Lion Server
Upgrading and Migrating

For Mac OS X v10.7 Lion Server

Contents

About this guide

This guide provides instructions for moving to Lion Server from a previous version of the server or for migrating data to a Mac with Lion Server.

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

- Perform an upgrade installation. This approach leaves all data and settings in place and lets you reuse your existing server hardware for Lion Server. You can perform an upgrade installation of v10.6.6 or later servers.
- Manually migrate data and settings. This approach transfers data and settings to a different computer—one running Lion Server. You can migrate data and settings from v10.5.8 and v10.6 or later servers.

What's new in Lion Server

Lion Server has major changes in several key areas:

- **Lateral Migrations:** The migration of Lion Server to Lion Server is supported.
- **Server app** Services are administrated by the new Server app.
- **PostgreSQL:** MySQL is replaced with PostgreSQL.
- **Tomcat:** Support for Tomcat is removed from Lion Server.
- **Axis:** Support for Axis is removed from Lion Server.
- **Mobile Access:** Support for Mobile Access is removed from Lion Server.
- **Print service:** Print service is replaced with CUPS.
- **QuickTime Streaming Server (QTSS):** Support for QTSS is removed from Lion Server.

What's in this guide

This guide includes the following sections:

- Chapter 1, "Before you begin," summarizes upgrade and migration options and requirements. Read this chapter to understand your options, and then see the chapter relevant to your upgrade or migration scenario.
- Chapter 2, "Upgrading Mac OS X Server v10.6," describes how to upgrade a v10.6.6 or later server to Lion Server.
- Chapter 3, "Migrating from Mac OS X Server v10.5.8 or later," describes how to migrate data from a v10.5.8 or later server to a different computer running Lion Server.

Using onscreen help

You can get task instructions onscreen in Help Center while you're managing Lion Server. You can view help on a server, or on an administrator computer. (An administrator computer is a Mac with Lion and the Server app installed.)

To get the most recent onscreen help for Lion Server:

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

To see the most recent server help topics:

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

Viewing PDF guides onscreen

While reading the PDF version of a guide onscreen:

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

Printing PDF guides

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

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

You may want to enlarge the printed pages even if you don't print double sided, because the PDF page size is smaller than standard printer paper. In the Print dialog or Page Setup dialog, try changing Scale to 115%.

Getting documentation updates

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

To get the latest information about Lion Server, go to the Lion Server website at www.apple.com/macosx/server.

Getting additional information

For more information, consult these resources:

- *Lion Server website* (www.apple.com/macosx/server/)—enter the gateway to extensive product and technology information.
- *Lion Server Support website* (www.apple.com/support/lionserver/)—access hundreds of articles from Apple's support organization.
- *Apple Discussions website* (discussions.apple.com/)—share questions, knowledge, and advice with other administrators.
- *Apple Mailing Lists website* (www.lists.apple.com/)—subscribe to mailing lists so you can communicate with other administrators using email.
- *Apple Training and Certification website* (www.apple.com/training/)—hone your server administration skills with instructor-led or self-paced training, and differentiate yourself with certification.

Before you begin

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

If you're using Mac OS X Server v10.6.6 or later, 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 Lion Server on your existing server computer while preserving data and service settings.

Servers you can upgrade or migrate from

You can reuse server data and settings with Lion Server by:

• Upgrading Mac OS X Server v10.6.6 or later

• Migrating from versions 10.5.8 or 10.6 or later

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

If you have a computer with Lion installed on it, you can make it into a server by downloading the Server app from the App Store.

The upgrade or migration to Lion Server from a v10.5 PowerPC is not supported.

Upgrading to v10.7

You can upgrade Mac OS X Server v10.6.6 or later if:

• You don't need to reformat the current computer's hard disk.

• Your server hardware has:

  • A 64–bit Intel processor

  • At least 2 gigabyte (GB) of random access memory (RAM)

  • At least 10 gigabytes (GB) of available disk space

When you upgrade, you perform an upgrade installation from the Mac OS X Lion Server install image on your server computer. Data and settings are preserved for you, and manual adjustments are minimal.

Migrating from a v10.5.8 server or later to Lion Server

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

Migrations from Mac OS X Server v10.5.8 or later are supported. You can also migrate from a server running Lion Server to another server running Lion Server. When you migrate, you install and perform initial setup of Lion Server on a computer, restore files to the Lion Server computer from the v10.5.8 or current v10.6 computer, and make manual adjustments as required.

You'll need to migrate, not upgrade, to Lion Server if:

- Your v10.5.8 or later server's hard disk needs reformatting.
- Your v10.5.8 or later server doesn't have:
  - A 64–bit Intel processor
  - At least 2 GB of RAM
  - At least 10 GB of available disk space
- You want to move data and settings you've been using on a v10.5.8 or later server to different server hardware.

Migrating users and groups

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

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

Saving and reusing user and group accounts

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

Each migration chapter provides instructions for using these tools.

System accounts

When you install Lion Server, several user and group accounts are created in the local directory. These accounts are sometimes called *system accounts* because they're used by server system software.

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

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

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

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

Here are the predefined user accounts:

Name	Short name	UID
Unprivileged User	nobody	-2
System Administrator	root	0
System Services	daemon	1
Unix to Unix Copy Protocol	uucp	4
Network Services	netword	24
Install Assistant	installassistant	25
Printing Services	lp	26
Postfix Mail Server	postfix	27
Service Configuration Service	scsd	31
Certificate Enrollment Service	ces	32
MCX AppLaunch	mcxalr	54
Podcast Producer Agent	pcastagent	55
Podcast Producer Server	pcastserver	56
VPN MPPE Key	vpn_*nnnnnnnnnnnn*	57
Serial Number Daemon	serialnumberd	58
Developer Documentation	devdocs	59
Seatbelt	sandbox	60
mDNSResponder	mdnsresponder	65

