

Which Deployment Method is Right for Us?

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JAN

4



OS X 10.8.2

JAN

11



OS X 10.8.2

18 or
17.0.2esr

11.0.01 or
10.1.5

JAN

11



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**

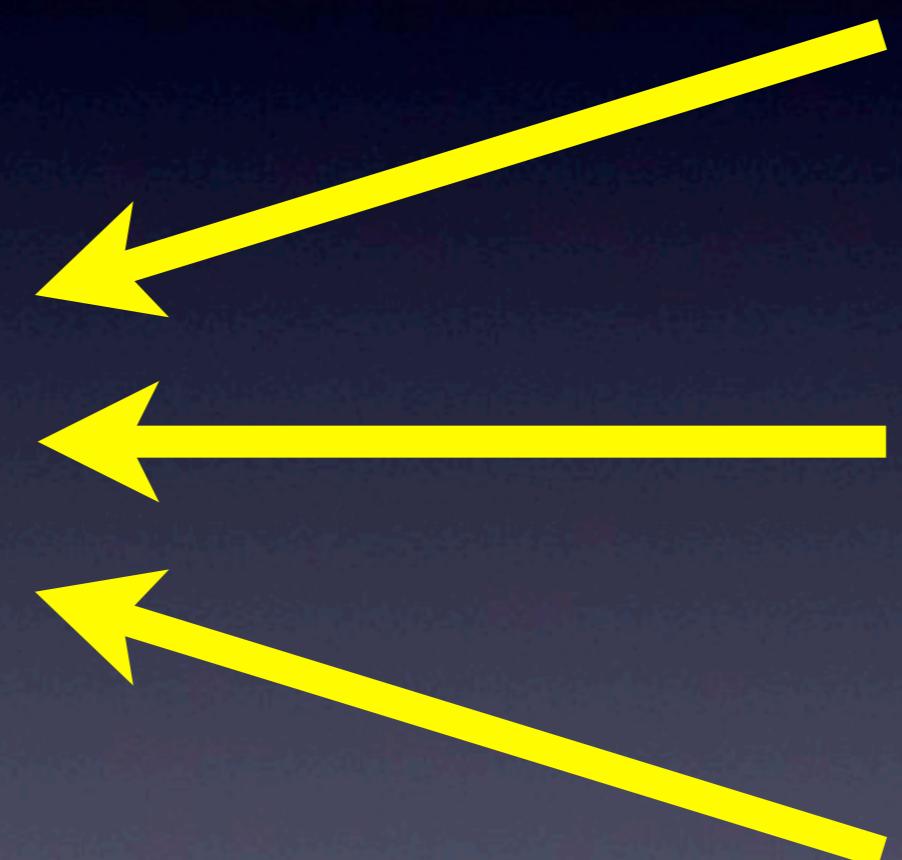
- ▶ *Network (speed, capacity)*
- ▶ *NetBoot Server and/or Web Server*
- ▶ *Bootable Drive / Volume*

