Deploying OS X v10.7 or Later with the Casper Suite

Technical Paper
8 April 2016

JAMF software

JAMF Software, LLC
© 2016 JAMF Software, LLC. All rights reserved.

JAMF Software has made all efforts to ensure that this guide is accurate.

JAMF Software
100 Washington Ave S Suite 1100
Minneapolis, MN 55401-2155
(612) 605-6625

Apple, the Apple logo, FireWire, and OS X are trademarks of Apple Inc., registered in the U.S. and other countries. The App Store is a service mark of Apple Inc.

The CASPER SUITE, COMPOSER®, the COMPOSER Logo®, JAMF SOFTWARE®, the JAMF SOFTWARE Logo®, RECON®, and the RECON Logo® are registered or common law trademarks of JAMF SOFTWARE, LLC in the U.S. and other countries.

All other product and service names mentioned are the trademarks of their respective companies.

Contents

4 Introduction
4 What's in This Guide
4 Additional Resources

5 Overview

6 Deploying an OS X Upgrade
6 Requirements
7 Step 1: Add the .app File for OS X to Casper Admin
8 Step 2: Cache the InstallESD.dmg File
10 Step 3: Create a Smart Computer Group
11 Step 4: Create a Self Service Policy for Upgrading OS X

15 Deploying OS X by Imaging Using the JSS v9.7 or Later
15 Requirements
15 Step 1: Prepare to Image a Partition
19 Step 2: Image Computers

21 Deploying OS X by Imaging Using the JSS v9.66 or Earlier
21 Requirements
21 Step 1: Prepare to Image a Main Partition
25 Step 2: (Optional) Prepare to Create or Modify a “Recovery HD” Partition During Imaging
30 Step 3: Image Computers

32 Revision History

Introduction

What's in This Guide

This guide provides step-by-step instructions on how to deploy OS X v10.7 or later with the Casper Suite.

Additional Resources

For more information on Casper Suite-related topics, see the *Casper Suite Administrator's Guide*, available at:
http://jamfsoftware.com/product-documentation/administrators-guides

Overview

This guide provides workflows for two different OS X deployment scenarios:

- **Deploying an OS X upgrade**—This should be used for upgrading OS X on computers that are already configured in your environment. It allows you to preserve the settings and files on computers. For instructions, see Deploying an OS X Upgrade.
- **Deploying OS X by imaging**— This should be used for configuring newly purchased computers or re-purposing computers that are already part of your environment. It gives you complete control over the settings and files on computers. For instructions, see Deploying OS X by Imaging Using the JSS v9.7 or Later or Deploying OS X by Imaging Using the JSS v9.66 or Earlier.

Deploying an OS X Upgrade

Deploying OS X v10.7 or later as an upgrade involves the following steps:

1. Add the .app file for OS X to Casper Admin.
2. Cache the `InstallESD.dmg` file using a policy.
3. Create a smart computer group.
4. Create a Self Service policy for upgrading OS X.

Note: The name of the `InstallESD.dmg` file in Casper Admin will vary depending on the version of OS X that you plan to deploy. For example, the name of the `InstallESD.dmg` file for OS X v10.10 would be `Install OS X Yosemite.InstallESD.dmg`.

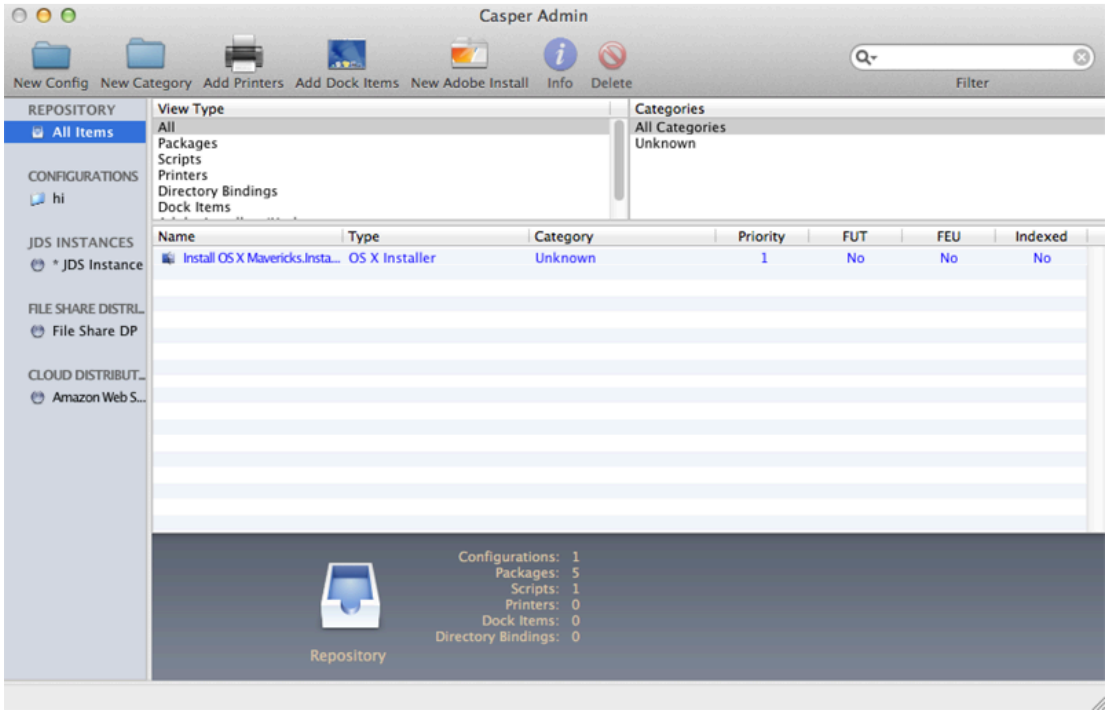
Requirements

- The JAMF Software Server (JSS) v9.21 or later
  Note: If you are using the JSS v8.3-9.1, see the following Knowledge Base article for instructions on deploying an OS X upgrade:
  Deploying OS X v10.7 or Later
- Casper Admin
- The .app file for the version of OS X that you plan to deploy (For example, `Install OS X Mountain Lion.app`.)
  You can obtain the latest .app file for OS X from the Mac App Store.
- Managed computers with:
  - (For deployments of OS X v10.10 or later only) OS X v10.7 or later
    Computers with OS X v10.5 or OS X v10.6 must be upgraded to OS X v10.7 or later before upgrading to OS X v10.10.
  - Self Service
  - The system requirements for the version of OS X that you plan to deploy
    - OS X v10.7: http://support.apple.com/kb/HT4949
    - OS X v10.8: http://support.apple.com/kb/HT5444
    - OS X v10.9: http://support.apple.com/kb/HT5842
    - OS X v10.11: http://support.apple.com/kb/HT201475

Step 1: Add the .app File for OS X to Casper Admin

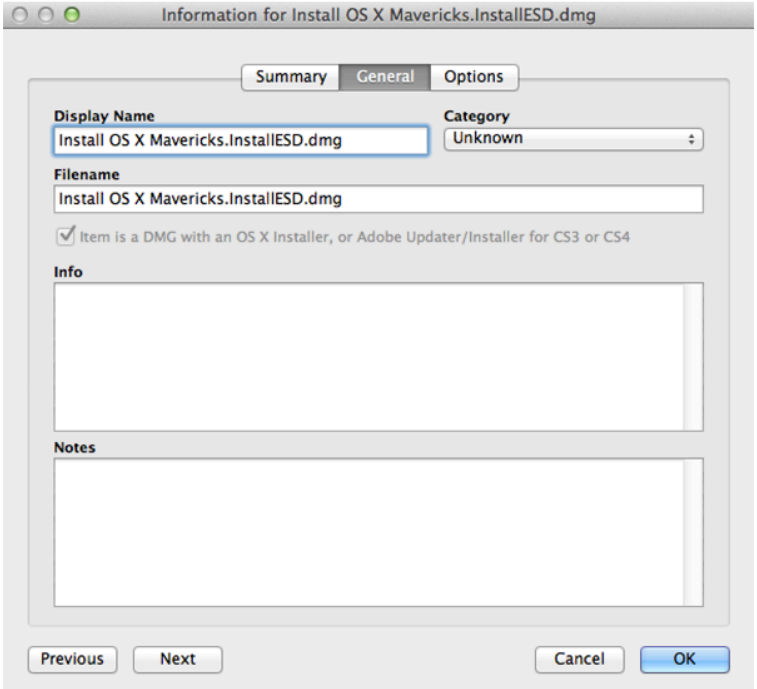
Add the .app file for OS X to Casper Admin. Casper Admin extracts the `InstallESD.dmg` file from the .app file so you can cache and install it using policies.

1. Open Casper Admin and authenticate to the JSS.
2. Drag the .app file to the main repository in Casper Admin.
   Casper Admin extracts the `InstallESD.dmg` file, analyzes its contents, and adds it to the master distribution point and the JSS.
   The `InstallESD.dmg` file is displayed in blue text until you add it to a category.



