Mac OS X Server

Upgrading and Migrating
Version 10.6 Snow Leopard

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Contents

About This Guide

This guide provides instructions for moving to Mac OS X v10.6 from a previous version of the server or for migrating data to a Mac OS X Server v10.6.

Upgrading and Migrating contains instructions for reusing data and settings of previous server versions. There are two approaches:

- Perform an upgrade installation. This approach leaves all data and settings in place and lets you reuse your existing server hardware for Mac OS X Server v10.6. You can perform an upgrade installation of v10.5 and v10.4.11 servers.
- Manually migrate data and settings. This approach transfers data and settings to a different computer—one running Mac OS X Server v10.6. You can migrate data and settings from v10.5 and v10.4.11 servers.

What's New in Mac OS X Server v10.6

Mac OS X Server v10.6 offers major enhancements in several key areas:

- **Lateral Migrations:** Supports the migration of Mac OS X Server v10.6 to v10.6.
- **WebObjects:** Support for WebObjects is removed with Mac OS X Server v10.6.

What's in This Guide

This guide includes the following sections:

- Chapter 1, "Before You Begin," summarizes upgrade and migration options and requirements. Read this chapter to understand your options, and then see the chapter relevant to your upgrade or migration scenario.
- Chapter 2, "Upgrading Mac OS X Server v10.5," describes how to upgrade a v10.5 or later server to v10.6.
- Chapter 3, "Migrating from Mac OS X Server v10.5," describes how to migrate data from a v10.5 or later server to a different computer running v10.6.

- Chapter 4, "Upgrading Mac OS X Server v10.4," describes how to upgrade a v10.4.11 server to v10.6.
- Chapter 5, "Migrating from Mac OS X Server v10.4," describes how to migrate data from a v10.4.11 server to a different computer running v10.6.

Note: Because Apple periodically releases new versions and updates to its software, images shown in this book may be different from what you see on your screen.

Using Onscreen Help

You can get task instructions onscreen in Help Viewer while you're managing Mac OS X Server. You can view help on a server, or on an administrator computer. (An administrator computer is a Mac OS X computer with Mac OS X Server administrator software installed on it.)

To get the most recent onscreen help for Mac OS X Server:

- Open Server Admin or Workgroup Manager and then:
  - Use the Help menu to search for a task you want to perform.
  - Choose Help > Server Admin Help or Help > Workgroup Manager Help to browse and search the help topics.

  The onscreen help contains instructions taken from *Advanced Server Administration* and other advanced administration guides.

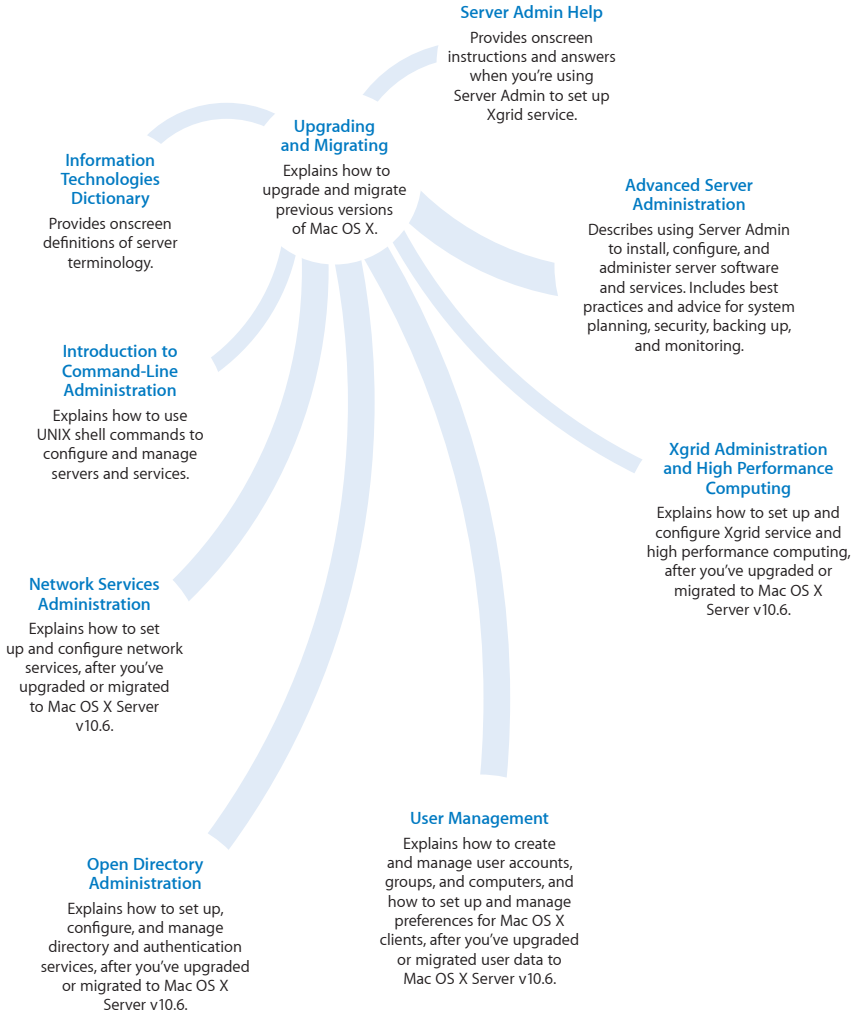
To see the most recent server help topics:

- Make sure the server or administrator computer is connected to the Internet while you're getting help.

  Help Viewer automatically retrieves and caches the most recent server help topics from the Internet. When not connected to the Internet, Help Viewer displays cached help topics.

Documentation Map

Mac OS X Server has a suite of guides that cover management of individual services. Each service may depend on other services for maximum utility. The documentation map below shows some related guides that you may need in order to fully configure Mac OS X Server to your specifications. You can get these guides in PDF format from the Mac OS X Server Resources website at www.apple.com/server/macosx/resources/.



Viewing PDF Guides Onscreen

While reading the PDF version of a guide onscreen:

- Show bookmarks to see the guide's outline, and click a bookmark to jump to the corresponding section.
- Search for a word or phrase to see a list of places where it appears in the guide. Click a listed place to see the page where it occurs.
- Click a cross-reference to jump to the referenced section. Click a web link to visit the website in your browser.

Printing PDF Guides

If you want to print a guide, you can take these steps to save paper and ink:

- Save ink or toner by not printing the cover page.
- Save color ink on a color printer by looking in the panes of the Print dialog for an option to print in grays or black and white.
- Reduce the bulk of the printed document and save paper by printing more than one page per sheet of paper. In the Print dialog, change Scale to 115% (155% for *Getting Started*). Then choose Layout from the untitled pop-up menu. If your printer supports two-sided (duplex) printing, select one of the Two-Sided options. Otherwise, choose 2 from the Pages per Sheet pop-up menu, and optionally choose Single Hairline from the Border menu. (If you're using Mac OS X v10.4 or earlier, the Scale setting is in the Page Setup dialog and the Layout settings are in the Print dialog.)

You may want to enlarge the printed pages even if you don't print double sided, because the PDF page size is smaller than standard printer paper. In the Print dialog or Page Setup dialog, try changing Scale to 115% (155% for *Getting Started,* which has CD-size pages).

Getting Documentation Updates

Periodically, Apple posts revised help pages and new editions of guides. Some revised help pages update the latest editions of the guides.

- To view new onscreen help topics for a server application, make sure your server or administrator computer is connected to the Internet and click "Latest help topics" or "Staying current" in the main help page for the application.
- To download the latest guides in PDF format, go to the Mac OS X Server Resources website at www.apple.com/server/resources/.
- An RSS feed listing the latest updates to Mac OS X Server documentation and onscreen help is available. To view the feed, use an RSS reader application such as Safari or Mail and go to:

  feed://helposx.apple.com/rss/snowleopard/serverdocupdates.xml

Getting Additional Information

For more information, consult these resources:

- *Read Me documents*—get important updates and special information. Look for them on the server discs.
- *Mac OS X Server website* (www.apple.com/server/macosx/)—enter the gateway to extensive product and technology information.
- *Mac OS X Server Support website* (www.apple.com/support/macosxserver/)—access hundreds of articles from Apple's support organization.
- *Apple Discussions website* (discussions.apple.com/)—share questions, knowledge, and advice with other administrators.
- *Apple Mailing Lists website* (www.lists.apple.com/)—subscribe to mailing lists so you can communicate with other administrators using email.
- *Apple Training and Certification website* (www.apple.com/training/)—hone your server administration skills with instructor-led or self-paced training, and differentiate yourself with certification.

Before You Begin

1

Take a few moments to become familiar with upgrade and migration options and requirements.

If you're using Mac OS X Server v10.4 or v10.5, you may not need to migrate server data to a different computer. You might be able to *upgrade* your server, a process that installs and sets up Mac OS X Server v10.6 on your existing server computer while preserving data and service settings.

Servers You Can Upgrade or Migrate From

You can reuse server data and settings with Mac OS X Server v10.6 by:

- Upgrading server v10.5 or later or v10.4.11
- Migrating from versions 10.6, 10.5 or later, or v10.4.11

When you migrate from a volume, the volume must have an installation or Time Machine backup of Mac OS X Server that was configured with a static IP address. When the migration is complete, the new server will have the identity of the migrated server. It will have the same DNS name and static IP address of the migrated server. Also, all services will be migrated and configured as they were on the migrated server.

The promoting of a Mac OS X v10.6 client computer to a Mac OS X Server v10.6 is not supported.

Upgrading to v10.6

You can upgrade Mac OS X Server v10.5 or later or v10.4.11 to v10.6 or later if:

- You don't need to reformat the current computer's hard disk.
- Your server hardware has:
  - An Intel processor
  - At least 1 gigabyte (GB) of random access memory (RAM)
  - At least 20 gigabytes (GB) of disk space available

When you upgrade, you perform an upgrade installation from the server installation disc on your server computer. Data and settings are preserved for you, and manual adjustments are minimal.

Migrating from a Pre-10.5 Version Server to v10.6

Even if your existing server meets the minimum requirements for upgrading, you may want to migrate instead of upgrade. For example, you may be updating computers and decide you want to reestablish your server environment on newer computers.

Migrations from Mac OS X Server v10.5 or later and v10.4.11 are supported. You can also migrate from a server running Mac OS X Server v10.6 to another server running Mac OS X Server v10.6. When you migrate, you install and perform initial setup of Mac OS X Server v10.6 on a computer, restore files onto the v10.6 computer from the pre-v10.6 or current v10.6 computer, and make manual adjustments as required.

You'll need to migrate, not upgrade, to Mac OS X Server v10.6 if:

- Your v10.4.11 or v10.5 or later server's hard disk needs reformatting.
- Your v10.4.11 or v10.5 or later server doesn't have:
  - An Intel processor
  - At least 1 GB of RAM
  - At least 20 GB of disk space available
- You want to move data and settings you've been using on a v10.4.11 or v10.5 or later server to different server hardware.

Migrating Users and Groups

All versions of Mac OS X Server you can migrate from are supported by tools that help you move user and group accounts from an existing server to a v10.6 server.

Note: POP/IMAP accounts are disabled after an upgrade or migration. See the relevant migration chapter for information about restoring accounts.

Saving and Reusing User and Group Accounts

To save user and group accounts to be imported later, back up the Open Directory master database or export user and group accounts using Workgroup Manager. To restore user and group accounts, restore the Open Directory master database or use Workgroup Manager or the `dsimport` tool.

Each migration chapter provides instructions for using these tools.

System Accounts

When you install Mac OS X Server, several user and group accounts are created in the local directory. These accounts are sometimes called *system accounts* because they're used by server system software. For a description of how predefined accounts are used, see *User Management*.

You can't change the names or IDs of system accounts, so when you migrate users and groups, don't try to. However, you can add users during migration to two system groups—admin and wheel:

- The wheel and admin groups allows members to use the `su` (substitute user) command in the Terminal application to log in on a remote computer as the root user. (Members should know the root password to use the `su` command.)

  Use `ssh` to log in; enter `su`; then supply the root password when prompted.

- The admin group gives members the right to administer Mac OS X Server. Admin users can use server management applications and install software that requires administrator privileges. By default, members of the admin group can gain root privilege using the `sudo` command.

Here are the predefined user accounts:

Name	Short name	UID
Unprivileged User	nobody	-2
System Administrator	root	0
System Services	daemon	1
Printing Services	_lp	26
Postfix Mail Server	_postfix	27
VPN MPPE Key	vpn_*nnnnnnnnnnn*	57
World Wide Web Server	_www	70
Apple Events User	_eppc	71
MySQL Server	_mysql	74
sshd Privilege separation	_sshd	75
QuickTime Streaming Server	_qtss	76
Cyrus Administrator	_cyrus	77
Mailman List Server	_mailman	78
Application Server	_appserver	79
Clamav User	_clamav	82

Name	Short name	UID
Amavisd User	_amavisd	83
Jabber XMPP Server	_jabber	84
Xgrid Controller	_xgridcontroller	85
Xgrid Agent	_xgridagent	86
Application Owner	_appowner	87
WindowServer	_windowserver	88
Dovecot Administrator	_dovecot	98
Unknown User	_unknown	99

Here are the predefined groups:

Short name	Group ID
nobody	-2
nogroup	-1
wheel	0
daemon	1
kmem	2
sys	3
tty	4
operator	5
mail	6
bin	7
staff	20
_lp	26
_postfix	27
postdrop	28
utmp	45
uucp	66
dialer	68
network	69

Short name	Group ID
_www	70
_mysql	74
_sshd	75
_qtss	76
_mailman	78
_appserver	79
admin	80
appserveradm	81
_clamav	82
_amavisd	83
_jabber	84
_xgridcontroller	85
_xgridagent	86
_appowner	87
_windowserver	88
accessibility	90
unknown	99

Applying a New Serial Number

When upgrading to Mac OS X Server v10.6, you must configure your system to use a v10.6 serial number.

Upgrading Mac OS X Server v10.5

2

Use the instructions in this chapter to upgrade a v10.5 or later server to v10.6.

You can upgrade computers with Mac OS X Server v10.5 or later that don't require hard disk reformatting and that have:

- An Intel processor
- At least 1 GB of RAM
- At least 20 GB of disk space available

Understanding What Can Be Reused

When you upgrade from Mac OS X Server v10.5 or later, virtually all existing data and settings remain available for use, but note the following:

- NetBoot images created using Mac OS X Server v10.4 and v10.5 can be reused. NetBoot images created using earlier versions cannot be used.
- When upgrading to Mac OS X Server v10.6, the launch daemons (/System/Library/LaunchDaemons) are replaced by the Mac OS X Server v10.6 version of these daemons.
- PHP: Hypertext Preprocessor (PHP) 4 reached its end of life on December 31, 2007 as announced at www.php.net. If you upgrade to Mac OS X Server v10.6 and retain PHP 4.4.*x* and Apache 1.3, you must switch to PHP 5.*x* and Apache 2.2 to maintain a secure PHP.
- If you use Apache v1.3 on Mac OS X Server v10.5, you should perform an upgrade from Apache v1.3 to Apache v2.2 before upgrading to Mac OS X Server v10.6. When you upgrade to Mac OS X Server v10.6, a clean default configuration of Apache v2.2 is used for Web service and Apache v1.3 configuration files are preserved in the /etc/httpd/ folder. For more information about upgrading from Apache v1.3 to Apache v2.2, see "Upgrading Apache Web Server to v2.2 from v1.3" on page 23.
- WebObjects is not supported by Mac OS X Server v10.6. However, Mac OS X Server v10.6 can remotely manage a Mac OS X Server v10.4 or later that is running WebObjects. For more information, see "WebObjects" on page 21.

