

CompTIA Linux+

Using Debian Package Management

- **Introduction**
- **Lab Topology**
- **Exercise 1 - Using Debian Package Management**
- **Review**

Introduction

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

Debian Package Management
Binary
Linux System

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 - Use Debian Package Management

After completing this lab, you will be able to:

- Manage Debian Binary Packages
- Find Packages Containing Specific Files or Libraries Which May or May Not Be Installed
- Obtain Package Information

Exam Objectives

The following exam objectives are covered in this lab:

- LPI: 102.4 Use Debian package management
- CompTIA: 2.1 Given a scenario, conduct software installations, configurations, updates, and removals.

Exercise 1 - Using Debian Package Management

Debian packages are meant for Debian Linux distributions, such as Ubuntu and Mint. Debian packages are similar to RPM packages. However, the two cannot be used interchangeably without converting the format of the package.

In this exercise, you will understand how to install and remove Debian packages.

Learning Outcomes

After completing this exercise, you will be able to:

- Manage Debian Binary Packages
- Find Packages Containing Specific Files or Libraries Which May or May Not Be Installed
- Obtain Package Information

Task 1 - Manage Debian Binary Packages

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 and remove the apache2 package.

To manage Debian binary packages, perform the following steps:

Step 1

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

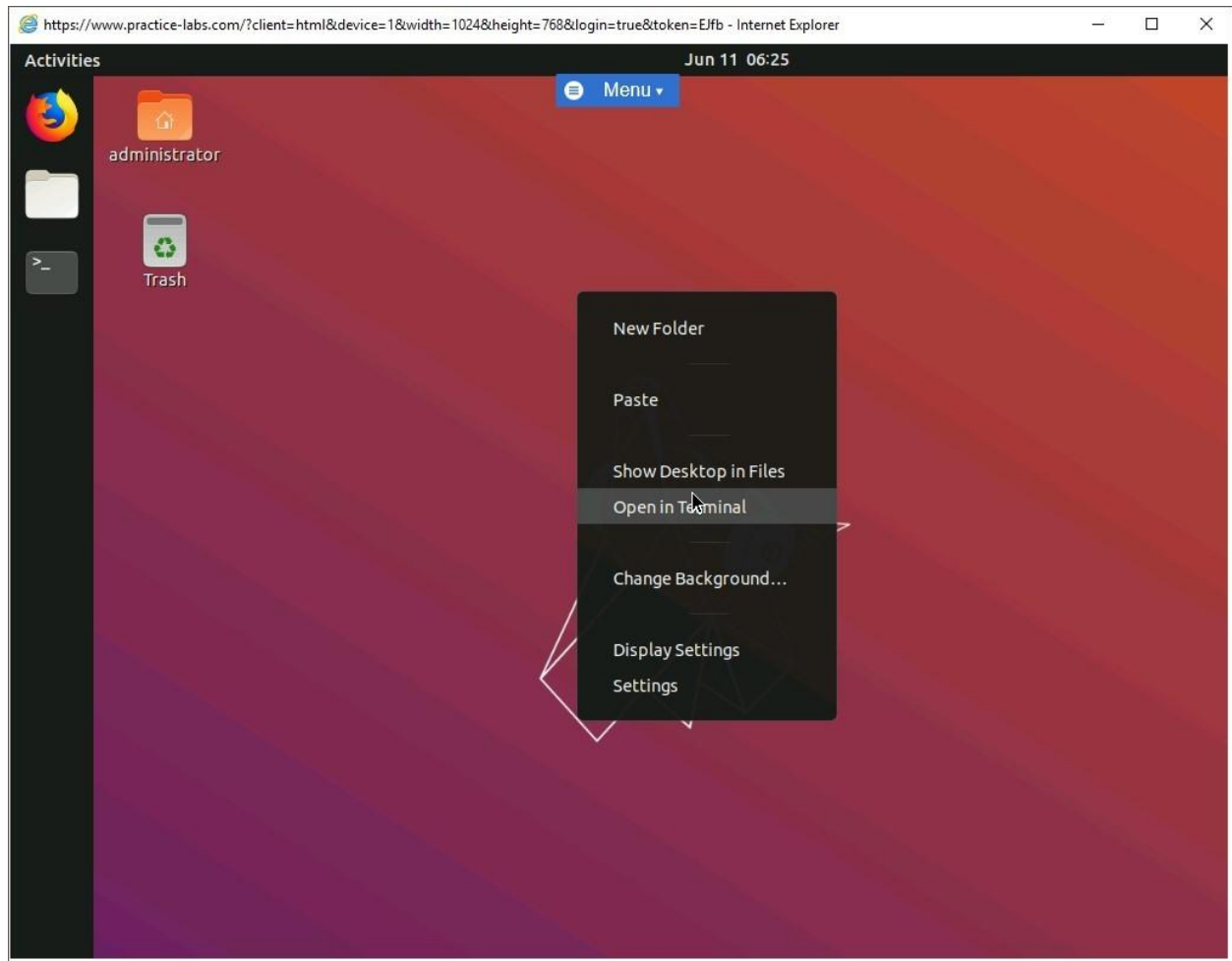


Figure 1.1 Screenshot of PLABLINUX02: Selecting the Open in Terminal option from the context menu.

Step 2

Before you begin the installation of a package, you can update the local package index. To do this, type the following command:

```
sudo apt update
```

Press Enter.

When prompted to provide an administrator password, type the following password: **Passw0rd**

Press Enter.

The package reading is initiated. Notice that all packages are up to date.

Note: There will be chances that when you run the lab, there are new updates that are released. Therefore, the result may vary at that point of time. You can also run the `sudo apt upgrade` command after running the update command. The upgrade parameter will upgrade the existing packages.

