CompTIA Linux+

Configure Client Side DNS

Introduction

Welcome to the **Configure Client Side DNS** Practice Lab. In this module you will be provided with the instructions and devices needed to develop your hands-on skills.

DNS
Domain Name System
Client Side

Learning Outcomes

In this module, you will complete the following exercise:

- Exercise 1 - Configure Client Side DNS

After completing this lab, you will be able to:

- Configure a DNS server
- Configure client DNS
- Query remote DNS servers
- Configure DNS servers
- Modify the order in which name resolution is done

Exam Objectives

The following exam objectives are covered in this lab:

- **LPI:** 109.4 Configure client side DNS
- **CompTIA:** 2.5 Summarize and explain server roles.

- **CompTIA:** 4.1 Given a scenario, analyse system properties and remediate accordingly.

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.

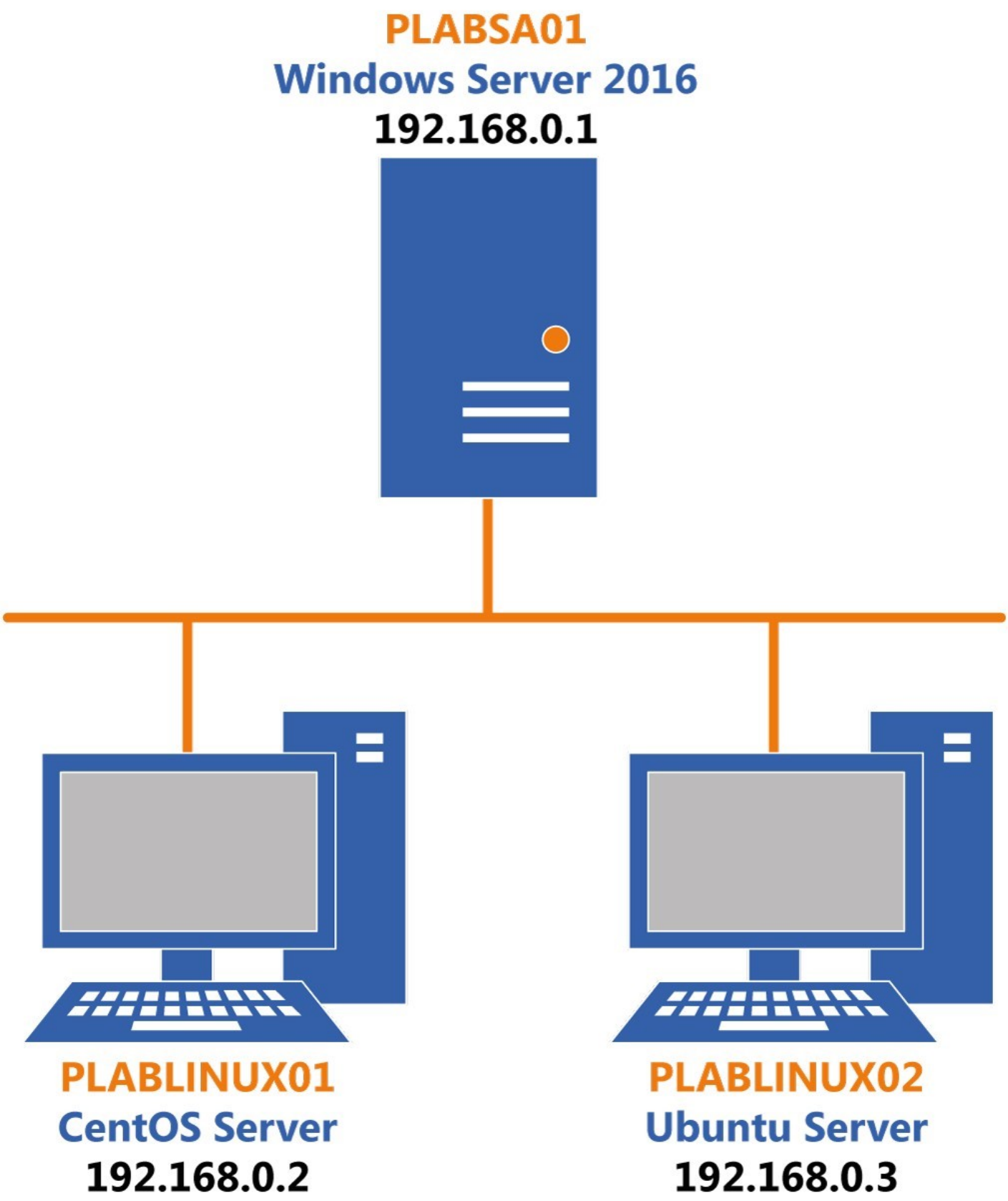
Help and Support

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 - Configure Client-side DNS

DNS, short for domain name server, is an important part of every network. DNS, as the name suggests, resolves the names of nodes or any services on a network to the target IP addresses.

In this exercise, you will understand how to perform basic network troubleshooting.

Learning Outcomes

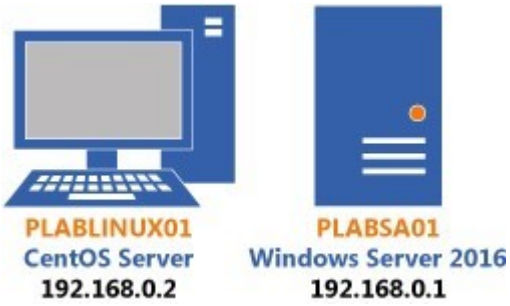
After completing this exercise, you will be able to:

- Configure a DNS server
- Log into a Linux System
- Configure client DNS
- Query remote DNS servers
- Configure DNS servers
- Modify the order in which name resolution is done

Your Devices

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

- **PLABSA01** (Windows Server 2016)
- **PLABLINUX01** (CentOS Server)



Task 1 - Configure DNS Server

A DNS server is designed to perform name resolution, which is resolving the hostnames to the IP addresses.

In this task, you will configure a DNS server. To do this, perform the following steps:

Step 1

Power on the required devices and connect to **PLABSA01**.

The **Server Manager** window is displayed.

From the right pane, click **Add roles and features**.

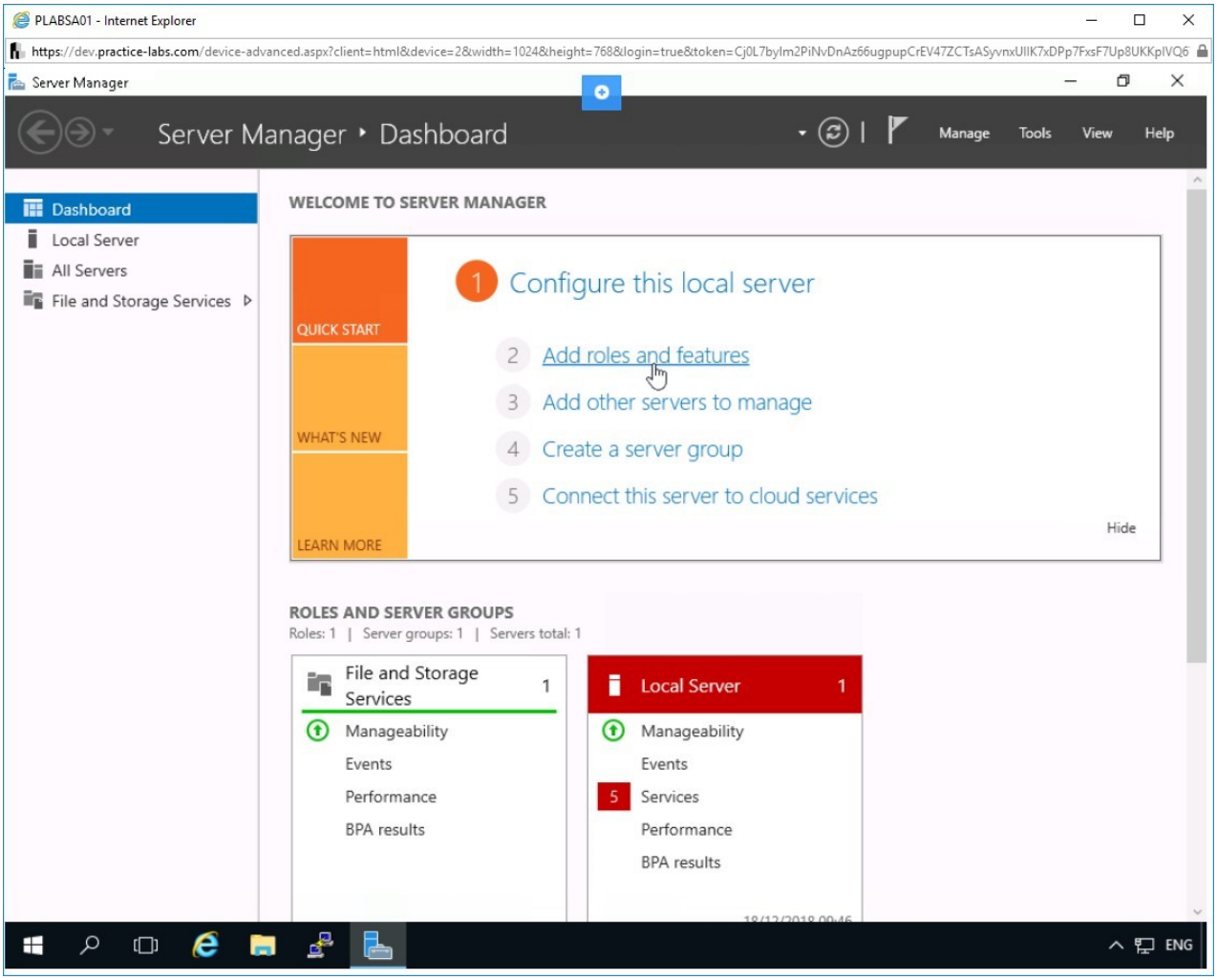


Figure 1.1 Screenshot of PLABSA01: Clicking the Add roles and features option on the Server Manager window.

Step 2

On the **Before you begin** page of the **Add Roles and Features Wizard**, click **Next**.

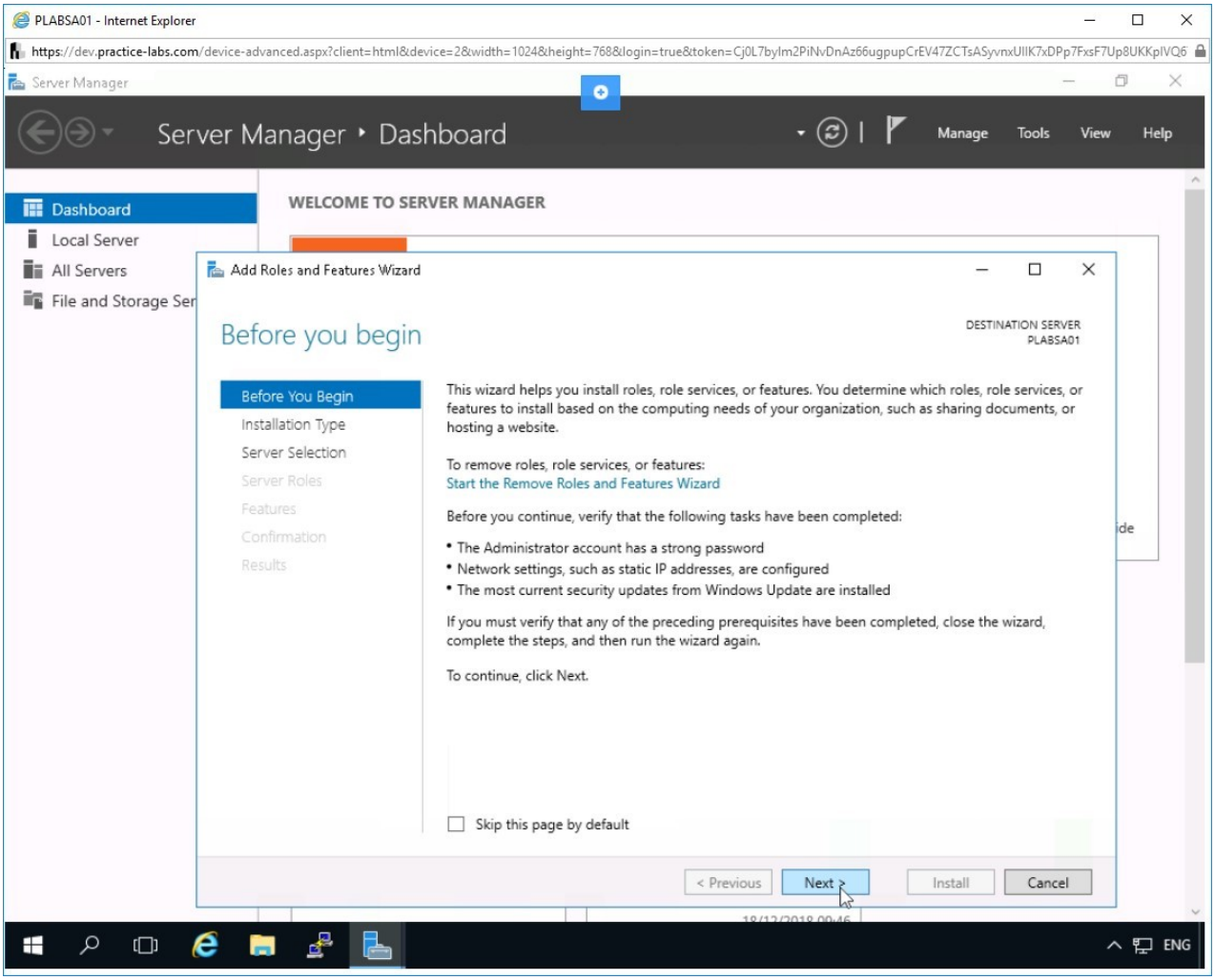


Figure 1.2 Screenshot of PLABSA01: Clicking the Next button on the Before you begin page.

Step 3

On the **Select Installation Type** page, keep the default selection and click **Next**.

Step 4

On the **Select destination server** page, keep the default selection and click **Next**.

Step 5

On the **Select server role** page, select **DNS Server**. The **Add features that are required for DNS Server?** dialog box is displayed. Click **Add Features**.

