Getting ArcGIS Desktop (ArcMap) on your Mac

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# Introduction

Some software (like ArcGIS) is only available for Windows and cannot be installed directly onto a Mac Operating System (MacOS). However, it is possible to install Windows as a separate operating system (OS) on a Mac computer, allowing for the use of such software. There are two primary methods of doing this:

1. **Virtual Machine** (*recommended)* **–** using third-party software, it is possible to run Windows on top of and simultaneously alongside MacOS in a virtual environment. While this might hinder performance, it is easy to set up and use, making it the preferred option. This can be accomplished using the virtualization software **VMWare Fusion,** which is available to Tufts affiliates at no cost.
2. **Boot Camp** *(advanced)*– the multi-boot utility developed by Apple and pre-installed on all Mac computers. This can be used to create a non-virtualized environment on a Mac computer to install Windows onto. However, it requires careful setup and only allows for one operating system (Windows or MacOS) to be used at a time.

**NOTE: To install VMWare Fusion on a Mac, you will need at least 60 GB of free space on the Mac. To check free space, click the Apple Icon () and then About this Mac > Storage. This will take up to three hours to complete, please budget your time accordingly.**

For more information on working remotely, please see here: <https://it.tufts.edu/working-remotely>

# Choosing the Best Option for You

The best option for installing Windows on MacOS depends on two primary factors:

1. The type and amount of analysis to be performed using Windows.
2. Extent of desired interaction with MacOS while using Windows.

**VMWare Fusion** runs Windows alongside MacOS as a *virtual machine*. This means there will be less memory and processing power available as it will have to be shared between the two operating systems. Hence, this option is better for light analysis and simple data visualization. However, it does have the benefit of easily switching between the two operating systems (Windows and MacOS) within a single session.

 **PROS:**

* Allows for concurrent use of both Windows and MacOS.
* Allows for easy file transfer between Windows and MacOS.
* Allows for copy and paste between Windows and MacOS.
* Utilizes all free disk space.
* Does not require a permanent disk partition.

**CONS:**

* Memory (RAM) and processing (CPU) resources are shared between the two operating systems (Windows and MacOS), resulting in slower processing speeds.
* Not ideal for intensive analytical processes.

**Boot Camp** is a better choice for users who require the full processing power of their computer because it only allows for the use of one operating system at a time. However, this means that it is impossible to use both operating systems (Windows and MacOS) at the same time nor flip between them within a single session.

 **PROS:**

* Pre-installed on all Mac computers since 2007.
* Windows and all of its applications (like ArcGIS) will be able to harness the full processing power of your computer.
* Allows for access of files on your MacOS system while using Windows and vice versa.

**CONS:**

* Requires a dedicated, semi-permanent disk partition.
* Disk space for Windows and all of its applications must be allocated in advance and cannot be changed later.
* User must sign out of one operating system and restart the computer to use the other operating system.
* Cannot directly copy and paste or share files between the two systems.

# Checking System Requirements

Regardless of which method you choose, you must first determine whether your computer meets the minimum requirements for installing Windows and any Windows applications you might want to use (like ArcGIS). Then you must also determine whether your computer meets the requirements of using wither VMWare, Parallels, or Boot Strap.

To check the system information of your Mac computer, click on the Apple icon in the upper-left corner of your screen and select **About This Mac**. To determine free disk space, click on the **Storage** tab.



**Minimum System Requirements for Windows 10:**

* **Processor (CPU):** 1 GHz or faster processor or System on a Chip (SoC)
* **Memory (RAM):** 1 GB for 32-bit or 2 GB for 64-bit
* **Disk space:** 32 GB
* **Display:** 800x600

**Minimum System Requirements for ArcGIS Desktop 10.8:**

* **Processor (CPU):** 2.2 GHz minimum; hyper-threading (HHT) or multi-core recommended
* **Memory (RAM):** 4 GB minimum; at least 8 GB recommended
* **Disk space:** 4 GB minimum; at least 6 GB recommended
* **Graphics memory:** 64 MB minimum; at least 256 MB recommended
* **Display:** 1024x768; 24-bit color depth
* *Check system requirements for latest version:*<https://desktop.arcgis.com/en/system-requirements/latest/arcgis-desktop-system-requirements.htm>

