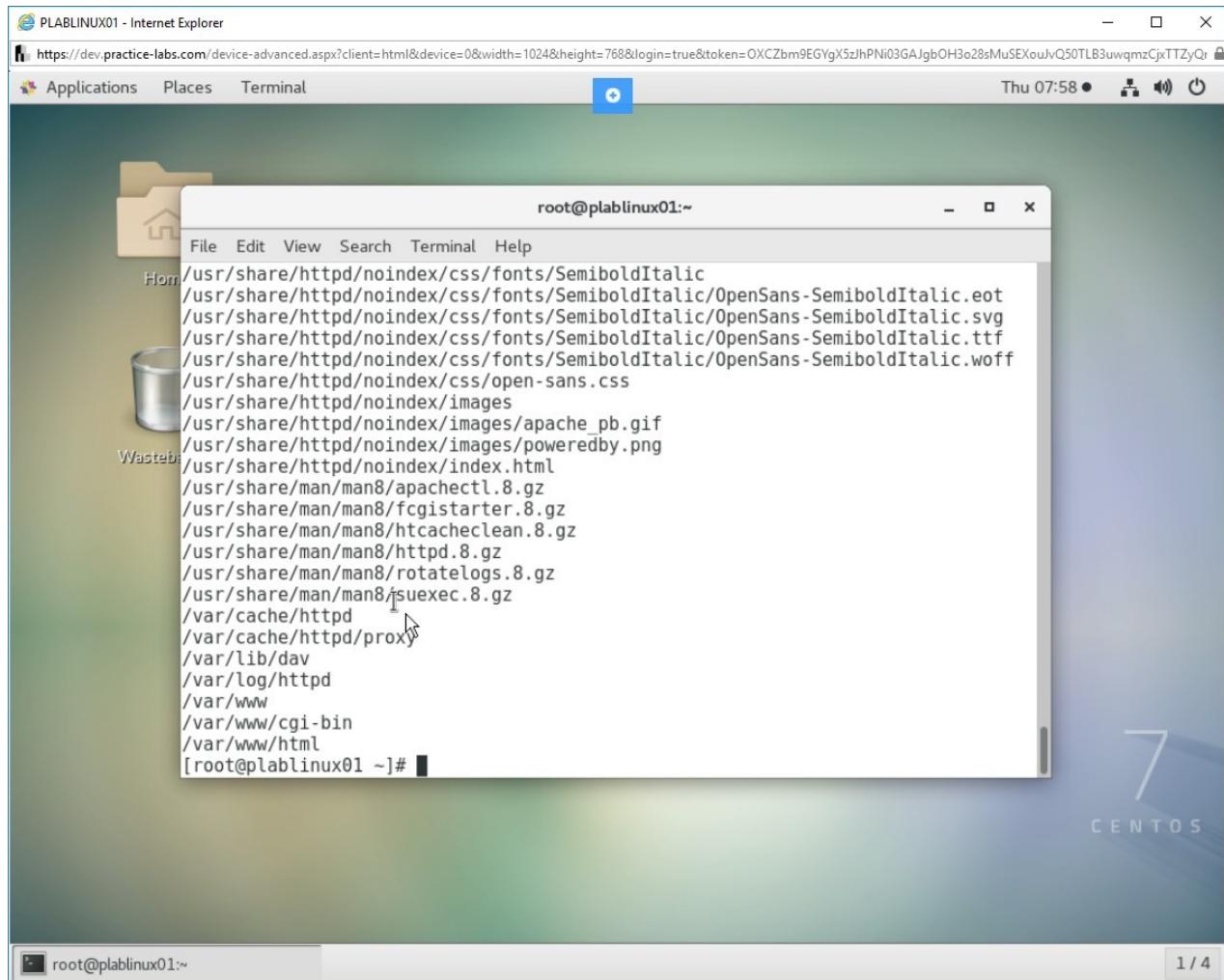


Figure 1.18 Screenshot of PLABLINUX01: Listing the files contained in the httpd package.

Task 4 - Manage YUM Configuration Options

Yum configurations are retained in the **/etc/yum.conf** file. The repositories of this file are managed via the **/etc/yum.repos.d/** directory. You can add an extra repository by placing a definition file of the repository in the **/etc/yum.repos.d/** directory on your system. In this task, you will access **yum.repos.d**, view its contents and then download **squid**.

To manage different configuration options in yum, carry out the following steps:

Step 1

Clear the screen by entering the following command:

clear

Before manipulating the **yum.conf** file, you view its contents. To review the **yum.conf** file, type the following command:

```
cat /etc/yum.conf
```

Press **Enter**.

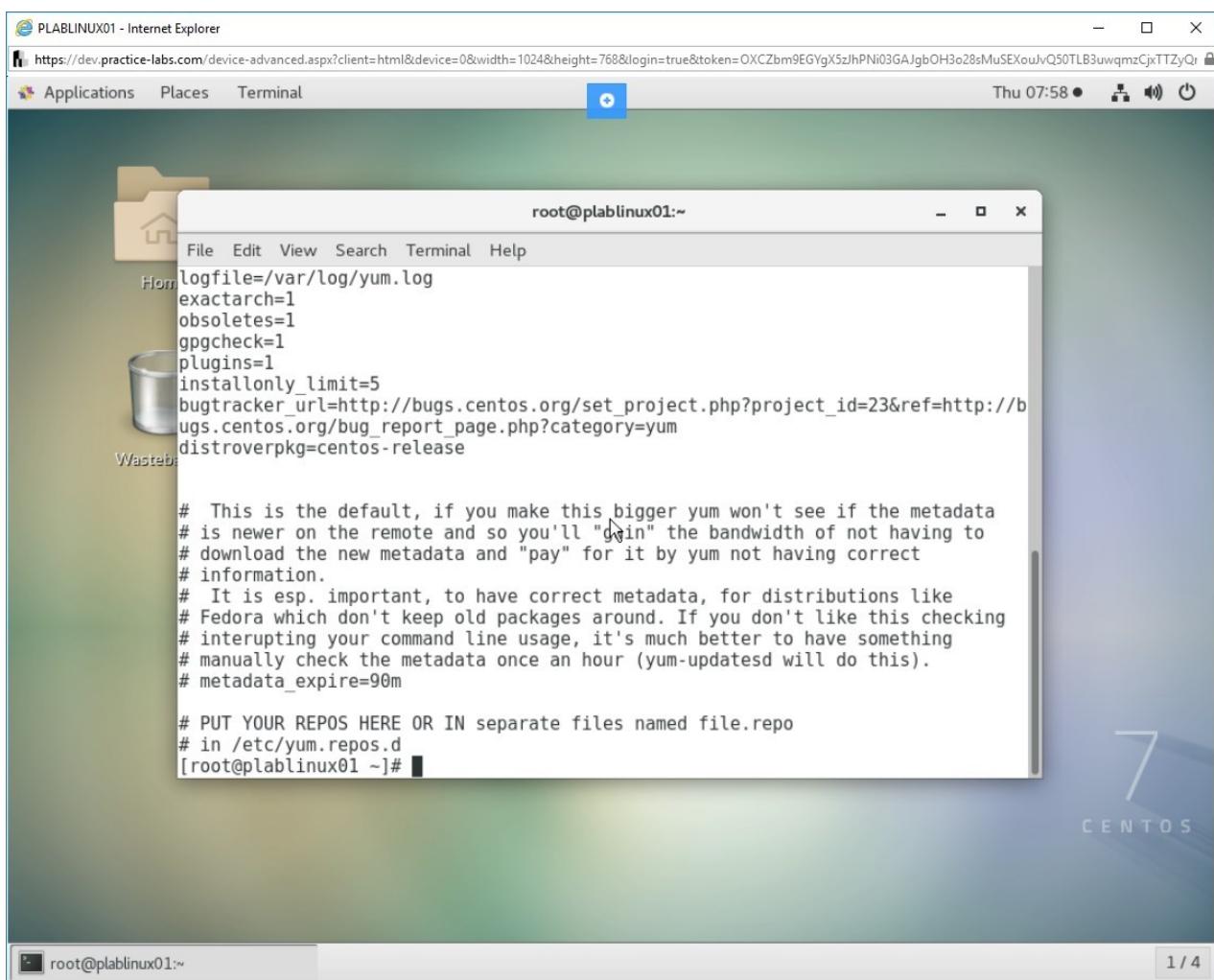


Figure 1.19 Screenshot of PLABLINUX01: Viewing the contents of the /etc/yum.conf file.

Step 2

Clear the screen by entering the following command:

```
clear
```

To manage the repositories of the **yum.conf** file, change the path to the **yum.repos.d** directory by typing the following command:

```
cd /etc/yum.repos.d/
```

Press **Enter**.

