

# Accelerate Your Enrollment Testing

MacSysAdmin 2019



# Imaging is Dead... Deploy With Magic!

MacSysAdmin 2019



**Automatic enrollment (DEP)  
workflows are like a magic act.**



**Both bring surprise and delight,  
but only when executed properly.**



**Proper execution of both requires  
dedication and a lot of practice!**



**What does "practice" mean for  
automatic enrollment?**



**Enrollment Testing Workflows:**  
**Enroll, Test, Reset, Repeat...**



**Resetting iOS is as simple as an  
MDM Wipe command...**



**Resetting macOS is still a lot more  
work than iOS**



**So let's talk about ways to  
accelerate resetting macOS!**



# Macjutsu





**Real vs Virtual macOS Testing...**  
**You should do both!**



# Testing Enrollments on a real Mac



Real hardware = real results

Best method for hardware/accessories

Best method for Wi-Fi

This should always be your final tests

Requires computers in ABM/ASM

Takes longer to reset than a VM



# Reset a Real Mac

macOS Recovery	Apple Approved	30+ minutes
<code>createinstallmedia</code>	Apple Approved	20+ minutes
<code>startosinstall</code>	Apple Approved	10+ minutes
Mac Deploy Stick (MDS)	Best Mac hack ever?	see above
<code>tmutil</code> snapshot	Built-in but problematic	2+ minutes
AutoDMG + Target Mode	Mostly fast and reliable	2+ minutes



