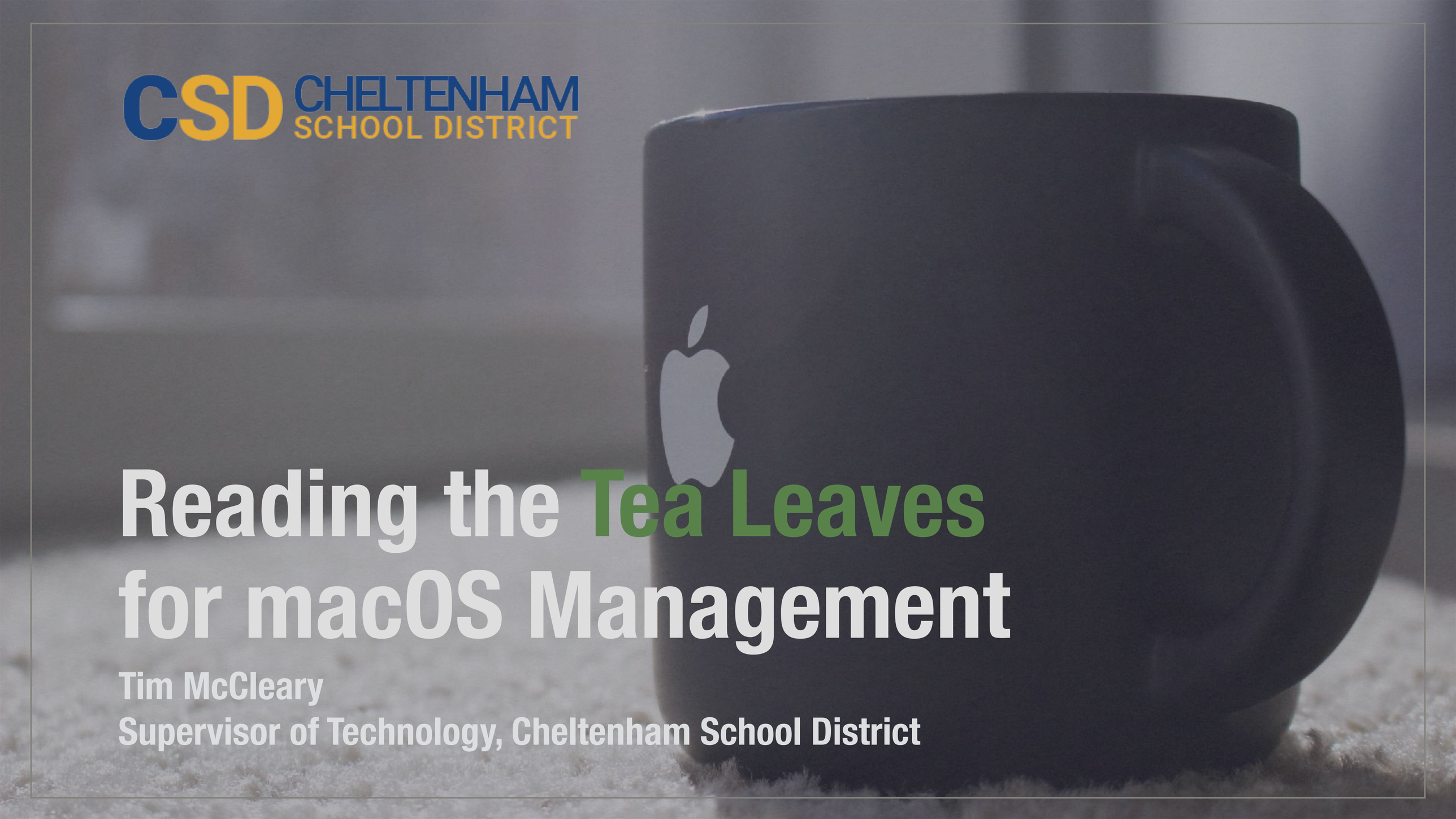


CSD CHELTENHAM SCHOOL DISTRICT

Reading the Tea Leaves for macOS Management

Tim McCleary
Supervisor of Technology, Cheltenham School District

How Do You Deploy Now?

