



Mac OS X Server

Upgrading and Migrating
For Version 10.4 or Later

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About This Guide

Use this guide when you want to move to Mac OS X Server version 10.4 from a previous version of the server.

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

- Perform an upgrade installation. This approach leaves all your data and settings in place and lets you reuse your existing server hardware for Mac OS X Server version 10.4. You can perform an upgrade installation of version 10.3 and version 10.2 servers.
- Manually migrate data and settings. This approach transfers data and settings to a different computer—one running Mac OS X Server version 10.4. You can migrate data and settings from server versions 10.3, 10.2, 10.1, 1.2, and AppleShare IP (ASIP) 6.3.3.

What's in This Guide

This guide includes the following chapters:

- Chapter 1, “Before You Begin,” summarizes upgrade and migration options and requirements.
- Chapter 2, “Upgrading Mac OS X Server Version 10.3,” describes how to upgrade the latest 10.3 version to version 10.4.
- Chapter 3, “Upgrading Mac OS X Server Version 10.2,” describes how to upgrade version 10.2.8 to version 10.4.
- Chapter 4, “Migrating From Mac OS X Server Version 10.3,” describes how to migrate data from the latest version 10.3 server to a different computer running version 10.4.
- Chapter 5, “Migrating From Mac OS X Server Version 10.2,” describes how to migrate data from a version 10.2.8 server to a different computer running version 10.4.
- Chapter 6, “Migrating From Mac OS X Server Version 10.1,” describes how to migrate data from a version 10.1.4 or 10.1.5 server to a different computer running version 10.4.
- Chapter 7, “Migrating From Mac OS X Server Version 1.2,” describes how to migrate data from a version 1.2 server to a different computer running version 10.4.
- Chapter 8, “Migrating From Appleshare IP,” describes how to migrate data from an ASIP 6.3.3 server to a different computer running version 10.4.

Using This Guide

Using this guide is easy. Simply read chapter 1 to make sure you understand all your options. Then turn to the chapter that addresses your upgrade or migration scenario. You'll find step-by-step instructions for preserving and reusing server data by using various tools and manual techniques. You'll also find references to instructions and supplemental information in other guides in the server suite; the next page tells you about the documents in the suite and where to find them.

Using Onscreen Help

You can view instructions and other useful information from this and other documents in the server suite by using onscreen help.

On a computer running Mac OS X Server, you can access onscreen help after opening Workgroup Manager or Server Admin. From the Help menu, select one of the options:

- *Workgroup Manager Help* or *Server Admin Help* displays information about the application.
- *Mac OS X Server Help* displays the main server help page, from which you can search or browse for server information.
- *Documentation* takes you to www.apple.com/server/documentation, from which you can download server documentation.

You can also access onscreen help from the Finder or other applications on a server or on an administrator computer. (An administrator computer is a Mac OS X computer with server administration software installed on it.) Use the Help menu to open Help Viewer, then choose Library > Mac OS X Server Help.

To see the latest server help topics, make sure the server or administrator computer is connected to the Internet while you're using Help Viewer. Help Viewer automatically retrieves and caches the latest server help topics from the Internet. When not connected to the Internet, Help Viewer displays cached help topics.

The Mac OS X Server Suite

The Mac OS X Server documentation includes a suite of guides that explain the services and provide instructions for configuring, managing, and troubleshooting the services. All of the guides are available in PDF format from:

www.apple.com/server/documentation/

This guide ...	tells you how to:
<i>Mac OS X Server Getting Started for Version 10.4 or Later</i>	Install Mac OS X Server and set it up for the first time.
<i>Mac OS X Server Upgrading and Migrating to Version 10.4 or Later</i>	Use data and service settings that are currently being used on earlier versions of the server.
<i>Mac OS X Server User Management for Version 10.4 or Later</i>	Create and manage users, groups, and computer lists. Set up managed preferences for Mac OS X clients.
<i>Mac OS X Server File Services Administration for Version 10.4 or Later</i>	Share selected server volumes or folders among server clients using these protocols: AFP, NFS, FTP, and SMB/CIFS.
<i>Mac OS X Server Print Service Administration for Version 10.4 or Later</i>	Host shared printers and manage their associated queues and print jobs.
<i>Mac OS X Server System Image and Software Update Administration for Version 10.4 or Later</i>	Use NetBoot and Network Install to create disk images from which Macintosh computers can start up over the network. Set up a software update server for updating client computers over the network.
<i>Mac OS X Server Mail Service Administration for Version 10.4 or Later</i>	Set up, configure, and administer mail services on the server.
<i>Mac OS X Server Web Technologies Administration for Version 10.4 or Later</i>	Set up and manage a web server, including WebDAV, WebMail, and web modules.
<i>Mac OS X Server Network Services Administration for Version 10.4 or Later</i>	Set up, configure, and administer DHCP, DNS, VPN, NTP, IP firewall, and NAT services on the server.
<i>Mac OS X Server Open Directory Administration for Version 10.4 or Later</i>	Manage directory and authentication services.
<i>Mac OS X Server QuickTime Streaming Server Administration for Version 10.4 or Later</i>	Set up and manage QuickTime streaming services.
<i>Mac OS X Server Windows Services Administration for Version 10.4 or Later</i>	Set up and manage services including PDC, BDC, file, and print for Windows computer users.
<i>Mac OS X Server Migrating from Windows NT for Version 10.4 or Later</i>	Move accounts, shared folders, and services from Windows NT servers to Mac OS X Server.

This guide ...	tells you how to:
<i>Mac OS X Server Java Application Server Administration For Version 10.4 or Later</i>	Configure and administer a JBoss application server on Mac OS X Server.
<i>Mac OS X Server Command-Line Administration for Version 10.4 or Later</i>	Use commands and configuration files to perform server administration tasks in a UNIX command shell.
<i>Mac OS X Server Collaboration Services Administration for Version 10.4 or Later</i>	Set up and manage Weblog, iChat, and other services that facilitate interactions among users.
<i>Mac OS X Server High Availability Administration for Version 10.4 or Later</i>	Manage IP failover, link aggregation, load balancing, and other hardware and software configurations to ensure high availability of Mac OS X Server services.
<i>Mac OS X Server Xgrid Administration for Version 10.4 or Later</i>	Manage computational Xserve clusters using the Xgrid application.
<i>Mac OS X Server Glossary: Includes Terminology for Mac OS X Server, Xserve, Xserve RAID, and Xsan</i>	Interpret terms used for server and storage products.

Getting Documentation Updates

Periodically, Apple posts new onscreen help topics, revised guides, and solution papers. The new help topics include updates to the latest guides.

- To view new onscreen help topics, make sure your server or administrator computer is connected to the Internet and click the Late-Breaking News link on the main Mac OS X Server help page.
- To download the latest guides and solution papers in PDF format, go to the Mac OS X Server documentation webpage: www.apple.com/server/documentation.

Getting Additional Information

For more information, consult these resources:

Read Me documents—important updates and special information. Look for them on the server discs.

Mac OS X Server website (www.apple.com/macosx/server/)—gateway to extensive product and technology information.

Apple Service & Support website (www.apple.com/support/)—access to hundreds of articles from Apple's support organization.

Apple customer training (train.apple.com/)—instructor-led and self-paced courses for honing your server administration skills.

Apple discussion groups (discussions.info.apple.com/)—a way to share questions, knowledge, and advice with other administrators.

Apple mailing list directory (www.lists.apple.com/)—subscribe to mailing lists so you can communicate with other administrators using email.

Take a few moments to become familiar with upgrading and migrating options and requirements.

If you're using Mac OS X Server version 10.2 or 10.3, 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 version 10.4 on your existing server computer while automatically preserving data and service settings.

Servers From Which You Can Upgrade or Migrate

You can reuse server data and settings with Mac OS X Server version 10.4 by:

- Upgrading the latest version 10.3 server or server version 10.2.8
- Migrating from the latest 10.3 version; from versions 10.2.8, 10.1.4 and 10.1.5, and 1.2; and from AppleShare IP version 6.3.3
- Migrating from Windows NT

Upgrading to Version 10.4

You can upgrade your version 10.3 or 10.2.8 server to version 10.4 if:

- You don't need to reformat the current computer's hard drive.
- Your server hardware has:
 - A PowerPC G3, G4, or G5 processor.
 - Built-in FireWire.
 - At least 128 megabytes (MB) of random access memory (RAM). At least 256 MB of RAM is required for high-demand servers running multiple services.
 - At least 4 gigabytes (GB) of disk space available.

When you upgrade a server, you perform an upgrade installation from the server installation discs on your server computer. Data and settings are automatically preserved for you, and manual adjustments are minimal. If you've been using Macintosh Manager to manage Mac OS 9 client computers, you can continue to do so—an option not available when you migrate. See the documentation for your version 10.2 or 10.3 server for Macintosh Manager information.

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 some of your computers and decide that you want to reestablish your server environment on one or more of the newer computers.

Migrating From a Pre-Version 10.4 Server to Version 10.4

Migrations from the latest 10.3 version; from versions 10.2.8, 10.1.4 and 10.1.5, and 1.2; and from AppleShare IP version 6.3.3 are supported.

You'll need to migrate when:

- A version 10.2.8 or 10.3 server's hard disk needs reformatting or doesn't have:
 - A PowerPC G3, G4, or G5 processor.
 - Built-in FireWire.
 - At least 128 megabytes (MB) of random access memory (RAM). At least 256 MB of RAM is required for high-demand servers running multiple services.
 - At least 4 gigabytes (GB) of disk space available.
- You want to move data and settings you've been using on a version 10.2.8 or 10.3 server to different server hardware.
- The server version you've been using is earlier than version 10.2.8.

When you migrate, you install and perform initial setup of Mac OS X Server version 10.4 on a computer, restore files onto the version 10.4 computer from the pre-10.4 computer, and make manual adjustments as required. Migrating Macintosh Manager data is not supported.

Migrating From Windows NT

Mac OS X Server can provide a variety of services to users of Microsoft Windows 95, 98, ME (Millennium Edition), XP, NT 4, and 2000 computers. By providing these services, Mac OS X Server can replace Windows NT servers in small workgroups.

The Windows NT migration guide explains how to import users, groups, and computers from a Microsoft Windows NT server to a Mac OS X Server primary domain controller (PDC). The Windows NT migration guide also explains how to migrate home directories, share points, and server configuration information.

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 version 10.4 server.

Saving and Reusing User and Group Accounts

The tool you use to save existing user and group accounts depends on the version of the server you're migrating from:

From	You use
Mac OS X Server version 10.2 and later	Workgroup Manager
Mac OS X Server version 10.1	Server Admin
Mac OS X Server version 1.2	Mac_OS_X_Server_1.2_Export_Tool
AppleShare IP	AppleShare IP Migration utility or Mac OS Server Admin

All these tools except AppleShare IP Migration write account records to an export file. To import users and groups from the file into an existing directory for use with version 10.4, you use Workgroup Manager or the `dsimport` tool in version 10.4.

The AppleShare IP Migration utility preserves existing user and group accounts without using export files.

Each chapter provides instructions for using these tools as appropriate.

System Accounts

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

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

- Wheel is a group that gives members almost as much control as root. If you're a member of the wheel group, you can use the `su` (superuser) command in the Terminal application to log in to a remote computer as the root user. Use `ssh` to log in, type `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.

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 User	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 IMAP User	cyrus	77
Mailman User	mailman	78
Application Server	appserver	79
Clamav User	clamav	82
Amavisd User	amavisd	83
Jabber User	jabber	84
Xgrid Controller	xgridcontroller	85
Xgrid Agent	xgridagent	86
Application Owner	appowner	87
WindowServer	windowserver	88
Unknown User	unknown	99

Here is a list of the predefined group accounts:

Short name	Group ID
nobody	-2
nogroup	-1
wheel	0
daemon	1
kmem	2
sys	3
tty	4
operator	5
mail	6
bin	7

Short name	Group ID
staff	20
lp	26
postfix	27
postdrop	28
utmp	45
uucp	66
dialer	68
network	69
www	70
mysql	74
sshd	75
qtss	76
mailman	78
appserverusr	79
admin	80
appserveradm	81
clamav	82
amavisd	83
jabber	84
xgridcontroller	85
xgridagent	86
appowner	87
windowserver	88
accessibility	90
unknown	99

Use the instructions in this chapter to upgrade a server running the latest 10.3 version server to version 10.4.

This chapter is for computers running the latest 10.3 Mac OS X Server version that don't require hard drive reformatting and that have:

- A PowerPC G3, G4, or G5 processor.
- Built-in FireWire.
- At least 128 megabytes (MB) of random access memory (RAM). At least 256 MB of RAM is required for high-demand servers running multiple services.
- At least 4 gigabytes (GB) of disk space available.

Understanding What Can Be Reused

When you upgrade from the latest 10.3 version, virtually all existing data and settings remain available for use, including Macintosh Manager data and all user passwords.

NetBoot images created using version 10.2 and 10.3 can be reused.

In version 10.4, watchdog has been replaced by launchd. To re-enable 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/`. See the man page for `launchd.conf` for details.

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 then upgrade the replicas.

To upgrade the master and its replicas:

- 1 Upgrade the master to version 10.4 following the instructions later in this chapter.

While you're upgrading the master, client computers won't be able to connect to it for Open Directory services. Clients may experience a delay while automatically finding the nearest 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, you can change the DHCP service to use the address of the master.

The Network services administration guide provides instructions for configuring LDAP settings in DHCP service.

- 2 Upgrade each replica server to version 10.4.
- 3 Using Server Admin, connect to each replica server and reestablish the replicas.

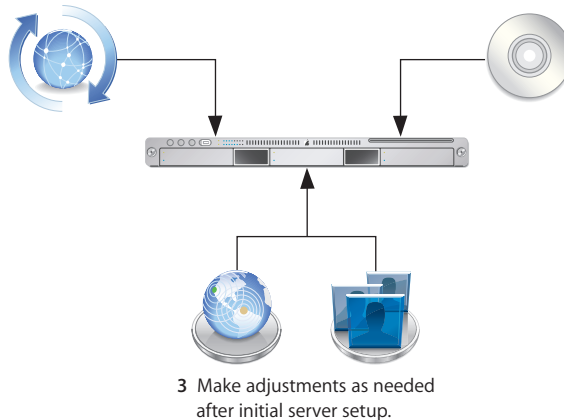
For information about resetting passwords in the master, see “Directory Services” on page 22.