# Accelerate Apple Approved Methods



Apple Content Caching

Purchase fast external storage

`createinstallmedia --downloadassets`

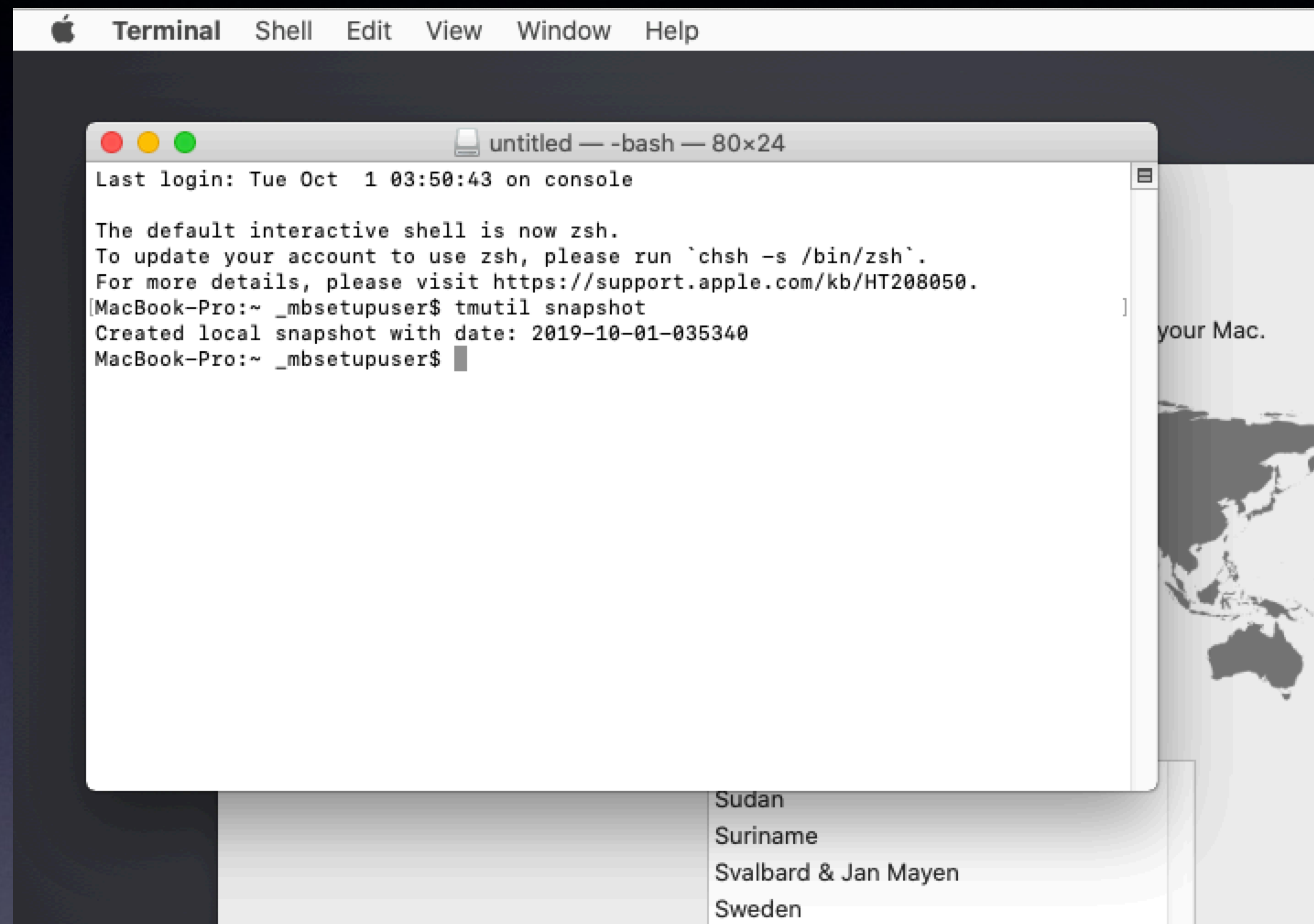
MDS helps with scale; not time per unit

Automate `startosinstall` via management

Still best methods for a T2 Mac



# Setup Assistant With `tmutil` snapshot



```
Terminal Shell Edit View Window Help

untitled — -bash — 80x24

Last login: Tue Oct 1 03:50:43 on console

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
MacBook-Pro:~ _mbsetupuser$ tmutil snapshot
Created local snapshot with date: 2019-10-01-035340
MacBook-Pro:~ _mbsetupuser$
```

