

## Quick Summary (By Francisco Novoa)

1. First boot Mac OS install using your opencore usb stick
2. At MacOS Install you need to configure hardisk to be ready to install Windows.
3. Do not install yet MacOS
4. Restart to Windows Install with your USB (you can make one on Windows with Microsoft Tool)
5. Instead of install windows through gui press Shift+F10 to enter Shell
6. Follow instructions on this guide to use diskpart and create needed partitions
7. Install Windows following this guide (not gui install)
8. Reboot to Windows and setup it normally
9. Reboot using your opencore + install macos usb stick
10. Install mac os on MacOS partition that you have created on the first step
11. Configure normally your MacOS
12. Reboot with your usb to be sure that windows and mac shows at opencore menu
13. If you select Windows, probably you'll get a nice blue screen, so don't worry
14. Start your MacOS with your usb
15. Download Refind from this link <https://sourceforge.net/projects/refind/>
16. Unzip it
17. Install "Refind-install"
18. Mount your hardisk efi folder (use mountefi <https://github.com/corpnewt/MountEFI>)
19. Your efi folder will not be empty (Windows files will be there)
20. Copy your OC folder from your opencore usb drive to your hardisk efi folder
21. Look for your bootx64.efi file inside your efi/boot folder and copy it into your EFI/OC folder inside your hardisk efi partition.
22. Copy your downloaded "Refind" folder to your EFI Disk
23. OPTIONAL → you can install refind from Windows following this page <https://www.rodsbooks.com/refind/installing.html#windows>
24. Start Windows with your bios boot selector
25. Download <http://www.easyuefi.com/index-us.html> (Paid Version you can find alternatives)
26. Open Easyuefi and select the left option "Manage EFI BOOT OPTION"
27. On the left box, select the second button to create new table
28. On type select "Linux or other os"
29. Description: The name you want to your new Boot
30. Select target partitions (EFI on your hard disk)
31. On file path you'll have to choose your Refind\_x64.efi file (main was on Efi\refind\refind\_x64.efi)
32. Leave optional data empty
33. Now move your refind boot to the first place
34. Close EasyUEFI
35. Restart and select Refind at your bios boot options
36. Boot into your mac os (Will send you to opencore)
37. On MacOS, mount your hard disk efi
38. Go to \EFI\Refind and open refind.conf with text editor

39. You can now configure your links to the icons on your refind app
40. To do that go to the end of the file and look for "menuentry"
41. Edit MacOS one and on loader link to your opencore's bootx64.efi on your  
EFI/OC/Bootx64.efi
42. Delete "DISABLED" Word to activate option
43. Edit Windows one and link it to EFI\Microsoft\Boot\bootmgfw.efi
44. Save file
45. Now reboot into Refind and press Delete on the older icons to hide them, and you can  
keep the ones that you modify on Refind.conf
46. If you want to Opencore to start automatically with your mac os, you have to go to  
System Preferences → Startup Disk and select your mac os disk(partition)

# Full Guide (Extracted from Reddit, not mine)

## INTRODUCTION

Installing Windows onto a GPT Hackintosh drive using the installer has always been a royal pain or worse. I documented this technique for Windows 8 years ago somewhere on InsanelyMac (I think). Windows 10 uses a similar technique. I'll try to fully explain it here. This technique will be relatively easy to accomplish on the same drive with Mac OS using APFS. I apologize in advance for the poor quality photos. I'm working with a cell phone camera... Also, I used an old 120GB Apple SSD for the examples. It's a little tight, but it worked!

Ideally, I prefer to setup the drive for Dual Booting before installing Mac OS, reserving the space for Windows between the EFI Partition and the APFS Container used by Mac OS. When Windows is installed later, space is only available following the APFS Container. This works just as well but can be a little confusing when examining the drive layout later.

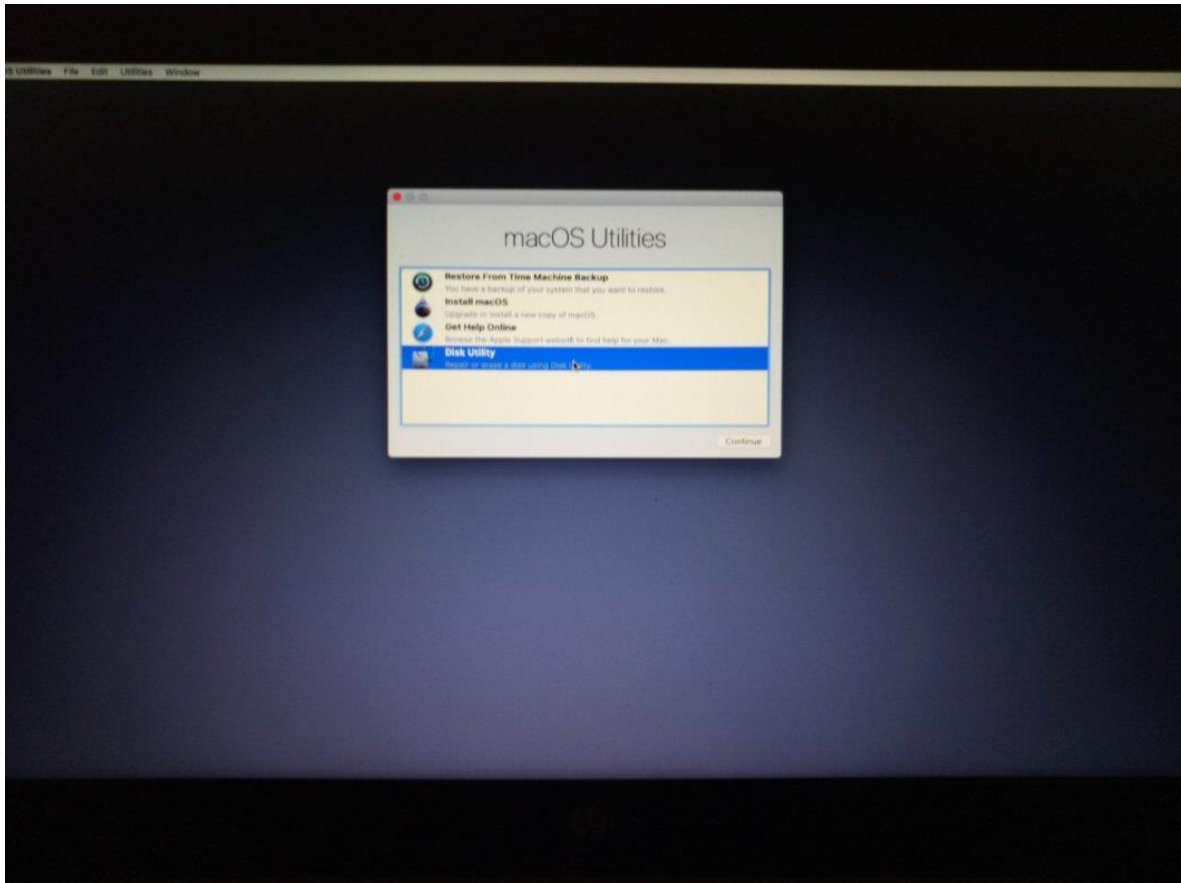
Building the Windows Install USB from Mac OS consists of simply erasing an 8GB or larger drive using MBR and formatted in Fat32. Name it WINSTALL. Double-click the Windows Install ISO file to mount it. From Terminal enter the following command:

```
sudo cp -r /Volumes/<ISO Drive Name>/* /Volumes/WINSTALL/
```

