

# Implementing Different Boot Methods and Types of Operating System Installation

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  - **Exercise 2 - Perform a Clean Install**
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## Introduction

Boot methods

OS installation types

A+

OS

Welcome to the **Implementing Different Boot Methods and Types of Operating System Installation** Practice Lab. In this module you will be provided with the instructions and devices needed to develop your hands-on skills.

## Learning Outcomes

In this module, you will complete the following exercises:

- Exercise 1 - Learn About Boot Methods
- Exercise 2 - Perform a Clean Install

After completing this lab, you will be able to:

- Set up a Boot Device
- Perform a Clean Install
- Create a Recovery partition
- Prepare for an Unattended Installation

# Exam Objective

The following exam objective is covered in this lab:

- 1.3 Summarize general OS installation considerations

**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

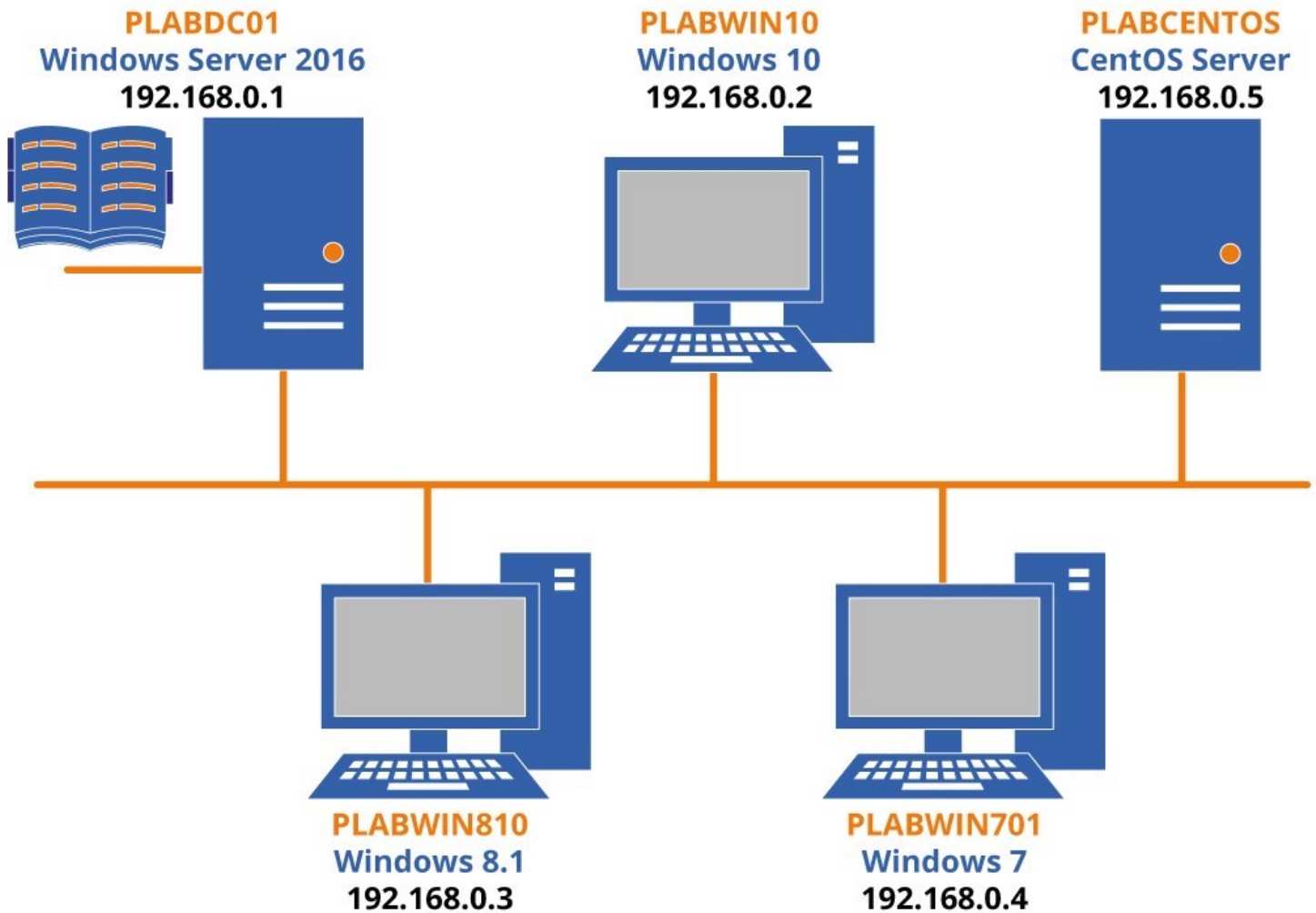
For more information on using Practice Labs, please see our **Help and Support** page. You can also raise a technical support ticket from this page.

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

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## 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.

- **PLABDC01** - (Windows Server 2016 - Domain Controller)
- **PLABWIN10** - (Windows 10 - Domain Member)
- **PLABCENTOS** - (CentOS Server)
- **PLABWIN810** - (Windows 8.1 - Domain Member)
- **PLABWIN701** - (Windows 7 - Domain Member)

Click **Next** to proceed to the first exercise.

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## Exercise 1 - Learn About Boot Methods

Booting is the process of powering on the computer and starting the operating system. An operating system is a program, which makes the application programs and the computer hardware work together. The most usual place where you will install an operating system is a hard drive. However, you can also boot a computer with an operating system that runs on a USB drive. You can install an operating system using a hard drive, optical disk, USB drive, or PXE. During the boot process, the device containing the operating system program is loaded in the RAM or computer's main memory and executed. After execution, the operating system becomes functional and takes over control of the machine.

In this exercise, you will learn about the boot methods.

## Learning Outcomes

After completing this exercise, you will be able to:

- Set up a Boot Device

## Your Devices

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

- **PLABDC01** - (Windows Server 2016 - Domain Controller)
- **PLABWIN10** - (Windows 10 - Domain Member)



## Task 1 - Set up a Boot Device

Operating system files can be loaded from an external storage device. The device could be an optical disk or a USB drive. The methods of installing an operating system from these devices are similar.

To load an operating system from a DVD, perform the following steps:

## Step 1

Ensure all the required device are powered on and connect to **PLABWIN10**. Close any open windows.

Click the **Hyper-V Manager** icon on the taskbar.

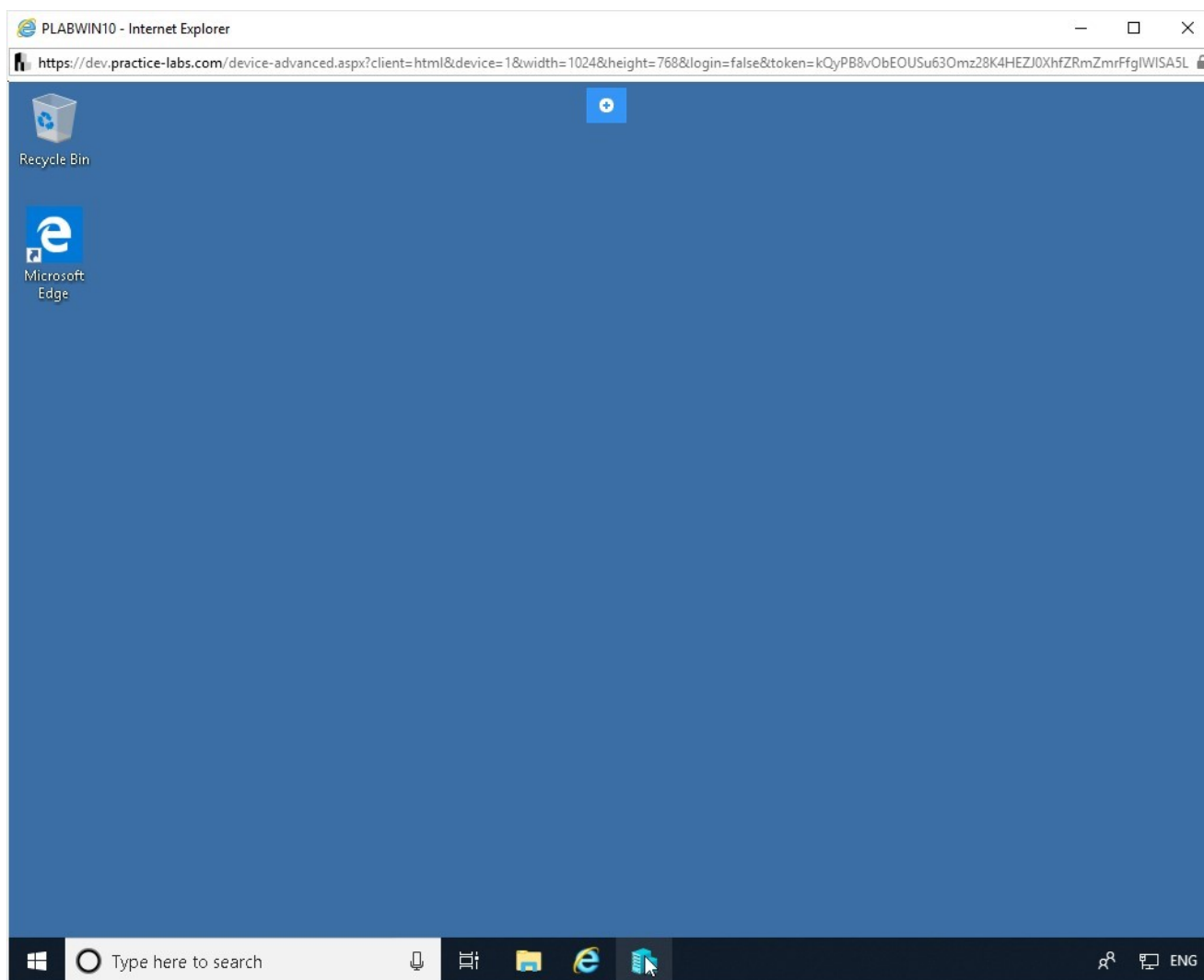


Figure 1.1 Screenshot of PLABWIN10: Clicking the Hyper-V Manager icon in the taskbar.

## Step 2

The **Hyper-V Manager** window is displayed.

In the central pane, right-click **PLABWIN101** and select **Settings** from the context menu.

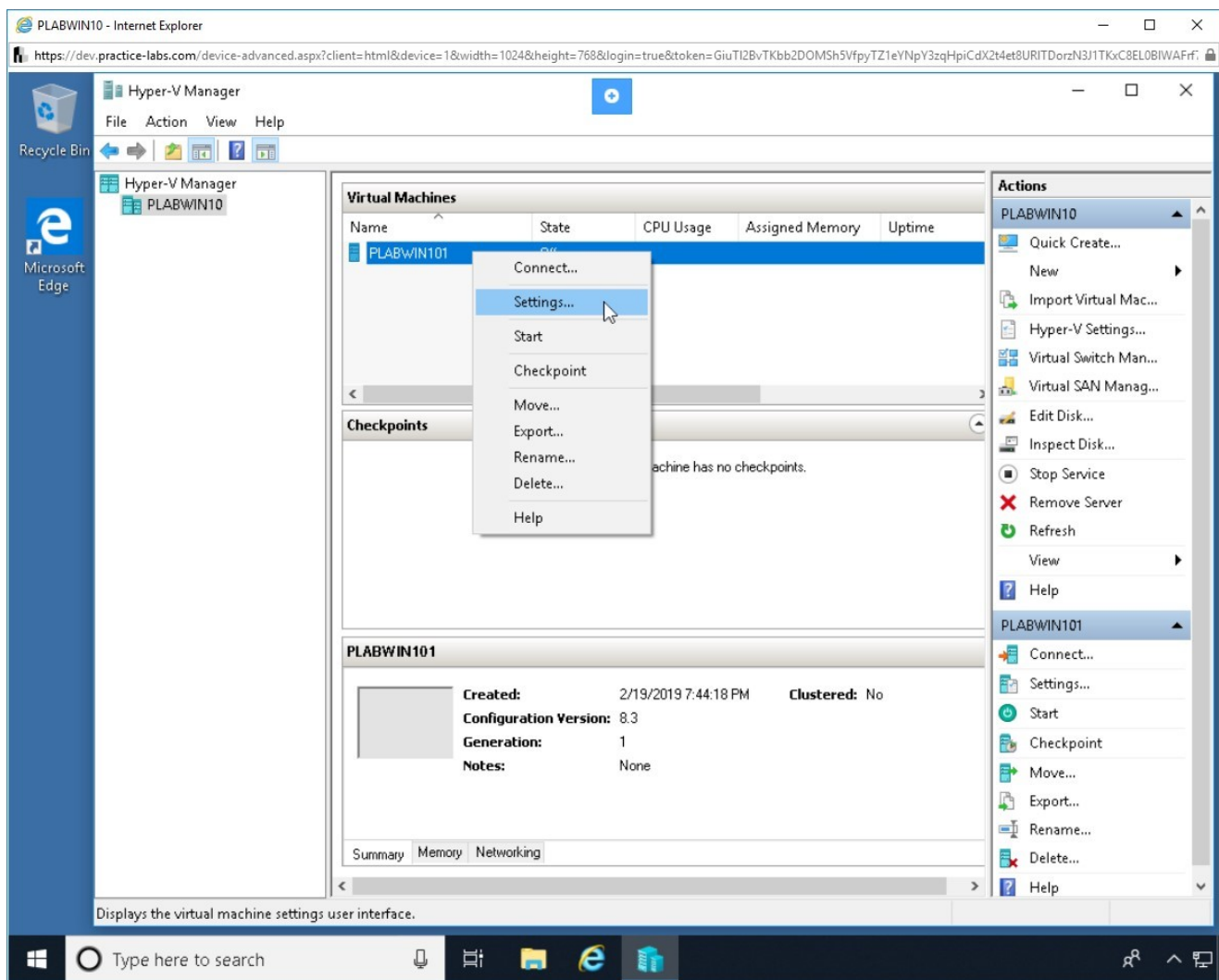


Figure 1.2 Screenshot of PLABWIN10: Right-clicking the PLABWIN101 virtual machine and selecting Settings from the context menu.

### Step 3

The **Settings for PLABWIN101 on PLABWIN10** dialog box is displayed.

In the **Hardware** pane, select **BIOS**. The BIOS panel is displayed in the right pane.

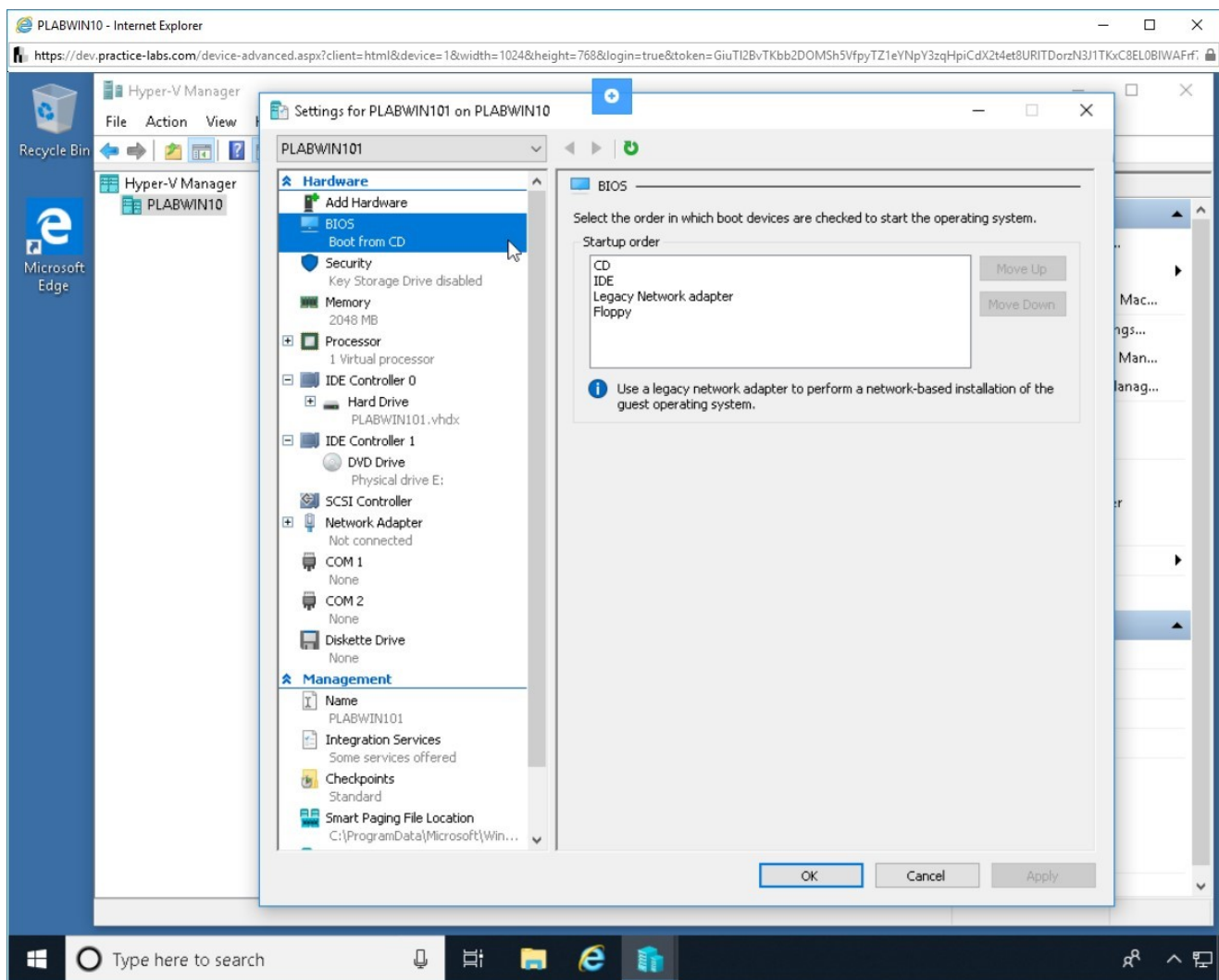


Figure 1.3 Screenshot of PLABWIN10: Displaying the BIOS boot menu of the virtual machine.

## Step 4

Under the **Startup order** list box, a list of devices is displayed. Any of these devices can be used for booting purpose.

Devices are checked in this order for the availability of an operating system. For this, the order can be chosen.

Select **IDE** in the list box and click the **Move Up** button.

This will set IDE as the first choice for booting.

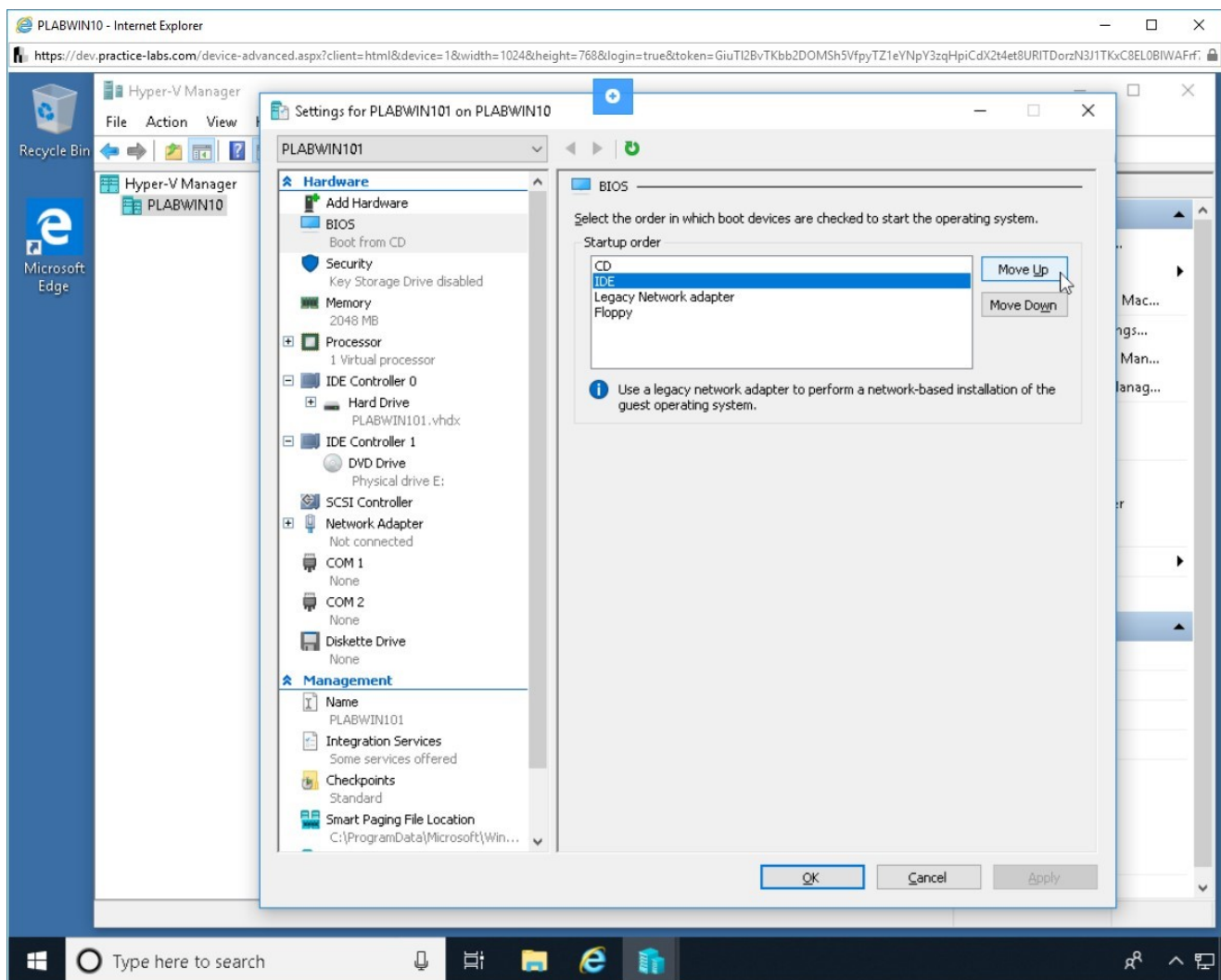


Figure 1.4 Screenshot of PLABWIN10: Selecting IDE and moving it up as the boot device.

## Step 5

IDE is now the preferred boot device. The system will first check IDE for a bootable operating system and then move to the CD.

Select the **CD** and click the **Move Up** button.

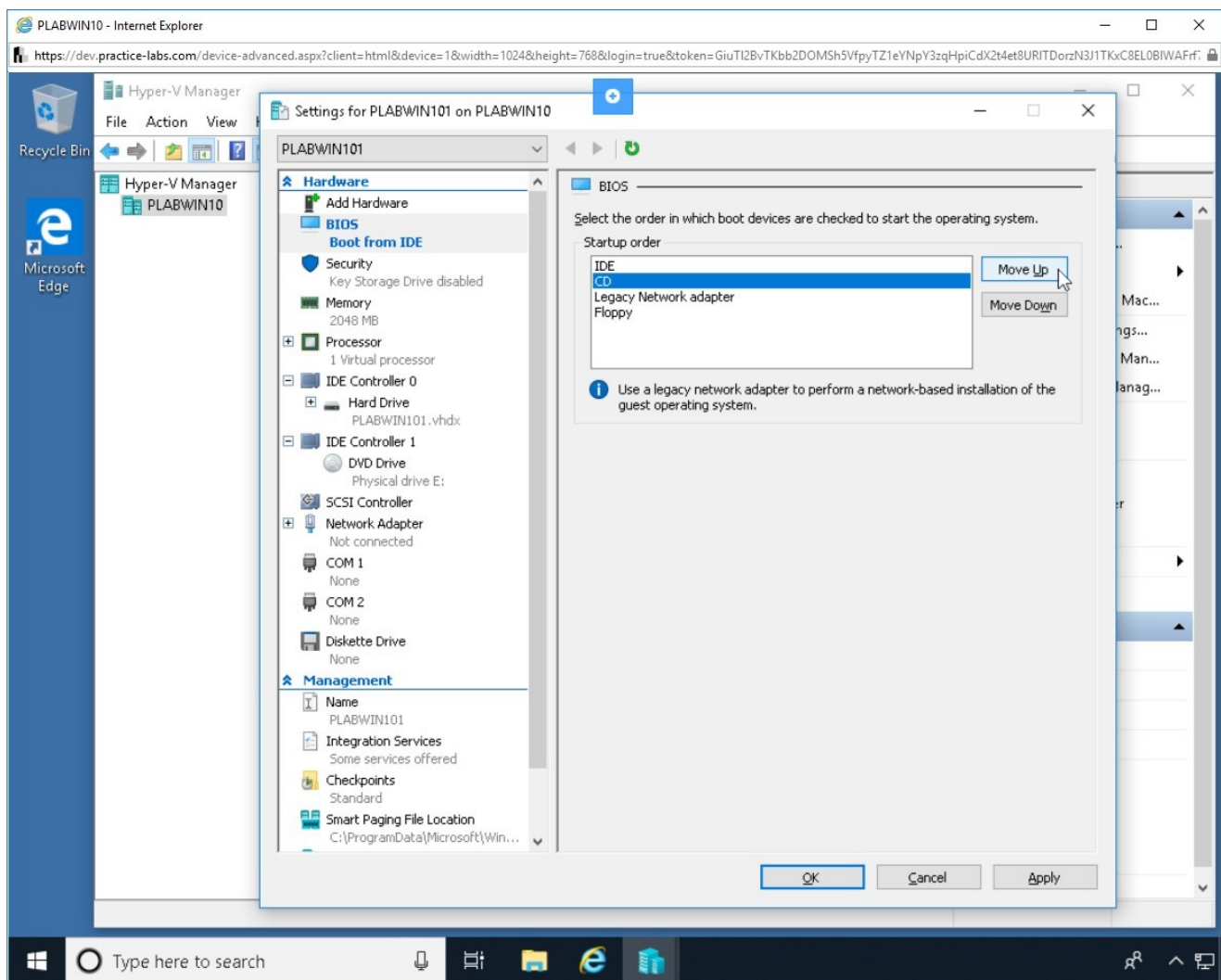


Figure 1.5 Screenshot of PLABWIN10: Selecting CD and moving it up as the boot device.

## Step 6

CD is now the first device in the boot order.

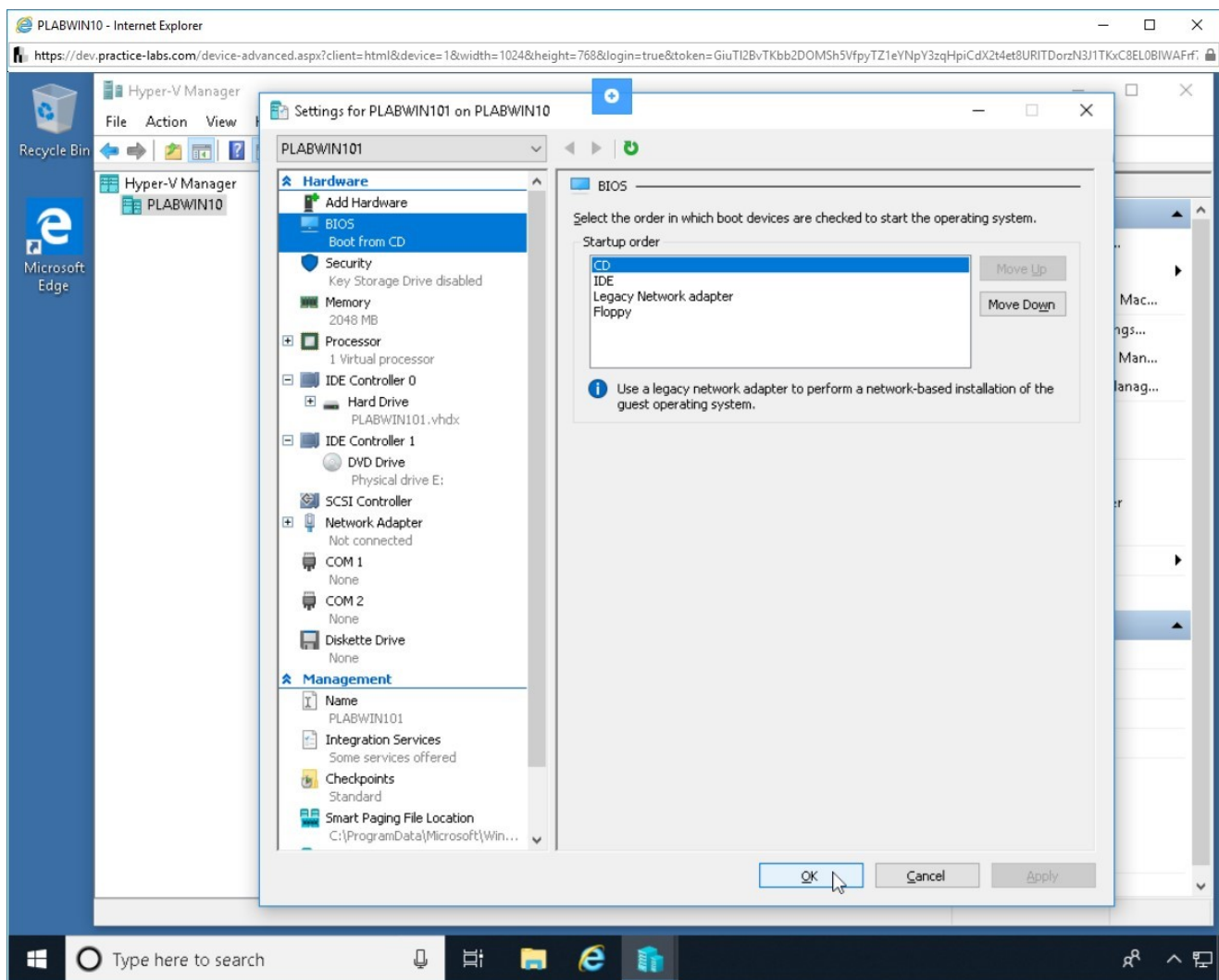


Figure 1.6 Screenshot of PLABWIN10: Clicking the OK button in the virtual machine's properties dialog box.

## Step 7

Click **OK**.

You should now be back on the **Hyper-V Manager** window. Keep this window open.

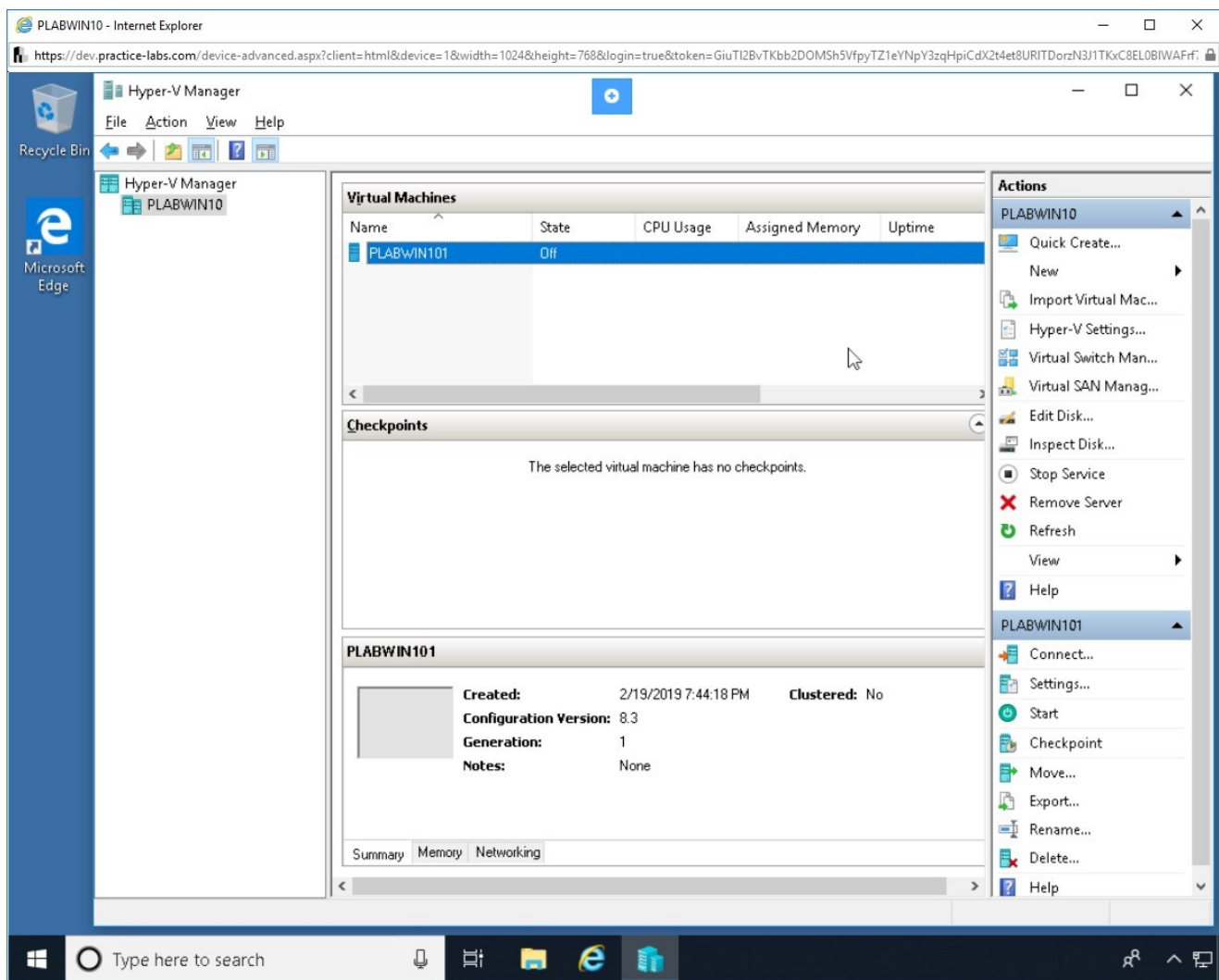


Figure 1.7 Screenshot of PLABWIN10: Displaying the Hyper-V Manager window.

