Project 2: Windows 2016 Server Virtual Machine (20 Points)

What You Need for This Project

- A computer with an Internet connection.
- The instructions below assume you are using Windows 10. You can use VMware on the Mac and other operating systems, but the steps may be somewhat different.

Task 1: Installing a Fresh Windows Server 2016 Virtual Machine

Downloading the Installer ISO File (180-day Evaluation)

In a Web browser, go here:

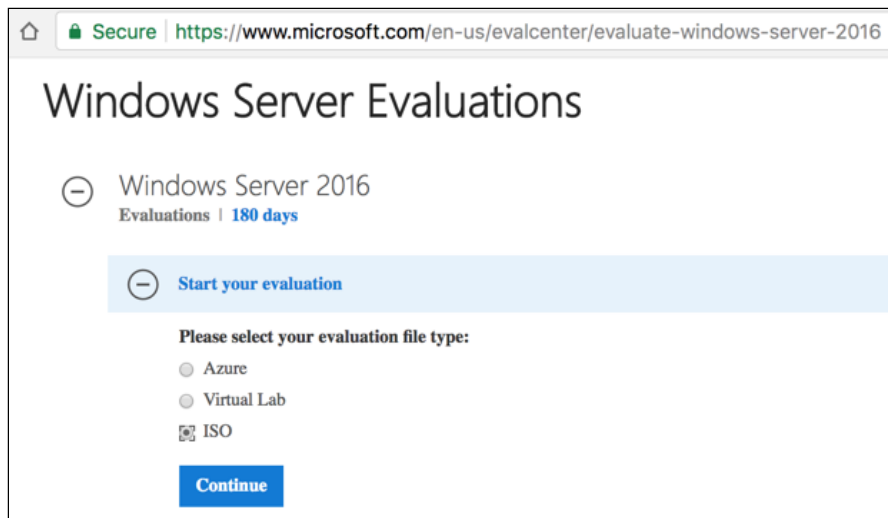https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2016

Click "**Register to continue**".

Fill in name, email address, etc., and click **Continue**.

Click **ISO**, as shown below.

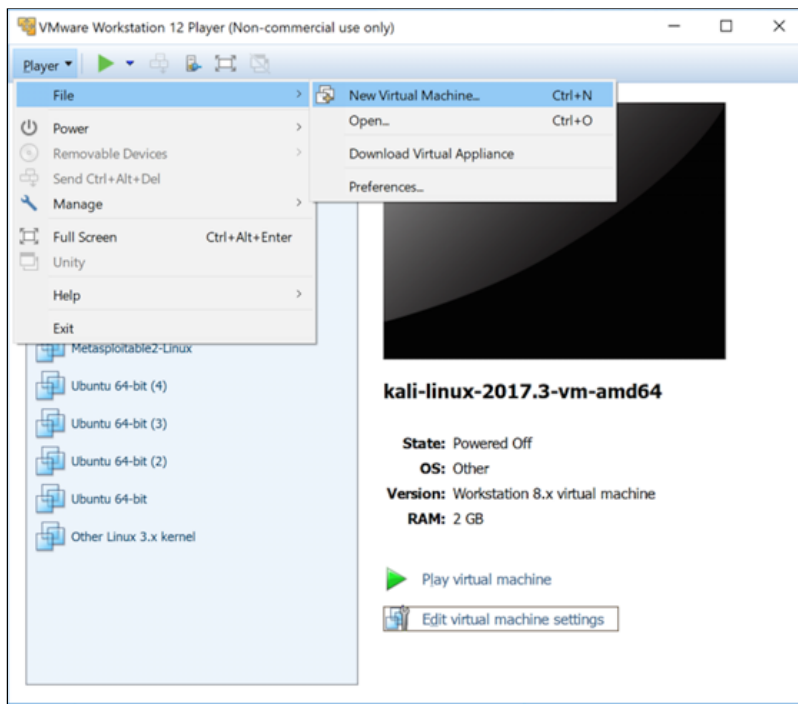Click **Continue**.

Select **English**.

It's a 6.5 GB download.

The file name is "Windows_Server_2016_Datacenter_EVAL_en-us_14393_refresh.ISO", as of Dec. 3, 2018. The SHA-256 hash value is:
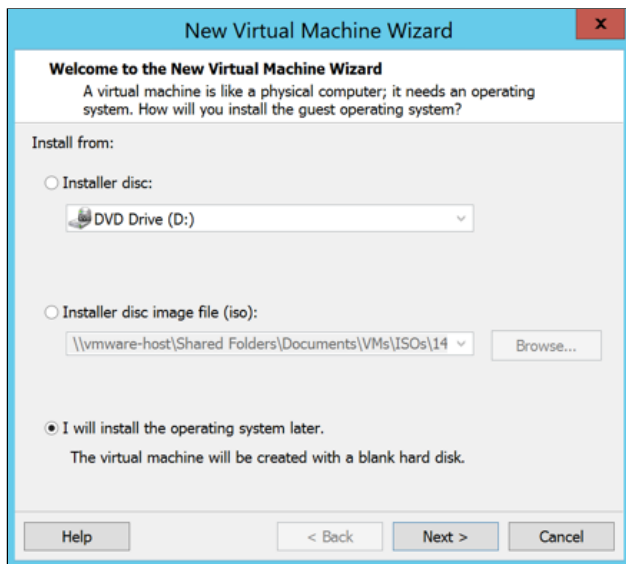
1ce702a578a3cb1ac3d14873980838590f06d5b7101c5daaccbac9d73f1fb50f

Installing Windows

Start VMware Player. Click **Player**, **File**, "**New Virtual Machine...**", as shown below.

In the "Welcome to the New Virtual Machine Wizard" screen, click the "**I will install the operating system later.**" button, as shown below.

Click **Next**.

In the "Select a Guest Operating System" box, select "**Microsoft Windows**" and "**Windows Server 2016**", as shown below.

Click **Next**.

In the "Name the Virtual Machine" box, enter a Virtual machine name of **Win16-YOURNAME**, replacing "YOURNAME" with your own name, as shown below.
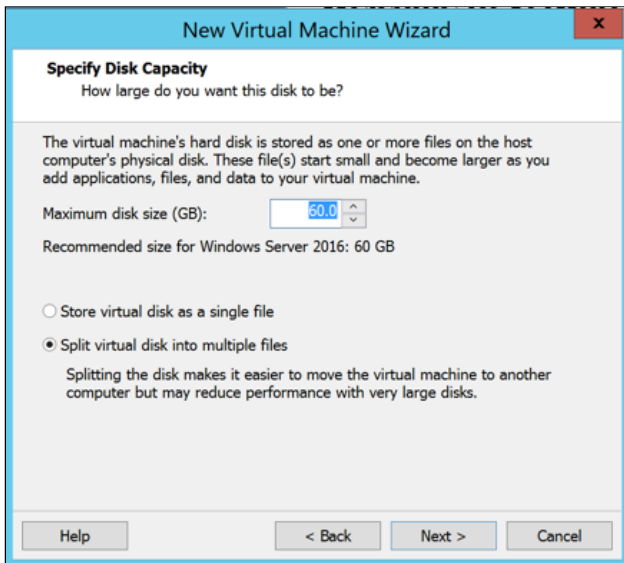
Click the **Browse...** button and navigate to the VMs drive and the folder with your name on it.
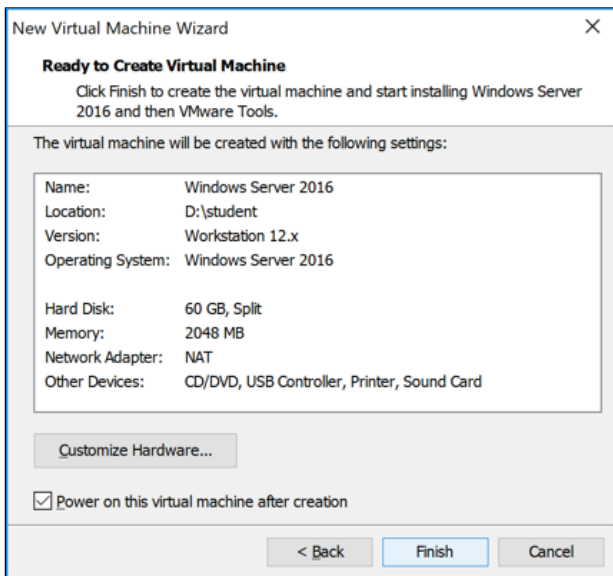
~~DO NOT SAVE VIRTUAL MACHINES ON THE C: DRIVE IN S214~~

Click **Next**.

