



Apple Technical White Paper

Best Practices for Deploying Mac Computers with OS X Lion

Updated January 12, 2012

Contents

Overview	3
New in OS X Lion	3
Installer Technology	3
Lion Recovery.....	4
Lion Licensing	4
Mass Deployment.....	5
Downloading and Installing Lion.....	5
Unmanaged Deployment	5
Network Deployment	6
Conclusion	7

Overview

OS X Lion ushers in an exciting shift in the delivery of desktop operating systems. With Lion, the primary delivery method is now a digital download from the Mac App Store. The OS X Lion installer is an application that runs on the Mac to be updated.

This departure from past methods of OS delivery raises some questions about enterprise deployment of Lion, such as how to handle licensing, imaging, installation, and Lion-specific features like Lion Recovery and Internet Recovery.

The purpose of this white paper is to answer these questions and show how IT departments can license and deploy OS X Lion in large organizations with the same simplicity and ease of use as previous versions of OS X.

New in OS X Lion

Installer Technology

OS X Lion is the easiest OS to install on the Mac. There's no need for boot disks or disk images because you can download the installer from the Mac App Store.

This section highlights the technical details of the OS X Lion installer.

Install from an App

After you purchase OS X Lion from the Mac App Store, the Install OS X Lion app is installed in the Applications folder of the Mac that downloaded it. The OS X Lion app contains all the OS X Lion packages to be installed and components needed to install the packages. To install the OS, simply open the installer and follow the prompts.

Mass Deployment

Apple provides software solutions to enable mass deployment from an app-based installer:

- Simply copy the OS X Lion installer to each Mac.
- Use NetInstall or NetRestore to create network deployment images from the installer app.

Lion Recovery

When you install OS X Lion, a Lion Recovery partition is created on the target disk. Users can't usually see this partition until they need to use it.

Lion Recovery Uses

The Lion Recovery includes several utilities:

- OS X Lion Installer to reinstall OS X Lion
- Network Utility for network diagnostics
- Firmware Password Utility to set a low-level password
- Disk Utility to manage or repair disks
- Safari to access online help and documentation
- Time Machine to restore the computer from a backup
- Terminal for command-line configuration and diagnostics

Using Lion Recovery

To use Lion Recovery, hold down Command-R during startup. This key combination is required because you can't see the Lion Recovery partition when you select a startup disk from the Startup Disk pane of System Preferences.

Securing Lion Recovery

To prevent users from using Lion Recovery, you should apply a firmware password to the Mac. This will stop unauthorized users from using shortcut keys at startup to access utilities like Lion Recovery.

Lion Licensing

The Mac App Store–based delivery method of OS X Lion introduces some changes in volume licensing for the OS.

Apple ID

To use the Mac App Store, you'll need to create an Apple ID. With this unique ID, you can buy apps and download those you previously purchased. Instead of using your personal Apple ID, such as your iTunes account, you should create a separate Apple ID for purchasing software for your organization.

Volume License Agreement

With the Mac App Store Volume License Agreement (VLA), you can buy multiple licenses of Mac App Store items, making it easy to deploy OS X Lion in your organization.

The steps for using VLA are simple:

1. Contact your Apple sales team or reseller.
2. Purchase as many licenses for OS X Lion as you need.

3. Download the OS X Lion installer just once.
4. Deploy OS X Lion to your Mac population.

You'll receive proof of licensing as a PDF. Keep both electronic and paper copies of this document in a secure place.

Mass Deployment

Downloading and Installing Lion

One of the biggest changes with OS X Lion is the switch to using the Mac App Store for distribution. This change makes it easy to always have the latest version of the OS installer on hand without needing to wait for changes to shrink-wrapped software boxes.

Downloading Lion

Retrieving your initial download of OS X Lion is simple:

1. Log in to the Mac App Store with the Apple ID you use to purchase apps for your organization.
2. Purchase OS X Lion or redeem a VLA code to begin the download.
3. When the installer opens, quit the program.
4. Copy the Install Mac OS X Lion app to a secure location.

Updating the Lion Installer

When OS X Lion is updated, the full Lion installer is also updated. Updates to the full installer may come several days after the release of OS updates.