**Minimum System Requirements for VMWare Fusion 11:**

* **Hardware:**
	+ All Mac computers launched in 2011 or later are supported except:
		- 2012 Mac Pro “Quad Core” using the Intel Xeon W3565 Processor
	+ In addition the following are also supported:
		- 2010 Mac Pro “Six Core”, “Eight Core” and “Twelve Core”
* **Memory (RAM):** 4 GB minimum; at least 8 GB recommended
* **Disk space:** 750 MB for VMWare Fusion plus space needed for Virtual Machine(s)
* **Operating system:** macOS 10.13 or later
* *Check system requirements for latest version:* [*https://kb.vmware.com/s/article/2005196*](https://kb.vmware.com/s/article/2005196)

**Minimum System Requirements for installing Windows 10 using Boot Camp:**

* **Hardware:**
	+ MacBook introduced in 2015 or later
	+ MacBook Air introduced in 2012 or later
	+ MacBook Pro introduced in 2012 or later
	+ Mac mini introduced in 2012 or later
	+ Mac Pro introduced in 2013 or later
	+ iMac introduced in 2012 or later
	+ iMac Pro (all models)
* **Disk space:** at least 64 GB of free space; 128 GB or more recommended
* *More information:* <https://support.apple.com/en-us/HT201468>

# Downloading and Installing VMWare Fusion

Tufts affiliates can get VMware Fusion though the VMWare Academic Program for **free** as follows:

1. Go to the **Tufts** **University VMWare Academic Program** site at <https://vmap-tufts.onthehub.com/>
2. Click **Sign In** at the upper-right corner of the website
3. Use your Tufts username (UTLN) and password to sign in
4. If you are a student, provide your expected graduation date to receive special pricing upon graduation
5. Click on the tab corresponding to your primary affiliation: **Student** or **Faculty/Staff**
6. Under **VMWare**, click again on the tab corresponding to your primary affiliation
7. Under **Software**, select **VMWare Fusion 11**
8. Click **Add to Cart** and then **Check Out**
9. The next page includes details of your order, including your **serial number** (in red)
10. **Take note of your serial number for future reference!**
	* *You will receive an email with your order information, but that will* ***not*** *include the serial number*
	* **You must save this serial number safely. Otherwise it costs $30 to get the serial back.**
11. Click **Download**
12. Once the download is complete, **install** the software
13. You will be prompted to enter your **serial number** during the installation process

You will receive a 12-month license which is effectively a prolonged 12-month evaluation period. You might see a message stating that your evaluation period is ending in ### days. Feel free to ignore said message. At the end of the 12-month “evaluation period” you will be able to download a new version and get a new 12-month license as long as you still remain a Tufts affiliate.

# Downloading Windows 10

To install Windows 10 on your Mac computer you need both a Windows 10 **product key** and a **disk image** (ISO)**.**

Tufts affiliates can get a free (students) or discounted (faculty/staff) Windows 10 **product key** as follows:

1. Go to **Tufts On The Hub** at <https://tufts.onthehub.com/>
2. Sign in with your Tufts username (UTLN) and password
3. Click on the tab corresponding to your primary affiliation: **Student** or **Faculty/Staff**
4. Select **Microsoft**, then **Windows 10**
5. Click **Add to Cart** and then **Check Out**
6. Once you finalize the checkout process, you will get a **product key** for **Windows 10 Education**
7. **Take note of your product key for future reference!**
	1. **You must save this product key safely. Otherwise you cannot get another key for one year.**
8. Once you have your product key, you can download a Windows 10 **disk image** (ISO-file).

If you are at home, do the following:

1. Go to <https://www.microsoft.com/en-us/software-download/vlacademicwindows10>
2. Scroll to the bottom of the pace and select your language (English)
3. Click on **64-bit Download**
4. Save the ISO-file to a convenient location on your Mac computer