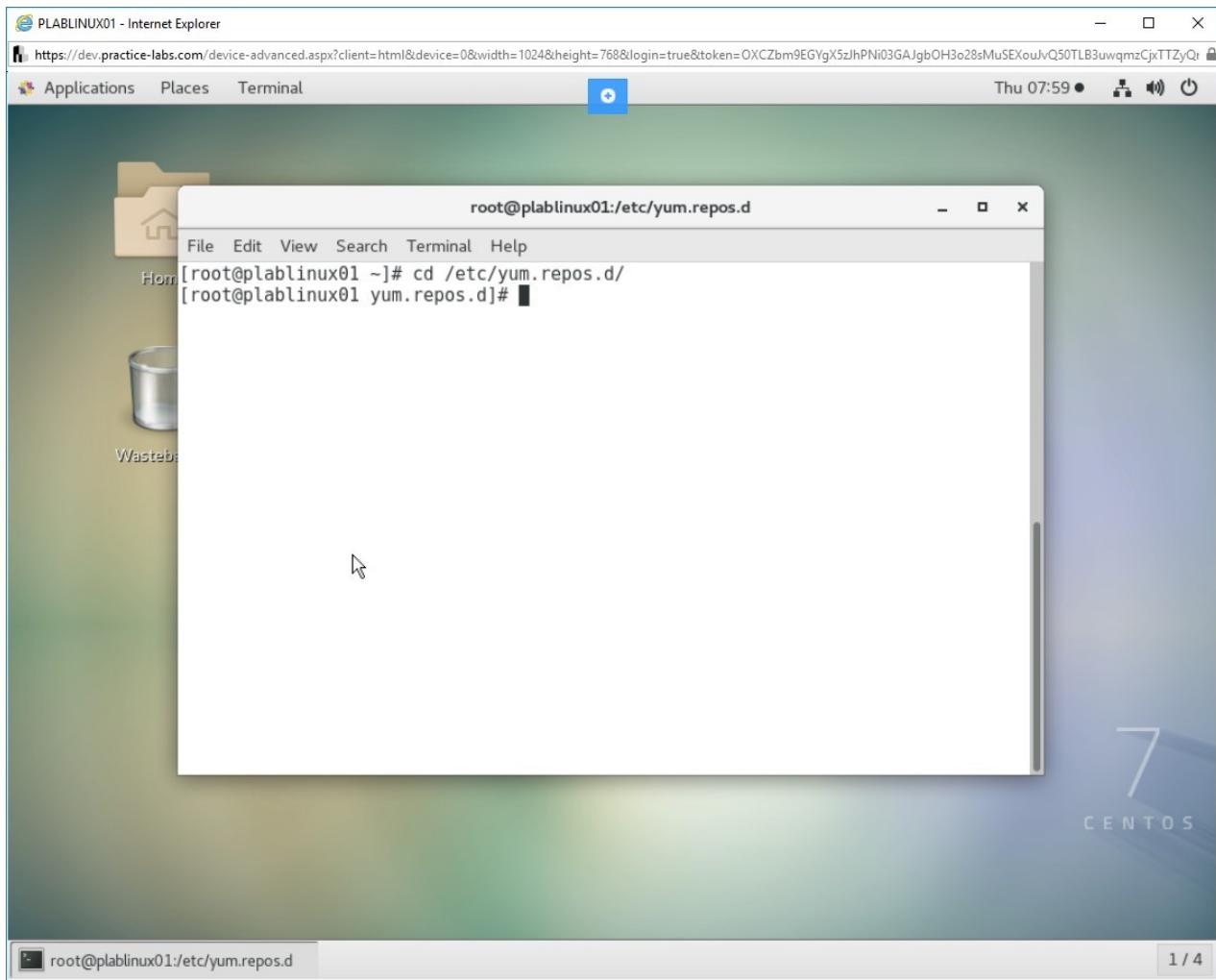


Figure 1.20 Screenshot of PLABLINUX01: Changing the path to the /etc/yum.repos.d/ directory.

Step 3

To list the files in the **yum.repos.d** directory, type the following command:

```
ls
```

Press **Enter**.

Note that there are multiple files listed in the directory.

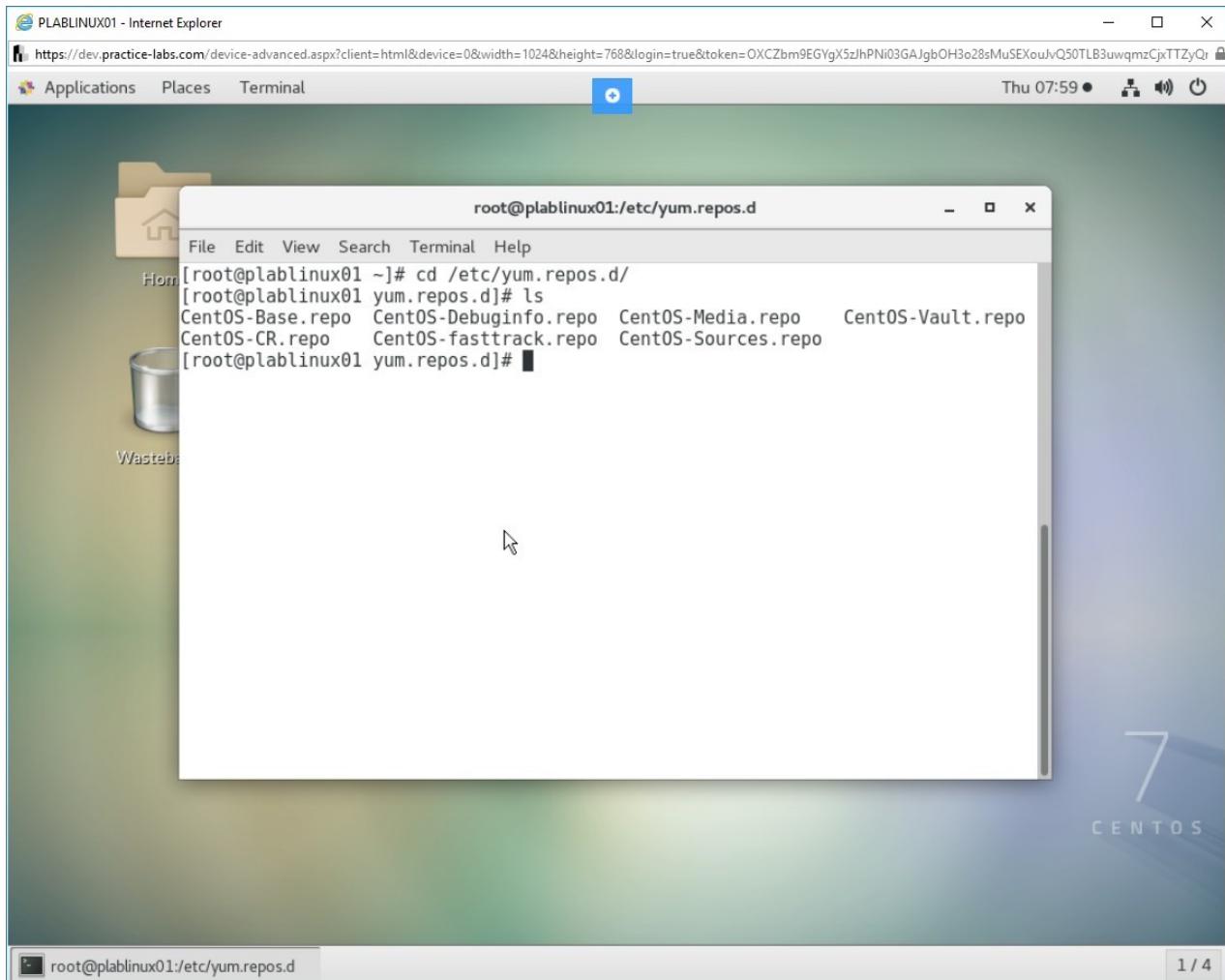


Figure 1.21 Screenshot of PLABLINUX01: Listing the files in the /etc/yum.repos.d/ directory.

Step 4

Clear the screen by entering the following command:

```
clear
```

To download **squid** rpm, or any other package that you like, from the **YUM** repository, type the following command:

```
yumdownloader squid
```

Press **Enter**.

Note: If you are downloading any other package but **squid**, please use an appropriate name with the **yumdownloader** command.