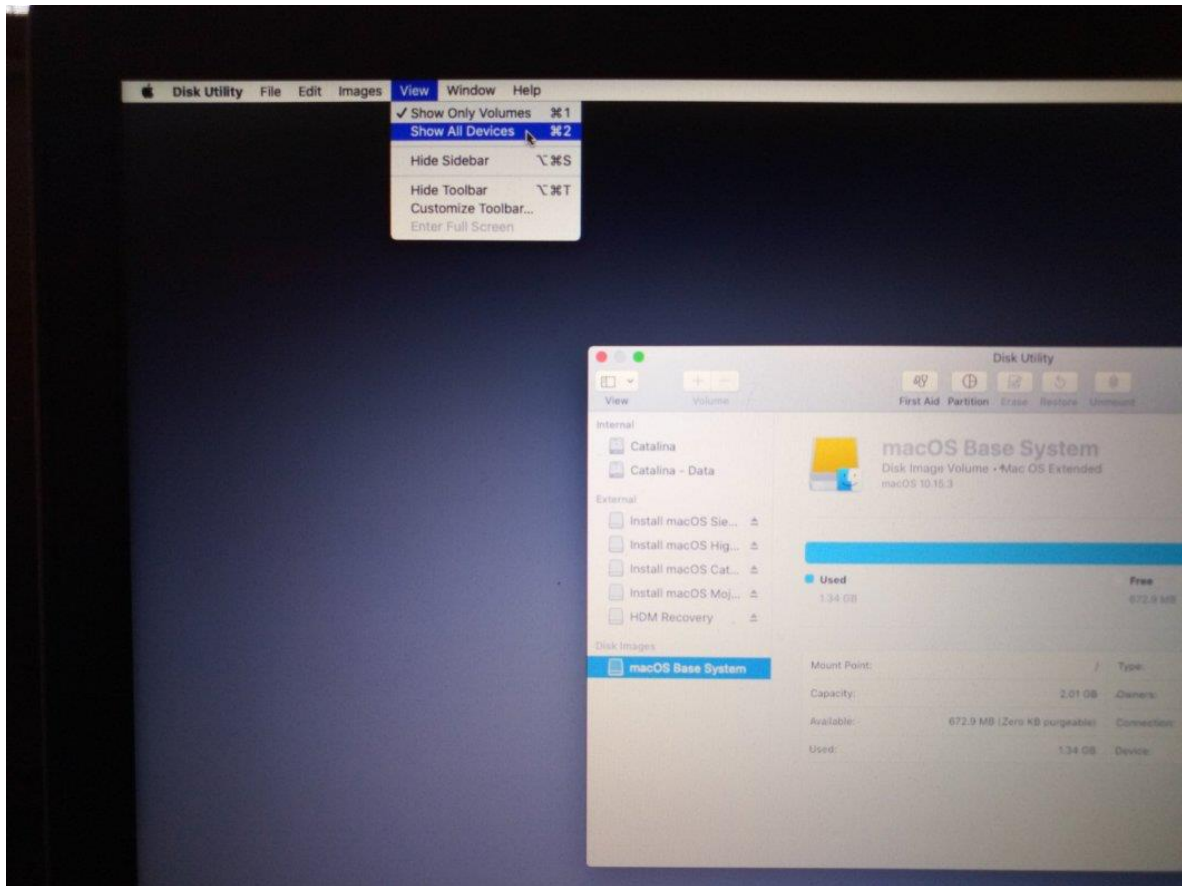
The first step is to clear some space after the APFS Container partition. I recommend a minimum of 64GB for installing Windows. Be sure to make a backup of your Macintosh before proceeding. Just in case...

## CREATING THE SPACE FOR WINDOWS

Boot from your USB Installer since you're editing the Boot Drive. Once at the Installer window appears, select Disk Utility and click Continue.



At the Disk Utility window, go to the View menu and select Show All Devices (Cmd-2).