3. Double-click the package in the main repository.

4. Click the **General** tab and choose a category for the package.



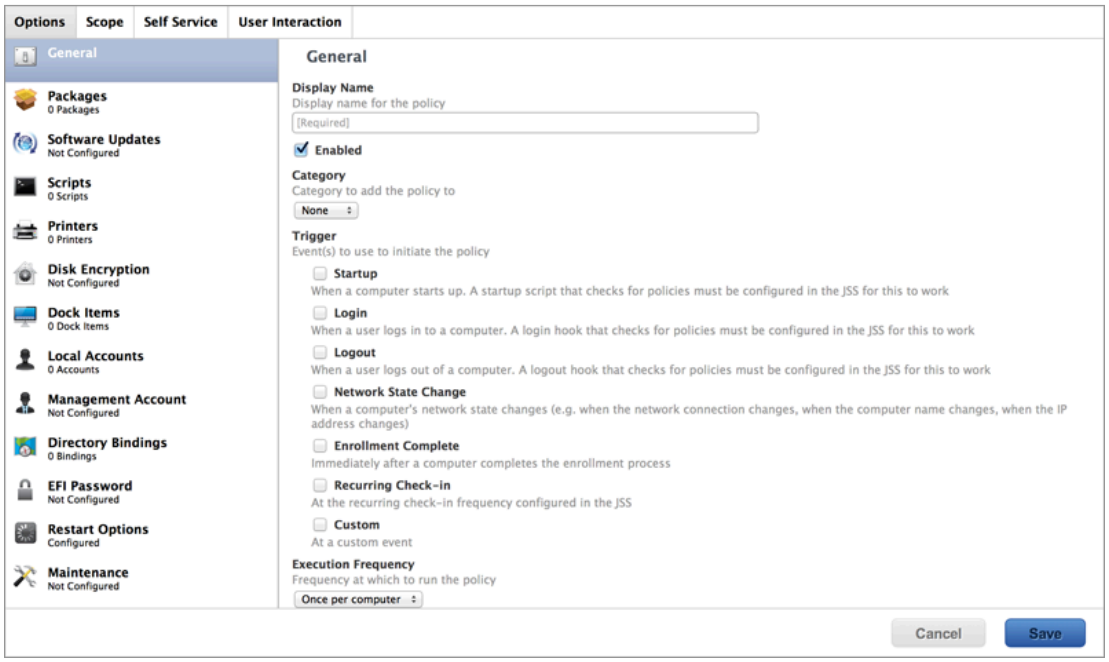
5. Click **OK**.

Step 2: Cache the InstallESD.dmg File

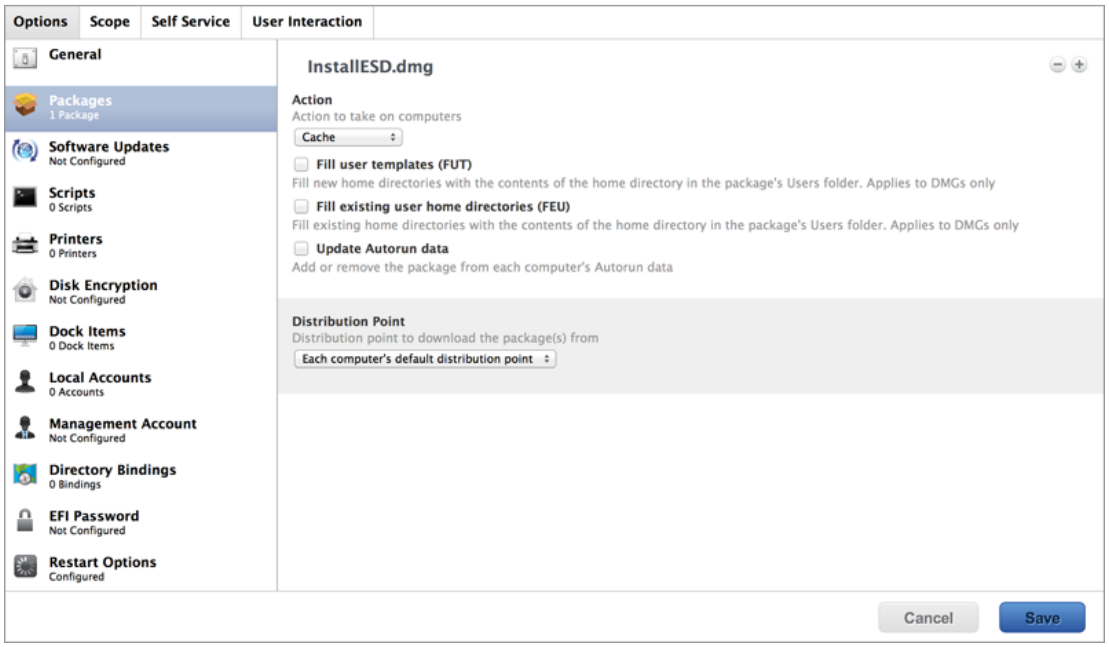
After adding the .app file to Casper Admin, you can cache the `InstallESD.dmg` file using a policy. Caching the file ahead of time speeds up the upgrade process.

1. Log in to the JSS with a web browser.
2. Click **Computers** at the top of the page.
3. Click **Policies**.
   On a smartphone, this option is in the pop-up menu.
4. Click **New** + .

5. In the General payload, enter a display name for the policy. For example, “Cache InstallESD.dmg”.



6. Select **Recurring Check-in** as the trigger.
7. Choose “Once per Computer” from the **Execution Frequency** pop-up menu.
8. Select the Packages payload and click **Configure**.
9. Click **Add** for the `InstallESD.dmg` file.
10. Choose “Cache” from the **Action** pop-up menu.



11. Specify a distribution point for computers to download the package from.

12. Select the Maintenance payload and click **Configure**.
13. Ensure that the **Update Inventory** checkbox is selected.
14. Click the **Scope** tab and configure the scope of the policy.

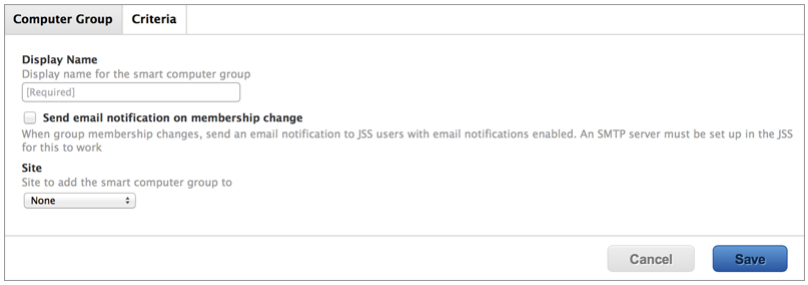
15. Click **Save**.

    The `InstallESD.dmg` file is cached on computers in the scope the next time they check in with the JSS and meet the criteria in the General payload.

Step 3: Create a Smart Computer Group

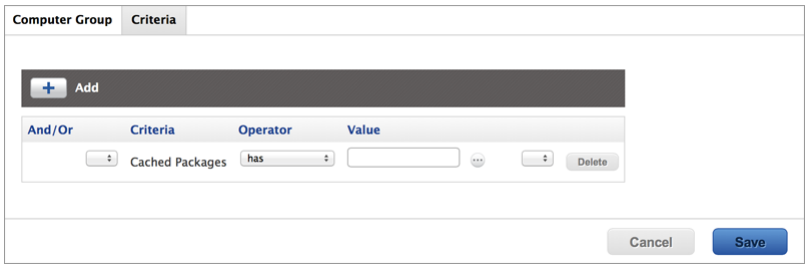
Create a smart group of computers with the `InstallESD.dmg` file cached. The smart group will be used as the scope of the Self Service policy for upgrading OS X.

1. Log in to the JSS with a web browser.
2. Click **Computers** at the top of the page.
3. Click **Smart Computer Groups**.
   On a smartphone, this option is in the pop-up menu.
4. Click **New** .
5. On the Computer Group pane, enter a display name for the smart computer group. For example, "InstallESD.dmg Cached".



6. Click the **Criteria** tab.
7. Click **Add** .
8. Click **Choose** for "All Criteria".
9. Click **Choose** for "Cached Packages".

10. Choose “has” from the **Operator** pop-up menu.



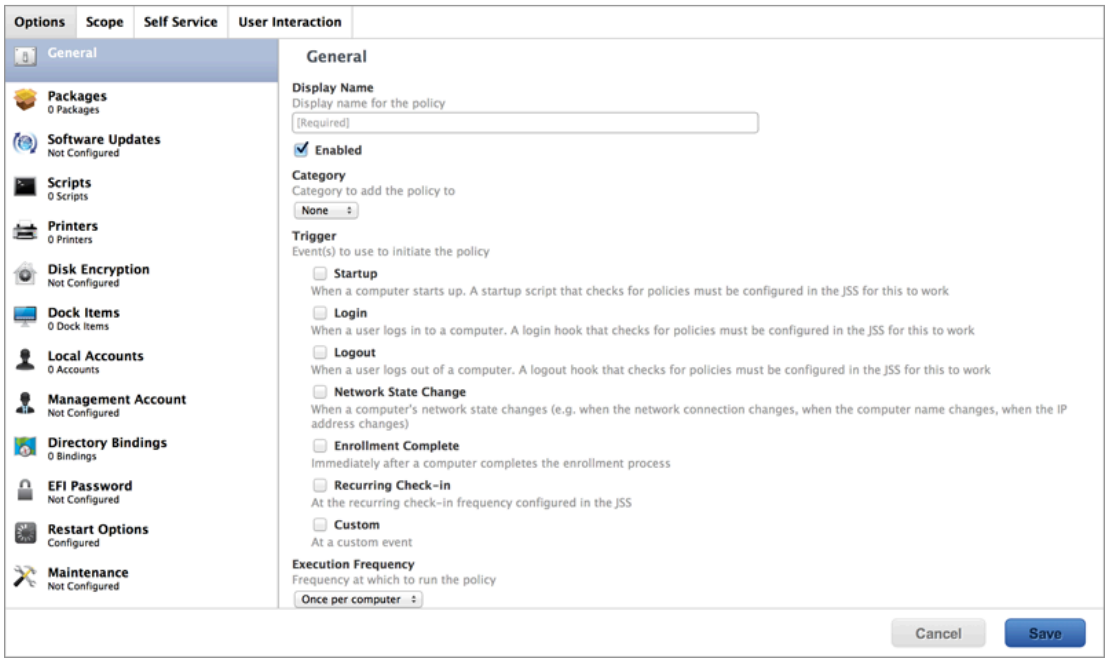
11. Click **Browse** .
12. Click **Choose** for the `InstallESD.dmg` file.
    Note: The `InstallESD.dmg` file is not available as a value until it has been cached on at least one computer.
13. Click **Save**.