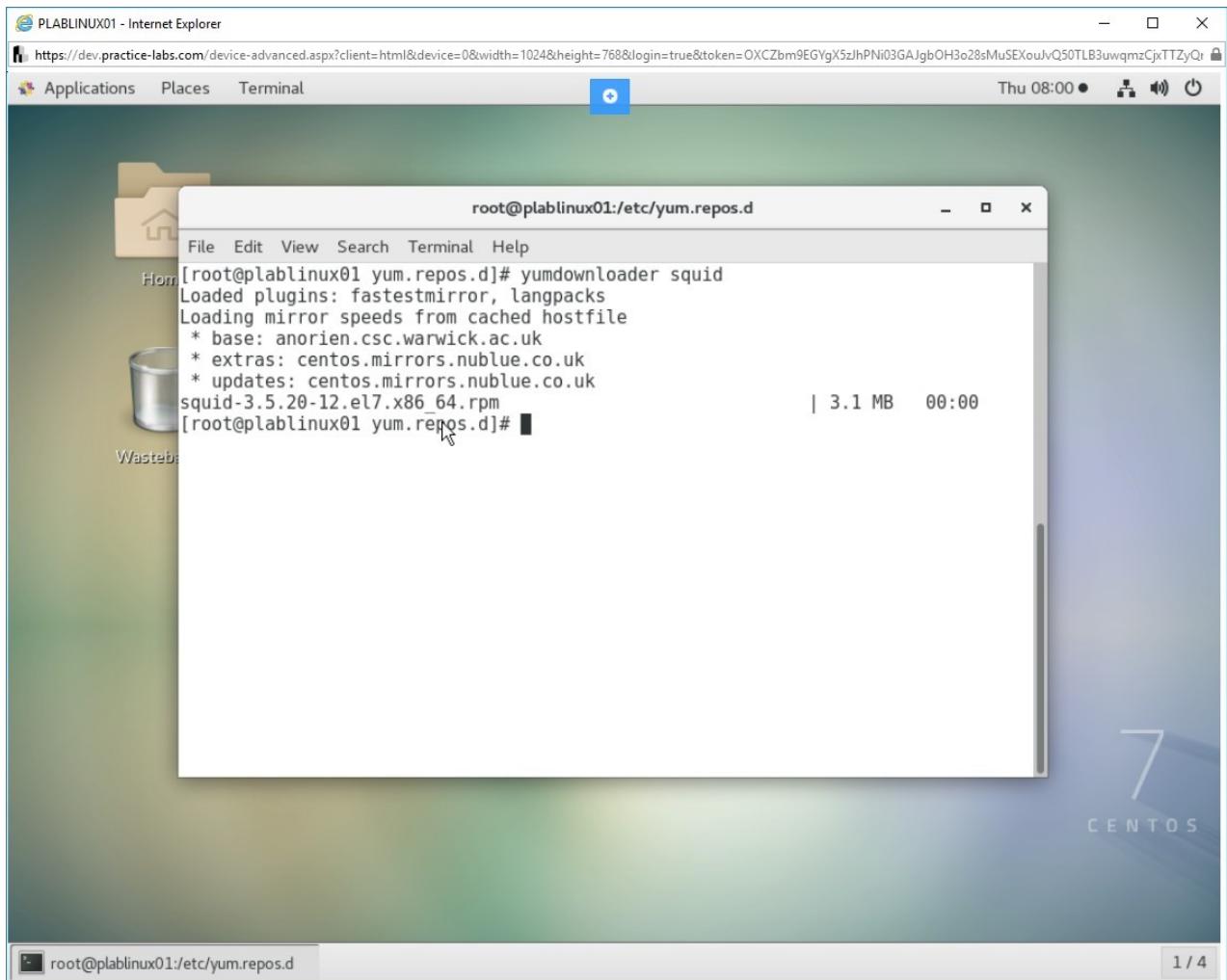


Figure 1.22 Screenshot of PLABLINUX01: Downloading the squid package.

Step 5

To verify that the squid package has been downloaded, type the following command:

```
ls
```

Press **Enter**.

Notice that squid rpm is listed as one of the contents of the repository.

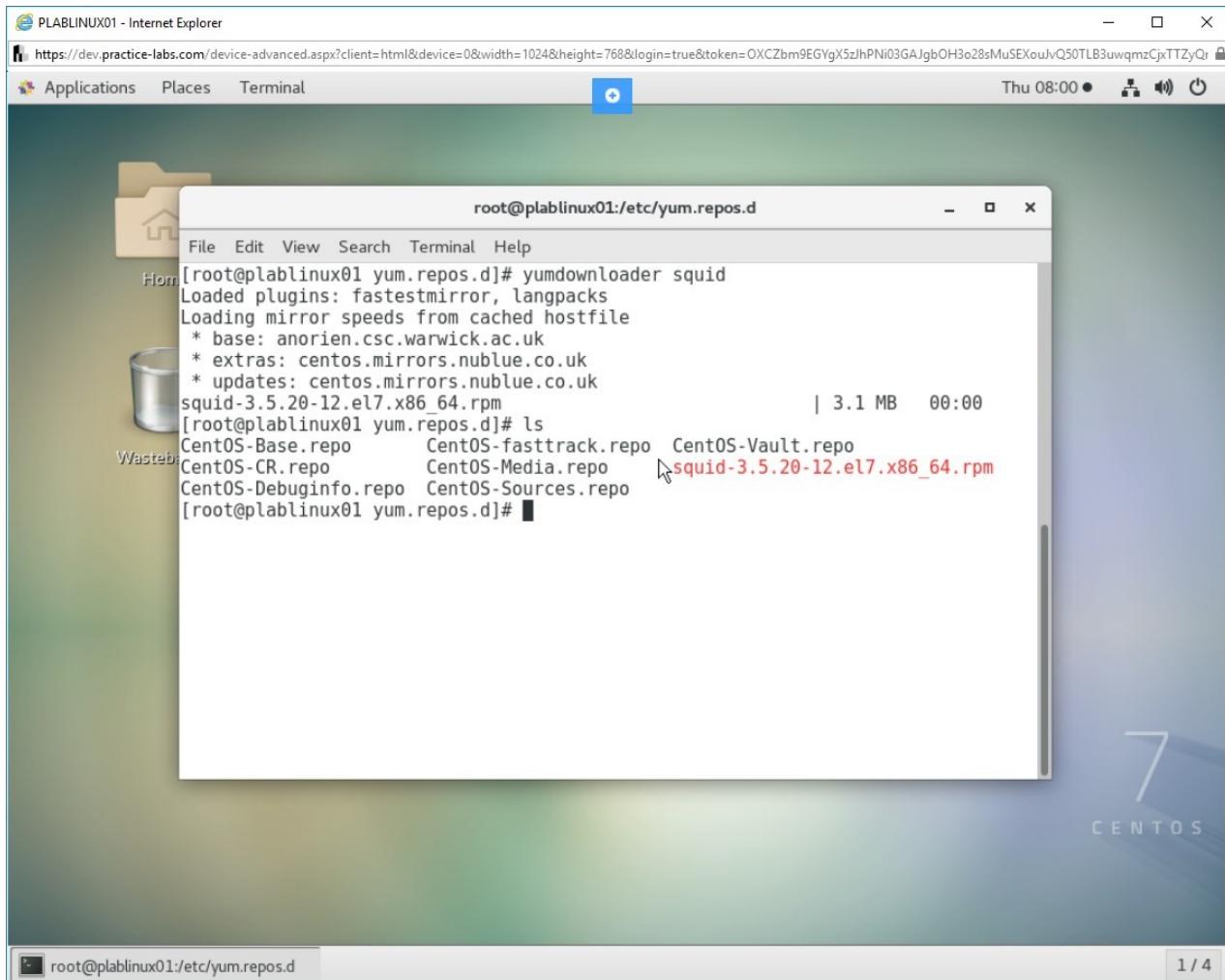


Figure 1.23 Screenshot of PLABLINUX01: Listing to verify the download of the squid package.

Task 5 - Browse RPM Files

You can browse the rpm files without extracting them. The **mc** utility helps you achieve this. By default, **mc** is not installed in Fedora. You need to install **mc** separately. In this task, you will install mc, launch mc, and then view the files contained in the squid rpm package, without extracting these files.

To browse RPM files, carry out the following steps:

Step 1

Clear the screen by entering the following command:

```
clear
```

To install the **mc** utility, type the following command:

```
yum install mc
```

Press **Enter**.