In the "Specify Disk Capacity" box, accept the default options, as shown below, and click **Next**.
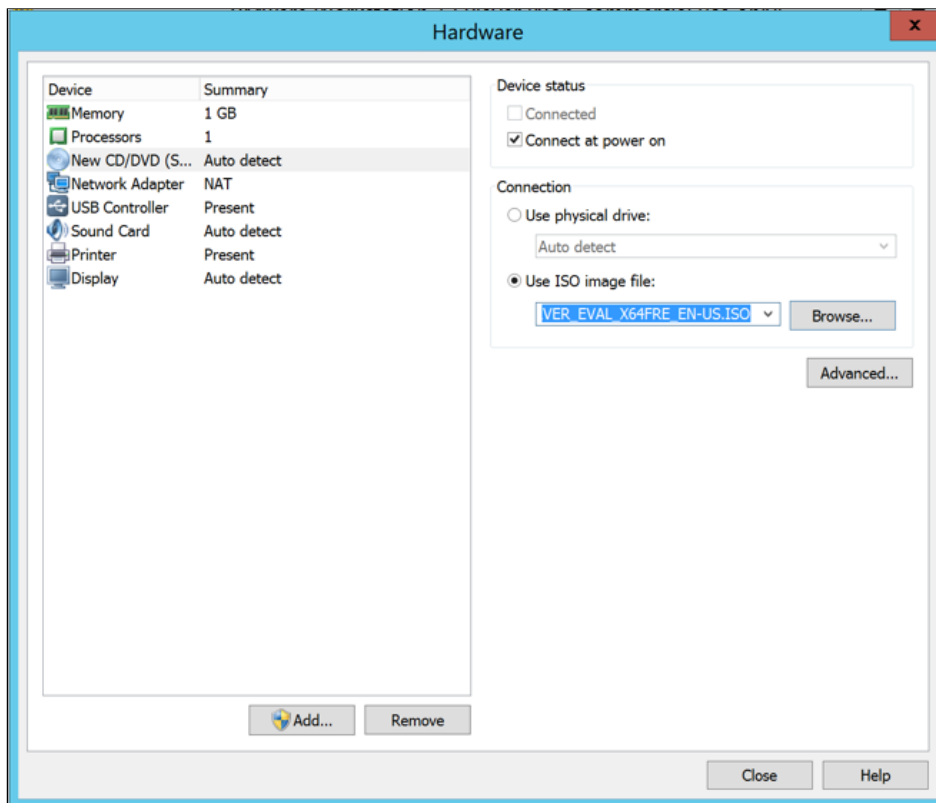
In the "Ready to Create Virtual Machine" box, click the "**Customize Hardware...**" button, as shown below.

In the "Hardware" box, on the left side, click "**New CD/DVD**". On the right side, click the "**Use ISO image file**" button.

Click the **Browse...** button. Navigate to your Downloads folder and double-click the **4393.0.161119-1705.RS1_REFRESH_SERVER_EVAL_X64FRE_EN-US.ISO** file, as shown below.
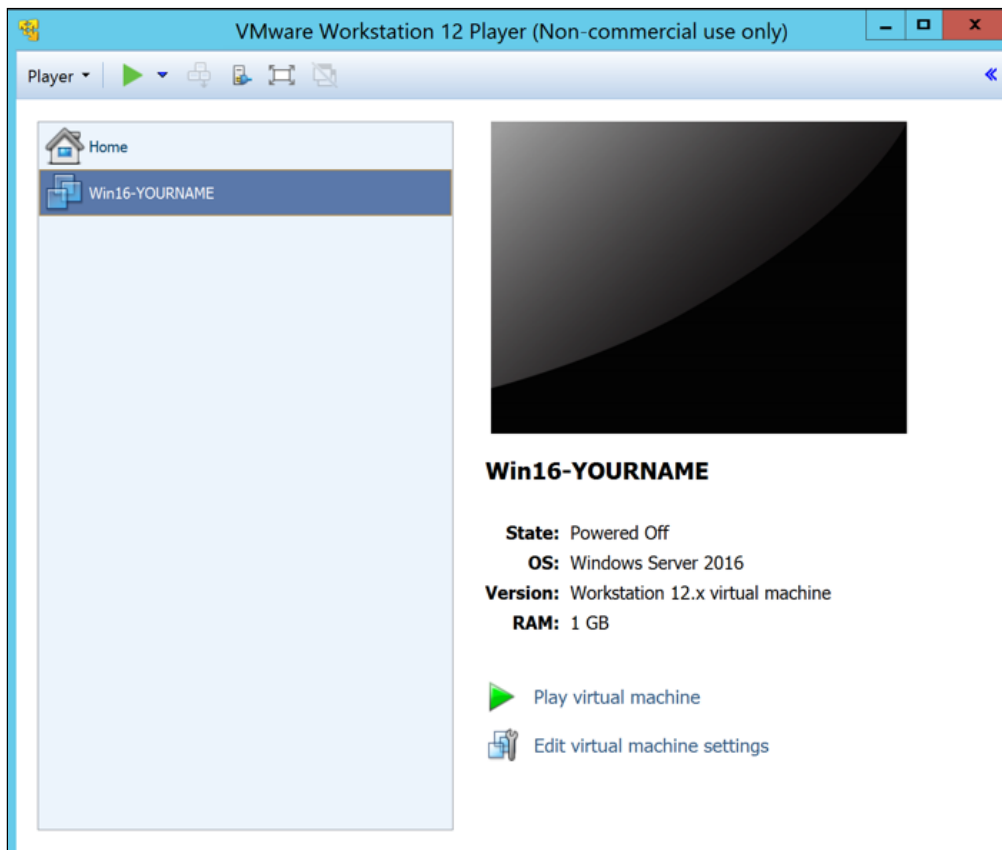
Click the **Close** button.

In the "Ready to Create Virtual Machine" box, click the **Finish** button.

VMware Workstation Player now shows a "Win16-YOURNAME" item on the left side, as shown below.

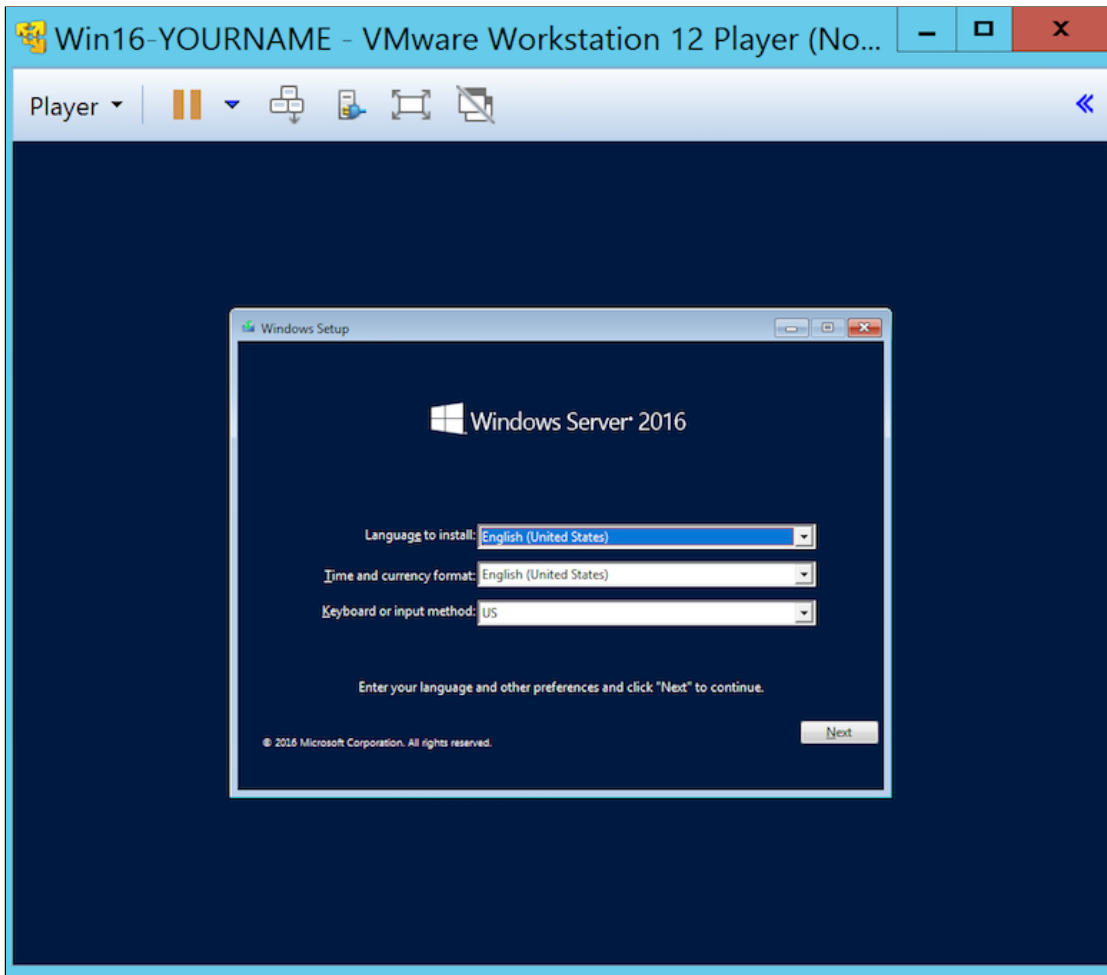On the right side, click "**Play virtual machine**".

If a box pops up titled "Software Updates", click "**Remind Me Later**".

If a box pops up titled "Removable Devices", click **OK**.