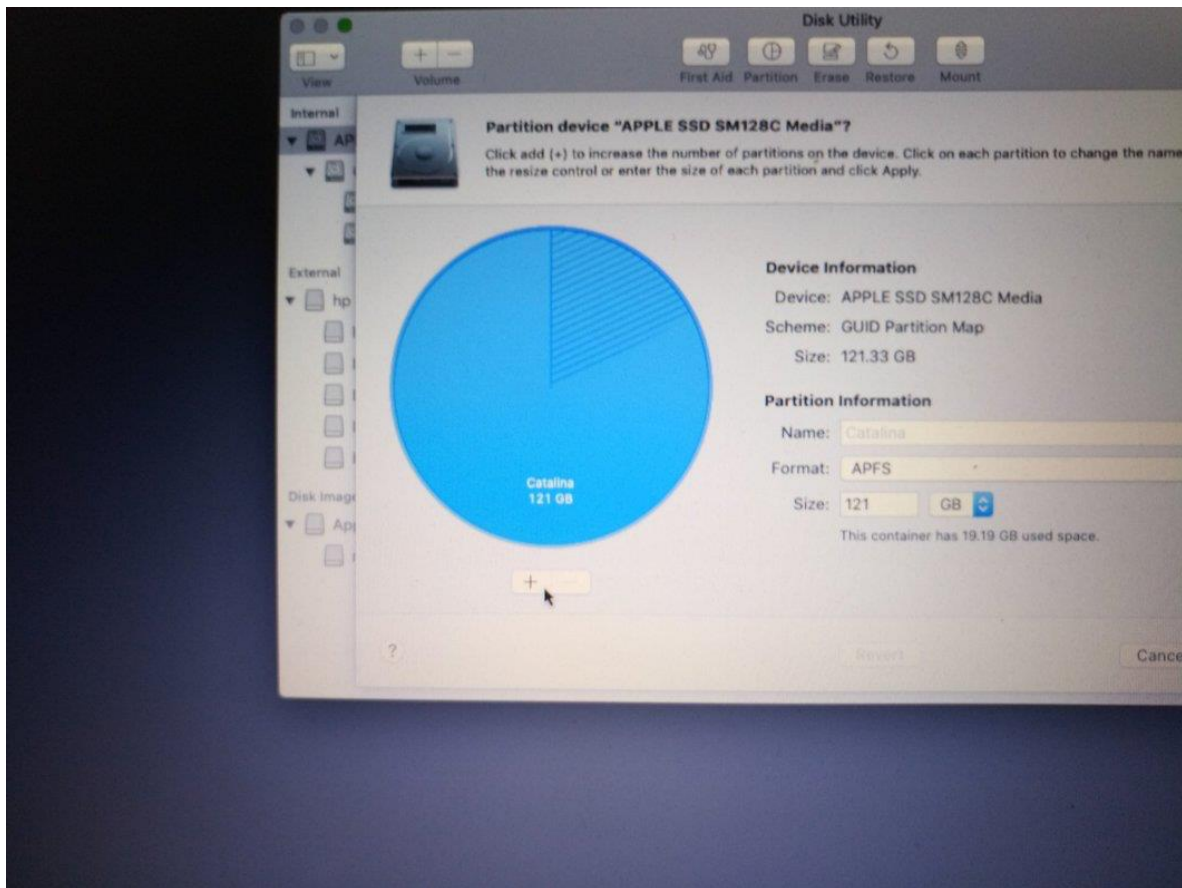


Select the drive name above your Mac OS Volume.

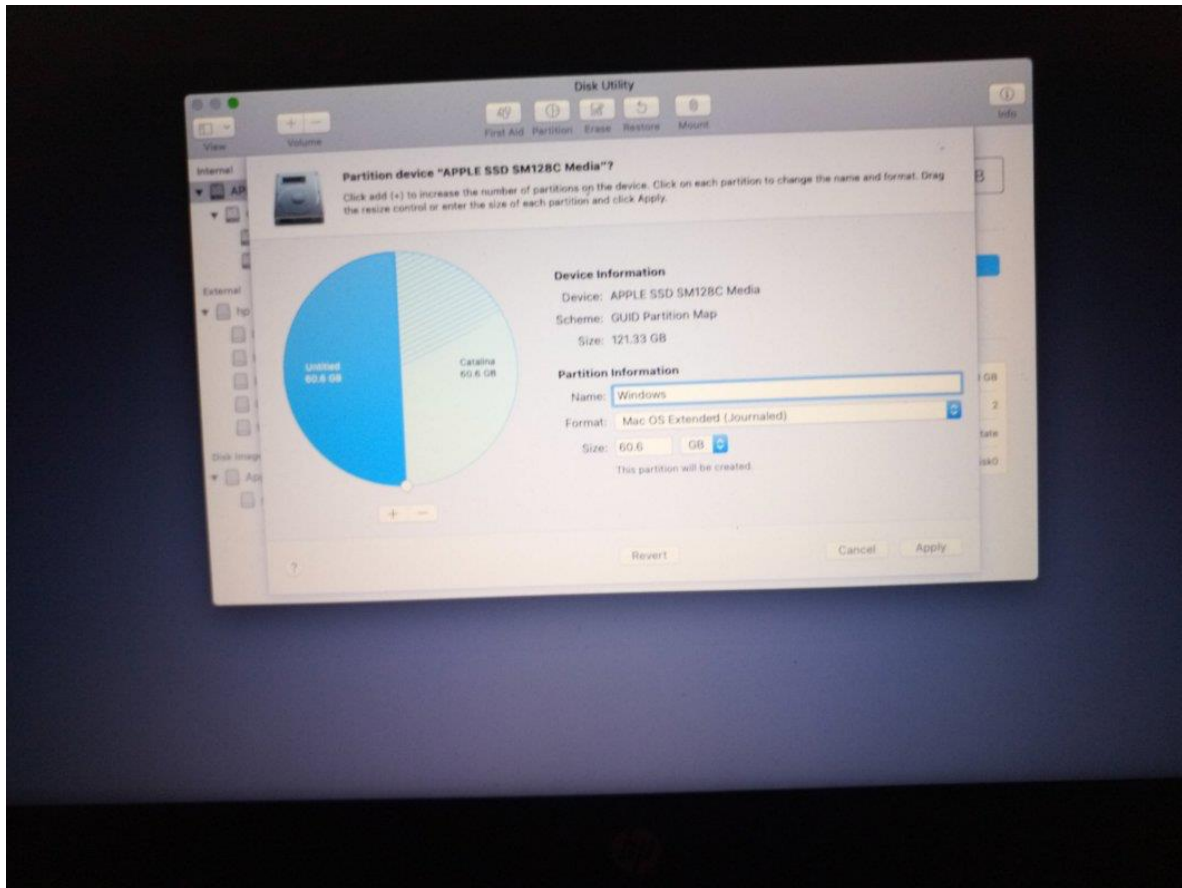
Click the **Partition** button at the top of the window (Shift-Command-P). Since this is an APFS volume, you will be presented with a message that you may want to add to the APFS volume instead. You don't want to do that, so confirm your intent by **clicking the Partition button**.



Press the Plus (+) button under the circular image of the drive. This will reduce your Mac volume to its minimum size based on the space used, or half the drive, whichever is larger.