Leave the devices you have powered on in their current state and proceed to the next exercise.

## Exercise 2 - Perform a Clean Install

An operating system can be installed using multiple methods. Some of these methods are listed below:

- Unattended installation
- In-place upgrade
- Clean install

- Repair installation
- Multiboot
- Remote network installation
- Image deployment
- Recovery partition
- Restore/Refresh

For all the methods listed above, the actual process of installation remains the same. Only the choice of boot device differs.

In this exercise, you will perform a clean install.

## Learning Outcomes

After completing this exercise, you will be able to:

- Perform a Clean Install
- Create a Recovery partition
- Prepare for an Unattended Installation

## Your Devices

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

- **PLABWIN10** - (Windows 10 - Domain Member)



## Task 1 - Installing an Operating System

A clean install is a fresh install. To do this, perform the following steps:

### *Step 1*

Ensure you are connected to **PLABWIN10** and **Hyper-V Manager** window is open.

Right-click **PLABWIN101**, and then select **Start**. This will power on the device.

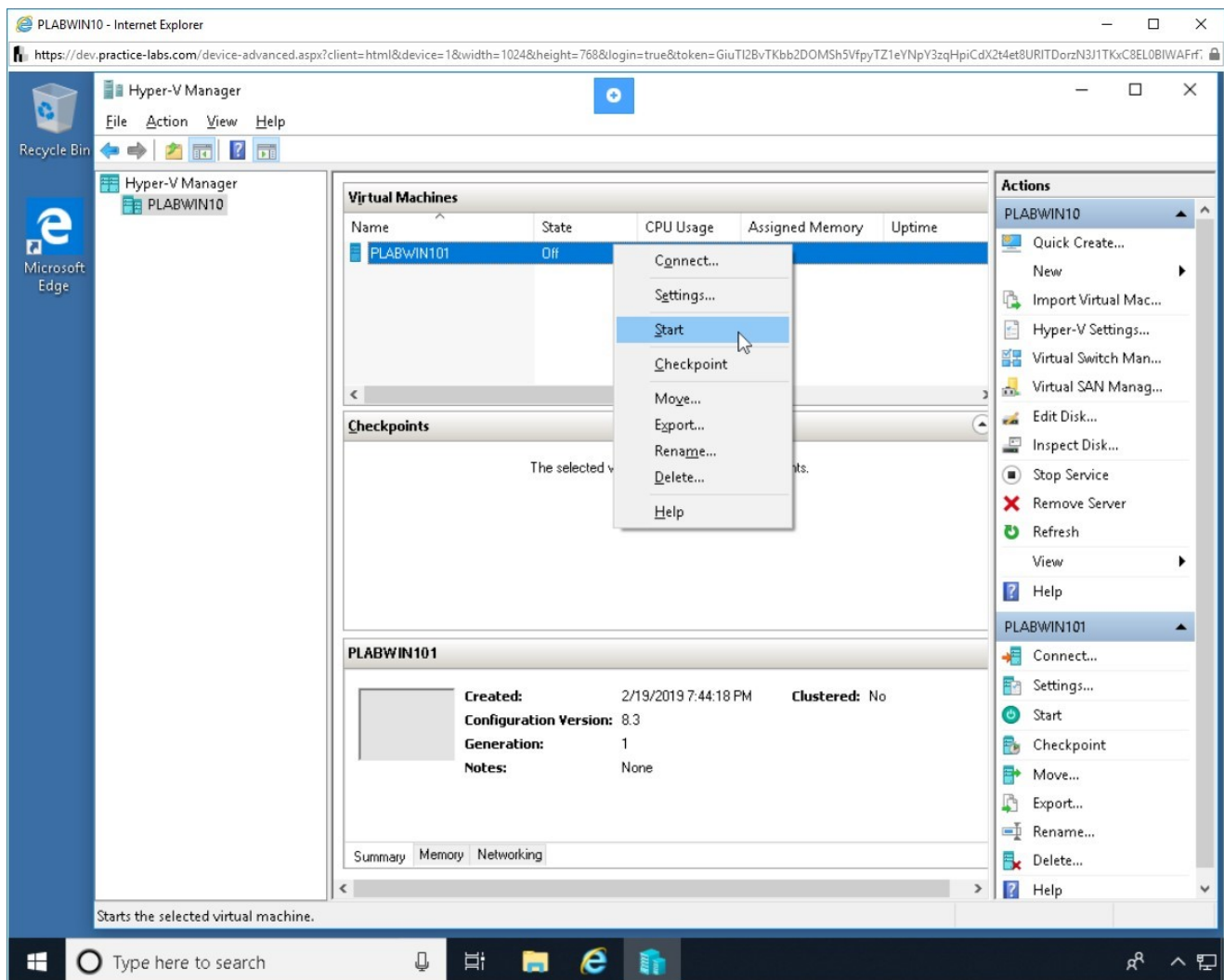


Figure 2.1 Screenshot of PLABWIN10: Right-clicking the virtual machine and selecting Start.

## Step 2

The black colored icon inside the **PLABWIN101** section contains **Hyper-V** text.

Double-click on the icon.

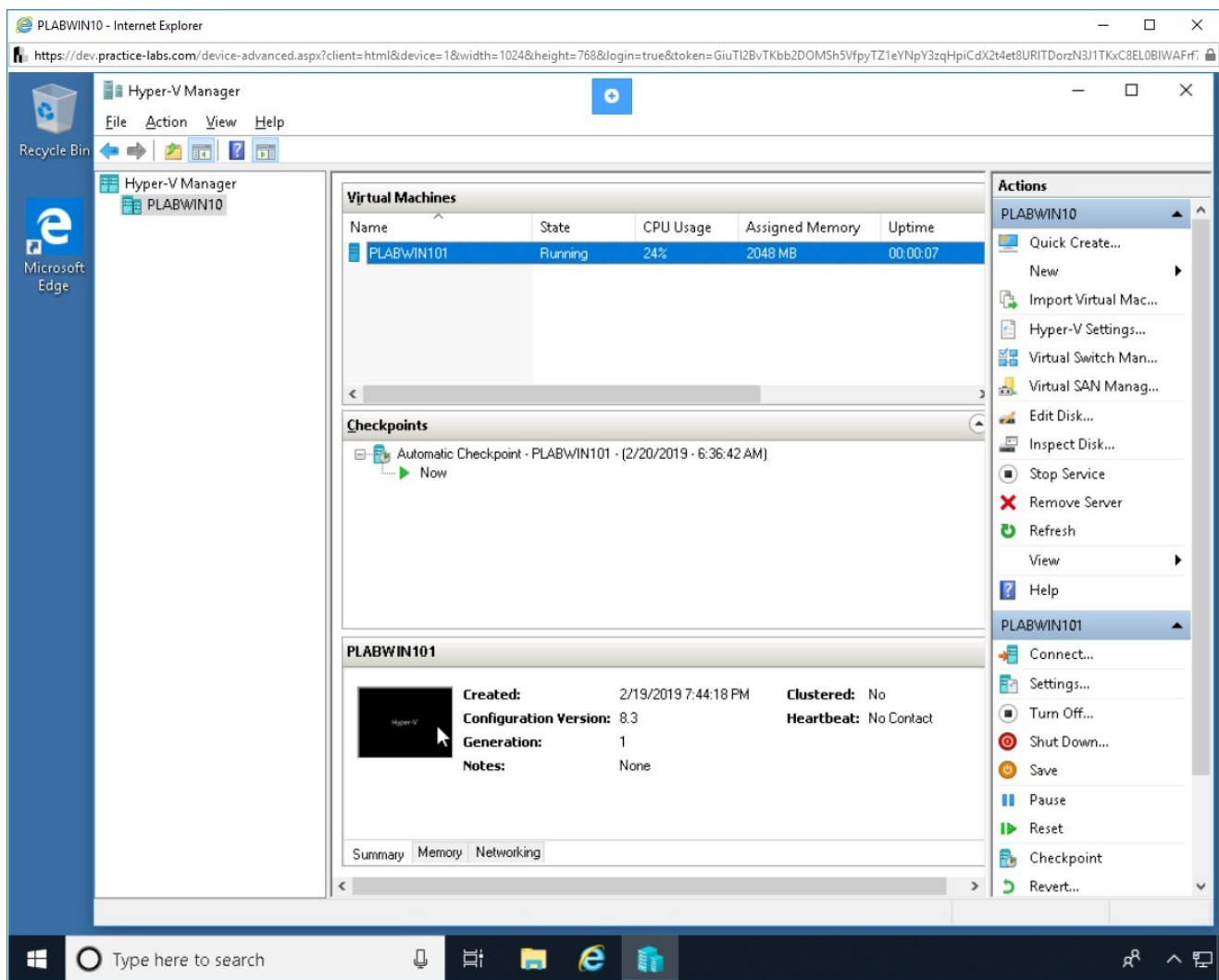


Figure 2.2 Screenshot of PLABWIN10: Double-clicking the black colored icon to enlarge the virtual machine.

### Step 3

If the virtual machine window is not properly visible, click **Maximize**.

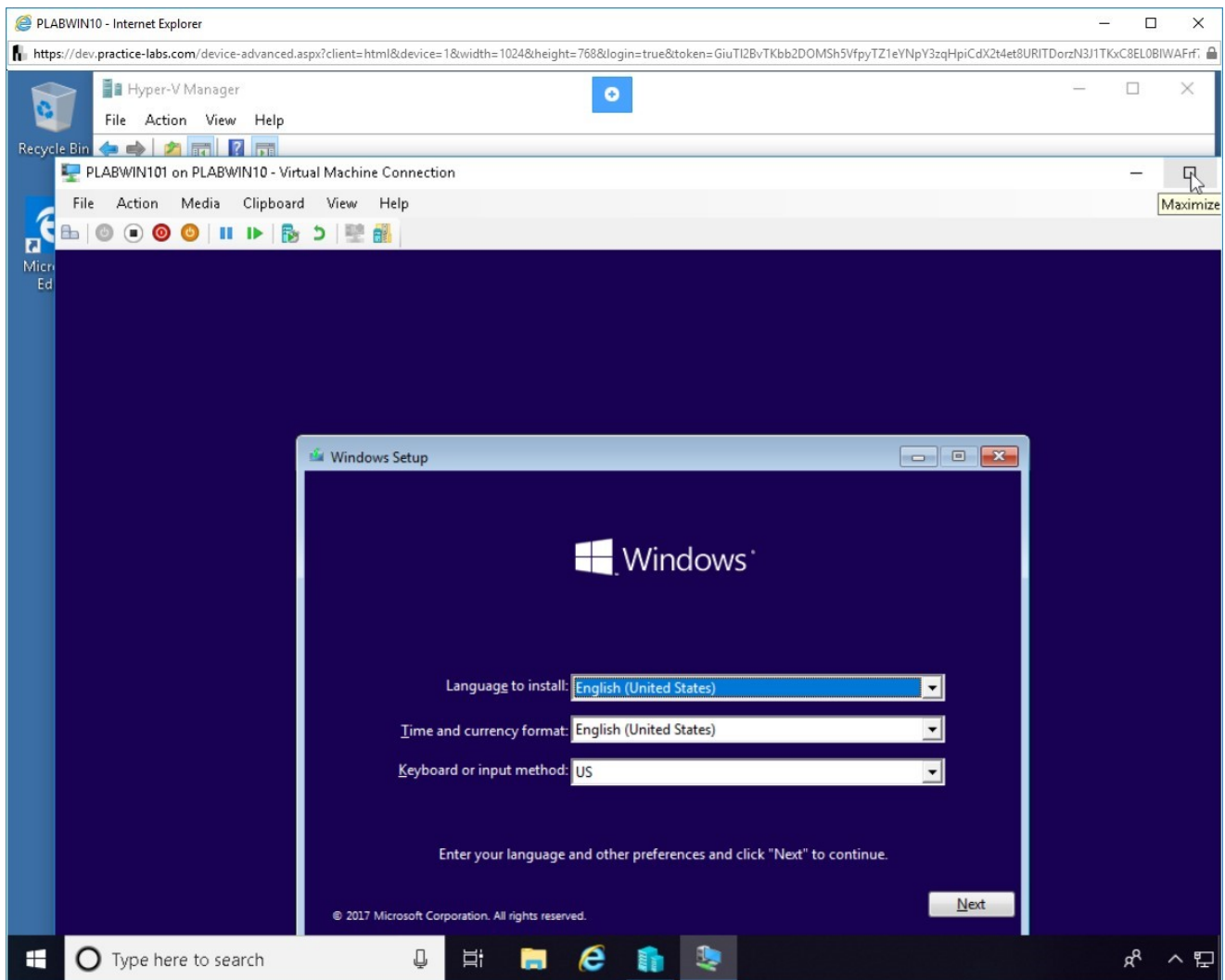


Figure 2.3 Screenshot of PLABWIN10: Maximizing the virtual machine window.

## Step 4

The process of installation starts and the **Windows Setup** dialog box is displayed. Keep the default values and click **Next**.

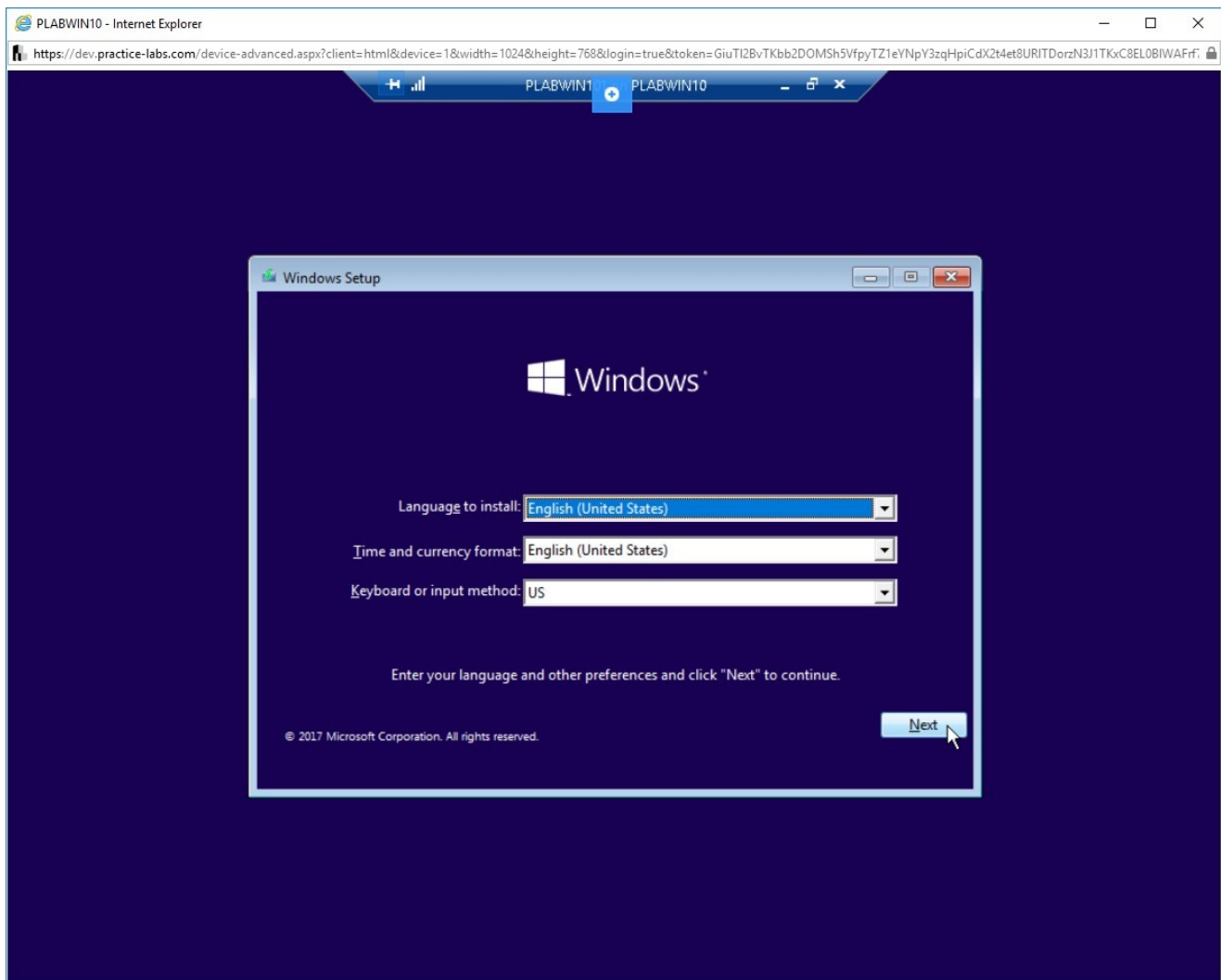


Figure 2.4 Screenshot of PLABWIN10: Displaying the dialog box for acquiring language, time, date, and keyboard or input related method-related information.

## *Step 5*

Click **Install now**.

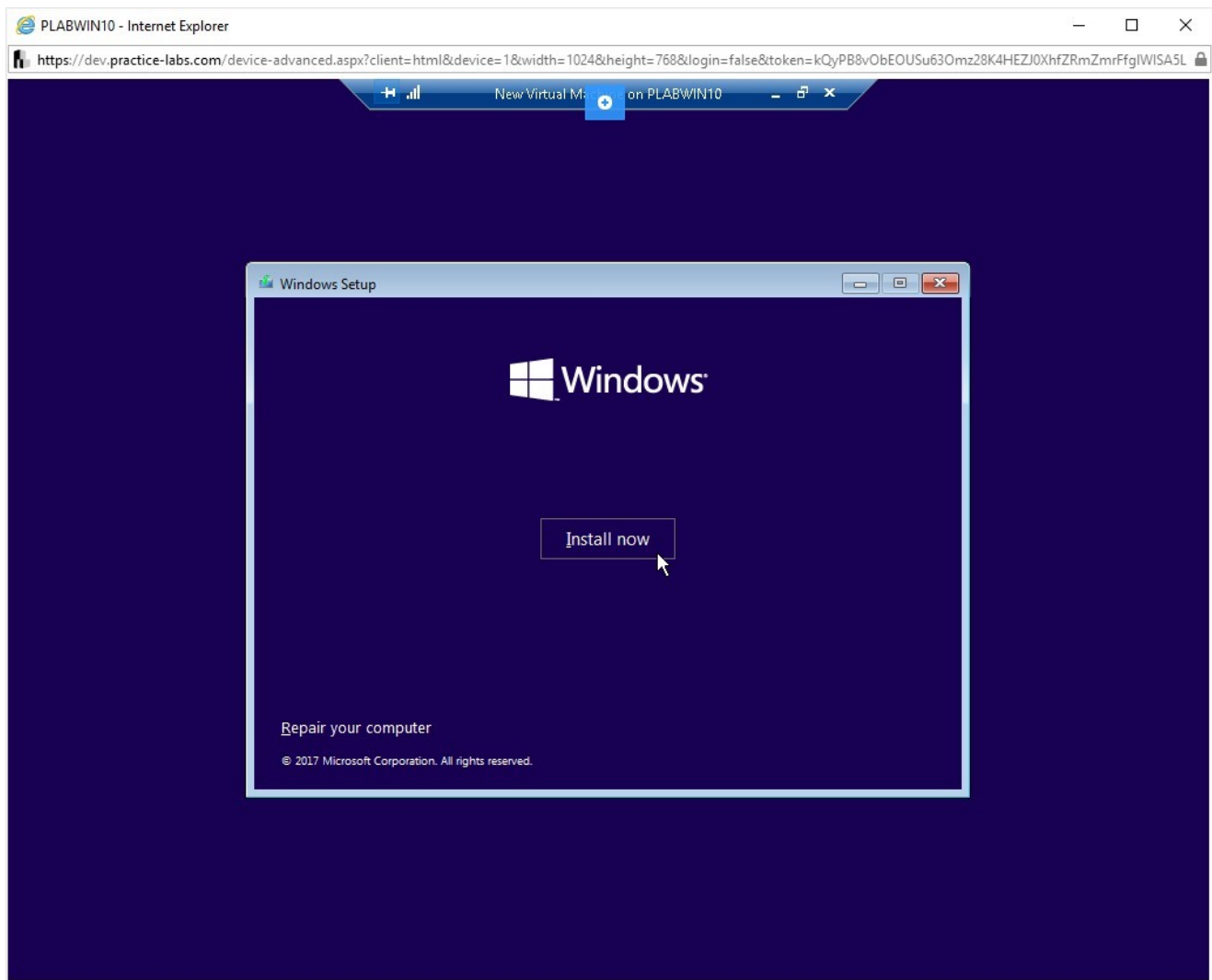


Figure 2.5 Screenshot of PLABWIN10: Clicking the Install now button.

## *Step 6*

The **Setup is starting** window appears. You will be moved to the next screen automatically after a few seconds.

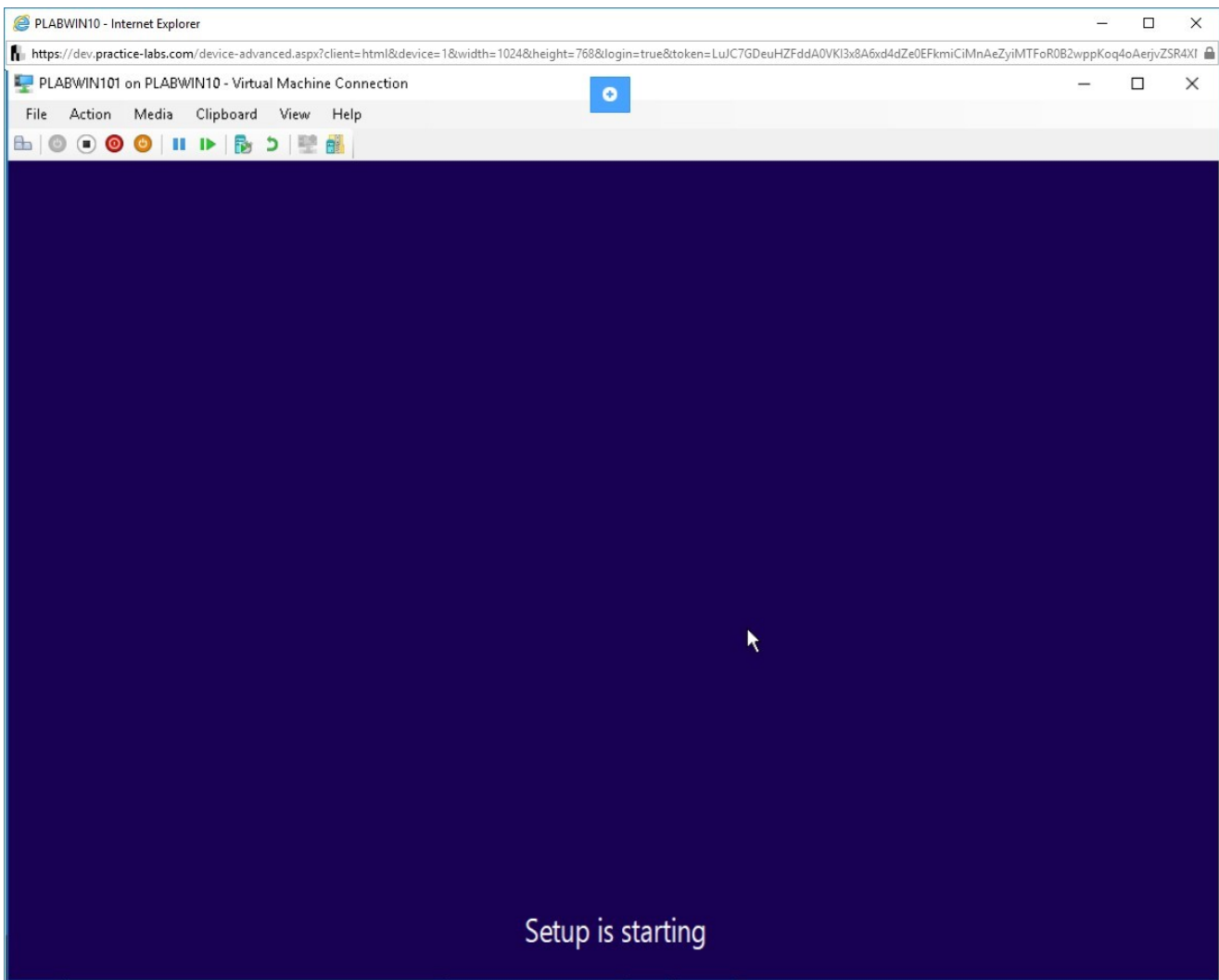


Figure 2.6 Screenshot of PLABWIN10: Displaying the Setup is starting screen.

## *Step 7*

Wait till the **Select the operating system you want to install** panel appears.

Keep the default selection and click **Next**.

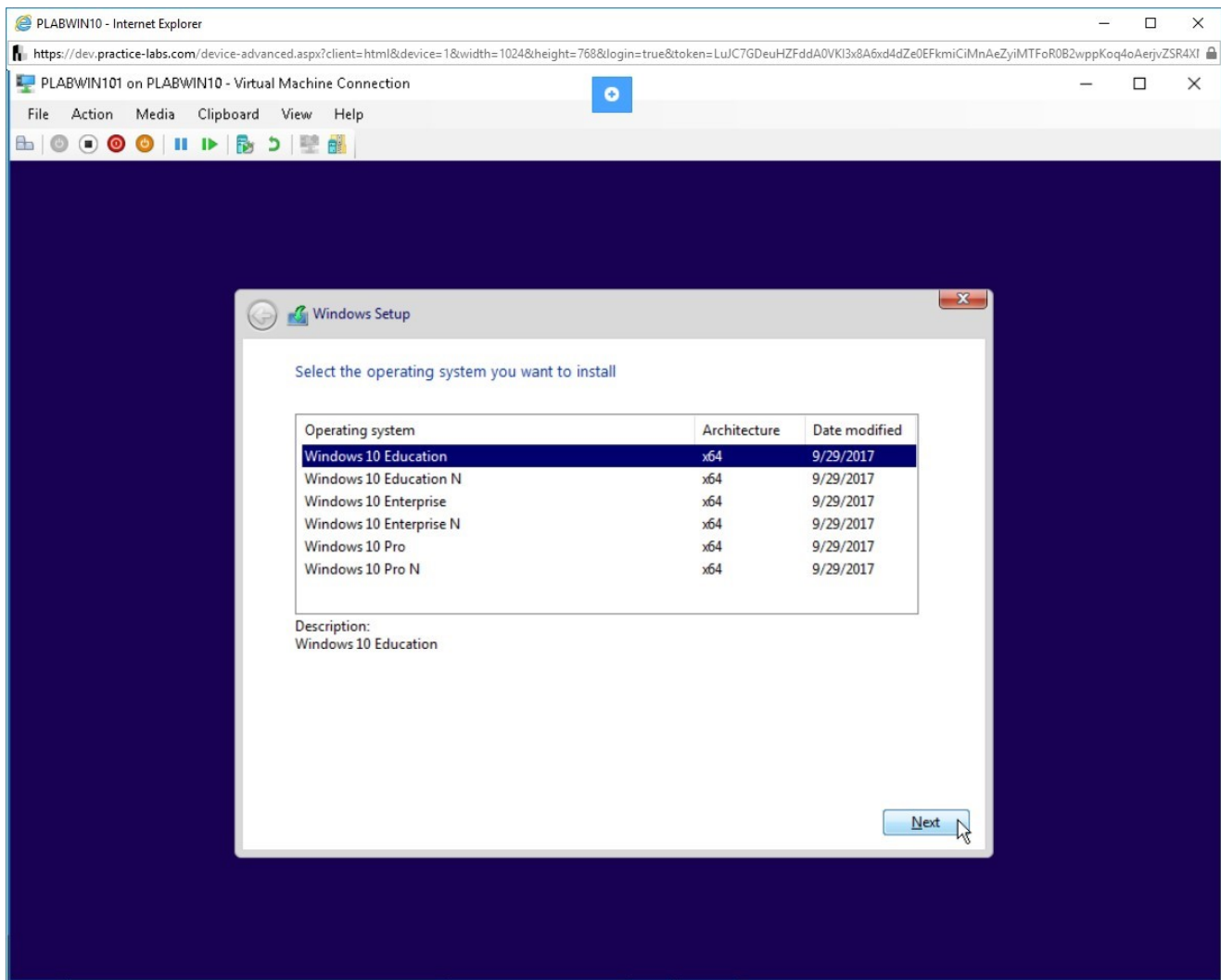


Figure 2.7 Screenshot of PLABWIN10: Selecting the Windows 10 version to install.

## Step 8

Tick the **Accept the license terms** checkbox and click **Next**.

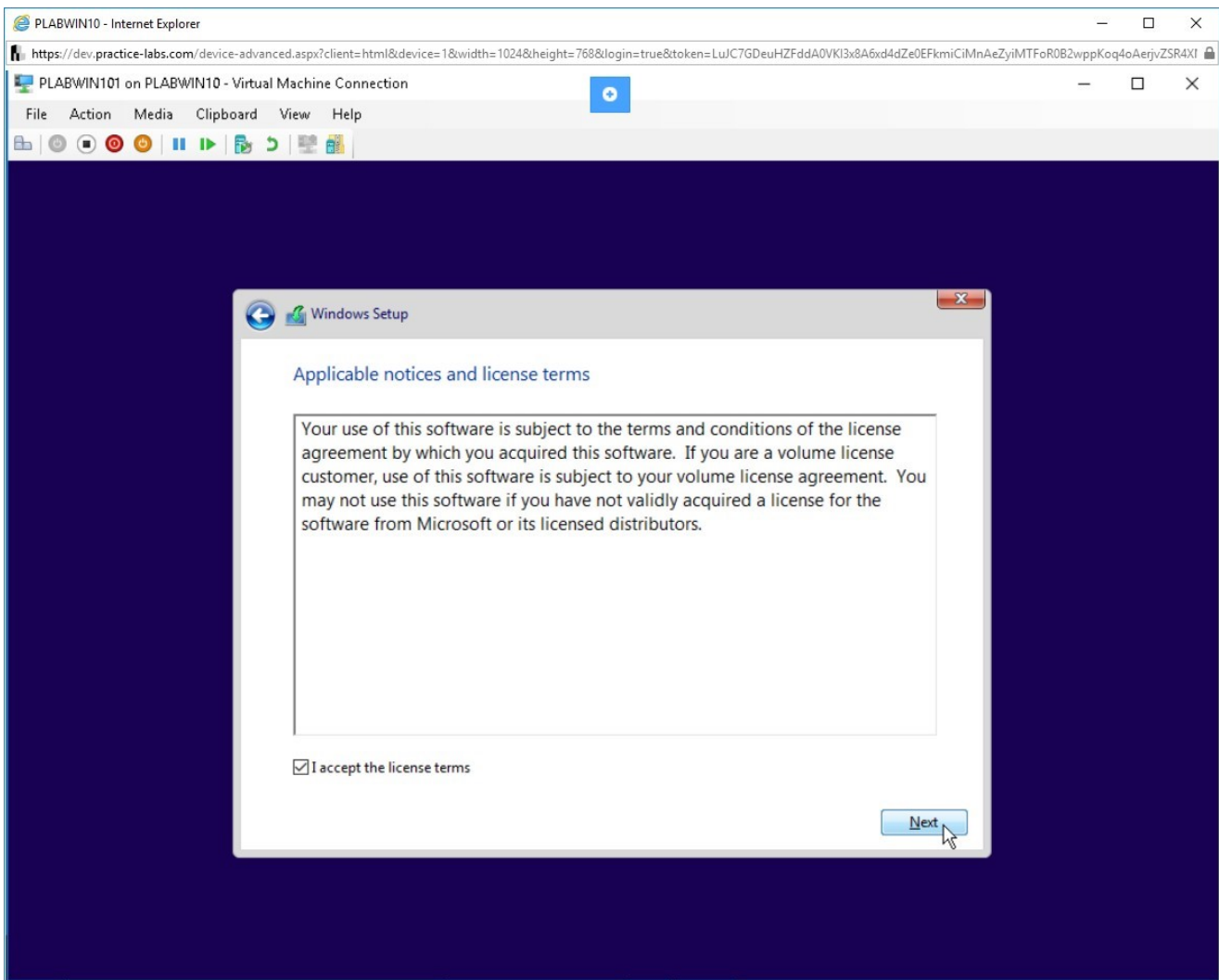


Figure 2.8 Screenshot of PLABWIN10: Accepting the license terms.