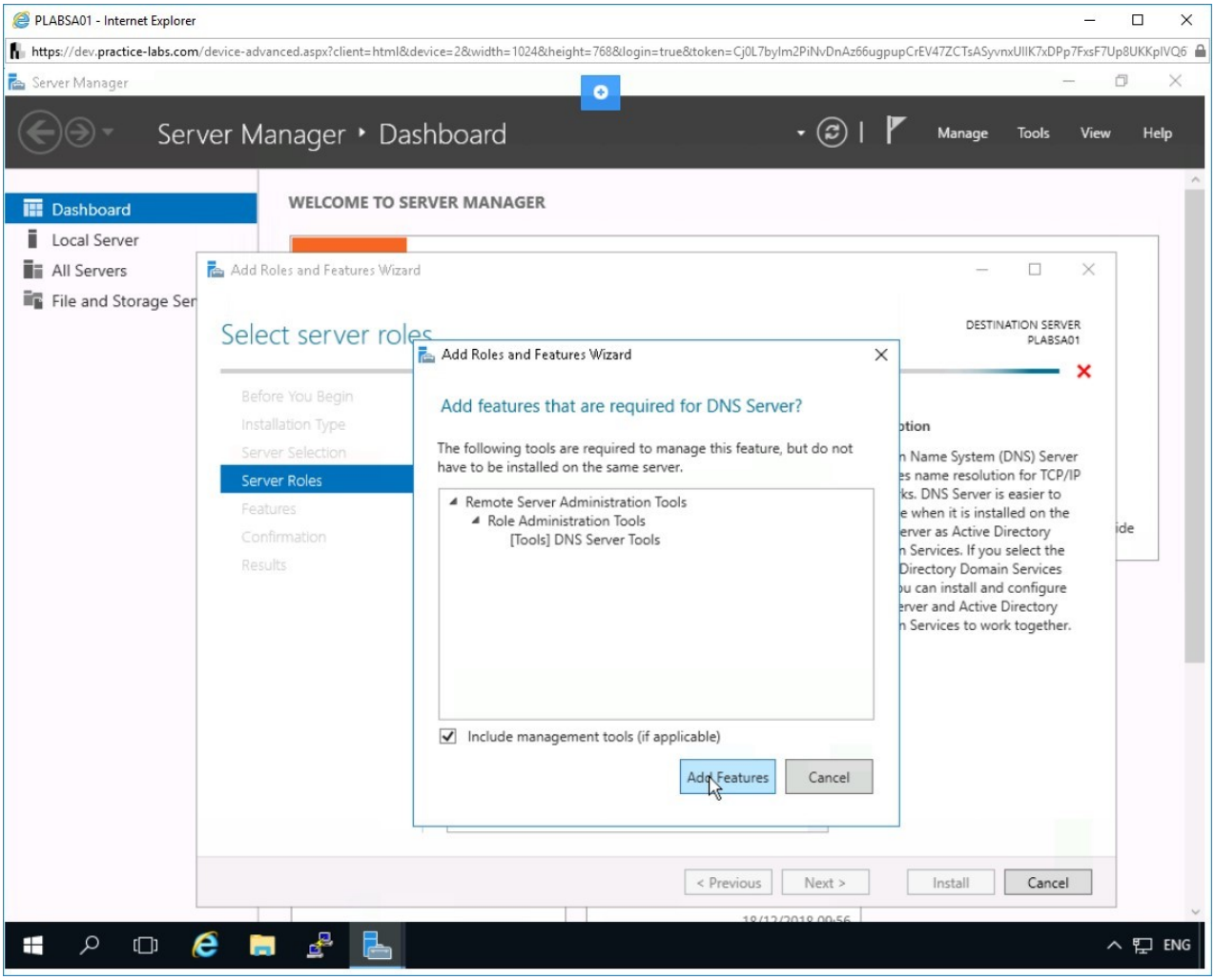


Figure 1.3 Screenshot of PLABSA01: Clicking the Add Features button on the Add features that are required for DNS Server? dialog box.

Step 6

On the **Select server roles** page, **DNS Server** is now selected. Click **Next**.

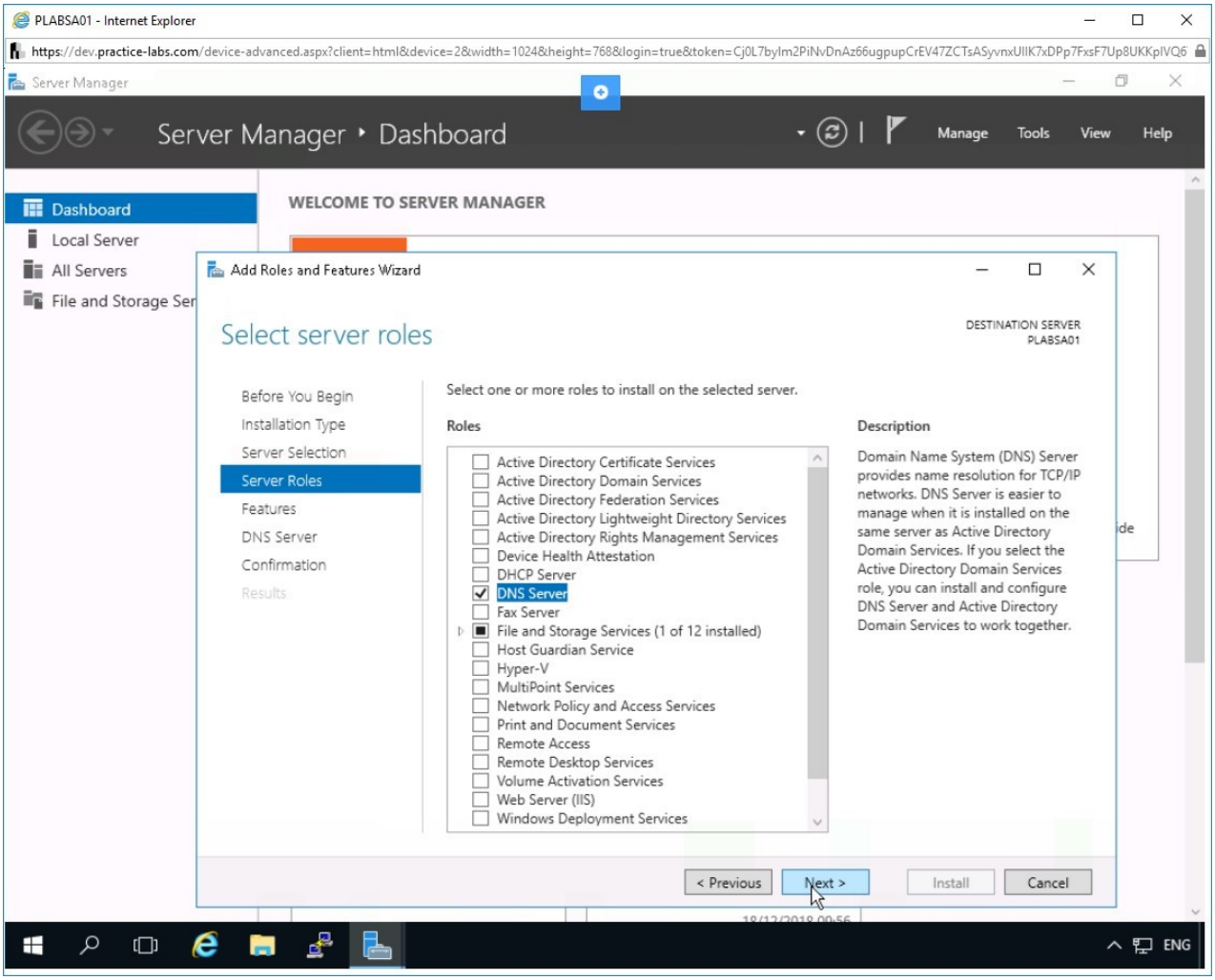


Figure 1.4 Screenshot of PLABSA01: Displaying the DNS Server selection and then clicking the Next button.

Step 7

On the **Select features** page, keep the default selection and click **Next**.

Step 8

On the **DNS Server** page, click **Next**.

Step 9

On the **Confirm installation selections** page, click **Install**.

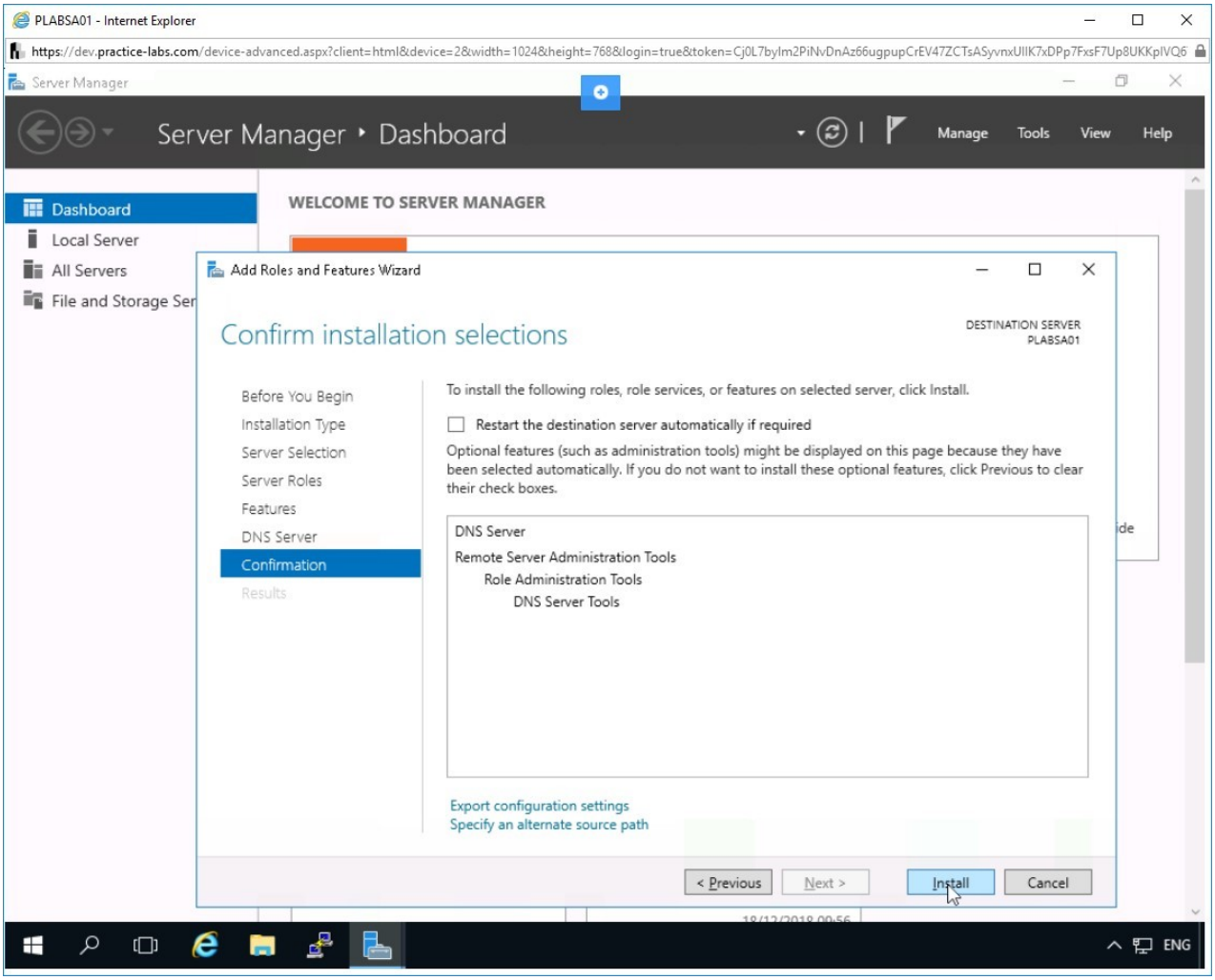


Figure 1.5 Screenshot of PLABSA01: Clicking the Install button to proceed with the DNS server installation.

Step 10

Installation of DNS server starts.

After installation is completed, click **Close**.

Close the **Server Manager** window.

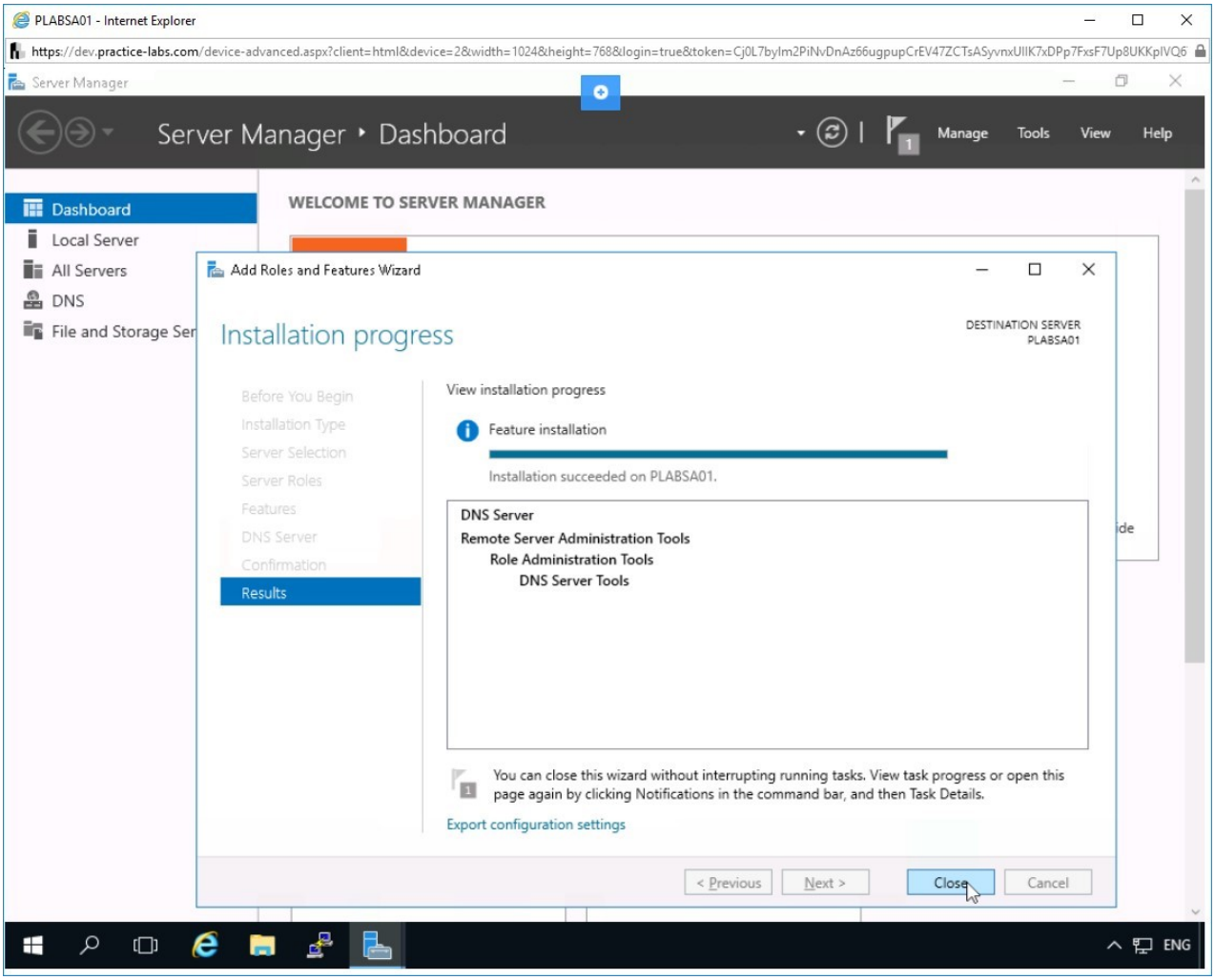


Figure 1.6 Screenshot of PLABSA01: Clicking the Close button after successful installation of the DNS server.