Step-by-Step Instructions

To upgrade a version 10.3 server to version 10.4, follow the instructions in this section.

- 1 Update your server to the latest version 10.3 server.

- 2 Perform an upgrade installation to version 10.4.



Step 1: Update your server to the latest 10.3 version

Use Software Update if necessary to update your server to the latest available 10.3 version.

Step 2: Perform an upgrade installation to version 10.4

You can use the version 10.4 installation discs to perform the upgrade installation locally on your server computer if it has a display, keyboard, and optical drive attached. Alternatively, you can perform the upgrade remotely from an administrator computer; the getting started guide tells you how to set up an administrator computer.

After the upgrade installation 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 version 10.4 and perform initial server setup locally:

- 1 Make sure that any DHCP or DNS servers your server depends on are running.
- 2 Turn on the computer and insert the first install disc into the optical drive.
- 3 Restart the computer while holding down the C key on the keyboard. The computer boots from the install disc. You can release the C key when you see the Apple logo.
- 4 When Installer opens, proceed through its panes by following the onscreen instructions. On the Select a Destination pane, be sure to select the disk or partition on which version 10.3 is installed. Click Options, and select “Don’t erase.” Click OK.
- 5 During installation, progress information is displayed. Insert the next installation disc if prompted.
- 6 After installation is complete, the computer restarts automatically and Server Assistant opens so you can perform initial server setup.

Move through the Assistant’s panes, following the onscreen instructions. Your existing settings are displayed in the panes, but you can change them if you like.

Unless you have a site license, you’ll need to 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, a registered owner name and organization must be entered exactly as specified by your Apple representative.

When you use the Directory Usage pane, it’s best to select “No change” in the server’s directory setup. After setup is complete, you can make adjustments if necessary, following instructions in the Open Directory administration guide.

- 7 After all setup data has been entered, Server Assistant displays a summary of the data. Review the setup data, optionally clicking Go Back to change it.

- 8 To initiate setup of the server, click Apply.

When server setup is complete, click Restart Now.

To upgrade to version 10.4 and perform initial server setup remotely:

- 1 Make sure that any DHCP or DNS servers your server depends on are running.
- 2 Start the computer from the first install disc. The procedure you use depends on the server hardware.

If the server is an Xserve with a built-in optical drive, start the server using the first install disc by following the instructions in the *Xserve User’s Guide* for starting from a system disc.

If the target server is an Xserve with no built-in optical drive, you can start it in target disk mode and insert the install disc into the optical drive on your administrator computer. You can also use an external FireWire optical drive or an optical drive from another Xserve system to start the server from the install disc. Instructions for using target disk mode and external optical drives are in the *Quick Start* guide or *Xserve User's Guide* that came with your Xserve system.

- 3 On an administrator computer, navigate to `/Applications/Server/` and open Server Assistant (you don't have to be an administrator on the local computer to use Server Assistant). Select "Install software on a remote server."
- 4 Identify the server you want to upgrade.
If it's on the local subnet, select it in the list.
Otherwise, click "Server at IP Address" and enter an IP address in IPv4 format (000.000.000.000).
- 5 When prompted for a password, type the first 8 digits of the server's built-in hardware serial number. To find a server's serial number, look for a label on the server.
- 6 Proceed by following the onscreen instructions.
- 7 When the Volumes pane appears, select a target disk or volume (partition) and click Continue. Click Options and select "Don't erase." Click OK.
- 8 During installation, progress information is displayed. Insert the next installation disc if prompted.
- 9 After installation is complete, the computer restarts automatically, and then Server Assistant opens and displays a Welcome pane. To initiate server setup, select "Set up a remote server" and click Continue.
- 10 In the Destination pane, put a check in the Apply column for the server you're upgrading, then type its preset password in the Password field and click Continue to connect to the server.
If you don't see the server in the list, click Add to add it or Refresh to determine whether it's available.
- 11 Move through the Assistant's panes, following the onscreen instructions. Your existing settings are displayed in the panes, but you can change them if you like.
Unless you have a site license, you'll need to 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, a registered owner name and organization must be entered exactly as specified by your Apple representative.
When you use the Directory Usage pane, it's safest to select "No change" in the server's directory setup. After setup is complete, you can make adjustments if necessary, following instructions in the Open Directory administration guide.

- 12 After all setup data has been entered, Server Assistant displays a summary of the data. Review the setup data, optionally clicking Go Back to change it.
- 13 To initiate setup of the server, click Apply.

When server setup is complete, click Restart Now.

Step 3: 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 version 10.4 features.

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

WebObjects

Restore `httpd.conf` to the previous version (`httpd.conf.AppleSaved`), or include the following line in the new `httpd.conf` file:

```
Include /System/Library/WebObjects/Adaptors/Apache/apache.conf
```

If you didn't install Java 1.4.2 on your version 10.3 server, WebObjects application projects need to be manually updated to use the version of the Java Virtual Machine (VM) included with version 10.4.

To update a WebObjects project:

- 1 Open the project in Xcode.
- 2 In the Expert View for the main target's settings, change the property value for "JAVA_VM" to "java".

Secure Sockets Layer (SSL) Certificates

Use Server Admin to import any existing SSL certificates you want to continue to use for LDAP, mail, or Web services.

To import an SSL certificate:

- 1 Open Server Admin.
- 2 Select Open Directory, Web, or Mail in the Computers & Services list for the upgraded server.
- 3 Click Settings. See the administration guides for Open Directory, mail service, and web technologies for information about how to import related SSL certificates.

Using Server Admin, you can create a self-signed certificate and generate a Certificate Signing Request (CSR) to obtain an SSL certificate from an issuing authority and install the certificate. The mail services administration guide tells you how.

Groups

If you want groups to use new version 10.4 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 one or more groups and click “Upgrade legacy group.”
- 4 Click Save.

Directory Services

After upgrading, you may want to convert a shared NetInfo directory to LDAP. See the Open Directory administration guide for details about the advantages of using LDAP and how to use Server Admin to conduct the conversion.

You can also convert to Open Directory authentication from a different authentication strategy. For example, if any of the users in your upgraded server are configured to be authenticated using Authentication Manager, you can change their settings to Open Directory authentication. Authentication options and instructions appear in the Open Directory administration guide.

If you want to enable Kerberos for an Open Directory master on which it’s not enabled, you can 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 command above, you can use Workgroup Manager or the NeST command to use an Open Directory password:

- To use Workgroup Manager, open the application and access the directory in which 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 new password, and click Save.
- To use the NeST tool, open the Terminal application and type:

```
NeST -convertuser <user-name> <domain-administrator-name>
```

For more information about NeST and `slapconfig`, see their man pages.

NetBoot Images

NetBoot images created using version 10.2 and 10.3 can be reused following the upgrade installation.

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

Print Service

The upgrade process matches the old configuration with existing print queues and applies the settings to the new configuration, which is stored in `/Library/Preferences/com.apple.printservice.plist`.

The upgrade results are logged in `/Library/Logs/PrintService/PrintService.admin.log`.

If the server has a legacy (NetInfo-based) print service configuration that hasn't been upgraded, the log file contains a report of the upgraded items. Most of the log file entries reflect the inherent differences between the version 10.4 print architecture (Common UNIX Printing System, or CUPS) and the legacy printing architecture.

Open Directory Upgrade Log

Information about upgrading the Open Directory LDAP server is stored in:

`/Library/Logs/slapconfig.log`

Web Service

If you've modified `/etc/httpd/workers.properties`, reapply your changes to the version of the file that's installed with server version 10.4. The version 10.4 `workers.properties` file has a new entry for Weblog service.

Macintosh Manager

If you've been using Macintosh Manager, you can continue to do so.

To start Macintosh Manager

- 1 Open Server Admin.
- 2 Select the upgraded server in the Computers & Services list, connecting to it if necessary.
- 3 Click Settings, then click General.
- 4 Under Protocols, enable Macintosh Manager.
- 5 Click Save.

Use the instructions in this chapter to upgrade a version 10.2.8 server to version 10.4.

This chapter is for computers running Mac OS X Server version 10.2.8 that don't require hard drive reformatting and that have:

- A PowerPC G3, G4, or G5 processor.
- Built-in FireWire.
- At least 128 megabytes (MB) of random access memory (RAM). At least 256 MB of RAM is required for high-demand servers running multiple services.
- At least 4 gigabytes (GB) of disk space available.

Understanding What Can Be Reused

When you upgrade from Mac OS X Server version 10.2.8, virtually all existing data and settings remain available for use, including Macintosh Manager data and all user passwords.

NetBoot images created using version 10.2 can be reused.

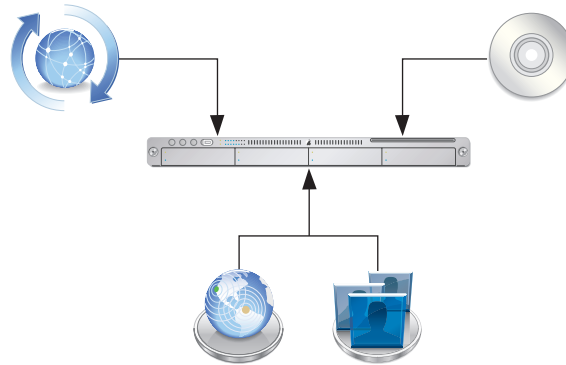
In version 10.4, watchdog has been replaced by launchd. To re-enable automatic hardware restart, use the Energy Saver pane of System Preferences. To migrate settings for services you added to `/etc/watchdog.conf`, create a launchd plist file and install it into `/System/Library/LaunchDaemons/`. See the man page for `launchd.conf` for details.

Step-by-Step Instructions

To upgrade a version 10.2.8 server to version 10.4, follow the instructions in this section.

1 Update your server to version 10.2.8.

2 Perform an upgrade installation to version 10.4.



3 Make adjustments as needed after initial server setup.

Step 1: Update your server to version 10.2.8

Use Software Update if necessary to update your server to version 10.2.8.

Step 2: Perform an upgrade installation to version 10.4

You can use the version 10.4 installation discs to perform the upgrade installation locally on your server computer if it has a display, keyboard, and optical drive attached. Alternatively, you can perform the upgrade remotely from an administrator computer; the getting started guide tells you how to set up an administrator computer.

After the upgrade installation 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 version 10.4 and perform initial server setup locally:

- 1 Make sure that any DHCP or DNS servers your server depends on are running.
- 2 Turn on the computer and insert the first install disc into the optical drive.
- 3 Restart the computer while holding down the C key on the keyboard. The computer boots from the install disc. You can release the C key when you see the Apple logo.
- 4 When Installer opens, proceed through its panes by following the onscreen instructions. On the Select a Destination pane, be sure to select the disk or partition on which version 10.2.8 is installed. Click Options, and select “Don’t erase.” Click OK.
- 5 During installation, progress information is displayed. Insert the next installation disc if prompted.

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

Move through the Assistant's panes, following the onscreen instructions. Your existing settings are displayed in the panes, but you can change them if you like.

Unless you have a site license, you'll need to 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, a registered owner name and organization must be entered exactly as specified by your Apple representative.

When you use the Directory Usage pane, it's best to select "No change" in the server's directory setup. After setup is complete, you can make adjustments if necessary, following instructions in the Open Directory administration guide.

- 7 After all setup data has been entered, Server Assistant displays a summary of the data. Review the setup data, optionally clicking Go Back to change it.

- 8 To initiate setup of the server, click Apply.

When server setup is complete, click Restart Now.

To upgrade to version 10.4 and perform initial server setup remotely:

- 1 Make sure that any DHCP or DNS servers your server depends on are running.
- 2 Start the computer from the first install disc. The procedure you use depends on the server hardware.

If the server is an Xserve with a built-in optical drive, start the server using the first install disc by following the instructions in the *Xserve User's Guide* for starting from a system disc.

If the target server is an Xserve with no built-in optical drive, you can start it in target disk mode and insert the install disc into the optical drive on your administrator computer. You can also use an external FireWire optical drive or an optical drive from another Xserve system to start the server from the install disc. Instructions for using target disk mode and external optical drives are in the *Quick Start* guide or *Xserve User's Guide* that came with your Xserve system.

- 3 On an administrator computer, navigate to /Applications/Server/ and open Server Assistant (you don't have to be an administrator on the local computer to use Server Assistant). Select "Install software on a remote server."
- 4 Identify the server you want to upgrade.

If it's on the local subnet, select it in the list.

Otherwise, click "Server at IP Address" and enter an IP address in IPv4 format (000.000.000.000).

- 5 When prompted for a password, type the first 8 digits of the server's built-in hardware serial number. To find a server's serial number, look for a label on the server.
- 6 Proceed by following the onscreen instructions.
- 7 When the Volumes pane appears, select a target disk or volume (partition) and click Continue. Click Options and select "Don't erase." Click OK.
- 8 During installation, progress information is displayed. Insert the next installation disc if prompted.
- 9 After installation is complete, the computer restarts automatically, and then Server Assistant opens and displays a Welcome pane. To initiate server setup, select "Set up a remote server" and click Continue.
- 10 In the Destination pane, put a check in the Apply column for the server you're upgrading, then type its preset password in the Password field and click Continue to connect to the server.

If you don't see the server in the list, click Add to add it or Refresh to determine whether it's available.

- 11 Move through the Assistant's panes, following the onscreen instructions. Your existing settings are displayed in the panes, but you can change them if you like.

Unless you have a site license, you'll need to 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, a registered owner name and organization must be entered exactly as specified by your Apple representative.

When you use the Directory Usage pane, it's safest to select "No change" in the server's directory setup. After setup is complete, you can make adjustments if necessary, following instructions in the Open Directory administration guide.

- 12 After all setup data has been entered, Server Assistant displays a summary of the data. Review the setup data, optionally clicking Go Back to change it.
- 13 To initiate setup of the server, click Apply.