## Step 9

There are two options for this window:

- **Upgrade:** This option keeps all the files, setting and applications intact. These are moved to the newly installed operating system. If the data in the previous setup is required, then this option should be used.
- **Custom:** This is also known as a clean installation. In this type of installation, the data present in the previous operating system is erased. Files should be backed-up before proceeding with this type of installation.

Select **Custom: Install Windows only (advanced)**.

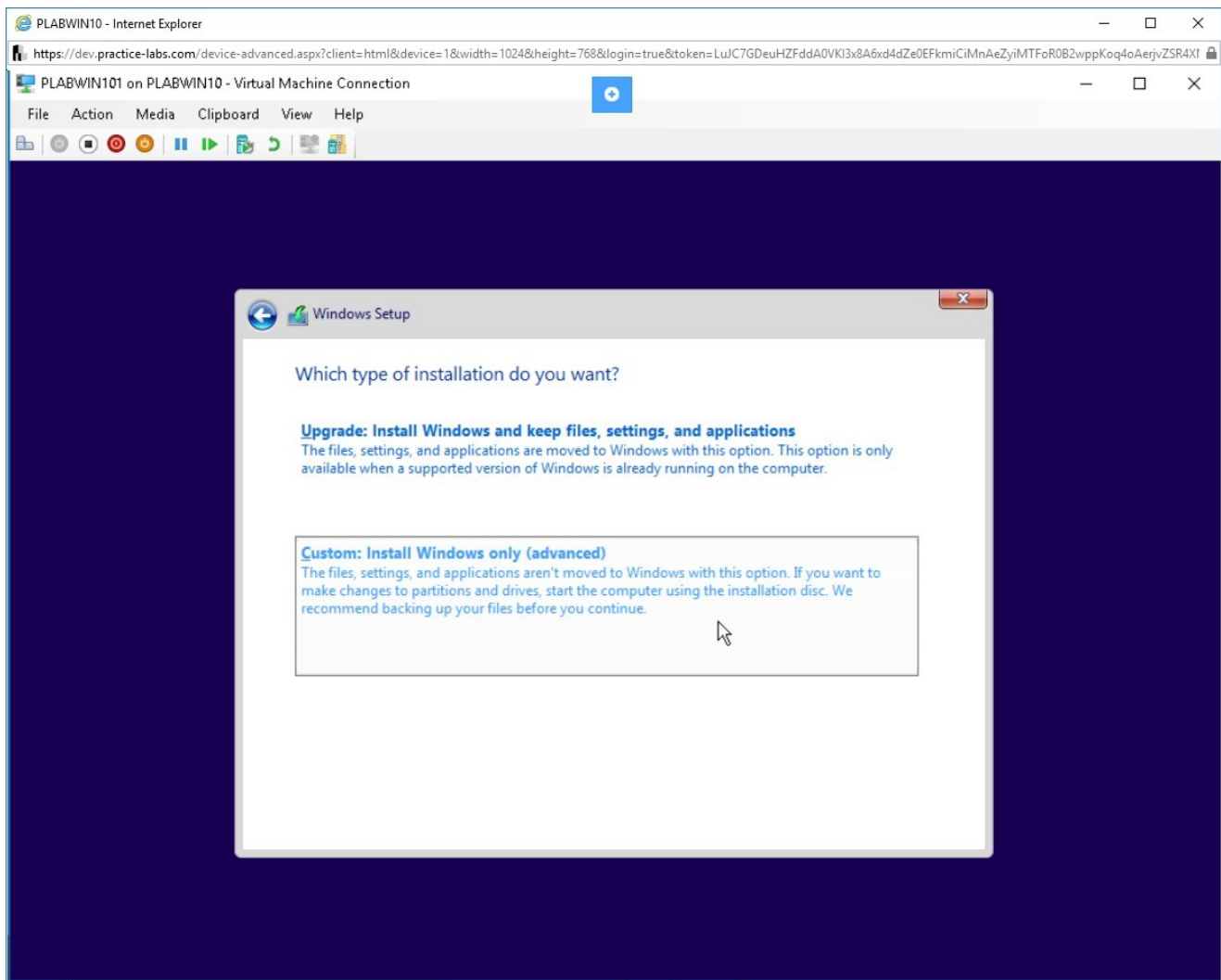


Figure 2.9 Screenshot of PLABWIN10: Choosing the Custom installation.

## ***Step 10***

Click the **New** link.

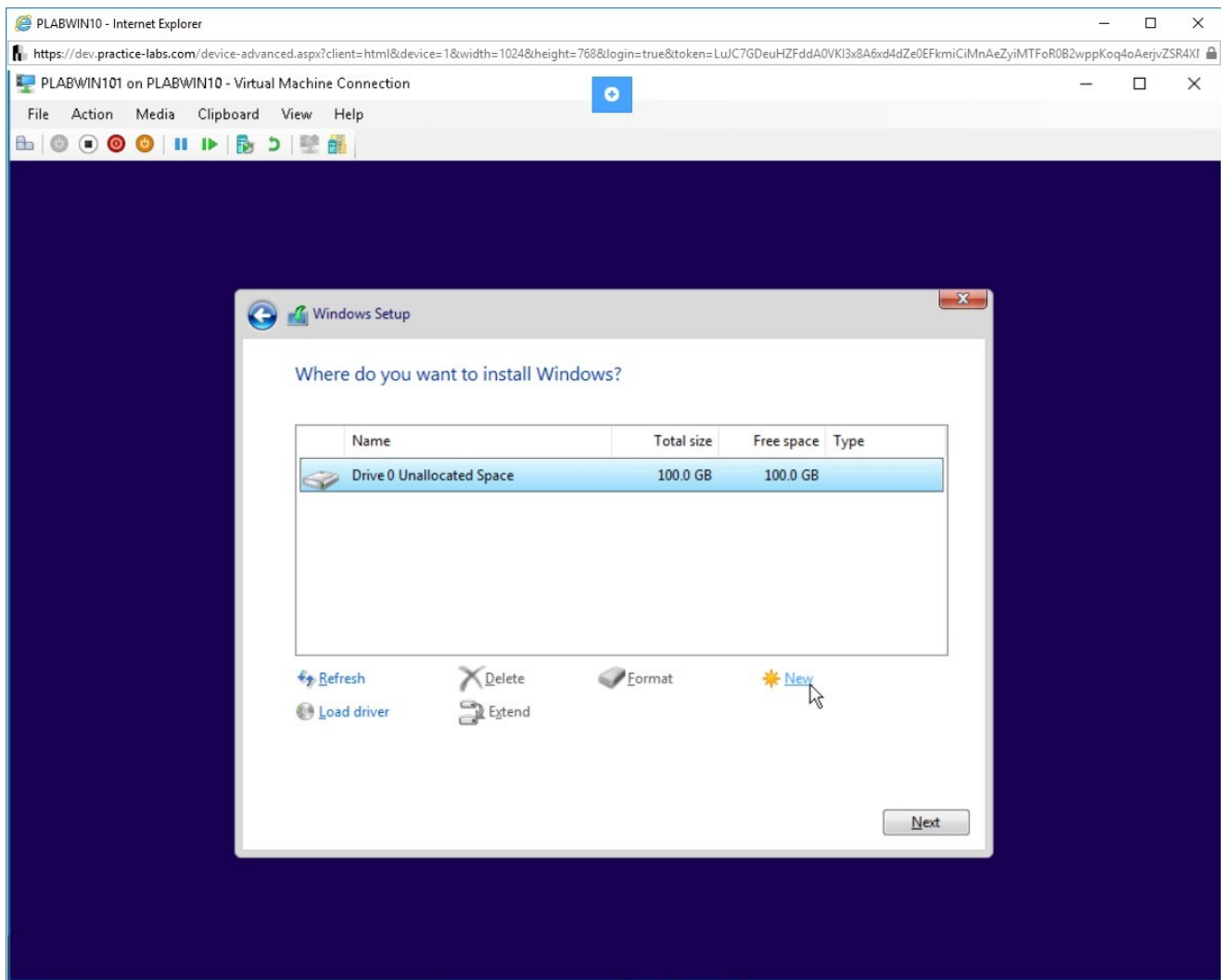


Figure 2.10 Screenshot of PLABWIN10: Clicking the New link to create a new partition.

## Step 11

You need to define the partition size. In the **Size** text box, change to the following value:

50000

Click **Apply**.

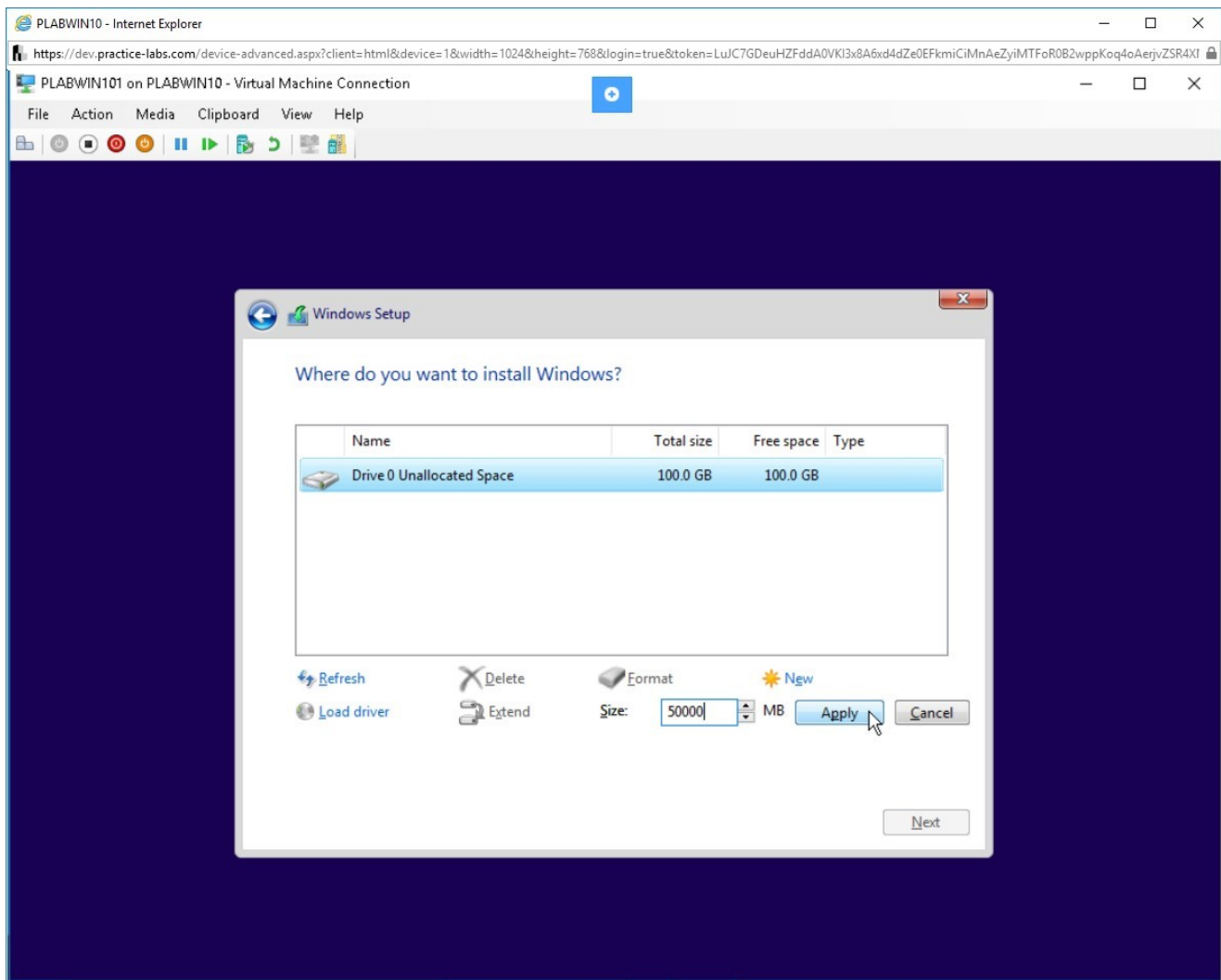


Figure 2.11 Screenshot of PLABWIN10: Setting the size of the partition.

## Step 12

The **Windows Setup** dialog box is displayed. Click **OK**.

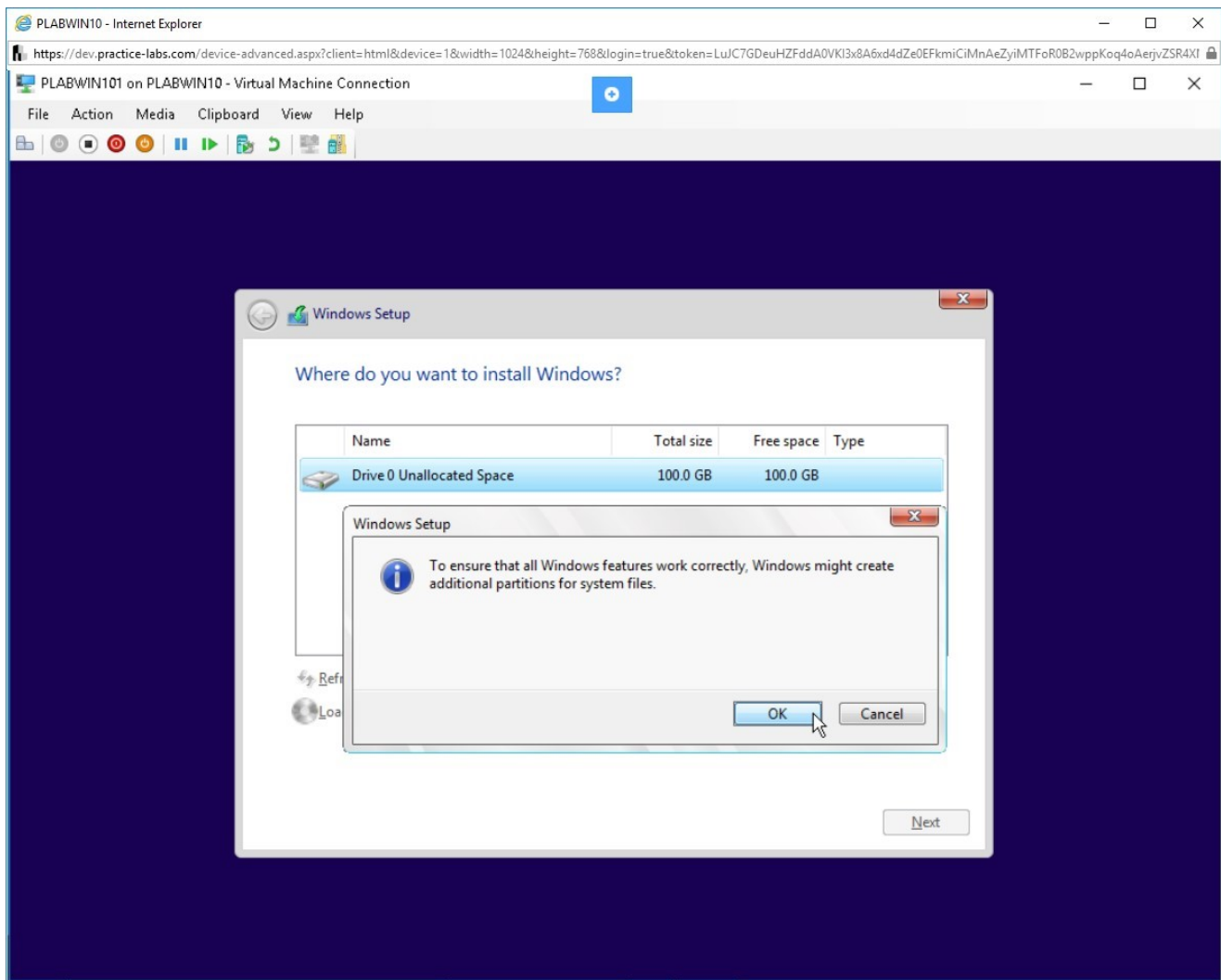


Figure 2.12 Screenshot of PLABWIN10: Displaying the Windows Setup dialog box with the message about creating additional partitions.

## Step 13

Select **Drive 0 Unallocated space** and click the **New** link again.

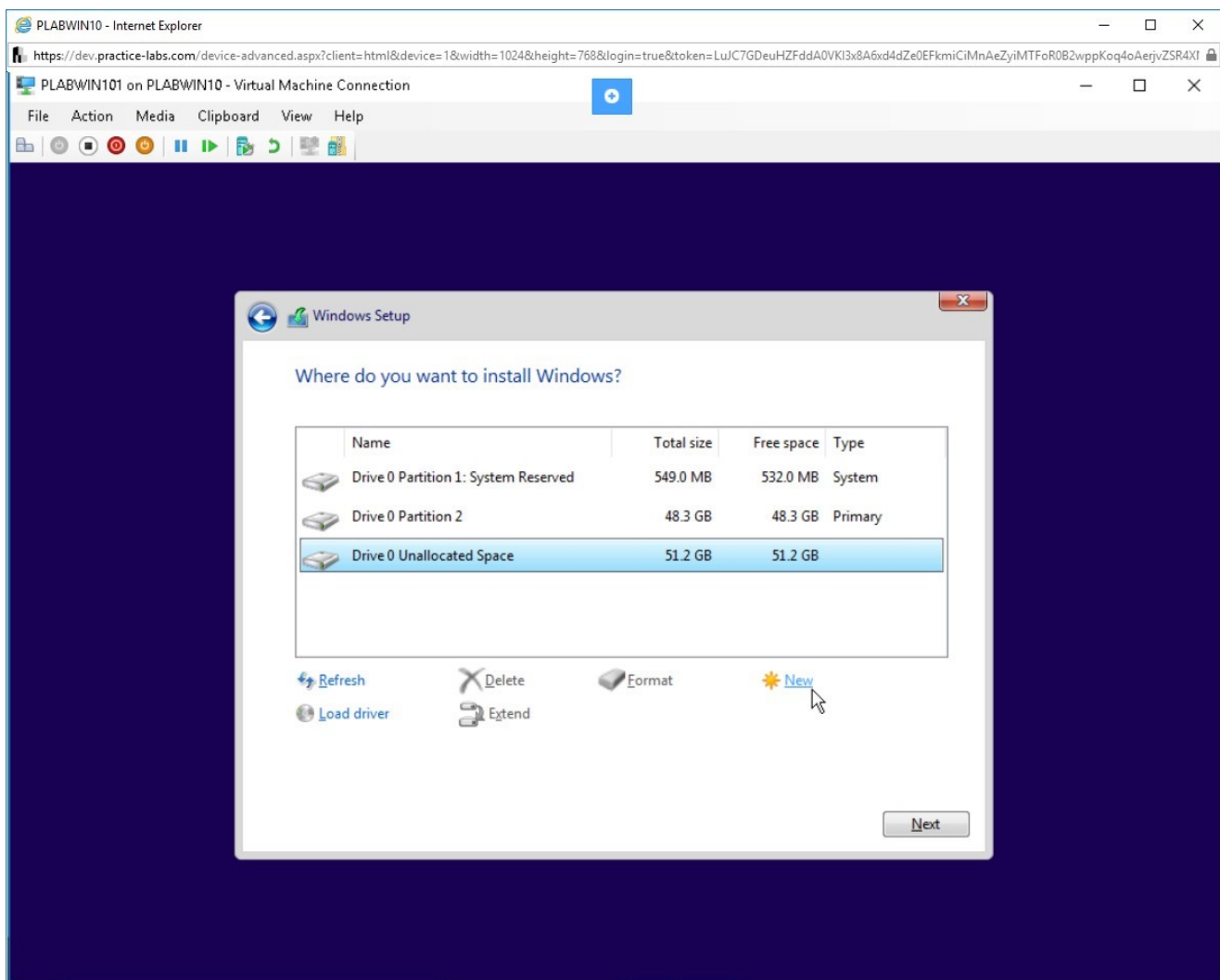


Figure 2.13 Screenshot of PLABWIN10: Showing a newly created partition and then selecting the leftover space and clicking the New link.

## Step 14

Accept the default value mentioned in the **Size** text box. Click **Apply**.

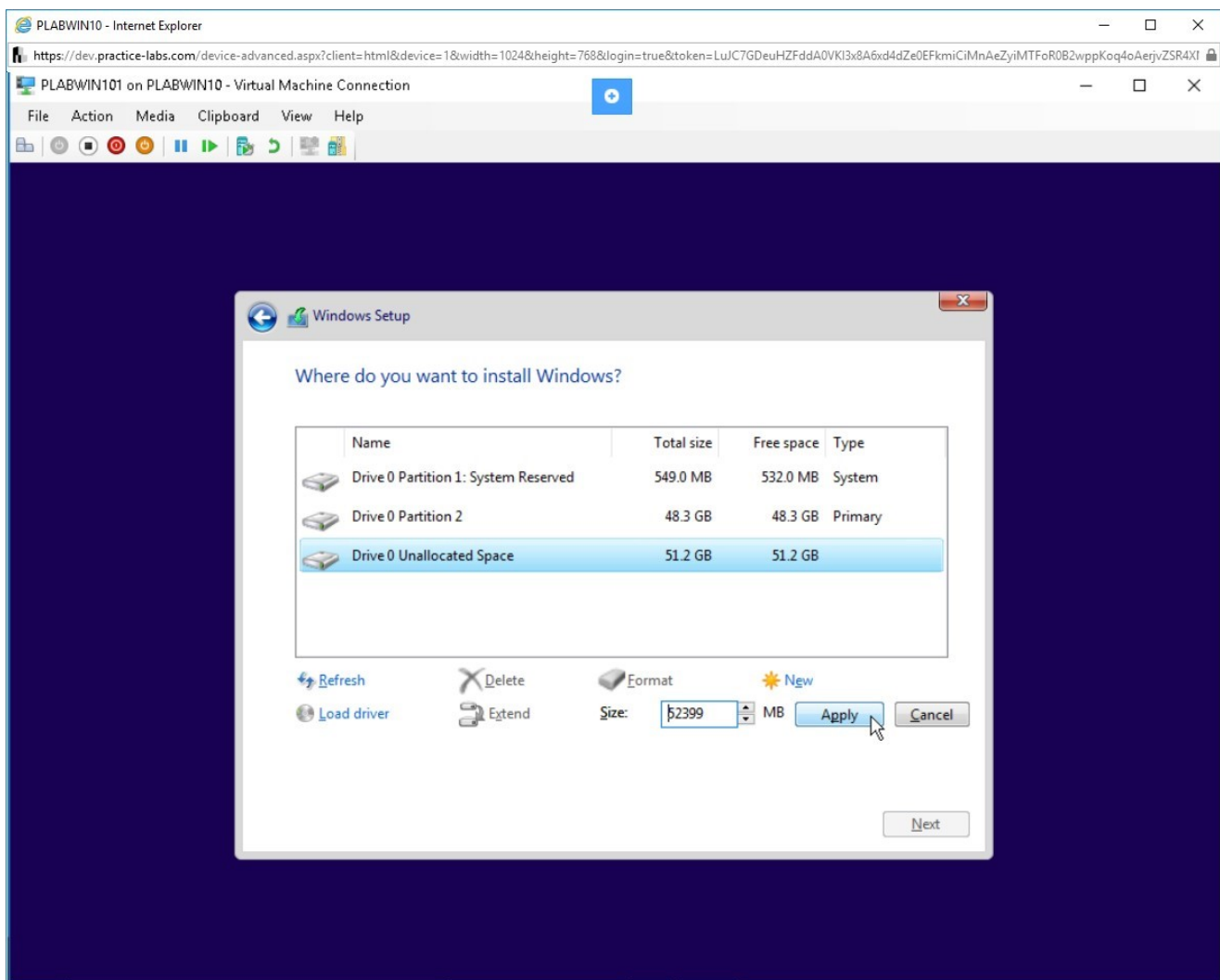


Figure 2.14 Screenshot of PLABWIN10: Setting the default size and clicking Apply.

## Step 15

Notice that two partitions are now created. The third partition is reserved for the system. Select **Disk 0 Partition 2** and then click **Next**.

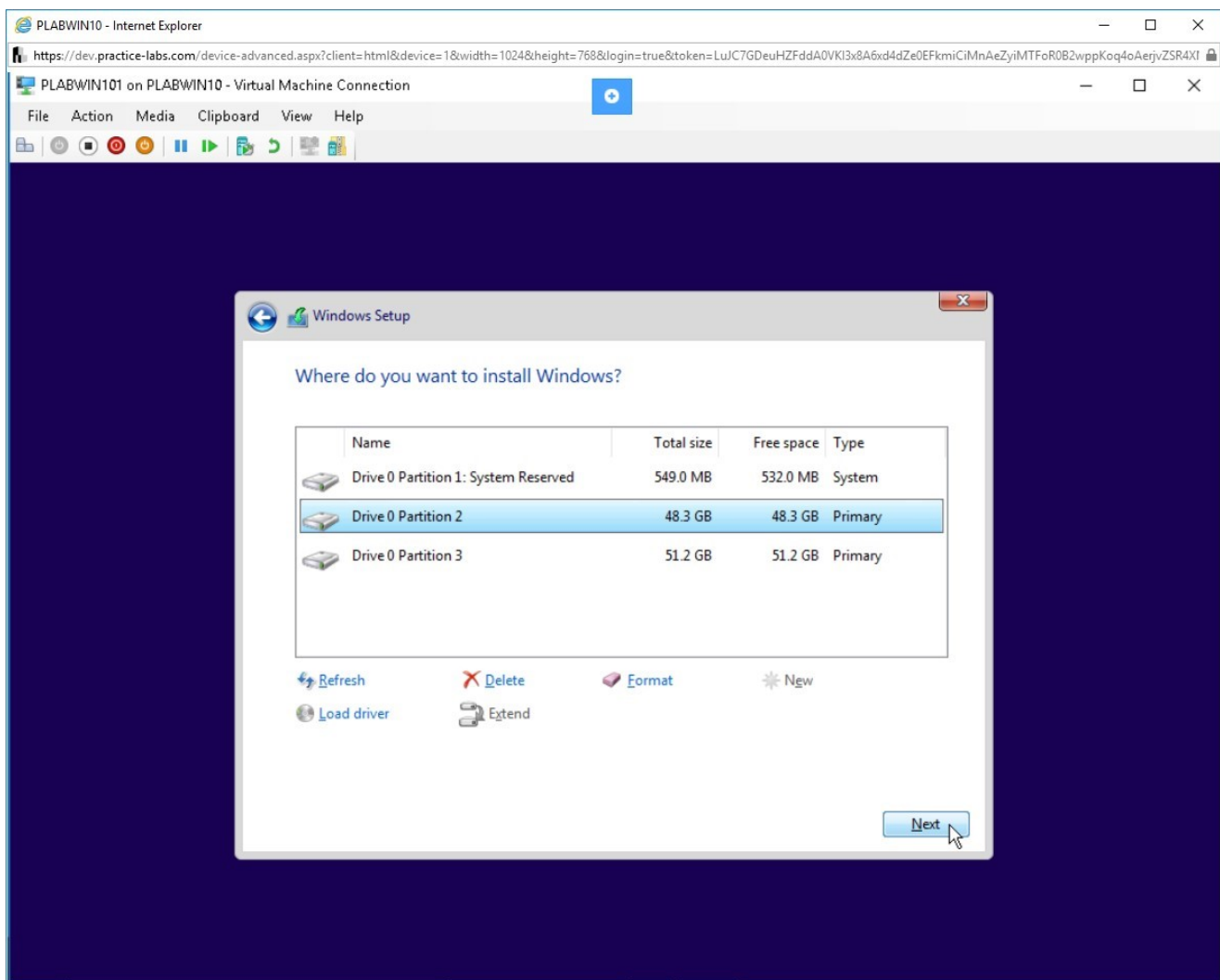


Figure 2.15 Screenshot of PLABWIN10: Selecting the partition for installation.

## Step 16

The **Installing Windows** dialog box is displayed when the installation procedure begins.

Wait for the procedure to be completed. The virtual machine may restart multiple times during the course of this procedure.

**Note:** This installation takes about 20-30 minutes to complete.

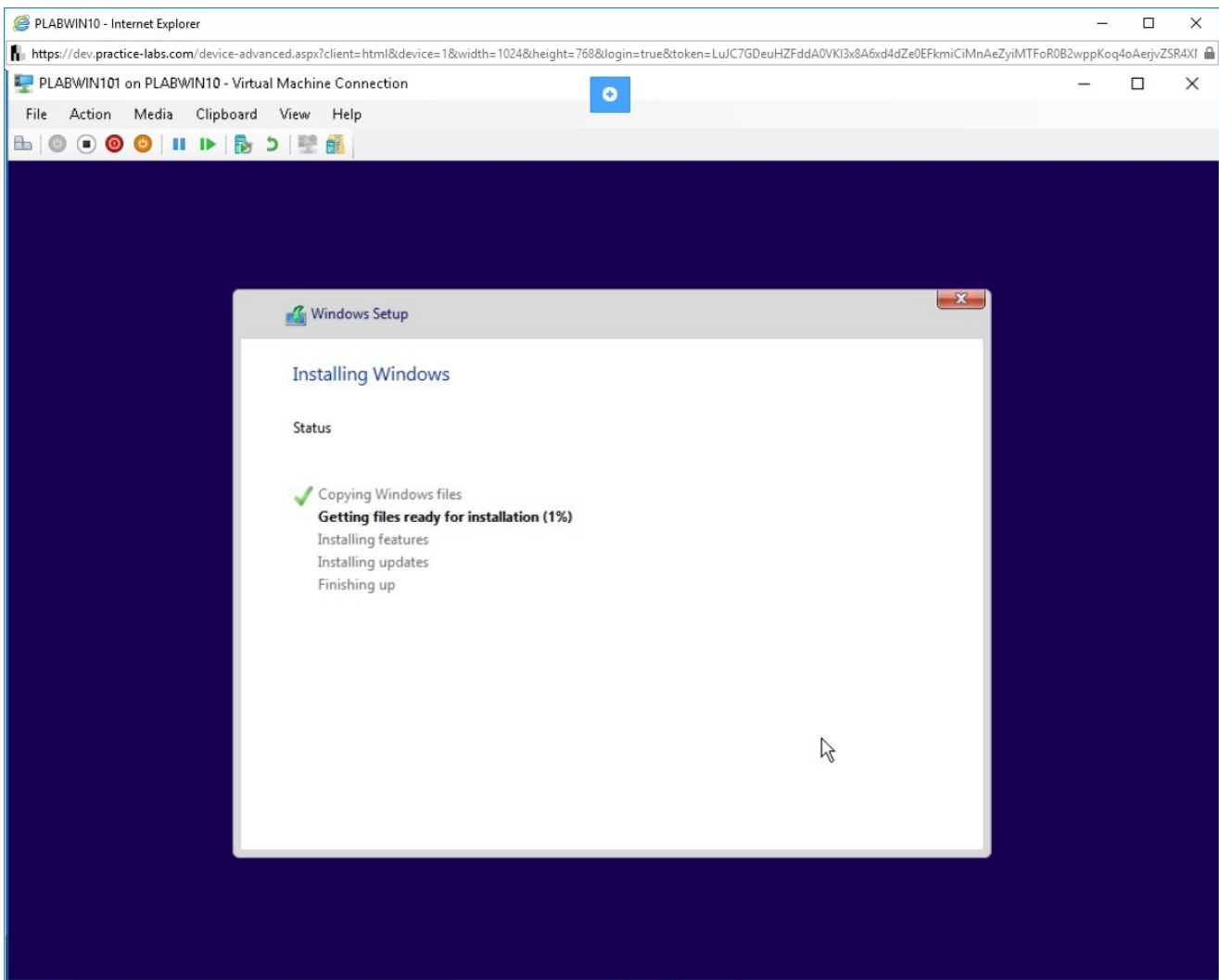


Figure 2.16 Screenshot of PLABWIN10: Showing the installation progress on the Installing Windows screen.

## *Step 17*

The installation will continue.