Task 2 - Configure Client DNS

For a client to perform name resolution, it needs to know a DNS server. You will either provide the DNS name and IP address to the client through DHCP or enter it manually in the IP address configuration for the client.

In this task, you will configure the DNS server on the client. To do this, perform the following steps:

Step 1

Connect to **PLABLINUX01**.

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

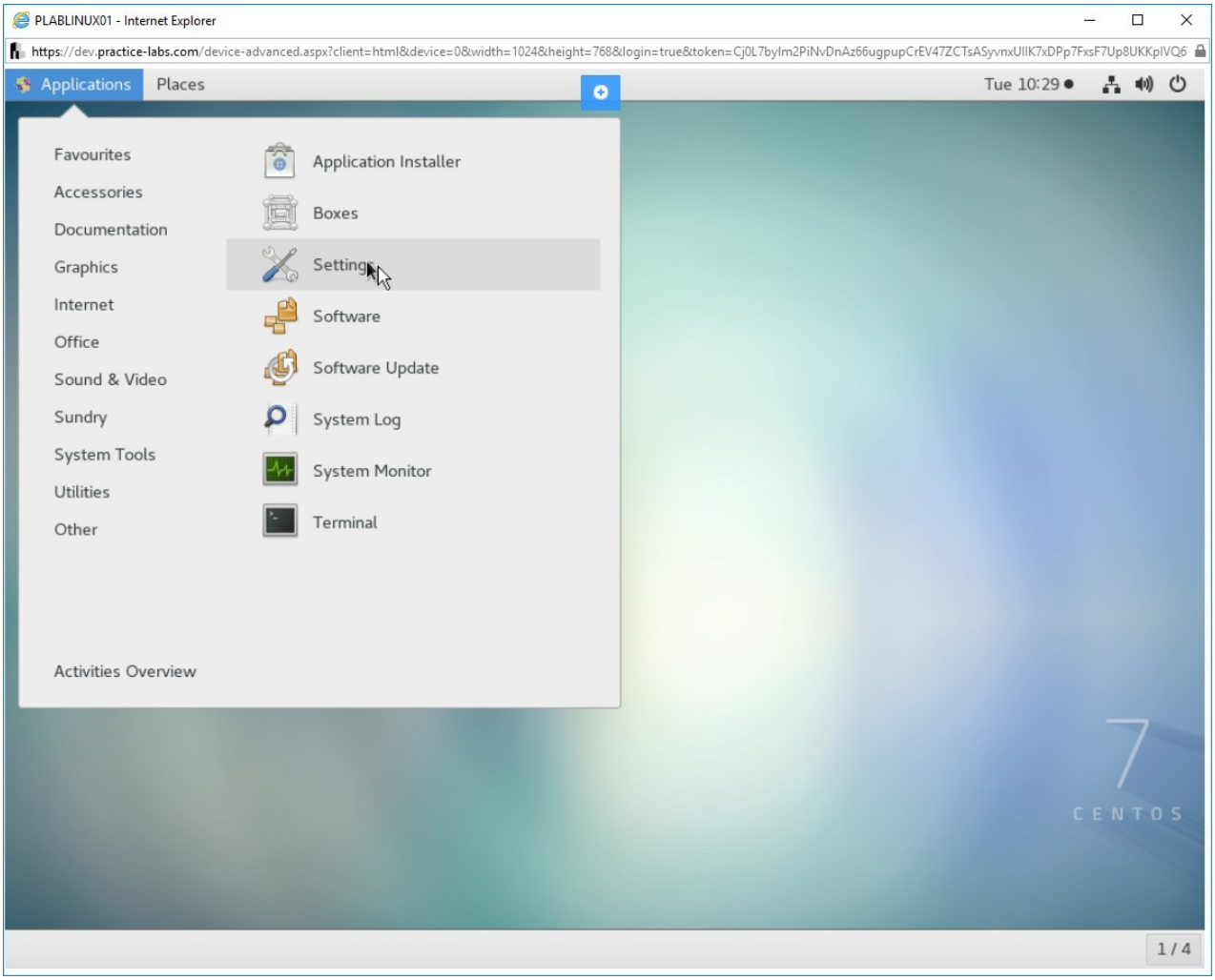


Figure 1.7 Screenshot of PLABLINUX01: Selecting the Settings option from the Applications > System Tools menu.

Step 2

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

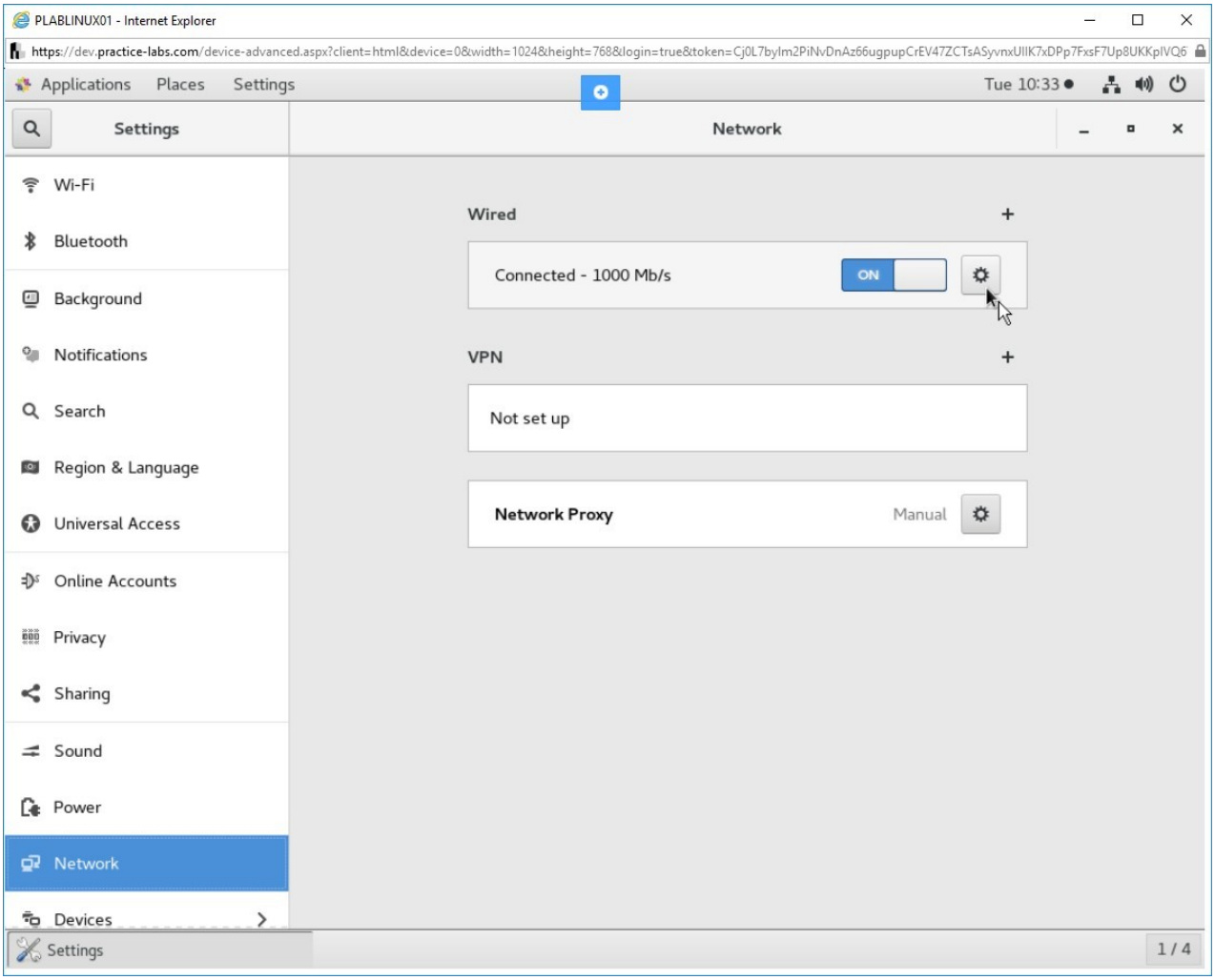


Figure 1.8 Screenshot of PLABLINUX01: Clicking the button to invoke the Wired dialog box.

Step 3

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

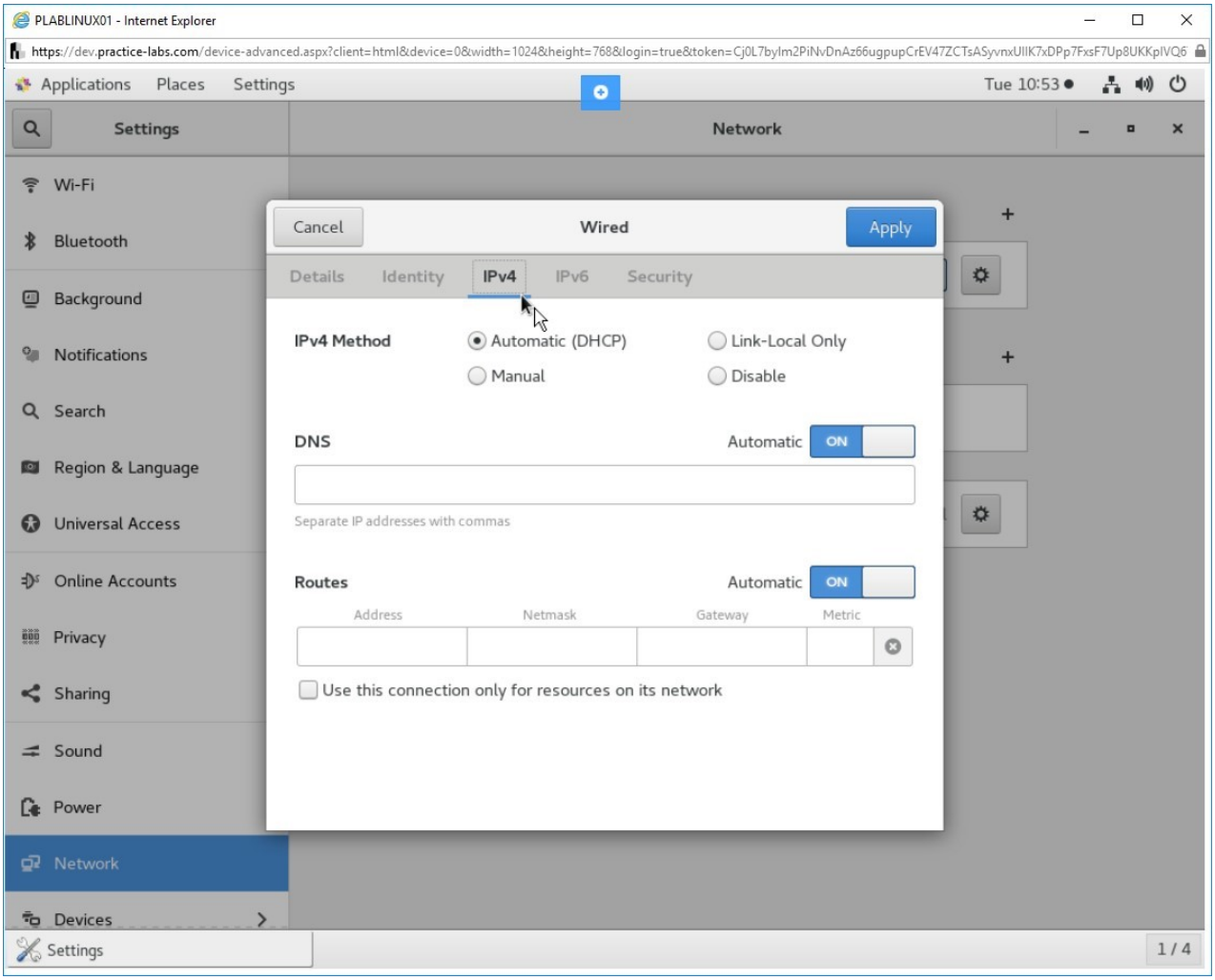


Figure 1.9 Screenshot of PLABLINUX01: Selecting the IPv4 tab in the Wired dialog box.

Step 4

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

Address:

```
192.168.0.2
```

Netmask:

```
255.255.255.0
```

Gateway:

```
192.168.0.1
```

DNS:

```
192.168.0.1
```

Click **Apply**.