Step 4: Create a Self Service Policy for Upgrading OS X

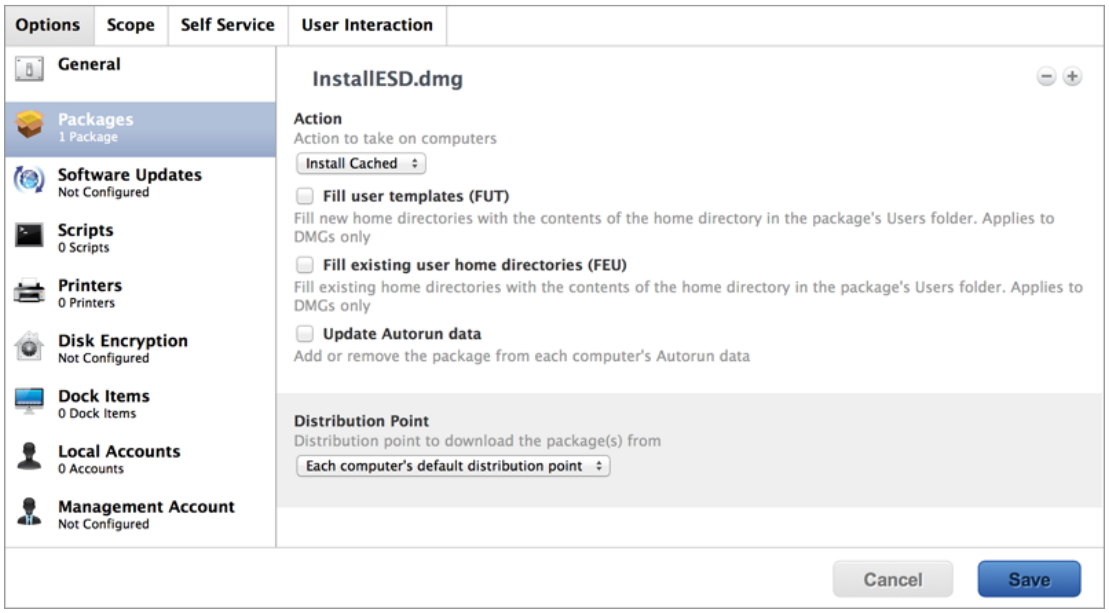
After caching the `InstallESD.dmg` file, you can create a Self Service policy that allows users to upgrade OS X.

1. Log in to the JSS with a web browser.
2. Click **Computers** at the top of the page.
3. Click **Policies**.
   On a smartphone, this option is in the pop-up menu.
4. Click **New** .

5. In the General payload, enter a display name for the policy. For example, “Upgrade OS X”.



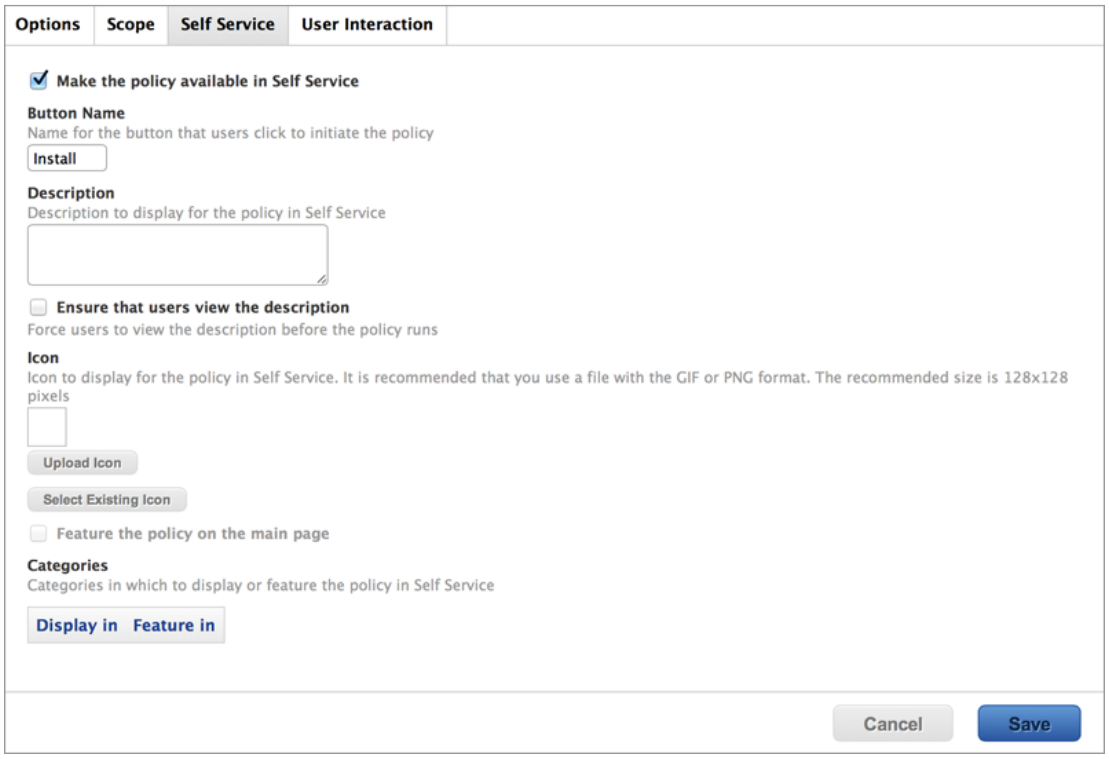
6. Choose “Once per Computer” from the **Execution Frequency** pop-up menu.
7. Select the Packages payload and click **Configure**.
8. Click **Add** for the `InstallESD.dmg` file.
9. Choose “Install Cached” from the **Action** pop-up menu.



10. Click the **Scope** tab.
11. Click **Add** + .
12. Click the **Computer Groups** tab.

13. Click **Add** for the smart computer group you just created.

14. Click the **Self Service** tab.
15. Select **Make the policy available in Self Service**.
16. Configure how the policy is displayed in Self Service using the settings on the pane.



17. Click **Save**.

The policy is made available in Self Service on computers in the scope the next time they check in with the JSS and meet the criteria in the General payload. OS X is upgraded when users run the policy from Self Service.

Upgrading FileVault 2-enabled drives from OS X v10.7 or v10.8 prompts users to enter their password after reboot. Upgrading FileVault 2-enabled drives from OS X v10.9 or later automatically bypasses authentication after reboot.

Note: The jamf binary automatically enables Core Storage on the target computer before installing an OS X v10.11 upgrade using a policy. This *only* occurs for OS X v10.11 upgrades that are installed using a policy.

Deploying OS X by Imaging Using the JSS v9.7 or Later

Deploying OS X by imaging involves the following steps:

1. Prepare to image a partition.
2. Image computers.

Requirements

To deploy OS X by imaging, you need:

- The JAMF Software Server (JSS) v9.7 or later
- A test computer with:
  - Composer
  - A "Recovery HD" partition
- Casper Admin
- A distribution point
- A startup disk other than the target drive that has Casper Imaging installed
  Some common startup disks used for imaging are USB or FireWire drives, Restore partitions, and NetBoot images.

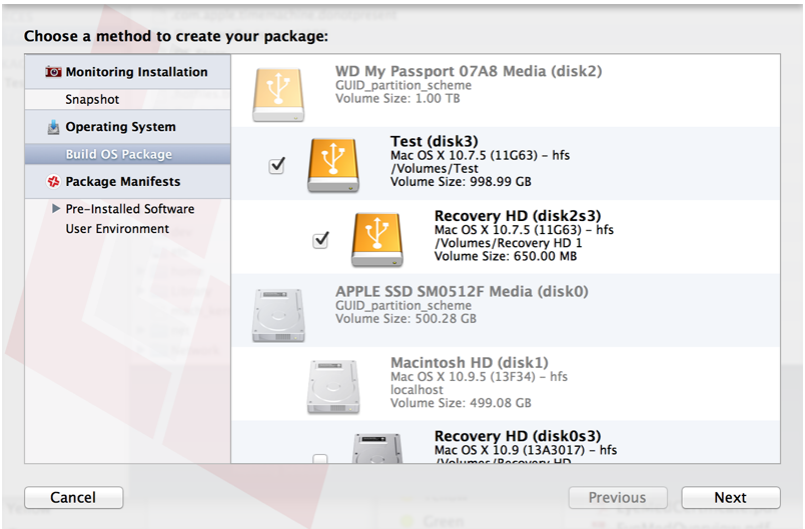
Step 1: Prepare to Image a Partition

As of OS X v10.7, newly purchased Macs come with a "Recovery HD" partition that can be used for recovery tasks, such as repairing disks or reinstalling OS X. As of the JSS v9.7, you have the option to build a deployable package of an operating system, a "Recovery HD" partition, or a whole disk in a single step.

1. Build an OS package:
   a. On the test computer, install and configure the OS. For complete instructions, see the following Knowledge Base article:
   Creating a Minimal Base OS Image
   b. Open Composer and authenticate locally.
   c. In the toolbar, click **New** .