Name	Short name	UID
Apple Remote Desktop	ard	67
World Wide Web Server	www	70
Apple Events User	eppc	71
CVS Server	cvs	72
SVN Server	svn	73
MySQL Server	mysql	74
sshd Privilege separation	sshd	75
QuickTime Streaming Server	qtss	76
Cyrus Administrator	cyrus	77
Mailman List Server	mailman	78
Application Server	appserver	79
Clamav User	clamav	82
Amavisd User	amavisd	83
Jabber XMPP Server	jabber	84
Xgrid Controller	xgridcontroller	85
Xgrid Agent	xgridagent	86
Application Owner	appowner	87
WindowServer	windowserver	88
Spotlight	spotlight	89
Token Daemon	tokend	91
SecurityAgent	securityagent	92
Calendar	calendar	93
TeamServer	teamserver	94
Update Sharing	update_sharing	95
Installer	installer	96
ATS Server	atsserver	97
FTP Daemon	ftp	98
Unknown User	unknown	99
Software Update Service	softwareupdate	200

Name	Short name	UID
Core Audio Daemon	coreaudiod	202
Screensaver	screensaver	203
Location Daemon	locationd	205
Trust Evaluation Agent	trustevaluationagent	208
AutoTimeZoneDaemon	timezone	210
Local Delivery Agent	lda	211
CVMS Root	cvmsroot	212
iPhone OS Device Helper	usbmuxd	213
Dovecot Administrator	dovecot	214
DP Audio	dpaudio	215
PostgreSQL Server	postgres	216
Kerberos Ticket Granting Ticket	krbtgt	217
Kerberos Admin Service	kadmin_admin	218
Kerberos Change Password Service	kadmin_changepw	219
Device Management Server	devicemgr	220
Web Auth Server	webauthserver	221
NetBIOS	netbios	222
Warm Daemon	warmd	224
Podcast Library Server	pcastlibrary	225
Dovecot Authentication	dovenull	227
Network Statistics Daemon	netstatistics	228
Ethernet AVB Device Daemon	avbdeviced	229
Open Directory Kerberos Ticket Granting Ticket	krb_krbtgt	230
Open Directory Kerberos Admin Service	krb_kadmin	231
Open Directory Kerberos Change Password Service	krb_changepw	232
Open Directory Kerberos	krb_kerberos	233
Open Directory Kerberos Anonymous	krb_anonymous	234

Here are the predefined groups:

Short name	Group ID
nobody	-2
nogroup	-1
wheel	0
daemon	1
kmem	2
sys	3
tty	4
operator	5
mail	6
bin	7
procview	8
procmod	9
owner	10
everyone	12
group	16
staff	20
networkd	24
installassistant	25
lp	26
postfix	27
postdrop	28
certusers	29
keytabusers	30
scsd	31
ces	32
appstore	33
utmp	45
authedusers	50
interactusers	51
netusers	52
consoleusers	53

Short name	Group ID
mcxalr	54
pcastagent	55
pcastserver	56
serialnumberd	58
devdocs	59
sandbox	60
localaccounts	61
netaccounts	62
mdnsresponder	65
uucp	66
ard	67
dialer	68
network	69
www	70
cvs	72
svn	73
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
spotlight	89

Short name	Group ID
accessibility	90
tokend	91
securityagent	92
calendar	93
teamserver	94
update_sharing	95
installer	96
atsserver	97
lpadmin	98
unknown	99
lpoperator	100
softwareupdate	200
guest	201
coreaudiod	202
screensaver	203
developer	204
locationd	205
detachedsig	207
trustevaluationagent	208
adchpass	209
timezone	210
lda	211
cvms	212
usbmuxd	213
postgres	216
devicemgr	220
webauthserver	221
netbios	222
pcastfeedadmins	223
warmd	224
pcastlibrary	225

Short name	Group ID
podcastlibraryfeedadmins	226
dovenull	227
netstatistics	228

Upgrading Mac OS X Server v10.6   2

Use the instructions in this chapter to upgrade a v10.6.6 or later server to Lion Server.

You can upgrade computers with Mac OS X Server v10.6.6 or later that don't require hard disk reformatting and that have:

- A 64–bit Intel processor
- At least 2 GB of RAM
- At least 10 GB of available disk space

Understanding what can be reused

When you upgrade from Mac OS X Server v10.6 or later, virtually all existing data and settings remain available for use, but note the following:

- NetBoot images created using Mac OS X Server v10.5 or later can be reused. NetBoot images created using earlier versions cannot be used.
- When upgrading to Lion Server, the launch daemons (/System/Library/LaunchDaemons) are replaced by the Lion Server version of these daemons.
- Open Directory on Lion Server cannot be configured as a primary domain controller (PDC) or a backup domain controller (BDC) using the SMB service.
- Lion Server does not support Print service, MySQL, Mobile Access, Tomcat, Axis, or QuickTime Streaming Server (QTSS).
- Wiki-based mailing list and archives are not available in Lion Server.
- If you are using Mail service with Mac OS X Server v10.6 and are performing the upgrade to Lion Server, make sure your mail data partitions and the mail database are accessible during the upgrade process. This automates the mail migration process and requires you to have no interaction.

- Lion Server uses the Server app to administer many services featured on Lion Server.
- Other administration tools aren't installed by default, including Server Admin, Workgroup Manager, System Image Utility, Podcast Composer, and Xgrid Admin. You can install these tools by downloading the Server Admin Tools for Mac OS X Lion Server from the AppleCare Support Downloads website at www.apple.com/support/downloads/.

Upgrading an Open Directory master and its replicas

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

To upgrade the master and its replicas:

1 Create an archive of your Open Directory master and save it to a separate volume.

For more information about creating an Open Directory archive, see "LDAP server" on page 33.

2 Upgrade the master to Lion Server using the instructions in "Step-by-step instructions" on page 19.

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

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

When the master upgrade is complete, change the DHCP service to use the address of the master.

3 Upgrade each replica server to Lion Server.

4 Using Server Admin, connect to each replica server and reconnect the replicas with the master.

For information about changing password types in the master, see "Directory services" on page 23.

Step-by-step instructions

To upgrade a v10.6.6 or later server to Lion Server, follow the instructions in this section.

1 Update your server to v10.6.6.

2 Perform an upgrade to v10.7.
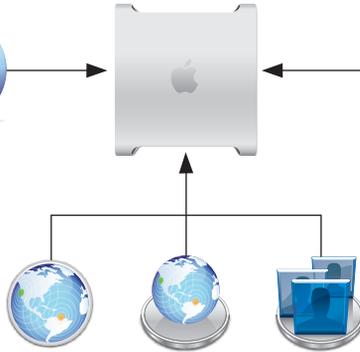
3 Make adjustments as needed after initial server setup.

