Peter Havens

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Deployment Methods

Which method best suits your needs?

About Me

- UCSD Computer Science Engineering degree - Worked briefly at the UCSD Super Computer facility
- 10+ years as a software engineer before moving to Functional Architect / UI design then on to Product Management
- Enjoy the hiking, biking and the great outdoors, and the occasional CS GO match with my eldest son



What are we going to cover?

- What to consider when picking a deployment method
- Common terms and technologies
- Methods for deployment
- Vendors approaches and how they suit your needs
- Question and Answer

What to consider…

What devices are we talking about?

- What type of devices do you need to support?
  - Macs only?
  - Macs and iOS only?
  - Android? Windows?
  - Will this change in the future?
- How many devices are we talking about?
  - How many could this grow to in the future?
- Where are these devices?
  - How are they connected?

What to consider…

What is the deployment scenario?

- What type of organization is this for?
  - Is this for an Enterprise organization or SMB?
  - Perhaps this is for a school or university?

- What is important to the organization?
  - Ease of deployment?
  - Facilitating productivity?
    - Email, Apps, Wifi, VPN, etc…
  - Meeting security requirements?
    - disk encryption, preventing unapproved apps, non-admin users, smart cards, etc…
  - Special purpose devices, classroom facilitation, kiosk mode…

What to consider…

What is the deployment scenario?

- Deployment constraints?
  - How quickly does a device need to be configured or deployed?
  - Do you need image management solution?
  - Bandwidth or connectivity restraints?
- What tools and processes already exist?
  - Is there a user / computer directory?
    - Active Directory or LDAP?
    - Is the organization using existing tools to manage other devices?

What to consider…

What is the deployment scenario?

- IT Staff supporting this deployment?
  - Level of expertise available
  - Support SLAs? Professional Services? Community support?
  - Supporting Staff?
    - Commercial offering vs open-source (hint: it's not always the price tag)

What are we deploying?

- System Images?
- Configuration Profiles
  - Email, wifi, VPN, etc…
  - https://developer.apple.com/library/content/featuredarticles/iPhoneConfigurationProfileRef/Introduction/Introduction.html
- Applications, Enterprise App Store
- System Updates
- Custom settings, custom scripts / commands, MCX Settings, plist settings, etc…

Deployment Methods

- Image based deployment solutions
- Direct connect deployment
- File transfer based deployment
- Mobile Device Management (MDM) and Mobile Application Management (MAM) solutions
- Agent or Client based management solutions

Imaging Solutions

- A solution for capturing and deploying entire OS images (macOS only, not for iOS)
- If you need to be able to quickly reset a system back to a “Golden Master” image in a short time
- Perhaps a lab environment for training or EDU
- Often times a management agent or client is part of the Image distributed

Imaging Solutions

- Advantages:
  - Quick turn around time for full deployment
  - Very repeatable / consistent results

- Disadvantages:
  - Managing different images for new OS updates and or different systems is tedious

- Full system imaging is becoming less common as other approaches improve in efficiency

Imaging Solutions

- DeployStudio - http://www.deploystudio.com
  - Free to use, not open-source
  - community / forum supported
- Imagr - https://github.com/grahamgilbert/imagr
  - Open-source
  - Community forum and mailing list supported
- Puppet Open-source & Enterprise - https://puppet.com/
  - Enterprise adds Scalability, Management UI, RBAC, Reporting, etc.
- Commercial Offerings
  - Casper jamf - Mac Imaging
  - FileWave Imaging
  - Both offer excellent customer support

Direct Connection

- Deployment by directly connecting an iOS device to a Mac and using Apple Configurator 2
- Useful for deploying a single or multiple devices by connecting them via USB
- Allows you to put devices into Supervised mode
- Good for EDU / classroom environments
- Good for relatively small number of devices



Direct Connection

- Supervised mode enables
  - App Lock (Single App Mode or “Kiosk” Mode)
  - Autonomous Single App Mode
  - Global HTTP Proxy
  - Activation Lock Bypass
  - Web Content Filter
  - Set background & lock screen
  - Silent App Push
  - Always-On VPN
  - Allow managed app installation exclusively

Direct Connection

- With Supervised mode you can also block or allow:
  - iBookstore, iMessages, Game center
  - AirDrop, AirPlay, Host pairing
  - Cloud Sync, Spotlight internet results
  - Handoff, Erase, Restrictions UI
  - Installation of configuration profiles by UI
  - News, Keyboard shortcuts, Passcode modifications
  - Device name changes, Wallpaper changes
  - Automatic app downloads
  - Changes to enterprise app trust, Apple Music
  - Mail Drop, Pairing with a watch

File Transfer

- A method deployment that simply uses file transfers as a means of deploying
- Essentially works like an incremental backup would, keeping the client machines in sync with the files deployed to them
- Only copies what is missing or changed

