

# Imaging is Dead...



R.I.P.

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Apple Inc. support.apple.com/en-ca/HT208020

## Upgrade macOS on a Mac at your institution

If you're the system administrator for your business or education institution, use these methods to upgrade macOS High Sierra.

### Before you upgrade

You must be connected to the Internet when you upgrade your macOS. After your Mac confirms your connection, the Installer uses the model number of your Mac to locate and download a firmware update specific to only that Mac.

Only the macOS Installer can download and install the firmware update. Firmware updates can't be done on external devices, like those connected via Target Disk Mode, Thunderbolt, USB, or Firewire.

### Upgrade macOS

You can use these supported methods to install macOS:

- Use the macOS Installer.
- Create a bootable installer. Learn how to [Create a bootable installer for macOS](#).
- Startup from macOS Recovery and [install macOS](#).
- Use System Image Utility and create a NetInstall image.

Installing macOS High Sierra on a Mac that is connected by [Target Disk Mode](#) isn't a supported installation method.

Learn more about [changes to secure kernel extensions in macOS High Sierra](#).

### About monolithic system imaging

Apple doesn't recommend or support monolithic system imaging when upgrading or updating macOS.

Monolithic system imaging can only be used to re-install macOS, not to upgrade to a new macOS version.

<https://support.apple.com/en-ca/HT208020>

**Why?**

# Why?

- (U)EFI Firmware
- Touch Bar MacBook Pros
- APFS
- Does it really matter?

# **Thunderstrike**

January 2015

# Firmware Updates

## Pre-Thunderstrike

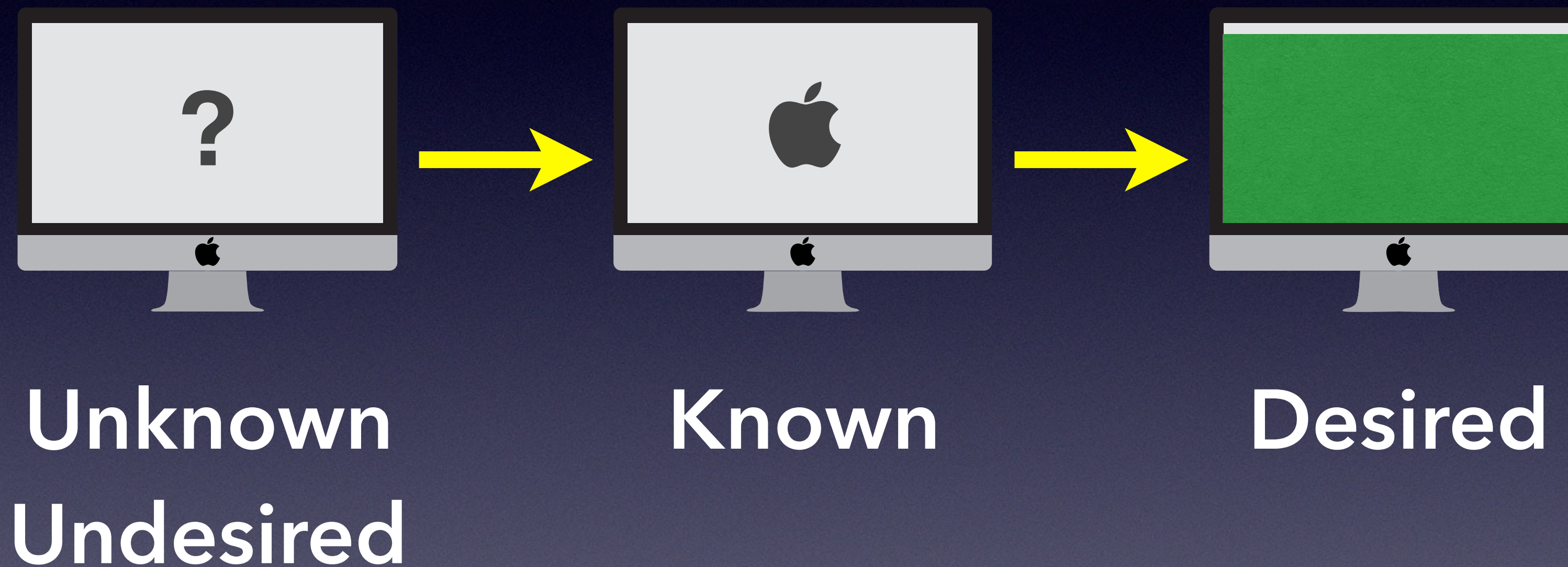
- Standalone
- Per model
- Manual installation

