

How to Create a "Never-Run" VM Snapshot
with VMware Fusion Player
for Testing Automated Device Enrollment



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Whether testing Automated Enrollment workflow, app stability, or simply testing your automation scripts, it has always been Mac Admin's challenge to perform these tasks without compromising their daily driver. And yet, being able to repeatedly create and destroy your tests to confirm the correctness of your work is the key to success in managing Apple devices. Hence, it is incumbent upon all of us to become proficient in working with virtual machines. For training purpose, this article describes step by step process in creating a Big Sur virtual machine using VMware Fusion Player. Please obtain the licensed copy of VMware Fusion Pro if you intend to use this guide outside of your personal use.

Requirements:

- Serial number of a Mac computer enrolled in Apple Business Manager
- An MDM solution which supports Automated Enrollment.
- Mac computer with 16GB of Ram and minimum 100GB of free hard drive space.

The following was used for this guide:

- macOS Big Sur 11.3.1
- VMWare Fusion Player: <https://my.vmware.com/web/vmware/evalcenter?p=fusion-player-personal>



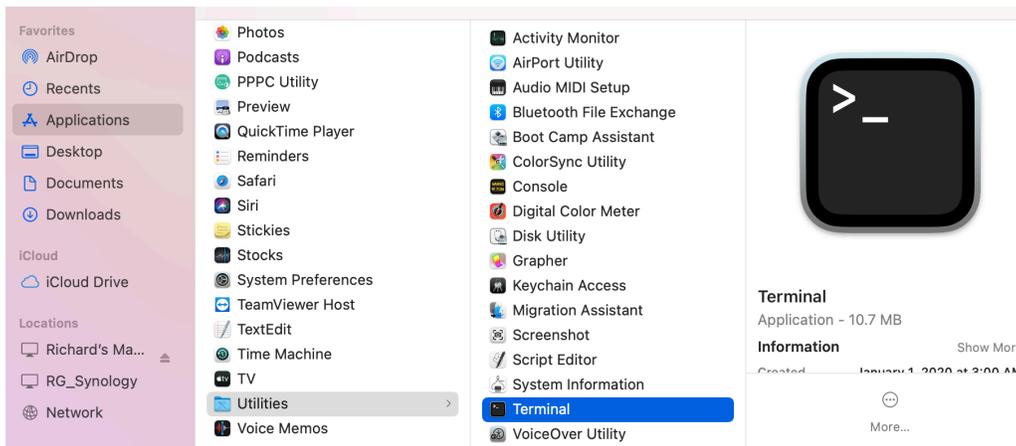
Section 1: Download Install macOS Big Sur Full Installer App

If you have an older version of macOS running on your computer, then you may need to use an open-source tool such as `installinstallmacos.py` to download the installer:

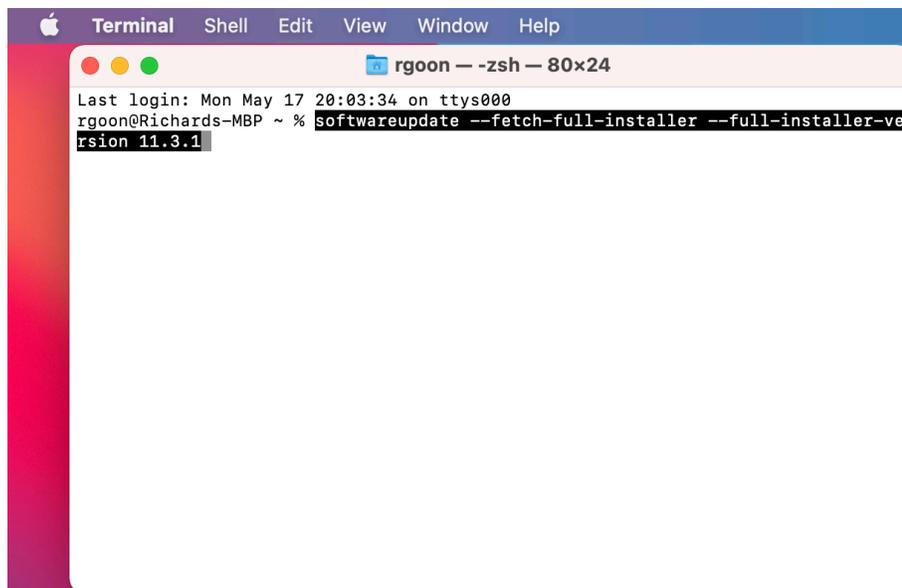
<https://github.com/munki/macadmin-scripts/blob/main/installinstallmacos.py>

If you are currently running macOS Big Sur, then you will be able to use “`softwareupdate`” command in the terminal to download Install macOS Big Sur app.

1. Launch Terminal from `/Applications/Utilities/` folder.



2. Type “`softwareupdate --fetch-full-installer --full-installer-version 11.3.1`” then press return.



Install macOS Big Sur.app will be saved in the Applications folder.



Section 2: Download and Install VMware Fusion Player

You first need to create VMware account before you can download the free version of Fusion Player.

1. Open Safari then launch the following web site:
<https://my.vmware.com/web/vmware/evalcenter?p=fusion-player-personal>

Home/Evaluate VMware Products / VMware Fusion Player – Personal Use License

Email Us
1-877-486-9273

VMware Fusion Player – Personal Use License

Fusion Player offers a Personal Use License, available for free with a valid MyVMware account. Home users, Open Source contributors, students, and anyone else can use Fusion Player Free for Non-Commercial activity.

Top Evaluation Resources

- Fusion Community
- Documentation and Release Notes
- Downloading and installing VMware Fusion
- Fusion Player FAQ

Installation & Configuration > License & Download > Troubleshooting & Support > How to Buy >

VMware Fusion Player – Personal Use License

Use the following resources to learn more about VMware Fusion Player.

Cookie Settings

2. Click Create an Account. Type your first name, last name, and your email address. Click Continue.

I Have an Account Create an Account

Register to download your 0 day trial

David Yoon

email@yourdomain.com

Are you a VMware Partner?

Yes No

Continue



3. Fill out all information required to create VMware account.

Register

Complete this registration form to access your free products and Customer Connect. Customer Connect simplifies management of free trials, product license keys, downloads, and support. A note to our international users: Most of the Customer Connect site is in English only.

① You can access **My Workspace ONE** using your **Customer Connect** login credentials. If you are a new Customer Connect or My Workspace ONE user, complete the registration below to be able to manage both the accounts.

Login Information

Email address: ⓘ
Activation email will be sent to the address provided.

Verify email address:

Password:
Use at least 8 and at most 20 characters, including at least one of each of the following: special character (@%+V!#\$?:-0[]~_), lowercase, uppercase and number.

Verify password:

Tell Us About Yourself

First name:

Last name:

[Cookie Settings](#)

4. After submitting, it will ask you to check your email to finish registration. Go to the email account that you register VMware with.

Next Step: Check Your Email

Thanks for registering. You're almost done!

We sent you an email with instructions for completing your registration for rogon@hconline.com. The message should arrive within 10 minutes. If you provided the wrong email address, please go back and register with the correct address.

If you do not receive the email:

- Check your junk or spam mail folder.
- Add "donotreply@vmware.com" to your email contacts list or allowlist.
- Ask your IT department to add "donotreply@vmware.com" to their email allowlist.

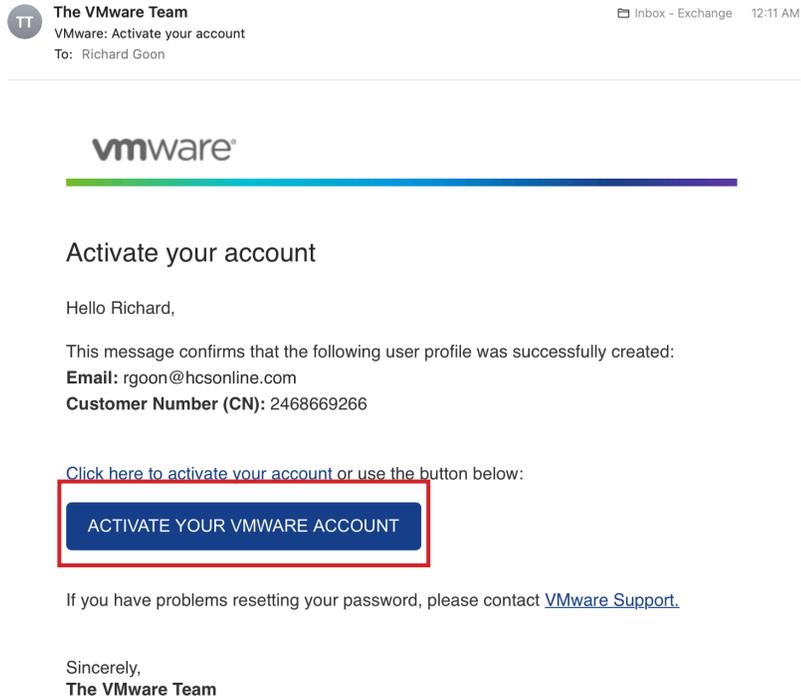
To send the email instructions again, click below or [Contact Support](#).