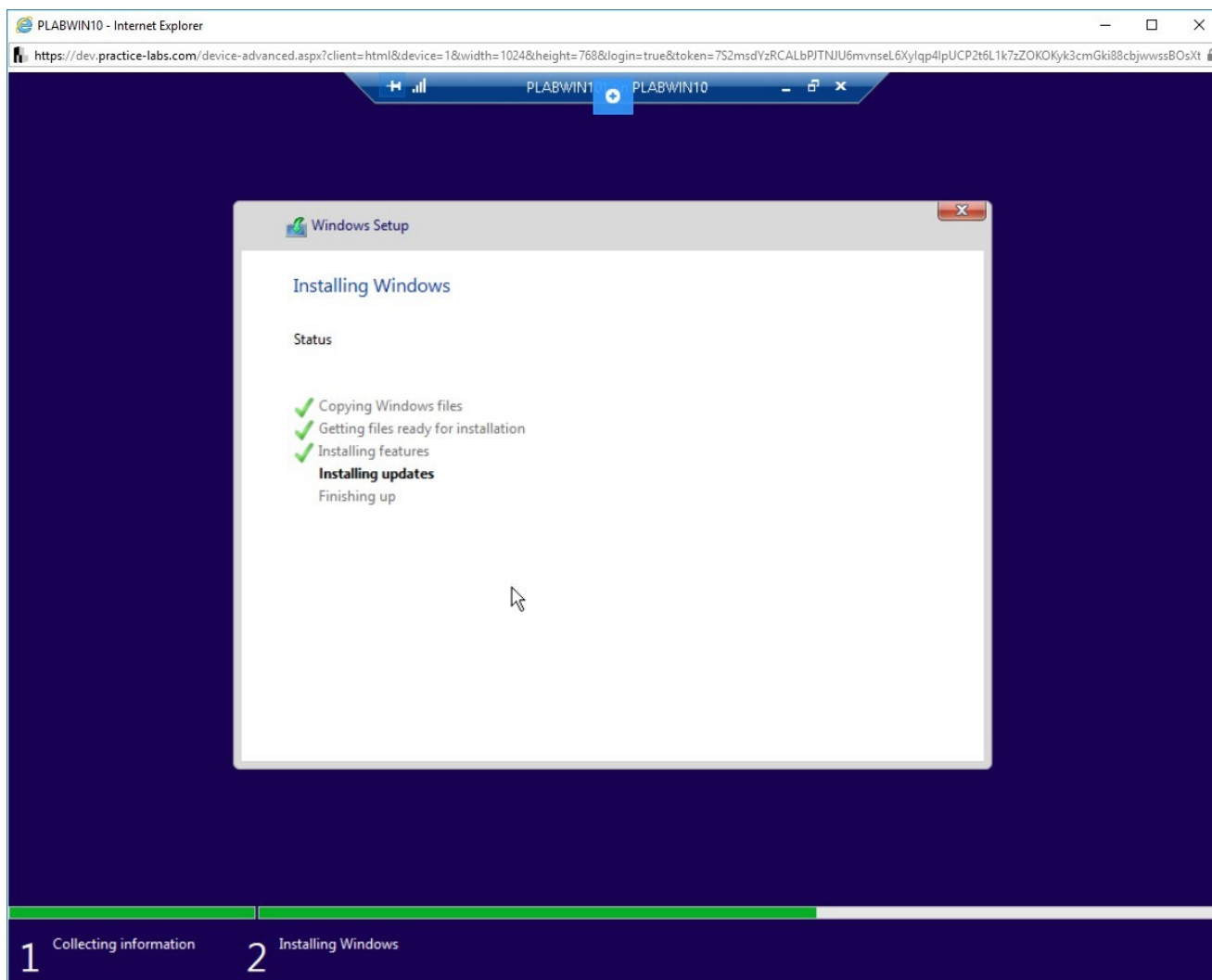


Figure 2.17 Screenshot of PLABWIN10: Showing the installation progress on the Installing Windows screen.

## Step 18

Finally, you need to restart Windows. Click **Restart now**.

**Note:** If you do not restart window within 15 seconds, it will auto restart.

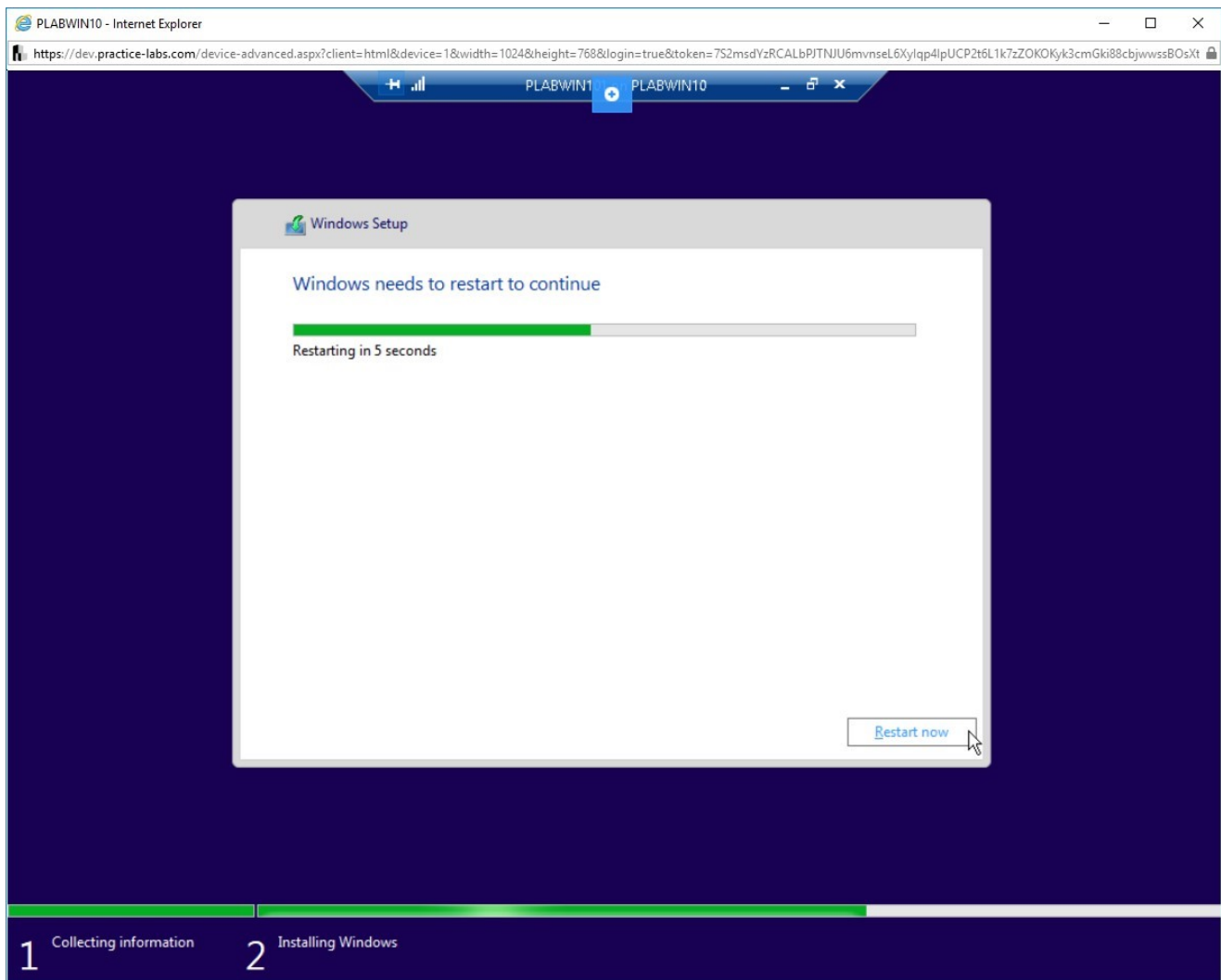


Figure 2.18 Screenshot of PLABWIN10: Clicking the Restart now button.

## Step 19

Windows will boot. You will be prompted to press a key to boot from CD.

Remember that you have already loaded Windows. **Do NOT press any key.** If you press a key at this point, the installation will restart.

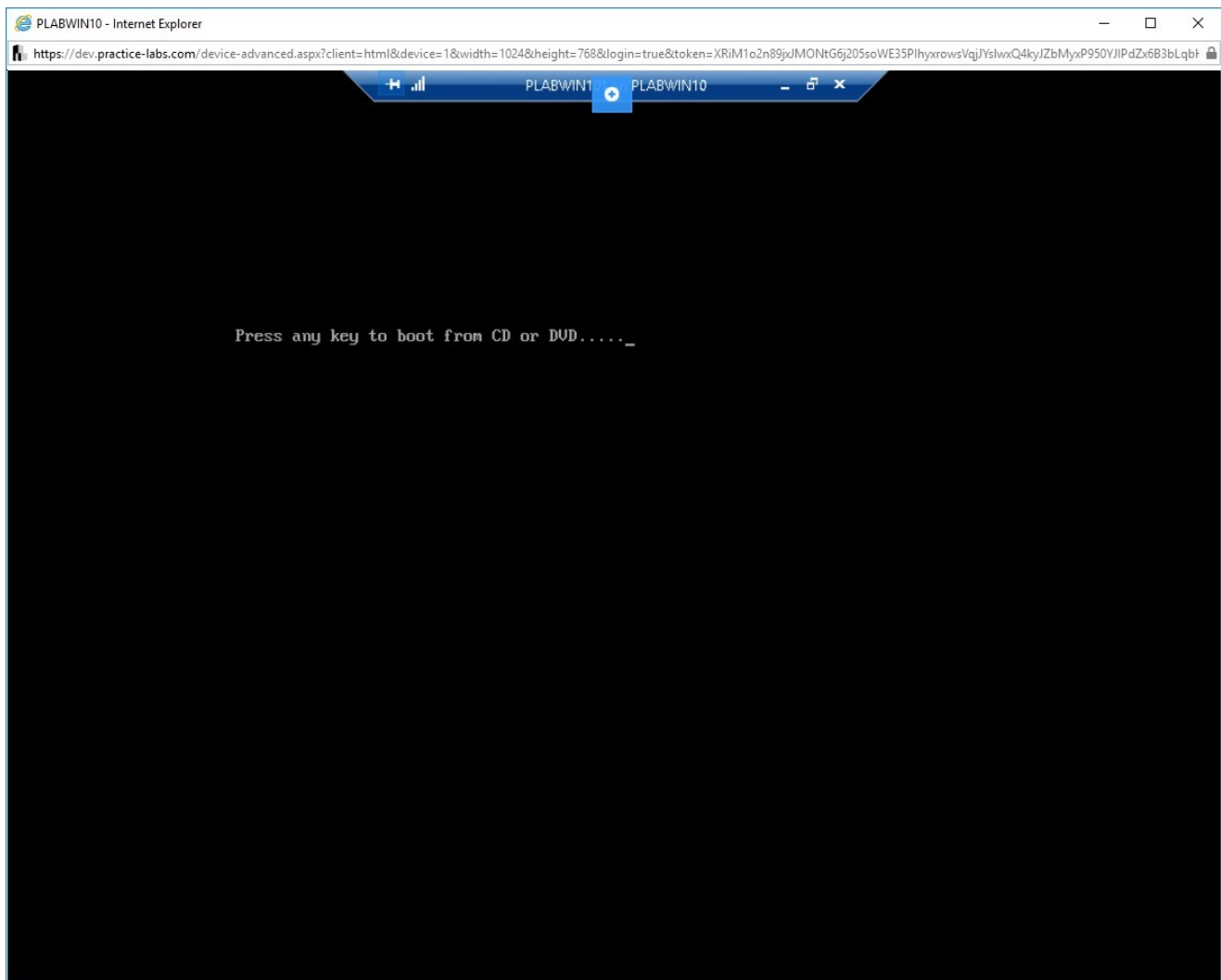


Figure 2.19 Screenshot of PLABWIN10: Showing the boot from CD screen.

## ***Step 20***

Windows Setup is now configuring Windows services.

**This will take a few minutes to complete.** You will be taken to a few more screens.

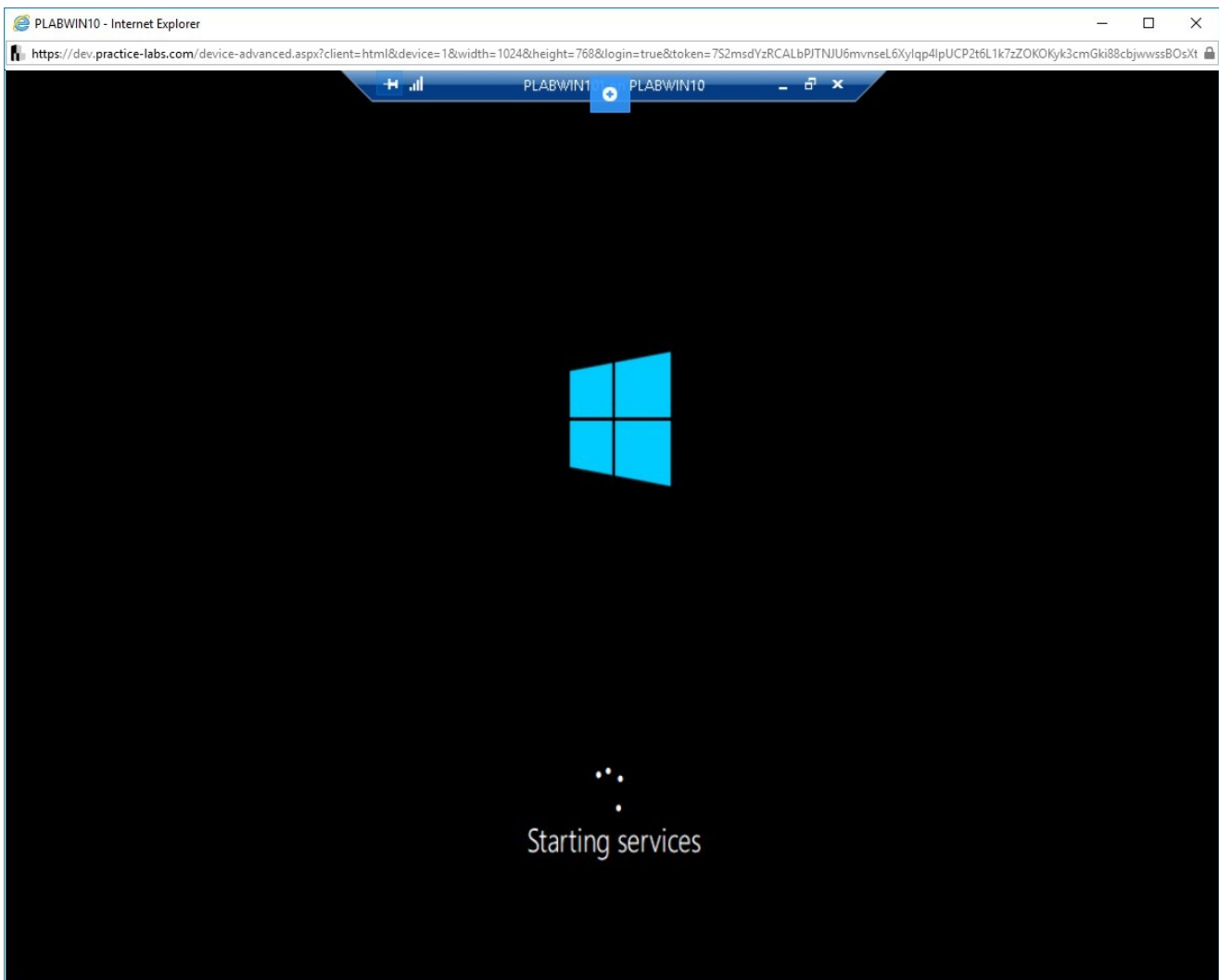


Figure 2.20 Screenshot of PLABWIN10: Showing the newly installed Windows configuration.

## ***Step 21***

Windows will reboot to finalize the setup. Notice that the virtual machine is now closed.

On the **Virtual Machine Connection** dialog box, click **Reconnect**.

**Note:** If the **Virtual Machine Connection** dialog box doesn't appear, please proceed to **Step 24**.

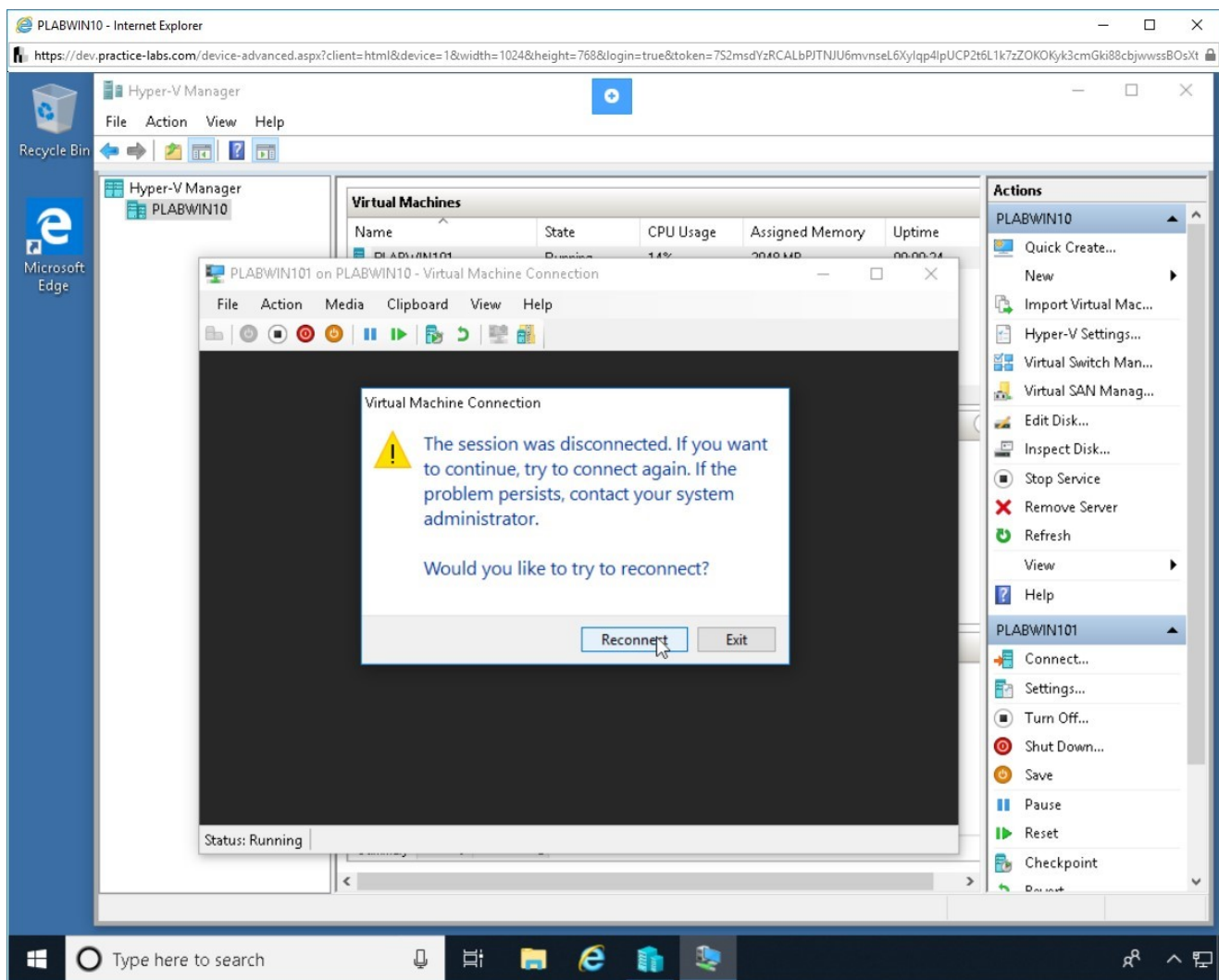


Figure 2.21 Screenshot of PLABWIN10: Reconnecting with the virtual machine.

## Step 22

Maximize the **PLABWIN101 on PLABWIN10 - Virtual Machine Connection** dialog box.

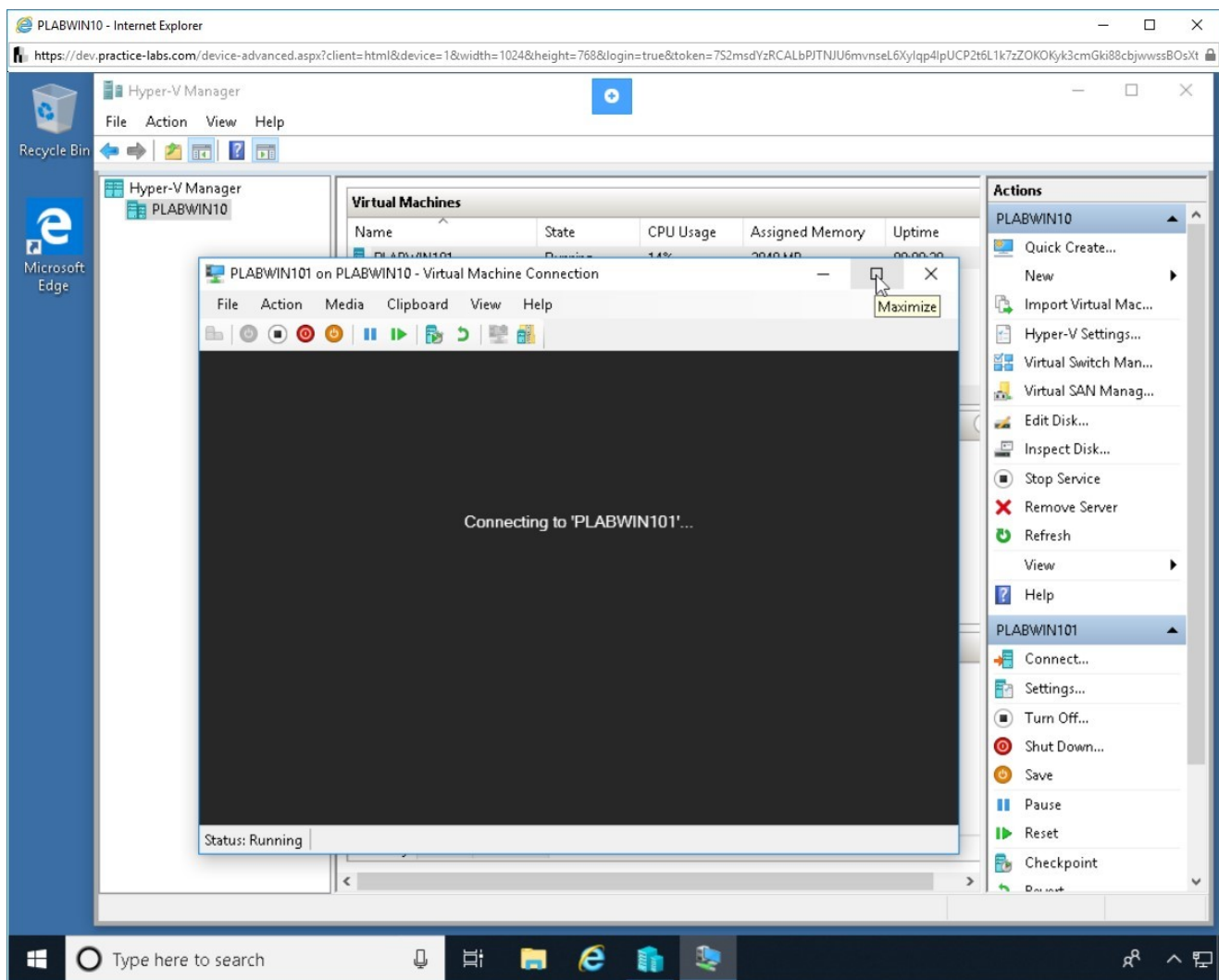


Figure 2.22 Screenshot of PLABWIN10: Maximizing the virtual machine window size.

## Step 23

The **Just a moment** screen is displayed. This will stay for a few minutes.

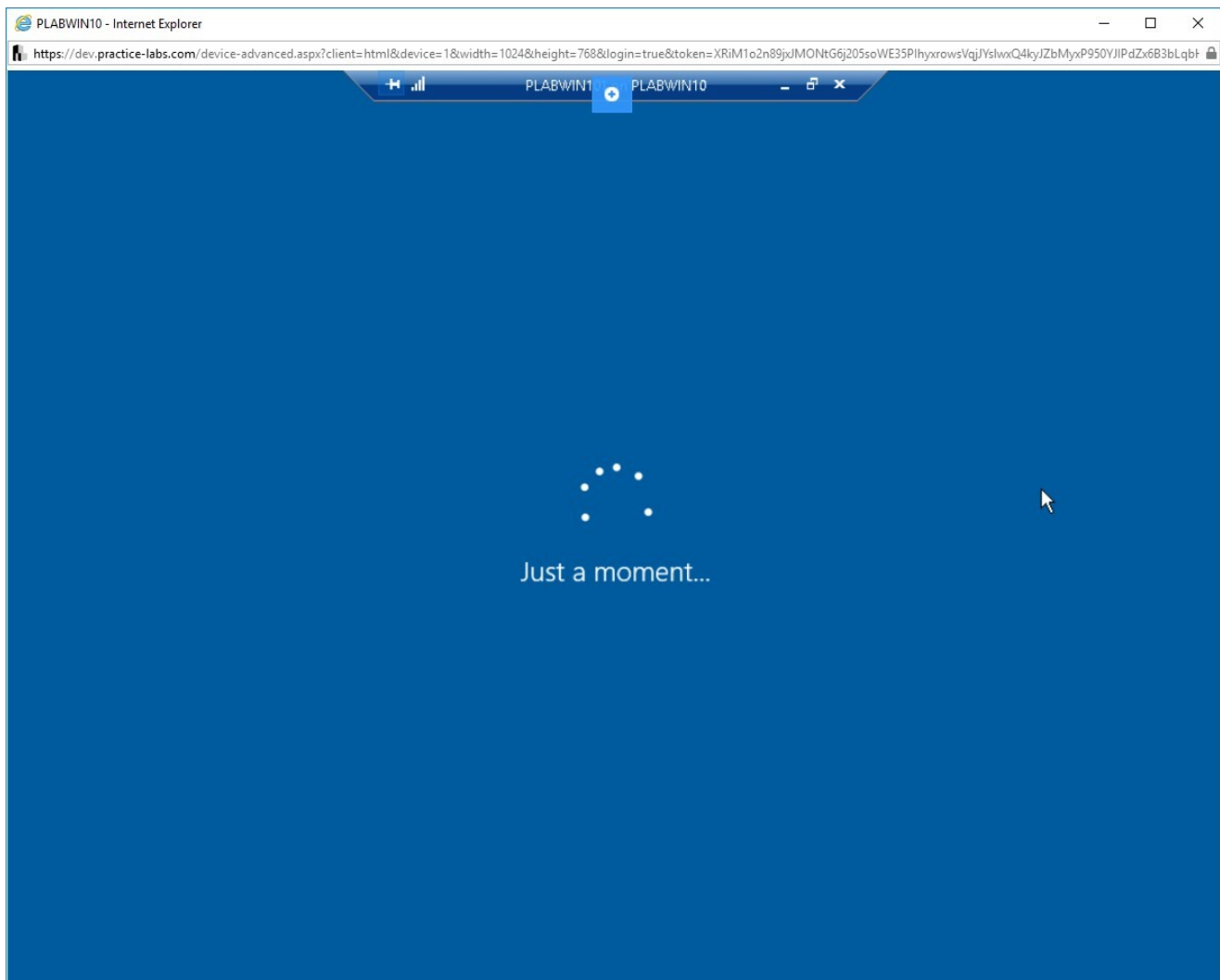


Figure 2.23 Screenshot of PLABWIN10: Showing the Just a moment screen.

## ***Step 24***

On the **Let's start with region. Is this right?** screen, select **United Kingdom** and then click **Yes**.

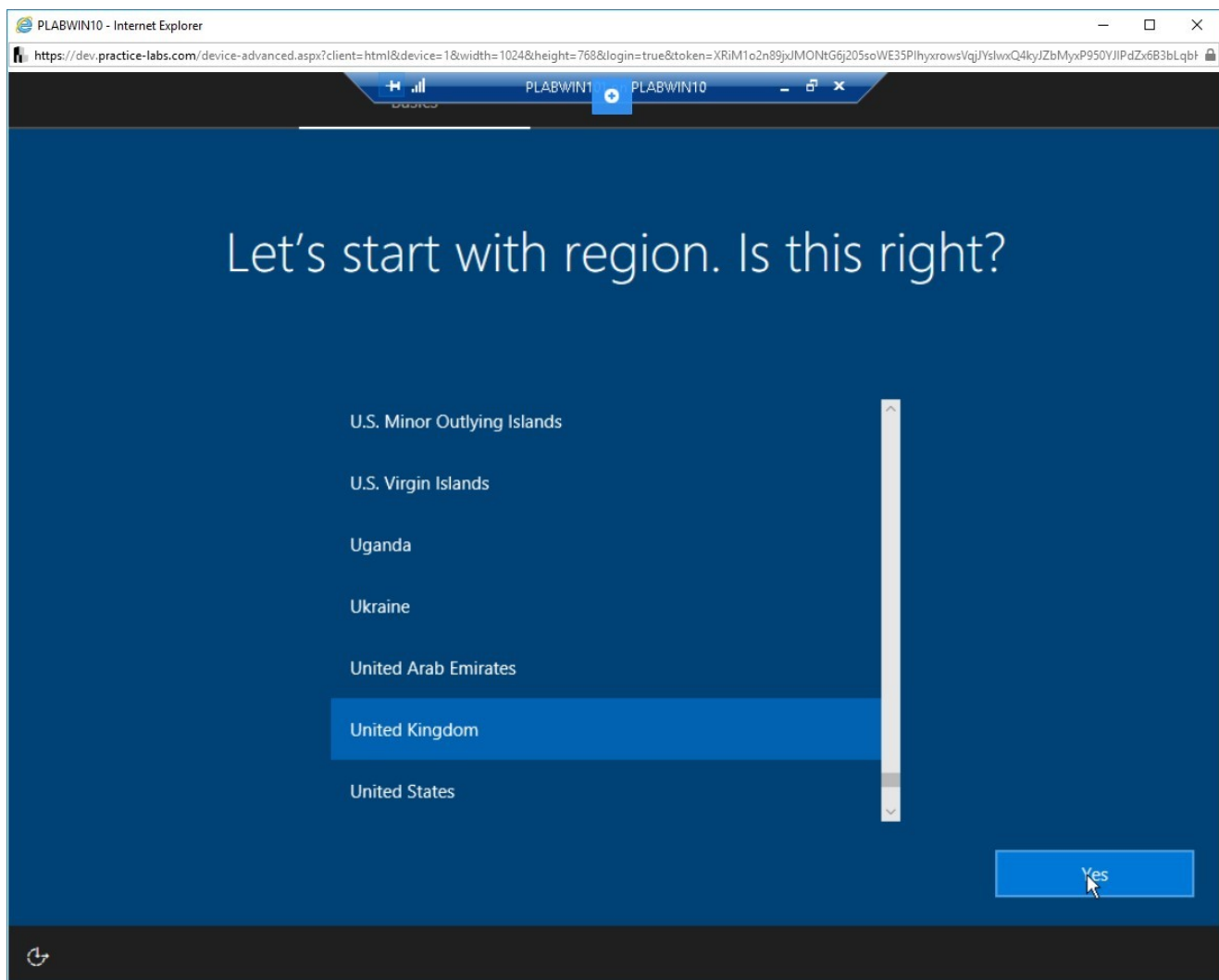


Figure 2.24 Screenshot of PLABWIN10: Selecting a region for this installation.

## ***Step 25***

On the **Is this the right keyboard layout?** screen, select **United Kingdom** as the keyboard layout and then click **Yes**.

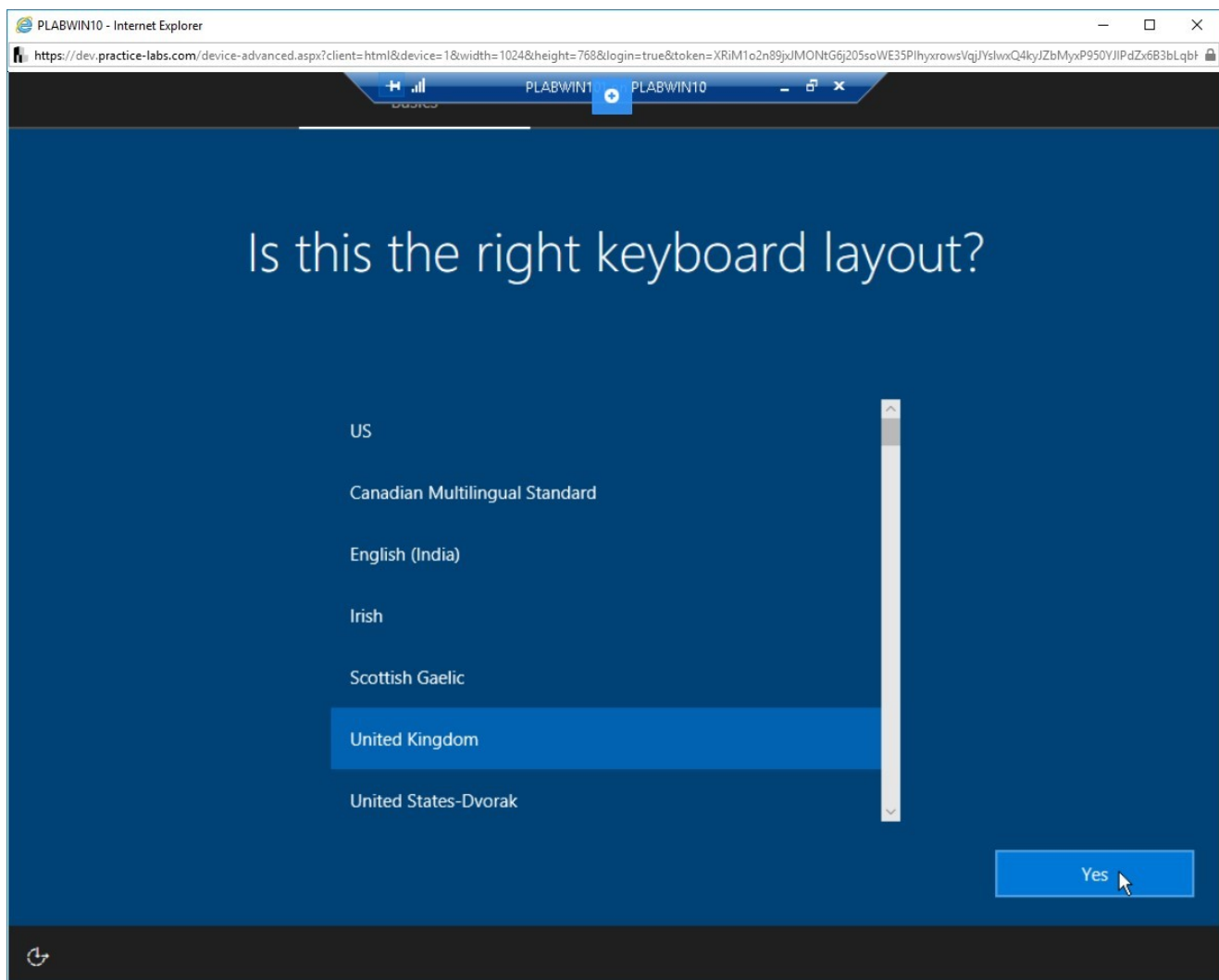


Figure 2.25 Screenshot of PLABWIN10: Selecting a keyboard layout for this installation.