## Post-Thunderstrike

- 1 pkg for all models
- Delivered with security / macOS update
- Automation possible

**Imaging:**  
**Broken since 2015**

# Deployment





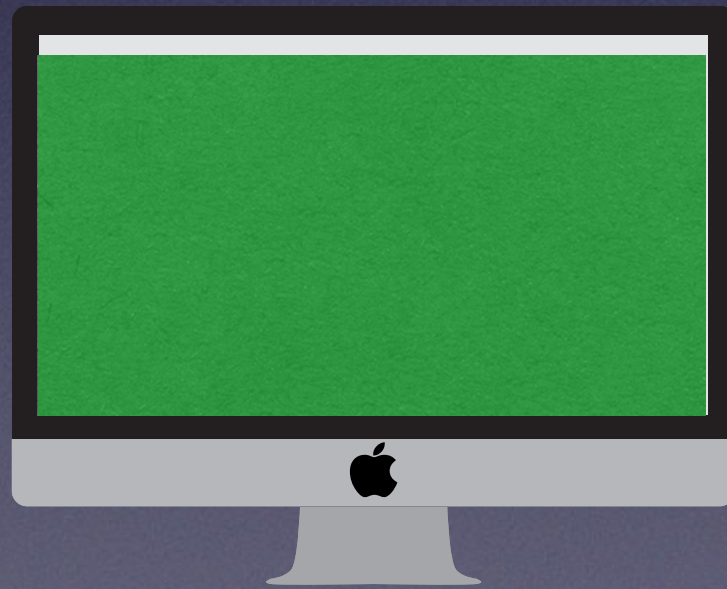
# Deployment

*Image  
Creation*



*Imaging or  
Installing OS*

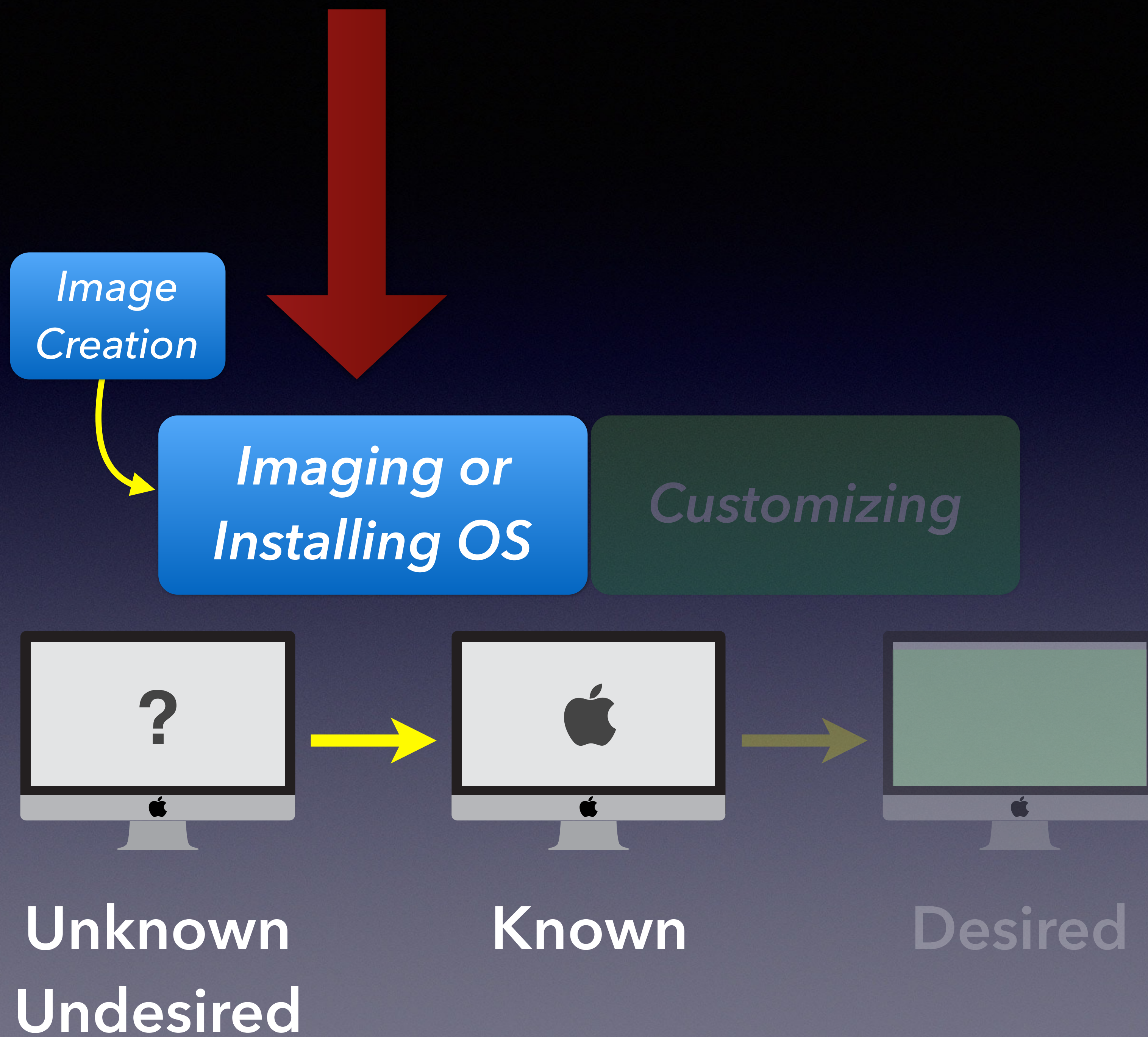
*Customizing*



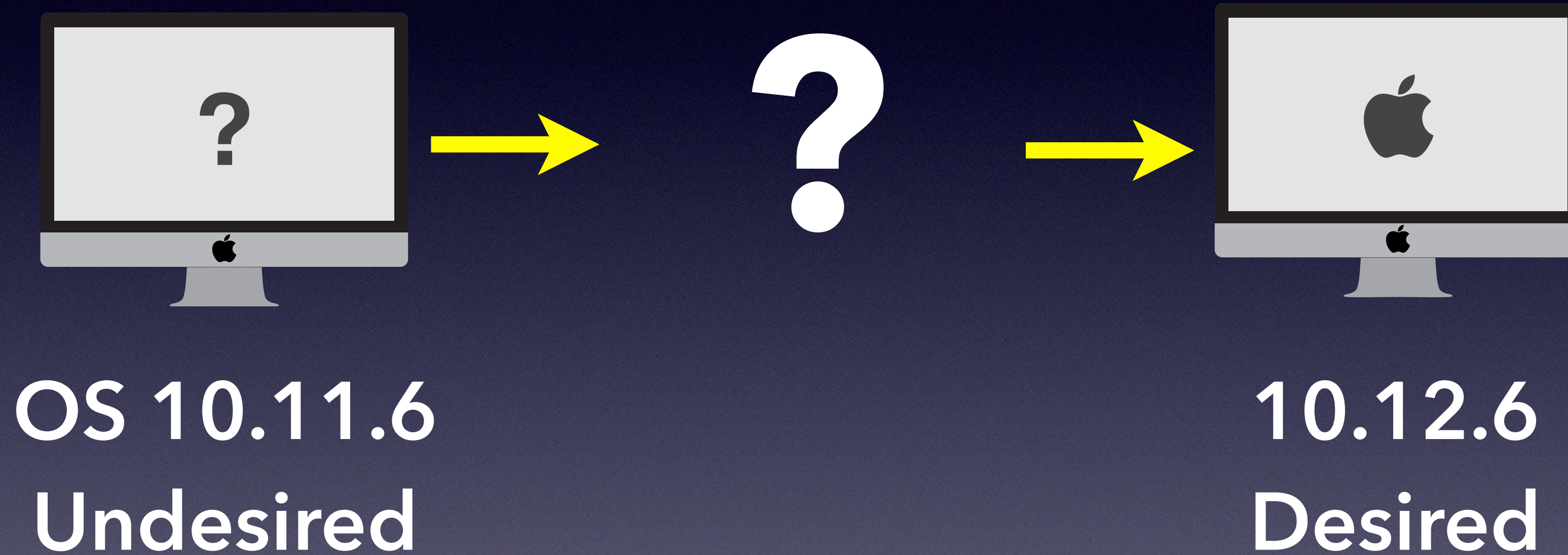
Unknown  