When server setup is complete, click Restart Now.

Step 3: 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 version 10.4 features.

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

WebObjects

Restore `httpd.conf` to the previous version (`httpd.conf.AppleSaved`) or include the following line in the new `httpd.conf` file:

```
Include /System/Library/WebObjects/Adaptors/Apache/apache.conf
```

In addition, update WebObjects application projects to use the version of the Java Virtual Machine (VM) included with version 10.4.

To update a WebObjects project:

- 1 Open the project in Xcode.
- 2 In the Expert View for the main target's settings, change the property value for "JAVA_VM" to "java".

Groups

If you want groups to use new version 10.4 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 one or more groups and click "Upgrade legacy group."
- 4 Click Save.

Directory Services

After upgrading, you may want to convert a shared NetInfo directory to LDAP. See the Open Directory administration guide for details about the advantages of using LDAP and how to use Server Admin to conduct the conversion.

You can also convert to Open Directory authentication from a different strategy. For example, if any of the users in your upgraded server are configured to be authenticated using Authentication Manager, you can change their settings to Open Directory authentication. Authentication options and instructions appear in the Open Directory administration guide.

NetBoot Images

NetBoot images created using version 10.2 can be reused following the upgrade installation.

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

Print Service

The upgrade process matches the old configuration with existing print queues and applies the settings to the new configuration, which is stored in `/Library/Preferences/com.apple.printservice.plist`.

The upgrade results are logged in `/Library/Logs/PrintService/PrintService.admin.log`.

If the server has a legacy (NetInfo-based) print service configuration that hasn't been upgraded, the log file contains a report of the upgraded items. Most of the log file entries reflect the inherent differences between the version 10.4 print architecture (Common UNIX Printing System, or CUPS) and the legacy printing architecture.

Web Service

If you've modified `/etc/httpd/workers.properties`, reapply your changes to the version of the file that's installed with server version 10.4. The version 10.4 `workers.properties` file has a new entry for Weblog service.

Macintosh Manager

If you've been using Macintosh Manager, you can continue to do so.

To start Macintosh Manager

- 1 Open Server Admin.
- 2 Select the upgraded server in the Computers & Services list, connecting to it if necessary.
- 3 Click Settings, then click General.
- 4 Under Protocols, enable Macintosh Manager.
- 5 Click Save.

Use the instructions in this chapter when you need to migrate data from a server running the latest 10.3 version to a different computer running version 10.4.

This chapter is for Mac OS X Server version 10.3 computers that can't be updated to run version 10.4 using an upgrade installation. Such computers may:

- Require hard drive reformatting or replacement with a newer computer.
- Be using server hardware that doesn't have:
 - A PowerPC G3, G4, or G5 processor.
 - Built-in FireWire.
 - At least 128 megabytes (MB) of random access memory (RAM). At least 256 MB of RAM is required for high-demand servers running multiple services.
 - At least 4 gigabytes (GB) of disk space available.

Before You Begin

Before using the instructions in this chapter, perform initial setup of the version 10.4 server to which you'll migrate data. See the getting started guide for instructions.

If necessary, upgrade the server whose data you'll migrate so it's running the latest 10.3 version.

When the server is an Open Directory master or replica, set up the version 10.4 master then set up the version 10.4 replicas.

To reestablish the master and its replicas:

- 1 Set up the version 10.4 master following the instructions later in this chapter.

While you're setting up the master, client computers won't be able to connect to the version 10.3 master for Open Directory services. Clients may experience a delay while automatically finding the nearest 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 it provides clients with an LDAP server address. When the version 10.4 master is ready, you can change the DHCP service to use the address of the master.

The Network services administration guide provides instructions for configuring LDAP settings in DHCP service.

2 Set up each version 10.4 replica by migrating data as appropriate.

Then change the version 10.3 replica's role to standalone and set up the version 10.4 server to be a replica of the version 10.4 master.

The Open Directory administration guide provides instructions for changing a server's Open Directory role to standalone and replica.

For information about resetting passwords in the master, see step 6 on page 40.

Understanding What You Can Migrate

The information in "Step-by-Step Instructions" on page 34 describes how to reuse the following version 10.3 data with version 10.4:

- Web configuration data
- Web content
- MySQL data
- Mail database
- WebMail data
- FTP configuration files
- NetBoot images
- WebObjects applications and frameworks
- Tomcat data
- JBoss applications
- AFP settings
- IP firewall configuration
- DNS configuration
- DHCP settings
- NAT settings
- VPN settings
- User data, including home directories
- QuickTime Streaming Server files and directories
- User and group accounts

If you're using any of the following, make a note of any settings you want to continue to use, then see the document indicated for instructions on re-creating the settings after using the instructions in this chapter.

To set up	See the
NFS file services	File services administration guide
Windows services	Windows services administration guide
Print service	Print service administration guide

In version 10.4, `watchdog` has been replaced by `launchd`. To re-enable 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/`. See the man page for `launchd.conf` for details.

Tools You Can Use

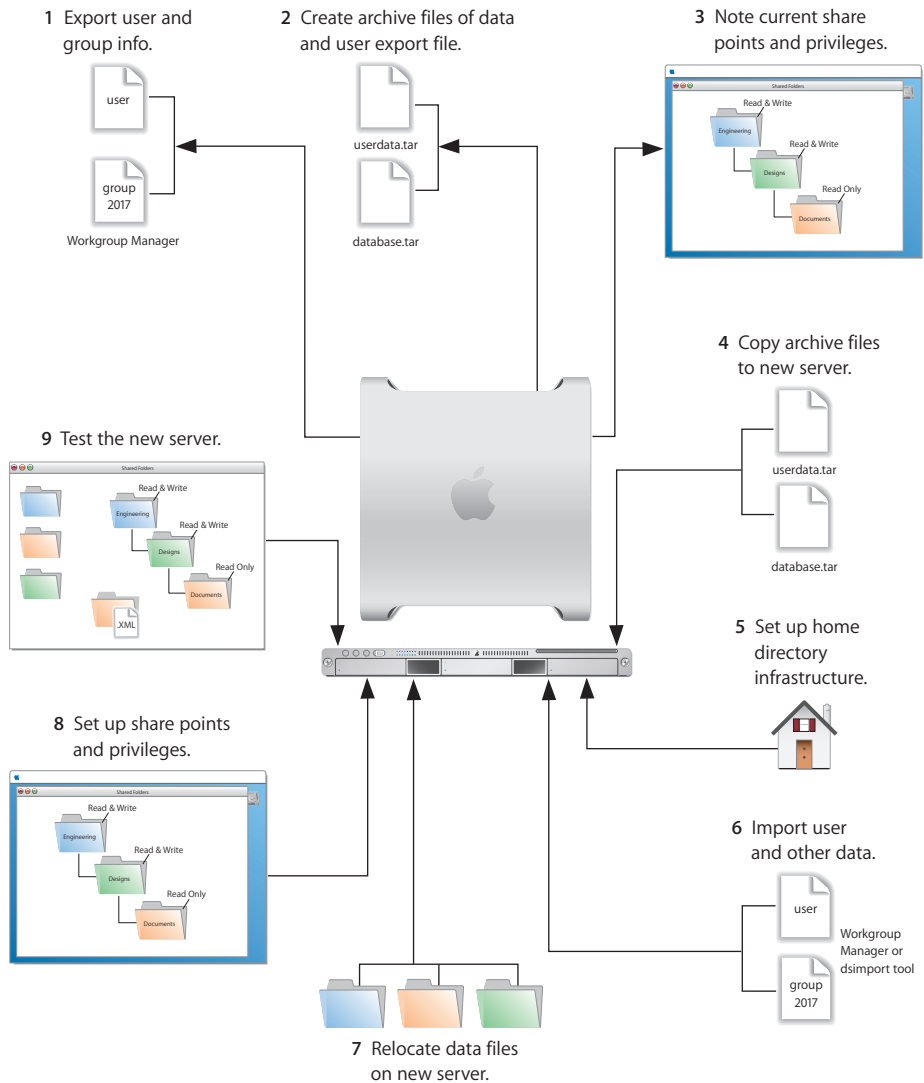
Several tools are available:

- You use Workgroup Manager to export version 10.3 user and group accounts to a character-delimited file, and then import them into a version 10.4 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.
- You use the `49_webconfigmigrator` tool to migrate your web configuration.
- You use the `50_ipfwconfigmigrator` tool to migrate your IP firewall configuration.
- You use the `nidump` and `niload` tools and the NetInfo Manager application to migrate your DHCP configuration.

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

Step-by-Step Instructions

To move data from a Mac OS X Server version 10.3 computer to a computer with Mac OS X Server version 10.4 installed, follow the instructions in this section.



Step 1: Export users and groups

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 version 10.4.

To export users and groups:

- 1 In Workgroup Manager, click Accounts, then click the globe icon below the toolbar and choose the directory from which you want to export accounts.
- 2 Click the lock to authenticate as domain administrator.
- 3 Click the Users button to export users or the Groups button to export groups.
- 4 To export all accounts listed, select all of them. To export a specific 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. If you want to set passwords, you can modify the export file before you import it or you can set passwords after importing, as described in step 6 on page 40.

Step 2: Create archive files

Save all the data files that you want to reuse with Mac OS X Server version 10.4. In step 4 you'll move the files described below, as well as the export file created in step 1, to the version 10.4 computer.

For large amounts of data, you may want to create one or more tar archives or use `/usr/bin/mkdmg` to create disk image files. Both disk images and tar files can be transferred using FTP. Note that tar doesn't preserve resource forks on HFS+ volumes, so it's useful only for UFS volumes.

To create a tar archive, use the `tar` command in the Terminal application. The command's `-c` flag creates a new archive file in tar format. Use the `-f` flag to identify the archive file name. Use the `-v` (verbose) flag to view useful 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 directory:

- /etc/httpd/httpd.conf
- /etc/httpd/httpd_macosxserver.conf
- /etc/httpd/httpd_squirrelmail.conf
- /etc/httpd/magic
- /etc/httpd/mime.types
- /etc/httpd/mime_macosxserver.types
- /etc/httpd/ssl.crt/
- /etc/httpd/ssl.key/
- /etc/httpd/tomcat.conf
- /etc/webperfcache/webperfcache.conf
- /Library/WebServer/

Web Content

Copy web content you want to reuse from:

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

MySQL Data

Mac OS X Server version 10.3 preinstalled version 4.0.18 of MySQL. Server version 10.4 preinstalls MySQL version 4.0.20.

To migrate your MySQL databases from one computer to another, you can use the `mysqldump` command from a Terminal window. To back up the data, type:

```
mysqldump -p table > backup-file.sql
```

or

```
mysqldump --opt database > backup-file.sql
```

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

Mail Database

If you want to reuse the mail database and mail store, stop mail service if it's running and save files the database and store. 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. See its man page for information about it.

Webmail Data

If you've been using the SquirrelMail installed when you installed version 10.3 and 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 your FTP settings, save these configuration files:

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

AFP

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

NetBoot Images

You can migrate NetBoot images created using Mac OS X Server version 10.3.

Save the `<name>.nbi` folder for each image you want to migrate, noting the path to the folder if you want to re-create it in version 10.4.

Also save the DHCP settings, which include NetBoot settings. See “DHCP” on page 38 for instructions.

WebObjects Applications and Frameworks

Save WebObjects applications and frameworks located in:

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

Tomcat Data

Save any 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, save any Simple Object Access Protocol (SOAP) services.

JBoss Applications

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

IP Firewall

Save these files:

- /etc/ipfilter/ip_address_groups.plist
- /etc/ipfilter/standard_services.plist
- /etc/ipfilter/ipfw.conf

NAT

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

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 and the directory /var/named/ and all its contents.

DHCP

Save the DHCP settings after running the following command from the Terminal application. This command writes the DHCP configuration record stored in NetInfo to a file named DHCPconfig:

```
nidump -r /config/dhcp . > DHCPconfig
```

Although Server Admin DHCP didn't manage static bindings between IP addresses and Ethernet addresses in version 10.3, it does in version 10.4. So if you've manually configured some DHCP static bindings on your version 10.3 server, you can save them to a file for migration to version 10.4 by using this command:

```
nidump -r /machines . > Machinesconfig
```

User Data

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

QuickTime Streaming Server Files and Folders

Save files and folders in /Library/QuickTimeStreaming/.

For more information on migrating QTSS, see the QuickTime Streaming Server administration guide.

Step 3: Note current share points and privileges

If your version 10.3 server has share points and privileges you want to re-create on the version 10.4 server, make a note of them. Note which share points are for home directories.

Step 4: Copy archive files to the new server

Transfer the files you saved in steps 1 and 2 to the version 10.4 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 into which you'll place files you transfer from the 10.3 computer.
- 3 On the version 10.3 server, use FTP service to copy the tar files or disk images to the version 10.4 computer.
- 4 Double-click a tar file to extract its contents. 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 detailed instructions on how to perform individual steps in the following procedure, see the user management guide.

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, if you like.
- 2 Open Workgroup Manager on the server where you want the home directories to reside.
- 3 Click Sharing to set up a share point for the home directories.
If the 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 from which you'll import users, click Accounts, then open the directory into which you'll import users.
- 5 If you'll 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 you want imported users to inherit, such as password settings, mail settings, and so forth.

Step 6: Import users and groups and other data

You can use Workgroup Manager or the `dsimport` tool to import users and groups and other data:

- See the user management guide for details about importing by using Workgroup Manager.
- See the Open Directory administration guide for information about passwords of users originally created with Mac OS X Server version 10.1.5 or earlier.
- See the command-line administration guide for `dsimport` instructions and a description of Workgroup Manager export format.

To import users and groups using Workgroup Manager:

- 1 Place the export file(s) you created in step 1 in a location accessible from your server.
- 2 You can modify user accounts in an export file if you want to set passwords before importing users. See the user management guide for instructions.

Alternatively, you can set up the preset you defined in step 5 above so that user passwords are validated using Open Directory authentication, and set up the password validation options so that users are forced to change their passwords the next time they log in.

See the last step in this sequence for information about using Kerberos passwords.