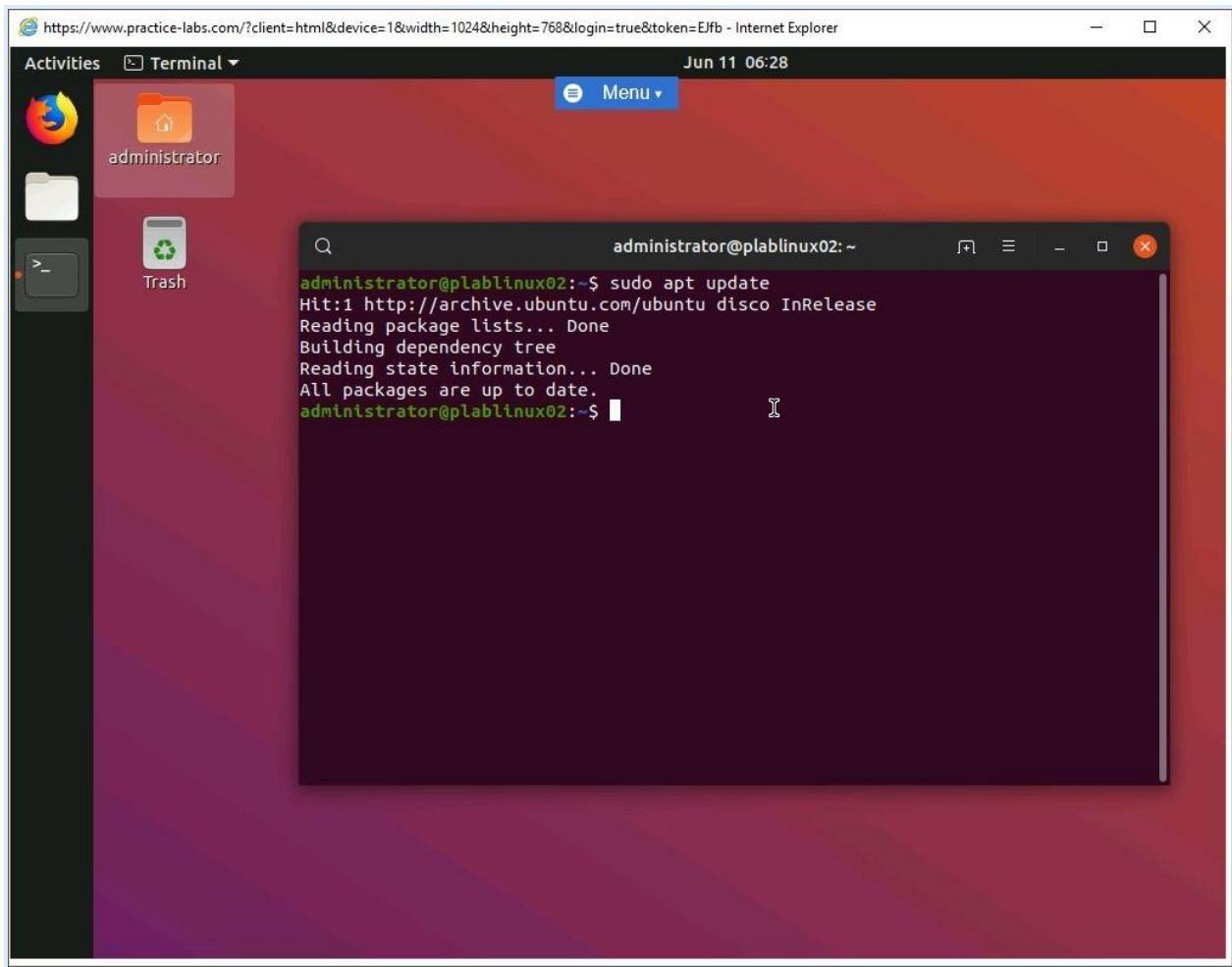


Figure 1.2 Screenshot of PLABLINUX02: Updating the packages.

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.

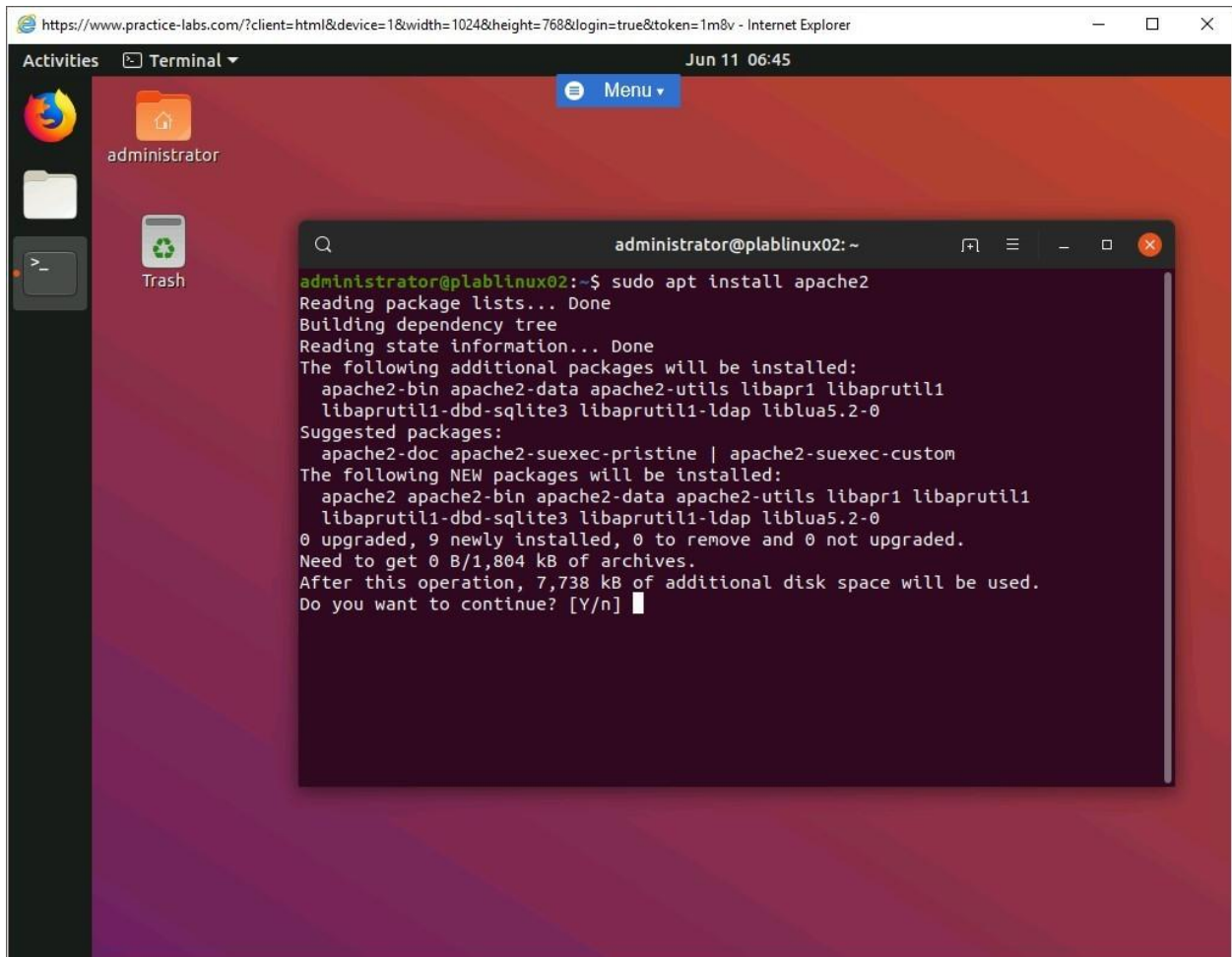
You will now install a package named apache2.

To install the apache package, type the following command:

```
sudo apt install apache2
```

Press Enter.

Notice the use of the sudo command. This command is required here because you are not logged in as root. The apt-get command is used to install, upgrade, or remove the package. The install parameter helps you install the package.

A screenshot of a Linux desktop environment. The desktop background is a dark red/purple gradient. On the left side, there is a vertical dock with icons for Firefox, a file manager, and a trash can. The top of the screen shows a web browser window with the URL 'https://www.practice-labs.com/?client=html&device=1&width=1024&height=768&login=true&token=1m8v - Internet Explorer'. Below the browser, there is a terminal window titled 'administrator@plablinux02: ~'. The terminal displays the output of the command 'sudo apt install apache2'. The output shows the package lists being read, the dependency tree being built, and the state information being read. It then lists the additional packages to be installed: 'apache2-bin', 'apache2-data', 'apache2-utils', 'libapr1', 'libaprutil1', 'libaprutil1-dbd-sqlite3', 'libaprutil1-ldap', and 'liblua5.2-0'. It also lists suggested packages: 'apache2-doc', 'apache2-suexec-pristine', and 'apache2-suexec-custom'. The terminal then shows the new packages to be installed and the disk space requirements. Finally, it asks 'Do you want to continue? [Y/n]' with a cursor pointing to the 'Y' option.

```
administrator@plablinux02: ~  
administrator@plablinux02:~$ sudo apt install apache2  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0  
Suggested packages:  
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom  
The following NEW packages will be installed:  
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0  
0 upgraded, 9 newly installed, 0 to remove and 0 not upgraded.  
Need to get 0 B/1,804 kB of archives.  
After this operation, 7,738 kB of additional disk space will be used.  
Do you want to continue? [Y/n]
```