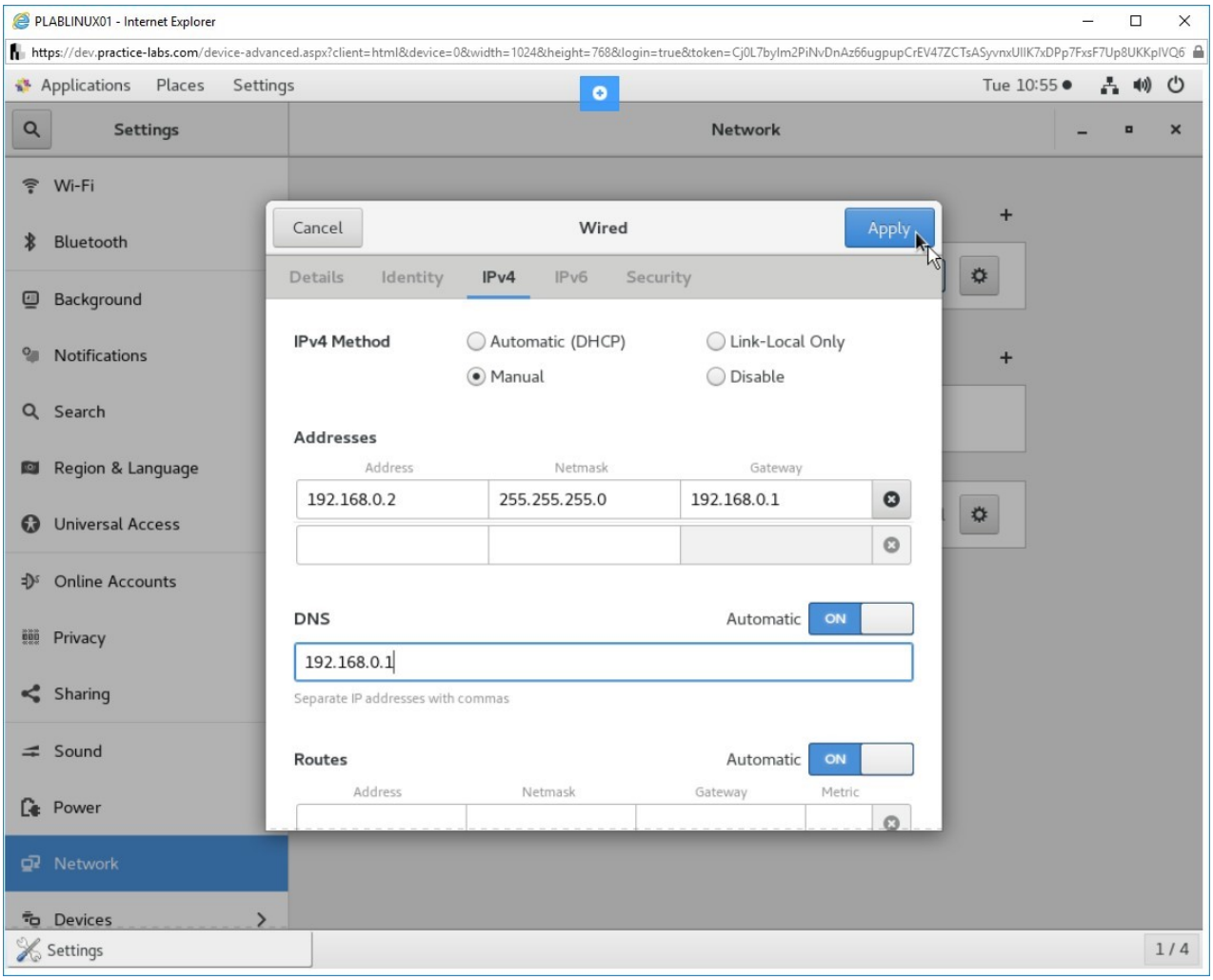


Figure 1.10 Screenshot of PLABLINUX01: Entering the network information and then clicking the Apply button.

Step 5

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

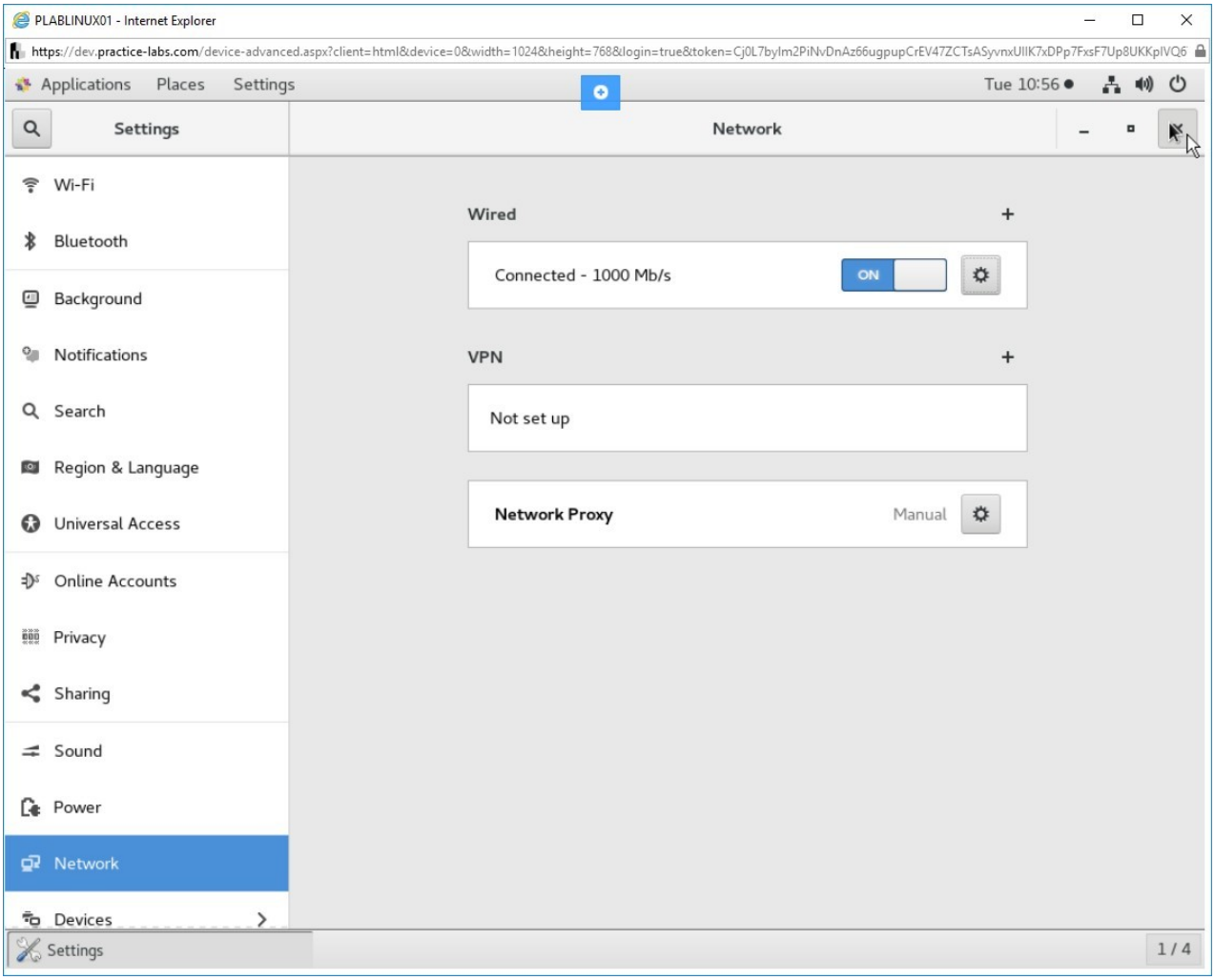


Figure 1.11 Screenshot of PLABLINUX01: Displaying the Settings window.

Task 3 - Query Remote DNS Servers

In Linux, you can query the remote DNS server to understand their current configuration. You can use these servers to perform reverse name resolution as well. In this task, you will query the DNS server, both in the forward lookup as well as reverse resolution mode.

> ***Note**: In this task, you will not be able to query any system that is located outside the lab network. Therefore, the commands are used with the local systems.*

To query remote DNS servers, perform the following steps:

Step 1

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

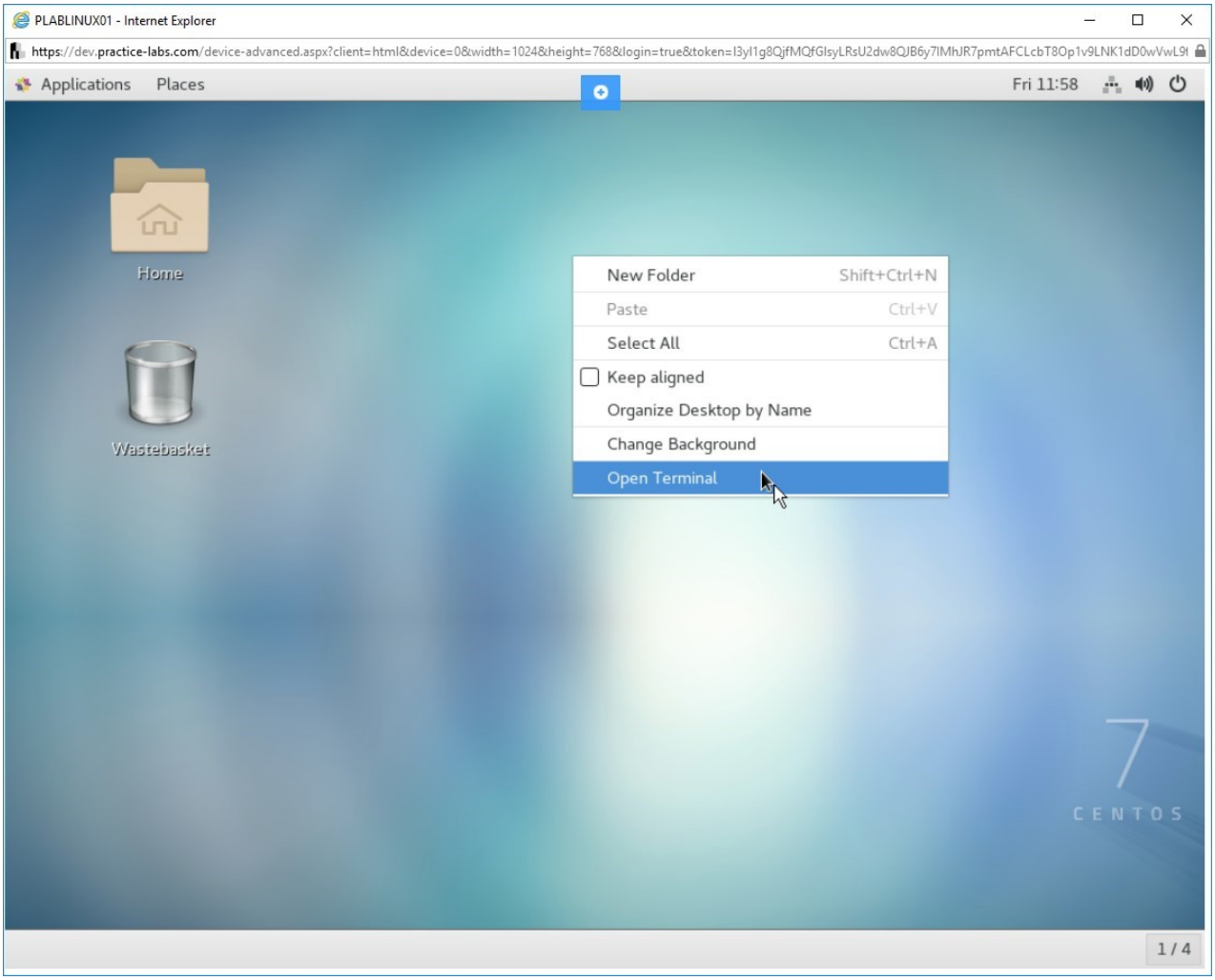


Figure 1.12 Screenshot of PLABLINUX01: Selecting the Open Terminal option from the context menu.

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**.

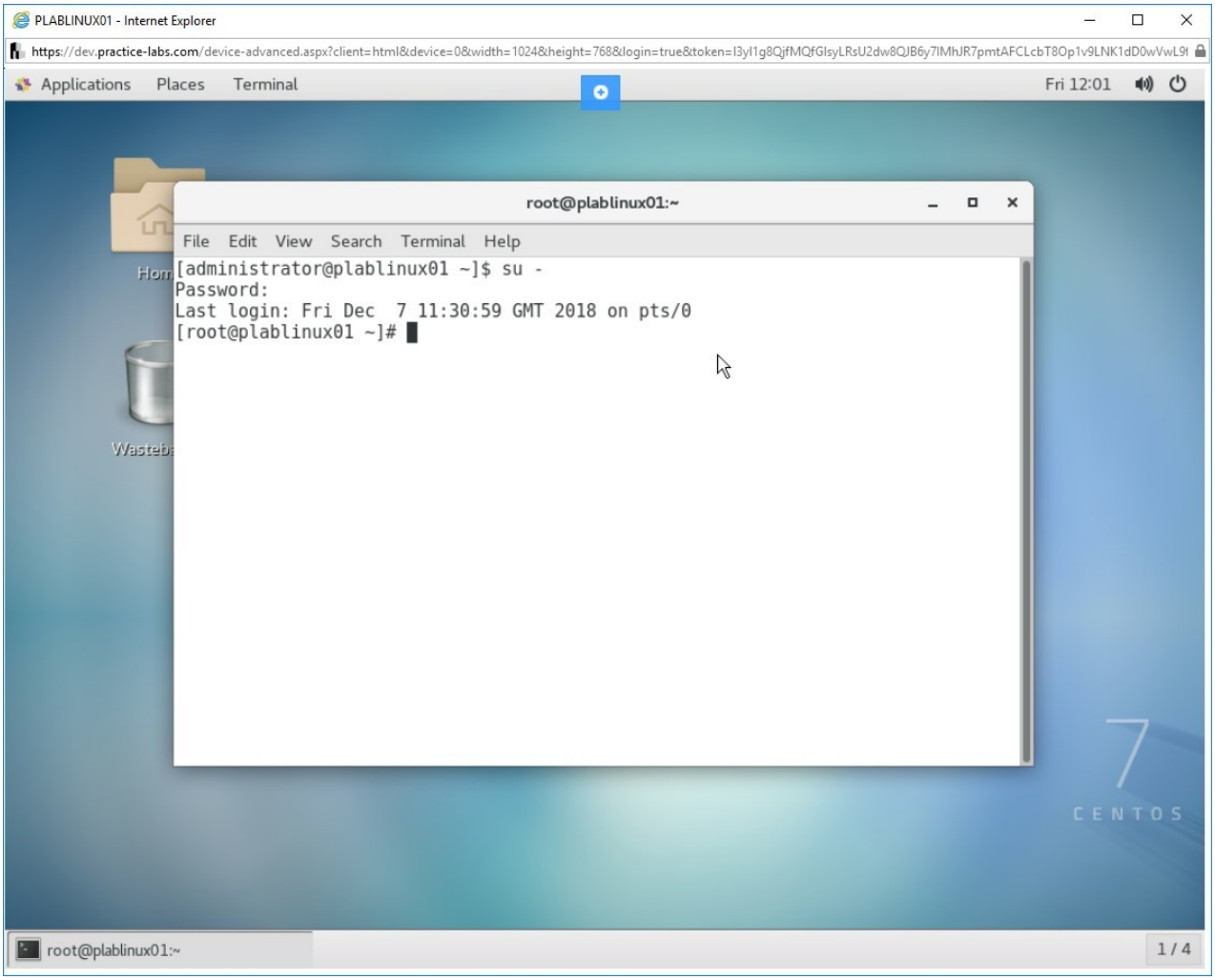


Figure 1.13 Screenshot of PLABLINUX01: Changing the account to the root account with the su command.

