CompTIA Linux+

Amending Hard and Symbolic Links

Exercise 1 - Create and Change Hard and Symbolic Links

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Sometimes, you may require a file to be accessed from multiple locations on a filesystem. One option is to create multiple copies of the source file. However, it will take much more space and also if the source file is updated, you would need to update the copies at all locations.

Another option is to create a link of the source file at each required location. A link carries the metadata to the filesystem and is linked with the source file. These links can be hard links or symbolic links.

In this exercise, you will understand how to Create and change hard and symbolic links.

Learning Outcomes

After completing this exercise, you will be able to:

- Log into a Linux system
- Manage hard and/or symbolic links
- Use links to support system administrative tasks

Your Devices

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

- PLABLINUX01 (CentOS Server)

Task 1 - Manage Hard and/or Symbolic Links

There are two types of links that you can create for a source file:

- Symbolic links: It is a pointer to the source file. It can point to a source file on the local or remote filesystem.
- Hard links: It is another directory entry for the source file and carries those same properties, such as file permissions, of the source file. If you delete one file, the other file remains intact. A hard link must exist in the same local filesystem.

In this task, you will create a symbolic link and a hard link to a file.

To identify hard and/or symbolic links, perform the following steps:

Step 1

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

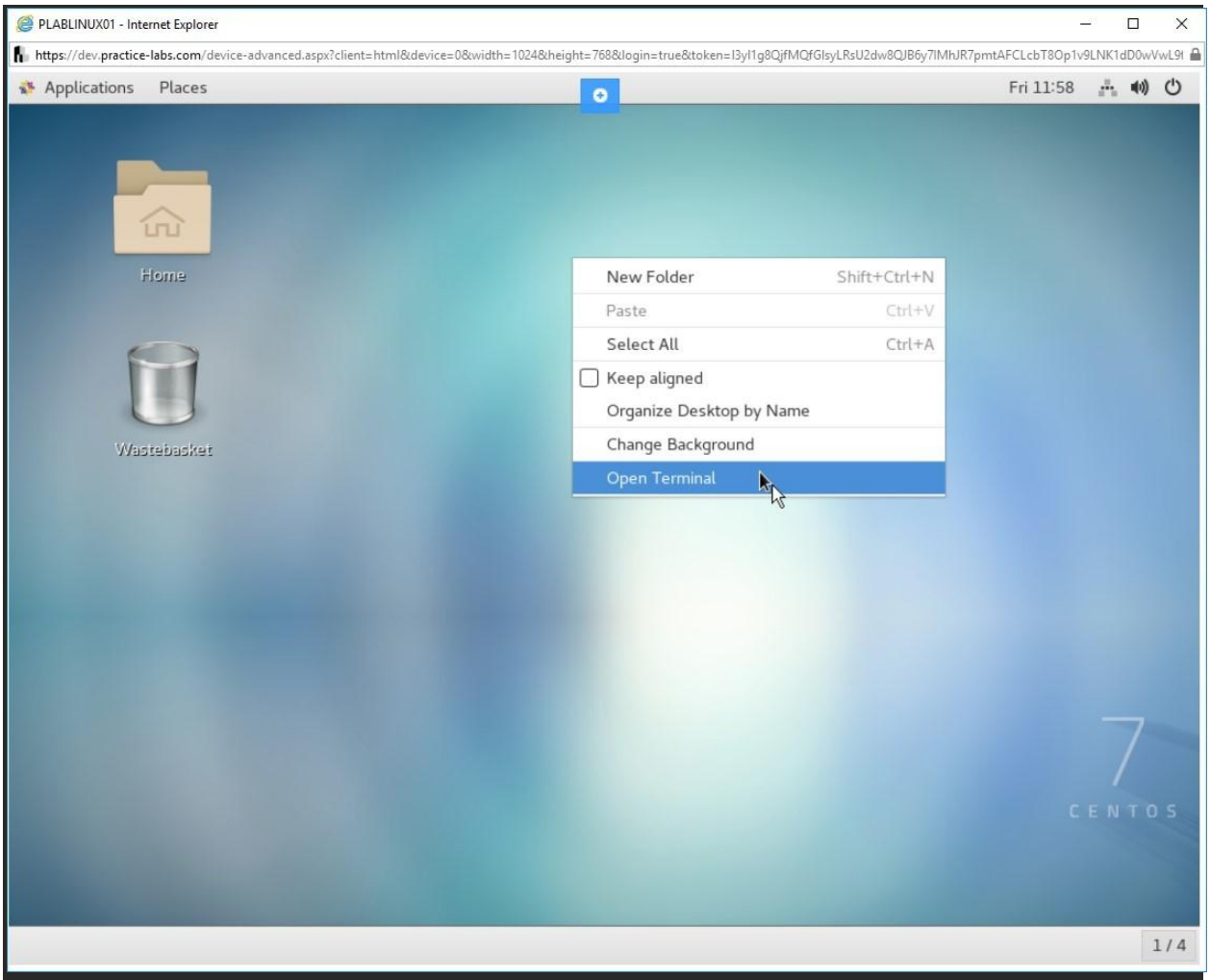

Figure 1.1 Screenshot of PLABLINUX01: Selecting the Open Terminal option from the context menu.

Step 2

Clear the screen by entering the following command:

```
clear
```

Note: The clear command can be 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 need to find the links in the /etc directory. To do this, type the following command:

```
ls -l /etc
```

Press Enter.

Note that system-release is pointing to another link centos-release.