## *Step 26*

On the **Want to add a second keyboard layout?** screen, click **Skip**.

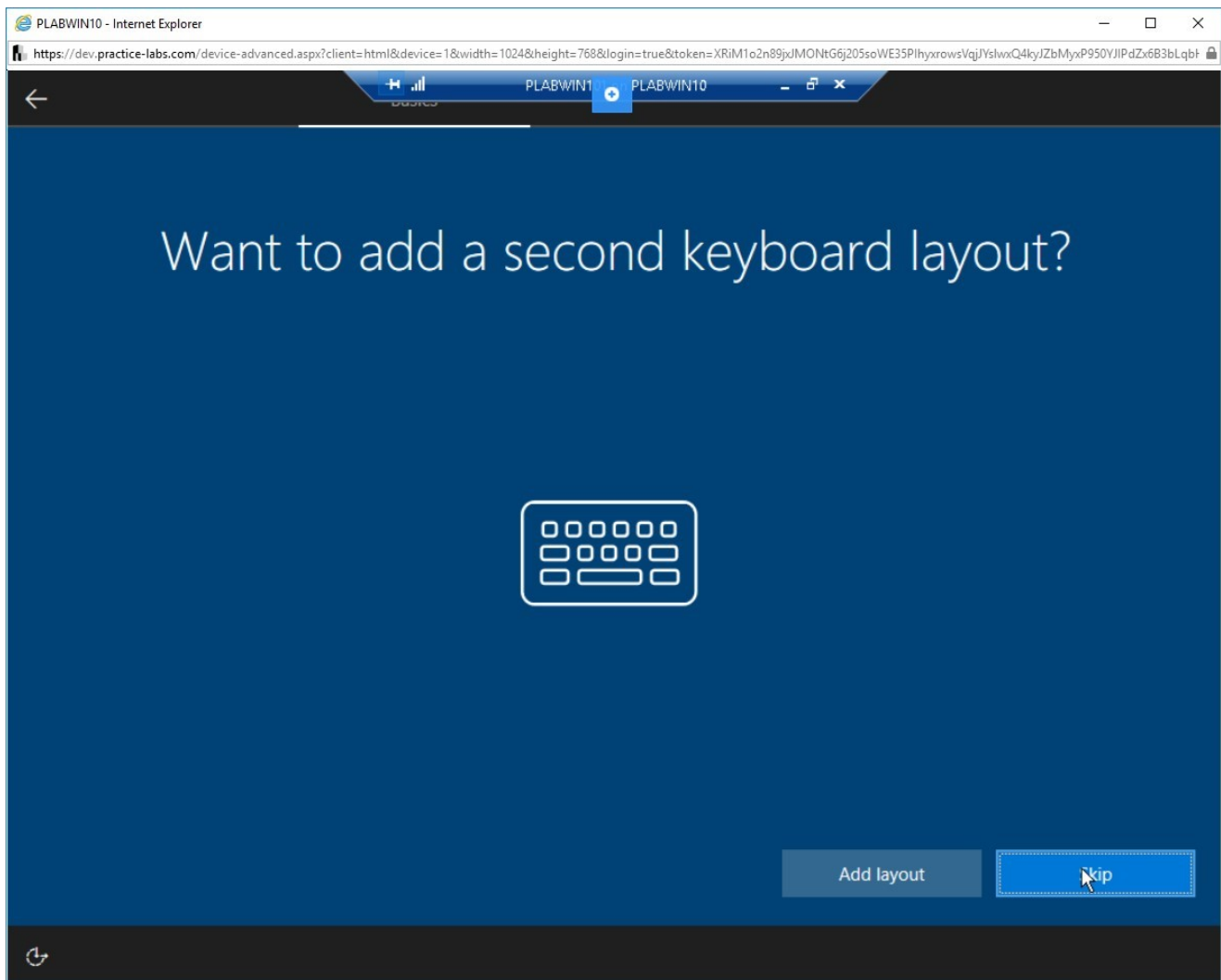


Figure 2.26 Screenshot of PLABWIN10: Skipping adding a secondary keyboard.

## ***Step 27***

On the **Let's connect you to a network** screen, click the **Skip for Now** link

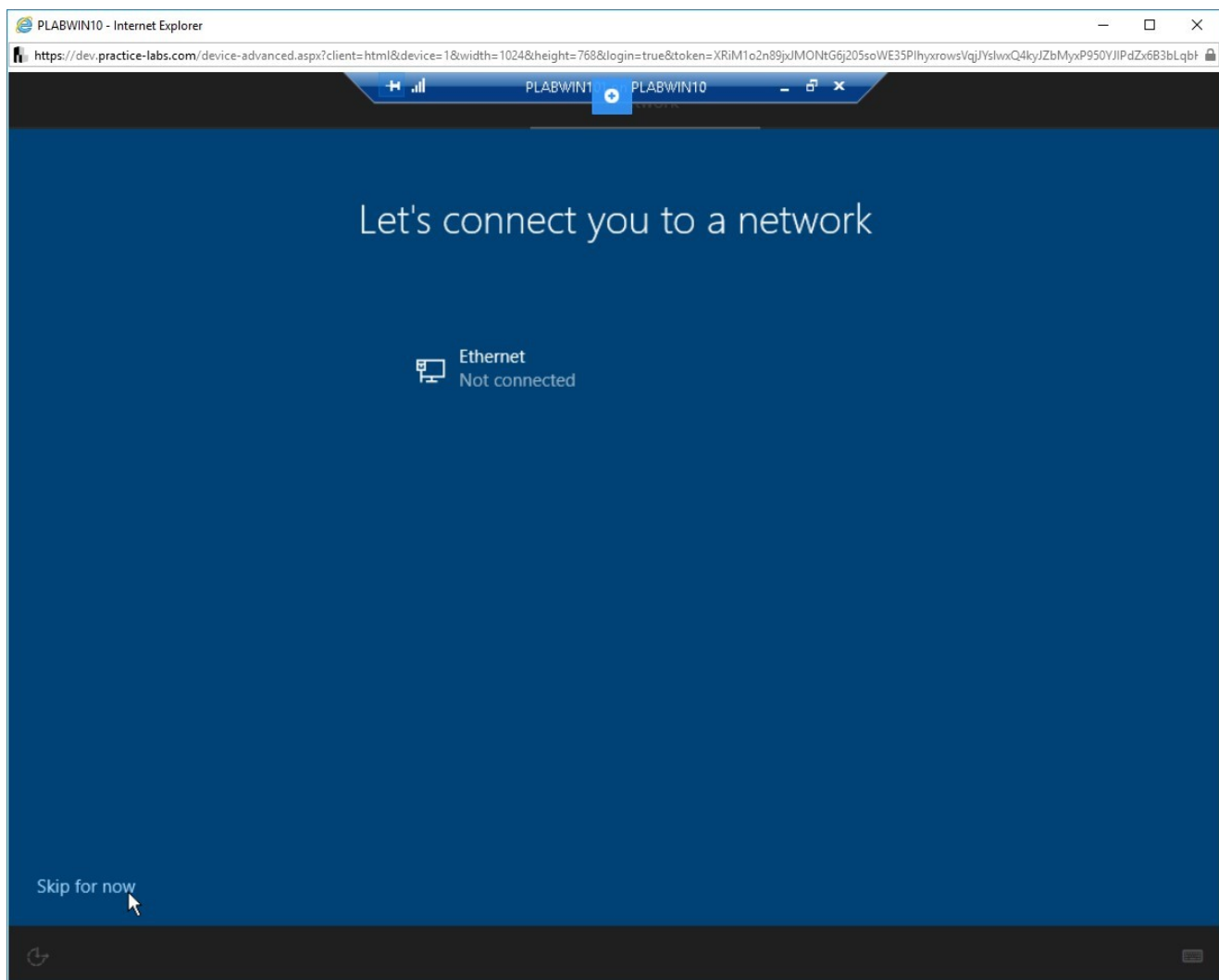


Figure 2.27 Screenshot of PLABWIN10: Clicking the Skip for now link for the Ethernet network.

## Step 28

On the **Who's going to use this PC?** screen, type the following inside the text box:

PLABUser

Then, click **Next**.

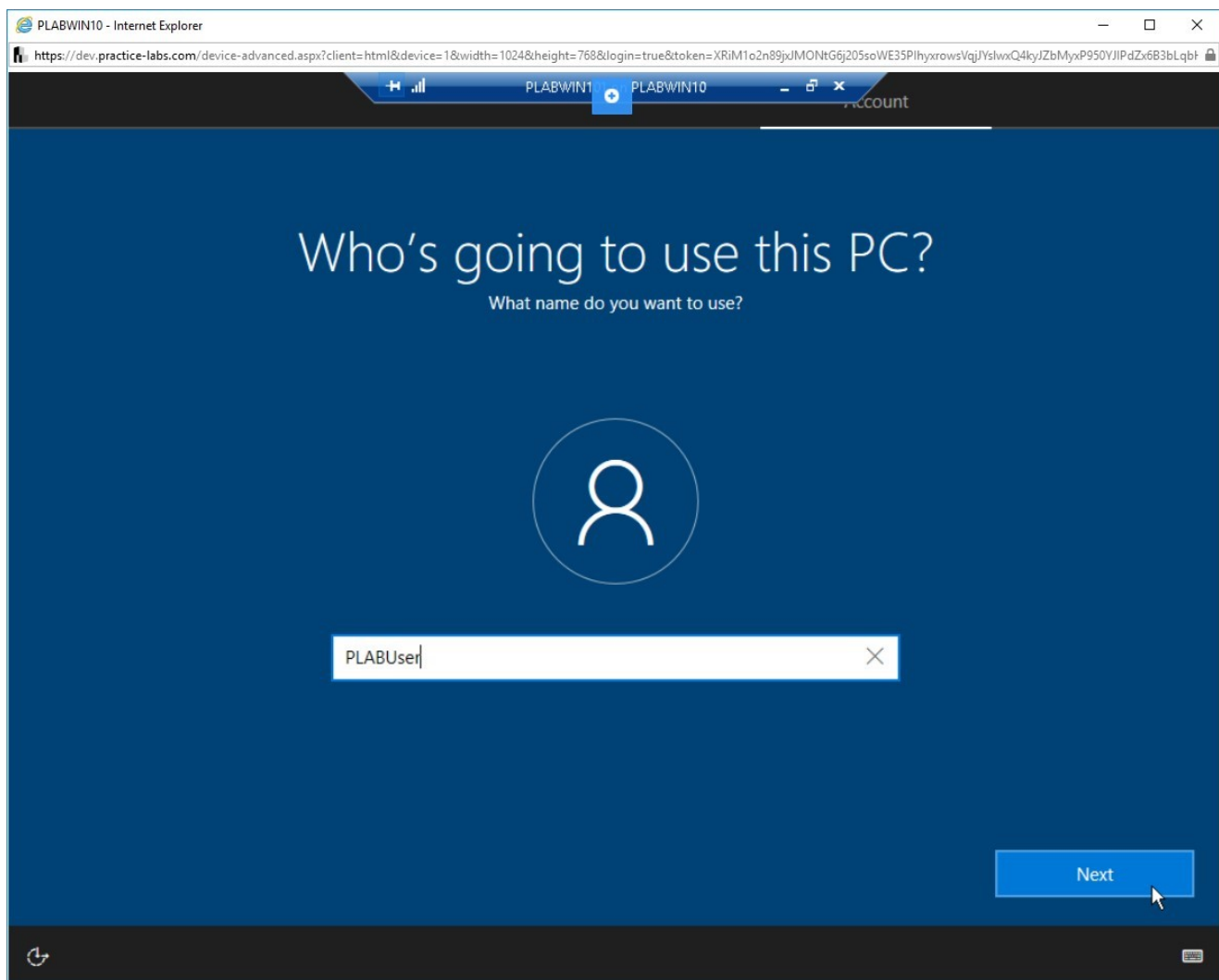


Figure 2.28 Screenshot of PLABWIN10: Creating a user account who will use this installation.

## *Step 29*

On the **Create a super memorable password** screen, type the following text in the field password field:

**Passw0rd**

Then, click **Next**.

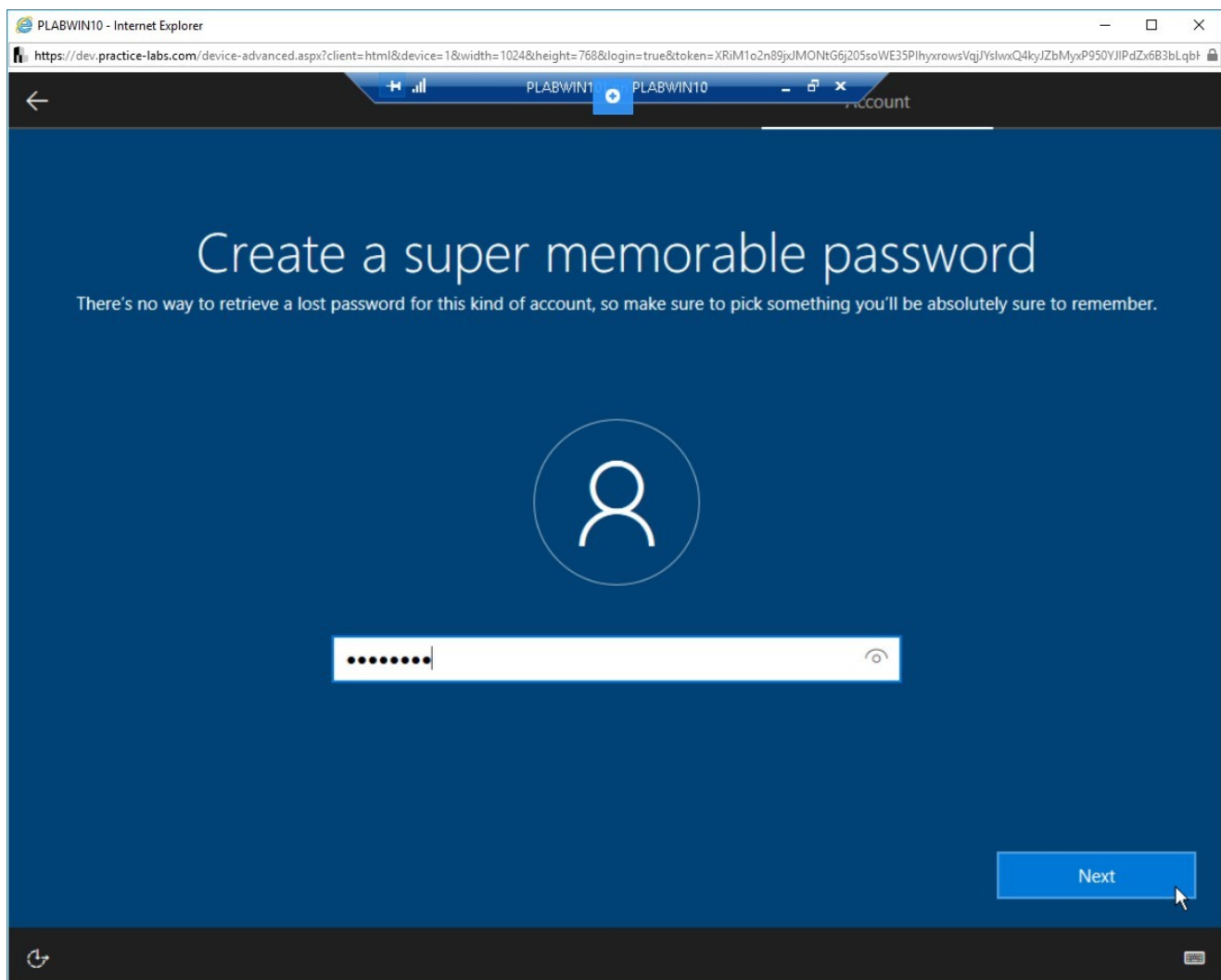


Figure 2.29 Screenshot of PLABWIN10: Entering a password during the windows 10 installation process.

## *Step 30*

On the **Confirm your password** screen, re-enter the password in the text field:

**Passw0rd**

Click **Next**.

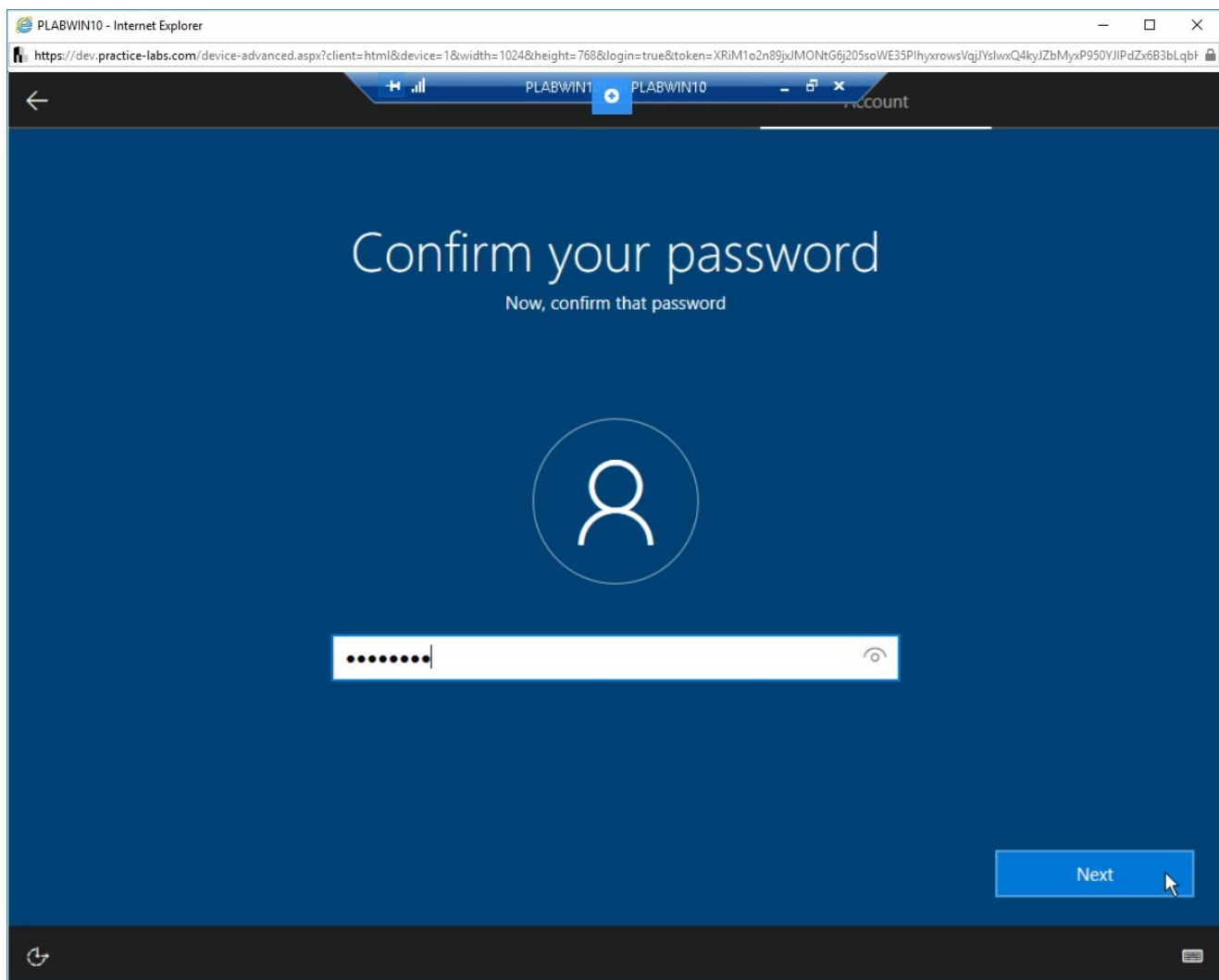


Figure 2.30 Screenshot of PLABWIN10: Confirming the password for the user.

## *Step 31*

On the **Add a hint for your password** screen, type the following in the text field:

default password

Click **Next**.

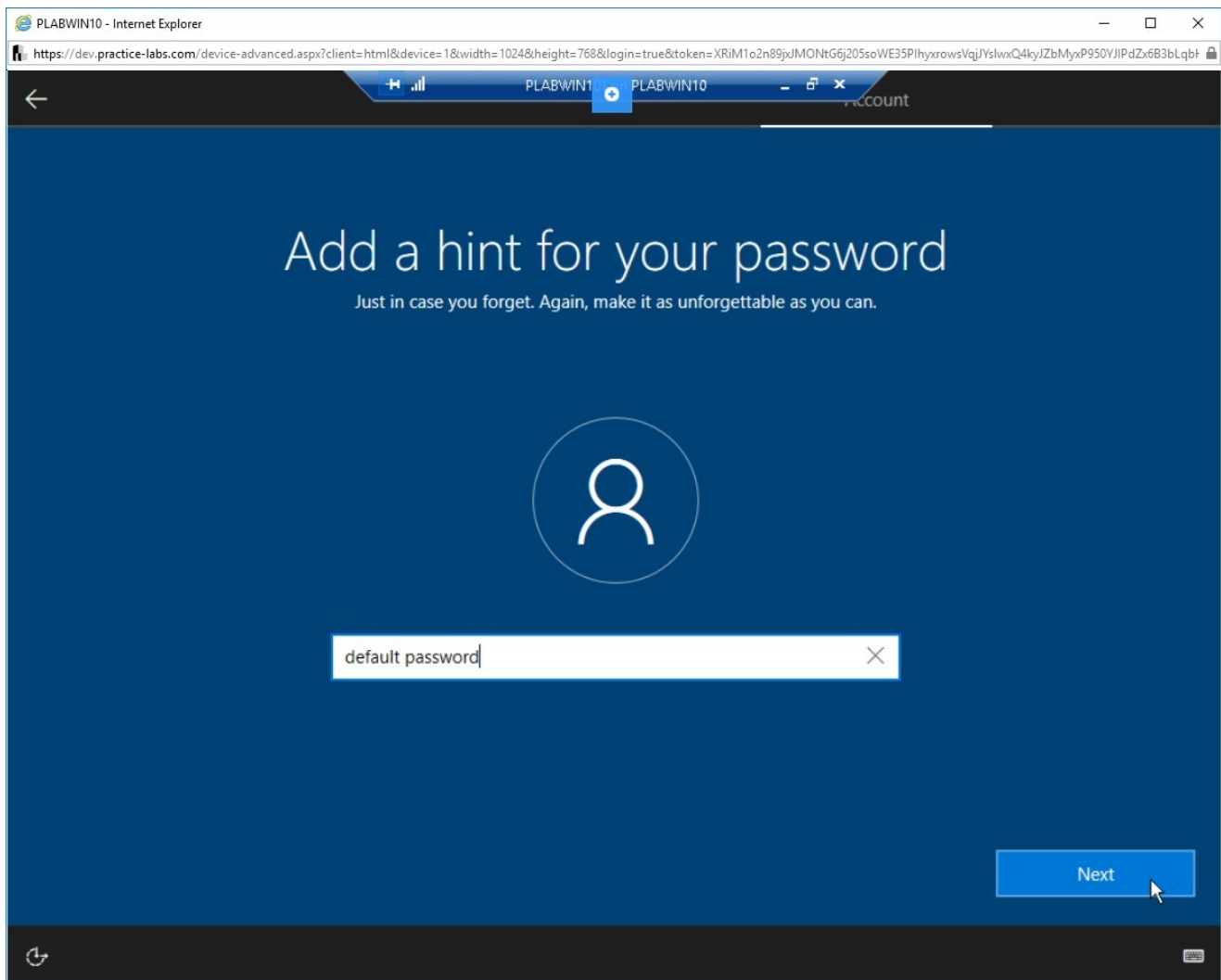


Figure 2.31 Screenshot of PLABWIN10: Setting a hint for the password.

## ***Step 32***

On the **Make Cortana your personal assistant?** screen, click **No**.

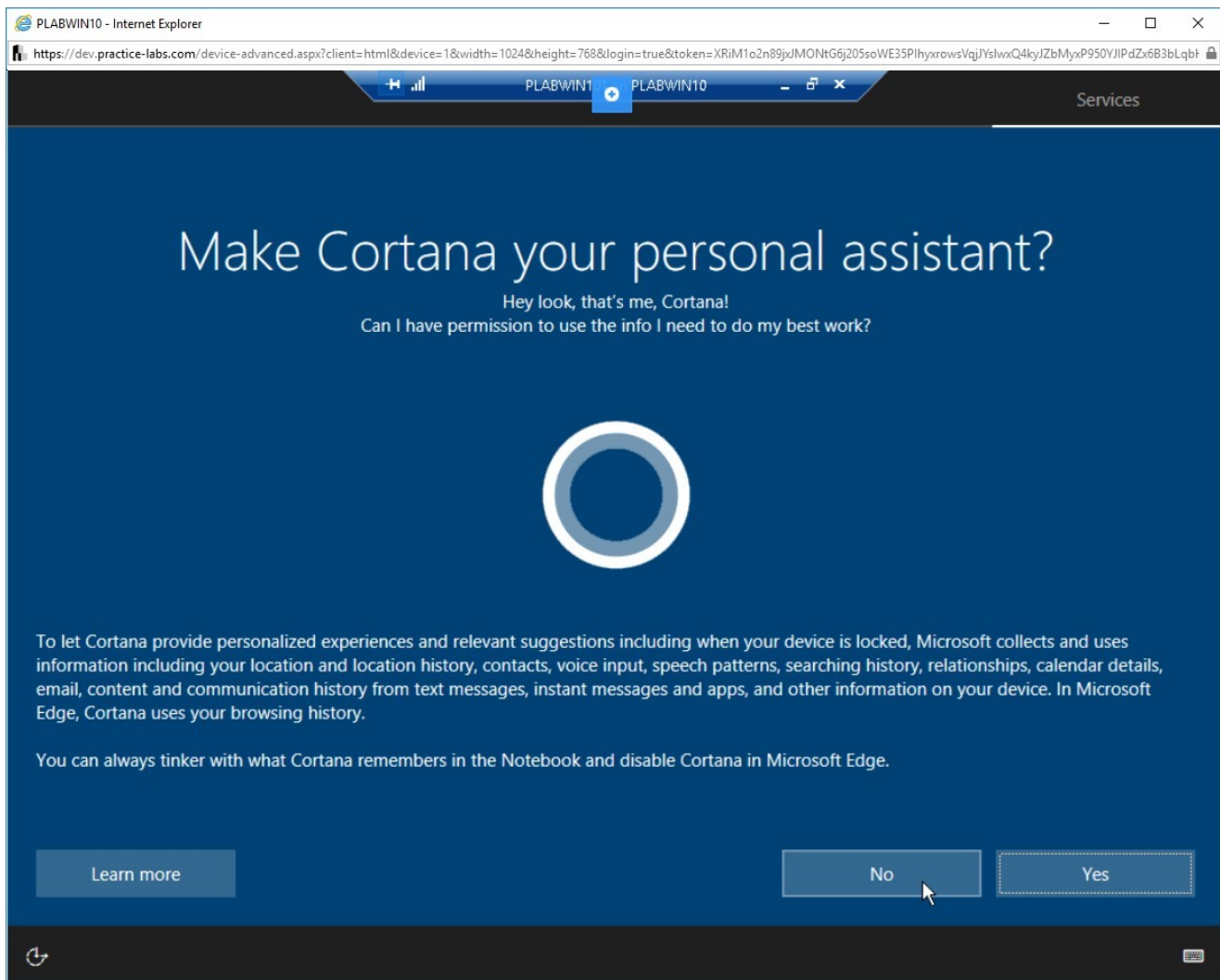


Figure 2.32 Screenshot of PLABWIN10: Clicking No for the Cortana integration.

## Step 33

On the **Choose privacy settings for your device** screen, click **Accept**.

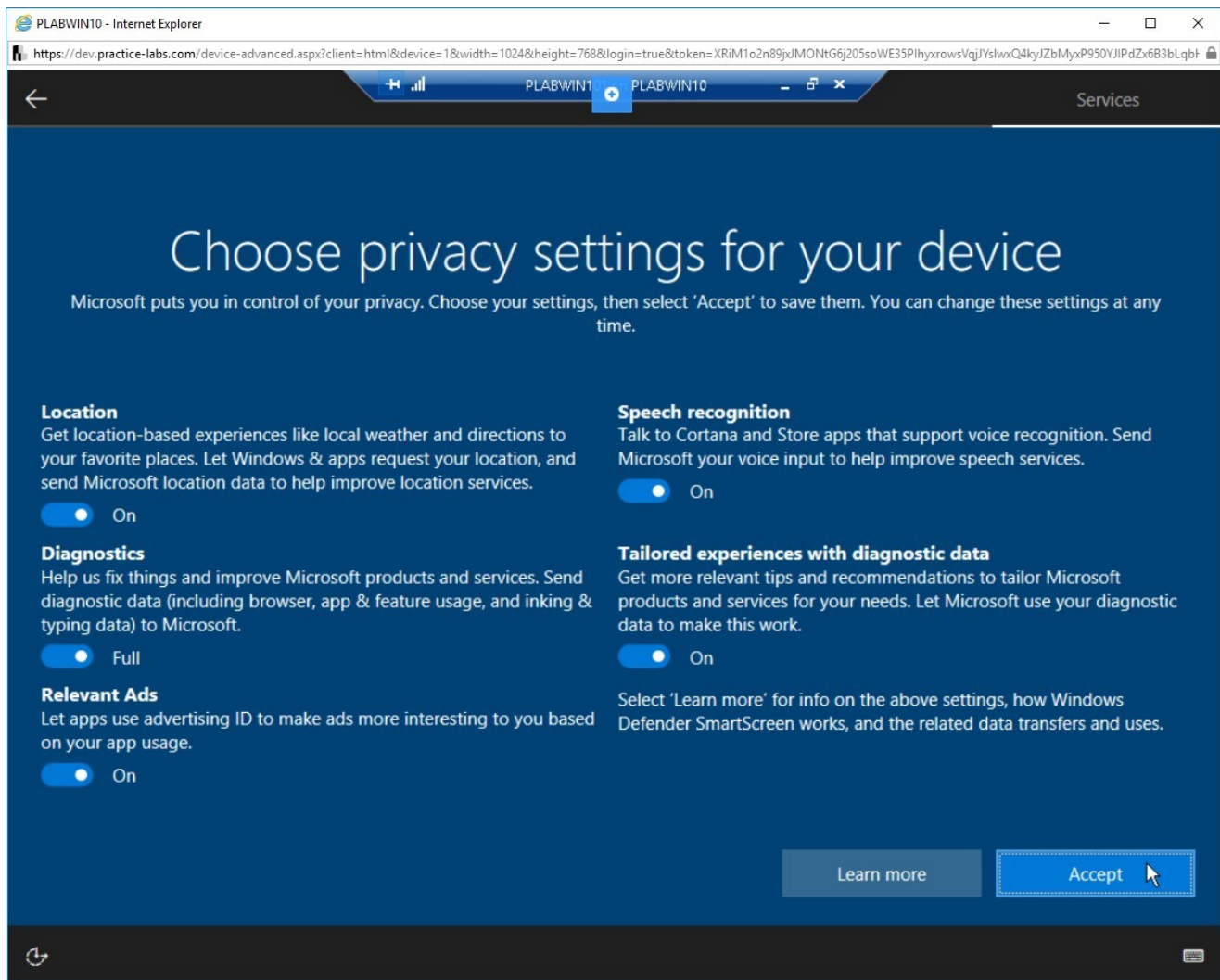


Figure 2.33 Screenshot of PLABWIN10: Accepting the privacy settings.

## Step 34

The settings configured in the previous steps will be applied. Wait until the process is completed. This may take a few minutes.

