

Which Deployment Method is Right for Us?

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OS X 10.8.2



OS X 10.8.2

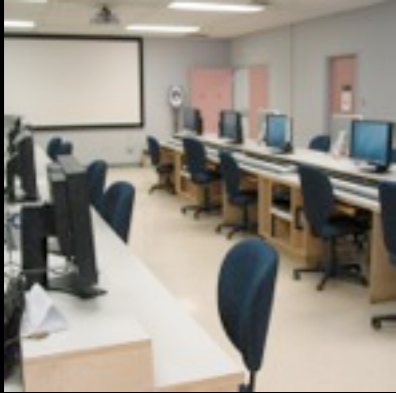
18 or
17.0.2esr

11.0.01 or
10.1.5



OS X 10.8.2

OS X 10.8.1 or .2
Custom Build



Session Overview

- Defining Deployment
- Variables to Consider
- Modular Tools in context
- Cases (as time permits)



Unknown

Known

Desired

Imaging



Unknown

Known

Desired

Deployment

Imaging



Unknown

Known

Desired

Deployment

Imaging



Unknown

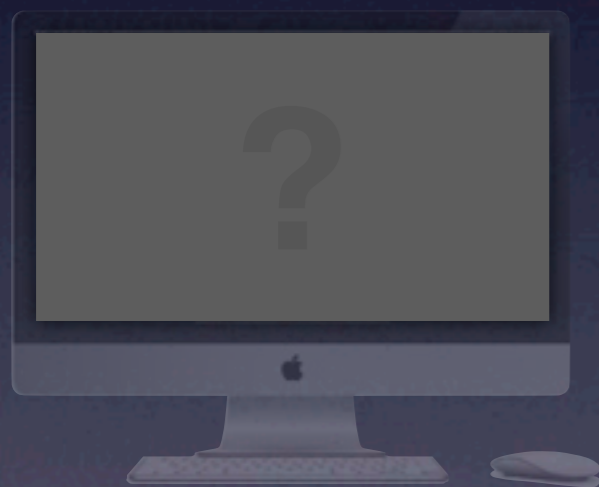
Known

Desired

Deployment

Imaging

Customizing



Unknown

Known

Desired

Deployment

Imaging

Customizing

Image
Creation

Image/OS
Delivery



Unknown

Known

Desired

Variables to Consider





Variables

- Control
- Scale
- Resources



Control

- Level of Control
 - ▶ *Fully Controlled (e.g., Labs)*
 - ▶ *Partially Controlled (e.g., office/individual)*
 - ▶ *Not Controlled (BYOD, staff helps)*
- Physical Proximity
- Hardware variations



Scale

- **Number of computers**
 - ▶ *Fewer = ARD, manual methods*
 - ▶ *Automate more as numbers grow*
- **Size of payload**
 - ▶ *> 20 GB = Common Image for bulk of load*
- **Consistency of payload**
 - ▶ *Less consistent = more delivered through Customizing stage*