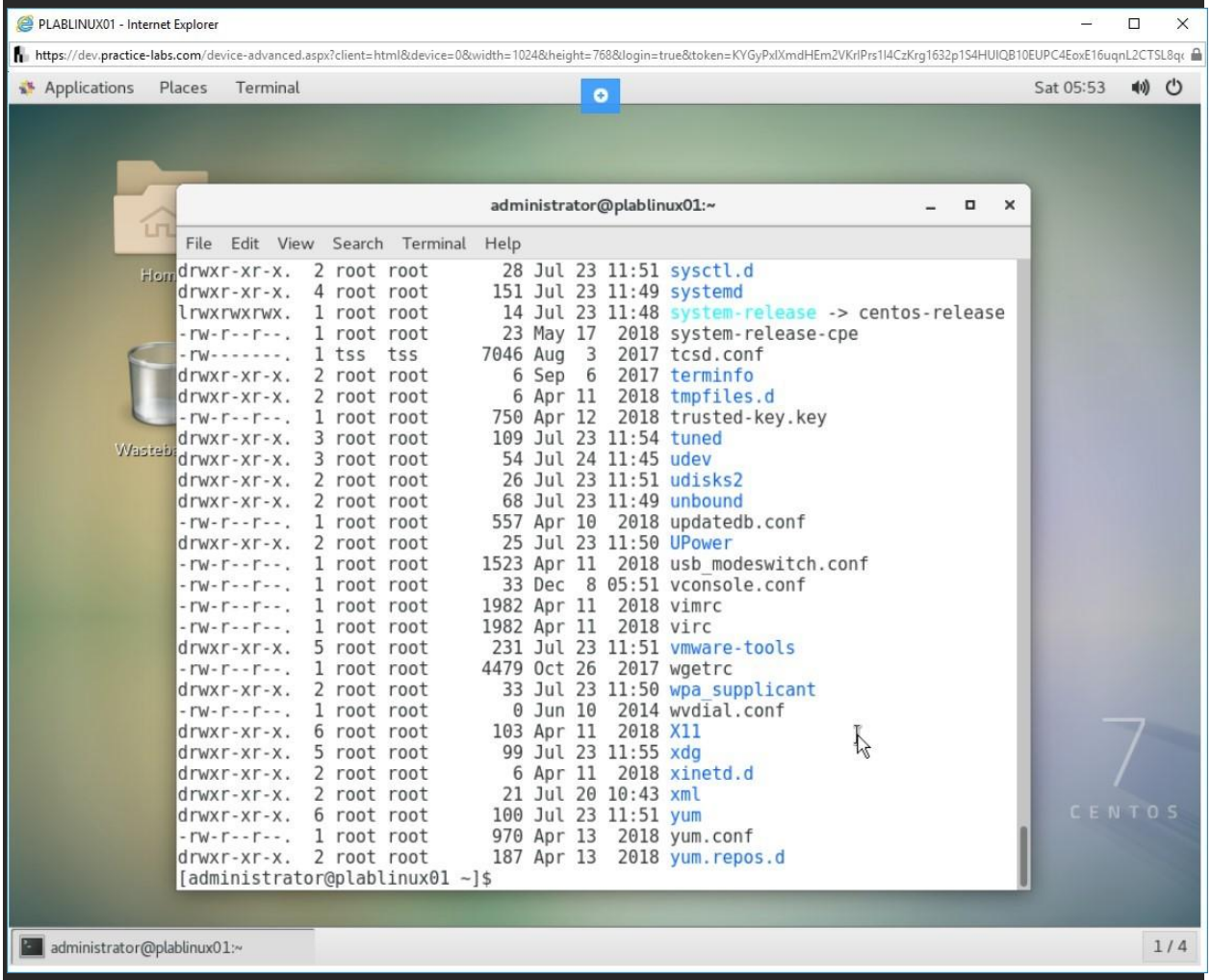

Figure 1.2 Screenshot of PLABLINUX01: Displaying the links in the /etc directory.

Step 3

Clear the screen by entering the following command:

```
clear
```

It is important to note that sh is also a symbolic link to bash. To verify this, type the following command:

```
ls -l /bin/bash /bin/sh
```

Press Enter.