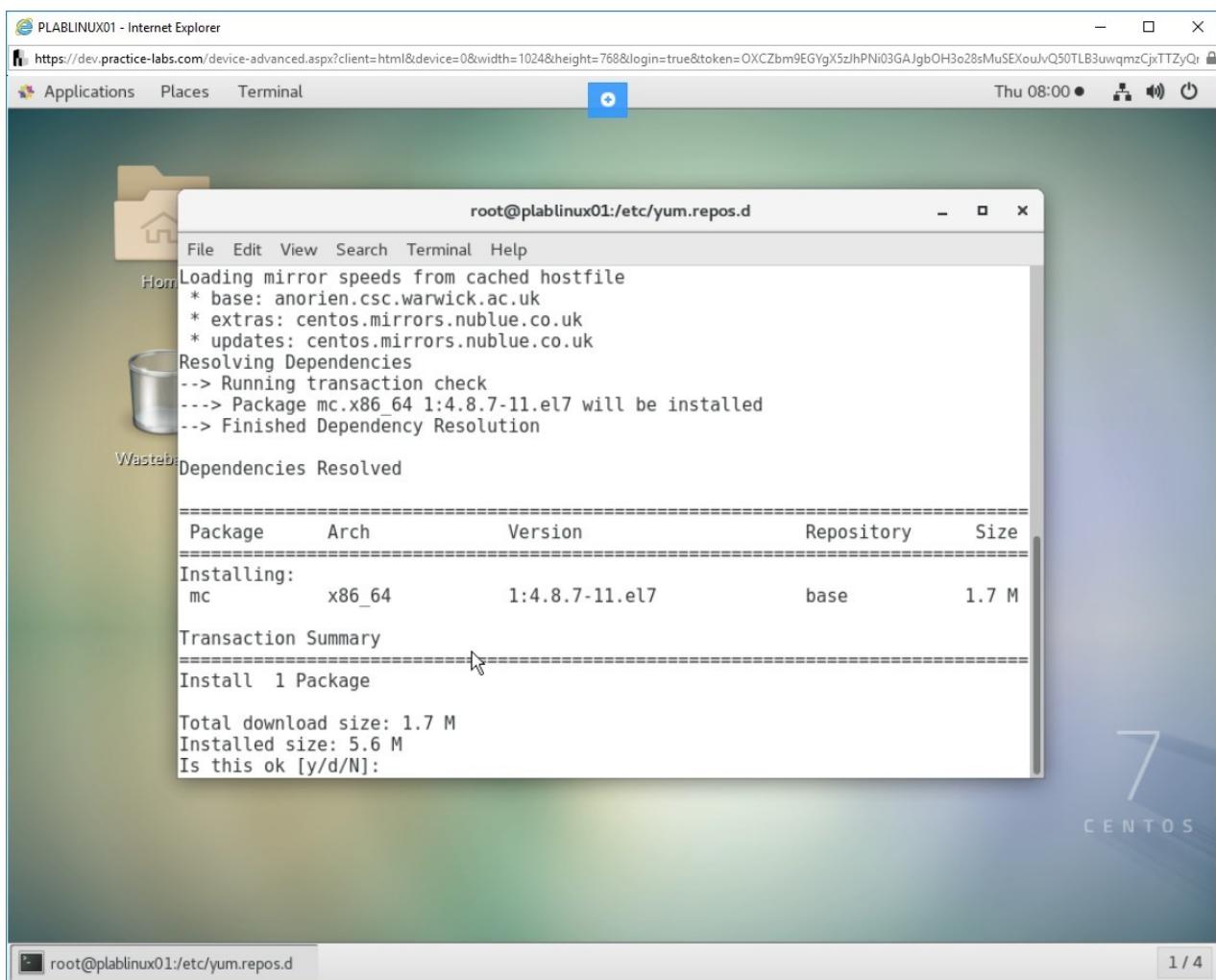


Figure 1.24 Screenshot of PLABLINUX01: Installing the mc utility.

Step 2

Notice that the installation proceeds the usual way - listing the relevant updates, then resolving the dependencies, and then, giving the detailed description of the utility to install.

When prompted to confirm the installation, enter **y**.

Package downloading starts.

The **complete** message at the bottom of the screen confirms that the installation is complete.

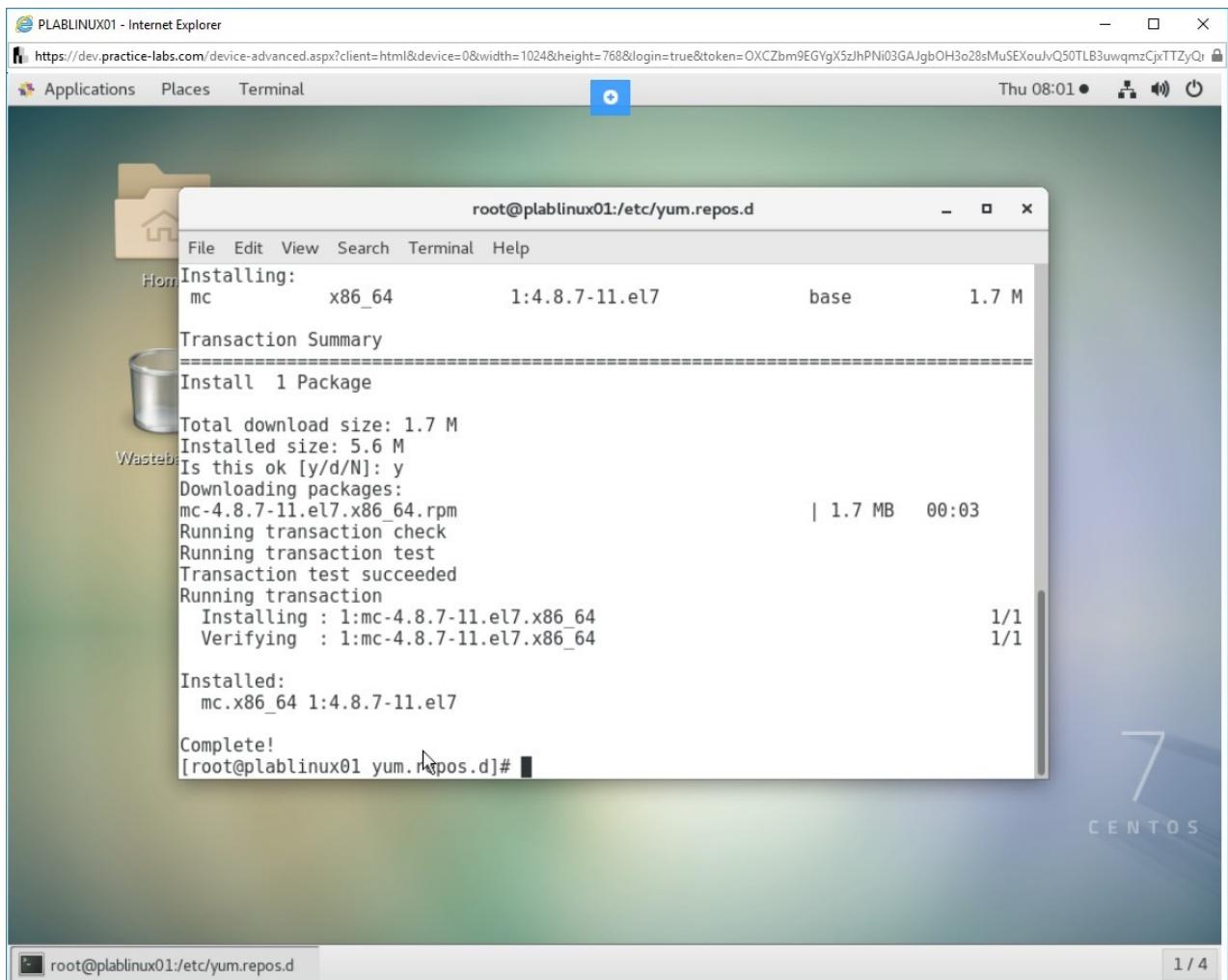


Figure 1.25 Screenshot of PLABLINUX01: Showing the completion status of the mc utility.

Step 3

Clear the screen by entering the following command:

```
clear
```

Start **mc** by typing the following command:

```
mc
```

Press **Enter**.