Built-in trick during Setup Assistant

Control-Option-Command-T to Terminal

`tmutil` snapshot

Recovery and Time Machine to restore

Can't repeat FileVault encryption

Snapshots expire after 24 hours



# AutoDMG and Restore in Target Disk Mode



Prepare restorable systems in advance

Destination Mac in Target Disk Mode

Erase/Restore via Disk Utility or `asr`

Restore complete within two minutes

Requires extra hardware

Only reliable on upgraded Mac firmware

Only reliable and faster on a pre-T2 Mac



# Testing Enrollments on Virtualized macOS



By far the fastest method to reset

Easily test multiple versions

Easily test failure conditions

Only needs serial numbers in ABM/ASM

Recovery operations can be unreliable

Some services don't like virtualization

Some features can't be virtualized



# Prepare for Virtualization



Aquire Install macOS Mojave.app

`installinstallmacos.py`

Build restore image with AutoDMG

Both useful even if you don't virtualize



# Prepare macOS Beta



Join an Apple Beta Program

ABM/ASM includes access to AppleSeed

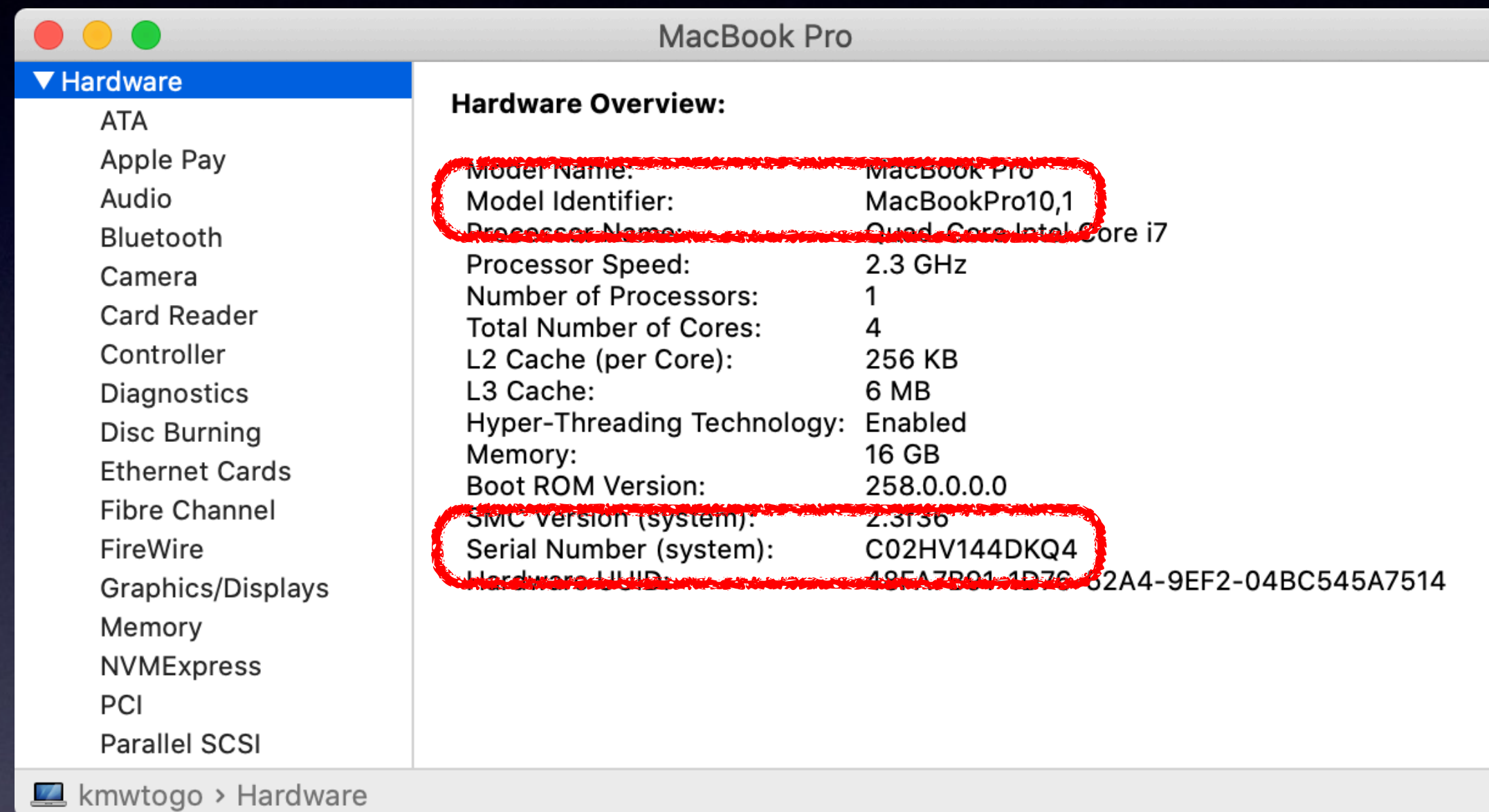
<https://apps.apple.com/in/app/macOS-catalina-beta/id1455661060?mt=12>