- If you are using mail service on your Mac OS X Server v10.5 and are performing the upgrade to Mac OS X Server v10.6, make sure that your mail data partitions and the mail database are accessible during the upgrade process. This automates the mail migration process and requires you to have no interaction.

Upgrading an Open Directory Master and Its Replicas

When the server you want to upgrade is an Open Directory master or replica, upgrade the master and then upgrade the replicas.

To upgrade the master and its replicas:

1. Create an archive of your Open Directory master and save it to a separate volume. For more information about creating an Open Directory archive, see "LDAP Server" on page 34.
2. Upgrade the master to v10.6 using the instructions in "Step-by-Step Instructions" on page 51.

   While you're upgrading the master, client computers can't connect to it for Open Directory services.

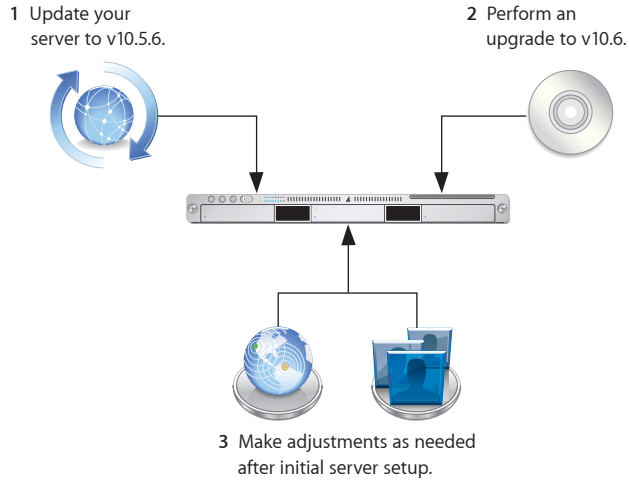
   Clients may experience a delay finding an Open Directory replica server. You can eliminate this delay by changing the DHCP service to use the address of an Open Directory replica server if the server provides clients with an LDAP server address.

   When the master upgrade is complete, change the DHCP service to use the address of the master. For instructions on configuring LDAP settings in DHCP service, see *Network Services Administration*.
3. Upgrade each replica server to v10.6.
4. Using Server Admin, connect to each replica server and reconnect the replicas with the master.

   For information about resetting passwords in the master, see "Directory Services" on page 55.

Step-by-Step Instructions

To upgrade a v10.5 or later server to v10.6, follow the instructions in this section.



Step 1: Update Your Server to v10.5 or Later

If necessary, use Software Update to update your server to v10.5 or later.

Step 2: Save Service Settings

Use `serveradmin` or Server Admin to export service settings for reference. Also, use System Profiler to generate a full profile of your system. Store the exported service settings and your server's profile on a removable drive or another system.

Important: Before upgrading you should also create a full, bootable, tested-by-booting clone of your server as a backup in case you need it in the future.

Step 3: Save Print Server Settings

Use the `serveradmin settings print` command to save the print server settings before you start the upgrade.

```
serveradmin settings print > exported_print_settings
```

Also, record the names and IDs of the CUPS queues for later use.

Step 4: Perform an Upgrade to v10.6

You can use the v10.6 installation disc to perform the upgrade locally on your server computer if it has a display, keyboard, and optical drive attached.

After the upgrade is complete, the computer restarts and Server Assistant leads you through initial server setup. Your existing settings are displayed, and you can change them if you like.

To upgrade to v10.6 and perform initial server setup locally:

1. Make sure that DHCP or DNS servers your server depends on are running.
2. Turn on the computer and insert the installation disc into the optical drive.
3. Restart the server while holding down the C key on the keyboard.

   The computer boots from the installation disc. You can release the C key when you see the Apple logo.

   For information about restarting a headless Xserve system, see the user's guide that came with the system.
4. When the Installer opens, follow the onscreen instructions to proceed through each pane, then click Continue.
5. When the Installer prompts for a disk or partition to install Mac OS X Server v10.6 on, be sure to select the disk or partition on which v10.5 or later is installed.

   If you want to add or remove install packages, click Customize and select or deselect packages from the install packages list.
6. Click Install.

   During installation, progress information is displayed.

   After installation is complete, the computer restarts and Server Assistant opens so you can perform initial server setup.
7. Move through the Assistant's panes, following the onscreen instructions.
8. In the Serial Number pane, enter a unique server software serial number for each server you upgrade.

   The number is printed on the materials provided with the server software package. If you have a site license, enter the registered owner name and organization as specified by your Apple representative.
9. To initiate setup of the server, click Setup.
10. When server setup is complete, log in.

    Note: The Mail service is disabled after upgrading or migrating your server, to give you the opportunity to inspect mailboxes and manually migrate mailboxes that may have been on previously unmounted volumes. For more information about mail services, see "Mail Database" on page 41.

To upgrade to v10.6 and perform initial server setup remotely:

1. Make sure that DHCP or DNS servers your server depends on are running.
2. Start the computer from the installation disc.

   The procedure you use depends on whether the target server has an optical drive that can read your installation disc. If you have an installation DVD, the optical drive must be able to read DVD discs.

If the target server has a keyboard and an optical drive that can read your installation disc, insert the installation disc into the optical drive, then hold down the C key on the keyboard while restarting the computer.

If the target server is an Xserve system with a built-in optical drive that can read your installation disc, start the server using the installation disc by following the instructions in *Xserve User Guide* for starting from a system disc.

If the target server lacks a built-in optical drive that can read your installation disc, you can start it in target disk mode and insert the installation disc into the optical drive on your administrator computer. You can also use an external FireWire optical drive.

If the target server is an Xserve system, you can move its drive module to another Xserve system that has an optical drive capable of reading your installation disc.

Instructions for using target disk mode and external optical drives are in the *Quick Start* guide, *Getting Started* guide, or user's guide that came with your Xserve system or Macintosh computer.

3. On an administrator computer, open Server Assistant by opening Server Admin and choosing "Installing Remote Server" from the Server menu.

   You don't need to be an administrator on the local computer to use Server Assistant.

4. In Destination, identify the server you want to upgrade by entering the IP address of the server in the IP Address field.
5. Enter the first eight characters of the computers hardware serial number (case-sensitive) and click Continue.
6. Proceed by following the onscreen instructions.
7. When the Target Disk pane appears, select a target disk or volume (partition) and click Install.

   During installation, progress information is displayed.

8. When the message appears explaining that a earlier version of Mac OS X Server is installed on the volume, select Upgrade.

   After the installation is complete, the computer restarts.

9. In the Installing pane, click More Options.
10. To initiate server setup, select "Set up Mac OS X Server remotely" and click Continue.
11. In the Servers pane, click Add.
12. From the Address pop-up menu, choose the server you're upgrading.
13. In the Password field, enter the root password used by the previous version of Mac OS X Server and click Continue to connect to the server.
14. Select the server you want to upgrade and click Continue.
15. Move through the Assistant's panes, following the onscreen instructions.

16 In the Serial Number pane, you must enter a unique server software serial number for each server you upgrade.

You'll find the number printed on the materials provided with the server software package. If you have a site license, enter the registered owner name and organization as specified by your Apple representative.

17 Click Setup.

When the setup is complete, the computer reboots.

18 When server setup is complete, close Server Assistant.

Note: The Mail service is disabled after upgrading or migrating your server, to give you the opportunity to inspect mailboxes and manually migrate mailboxes that may have been on previously unmounted volumes. For more information about mail services, see "Mail Database" on page 41.

Administrators on an Upgraded Server

If you are upgrading or migrating from a standard or workgroup configuration of Mac OS X Server v10.5, the following administrator accounts will exist on your upgraded or migrated server:

- Directory administrator

  This is your primary administrator account and is in the directory of your server. It has the name and short name specified during server setup.

- Local Administrator

  This is an administrator account stored on your server. It has the name Local Administrator and short name localadmin.

For more information about these accounts, see *Getting Started* for Mac OS X Server v10.5. It's available on the Apple Manuals website at support.apple.com/manuals/.

Step 5: Make Adjustments as Needed After Initial Server Setup.

Now use Workgroup Manager, Server Admin, Terminal, and other applications to refine your server's settings and take advantage of v10.6 features.

For an explanation of new and changed features, see the administration guide for individual services. Following are a few suggestions of interest.

Print Server Settings

To restore Print server settings, you must first recreate the original CUPS queues before importing the saved settings.

For printers connected to the server via USB, the queues are created by CUPS when the printers are plugged in and turned on. However, for network printers, you must add the printers using Server Admin > Print (for LPR or AppleTalk printers) or System Preferences > Print & Fax (for all printer types).

Important: When recreating a CUPS queue, make sure you give it the same name as the one it had before the upgrading process. If the name is not the same, Server Admin won't import the settings correctly.

Important: When creating the print queues using the Print & Fax pane of System Preferences, specify Generic Postscript (Generic PPD) for any queue that enforces quotas because there are known issues with third-party printer drivers and CUPS quotas. For more information about this issue, see the Knowledge Base article at http://docs.info.apple.com/article.html?artnum=303538.

After creating the print queues, import the saved settings:

```
serveradmin settings exported_print_settings
```

WebObjects

Mac OS X Server v10.6 does not support WebObjects. After the upgrade to Mac OS X Sever v10.6, your WebObjects applications are placed in the /Library/WebObjects/ folder and your WebObjects frameworks are placed in the /Library/Frameworks/ folder.

Secure Sockets Layer (SSL) Certificates

When you upgrade or migrate to Mac OS X Server v10.6 from version 10.5.x, the self-signed certificate in v10.5 referred to as the Default certificate is migrated unmodified. If your services used the v10.5 Default certificate, the services SSL settings are migrated and configured to use the v10.6 Default certificate.

Some services might reject the Default certificate because the name in the certificate does not match the host name of the server. If a service rejects the certificate, you must generate a new self-signed certificates using Server Admin and distribute it to your client computers.

For more information about distributing self-signed certificates, see http://support.apple.com/kb/TA25124.

Use Server Admin to import existing SSL certificates you want to continue to use for iChat, Open Directory, Mail, or Web services.

To import an SSL certificate:

1. Open Server Admin.
2. Select the upgraded server in the list of computers and services.
3. Click Certificates.
4. Import the certificates you want to use.

   You can also create a self-signed certificate and generate a Certificate Signing Request (CSR) to obtain an SSL certificate from a certificate authority and then install the certificate.

5 Click Save.

6 Activate the certificates per service.

For more information about importing, creating, and activating self-signed certificates, see *iChat Server Administration, Mail Server Administration, Open Directory Administration,* and *Web Technologies Administration.*

Directory Services

To enable Kerberos for an Open Directory master that it's not enabled for, use the Kerberize button on the Open Directory pane in Server Admin. If the Kerberize button is not visible, use the following command, which maintains existing passwords and adds them to a new KDC:

```
slapconfig -kerberize
```

Make sure your search policy does not contain multiple realms.

If you have user accounts with crypt passwords and you don't Kerberize them using the above command, you can use Workgroup Manager to upgrade to Open Directory passwords.

To use Workgroup Manager, open the application and access the directory where the user account resides. Authenticate as domain administrator, then select a user with a crypt password. Click Advanced, choose Open Directory from the User Password Type pop-up menu, click Basic, specify a password, and click Save.

Mac OS X Server v10.6 does not support single DES encryption. It supports AES 128 and 256 encryption types. However, during a migration or upgrade from v10.5 to v10.6, servers that were Kerberized by the v10.5 Open Directory server will not use the AES 128 or 256 encryption types. To use the AES 128 or 256 encryption types, you must re-Kerberize all servers.

For more information about `slapconfig`, see its man page.

LDAP ACLs

Due to a change in format, you must manually move the LDAP access control lists (ACLs) after the upgrade is finished. During the upgrade process, the container or record for access controls and ACL information is made available as Read-Only.

Use Workgroup Manager to add custom ACLs to the new olcAccess attribute (in olcBDBConfig). You must also use the `set` directive instead of the `group` directive.

LDAP Schemas

Schema changes must be made under OlcSchemaConfig and custom schemas should be added to the {9}customschema record. Changes to configure slapd can be made to the back-config backend using inspector in Workgroup Manager or ldap tools. If changes require slapd to be restarted, you can use the following commands:

- `slapconfig -stopldapserver`
- `slapconfig -startldapserver`

DNS

If DNS was never upgraded in v10.5 or if DNS was never selected and configured in v10.5 using Server Admin, when you select DNS in Server Admin for the first time after an upgrade, Server Admin prompts you to upgrade.

If you click Don't Upgrade, Server Admin leaves the DNS configuration files as they were before the v10.6 upgrade. DNS runs, but you can't make DNS configuration changes using Server Admin. To make changes, edit the DNS configuration files.

If you click Upgrade, Server Admin upgrades the configuration files to the v10.6 format. After that, you can use Server Admin to make DNS configuration changes.

NetBoot Images

You can reuse NetBoot images created using v10.4 and v10.5 following the upgrade.

To manage Netboot images, you use System Image Utility, which replaces Network Image Utility during the upgrade.

The Open Directory Upgrade Log

Information about upgrading the Open Directory LDAP server is stored in /Library/Logs/slapconfig.log.

Upgrading Apache Web Server to v2.2 from v1.3

When you upgrade from Mac OS X Server v10.5 to Mac OS X Server v10.6, the upgrade details depend on the version of Apache that was in place on your 10.5 system. If you were managing Apache v2.2 on the 10.5 system, the upgrade process converts the Apache config files from 10.5 to 10.6 format, and, after you check the /Library/Logs/Setup.log to confirm that this was successful, no further action should be necessary.

If you were managing Apache v1.3 on a v10.5 server, the upgrade process preserves the old Apache v1.3 config files in /etc/httpd-1.3/, and starts you with a default version of Apache v2.2 config files in /etc/apache2/. You then have the opportunity to customize the default Apache v2.2 configuration with the same custom settings you had with the Apache v1.3. You can use the apache1_config_helper tool to do this for you automatically in many, but not all, cases. Run the tool as follows for additional details:

To transfer customized Apache v1.3 configurations to Apache v2.2:

1. Open Terminal.
2. Type the following command:

```
$ sudo /usr/bin/apache1_config_helper
```

The apache1_config_helper script outputs to stdout. For more information, see the apache1_config_helper(8) man page.

Note: Apache v2.2 runs as a 64-bit process on appropriate hardware.

WARNING: There are possible side-effects when running of the Apache 1-to-Apache 2 conversion script, especially for security-related settings, which impacts the security of your upgrade. Use Server Admin or a text editor to customize the Apache v2.2 configuration settings.

For more information about upgrading to Apache v2.2, see *Web Technologies Administration*.

Migrating from Mac OS X Server v10.5

3

Use the instructions in this chapter to migrate data from a v10.5 or later server to a different computer running v10.6.

You can migrate data from Mac OS X Server v10.5 or later computers that can't or won't be upgraded to v10.6 or later. Such computers may:

- Require hard disk reformatting or replacement with a newer computer.
- Use server hardware that doesn't have:
  - An Intel processor
  - At least 1 GB of RAM
  - At least 20 GB of available disk space

Before You Begin

Before using the instructions in this chapter, perform initial setup of the v10.6 server that you'll migrate data to. For instructions, see *Getting Started*.