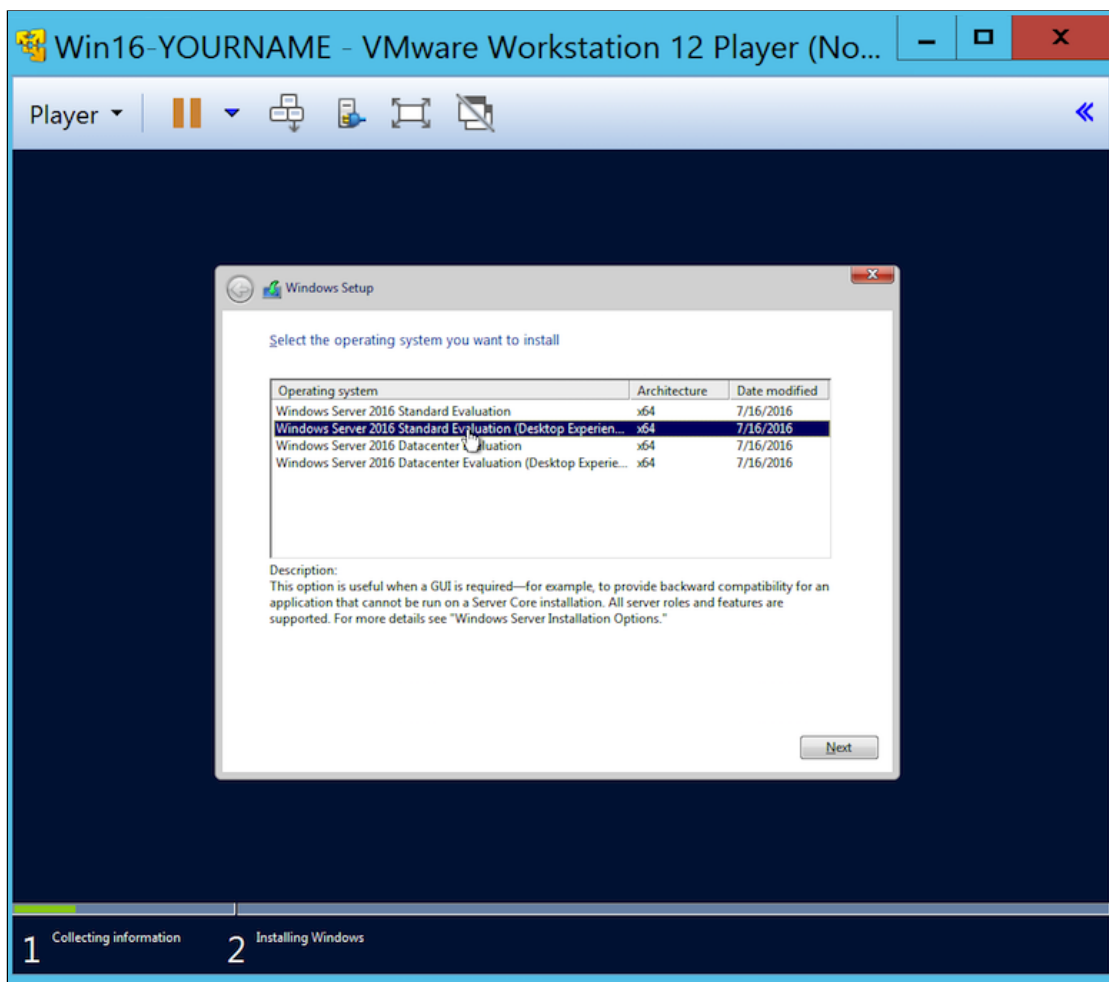A "Windows Setup" box appears, as shown below.

Click **Next**.

On the next screen, click the "**Install now**" button.

In the "Select the operating system you want to install" box, click "**Windows Server 2016 Standard Evaluation (Desktop Experience)**", as shown below.

Click **Next**.

On the next screen, click the "**I accept the license terms**" box, and click **Next**.

On the next screen, click "**Custom: Install Windows only (Advanced)**" box.

In the "Where do you want to install Windows" box, click **Next**.
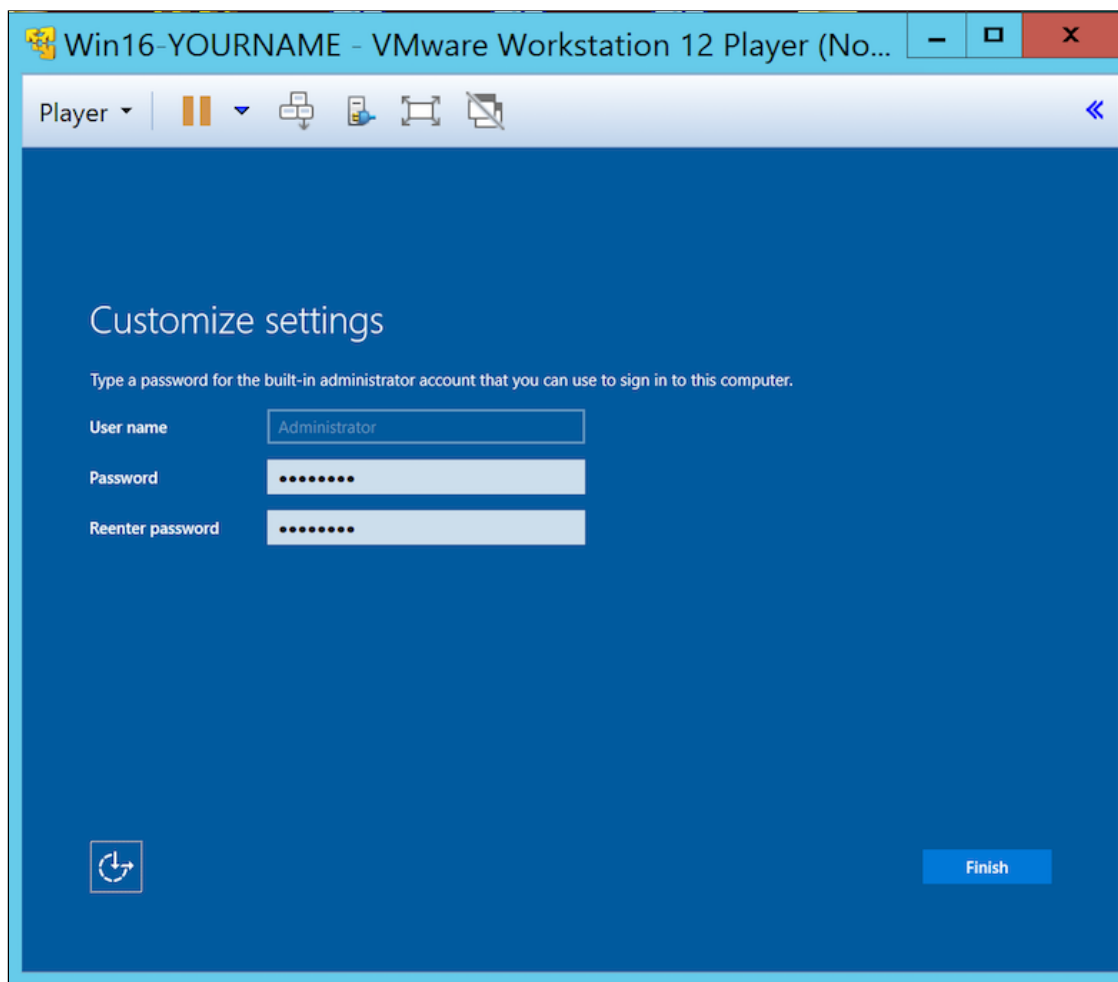
Wait a few minutes while Windows installs.

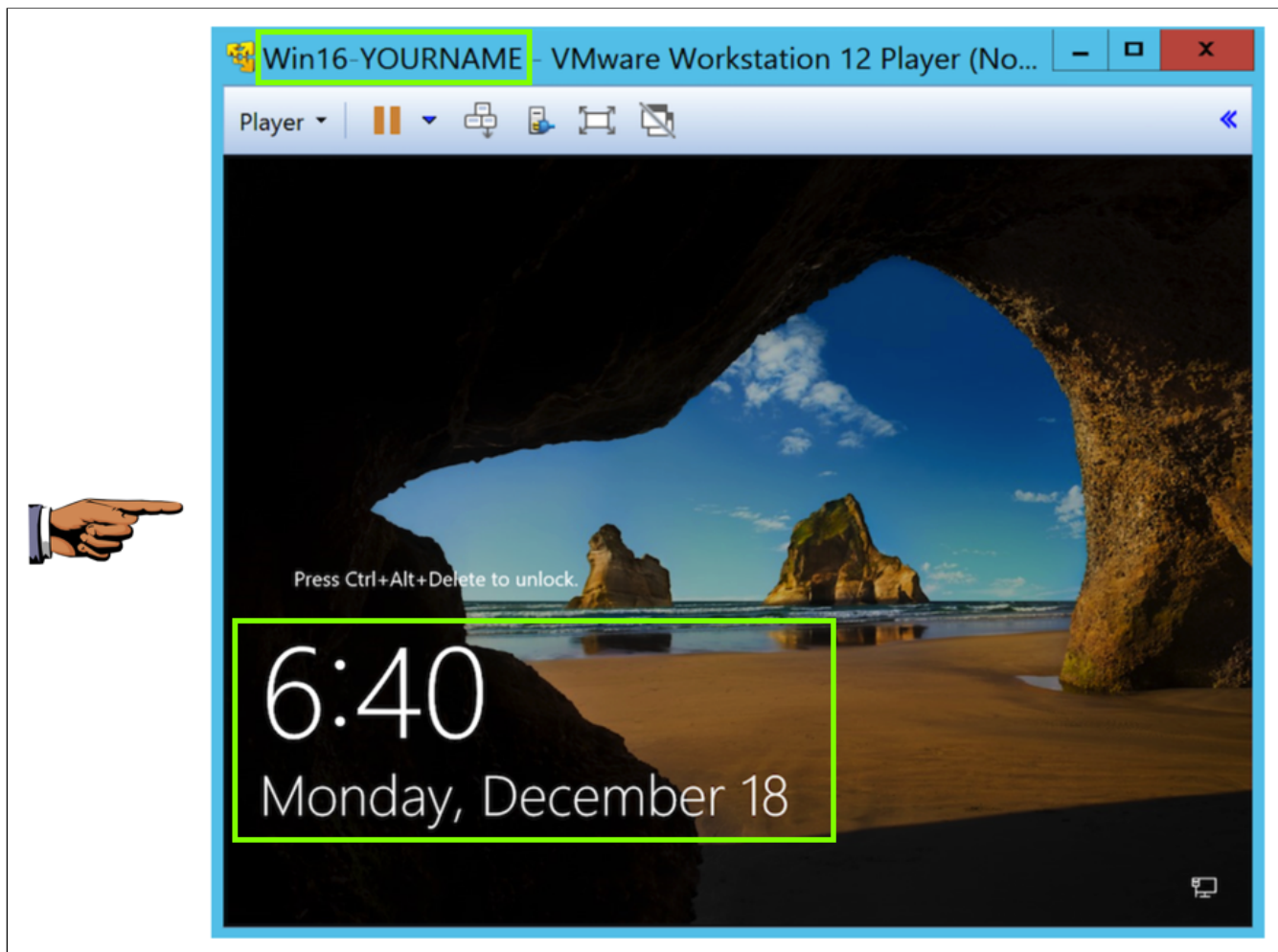Your virtual machine restarts twice, and you see the box shown below.