Undesired

Known

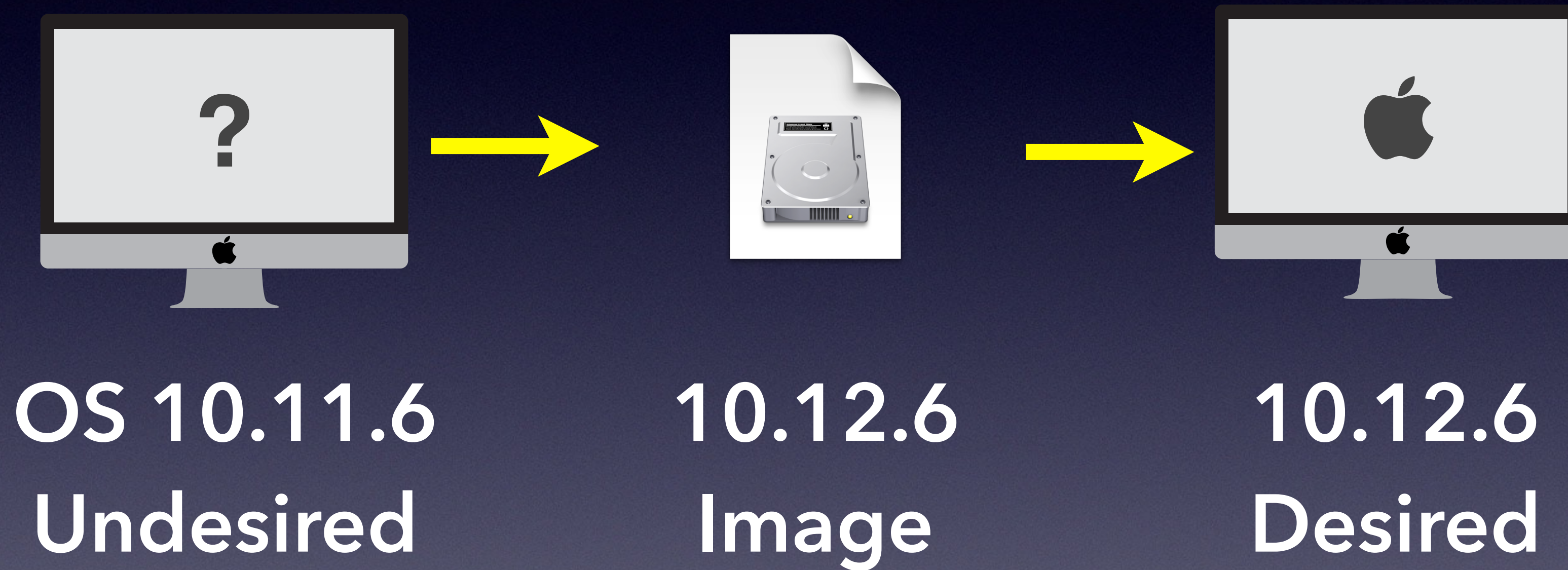
Desired



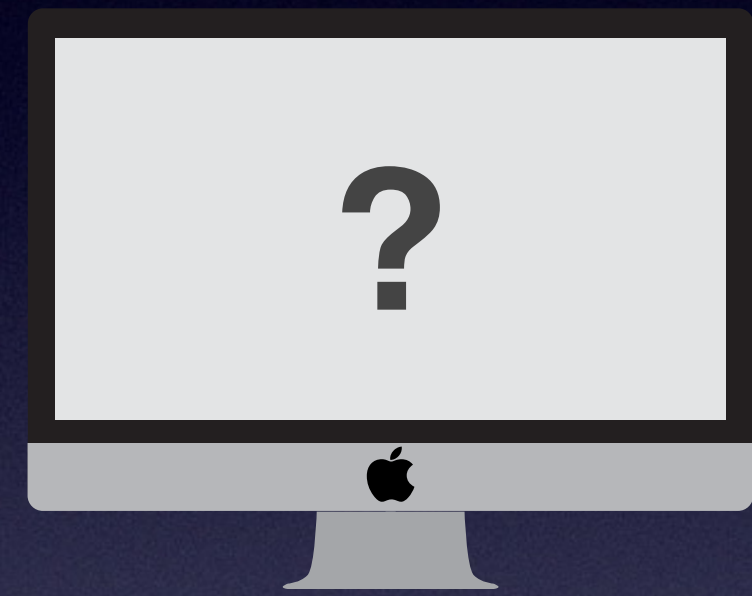
# Case: Upgrade OS



# Case: Upgrade OS



# Case: Upgrade OS



OS 10.11.6  
Undesired

IM131\_010A\_  
B09



10.12.6  
Image

N/A



10.12.6  
Desired

IM131\_010A\_  
B09 (B1D)



# Case: Upgrade OS



OS 10.11.6  
Undesired

10.12.6  
OS Install

10.12.6  
Desired??



IM131\_010A\_  
B09

N/A

IM131\_010A\_  
B1D



# Replacement Methods

- Upgrade *and* Image to same OS (supported)
- Extract firmware update from Apple system packages, add to DeployStudio or Casper Imaging workflow when imaging (unsupported, fragile)
- Erase, Install OS, use Jamf Pro or other tool to install needed software on first boot/check-in (supported)

# Why?

- (U)EFI Firmware
- Touch Bar MacBook Pros
- APFS
- Does it really matter?



# Reference Articles

- Allister Banks:  
UEFI, 10.13/APFS, and You(r Imaging)
  - ▶ <https://www.afp548.com/2017/08/31/uefi-10-13apfs-and-your-imaging/>
- Duo Security (Pepijn Bruienne, Rich Smith):  
The Apple of Your EFI
  - ▶ <https://duo.com/blog/the-apple-of-your-efi-mac-firmware-security-research>