File Transfer

- Advantages:
  - Simple concept and interface
  - Support for Multiple platforms including macOS, Windows, iOS and Android
  - Powerful for initial deployment / configuration and maintenance
  - Efficient, only transfers the components that are out of sync

- Disadvantages:
  - Requires connectivity to the management console usually hosted on premises

File Transfer

- FileWave
- THE goto File Transfer deployment solution
- Commercial offering with great support
- Stable product / solution. Since 1992

EMM

- What is EMM? Enterprise Mobile Management
  - Usually consists of a Mobile Device Management (MDM) and Mobile Application Management (MAM)
  - Leverages protocols built into the platforms to do deployment / configuration and management
    - Apple MDM profile based management
    - Apple Device Enrollment Program
    - Apple Volume Purchase Program
    - Windows MDM
    - Android for Work (now called Android)
    - Samsung KNOX

EMM

Apple Specific MDM Capabilities

- Apple Device Enrollment Program (DEP)
  - Streamlined setup (skip Passcode, Location, Restore from backup, Apple ID, Terms of Service, Siri, Sending diagnostics)
  - Mandatory Zero touch MDM enrollment
  - Profiles are locked
  - Support for Supervised Mode
- Apple Volume Purchase Program (VPP)
  - Solution for deploying paid apps
  - Business and Education options

EMM

- Advantages:
  - Zero touch through Apple DEP and Samsung Mobile Enrollment
  - Deployment / Management anywhere cloud messaging (APNS / GCM)
  - Deployment Flexibility Cloud or On premises
  - User friendly interfaces for self enrollment / management
  - Multi-Platform support
  - Cloud based lightweight user directories
  - BYOD scenarios

- Disadvantages:
  - Big brother stigma
  - Multi-Platform doesn't necessarily mean best for one platform
  - Sometimes complicated to configure

EMM

Notable EMM Vendors

- Centrify (EMM included as a part of Identity Service)
- VMware AirWatch (Feature rich, wide adoption)
- MobileIron - (Only public company focused solely on EMM)
- Jamf Now - AKA Bushel - (Apple Experts)
- Blackberry EMM - (Good Technologies and Blackberry)
- Citrix XenMobile - (formerly Zenprise)

Client / Agent Based

- Traditional Client / Server based model
- Proprietary methods employed for deployment and management
- File & EMM based solutions may also use this model
  - To supplement additional features beyond the Platform capability

Client / Agent Based

- Advantages:
  - Richest feature sets
    - Can provide solutions beyond what is available via platform supported EMM interfaces (macOS only)
    - Plist support, MCX Settings, Profiles, command execution, etc
    - Extensible through custom scripts
- Disadvantages:
  - Agent / client footprint on endpoint
  - Possible incompatibility with other 3rd party software
  - Agent / client updates and OS update compatibility

Client / Agent Based

Open-source Solutions

- Munki - (Author Greg Neagle at Walt Disney Animation Studios)
  - Active open-source community
  - Mac / python based toolset for deployment
  - Great Apple App Store like end user experience
  - Wide adoption from small business to very large (Facebook, Google, Disney, etc)
- AutoPkg & AutoPkgr (AutoPkg Author - Per Olofsson, Greg Neagle)
  - AutoPkg (Per for community based pkg recipe support
  - Allows automated repository maintenance for Munki and other solutions
  - AutoPkgr (from the Linde Group) - Provides a nice GUI interface for configuring AutoPkg

Client / Agent Based

Commercial / ISV Solutions

- Jamf
  - Apple Experts - Deepest Mac & iOS support
  - Self Service portal for end users
  - Excellent Support and Community
- Centrify
  - Security focused solution - Smart Card services for Mac and Mobile derived credentials
  - Cloud Directory, Directory services plugin for Mac
    - Excellent for complex AD environments (cross / multi forest)
  - Leverages Active Directory Group Policy for Mac management

Client / Agent Based

Commercial / ISV Solutions

- Parallels
  - Leverages SCCM as a means for deploying Apple
- FileWave
  - Client / Agent solution for File Transfer based deployment
- Absolute Manage
- Ivanti (AKA Heat & Landesk)

Resources

Munki:

- https://github.com/munki/munki/wiki

Imagr:

- https://github.com/grahamgilbert/imagr/wiki

Apple MDM, DEP & VPP:

- DEP - http://www.apple.com/business/dep/
- VPP - http://www.apple.com/business/vpp/
- VPP for EDU - https://volume.itunes.apple.com/gb/store
- Apple Profile Reference:
  https://developer.apple.com/library/content/featuredarticles/iPhoneConfigurationProfileRef/Introduction/Introduction.html

Questions?



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