- Building Each Mac Individually
- Monolithic Imaging (Master Image)
- Modular Imaging
- Thin Imaging
- DEP Deployment / “Zero-Touch” Deployment

What Method Do You Use?

- NetBoot/NetInstall solution
- Target Disk Mode
- Booting from External Drive
- Other?

Which MDM Do You Use?

- JAMF Pro (Casper)
- FileWave
- Meraki Systems Manager
- LANRev
- Profile Manager
- MicroMDM
- SimpleMDM
- Munki
- Other?
- What’s an MDM?

Terminology

- **MDM:** Mobile Device Management
- **DEP:** Device Enrollment Program
- **HFS+:** Hierarchical File System or Mac OS Extended; the default file system for the Mac until High Sierra, introduced in January 1998
- **APFS:** Introduced at WWDC as a replacement for HFS+ for macOS, iOS, tvOS, and watchOS; optimized for flash and solid-state storage with a **focus on encryption**

Hints from WWDC 2016

- Credit goes to: http://michaellynn.github.io/2016/10/04/mDMacOS/
- “…Apple File System will be the default file system for all Apple products [in] 2017”
- “…this allows us to unify our **encryption** story across all of our platforms.”
- Translation: We’re going to handle things with macOS similar to how we handle things with iOS, tvOS, and watchOS.
- **Simplified Translation: Get ready to chuck most of what you know about deploying macOS devices out the window!**

Hints from @deploystudio

Hints from High Sierra

- https://support.apple.com/en-us/HT208020
- “Apple doesn't recommend or support monolithic system imaging when upgrading or updating macOS.”
- “If you try to use a monolithic system image, required firmware updates will be missing from the installation. This causes the Mac to operate in an unsupported and unstable state.”

Hints from the iMac Pro

- Secure Boot (https://support.apple.com/en-us/HT208330): “Use Secure Boot to make sure that only a legitimate, trusted operating system loads on your iMac Pro at startup.”
- No NetBoot (https://support.apple.com/en-us/HT202770): “iMac Pro computers don't support starting up from network volumes.”
- https://support.apple.com/en-us/HT201255: For holding “N” during startup — “iMac Pro doesn't support this startup key.”
- https://help.apple.com/configurator/mac/2.6/#/apdebea5be51: Instructions on restoring an iMac Pro with Apple Configurator 2.6.

Hints from macOS Server.app

- https://support.apple.com/en-us/HT208312
- “A number of services will be deprecated, and will be hidden on new installations of an update to macOS Server coming in ~~spring~~ fall 2018.”
- In the list: NetInstall (which also means NetBoot)