Captcha

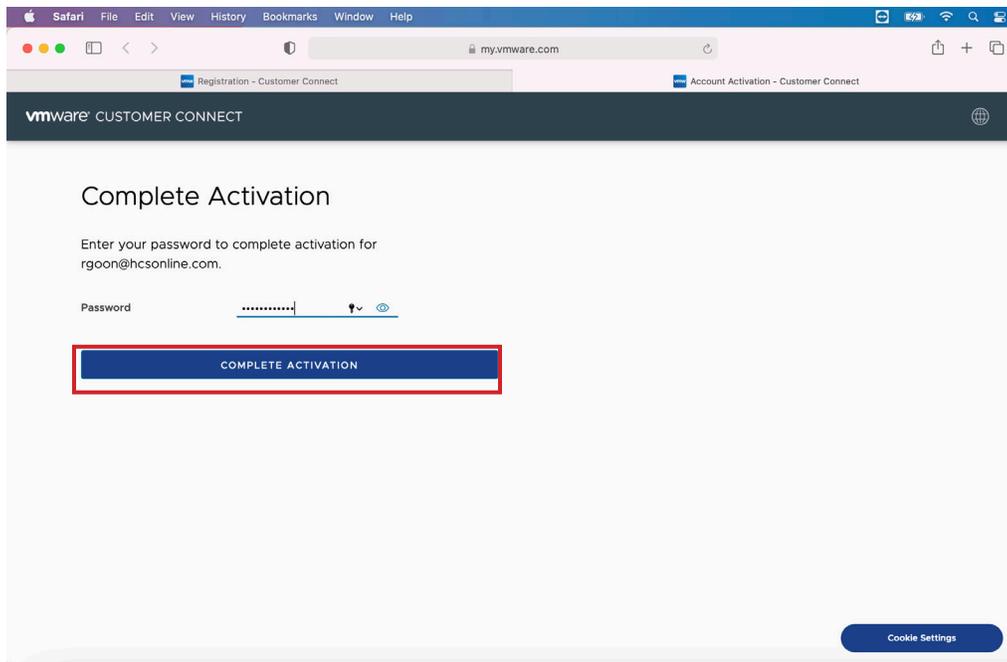

ENTER CAPTCHA CODE HERE



5. Open the email from VMware. Click Activate your VMware account.



6. Enter your password for your VMWare account and click Complete Activation.





7. Make note of the license keys. Click Manually download to download the dmg installer file.

The screenshot shows the VMware registration page in a Safari browser. The page title is "Registration - Customer Connect" and the URL is "my.vmware.com". The page content includes a thank you message, license information, and download packages. The license information table is as follows:

COMPONENT	LICENSE KEYS
VMware Fusion Player - Personal Use	N523G-2HJE7-4BUJA-OUCAK-CLU3J

The download packages section shows "VMware Fusion 12.1.2 (for Intel-based Macs)" with a "Manually Download" button highlighted in a red box. Below the download packages, there are sections for "Terms & Conditions" and "Privacy".

8. Click Allow.

The screenshot shows a macOS system dialog box with the following text:

Do you want to allow downloads on "my.vmware.com"?

You can change which websites can download files in Websites Preferences.

Buttons: Cancel, Allow (highlighted in a red box), Manually

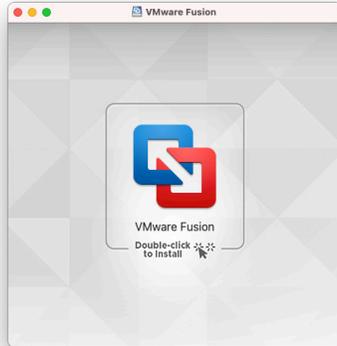
9. Navigate to your "Downloads" folder. Double-click VMware-Fusion-12.x.x-xxx.dmg to mount the image on your Desktop.

The screenshot shows the macOS Downloads folder in a Finder window. The file list is as follows:

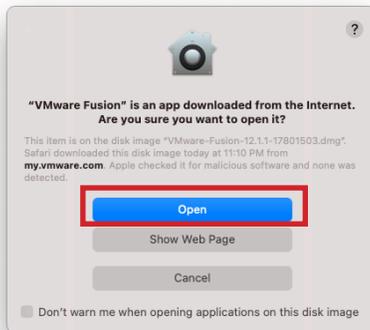
Name	Size	Kind	Date Added
VMware-Fusion-12.1.2-17964953.dmg	652.4 MB	Disk Image	Today at 6:16 PM