- **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



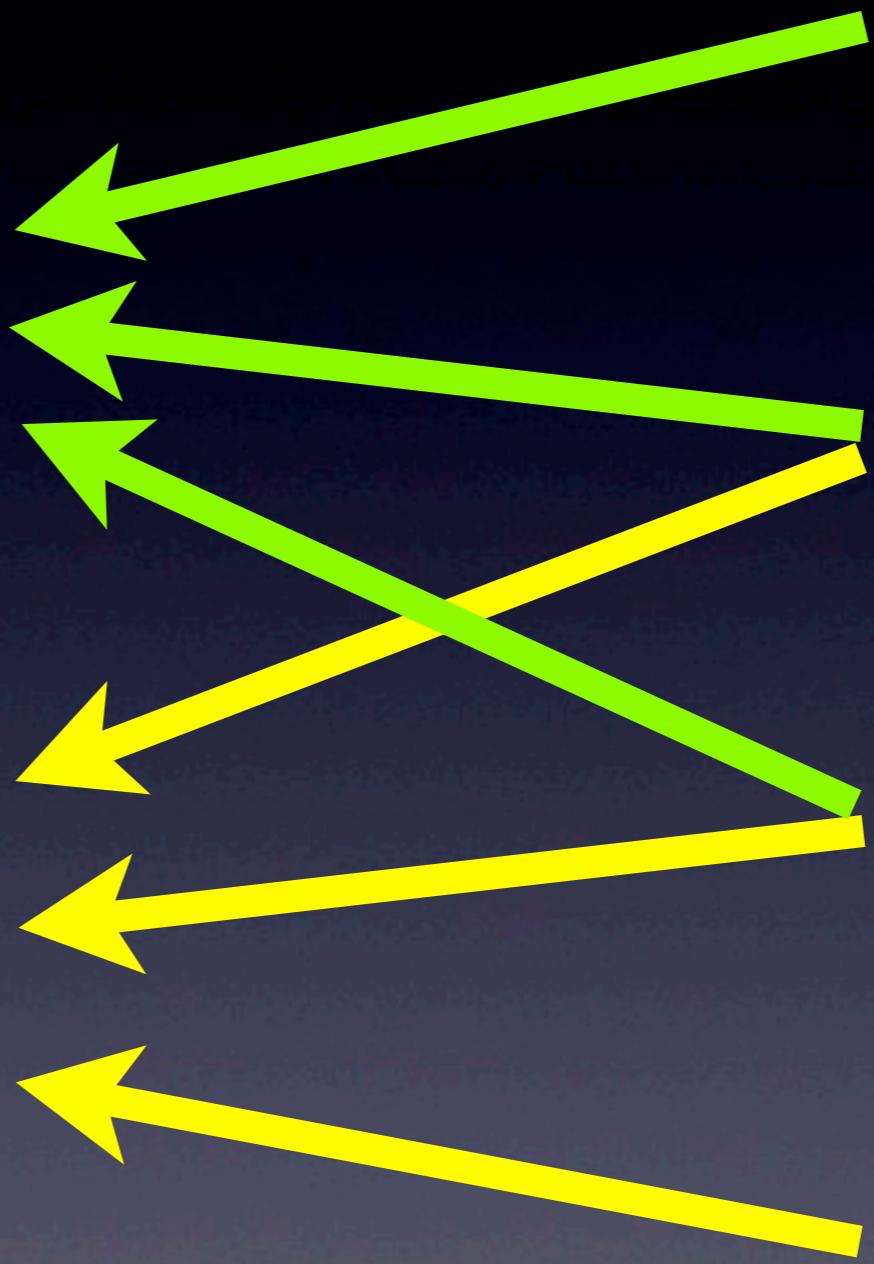
40 Machines



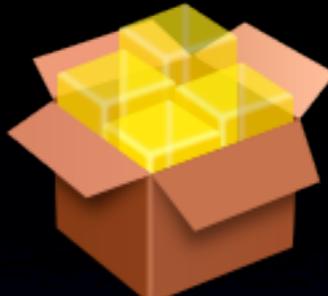
x10



x30



automate





Modular Deployment

1. Collect Installation Packages

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

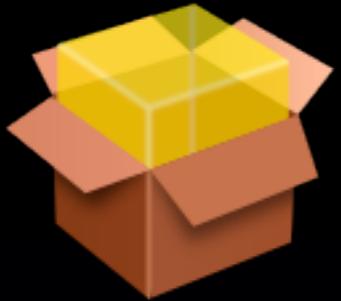
2. Automate Installation

- ▶ *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

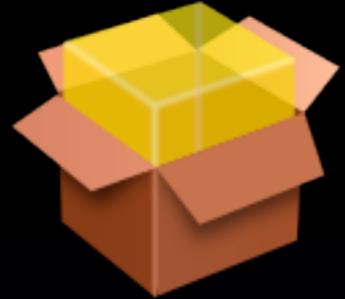


Package Creation



- 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.)