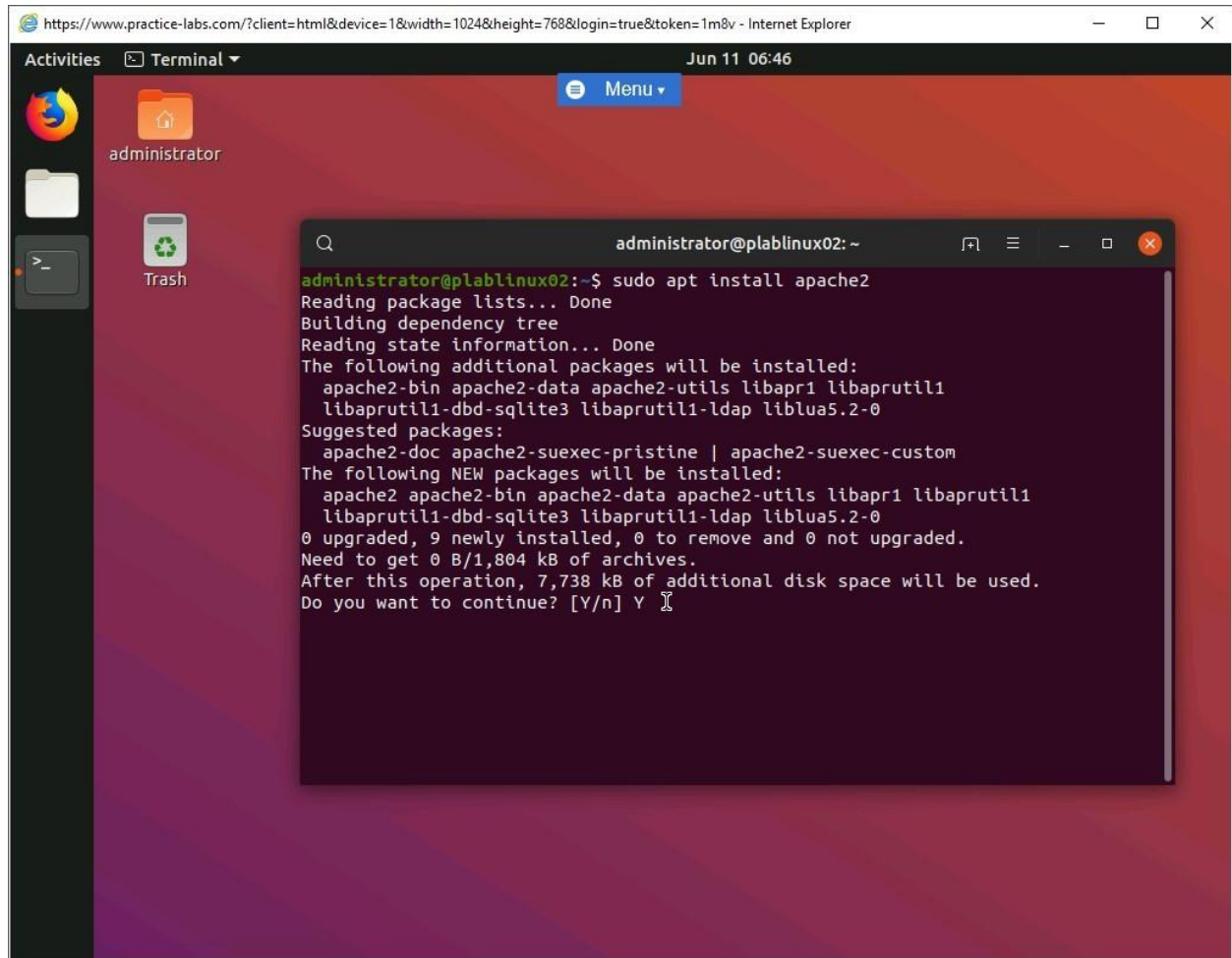
Figure 1.3 Screenshot of PLABLINUX02: Installing the apache2 package.

Step 4

After going through the dependencies, you are prompted to continue or discontinue the installation. Type the following to continue:

Y

Press Enter.



```
administrator@plablinux02: ~  
administrator@plablinux02:~$ sudo apt install apache2  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
The following additional packages will be installed:  
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0  
Suggested packages:  
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom  
The following NEW packages will be installed:  
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0  
0 upgraded, 9 newly installed, 0 to remove and 0 not upgraded.  
Need to get 0 B/1,804 kB of archives.  
After this operation, 7,738 kB of additional disk space will be used.  
Do you want to continue? [Y/n] Y
```

Figure 1.4 Screenshot of PLABLINUX02: Confirming the installation.

Step 5

After the packages are downloaded, they are installed. Finally, the installation is complete, and you are navigated back to the administrator command prompt.

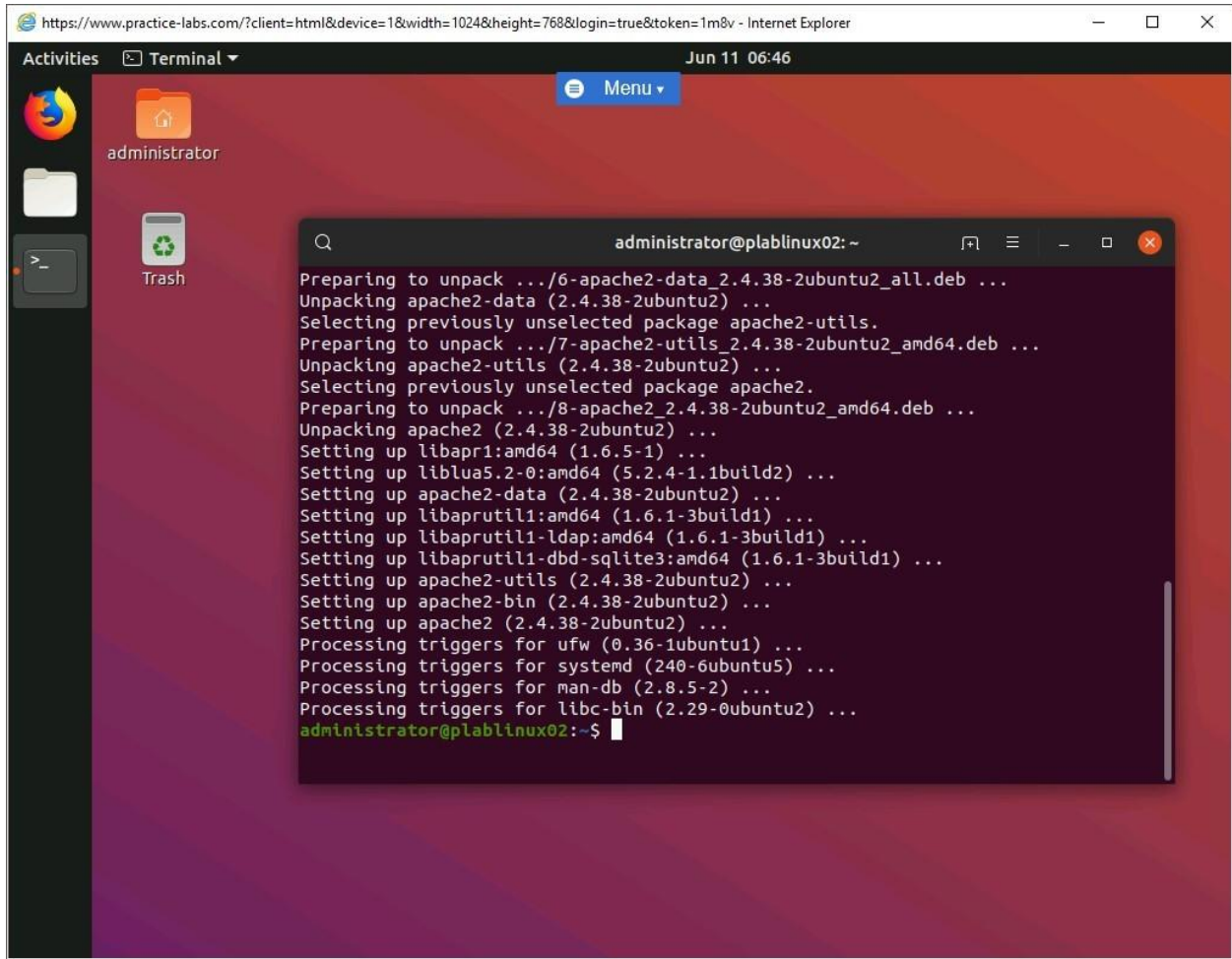


Figure 1.5 Screenshot of PLABLINUX02: Showing the completion of installation.

Step 6

Clear the screen by entering the following command:

```
clear
```

During installation, Apache registers itself with UFW. With this registration, UFW creates several profiles that can be used to enable or disable access to Apache through the firewall. To see the list of profiles, type the following command:


```
sudo ufw app list
```

Press Enter.