Step 1: Update your server to v10.6.6 or later

If necessary, use Software Update to update your server to v10.6.6 or later.

Step 2: Save service settings

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

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

Step 3: Record Print service settings

Print service is no longer supported in Server Admin. You must use System Preferences > Print & Scan to add printers or control print jobs. You can also use CUPS to add and manage printers and control print jobs. Record your current printer configuration settings so you can reconfigure your shared printers using Print & Scan preferences or CUPS.

Step 4: Perform an upgrade to Lion Server

You can use the Install Mac OS X Lion assistant to perform the upgrade locally on your server computer if it has a display and keyboard.

After the upgrade is complete, the computer restarts and the server setup assistant leads you through initial server setup.

To upgrade to Lion Server and perform initial server setup locally:

1　Make sure that the DHCP or DNS servers your server depends on are running.

2　On the server you are going to upgrade, open the App Store, find Mac OS X Lion, and install it.

3　When the Installer opens, follow the onscreen instructions to proceed through each pane.

4　When the Installer asks where to install, select the disk or partition that Mac OS X Server v10.6.6 or later is installed on.

5　Click Install.

　　During installation, progress information appears.

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

6　Move through the assistant's panes, following the onscreen instructions.

　　Note:　Mail service is disabled after upgrading or migrating your server, to give you the opportunity to inspect mailboxes and manually migrate mailboxes that may have been on previously unmounted volumes. For more information about mail services, see "Mail database" on page 32.

To perform initial server setup remotely:

1　Make sure that the DHCP or DNS servers your server depends on are running.

　　Make sure the server has an active connection to the same network as the administrator computer you're using and that your administrator computer has the Server app installed.

2　If the server is off, turn it on.

　　When the server starts up, the server setup assistant opens and waits for the setup to begin.

3　On an administrator computer, open Server app, choose Manage > Connect to Server, select the new server in the "Choose a Mac" dialog, and click Continue.

　　The new server may be listed with a name generated from the computer model and the Ethernet hardware address (the MAC address), or with a name from your DNS server.

　　If the server you want to set up is listed in the Server app sidebar, you can begin setup by selecting it and clicking Set Up This Mac.

4　Enter the server's complete hardware serial number.

　　You can find the serial number on the case of the product, on the original product packaging, and on the original product receipt or invoice. For more information about finding the serial number, see the Apple Support article at support.apple.com/kb/HT1349.

5　Click Continue and proceed through the server setup assistant panes.

Note: Mail service is disabled after upgrading or migrating your server, to give you the opportunity to inspect mailboxes and manually migrate mailboxes that may have been on previously unmounted volumes. For more information about mail services, see "Mail database" on page 32.

Step 5: Make adjustments as needed after initial server setup

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

For an explanation of new and changed features, see the Lion Server: Advanced Administration for individual services. Following are a few suggestions of interest.

Print server settings

Print service is no longer supported in Server Admin. You must use System Preferences > Print & Scan to add printers or control print jobs. For more advanced print service settings you can use the web interface of CUPS at http://localhost:631/admin to manage printer sharing. You can find documentation for CUPS at http://localhost:631/help.

For printers connected to the server through USB, the queues are created by CUPS when the printers are plugged in and turned on. However, for network printers, add the printers using System Preferences > Print & Scan (for all printer types) or the CUPS web interface.

When you set up printer sharing in the Print & Scan pane of System Preferences or in CUPS, you cannot configure specific protocols on which the printer is to be shared. The printer is shared over all protocols.

In CUPS the description is equivalent to the printer sharing name and is set using the web interface at http://localhost:631/admin. See instructions below.

CUPS classes is the equivalent to printer pools. For instructions on setting up classes, see CUPS help at http://localhost:631/help

Configuring quotas requires the use of command-line tools. For more information, see the `lpadmin` man page. Also, documentation for quotas is located at http://localhost:631/help/. Click Getting Started, then click Printer Accounting Basics.

The Print service quota system was unique and there is no direct equivalent in CUPS, so the settings cannot be duplicated. Print service quotas were based on Open Directory user records and could be set across multiple servers, where CUPS quotas must be configured on each server individually.

The CUPS banner page (starting page only) is the equivalent to the Print service cover sheet. CUPS allows setting starting and ending banner sheets to bracket the job. See instructions below.

To set the description (printer sharing name):

1 Open the CUPS admin web interface http://localhost:631/admin.

2 Click Manage Printers, then click on the printer queue name.

3 From the Administration popup menu, select Modify printer.

This presents a page for modifying common settings.

4 Click Continue.

5 Change the description and location strings associated with the printer.

The description string is used by CUPS to advertise the print queue through Bonjour for IPP connections. CUPS does not provide Bonjour services for LPR queues, and these must be manually configured for clients.

To set a banner page (cover sheet):

1 Open the CUPS admin web interface http://localhost:631/admin.

2 Click Manage Printers, then click on the printer queue name.

3 From the Administration popup menu, select Set Default Options.

4 Click Banners and choose starting and ending banner pages in the popup menus.

Secure sockets layer (SSL) certificates

When you upgrade to Lion Server from v10.6.6 or later, the self-signed certificates in v10.6 are migrated unmodified. If your services used v10.6 self-signed certificates, the services' SSL settings are migrated and configured to use default certificates on Lion Server.

Some services might reject the default certificate because the name in the certificate does not match the host name of the server. If a service rejects the certificate, use the Open Directory generated hostname certificates or generate new self-signed certificates using Server app, and then distribute them to your client computers.

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

The SSL keys and certificates must be in Privacy Enhanced Mail (PEM) format. If your certificates and keys aren't in PEM format, you must convert them.

To import an SSL certificate:

1 In the Server app, select your server's name under Hardware in the Server app sidebar.

2 In the Settings pane, click the Edit button at the right of SSL Certificate.

3 From the Action pop-up menu, choose Manage Certificates.

4   Click + and then choose Import a Certificate Identity from the menu.

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

5   Drag the files containing the certificate and private key to the middle of the dialog.

6   Click the Import button and, if prompted, enter the private key passphrase.

7   Activate the certificates per service.

For more information about importing, creating, and activating self-signed certificates, see Lion Server: Advanced Administration or Server Help.