10. Navigate to your Downloads folder. Double-click VMware-Fusion-12.x.x-xxx.dmg to mount the image on your Desktop.



11. Click Open button if warning appears before installation begins.

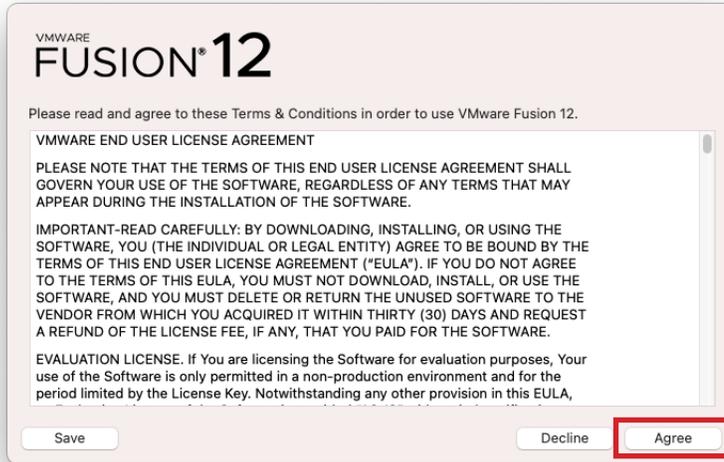


12. Enter your local admin password. Click OK.

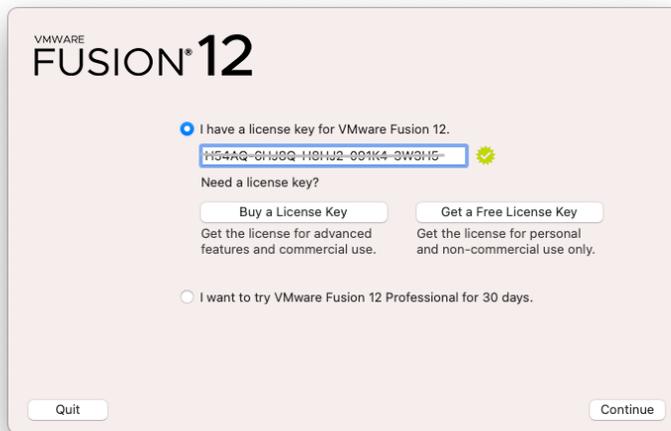




13. Click Agree to proceed with the installation.



14. Enter the license keys from step 7, then click Continue.

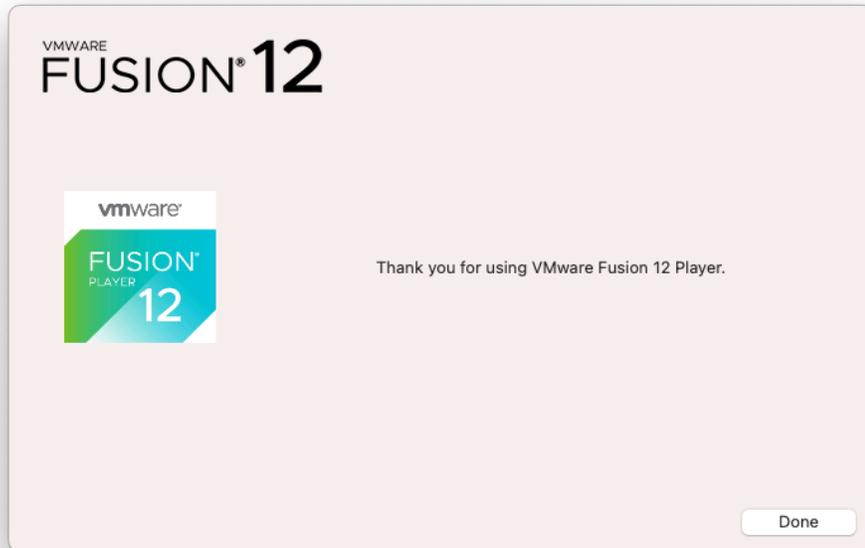


15. Enter your local admin password. Click OK.





16. You have successfully completed the VMware Fusion Player installation. Click Done.

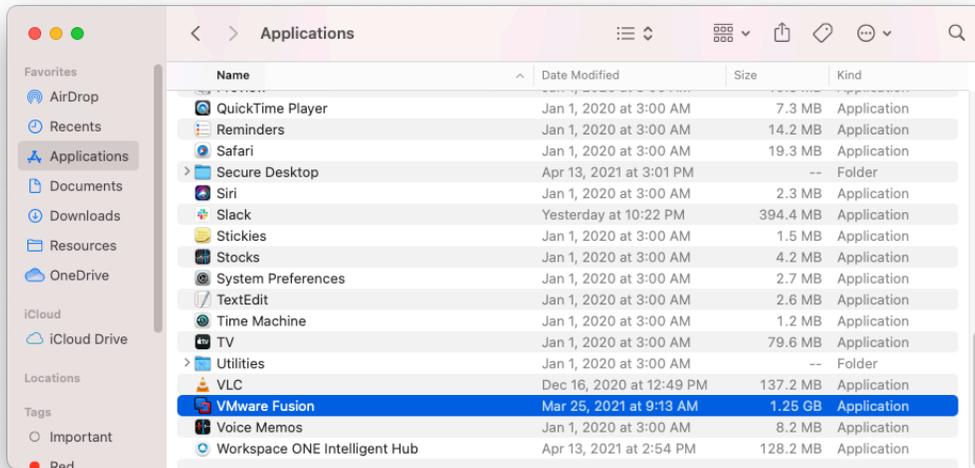




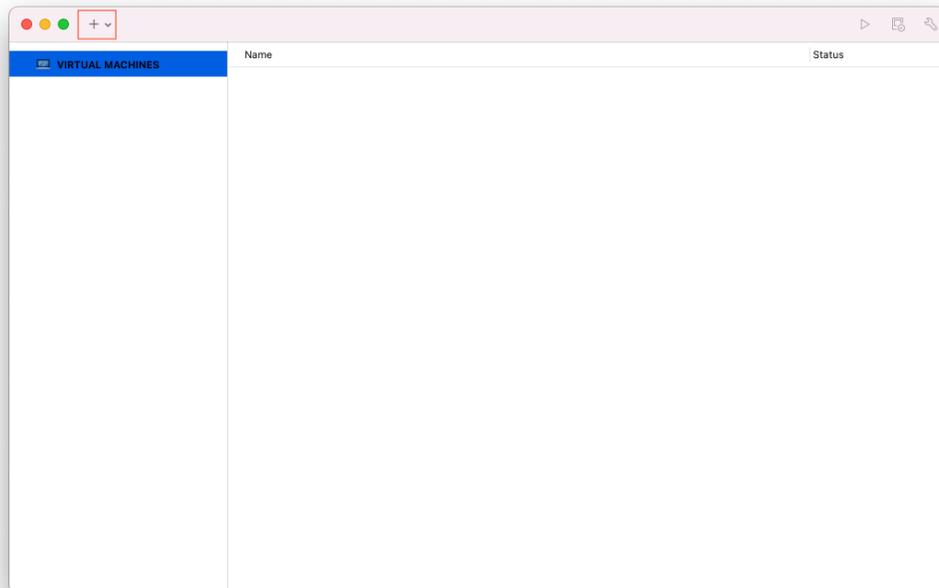
Section 3: Install macOS Big Sur virtual machine

We are going to install macOS Big Sur Virtual Machine in VMware Fusion Player using the “Install macOS Big Sur” app we downloaded from Section 1.

1. Launch VMware Fusion Player from the Applications folder.

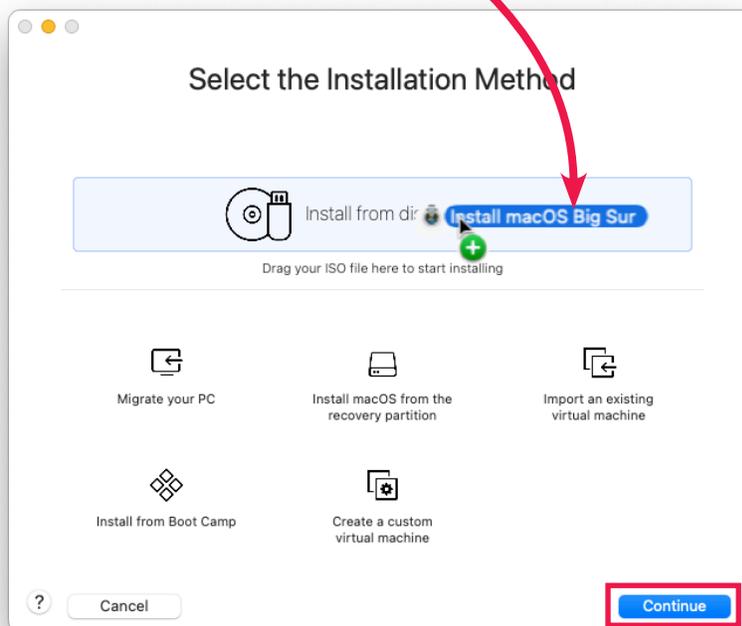
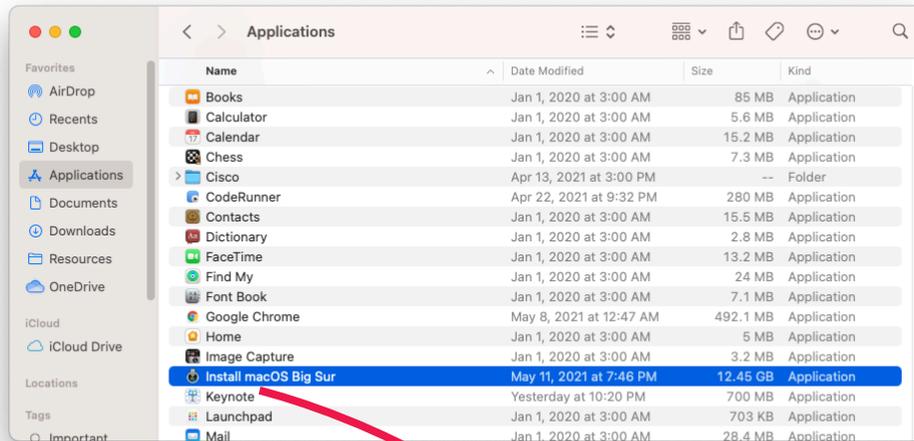


2. Click Add (+) at the top left corner. Select New.



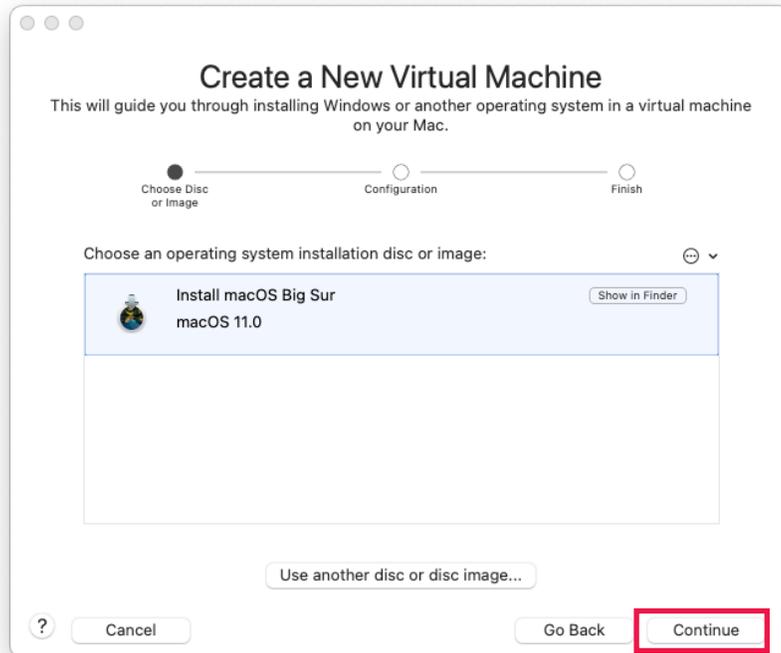


3. Go to the Finder.
4. Navigate to Applications folder, then drag Install macOS Big Sur app to Create a Virtual Machine window shown above.
5. Click Continue.