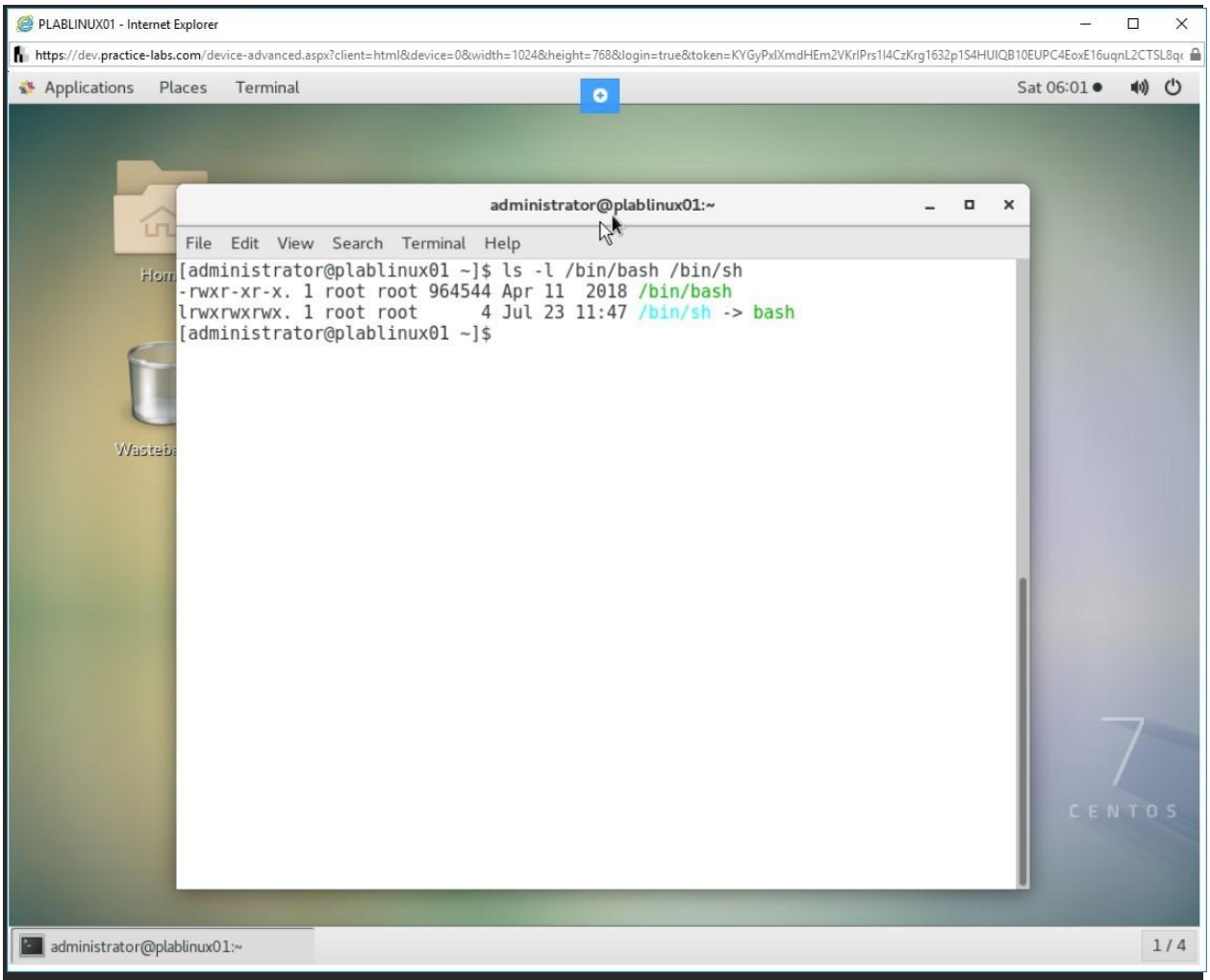

Figure 1.2 Screenshot of PLABLINUX01: Displaying sh as the symbolic link to bash.

Step 4

Clear the screen by entering the following command:

```
clear
```

You can use the ln command to create links. A new link is created and linked to the source file, which must exist on the local filesystem.

Let's create a new file named testfile. Type the following command:

```
touch testfile
```

Press Enter.

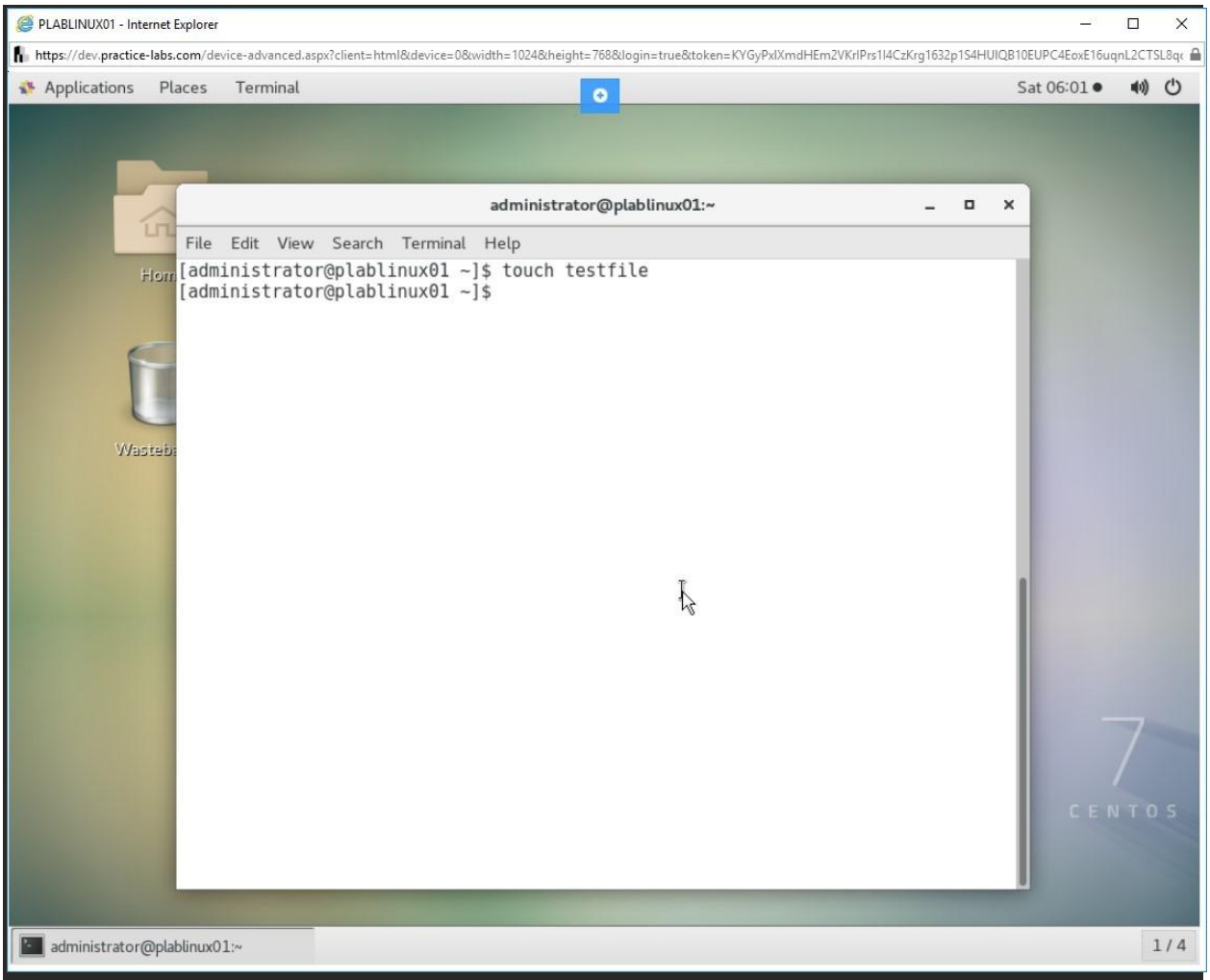

Figure 1.3 Screenshot of PLABLINUX01: Creating a file using the touch command.