Step 3

You can use the getent command to query databases for information on various components including password, group, hosts, services, and protocols.

To list the entry for the **localhost** in the **/etc/hosts** file, type the following command:

```
getent hosts localhost
```

Press **Enter**.

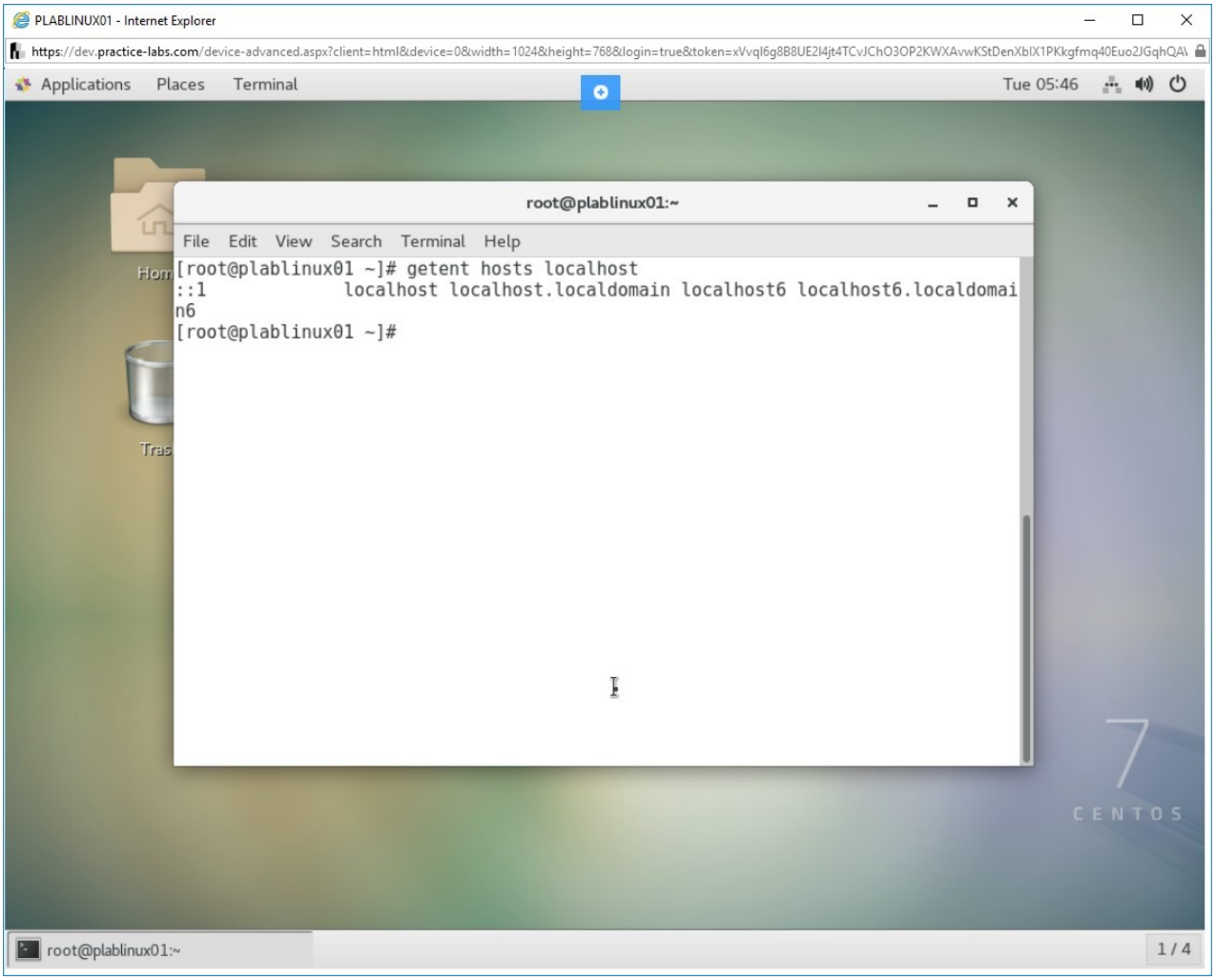


Figure 1.14 Screenshot of PLABLINUX01: Performing a forward lookup.

Step 4

You can also perform reverse name resolution, which means that you can use an IP address to get the name of the system with the getent command.

Type the following command:

```
getent hosts 127.0.0.1
```

Press **Enter**.

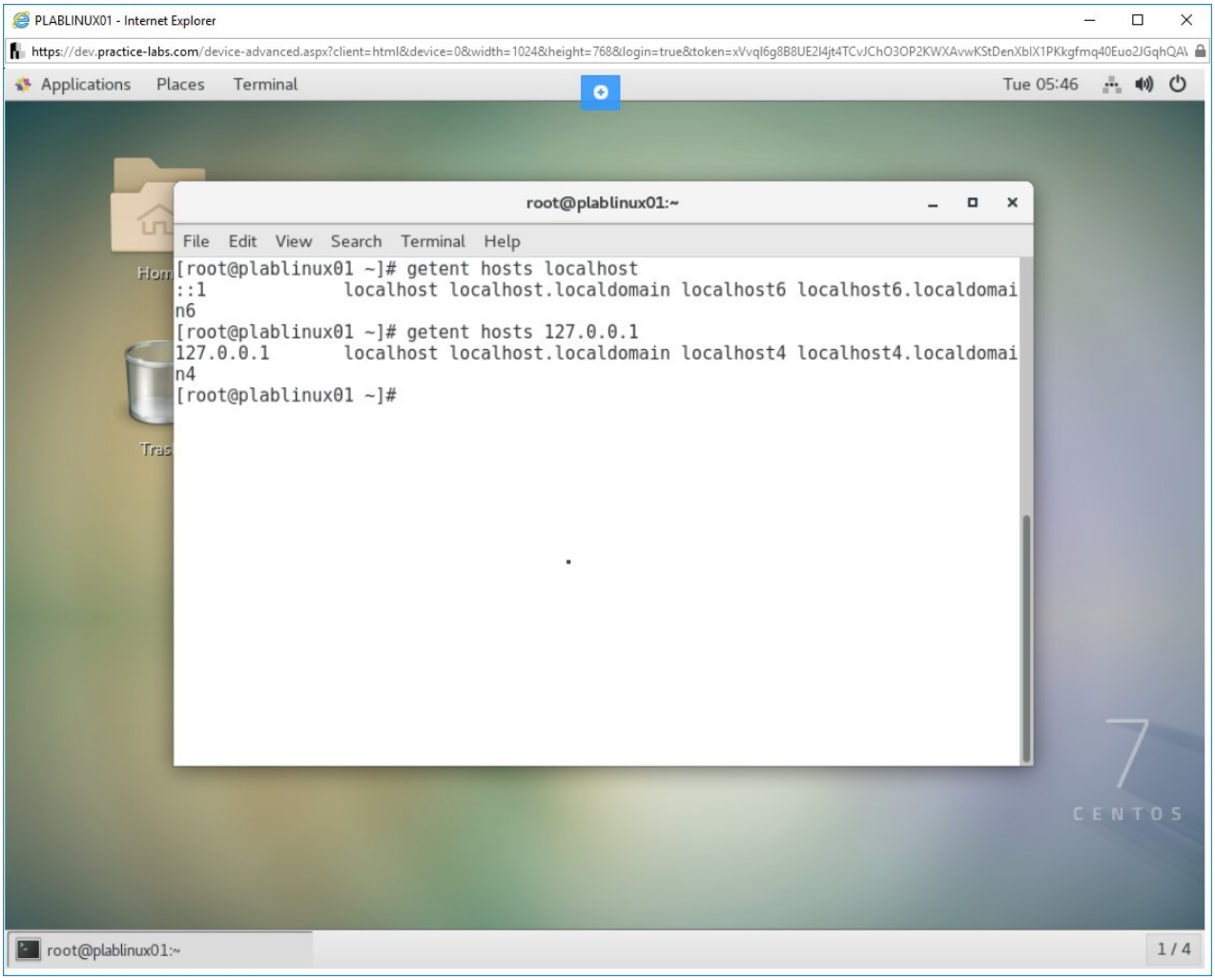


Figure 1.15 Screenshot of PLABLINUX01: Performing a reverse lookup.

Step 5

Other than name resolution, you can also use the getent command to perform tasks such as listing usernames in alphabetical order.

Type the following command:

```
getent passwd | cut -d: -f1 | sort
```

Press **Enter**.

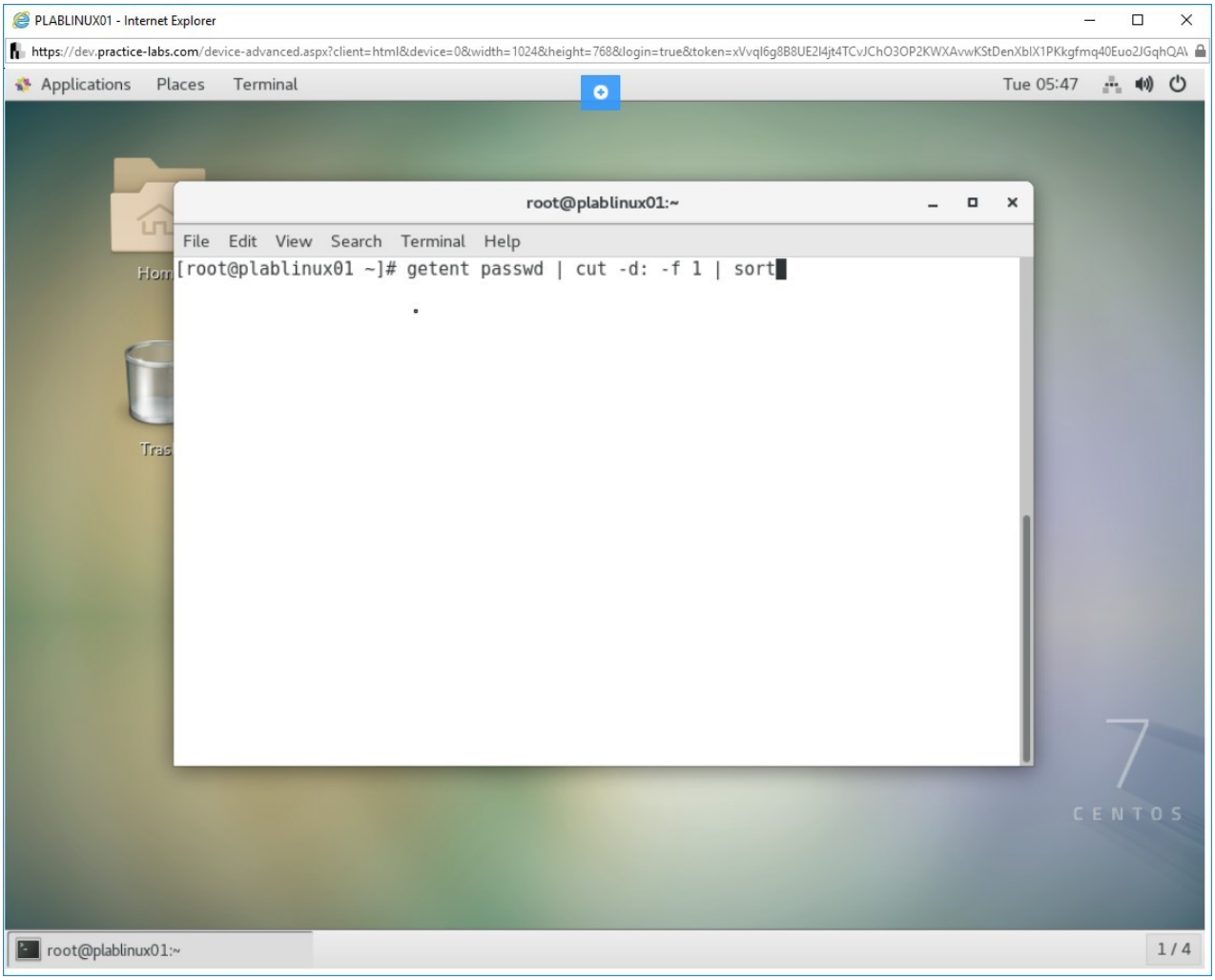


Figure 1.16 Screenshot of PLABLINUX01: Executing the command to see the usernames in alphabetical order.