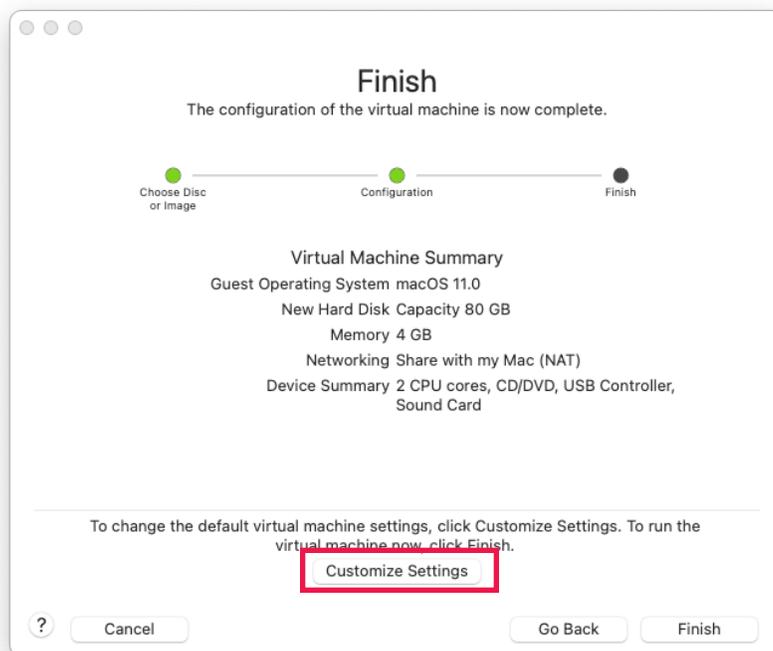




6. Click Continue

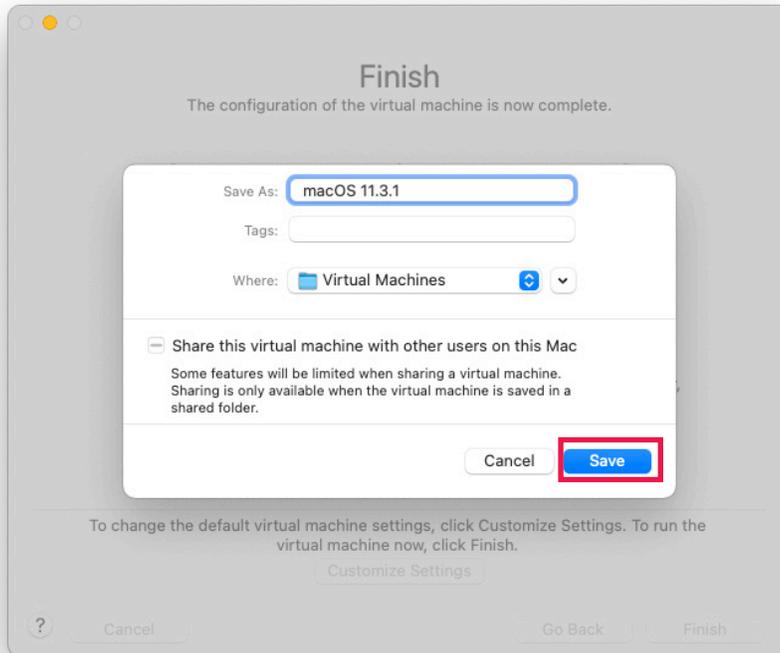


7. Click Customize Settings.

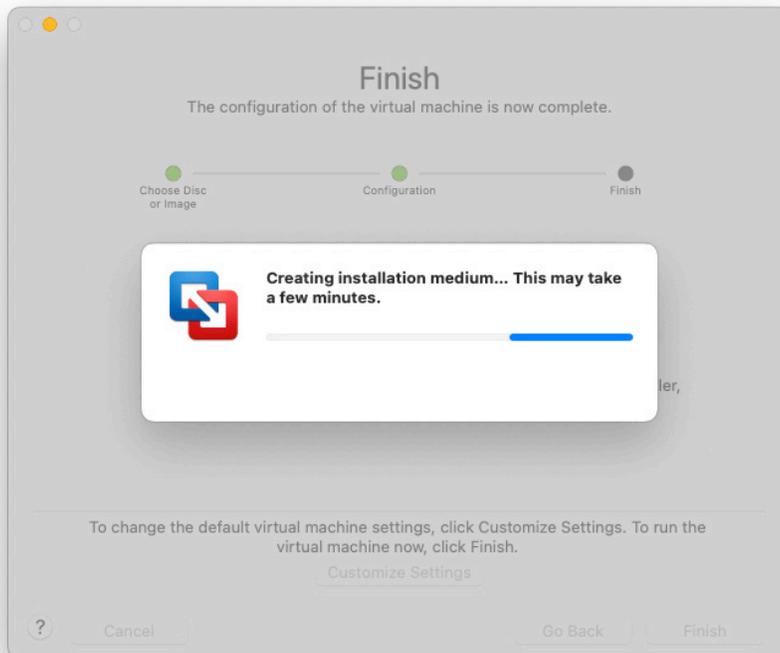




8. Rename the virtual machine to “macOS 11.3.1”. Click Save.

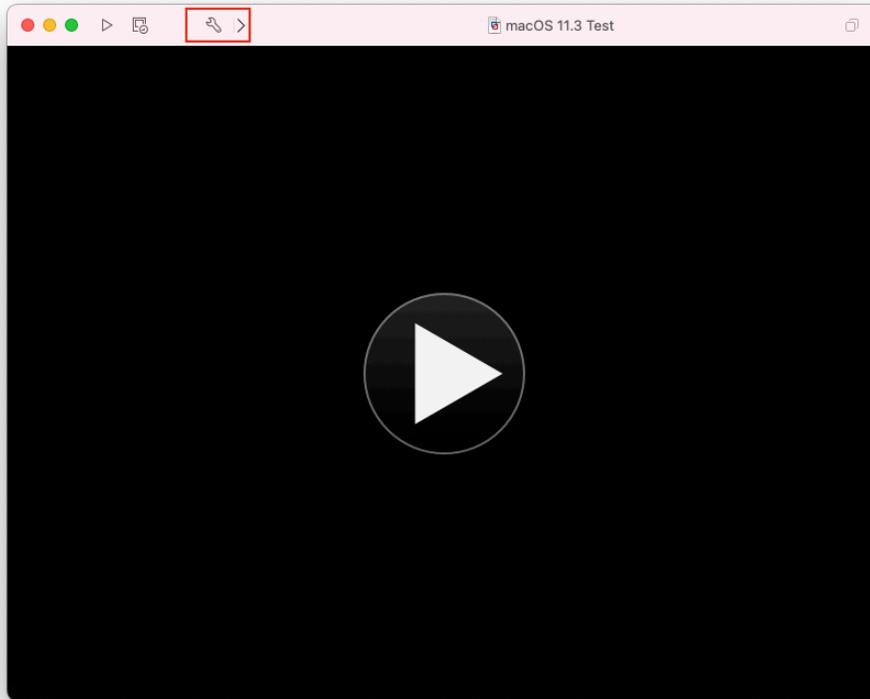


9. Wait until Creating installation medium process is completed.





10. Your virtual machine window will appear after the installation. Click Settings.

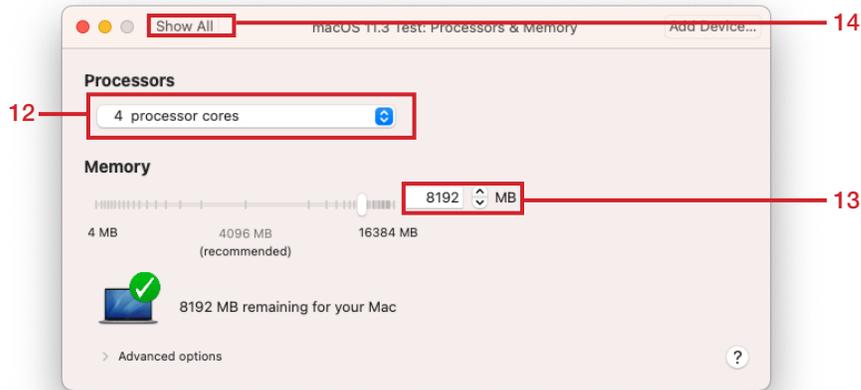


11. Click Processors & Memory.





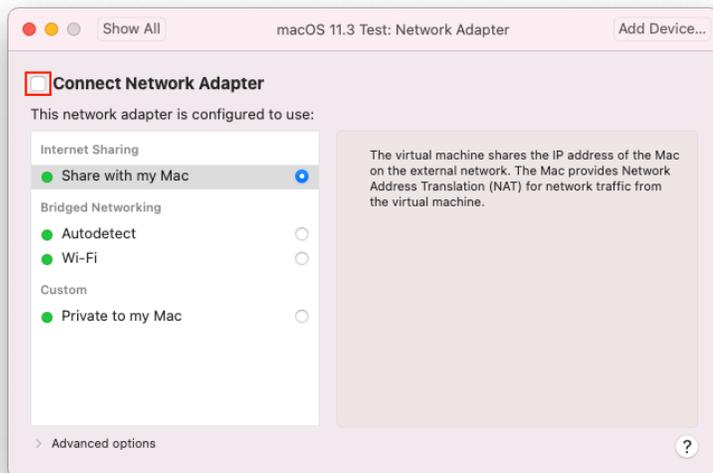
12. Click the menu and select 4 Processor Cores.
13. Change the memory to minimum 8GB.
14. Click Show All.