Step 5

To create a link to testfile, type the following command:

```
ln -s testfile testlink
```

Press Enter.

Note: The -s parameter creates a symbolic link rather than a hard link.

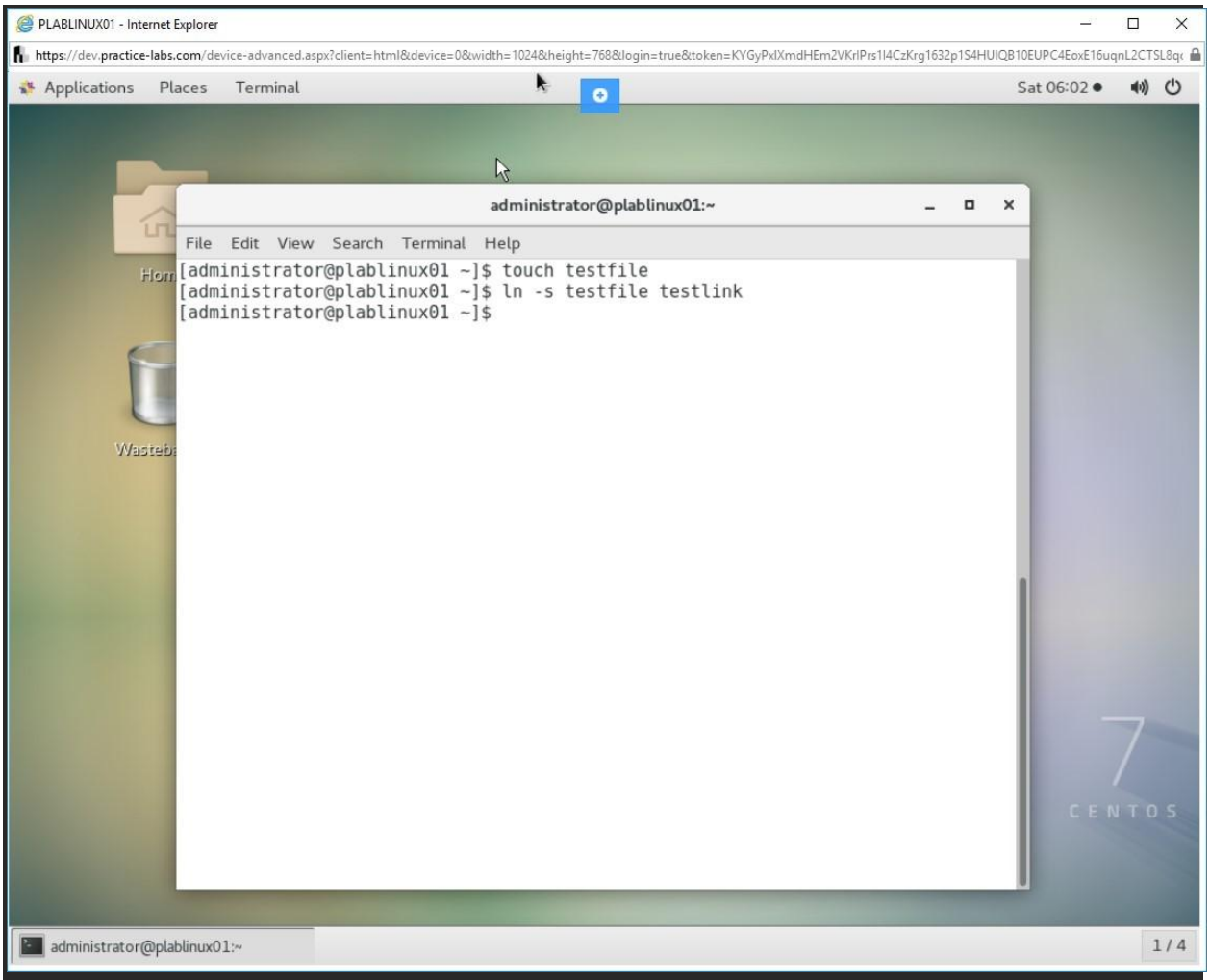

Figure 1.4 Screenshot of PLABLINUX01: Creating a link named testlink to testfile.

Step 6

To verify whether the symbolic link is created, type the following command:

```
ls -l
```

Press Enter.

The symbolic links are identified with the -> arrow.