Enter these values:

- Password: **P@ssw0rd**
- Reenter password: **P@ssw0rd**
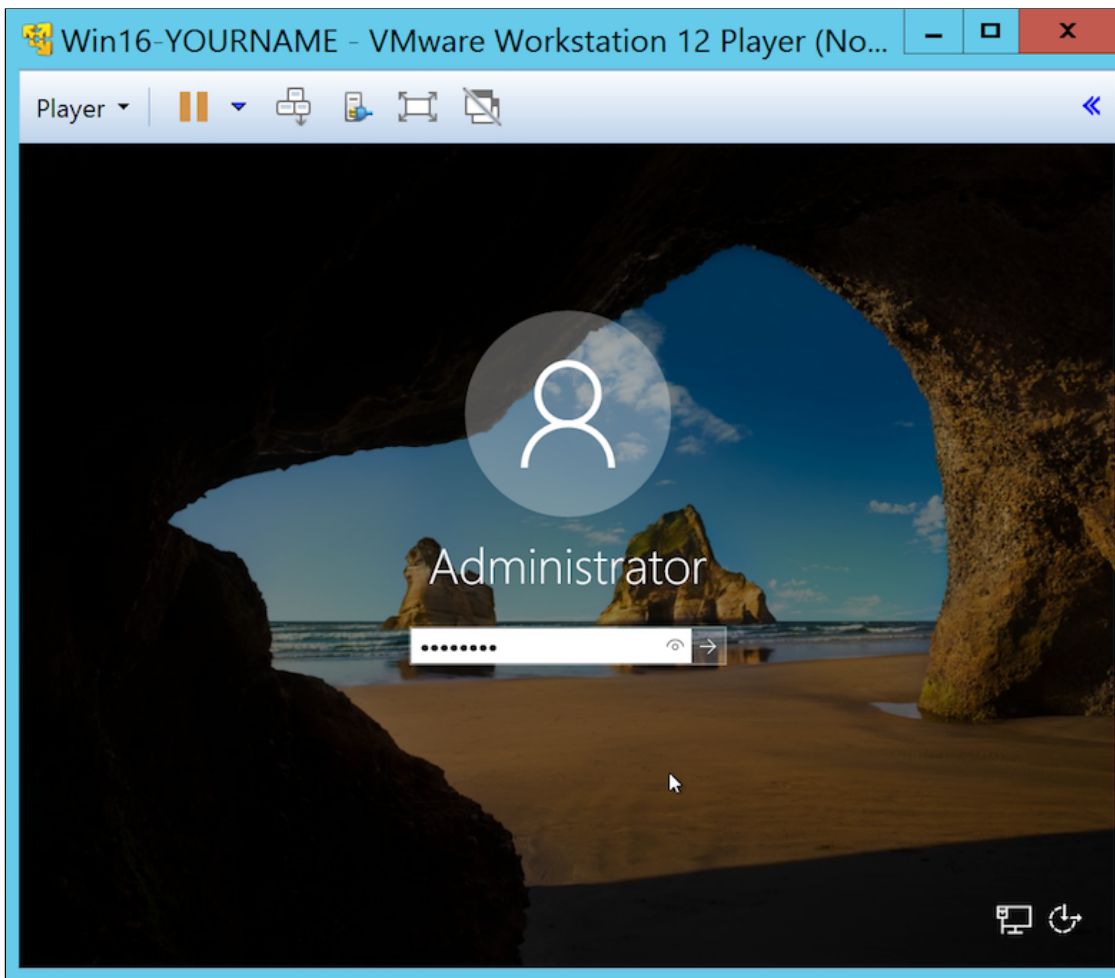
Click **Finish**

Windows starts, as shown below.

Logging In

In VMware Player, at the top left, click **Player**, "**Send Ctrl+Alt+Del**".

At the login screen, enter a password of **P@ssw0rd** as shown below. Then press **Enter**.

Adjusting Resolution

If the text in the virtual machine is tiny, and hard to read, do these steps:

- At the top right of the VMware Workstation Player window, click the red **X**.
- A box pops up. Click **Suspend** button.
- On your desktop, right-click the "**VMware Workstation Player**" icon and click **Properties**.
- In the "VMware Workstation Player Properties" box, on the **Compatibility**" tab, click the "**Disable display scaling on high DPI settings**" box.
- Click **OK**.

Then restart VMware Workstation Player and run your VM again. The font should be larger.

Task 2: Lowering Security Settings

Blocking Automatic Updates

Updates are important for security, but for this class we want a vulnerable target machine, so we'll stop them.

On your Windows Server 2016 desktop, in Server Manager, on the top right, click **Tools**, "**Windows PowerShell**", as shown below.
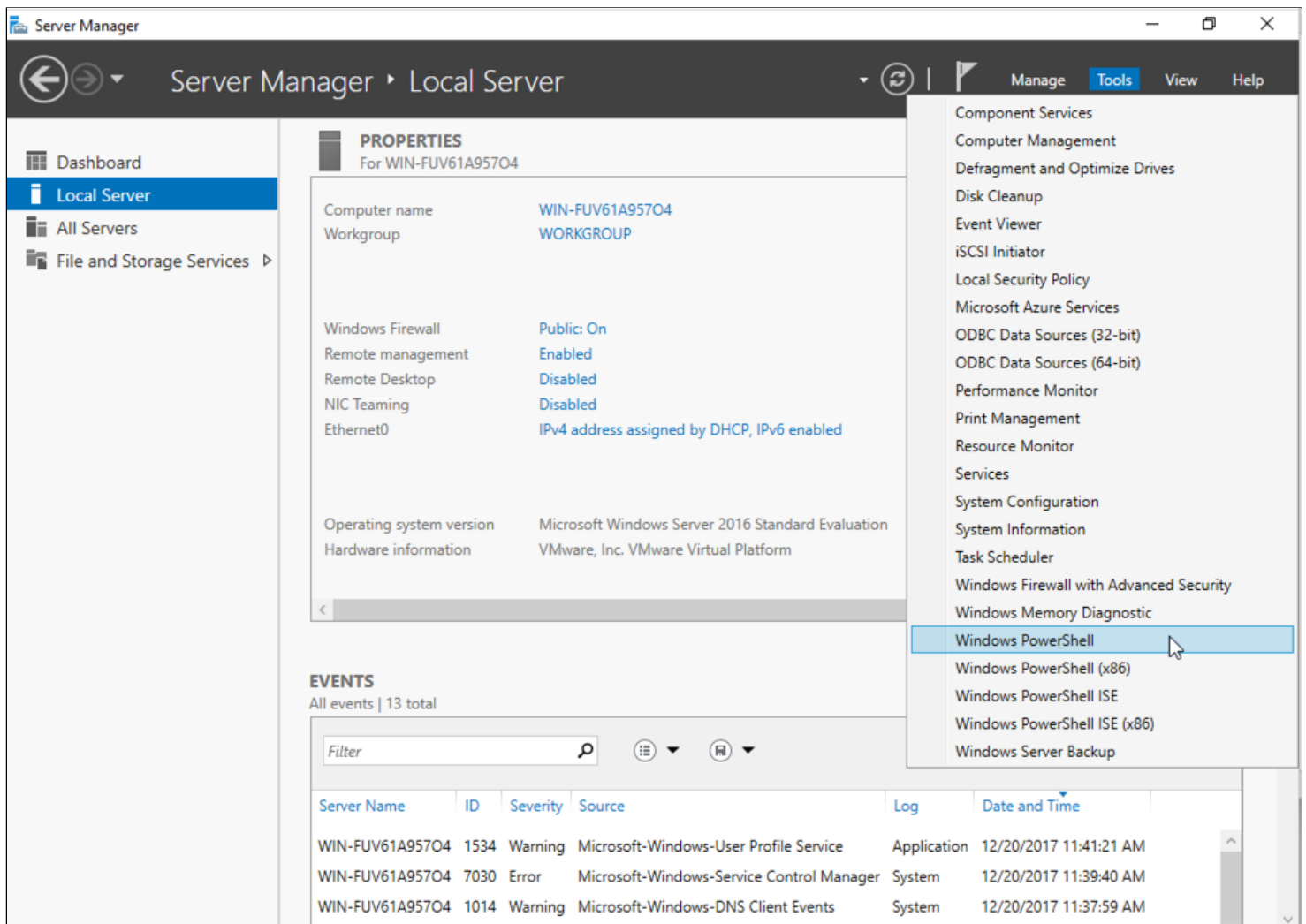
In PowerShell, execute this command:

    sconfig

A menu appears, as shown below. Enter these values:

- **5**
- **m**

After a minute or two, an "Update Settings" box pops up. Click **OK**.

Disabling IE Enhanced Security Configuration

This setting prevents you from downloading software directly on the server, which is a poor practice.