Directory services

If user accounts have crypt passwords, use Workgroup Manager to upgrade them to Open Directory passwords.

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

LDAP schemas

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

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

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

NetBoot images

You can reuse NetBoot images created using Mac OS X Server v10.5 and v10.6 following the upgrade.

To manage NetBoot images, you use System Image Utility.

The Open Directory upgrade log

Information about the upgrade tasks that were performed during the Open Directory LDAP server upgrade are viewable in the /Library/Logs/slapconfig.log file.

Migrating from Mac OS X Server v10.5.8 or later

3

Use the instructions in this chapter to migrate data from a v10.5.8 or later server to a different computer running Lion Server.

You can migrate data from Mac OS X Server v10.5.8 or later computers that can't or won't be upgraded to Lion Server. Such computers may:

- Require hard disk reformatting or replacement with a newer computer.
- Use server hardware that doesn't have:
  - A 64–bit Intel processor
  - At least 2 GB of RAM
  - At least 10 GB of available disk space

Before you begin

Lion Server uses the Server app to administer many of the services featured in Lion Server.

Other administration tools aren't installed by default, including Server Admin, Workgroup Manager, System Image Utility, Podcast Composer, and Xgrid Admin. You can install these tools by downloading the Server Admin Tools for Mac OS X Lion Server from the AppleCare Support Downloads website at www.apple.com/support/downloads/.

If necessary, upgrade the server whose data you'll migrate so it's running Mac OS X Server v10.5.8 or later.

When the server is an Open Directory master or replica, set up the master with Lion Server and then set up the replica with Lion Server.

To reestablish the master and its replicas:

1 Set up the v10.7 master.

   While you're setting up the master, client computers can't connect to the v10.5.8 or later master for Open Directory services.

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

   When the v10.7 master is ready, you can change the DHCP service to use the address of the master.

2 Change the v10.5.8 or later replica's role to standalone, then set up the v10.7 server to be a replica of the v10.7 master.

   For instructions about changing a server's Open Directory role to standalone and replica, see Lion Server: Advanced Administration.

   For information about changing password types in the master, see "Directory services" on page 23.

Using Server Assistant to automate migration

Lion Server supports the migration of data and settings from a volume. Lion Server also supports lateral migrations from v10.7 to v10.7. Lateral migrations can be used to replace or upgrade hardware in your server. You can migrate all data, supported services, and settings from a volume to Lion Server.

When you migrate using a volume, the process is automated and doesn't require you to interact. You can migrate from a volume that has an installation of Mac OS X Server v10.5.8 or later.

You can also use a Time Machine backup of Lion Server, Mac OS X Server v10.6, or a standard or workgroup configuration of Mac OS X Server v10.5.8 or later. The installation or Time Machine backup on the volume must be a version of Mac OS X Server v10.5.8 or later configured with a static IP address. The volume can be on an existing server or connected using target disk mode.

To migrate to Lion Server using Server Assistant:

1 Make sure the volume you migrate from is connected through target disk mode or is installed locally on your server.

2 Make sure that the DHCP or DNS servers your server depends on are running.

3 If this is a new server with Lion Server already installed, proceed to Server Assistant instructions in step 8.

4 On the server you are going to install Lion Server on, open the App Store, find Mac OS X Lion, and install it.

5   When the Installer opens, follow the onscreen instructions to proceed through each pane.

6   When the Installer asks where to install, select the disk or partition to install Lion Server on.

Do not select the volume that has the v10.5.8 or v10.6 data you are migrating from.

7   Click Install.

During installation, progress information appears.

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

8   Move through the assistant's panes, following the onscreen instructions.

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

10 In the Transfer Your Mac Server pane, select the v10.5.8 or v10.6 or later volume you want to migrate data from and click Transfer.

In this first phase of the migration, all data on the source volume is transferred to the volume with Lion Server. The time required for this phase of the migration depends on the amount of data on the source volume and the speed of the interconnect between the source volume and the server. For example, FireWire 400 takes longer than a SATA drive.

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

When the information is transferred, a message in the Transferring Information pane appears, describing a successful transfer.

11 Click Continue.

In this second phase of the migration, all configuration information on your v10.5.8 or v10.6 disk is migrated to the volume with Lion Server.

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

Important: The server assistant migration tool does not support the migration of mail message data from unmounted or Xsan volumes. If you used Mail service on your previous version of Mac OS X Server and it stored mail message data on an unmounted or Xsan volume, you must migrate the service manually. For more information about manually migrating mail service, see "Step-by-step instructions for manual migration" on page 29 and "Step 7: Relocate the following saved data files" on page 40.

12 When the setup is complete, click Restart.

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

Understanding what you can migrate

When you migrate from Mac OS X Server v10.5.8 or later to Lion Server, the following services are not supported.

- Lion Server does not support Print service, MySQL, Mobile Access, Tomcat, Axis, or QuickTime Streaming Server (QTSS).

- PHP: Hypertext Preprocessor (PHP) 4 reached its end of life on December 31, 2007 as announced at www.php.net. Also, Apache 1.3 is not supported in Lion Server. If you migrate to Lion Server, Apache 1.3 and PHP 4.4.*x* won't be migrated. Switch to PHP 5.*x* and Apache 2.2 to before migrating to Lion Server. You can use the Mac OS X Server v10.6 apache1_config_helper tool to migrate Apache 1.3 to Apache v2.2 in many, but not all, cases. For more information, see the apache1_config_helper(8) man page in Mac OS X Server v10.6.