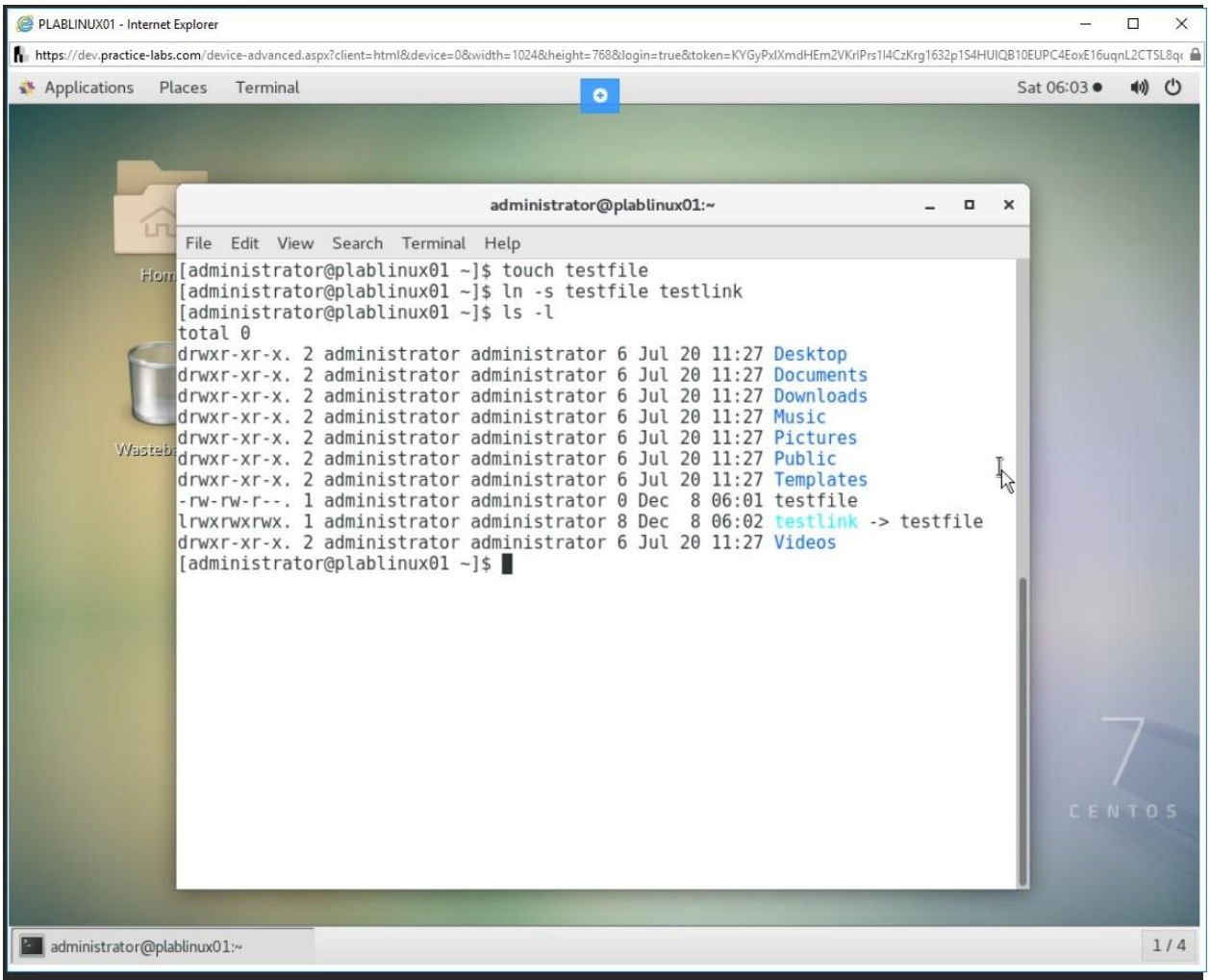

Figure 1.5 Screenshot of PLABLINUX01: Listing the directory contents using the ls -l command.

Step 7

Clear the screen by entering the following command:

```
clear
```

To create a hard link, type the following command:

```
ln testfile testlink1
```

Press Enter.

