

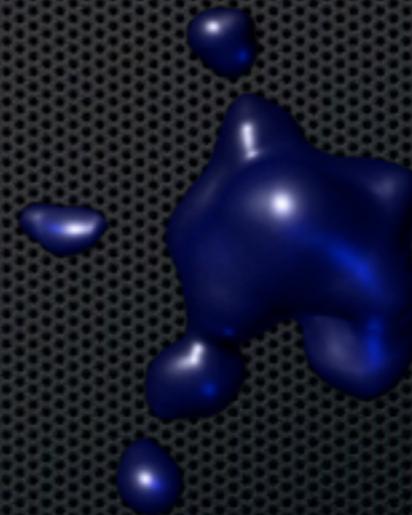
Deployment

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Apple Certified System

Administrator



Methods of Deployment



Before we begin...

- Learn from others historical mistakes
- Reducing complexity and re-using resources increases reliability and overall user satisfaction
- Total effort doesn't change no matter how many endpoints you maintain
- There's no "one fits all" solution
- Don't even think about squeezing Mac into "that" Windows world!

Agenda

- Planning
- Image Deployment
- Deployment Solutions (for any \$budget)
- Packaging
- Tools Most of Us Use
- Resources
- Q & A

Planning

- Gather security and user requirements, get sign-off if possible
- Think years ahead before looking to solution
- Know your budget and resources, set realistic expectations
- Take the time to do it “mostly” right the first time

Image Deployment

- “Manual” Non-Imaging
- Monolithic “Golden Master Mac”
- Thin Imaging
- Modular Imaging

“Manual” Non-Imaging

- Ergonomic nightmare
- No Mac will ever be the same. Guaranteed.
- Inefficient use of resources
- Slow to deploy

I really hate myself.



Monolithic “Golden Master Mac”

- Make one and clone to all!
- How we all used to do it
- A LOT of work ALL the time
- Support limited to build version of core OS
<http://support.apple.com/kb/HT1159>
- Inconsistency across image releases
- Requires additional post-configuration



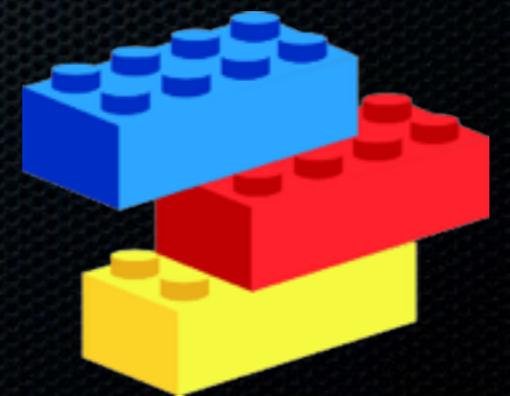
Thin Imaging

- Out-of-the-Box approach
- Reduced time to deploy
- System-specific image need not apply
- Internet restore compatible
- Potential network bandwidth impact
- Human-factor risk
- BYOD “capable”



Modular Imaging

- “Gotta keep ‘em separated” (OS / Recovery Partition / Applications / Settings)
- Fast to deploy updated image for new Apple hardware
- 3rd Party applications and patches stay current
- Consistent experience across images
- BYOD “capable” as well



Examples of Cloning



No-image deployment

- Benefit: Fastest method of deployment
- Benefit: Doesn't require system-specific images
- Benefit: Ability to use Internet-restore.
- `osxinstall.pkg` (Greg Neagle's tool)

Mac Third Party Solutions:

Who they are, what are their strengths

- JAMF Casper and Composer
- Absolute
- FileWave
- Munki
- Puppet
- Apple Remote Desktop