If necessary, upgrade the server whose data you'll migrate so it's running v10.5 or later.

When the server is an Open Directory master or replica, set up the v10.6 master and then set up the v10.6 replicas.

To reestablish the master and its replicas:

1 Set up the v10.6 master.

While you're setting up the master, client computers can't connect to the v10.5 or later master for Open Directory services.

In addition, clients may experience a delay while finding the nearest Open Directory replica server. To eliminate this delay, change the DHCP service to use the address of an Open Directory replica server if it provides clients with an LDAP server address.

When the v10.6 master is ready, you can change the DHCP service to use the address of the master.

For instructions on configuring LDAP settings in DHCP service, see *Network Services Administration*.

2 Change the v10.5 or later replica's role to standalone, then set up the v10.6 server to be a replica of the v10.6 master.

For instructions about changing a server's Open Directory role to standalone and replica, see *Open Directory Administration*.

For information about resetting passwords in the master, see "Directory Services" on page 22.

Using Server Assistant to Automate Migration

Mac OS X Server v10.6 supports the migration of data and settings from a volume. Mac OS X Server v10.6 also supports lateral migrations from v10.6 to v10.6. Lateral migrations can be used to replace or upgrade hardware in your server. You can migrate all data, supported services, and settings from an volume to your Mac OS X v10.6 Server.

When you migrate using a volume, the process is automated and doesn't require you to interact. You can migrate from a volume that has an installation of Mac OS X Server v10.5 or v10.6.

You can also use a Time Machine backup of Mac OS X Server v10.6 or a standard or workgroup configuration of Mac OS X Server v10.5 or later. The installation or Time Machine backup on the volume must be a version of Mac OS X Server v10.5 or later configured with a static IP address. The volume can be on an existing server or connected using Target Disk Mode.

To migrate to v10.6 using Server Assistant:

1 Make sure the volume you migrate from is connected through Target Disk Mode or is installed locally on your server.

2 Turn on the computer and insert the installation disc into the optical drive.

3 Restart the server while holding down the C key on the keyboard.

The computer boots from the installation disc. You can release the C key when you see the Apple logo.

For information about restarting a headless Xserve system, see the user's guide that came with the system.

4 When the Installer opens, follow the onscreen instructions to proceed through each pane, then click Continue.

5 When the Installer prompts for a disk or partition, select the disk or partition you want to install Mac OS X Server v10.6 on.

If you want to add or remove install packages, click Customize and select or deselect packages from the install packages list.

6 Click Install.

During installation, progress information is displayed.

After installation is complete, the computer restarts and Server Assistant opens so you can perform initial server setup.

7 Move through the panes in Server Assistant, following the onscreen instructions.

8 In the Serial Number pane, enter a unique server software serial number.

You'll find the number printed on the materials provided with the server software package. If you have a site license, enter the registered owner name and organization as specified by your Apple representative.

9 In the Transfer an Existing Server pane, select "Transfer the information from an existing server" and click Contiune.

10 In the Transfer Your Server pane, select the v10.5 or v10.6 volume you want to migrate data from and click Transfer.

In this first phase of the migration, all configuration information on your v10.5 or v10.6 disk is migrated to the Mac OS X Server v10.6 volume.

Note: The Mail service is disabled after upgrading or migrating your server, to give you the opportunity to inspect mailboxes and manually migrate mailboxes that may have been on previously unmounted volumes. For more information about migrating mail, see "Mail Database" on page 41 to validate your mail stores before starting the Mail service.

11 When the information has been transfered, a message in the Transferring Information pane describing a successful transfer appears.

12 Click Continue.

In this second phase of the migration, all data on the source volume is transfered to the Mac OS X Server v10.6 volume. The time required for this phase of the migration depends on the amount of data on the source volume and the speed of the interconnect between the source volume and the server. For example, FireWire 400 takes longer than a SATA drive.

If your previous version of Mac OS X Server had services that are not supported by Mac OS X Server v10.6 or if services did not start, an upgrading services message appears at the end of the setup process.

Important: The Server Assistant migration tool does not support the migration of mail message data from unmounted or Xsan volumes. If you used mail service on your previous version of Mac OS X Server and it stored mail message data on an unmounted or Xsan volume, you must migrate the service manually. For more information about manually migrating mail service, see "Step-by-Step Instructions for Manual Migration" on page 30 and "Step 7: Relocate the Following Saved Data Files" on page 39.

13 When the setup is complete, click Restart.

14 Log into your newly migrated server and verify the settings of your migrated services.

Understanding What You Can Migrate

Using the automated migration in Server Assistance is the preferred method for migrating. However, if you require finer grained control, the information in "Step-by-Step Instructions for Manual Migration" on page 30 describes how to reuse the following v10.5 data with v10.6:

- Web configuration data
- Web content
- Tomcat content
- MySQL data
- Mail database
- WebMail data
- FTP configuration files
- LDAP server settings
- NetBoot images
- AFP settings
- SMB Settings
- IP firewall configuration
- DNS settings
- DHCP settings
- NAT settings
- Print settings
- VPN settings
- User data, including home directories
- QuickTime Streaming Server files and folders
- QTSS Publisher files and folders
- User and group accounts

- iChat server settings
- Shared Contacts
- RADIUS Settings
- Xgrid Settings

Use `serveradmin` or Server Admin to export service settings for reference. Store the exported service settings on a removable drive or another system.

Note: To save service settings in Server Admin, select the service from the list of computers and services on the left, click Settings, and drag the button on the bottom right to the Desktop. Dragging this button creates a file on the Desktop containing the service settings.

Tools You Can Use

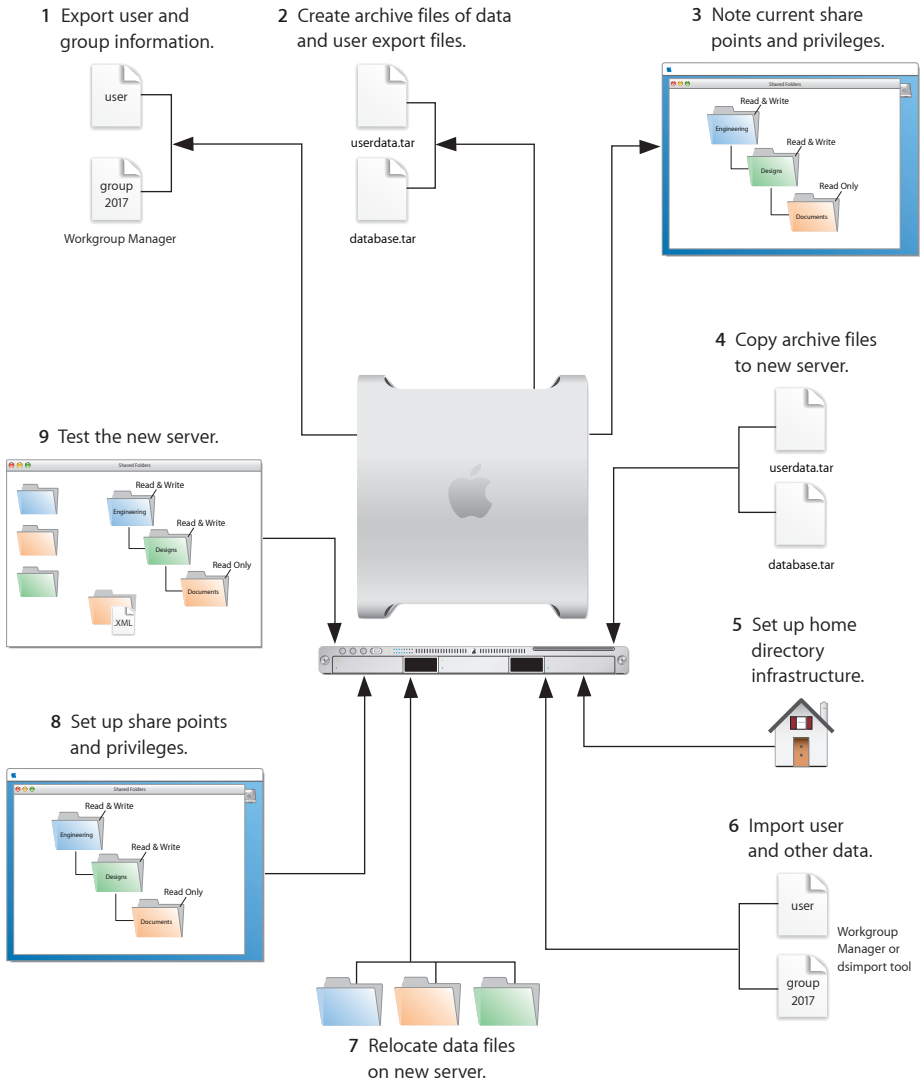
Several tools are available:

- You can use Workgroup Manager to export v10.5 user and group accounts to a delimited file and then import them into a v10.6 server. You can also import users and groups using the command-line `dsimport` tool.
- Workgroup Manager's import facility and the `dsimport` tool also let you import other kinds of data, such as computers and computer lists.
- Use the `61_webconfigmigrator.rb` tool located /System/Library/ServerSetup/MigrationExtras/ to migrate Web server settings.
- Use the `58_jabbermigrator.pl` tool located /System/Library/ServerSetup/MigrationExtras/ to migrate iChat server settings.
- Use the `65_mail_migrator.pl` tool located /System/Library/ServerSetup/MigrationExtras/ to migrate Mail server settings.
- Use the `migrate_mail_data.pl` tool located /usr/libexec/dovecot/ to migrate mail data.

Instructions in the following sections explain when and how to use these utilities.

Step-by-Step Instructions for Manual Migration

To move data from a Mac OS X Server v10.5 or later computer to a computer with Mac OS X Server v10.6 installed, follow the instructions in this section.



Step 1: Export Users and Groups

You can use Workgroup Manager or Server Admin to export users and groups from your LDAPv3 directory. By using Server Admin you can archive and restore LDAP data, including passwords and Kerberos principals. For more information about archiving LDAP data, see "LDAP Server" on page 34.

If you prefer to export only users and group information, you can use Workgroup Manager to export user and group accounts from an LDAPv3 directory into a character-delimited file that you can import into a directory for use with Mac OS X Server v10.6.

To export users and groups using Workgroup Manager:

1. In Workgroup Manager, click Accounts, then click the globe icon below the toolbar and choose the directory you want to export accounts from.
2. Click the lock to authenticate as domain administrator (typically diradmin).
3. Click the Users button to export users or click the Groups button to export groups.
4. Export user or group accounts as follows:
   - To export all accounts, select all of them.
   - To export one account, select it.
   - To export multiple accounts, select them while holding down the Command or Shift key.
5. Choose Server > Export.
6. Specify a name to assign to the export file and the location where you want it created.
7. Click Export.

When you export users using Workgroup Manager, password information isn't exported. To set passwords, modify the export file before you import it or set passwords individually after importing using the `passwd` command or Workgroup Manager. For more information about setting passwords after importing users, see *User Management*.

Step 2: Create Archives of the Following Files

Save data files you want to reuse with Mac OS X Server v10.6. In "Step 4: Copy Archive Files to the New Server" on page 70 you'll move the files described below, as well as the export file created in "Step 1: Export Users and Groups" on page 64, to the v10.6 computer.

For large amounts of data, you may want to create tar archives or use `/usr/bin/mkdmg` to create disk image files. You can transfer disk images and tar files using AFP or FTP.

Note: You can also use `scp -r` for secure copying of files and `rsync` for remote file copying. The `rsync` command is particularly useful when you have a large amount of data that can be migrated before moving, and then updated in a small downtime window.

To create a tar archive, use the `tar` command in the Terminal application. The command's `-c` flag creates an archive file in tar format. Use the `-f` flag to specify the archive file name. Use the `-v` (verbose) flag to view progress information as the command executes:

```
tar -cvf /MyHFSVolume/Stuff.tar /MyHFSVolume/My\ Stuff
```

The escape character (\ in the example above) indicates a space in the name. You can also use quotation marks to handle embedded spaces:

```
tar -cvf /MyHFSVolume/Stuff.tar "/MyHFSVolume/My Stuff"
```

Web Configuration Data

Save the following files and directories:

- /etc/apache2/httpd.conf
- /etc/apache2/httpd_mailman.conf
- /etc/apache2/httpd_squirrelmail.conf
- /etc/apache2/magic
- /Library/WebServer/

Web Content

Copy web content you want to reuse from:

- /Library/WebServer/Documents/
- /Library/WebServer/CGI-Executables/
- Any other location where it resides

MySQL Data

Mac OS X Server v10.5 and v10.6 use MySQL v5.0.67.

To migrate MySQL databases from one computer to another, you can use the `mysqldump` command to back up your data. This command has several forms depending on the scope of data to be backed up: individual tables, single databases, or the entire set of databases on the server.

To back up individual tables, enter:

```
mysqldump database tb1 [tb2 tb3...] > backup-file.sql
```

Replace *`database`* with the name of the database containing the listed tables and *`tb1`*,*`tb2`*, and *`tb3`* represent table names.

To back up one or more databases, enter:

```
mysqldump --databases db1 [db2 db3...] > backup-file.sql
```

To back up all databases on the system, enter:

```
mysqldump --all-databases > backup-file.sql
```

For additional instructions for database backup and restore, see the MySQL documentation at www.mysql.org.

To back up tables or databases that require root access (for example, grant tables or other restricted data), run `mysqldump` with the `--user=root` and `-p` options:

```
mysqldump --user=root -p --all-datagases > backup-file.sql
```

The `-p` option causes `mysqldump` to prompt for the MySQL root password before proceeding.

Mail Database

To reuse the Mail server database and store, stop Mail server if it's running and save the mail files. When Mail server is not running, copy all Mail server directories.

By default:

- The mail database resides in /var/imap/.
- The mail store resides in /var/spool/imap/. You can back up mail storage folders or the entire mail store.

The `ditto` command-line tool is useful for backing up mail files. For more information about `ditto`, see its man page.

Also, save a copy of the file /usr/bin/cyrus/bin/ctl_mboxlist so you can move it to the v10.6 server in "Step 4: Copy Archive Files to the New Server" on page 70. You need this file to migrate the mail database successfully in "Step 7: Relocate the Following Saved Data Files" on page 73.

Webmail Data

If you use SquirrelMail that was installed with v10.5 and you want to continue using it after migration, make copies of the address books and preferences stored in /var/db/squirrelmail/data/.

FTP Configuration Files

To migrate FTP settings, save these configuration files:

In this directory	Save these files
/Library/FTPServer/Configuration/	ftpaccess
	ftpconversions
	ftphosts
	ftpgroups
	ftpusers
/Library/FTPServer/Messages/	banner.txt
	welcome.txt
	limit.txt

LDAP Server

Back up the LDAP server configuration information, passwords, and Kerberos principals.

To back up the Open Directory database, which includes LDAP server configuration:

1. Open Server Admin and connect to the server.
2. Click the triangle at the left of the server.

   The list of services appears.
3. From the expanded Servers list, select Open Directory.
4. Click Archive.
5. Enter a path for your archive in the Archive field or click Choose and browse for a location to store your archive.
6. Click the Archive button.
7. Enter a name and password to use in encrypting the archive, then click OK.