The output is now displayed.

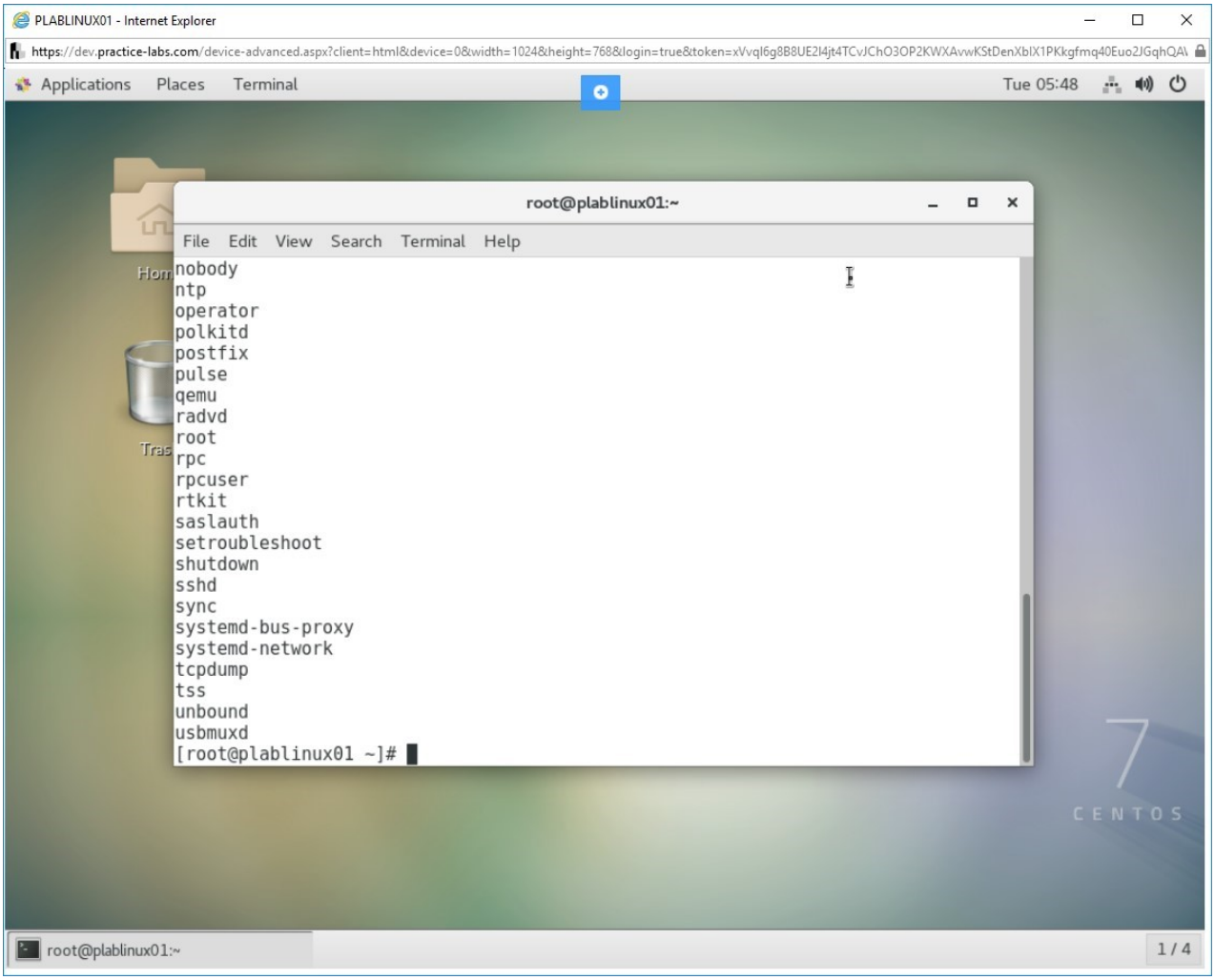


Figure 1.17 Screenshot of PLABLINUX01: Viewing the usernames in alphabetical order.

Step 6

Clear the screen by entering the following command:

```
clear
```

You can use the host command to list IP addresses that a domain is configured to use.

The domain name resolution is performed using the forward lookup. This means that you will need to use the system name along with the host command.

For example, type the following command:

```
host localhost
```

Press **Enter**.

> ***Note**: You may receive an error when you run this command due to access limitations within the lab environment.*

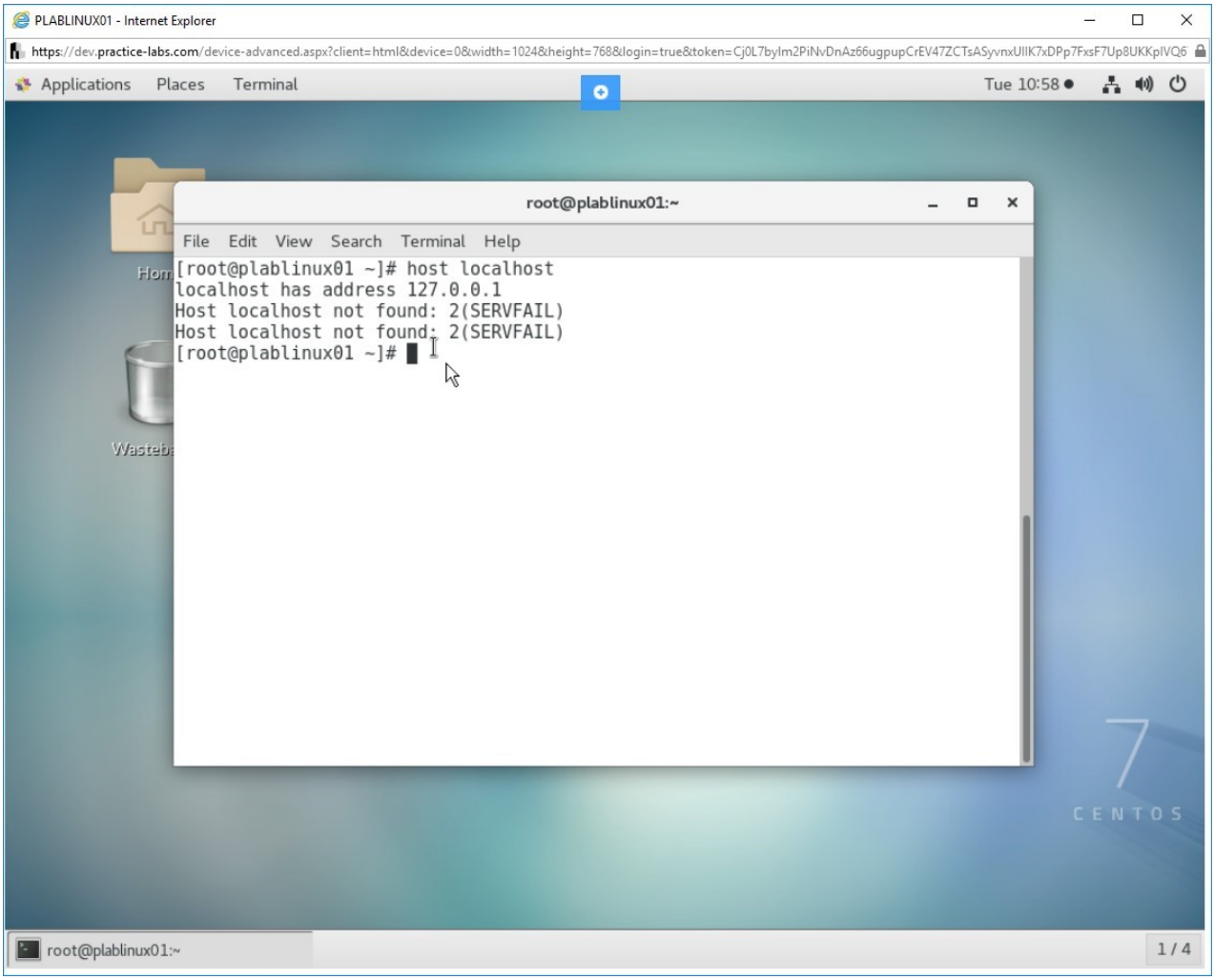


Figure 1.18 Screenshot of PLABLINUX01: Performing a forward lookup.

Step 7

You can also do a reverse lookup. Here, you will use the system IP address rather than the domain name.

Type the following command:

```
host 127.0.0.1
```

Press **Enter**.

> ***Note**: You will receive an error when you run this command due to access limitations within the lab environment.*

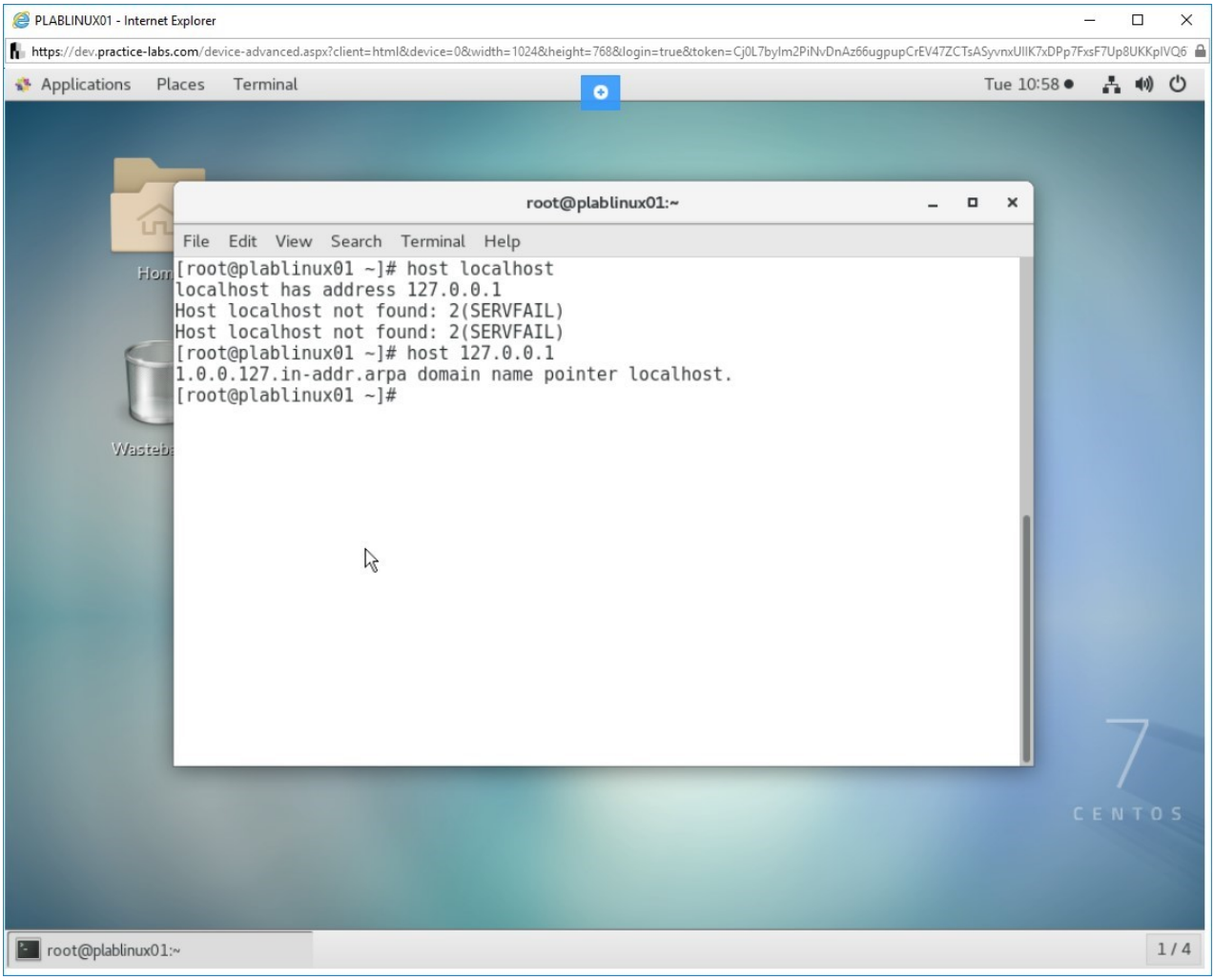


Figure 1.19 Screenshot of PLABLINUX01: Performing a reverse lookup.

Step 8

Clear the screen by entering the following command:

```
clear
```

The dig command provides more information than the host command. It also provides information on the nameservers.

Type the following command:

```
dig 127.0.0.1
```

Press **Enter**.