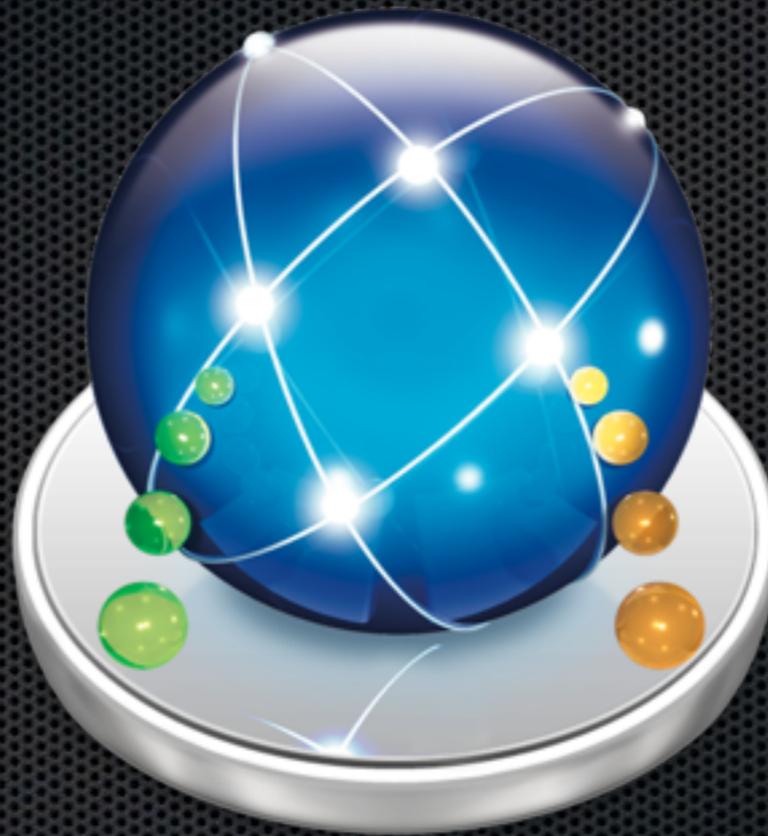
Additional Options

- Centrify: From a Directory Point of view
- DeployStudio
- LANDesk - Windows focus
- InstaDMG or AutoDMG
- CanHazImage
- AutoPkg
- Thin Imaging

Thin/Layered Imaging

- Use existing, good OS & Recovery HD
- Build packages for everything
- Build scripts for configuration
- Using tools like Casper Suite, Munki, etc.
 - Useful for BYOD environments
 - Supported 10.7/10.8 within a day

DeployStudio



Basic Concepts



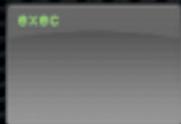
What is DeployStudio?

- ▶ A GUI to Apple's restoration tools
 - asr, diskutil, hdiutil
- ▶ To automatically restore complete disk images
 - Either from a OS X Server
 - or Thunderbolt/Firewire/USB external hard drives
- ▶ To automate certain customisation tasks
 - Name computer, set static IP addresses
- ▶ To make your life easier!!

Components



DeployStudioServer Repository: Local folder or network file share point where DeployStudio stores and retrieves disk images, packages, scripts, logs and all the databases (computers and workflows).



DeployStudioServer Daemon: Shares the repository's databases to client applications like DeployStudio Admin and Runtime. Also manages Runtime's multicast restoration requests by controlling ASR server instances.



DeployStudio Assistant: Simple tool to install, restart & configure a DeployStudioServer daemon. This is also the tool to create a DeployStudio NetBoot set or bootable external drive based on the system where the assistant is running.



DeployStudio Admin: Workflows, computers, scripts and disk images editing tool. Also Includes an activity viewer to follow the status of the computers running Runtime. It requires a DeployStudioServer daemon running on the network or local system.



DeployStudio Runtime: Deployment workflows' execution tool. It requires a DeployStudioServer daemon running on the network or local system.