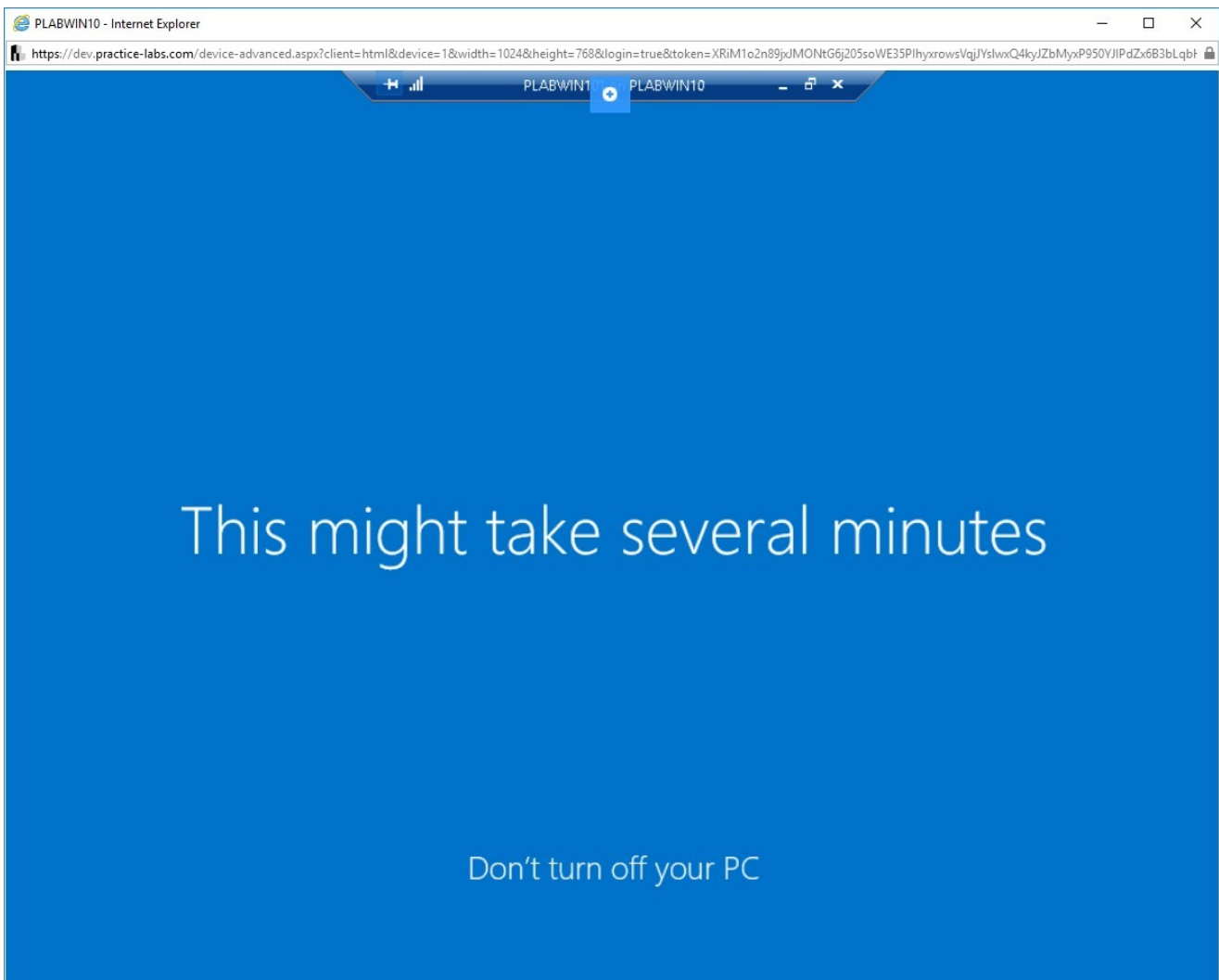


Figure 2.34 Screenshot of PLABWIN10: Finalizing the Windows installation.

## ***Step 35***

When the installation process is completed, the desktop of the newly installed operating system will appear.

Let the virtual machine reach this stage, and then close the virtual machine window.

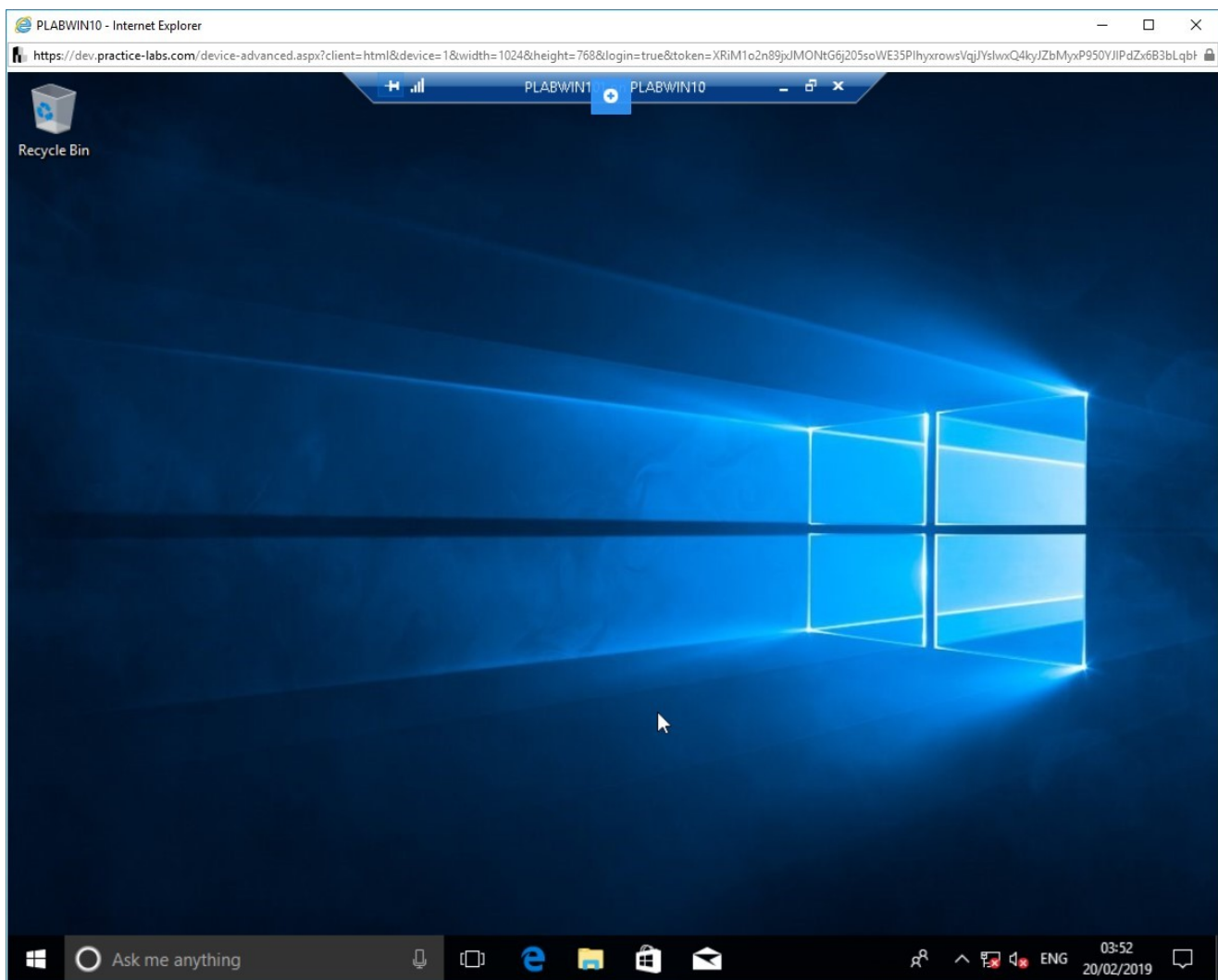


Figure 2.35 Screenshot of PLABWIN10: Showing the desktop after to completion of windows 10 installation.

**Note:** If you need to create a multiboot system, restart your system and then choose to boot from the DVD. After which, you can follow the following steps:

1. Follow step 1 to step 4 of this exercise.
2. Then, follow step 10 to step 13 of this exercise.
3. Once the steps are followed, then The **Where do you want to install the window?** panel appears.
4. Select **Drive o Partition 3** and continue with the installation.
5. Follow step 21 to 32 of this exercise to complete the procedure.
6. After the virtual machine restarts when installation is completed, you will get two options to choose from.

There are no hard and fast rules of which two operating systems you want to boot from. Remember that if you were multibooting with Linux, the default operating system would be Linux. The system will directly boot from Linux unless you change it to Windows manually.

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## Step 36

**Close** all open windows.

### Task 2 - Create a Recovery Partition

The recovery partition is a part of a disk drive which is created to hold an image of the system taken at a particular point of time. Creating a recovery partition helps in recovering data if it is lost.

Recovery partition's files are used for reinstalling operating system back on the machine. Windows operating system has inbuilt functionality to create a recovery partition.

Below is the demonstration of how to create a recovery partition.

**Alert:** This task **cannot** be performed in the lab environment as it requires an external drive. Below is a demonstration of how you would perform these steps.

## Step 1

Search for the following in the search bar:

Create a recovery drive

Select **Create a recovery drive** from the search results.

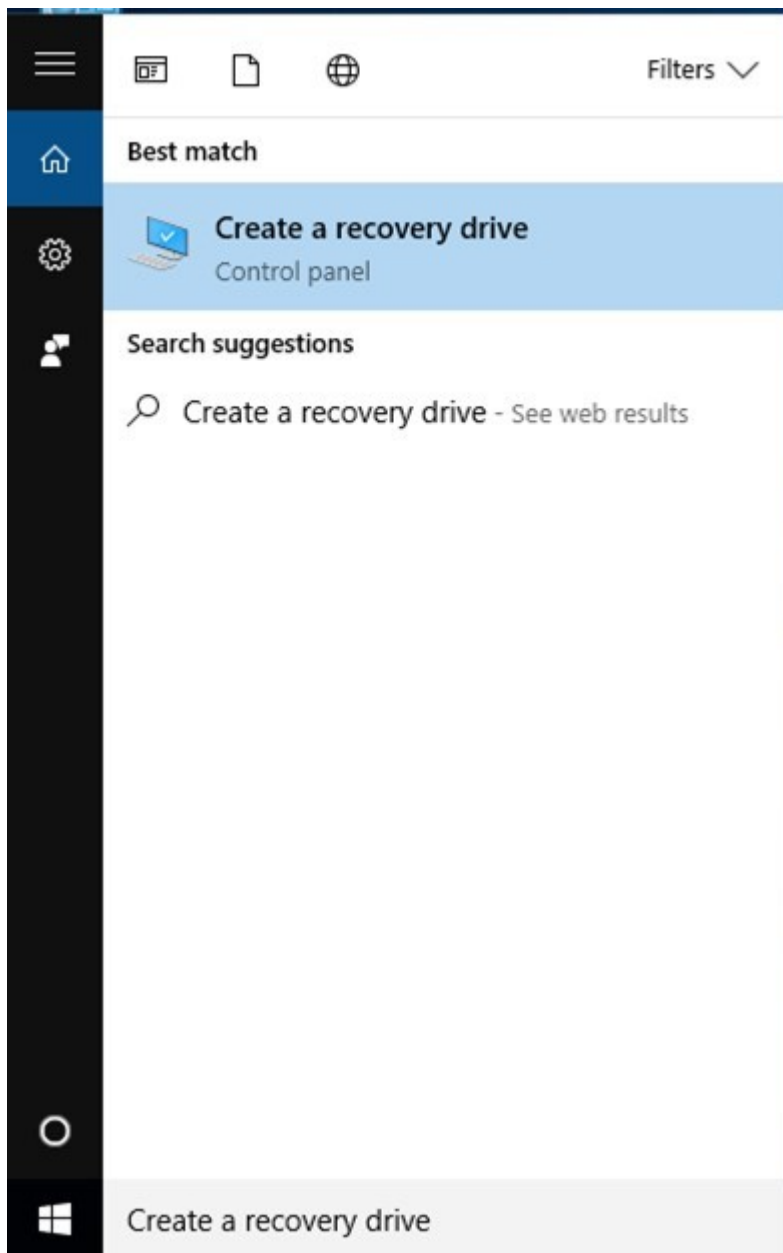


Figure 2.36: Selecting Create a recovery drive from the search results.

## ***Step 2***

The **Recovery Drive** wizard is displayed. Keep the default selection and click **Next**.

***Note:*** If prompted with **User Account Control** dialog box, click **Yes**.

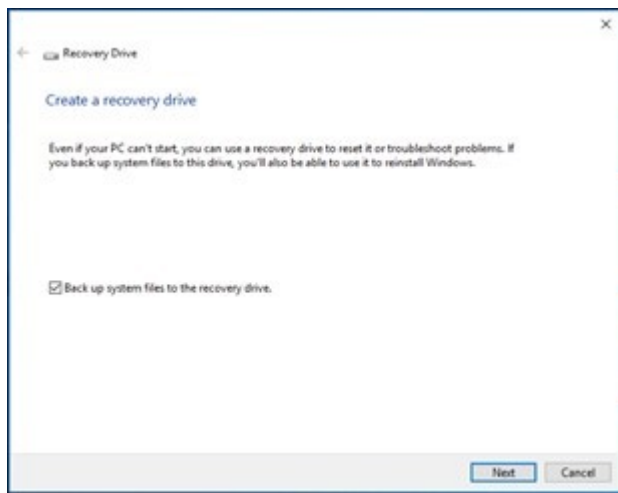


Figure 2.37: Clicking Next on the Create a recovery drive page.

## Step 3

The process of creating a recovery partition starts.

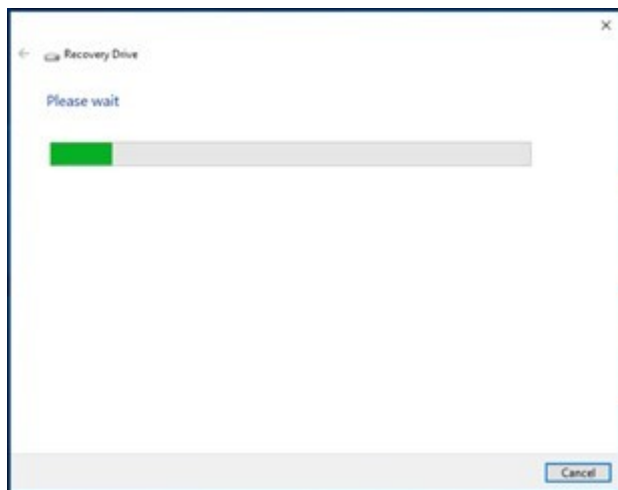


Figure 2.38: Showing the initial phase of recovery partition creation process.

## Step 4

A message about the recovery drive size requirement is shown. Click **Next**.

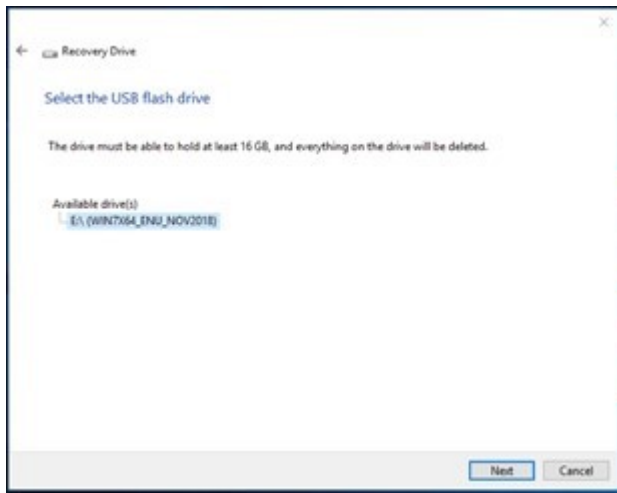


Figure 2.39: Screen shows a screen of selection of a device for creating the recovery partition

## Step 5

Click **Create**.

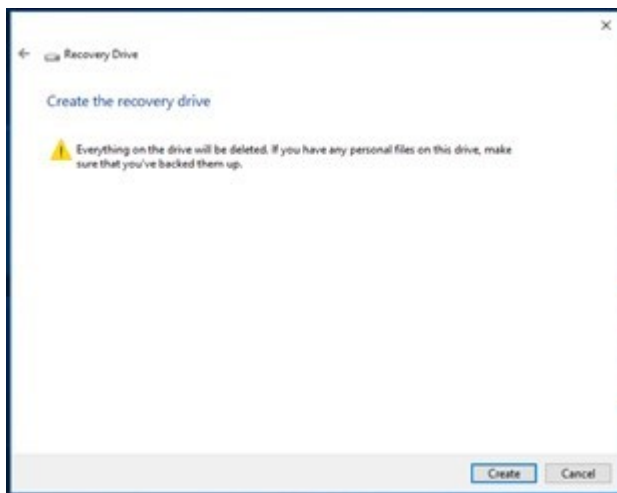


Figure 2.40: Showing a warning message about losing data.

## Step 6

The process of creating a recovery drive starts. It will take a few minutes to complete.

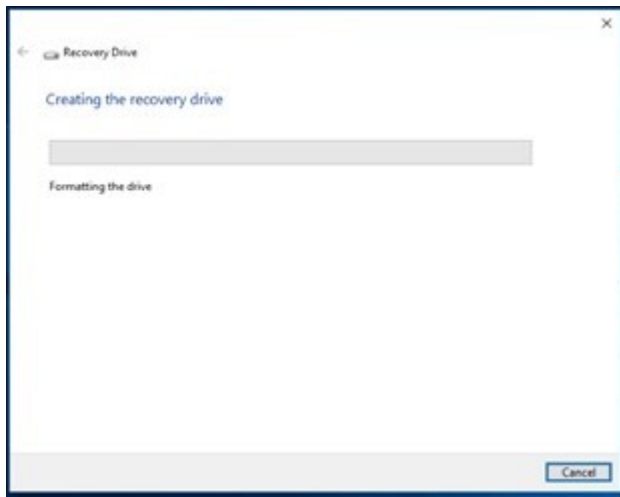


Figure 2.41: Formatting the drive for the recovery partition.

## Step 7

Once the recovery drive is created, it is visible inside the **This PC** window.

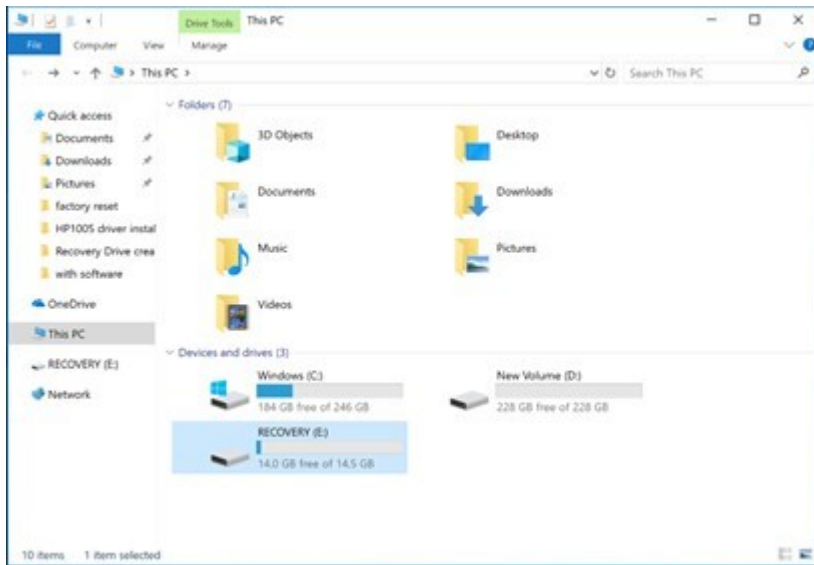


Figure 2.42: Showing a newly created recovery partition.

**Alert:** The next task **can** be performed in the lab environment.

## Task 3 - Prepare for an Unattended Installation

Assume that you have to install Windows 10 on multiple systems at the same time. You can perform an unattended installation on all these systems at one go.

This is done with the help of Autounattended.xml, which needs to be copied to the root of the USB or DVD drive.

A sample of this file can be downloaded from the Internet, and then the parameters within the file can be changed as per your need. Alternatively, you can create this file.

In this task, you will perform an unattended installation. To do this, perform the following steps:

## ***Step 1***

Ensure you are connected to **PLABWIN10**.

In the **Type here to search** text box, type the following:

```
windows answer file generator x86
```

Select **Windows answer file generator** from the search results.

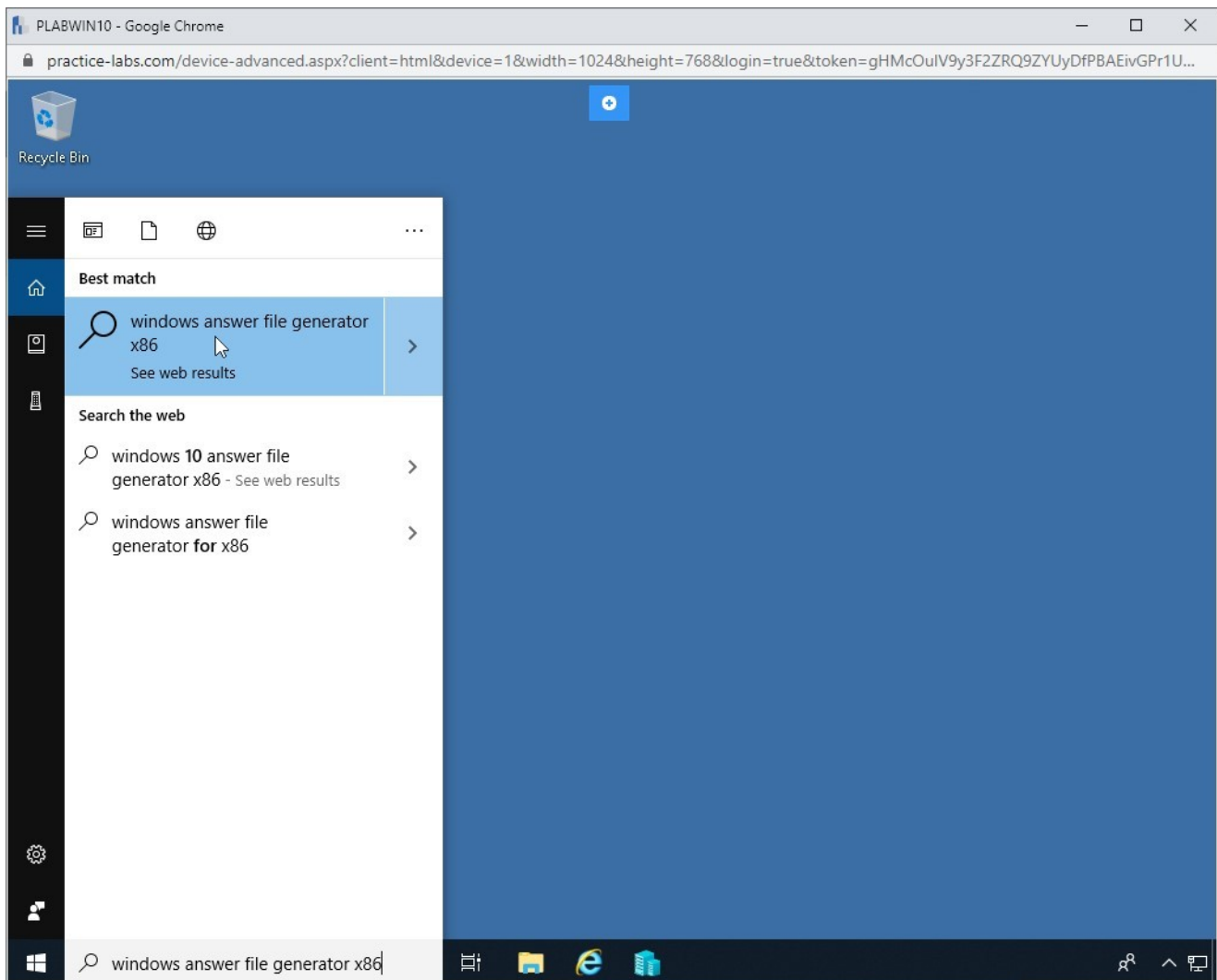


Figure 2.43 Screenshot of PLABWIN10: Selecting Windows answer file generator Windows 10 from the search results.

## *Step 2*

From the search engine results, click the **Windows 10 Answer File Generator for x86 ... - windowsafg.com** website link.

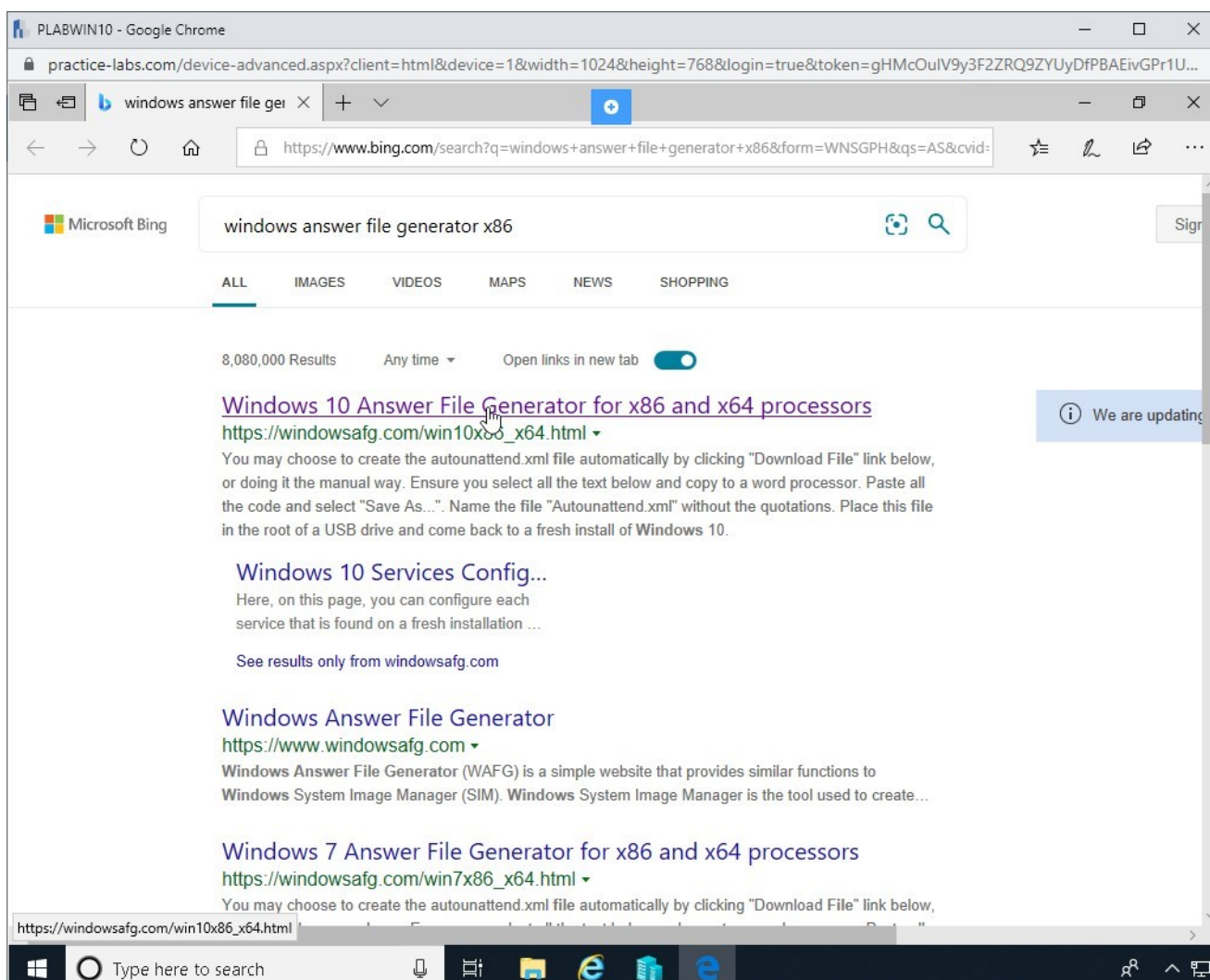


Figure 2.44 Screenshot of PLABWIN10: Selecting Windows answer file generator Windows 10 from the search engine results.

**Note:** If you are unable to find the link above, stay on the <https://indowsafg.com> site. Hover your mouse over the **Desktop** menu option. You will see a dropdown list appears. Click on **Windows 10 UEFI** and continue with the lab as intended.

## Step 3

The **Windows Answer File Generator Webpage** is loaded. Scroll down the page and click **Highlight All**.

**Alert:** This web page allows you to create your custom **Autounattend.xml** file. You can either use the default text below the **Highlight All** button, then customize it, or you can customize and download the file.

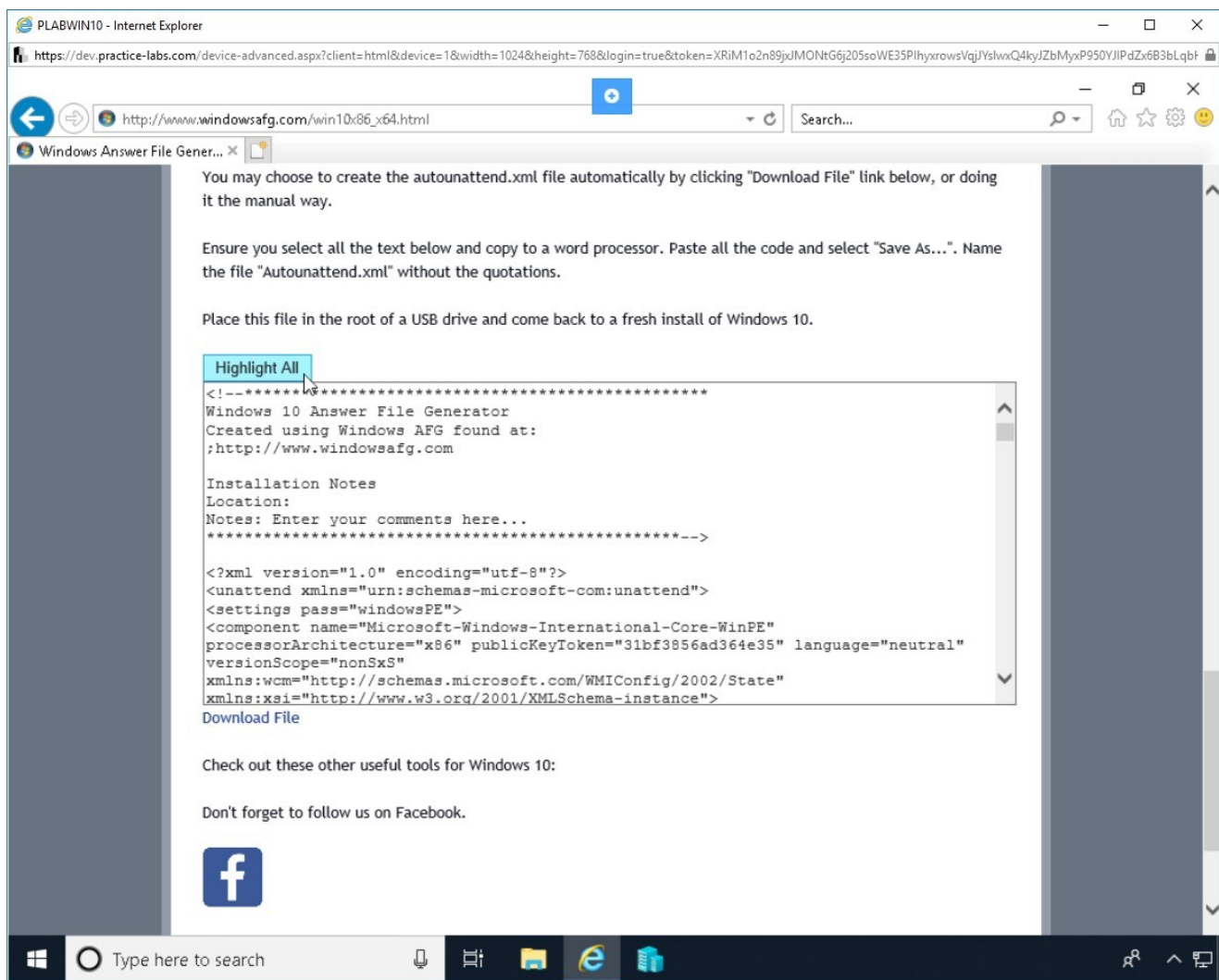


Figure 2.45 Screenshot of PLABWIN10: Clicking the Highlight All button on the Windows Answer File Generator Webpage.

## Step 4

Right-click on the highlighted text and select **Copy** from the context menu.