   This create a entire archive of your LDAPv3 data.

AFP

Save /Library/Preferences/com.apple.AppleFileServer.plist.

SMB

Copy /etc/smb.conf to /etc/smb.conf.old.

NetBoot Images

You can migrate NetBoot images created using Mac OS X Server v10.5.

Save the <*name*>.nbi folder for each image you want to migrate, noting the path to the folder to recreate it in v10.6.

Also save the NetBoot settings. In Server Admin, select NetBoot from the list of computers and services on the left, click Settings, and drag the button on the bottom right to the Desktop. Dragging this button creates a file on the Desktop containing the NetBoot service settings. Save this file.

WebObjects and Frameworks

Mac OS X Server v10.6 does not support WebObjects. You can still save your WebObjects applications and frameworks located in:

- /Library/WebObjects/
- /System/Library/WebObjects/

Tomcat Data

Save Tomcat servlets you want to reuse. They're in /Library/Tomcat/webapps/.

If you've installed Axis independently of the version supplied with your server, save any Simple Object Access Protocol (SOAP) services.

IP Firewall

In the Terminal application, you can run the 30-ipfilterconfigmigrator tool to migrate your firewall to your v10.6 server. For more information about the required arguments for the 30-ipfilterconfigmigrator tool, enter the following command:

```
sudo /System/Library/ServerSetup/MigrationExtras/30-
     ipfilterconfigmigrator
```

Save the contents of /etc/ipfilter.

NAT

Save the contents of /etc/nat/natd.plist.

Print

Use the `serveradmin settings print` command to save print settings before you start the migration.

```
serveradmin settings print > exported_print_settings
```

Also, record the names and IDs of the CUPS queues for later use.

VPN

Copy and save the following files:

- /Library/Preferences/SystemConfiguration/com.apple.RemoteAccessServers.plist
- /Library/Keychains/System.keychain
- /etc/racoon/psk.text

  If L2TP is set up and psk.text stores the IPsec shared secret, the shared secret may also be stored in com.apple.RemoteAccessServers.plist or System.keychain.

DNS

Save the file /etc/named.conf, the directory /etc/dns/ and its contents (if /etc/dns/ exists), and the directory /var/named/, and its contents.

DHCP

In Server Admin, select DHCP from the list of computers and services on the left, click Settings, and drag the button on the bottom right to the Desktop.

Dragging this button creates a file on the Desktop containing DHCP service settings.

Save this file.

User Data

Save user data files or folders you want to reuse, especially home directory folders.

QuickTime Streaming Server Files and Folders

Save files and folders in /Library/QuickTimeStreaming/.

QTSS Publisher Files and Folders

Save the following:

- Files and folders in /Library/Application Support/Apple/QTSS Publisher/
- Files and folders in each QTSS Publisher user's path:

  /Users/<*publisher_user*>/Library/Application Support/Apple/QTSS Publisher

iChat Server

When making a copy or compressed archive, use the full path.

For example:

```
cp -Rv /var/jabberd /Volumes/10.5_backup_drive/ichat
```

Save the following files and folders:

- /var/jabberd
- /etc/jabberd
- /var/spool/conference.<*jabberdomain*>

  If multiple domains are hosted, multiple directories exist in the /var/spool/ directory. To obtain all directories, use /var/spool/conference.*
- /System/Library/LaunchDaemons/org.jabber.jabberd.plist

Step 3: Note Current Share Points and Privileges

If your v10.5 server has share points and privileges you want to recreate on the v10.6 server, make a note of them. Record which share points are for home directories.

You can use the following commands to view share points:

- Use `/usr/sbin/sharing -l` to view share points and settings.
- Use `/usr/bin/dscl . -list /SharePoint` to view a list of sharepoints.
- Use `/usr/bin/dscl . -read /SharePoints/`*`name of share point`* to view the configuration of a share point.

Step 4: Copy Archive Files to the New Server

Transfer the files you saved in "Step 1: Export Users and Groups" on page 64 and "Step 2: Create archives of the following files." on page 65 to the v10.6 server.

To transfer tar files or disk images using FTP:

1. Use Server Admin on the new server to start FTP.
2. Set up sharing for a folder where you'll place files you transfer from the v10.5 computer.
3. From the v10.5 server, use FTP to copy the tar files or disk images to the v10.6 computer.
4. On the v10.6 server, double-click a tar file to extract its contents or double-click a disk image to mount it.

Step 5: Set Up the Home Directory Infrastructure

Set up the destination for home directories you want to restore.

The home directory location identified in imported user accounts must match the physical location of the restored home directories, including the share point location.

For details on how to perform the steps in the following procedure, see *User Management*.

To prepare the server to store home directories:

1. Create the folder you want to serve as the home directory share point, if required.

   You can use the predefined /Users folder.
2. Open Server Admin on the server where you want home directories to reside.
3. Click File Sharing to set up a share point for home directories.

   If user accounts reside in a shared Open Directory directory, create a dynamically automounted AFP or NFS share point for home directories. Make sure the share point is published in the directory where the user accounts that depend on it will reside.

4 In Workgroup Manager on the computer where you'll import users, click Accounts, then open the directory where you'll import users.

If you restore home directories in locations that don't match the locations identified in exported user records, you can define a preset that identifies the restore location. If you identify the preset when you import users, the new location replaces the existing location in user records.

You can also use the preset to specify other default settings you want imported users to inherit, such as password settings and mail settings.

Step 6: Import Users and Groups and Other Data

If you migrate users and groups from an Open Directory master, use the instructions in "LDAP Server Settings" on page 76. If you migrate local node users and groups, use Workgroup Manager or the `dsimport` tool.

For more information about importing by using Workgroup Manager, see *User Management*.

For more information about `dsimport` and a description of Workgroup Manager export format, see *User Management*.

Users created in Mac OS X Server v10.6 using Server Preferences are given a shell by default (/bin/bash). Migrated or imported users without a default shell are not given one. For information about setting a users default shell, see *User Management*.

To import users and groups using Workgroup Manager:

1 Place the export files you created in Step "Step-by-Step Instructions for Manual Migration" on page 64 in a location accessible from your server.

You can modify user accounts in an export file to set passwords before importing users. For instructions, see *User Management*.

Additionally, you can set up the preset you defined in "Step 5: Set Up the Home Directory Infrastructure" on page 71 so user passwords are validated using Open Directory authentication, and you can set password validation options so users must change their passwords the next time they log in.

For information about using Kerberos passwords, see the last step in this sequence.

2 In Workgroup Manager, click the Accounts button.

3 Click the globe icon in the toolbar to open the directory where you want to import accounts.

4 Click the lock to authenticate as domain administrator.

5 Choose Server > Import, select the import file, and specify import options.

If you're using a preset, make sure you specify the preset.

6 Click Import.

7 For groups to use v10.6 features, upgrade groups using Workgroup Manager.

In Workgroup Manager, open the directory containing the groups, select groups, click "Upgrade legacy group," and click Save.

8 To create home directories for imported users, use one of the following options.

- Create home directories one at a time by selecting a user account in Workgroup Manager, clicking Home, and then clicking Create Home Now.
- Create all home directories by using the `-a` argument of the `createhomedir` command. For details, see *User Management*or the man page for `createhomedir`.

A home directory associated with an AFP share point is created the first time a user logs in, if it doesn't exist.

9 To enable Kerberos for an Open Directory master that it's not enabled for, use the Kerberize button on the Open Directory pane in Server Admin.

If the Kerberize button is not visible, use the following command, which maintains existing passwords and adds them to a new KDC:

```
slapconfig -kerberize
```

If you have user accounts with crypt passwords and you don't Kerberize them using the above command, you can use Workgroup Manager to upgrade to Open Directory passwords.

To use Workgroup Manager, open the application and access the directory where the user account resides. Authenticate as the Open Directory administrator (typically diradmin), then select a user with a crypt password. Click Advanced, choose Open Directory from the User Password Type pop-up menu, click Basic, specify a password, and click Save.

For more information about `slapconfig`, see its man page.

Administrators on an Upgraded Server

If you are upgrading or migrating from a standard or workgroup configuration of Mac OS X Server v10.5, the following administrator accounts exist on your upgraded or migrated server:

- Directory administrator

  This account is your primary administrator account and is in the directory of your server. It has the name and short name specified during server setup.

- Local Administrator

  This account is an administrator account stored on your server. It has the name Local Administrator and short name localadmin.

For more information about these accounts, see *Getting Started* for Mac OS X Server v10.5. It's available on the Apple Manuals website at support.apple.com/manuals/.

Step 7: Relocate the Following Saved Data Files

Place the files you saved from your v10.5 server in their final locations.

Web Configuration Data

To migrate the web configuration:

1. Open Server Admin.
2. Under the v10.6 server in the list of computers and services, click Web.
3. If Web service is running, click Stop Web
4. Delete the following files:
   - /etc/apache2/ssl.crt
   - /etc/apahe2/ssl.key
5. Delete the content in the /etc/apache2/sites/ folder.
6. Copy the saved v10.5 files and directory onto the v10.6 server.
7. If your v10.5 server was using Apache v1.3, run the apache1_config_helper tool.

   Your Apache v1.3 configuration files on the v10.5 server are not compatible with Apache v2.2 on the v10.6 server.

   The apache1_config_helper tool translates the old files to the new format in many, but not all, cases. For more information, see the apache1_config_helper(8) man page.

   ```
   sudo /usr/bin/apache1_config_helper
   ```
8. If you've modified /etc/apache2/workers.properties, reapply changes to the version of the file that's installed with server v10.6.

   The v10.6 workers.properties file has a new entry for Blog service.
9. In Server Admin, start Web service.

Web Content

Copy saved web content to the following locations and anywhere else you have placed web content on the server:

- /Library/WebServer/Documents/
- /Library/WebServer/CGI-Executables/

MySQL Data

Before importing backed up MySQL data, make sure the MySQL service is active. You can activate the MySQL service using Server Admin or the serveradmin command.

To activate the MySQL service using the `serveradmin` command, enter:

```
serveradmin start mysql
```

To import database backups, enter:

```
mysql < backup-file.sql
```

To import data into databases that require privileged access, run `mysql` with the `--user=root` and `-p` options:

```
mysql --user=root -p < backup-file.sql
```

The `-p` option causes `mysql` to prompt for the MySQL root password before proceeding.

When running MySQL and PHP on the same server, you may find that PHP cannot connect to MySQL or that authentication errors occur when using PHP. For more information and workarounds, see the following AppleCare KnowledgeBase articles:

- "Mac OS X Server v10.5: PHP and MySQL authentication issues" (article 301456)"
- "Mac OS X Server v10.5: Issues connecting PHP to MySQL" (article 301457)"

Additional instructions for MySQL database backup and restoration can be found in the MySQL documentation at www.mysql.org.

Mail Database

Migrating Mail to an Alternate Startup Volume

If you have installed Mac OS X Server v10.6 on a separate volume and you want to migrate mail settings and data, you can use the mail migration script, 65_mail_migrator.pl, located /System/Library/ServerSetup/MigrationExtras. The script migrates all necessary mail configuration information from the separate and upgrades the mail data store.

The following are arguments for the script:

Arguments	Description
`--purge<0 | 1>`	The default value is 0, which leaves the source data intact. If you use the value of 1, the script attempts to clean up the source volume and delete configuration and mail directories after the migration is complete.
`--sourceRoot<path>`	Path to the source volume you are migrating from. For example, "/Volumes/Leopard Server."
`--sourceVersion<ver>`	Version of the source you are migrating from. For example, 10.5.
`--targetRoot<path>`	Path to the root of the new system, generally your boot volume "/".
`--language<lang>`	Language identifier, such as "en." for English.

For example, to migrate from the source volume /Volumes/Leopard Server and install on the local boot volume leaving the source data untouched:

```
sudo 65_mail_migrator.pl --purge 0 --sourceRoot "/Volumes/Leopard Server"
     --sourceVersion 10.5.x --targetRoot "/" --language en
```

Migrating Mail from Alternate Mail Data Stores

In some circumstances mail may not migrate (for example, if the mail data store was not available during the upgrade or the mail was on an Xsan volume). In these cases you can manually migrate mail by using the migrate_mail_data.pl script located in /usr/libexec/dovecot/.

The following are arguments for the script:

Arguments	Description
`--moveMail<0 | 1>`	The default value of 0 leaves the source mail data in its original location. A value of 1 moves the mail during migration.
`--cyrusBin<path>`	Path to the Cyrus binaries used by the previous mail server. For example, if you were running a v10.5 Mail server, you need a copy of the sources from /usr/bin/cyrus/bin/.
`--database<path>`	Path to the mail database of the previous mail server. The default location is /var/imap for Mac OS X Server v10.5.
`--sourceSpool<path>`	Path to the original Cyrus mail data store. The default location is /var/spool/imap for Mac OS X Server v10.5.
`--targetSpool<path>`	Path to the current mail data store. The default location is /var/spool/imap/dovecot/mail.

For example, to migrate mail from a 10.5 Mail server:

```
sudo /usr/libexec/dovecot/migrate_mail_data.pl —moveMail 0 —cyrusBin "/
    Volumes/Leopard Server/usr/bin/cyrus/bin" --database "/Volumes/
    Leopard Server/var/imap" --sourceSpool "/Volumes/Leopard Server/var/
    spool/imap" --targetSpool "/var/spool/imap/dovecot/mail"
```

The mail data migration script logs detailed status to /Library/Logs/MailDataMigration.log.

Webmail Data

Place saved address books and preferences in /var/db/squirrelmail/data/.

FTP Configuration Files

Copy saved FTP configuration files to:

- /Library/FTPServer/Configuration/
- /Library/FTPServer/Messages/

LDAP Server Settings

Restore the LDAP server configuration information, password, and Kerberos principals.

To restore the Open Directory database, which includes LDAP server configuration:

1. Open Server Admin and connect to the server.
2. Click the triangle at the left of the server.

The list of services appears.

3 From the expanded Servers list, select Open Directory.

4 Click Archive.

5 In the Archive field, enter a path for your archive or click Choose and browse to your archive.

6 Click the Restore button.

7 In the Password field, enter the password for the archive.

AFP Configuration

To migrate the AFP configuration, restore /Library/Preferences/com.apple.AppleFileServer.plist.

SMB Configuration

To migrate the SMB configuration, copy /etc/smb.conf.old to the new server, and run the following script:

```
sudo /System/Library/ServerSetup/MigrationExtras/70_smbconfigmigrator
```

This script generates the settings in /Library/Preferences/SystemConfiguration/com.apple.smb.server.plist for the v10.5 server using the settings from /etc/smb.conf.old.

NetBoot Images

Copy the <*name*>.nbi folder for each image you want to migrate, optionally placing it into the location where it previously resided.

Also, restore the NetBoot settings file.

To restore the NetBoot settings:

1 Open Server Admin and select NetBoot from the list of computers and services.

2 Choose Server > Import > Service Settings to import the NetBoot settings from the file you exported earlier (see "NetBoot Images" on page 68).

3 Review the NetBoot settings to make sure they were imported correctly.

Tomcat Data

Restore Tomcat servlets to /Library/Tomcat/webapps/.

Place SOAP services you want to migrate in /Library/Tomcat/webapps/axis/.
Mac OS X Server v10.6 includes a version of Axis that may be newer or older than the version you've been using.

