

Installing Windows 10 as a Virtual Computer on your Mac

IMPORTANT NOTE BEFORE BEGINNING

The process below will work for Intel-based Macs, but **not Macs with Apple M1** or later chips. To check your Mac's chip, go to the Apple menu at the top left and click "About This Mac". If you have a Mac with an Apple chip, don't proceed with the directions below as VirtualBox won't work. Instead check the [discussion on our forums](#) for advice.

Purpose

DNA Master runs only on the Windows operating system. If you need to install DNA Master but have a Mac, you will first need to install a virtual machine running Windows. Once that virtual machine is running on your Mac, you can launch it and follow the standard instructions to install DNA Master on Windows.

Considerations

If you follow the steps below, it will allow you to install a copy of Windows without having a product key, but that will not be fully activated. This saves the cost of buying a Windows license, and should work fine for running DNA Master only, but is not recommended if you're intending to use Windows in general as a guest operating system.

Overview

These are the steps you'll take to install a functional copy of Windows 10 on your Mac.

1. Install VirtualBox, a free program that allows your computer to run other operating systems.
2. Download a copy of Windows 10 from Microsoft.
3. Create a new Virtual Machine that runs Windows.
4. (Optional, but recommended.) Install Guest Additions for the best experience.

Procedure

1. Install VirtualBox

- a. Go to the VirtualBox download page <https://www.virtualbox.org/wiki/Downloads>
- b. Download the "OS X hosts" VirtualBox file from the Platform Packages section. (This should be a .dmg file.)
- c. Open that file, and follow the instructions to install VirtualBox, clicking "Continue" and/or "Install" as needed.
- d. To make sure installation was successful, go to your Applications folder and launch VirtualBox.

2. Download Windows 10

Note that the file you will download at this step can be quite large (~5 Gb) and you may want to connect via a wired connection or other fast internet before beginning. Ensure you have enough free hard drive space to download.

- a. Go to the Windows 10 download page
<https://www.microsoft.com/en-us/software-download/windows10ISO>
- b. From the “Select Edition” menu, choose Windows 10.
- c. Click Confirm.
- d. If prompted, select “English” (or your choice of language) as the language and click Confirm.
- e. Select the 64-bit Download (unless you have a very old computer), and choose a location to save the file. (It should be a file ending with “.iso”.)

We suggest keeping it in a designated location rather than a Downloads folder. For example, make a new folder on your Desktop called VMs.
- f. Wait for the download to complete before closing browsers or shutting off your computer.

3. Create a Windows virtual machine

Now you will use VirtualBox to install a Windows “computer” on your Mac.

- a. From your applications folder, launch VirtualBox.
- b. Click the “New” button to begin creating a new virtual machine.
 1. When prompted for a name, write something like “WindowsVM” or “Windows for SEA-PHAGES”.
 2. For “Type”, make sure “Windows” is selected.
 3. For “Version”, choose “Windows 10 (64-bit)”.
 4. Click “Continue”.
- c. Select the amount of RAM to dedicate to your virtual machine.

The higher the number, the faster your Windows machine will run, but it may also take resources away from your Mac side. We recommend a minimum of 2 Gb (2048 Mb) and a maximum of half the RAM of your Mac. (Stay in the green area.)
 1. In the “Memory Size” panel, select an amount of RAM to dedicate to your Windows computer.
 2. Click Continue.
- d. Set up your virtual hard drive.
 1. Select “Create a virtual hard disk now”, then click “Create”.
 2. Select “VDI (VirtualBox Disk Image)”, then click “Continue”.
 3. Select “Dynamically allocated”, then click “Continue”.
 4. Select a size for your Windows virtual hard drive. This will be the amount of space you have available inside your Windows “computer” to save files. We

recommend a minimum of 15 Gb, with a preferred size of at least 20 Gb, as long as you have space on your Mac to hold it.