15. Click Network Adapter.

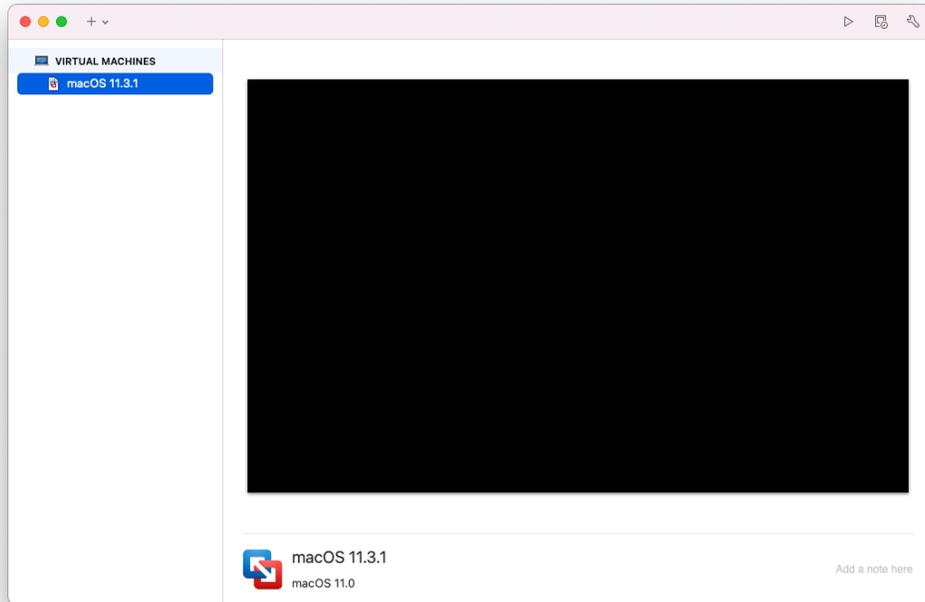


16. Deselect the checkbox to disable Connect Network Adapter.

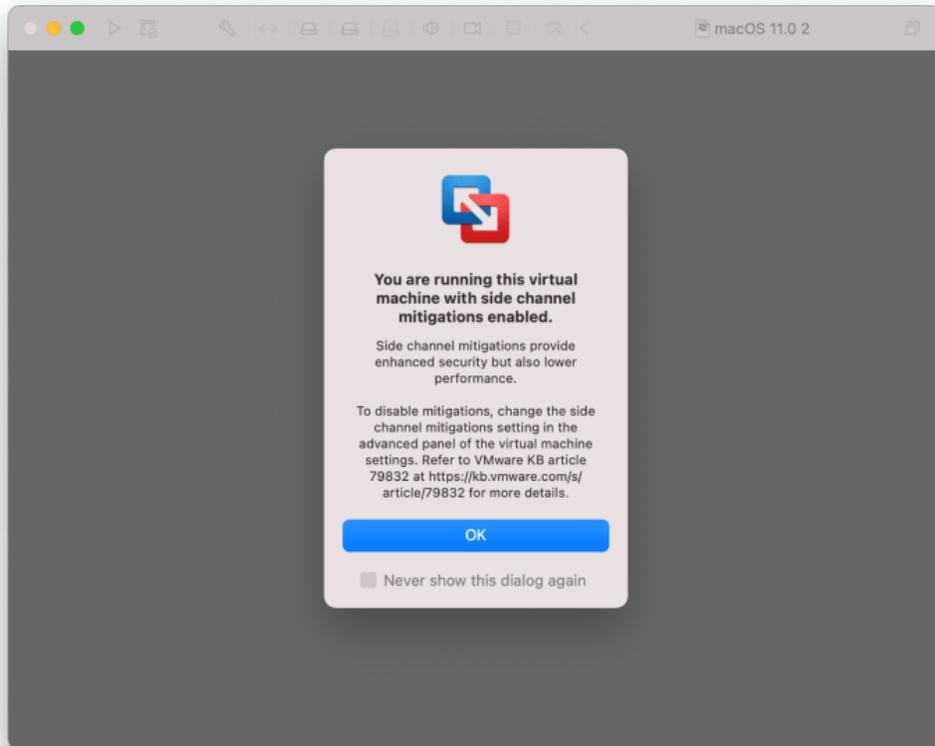




17. Close the Settings window then navigate to Virtual Machines Library window.

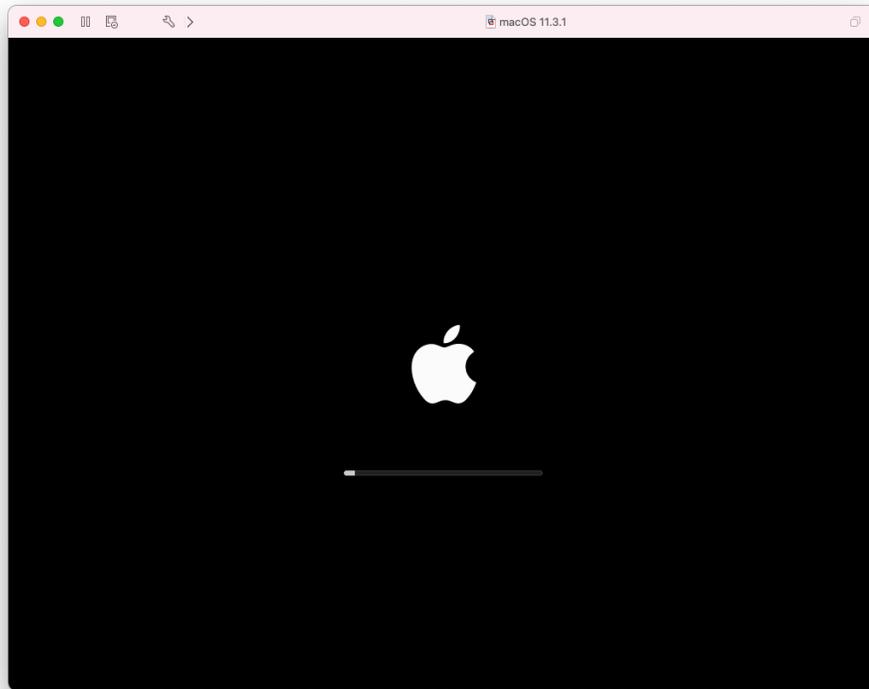


18. Launch macOS 11.3.1 virtual machine by double clicking the title. Click OK when side channel mitigation enabled prompt appears.