# Using VMWare Fusion to Install Windows on MacOS

1. Before proceeding, **check system requirements** and make sure you have the following:
	* VMWare Fusion **installed** on your Mac computer
	* Windows 10 disk image (**ISO-file**) downloaded onto your Mac computer
	* Windows 10 **product key** on hand
2. Launch **VMWare Fusion**
	* If the **New Virtual Machine Assistant** does not automatically start, go to **File > New** to launch it
3. Select **Install From Disc or Image** and click **Continue**
4. Click **Use Another Disc or Disc Image**
5. Select the Windows **ISO-file** you downloaded, then click **Open**
6. Ensure the **Use Easy Install** option is **selected**
7. Pick an **account name** and **password**
8. Provide your Windows **product key** and click **Continue**
9. Choose the **integration level** most suitable for you and click **Continue**
	* You may not know which level is suitable – if so, we suggest **more isolated**. This means you can drag and drop files into the Windows machine, but it is otherwise isolated.
10. You will see an overview of the settings and technical specifications of your new virtual machine (VM). You might want to click **Customize Settings** and allocate more disk space or memory (RAM) to your new VM to match the system requirements of various Windows applications you might want to run on it
	* You might want to refer to the previously outlined **system requirements**
	* If you are unsure, feel free to accept the defaults – **you can always change this later**
11. Once done, click **Finish**
12. Select where to store your new VM and click **Save**
13. Your new VM will power on and install Windows *(this might take a long time)*
14. Once the installation completes, you will be able to sign in to your new Windows account
	* **If you see an error that states “Could not open dev/vmmon: Broken pipe”, please do the following:**
		1. Exit out of the VMWare image by clicking the “x” to close the window.
		2. Restart VMWare Fusion. Right click on the VMWare Fusion icon to open the program.
		3. Now go to *System Preferences > Security & Privacy* and verify if VMWare is allowed to run and there is no mention of a blocked application. If VMWare has been blocked, click allow.
		4. Try to run VMWare again.
		5. If this doesn’t work, restart your Mac and check *Security & Privacy* again.
		6. Try to run VMWare again.
* *More information, including an installation video:* [*https://kb.vmware.com/s/article/1011677*](https://kb.vmware.com/s/article/1011677)
* *Changing the disk size of your VM after creation:*[*https://kb.vmware.com/s/article/1020778*](https://kb.vmware.com/s/article/1020778)
* *Changing the amount of RAM assigned to a VM:*[*https://kb.vmware.com/s/article/1004059*](https://kb.vmware.com/s/article/1004059)

**Installing ArcMap 10.8.1 in the VMWare image**

You will need to have received an ESRI student digital download code. If you are in a GIS class, you professor has a code for you. If you are not in a class but would like to install the software, please email us at DataLab-support@elist.tufts.edu to request a code. Support for the ArcGIS Desktop Education Edition is available at <http://esri.com/evalhelp>.

## Sign into your ESRI Account

This first section is only necessary if you have never accessed ArcGIS Online (AGOL) or any online ESRI product before. If you have logged into to AGOL before, you do not need to do this step.

1. You will need to log in to our Tufts Organization’s account one time so an account is created in your name Go to [www.esri.com](http://www.esri.com)
2. Click on the **Sign In** link at the top right of the page.
3. Click on Sign in with Y**our ArcGIS organization’s URL**. Do **NOT** click sign in with ArcGIS Login
4. Enter **tuftsgis** as the organizations URL so it looks like the following image. If this is your personal computer, you can check remember this URL and it will be faster next time.
5. You will then be prompted to log in with **TUFTS UNIVERSITY**. Press the blue Tufts button.
6. Now you will log in with your Tufts Username (UTLN) and password. You will need to also go through duo authentication. Press Login.


An AGOL account has now been created within our Tufts University organization account that is associated with your Tufts Username.

## Activate your Student Digital Download Code

1. Visit <http://www.esri.com/EducationEdition>
2. Click on **I have an ESRI Account.** You will log in the same way you just did in the step above.
3. Click on Sign in with Y**our ArcGIS organization’s URL**. Do **NOT** click sign in with ArcGIS Login
4. Enter **tuftsgis** as the organizations URL so it looks like the following image. If this is your personal computer, you can check remember this URL and it will be faster next time.



1. You will then be prompted to log in with **TUFTS UNIVERSITY**. Press the blue Tufts button.



1. Now you will log in with your Tufts Username (UTLN) and password. You will need to also go through duo authentication. Press Login.
2. Enter the **authorization** **code** you have been given by your GIS Professor or the Data Lab Staff. The format of the code is similar to EVA123456789.



1. Click **Activate** **ArcGIS**.

## Download and Install the Software

1. The newest version of ArcMap 10.8.1 and ArcGIS Pro 2.6 is not yet available through this ESRI site. Therefore, we have downloaded the software and made it available for you at this link. Go to the following link: <https://tufts.box.com/s/1kdjeo8psz43lu2plhb5cn1l923gn8sm>
2. Click on the file **ArcGIS\_Desktop\_1081\_175110.exe** and press **Download** to access the software installer.