Workflows



DeployStudio Admin connected to osxserver.example.com

Runtime Control Logs

ACTIVITY COMPUTERS WORKFLOWS MASTERS PACKAGES SCRIPTS

1	Title	Description	Access group	Identifier
1	Create a master from a volume	This simple workflow enables you...	-	04062320-1111-8888-2322-000000000000
1	Install a package (pkg)	This simple workflow enables you...	-	04062320-1111-8888-2322-000000000000
4	Restore a master on a volume	This simple workflow enables you...	-	04062320-1111-8888-2322-000000000000
1	Triple-OS restoration	This workflow shows the 4 tasks...	-	04062320-1111-8888-2322-000000000000

Partition

Target volume: First disk available

LINUX 10GB MacOSX 80% WINDOWS 20%

Apply layout template: Custom Add partition

Secure erase before partitioning with the algorithm single-pass zero-fill (~4 hours for 500GB)

Automate

Revert Save

- Active Directory binding**
Binds a computer to an Active Directory server.
- Alert**
Pauses the workflow by displaying an alert message.
- Automatic enrollment**
Enrolls a computer to a MDM server at first boot.
- Configure**
Applies computer's settings defined in the DeployStudio database.
- Disk image**
Creates a disk image of a volume or partition.
- File copy**
Copies files and folders to a volume.
- Firmware Security**
Enables Firmware Security at boot.
- Fusion Drive**
Creates a Fusion Drive volume combining a SSD and a hard drive.
- Generic**
Runs a script or any executable file.
- Hostname form**
Updates computer's name in the DeployStudio database.
- Licenses form**
Updates computer's Server & Xsan licenses in the DeployStudio database.
- Localization**
Configures the default system language & keyboard layout.
- Network location form**
Updates computer's network locations in the DeployStudio database.
- New user form**
Updates computer's local users list in the DeployStudio database.
- Open Directory binding**
Binds a computer to an Open Directory server.
- Package install**
Installs a package to a volume.
- Partition**
Creates multiple partitions on a specific disk.
- Periodic NetBoot**
Configures the computer to NetBoot periodically.
- Restore**
Restores a disk image to a specific partition or disk.
- Shut down**
Shuts down the computer at the end of the workflow (NetBoot only).
- Software update**
Customizes the Software update client.
- Time**
Configures the default network time server & time zone.
- Workflow**
Inserts all the tasks of another workflow at runtime.

Drag an icon to the workflow timeline

Scripts



```
DeployStudio Admin connected to osxserver.example.com

File name
ds_create_RAID.sh
ds_example.sh
ds_mac_serial_number.sh
ds_partition.sh
ds_workflow_selector.sh

#!/bin/sh

echo "ds_partition.sh - v2.3 ("date")"

ARCH="arch"
BOOT_DEVICE="diskutil info / | grep "Device Node:" | sed s/Device\ Node://g | sed s/\ *//
if [ "_${BOOT_DEVICE}" = "_" ]
then
    echo "RuntimeAbortWorkflow: cannot get boot device"
    echo "ds_partition.sh - end"
    exit 1
fi

SLICE_INDEX="expr ${#BOOT_DEVICE} - 1"
while [ ${SLICE_INDEX} -ge 10 ];
do
    if [ "${BOOT_DEVICE:${SLICE_INDEX}:1}" = "s" ]
    then
        BOOT_DEVICE="${BOOT_DEVICE:0:${SLICE_INDEX}}"
        break
    fi
    SLICE_INDEX="expr ${SLICE_INDEX} - 1"
done
echo "Boot device: "${BOOT_DEVICE}

DISK_NB=0
DEVICE_FOUND=0
```

Scripts stored in /Repository/Scripts

Restore via Multicast ASR



DeployStudio Admin connected to osxserver.example.com

Runtime Control Logs

Search

Title	Description	Access group	Identifier
1 Create a master from a volume	This simple workflow enables you...	-	04062220-1111-8888-2222-0...
Install a package (pkg)	This simple workflow enables you...	-	04062220-1111-8888-2222-0...
10 Partition and Restore OS X		-	E88C3548-E140-4F7C-A32C-E...
2 Partition and Restore OS X + Package		-	9CB0940F-FCCE-4651-A0F8-5...
1 Partition and Restore OS X AD Bind		-	D6F803C6-64E5-4CA8-8588-3...
1 Partition and Restore OS X Auto Enrollment		-	A2549504-0738-4758-83DD-F...
Partition and Restore OS X Reconfigure		-	CD80F292-8673-42C0-8288-A...
Partition, Restore OS X and BootCamp		-	75485FEC-0781-486A-9783-6...
Restore a master on a volume	This simple workflow enables you...	-	04062220-1111-8888-2222-0...