- 3 In Workgroup Manager, click the Accounts button.
- 4 Click the globe icon in the toolbar to open the directory into which you want to import accounts.
- 5 Click the lock to authenticate as domain administrator.
- 6 Choose Server > Import, select the import file, and specify import options.
If you're using a preset, make sure you identify the preset.
- 7 Click Import.
- 8 If you want groups to use new version 10.4 features such as nesting and stricter membership checking, upgrade groups using Workgroup Manager.

In Workgroup Manager, open the directory containing the groups. Select one or more of the groups and click "Upgrade legacy group." Click Save.

- 9 To create home directories for imported users, you have several options.

Create home directories one at a time by selecting a user account in Workgroup Manager, clicking Home, then clicking Create Home Now.

Create all the home directories by using the `-a` argument of the `createhomedir` command. For details, see the command-line administration guide or the man page for `createhomedir`.

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

- 10 If you want to enable Kerberos for an Open Directory master on which it's not enabled, you can 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 command above, you can use Workgroup Manager or the NeST command to use an Open Directory password:

To use Workgroup Manager, open the application and access the directory in which 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 new password, and click Save.

To use the NeST tool, open the Terminal application and type:

```
NeST -convertuser <user-name> <domain-administrator-name>
```

For more information about NeST and slapconfig, see their man pages.

Step 7: Relocate saved data files

Place the files you saved from your version 10.3 server in their final locations.

Web Configuration Data

To migrate the web configuration:

- 1 Open Server Admin and click Web in the Computers & Services list. Click Stop Service if web service is running.
- 2 Delete the following files:
 - /etc/httpd/sites
 - /etc/httpd/ssl.crt
 - /etc/httpd/ssl.key
- 3 Copy the saved version 10.3 files and directory onto the version 10.4 server.
- 4 Open the Terminal application. As the root user, type the `49_webconfigmigrator` command:

```
sudo /System/Library/ServerSetup/MigrationExtras/49_webconfigmigrator
```

A log of the changes made to the files is created in `/Library/Logs/Migration/webconfigmigrator.log`. The version 10.3 files in `/etc/httpd/` are renamed to `httpd.conf.obsolete`, `httpd_macosxserver.conf.obsolete`, and `mime_macosxserver.types.obsolete`. A new `httpd.conf` file is created and a `sites` directory is created.
- 5 If you've modified `/etc/httpd/workers.properties`, reapply all your changes to the version of the file that's installed with server version 10.4. The version 10.4 `workers.properties` file has a new entry for Weblog service.
- 6 In Server Admin, start web service.

Web Content

Copy saved web content to:

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

MySQL Data

If you backed up your MySQL data using `mysqldump`, you can restore the data using:

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

or

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

If the MySQL 4.0.18 database you're migrating originated as a MySQL 3.23.x database and it's still using the deprecated ISAM table format from MySQL 3.23, now is a good time to update it. Refer to the documentation on the MySQL website for migration details:

www.mysql.com/doc/en/Upgrading-from-3.23.html

This site suggests:

- Running `mysql_fix_privilege_tables` to enable new security privilege features.
- Running either `mysql_convert_table_format` (if all existing tables are ISAM or MyISAM) or `ALTER TABLE table_name TYPE=MyISAM` on all ISAM tables (to avoid the deprecated ISAM table format).

Mail Database

To migrate the mail database:

- 1 Make sure that mail service isn't running.
Open Server Admin, then click Mail. If it is not grayed out, click Stop Service.
- 2 Restore the saved mail database and mail store. By default the mail database resides in `/var/imap/` and the mail store in `/var/spool/imap/`.
- 3 In Server Admin, click Settings, click Advanced, and click Database to indicate where you restored the database and mail store.
- 4 Click Save.
- 5 Open the Terminal application and use the `su` command to assume the identity of the root user.
- 6 Run the mail database `upgradedb` script:

```
sudo -u cyrusimap /System/Library/ServerSetup/SetupExtras/upgradedb
```
- 7 In Server Admin, start mail service by clicking Mail, then clicking Start Service.

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/`

AFP Configuration

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

NetBoot Images

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

Restore the DHCP settings file, as described in “DHCP Settings” on page 45.

WebObjects Applications and Frameworks

To migrate WebObjects:

- 1 Copy saved applications and frameworks to:
 - `/Library/WebObjects/`
 - `/System/Library/WebObjects/`
- 2 Add the following line to the new `httpd.conf` file:

```
Include /System/Library/WebObjects/Adaptors/Apache/apache.conf
```
- 3 If you didn't have Java 1.4.2 installed on your version 10.3 server, WebObjects application projects need to be manually updated to use the version of the Java Virtual Machine (VM) included with version 10.4.

Open the project in Xcode. In the Expert View for the main target's settings, change the property value for “`JAVA_VM`” to “`java`”.

Tomcat Data

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

Place any SOAP services you want to migrate in `/Library/Tomcat/webapps/axis/`.

Mac OS X Server version 10.4 includes a version of Axis that may be newer or older than the version you've been using.

JBoss Applications

Restore JBoss applications to `/Library/JBoss/3.2/deploy/`.

IP Firewall Configuration

To migrate the IP firewall configuration:

- 1 Restore these files:
 - /etc/ipfilter/ip_address_groups.plist
 - /etc/ipfilter/standard_services.plist
 - /etc/ipfilter/ipfw.conf
- 2 In the Terminal application, run this command:

```
sudo /System/Library/ServerSetup/MigrationExtras/  
50_ipfwconfigmigrator
```
- 3 Open Server Admin and click Firewall to inspect the settings and make sure they are accurate.

At any time you can restore the version 10.4 default settings for IP firewall (stored in /etc/ipfilter/ip_address_groups.plist.default) by deleting the active configuration file (/etc/ipfilter/ip_address_groups.plist). The next time IP firewall is accessed using Server Admin, the default configuration file is used to create the active configuration file.

Note: In version 10.4, the standard services are no longer managed in /etc/ipfilter/standard_services.plist. They are now part of the configuration managed by the Server Admin graphical user interface, in /etc/ipfilter/ip_address-groups.plist.

NAT

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

At any time you can restore the version 10.4 default settings for NAT (stored in /etc/natd/natd.plist.default) 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 create the active configuration file.

Note: In version 10.4, the default setting of `unregistered_only` in /etc/nat/natd.plist.default changed from `false` to `true`.

VPN

Restore:

- /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. See its man page for usage details.

DNS Configuration

To migrate the DNS configuration:

- 1 Restore the file `/etc/named.conf` and the directory `/var/named/` and all its contents.
- 2 In the Terminal application, go to the directory where the DNS migration script resides

```
cd /System/Library/ServerSetup/MigrationExtras/
```

- 3 Run the migration script:

```
./48_dnsconfigmigrator
```

DHCP Settings

To migrate the DHCP configuration:

- 1 Restore the `DHCPconfig` and `Machinesconfig` files.
- 2 In the Terminal application, type:

```
sudo niload -r /config/dhcp . < DHCPconfig
sudo niload -r /machines . < Machinesconfig
```
- 3 Open Server Admin and click DHCP to inspect the DHCP Subnets and Static Bindings to make sure they are correct.

User Data

Restore saved user data files.

Place home directories in locations that match the locations in the imported user records. If necessary, you can 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 the QuickTime Streaming Server administration guide to reuse files and folders saved from `/Library/QuickTimeStreaming/`.

Step 8: Set up share points and privileges

Re-create the share points and privileges as required.

To create a share point and set privileges:

- 1 Open Workgroup Manager and click Sharing.
- 2 Click the All button and select the volume or folder you want to share.
- 3 Click General and select "Share this item and its contents."
- 4 Click Access to set up access privileges.
- 5 Click Save.

New share points are automatically shared using AFP, SMB, and FTP, but not NFS. To export a share point using NFS, use the Protocol pane. See the file services administration guide for more information about setting up share points.

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.

Use the instructions in this chapter when you need to migrate data from a version 10.2.8 server to a different computer running version 10.4.

This chapter is for Mac OS X Server version 10.2.8 computers that can't be updated to run version 10.4 using an upgrade installation. Such computers may:

- Require hard drive reformatting or replacement with a newer computer.
- Be using server hardware that doesn't have:
 - A PowerPC G3, G4, or G5 processor.
 - Built-in FireWire.
 - At least 128 megabytes (MB) of random access memory (RAM). At least 256 MB of RAM is required for high-demand servers running multiple services.
 - At least 4 gigabytes (GB) of disk space available.

Before You Begin

Before using the instructions in this chapter, perform initial setup of the version 10.4 server to which you'll migrate data. See the getting started guide for instructions.

If necessary, upgrade the server whose data you'll migrate so it's running version 10.2.8.

Understanding What You Can Migrate

The information in "Step-by-Step Instructions" on page 49 describes how to reuse the following version 10.2 data with version 10.4:

- Web configuration data
- Web content
- MySQL data
- Mail database
- WebMail data
- FTP configuration files
- NetBoot images
- WebObjects applications and frameworks

- Tomcat data
- AFP settings
- IP firewall configuration
- DNS configuration
- DHCP settings
- User data, including home directories
- QuickTime Streaming Server files and directories
- User and group accounts

If you're using any of the following, make a note of any settings you want to continue to use, then see the document indicated for instructions on re-creating the settings after using the instructions in this chapter.

To set up	See the
NFS file services	File services administration guide
Windows services	Windows services administration guide
Print service	Print service administration guide

In version 10.4, watchdog has been replaced by launchd. To re-enable 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/`. See the man page for `launchd.conf` for details.

Tools You Can Use

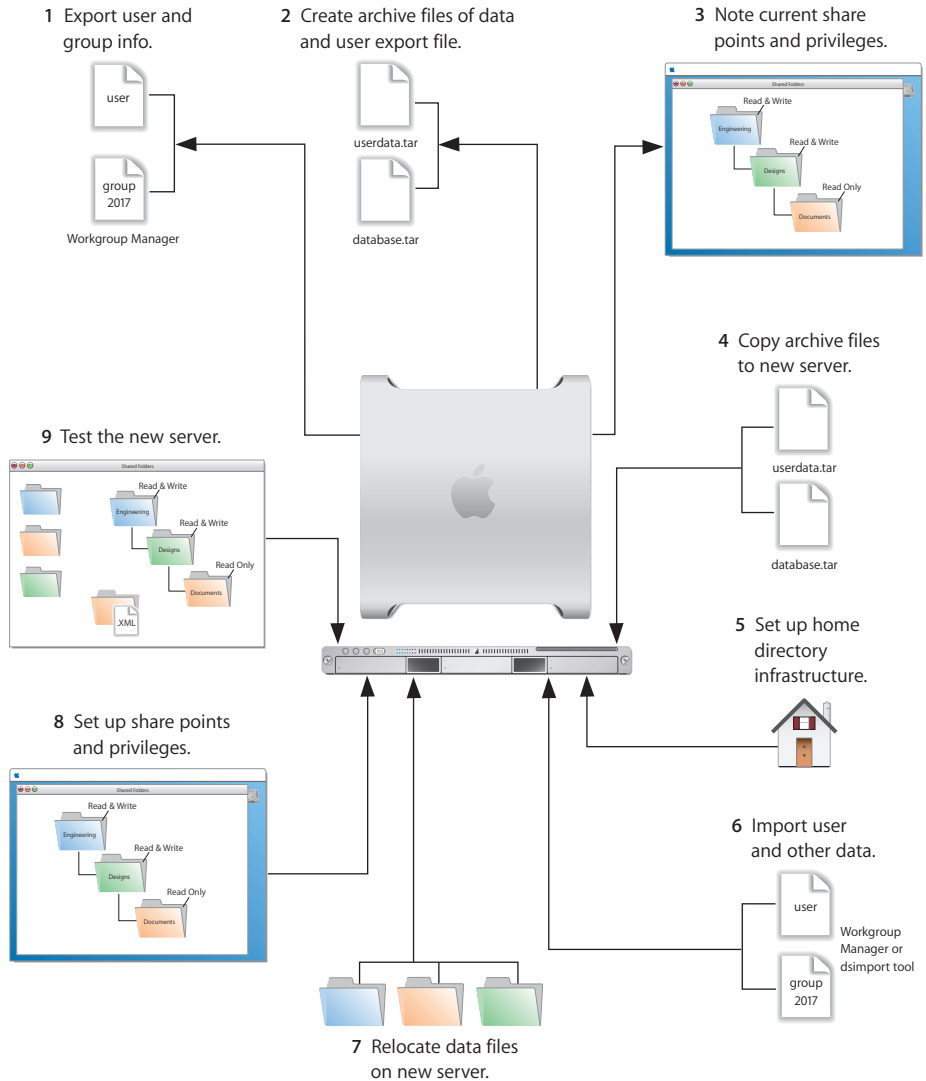
Several tools are available:

- You use Workgroup Manager to export version 10.2 user and group accounts to a character-delimited file, and then import them into a version 10.4 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.
- You use the `49_webconfigmigrator` tool to migrate your web configuration.
- You use the `nidump`, `niload`, and `50_ipfwconfigmigrator` tools and the NetInfo Manager application to migrate your IP firewall configuration.
- You use the `nidump`, `niload`, and `51_afpconfigmigrator` tools and the NetInfo Manager application to migrate your AFP configuration.
- You use the `nidump` and `niload` tools and the NetInfo Manager application to migrate your DHCP configuration.

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

Step-by-Step Instructions

To move data from a Mac OS X Server version 10.2.8 computer to a computer with Mac OS X Server version 10.4 installed, follow the instructions in this section.



Step 1: Export users and groups

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 version 10.4.

To export users and groups:

- 1 In Workgroup Manager, click Accounts, then click the globe icon below the toolbar and choose the directory from which you want to export accounts.
- 2 Click the lock to authenticate as domain administrator.
- 3 Click the Users button to export users or the Groups button to export groups.
- 4 To export all accounts listed, select all of them. To export a specific 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. If you want to set passwords, you can modify the export file before you import it or you can set passwords after importing, as described in step 6 on page 54.

Step 2: Create archive files

Save all the data files that you want to reuse with Mac OS X Server version 10.4. In step 4 you'll move the files described below, as well as the export file created in step 1, to the version 10.4 computer.