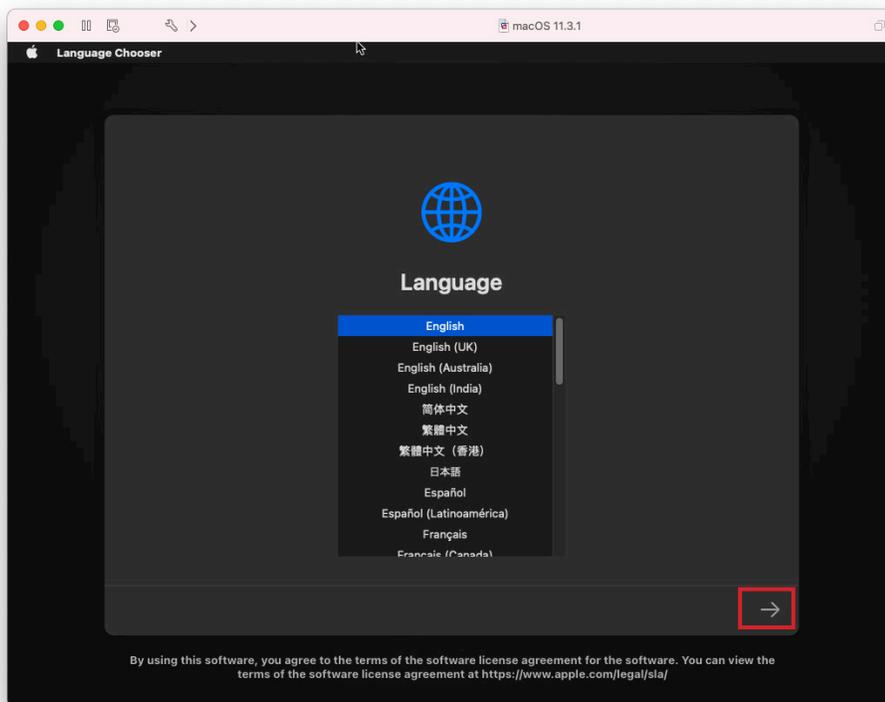




19. Wait until the virtual machine boots to recovery.

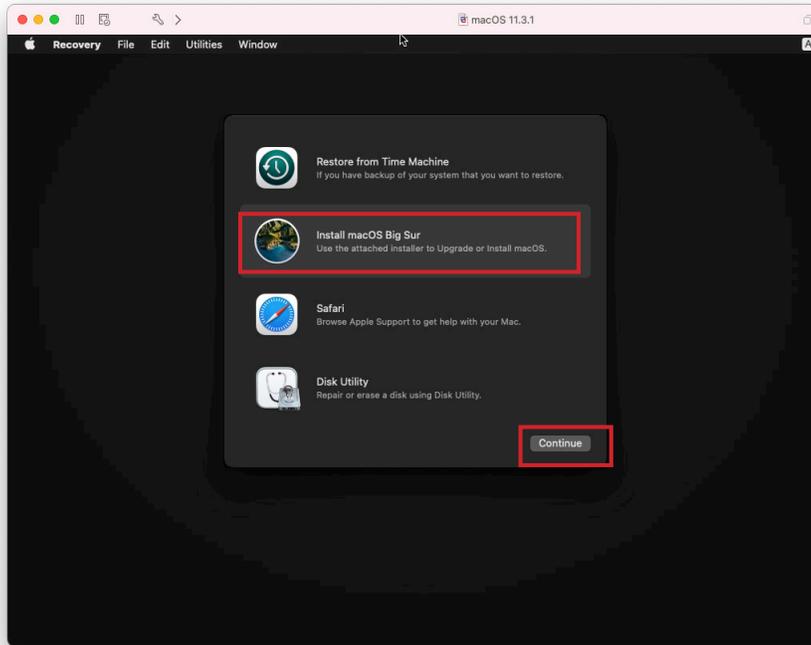


20. Choose your language then click →.





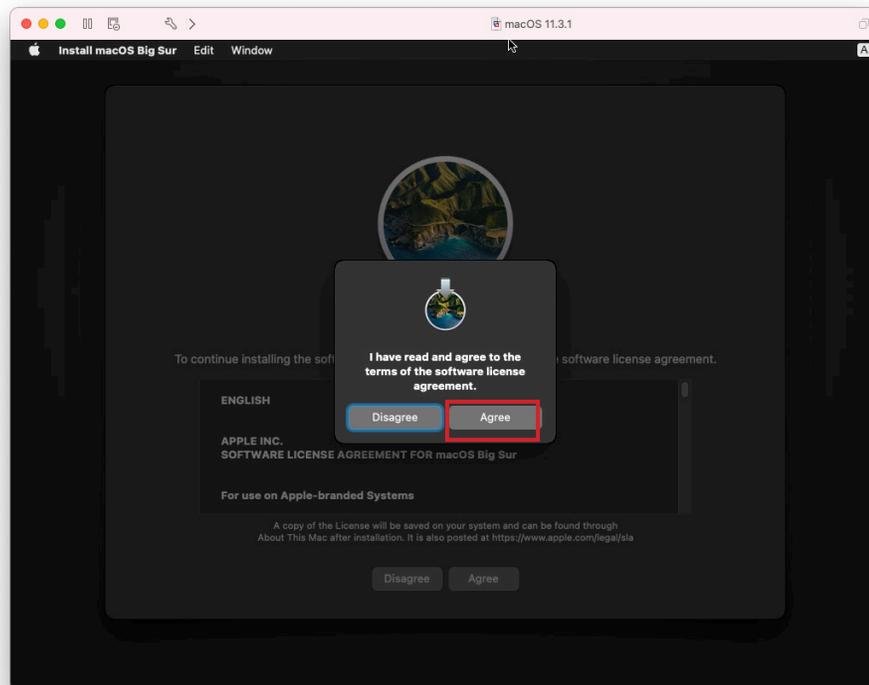
21. Select Install macOS Big Sur. Click Continue.



22. Click Continue.

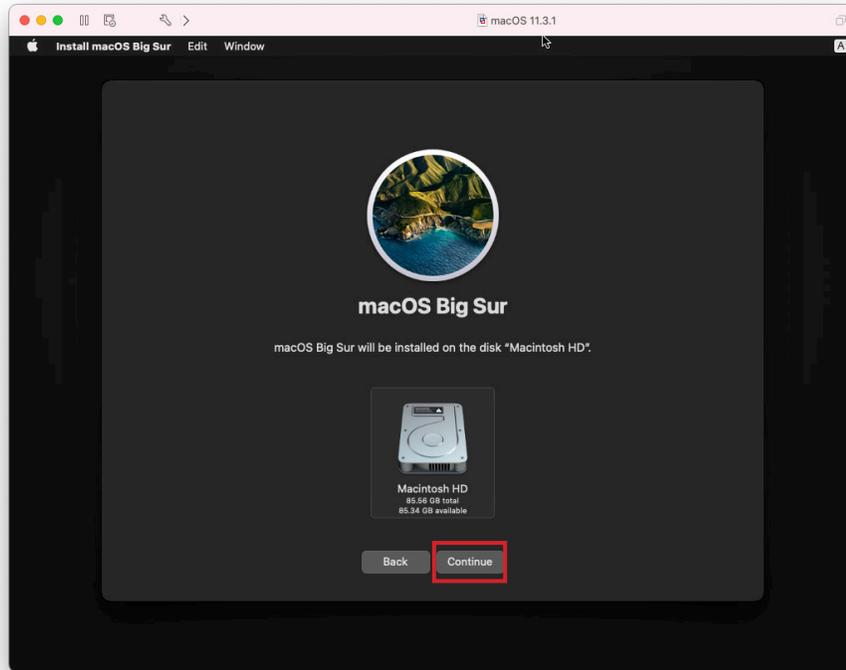
23. Click Agree.

24. Click Agree again.

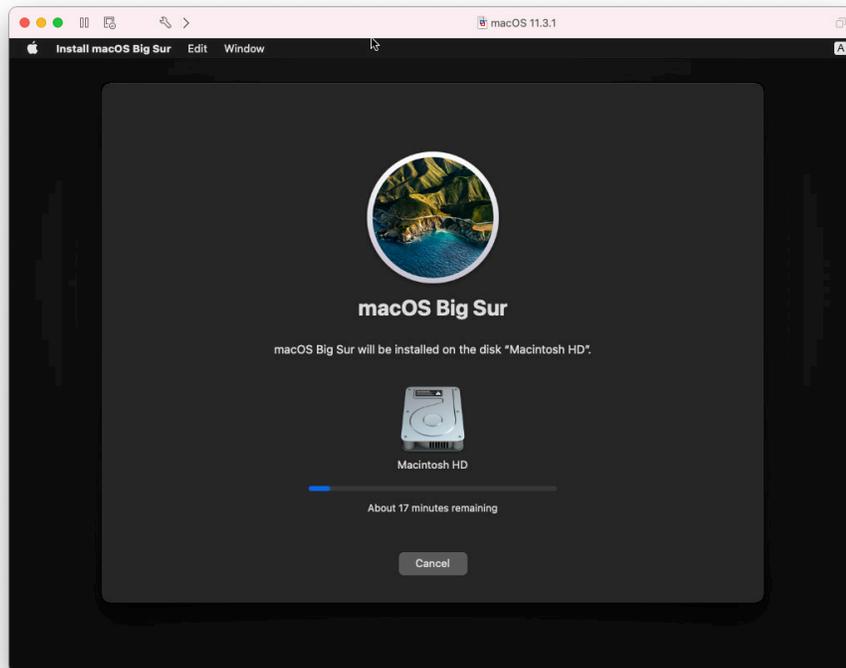




25. Select Macintosh HD. Click Continue to begin the installation.

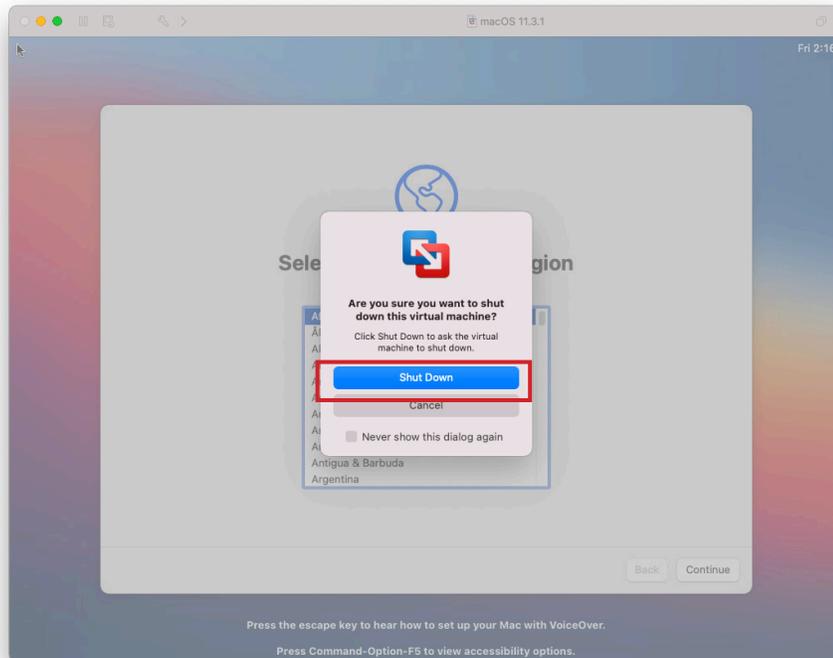


26. The installation will begin. Wait for your virtual machine to reboot.





27. After the virtual machine has restarted, you will see Select Your Country or Region window
DO NOT PROCEED FURTHER!
Navigate to Virtual Machine menu and select Shut Down. Click Shut Down.





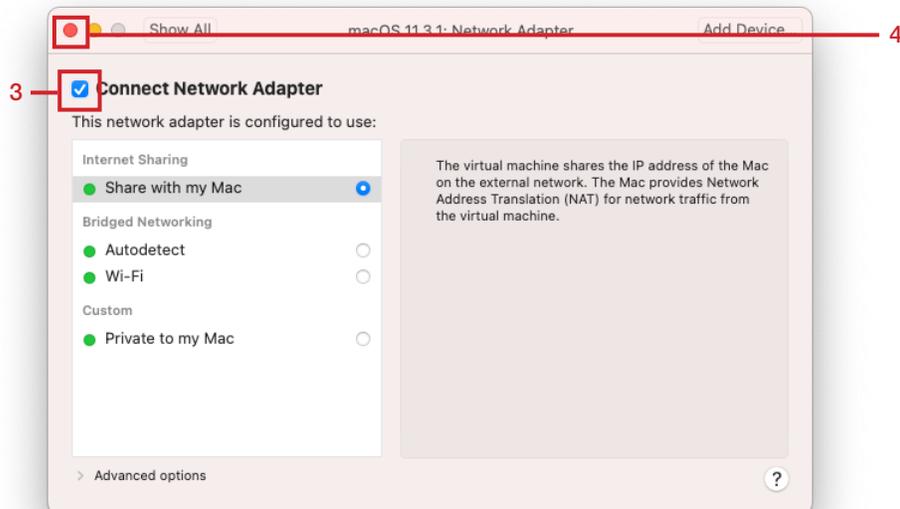
Section 4: Create “Never Run” Snapshot

There are several tweaks you need to perform before creating a “Never Run” snapshot.