Restore

Target volume: First disk available

Image: HFS OSX_BaseImage.hfs.dmg

HFS only options:

Rename volume to:

Don't check restoration (faster) Erase target for block copy restoration (faster)

Rename ByHost prefs Cleanup machine dependent files and caches

Restore system recovery partitions

Enable multicast restoration Pause workflow until multicast ends

Stream data rate: 100 MBs Startup trigger: 0 clients

Client disk speed: 125 MBs Timeout: 0 minutes

Add generic BCD (Vista and later) Expand restored NTFS volume

Set as default startup volume

Automate

Revert Save

Prepare The Image

- Install all updates
- Create users (admin account for remote management)
- Install desired applications (with serial #'s)
- Run Disk Utility



- Unbind from test environment
- DeployStudio includes Workflow Tasks for rebinding the systems to both Active Directory and/or Open Directory
- Select name of Deployment Image

Benefits of Installation Packages

- Distribute single files or groups of items
- Consistent install behavior
- Automation options
- Trackable and easily audited
- Combine with ARD for a powerful distribution option



Other Package Formats

- Microsoft - no custom package format (needs post install attention)
- Adobe - own package format - AAMEE



Packaging

- Potentially use package from vendor
- Many third-party packaging tools
 - PackageMaker, pkgutil, Iceberg, Packages, The Luggage, JAMF Composer, InstallEase

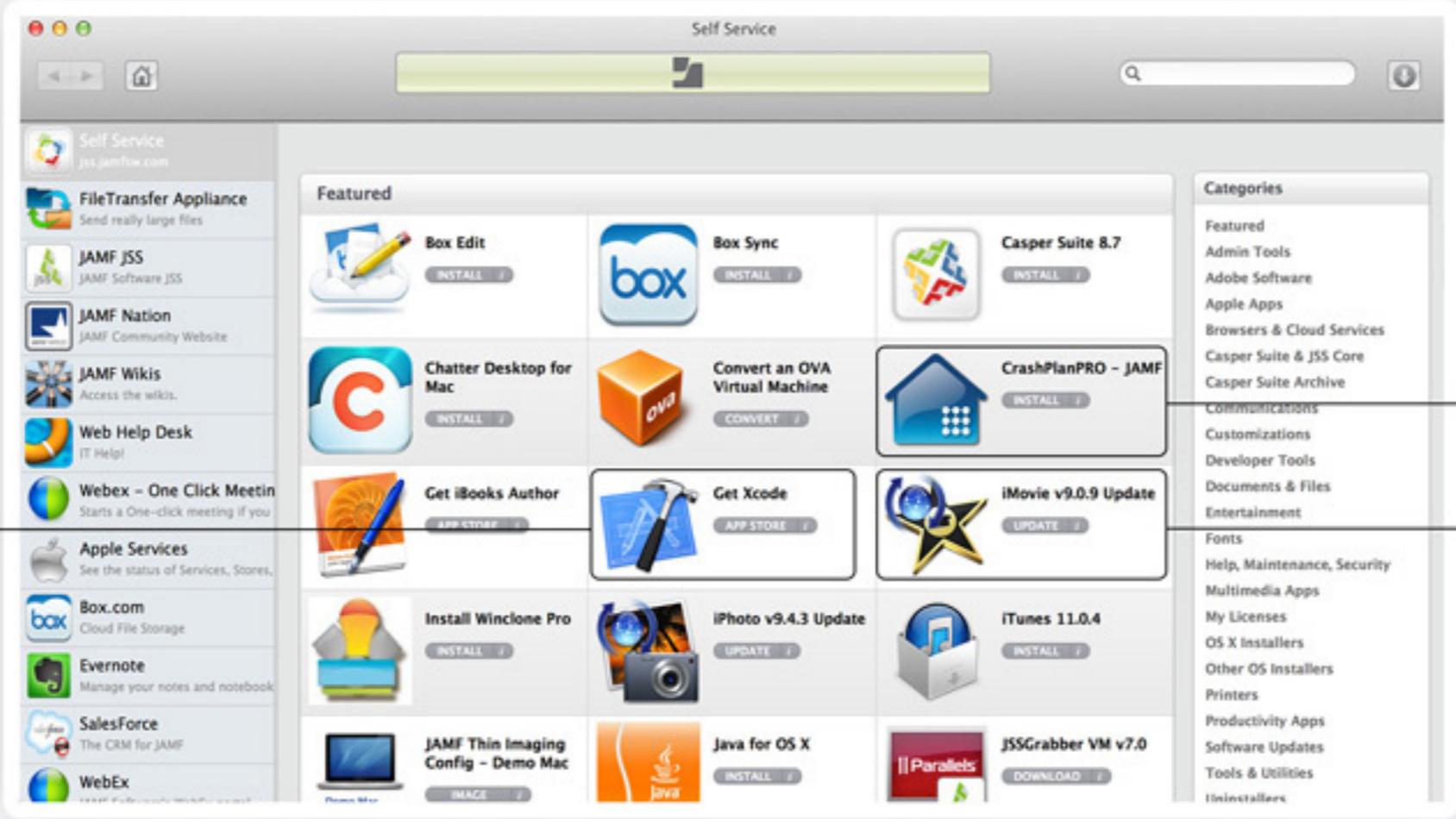
What is Casper?