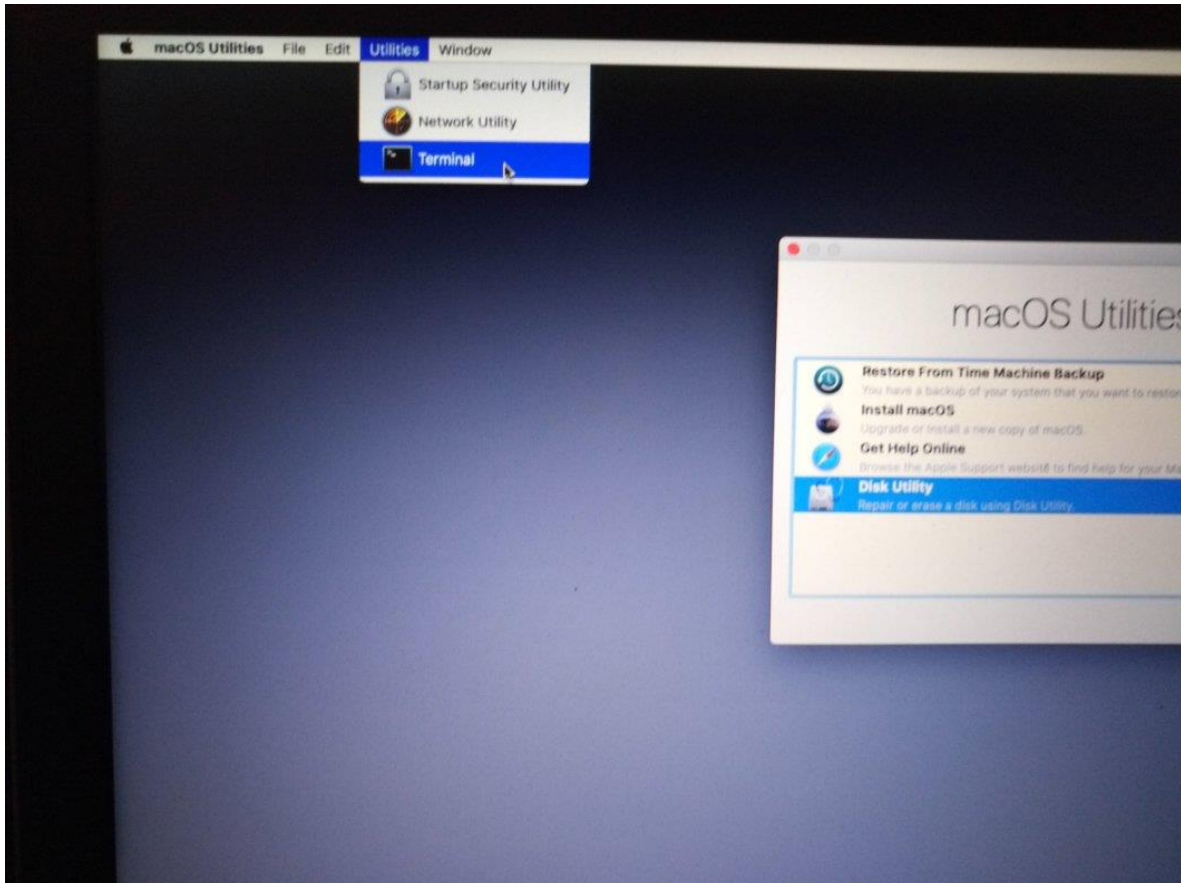
Select the new, Unnamed partition and enter the size you wish to reserve for Windows. Name it Windows and set the Format to Mac OS Extended (Journaled). Do not format it as APFS! Click the Apply button to create the new partition. When it's finished, exit Disk Utility by closing the window.





## FREE UP THE SPACE FOR WINDOWS

Select Terminal under the Utilities menu. When the Terminal window appears, I prefer to enlarge the text to make it easier to read by pressing Cmd-Plus multiple times (Old Man Eyes).



Type:

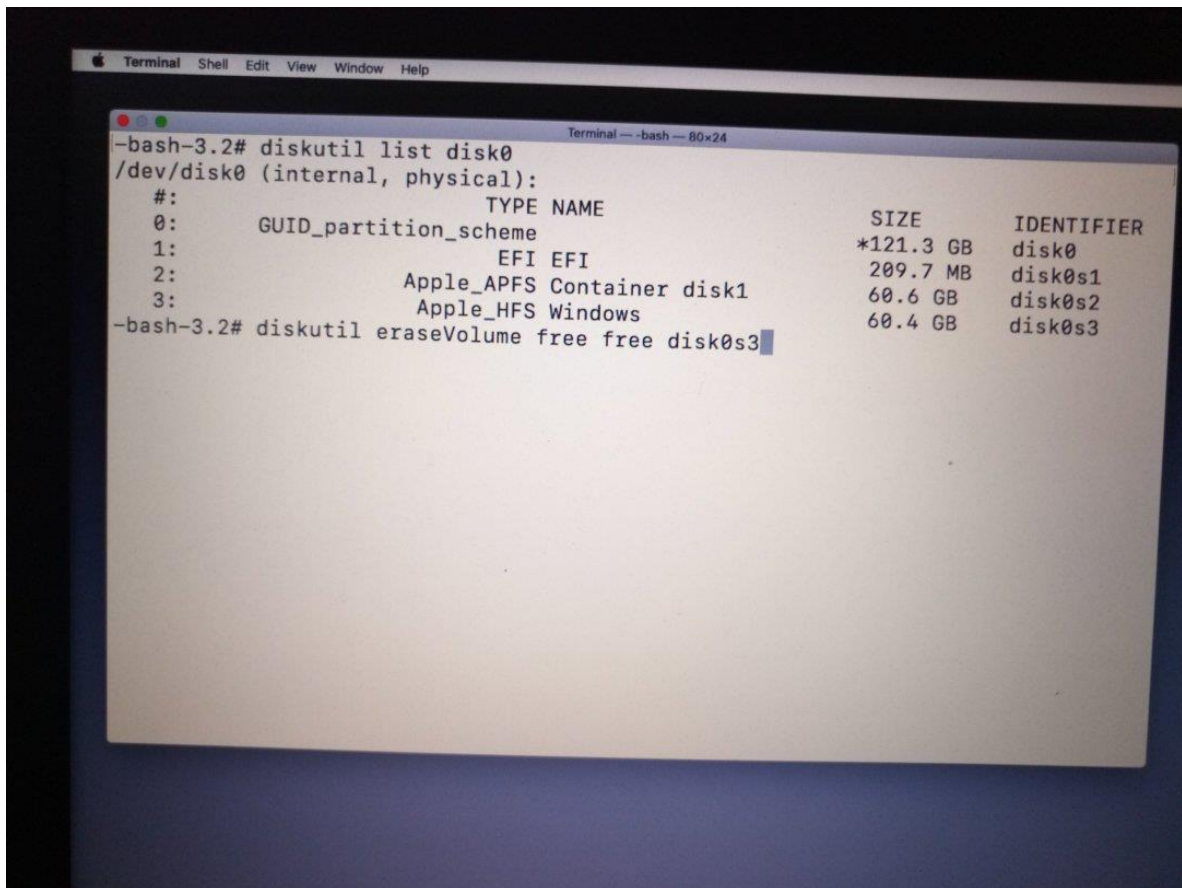
```
diskutil list disk0
```

If this is your primary drive, you will see 3 partitions: EFI, Container disk1 and Windows. If not, try disk1.