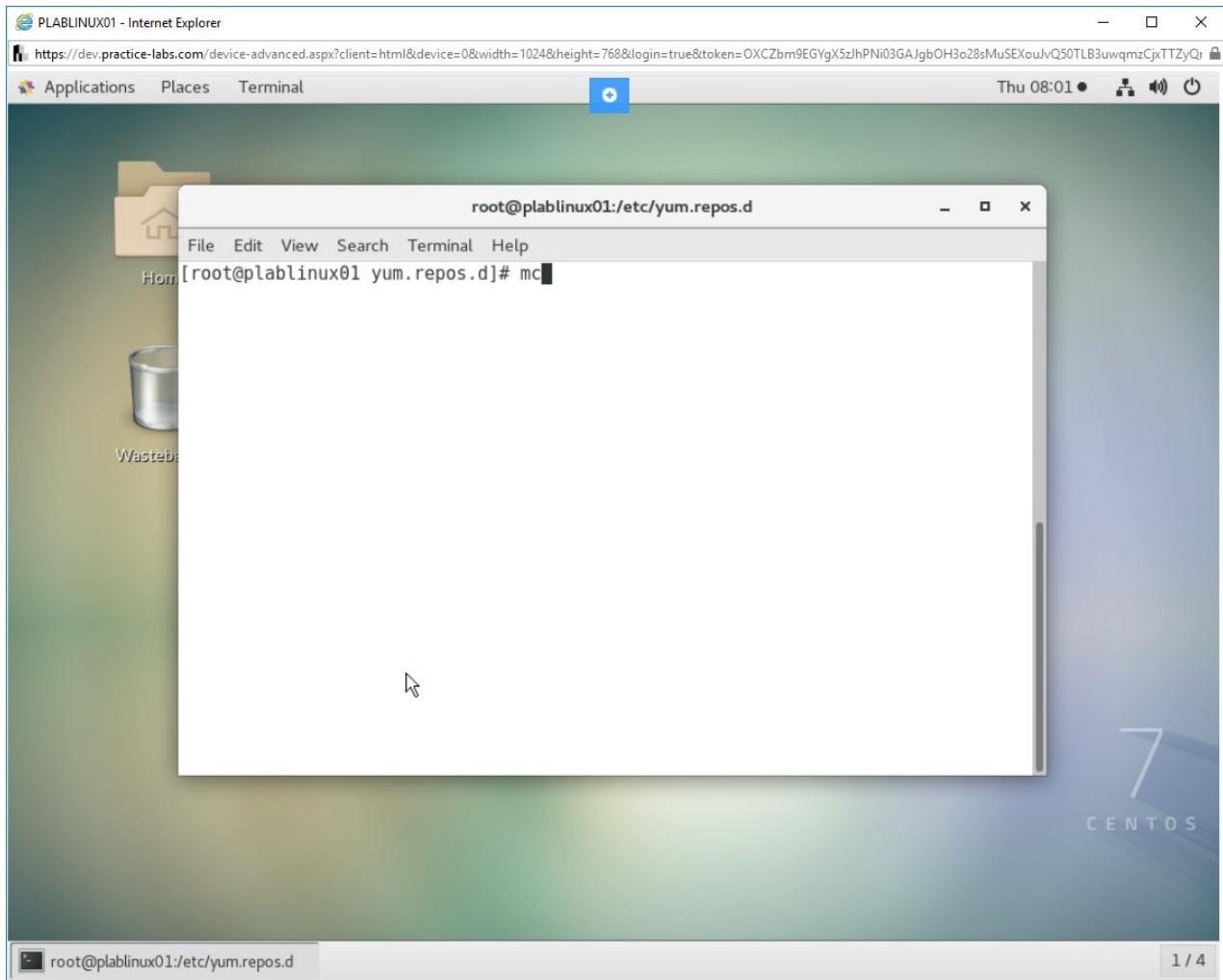


Figure 1.26 Screenshot of PLABLINUX01: Starting the mc utility.

Step 4

The **mc** window is displayed. This window offers the files contained in the **yum.repos.d** for various file-managing operations, without extracting the files.

You can either use the arrow keys or the mouse to navigate through the files.

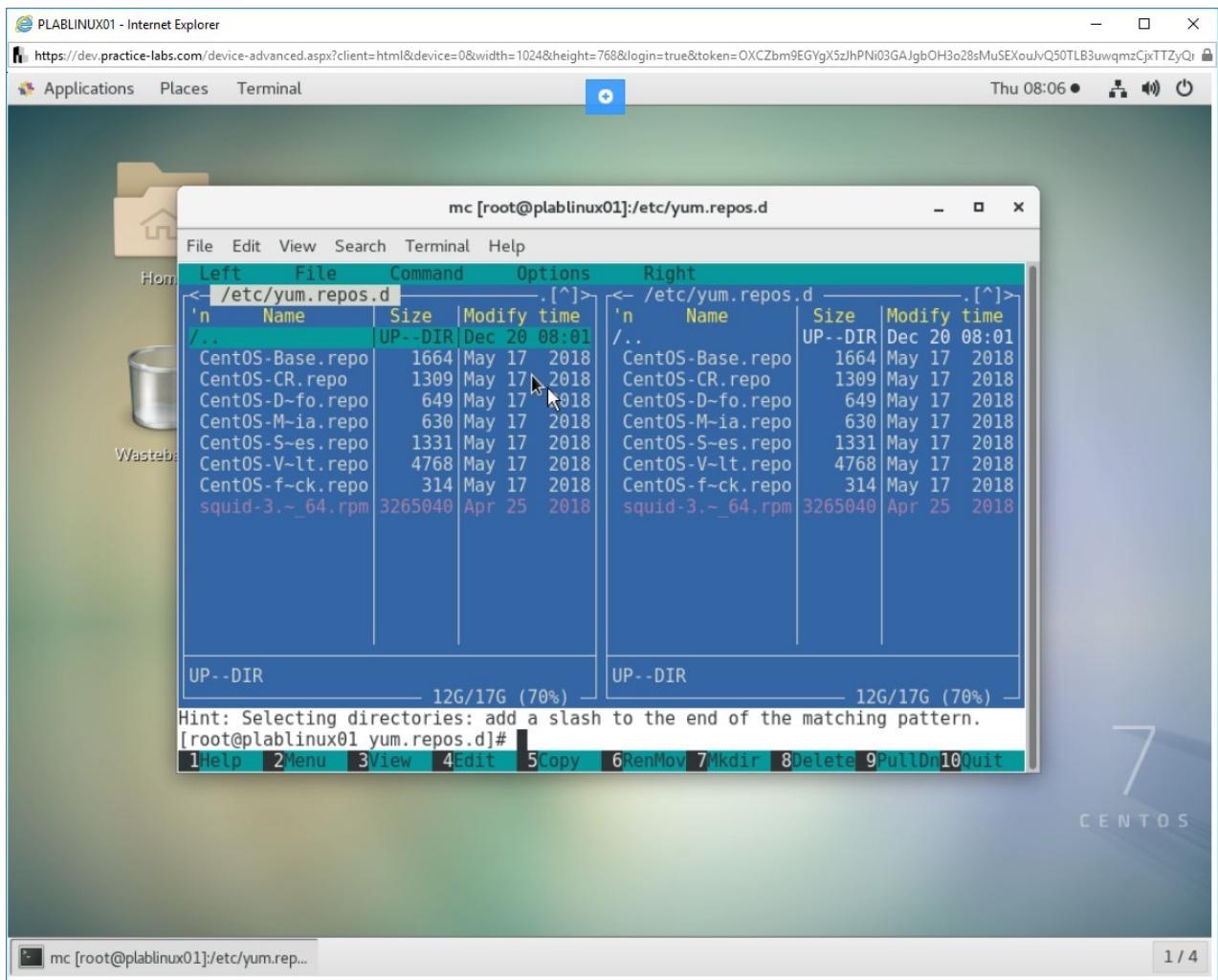


Figure 1.27 Screenshot of PLABLINUX01: Displaying the mc window.

Step 5

On the **mc** window, select **squid-3. - 64.rpm.rpm** on the left pane.

Note that the directory path of this file **/etc/yum/repos.d** appears on the screen.

Note: The file name and version for Squid may be different in your lab environment.