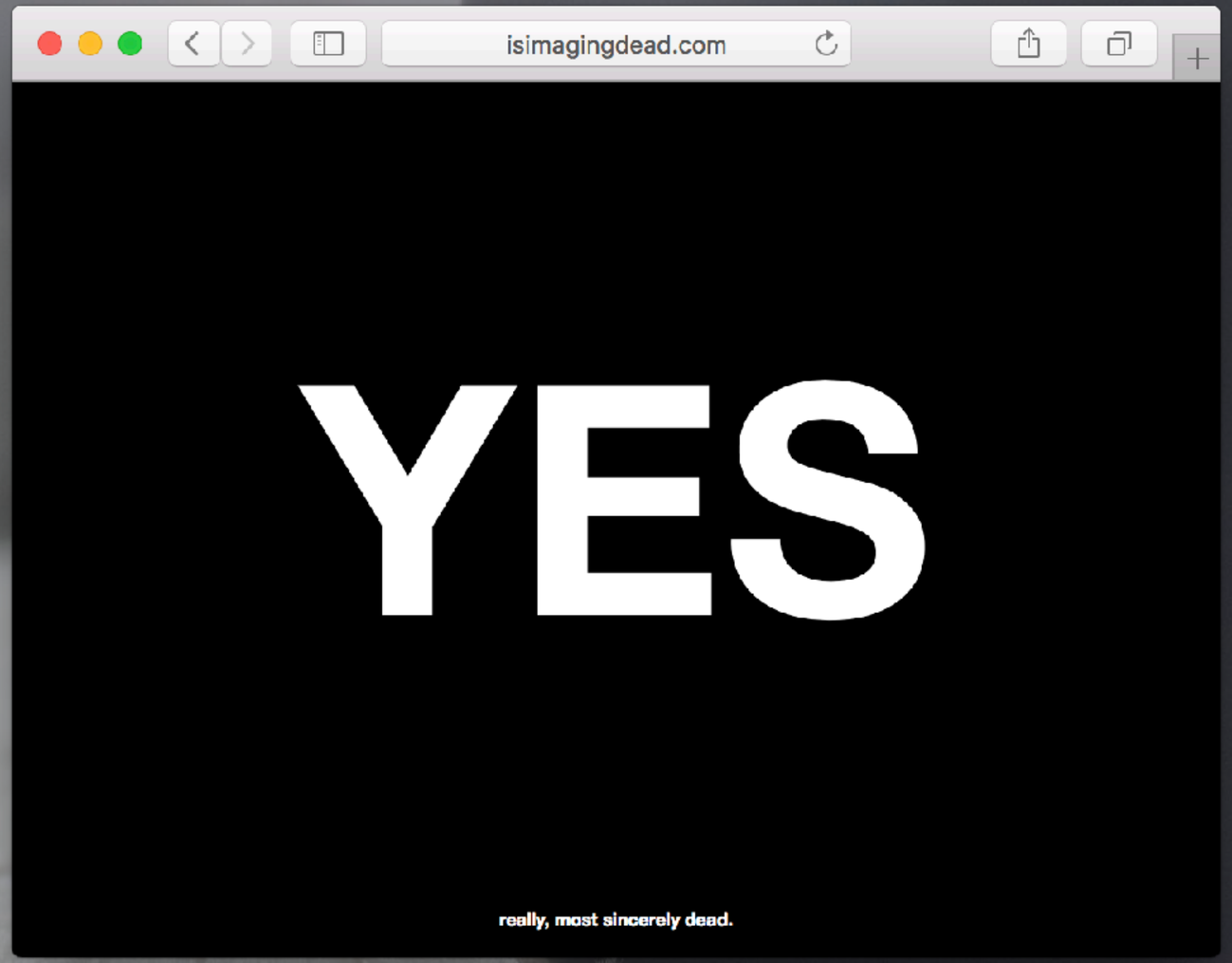
Hints from High Sierra 10.13.4

- https://support.apple.com/en-us/HT208533
- “No longer disables User Approved Kernel Extension Loading on MDM-enrolled devices. For devices with DEP-initiated or User Approved MDM enrollment, administrators can use the Kernel Extension Policy payload.”

Hints from High Sierra 10.13.4

- Just something else to note…
- https://support.apple.com/en-us/HT208436
- “Starting with macOS High Sierra 10.13.4, apps that have not been updated to use 64-bit processes produce a one-time alert when opened. This gives users advance notice that they are running 32-bit software, which will not be compatible with macOS in the future.”

Hints from the InterWebs



Where Do We Go From Here?

Need to Change Our Thinking on Deployment:

~~Imaging~~ ➡ Provisioning

Is Imaging Really Dead? What now?

- Not quite yet, but it’s on life support
- Start experimenting now so you’re ready for the inevitable
- Get connected with the larger Mac community — there’s a lot of really smart people out there that apparently have a lot more time on their hands than probably any of us do.

Where Do I Even Start???

- Three Not-So-Simple Steps
  - Make sure your institution is set up for DEP with Apple
  - Get an MDM that can manage macOS devices
  - Develop and test (and test and test…) a DEP enrollment process with your MDM and/or management system

Two Quick Items to Note…

- **UAMDM — User Approved MDM**
  - If you are not using DEP, you will need to manually approve your MDM starting with 10.13.4
  - This cannot be done remotely, must be done while physically at the device!
  - Approval button cannot be clicked from a remote screen sharing connection (ARD, TeamViewer, etc.)