5. Click "Create".
- e. Attach the downloaded Windows file to your Virtual Machine.
 1. Make sure your new machine (e.g. "WindowsVM") is selected in the VirtualBox menu, and click "Settings".
 2. Select the "Storage" tab at the top.
 3. In the box on the left, single-click on where you see an image of a CD and the word "Empty".
 4. On the right, it should say "Optical Drive: SATA Port 1". Click the small icon to the right of that, then select "Choose a disk file".
 5. Navigate to the .iso file you downloaded from Microsoft, then click "Open".
 6. Click OK to close the settings tab.
- f. Launch the VM and install Windows.

This step may take up to 30 minutes, so make sure you have time to do this uninterrupted.

1. Make sure your new machine (e.g. "WindowsVM") is selected in the VirtualBox menu, and click "Start".
2. Follow the prompts to choose a language and begin the Windows installation.
3. When an "Activate Windows" box appears asking for a product key, click the link near the bottom that says "I don't have a product key".
4. Select "Windows 10 Home" if prompted.
5. Choose "Custom" rather than "Upgrade" from the installation type menu. Click "Next".
6. Select your hard drive (should be only one option) and click "Next".
7. Wait for Windows 10 to install. (This may take a while.)
8. Follow the prompts from "Cortana" to finish the Windows setup. **As of a recent update**, you're required to input either a phone number or non-school email address to proceed. That's the price of a free copy of Windows.
9. Choose a user name and password for your Windows account.
10. Continue with Windows setup, answering questions as needed.
11. Eventually, you should be taken to your new Windows Desktop.
12. If your Mac is connected to the internet, your new Windows computer should be as well. Try opening a browser (Microsoft Edge, for example) and navigating to phagesdb.org.
13. Congratulations! You're now running a Windows computer inside your Mac.

NOTE that you should treat this “virtual computer” like a real computer.

Don’t suddenly quit VirtualBox while your Windows machine is running. Instead, shut down Windows like you would your own computer before closing it.

Sometimes, virtual machines have trouble if you just close your laptop while they’re running. We suggest shutting down Windows before closing a Mac laptop.

Moreover, since running a whole second operating system requires a lot of resources, it’s best to only keep your Windows VM open when you’re actively using it. Shut it down when you won’t need it for a while and it’ll save on RAM and battery life.

4. Install Guest Additions (optional, recommended)

Guest Additions is a package of software that helps your virtual Windows machine work seamlessly with your Mac. It lets you do things like use your mouse correctly, resize the virtual machine window, drag-and-drop files and share a clipboard between your Windows and Mac environments.

- a. Launch VirtualBox if it’s not already running, then Start your Windows VM.
- b. At the very bottom bar of the window, there will be a small CD icon. If it’s not grayed out, click on it and select “Remove Disk From Virtual Drive”.
- c. Find the VirtualBox “Devices” menu (probably all the way at the top of your Mac screen), and choose “Insert Guest Additions CD image”.
- d. (If it doesn’t auto-run, do this step and step e.) Click the folder icon near the bottom of your Windows desktop to open a file browser. From the left sidebar, Select “This PC” then “CD Drive D:...”.
- e. Double-click “**VBoxWindowsAdditions-amd64**” to run it.
- f. Click “Yes” to allow the app to make changes.
- g. Click “Next” or “Install” to accept the default selections and begin installation.
- h. When complete, select “Reboot Now” and click “Finish”.

When Windows reboots, you should now be able to resize its window and your mouse pointer should move more seamlessly between your Mac and PC windows.

- i. From the VirtualBox menus (likely at the top of your Mac screen) select “Devices” → “Drag and Drop” and choose “Bidirectional”. This will allow you to drag files between your Mac and Windows environments.
- j. From the VirtualBox menus (likely at the top of your Mac screen) select “Devices” → “Clipboard” and choose “Bidirectional”. This will allow you to copy and paste text between your Mac and Windows environments.
- k. All done!