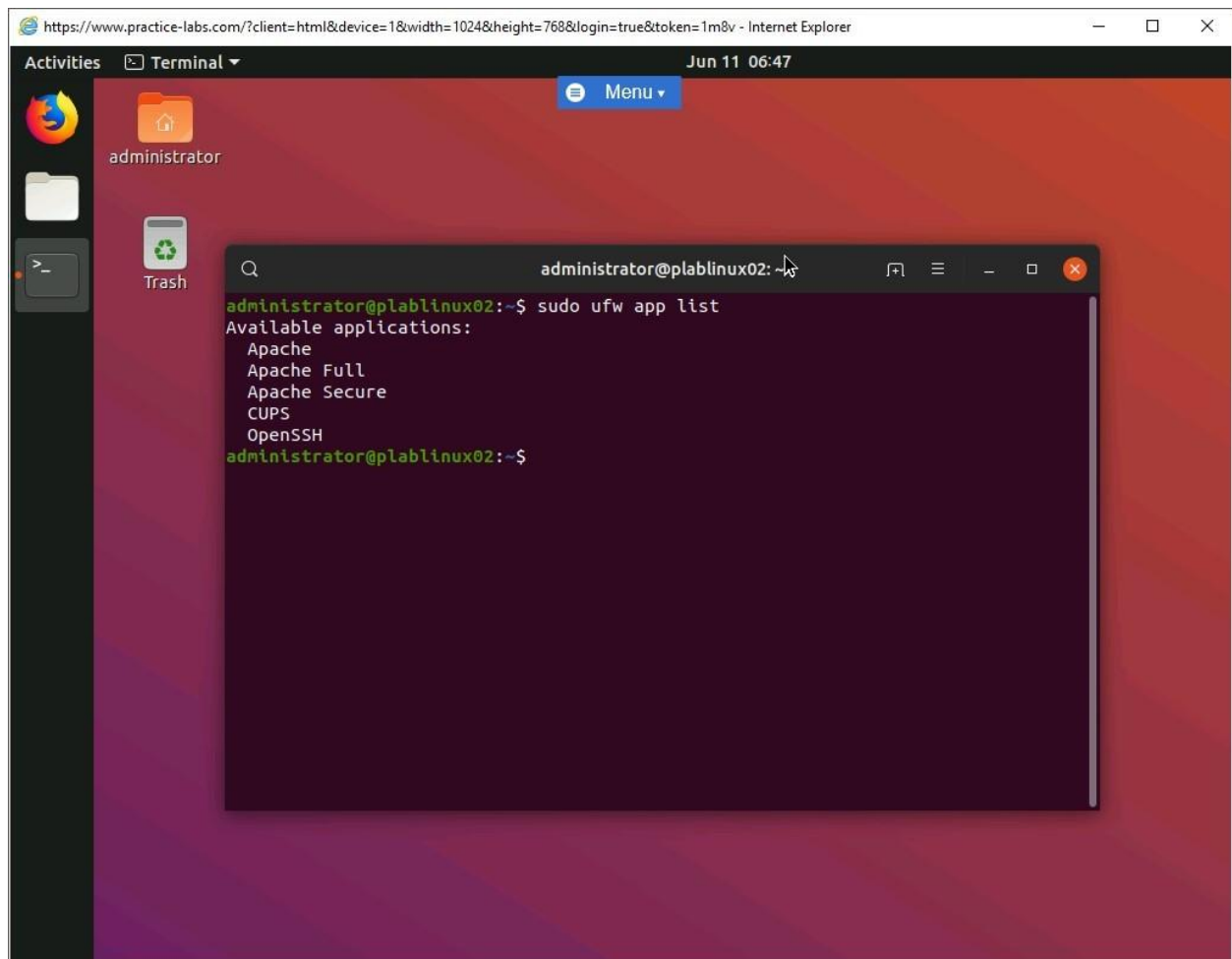


Figure 1.6 Screenshot of PLABLINUX02: Showing the list of profiles in UFW.

Step 7

Clear the screen by entering the following command:

```
clear
```

You can also remove a package. For example, you can remove the apache2 package from the system.

To remove the apache2 package, type the following command:

```
sudo apt-get remove apache2
```

Press Enter.

The remove parameter removes the apache2 package.

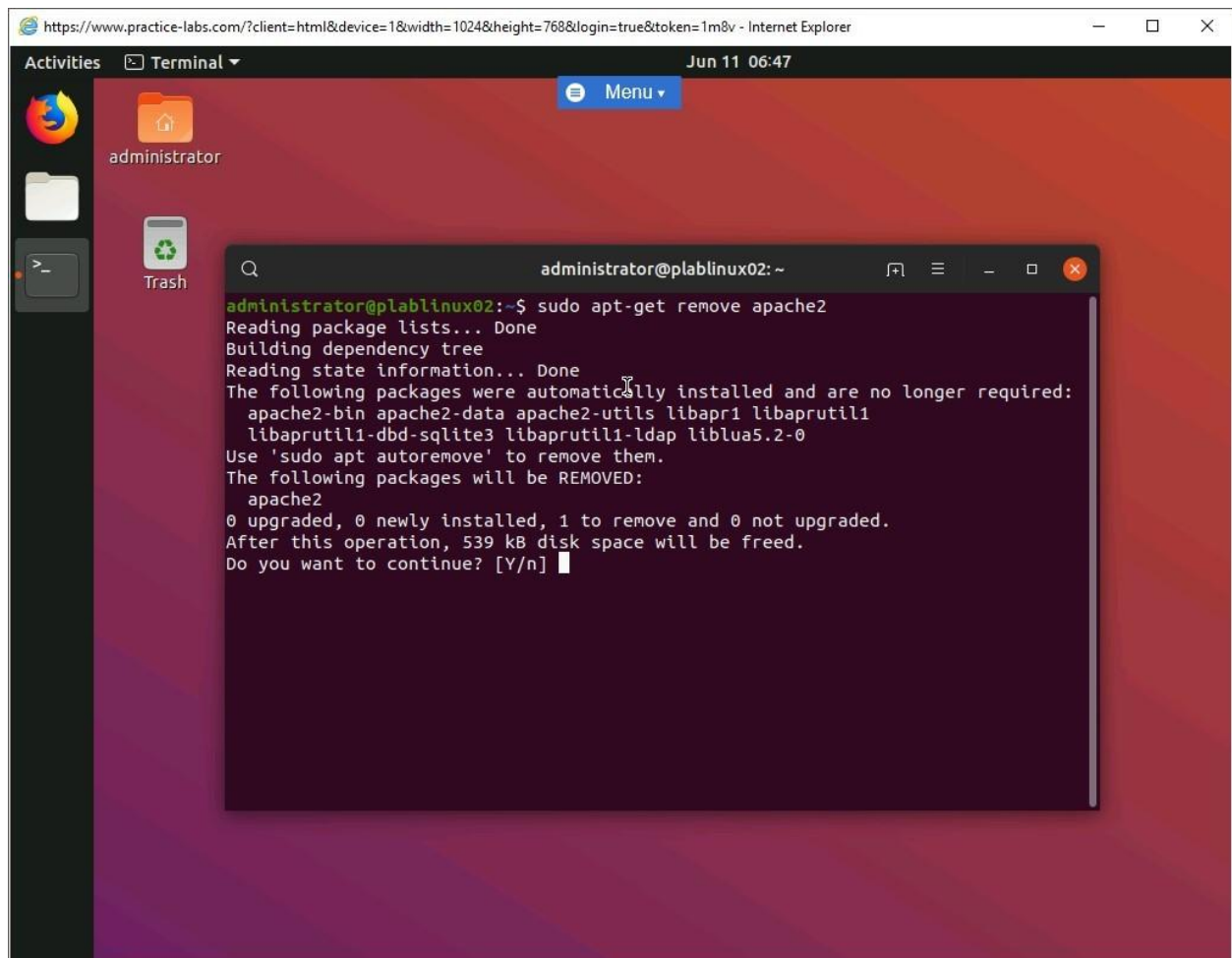


Figure 1.7 Screenshot of PLABLINUX02: Removing the apache2 package.