The Casper Suite is a collection of Commercial tools. Allows the admin to oversee the eight tenets of Mac OS X client management: Inventory, Imaging, Patch Management, Software Distribution, Remote Control, Settings and Security Management, License Management, and Usage Management.



Casper Suite

- Management console = web browser



The screenshot shows a web browser window titled "Self Service" with a search bar and navigation icons. The main content area is divided into a "Featured" section with a grid of application tiles and a "Categories" sidebar on the right. The "Featured" section includes tiles for Box Edit, Box Sync, Casper Suite 8.7, Chatter Desktop for Mac, Convert an OVA Virtual Machine, CrashPlanPRO - JAMF, Get iBooks Author, Get Xcode, iMovie v9.0.9 Update, Install Winclone Pro, iPhoto v9.4.3 Update, iTunes 11.0.4, JAMF Thin Imaging Config - Demo Mac, Java for OS X, and JSSGrabber VM v7.0. The "Categories" sidebar lists various application groups such as Admin Tools, Adobe Software, Apple Apps, and more. Annotations with lines pointing to specific tiles include: "Distribute Apple App Store apps." pointing to the "Get iBooks Author" and "Get Xcode" tiles; "Install any application, from any vendor, via Self Service." pointing to the "Casper Suite 8.7" and "CrashPlanPRO - JAMF" tiles; and "Update Apple App Store apps." pointing to the "iMovie v9.0.9 Update" and "iTunes 11.0.4" tiles.