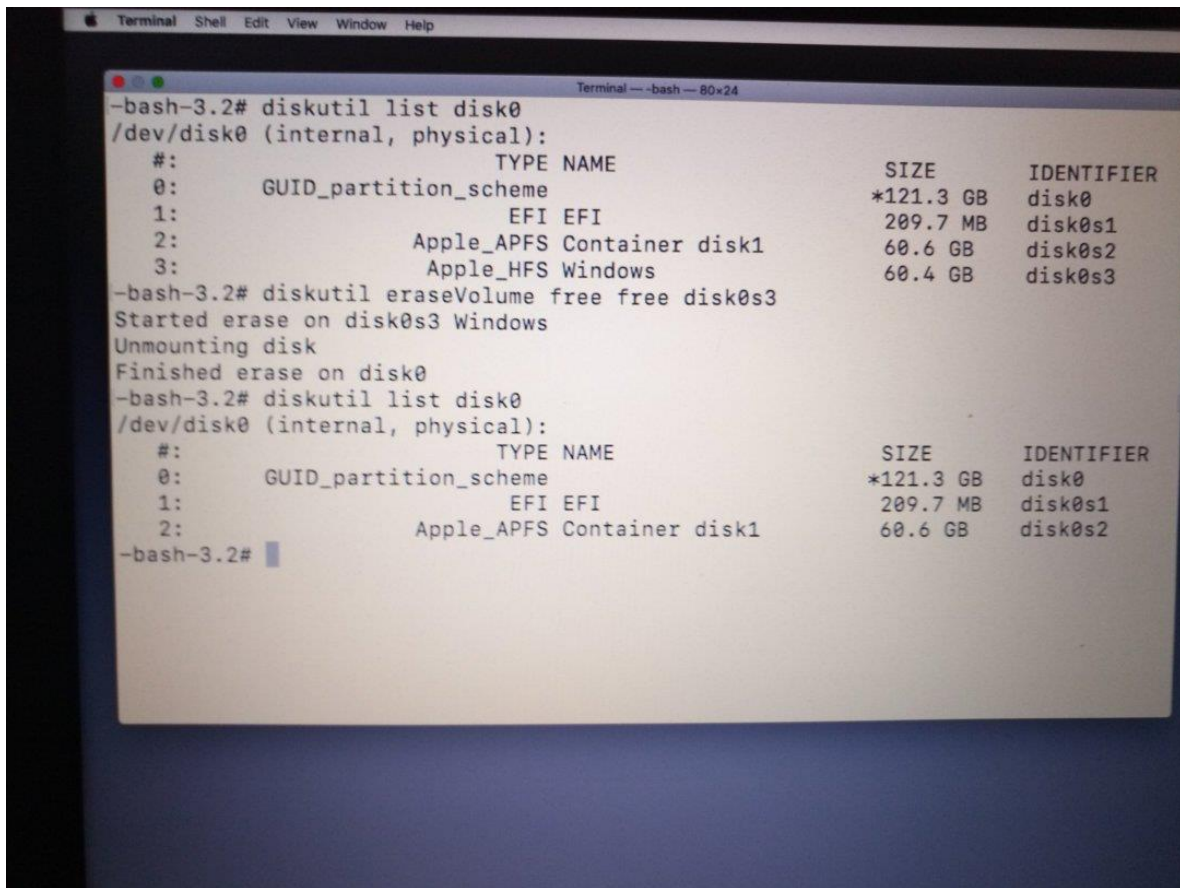
To clear the space for windows, enter:

**diskutil eraseVolume free free disk0s3**



**diskutil list disk0**

This will wipe the partition you just created. You need that space unused! The new listing will show the Windows partition is no longer present.

A photograph of a computer screen displaying a macOS Terminal window. The window has a title bar with 'Terminal' and standard macOS window controls. The terminal shows the following commands and output:

```
-bash-3.2# diskutil list disk0
/dev/disk0 (internal, physical):
#          TYPE NAME              SIZE       IDENTIFIER
0:        GUID_partition_scheme   *121.3 GB  disk0
1:        EFI EFI                 209.7 MB   disk0s1
2:        Apple_APFS Container disk1 60.6 GB    disk0s2
3:        Apple_HFS Windows        60.4 GB    disk0s3
-bash-3.2# diskutil eraseVolume free free disk0s3
Started erase on disk0s3 Windows
Unmounting disk
Finished erase on disk0
-bash-3.2# diskutil list disk0
/dev/disk0 (internal, physical):
#          TYPE NAME              SIZE       IDENTIFIER
0:        GUID_partition_scheme   *121.3 GB  disk0
1:        EFI EFI                 209.7 MB   disk0s1
2:        Apple_APFS Container disk1 60.6 GB    disk0s2
-bash-3.2#
```

You are now finished with the Mac Installer. Select Shut Down from the Apple menu.

### NOW FOR THE FUN PART!

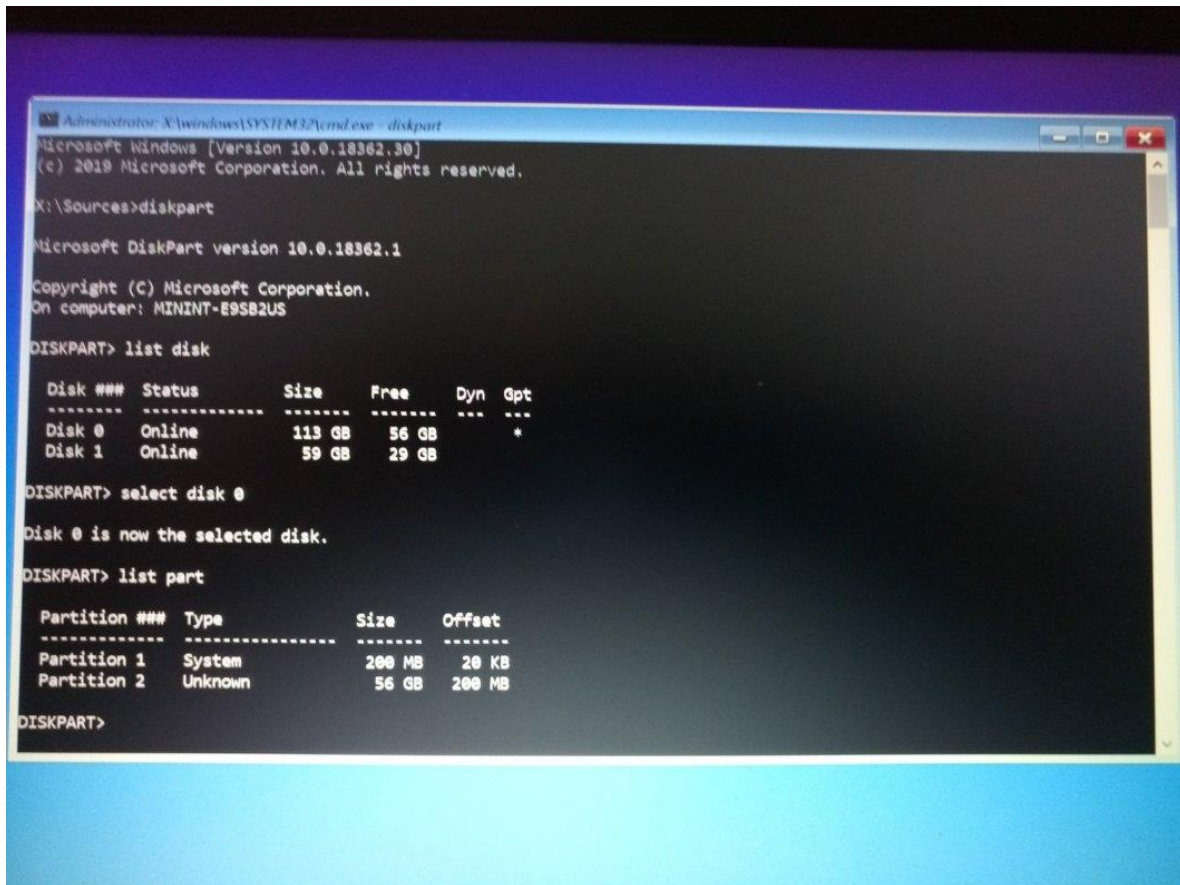
I'm going to assume you've already created your USB Windows Installer either through Apple's Boot Camp utility, or by other means. There are plenty of tutorials to do this. Google it, if need be.