Resources

- Hardware

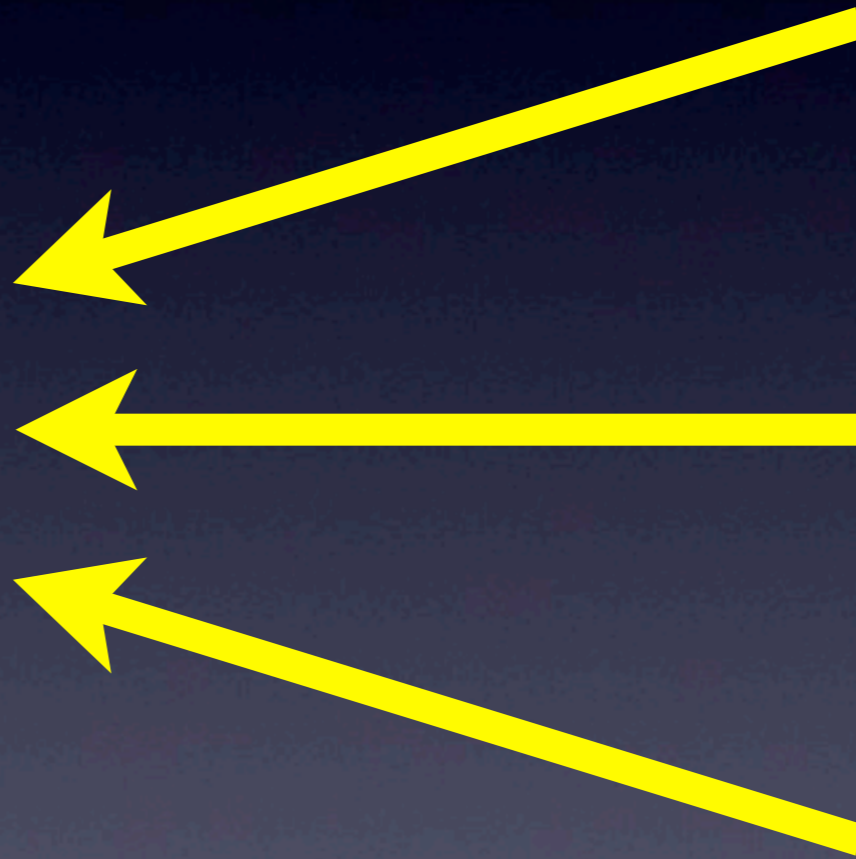
- ▶ *Network (speed, capacity)*
- ▶ *NetBoot Server and/or Web Server*
- ▶ *Bootable Drive / Volume*

- Human

- ▶ *Number*
- ▶ *Skill Level*

We very much appreciate
the applause,
but you shouldn't be
applauding because this is
how it *ought* to work.