For large amounts of data, you may want to create one or more tar archives or use `/usr/bin/mkdmg` to create disk image files. Both disk images and tar files can be transferred using FTP. Note that tar doesn't preserve resource forks on HFS+ volumes, so it's useful only for UFS volumes.

To create a tar archive, use the `tar` command in the Terminal application. The command's `-c` flag creates a new archive file in tar format. Use the `-f` flag to identify the archive file name. Use the `-v` (verbose) flag to view useful 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 directory:

- /etc/httpd/httpd.conf
- /etc/httpd/httpd_macosxserver.conf
- /etc/httpd/httpd_squirrelmail.conf
- /etc/httpd/magic
- /etc/httpd/mime.types
- /etc/httpd/mime_macosxserver.types
- /etc/httpd/ssl.crt/
- /etc/httpd/ssl.key/
- /etc/httpd/tomcat.conf
- /etc/webperfcache/webperfcache.conf
- /Library/WebServer/

Web Content

Copy web content you want to reuse from:

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

MySQL Data

Mac OS X Server version 10.2.8 preinstalled version 3.23 of MySQL. Server version 10.4 preinstalls MySQL version 4.0.20.

To migrate your MySQL databases from one computer to another, you can use the `mysqldump` command from a Terminal window. To back up the data, type:

```
mysqldump -p table > backup-file.sql
```

or

```
mysqldump --opt database > backup-file.sql
```

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

Mail Database

Save the mail database if you want to reuse it. Its default location is `/Library/AppleMailServer/`.

Webmail Data

If you've been using the SquirrelMail installed when you installed version 10.2 and 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 your FTP settings, save these configuration files:

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

AFP

Save the AFP configuration after running the following command from the Terminal application. This command writes the AFP configuration record stored in NetInfo to a file named `afpconfig`:

```
nidump -r /config/AppleFileServer . > afpconfig
```

NetBoot Images

You can migrate NetBoot images created using Mac OS X Server version 10.2.

Save the `<name>.nbi` folder for each image you want to migrate, noting the path to the folder if you want to re-create it in version 10.4.

Also save the DHCP settings, which include NetBoot settings. See “DHCP” on page 53 for instructions.

WebObjects Applications and Frameworks

Save WebObjects applications and frameworks located in:

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

Tomcat Data

Save any 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, save any Simple Object Access Protocol (SOAP) services.

IP Firewall

Save the IP firewall configuration after running the following command from the Terminal application. This command writes the IP firewall configuration record stored in NetInfo to a file named `firewallconfig`:

```
nidump -r /config/IPFilters . > firewallconfig
```

DNS

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

DHCP

Save the DHCP settings after running the following command from the Terminal application. This command writes the DHCP configuration record stored in NetInfo to a file named DHCPconfig:

```
nidump -r /config/dhcp . > DHCPconfig
```

Although Server Admin DHCP didn't manage static bindings between IP addresses and Ethernet addresses in version 10.3, it does in version 10.4. So if you've manually configured some DHCP static bindings on your version 10.3 server, you can save them to a file for migration to version 10.4 by using this command:

```
nidump -r /machines . > Machinesconfig
```

User Data

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

QuickTime Streaming Server Files and Folders

Save files and folders in /Library/QuickTimeStreaming/.

For more information on migrating QTSS, see the QuickTime Streaming Server administration guide.

Step 3: Note current share points and privileges

If your version 10.2 server has share points and privileges you want to re-create on the version 10.4 server, make a note of them. Note which share points are for home directories.

Step 4: Copy archive files to the new server

Transfer the files you saved in steps 1 and 2 to the version 10.4 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 into which you'll place files you transfer from the 10.2 computer.
- 3 On the version 10.2 server, use FTP service to copy the tar files or disk images to the version 10.4 computer.
- 4 Double-click a tar file to extract its contents. 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 detailed instructions on how to perform individual steps in the following procedure, see the user management guide.

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, if you like.
- 2 Open Workgroup Manager on the server where you want the home directories to reside.
- 3 Click Sharing to set up a share point for the home directories.

If the 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 from which you'll import users, click Accounts, then open the directory into which you'll import users.
- 5 If you'll 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 you want imported users to inherit, such as password settings, mail settings, and so forth.

Step 6: Import users and groups and other data

You can use Workgroup Manager or the `dsimport` tool to import users and groups and other data:

- See the user management guide for details about importing by using Workgroup Manager.
- See the Open Directory administration guide for information about passwords of users originally created with Mac OS X Server version 10.1.5 or earlier.
- See the command-line administration guide for `dsimport` instructions and a description of Workgroup Manager export format.

To import users and groups using Workgroup Manager:

- 1 Place the export file(s) you created in step 1 on page 50 in a location accessible from your server.
- 2 You can modify user accounts in an export file if you want to set passwords before importing users. See the user management guide for instructions.

Alternatively, you can set up the preset you defined in step 5 above so user passwords are validated using Open Directory authentication and set up the password validation options so that users are forced to change their passwords the next time they log in.

- 3 In Workgroup Manager, click the Accounts button.
- 4 Click the globe icon in the toolbar to open the directory into which you want to import accounts.

- 5 Click the lock to authenticate as domain administrator.
- 6 Choose Server > Import, select the import file, and specify import options.
If you're using a preset, make sure you identify the preset.
- 7 Click Import.
- 8 If you want groups to use new version 10.4 features such as nesting and stricter membership checking, upgrade groups using Workgroup Manager.
In Workgroup Manager, open the directory containing the groups. Select one or more of the groups and click "Upgrade legacy group." Click Save.
- 9 To create home directories for imported users, you have several options.
Create home directories one at a time by selecting a user account in Workgroup Manager, clicking Home, then clicking Create Home Now.
Create all the home directories by using the `-a` argument of the `createhomedir` command. For details, see the command-line administration guide or the man page for `createhomedir`.
A home directory associated with an AFP share point is automatically created the first time a user logs in, if it doesn't exist already.

Step 7: Relocate saved data files

Place the files you saved from your version 10.2 server in their final locations.

Web Configuration Data

To migrate the web configuration:

- 1 Open Server Admin and click Web in the Computers & Services list. Click Stop Service if web service is running.
- 2 Delete the following files:
 - `/etc/httpd/sites`
 - `/etc/httpd/ssl.crt`
 - `/etc/httpd/ssl.key`
- 3 Copy the saved version 10.2 files and directory onto the version 10.4 server.
- 4 Open the Terminal application. As the root user, type the `49_webconfigmigrator` command:

```
sudo /System/Library/ServerSetup/MigrationExtras/49_webconfigmigrator
```

A log of the changes made to the files is created in `/Library/Logs/Migration/webconfigmigrator.log`. The version 10.2 files in `/etc/httpd/` are renamed to `httpd.conf.obsolete`, `httpd_macosxserver.conf.obsolete`, and `mime_macosxserver.types.obsolete`. A new `httpd.conf` file is created and a `sites` directory is created.

- 5 If you've modified `/etc/httpd/workers.properties`, reapply your changes to the version of the file that's installed with server version 10.4. The version 10.4 `workers.properties` file has a new entry for Weblog service.
- 6 In Server Admin, start web service.

Web Content

Copy saved web content to:

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

MySQL Data

If you backed up your MySQL data using `mysqldump`, you can restore the data using:

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

or

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

If the MySQL database you're migrating is still using the deprecated ISAM table format from MySQL 3.23, now is a good time to update it. Refer to the documentation on the MySQL website for migration details:

www.mysql.com/doc/en/Upgrading-from-3.23.html

This site suggests:

- Running `mysql_fix_privilege_tables` to enable new security privilege features.
- Running either `mysql_convert_table_format` (if all existing tables are ISAM or MyISAM) or `ALTER TABLE table_name TYPE=MyISAM` on all ISAM tables (to avoid the deprecated ISAM table format).

Mail Database

To migrate the mail database:

- 1 Make sure that mail service is not running.
Open Server Admin, then click Mail. If it isn't grayed out, click Stop Service.
- 2 Click Maintenance, then click Migration.
- 3 Place the saved database on the version 10.4 server. Make sure that no extra files are in the location you select.

If you place the database in the default location (`/Library/AppleMail Server/`), its location and accounts are displayed.

Otherwise, browse for the database to identify its location and list its accounts.

- 4 Make sure there is free space on the destination disk equal to the size of the mail database.

- 5 You can migrate a single user or all users.

To migrate mail for only one user, select the user and click Migrate User.

To migrate the entire database, click Migrate All.

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/`

AFP Configuration

To migrate the AFP configuration:

- 1 Restore the `afpconfig` file.
- 2 Open Server Admin and make sure that AFP isn't running.
- 3 Open NetInfo Manager, located in `/Applications/Utilities`.
- 4 Authenticate and go to `/config`.
- 5 Choose Directory > New SubDirectory to create a record in `/config`.
- 6 Change the name of the new record from "newdirectory" to "AppleFileServer" by selecting the name property's value and editing it.
- 7 In the Terminal application, run the following command from the directory in which the `afpconfig` file resides:

```
sudo niload -r /config/AppleFileServer . < afpconfig
```

- 8 Type the `51_afpconfigmigrator` command:

```
sudo /System/Library/ServerSetup/MigrationExtras/51_afpconfigmigrator
```
- 9 In Server Admin, start AFP service.

NetBoot Images

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

Restore the DHCP settings, as described in "DHCP Settings" on page 59.

WebObjects Applications and Frameworks

To migrate WebObjects:

- 1 Copy saved applications and frameworks to:
 - `/Library/WebObjects/`
 - `/System/Library/WebObjects/`
- 2 Add the following line to the new `httpd.conf` file:

```
Include /System/Library/WebObjects/Adaptors/Apache/apache.conf
```

- 3 WebObjects application projects need to be manually updated to use the version of the Java Virtual Machine (VM) included with version 10.4.

Open the project in Xcode. In the Expert View for the main target's settings, change the property value for "JAVA_VM" to "java".

Tomcat Data

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

Place any SOAP services you want to migrate in /Library/Tomcat/webapps/axis/.

Mac OS X Server version 10.4 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:

- 1 Restore the firewallconfig file.
- 2 Open Server Admin and make sure that firewall service isn't running.
- 3 Open NetInfo Manager, located in /Applications/Utilities.
- 4 Authenticate and go to /config.
- 5 Choose Directory > New SubDirectory to create a record in /config.
- 6 Change the name of the new record from "newdirectory" to "IPFilters" by selecting the name property's value and editing it.
- 7 In the Terminal application, run the following command from the directory in which the firewallconfig file resides:

```
sudo niload -r /config/IPFilters . < firewallconfig
```

- 8 Type the 50_ipfwconfigmigrator command:

```
sudo /System/Library/ServerSetup/MigrationExtras/  
50_ipfwconfigmigrator
```

- 9 In Server Admin, start firewall service.

DNS Configuration

To migrate the DNS configuration:

- 1 Restore the file /etc/named.conf and the directory /var/named/ and all its contents.
- 2 In the Terminal application, go to the directory where the DNS migration script resides

```
cd /System/Library/ServerSetup/MigrationExtras/
```

- 3 Run the migration script:

```
./48_dnsconfigmigrator
```

DHCP Settings

To migrate the DHCP configuration:

- 1 Restore the DHCPconfig and Machinesconfig files.
- 2 In the Terminal application, type:

```
sudo niload -r /config/dhcp . < DHCPconfig
sudo niload -r /machines . < Machinesconfig
```
- 3 Open Server Admin and click DHCP to inspect the DHCP Subnets and Static Bindings to make sure they are correct.

User Data

Restore saved user data files.

Place home directories in locations that match the locations in the imported user records. If necessary, you can 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 the QuickTime Streaming Server administration guide to reuse files and folders saved from /Library/QuickTimeStreaming/.

Step 8: Set up share points and privileges

Re-create the share points and privileges as required.

To create a share point and set privileges:

- 1 Open Workgroup Manager and click Sharing.
- 2 Click the All button and select the volume or folder you want to share.
- 3 Click General and select “Share this item and its contents.”
- 4 Click Access to set up access privileges.
- 5 Click Save.

New share points are automatically shared using AFP, SMB, and FTP, but not NFS. To export a share point using NFS, use the Protocol pane. See the file services administration guide for more information about setting up share points.

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.

Use the instructions in this chapter when you need to migrate data from a version 10.1.4 or 10.1.5 server to a different computer running version 10.4.

This chapter tells you what you can migrate, then explains how.

Before You Begin

Before using the instructions in this chapter, perform initial setup of the version 10.4 server to which you'll migrate data. See the getting started guide for instructions.

If necessary, upgrade the server whose data you'll migrate so it's running version 10.1.4 or 10.1.5.

Understanding What You Can Migrate

The information in "Step-by-Step Instructions" on page 63 describes how to reuse the following data with version 10.4:

- Web configuration data
- Web content
- MySQL data
- Mail database
- FTP configuration files
- WebObjects applications and frameworks
- Tomcat data
- AFP settings
- IP firewall configuration
- DNS configuration
- DHCP settings
- User data, including home directories
- QuickTime Streaming Server files and directories
- User and group accounts

If you're using any of the following, make a note of any settings you want to continue to use, then see the document indicated for instructions on re-creating the settings after using the instructions in this chapter.

To set up	See the
NFS file services	File services administration guide
Windows services	Windows services administration guide
Print service	Print service administration guide

In version 10.4, `watchdog` has been replaced by `launchd`. To re-enable 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/`. See the man page for `launchd.conf` for details.