We want to allow that, so do these steps:

In Server Manager, on right side, find "IE Enhanced Security Configuration". Click the word **On** next to it, as shown below.
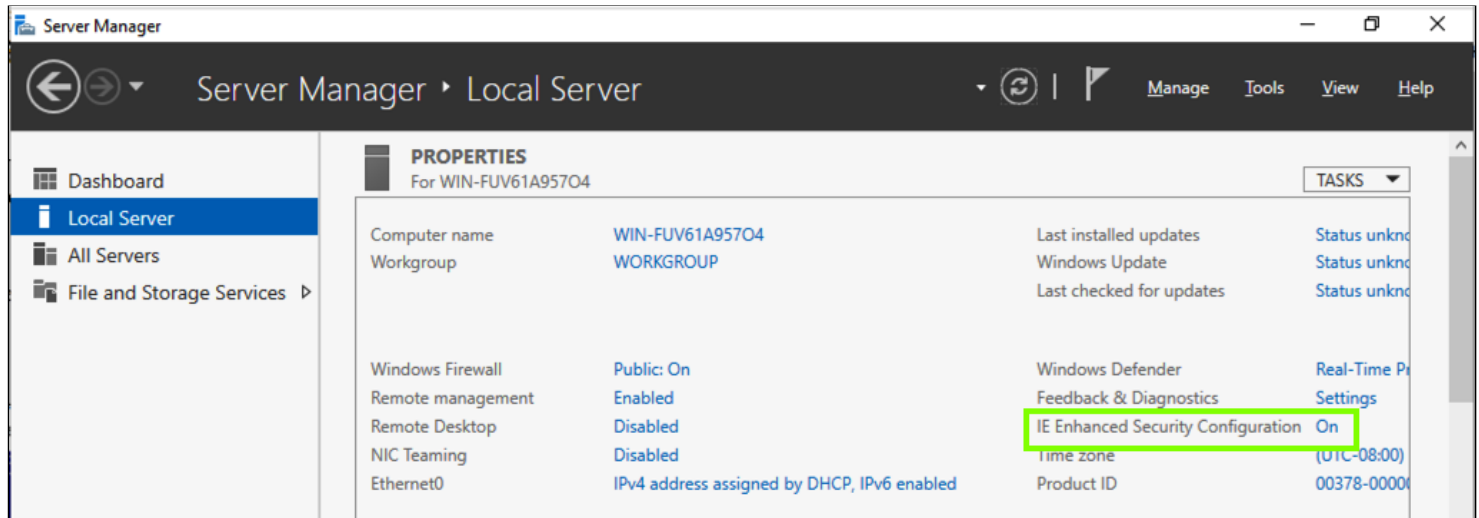
In the "Internet Explorer Enhanced Security Configuration" box, click both **Off** buttons, as shown below.
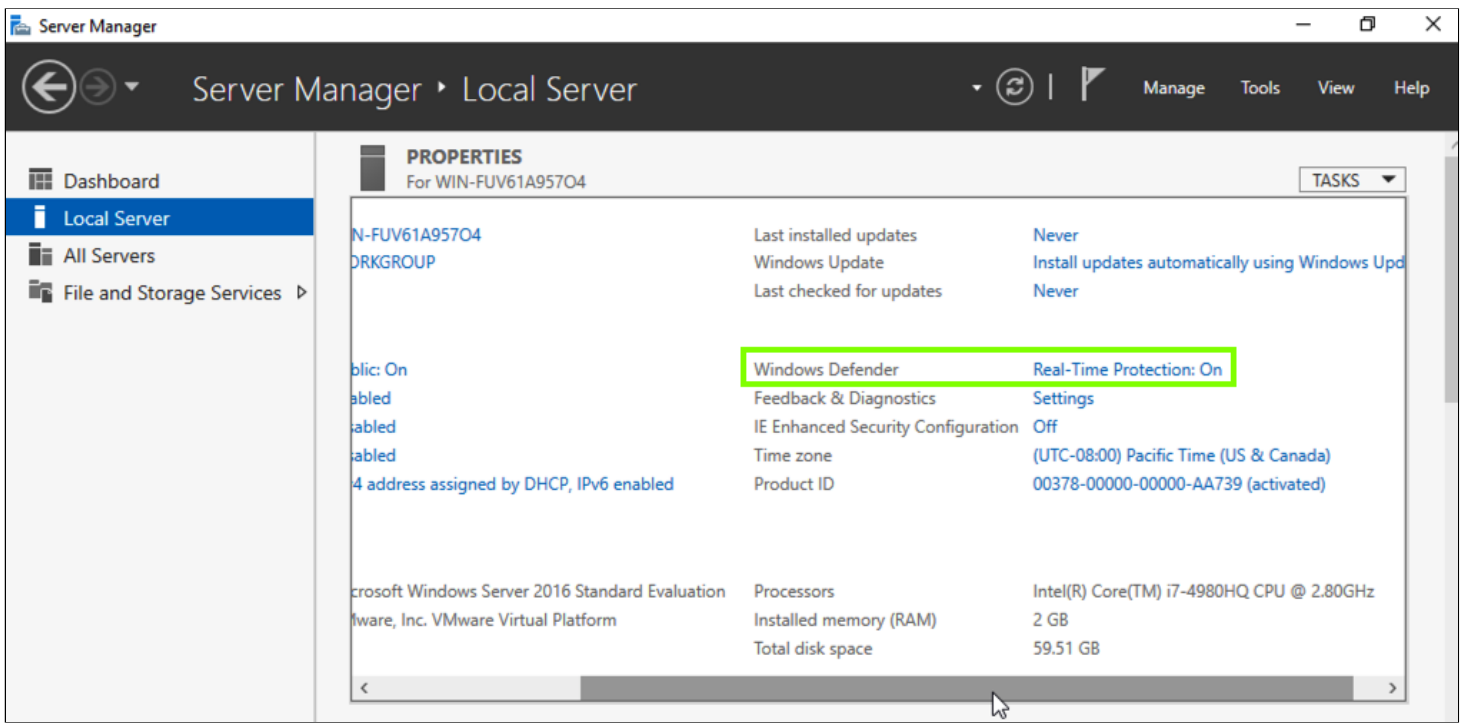
Click **OK**.
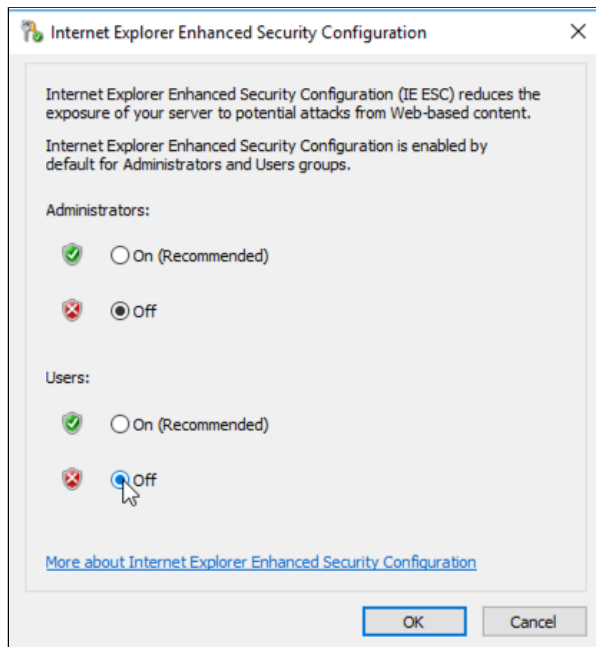
Disabling Realtime Protection

Windows Defender is much weaker than commercial antivirus products, but it'll still block some of the attacks we'll use. So we want it turned off.

In Server Manager, on right side, find "Windows Defender". Click the word **On** next to it, as shown below.

In the "Settings" box, turn off both **"Real-time protection"** and **"Cloud-based protection"** buttons, as shown below.

Close the "Settings" box.
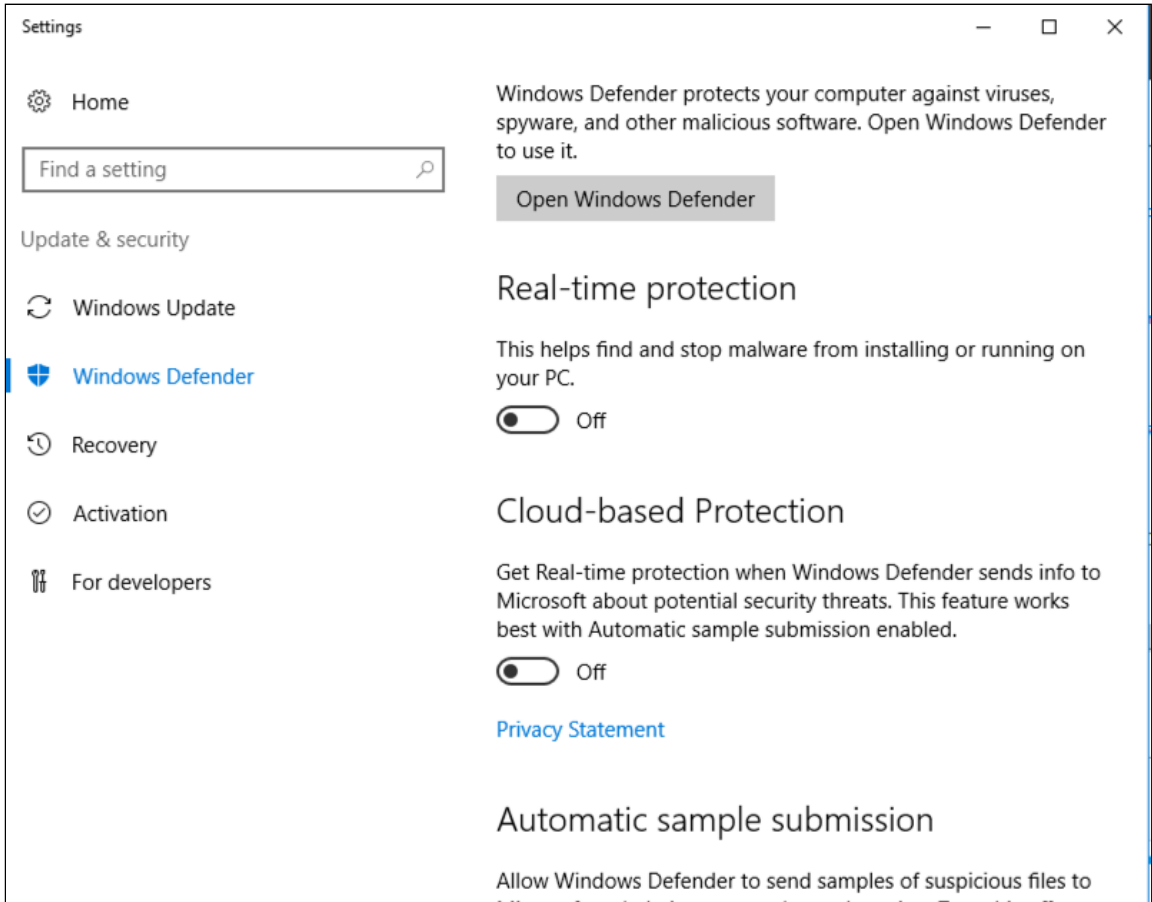
Turning Off the Firewall