Using the automated migration in Server Assistant is the preferred method for migrating. However, if you require finer control, the information in "Step-by-step instructions for manual migration" on page 29 describes how to reuse the following v10.5.8 or later data with v10.7:

- Web configuration data
- Web content
- Wiki data
- Mail database
- LDAP server settings
- NetBoot images
- AFP settings
- SMB settings
- IP firewall configuration
- DNS settings
- DHCP settings
- NAT settings
- VPN settings
- User data, including home directories

- User and group accounts
- iChat server settings
- Shared contacts
- RADIUS settings
- Xgrid settings

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

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

Tools you can use

Several tools are available:

- You can use Workgroup Manager to export v10.5.8 or later user and group accounts to a delimited file and then import them into Lion Server. You can also import users and groups using the command-line `dsimport` tool.
- Workgroup Manager's import facility and the `dsimport` tool also let you import other kinds of data, such as computers and computer lists.
- Use the `58_webconfigmigrator.rb` tool located in /System/Library/ServerSetup/ MigrationExtras/ to migrate Web server settings.
- Use the `58_jabbermigrator.pl` tool located in /System/Library/ServerSetup/ MigrationExtras/ to migrate iChat server settings.
- Use the `65_mail_migrator.pl` tool located in /System/Library/ServerSetup/ MigrationExtras/ to migrate Mail server settings.
- Use the `migrate_mail_data.pl` tool located in /usr/libexec/dovecot/ to migrate mail data.

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

Step-by-step instructions for manual migration

To move data from a Mac OS X Server v10.5.8 or later computer to a computer with Lion Server installed, follow the instructions in this section.

1 Export user and group information.

2 Create archive files of data and user export files.

3 Note current share points and privileges.

4 Copy archive files to new server.

5 Set up home directory infrastructure.

6 Import user and other data.

7 Relocate data files on new server.

8 Set up share points and privileges.

9 Test the new server.
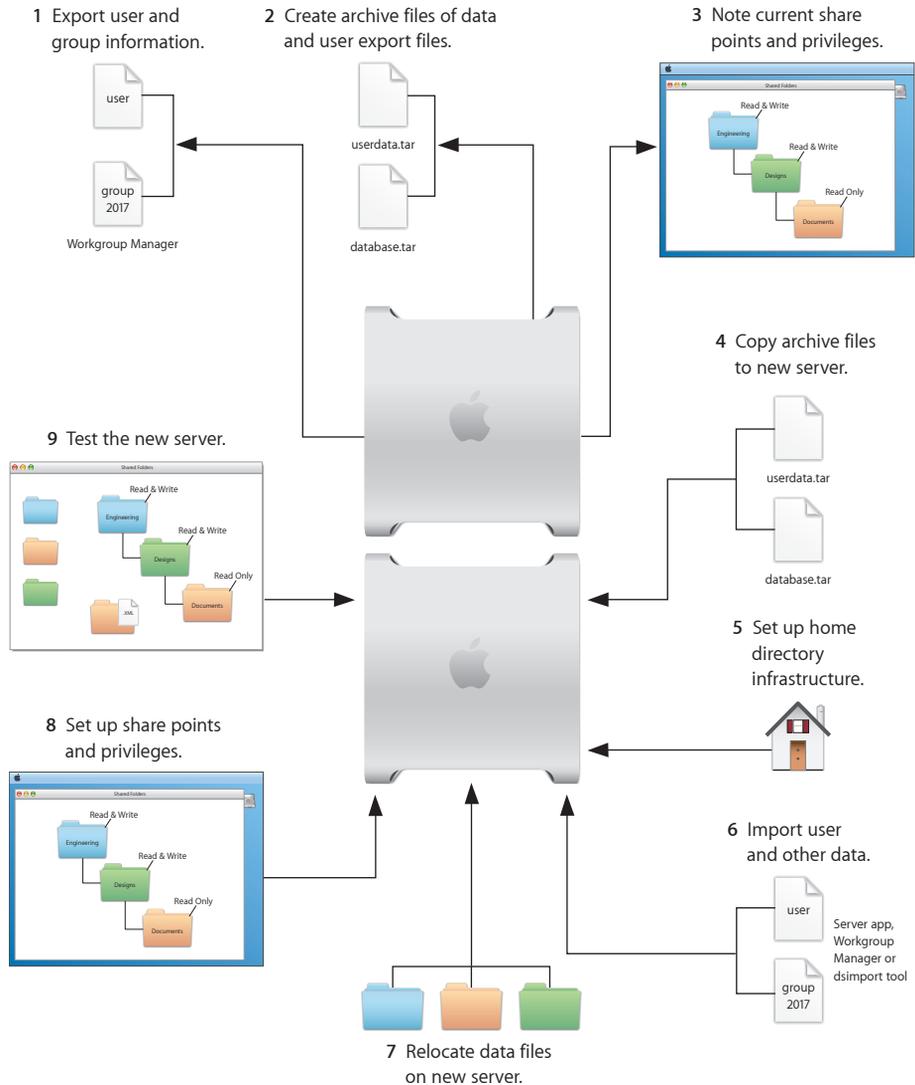
Step 1: Export users and groups

You can use Workgroup Manager or Server Admin to export users and groups from your LDAPv3 directory. By using Server Admin you can archive and restore LDAP data, including passwords and Kerberos principals. For more information about archiving LDAP data, see "LDAP server" on page 33.

If you prefer to export only user and group information, you can use Workgroup Manager to export user and group accounts from an LDAPv3 directory into a character-delimited file that you can import into a directory for use with Lion Server. You can also use `dsexport` to export users and groups.

For information about `dsexport`, see its man page or Mac OS X Server v10.6 *User Management.* It's available on the Apple Manuals website at support.apple.com/manuals/.

To export users and groups using Workgroup Manager:

1 In Workgroup Manager, click Accounts, then click the globe icon below the toolbar and choose the directory to export accounts from.

2 Click the lock to authenticate as domain administrator (typically diradmin).

3 Click the Users button to export users or click the Groups button to export groups.

4 Export user or group accounts as follows:

  • To export all accounts, select all of them.

  • To export one account, select it.

  • To export multiple accounts, select them while holding down the Command or Shift key.

5 Choose Server > Export.

6 Specify a name to assign to the export file and the location where you want it created.

7 Click Export.

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

Step 2: Create archives of the following files

Save data files you want to reuse with Lion Server. In "Step 4: Copy archive files to the new server" on page 37 you'll move the files described below, as well as the export file created in "Step 1: Export users and groups" on page 29, to Lion Server.