Tools You Can Use

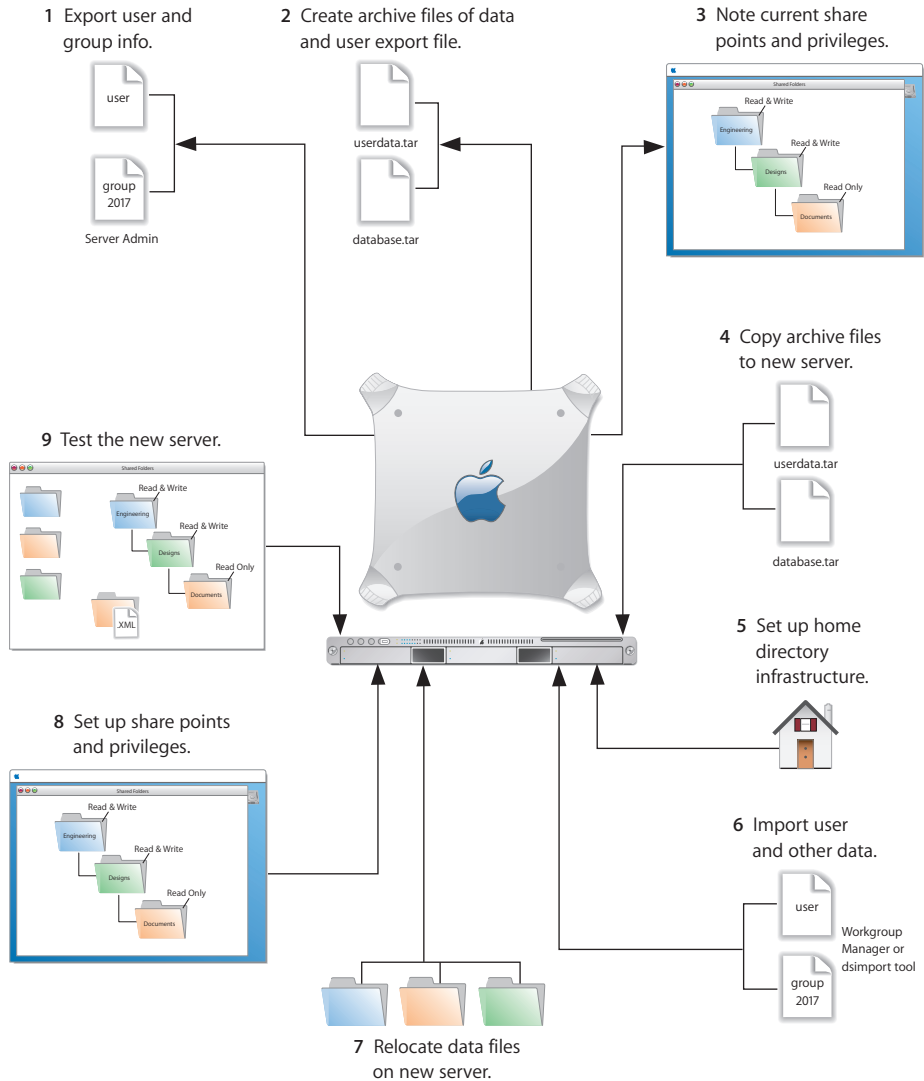
Several utilities are available for use during migration:

- You use Server Admin to export version 10.1 users and groups to an XML export file.
- You use Workgroup Manager in version 10.4 to import users and groups from the export file.
- Workgroup Manager's import facility and the `dsimport` tool also let you import other kinds of data, such as computers and computer lists.
- You use the `49_webconfigmigrator` tool to migrate your web configuration.
- You use the `nidump`, `niload`, and `50_ipfwconfigmigrator` tools and the NetInfo Manager application to migrate your IP firewall configuration.
- You use the `nidump`, `niload`, and `51_afpconfigmigrator` tools and the NetInfo Manager application to migrate your AFP configuration.
- You use the `nidump` and `niload` tools and the NetInfo Manager application to migrate your DHCP configuration.

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

Step-by-Step Instructions

To move data from a Mac OS X Server version 10.14 or 10.1.5 computer to a computer with Mac OS X Server version 10.4 installed, follow the instructions in this section.



Step 1: Export users and groups

Use Server Admin to export user and group accounts from a NetInfo directory into an XML file that you can import into a directory for use with Mac OS X Server version 10.4.

To export users and groups:

- 1 Open Server Admin and log in to the server that stores the user and group accounts you want to migrate.

- 2 Click Users & Groups and choose Show Users & Groups.
- 3 Select the users and groups you want to export, then click Export.

When you export users using Server Admin, encrypted passwords are exported. If you want to reset passwords, you can do so using Workgroup Manager, as described in step 6 on page 68.

Step 2: Create archive files

Save all the data files that you want to reuse with Mac OS X Server version 10.4. In step 4 you'll move the files described below, as well as the export file created in step 1, to the version 10.4 computer.

For large amounts of data, you may want to create one or more tar archives or use `/usr/bin/mkdmg` to create disk image files. Both disk images and tar files can be transferred using FTP. Note that tar doesn't preserve resource forks on HFS+ volumes, so it's useful only for UFS volumes.

To create a tar archive, use the `tar` command in the Terminal application. The command's `-c` flag creates a new archive file in tar format. Use the `-f` flag to identify the archive file name. Use the `-v` (verbose) flag to view useful 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 directory `/etc/httpd/` and all its contents. Also save the file `/etc/webperfcache/webperfcache.conf`.

Web Content

Copy web content you want to reuse from:

- `/Library/WebServer/Documents/`
- `/Library/WebServer/CGI-Executables/`
- Any other location in which it resides

MySQL Data

Mac OS X Server version 10.1 preinstalled MySQL version 3.23. Server version 10.4 preinstalls MySQL version 4.0.20.

To migrate your MySQL databases from one computer to another, you can use the `mysqldump` command from a Terminal window. To back up the data, type:

```
mysqldump -p table > backup-file.sql
```

or

```
mysqldump --opt database > backup-file.sql
```

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

Mail Database

Save the mail database, if you want to reuse it. Its default location is `/Library/AppleMailServer/`.

Webmail Data

Mac OS X Server version 10.1 didn't include a preinstalled WebMail client. If you installed SquirrelMail on your own, you may want to save the user preferences and address books, and try to migrate them to SquirrelMail 1.4.3 on the version 10.4 server.

FTP Configuration Files

To migrate your FTP settings, save these configuration files:

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

AFP

Save the AFP configuration after running the following command from the Terminal application. This command writes the AFP configuration record stored in NetInfo to a file named `afpconfig`:

```
nidump -r /config/AppleFileServer . > afpconfig
```

WebObjects Applications and Frameworks

Save WebObjects applications and frameworks located in:

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

Tomcat Data

Save any 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, save any Simple Object Access Protocol (SOAP) services.

IP Firewall

Save the IP firewall configuration after running the following command from the Terminal application. This command writes the IP firewall configuration record stored in NetInfo to a file named `firewallconfig`:

```
nidump -r /config/IPFilters . > firewallconfig
```

DNS

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

DHCP

Save the DHCP settings after running the following command from the Terminal application. This command writes the DHCP configuration record stored in NetInfo to a file named `DHCPconfig`:

```
nidump -r /config/dhcp . > DHCPconfig
```

Although Server Admin DHCP didn't manage static bindings between IP addresses and Ethernet addresses in version 10.1, it does in version 10.4. So if you've manually configured some DHCP static bindings on your version 10.3 server, you can save them to a file for migration to version 10.4 by using this command:

```
nidump -r /machines . > Machinesconfig
```

User Data

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

QuickTime Streaming Server Files and Folders

Save files and folders in `/Library/QuickTimeStreaming/`.

For more information about migrating QTSS, see the QuickTime Streaming Server administration guide.

Step 3: Note current share points and privileges

If your version 10.1 server has share points and privileges you want to re-create on the version 10.4 server, make a note of them. Note which share points are for home directories.

Step 4: Copy archive files to the new server

Transfer the files you saved in steps 1 and 2 to the version 10.4 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 into which you'll place files you transfer from the 10.1 computer.
- 3 On the version 10.1 server, use FTP service to copy the tar files or disk images to the version 10.4 computer.
- 4 Double-click a tar file to extract its contents. 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 detailed instructions on how to perform individual steps in the following procedure, see the user management guide.

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, if you like.
- 2 Open Workgroup Manager on the server where you want the home directories to reside.
- 3 Click Sharing to set up a share point for the home directories.
If the 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 from which you'll import users, click Accounts, then open the directory into which you'll import users.
- 5 If you'll 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 you want imported users to inherit, such as password validation settings, mail settings, and so forth.

Step 6: Import exported users and groups and other data

You can use Workgroup Manager or the `dsimport` tool to import users and groups and other data:

- See the user management guide for details about importing by using Workgroup Manager.
- See the Open Directory administration guide for information about passwords of users originally created with Mac OS X Server version 10.1.5 or earlier.
- See the command-line administration guide for `dsimport` instructions and a description of Workgroup Manager export format.

To import users and groups using Workgroup Manager:

- 1 Place the export file(s) you created in step 1 in a location accessible from your server.
- 2 If you want imported users to have passwords validated using Open Directory authentication, you can set that up in the preset you defined in step 5 above. Enable the password option that forces users to change their passwords the next time they log in.

You can also change password settings using Workgroup Manager after you've finished importing users.

- 3 In Workgroup Manager, click the Accounts button.
- 4 Click the globe icon in the toolbar to open the directory into which you want to import accounts.
- 5 Click the lock to authenticate as domain administrator.
- 6 Choose Server > Import, select the import file, and specify import options.
If you're using a preset, make sure you identify the preset.
- 7 Click Import.
- 8 If you want groups to use new version 10.4 features such as nesting and stricter membership checking, upgrade groups using Workgroup Manager.

In Workgroup Manager, open the directory containing the groups. Select one or more of the groups and click "Upgrade legacy group." Click Save.

- 9 To create home directories for imported users, you have several options.

Create home directories one at a time by selecting a user account in Workgroup Manager, clicking Advanced, then clicking Create Home Now.

Create all the home directories by using the `-a` argument of the `createhomedir` command. For details, see the command-line administration guide or the man page for `createhomedir`.

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

Step 7: Relocate saved data files

Place the files you saved from your version 10.1 server in their final location.

Web Configuration Data

To migrate the web configuration:

- 1 Save the file `/etc/httpd/servermgr_web_httpd_config.plist` and the directory `/etc/httpd/sites_disabled/` and all its contents from the version 10.4 server.
- 2 Replace the `/etc/httpd/` directory and its files on the version 10.4 server with the `/etc/httpd/` directory and its contents that you saved on the former server. Also restore the saved `/etc/webperfcache/webperfcache.conf`.
- 3 Copy the file `/etc/httpd/servermgr_web_httpd_config.plist` and the directory `/etc/httpd/sites_disabled/` and all its contents into the restored `/etc/httpd/` directory.
- 4 Open Server Admin and make sure that web service isn't running.
- 5 Open the Terminal application. As the root user, type the `49_webconfigmigrator` command:

```
sudo /System/Library/ServerSetup/MigrationExtras/49_webconfigmigrator
```

A log of the changes made to the files is created in `/Library/Logs/Migration/webconfigmigrator.log`. Original versions of changed files in `/etc/httpd` are renamed to `httpd.conf.obsolete`, `httpd_macosxserver.conf.obsolete`, and `mime_macosxserver.types.obsolete`. A new `httpd.conf` file is created.

- 6 If you've modified `/etc/httpd/workers.properties`, reapply your changes to the version of the file that's installed with server version 10.4. The version 10.4 `workers.properties` file has a new entry for Weblog service.
- 7 In Server Admin, start web service.

Web Content

Copy saved web content to:

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

MySQL Data

If you backed up your MySQL data using `mysqldump`, you can restore the data using:

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

or

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

If the MySQL database you're migrating uses the deprecated ISAM table format from MySQL 3.23, now is a good time to update it. Refer to the documentation on the MySQL website for migration details:

www.mysql.com/doc/en/Upgrading-from-3.23.html

This site suggests:

- Running `mysql_fix_privilege_tables` to enable new security privilege features.
- Running either `mysql_convert_table_format` (if all existing tables are ISAM or MyISAM) or `ALTER TABLE table_name TYPE=MyISAM` on all ISAM tables (to avoid the deprecated ISAM table format).

Mail Database

To migrate the mail database:

- 1 Make sure that mail service is not running.
Open Server Admin, then click Mail. If it isn't grayed out, click Stop Service.
- 2 Click Maintenance, then click Migration.
- 3 Place the saved database on the version 10.4 server. Make sure that no extra files are in the location you select.

If you place the database in the default location (`/Library/AppleMail Server/`), its location and accounts are displayed.

Otherwise, browse for the database to identify its location and list its accounts.

- 4 Make sure there is free space on the destination disk equal to the size of the mail database.
- 5 You can migrate a single user or all users.

To migrate mail for only one user, select the user and click Migrate User.

To migrate the entire database, click Migrate All.

Webmail Data

If you're trying to migrate SquirrelMail preferences and address book settings from a version of SquirrelMail you installed on your version 10.1 server, see the documentation at squirrelmail.org.

In particular, check to see whether any conversion is necessary between the SquirrelMail version you installed on server version 10.1 and SquirrelMail version 14.3 on Mac OS X Server.

FTP Configuration Files

Copy saved FTP configuration files to:

- `/Library/FTPService/Configuration/`
- `/Library/FTPService/Messages/`

AFP Configuration

To migrate the AFP configuration:

- 1 Restore the afpconfig file.
- 2 Open Server Admin and make sure that AFP isn't running.
- 3 Open NetInfo Manager, located in /Applications/Utilities.
- 4 Authenticate and go to /config.
- 5 Choose Directory > New SubDirectory to create a record in /config.
- 6 Change the name of the new record from "newdirectory" to "AppleFileServer" by selecting the name property's value and editing it.
- 7 In the Terminal application, run the following command from the directory in which the afpconfig file resides:

```
sudo niload -r /config/AppleFileServer . < afpconfig
```
- 8 Type the 51_afpconfigmigrator command:

```
sudo /System/Library/ServerSetup/MigrationExtras/51_afpconfigmigrator
```
- 9 In Server Admin, start AFP service.

WebObjects Applications and Frameworks

To migrate WebObjects:

- 1 Copy saved applications and frameworks to:
 - /Library/WebObjects/
 - /System/Library/WebObjects/
- 2 Add the following line to the new httpd.conf file:

```
Include /System/Library/WebObjects/Adaptors/Apache/apache.conf
```
- 3 Earlier versions of WebObjects stored Apache-specific information in the file webobjects.conf, located in /System/Library/WebObjects/Adaptors/Apache/. If necessary to restore your settings, copy information out of this file into apache.conf.
- 4 WebObjects application projects need to be manually updated to use the version of the Java Virtual Machine (VM) included with version 10.4.