In Server Manager, on left side, find "Windows Firewall". Click the word **On** next to it, as shown below.

A "Windows Firewall" box pops up. On the left side, click "**Turn Windows Firewall on or off**".

In the "Customize Settings" box, click both **Off** buttons, as shown below.

Click **OK**.

Close the "Windows Firewall" box.

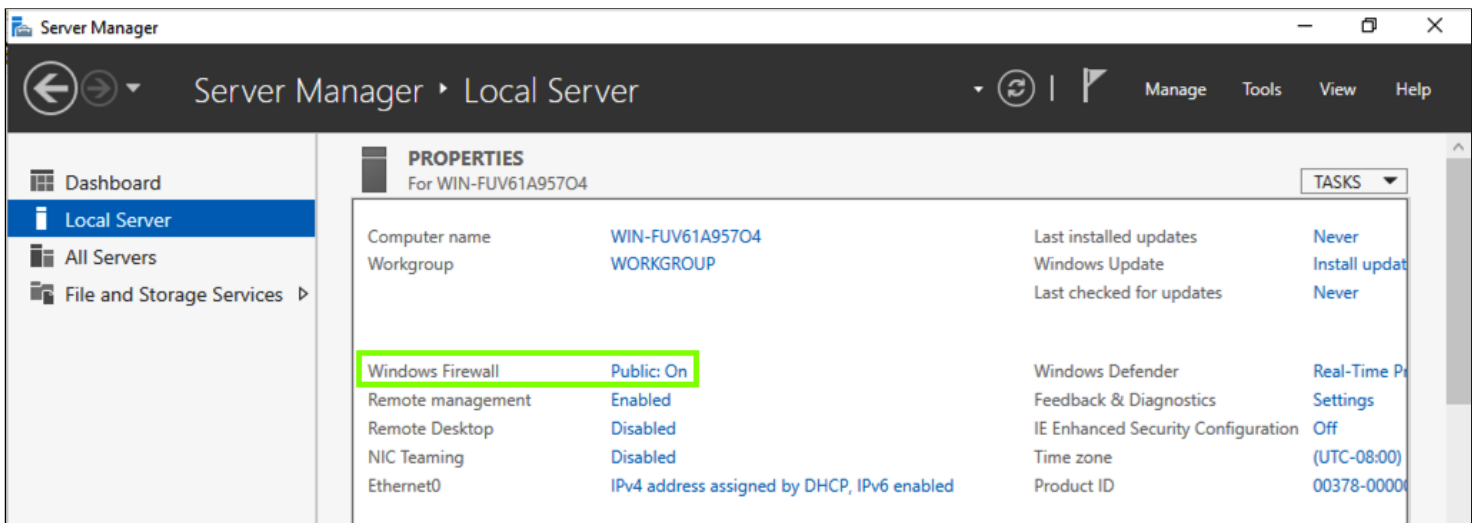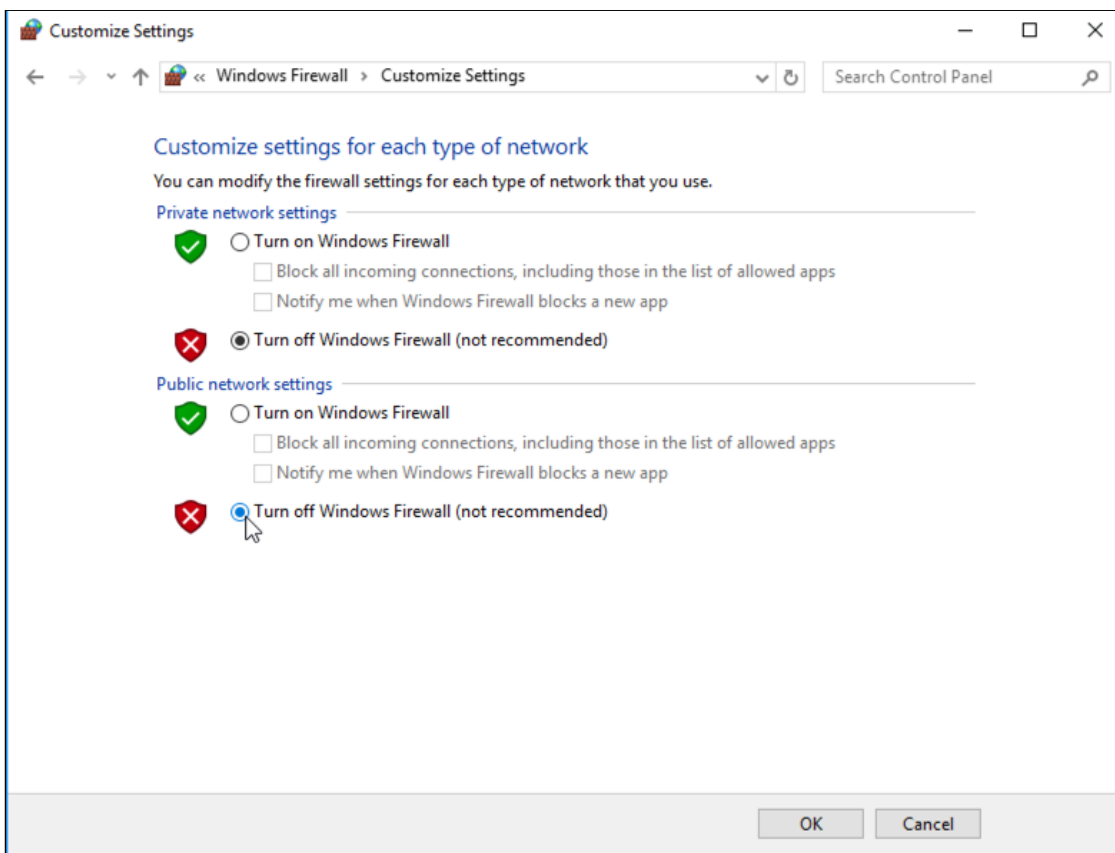## Lowering DEP Settings

Data Execution Prevention is a powerful defense against buffer overflows, but it stops some old software from running.

On Servers, DEP is enabled by default. This adjustment will lower the security level to the value used on Windows client versions.

On your Windows Server 2016 desktop, at the lower left, right-click the **Start** button and click **System**, as shown below.
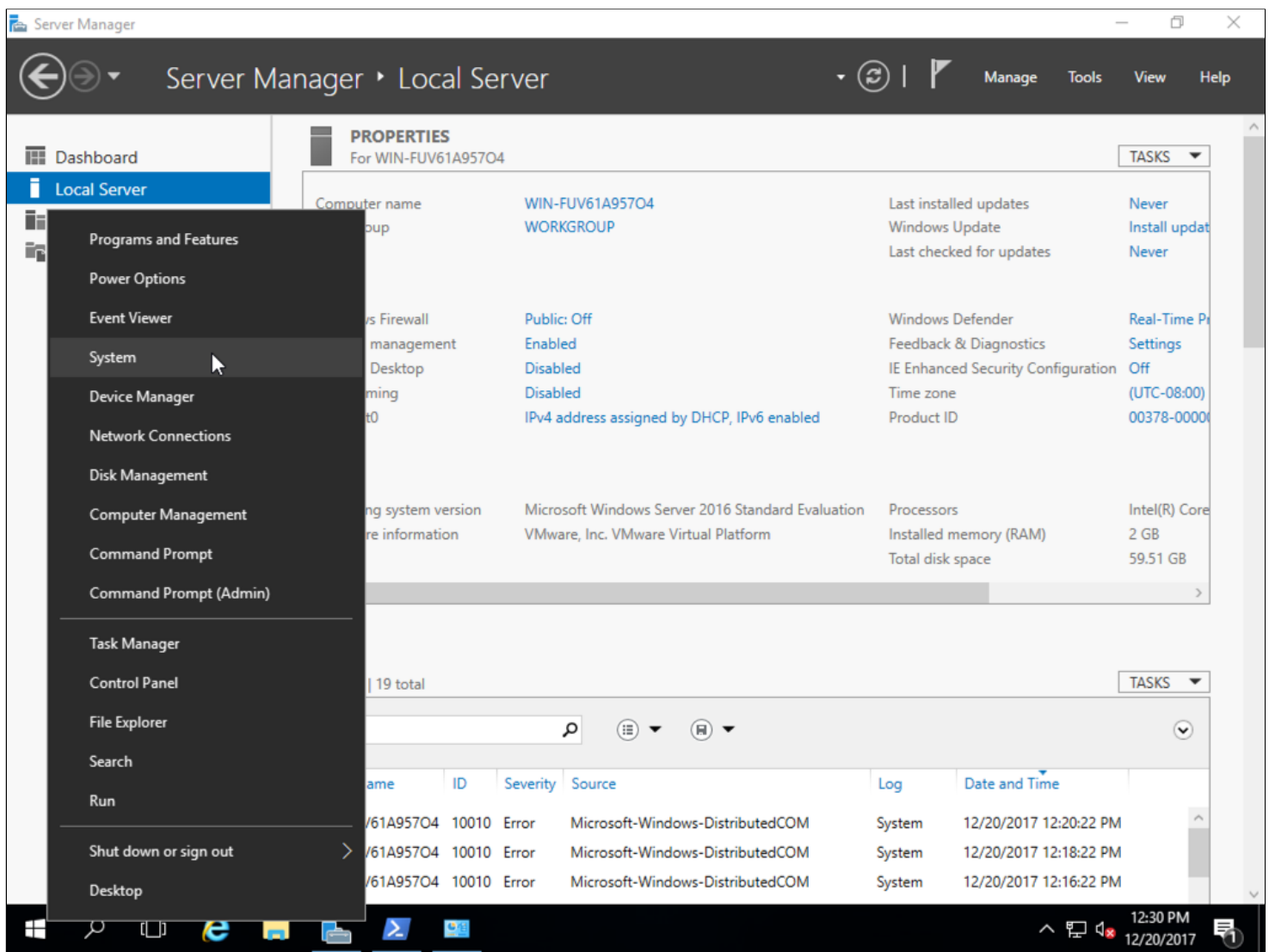
In the "System" box, on the left side, click "**Advanced System Settings**".