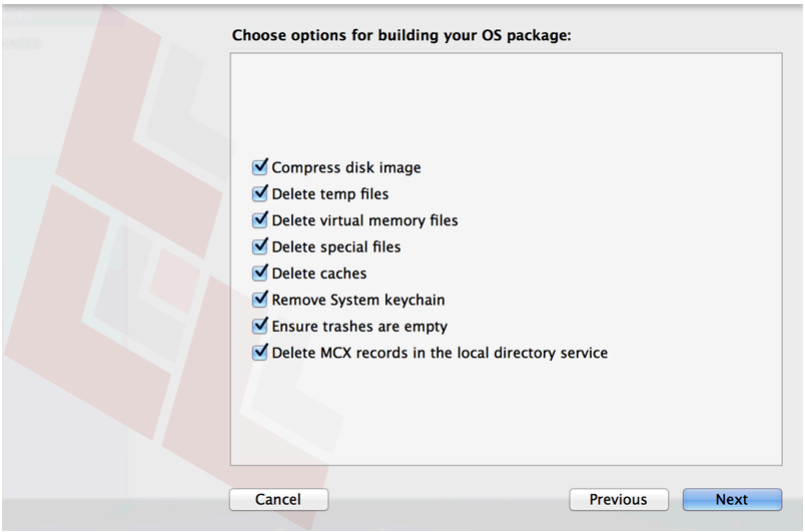
d. Under the Operating System heading in the sidebar, select **Build OS Package**. For information on how Composer v9.7 or later displays partitions when building OS packages, see the following Knowledge Base article:
[How Composer Displays Partitions when Building OS Packages]

e. Select the drive(s) you want to package and click **Next**.



Important: It is recommended that the OS X version of the "Recovery HD" partition matches the OS X version of the OS partition.

f. Choose options for removing unnecessary files from the package and click **Next**.

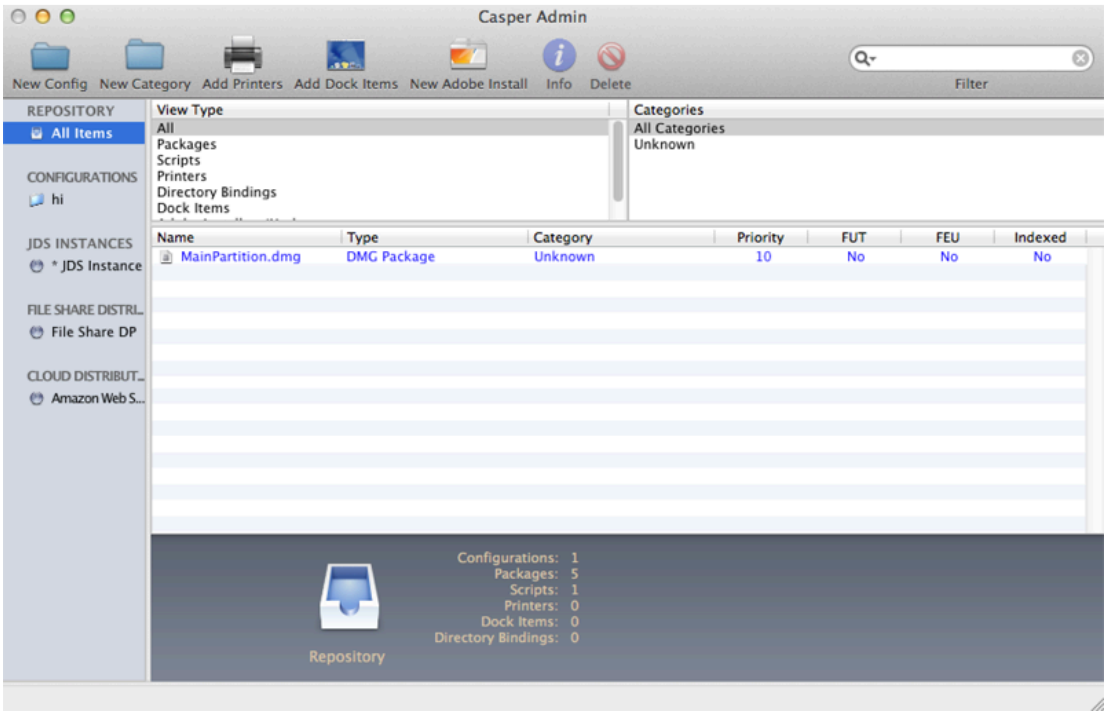


g. Enter a package name and select a location to save the package, and then click **Build**.

2. Add the OS package to Casper Admin:

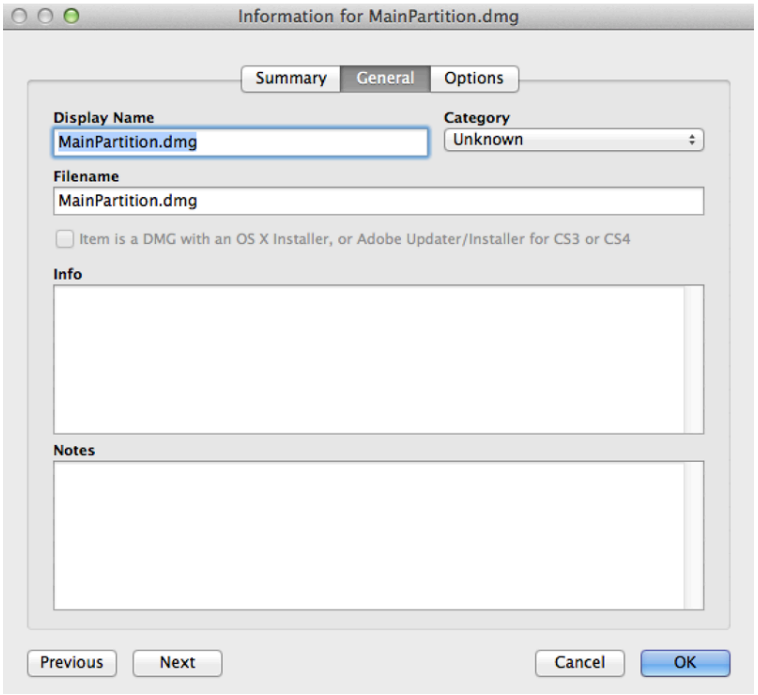
a. Open Casper Admin and authenticate to the JSS.

b. Drag the package to the main repository in Casper Admin.
The package is displayed in blue text until you add it to a category.

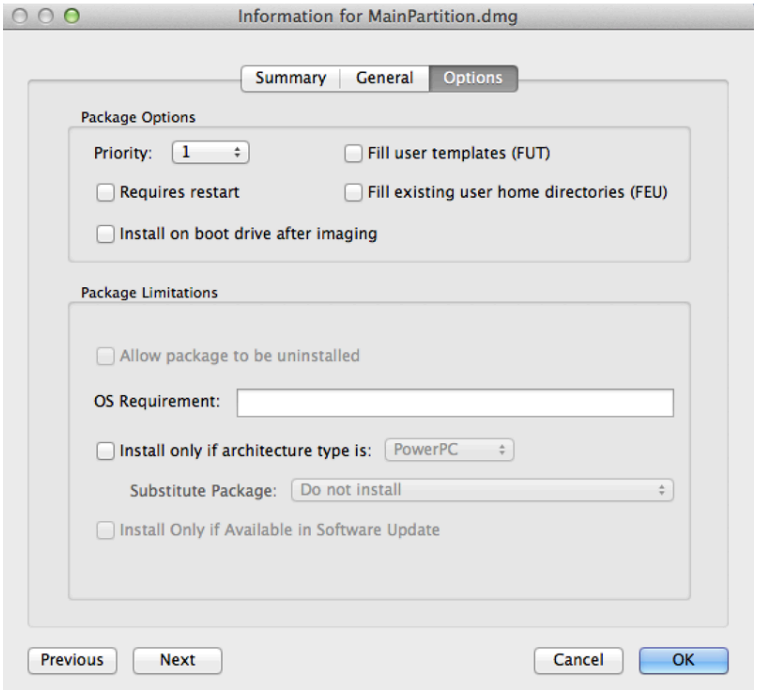


c. Double-click the package in the main repository.

d. Click the **General** tab and choose a category for the package.

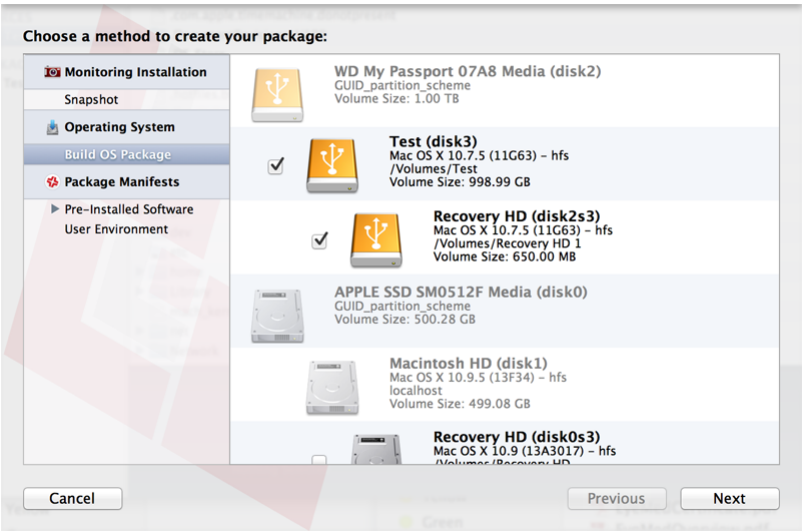


e. Click the **Options** tab and choose a priority for the package. The recommended priority is "1".



f. Click **OK**.

3. Create a configuration:

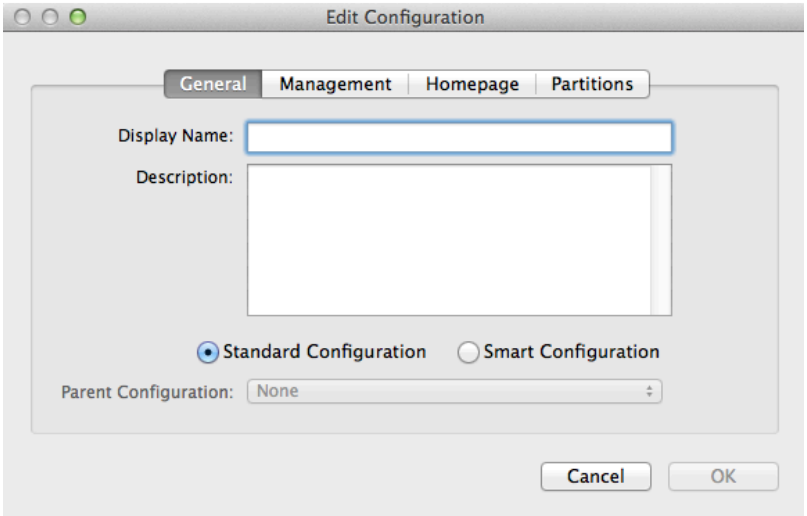


Note: Compiling a configuration with a multi-partition DMG will result in a DMG with a single partition.