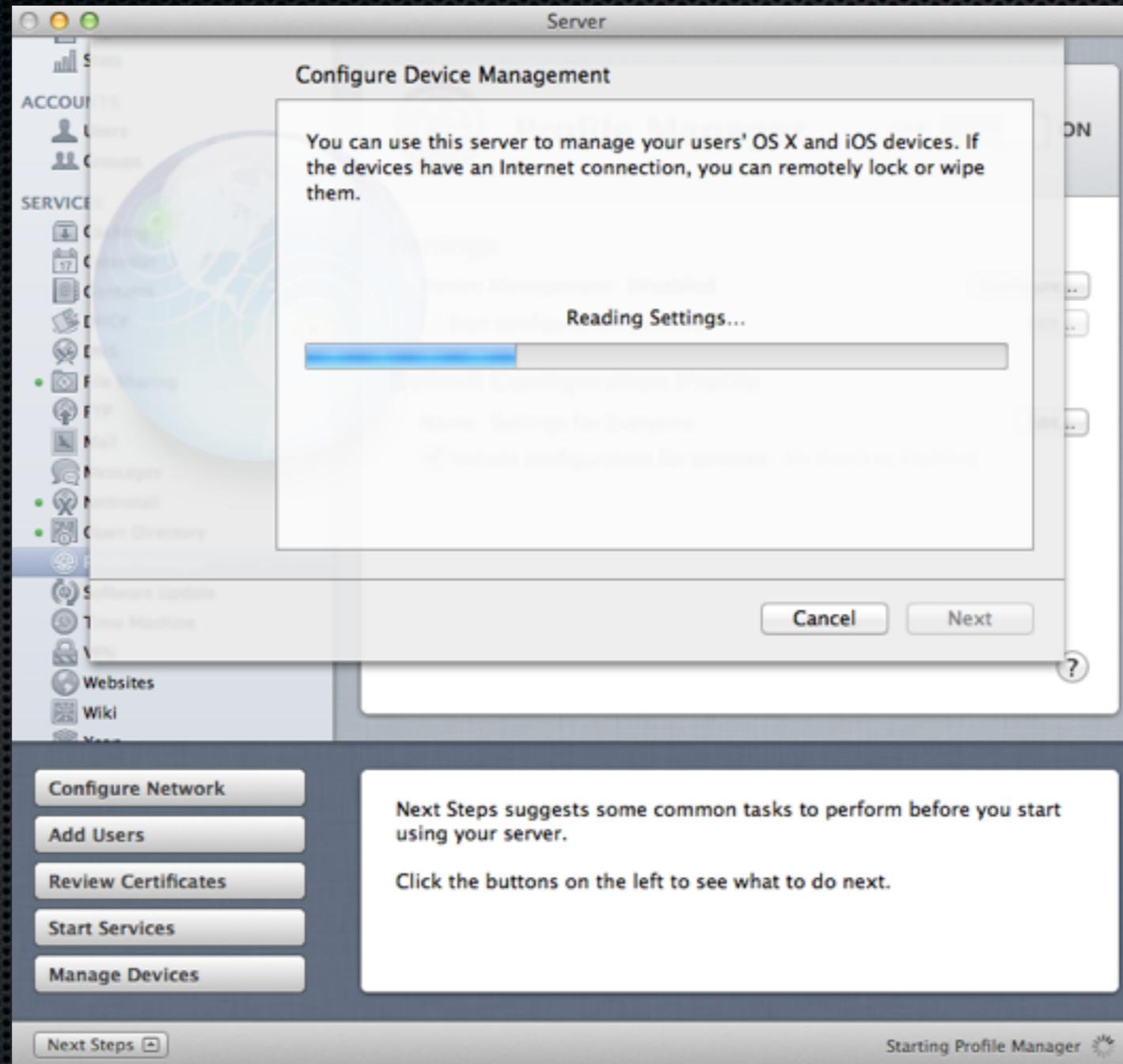


- Modular Approach
- Packages are Everything
- Casper Tools
- Casper Admin, Casper Imaging, Composer

OS X Server

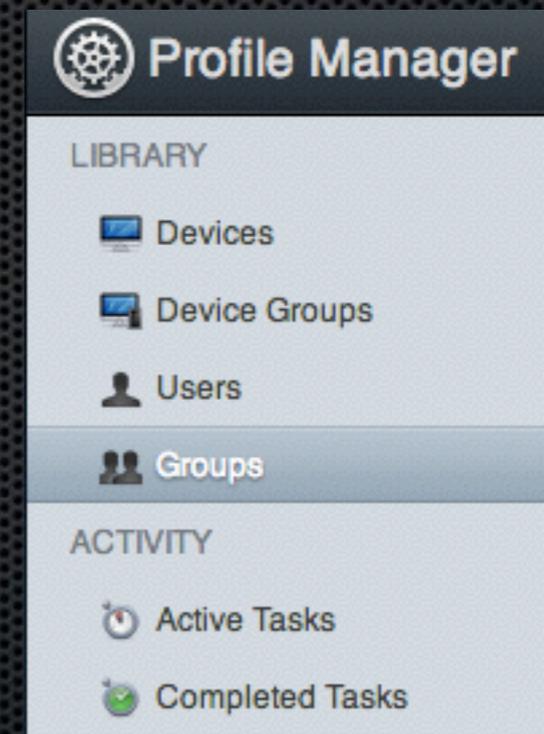


Configuration Profiles



Profile Manager

- Introduced OS X Lion
- Preference/Configuration Management
- Supported by many third-party MDMs