`hdiutil create -fs HFS+ -srcfolder`

Probably need a beta build of AutoDMG



# Prepare a "Virtual" Mac



A real Serial Number in ABM/ASM

With matching Model Identifier

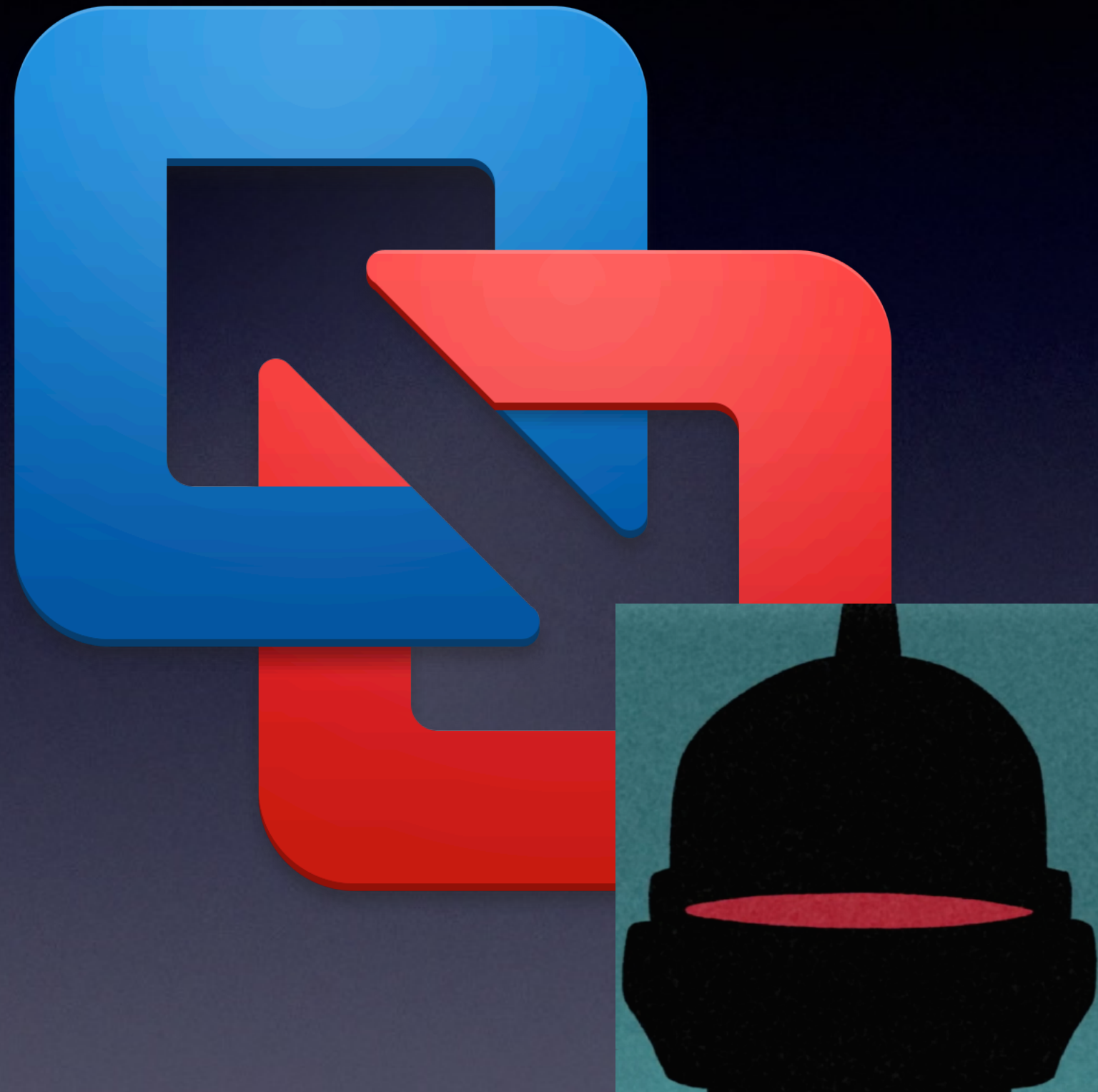
<https://checkcoverage.apple.com>

<https://support.apple.com/en-us/>

[HT201300](https://support.apple.com/en-us/HT201300)



# AutoDMG to VMware with vfuse



<https://github.com/chilcote/vfuse>

Requires VMware Fusion Pro 10 or 11

Frequently updated and reliable

Support for templates and Packer

macOS Catalina requires Fusion Pro 11.5

macOS Catalina requires `qemu-img`

Homebrew or direct download either



# Prepare a Virtual Mac With vfuse



```
sudo /usr/local/vfuse/bin/vfuse \  
--input /Applications/Restore10.15-19A578c.apfs.dmg \  
--output "/Applications/Virtual Machines/" \  
--name "Test10.15" \  
--serial "C0987654321" \  
--hw-model "MacBookPro14,3" \  
--snapshot \  
--use-qemu /usr/local/bin/qemu-img
```



*Demo*



# Verify and Renew Automatic Enrollment

Enrollment doesn't need a reset

macOS Supervision doesn't need a reset

Scripts can help facilitate re-enrollment

```
sudo profiles renew -type enrollment
```

```
sudo profiles show -type enrollment
```