**Minimize** your browser window.

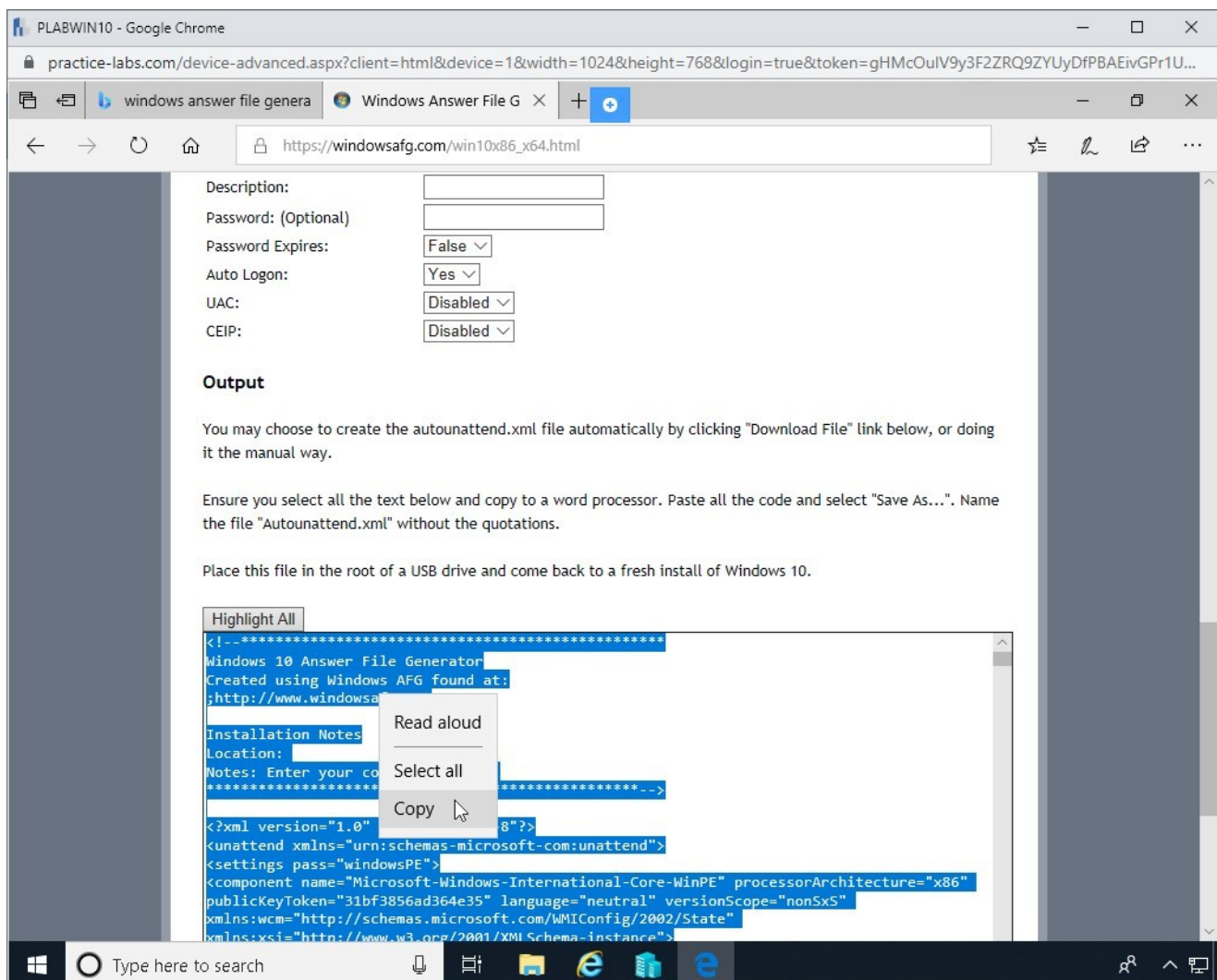


Figure 2.46 Screenshot of PLABWIN10: Copying the text on the Windows Answer File Generator Webpage.

## Step 5

Right-click on the desktop and select **Text Document**.

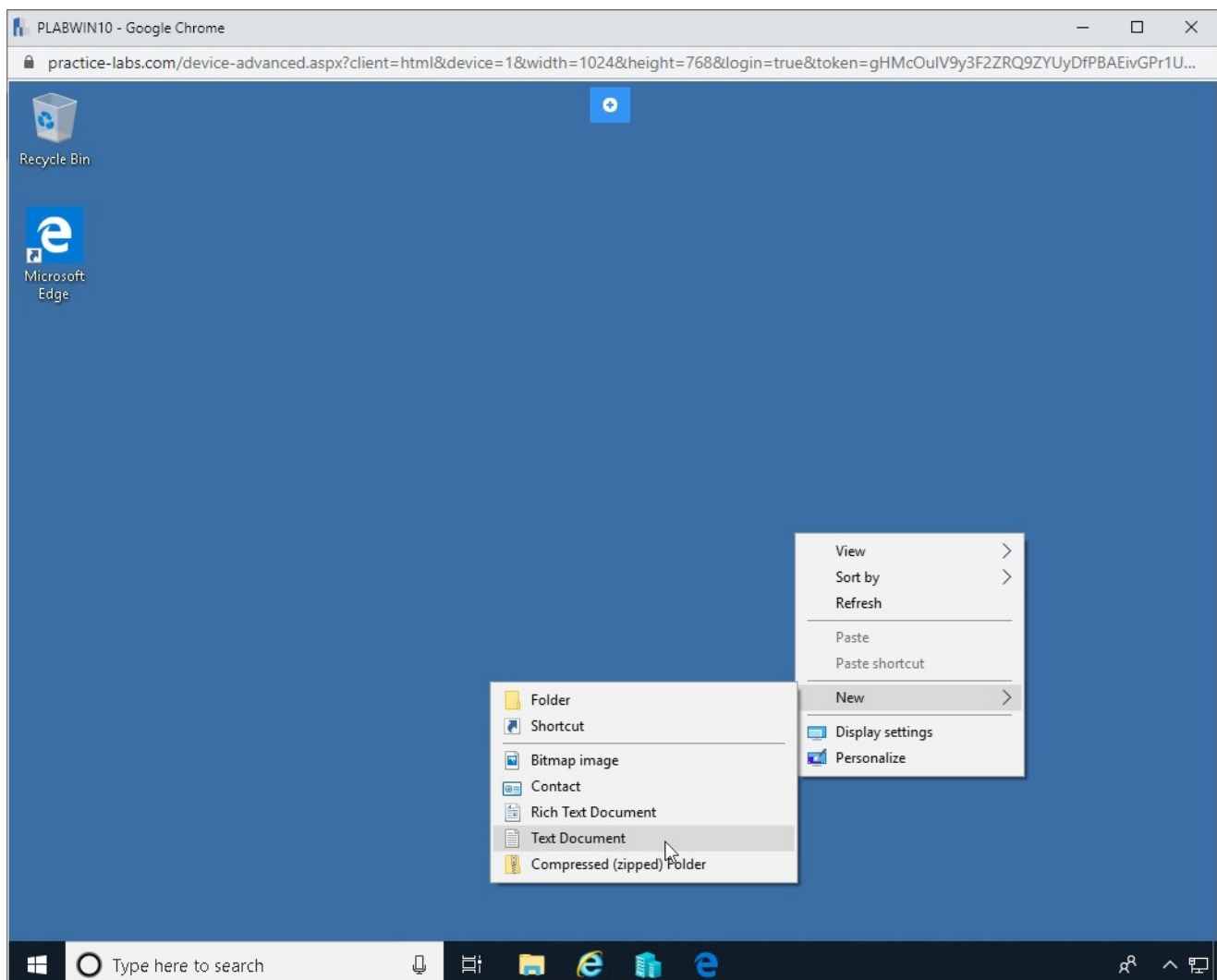


Figure 2.47 Screenshot of PLABWIN10: Creating a new text document on the desktop.

## *Step 6*

Click anywhere on the desktop and then double-click **New Text Document**.

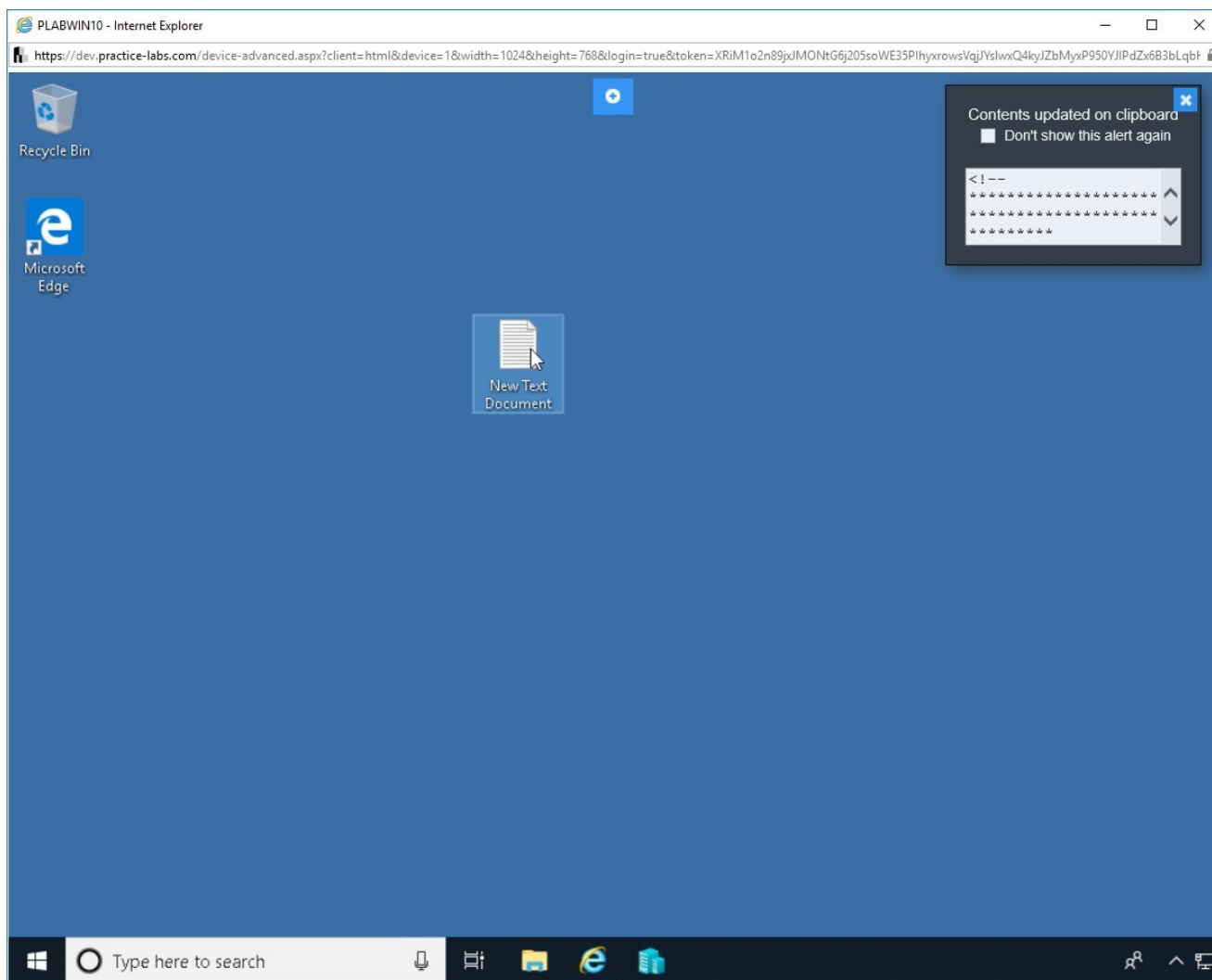


Figure 2.48 Screenshot of PLABWIN10: Opening the text document.

## Step 7

Right-click inside the document and then select **Paste**. This will paste the content into this file.

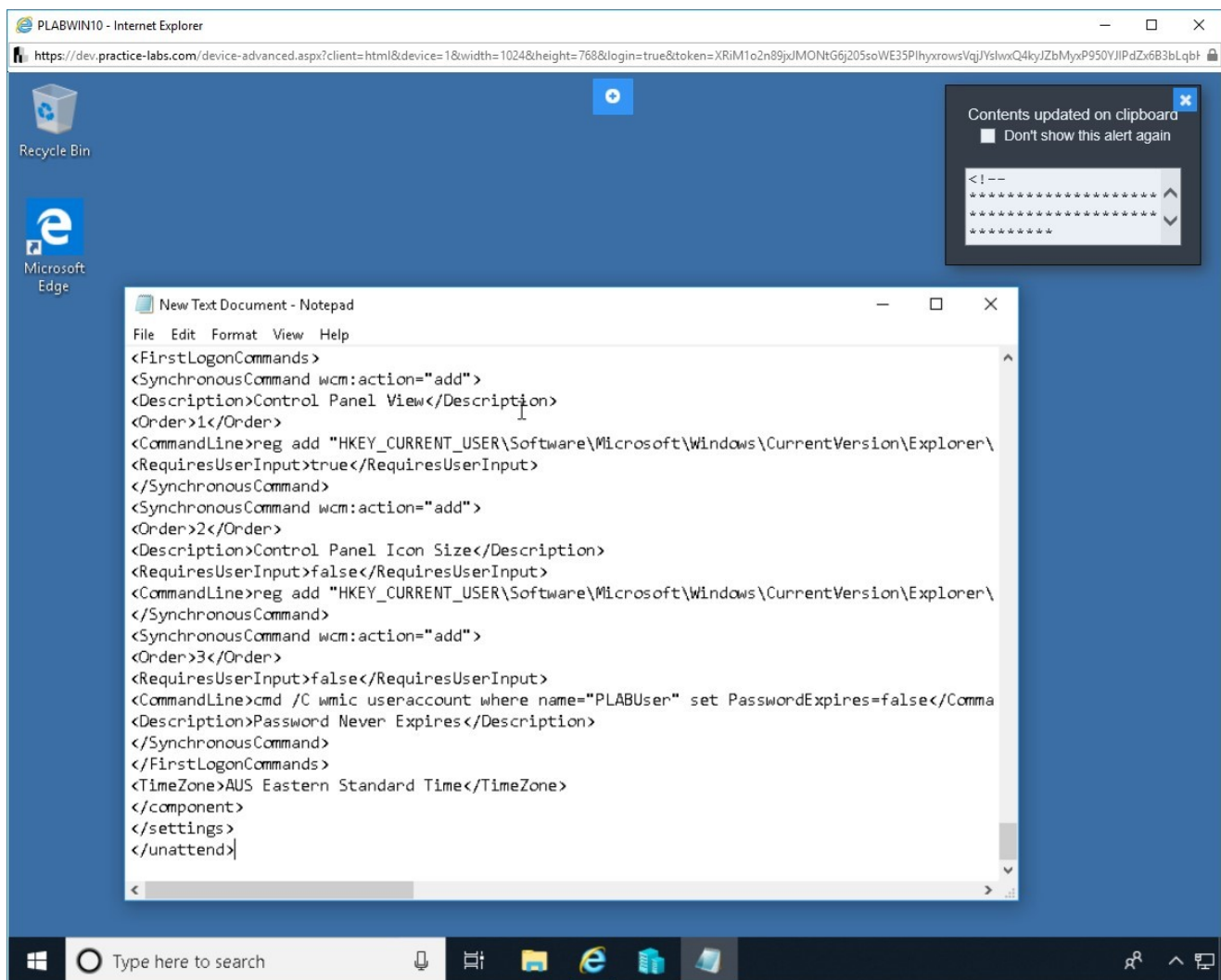


Figure 2.49 Screenshot of PLABWIN10: Pasting the content inside the text document.

## Step 8

Click **File** and then select **Save As**.

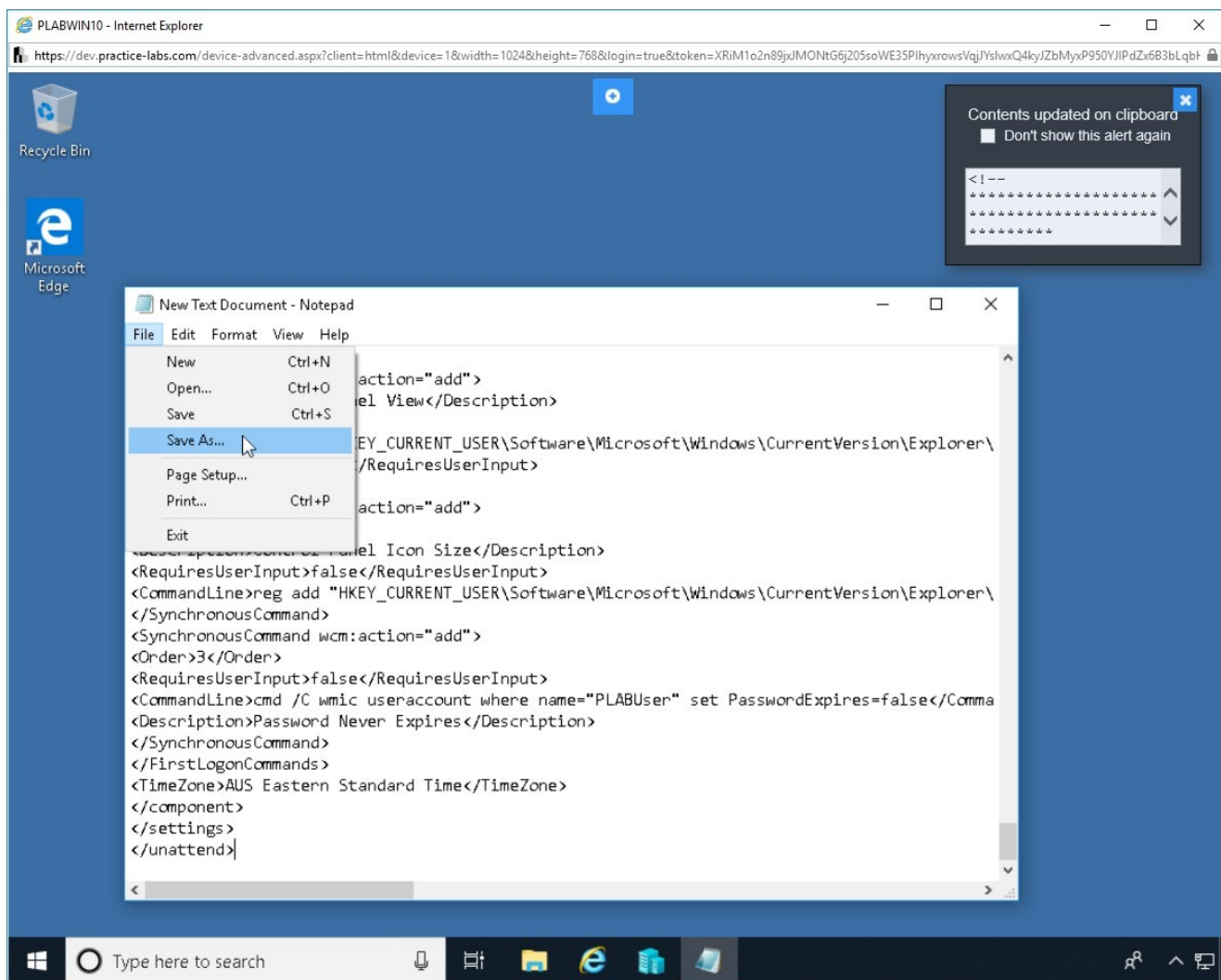


Figure 2.50 Screenshot of PLABWIN10: Selecting the Save As option from the File menu.

## Step 9

The **Save As** dialog box is displayed. In the **File name** text box, type the following name:

Autounattend.xml

In the **Save as** type drop-down, select **All Files**. Click **Save**.

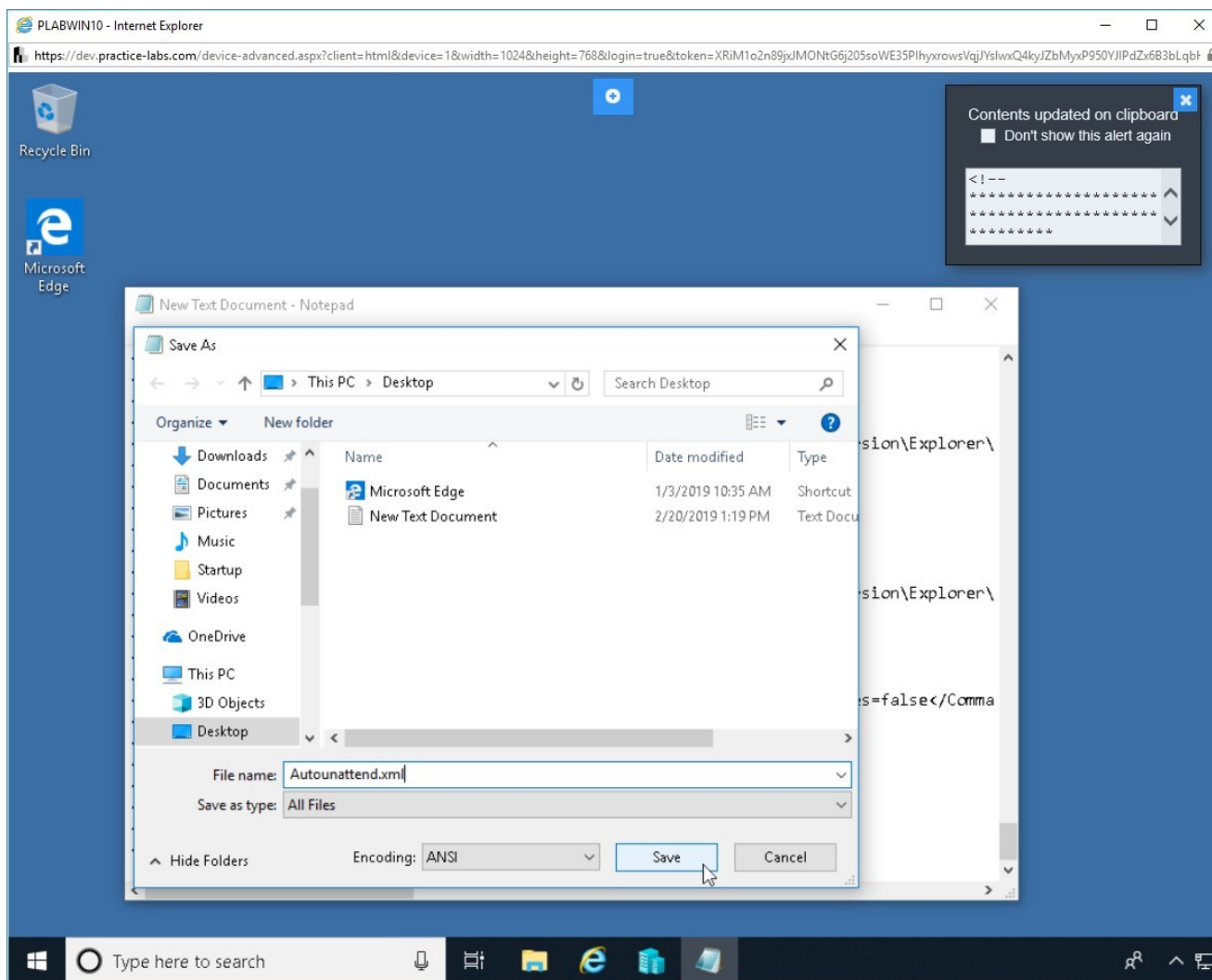


Figure 2.51 Screenshot of PLABWIN10: Saving the file on the desktop as Autounattend.xml.

## Step 10

Notice that **Autounattend.xml** file is now saved on the desktop.

**Close** the Notepad window. Also, **close** the **Clipboard** dialog box on the upper right corner.

**Alert:** At this point, you are using a sample Autounattend.xml file. You need to ensure that all parameters are properly populated. If it is not done, then the unattended installation will fail and halt where it does not find the correct value. Spend some time going through these values and then proceed further. You can refer to the following URL for more help:

## <https://docs.microsoft.com/en-us/windows-hardware/manufacture/desktop/automate-windows-setup>

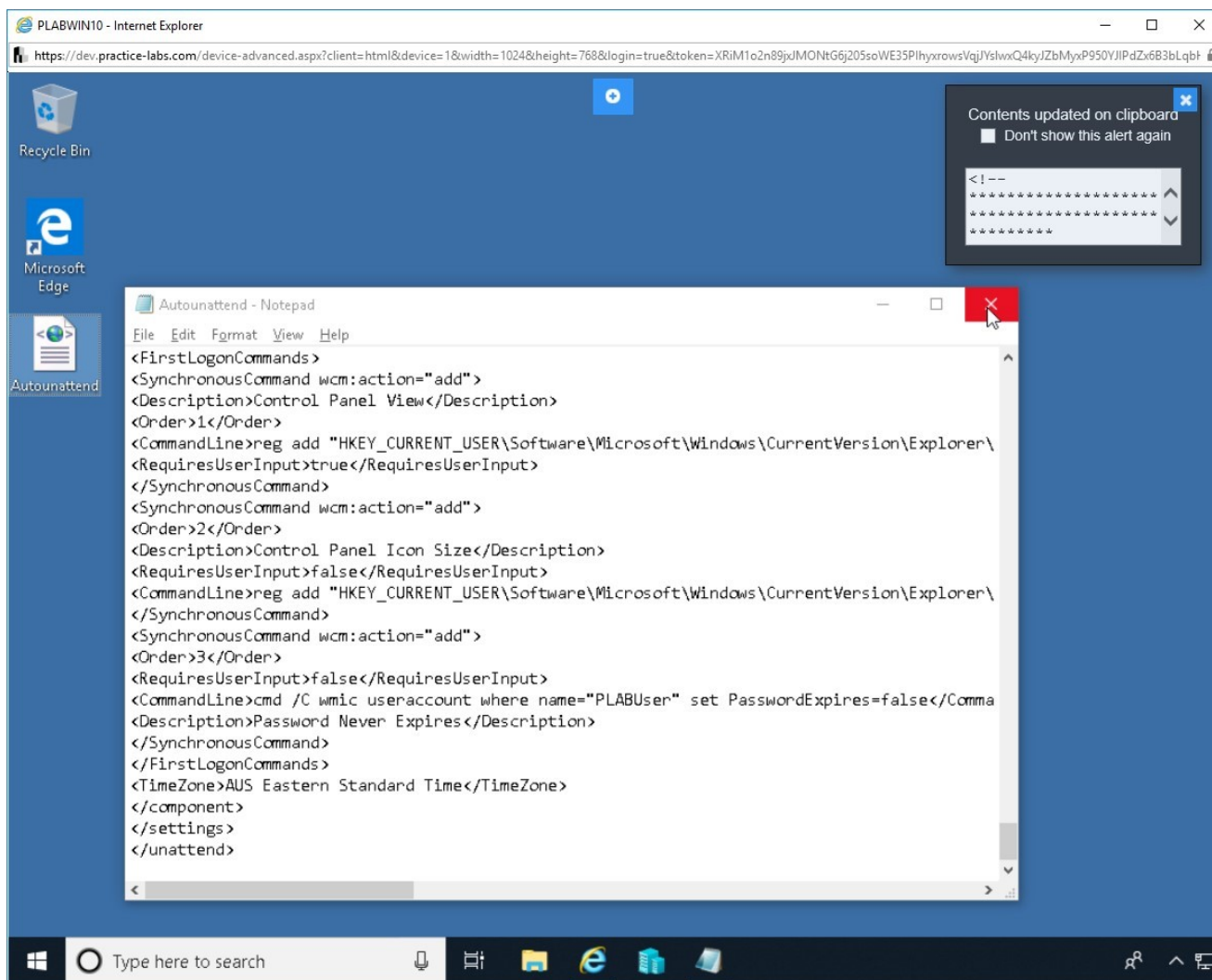


Figure 2.52 Screenshot of PLABWIN10: Closing the open windows.

### *Step 11*

Select the **New Text Document** file and press **Shift + Delete** to delete the file.

Click **Yes** when prompted for confirmation.

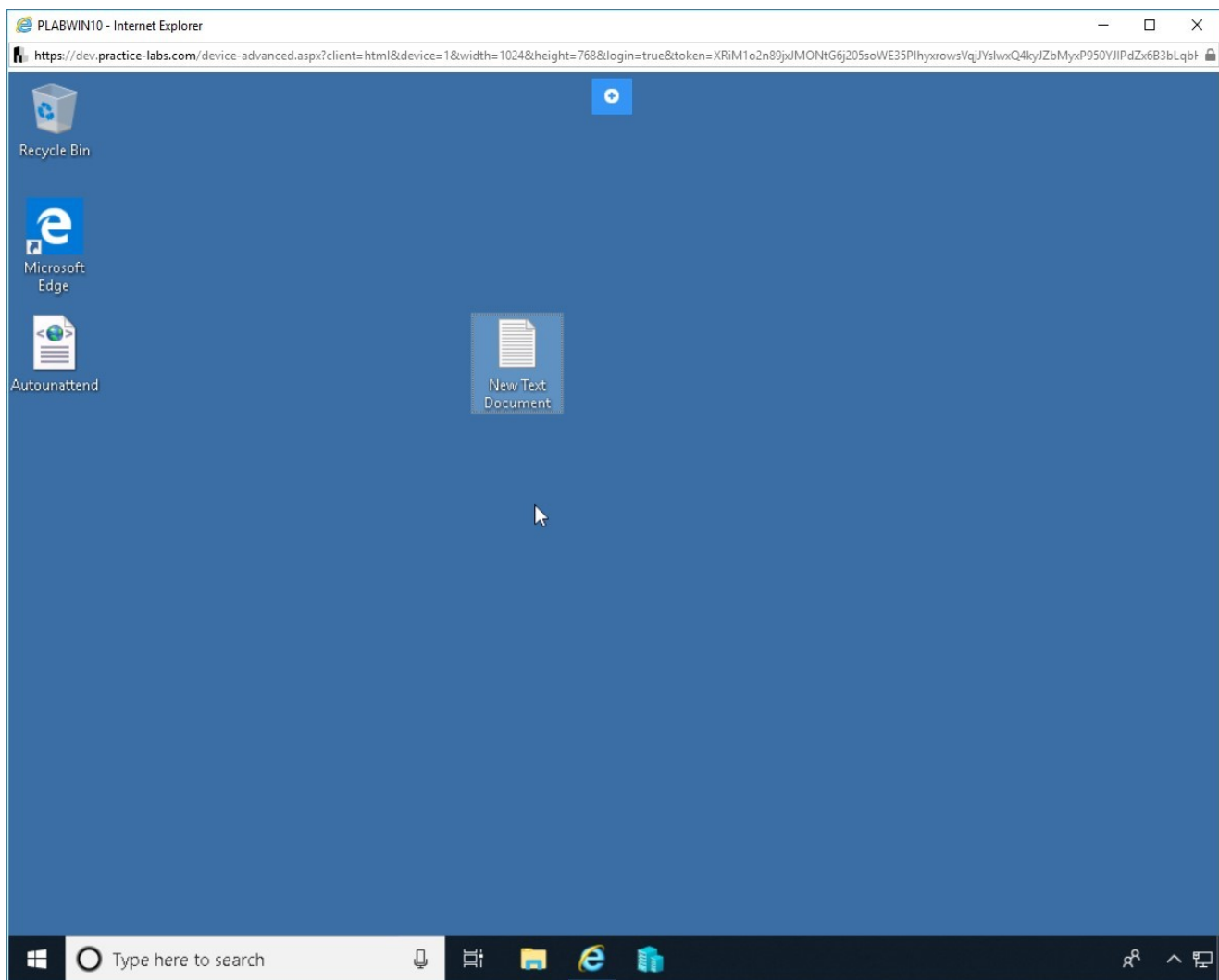


Figure 2.53 Screenshot of PLABWIN10: Deleting the New Text Document file.

## ***Step 12***

Right-click the **Unattend.xml** file and select **Copy**.

**Close** the **Clipboard** dialog box on the upper right corner if alert should appear.

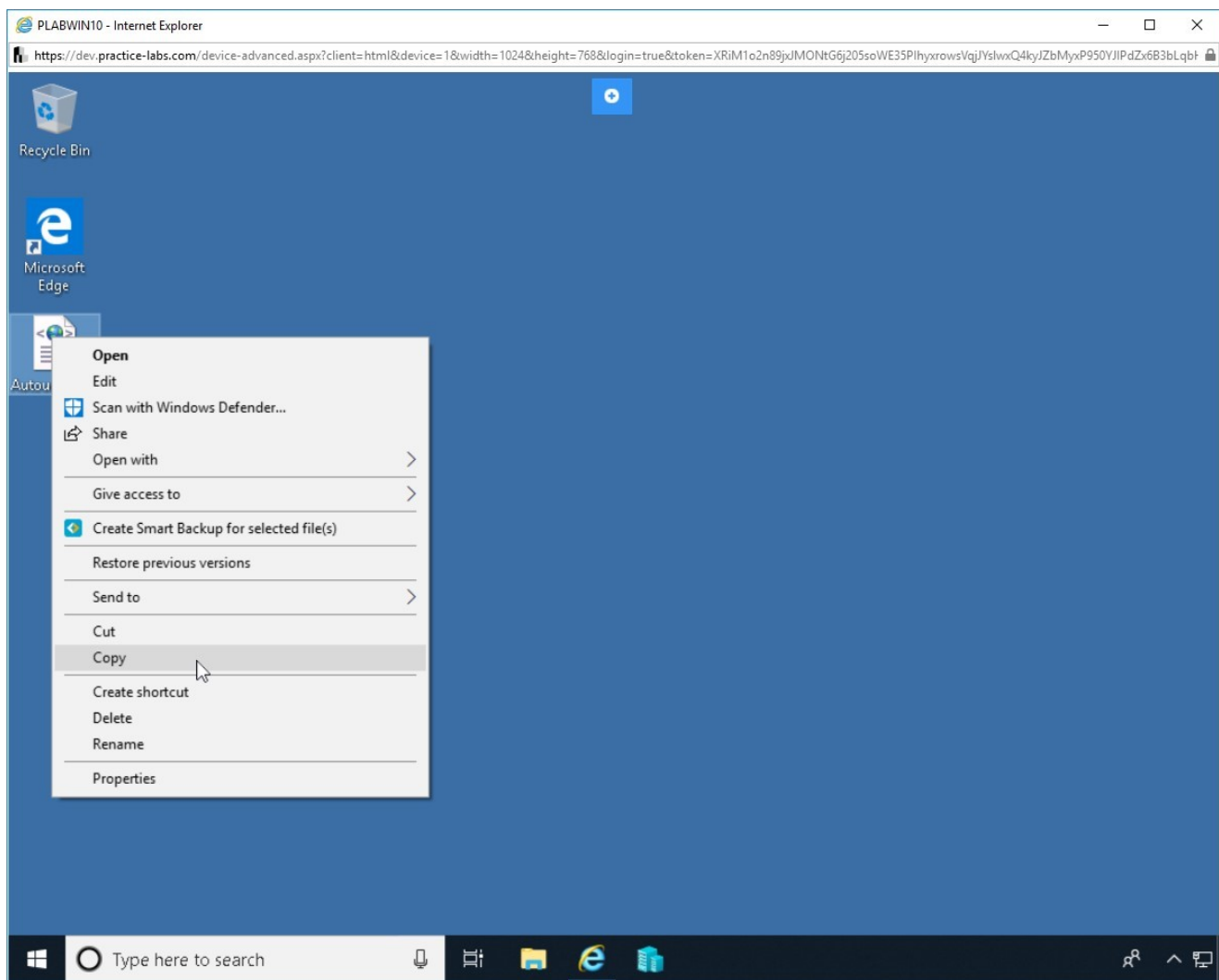


Figure 2.54 Screenshot of PLABWIN10: Copying the Autounattend.xml file.