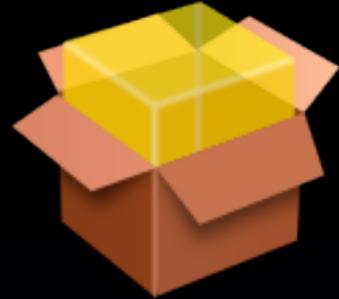




Package Creation



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



Package Creation

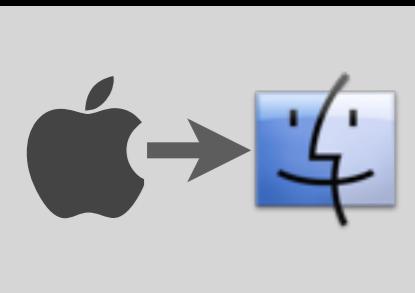
- More Info:
 - ▶ “*Practical Deployment Techniques for Small Labs*”, PSU MacAdmins 2012 on iTunes U and YouTube
 - ▶ ~10:30 to 25:30 in video of presentation



Unknown

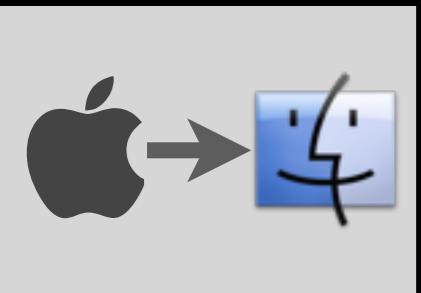
Known

Desired

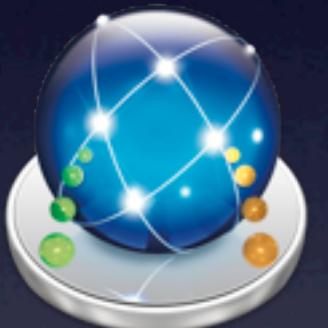


Known to Desired

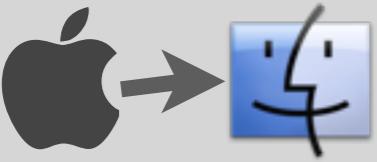
- “Customizing”
- Delivering installer packages for local installation
 - ▶ drag-and-drop apps, shell scripts, directory bindings, account creation and/or file copying may be allowed as well