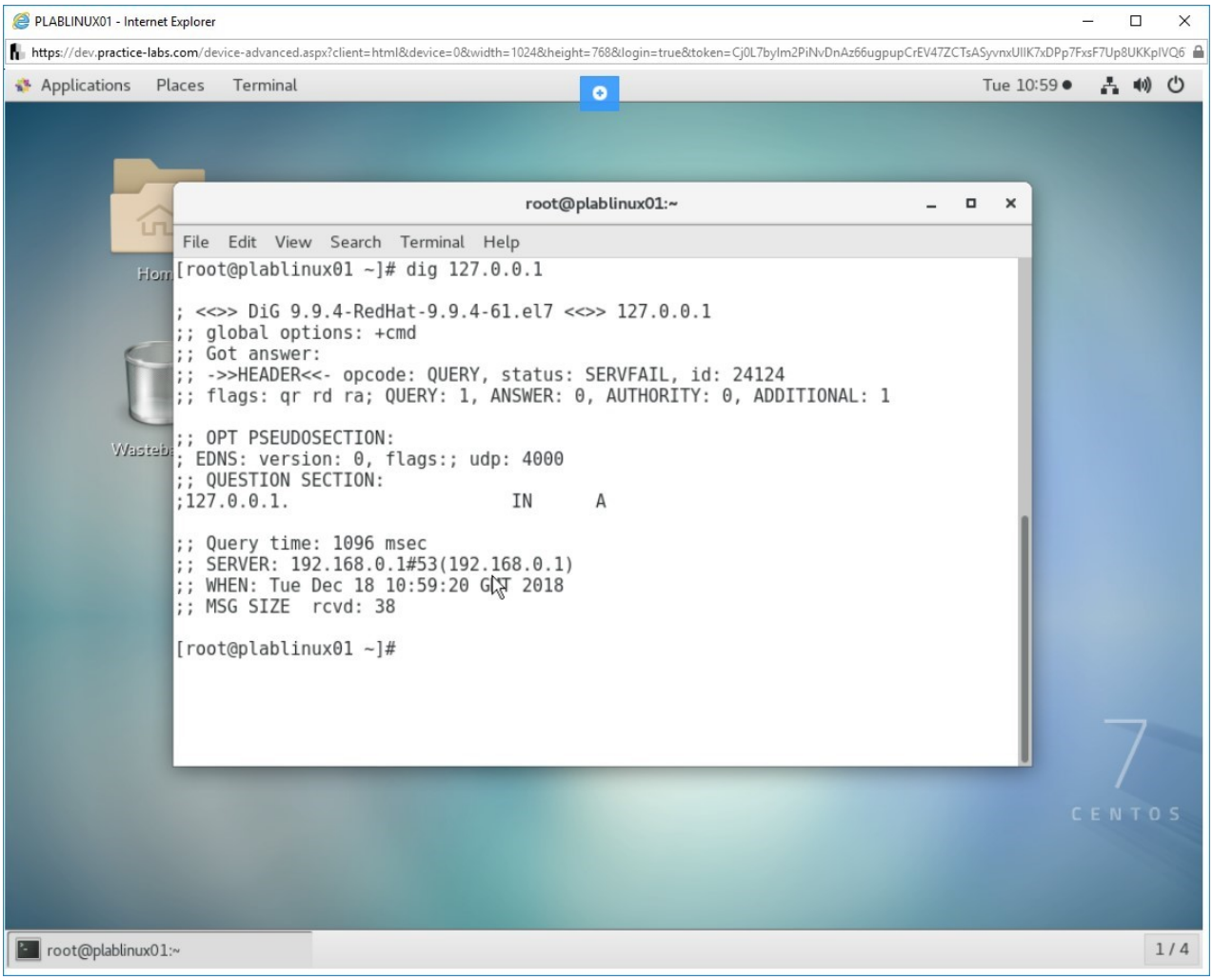


Figure 1.20 Screenshot of PLABLINUX01: Retrieving the information about the host and nameservers.

Step 9

Clear the screen by entering the following command:

```
clear
```

Type the following command to get information on a remote system:

```
dig 4.2.2.2
```

Press **Enter**.

> ***Note**: You will not be able to ping the DNS server 4.2.2.2. This is because ping is blocked by the firewall in the lab environment. However, you will be able to dig this server from within the lab environment.*

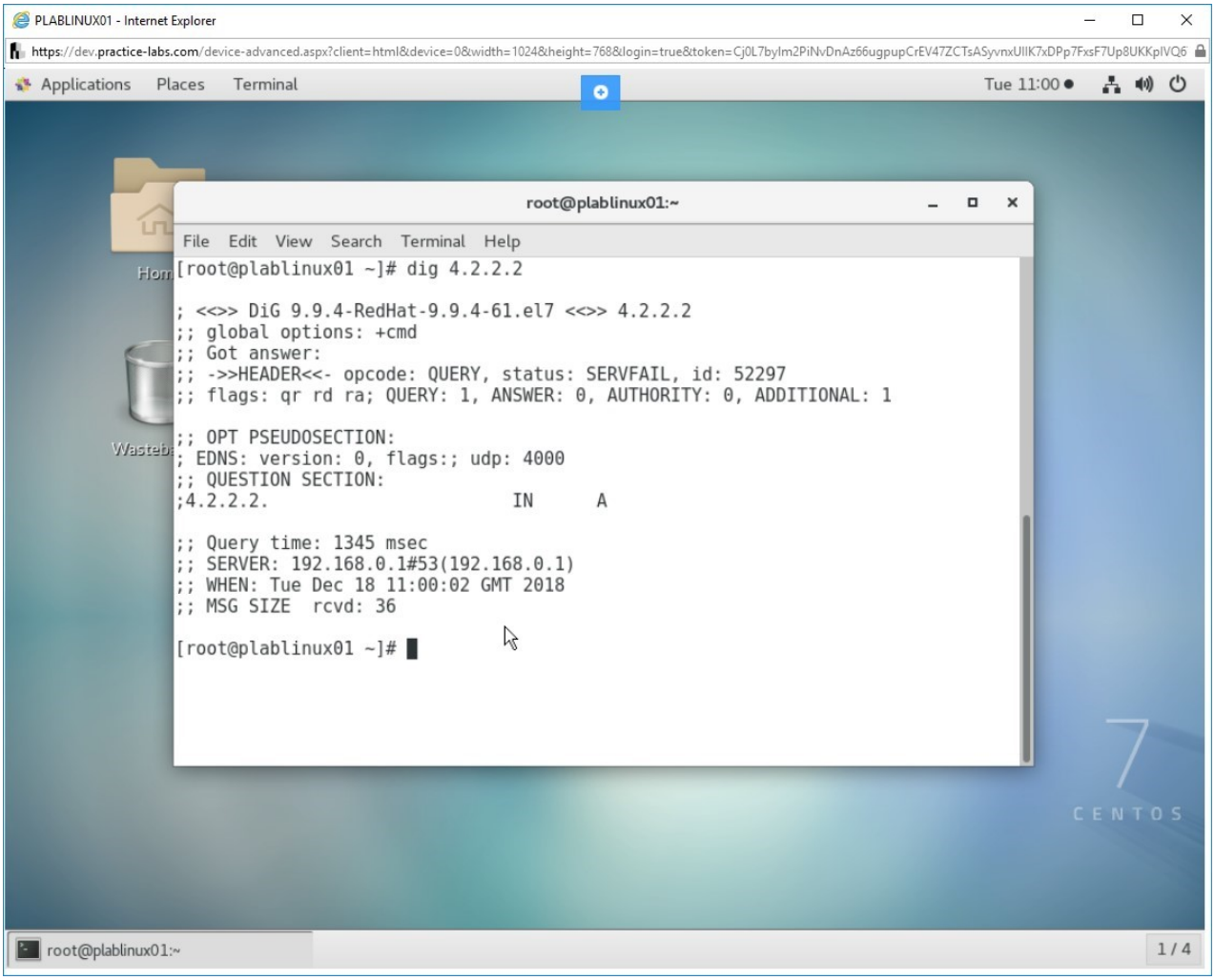


Figure 1.21 Screenshot of PLABLINUX01: Retrieving information of a remote system.

Step 10

Clear the screen by entering the following command:

```
clear
```

You can also perform forward name resolution. Type the following command:

```
dig localhost
```

Press **Enter**.

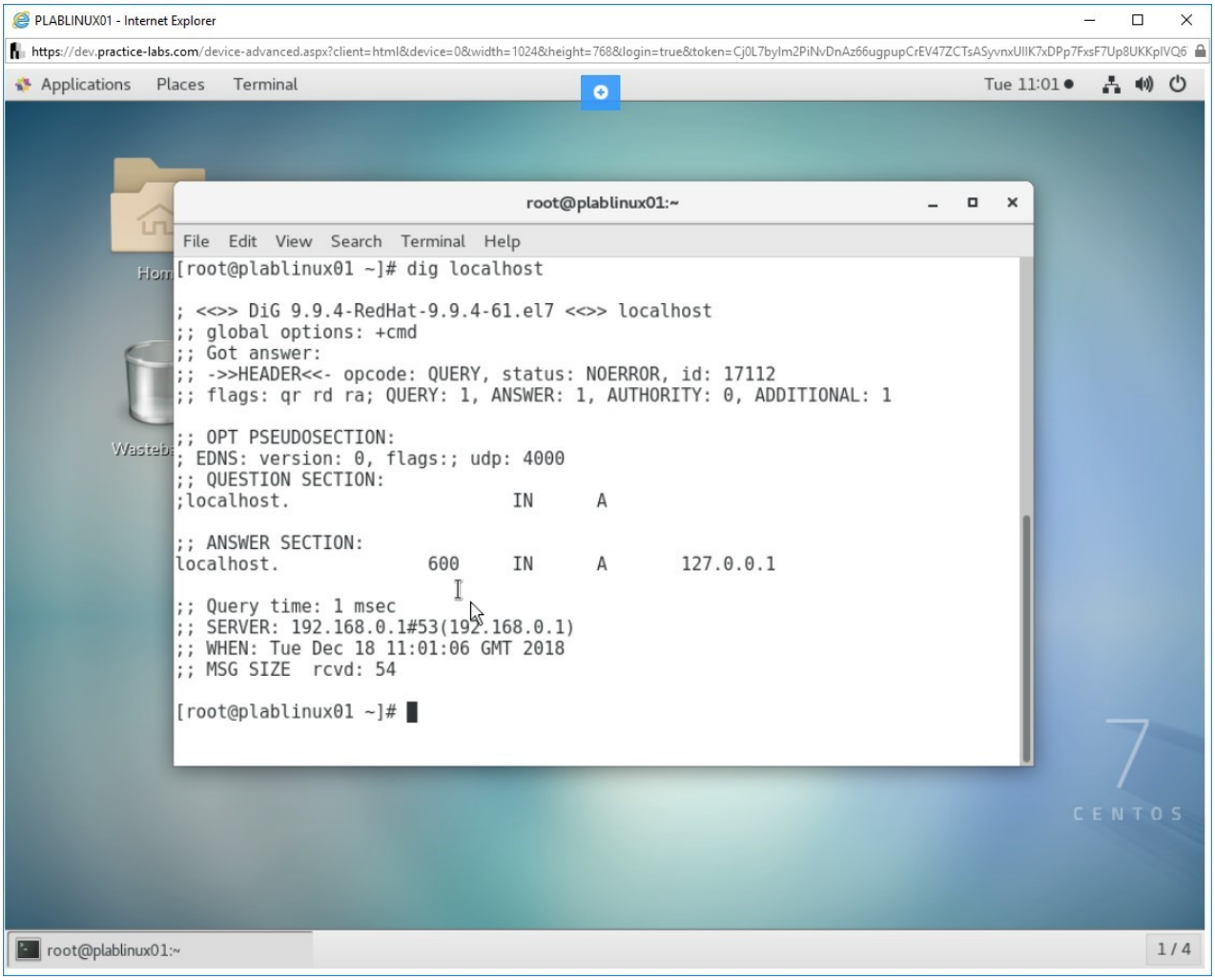


Figure 1.22 Screenshot of PLABLINUX01: Performing the forward host name resolution.

Task 4 - View DNS servers Settings

To configure local name resolution and use remote DNS servers, perform the following steps:

Step 1

Clear the screen by entering the following command:

```
clear
```

The name resolution can be performed using two different methods:

- Using the **/etc/hosts** file
- Using the **/etc/resolv.conf** file

To view the **/etc/hosts** file, type the following command:

```
cat /etc/hosts
```

Press **Enter**.

If you had the IP address and name of the system, you would be able to resolve its name from your system.

> ***Note**: This has been covered in detail in the previous tasks. Therefore, you will perform a quick task as a recap.*

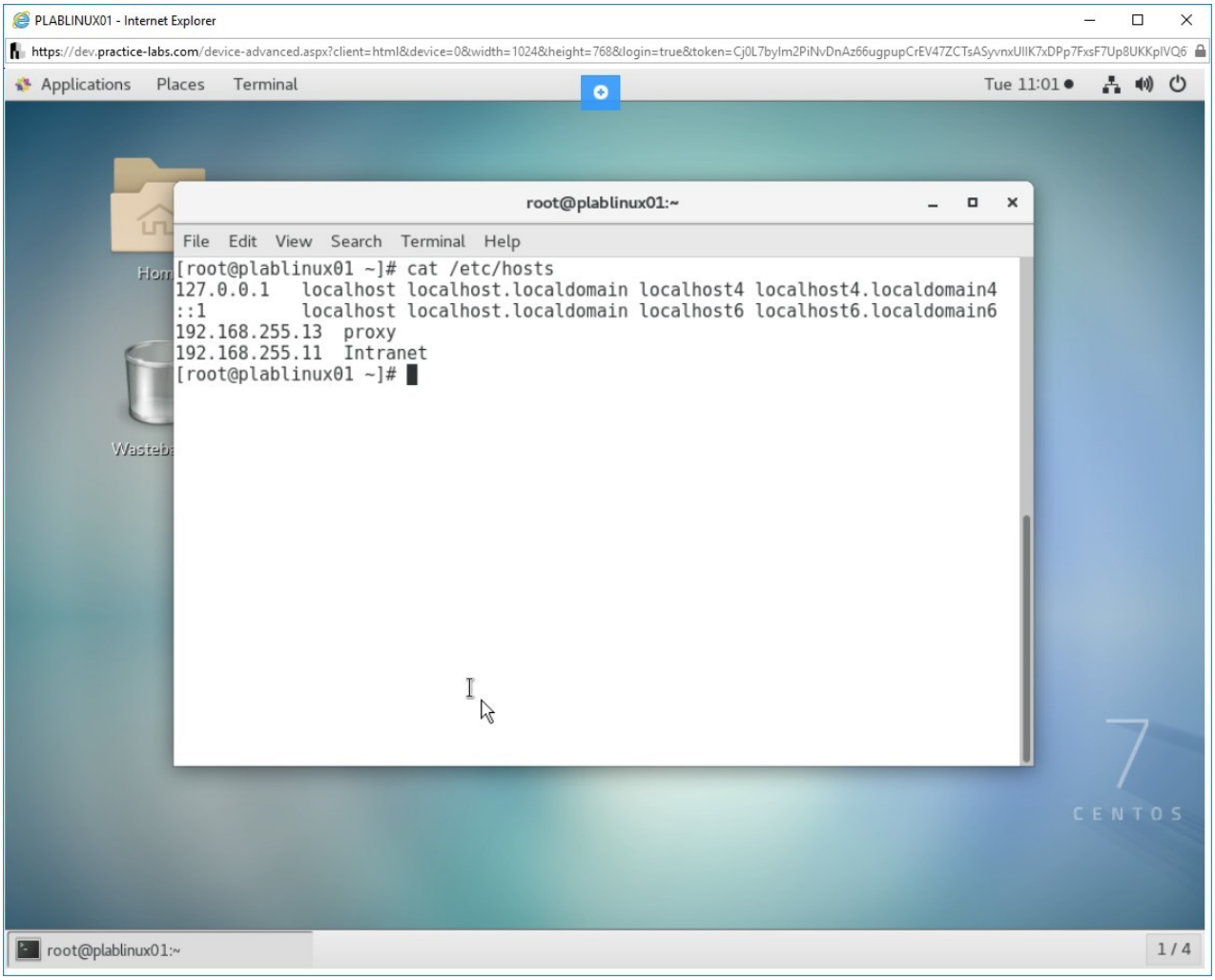


Figure 1.23 Screenshot of PLABLINUX01: Viewing the /etc/hosts file.