## *Step 13*

Click **File Explorer** from the Windows taskbar.

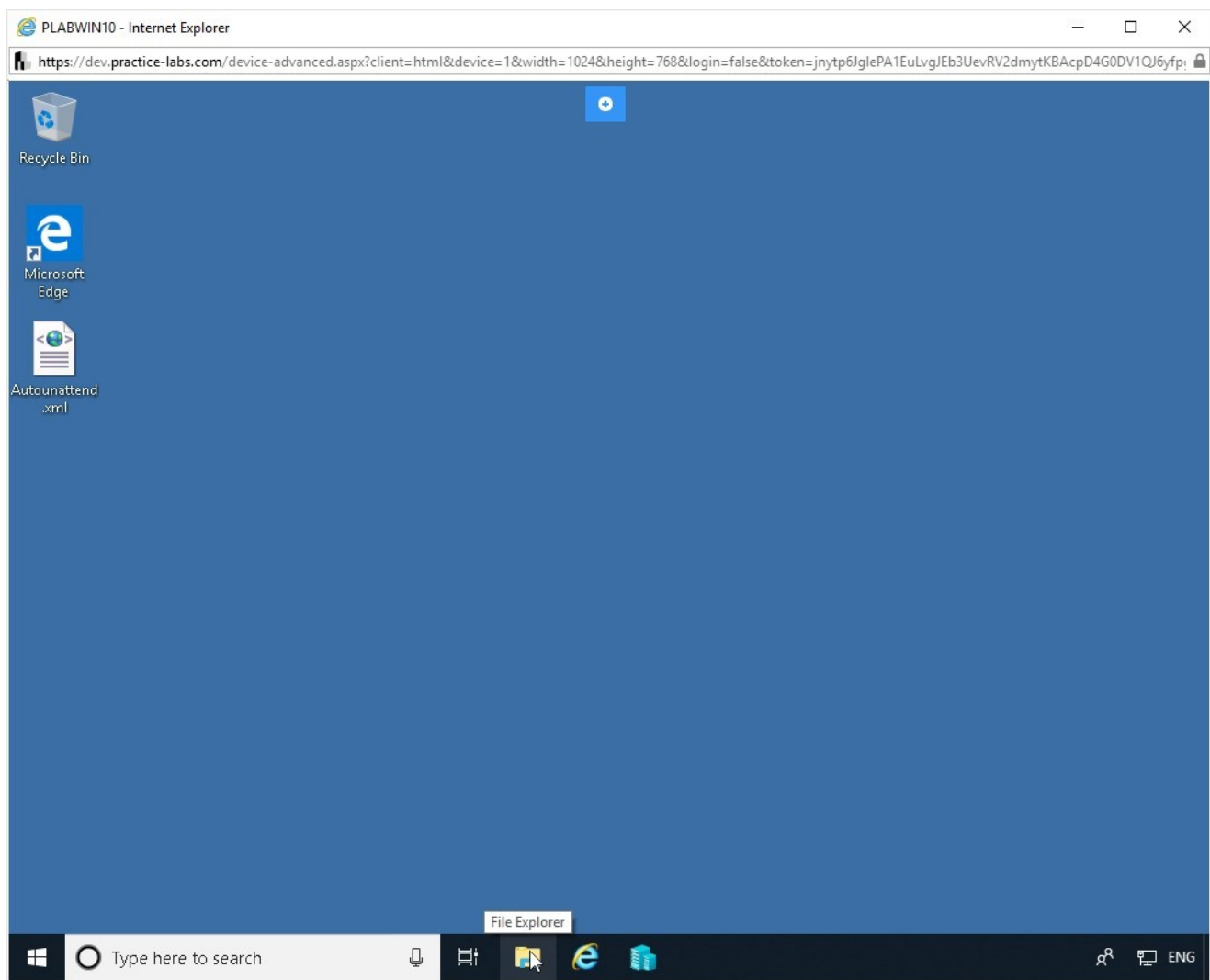


Figure 2.55 Screenshot of PLABWIN10: Opening the File Explorer from the taskbar.

## *Step 14*

Select **USB (D:)** drive in the left pane. Right-click and select **Paste**.

**Alert:** You can consider the USB (D:) as the **USB drive**. Consider this as a simulated USB drive.

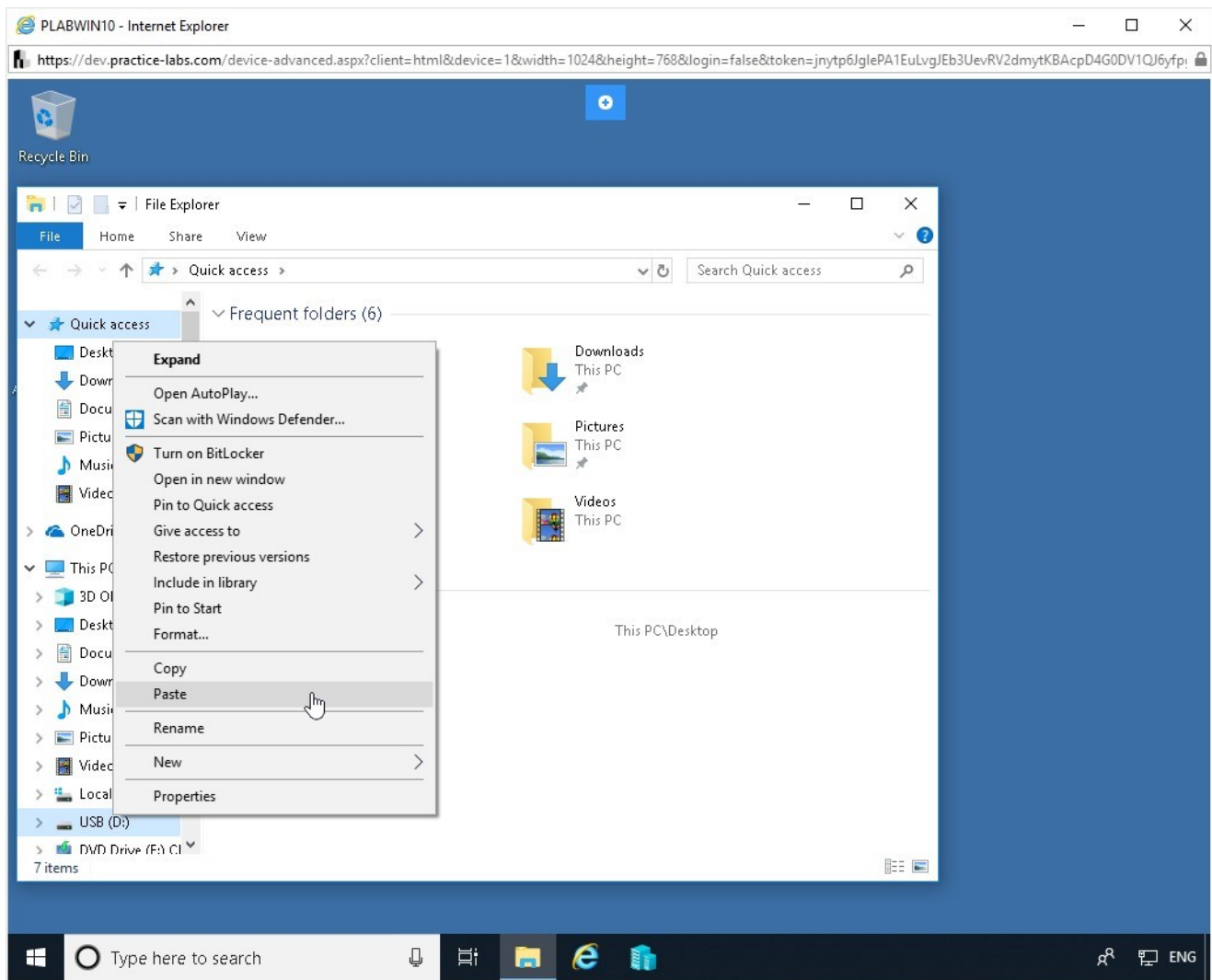


Figure 2.56 Screenshot of PLABWIN10: Pasting the file in the selected drive.

## Step 15

Notice that the file is now pasted inside the **USB (D:)** drive.

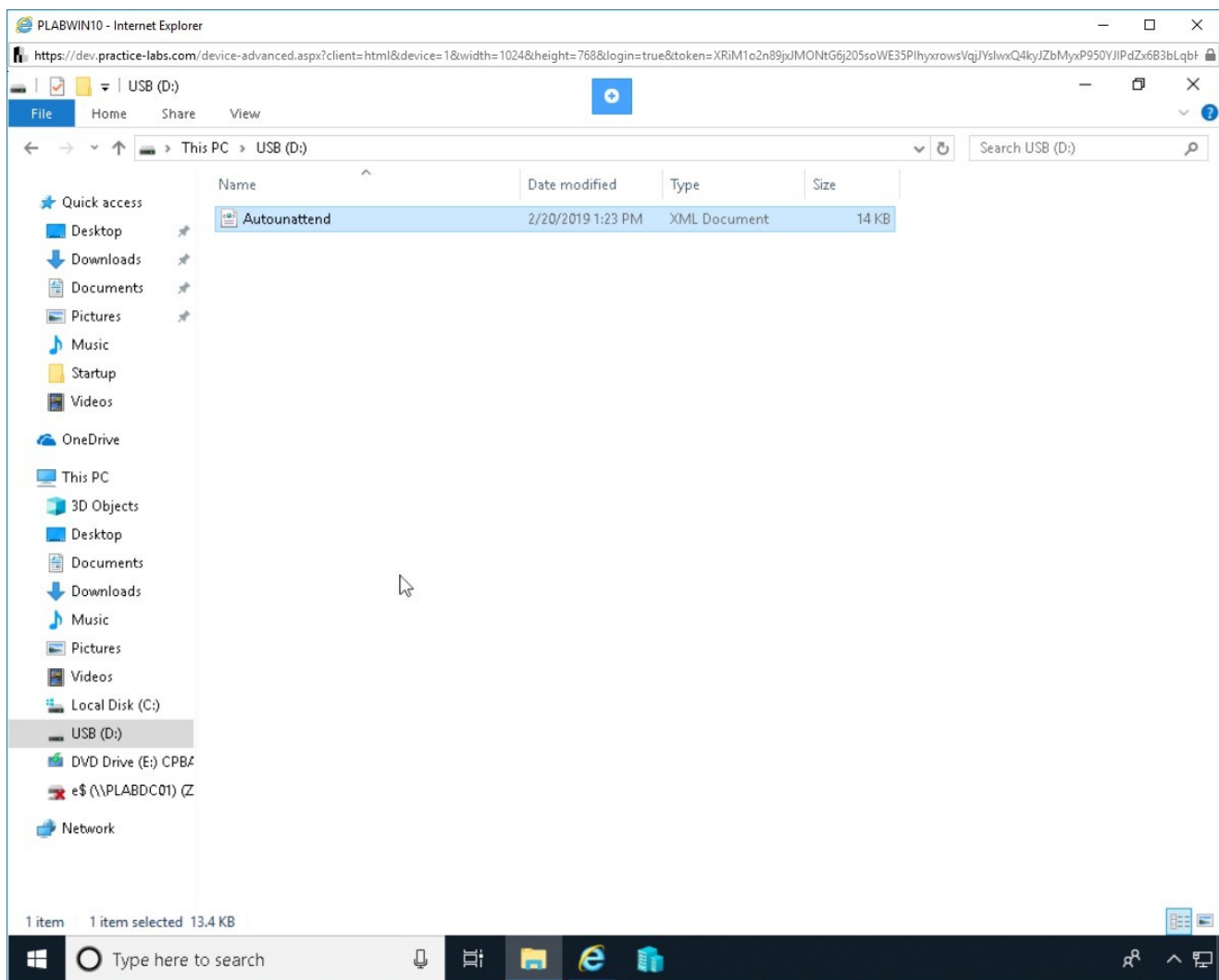


Figure 2.57 Screenshot of PLABWIN10: Showing the pasted file.

## Step 16

In the left pane, select **DVD Drive (E:)**.

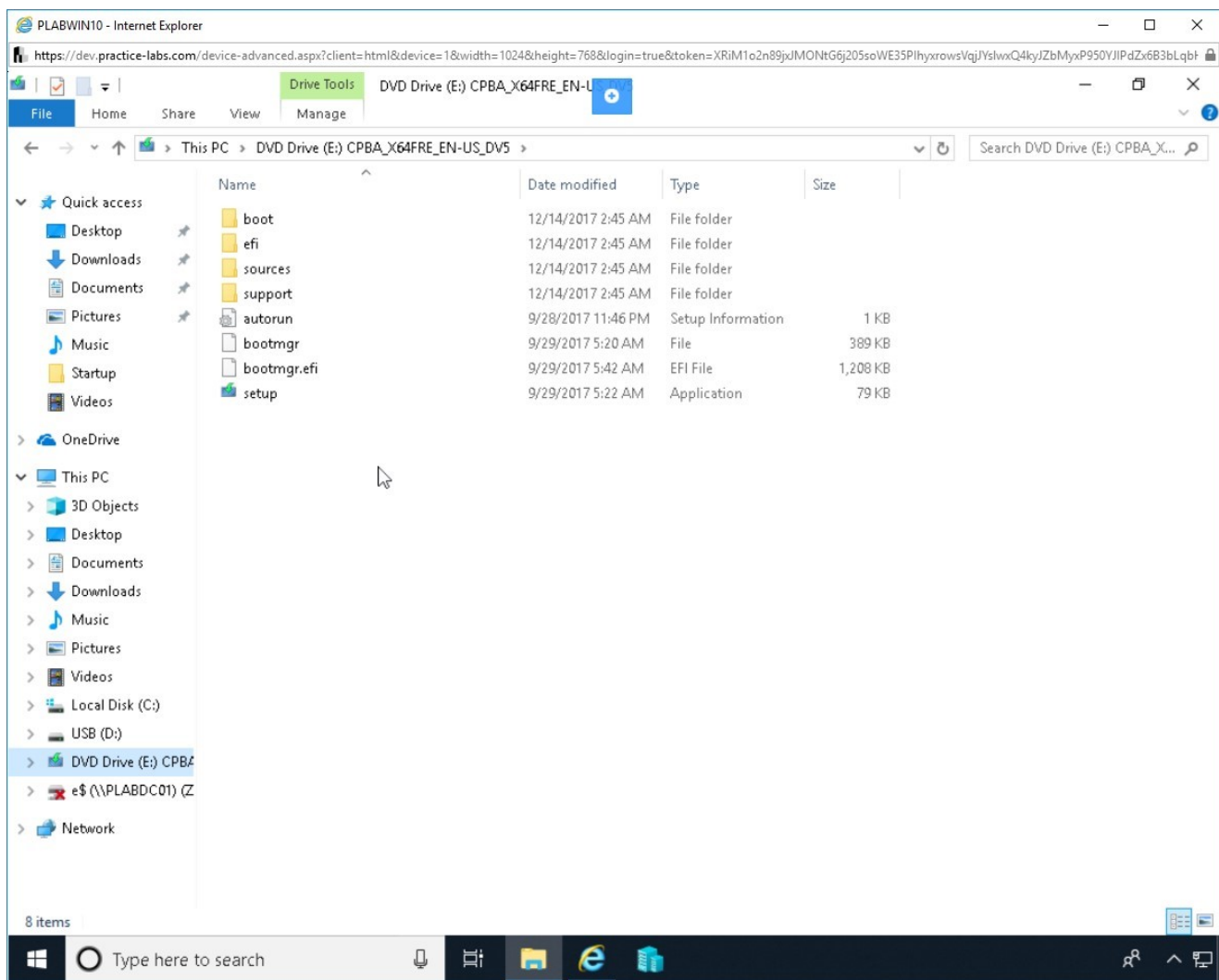


Figure 2.58 Screenshot of PLABWIN10: Selecting the DVD Drive (E:) and displaying its contents.

## Step 17

Press **Ctrl + A** to select all files. Then, right-click and select **Copy**.

**Close** the **Clipboard** dialog box on the upper right corner if alert should appear.

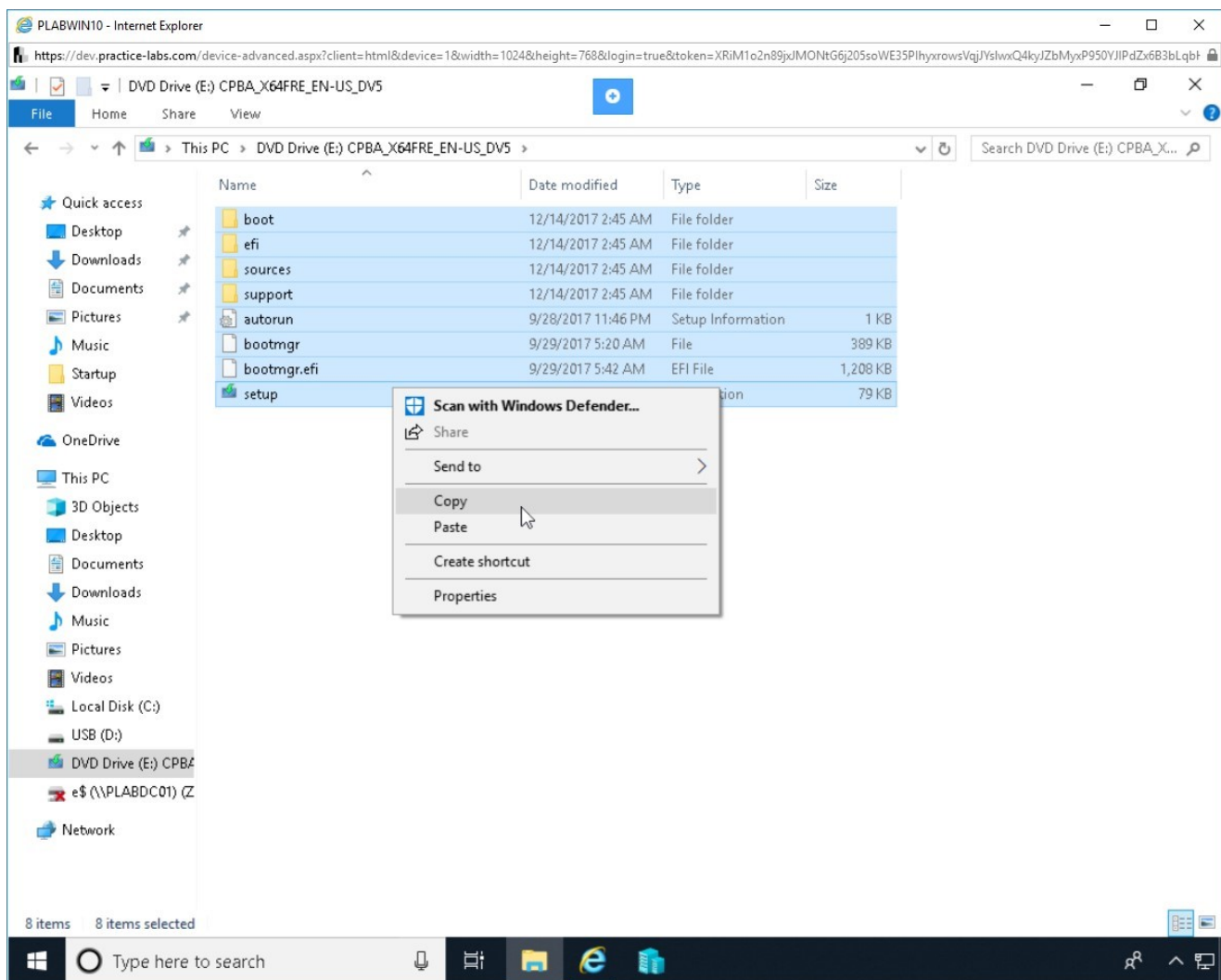


Figure 2.59 Screenshot of PLABWIN10: Selecting and copying all files.

## Step 18

In the left pane, select **USB (D:)**. Right-click and then select **Paste**.

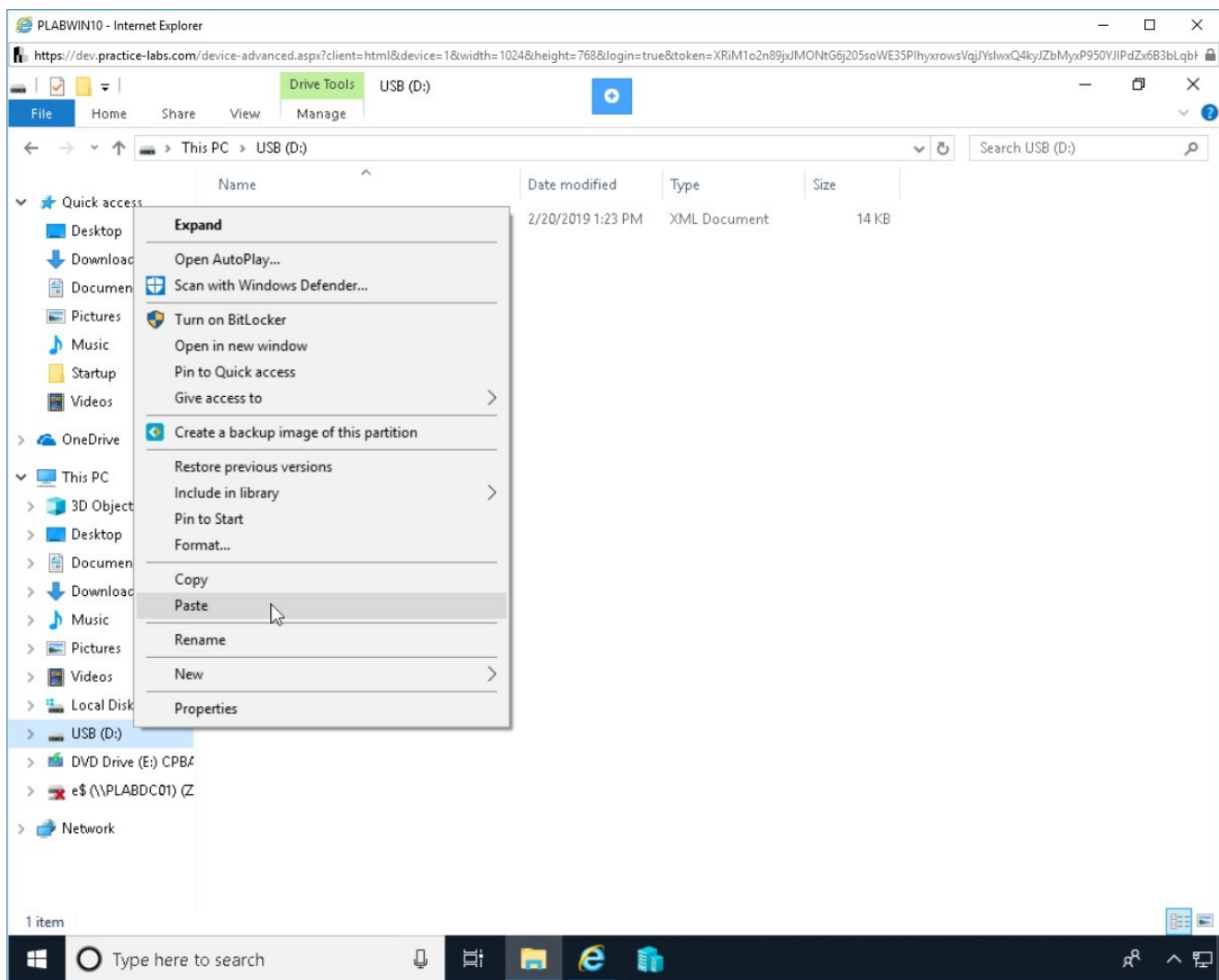


Figure 2.60 Screenshot of PLABWIN10: Pasting the files in the selected drive.

## Step 19

File copying will start. It will take a few minutes to copy the files.

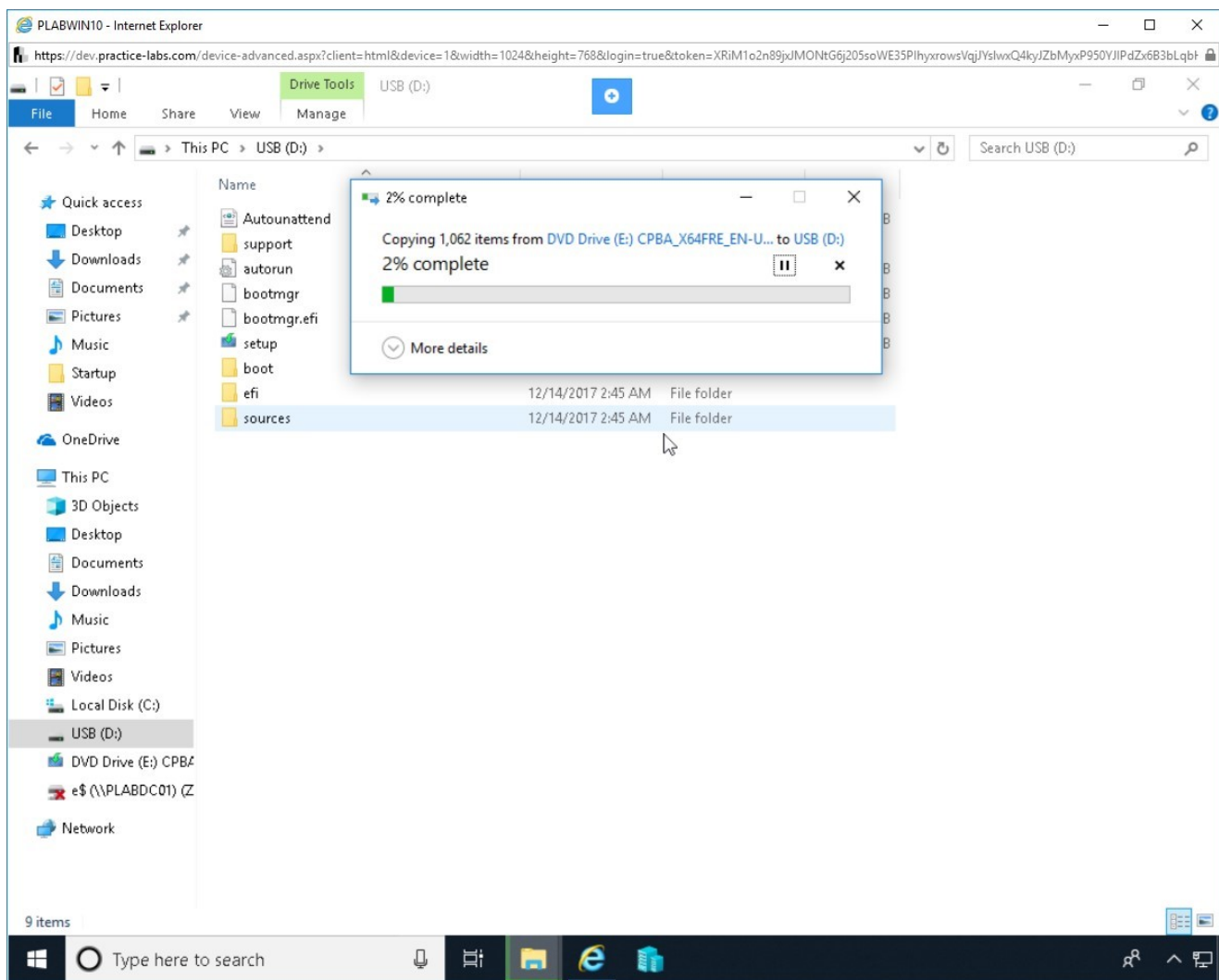


Figure 2.61 Screenshot of PLABWIN10: Showing the copy progress.

## Step 20

The Windows installation files are now copied to the **USB (D:)** drive.

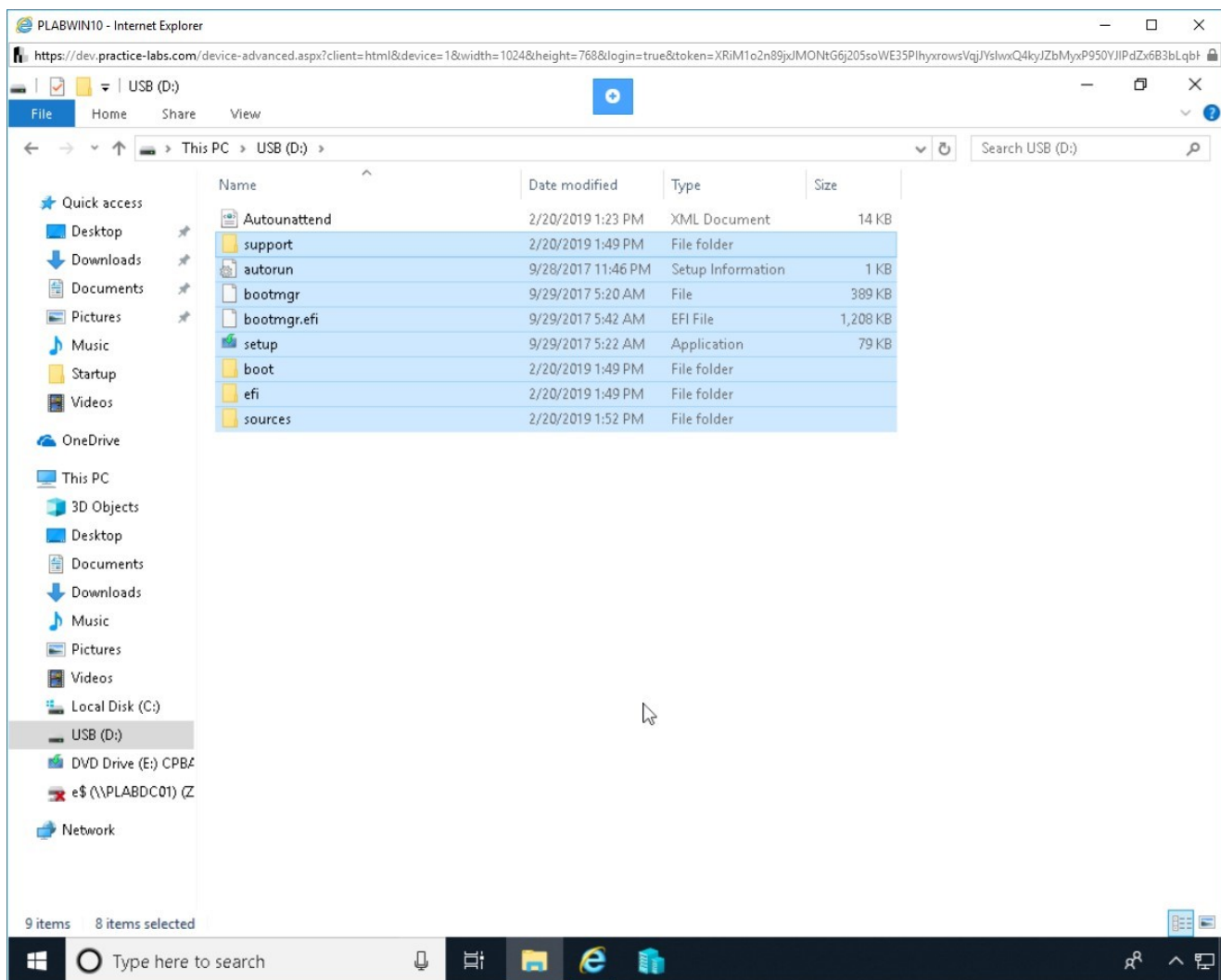


Figure 2.62 Screenshot of PLABWIN10: Showing the pack of files needed for unattended installation

## Review

Well done, you have completed the **Implementing Different Boot Methods and Types of Operating System Installation** Practice Lab.

## Summary

You completed the following exercises:

- Exercise 1 - Learn About Boot Methods
- Exercise 2 - Perform a Clean Install

You should now be able to:

- Set up a Boot Device
- Perform a Clean Install
- Create a Recovery partition
- Prepare for an Unattended Installation

## Feedback

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