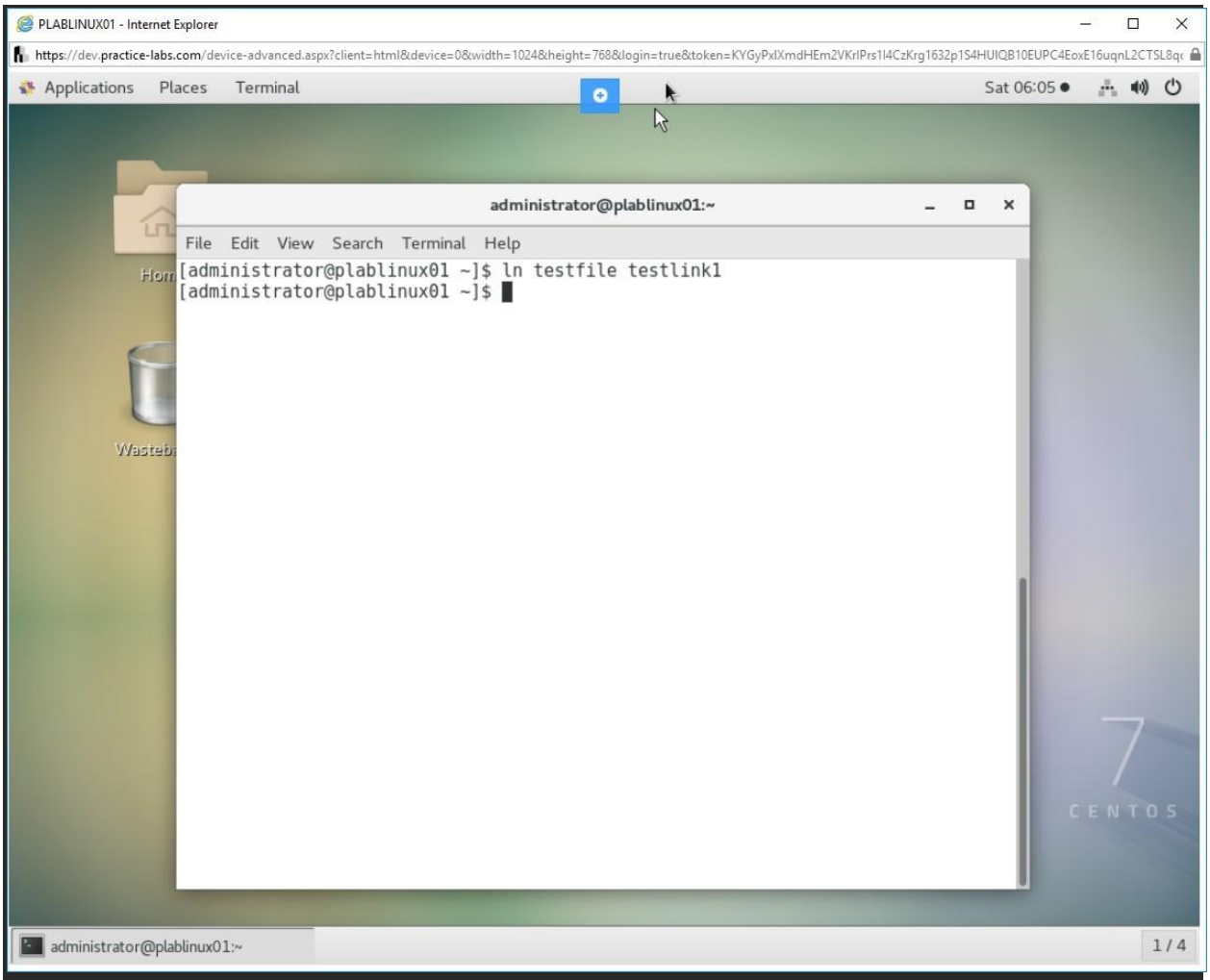

Figure 1.6 Screenshot of PLABLINUX01: Creating a hard link.

Step 8

To verify whether the hard link has been created, type the following command:

```
ls -l
```

Press Enter.

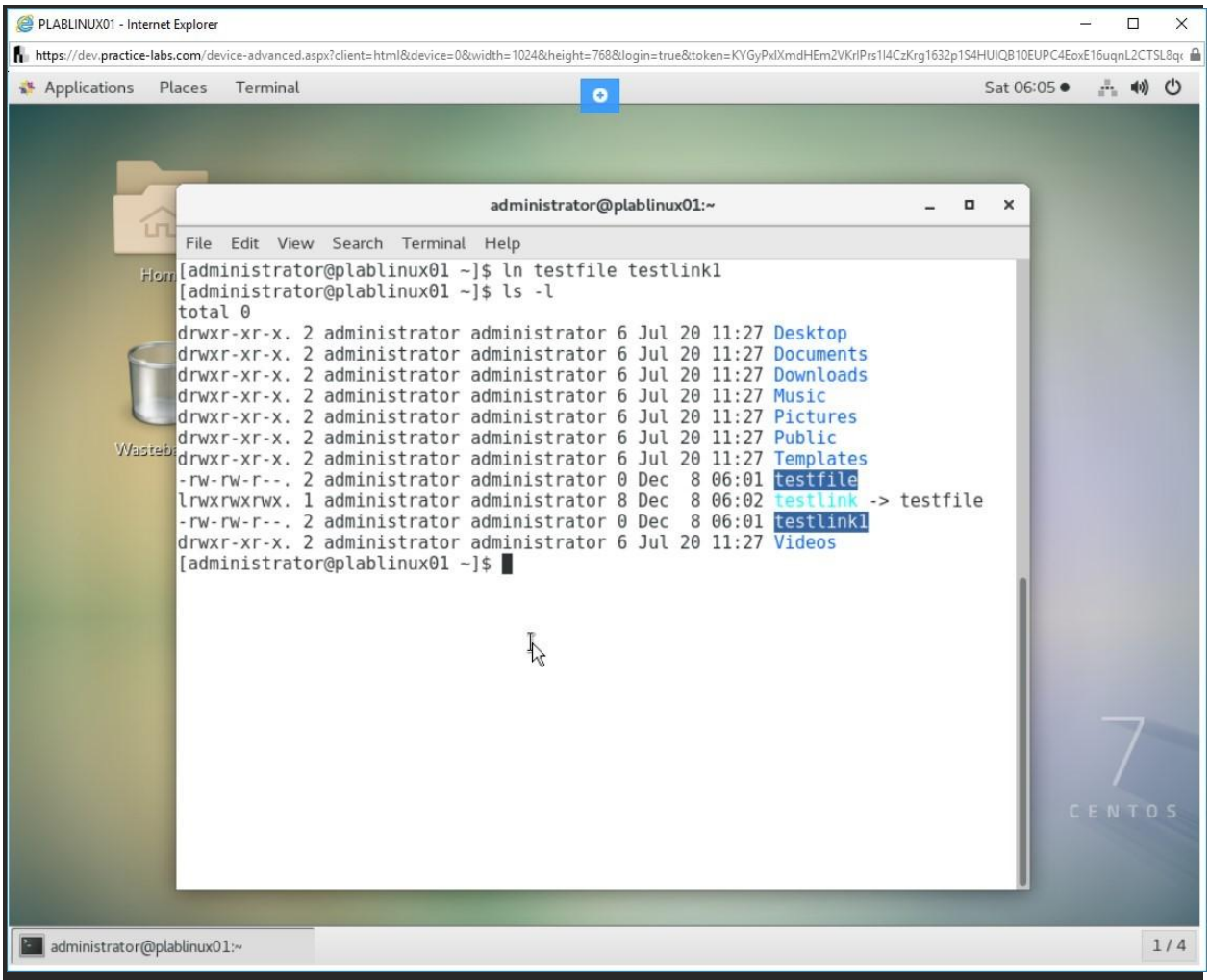

Figure 1.7 Screenshot of PLABLINUX01: Listing the directory contents using the ls -l command.

Task 2 - Use Links to Support System Administration Tasks

Symbolic links can be used for system administration tasks. For example, in this task, you will find a command file that has an alias and is stored and accessed from multiple locations.

This task demonstrates only one example, but you can perform a number of similar tasks.

To use links to support system administration tasks, perform the following steps:

Step 1

Clear the screen by entering the following command:

```
clear
```

Press Enter.

Take the example of a command ls. To locate the command, such as ls, type the following command:

```
which ls
```

Press Enter.