Insert your USB Windows Installer and boot from it. Once the Language window appears, press Shift F10 to enter the Command Prompt window.

**At the X:\Sources> prompt enter diskpart and press enter to launch DiskPart.**

Now type list disk to locate your target drive based on its size.

Type select disk X, where X is your drive number and list part to list its partitions. If you don't see, System (Your EFI Partition) and Unknown (Your Mac OS Partition), you didn't select the right disk. Try again...



```
Administrator: X:\windows\SYSTEM32\cmd.exe - diskpart
Microsoft Windows [Version 10.0.18362.30]
(c) 2019 Microsoft Corporation. All rights reserved.

X:\Sources>diskpart

Microsoft DiskPart version 10.0.18362.1

Copyright (C) Microsoft Corporation.
On computer: MININT-E9S82US

DISKPART> list disk

   Disk ###  Status         Size      Free      Dyn  Gpt
   -----  -
   Disk 0    Online        113 GB    56 GB
   Disk 1    Online         59 GB    29 GB

DISKPART> select disk 0

Disk 0 is now the selected disk.

DISKPART> list part

   Partition ###  Type              Size      Offset
   -----  -
   Partition 1     System           200 MB     20 KB
   Partition 2     Unknown          56 GB     200 MB

DISKPART>
```

Now you're going to create Windows' partitions starting with Recovery. Carefully enter the following lines:

create part primary size=450

format quick fs=ntfs label=Recovery

assign letter=R

set id=de94bba4-06d1-4d40-a16a-bfd50179d6ac

gpt attributes=0x8000000000000001

```
DISKPART succeeded in creating the specified partition.

DISKPART> format quick fs=ntfs label=Recovery

    100 percent completed

DiskPart successfully formatted the volume.

DISKPART> assign letter=R

DiskPart successfully assigned the drive letter or mount point.

DISKPART> set id="de94bba4-06d1-4d40-a16a-bfd50179d6ac"

DiskPart successfully set the partition ID.

DISKPART> gpt attributes=0x8000000000000001

DiskPart successfully assigned the attributes to the selected GPT partition.

DISKPART>
```

Next create the "Reserved" partition. Windows expects it, so you should supply it. Don't worry, it's tiny.

**create part msr size=16**

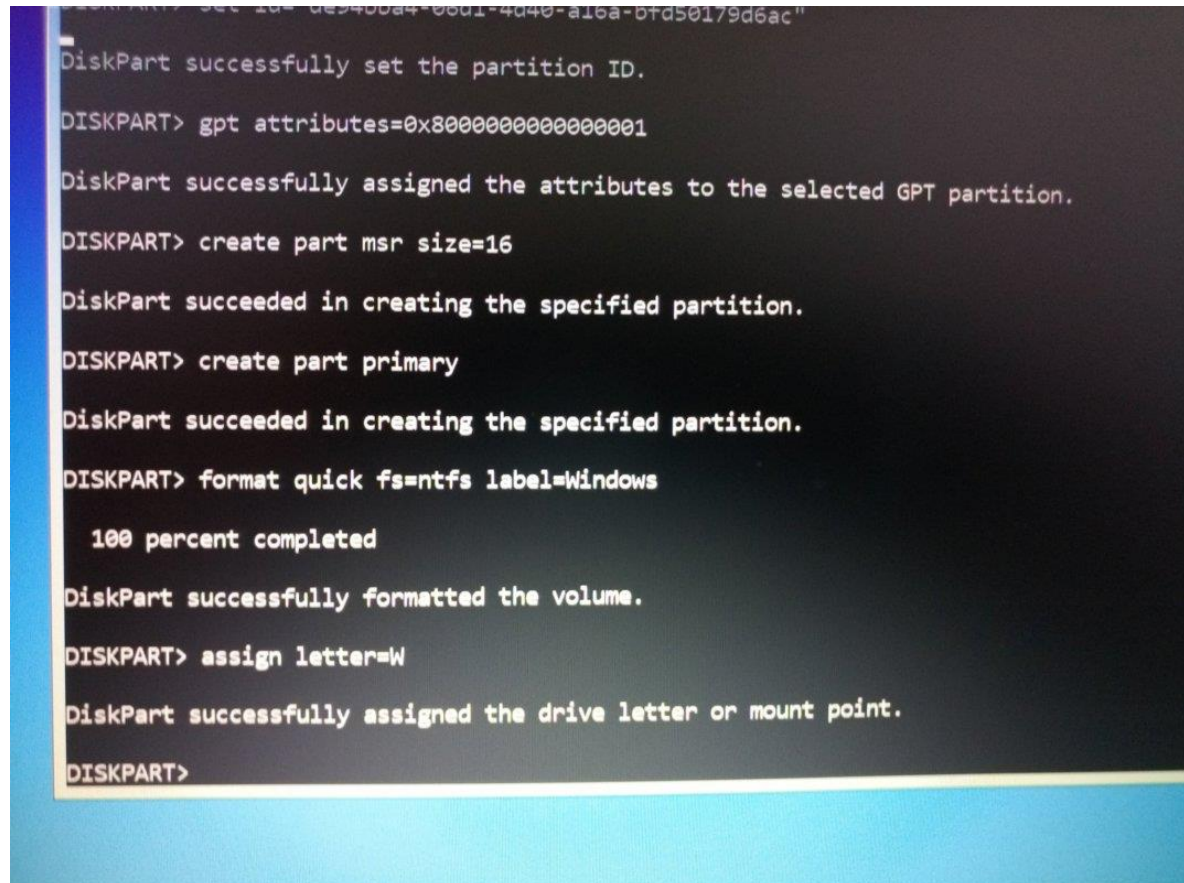


That's it! Now create the "Windows" partition.