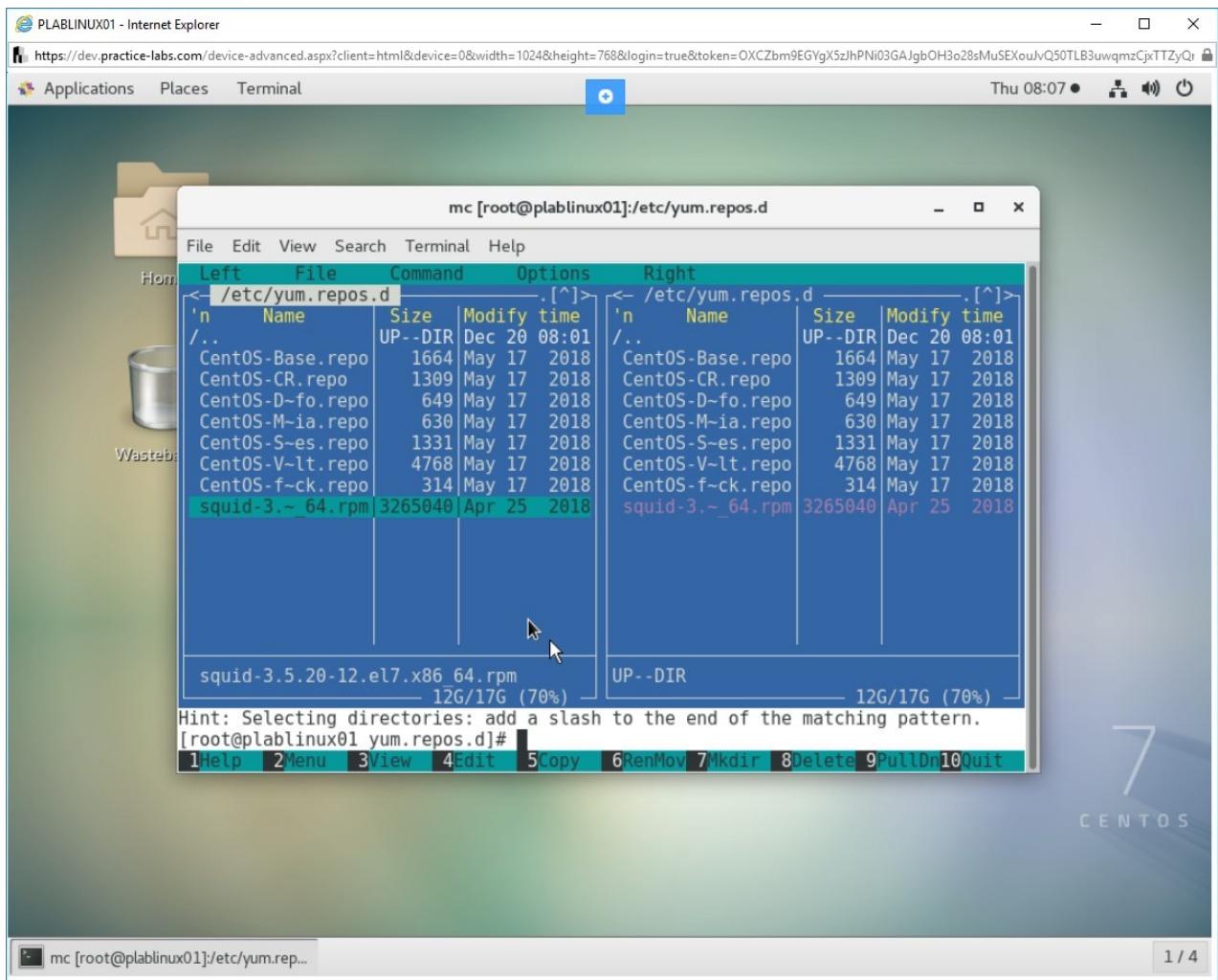


Figure 1.28 Screenshot of PLABLINUX01: Selecting the squid file in the mc window.

Step 6

Double-click **squid-3.5.20-12.el7.x86_64.rpm**.

Note that without extracting, you are able to view the files that are contained within this package.

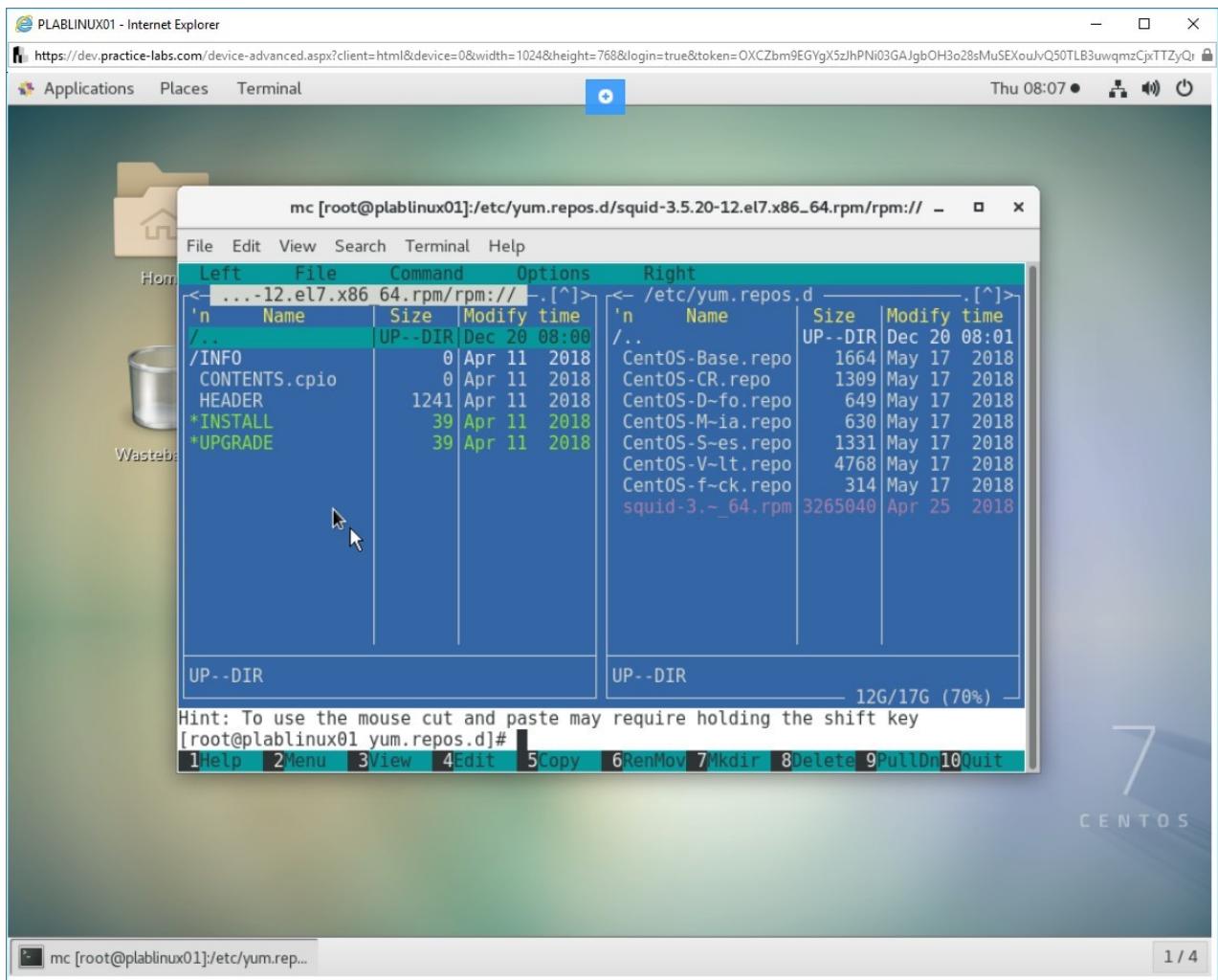


Figure 1.29 Screenshot of PLABLINUX01: Double-clicking the squid file.

Step 7

You can also view the contents of a cpio file.

For example, in this task, notice the **CONTENTS.cpio** file on the left pane.

Select the file.

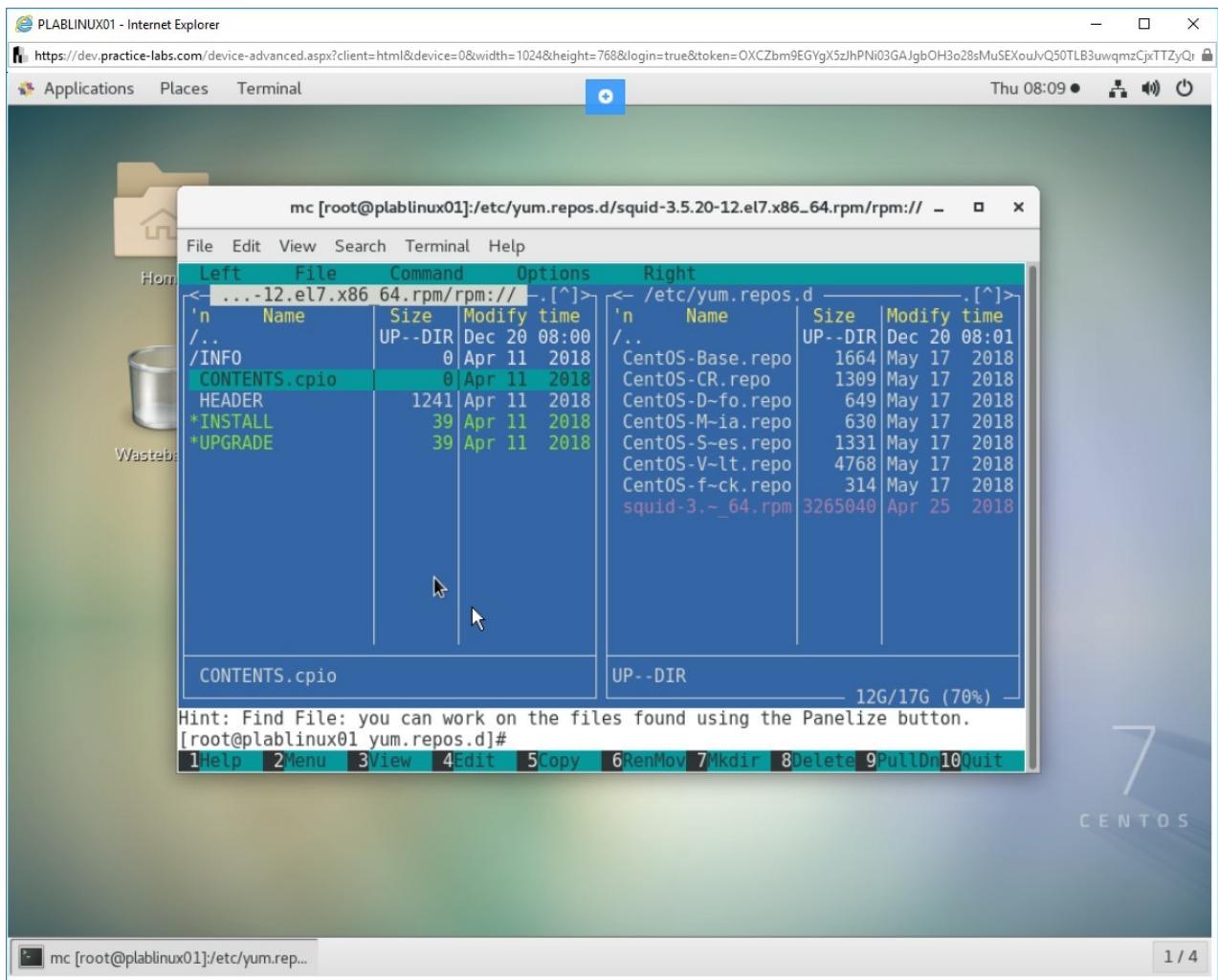


Figure 1.30 Screenshot of PLABLINUX01: Selecting the CONTENTS.cpio file.