Step 8

When prompted for confirmation, type the following:

Y

Press Enter.

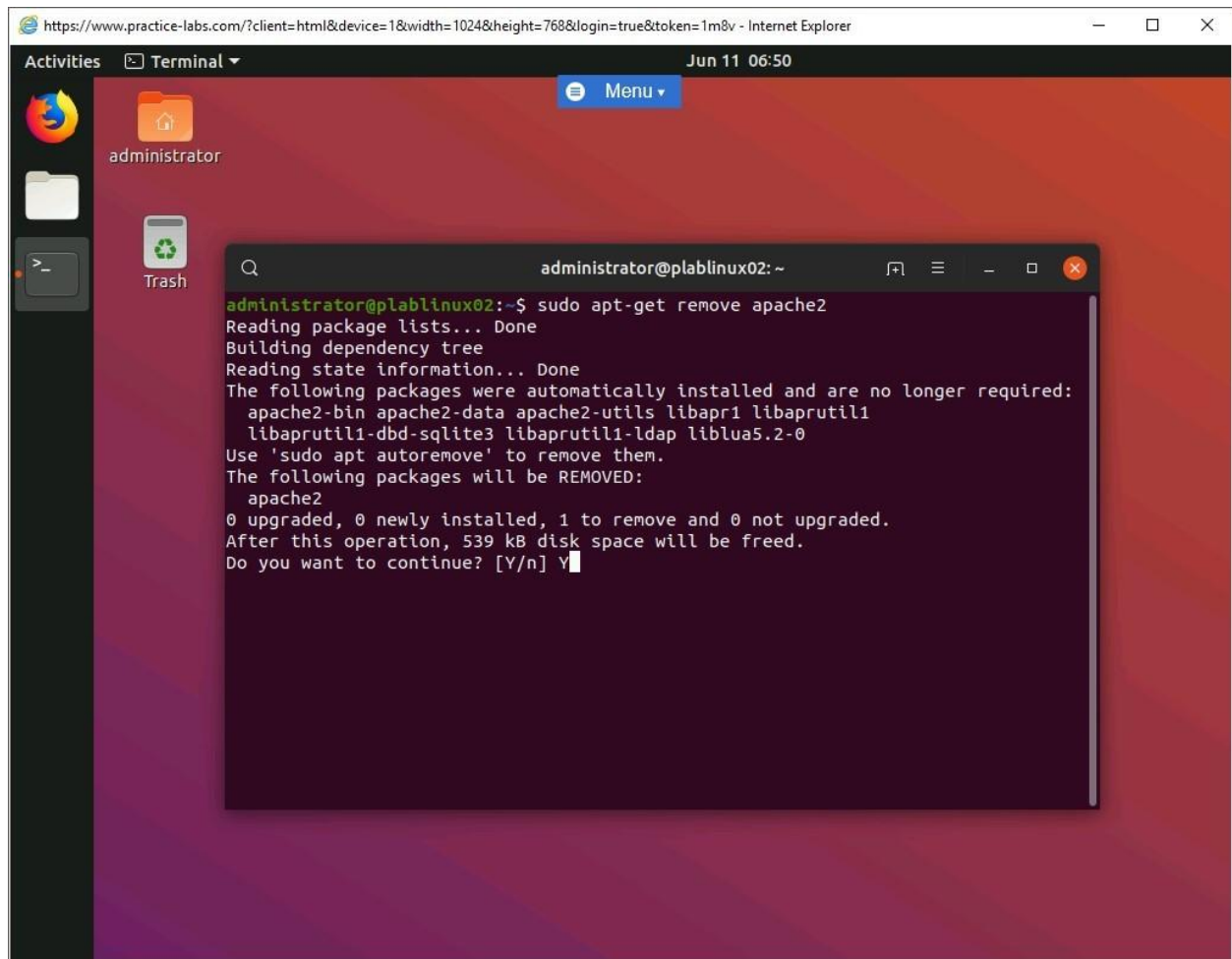


Figure 1.8 Screenshot of PLABLINUX02: Confirming the removal.

Step 9

The apache2 package is now removed, and you are navigated back to the administrator command prompt.

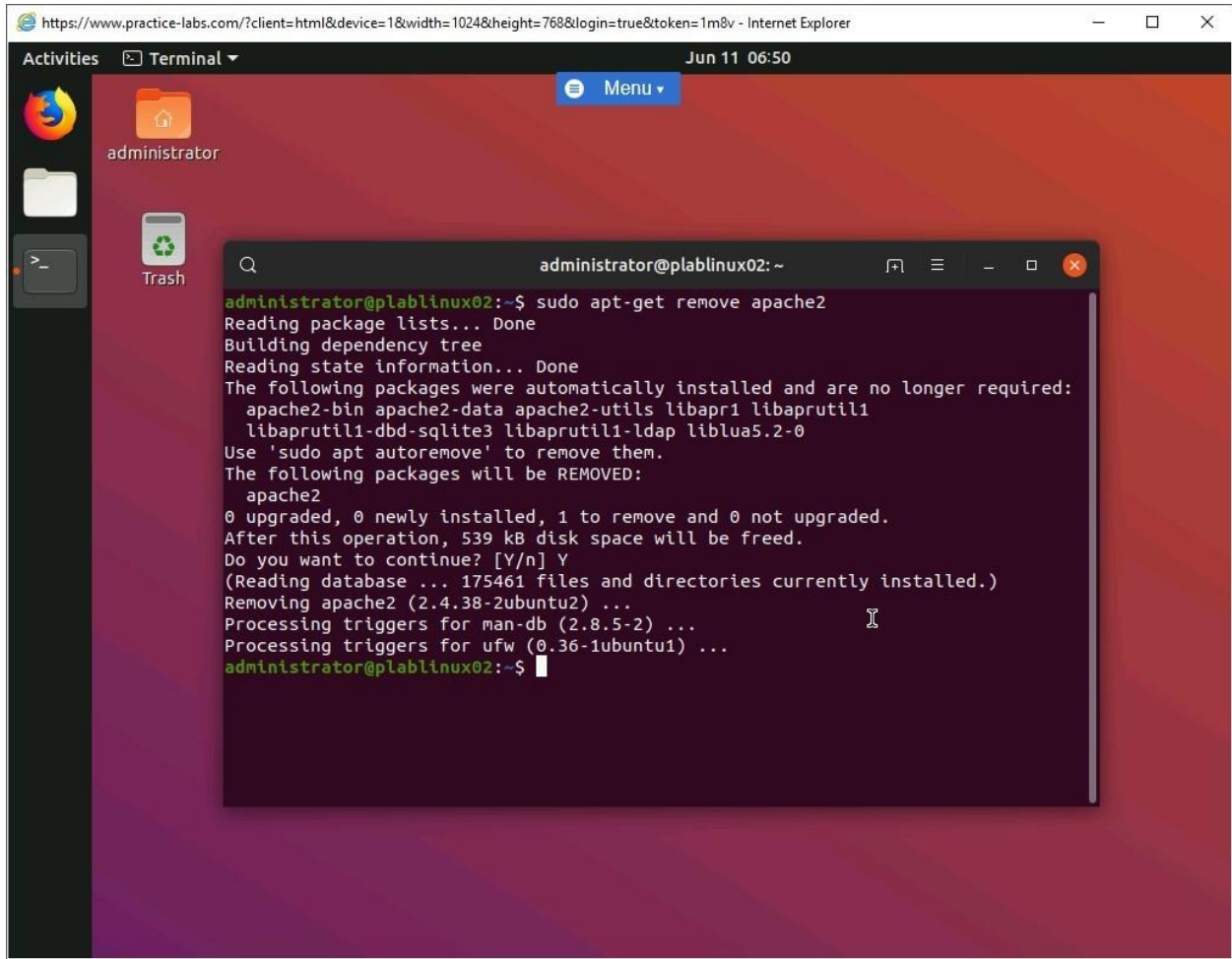


Figure 1.9 Screenshot of PLABLINUX02: Showing the completion of removal.