# Why?

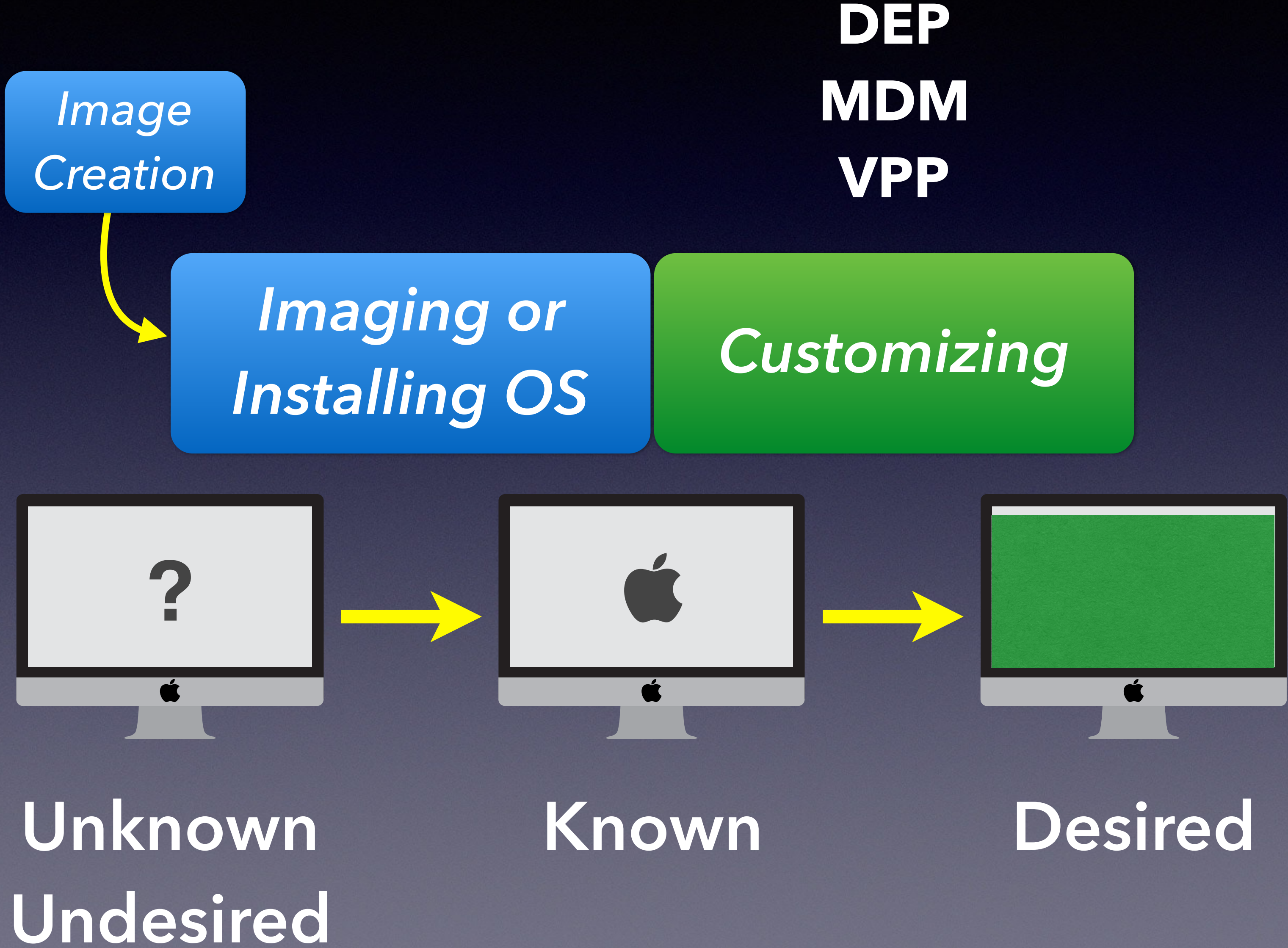
- (U)EFI Firmware
- Touch Bar MacBook Pros
- APFS
- Does it really matter?