Two Quick Items to Note…

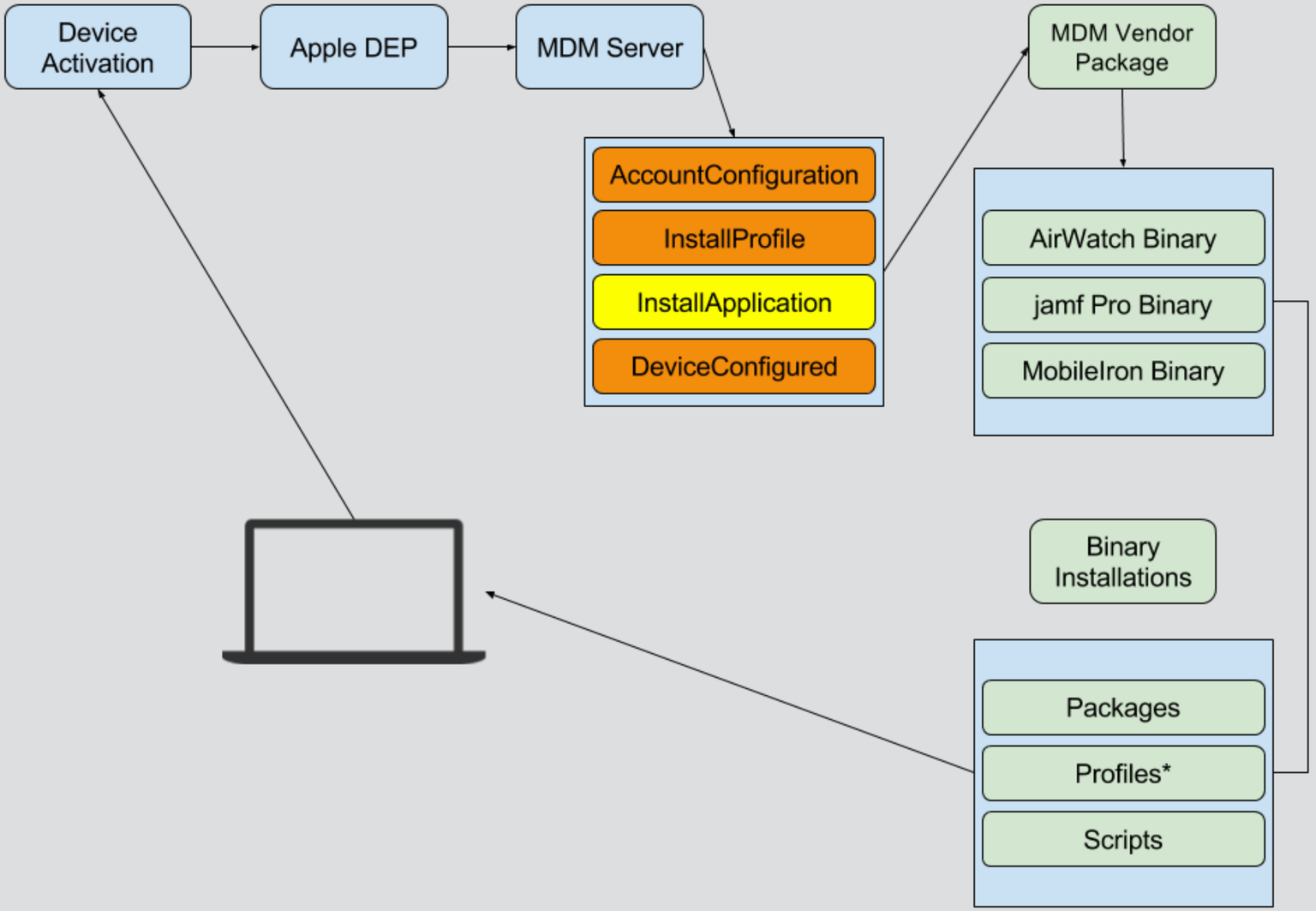
- **UAKEL — User Approved Kernel Extension Loading**
  - https://support.apple.com/en-us/HT208019
  - Requires any Kernel Extensions to be approved before the OS will load them starting with 10.13.4
  - Can be approved via Configuration Profile deployed by your MDM (https://derflounder.wordpress.com/2018/04/12/whitelisting-third-party-kernel-extensions-using-profiles/)
  - Includes SMART drivers, docking station drivers, Google Drive File Stream, etc.

DEP Process Step-By-Step

- Device booted for the first time
- Setup Assistant loads and the user is prompted to connect to a wireless network (if not wired)
- Once connected, the Mac is activated
- If the Mac’s serial number is assigned in DEP to an MDM server, the device registers with the server
- The device will go through the steps: “AccountConfigured”, “InstallProfile”, “InstallApplication”, and finally “DeviceConfigured” (It is possible that the user will be logged into the Mac while this process is happening in the background.)