Caching Server/SUS

- Included in Server.app 2.2
- No control over which updates
- Useful if all clients access Internet from single IP

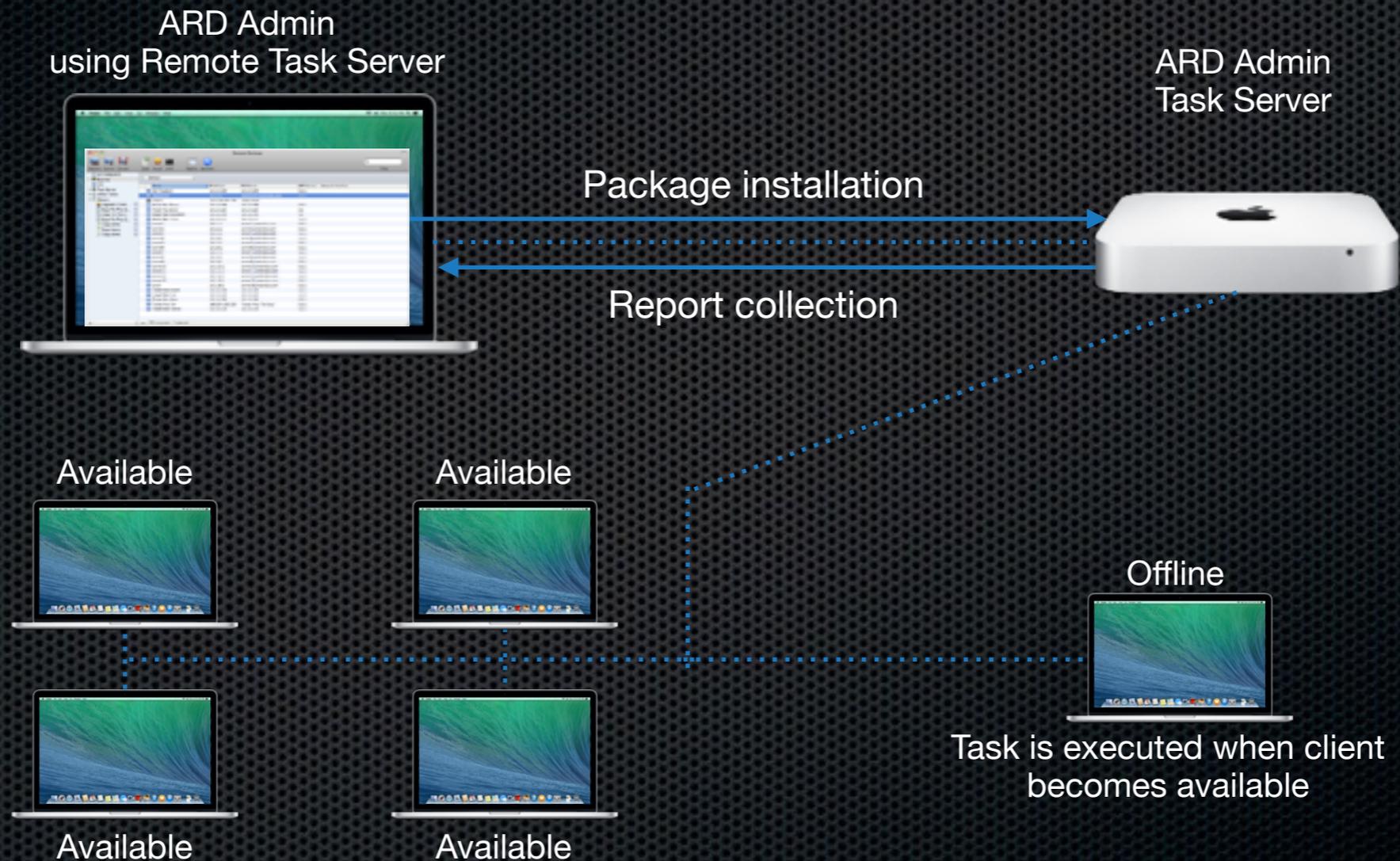


Apple Remote Desktop

- Remote Support/Screen Control
- Deployment
- Asset Management



ARD Task Server



Directory Service Integration

Enable ARD directory-based administration:

- ▶ Change Client Settings dialog.
- ▶ Create Client Installer dialog.
- ▶ `sudo /System/Library/CoreServices/RemoteManagement/ARDAgent.app/Contents/Resources/kickstart -configure -clientopts -setdirlogins -dirlogins yes`

Manage ARD access privileges:

- ▶ Use local group names with predefined ARD privilege keys.



ASR at the command line

- Doesn't work if network isn't set up for multicasting
- Proton Pack
- diskutil
- hdiutil
- asr

Multicast ASR



Server streams
packets to a
multicast address.



ASR server
continuously loops
the stream.



Any number of clients can
simultaneously receive the
stream.

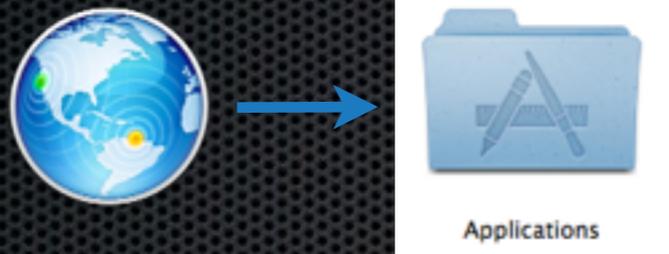


Clients accept packets
until entire image is
received.

Postimaging Server Configuration

To deploy a 10.9 unconfigured server =

- Copy Server.app to /Applications on an unconfigured client
- Run the Server.app to install and configure the server software



Third Party Review



DeployStudio

- Setup, create NetBoot images
- Manage configs/workflows
- Installed on your NetBoot image, runs workflows

Casper Suite

- Composer - build scripts and base OS
- Recon - scan/get machines enrolled