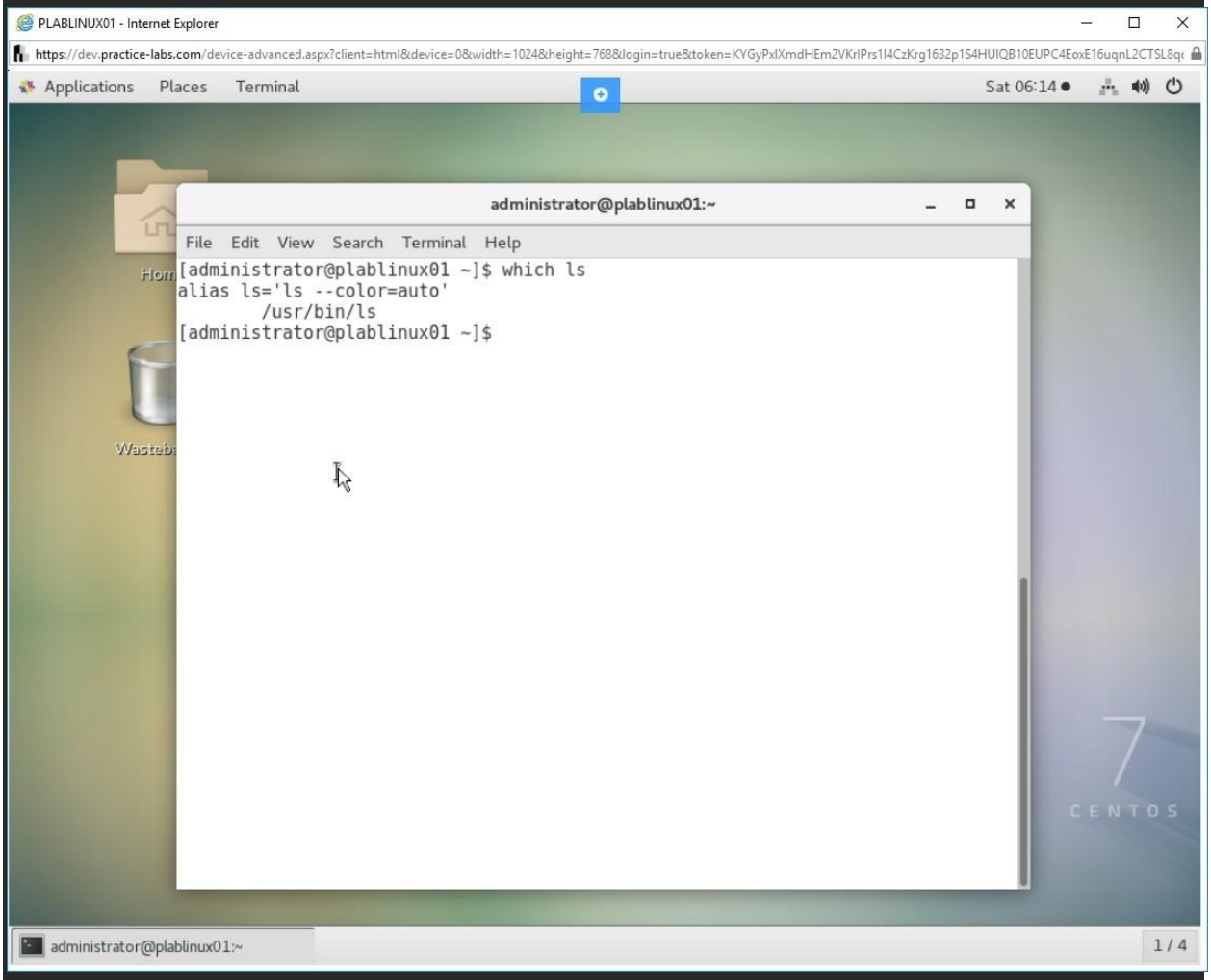

Figure 1.8 Screenshot of PLABLINUX01: Locating a command using the which command.

Step 2

Now, type the following command:

```
ls -l /usr/bin/ls
```

Press Enter.