Step 8

Press **F3**. The contents of the cpio file are displayed.

Note: In some keyboards, you will be required to press **Fn + F3**.

Press **F10** to quit.

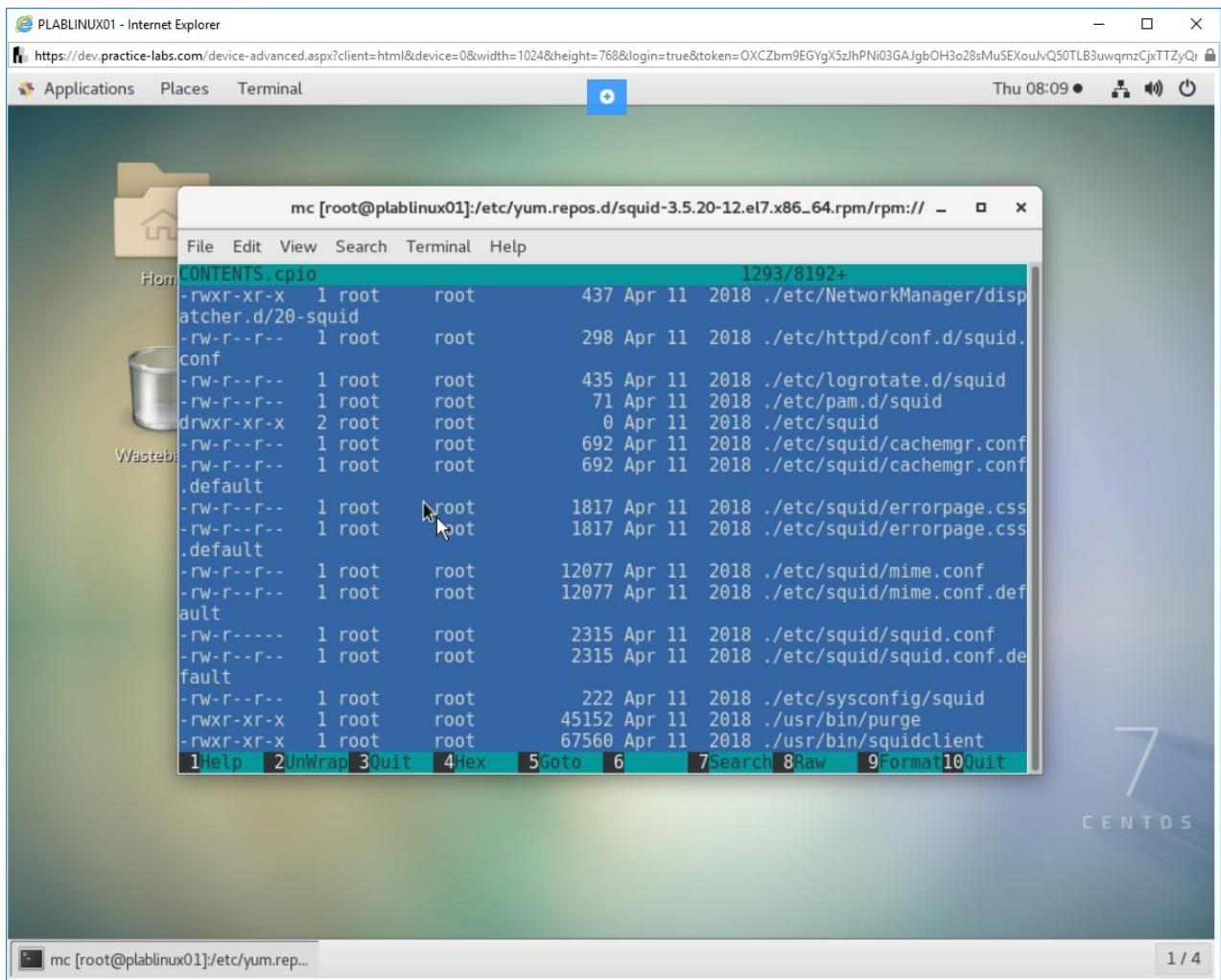


Figure 1.31 Screenshot of PLABLINUX01: Displaying the CONTENTS.cpio file content.

Task 6 - Extracting Files from RPM Package

You can convert the **rpm** package to **cpio**. After the conversion, you can use the **cpio** commands to extract the files contained in the rpm package. In this task, you will extract the files contained in the **squidrpm** package by converting it to **cpio**.

To extract files from an **rpm** package, carry out the following steps:

Step 1

Clear the screen by entering the following command:

```
clear
```

You use the **rpm2cpio** command to convert the **rpm** package to **cpio**. To convert the **squid rpm** package to cpio, type the following command:

```
rpm2cpio squid-3.5.20-12.el7.x86_64.rpm | cpio -idmv
```

Press **Enter**.

Note: The file name and version for Squid may be different in your lab environment. Ensure to use the filename displayed on your system.

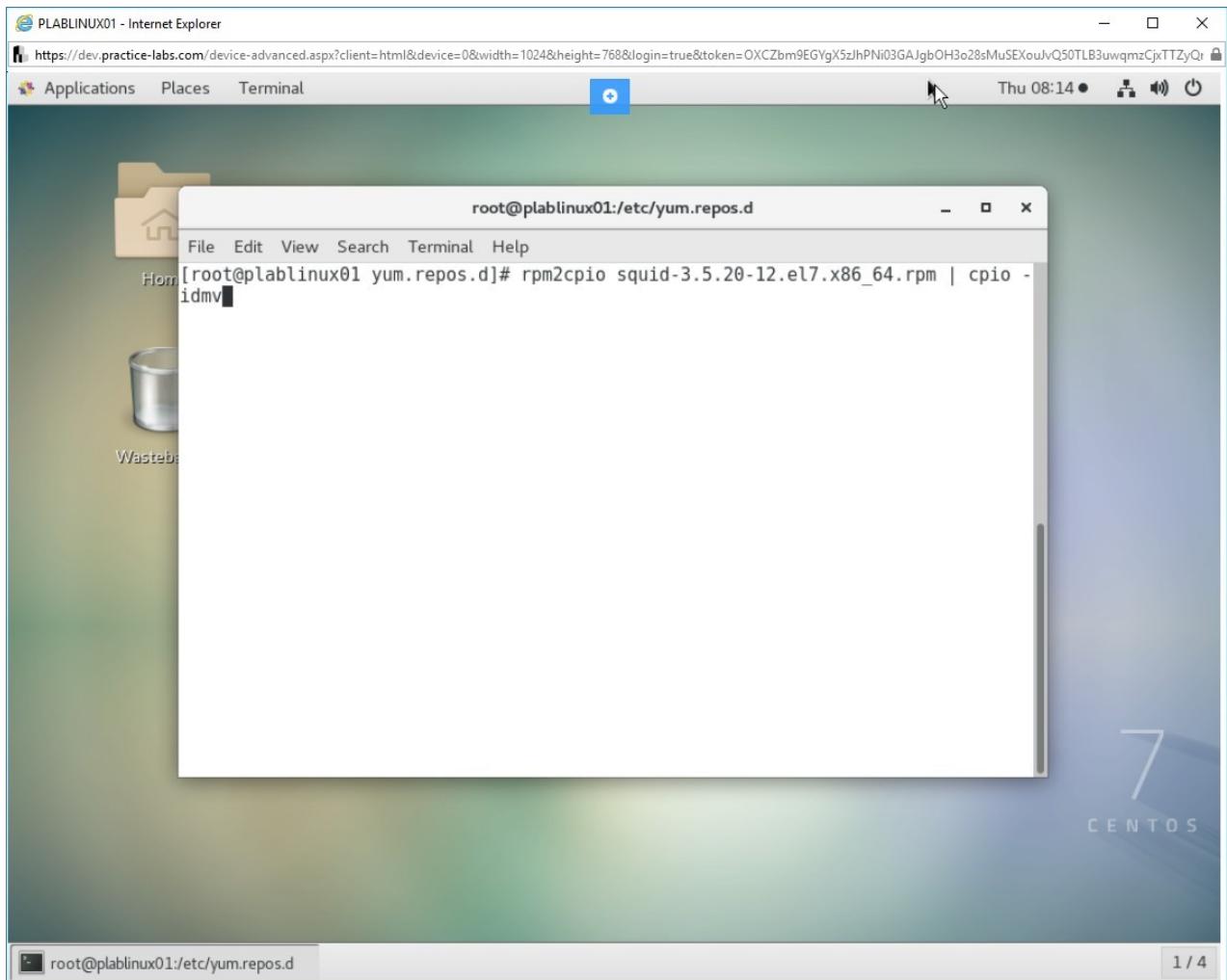


Figure 1.32 Screenshot of PLABLINUX01: Converting the rpm package to the cpio file.