**create part primary**

**format quick fs=ntfs label=Windows**

**assign letter=W**

A screenshot of a Windows command prompt window with a black background and white text. The window shows the execution of several DiskPart commands. At the top, a partition ID is set. Then, GPT attributes are assigned. Next, a 16 MB MSR partition is created. Then, a primary partition is created. This primary partition is then formatted with NTFS, labeled 'Windows', and the letter 'W' is assigned to it. The process is shown as 100 percent completed. The prompt ends with 'DISKPART>'.

```
DISKPART> set id= de34bba4-0001-4d40-a16a-b7d50179d6ac"
DiskPart successfully set the partition ID.
DISKPART> gpt attributes=0x8000000000000001
DiskPart successfully assigned the attributes to the selected GPT partition.
DISKPART> create part msr size=16
DiskPart succeeded in creating the specified partition.
DISKPART> create part primary
DiskPart succeeded in creating the specified partition.
DISKPART> format quick fs=ntfs label=Windows
    100 percent completed
DiskPart successfully formatted the volume.
DISKPART> assign letter=W
DiskPart successfully assigned the drive letter or mount point.
DISKPART>
```

Type list part to see the end result.

You still need to give the EFI/System partition a letter.

**select part 1**

**assign letter=S**

**list volu**

```
Partition 3    Recovery    450 MB    56 GB
Partition 4    Reserved    16 MB    57 GB
* Partition 5    Primary    55 GB    57 GB

DISKPART> select part 1

Partition 1 is now the selected partition.

DISKPART> assign letter=S

DiskPart successfully assigned the drive letter or mount point.

DISKPART> list volu

Volume ###  Ltr Label      Fs      Type        Size     Status      Info
-----
* Volume 0   S  EFI        FAT32    Partition   200 MB    Healthy     Hidden
Volume 1   C  WINSTALL   FAT32    Removable   29 GB    Healthy
Volume 2   R  Recovery   NTFS     Partition   450 MB    Healthy
Volume 3   W  Windows    NTFS     Partition   55 GB    Healthy

DISKPART>
```

The last line will show all mounted volumes with their associated drive letters. Now you can exit DiskPart and proceed with the install.

**exit**



## DOING THE INSTALL

Now the fun part! You're finally going to install Windows 10! First, you need to determine the package you need to install. Depending on the license you have or is in your firmware, you may need the Pro, Home or another install. Carefully enter the following line to determine what your package contains. Take note of the package number, you will use that for the Index in the next command:

```
dism /Get-WimInfo /WimFile:C:\sources\Install.esd (If not work try with Install.Wim)
```

Now, carefully enter the following commands:

```
dism /Apply-Image /ImageFile:C:\sources\Install.esd /Index:1 /ApplyDir:W:\ /Compact /EA
```

**if not work try replacing Install.esd with Install.Wim**

Note that setting /Index:1 will install first package. Set this number to the package you chose from the previous command.

Now install the boot files:

```
W:\Windows\System32\bcdboot W:\Windows /s S:
```

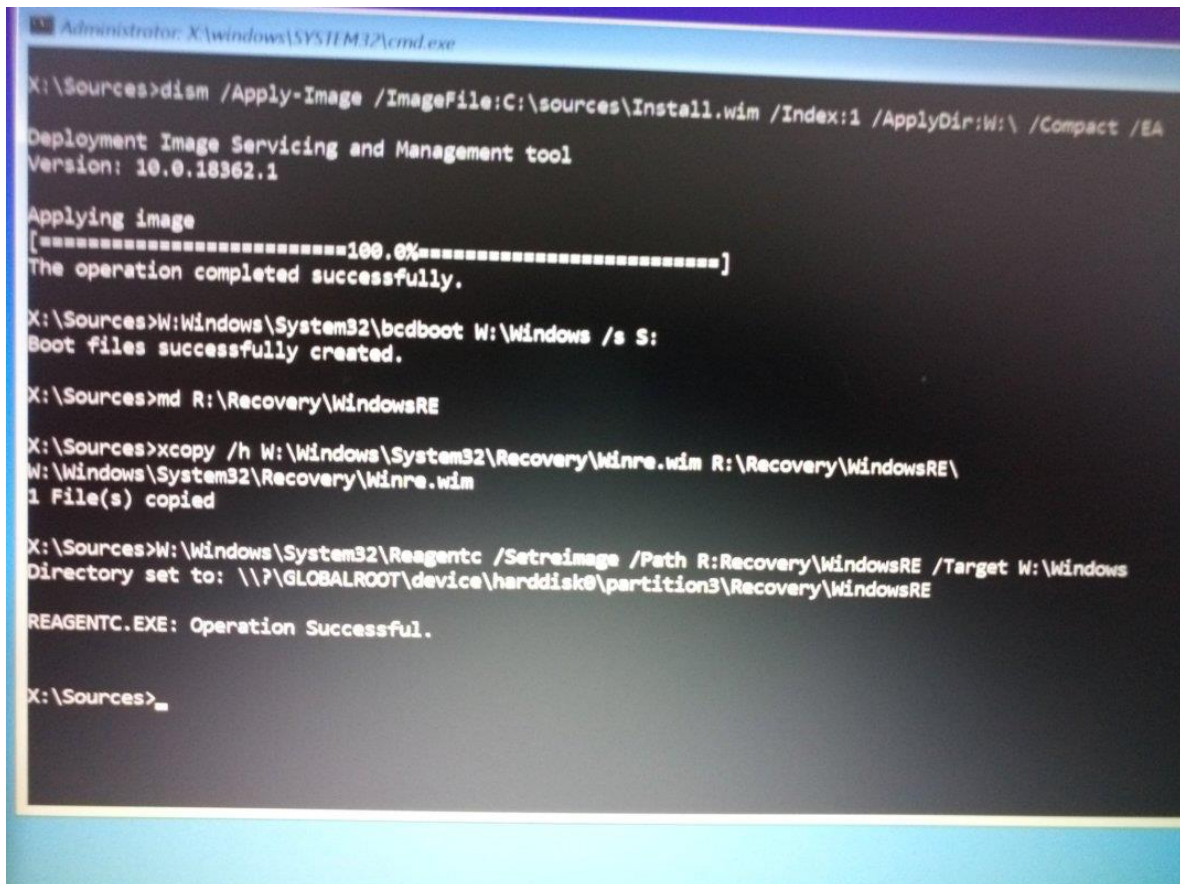
Save that line for later! It will fix Windows' Blue Screen most of the time...

Finally, build the Recovery partition.

```
md R:\Recovery\WindowsRE
```

```
xcopy /h W:\Windows\System32\Recovery\Winre.wim R:\Recovery\WindowsRE\
```

```
W:\Windows\System32\Reagentc /Setreimage /Path R:\Recovery\WindowsRE /Target  
W:\Windows
```



```
Administrator: X:\windows\SYSTEM32\cmd.exe  
X:\Sources>dism /Apply-Image /ImageFile:C:\sources\Install.wim /Index:1 /ApplyDir:W:\ /Compact /EA  
Deployment Image Servicing and Management tool  
Version: 10.0.18362.1  
Applying image  
[=====100.0%=====]  
The operation completed successfully.  
X:\Sources>W:\Windows\System32\bcdboot W:\Windows /s S:  
Boot files successfully created.  
X:\Sources>md R:\Recovery\WindowsRE  
X:\Sources>xcopy /h W:\Windows\System32\Recovery\Winre.wim R:\Recovery\WindowsRE\  
W:\Windows\System32\Recovery\Winre.wim  
1 File(s) copied  
X:\Sources>W:\Windows\System32\Reagentc /Setreimage /Path R:\Recovery\WindowsRE /Target W:\Windows  
Directory set to: \\?\GLOBALROOT\device\harddisk0\partition3\Recovery\WindowsRE  
REAGENTC.EXE: Operation Successful.  
X:\Sources>_
```

## **INSTALL COMPLETE**

You can now close the Command window and restart your computer, removing the USB Installer. Windows will launch and have you set it up. Go ahead and do your setup and updates if needed.