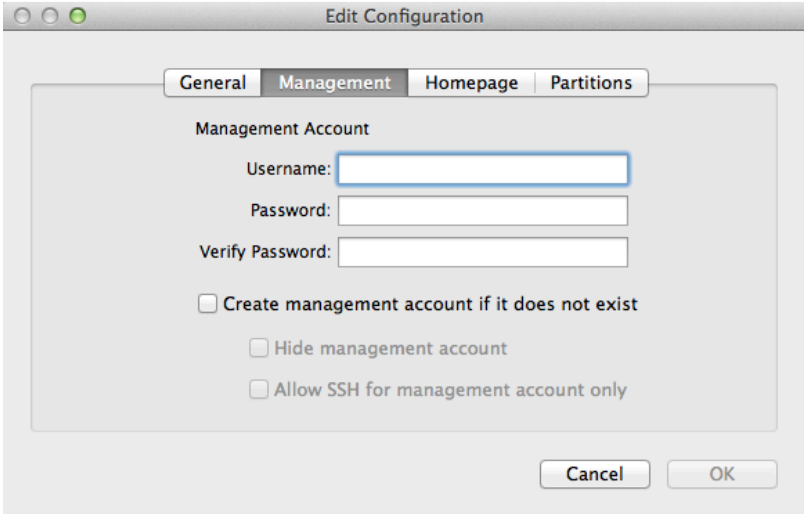
a. Open Casper Admin and authenticate to the JSS.

b. Click **New Config** .

c. On the General pane, enter a display name for the configuration.



d. Click the **Management** tab and enter credentials for a local administrator account that you want to use for management.



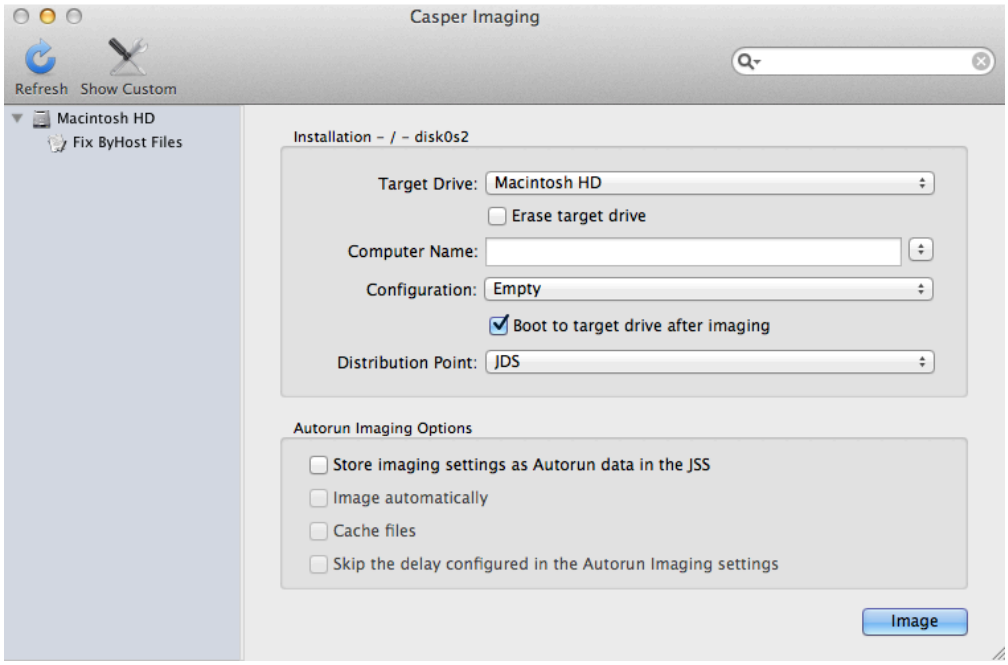
e. Click **OK**.
The configuration is added to the list of configurations in the sidebar.

f. Drag the OS package from the main repository to the configuration that you just created.

Step 2: Image Computers

1. On a target computer, boot to a startup disk other than the target drive.
2. Open Casper Imaging and authenticate locally.
3. Authenticate to the JSS when prompted.

4. Choose the drive to image from the **Target Drive** pop-up menu.



5. Select the **Erase target drive** checkbox.
6. Assign a name to the computer by entering a name in the **Computer Name** field.
7. From the **Configuration** pop-up menu, choose the configuration you created in "Step 1: Preparing to Image a Partition".
8. Select the **Boot to target drive after imaging** checkbox.
9. Choose a distribution point from the **Distribution Point** pop-up menu.
10. Click **Image**.
11. Repeat as needed for other target computers.

Deploying OS X by Imaging Using the JSS v9.66 or Earlier

Deploying OS X by imaging involves the following steps:

1. Prepare to image a main partition.
2. (Optional) Prepare to create or modify a “Recovery HD” partition during imaging.
3. Image computers.

Requirements

To deploy OS X by imaging, you need:

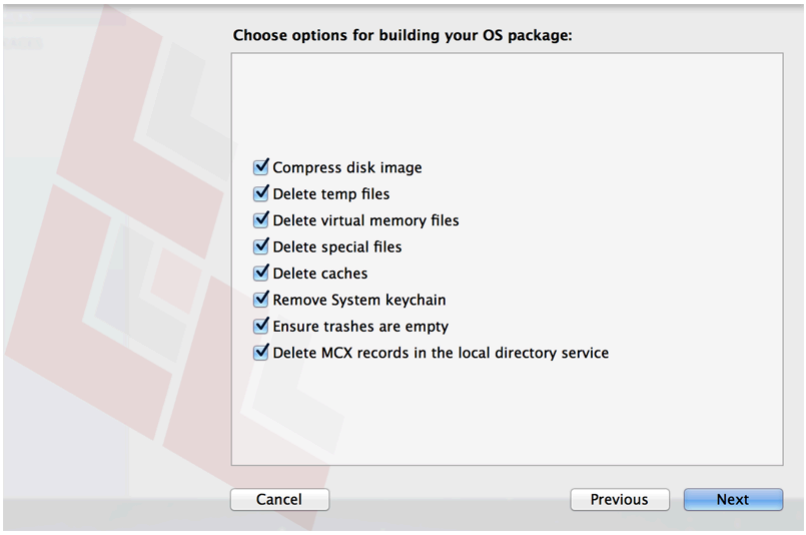
- The JAMF Software Server (JSS) v8.3 or later
- A test computer with:
  - Composer
  - A “Recovery HD” partition
- Casper Admin
- A distribution point
- A startup disk other than the target drive that has Casper Imaging installed
  Some common startup disks used for imaging are USB or FireWire drives, Restore partitions, and NetBoot images.

Step 1: Prepare to Image a Main Partition

1. Build an OS package:
   a. On the test computer, install and configure the OS. For complete instructions, see the following Knowledge Base article:
   Creating a Minimal Base OS Image
   b. Open Composer and authenticate locally.
   c. In the toolbar, click **New** .
   d. Under the Operating System heading in the sidebar, select **Build OS Package**.

e. Select the drive you want to package and click **Next**.

f. Choose options for removing unnecessary files from the package and click **Next**.

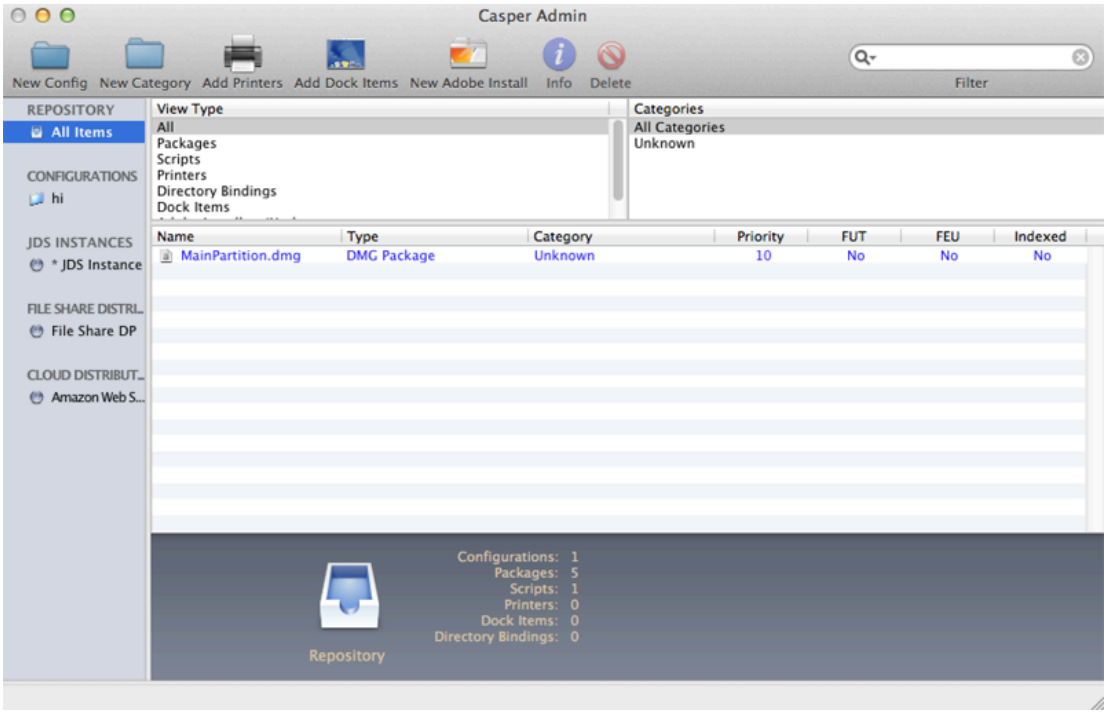


g. Enter a package name and select a location to save the package, and then click **Build**.