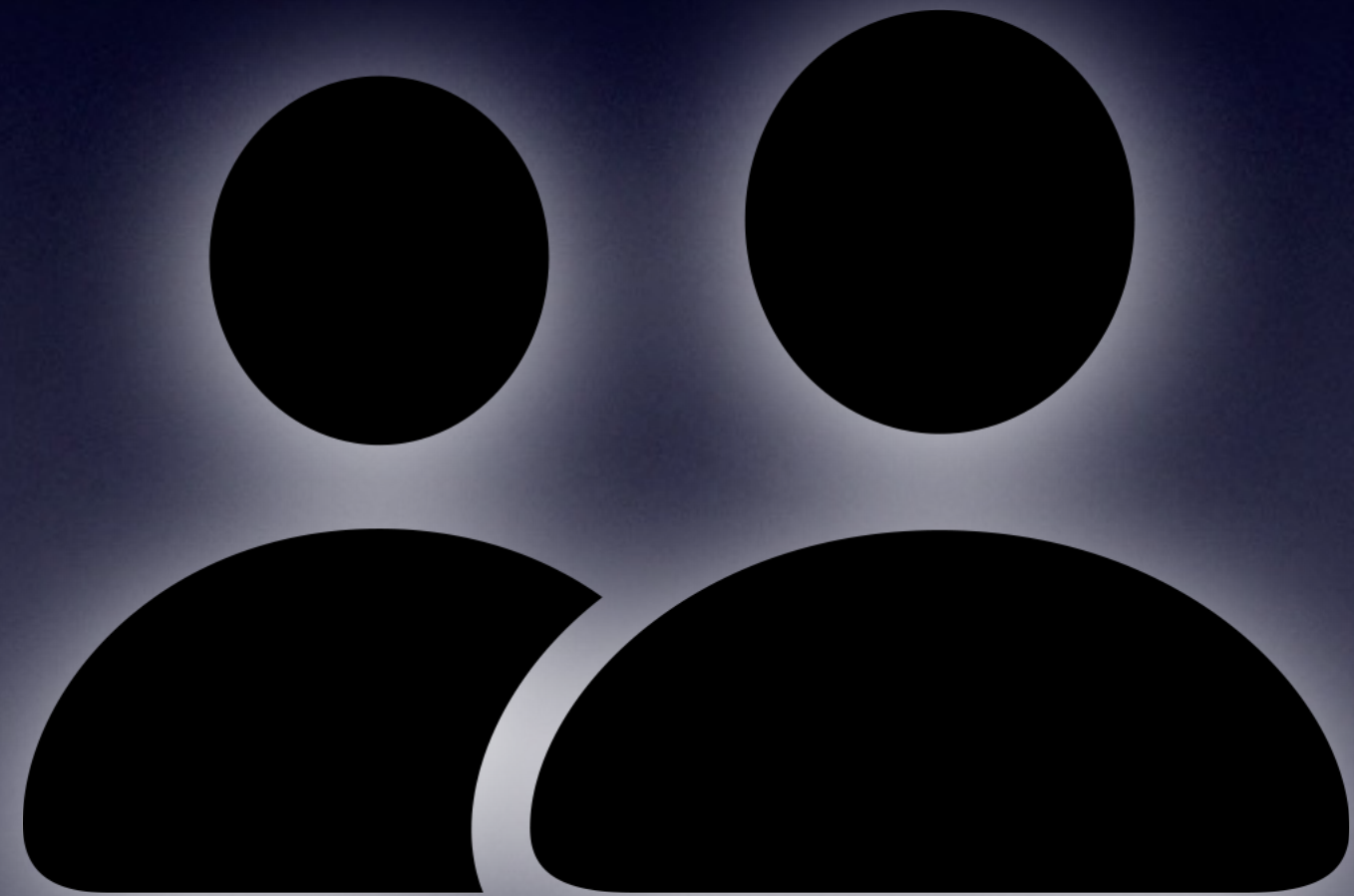
```
sudo profiles -e
```



```
test10.15
Terminal Shell Edit View Window Help Wed 2:17 AM
kevin — -zsh — 145x47
Last login: Wed Oct  2 02:08:45 on console
[kevin@Kevins-MacBook-Pro ~ % sudo profiles show -type enrollment
[Password:
Device Enrollment configuration:
{
  AllowPairing = 0;
  AnchorCertificates = (
  );
  AwaitDeviceConfigured = 1;
  ConfigurationURL = "https://ngmnfr.jamfcloud.com/cloudenroll";
  ConfigurationWebURL = "https://ngmnfr.jamfcloud.com/enrollment-customization-view?prestageId=3&enrollmentCustomizationId=6&prestageType=313";
  IsMDMUnremovable = 0;
  IsMandatory = 1;
  IsSupervised = 1;
```



# Thank These People!



Greg Neagle (`installinstallmacos.py`)

Per Olofsson (AutoDMG)

Joseph Chilcote (`vfuse`)

Nick McDonald ("Borrowed" Test MDM)

Craig Cohen ("Borrowed" Test MDM)

Adam Karneboge (Editor Extraordinaire)



**Tak!**