Step 10

Clear the screen by entering the following command:

```
clear
```

You can also remove a package and its dependencies.

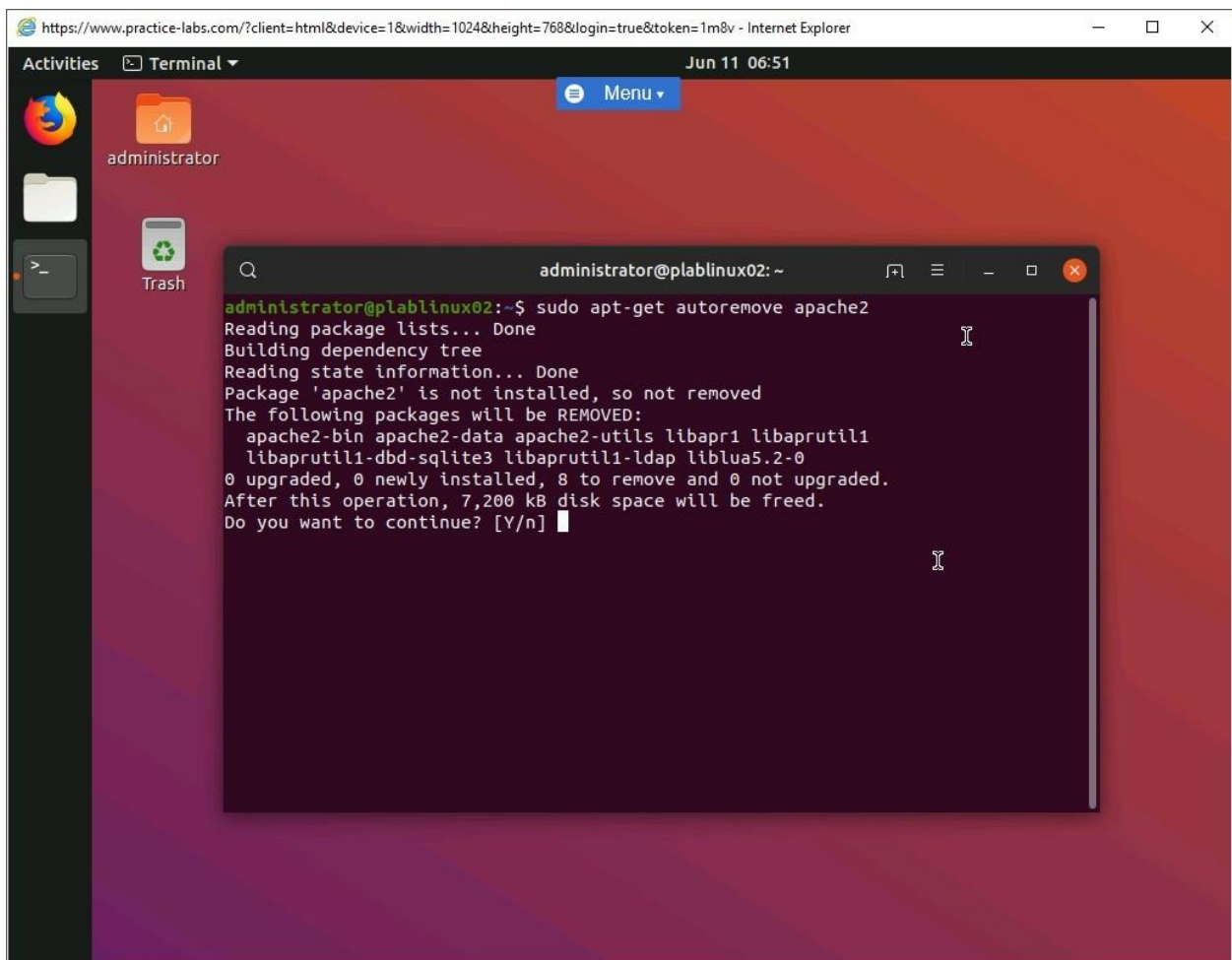
To remove the apache2 package dependencies, type the following command:

```
sudo apt-get autoremove apache2
```

Press Enter.

The autoremove command removes the apache2 package dependencies if they still exist.

Note: If dependencies exist, you will be prompted to confirm the removal. When prompted for confirmation, enter Y.



```
administrator@plablinux02: ~  
administrator@plablinux02:~$ sudo apt-get autoremove apache2  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
Package 'apache2' is not installed, so not removed  
The following packages will be REMOVED:  
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1  
  libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.2-0  
0 upgraded, 0 newly installed, 8 to remove and 0 not upgraded.  
After this operation, 7,200 kB disk space will be freed.  
Do you want to continue? [Y/n]
```

Figure 1.10 Screenshot of PLABLINUX02: Removing the package dependencies.

Step 11

When prompted for confirmation, type the following:

Y

Press Enter.

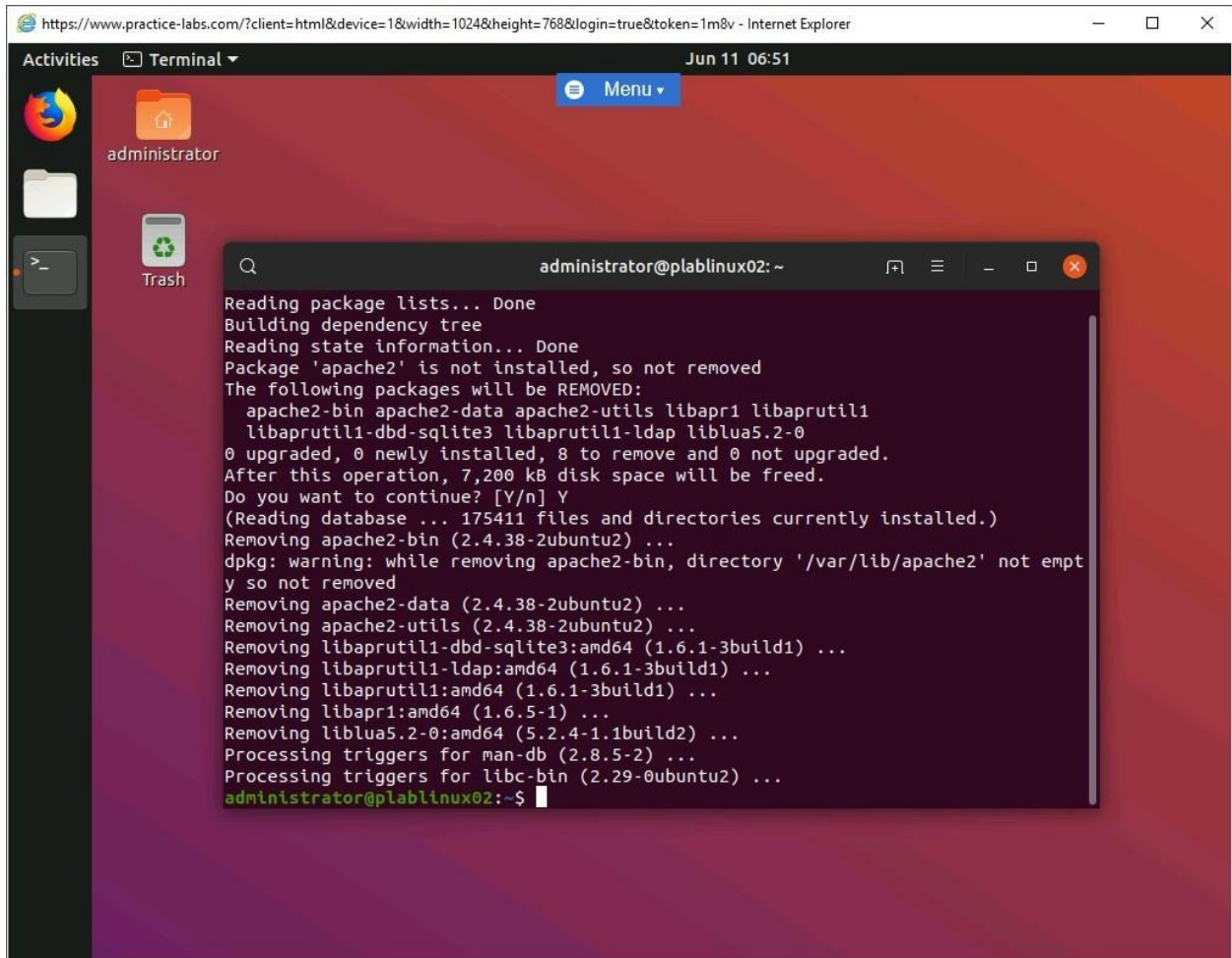
A screenshot of a Linux desktop environment. The desktop background is a dark red gradient. On the left, there is a sidebar with icons for 'Activities', 'Terminal', 'Home', 'Trash', and a terminal icon. The 'Terminal' icon is highlighted. A terminal window is open in the center, titled 'administrator@plablinux02: ~'. The terminal output shows the process of removing package dependencies for 'apache2'. It lists packages to be removed: 'apache2-bin', 'apache2-data', 'apache2-utils', 'libapr1', 'libaprutil1', 'libaprutil1-dbd-sqlite3', 'libaprutil1-ldap', and 'liblua5.2-0'. It also shows the disk space freed (7,200 kB) and the confirmation prompt 'Do you want to continue? [Y/n] Y'. The terminal output ends with 'administrator@plablinux02:~\$'.