If you're using WebObjects 5, open the project in Xcode. In the Expert View for the main target's settings, change the property value for "JAVA_VM" to "java".

If you're using WebObjects 4.5, you'll need to update the source code of your applications to use Java instead of Objective-C. See the Java Converter documentation on the WebObjects 5 Developer disc for more information.

Tomcat Data

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

Place any SOAP services you want to migrate in /Library/Tomcat/webapps/axis/. Mac OS X Server version 10.4 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:

- 1 Restore the firewallconfig file.
- 2 Open Server Admin and make sure that firewall service isn't running.
- 3 Open NetInfo Manager, located in /Applications/Utilities.
- 4 Authenticate and go to /config.
- 5 Choose Directory > New SubDirectory to create a record in /config.
- 6 Change the name of the new record from "newdirectory" to "IPFilters" by selecting the name property's value and editing it.
- 7 In the Terminal application, run the following command from the directory in which the firewallconfig file resides:

```
sudo niload -r /config/IPFilters . < firewallconfig
```

- 8 Type the 50_ipfwconfigmigrator command:

```
sudo /System/Library/ServerSetup/MigrationExtras/  
50_ipfwconfigmigrator
```

- 9 In Server Admin, start firewall service.

DNS Configuration

Restore the file /etc/named.conf and the directory /var/named/ and all its contents.

DHCP Settings

To migrate the DHCP configuration:

- 1 Restore the DHCPconfig and Machinesconfig files.
- 2 In the Terminal application, type:

```
sudo niload -r /config/dhcp . < DHCPconfig  
sudo niload -r /machines . < Machinesconfig
```
- 3 Open Server Admin and click DHCP to inspect the DHCP Subnets and Static Bindings to make sure they are correct.

User Data

Restore saved user data files.

Place home directories in locations that match the locations in the imported user records. If necessary, you can 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 the QuickTime Streaming Server administration guide to reuse files and folders saved from /Library/QuickTimeStreaming/.

Step 8: Set up share points and privileges

Re-create the share points and privileges as required.

To create a share point and set privileges:

- 1 Open Workgroup Manager and click Sharing.
- 2 Click the All button and select the volume or folder you want to share.
- 3 Click General and select “Share this item and its contents.”
- 4 Click Access to set up access privileges.
- 5 Click Save.

New share points are automatically shared using AFP, SMB, and FTP, but not NFS. To export a share point using NFS, use the Protocol pane. See the file services administration guide for more information about setting up home directories.

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.

Migrating From Mac OS X Server Version 1.2

7

Use the instructions in this chapter when you need to migrate data from a version 1.2 server to a different computer running version 10.4.

This chapter tells you what you can migrate, and then explains how.

Before You Begin

Before using the instructions in this chapter, perform initial setup of the version 10.4 server to which you'll migrate data. See the getting started guide for instructions.

Understanding What You Can Migrate

The information in "Step-by-Step Instructions" on page 77 describes how to reuse the following data with version 10.4:

- FTP configuration files
- WebObjects applications and frameworks
- User data, including home directories
- QuickTime Streaming Server files and directories
- User and group accounts

If you're using any of the following, make a note of any settings you want to continue to use, then see the document indicated for instructions on re-creating the settings after using the instructions in this chapter.

To set up	See the
AFP and NFS services	File services administration guide
Network services: DHCP, DNS, or Firewall	Network services administration guide
Web service	Web technologies administration guide

Tools You Can Use

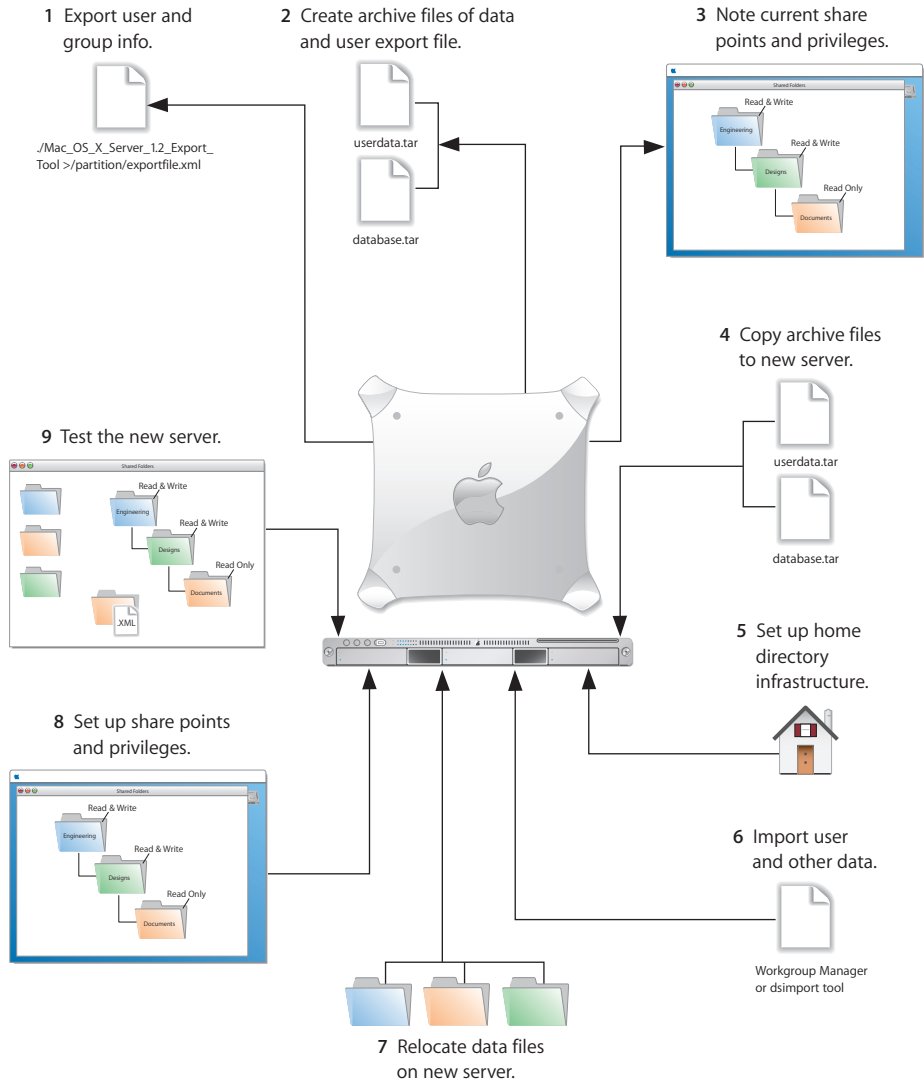
Several utilities are available for use during migration:

- You use a command-line tool called `Mac_OS_X_Server_1.2_Export_Tool` to export version 1.2 users and groups to an XML export file.
- You use Workgroup Manager in version 10.4 to import users and groups from the file.
- Workgroup Manager's import facility and the `dsimport` tool also let you import other kinds of data, such as computers and computer lists.

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

Step-by-Step Instructions

To move data from a Mac OS X Server version 1.2 computer to a computer with Mac OS X Server version 10.4 installed, follow the instructions in this section.



Step 1: Export user and group information

You use a command-line tool called `Mac_OS_X_Server_1.2_Export_Tool` to export user and group information.

The tool is located on the version 10.4 server installation disc in `/Welcome to Mac OS X Server/Migration Tools/`.

When you run the tool, you must save the exported information in a file with the extension `.xml` on a partition or disk other than the server partition.

To export user and group information:

- 1 Insert the installation disc.
- 2 Log in using the root account.
- 3 Open the Terminal application.
- 4 Navigate to the Migration Tools folder by entering:

```
cd "<disc-name>/Welcome to Mac OS X Server/Migration Tools/"
```
- 5 Run the tool and save the results in an XML file on a partition other than the server partition. For example:

```
./Mac_OS_X_Server_1.2_Export_Tool > /MyPartition/MyExportFile.xml
```

You can limit the user and group accounts exported to a specific range. To do this, use the `-u` and `-g` command-line arguments. For example, to export only user accounts that have a user ID in the range of 100 to 199, and to export all groups, use the following command:

```
./Mac_OS_X_Server_1.2_Export_Tool -u 100,199 > exported-ug.xml
```

To export all user accounts, but limit the exported groups to those that have a group ID in the range of 200 to 500, use this command:

```
./Mac_OS_X_Server_1.2_Export_Tool -g 200,500 > exported-ug.xml
```

You can also use `-u` and `-g` options in the same command:

```
./Mac_OS_X_Server_1.2_Export_Tool -u 800,899 -g 100,199 >
exported-ug.xml
```

The ID range must contain two numbers separated by a comma and must not contain any spaces.

Note: The export tool remaps users in primary group 80 to primary group 20 for security reasons. To override this behavior, use the `-x` command-line option.

- 6 Check the location where you saved the export file and make sure it's there.

When you export users, encrypted passwords are exported. If you want to reset passwords, you can do so using Workgroup Manager, as described in step 6 on page 81.

Step 2: Create archive files

Save all the data files that you want to reuse with Mac OS X Server version 10.4. In step 4 you'll move the files described below, as well as the export file created in step 1, to the version 10.4 computer.

For large amounts of data, you may want to create one or more tar archives, using the `tar` command in the Terminal application; tar archives can be transferred to the version 10.4 server using FTP. Note that tar doesn't preserve resource forks on HFS+ volumes, so it's useful only for UFS volumes.

Use the `-c` flag of the `tar` command to indicate you want to create a new archive file in tar format. Use the `-f` flag to identify the archive file name. Use the `-v` (verbose) flag to view useful 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"
```

FTP Configuration Files

To migrate your 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

WebObjects Applications and Frameworks

Save WebObjects applications and frameworks located in:

- /Local/Library/WebObjects/
- /Library/WebObjects/

Save a copy of `webobjects.conf` for reference if you want to modify the new version of `apache.conf` to reproduce your current settings.

User Data

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

QuickTime Streaming Server Files and Folders

Save files and folders in /Library/QuickTimeStreaming/.

For more information about migrating QTSS, see the QuickTime Streaming Server administration guide.

Step 3: Note current share points and privileges

If your version 1.2 server has share points and privileges you want to re-create on the new server, make a note of them. Note which share points are for home directories.

Step 4: Copy archive files to the new server

Transfer the files you saved in steps 1 and 2 to the version 10.4 server.

To transfer tar files using FTP:

- 1 Use Server Admin on the new server to start FTP service.
- 2 Set up sharing for a folder into which you'll place files you transfer from the 1.2 computer.
- 3 On the version 1.2 server, use FTP service to copy the tar files to the version 10.4 computer.
- 4 Double-click a tar file to extract its contents.

Step 5: Set up the home directory infrastructure

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

For detailed instructions on how to perform individual steps in the following procedure, see the user management guide.

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, if you like.
- 2 Open Workgroup Manager on the server where you want the home directories to reside.
- 3 Click Sharing to set up a share point for the home directories.
If the user accounts will reside in a shared Open Directory directory, create a dynamically automounted 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 from which you'll import users, click Accounts then open the directory into which you'll import users.
- 5 Optionally, define a preset that sets up default home directory settings for users.
You can also use the preset to specify other default settings you want imported users to inherit, such as password validation settings, mail settings, and so forth.

Step 6: Import users and groups and other data

You can use Workgroup Manager or the `dsimport` tool to import users and groups and other data:

- See the user management guide for details about importing by using Workgroup Manager.
- See the Open Directory administration guide for information about passwords of users originally created with Mac OS X Server version 10.1.5 or earlier.
- See the command-line administration guide for `dsimport` instructions and a description of Workgroup Manager export format.

To import users and groups using Workgroup Manager:

- 1 Place the export file(s) you created in step 1 in a location accessible from your server.
- 2 If you want imported users to have passwords validated using Open Directory authentication, you can set that up in the preset you defined in step 5 above. Enable the password option that forces users to change their passwords the next time they log in.

You can also change password settings using Workgroup Manager after you've finished importing users.

- 3 In Workgroup Manager, click the Accounts button.
- 4 Click the globe icon in the toolbar to open the directory into which you want to import accounts.
- 5 Click the lock to authenticate as domain administrator.
- 6 Choose Server > Import, select the import file, and specify import options.
If you're using a preset, make sure you identify the preset.
- 7 Click Import.
- 8 If you want groups to use new version 10.4 features such as nesting and stricter membership checking, upgrade groups using Workgroup Manager.

In Workgroup Manager, open the directory containing the groups. Select one or more of the groups and click "Upgrade legacy group." Click Save.

- 9 To create home directories for imported users, you have several options.

Create home directories one at a time by selecting a user account in Workgroup Manager, clicking Home, then clicking Create Home Now.

Create all the home directories by using the `-a` argument of the `createhomedir` command. For details, see the command-line administration guide or the man page for `createhomedir`.

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

Step 7: Relocate saved data files

Place the files you saved from your version 1.2 server on the version 10.4 server.

FTP Configuration Files

Copy saved FTP configuration files to:

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

WebObjects Applications and Frameworks

To migrate WebObjects:

- 1 Copy saved applications and frameworks to:
 - /Library/WebObjects/
 - /System/Library/WebObjects/
- 2 Add the following line to the new httpd.conf file:

```
Include /System/Library/WebObjects/Adaptors/Apache/apache.conf
```
- 3 Earlier versions of WebObjects stored Apache-specific information in the file `webobjects.conf`, located in `/System/Library/WebObjects/Adaptors/Apache/`. If necessary to restore your settings, copy information out of this file into `apache.conf`.
- 4 Since server version 10.4 requires Webobjects 5, you'll need to update the source code of your applications to use Java instead of Objective-C. See the Java Converter documentation on the WebObjects 5 Developer disc for more information.

User Data

Restore saved user data files, including home directories.

Place home directories in locations that match the locations in the imported user records. If necessary, you can 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 the QuickTime Streaming Server administration guide to reuse files and folders saved from `/Library/QuickTimeStreaming/`.

Step 8: Set up share points and privileges

Re-create the share points and privileges as required.

To create a share point and set privileges:

- 1 Open Workgroup Manager and click Sharing.
- 2 Click the All button and select the volume or folder you want to share.
- 3 Click General and select "Share this item and its contents."
- 4 Click Access to set up access privileges.
- 5 Click Save.

New share points are automatically shared using AFP, SMB, and FTP, but not NFS. To export a share point using NFS, use the Protocol pane. See the file services administration guide for more information about setting up share points.

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.

Use this chapter when you need to migrate data from an AppleShare IP (ASIP) 6.3.3 server to a different computer running version 10.4.

This chapter tells you what you can migrate, and then explains how.

Before You Begin

Before using the instructions in this chapter, perform initial setup of the version 10.4 server to which you'll migrate data. See the getting started guide for instructions.

Understanding What You Can Migrate

The information in "Step-by-Step Instructions" on page 87 describes how to reuse the following data with version 10.4:

- Web content
- Mail database
- User data, including home directories
- User and group accounts

If you're using either of the following, make a note of any settings you want to continue to use, then see the document indicated for instructions on re-creating the settings after using the instructions in this chapter.

To set up	See the
AFP service	File services administration guide
Windows services	Windows services administration guide

Tools You Can Use

Several utilities are available for use during migration:

- The AppleShare IP Migration utility can import users and groups into the local server directory.
- If you want to import users into a shared directory, create an XML export file using Web & File Admin in ASIP 6.2 or Mac OS Server Admin in ASIP 6.3. Import the file using Workgroup Manager or the `dsimport` tool in version 10.4.

Workgroup Manager's import facility and the `dsimport` tool also let you import other kinds of data, such as computers and computer lists.

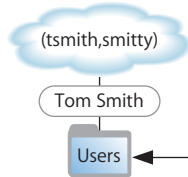
- The AppleShare IP Migration utility can be used to migrate the mail database to Mac OS X Server version 10.2. From the version 10.4 server, you can use Server Admin to import the version 10.2 database.

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

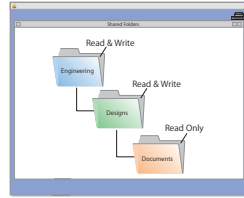
Step-by-Step Instructions

To move data from an ASIP 6.2 or 6.3 computer to a computer with Mac OS X Server version 10.4 installed, follow the instructions in this section.

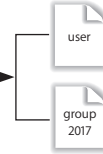
1 Create Internet aliases for users.



2 Note current share point and privileges.



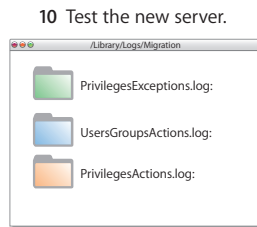
3 Export user and group info.



4 Mount ASIP server on Mac OS X Server.

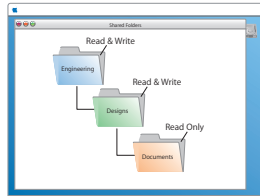


11 Migrate mail.



10 Test the new server.

9 Set up share points and privileges.



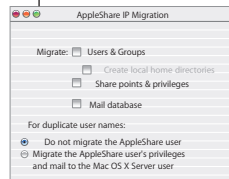
5 Set up home directory infrastructure.



6 Copy Users & Groups.

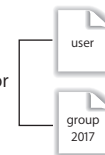


8 Copy data files to the new server.



7 Run the AppleShare IP Migration utility.

OR



Import user and other data.

If you have a primary ASIP server and one or more secondary ASIP servers and you want to migrate all of them to version 10.4, synchronize all secondary servers with the primary server before starting migration. Migrate the primary server, then migrate the secondary servers. When migrating secondary servers, you can't use the AppleShare IP Migration utility.

Step 1: Provide Internet Aliases (if necessary)

The AppleShare IP Migration utility uses the Internet alias in the ASIP user account to create the required short name for the version 10.4 user account. If no Internet alias exists, the migration utility generates one.

If you'll be using the AppleShare IP Migration utility, create an Internet alias for any ASIP user account that doesn't have one. To do this, use Mac OS Server Admin (in ASIP 6.3) or Web & File Admin (in ASIP 6.2).

If you're planning to migrate both primary and secondary ASIP servers, provide the Internet aliases on the primary server, then synchronize the secondary servers with the primary server.

Step 2: Note current share points and privileges

If your version ASIP server has share points and privileges you want to re-create on the new server, make a note of them. Note which share points are for home directories. Remember that a folder can't be owned by a group in Mac OS X Server.

Step 3: Export user and group information (if necessary)

If you won't use the AppleShare IP Migration utility to migrate users and groups, create an XML file of user and group accounts. Create the file using Web & File Admin in ASIP 6.2 or Mac OS Server Admin in ASIP 6.3.

Note: The AppleShare IP Migration utility lets you migrate passwords. When you import an XML file, you need to reset passwords using Workgroup Manager, as described in step 7 on page 90.

To export user information from ASIP 6.3:

- 1 Open Mac OS Server Admin and log in to the server you want to administer. If you have secondary servers, use the primary server to export information.
If you're exporting over 1000 users, increase the memory allocated to Mac OS Server Admin.
- 2 Click Users & Groups and choose Show Users & Groups List.
- 3 Select the users or groups in the list that you want to export. If you select a group, the individual users in the group are exported. Guest attributes can't be exported.
- 4 Click Users & Groups and choose Export Selected Items.
- 5 Save the exported file on the ASIP server.

Step 4: Mount the ASIP server on Mac OS X Server

To mount the ASIP server:

- 1 On the ASIP server, disconnect all users and administrators and shut down the mail server.
- 2 On Mac OS X Server, log in as an administrator and turn off all services using Server Admin.
- 3 Choose Go > Connect to Server.
- 4 Enter the IP address or DNS name of the ASIP server, then click Connect.
- 5 Log in to the ASIP server as an administrator, then mount the startup volume for the ASIP server.

Step 5: Set up the home directory infrastructure

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

For detailed instructions on how to perform individual steps in the following procedure, see the user management guide.

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, if you like.
- 2 Open Workgroup Manager on the server where you want the home directories to reside.
- 3 Click Sharing to set up a share point for the home directories.

If the 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 If you'll import user and group accounts from an XML file using Workgroup Manager, optionally set up a preset. When you import users, you identify the preset, and the users inherit settings associated with the preset.

In Workgroup Manager on the computer from which you'll import users, click Accounts, then open the directory into which you'll import users.

Define the preset. You can specify default home directory settings for users, password validation settings, mail settings, and so forth.

Step 6: Copy the Users & Groups Data File

To copy this file:

- 1 Navigate to the Users & Groups Data File on the remote ASIP server. Its default location is the Preferences folder in the System Folder.
- 2 Make a copy of the Users & Groups Data File.
- 3 From the version 10.4 server, move the copy of the Users & Groups Data File to a local partition on the version 10.4 server.

Step 7: Run the AppleShare IP Migration utility or use Workgroup Manager to import users and groups and other data

You can use Workgroup Manager or the `dsimport` tool to import users and groups and other data into any directory:

- See the user management guide for instructions about importing by using Workgroup Manager.
- See the command-line administration guide for `dsimport` instructions and a description of Workgroup Manager export format.

The AppleShare IP Migration utility imports users only into the local directory.

To use the AppleShare IP Migration utility:

- 1 Open the AppleShare IP Migration utility. It's located in `/Applications/Server/`.
- 2 Click the lock in the lower-left corner to authenticate as an administrator.
- 3 Specify migration options.

Note: You can't migrate share points and privileges.

Select Users & Groups, then select the option that creates local home directories for the users you're migrating. The users are migrated to the local directory on the server where you're running the migration utility.

The migration utility checks to see whether a duplicate user exists in a parent domain on a different computer. To set what happens when a duplicate user name occurs, select an option:

- **Don't migrate the AppleShare user:** The ASIP data is reassigned to the administrator. (Choose this option if you're migrating a primary server.)
- **Migrate the AppleShare user's privileges and mail:** The ASIP data is assigned to the existing user in the parent domain. (Choose this option if you're migrating a secondary server.)

Note: If a duplicate group exists in a parent domain on another computer, the membership of this group isn't updated.

- 4 Click Migrate.
- 5 Locate the file Users & Groups Data File and click Choose. (The default location is the Preferences folder in the System Folder.)

- 6 During migration, the utility displays a progress bar and status information. When migration is complete, click Quit.
- 7 Examine the log files, which are located in /Library/Logs/Migration/:
 - **UserGroupsActions.log:** Steps taken during user and group migration.
 - **UserGroupsExceptions.log:** Steps taken or not taken during user and group migration that may require additional administrative attention. For example, the log records duplicate users detected and the assignment of data to the administrator or to an existing user.
 - **PrivilegesActions.log:** Steps taken during privileges migration.
 - **PrivilegesExceptions.log:** Steps taken or not taken during privileges migration that may require additional administrative attention.
- 8 In Workgroup Manager, change home directory settings from local to network for all migrated users.
- 9 Using Workgroup Manager, examine a sample of users and groups to see if the settings were migrated correctly.

To import users and groups using Workgroup Manager:

- 1 In Workgroup Manager, click the Accounts button.
- 2 Click the globe icon in the toolbar to open the directory into which you want to import accounts.
- 3 Click the lock to authenticate as domain administrator.
- 4 Choose Server > Import, select the export file you created on the ASIP server in step 3 on page 88, and specify import options.

If you're using a preset, make sure you identify the preset. If you want imported users to have passwords validated using Open Directory authentication, you can set it up in the preset. Enable the password option that forces users to change their passwords the next time they log in.

You can also change password settings using Workgroup Manager after you've finished importing users.

- 5 Click Import.

You can also use the `dsimport` tool to import users and groups. See the command-line administration guide for `dsimport` instructions.
- 6 If you want groups to use new version 10.4 features such as nesting and stricter membership checking, upgrade groups using Workgroup Manager.

In Workgroup Manager, open the directory containing the groups. Select one or more of the groups and click "Upgrade legacy group." Click Save.

- 7 To create home directories for imported users, you have several options:

Create home directories one at a time by selecting a user account in Workgroup Manager, clicking Home, then clicking Create Home Now.

Create all the home directories by using the `-a` argument of the `createhomedir` command. For details, see the command-line administration guide or the man page for `createhomedir`.

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

Step 8: Copy data to the new server

Copy data you want to reuse from the remote ASIP server to Mac OS X Server.

Web Content

Copy static webpages to `/Library/WebServer/Documents/`.

For dynamic content, consider recoding your existing CGIs using the native Mac OS X Server web server capabilities. You can also run AFIP CGIs based on AppleScript, and it's no longer necessary to have the Classic environment available to run them; run the ACGI Enabler (in `/Applications/Utilities/`) to set up Apache support for these legacy CGIs.

User Data

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

Step 9: Set up share points and privileges

Re-create the share points and privileges as required.

To create a share point and set privileges:

- 1 Open Workgroup Manager and click Sharing.
- 2 Click the All button and select the volume or folder you want to share.
- 3 Click General and select "Share this item and its contents."
- 4 Click Access to set up access privileges.
- 5 Click Save.

New share points are automatically shared using AFP and SMB, but not NFS. To export a share point using NFS, use the Protocol pane. See the file services administration guide for more information about setting up share points.

Step 10: 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.

Step 11: Migrate mail

If you want to migrate mail, use one of these techniques:

- Have users copy mail they want to save from the ASIP server to Mac OS X Server.
- Migrate the mail database to Mac OS X version 10.2, then migrate it to the version 10.4 server.

To have users copy mail:

- 1 Follow the instructions in the mail administration guide for setting up version 10.4 mail service that supports the IMAP protocol.
- 2 Create user mail accounts.
- 3 Have ASIP mail users configure their mail clients to use Mac OS X Server's mail service.
- 4 With the ASIP mail server running, have the mail users copy the mail they want to keep from the ASIP server to Mac OS X Server using the IMAP protocol.

To migrate the ASIP mail database:

- 1 Install Mac OS X Server version 10.2 on a computer that meets the system requirements in *Getting Started With Mac OS X Server* for version 10.2. Follow the instructions in the getting started guide to install server software and perform initial server setup.
- 2 On the ASIP server, disconnect all users and administrators and shut down the mail server.
- 3 On the version 10.2 server, log in as an administrator and turn off all services using Server Settings.
- 4 Connect to the ASIP server from the version 10.2 server, logging in as an administrator.
- 5 Mount the startup volume for the ASIP server.
- 6 Navigate to the AppleShare IP Mail 6.0 Data file and copy it to a local partition on the version 10.2 server.
- 7 Open the AppleShare IP Migration utility on the version 10.2 server. It's located in `/Applications/Utilities/`. Then click the lock in the lower-left corner to authenticate as an administrator.
- 8 Select the option that migrates the mail database, then click Migrate.
- 9 Locate the file Users & Groups Data File and click Choose. (The default location is the Preferences folder in the System Folder.)
- 10 Locate the file AppleShare IP Mail 6.0 Data and click Choose.

- 11 During migration, the utility displays a progress bar and status information. When migration is complete, click Quit.
- 12 Examine the log files for mail migration, which are located in /Library/Logs/Migration/:
 - **MailActions.log:** Steps taken during mail migration.
 - **MailExceptions.log:** Steps taken or not taken during mail migration that may require additional administrative attention.
- 13 Move the mail database from the version 10.2 server to the version 10.4 server. It's default location is /Library/AppleMailServer/. Perform remaining steps on the version 10.4 server.
- 14 Open Server Admin, then click Mail. If it isn't grayed out, click Stop Service.
- 15 Click Maintenance, then click Migration.
- 16 If you placed the database in the default location (/Library/AppleMailServer/), its name and contents are displayed. Otherwise, click Select to browse for and identify the database.
- 17 Make sure there is free space on the destination disk equal to the size of the mail database.
- 18 You can migrate a single user or all users.

To migrate mail for only one user, select the user and click Migrate User. To migrate the entire database, click Migrate All.

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