*Steve Jobs on burning discs in the Finder
Macworld Expo, Jan. 9, 2001*



automate

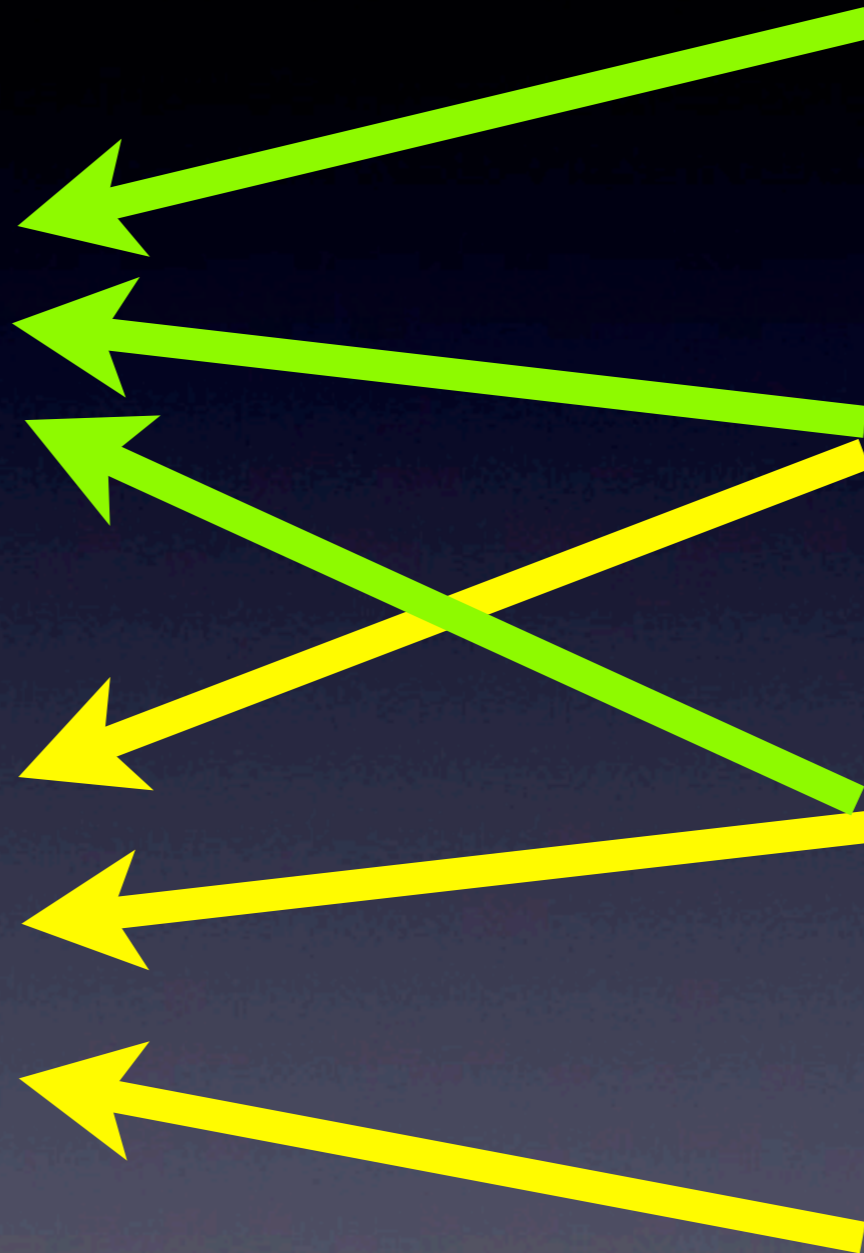
40 Machines



x10



x30



automate



Modular Deployment

1. Collect Installation Packages

- ▶ *Vendor-built or self-built*
- ▶ *Some tools may allow non-package payloads*

2. Automate Installation

- ▶ *Onto a Disk Image (Imaging stage), and/or*
- ▶ *Onto the target device (Customizing stage)*



Modular Advantages

- Easy to change software payload (add, delete, update)
- Multiple payload variations can be managed
- Packages can be used by other admin tools
 - ▶ e.g., *Apple Remote Desktop*



Package Creation



- PackageMaker

- ▶ Apple, free with Developer registration
- ▶ also `pkgbuild` via command line



- Iceberg, Packages

- ▶ WhiteBox (s.sudre.free.fr/Packaging.html), free



- Composer

- ▶ www.JAMFSoftware.com, \$100 (\$80 Edu.)



Package Creation

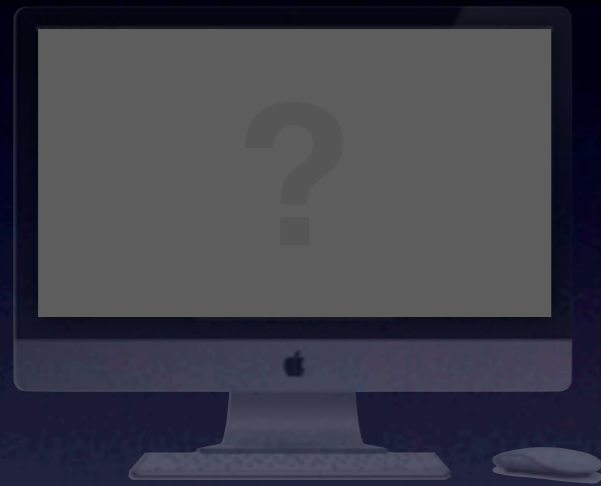


- Adobe Application Manager Enterprise Edition (AAMEE)
 - ▶ Adobe (adobe.com/products/creativesuite/it.html), free
 - ▶ Creative Suite packaging only



Package Creation

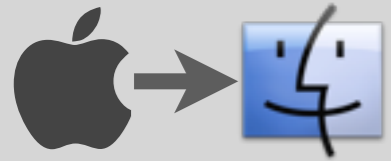
- More Info:
 - ▶ *"Practical Deployment Techniques for Small Labs", PSU MacAdmins 2012 on iTunes U and YouTube*
 - ▶ *~ 10:30 to 25:30 in video of presentation*



Unknown

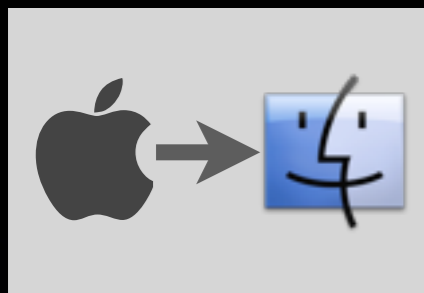
Known

Desired



Known to Desired

- “Customizing”
- Delivering installer packages for local installation
 - ▶ *drag-and-drop apps, shell scripts, directory bindings, account creation and/or file copying may be allowed as well*



Package Delivery!