IP Firewall Configuration

To migrate the IP firewall configuration, restore the /etc/ipfilter folder.

Open Server Admin and click Firewall to inspect the settings and make sure they are correct.

NAT

Restore the contents of /etc/nat/natd.plist.

To restore the v10.6 default settings for NAT (in /etc/natd/natd.plist.default), delete the active configuration file (/etc/nat/natd.plist). The next time NAT is accessed using Server Admin, the default configuration file is used to recreate the active configuration file.

Note: In v10.6, the default setting of unregistered_only in /etc/nat/natd.plist.default is true.

Print Server Settings

To restore Print server settings, you must first recreate the original CUPS queues before importing the saved settings.

For printers connected directly to the server via USB, the queues are created by CUPS when the printers are plugged in and turned on. However, for network printers, add the printers using Server Admin > Print (for LPR or AppleTalk printers) or System Preferences > Print & Fax (for all printer types).

Important: When recreating a CUPS queue, make sure you give it the same name as the one it had on the older system. If the name is not the same, Server Admin won't import the settings correctly.

Important: When creating the print queues using the Print & Fax pane of System Preferences, specify Generic Postscript (Generic PPD) for any queue that enforces quotas because there are known issues with third-party printer drivers and CUPS quotas. For more information about this issue, see the Knowledge Base article at http://docs.info.apple.com/article.html?artnum=303538.

After creating print queues, import the saved settings:

```
serveradmin settings exported_print_settings
```

VPN

Restore the following:

- /Library/Preferences/SystemConfiguration/com.apple.RemoteAccessServers.plist.
- /Library/Keychains/System.keychain
- /etc/racoon/psk.text

  If L2TP is set up and psk.text stores the IPsec shared secret, the shared secret may also be stored in com.apple.RemoteAccessServers.plist or System.keychain.

Migrate the VPN MPPE Key user by using the `vpnaddkeyagentuser` command-line tool. For more information about this command, see its man page.

DNS Configuration

To migrate the DNS configuration:

1. Restore the file /etc/named.conf, the directory /etc/dns/ and its contents (if /etc/dns/ exist), the directory /var/named/, and its contents.
2. In Server Admin, select DNS from the list of computers and services.

   If DNS was never upgraded in v10.5 or if DNS was never selected and configured in v10.5 using Server Admin, a dialog box appears, prompting you whether to upgrade. Choose from the following:

   - If you click Don't Upgrade, Server Admin leaves the DNS configuration files as they were before the v10.6 migration. DNS still runs, but you can't make DNS configuration changes using Server Admin. To make changes, you must directly edit the DNS configuration files.
   - If you click Upgrade, Server Admin upgrades the configuration files to the v10.6 format. After that, you can use Server Admin to make DNS configuration changes.

DHCP Settings

To migrate the DHCP configuration:

1. Open Server Admin and select DHCP from the list of computers and services.
2. Choose Server > Import > Service Settings to import DHCP settings from the file you exported earlier (see "DHCP" on page 70).
3. Inspect the Subnets and Static Maps panes of the DHCP service to make sure the subnet and static binding settings are imported correctly.

User Data

Restore saved user data files.

Place home directories in locations that match the locations in imported user records. If necessary, use Workgroup Manager to edit user accounts so the locations in the account and on disk are the same.

QuickTime Streaming Server Files and Folders

Follow instructions in *QuickTime Streaming and Broadcasting Administration* to reuse files and folders saved from /Library/QuickTimeStreaming/.

QTSS Publisher Files and Folders

QTSS Publisher has been removed from Mac OS X Server v10.6. However, files created using QTSS Publisher should work with v10.6.

Restore QTSS Publisher files and folders to Mac OS X Server v10.6.

QTSS Publisher Media and MP3 files should be stored in:

- /Library/Application Support/Apple/ QTSS Publisher/Libraries/
- /Users/<*publisher_user*>/Library/Application Support/Apple/QTSS Publisher/Libraries/

To migrate QTSS Publisher media and MP3 playlists to QTSS Web Admin:

1. Move folders in /Library/Application Support/Apple/QTSS Publisher/Playlists/ to /Library/QuickTimeStreaming/Playlists.

   For example, you would move:

   /Library/Application Support/Apple/QTSS Publisher/Playlists/my_playlist/

   to

   /Library/QuickTimeStreaming/Playlists/my_playlist/
2. Verify that the owner of folders and files in /Library/QuickTimeStreaming/Playlists is qtss.
3. For media playlists, verify that the folder /Library/Application Support/Apple/QTSS Publisher/Libraries/Media/ contains the media files listed in .playlist files.
4. For MP3 playlists, verify that the folder /Library/Application Support/Apple/QTSS Publisher/Libraries/MP3/ contains the media files listed in .playlist files.
5. For every playlist, update its .config file so that paths point to the new playlist folder in /Library/QuickTimeStreaming/Playlists.

   This includes paths defined in the pid_file, playlist_file, and sdp_file (media playlists only) preferences.
6. Enable QTSS web-based administration using Server Admin.
7. Open Web Admin using Safari (http://<hostname>:1220) and log in.
8. Click Playlists.

   You can now start and manage QTSS Publisher playlists using QTSS Web Admin.

   For information about using Web Admin, see the *QuickTime Streaming Server Darwin Streaming Server Administrator's Guide* available at developer.apple.com/opensource/server/streaming.

iChat Server

To migrate iChat server settings:

1. Restore the following folders:

   - /var/jabberd
   - /etc/jabberd
   - /var/spool/conference.*
   - /System.Library/LaunchDaemons/org.jabber.jabberd.plist

2 If the files above were copied to a mounted volume, run the following script with root privileges:

```
sudo /System/Library/ServerSetup/MigrationExtras/58_jabbermigrator.
     pl --purge 0 --sourceRoot <location> --sourceType System
     --sourceVersion  10.5 --targetRoot / --language en
```

Replace *<location>* with the full path to the archived files. For example, *volumes/10.5_backup_drive/ichat*.

3 If the files were compressed into an archive file, expand the archive into a temporary directory.

For example, use */var/root/ichatserver_backup* and give that path as the `sourceRoot` argument.

4 Ensure the security of copied files or expanded archives because they may contain private user data.

The `58_jabbermigrator.pl` script invokes three scripts to migrate iChat server settings. You can run these scripts individually to customize the migration. The scripts are documented and contain helpful information.

Shared Contacts

If you used Shared Contacts in Mac OS X Server v10.5, you can upgrade these to use Address Book Server in Mac OS X Server v10.6.

To migrate Shared Contact:

- Run the following command:

```
/usr/sbin/ContactsMigrator -s /LDAPv3/yourserverName -d http://
     yourserverName:8800/addressbooks/groups/mygroup/addressbook/ -u
     username -p password
```

Replace:

- `yourserverName` with the fully qualified domain name of your Open Directory server where the Shared Contacts are located.
- `username` with the username of an administrator for the Address Book Server.
- `password` with the password of the administrator username you entered.

For information about `ContactsMigrator`, see its man page. For the basics of command-line tool usage, see *Introduction to Command-Line Administration*.

RADIUS Settings

When you upgrade or migrate, RADIUS service settings you configured in Server Admin are migrated. However, manual changes to RADIUS configuration files are not preserved.

If you made manual changes to Mac OS X Server v10.5 RADIUS configuration files, you cannot copy your old RADIUS files to Mac OS X Server v10.6. You must manually modify the new RADIUS configuration files with your custom settings.

Xgrid Settings

When you upgrade or migrate your Xgrid service settings are migrated. Upgrade the controller before the upgrading the agents. The first time the controller starts after an upgrade or migration it can take a little while longer than usual before it starts accepting connections, because Xgrid must migrate internal datastore to the new format.

If you are upgrading or migrating a server with a Kerberos identity, make sure your new server is properly Kerberized after the upgrade, this ensures that Xgrid is fully operational. If the server is not properly Kerberized, the Xgrid service functions once the Kerberos environment is correctly configured.

If the daemons have trouble starting after an upgrade or migration, they will log information to the /Library/Logs/Xgrid log file.

Step 8: Set up share points and privileges.

Recreate the share points and privileges as required.

To create a share point and set privileges:

1. Open Server Admin and click File Sharing.
2. Click Volumes and select the volume or folder you want to share.
3. Click Share.
4. Click Permissions to set up access privileges.
5. Click Save.

New share points are shared using AFP, SMB, and FTP, but not NFS. To export a share point using NFS, use the Protocol pane. For more information about setting up share points, see *File Server Administration*.

Step 9: Test the new server.

To test the new server:

1. Open Workgroup Manager and inspect user and group accounts.
2. Open Server Admin and inspect settings for services whose configuration data you migrated.

Upgrading Mac OS X Server v10.4

4

Use the instructions in this chapter to upgrade a v10.4.11 server to v10.6.

You can upgrade computers with Mac OS X Server v10.4.11 that don't require hard disk reformatting and that have:

- An Intel processor
- At least 1 GB of RAM
- At least 20 GB of disk space available

Understanding What Can Be Reused

When you upgrade from Mac OS X Server v10.4.11, virtually all existing data and settings remain available for use, but note the following:

- NetBoot images created using Mac OS X Server v10.3 and v10.4 can be reused. NetBoot images created using earlier versions cannot be used.
- When upgrading to Mac OS X Server v10.6, the launch daemons (/System/Library/LaunchDaemons) are replaced by the Mac OS X Server v10.6 version of these daemons.
- Upgrading to v10.6 removes the QTSS Publisher application but leaves the files used by the application. These files should continue to work on v10.6, but you must move them to the relevant locations. For more information about moving them, see "QTSS Publisher Files and Folders" on page 70.
- PHP: Hypertext Preprocessor (PHP) 4 reached its end of life on December 31, 2007. No critical security fixes will be made after August 8, 2008, as announced at www.php.net. If you upgrade to Mac OS X Server v10.6 and retain PHP 4.4.*x* and Apache v1.3, plan on switching to PHP 5.*x* and Apache v2.2 to maintain a secure PHP.

- When you upgrade from Mac OS X Server v10.4.11, virtually all existing data and settings remain available for use, but when you upgrade to Mac OS X Server v10.6, a clean default configuration of Apache v2.2 is used for Web service and Apache v1.3 configuration files are preserved in the /etc/httpd-1.3/ folder. For more information about upgrading from Apache v1.3 to Apache v2.2, see "Upgrading Apache Web Server to v2.2 from v1.3" on page 57.
- WebObjects is not supported by Mac OS X Server v10.6. However, Mac OS X Server v10.6 can remotely manage Mac OS X Server v10.4 or later that is running WebObjects. For more information, see "WebObjects" on page 55.
- If you are using mail service on Mac OS X Server v10.4.11 and are performing the upgrade to Mac OS X Server v10.6, make sure your mail data partitions and the mail database are accessible during the upgrade. This automates the mail migration and does not require you to interact.

Note: Macintosh Manager is not supported in Mac OS X Server v10.6.

Upgrading an Open Directory Master and Its Replicas

When the server you want to upgrade is an Open Directory master or replica, upgrade the master and then upgrade the replicas.

To upgrade the master and its replicas:

1. Create an archive of your Open Directory master and save it to a separate volume. For more information about creating an Open Directory archive, see "LDAP Server" on page 68.
2. Upgrade the master to v10.6 using the instructions in "Step-by-Step Instructions" on page 51.

   While you're upgrading the master, client computers can't connect to it for Open Directory services.

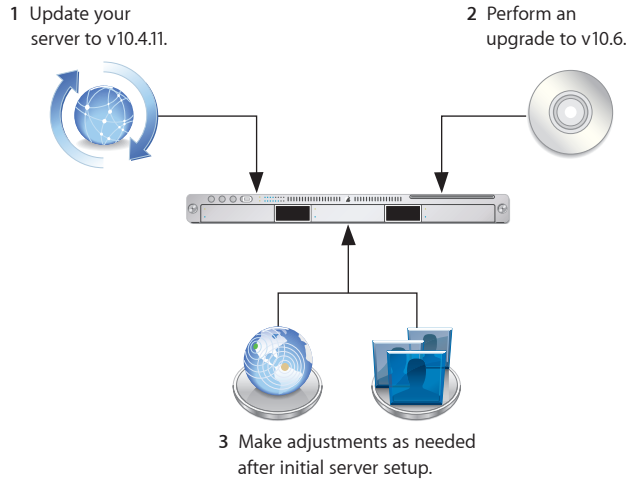
   Clients may experience a delay while finding an Open Directory replica server. You can eliminate this delay by changing DHCP service to use the address of an Open Directory replica server if the server provides clients with an LDAP server address.

   When the master upgrade is complete, you can change DHCP service to use the address of the master. For instructions on configuring LDAP settings in DHCP service, see *Network Services Administration*.
3. Upgrade each replica server to v10.6.
4. Using Server Admin, connect to each replica server and reconnect the replicas with the master.

   For information about resetting passwords in the master, see "Directory Services" on page 55.

Step-by-Step Instructions

To upgrade a v10.4.11 server to v10.6, follow the instructions in this section.



Step 1: Update Your Server to v10.4.11

If necessary, use Software Update to update your server to v10.4.11.

Step 2: Save all Service Settings

Use `serveradmin` or Server Admin to export service settings for reference. Also, use System Profiler to generate a profile of your system. Store the exported service settings and your server's profile on a removable disk or another system.

Important: Before upgrading, create a full, bootable, tested-by-booting clone of your server as a backup in case you need it in the future.

Step 3: Save Print Server Settings

Use the `serveradmin settings print` command to save print server settings before you start the upgrade.

```
serveradmin settings print > exported_print_settings
```

Also, record the names and IDs of the CUPS queues for later use.

Step 4: Perform an Upgrade to v10.6

Use the v10.6 installation disc to perform the upgrade locally on your server computer if it has a display, keyboard, and optical drive attached.

After the upgrade, the computer restarts and Server Assistant leads you through initial server setup. Your existing settings are displayed, and you can change them as needed.

To upgrade to v10.6 and perform initial server setup locally:

1. Make sure the DHCP or DNS servers your server uses are running.
2. Turn on the computer and insert the installation disc into the optical drive.
3. Restart the server while holding down the C key on the keyboard.

   The computer boots from the installation disc. You can release the C key when you see the Apple logo.

   For information about restarting a headless Xserve system, see the user's guide that came with the system.
4. When the Installer opens, follow the onscreen instructions to proceed through each pane, then click Continue.
5. When the Installer prompts for a disk or partition to install Mac OS X Server v10.6 on, be sure to select the disk or partition on which v10.4.11 or later is installed.

   If you want to add or remove install packages, click Customize and select or deselect packages from the install packages list.
6. Click Install.

   During installation, progress information is displayed.

   After installation is complete, the computer restarts and Server Assistant opens so you can perform initial server setup.
7. Move through the Assistant's panes, following the onscreen instructions.
8. In the Serial Number pane, enter a unique server software serial number for each server you upgrade.

   The number is printed on the materials provided with the server software. If you have a site license, enter the registered owner name and organization as specified by your Apple representative.
9. To initiate setup of the server, click Setup.
10. When server setup is complete, log in.

    Note: The Mail service is disabled after upgrading or migrating your server, to give you the opportunity to inspect mailboxes and manually migrate mailboxes that may have been on previously unmounted volumes. For more information about mail, see "Mail Database" on page 74.