In the "System Properties" box, click the **Advanced** tab. In the Performance section, click the **Settings...** button, as shown below.
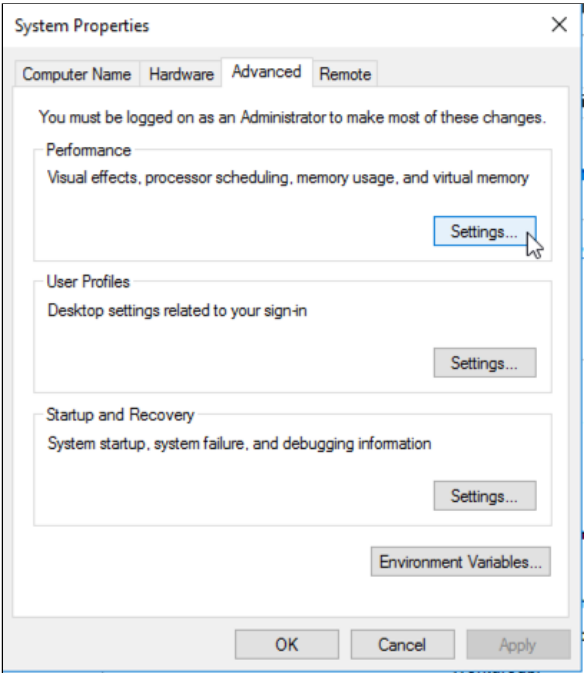
In the "Performance Options" box, click the "**Data Execution Prevention**" tab. Click the "**Turn on DEP for essential Windows programs and services only**" button, as shown below.
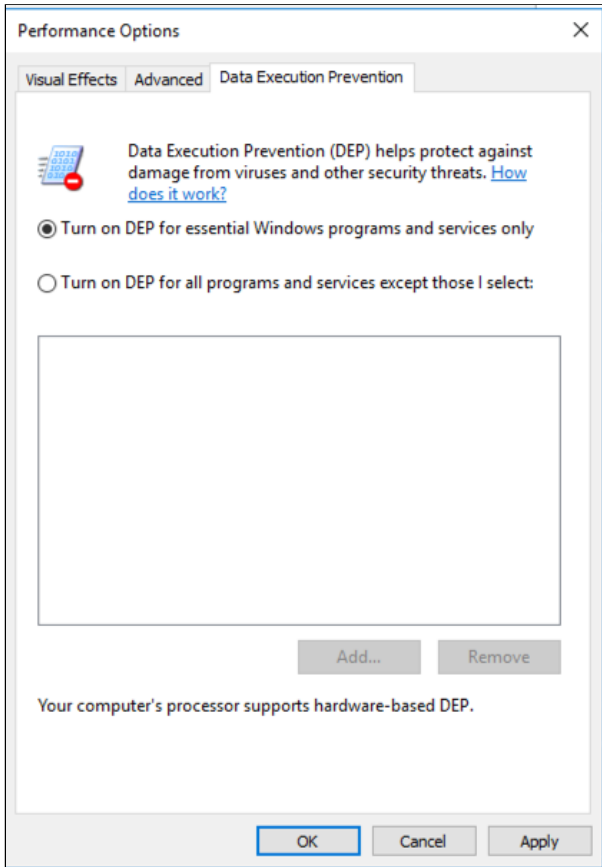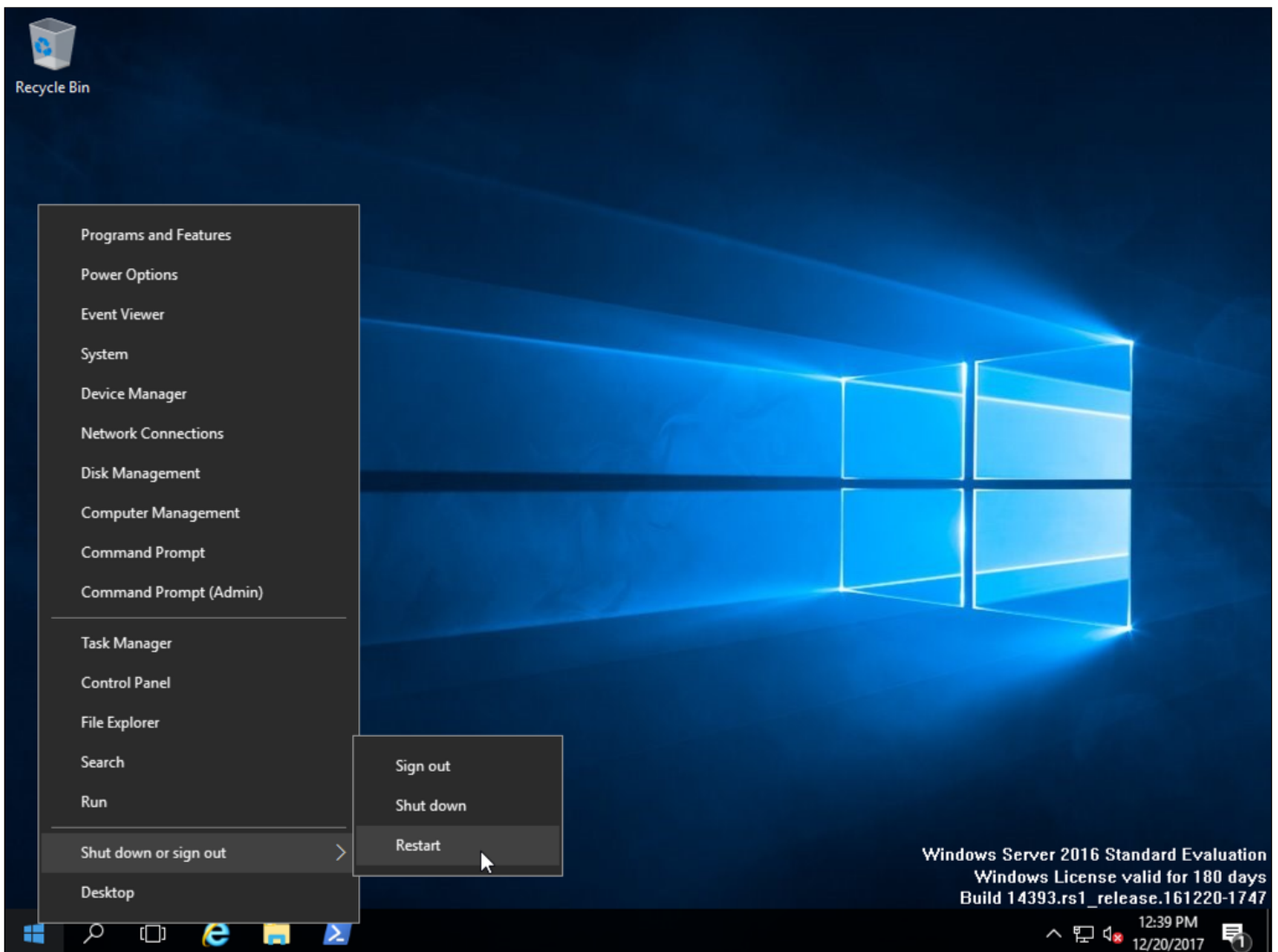
Click **OK**.

A "System Properties" box pops up. Click **OK**.

In the "System Properties" box, click **OK**.

Close all windows. At the lower left, right-click the **Start** button. Point to "**Shut down or sign out**" and click **Restart**, as shown below.

A box pops up asking you to "Choose a reason". Click **Continue**.

If a screen appears saying there are background tasks running, click "**Restart Anyway**".

Log in as normal when the server restarts, with the password **P@ssw0rd**

Installing VMware Tools

VMware tools make it much easier to use the virtual machine.

In your Windows Server 2016 machine, close Server Manager.