- Apple Remote Desktop
 - ▶ Apple, \$80 (Mac App Store)



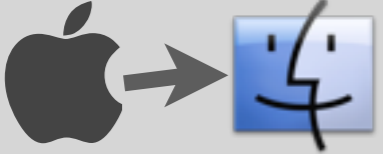




- DeployStudio
 - ▶ www.deploystudio.com

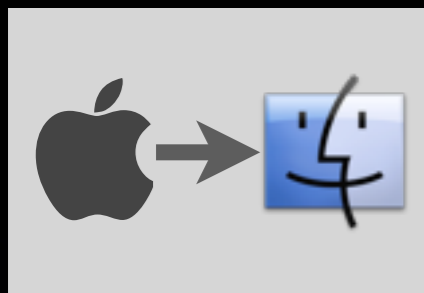


- System Image Utility/NetInstall
 - ▶ Apple (w/10.8 or Server Admin Tools)



- Munki
 - ▶ code.google.com/p/munki/

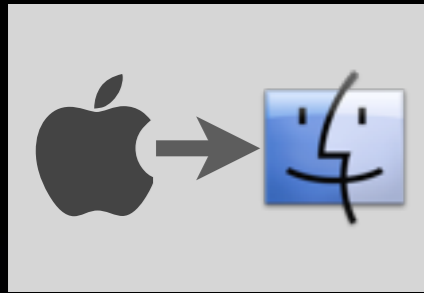
				
Admin UI	GUI	GUI	GUI	CLI, XML
Payload	pkg, files, UNIX	pkg, files, sh, settings	OS, pkg, sh	pkg, apps
Automate	Task	Workflow (+Nested)	Workflow	Manifest (+Nested)
Delivery State	Booted into Known	Ext. Boot (NetBoot)	Ext. Boot (NetBoot)	Booted into Known
Delivery Method	Admin Push	Direct or Next Boot	Bootable Installer	User Pull, Admin Push



Known to Desired

- “Known” state can be right out of the box
 - ▶ *a.k.a. “No Imaging” deployment*
 - ▶ *Useful for Custom OS builds*
- Use ARD, DeployStudio or Munki to install all software/settings

**You may never
need to make an
image again!**



Known to Desired

- **More Info:**

- ▶ *IT881 @ 11:15 a.m. (Boylan/McSpadden)*
- ▶ *PSU MacAdmins on iTunes U and YouTube*

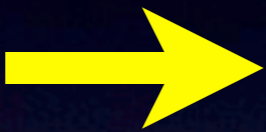


Unknown

Known

Desired

Image
Creation

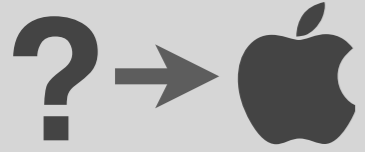


Image/OS
Delivery



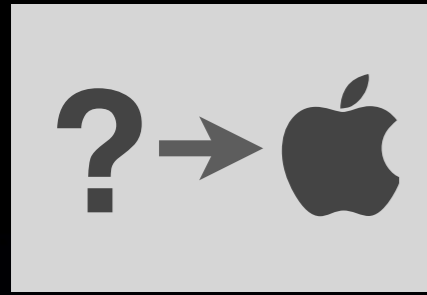
Unknown

Known



Unknown to Known

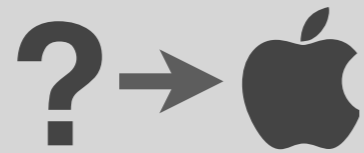
- Good reasons to create an image:
 - ▶ *Speed of deployment*
 - ▶ *Large payload (> 20 GB)*
- ...Modularly:
 - ▶ *No cruft*
 - ▶ *Easy to add/change/delete components*
 - ▶ *Can have multiple setups*