## **GETTING BACK TO OPENCORE**

Using the keyboard shortcut for your computer to select the boot drive, select the option to Launch File. Navigate to your EFI Partition, locate and select \EFI\BOOT\BOOTx64.efi.

In OpenCore, press to spacebar to reveal ResetNVRam and select it.

You should now be presented with the choice between Mac OS or Windows! Both should work. If not, you will need to edit your config.plist to add a custom Windows entry.

That's it! In both Clover and OpenCore, you can now use System Preferences -> Startup Disk to set your Default boot.

## **TROUBLESHOOTING**

Getting your system to cooperate with the dual-booting arrangement can be challenging. With some firmware, Windows will insist on being the default bootloader every time you launch Windows. Also, with both Clover and OpenCore, the default Windows selection will fail to boot Windows. This is how I resolve these problems.

Windows Wants To Be First:

OpenCore:

Follow the instructions above to get into OpenCore. At the OpenCore picker press the spacebar to launch OpenShell.

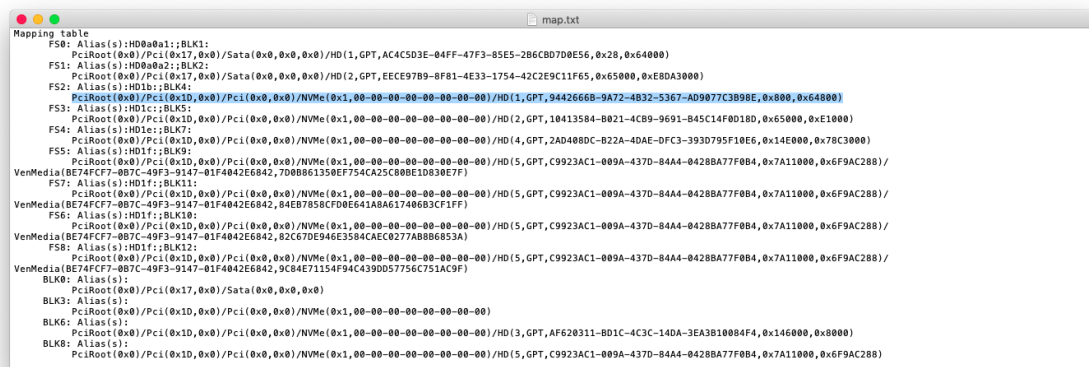
Select your EFI Partition (The first entry of your boot drive. In my case it FS2:, the first NVMe entry)

```
UEFI Interactive Shell v2.2
EDK II
UEFI v2.50 (HP, 0x00010901)
Mapping table
FS0: Alias(s):HD0a0a1:;BLK1:
    PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x0,0x0,0x0)/HD(1,GPT,AC4C5D3E-04FF-47F3-85E5-2B6CB07D0E56,0x28,0x64000)
FS1: Alias(s):HD0a0a2:;BLK2:
    PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x0,0x0,0x0)/HD(2,GPT,EECE97B9-8F81-4E33-1754-42C2E9C11F65,0x65000,0xE8DA3000)
FS2: Alias(s):HD1b:;BLK4:
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(1,GPT,9442666B-9A72-4B32-5367-AD9077C3B90E,0x800,0x64000)
FS3: Alias(s):HD1c:;BLK5:
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(2,GPT,10413584-B021-4CB9-9691-845C14F0D1D0,0x65000,0xE1000)
FS4: Alias(s):HD1e:;BLK7:
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(4,GPT,2AD408DC-B22A-4DAE-DFC3-393D795F10E6,0x14E000,0x78C3000)
FS5: Alias(s):HD1f:;BLK9:
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(5,GPT,C9923AC1-009A-437D-84A4-46828BA77F0B4,0x7A11000,0x6F9AC288)
FS7: Alias(s):HD1f:;BLK11:
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(5,GPT,C9923AC1-009A-437D-84A4-46828BA77F0B4,0x7A11000,0x6F9AC288)
FS6: Alias(s):HD1f:;BLK10:
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(5,GPT,C9923AC1-009A-437D-84A4-46828BA77F0B4,0x7A11000,0x6F9AC288)
FS8: Alias(s):HD1f:;BLK12:
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(5,GPT,C9923AC1-009A-437D-84A4-46828BA77F0B4,0x7A11000,0x6F9AC288)
BLK0: Alias(s):
    PciRoot(0x0)/Pci(0x17,0x0)/Sata(0x0,0x0,0x0)
BLK3: Alias(s):
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)
BLK6: Alias(s):
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(3,GPT,AF620311-BD1C-4C3C-14DA-3EA3B10084F4,0x146000,0x80000)
BLK8: Alias(s):
    PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(5,GPT,C9923AC1-009A-437D-84A4-46828BA77F0B4,0x7A11000,0x6F9AC288)
Press ESC in 1 seconds to skip startup.nsh or any other key to continue.
Shell> FS2:
FS2:\> map > \map.txt
```

Enter map > \map.txt to save your drive map data. Remember which FS drive your EFI is!

Now exit from OpenShell and boot Mac OS.

Get into your EFI drive (I'm assuming you're old hat at this by now) and open map.txt Note the device string that identifies your EFI drive.



Edit your config.plist file with the following changes:

At Misc -> Entries create a new item with the following:

Comment String Windows 10 Entry

Name String Windows

Enabled Boolean YES

Auxiliary Boolean NO

Arguments String

Path String <Your EFI Device String>\EFI\Microsoft\Boot\bootmgfw.efi

As an example, this is my Path string:

```
PciRoot(0x0)/Pci(0x1D,0x0)/Pci(0x0,0x0)/NVMe(0x1,00-00-00-00-00-00-00-00)/HD(1,GPT,9442666B-9A72-4B32-5367-AD9077C3B98E,0x800,0x64800)/\EFI\Microsoft\Boot\bootmgfw.efi
```

At Misc -> Security -> BootProtect, enter Bootstrap to force OpenCore priority over Firmware.

At Misc -> Security -> ScanPolicy set to 19,857,667. This will stop the default Windows and EFI from appearing in your Picker Window.