2. Add the OS package to Casper Admin:

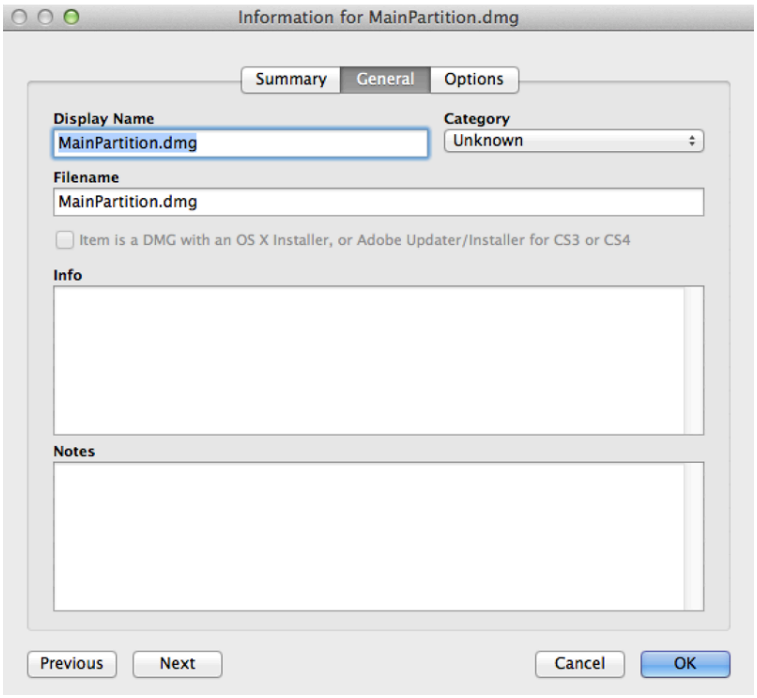
a. Open Casper Admin and authenticate to the JSS.

b. Drag the package to the main repository in Casper Admin.
The package is displayed in blue text until you add it to a category.

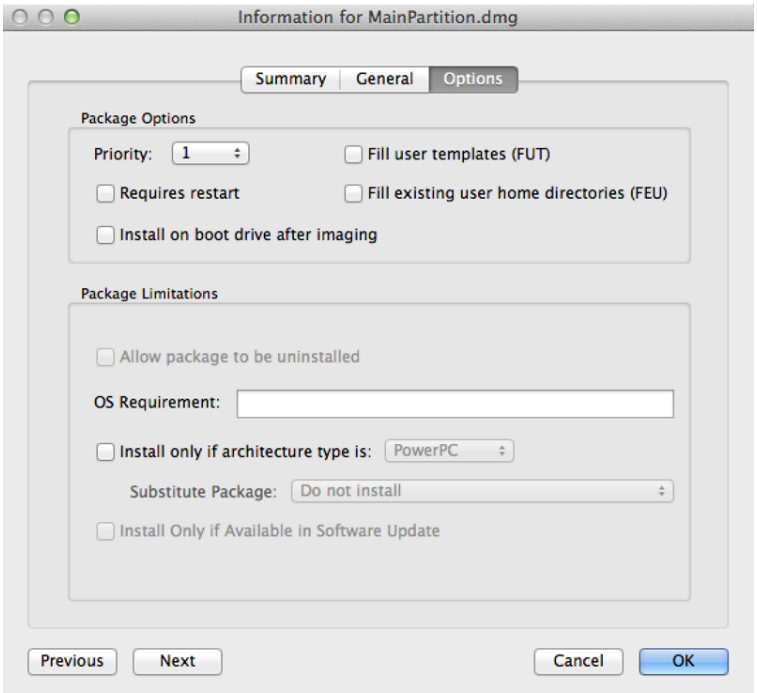


c. Double-click the package in the main repository.

d. Click the **General** tab and choose a category for the package.



e. Click the **Options** tab and choose a priority for the package. The recommended priority is "1".



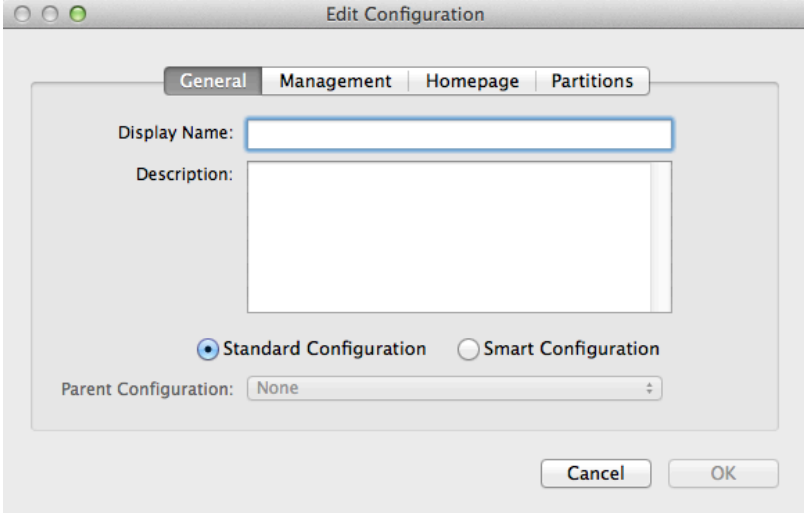
f. Click **OK**.

3. Create a configuration:

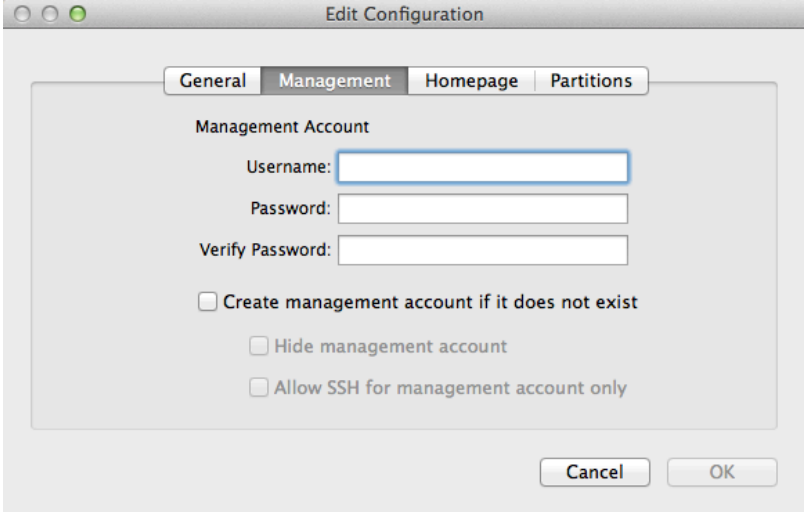
a. Open Casper Admin and authenticate to the JSS.

b. Click **New Config** .

c. On the General pane, enter a display name for the configuration.



d. Click the **Management** tab and enter credentials for a local administrator account that you want to use for management.



e. Click **OK**.
The configuration is added to the list of configurations in the sidebar.

f. Drag the OS package from the main repository to the configuration that you just created.

Step 2: (Optional) Prepare to Create or Modify a "Recovery HD" Partition During Imaging

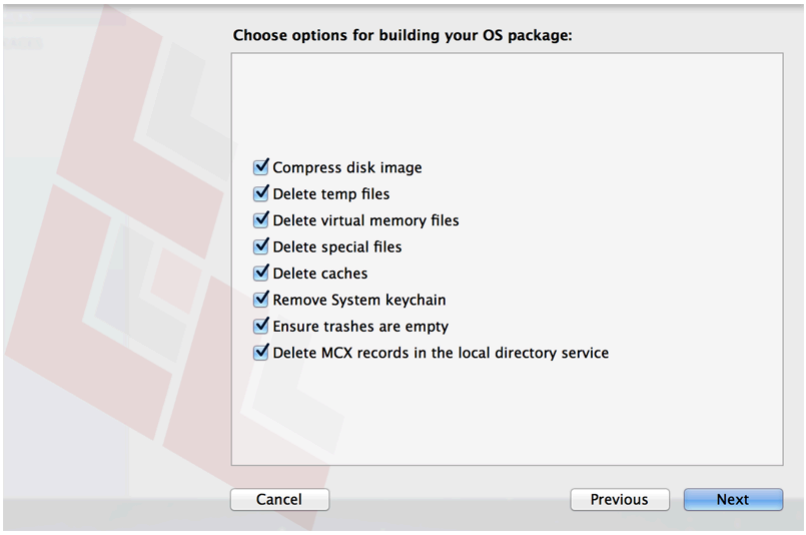
As of OS X v10.7, newly purchased Macs come with a "Recovery HD" partition that can be used for recovery tasks, such as repairing disks or reinstalling OS X. Use the instructions in this section if you need to create or modify a "Recovery HD" partition during the imaging process.

Important: It is recommended that the OS X version of the "Recovery HD" partition matches the OS X version of the main partition.