Modular Image Creation Tools



- **InstaDMG (+ InstaUp2Date)**
 - ▶ *afp548.com/category/instadmig/*
- **System Image Utility/NetRestore**
 - ▶ *Apple (w/10.8 or Server Admin Tools)*
 - ▶ *Note: NetRestore is image-based*
 - ▶ *Can extract .dmg from .nbi generated (mount SetName.nbi/NetInstall.dmg, then grab /Packages/System.dmg)*



InstaDMG

SIU/NR

Admin UI

CLI, text

GUI

Payload

pkg, dmg w/
app or pkg

pkg, sh, user
accounts

Automate

Catalogs
(+Nested)

Workflow

Creates

.dmg

.nbi (w/.dmg)

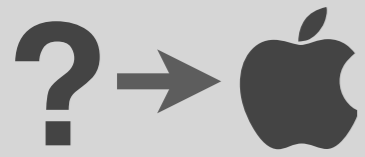


Image/OS
Delivery



Unknown

Known



OS Install Tools

- NetInstall
- OS X Recovery
- createOSXinstallPkg
 - ▶ code.google.com/p/munki/wiki/InstallingOSX
 - ▶ *Turns the OS X Installer into a package*



Case Studies



Small Labs, Big Payload

1. Control

- ▶ *Higher Ed labs, physically close*
- ▶ *Mac mini, Mac Pro (iMacs coming soon)*

2. Scale

- ▶ *30 computers with local accounts*
- ▶ *120 GB base payload, some single apps*

3. Resources

- ▶ *1 tech + some student help*
- ▶ *Gigabit Ethernet, all on same switches*



Small Labs, Big Payload

- Image Creation

- ▶ *InstaDMG (All Common software)*

- Image Delivery (to known state)

- ▶ *DeployStudio via NetBoot (Uni or Multicast)*

- Customizing (to desired state)

- ▶ *DeployStudio (station information, AAMEE & other packages)*

- ▶ *Manual work for single apps*

- ▶ *ARD for Local MCX settings*



Small Labs, Big Payload

- **Advantages**

- ▶ *Speedy imaging maintained*
 - Single station Unknown to Desired: < 1 h
- ▶ *Multiple/nested catalogues*
- ▶ *Cleaner master image(s), flexible, etc.*

- **Disadvantages**

- ▶ *Learning Curve*
- ▶ *Some packages don't work when installed to a disk image (rather than the boot drive)*
- ▶ *Initial setup of catalogues takes some time*



Your Cases

- Control
- Scale
- Resources

Tools Review



InstaDMG

- **Modular Image Creation**
 - ▶ *Catalogue support for more than one setup*
 - ▶ *Packages (including wrapped in .dmg), drag-and-drop apps*



System Image Utility

- **Modular Image Creation (NetRestore)**
 - ▶ *Flat lists of packages (no nesting)*
- **OS Installation + Customizing (NetInstall)**
 - ▶ *Build a custom OS Installer with your packages*
 - ▶ *Can allow user to select which packages to install just like with normal installers*



DeployStudio

- Image Deployment (to Known)
 - ▶ *Including install of OS Installer package*
- Customizing
 - ▶ *On top of any known state*
 - ▶ *Packages (can be grouped), settings*
 - ▶ *Workflows can reference other workflows*
 - ▶ *Station-specific and general configuration*



Munki

- Install OS (`createOSXInstallPkg`)
- Customizing
 - ▶ *Software installation and updating*
 - Automated or via GUI (non-Admin user)
 - ▶ *Packages (including OS, AAMEE), drag-and-drop apps*
 - ▶ *Payload managed via catalogues and manifests (XML)*
 - ▶ *Can specify payload by machine*



Apple Remote Desktop

- Customizing

- ▶ *Packages, files, apps, UNIX commands*
- ▶ *Install on live (booted) machine*

[www.ucalgary.ca/
iaml/help/pro](http://www.ucalgary.ca/iaml/help/pro)

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