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**

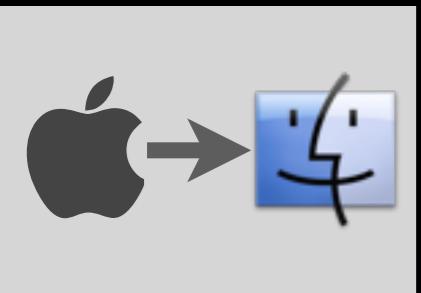
**Delivery
Method**

Admin Push

**Direct or
Next Boot**

**Bootable
Installer**

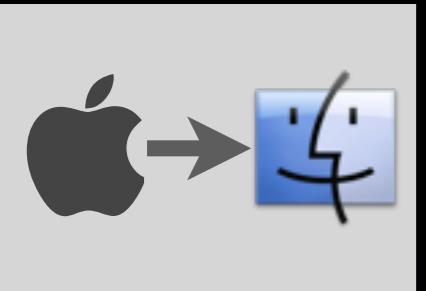
**User Pull,
Admin Push**



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

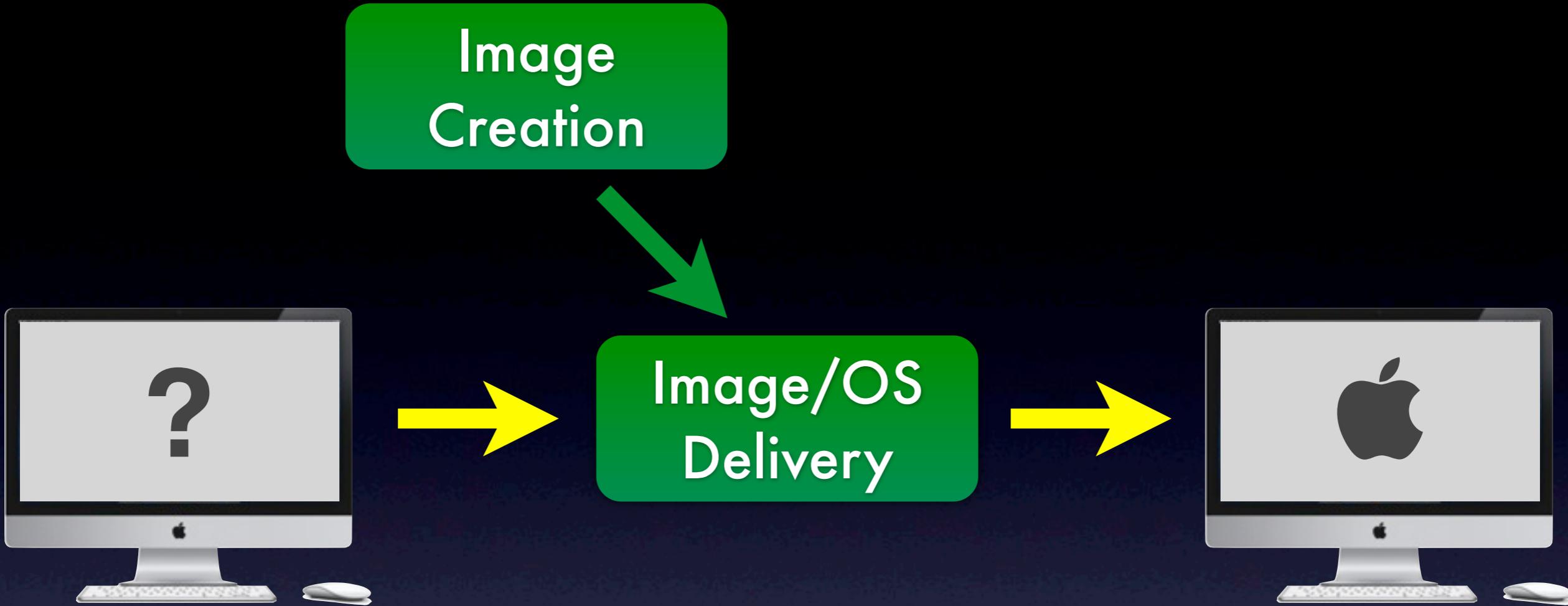
- More Info:
 - ▶ *IT881 @ 11:15 a.m. (Boylan/McSpadden)*
 - ▶ *PSU MacAdmins on iTunes U and YouTube*



Unknown

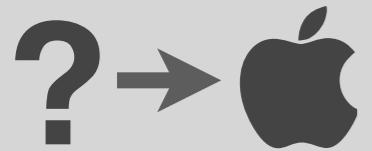
Known

Desired



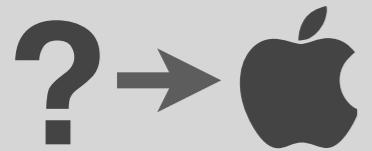
Unknown

Known



Unknown to Known

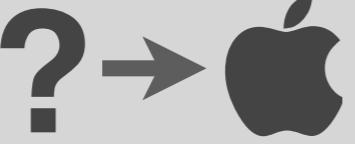
- Good reasons to create an image:
 - ▶ *Speed of deployment*
 - ▶ *Large payload (> 20 GB)*
- ...Modularly:
 - ▶ *No cruft*
 - ▶ *Easy to add/change/delete components*
 - ▶ *Can have multiple setups*

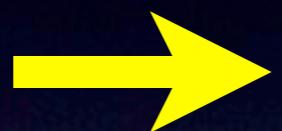


Modular Image Creation Tools

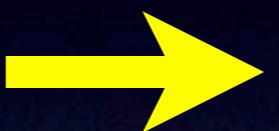


- InstaDMG (+ InstaUp2Date)
 - ▶ afp548.com/category/instadmg/
- System Image Utility/NetRestore
 - ▶ Apple (w/10.8 or Server Admin Tools)
 - ▶ Note: NetRestore is *image-based*
 - ▶ Can extract .dmg from .nbi generated
(mount SetName.nbi/NetInstall.dmg,
then grab /Packages/System.dmg)

	 → 		
Admin UI		InstaDMG	SIU/NR
Payload		pkg, dmg w/ app or pkg	pkg, sh, user accounts
Automate		Catalogs (+Nested)	Workflow
Creates		.dmg	.nbi (w/.dmg)

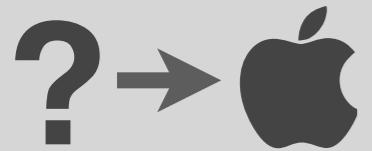


Image/OS
Delivery



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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