In VMware Workstation Player, at the top left, click **Player**, **Manage**, "**Install VMware Tools...**".

If a "Software Updates" box pops up, click the "**Download and Install**" button.

On your Windows Server 2016 desktop, at the lower left, click the yellow folder icon to open Windows Explorer.

On the left side, click "**This PC**".

On the right side, double-click the DVD drive containing VMware Tools, as shown below.
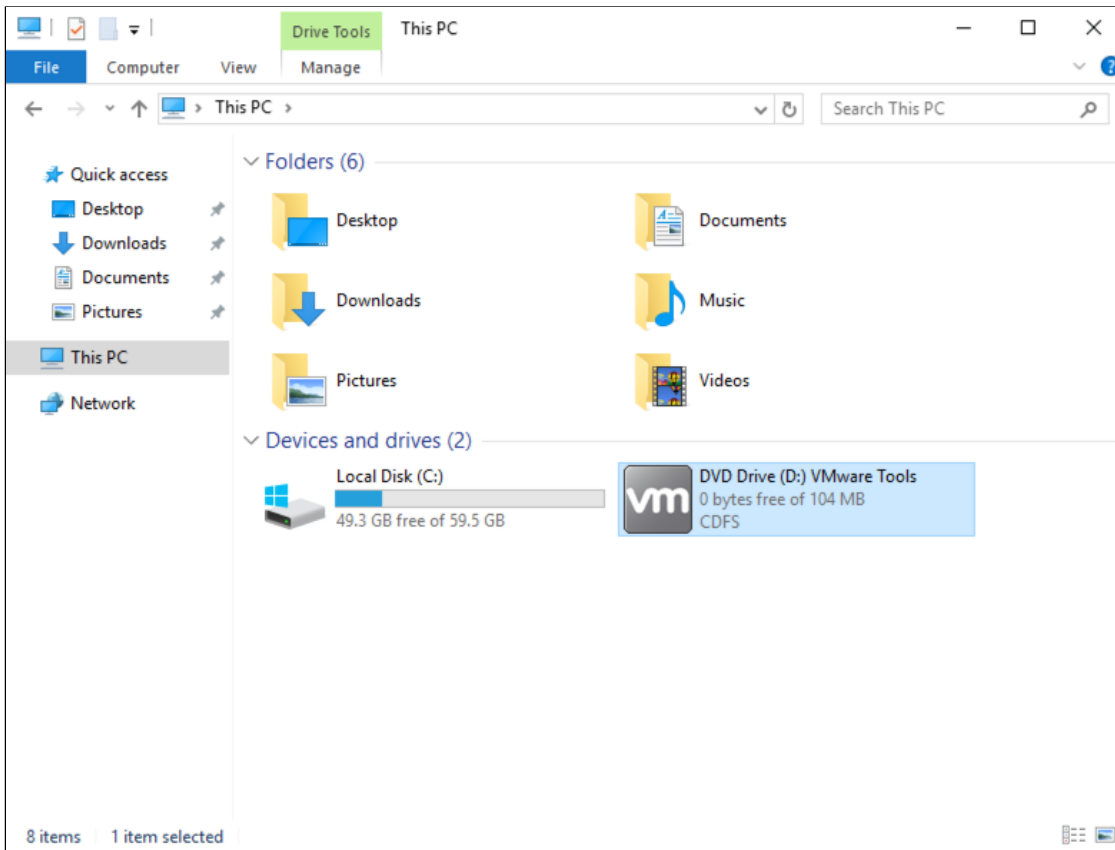
An installer starts, as shown below.

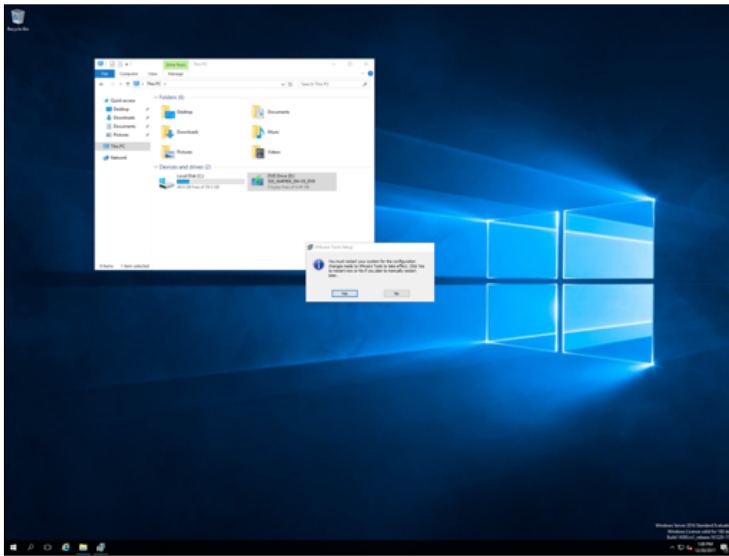Click **Next**, **Next**, **Install**, **Finish**.

Click **Yes** to restart now.

Log in as usual. Close Server Manager.

Troubleshooting

When VMware Tools installs, if you are using a Mac host, the desktop may shrink down so the letters are hard to read, as shown below.

To fix that, open VMware Settings, Display, and uncheck "Use full resolution for Retina display".
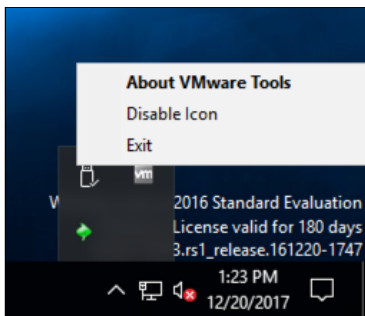
Downloading VMware Tools

VMware-Tools-10.1.0-core-4449150.zip
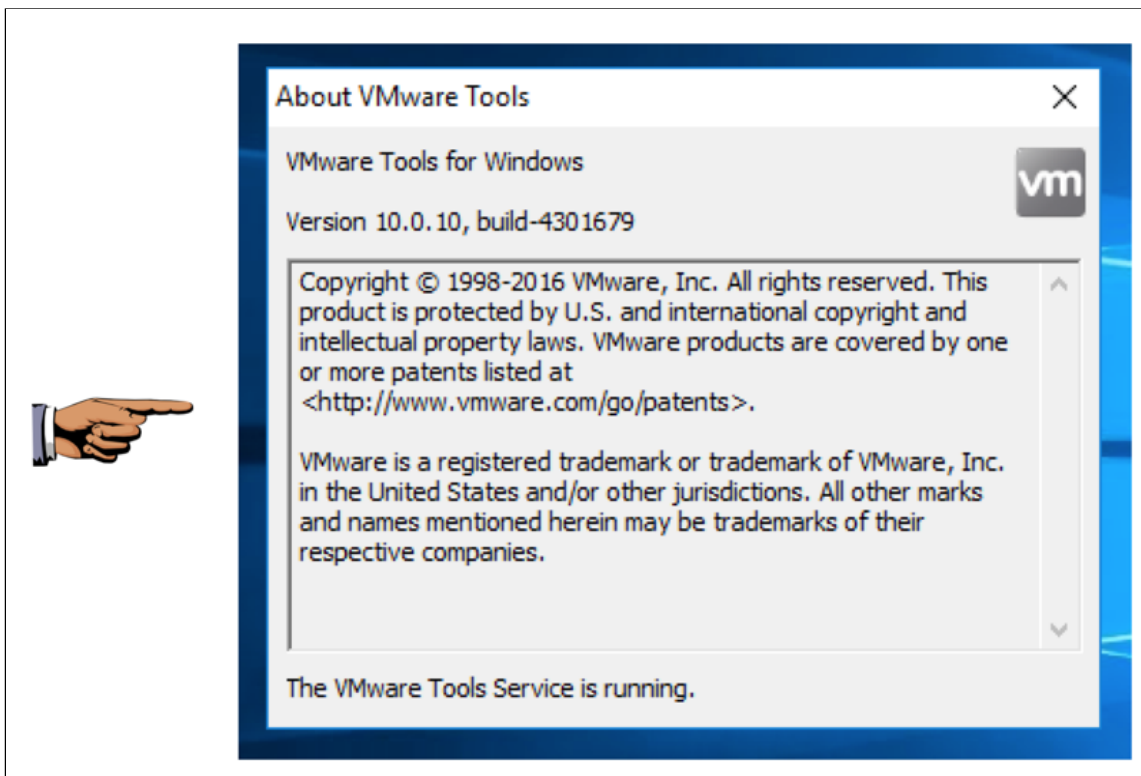
Viewing the VMware Tools Service

At the lower right corner of your Windows 2016 desktop, click the upward-pointing arrow to see hidden items.

Right-click the little **vm** icon. In the context menu, click "**About VMwate Tools**", as shown below.

A box opens, showing that VMware Tools is installed and running, as shown below.

Recording Your Success

In a Command Prompt window, type in this command and then press the Enter key:

```
systeminfo
```

You should see information about your Windows version, as shown below. Find the text that is covered by a gray box in the image below.

~~Use the form below to record your score in Canvas.~~

~~If you don't have a Canvas account, see the instructions~~ here.

Copy the picture above into a MS Word document and upload the document into the assignment in Blackboard.

Name or Email:

Version information (redacted in the image above):

~~CCSF Student~~

~~Non-CCSF Student~~

Extending the Trial Period

In Powershell, execute this command to see how many days you have left in your trial:

```
slmgr -dlv
```

Execute this command to extend the trial for another 180 days:

```
slmgr -rearm
```

You can extend the trial six times, for up to three years.

Posted: 5-17-18
Rearm added 5-22-18
Integrated with Canvas 6-27-18
Windows ISO hash added 12-3-18