1. Depending on the internet browser you’re using, the installation wizard might open automatically, it might save to the downloads bar at the bottom of chrome, or it might be saved to your downloads file.

 

1. Once it downloads, **Run** the installer wizard by double clicking the **ArcGIS\_Desktop\_1081\_175110** executable (.exe).
2. Select a destination folder to extract the install files to and press **Next**. If you choose, you can automatically launch the setup after the files have been extracted by clicking the box “launch the setup program”.

 

1. Press YES when asked if you want to let ArcGIS make changes to your computer.
2. Proceed through the setup installer options by clicking Next.



1. Select the **Complete** installation type.



1. Click next through all the prompts. You will see the software being installed and the progress bar. This may take several minutes.



1. After the files are installed, the Authorization Wizard will open and prompt you to choose a product to authorize. **Select Advanced (ArcInfo) Single Use.** Then click **Authorize Now.**
**Note**: If this authorization window does not automatically open, search for the program **ArcGIS Administrator** and it will open.



1. Select “I have installed my software and need to Authorize it”.



1. Select “Authorize with ESRI now using the Internet”.



1. Fill out your authorization information and press next.

 

1. Fill out your industry information and press next.



1. **Enter your activated code** into the text box**,** as shown below. Press Next.



1. Select “I do not want to authorize any extensions at this time.” Press Next.

 

1. Press Next again. You do not need to evaulate software extensions.



1. Press finish once your software authorizes successfully.



1. Open ArcMap 10.8.1 to ensure that everything works. If it opens up to a blank map, you are good to go.

Support for the ArcGIS Desktop Education Edition is available at esri.com/trialhelp

## Additional Resources for ArcMap

* **For information on how to connect to Box in ArcMap, see these instructions:** <https://tufts.app.box.com/file/631995847090>
* **For Information on how to Install the VPN, Map the Network Drives and Connect to Folders in ArcMap, see these instructions:** <https://tufts.box.com/s/7wl2b3jxp309a962q6b8g1270kgm68ky>

# For reference: Using Boot Camp to Install Windows on MacOS

1. Before proceeding, **check system requirements** and make sure you have the following:
	* Windows 10 disk image (**ISO-file**) downloaded onto your Mac computer
	* Windows 10 **product key** on hand
	* If you are running OS X Yosemite 10.10 or earlier **OR** have a computer introduced prior to 2015, you will also need an **empty USB flash drive with a storage capacity of 16GB or more**
2. Go to **Utilities > Applications** and open **Boot Camp Assistant**
3. Follow the on-screen instructions and insert a USB drive if asked to do so
4. Select the size of your Windows partition to be large enough to hold the Windows OS, any applications you might want to install on Windows, and any files you might want to store on your Windows system
	* Refer to the previously outlined **system requirements** when making a decision
	* Apple recommends at least 64 GB, but suggests allocating 128 GB or more
	* **This cannot be changed later!**
5. Once Boot Camp Assistant finishes, your Mac will **restart** and launch the **Windows installer**
6. If prompted, select **BOOTCAMP** as the installation location and click **Format**
7. Unplug any external devices not necessary for the installation and click **Next**
8. Follow the onscreen instructions to install Windows, enter your **product key** when prompted
9. After installation completes, your Mac starts up in Windows and launches **Boot Camp Installer**
10. Follow the onscreen instructions to install Boot Camp and Windows support software (drivers)
11. Once completed, you will be asked to **restart**
12. Restart and hold down the **option key** (⌥ or Alt) during startup
13. Release the option key and you will see the **Startup Manager** window
14. Select either to launch macOS or Windows (**Boot Camp**) and press **Enter/Return** (or click the arrow)
15. To switch between macOS and Windows, repeat steps 12-14
* *More information:* [*https://support.apple.com/en-us/HT201468*](https://support.apple.com/en-us/HT201468)
* *If Boot Camp Installer does not launch in step 9:* [*https://support.apple.com/en-us/HT208495*](https://support.apple.com/en-us/HT208495)
* *Switching between operating systems:* [*https://support.apple.com/en-us/HT208123*](https://support.apple.com/en-us/HT208123)