Visualization of the DEP Enrollment Process

From: http://blog.eriknicolasgomez.com/2017/03/08/Custom-DEP-Part-1-An-Introduction/



InstallApplication is the Key

- This is where your specific customizations and installations happen in the process
- Install Configuration Profiles
- Run scripts to configure defaults
- Prompt user for computer name
- Install packages
- Install software updates

My Process (Still in “Beta”)

- Boot new Mac fresh out of the box
- Connect to WiFi
- Let it enroll with our MDM (Jamf) and create our LocalAdmin account
- Script runs in background and waits for a non-setup user to login
- Log into LocalAdmin account
- Script kicks in after a few seconds and prompts for computer name
- Once computer name is entered, script takes over screen and displays setup and software installation progress
- Ends with checking for any updates and installing them

Live Demo: DEP+MDM+Fingers Crossed

(or “what I’ve figured out so far…”)

Using JAMF Pro and some scripts to make magic happen…

Backup Plan: Pre-Recorded Video
(in case the demo failed horribly)

Using JAMF Pro and some scripts to make magic happen…

Hang on...We are setting up your Mac for the first time

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Please wait...calculating pi to a few million digits

Additional Things to Worry About

- UAMDM (User Approved MDM): Requires the user to approve the MDM if computer is enrolled manually. DEP enrollment bypasses this. **Approval cannot not be done via a remote connection!** [10.13.4+]
- UAKEL (User Approved Kernel Extension Loading): Requires an admin user to approve any kernel extensions before they will load. This includes drivers (SMART, docking stations, Google Drive, etc.). **Can be automatically approved with an approved MDM.** [10.13.4+]
- 32-Bit Apps are going away, which affects a lot of older apps, especially in education. [10.15?]

Apple's View

- Hand a Mac to the end user still in the box and they can set it up themselves!
- Give the user the ability to personalize their Mac the way they want it
- You can enforce policies and make software available that they can install themselves

Reality

- You're probably gonna want to still set up each Mac yourself to ensure consistent results
- Let's be honest: DEP works, but there's still things that can go south and screw things up
- You can enforce policies and make software available that they can install themselves

Apple's View

- Need to rebuild an existing Mac?
- Just reinstall from macOS Recovery.
- Hold down Command-R while booting.
- Erase the drive with Disk Utility
- Reinstall macOS
- Spend a lot of time doing this

Reality

- Our existing methods are much faster
- Imaging still works (in some cases), so use it while you can to install a base, never-booted image of macOS
- Don't image a newer version than what's already on it (not supported)
- Boot normally and use DEP+MDM
- Let the MacAdmin community figure out a better way

Recommended Resources

- MacAdmins Slack (https://macadmins.slack.com) — Get invited here: https://macadmins.herokuapp.com/
- Jamf Nation (https://www.jamf.com/jamf-nation/) — Geared towards Jamf products, but also a good source of knowledge
- Managing OS X blog (https://managingosx.wordpress.com/)
- Der Flounder blog (https://derflounder.wordpress.com/)
- ScriptingOSX blog (https://scriptingosx.com/)

Recommended Tools

- Automate checking for and getting the latest app updates:
  AutoPkg / AutoPkgr (https://github.com/lindegroup/autopkgr)
- Build a base image of macOS from a macOS Installer
  AutoDMG (https://github.com/MagerValp/AutoDMG)
- Clone the serial number from a Mac enrolled in DEP, combine it with a base image from AutoDMG and get a VM you can snapshot and easily test your DEP enrollment/provisioning process
  VMware Fusion + vfuse (https://github.com/chilcote/vfuse/releases)

Recommended Tools

- Get an MDM for your Macs if you don’t already have one!
  - Jamf Pro
  - FileWave
  - Meraki Systems Manager
  - LANRev
  - SimpleMDM
  - MicroMDM

Keep in Touch

Tim McCleary
Email: tmccleary@cheltenham.org
MacAdmins Slack: @macpropellerhead

This presentation available here:
https://www.cheltenham.org/2018ttl
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