**DEP**

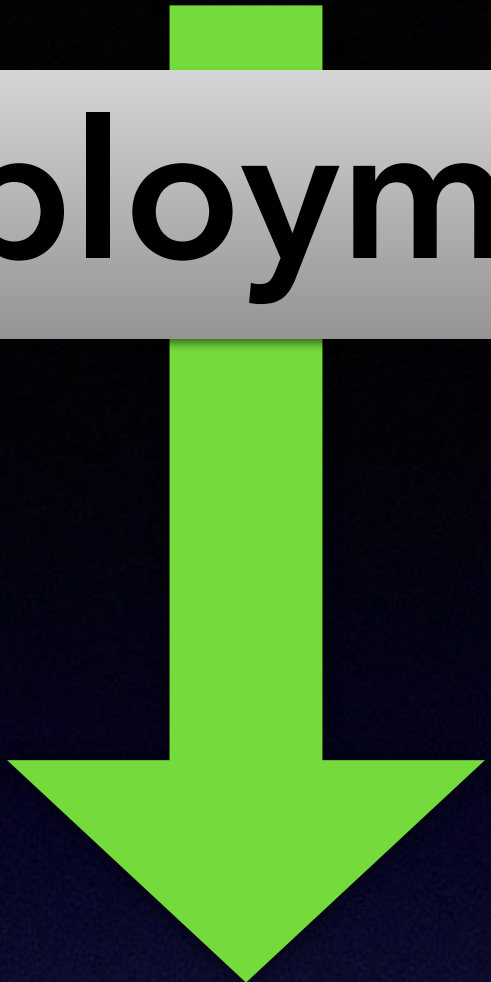
**MDM**

**VPP**

# Deployment



# Deployment

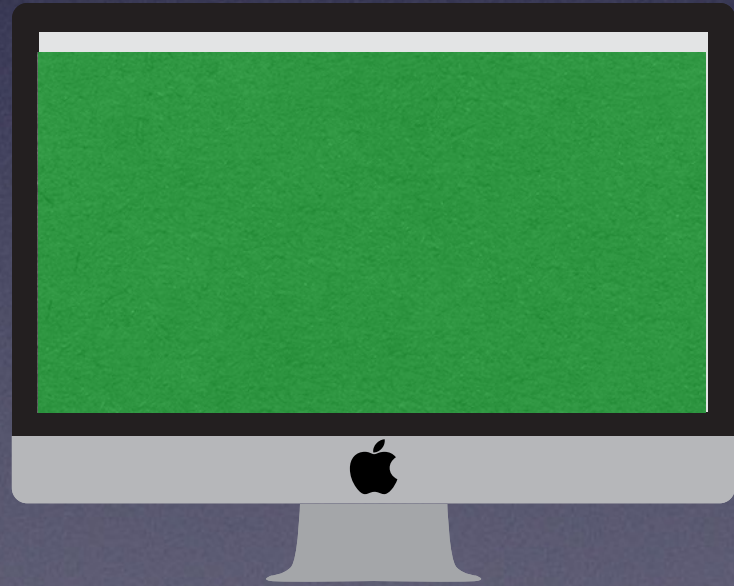
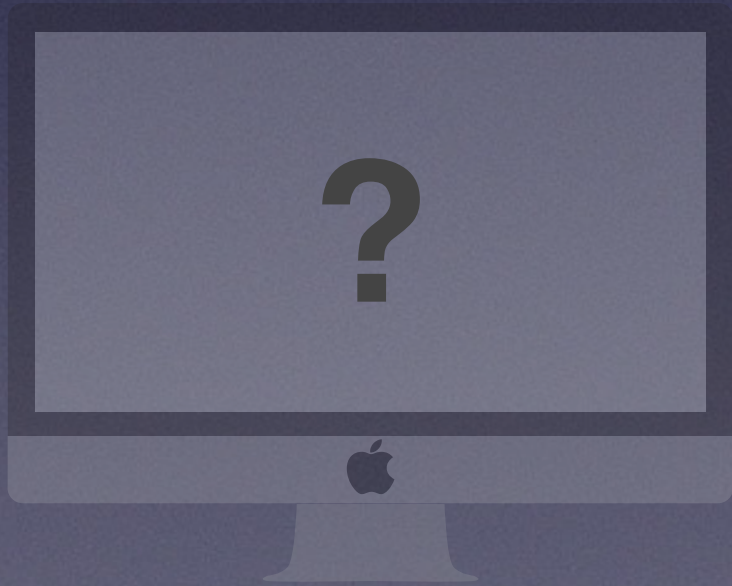


**DEP**  
**MDM**  
**VPP**

*Image  
Creation*

*Imaging or  
Installing OS*

**Customizing**



Unknown  
Undesired

Known  
(New Mac)

Desired

# Current Workflows

Image Creation	Status	Dead Scale (0-10)
Golden Machine (Image Capture)	Has been breaking for a while; 10.14 should kill it	9
Modular Image (using AutoDMG)	Great for VMs and testing; minimal size is most common	5
No image at all	Do it this way if you can; works well w/management systems like Jamf Pro	0

# Current Workflows

Nuke & Pave to same OS	Status	Dead Scale (0–10)
Using Image	Currently Supported	6
Using Apple Installer	Fully supported; can be automated with <code>startosinstall</code>	2
Snapshotting	A potential future benefit of APFS; not viable today	pre-birth

# Current Workflows

<b>Nuke &amp; Pave to upgrade OS</b>	Status	Dead Scale (0–10)
Using Image	Unsupported by Apple; workarounds currently possible	9
Using Apple Installer	Fully supported; can be automated with <code>startosinstall</code>	2
Using Image and Apple Installer	Currently supported by Apple	6



[maclabs.jazzace.ca/2017/10/20/  
imaging-is-dead-presentation.html](http://maclabs.jazzace.ca/2017/10/20/imaging-is-dead-presentation.html)

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