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

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

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

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

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

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

Web configuration data

Save the following files and directories:

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

Web content

Copy web content to reuse from:

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

MySQL data

Lion Server replaces MySQL with PostgreSQL. If you are using MySQL in v10.5.8 or later, MySQL is preserved during the upgrade or automated migration to Lion Server and continues to function. However, you will be running an old version of MySQL (v5.0.67) that is no longer supported by the MySQL community. Also you will not have Server Admin interface support or `serveradmin` command-line interface support.

PostgreSQL provides documentation and tools for migrating MySQL to PostgreSQL. See wiki.postgresql.org/wiki/Converting_from_other_Databases_to_PostgreSQL.

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

To back up individual tables, enter:

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

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

To back up databases, enter:

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

To back up all databases on the system, enter:

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

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

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

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

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

Mail database

To reuse the Mail server database and store, stop Mail server if it's running and save the mail files. After Mail server stops running, copy all Mail server directories.

By default:

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

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

Also, save a copy of the file /usr/bin/cyrus/bin/ctl_mboxlist so you can move it to Lion Server in "Step 4: Copy archive files to the new server" on page 37. You need this file to migrate the mail database successfully in "Step 7: Relocate the following saved data files" on page 40.

FTP configuration files

The FTP service `xftpd` was removed from Server Admin in Lion Server and is replaced with the improved `ftpd` service that is configured and managed using the command-line. For more information, see its man pages.

Save these configuration files for reference when configuring the `ftpd` service:

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

LDAP server

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

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

1 Open Server Admin and connect to the server.

2 Click the triangle at the left of the server.

   The list of services appears.

3 From the expanded Servers list, select Open Directory.

4 Click Archive.

5 Enter a path for your archive in the Archive field or click Choose and browse for a location to store your archive.

6 Click the Archive button.

7 Enter a name and password to use in encrypting the archive, then click OK.

   This create a entire archive of your LDAPv3 data.

AFP

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

SMB

Save /Library/Preferences/com.apple.smb.server.plist.

NetBoot images

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

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

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

WebObjects and Frameworks

Lion Server does not support WebObjects. You can still save your v10.5.8 WebObjects applications and frameworks located in:

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

Tomcat data

Lion Server does not support Tomcat or Axis. Save Tomcat servlets you want to use on another server. They're in /Library/Tomcat/webapps/.

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

IP firewall

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

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

Save the contents of /etc/ipfilter.

NAT

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

Print

Lion Server does not support Print service. You must reconfigure print service settings using the CUPS web admin interface http://localhost:631/admin or the Print & Scan pane of System Preferences.

Also, record the name and IDs of the CUPS queues to help with reconfiguring CUPS on Lion Server.

VPN

Copy and save the following files:

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

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

DNS

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

DHCP

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

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

Save this file.

User data

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

QuickTime Streaming Server files and folders

Lion Server does not support QuickTime Streaming Server. Save files and folders in /Library/QuickTimeStreaming/.

QTSS Publisher files and folders

Lion Server does not support QuickTime Streaming Server. Save the following:

• Files and folders in /Library/Application Support/Apple/QTSS Publisher/

• Files and folders in each QTSS Publisher user's path:

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

Secure sockets layer (SSL) certificates

When you migrate to Lion Server from v10.5.8 or later, the self-signed certificate in v10.5.8 or later referred to as the default certificate is migrated unmodified. If your services used the v10.5.8 or later default certificate, the services' SSL settings are migrated and configured to use the default certificates on Lion Server.

Some services might reject the default certificate because the name in the certificate does not match the host name of the server. If a service rejects the certificate, use the Open Directory generated hostname certificates or generate new self-signed certificates using the Server app and distribute it to your client computers.

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

The SSL keys and certificates must be in Privacy Enhanced Mail (PEM) format. If your certificates and keys aren't in PEM format, you must convert them.

To import an SSL certificate:

1   In the Server app, select your server's name under Hardware in the Server app sidebar.

2   In the Settings pane, click the Edit button at the right of SSL Certificate.

3   From the Action pop-up menu, choose Manage Certificates.

4   Click + and then choose Import a Certificate Identity from the menu.

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

5   Drag the files containing the certificate and private key to the middle of the dialog.

6   Click the Import button and, if prompted, enter the private key passphrase.

7   Activate the certificates per service.

    For more information about importing, creating, and activating self-signed certificates, see Lion Server: Advanced Administration.

iChat Server

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

For example:

```
cp -Rv /var/jabberd /Volumes/10.5.8_or_later_backup_drive/ichat
```

Save the following files and folders:

*   /var/jabberd

*   /etc/jabberd

*   /var/spool/conference.*<jabberdomain>*

    If multiple domains are hosted, multiple directories exist in the /var/spool/ directory. To obtain all directories, use /var/spool/conference.*

*   /System/Library/LaunchDaemons/org.jabber.jabberd.plist

Wiki data

Copy the wiki data located in /Library/Collaboration/ by default or in the location specified in Server Admin on the v10.5.8 or later server to a local volume Lion Server can access.

Step 3: Note current share points and privileges

If your v10.5.8 or later server has share points and privileges you want to recreate on Lion Server, make a note of them. Record which share points are for home directories.

You can use the following commands to view share points:

*   To view share points and settings, use `/usr/sbin/sharing -l`.

*   To view a list of sharepoints, use `/usr/bin/dscl . -list /SharePoint`.

*   To view the configuration of a share point, use `/usr/bin/dscl . -read /SharePoints/name of share point`

Step 4: **Copy archive files to the new server**

Transfer the files you saved in "Step 1: Export users and groups" on page 29 and "Step 2: Create archives of the following files" on page 30 to Lion Server.

To transfer tar files or disk images using AFP:

1 Use Server app on the new server to start AFP.

2 Set up sharing for a folder where you'll place files you transfer from the v10.5.8 or later server.

3 From the v10.5.8 or later server, use AFP to copy the tar files or disk images to Lion Server.

4 On Lion Server, double-click a tar file to extract its contents or double-click a disk image to mount it.

Step 5: **Set up the home directory infrastructure**

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

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

For details on how to perform the steps in the following procedure, see Workgroup Manager Help.

To prepare the server to store home directories:

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

You can use the predefined /Users folder.