- Casper Admin - upload packages and build imaging workflows
- Casper Imaging - installed on your NetBoot image, runs workflows
- Casper Remote - remote assistance and instant installs

Munki

- Automates software installation
- Managed Software Update app (Self Service), doesn't require admin
- Doesn't require OS X Server (http)
- Google variant - Simian (App Engine)
- <http://code.google.com/p/munki> - free

Puppet

- You specify how you want things configured
- Puppet compares to your specifications
- Makes changes if necessary
- Incredibly useful for server configurations
- <http://www.puppetlabs.com>

Absolute Manage

- Based on old netOctopus, LANrev
- Completely cross-platform: OS X, Windows, iOS, Android
- <http://www.absolutemanage.com> - commercial

FileWave

- Cross-platform (OS X, Windows, iOS)
- Can run on an OS X, Windows, or Linux server
- Lightning Thunderbolt Imaging
- <http://www.filewave.com> - commercial

Which Tool?

- Use the one that works for you, at a price that you can afford
- Don't discount "free" software, but...
- Don't discount the ability to call someone if you're stuck

Apple's documentation

- <http://www.apple.com/support/osxserver/setupadministration/>
- http://images.apple.com/education/docs/1521219b_osx_deployment_guide_030513.pdf
- <http://www.apple.com/mac/volume-licensing/>

More documentation

- <http://www.afp548.com>
- <http://krypted.com>
- <http://www.mactech.com>
- <http://managingosx.wordpress.com/category/deployment/>

Questions?



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