Step 2

Clear the screen by entering the following command:

```
clear
```

Another method is to use the **/etc/resolv.conf** file. The nameservers or the DNS servers that you intend to use can be listed here. The name resolutions will be performed using these servers.

To view the **/etc/resolv.conf** file, type the following command:

```
cat /etc/resolv.conf
```

Press **Enter**.

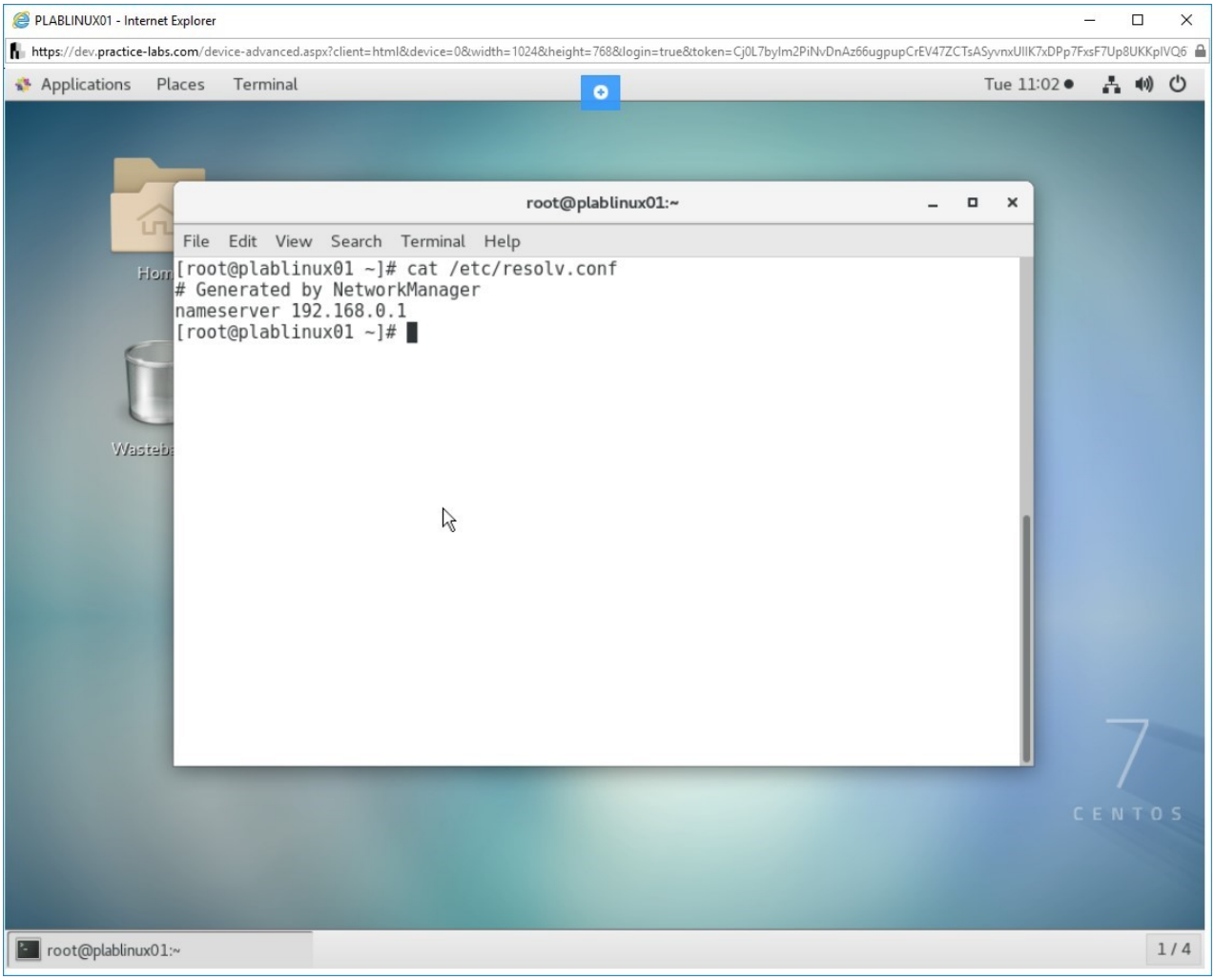


Figure 1.24 Screenshot of PLABLINUX01: Viewing the /etc/resolv.conf file.

Task 5 - Modify the Order in Which Name Resolution is Done

The name resolution can be performed by a hosts file on the local system or through a DNS server, which is commonly known as the name resolution server. The order in which they are specified in the /etc/hosts file defines which of the two will be used first. For example, the default order is /etc/hosts file first and then the DNS server.

To modify the order in which name resolution is done, perform the following steps:

Step 1

The **/etc/nsswitch.conf** file defines the order in which the name resolution is to be performed.

To view this file, type the following command:

```
cat /etc/nsswitch.conf
```

Press **Enter**.

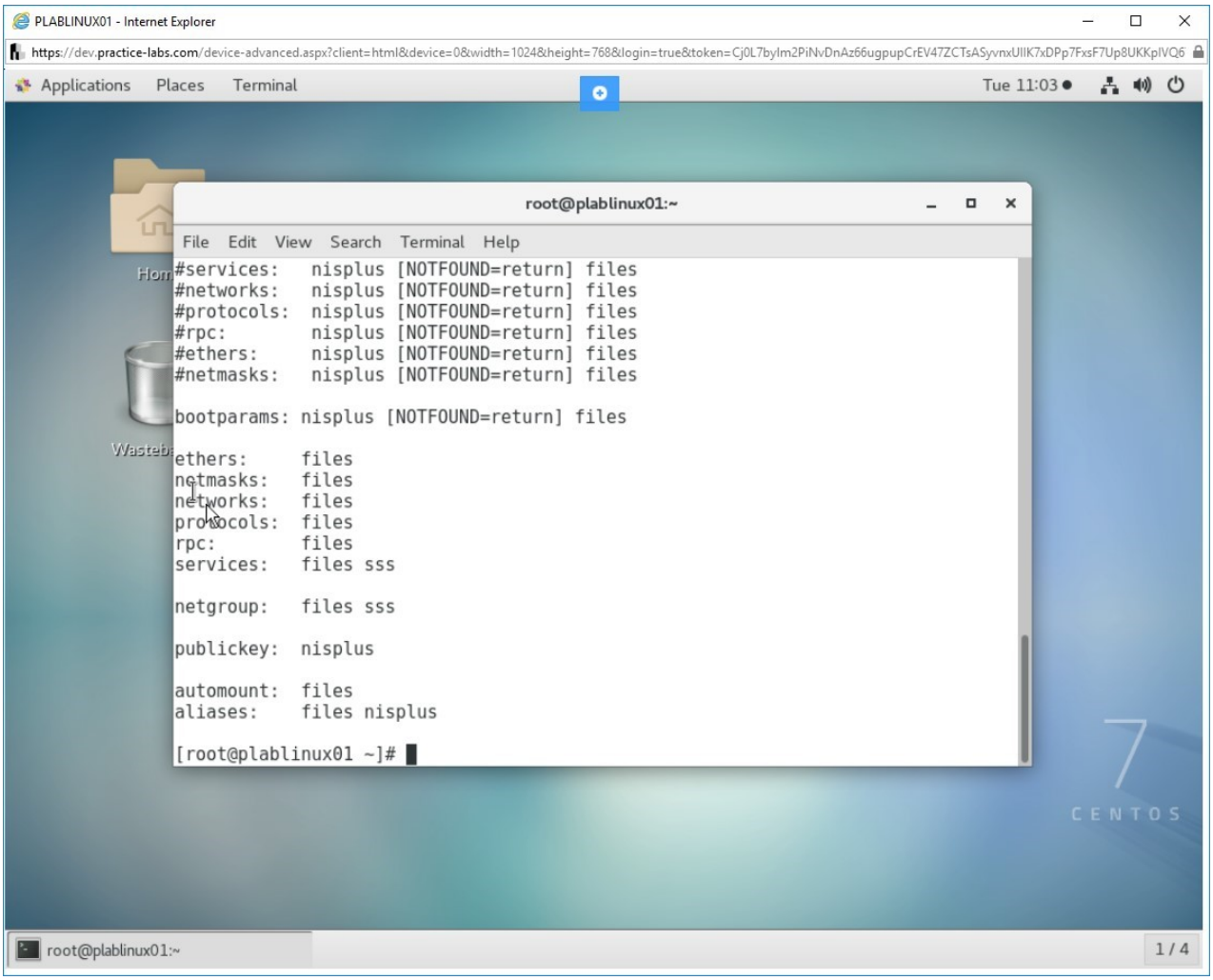


Figure 1.25 Screenshot of PLABLINUX01: Viewing the /etc/nsswitch.conf file.

Step 2

Note the **hosts** entry in the file. It contains the following order: **files**, **dns**, **myhostname**

The first entry, **files**, defines the **/etc/hosts** file. The second entry defines the **DNS**, **192.168.0.1**.

You can reverse the order and put DNS as the first name resolution mechanism and then move to the **/etc/hosts** file. You will need to edit this file and change the order.

For example, you can add the following: dns, files, myhostname. This way the DNS server will be queried for the name resolution

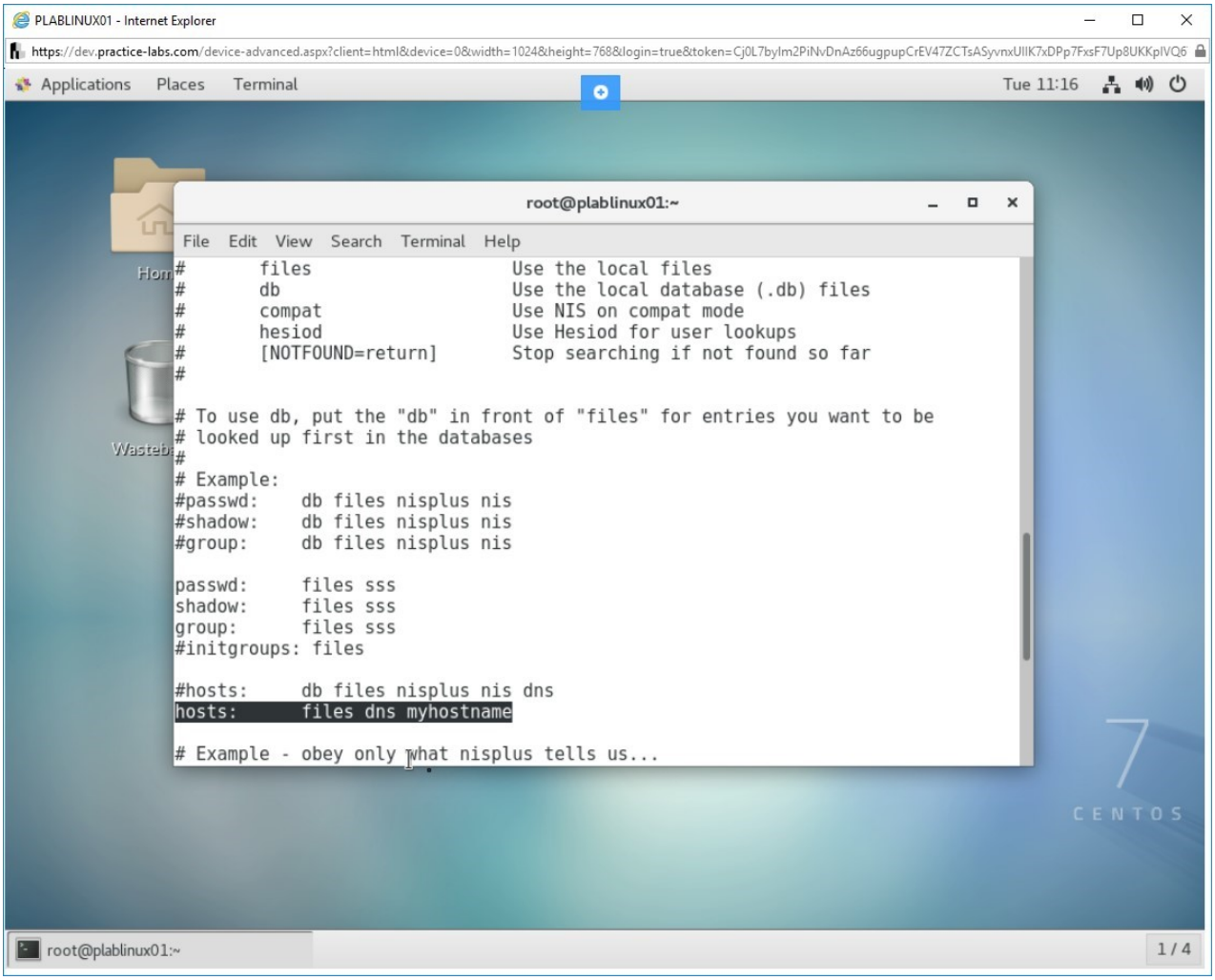


Figure 1.26 Screenshot of PLABLINUX01: Viewing the hosts section of the /etc/nsswitch.conf file.

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

Review

Well done, you have completed the **Configure Client Side DNS** Practice Lab.

Summary

You completed the following exercise:

- Exercise 1 - Configure Client Side DNS

You should now be able to:

- Configure a DNS server
- Configure client DNS
- Query remote DNS servers
- Configure DNS servers
- Modify the order in which name resolution is done

Feedback

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