2 Open the Server app on the server where you want home directories to reside.

3 Click File Sharing.

4 To set up a share point for home directories, select a share point from the Share Point list.

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

5 Click the Edit button (/).

6 Select the "Share with Mac clients (AFP)" and "Make available for home directories" checkboxes.

7 Click Done.

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

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

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

Step 6: Import users, groups, and other data

If you migrate users and groups from an Open Directory master, use the instructions in "LDAP server settings" on page 42. If you migrate local node users and groups, use the Server app, Workgroup Manager, or the `dsimport` tool.

For more information about importing by using the Server app, see Server Help.

For more information about importing by using Workgroup Manager, see Workgroup Manager Help

For more information about `dsimport` and a description of Workgroup Manager export format, see Mac OS X Server v10.6 *User Management*. It's available on the Apple Manuals website at support.apple.com/manuals/, or see the `dsimport` man page.

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

If your Open Directory master server has replicas, turn off `fullsyncmode` on all servers before importing users to the master server. This decreases the time it takes to import large amounts of users. Use the following command to disable `fullsyncmode`.

```
sudo slapconfig -setfullsyncmode no
```

To import users and groups using Workgroup Manager:

1 Place the export files you created in "Step-by-step instructions for manual migration" on page 29 in a location accessible from your server.

You can modify user accounts in an export file to set passwords before importing users. For instructions, see Workgroup Manager Help.

Additionally, you can set up the preset you defined in "Step 5: Set up the home directory infrastructure" on page 37 so user passwords are validated using Open Directory authentication, and you can set password validation options so users must change their passwords the next time they log in.

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

2   In Workgroup Manager, click the Accounts button.

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

4   Click the lock to authenticate as domain administrator.

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

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

6   Click Import.

7   For groups to use Lion Server features, upgrade groups using Workgroup Manager.

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

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

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

    •   Create all home directories by using the `-a` argument of the `createhomedir` command. For details, see Workgroup Manage Help or the man page for `createhomedir`.

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

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

    If you have user accounts with crypt passwords, you can use Workgroup Manager to upgrade to Open Directory passwords.

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

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

    Import users and groups from a file using the Server app:

1   If your server is not set up to host network accounts, set it up to do so.

    When you're viewing the Server app, if the Manage > Manage Network Accounts option is listed, your server is not set up to host network accounts. For information about setting up your server to host network accounts, see Server Help and search for Host network accounts.

2   In the Server app, choose Manage > Import Accounts from File.

3   Select the file to import and then click Open.

Administrators on a Migrated Server

If you are migrating from a standard or workgroup configuration of Mac OS X Server v10.5.8, the following administrator accounts exist on your migrated server:

- Directory administrator

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

- Local Administrator

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

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

Step 7: Relocate the following saved data files

Place the files you saved from your v10.5.8 or later server in their final locations.

Web configuration data

When you migrate from Mac OS X Server v10.5.8 to Lion Server, the migration details depend on the version of Apache that was in place on your v10.5 system.

If you were managing Apache v2.2 on v10.5, the migration converts the Apache config files from v10.5 to Lion Server. After you check the /Library/Logs/Setup.log to confirm that this was successful, no further action should be necessary.

If you were managing Apache v1.3 on a v10.5 server, the migration does not migrate the old Apache v1.3 config files in /etc/httpd-1.3/. Switch to PHP 5.*x* and Apache 2.2 before migrating to Lion Server.

You can use the Mac OS X Server v10.6 `apache1_config_helper` tool to migrate from Apache 1.3 to Apache v2.2 in many, but not all, cases. For more information, see the `apache1_config_helper(8)` man page in Mac OS X Server v10.6.

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

Web content

Copy saved web content to /Library/Server/Web/Data/Sites/ and anywhere else you placed web content on the server:

For information about setting website configurations, see Server Help.

Mail database

Migrating mail to an alternate startup volume

If you installed Lion Server on a separate volume and you want to migrate mail settings and data, use the mail migration script, `65_mail_migrator.pl`, located in /System/Library/ServerSetup/MigrationExtras. The script migrates all necessary mail configuration information from the separate volumes and upgrades the mail data store.

The following are arguments for the script:

Arguments	Description
`--purge<0 | 1>`	The default value is 0, which leaves the source data intact. If you use the value of 1, the script attempts to clean up the source volume and deletes configuration and mail directories after the migration is complete.
`--sourceRoot<path>`	This is the path to the source volume you are migrating from. For example, "/Volumes/Leopard Server."
`--sourceVersion<ver>`	This is the version of the source you are migrating from. For example, 10.5.8 or later.
`--targetRoot<path>`	This is the path to the root of the new system generally your boot volume "/".
`--language<lang>`	This is the language identifier, such as "en." for English.

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

```
sudo 65_mail_migrator.pl --purge 0 --sourceRoot "/Volumes/Leopard Server"
     --sourceVersion 10.5.8 --targetRoot "/" --language en
```

Migrating mail from alternate mail data stores

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

The following are arguments for the script:

Arguments	Description
`--moveMail<0	1>`	The default value of 0 leaves the source mail data in its original location. A value of 1 moves the mail during migration.
`--cyrusBin<path>`	This is the path to the Cyrus binaries used by the previous mail server. For example, if you were running a v10.5.8 or later Mail server, you need a copy of the sources from /usr/bin/cyrus/bin/.
`--database<path>`	This is the path to the mail database of the previous mail server. The default location is /var/imap for Mac OS X Server v10.5.8 or later.
`--sourceSpool<path>`	This is the path to the original Cyrus mail data store. The default location is /var/spool/imap for Mac OS X Server v10.5.8 or later.
`--targetSpool<path>`	This is the path to the current mail data store. The default location is /var/spool/imap/dovecot/mail.

For example, to migrate mail from a v10.5.8 or later Mail server:

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

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

LDAP server settings
You can restore the LDAP server configuration information, password, and Kerberos principals.

To restore the Open Directory database, which includes LDAP server configuration:
1 Open Server Admin and connect to the server.
2 Click the triangle at the left of the server.

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

LDAP ACLs

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

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

AFP configuration

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

SMB configuration

To migrate the SMB configuration, restore /Library/Preferences/com.apple.smb.server.plist.

NetBoot images

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

Also, restore the NetBoot settings file.

To restore the NetBoot settings:

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

2 Choose Server > Import > Service Settings to import the NetBoot settings from the file you exported earlier.

See "NetBoot images" on page 33.