1. Navigate to Virtual Machine menu. Select Settings.
2. Click Network Adapter.



3. Select the checkbox next to Connect Network Adapter.
4. Close the Settings window.





5. Click Window menu and select Virtual Machine Library.
6. Right-click macOS 11.3.1, then hold the option key. You will notice that an additional menu will appear called Open Config File in Editor. Select it to launch the editor.



7. Scroll to the bottom of the code block in the editor





8. For the next step, you will need a serial number of a Mac computer that is enrolled into Apple Business Manager.
9. Insert the following strings into the bottom of the code block:

```
hw.model = "MacBookPro11,4"  
serialNumber = "YOURSERIALNUMBER"
```

```
macOS 11.3.1.vmx — Edited  
softPowerOff = "FALSE"  
usb_xhci:4.present = "TRUE"  
usb_xhci:4.deviceType = "hid"  
usb_xhci:4.port = "4"  
usb_xhci:4.parent = "-1"  
usb_xhci:6.speed = "2"  
usb_xhci:6.present = "TRUE"  
usb_xhci:6.deviceType = "hub"  
usb_xhci:6.port = "6"  
usb_xhci:6.parent = "-1"  
usb_xhci:7.speed = "4"  
usb_xhci:7.present = "TRUE"  
usb_xhci:7.deviceType = "hub"  
usb_xhci:7.port = "7"  
usb_xhci:7.parent = "-1"  
ehci:0.present = "TRUE"  
ehci:0.deviceType = "video"  
ehci:0.port = "0"  
ehci:0.parent = "-1"  
toolsInstallManager.updateCounter = "5"  
usb:1.speed = "2"  
usb:1.present = "TRUE"  
usb:1.deviceType = "hub"  
usb:1.port = "1"  
usb:1.parent = "-1"  
sata0:1.startConnected = "FALSE"  
hw.model = "MacBookPro11,4"  
serialNumber = "YOURSERIALNUMBER"
```

NOTE: hw.model can be changed to reflect your own Mac computer you are using. You can run the following commands in the terminal to get the right information:

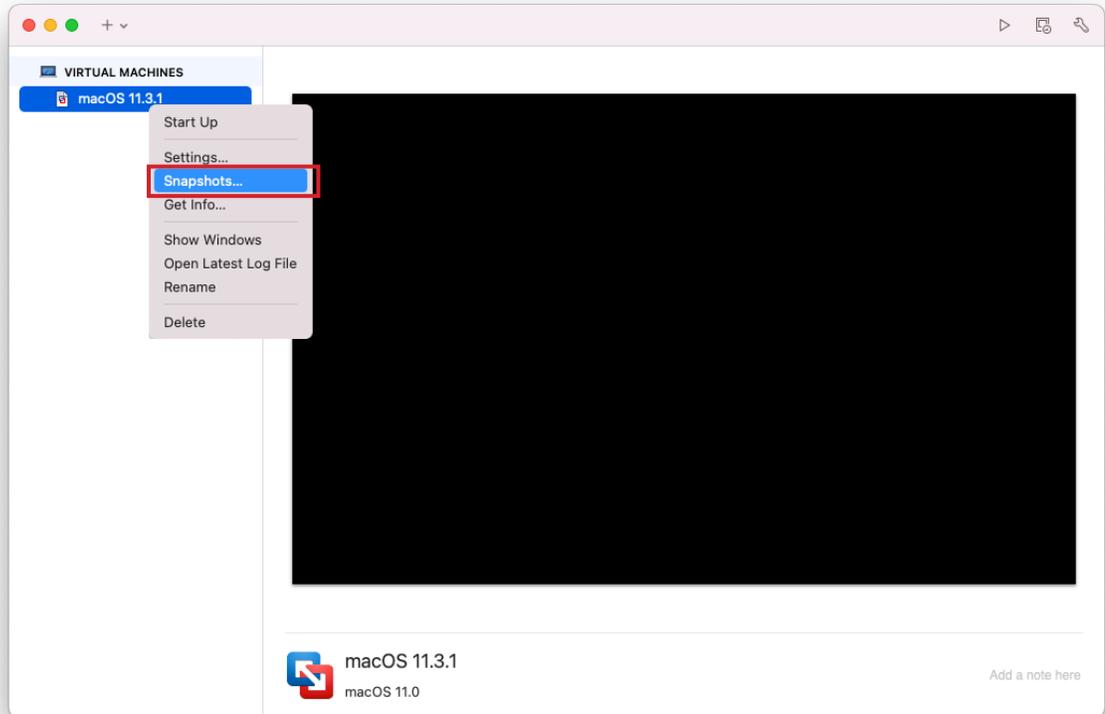
```
sysctl hw.model
```

```
dauidyoon -- zsh -- 75x13  
dauidyoon@Dauids-MacBook-Pro-2 ~ % sysctl hw.model  
hw.model: MacBookPro16,1  
dauidyoon@Dauids-MacBook-Pro-2 ~ %
```

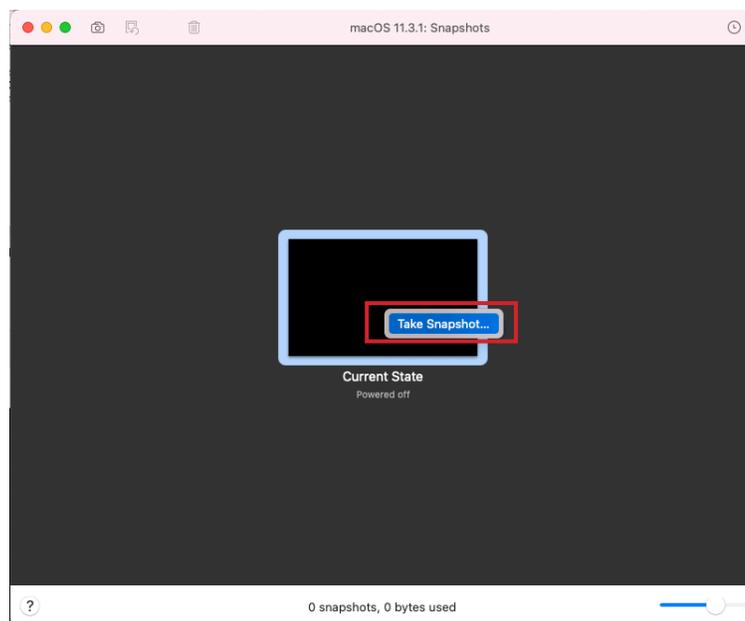
Make sure to save (Command + Q) before exiting the editor.