To upgrade to v10.6 and perform initial server setup remotely:

1. Make sure the DHCP or DNS servers your server uses are running.
2. Start the computer from the installation disc.

   The procedure you use depends on whether the target server has an optical drive that can read your installation disc. If you have an installation DVD, the optical drive must be able to read DVD discs.

If the target server has a keyboard and an optical drive that can read your installation disc, insert the installation disc into the optical drive, then hold down the C key on the keyboard while restarting the computer.

If the target server is an Xserve system with a built-in optical drive that can read your installation disc, start the server using the installation disc by following the instructions in *Xserve User Guide* for starting from a system disc.

If the target server lacks a built-in optical drive that can read your installation disc, you can start it in target disk mode and insert the installation disc into the optical drive on your administrator computer. You can also use an external FireWire optical drive.

If the target server is an Xserve system, you can move its drive module to another Xserve system that has an optical drive capable of reading your installation disc.

For instructions about using target disk mode and external optical drives, see *Quick Start, Getting Started,* or user's guide that came with your Xserve system or Macintosh computer.

3. On an administrator computer, open Server Assistant by opening Server Admin and choosing "Installing Remote Server" from the Server menu.

   You don't need to be an administrator on the local computer to use Server Assistant.

4. In the Destination, Identify the server you want to upgrade by entering the IP address of the server in the IP Address field.
5. Enter the first eight characters of the computer's hardware serial number (it is case sensitive) and click Continue.
6. Proceed by following the onscreen instructions.
7. When the Target Disk pane appears, select a target disk or volume (partition) and click Install.

   During installation, progress information is appears.

8. When the message appears explaining that an earlier version of Mac OS X Server is installed on the volume, select Upgrade.

   After installation is complete, the computer restarts.

9. In the Installing pane, click More Options.
10. To initiate server setup, select "Set up Mac OS X Server remotely" and click Continue.
11. In the Servers pane, click Add.
12. From the Address pop-up menu, choose the server you're upgrading.
13. In the Password field, enter the root password used by the previous version of Mac OS X Server and click Continue to connect to the server.
14. Select the server you want to upgrade from the list and click Continue.
15. Move through the Assistant's panes, following the onscreen instructions.

16 In the Serial Number pane, enter a unique server software serial number for each server you upgrade.

The number is printed on the materials provided with the server software. If you have a site license, enter the registered owner name and organization as specified by your Apple representative.

17 Click Setup.

When the setup is complete, the computer reboots.

18 When server setup is complete, close Server Assistant.

Note: The Mail service is disabled after upgrading or migrating your server, to give you the opportunity to inspect mailboxes and manually migrate mailboxes that may have been on previously unmounted volumes. For more information about mail, see "Mail Database" on page 74.

Step 5: Make Adjustments as Needed After Initial Server Setup

Now you can use Workgroup Manager, Server Admin, Terminal, and other applications to refine your server's settings and take advantage of new v10.6 features.

For an explanation of new and changed features, see the administration guide for individual services. Following are a few suggestions of interest.

Print Server Settings

To restore Print server settings, you must recreate the original CUPS queues before importing the saved settings.

For printers connected directly to the server via USB, the queues are created by CUPS when the printers are plugged in and turned on. However, for network printers, you must add the printers using Server Admin > Print (for LPR or AppleTalk printers) or System Preferences > Print & Fax (for all printer types).

Important: When recreating a CUPS queue, make sure you give it the same name as the one it had before upgrading. If the name is not the same, Server Admin won't import the settings correctly.

Important: When creating the print queues using the Print & Fax pane of System Preferences, specify Generic Postscript (Generic PPD) for any queue that enforces quotas because there are known issues with third-party printer drivers and CUPS quotas. For more information, see the Knowledge Base article at http://docs.info.apple.com/article.html?artnum=303538.

After creating print queues, import the saved settings:

```
serveradmin settings exported_print_settings
```

WebObjects

Mac OS X Server v10.6 does not support WebObjects. After the upgrade to Mac OS X Sever v10.6, WebObjects applications are placed in the /Library/WebObjects/ folder and WebObjects frameworks are placed in the /Library/Frameworks/ folder.

Secure Sockets Layer (SSL) Certificates

Use Server Admin to import SSL certificates you want to continue to use for iChat, Open Directory, Mail, or Web services.

To import an SSL certificate:

1. Open Server Admin.
2. Select the upgraded server in the list of computers and services.
3. Click Certificates.
4. Import the certificates you want to use.

   You can also create a self-signed certificate and generate a Certificate Signing Request (CSR) to obtain an SSL certificate from a certificate authority and then install the certificate.
5. Click Save.
6. Activate the certificates per service.

For more information about importing, creating, and activating self-signed certificates, see *iChat Server Administration, Mail Server Administration, Open Directory Administration,* and *Web Technologies Administration.*

Groups

For groups to use v10.6 features such as nesting and stricter membership checking, upgrade group records using Workgroup Manager.

To upgrade a group record:

1. Open Workgroup Manager.
2. Open the directory that contains the groups of interest.
3. Select groups and click "Upgrade legacy group."
4. Click Save.

Directory Services

After upgrading, you may want to convert a shared NetInfo directory to LDAP. For information about the advantages of using LDAP and how to use Server Admin to conduct the conversion, see *Open Directory Administration*.

To enable Kerberos for an Open Directory master that it's not enabled for, use the Kerberize button on the Open Directory pane in Server Admin. If the Kerberize button is not visible, use the following command, which maintains existing passwords and adds them to a new KDC:

```
slapconfig -kerberize
```

If you have user accounts with crypt passwords and you don't Kerberize them using the above command, you can use Workgroup Manager to upgrade to Open Directory passwords.

To use Workgroup Manager, open the application and access the directory where the user account resides. Authenticate as domain administrator, then select a user with a crypt password. Click Advanced, choose Open Directory from the User Password Type pop-up menu, click Basic, specify a password, and click Save.

Mac OS X Server v10.6 does not support single DES encryption. It supports AES 128 and 256 encryption types. However, during a migration or upgrade from v10.4 to v10.6, servers that were Kerberized by the v10.5 Open Directory server will not use the AES 128 or 256 encryption types. To use the AES 128 or 256 encryption types you must re-Kerberize all servers.

For more information about `slapconfig`, see its man page.

LDAP ACLs

Due to a change in format, you must manually move the LDAP access control lists (ACLs) after the upgrade. During the upgrade, the container or record for access controls and ACL information is made available as Read-Only.

Use Workgroup manager to add custom ACLs to the new olcAccess attribute (in olcBDBConfig). You must also use the `set` directive instead of the `group` directive.

LDAP Schemas

You must make schema changes in OlcSchemaConfig and add custom schemas to the {9}customschema record. Changes to configure slapd can be made to the back-config backend using inspector in Workgroup Manager or ldap tools. If changes require slapd to be restarted, use the following commands:

- `slapconfig -stopldapserver`
- `slapconfig -startldapserver`

DNS

When you select DNS in Server Admin for the first time after an upgrade, Server Admin prompts you whether to upgrade.

If you click Don't Upgrade, Server Admin leaves the DNS configuration files as they were before the v10.6 upgrade. DNS still runs, but you can't make DNS configuration changes using Server Admin. To make changes, edit the DNS configuration files.

If you click Upgrade, Server Admin upgrades the configuration files to the v10.6 format. After that, you can use Server Admin to make DNS configuration changes.

NetBoot Images

You can reuse NetBoot images created using versions 10.3 and 10.4 following the upgrade.

To manage Netboot images, use System Image Utility, which replaced Network Image Utility during the upgrade.

The Open Directory Upgrade Log

Information about upgrading the Open Directory LDAP server is stored in /Library/Logs/slapconfig.log.

Web Service

The upgrade of v10.4 Blog service to v10.6 is not supported.

MySQL Data

If you used MySQL on v10.4, MySQL data is not migrated during the upgrade and migration. You must manually migrate your MySQL data. For more information about manually migrating your MySQL data, see "MySQL Data" on page 66.

Upgrading Apache Web Server to v2.2 from v1.3

When you upgrade from Mac OS X Server v10.4.11 to Mac OS X Server v10.6, the upgrade process configures Web service with a clean default configuration of Apache v2.2 and preserves Apache v1.3 configuration files for reference in /etc/httpd-1.3/.

To configure Apache v2.2 after upgrading to Mac OS X Server v10.6 with the preserved configuration settings of Apache v1.3, use the apache1_config_helper script. This script automates the Apache v1.3 to Apache v2.2 translation. When the script is complete, use Server Admin or a text editor to customize the Apache v2.2 configuration.

To upgrade to Apache v2.2:

1. Open Terminal.
2. Enter the following command:

```
$ sudo /usr/bin/apache1_config_helper
```

The apache1_config_helper script outputs to stdout. For more information, see the apache1_config_helper(8) man page.

Note: Apache v2.2 runs as a 64-bit process on relevant hardware.

> ***WARNING:*** There are possible side-effects when running the Apache 1-to-Apache 2 conversion script, particularly for security-related settings, which impacts the security of your upgrade. Use Server Admin or a text editor to customize Apache v2.2 configuration settings.

For more information about upgrading to Apache v2.2, see *Web Technologies Administration*.

Migrating from Mac OS X Server v10.4

5

Use the instructions in this chapter to migrate data from a v10.4.11 server to another computer running v10.6.

You can migrate data from Mac OS X Server v10.4.11 computers that can't or won't be upgraded to v10.6 or later. Such computers may:

- Require hard disk reformatting or replacement with a newer computer.
- Use server hardware that doesn't have:
  - An Intel processor
  - At least 1 GB of RAM
  - At least 20 GB of available disk space

Before You Begin

Before using the instructions in this chapter, perform an initial setup of the v10.6 server that you'll migrate data to. For instructions, see *Getting Started*.

If necessary, upgrade the server whose data you'll migrate so it's running v10.4.11.

When the server is an Open Directory master or replica, set up the v10.6 master and then set up the v10.6 replicas.

To reestablish the master and its replicas:

1 Set up the v10.6 master.

While you're setting up the master, client computers can't connect to the v10.4.11 master for Open Directory services.

In addition, clients may experience a delay while finding the nearest Open Directory replica server. To eliminate this delay, change the DHCP service to use the address of an Open Directory replica server if it provides clients with an LDAP server address.

When the v10.6 master is ready, you can change the DHCP service to use the address of the master.

For instructions on configuring LDAP settings in DHCP service, see *Network Services Administration*.

2 Change the v10.4.11 replica's role to standalone, then set up the v10.6 server to be a replica of the v10.6 master.

For instructions about changing a server's Open Directory role to standalone and replica, see *Open Directory Administration*.

For information about resetting passwords in the master, see "Directory Services" on page 55.

Using Server Assistant to Automate Migration

Mac OS X Server v10.6 supports the migration of data and settings from a volume. You can migrate data, supported services, and settings from a volume to your Mac OS X v10.6 Server. When you migrate using a volume, the process doesn't require you to interact.

You can migrate from a volume that has Mac OS X Server v10.4.11 installed and configured or a volume with a Time Machine backup. The installation or Time Machine backup on the volume must be a version of Mac OS X Server v10.4.11 that was configured with a static IP address The volume can be installed on the local server or connected using Target Disk Mode.

To migrate to v10.6 using Server Assistant:

1 Make sure the volume you are migrating from is connected through Target Disk Mode or is installed locally on your server.

2 Turn on the computer and insert the installation disc into the optical drive.

3 Restart the server while holding down the C key on the keyboard.

The computer boots from the installation disc. You can release the C key when you see the Apple logo.

For information about restarting a headless Xserve system, see the user's guide that came with the system.

4 When the Installer opens, follow the onscreen instructions to proceed through each pane, then click Continue.

5 When the Installer prompts for a disk or partition, select the disk or partition you want to install Mac OS X Server v10.6 on.

If you want to add or remove install packages, click Customize and select or deselect packages from the install packages list.

6 Click Install.

During installation, progress information is displayed.

After installation is complete, the computer restarts and Server Assistant opens so you can perform initial server setup.

7 Move through the Assistant's panes, following the onscreen instructions.

8 In the Serial Number pane, enter a unique server software serial number.

The number is printed on the materials provided with the server software. If you have a site license, enter the registered owner name and organization as specified by your Apple representative.

9 In the Transfer an Existing Server pane, select "Transfer the information from an existing server" and click Contiune.

10 In the Transfer Your Server pane, select the v10.4.11 or v10.6 volume you want to migrate data from and click Transfer.

In this first phase of the migration, all configuration information on your v10.4.11 or v10.6 disk is migrated to the Mac OS X Server v10.6 volume.

Note: The Mail service is disabled after upgrading or migrating your server, to give you the opportunity to inspect mailboxes and manually migrate mailboxes that may have been on previously unmounted volumes. For more information about migrating mail, see "Mail Database" on page 74 to validate your mail stores before starting the Mail service.

11 When the information has been transfered, a message in the Transferring Information pane describing a successful transfer appears.

12 Click Continue.

In this second phase of the migration, all data on the source volume is transfered to the Mac OS X Server v10.6 volume. The time required for this phase of the migration depends on the amount of data on the source volume and the speed of the interconnect between the source volume and the server. For example, FireWire 400 takes longer than a SATA drive.

If your previous version of Mac OS X Server had services that are not supported by Mac OS X Server v10.6 or if services did not start, an upgrading services message appears at the end of the setup process.

Important: The Server Assistant migration tool does not support the migration of mail message data from unmounted or Xsan volumes. If you used mail service on your previous version of Mac OS X Server and it stored mail message data on an unmounted or Xsan volume, you must migrate the service manually. For more information about manually migrating mail service, see "Step-by-Step Instructions for Manual Migration" on page 64 and "Step 7: Relocate the Following Saved Data Files" on page 73.

13 When the setup is complete, click Restart.

14 Log into your newly migrated server and verify the settings of your migrated services.

Understanding What You Can Migrate

Using the automated migration in Server Assistance is the preferred method for migrating. However, if you require finer grained control, the information in "Step-by-Step Instructions for Manual Migration" on page 64 describes how to reuse the following v10.4 data with v10.6:

- Web configuration data
- Web content
- MySQL data
- Mail database
- WebMail data
- FTP configuration files
- LDAP server settings
- NetBoot images
- AFP settings
- SMB Settings
- IP firewall configuration
- DNS settings
- DHCP settings
- NAT settings
- Print settings
- VPN settings
- User data, including home directories
- QuickTime Streaming Server files and folders
- QTSS Publisher files and folders
- User and group accounts
- iChat server settings

Use `serveradmin` or Server Admin to export service settings for reference. Store the exported service settings on a removable drive or another system.

Note: One way to save service settings in Server Admin is to select the service from the list of computers and services on the left, click Settings, and drag the button on the bottom right to the Desktop. Dragging this button creates a file on the Desktop containing the service settings.

In v10.6, `watchdog` has been replaced by `launchd`. To reenable automatic hardware restart, use the Energy Saver pane of System Preferences. To migrate settings for services you added to /etc/watchdog.conf, create a `launchd` plist file and install it into /System/Library/LaunchDaemons/. For more information about `launchd`, see its man page.