You will see the listing of files contained in the **squid rpm** package.

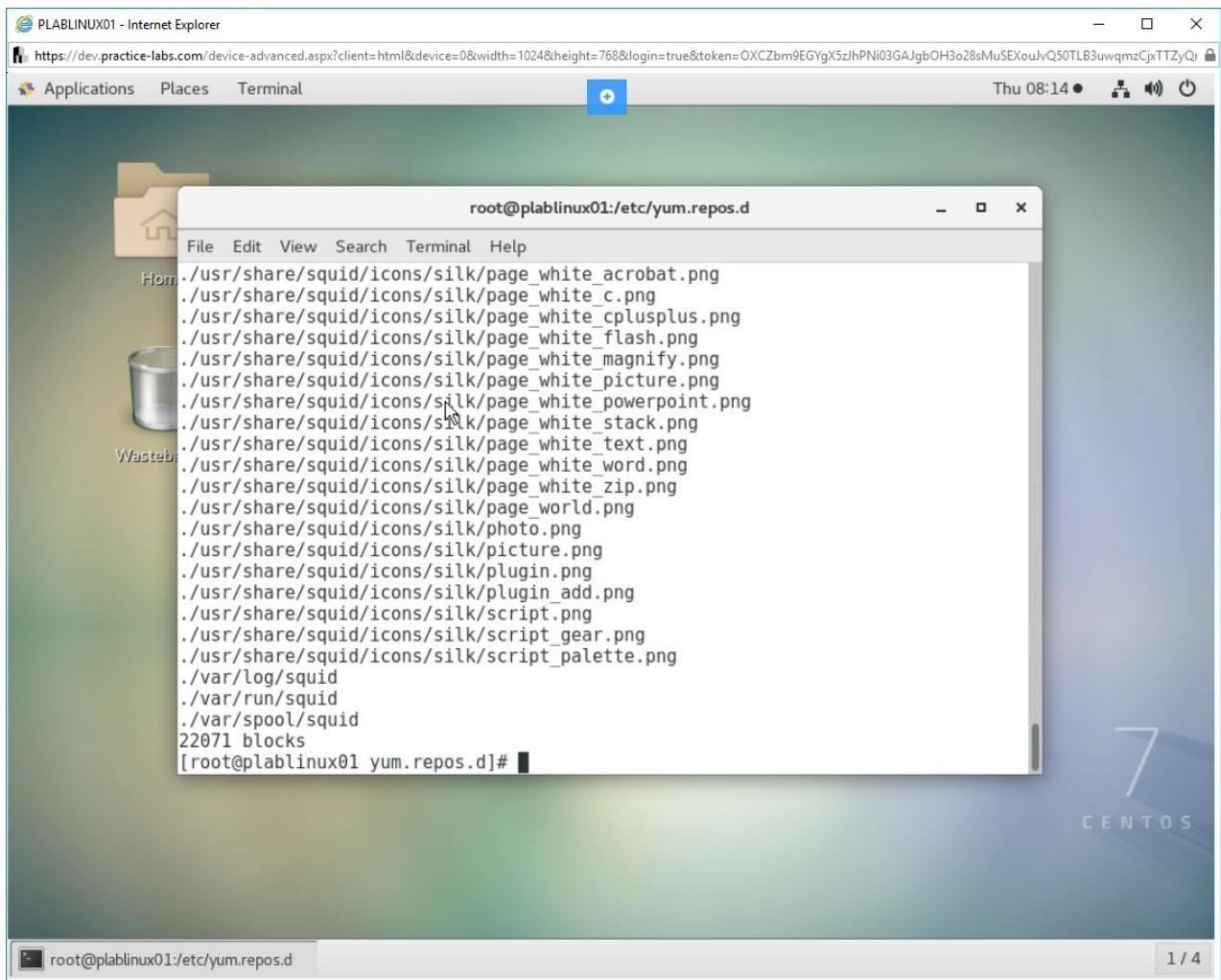


Figure 1.33 Screenshot of PLABLINUX01: Displaying the files contained in the squid rpm package.

Step 2

Type the following command:

```
ls
```

Press **Enter**.

Note that there are three more sub-directories, usr, var, and etc., that appear.

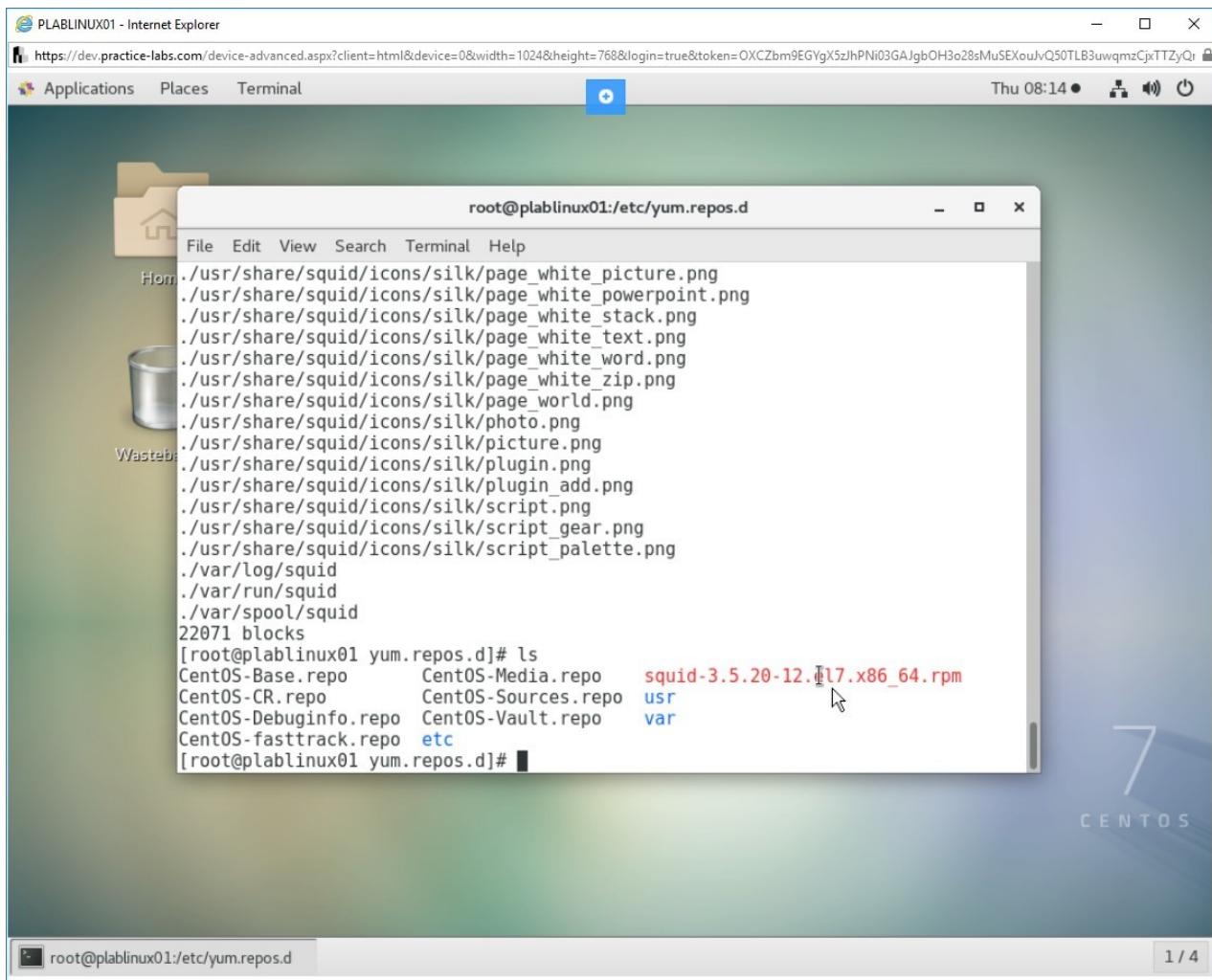


Figure 1.34 Screenshot of PLABLINUX01: Listing the files.

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

Review

Well done, you have completed the **Use RPM and YUM Package Management** Practice Lab.

Summary

You completed the following exercise:

- Exercise 1 - Use RPM and YUM Package Management

You should now be able to:

- Manage Packages using YUM

- Obtain information on packages using YUM
- List the contents of a package
- Manage yum configuration options
- Browse RPM files
- Extract files from an RPM package

Feedback

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