10. Navigate to Virtual Machine Library window. Right-click macOS 11.3.1 and select Snapshots.



11. Right click the Current State icon and select Take Snapshot.

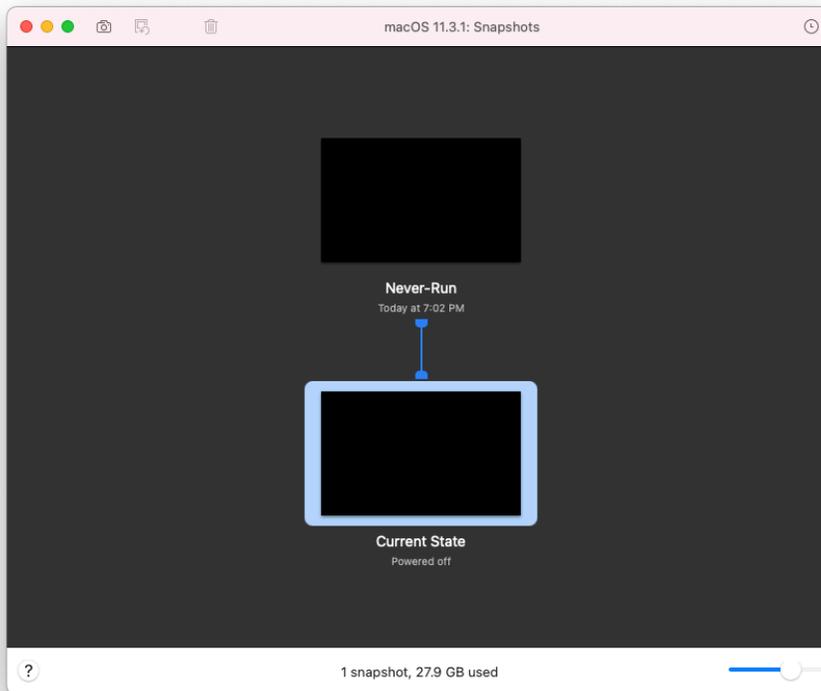




12. Change the name to Never Run.
13. Click Take.



21. Close the macOS 11.3.1: Snapshots window.



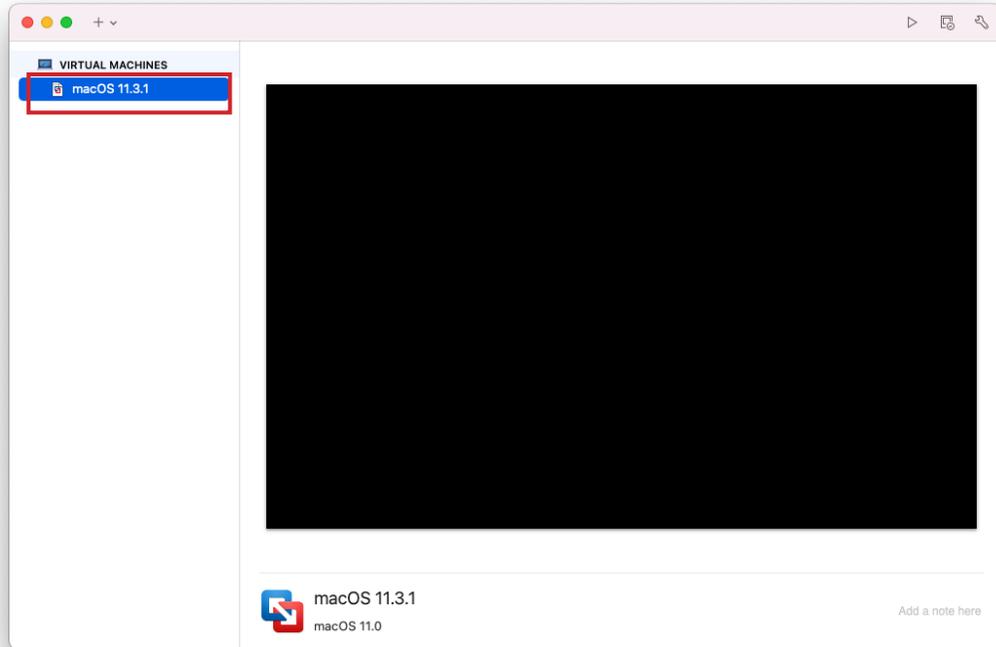
You have successfully created "Never Run" snapshot of macOS Big Sur 11.3.1.



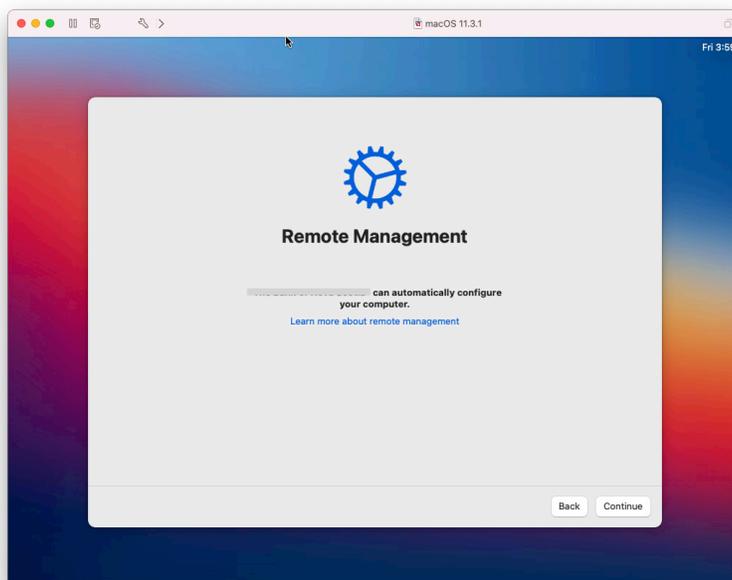
Section 5: Test Your Automated Enrollment

If the serial number you used in Section 5 is not enrolled in Apple Business Manager, then the virtual machine will go through the normal setup process upon boot. However, if a serial number you used is from a Mac enrolled in Apple Business Manager, then the virtual machine will go through the Automated Enrollment process upon boot.

1. Navigate to Virtual Machine Library window.
2. Double-click macOS 11.3.1 to boot the virtual machine.



3. You should be able to go through the setup process and land on the Desktop.

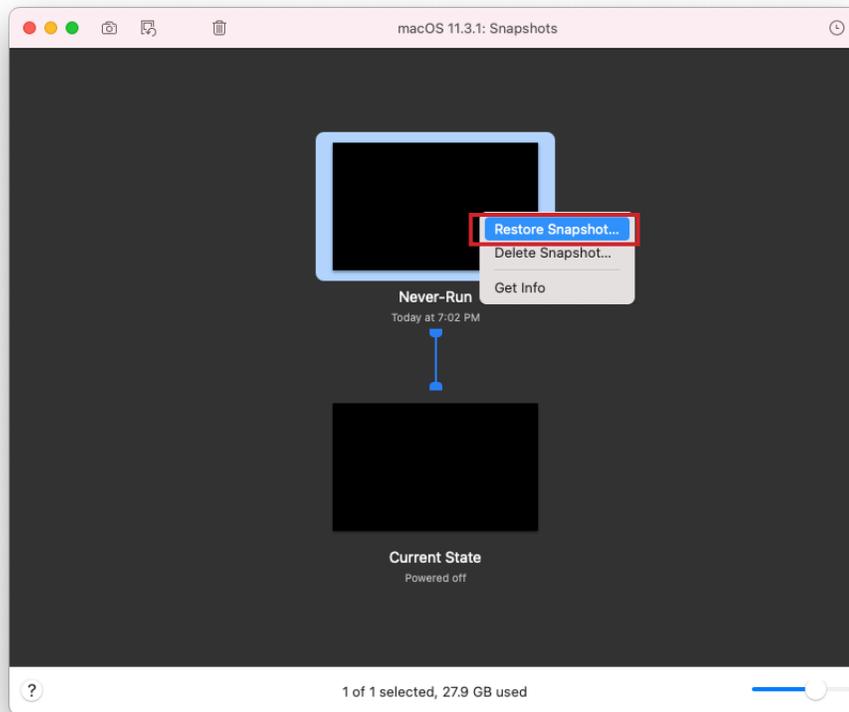




4. To revert to the Never Run snapshot, navigate to Virtual Machine Library window.
5. Right-click macOS 11.3.1 and select Snapshots.

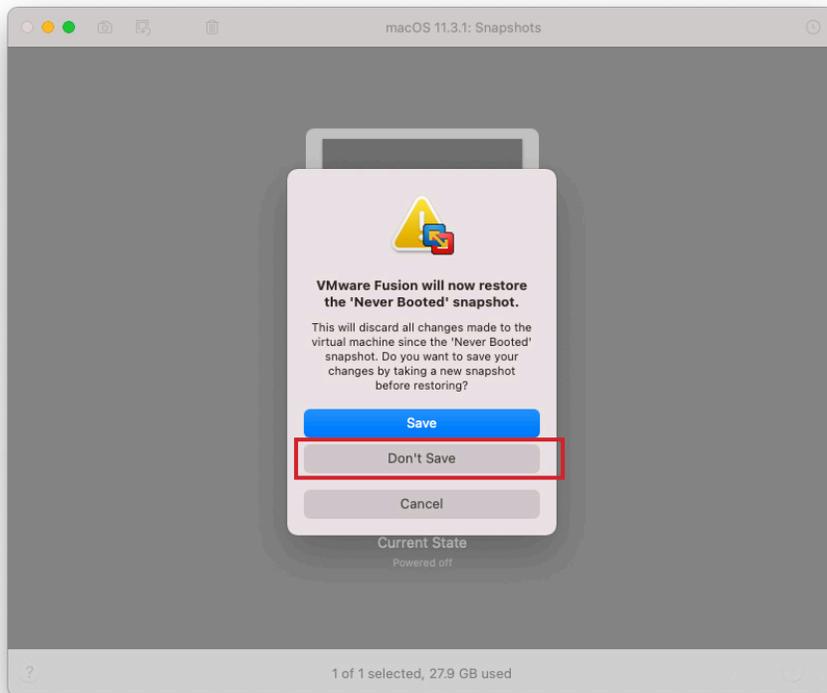


6. Right click Never Run snapshot and select Restore Snapshot.





- When prompted to save the current state before restoring to the Never Run snapshot, you may choose "Don't Save" to discard any changes that may have occurred during the current session.



You have successfully restored your snapshot to Never Run state.

NOTE: If you have a different serial number that is assigned to another MDM (Dev or UAT environment), You can revisit step 14 of section 5 to inject different serial number after restoring the snapshot back to Never Run state.

```
usb_xhci:6.deviceType = "hub"
usb_xhci:6.port = "6"
usb_xhci:6.parent = "-1"
usb_xhci:7.speed = "4"
usb_xhci:7.present = "TRUE"
usb_xhci:7.deviceType = "hub"
usb_xhci:7.port = "7"
usb_xhci:7.parent = "-1"
ehci:0.present = "TRUE"
ehci:0.deviceType = "video"
ehci:0.port = "0"
ehci:0.parent = "-1"
toolsInstallManager.updateCounter = "5"
usb:1.speed = "2"
usb:1.present = "TRUE"
usb:1.deviceType = "hub"
usb:1.port = "1"
usb:1.parent = "-1"
sata0:1.startConnected = "FALSE"
hw.model = "MacBookPro11,4"
board-id = "Mac-06F11FD93F0323C5"
serialNumber = "DIFFERENTSERIAL"
```

If you'd like help implementing the solution in this white paper, we are ready to help; contact us at info@hconline.com or (866) 518-9672.

If you have corrections please send them to info@hconline.com.

For more white papers, visit <https://hconline.com/support/white-papers>.

For more information about HCS, visit <https://hconline.com>.