Figure 1.11 Screenshot of PLABLINUX02: Showing the completion of removal of the package dependencies

Task 2 - Find Packages Containing Specific Files or Libraries Which May or May Not Be Installed

In many cases, you may need to install a file for which you may not know the package name. In this situation, you find the package name from the

system. Two key commands, namely the `dpkg` command and the `apt-file` command help you find the package name. In this task, you will use the `dpkg` command to find the package from the Ubuntu system on the lab environment. To find packages containing specific files or libraries, perform the following steps:

Step 1

Clear the screen by entering the following command:

```
clear
```

Let's assume that you need to find the package details of the `apt-get` file. To find the package details, type the following command:

```
sudo dpkg -S apt-get
```

Press Enter. The `-S` parameter is used to search a specific file name.

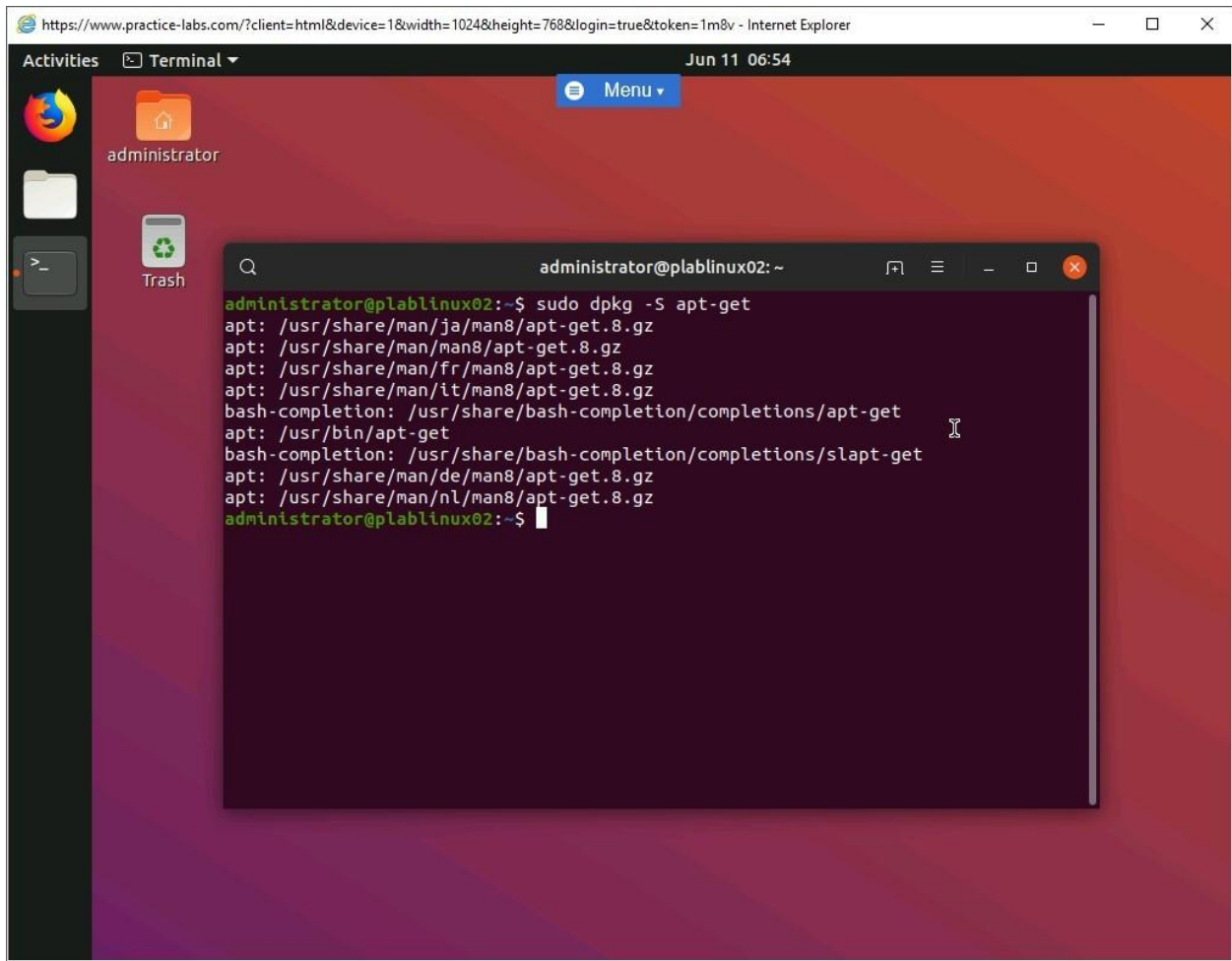


Figure 1.12 Screenshot of PLABLINUX02: Finding the package details.

Task 3 - Obtain Package Information

You may need to find the details of a package that exists on your system. These details include version, content, dependencies, package integrity, and installation status of the package. These details might be required if you want to see the package dependencies for another package installation. In this task, you will view the details about the yum package.

To obtain package information, perform the following steps:

Step 1

Clear the screen by entering the following command:


```
clear
```

For this task, let us view the information about the apt-cache command.

To view the package information, type the following command:

```
apt-cache show yum
```

Press Enter.