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

IP firewall configuration

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

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

NAT

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

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

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

Print server settings

Print service is no longer supported in Server Admin. You must use System Preferences > Print & Scan to add printers or control print jobs. For more advanced print service settings you can use the web interface of CUPS at http://localhost:631/admin to manage printer sharing. You can find documentation for CUPS at http://localhost:631/help.

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

For printers connected to the server through USB, the queues are created by CUPS when the printers are plugged in and turned on. However, for network printers, you must add the printers using System Preferences > Print & Scan (for all printer types) or CUPS web interface.

When you set up printer sharing in the Print & Scan pane of System Preferences or in CUPS, you cannot configure specific protocols on which the printer is to be shared. The printer is shared over all protocols.

In CUPS the description is equivalent to the printer sharing name and is set using the web interface at http://localhost:631/admin. See instructions below.

CUPS classes is the equivalent to printer pools. For instructions on setting up classes, see CUPS help at http://localhost:631/help .

Configuring quotas requires the use of command-line tools. For more information, see `lpadmin` man page. Also, documentation for quotas is located at http://localhost:631/help/. Click Getting Started then click Printer Accounting Basics.

The Print service quota system is unique and there is no direct equivalent in CUPS so the settings cannot be duplicated. Print service quotas were based on Open Directory user records and could be set across multiple servers, where CUPS quotas must be configured on each server individually.

A CUPS banner page (the starting page only) is the equivalent of the cover sheet. CUPS allows setting starting and ending banner sheets to bracket the job. See instructions below.

To set the description (printer sharing name):

1 Open the CUPS admin web interface http://localhost:631/admin.

2 Click Manage Printers, then click on the printer queue name.

3 From the Administration popup menu, select Modify printer.

This presents a page for modifying common settings.

4 Click Continue.

5 Change the description and location strings associated with the printer.

The description string is used by CUPS to advertise the print queue through Bonjour for IPP connections. CUPS does not provide Bonjour services for LPR queues, and these must be manually configured for clients.

To set a banner page (cover sheet):

1 Open the CUPS admin web interface http://localhost:631/admin.

2 Click Manage Printers, then click on the printer queue name.

3 From the Administration popup menu, select Set Default Options.

4 Click Banners and choose starting and ending banner pages in the popup menus.

VPN

Restore the following:

• /Library/Preferences/SystemConfiguration/com.apple.RemoteAccessServers.plist.

• /Library/Keychains/System.keychain

• /etc/racoon/psk.text

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

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

DNS configuration

To migrate the DNS configuration:

1 Restore the file /etc/named.conf, the directory /etc/dns/ and its contents (if /etc/dns/ exist), and the directory /var/named/ and its contents.

2 In Server Admin, select DNS from the list of computers and services.

If DNS was never upgraded in v10.5.8 or if DNS was never selected and configured in v10.5.8 using Server Admin, a dialog box appears, prompting you whether to upgrade. Choose from the following:

• If you click Don't Upgrade, Server Admin leaves the DNS configuration files as they were before Lion Server migration. DNS still runs, but you can't make DNS configuration changes using Server Admin. To make changes, you must directly edit the DNS configuration files.

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

DHCP settings

To migrate DHCP settings:

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

2 Choose Server > Import > Service Settings to import DHCP settings from the file you exported earlier.

See "DHCP" on page 35.

3 Inspect the Subnets and Static Maps panes of the DHCP service to make sure the subnet and static binding settings are imported correctly.

User data

Restore saved user data files.

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

QuickTime Streaming Server files and folders

QTSS has been removed from Lion Server. To reuse files and folders saved from /Library/QuickTimeStreaming/, follow instructions in *QuickTime Streaming and Broadcasting Administration.* It's available on the Apple Manuals website at support.apple.com/manuals/.

QTSS Publisher files and folders

QTSS Publisher has been removed from Lion Server. However, files created using QTSS Publisher should work with Lion Server.

iChat server

To migrate iChat server settings:

1 Restore the following folders:

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

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

```
sudo /System/Library/ServerSetup/MigrationExtras/58_jabbermigrator.
    pl --purge 0 --sourceRoot <location> --sourceType System
    --sourceVersion  10.5 or 10.6 --targetRoot / --language en
```

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

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

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

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

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

Wiki data

Use the following steps to manually migrate your Mac OS X v10.5.8 or later server's
Wiki data to Lion Server.

If you are migrating a v10.5.8 wiki server's data, make sure Lion Server is bound to the
same Open Directory master as the v10.5.8 server, so the ACLs for wikis can convert. If
not, wikis are only readable or writeable by admins, and ACLs must be reset.

To migrate wiki data:

1   Start Wiki service in the Server app.

2   Enter the following command.

```
sudo wikiadmin migrate -r /path/to/collaboration/folder
```

Shared contacts

If you used Shared Contacts in Mac OS X Server v10.5.8, you can upgrade these to use
Address Book Server in Lion Server.

Before you can migrate to Address Book Server using the server assistant's automated
migration process in Lion Server, migrate the Shared Contacts using the
`ContactsMigrator` of Mac OS X Server v10.6 using the steps below.

To migrate shared contacts:

1 Run the following command:

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

Replace:

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

For information about `ContactsMigrator`, see its man page. For the basics of command-line tool usage, see Mac OS X Server v10.6 *Introduction to Command-Line Administration*. It's available on the Apple Manuals website at support.apple.com/manuals/.

RADIUS settings

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

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

Xgrid settings

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

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

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

Step 8: Set up share points and privileges

Recreate the share points and privileges as required.

To create a share point and set privileges:

1 Open the Server app and click File Sharing.

2 Click the Add button (+), select a volume or folder to share, and then click Choose.

3 Select the volume or folder from the Share Points list and click the Edit button (/).

4 Configure permissions and access privileges.

5 Use the Settings to configure how the share point are shared.

6 Click Done.

New share points are shared using AFP and SMB. To share a share point using NFS or FTP, use command-line tools. For more information, see their man pages.

Step 9: Test the new server.

To test the new server:

1 Open Server app and inspect user and group accounts.

2 Open Server Admin and inspect settings for services whose configuration data you migrated.

3 Open the Server app and inspect settings for services that are only administered using the Server app.