To update your Install Mac OS X Lion app:

1. Log in to the Mac App Store with the Apple ID you use to purchase apps for your organization.
2. Click the Purchased tab to view your purchase history.
3. If OS X Lion doesn't begin to automatically update, click the Update button.
4. When the installer opens, quit the program.
5. Copy the updated Install Mac OS X Lion app to a secure location.

Unmanaged Deployment

With the new features in the OS X Lion installer, users can update the OS on their computer without help from IT departments. No external boot disks are needed, user data is preserved, and system configurations are retained and updated.

All you need to do is make the Install Mac OS X Lion app available on a file server or distribute it to client computers. Users can simply copy the installer to their computer and double-click the app to start the update.

Network Deployment

As part of the new features of the Lion installer, Apple has updated its NetInstall and NetRestore technologies. Both NetInstall and NetRestore use the NetBoot service in OS X Lion Server to provide a centralized deployment environment.

NetBoot Basics

Most IT organizations are familiar with using PXE network booting as part of their deployment plans on other platforms. NetBoot provides a similar feature for the Mac using familiar standards (BDP, TFTP, NFS, and HTTP). The easiest way to provide NetBoot services is with OS X Lion Server because you can quickly configure your NetBoot service and offer network disks to the appropriate clients.

System Image Utility

System Image Utility (SIU) is an application included in the free Server Admin Tools package that you can download from www.apple.com. With SIU, you can quickly create, save, and share imaging workflows among any number of administrator workstations. Saved workflows can be scripted to run using the built-in automator tool on OS X Lion.

NetInstall

Using NetBoot, NetInstall allows you to provide a customized instance of the OS X Lion installer from a network disk. With NetInstall, you can let users upgrade their own Mac computers without having to disable or add OS or third-party software components. Some examples of NetInstall customizations include:

- Slipstreaming Apple and third-party software installers
- Customizing slipstreamed software installers
- Naming computers
- Binding to directory services
- Adding MDM configuration profiles

NetInstall images are created from the OS X Lion installer. With System Image Utility, you can select the installer you want to use as your source. All image-creation workflow choices can be saved and distributed to other system-building workstations.

NetRestore

Another NetBoot-based deployment tool is NetRestore. NetRestore is different from NetInstall because it's used for deploying a prepared disk image to a Mac. This is a block-copy operation and is destructive to the target disk, so NetRestore is more commonly used for fully wiping a Mac so it can be redeployed.

You can use SIU to create NetRestore images either by capturing an image of an existing Mac or by installing and configuring software into a new

image. Additionally, NetRestore offers the ability to present a list of existing images that can be hosted on any web server, or multicast Apple Software Restore server, for deployment.

Provisioning New Mac Hardware

With the departure from installation media, Apple is also encouraging organizations not to wipe a new Mac when it comes out of the box. With client management suites or installer packages, you can simply configure a new Mac rather than image it. This consumer-focused deployment model for new hardware can free up valuable IT resources and give users a sense of empowerment.

To redeploy a Mac, most organizations will have a traditional NetInstall or NetRestore server to allow for a rapid wipe-and-restore operation.

Conclusion

OS X Lion has fundamentally changed the way operating systems are delivered, with sourcing and app-based delivery.

With these changes in deployment methodology, Apple continues to provide mass deployment tools for the enterprise.



Apple Inc.

© 2012 Apple Inc. All rights reserved.

Apple, the Apple logo, FileVault, iTunes, Mac, and Mac OS are trademarks of Apple Inc., registered in the U.S. and other countries. Apple Remote Desktop is a trademark of Apple Inc. Mac App Store is a service mark of Apple Inc.

OS X version 10.7 Lion is an Open Brand UNIX 03 Registered Product.

Other company and product names mentioned herein are trademarks of their respective companies. Mention of third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation. Apple assumes no responsibility with regard to the performance or use of these products. All understandings, agreements, or warranties, if any, take place directly between the vendors and the prospective users. Every effort has been made to ensure that the information in this manual is accurate. Apple is not responsible for printing or clerical errors.

01-12-2012