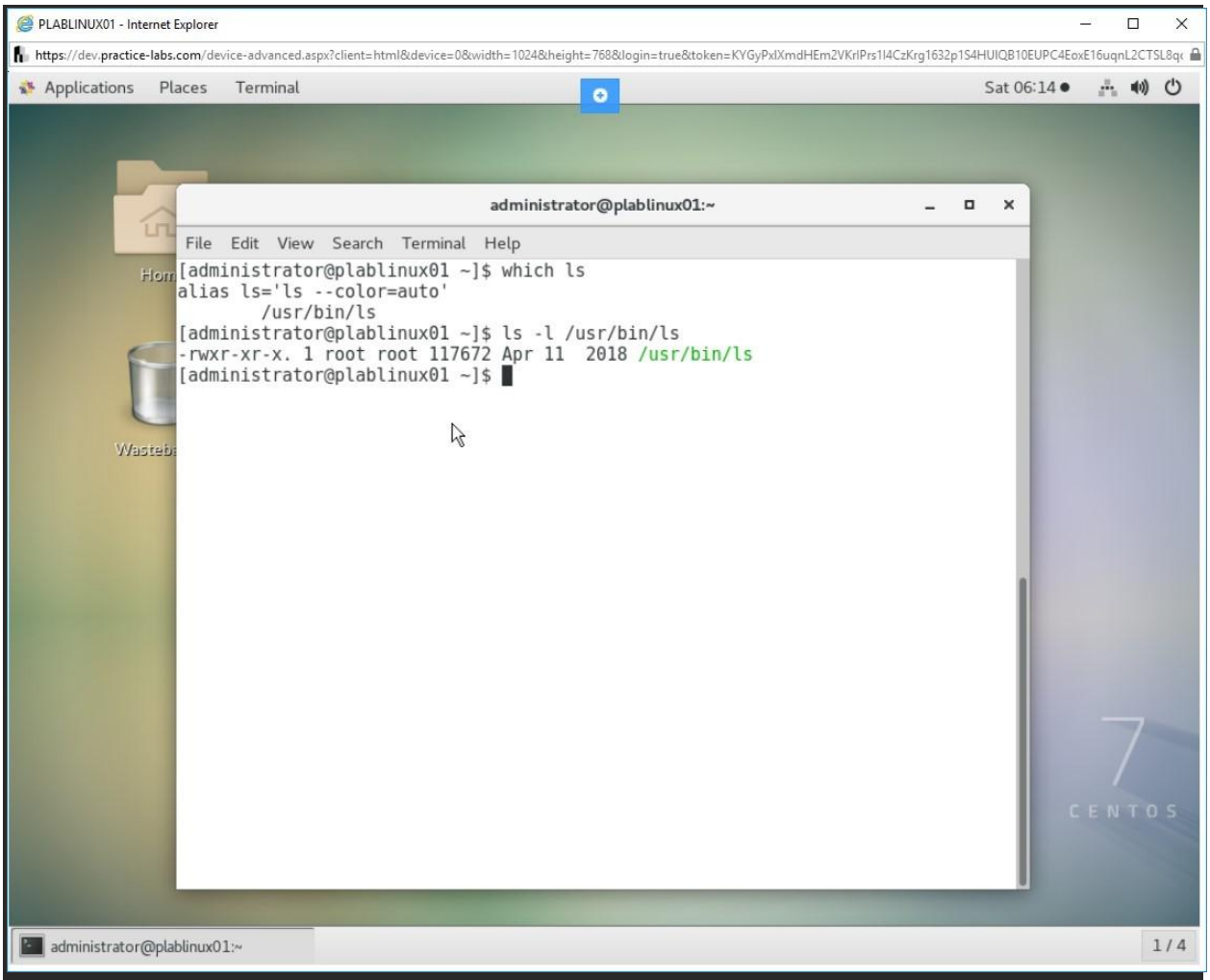

Figure 1.9 Screenshot of PLABLINUX01: Displaying the permissions on the ls command.

Step 3

Clear the screen by entering the following command:

```
clear
```

You can also check for the command alias. Type the following command:

```
ls -l $(which mkisofs)
```

Press Enter.

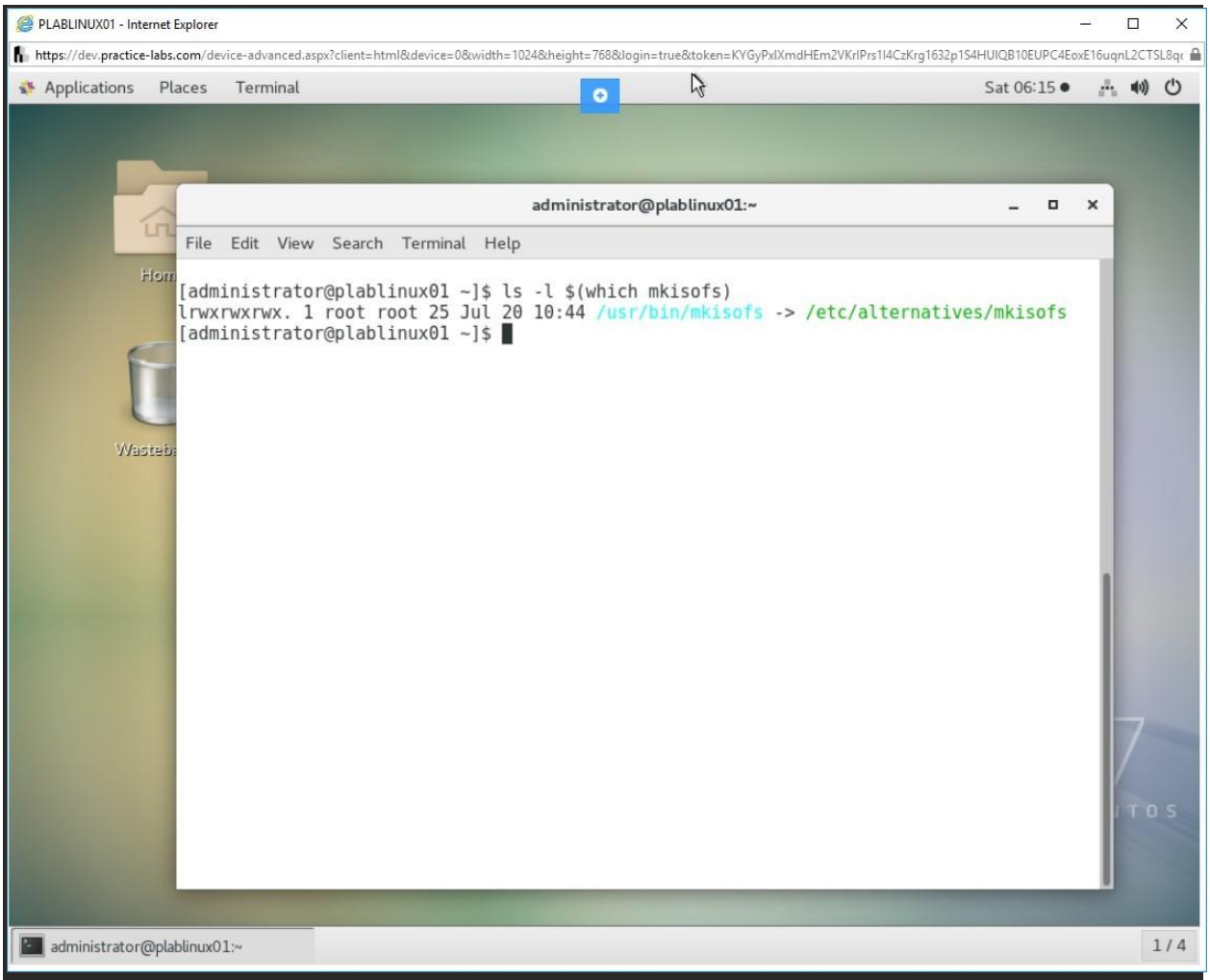

Figure 1.10 Screenshot of PLABLINUX01: Checking for the command alias.