Tools You Can Use

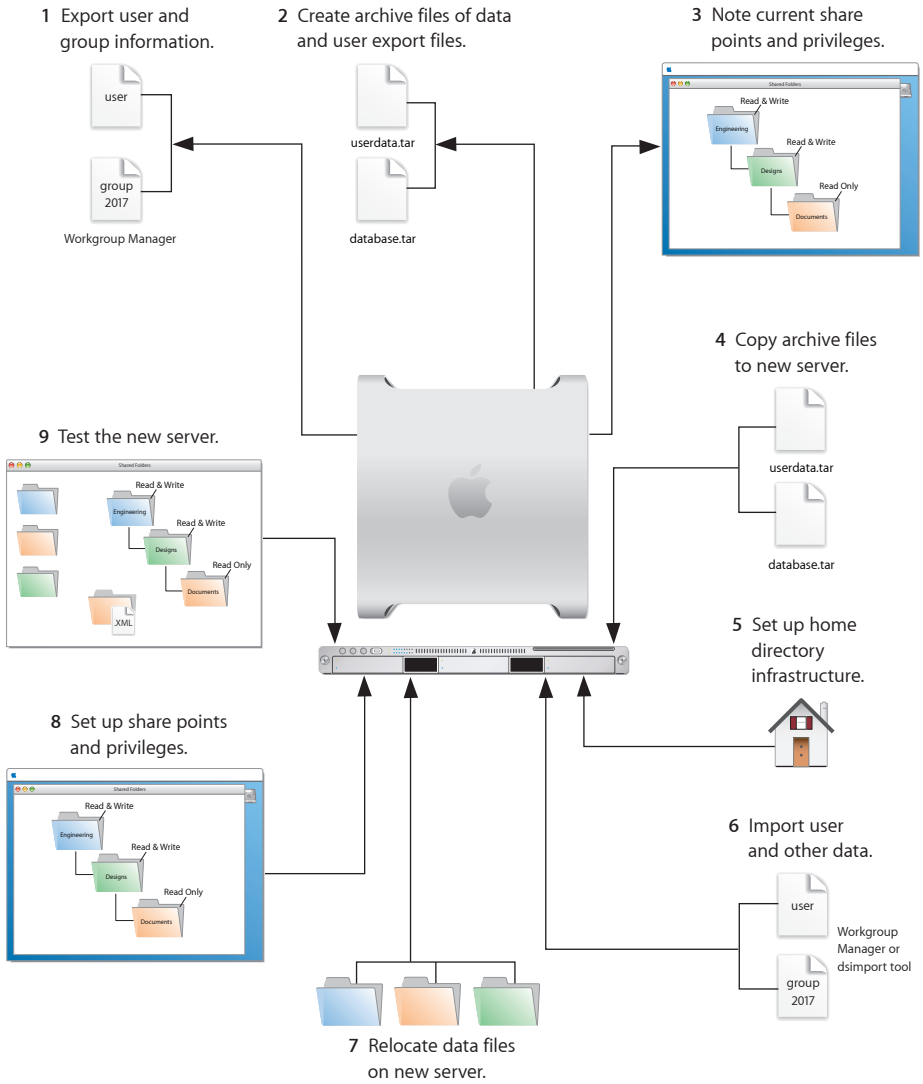
Several tools are available:

- You can use Workgroup Manager to export v10.4 user and group accounts to a delimited file and then import them into a v10.6 server. You can also import users and groups using the `dsimport` tool.
- Workgroup Manager's import facility and the `dsimport` tool also let you import other kinds of data, such as computers and computer lists.
- Use the `61_webconfigmigrator` tool located /System/Library/ServerSetup/MigrationExtras/ to migrate Web server settings.
- Use the `58_jabbermigrator.pl` tool located /System/Library/ServerSetup/MigrationExtras/ to migrate iChat server settings.
- Use the `65_mail_migrator.pl` tool located /System/Library/ServerSetup/MigrationExtras/ to migrate Mail server settings.
- Use the `migrate_mail_data.pl` tool located /usr/libexec/dovecot/ to migrate mail data.

Instructions in the following sections explain when and how to use these utilities.

Step-by-Step Instructions for Manual Migration

To move data from a Mac OS X Server v10.4.11 computer to a computer with Mac OS X Server v10.6 installed, follow the instructions in this section.



Step 1: Export Users and Groups

You can use Workgroup Manager or Server Admin to export users and groups from your LDAPv3 directory. By using Server Admin you can archive and restore all LDAP data including passwords and Kerberos principals. For more information about archiving LDAP data, see "LDAP Server" on page 68.

If you prefer to export only user and group information, use Workgroup Manager to export user and group accounts from a NetInfo or LDAPv3 directory into a character-delimited file that you can import into a directory for use with Mac OS X Server v10.6.

To export users and groups:

1. In Workgroup Manager, click Accounts, click the globe icon below the toolbar, and choose the directory you want to export accounts from.
2. Click the lock to authenticate as domain administrator (typically diradmin).
3. Click the Users button to export users or click the Groups button to export groups.
4. Export user or group accounts as follows:
   - To export all accounts, select all of them.
   - To export one account, select it.
   - To export multiple accounts, select them while holding down the Command or Shift key.
5. Choose Server > Export.
6. Specify a name to assign to the export file and the location where you want it created.
7. Click Export.

When you export users using Workgroup Manager, password information isn't exported. To set passwords, modify the export file before you import it or individually set passwords after importing using the `passwd` command or Workgroup Manager. For more information about setting passwords after importing users, see *User Management*.

Step 2: Create archives of the following files.

Save all data files that you want to reuse with Mac OS X Server v10.6. In "Step 4: Copy Archive Files to the New Server" on page 70 you'll move the files described below, as well as the export file created in "Step 1: Export Users and Groups" on page 64, to the v10.6 computer.

For large amounts of data, you may want to create tar archives or use `/usr/bin/mkdmg` to create disk image files. You can transfer disk images and tar files using AFP or FTP.

Note: You can also use `scp -r` for secure copying of files and `rsync` for remote file copying. The `rsync` command is useful where you have a large amount of data that can be migrated before cutting over and then updated in a small downtime window.

To create a tar archive, use the `tar` command in the Terminal application. The command's `-c` flag creates an archive file in tar format. Use the `-f` flag to specify the archive file name. Use the `-v` (verbose) flag to view progress information as the command executes:

```
tar -cvf /MyHFSVolume/Stuff.tar /MyHFSVolume/My\ Stuff
```

The escape character (\ in the example above) indicates a space in the name. You can also use quotation marks to handle embedded spaces:

```
tar -cvf /MyHFSVolume/Stuff.tar "/MyHFSVolume/My Stuff"
```

Web Configuration Data

Save the following files and directories:

- /etc/httpd/httpd.conf
- /etc/httpd/sites/
- /etc/httpd/sites_disabled/
- /etc/httpd/httpd_mailman.conf
- /etc/httpd/httpd_squirrelmail.conf
- /etc/httpd/magic
- /etc/httpd/mime.types
- /etc/httpd/ssl.crt/
- /etc/httpd/ssl.key/
- /etc/httpd/tomcat.conf
- /etc/webperfcache/webperfcache.conf
- /Library/WebServer/

Web Content

The migration of v10.4 Blog service to v10.6 is not supported.

Copy web content you want to reuse from:

- /Library/WebServer/Documents/
- /Library/WebServer/CGI-Executables/
- Any other location where it resides

MySQL Data

Mac OS X Server v10.4.11 includes MySQL v4.1.22. Mac OS X Server v10.6 installs MySQL v5.0.67.

To migrate MySQL databases from one computer to another, use the `mysqldump` command to back up your data. This command has several forms depending on the scope of data to be backed up: individual tables, single databases, or the set of databases on the server.

To back up individual tables, enter:

```
mysqldump database tb1 [tb2 tb3...] > backup-file.sql
```

Replace *`database`* with the name of the database containing the listed tables and *`tb1`*,*`tb2`*, and *`tb3`* represent table names.

To back up one or more databases, enter:

```
mysqldump --databases db1 [db2 db3...] > backup-file.sql
```

To back up all databases on the system, enter:

```
mysqldump --all-databases > backup-file.sql
```

Additional instructions for database backup and restore can be found in the MySQL documentation at www.mysql.org.

To back up tables or databases that require root access (for example, grant tables or other restricted data), run `mysqldump` with the `--user=root` and `-p` options:

```
mysqldump --user=root -p --all-datagases > backup-file.sql
```

The `-p` option causes `mysqldump` to prompt for the MySQL root password before proceeding.

Mail Database

To reuse the Mail server database and store, stop Mail server if it's running and save the mail files. When Mail server is not running, copy Mail server directories.

By default:

- The mail database resides in /var/imap/.
- The mail store resides in /var/spool/imap/. You can back up individual mail storage folders or the entire mail store.

The `ditto` command-line tool is useful for backing up mail files. For more information about `ditto`, see its man page.

Also, save a copy of /usr/bin/cyrus/bin/ctl_mboxlist so you can move it to the v10.6 server in "Step 4: Copy Archive Files to the New Server" on page 70. You need this file to migrate the mail database in "Step 7: Relocate the Following Saved Data Files" on page 73.

Webmail Data

If you used SquirrelMail with v10.4 and you want to continue using it after migration, make copies of the address books and preferences stored in /var/db/squirrelmail/data/.

FTP Configuration Files

To migrate FTP settings, save these configuration files:

In this directory	Save these files
/Library/FTPServer/Configuration/	ftpaccess
	ftpconversions
	ftphosts
	ftpgroups
	ftpusers
/Library/FTPServer/Messages/	banner.txt
	welcome.txt
	limit.txt

LDAP Server

Back up the LDAP server configuration information.

To back up the Open Directory database, which includes LDAP server configuration:

1. In Server Admin, select Open Directory from the list of Computers & Services.
2. Click Archive.
3. In the "Archive in" field, browse for the archive path.
4. Click the Archive button.
5. In the Archive Name field, enter the name of the file where the information will be stored.
6. In the Password field, enter the password for the archive.
7. Click OK.

AFP

Save /Library/Preferences/com.apple.AppleFileServer.plist.

SMB

Copy /etc/smb.conf to /etc/smb.conf.old.

NetBoot Images

You can migrate NetBoot images created using Mac OS X Server v10.4.

Save the <*name*>.nbi folder for each image you want to migrate, noting the path to the folder if you want to recreate it in v10.6.

Also save the NetBoot settings. In Server Admin, select NetBoot from the list of computers and services on the left, click Settings, and drag the button on the bottom right to the Desktop. Dragging this button creates a file on the Desktop containing the NetBoot service settings. Save this file.

WebObjects Applications and Frameworks

Mac OS X Server v10.6 does not support WebObjects. You can still save your WebObjects applications and frameworks located in:

- /Library/WebObjects/
- /System/Library/WebObjects/

Tomcat Data

Save Tomcat servlets you want to reuse. They're in /Library/Tomcat/webapps/.

If you've installed Axis independent of the version supplied with your server, also save Simple Object Access Protocol (SOAP) services.

JBoss Applications

Save JBoss applications located in /Library/JBoss/3.2/deploy/.

IP Firewall

In the Terminal application, you can run the 30-ipfilterconfigmigrator.pl tool to migrate your firewall to your v10.6 server. For more information about the required arguments for the 30-ipfilterconfigmigrator.pl tool, enter the following command:

```
sudo /System/Library/ServerSetup/MigrationExtras/30-
     ipfilterconfigmigrator
```

Save the contents of /etc/ipfilter folder.

NAT

Save the contents of /etc/nat/natd.plist.

Print

Use the `serveradmin settings print` command to save print settings before you start the migration.

```
serveradmin settings print > exported_print_settings
```

Also, record the names and IDs of the CUPS queues for later use.

VPN

Copy:

- /Library/Preferences/SystemConfiguration/com.apple.RemoteAccessServers.plist
- /Library/Keychains/System.keychain
- /etc/racoon/psk.text

  If L2TP is set up and psk.text stores the IPsec shared secret, the shared secret may also be stored in com.apple.RemoteAccessServers.plist or System.keychain.

DNS

Save the file /etc/named.conf, the directory /var/named/, and its contents.

DHCP

In Server Admin, select DHCP from the list of computers and services on the left, click Settings, and drag the button on the bottom right to the Desktop.

Dragging this button creates a file on the Desktop containing DHCP service settings.

Save this file.

User Data

Save user data files or folders you want to reuse, especially home directory folders.

QuickTime Streaming Server Files and Folders

Save files and folders in /Library/QuickTimeStreaming/.

QTSS Publisher Files and Folders

Save the following:

- The files and folders in /Library/Application Support/Apple/QTSS Publisher/
- The files and folders in each QTSS Publisher user's path:

  /Users/<*publisher_user*>/Library/Application Support/Apple/QTSS Publisher

iChat Server

When making a copy or compressed archive, use the full path.

For example:

```
cp -Rv /var/jabberd /Volumes/10.4_backup_drive/ichat
```

Save the following files and folders:

- /var/jabber/spool
- /etc/jabber
- /var/spool/conference.<*jabberdomain*>

  If multiple domains are hosted, multiple directories will exist in the /var/spool/ directory. To obtain all directories, use /var/spool/conference.*
- /System/Library/LaunchDaemons/org.jabber.jabberd.plist

Step 3: Note Current Share Points and Privileges

If your v10.4 server has share points and privileges you want to recreate on the v10.6 server, make a note of them. Record which share points are for home directories.

Step 4: Copy Archive Files to the New Server

Transfer the files you saved in "Step 1: Export Users and Groups" on page 64 and "Step 2: Create archives of the following files." on page 65 to the v10.6 server.

To transfer tar files or disk images using FTP:

1. Use Server Admin on the new server to start FTP service.
2. Set up sharing for a folder where you'll place files you transfer from the v10.4 computer.
3. From the v10.4 server, use FTP to copy the tar files or disk images to the v10.6 computer.
4. On the v10.6 server, double-click a tar file to extract its contents or double-click a disk image to mount it.

Step 5: Set Up the Home Directory Infrastructure

Set up the destination for home directories you want to restore.

The home directory location identified in imported user accounts must match the physical location of the restored home directories, including the share point location.

For details on how to perform the steps in the following procedure, see *User Management*.

To prepare the server to store home directories:

1. Create the folder you want to serve as the home directory share point, if required.

   You can use the predefined /Users folder.
2. Open Server Admin on the server where you want home directories to reside.
3. Click File Sharing to set up a share point for home directories.

   If user accounts will reside in a shared Open Directory directory, create a dynamically automounted AFP or NFS share point for the home directories. Make sure the share point is published in the directory where the user accounts that depend on it will reside.
4. In Workgroup Manager on the computer where you'll import users, click Accounts, then open the directory where you'll import users.

   If you restore home directories in locations that won't exactly match the locations identified in exported user records, you can define a preset that identifies the restore location. If you identify the preset when you import users, the new location will replace the existing location in user records.

   You can also use the preset to specify other default settings and you want imported users to inherit, such as password settings and mail settings.

Step 6: Import Users and Groups and Other Data

If you're migrating users and groups from an Open Directory master, use the instructions in "LDAP Server Settings" on page 76. If you're migrating local node users and groups, use Workgroup Manager or the `dsimport` tool.

For more information about importing by using Workgroup Manager, see *User Management*.

For more information about `dsimport` and a description of Workgroup Manager export format, see *User Management*.

To import users and groups using Workgroup Manager:

1. Place the export files you created in "Step-by-Step Instructions for Manual Migration" on page 64 in a location accessible from your server.

   You can modify user accounts in an export file to set passwords before importing users. For instructions, see *User Management*.