1. Build an OS package:
   a. On the test computer, mount the "Recovery HD" partition by executing:

   ```
   sudo diskutil mount disk0s3
   ```

   b. Open Composer and authenticate locally.
   c. In the toolbar, click **New** .
   d. Under the Operating System heading in the sidebar, select **Build OS Package**.
   e. Select the drive you want to package and click **Next**.
   f. Choose options for removing unnecessary files from the package and click **Next**.



   g. Enter a package name and select a location to save the package, and then click **Build**.
2. Create a script to hide the "Recovery HD" partition:
   a. Create a new file in a text editor.

b. Type the following text:

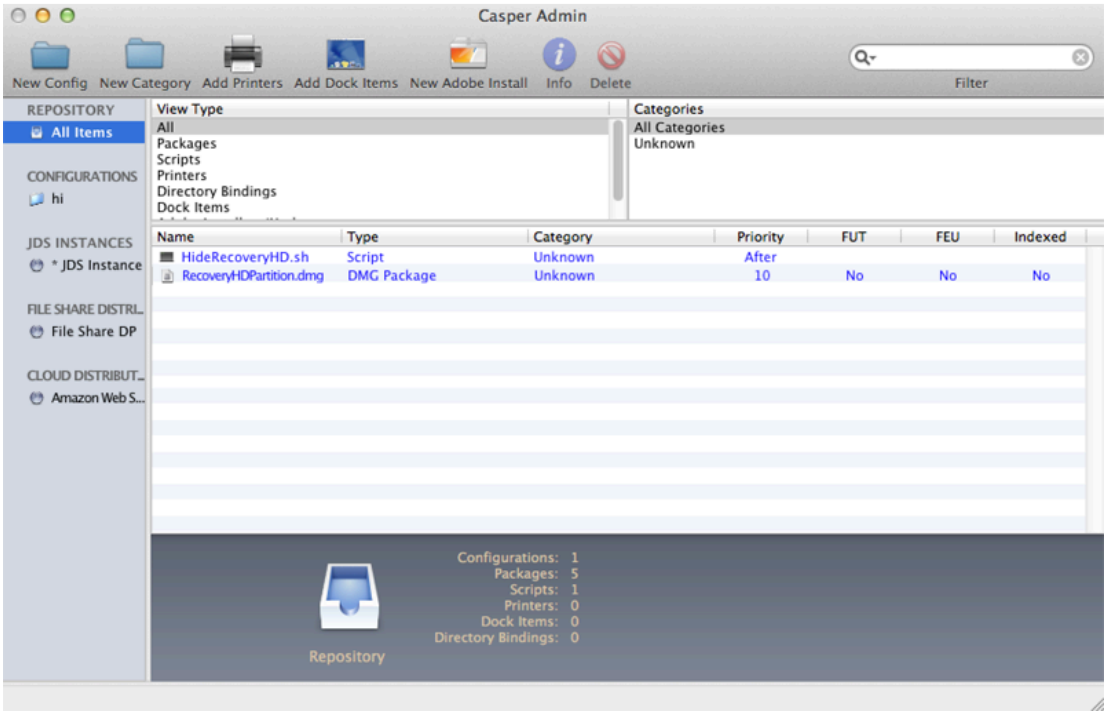
```
RecoveryHDName="Recovery HD"
RecoveryHDID=`/usr/sbin/diskutil list | grep disk0 | grep
"$RecoveryHDName" | awk 'END { print $NF }'`

/usr/sbin/diskutil unmount /dev/"$RecoveryHDID"
/usr/sbin/asr adjust -target /dev/"$RecoveryHDID" -settype Apple_Boot
```

c. Save the file with a .sh file extension. For example, “HideRecoveryHD.sh”.

3. Add the OS package and script to Casper Admin:

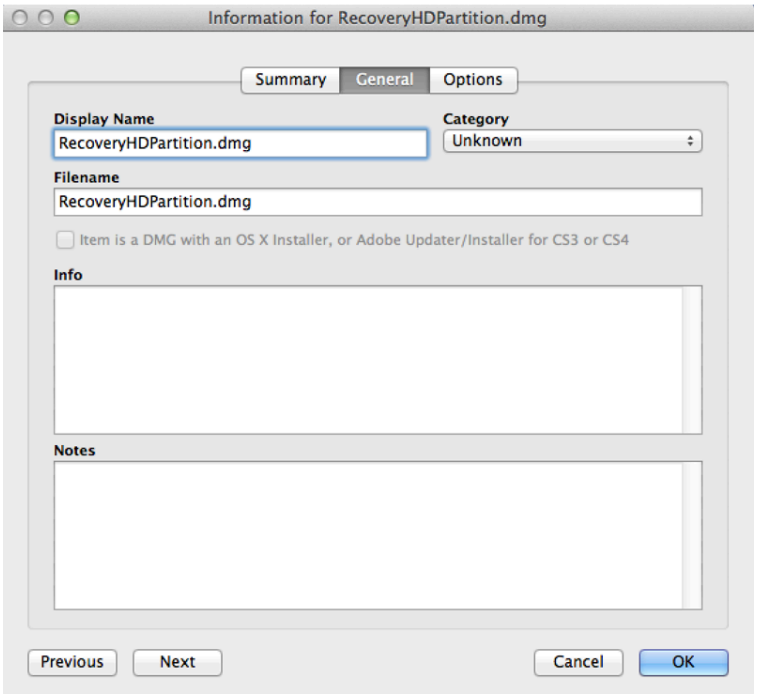
a. Open Casper Admin and authenticate to the JSS.

b. Drag the package and script to the main repository in Casper Admin.
The package and script are displayed in blue text until you add them to a category.

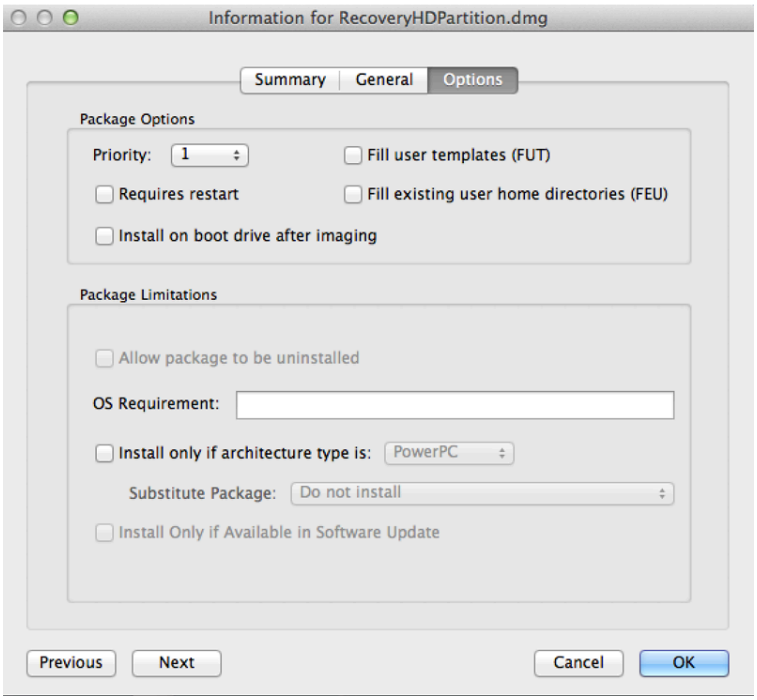


c. Double-click the package in the main repository.

d. Click the **General** tab and choose a category for the package.



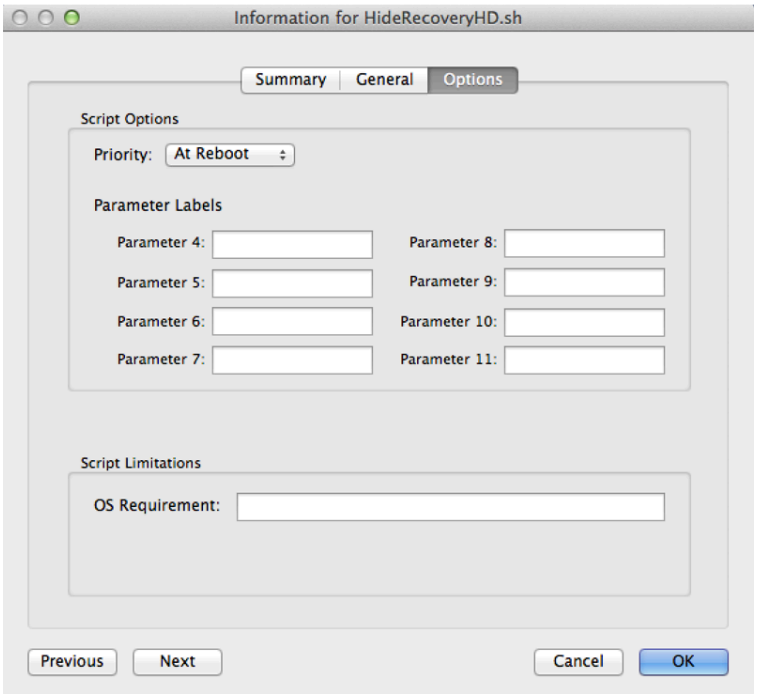
e. Click the **Options** tab and choose a priority for the package. The recommended priority is "1".



f. Click **OK**.

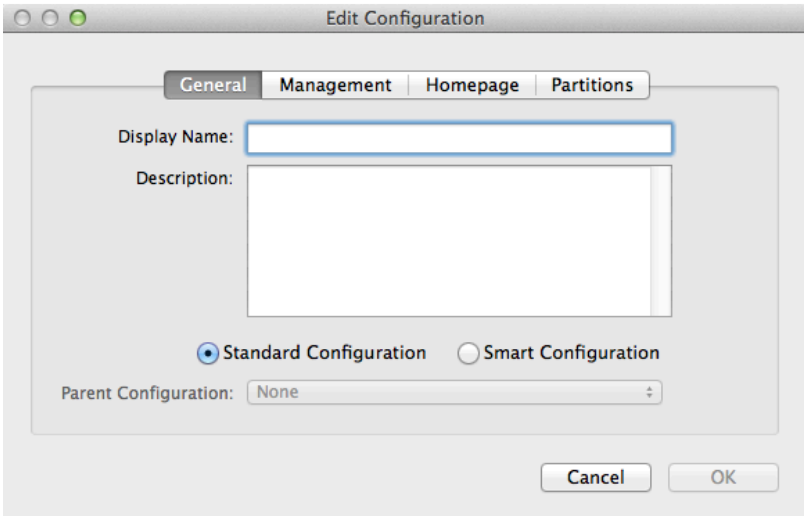
g. Double-click the script in the main repository.

h. Click the **Options** tab and verify that the priority is set to “At Reboot”.