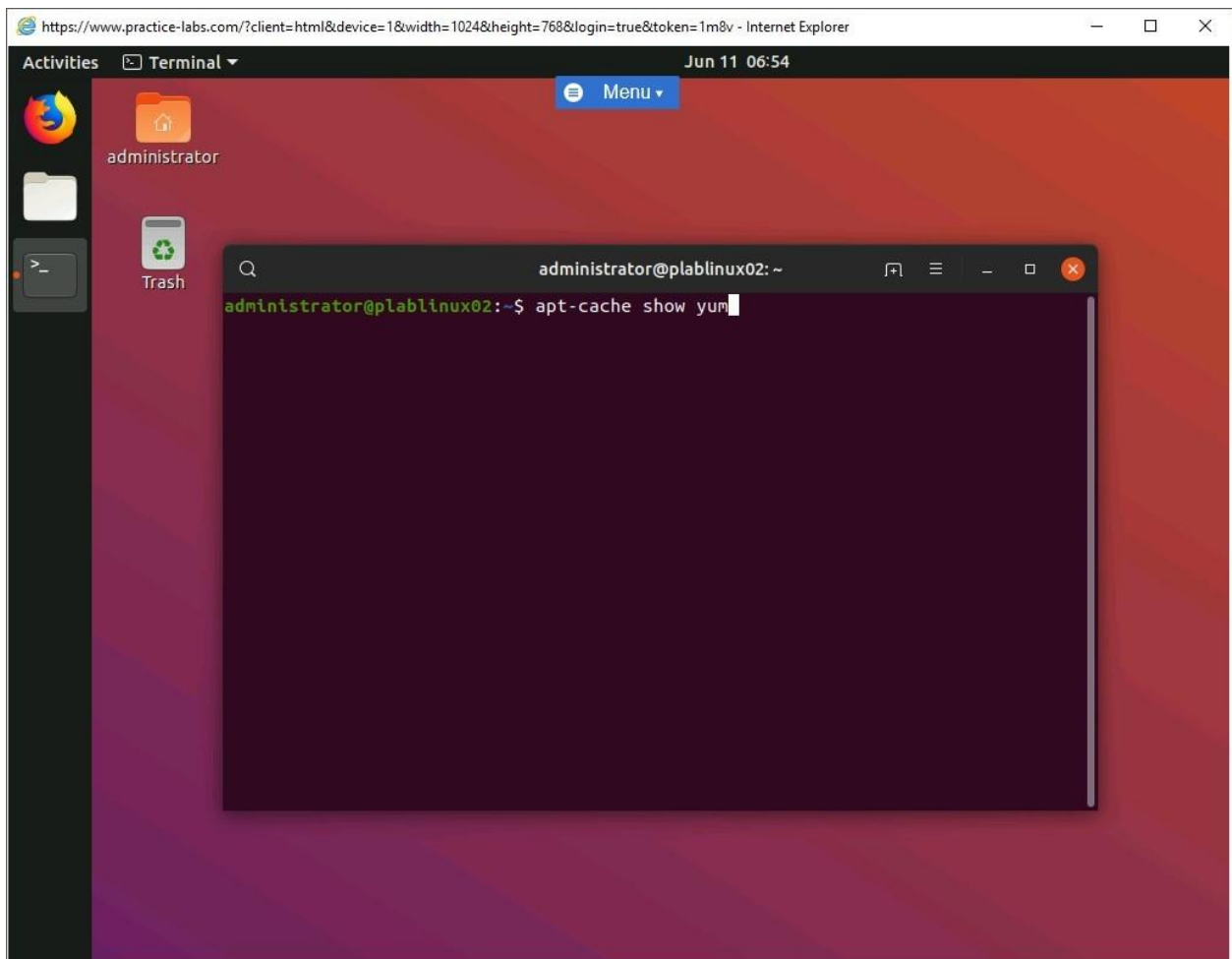
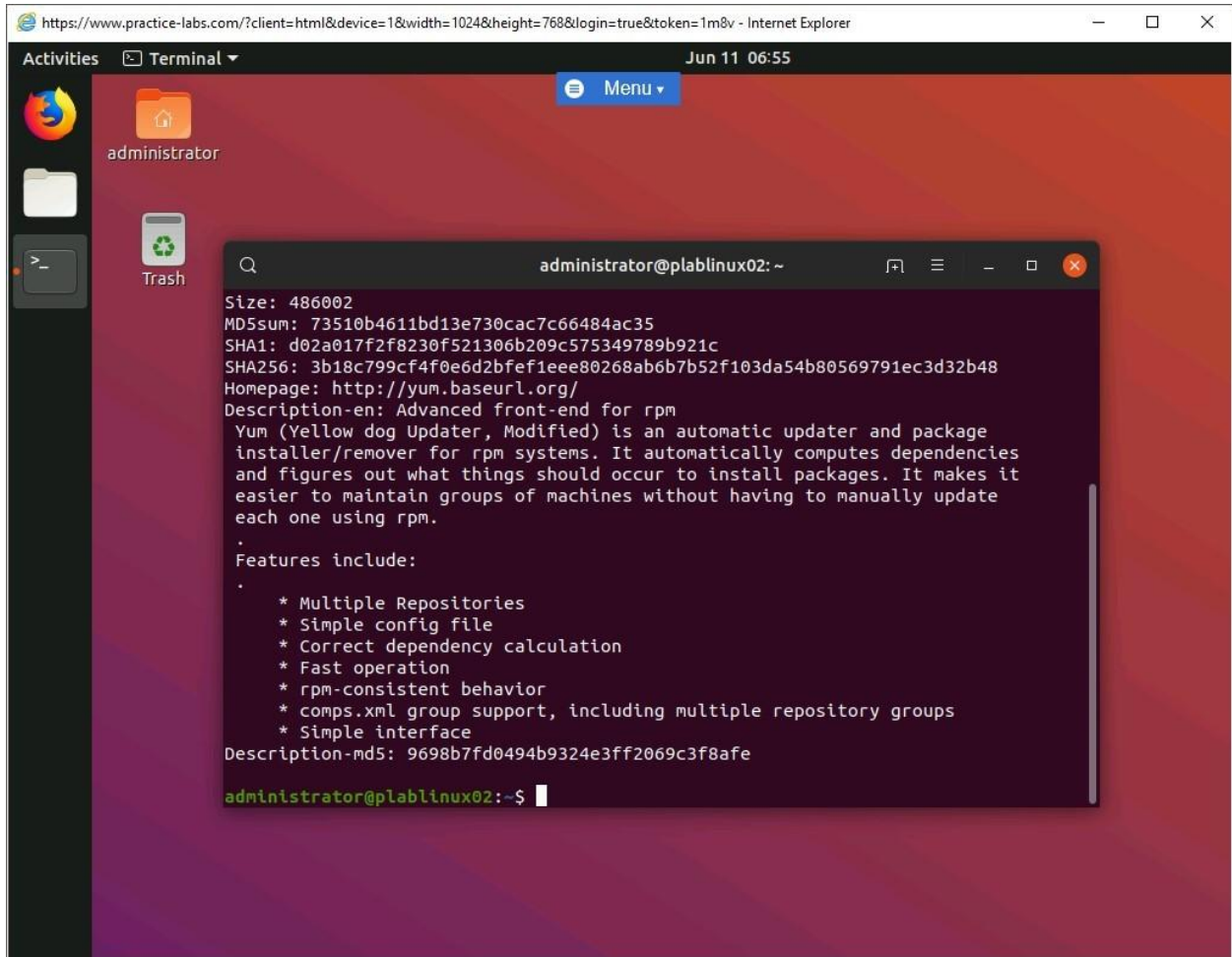


Figure 1.13 Screenshot of PLABLINUX02: Viewing the package information.

Step 2

The output is now displayed.



The screenshot shows a web browser window with the URL `https://www.practice-labs.com/?client=html&device=1&width=1024&height=768&login=true&token=1m8v` and a terminal window titled `administrator@plablinux02: ~`. The terminal displays the output of the `apt-cache` command for the `yum` package. The output includes the package size, MD5sum, SHA1, SHA256, homepage, description, and features.

```
Size: 486002
MD5sum: 73510b4611bd13e730cac7c66484ac35
SHA1: d02a017f2f8230f521306b209c575349789b921c
SHA256: 3b18c799cf4f0e6d2bfef1eee80268ab6b7b52f103da54b80569791ec3d32b48
Homepage: http://yum.baseurl.org/
Description-en: Advanced front-end for rpm
Yum (Yellow dog Updater, Modified) is an automatic updater and package
installer/remover for rpm systems. It automatically computes dependencies
and figures out what things should occur to install packages. It makes it
easier to maintain groups of machines without having to manually update
each one using rpm.
.
Features include:
.
* Multiple Repositories
* Simple config file
* Correct dependency calculation
* Fast operation
* rpm-consistent behavior
* comps.xml group support, including multiple repository groups
* Simple interface
Description-md5: 9698b7fd0494b9324e3ff2069c3f8afe
administrator@plablinux02:~$
```

Figure 1.14 Screenshot of PLABLINUX02: Showing the output of the apt-cache command.

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

Review

Well done, you have completed the Use Debian Package Management Practice Lab.

Summary

You completed the following exercise:

- Exercise 1 - Use Debian Package Management

You should now be able to:

- Manage Debian Binary Packages
- Find Packages Containing Specific Files or Libraries Which May or May Not Be Installed
- Obtain Package Information

Feedback

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