   Additionally, you can set up the preset you defined in "Step 5: Set Up the Home Directory Infrastructure" on page 71 so user passwords are validated using Open Directory authentication, and you can set up password validation options so users must change their passwords the next time they log in.

   For information about using Kerberos passwords, see the last step in this sequence.
2. In Workgroup Manager, click the Accounts button.
3. Click the globe icon in the toolbar to open the directory where you want to import accounts.
4. Click the lock to authenticate as domain administrator.
5. Choose Server > Import, select the import file, and specify import options.

   If you're using a preset, make sure you specify the preset.
6. Click Import.
7. For groups to use v10.6 features, upgrade groups using Workgroup Manager.

   In Workgroup Manager, open the directory containing the groups, groups, click "Upgrade legacy group," and click Save.
8. To create home directories for imported users, use one of the following options.
   - Create home directories one at a time by selecting a user account in Workgroup Manager, clicking Home, and then clicking Create Home Now.
   - Create all home directories by using the `-a` argument of the `createhomedir` command. For details, see *User Management* or the man page for `createhomedir`.

   A home directory associated with an AFP share point is created the first time a user logs in, if it doesn't exist.

9 To enable Kerberos for an Open Directory master that it's not enabled for, use the Kerberize button on the Open Directory pane in Server Admin.

If the Kerberize button is not visible, use the following command, which maintains existing passwords and adds them to a new KDC:

```
slapconfig -kerberize
```

If you have user accounts with crypt passwords and you don't Kerberize them using the above command, you can use Workgroup Manager to upgrade to Open Directory passwords.

To use Workgroup Manager, open the application and access the directory where the user account resides. Authenticate as the Open Directory administrator (typically diradmin), then select a user with a crypt password. Click Advanced, choose Open Directory from the User Password Type pop-up menu, click Basic, specify a password, and click Save.

For more information about `slapconfig`, see its man page.

Step 7: Relocate the Following Saved Data Files

Place the files you saved from your v10.4 server in their final locations.

Web Configuration Data

To migrate the web configuration:

1 Open Server Admin.

2 Under the v10.6 server, in the list of computers and services, click Web.

3 If Web service is running, click Stop Web .

4 Delete the following files:

- /etc/httpd/ssl.crt
- /etc/httpd/ssl.key

5 Delete the content in the /etc/httpd/sites/ folder.

6 Copy the saved v10.4 files and directory to the v10.6 server.

7 If your v10.4.11 server was using Apache v1.3, run the apache1_config_helper tool.

Your Apache v1.3 configuration files on the v10.4.11 server are not compatible with Apache v2.2 on the v10.6 server.

The apache1_config_helper tool translates the old files to the new format in many, but not all, cases. For more information, see the apache1_config_helper(8) man page.

```
sudo /usr/bin/apache1_config_helper
```

8 In Server Admin, start Web service.

Web Content

Copy saved web content to the following locations and anywhere else you have placed web content on the server:

- /Library/WebServer/Documents/
- /Library/WebServer/CGI-Executables/

MySQL Data

Before importing backed up MySQL data, make sure the MySQL service is active. You can activate the MySQL service using Server Admin or the serveradmin command.

To activate the MySQL service using the `serveradmin` command, enter:

```
serveradmin start mysql
```

To import database backups, enter:

```
mysql < backup-file.sql
```

To import data into databases that require privileged access, run `mysql` with the `--user=root` and `-p` options:

```
mysql --user=root -p < backup-file.sql
```

The `-p` option causes `mysql` to prompt for the MySQL root password before proceeding.

When running MySQL and PHP on the same server, you may find that PHP cannot connect to MySQL or that authentication errors occur when using PHP. For more information and workarounds, see the following AppleCare KnowledgeBase articles:

- "Mac OS X Server 10.4: PHP and MySQL authentication issues" (article 301456)"
- "Mac OS X Server 10.4: Issues connecting PHP to MySQL" (article 301457)"

Additional instructions for MySQL database backup and restoration can be found in the MySQL documentation at www.mysql.org.

Mail Database

Migrating Mail to an Alternate Startup Volume

If you have installed Mac OS X Server v10.6 on a separate volume and you want to migrate mail settings and data, you can use the mail migration script, 65_mail_migrator.pl, located /System/Library/ServerSetup/MigrationExtras. The script migrates all necessary mail configuration information from the separate and upgrades the mail data store.

The following are arguments for the script:

Arguments	Description
`--purge<0 | 1>`	The default value is 0, which leaves the source data intact. If you use the value of 1, the script attempts to clean up the source volume and delete configuration and mail directories after the migration is complete.
`--sourceRoot<path>`	Path to the source volume you are migrating from. For example, "/Volumes/Tiger Server."
`--sourceVersion<ver>`	Version of the source you are migrating from. For example, 10.4.11.
`--targetRoot<path>`	Path to the root of the new system, generally your boot volume "/".
`--language<lang>`	Language identifier, such as "en." for English.

For example, to migrate from the source volume /Volumes/Tiger Server and install on the local boot volume leaving the source data untouched:

```
sudo 65_mail_migrator.pl --purge 0 --sourceRoot "/Volumes/Tiger Server"
     --sourceVersion 10.4.11 --targetRoot "/" --language en
```

Migrating Mail from Alternate Mail Data Stores

In some circumstances mail may not migrate (for example, if the mail data store was not available during the upgrade or the mail was on an Xsan volume). In these cases you can manually migrate mail by using the migrate_mail_data.pl script located in /usr/libexec/dovecot/.

The following are arguments for the script:

Arguments	Description
`--moveMail<0 | 1>`	The default value of 0 leaves the source mail data in its original location. A value of 1 moves the mail during migration.
`--cyrusBin<path>`	Path to the Cyrus binaries used by the previous mail server. For example, if you were running a v10.4.11 Mail server, you need a copy of the sources from /usr/bin/cyrus/bin/.
`--database<path>`	Path to the mail database of the previous mail server. The default location is /var/imap for Mac OS X Server v10.4.11.
`--sourceSpool<path>`	Path to the original Cyrus mail data store. The default location is /var/spool/imap for Mac OS X Server v10.4.11.
`--targetSpool<path>`	Path to the current mail data store. The default location is /var/spool/imap/dovecot/mail.

For example, to migrate mail from a 10.4.11 Mail server:

```
sudo /usr/libexec/dovecot/migrate_mail_data.pl —moveMail 0 —cyrusBin "/
     Volumes/Tiger Server/usr/bin/cyrus/bin" --database "/Volumes/Tiger
     Server/var/imap" --sourceSpool "/Volumes/Tiger Server/var/spool/
     imap" --targetSpool "/var/spool/imap/dovecot/mail"
```

The mail data migration script logs detailed status to /Library/Logs/MailDataMigration.log.

Webmail Data

Place saved address books and preferences in /var/db/squirrelmail/data/.

FTP Configuration Files

Copy saved FTP configuration files to:

- /Library/FTPServer/Configuration/
- /Library/FTPServer/Messages/

LDAP Server Settings

Restore the LDAP server configuration information.

To restore the Open Directory database, which includes LDAP server configuration:

1. Open Server Admin and connect to the server.
2. Click the triangle at the left of the server.

   The list of services appears.
3. From the expanded Servers list, select Open Directory.
4. Click Archive.
5. Enter a path for your archive in the Archive field or click Choose and browse for your archive.
6. Click the Restore button, then click Merge.
7. In the Password field, enter the password for the archive.
8. Click OK.

AFP Configuration

To migrate the AFP configuration, restore /Library/Preferences/com.apple.AppleFileServer.plist.

SMB Configuration

To migrate the SMB configuration, copy /etc/smb.conf.old to the new server and run the following script:

```
sudo /System/Library/ServerSetup/MigrationExtras/70_smbconfigmigrator
```

This script generates the settings in /Library/Preferences/SystemConfiguration/com.apple.smb.server.plist for the v10.6 server using the settings from /etc/smb.conf.old.

NetBoot Images

Copy the <*name*>.nbi folder for each image you want to migrate, optionally placing it into the location where it previously resided.

Also, restore the NetBoot settings file.

To restore the NetBoot settings:

1. Open Server Admin and select NetBoot from the list of computers and services.
2. Choose Server > Import > Service Settings to import the NetBoot settings from the file you exported earlier (see "NetBoot Images" on page 68).
3. Review the NetBoot settings to make sure they were imported correctly.

Tomcat Data

Restore Tomcat servlets to /Library/Tomcat/webapps/.

Place SOAP services you want to migrate in /Library/Tomcat/webapps/axis/.
Mac OS X Server v10.6 includes a version of Axis that may be newer or older than the version you're using.

JBoss Applications

JBoss does not come with Mac OS X Server v10.6. Before you can restore JBoss applications, install it on your server.

For more information about installing and migrating JBoss applications, see the JBoss documentation.

IP Firewall Configuration

To migrate the IP firewall configuration, restore the /etc/ipfilter folder.

Open Server Admin, click Firewall to inspect the settings, and make sure they are correct.

NAT

Restore the contents of /etc/nat/natd.plist.

You can restore the v10.6 default settings for NAT (stored in/etc/natd/natd.plist.default) at any time by deleting the active configuration file (/etc/nat/natd.plist). The next time NAT is accessed using Server Admin, the default configuration file is used to recreate the active configuration file.

Note: In v10.6, the default setting of unregistered_only in /etc/nat/natd.plist.default is true.

Print Server Settings

To restore Print server settings, recreate the original CUPS queues before importing the saved settings.

For printers connected directly to the server via USB, the queues are created by CUPS when the printers are plugged in and turned on. However, for network printers, add the printers using Server Admin > Print (for LPR or AppleTalk printers) or System Preferences > Print & Fax (for all printer types).

Important: When recreating a CUPS queue, give it the same name as the one it had on the older system. If not, Server Admin won't import the settings correctly.

Important: When creating print queues using the Print & Fax pane of System Preferences, specify Generic Postscript (Generic PPD) for any queue that enforces quotas because there are known issues with third-party printer drivers and CUPS quotas. For more information about this issue, see the Knowledge Base article at http://docs.info.apple.com/article.html?artnum=303538.

After creating print queues, import the saved settings:

```
serveradmin settings exported_print_settings
```

VPN

Restore the following:

- /Library/Preferences/SystemConfiguration/com.apple.RemoteAccessServers.plist.
- /Library/Keychains/System.keychain
- /etc/racoon/psk.text

  If L2TP is set up and psk.text stores the IPsec shared secret, the shared secret may also be stored in com.apple.RemoteAccessServers.plist or System.keychain.

Migrate the VPN MPPE Key user by using the `vpnaddkeyagentuser` command-line tool. For more information about this command, see its man page.

DNS Configuration

To migrate the DNS configuration:

1. Restore the file /etc/named.conf, the directory /var/named/, and its contents.
2. In Server Admin, select DNS from the list of computers and services.

   A dialog box appears prompting you whether to upgrade. Choose from the following:

   - If you click Don't Upgrade, Server Admin leaves the DNS configuration files as they were before the v10.6 migration. DNS still runs, but you can't make DNS configuration changes using Server Admin. To make changes, you must directly edit the DNS configuration files.
   - If you click Upgrade, Server Admin upgrades the configuration files to the v10.6 format. After that, you can use Server Admin to make DNS configuration changes.

DHCP Settings

To migrate the DHCP configuration:

1. Open Server Admin and select DHCP from the list of computers and services.
2. Choose Server > Import > Service Settings to import DHCP settings from the file you exported earlier (see "DHCP" on page 70).
3. Inspect the Subnets and Static Maps panes of the DHCP service to make sure the subnet and static binding settings are imported correctly.

User Data

Restore saved user data files.

Place home directories in locations that match the locations in the imported user records. If necessary, use Workgroup Manager to edit user accounts so the locations in the account and on disk are the same.

QuickTime Streaming Server Files and Folders

Follow instructions in *QuickTime Streaming and Broadcasting Administration* to reuse files and folders saved from /Library/QuickTimeStreaming/.

QTSS Publisher Files and Folders

QTSS Publisher has been removed from Mac OS X Server v10.6. However, files created using QTSS Publisher on v10.4 work on v10.6.

Restore QTSS Publisher files and folders on Mac OS X Server v10.6.

QTSS Publisher Media and MP3 files should be stored in:

- /Library/Application Support/Apple/ QTSS Publisher/Libraries/
- /Users/<*publisher_user*>/Library/Application Support/Apple/QTSS Publisher/Libraries/

To migrate QTSS Publisher media and MP3 playlists to QTSS Web Admin:

1. Move folders in /Library/Application Support/Apple/QTSS Publisher/Playlists/ to /Library/QuickTimeStreaming/Playlists.

   For example, you would move:

   /Library/Application Support/Apple/QTSS Publisher/Playlists/my_playlist/

   to

   /Library/QuickTimeStreaming/Playlists/my_playlist/
2. Verify that the owner of folders and files in /Library/QuickTimeStreaming/Playlists is qtss.
3. For media playlists, verify that the folder /Library/Application Support/Apple/QTSS Publisher/Libraries/Media/ contains the media files listed in the .playlist files.

4 For MP3 playlists, verify that the folder /Library/Application Support/Apple/QTSS Publisher/Libraries/MP3/ contains the media files listed in the .playlist files.

5 For every playlist, update its .config file so that paths point to the new playlist folder in /Library/QuickTimeStreaming/Playlists.

This includes the paths defined in the pid_file, playlist_file, and sdp_file (media playlists only) preferences.

6 Enable QTSS web-based administration using Server Admin.

7 Open Web Admin using Safari (http://<hostname>:1220) and log in.

8 Click Playlists.

You can now manage QTSS Publisher playlists using QTSS Web Admin.

For information about using Web Admin, see the *QuickTime Streaming Server Darwin Streaming Server Administrator's Guide,* available at developer.apple.com/opensource/server/streaming.

iChat Server

To migrate iChat server settings:

1 Restore the following folders:

- /var/jabber/spool
- /etc/jabber
- /var/spool/conference.*
- /System.Library/LaunchDaemons/org.jabber.jabberd.plist

2 If the files above were copied to a mounted volume, run the following script with root privileges:

```
sudo /System/Library/ServerSetup/MigrationExtras/58_jabbermigrator.
     pl --purge 0 --sourceRoot <location> --sourceType System
     --sourceVersion  10.4 --targetRoot / --language en
```

Replace *<location>* with the full path to the archived files. For example, *volumes/10.4_backup_drive/ichat*.

3 If the files were compressed into an archive file, expand the archive into a temporary directory.

For example, use */var/root/ichatserver_backup* and give that path as the `sourceRoot` argument.

4 Ensure the security of copied files or expanded archives because they may contain private user data.

The `58_jabbermigrator.pl` script invokes three scripts to migrate iChat server settings. If needed, run these scripts individually to customize the migration. The scripts are documented and contain helpful information.

Step 8: Set Up Share Points and Privileges

Recreate the share points and privileges as required.

To create a share point and set privileges:

1. Open Server Admin and click File Sharing.
2. Click Volumes and select the volume or folder you want to share.
3. Click Share.
4. Click Permissions to set up access privileges.
5. Click Save.

New share points are shared using AFP, SMB, and FTP, but not NFS. To export a share point using NFS, use the Protocol pane. For more information about setting up share points, see *File Server Administration*.

Step 9: Test the New Server

To test the new server:

1. Open Workgroup Manager and inspect user and group accounts.
2. Open Server Admin and inspect settings for services whose configuration data you migrated.

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