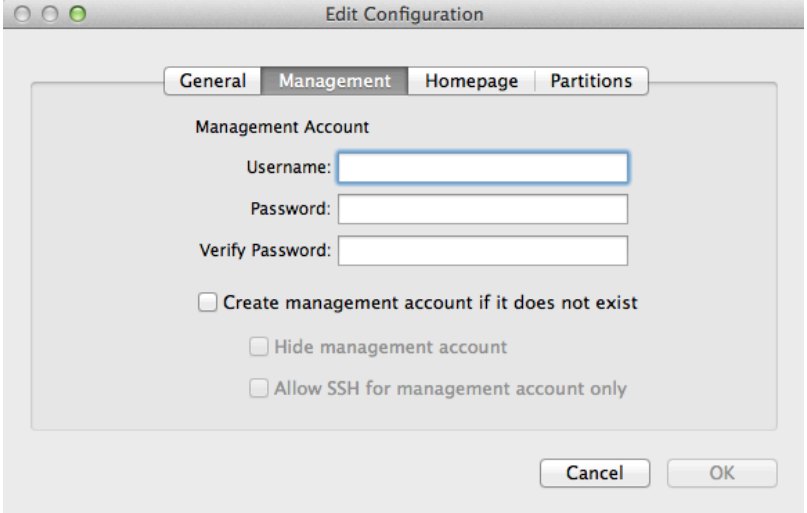


i. Click **OK**.

4. Drag the script from the main repository to the configuration you created for the main partition.
5. Create a configuration for the “Recovery HD” partition:
   a. Open Casper Admin and authenticate to the JSS.
   b. Click **New Config** .
   c. On the General pane, enter a display name for the configuration. For example, “Recovery HD”.



d. Click the **Management** tab and enter credentials for a local administrator account that you want to use for management.



e. Click **OK**.
The configuration is added to the list of configurations in the sidebar.

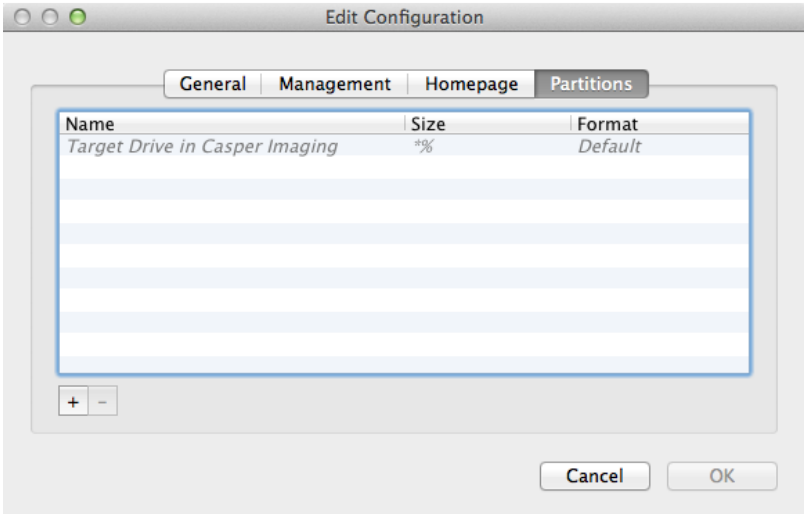
f. Drag the "Recovery HD" OS package from the main repository to the configuration that you just created.

6. Add a "Recovery HD" partition to the configuration you created in "Step 1: Preparing to Image a Main Partition":

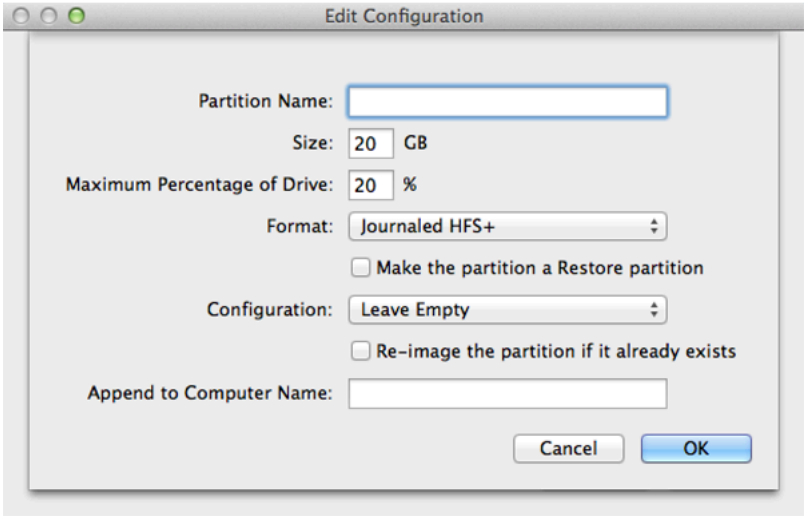
a. In the list of configurations in the sidebar, double-click the configuration.

b. Click the **Partitions** tab.

c. Click **Add** (+).



d. Type “Recovery HD” in the **Partition Name** field.



e. Type “1” in the **Size** field.

f. Type “99” in the **Maximum Percentage of Drive** field.

g. From the **Configuration** pop-up menu, choose the configuration you just created.

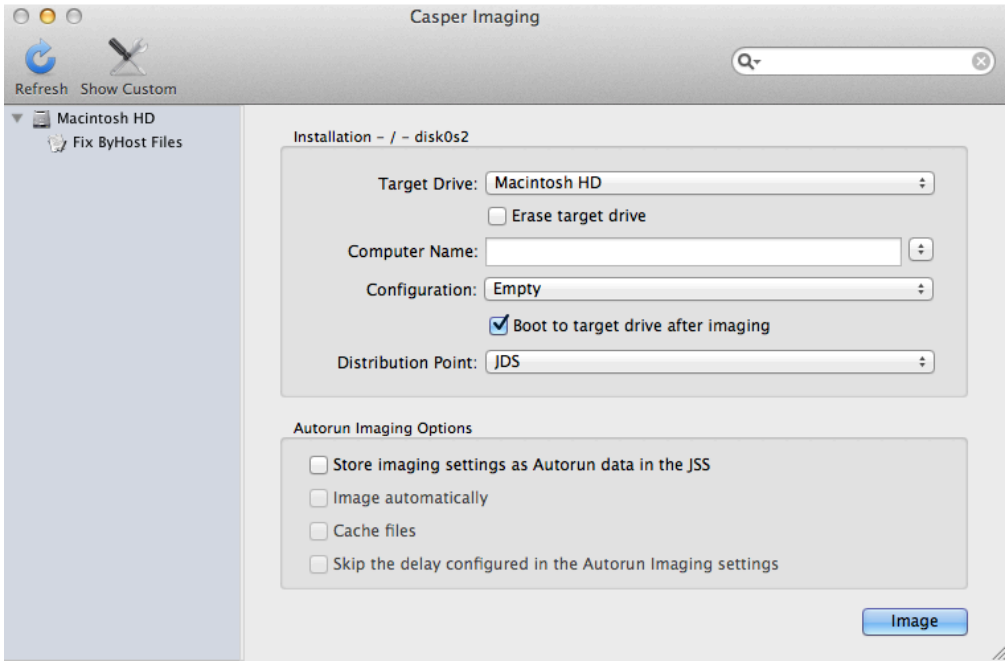
h. If the target computers already have a “Recovery HD” partition and do not have other additional partitions, select the **Re-image the partition if it already exists** checkbox.

Note: If the target computers already have a “Recovery HD” partition *and* other additional partitions, you must remove the “Recovery HD” partition so that it can be recreated during imaging.

Step 3: Image Computers

1. On a target computer, boot to a startup disk other than the target drive.
2. Open Casper Imaging and authenticate locally.
3. Authenticate to the JSS when prompted.

4. Choose the drive to image from the **Target Drive** pop-up menu.



5. Select the **Erase target drive** checkbox.
6. Assign a name to the computer by entering a name in the **Computer Name** field.
7. From the **Configuration** pop-up menu, choose the configuration you created in "Step 1: Preparing to Image a Main Partition".
8. Select the **Boot to target drive after imaging** checkbox.
9. Choose a distribution point from the **Distribution Point** pop-up menu.
10. Click **Image**.
11. Repeat as needed for other target computers.

Revision History

Revision Date	Changes
08 April 2016	Added information on naming conventions of the `InstallESD.dmg` file.
05 February 2016	Added information on authentication action after reboot when a FileVault 2-enabled drive is upgraded.
30 September 2015	Updated for use with OS X 10.11 deployments.
07 May 2015	"Deploying OS X by Imaging Using the JSS v9.66 or Earlier" section: Updated procedure for preparing to create or modify a "Recovery HD" partition during imaging.
25 March 2015	“Deploying an OS X Upgrade” section: Added a link to a Knowledge Base article from Apple that contains system requirements for OS X v10.10. Added the “Deploying OS X by Imaging Using the JSS v9.7 or Later” section.
11 November 2013	“Deploying an OS X Upgrade” section: ▪ Added a link to a Knowledge Base article from Apple that contains system requirements for OS X v10.9. ▪ Removed the note about the known issue that prevents drives encrypted with FileVault from being upgraded from OS X v10.7 to 10.8. This issue was fixed in v9.21. ▪ Updated procedure for adding the .app file for OS X to Casper Admin. ▪ Added a step for selecting the **Update Inventory** checkbox when creating a policy to cache the `InstallESD.dmg` file. “Deploying OS X by Imaging” section: Updated procedure for preparing to create or modify a “Recovery HD” partition during imaging.