Address Book Server Administration

Administrator's Guide

Version 3.2

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About This Guide

This guide provides a starting point for administering address book service using its advanced administration tools. It contains information about Address Book Server using Server Admin.

*Address Book Server Administration*may not be the only guide you need when administering Address Book Server, but it gives you the basic information to get the Address Book service running as well as background information that will assist you in making modifications to your address book server implementation.

What's New in Address Book Server

Address Book service is a new service in Mac OS X Server version 10.6. It:

- Implements the CardDAV protocol.

  CardDAV is based on WebDAV and vCard.
- Works using standard vCards.
- Provides a simpler and more easily expandable infrastructure than LDAP.

  Schema changes are not required to support custom vCard fields.
- Uses web-based protocols

  Network configuration is simpler with the use of frequently used and open ports.
- Is simple to set up.

What's in This Guide

This guide includes the following chapters:

- Chapter 1, "Understanding Address Book Service"
- Chapter 2, "Setting Up and Managing Address Book Service"
- Chapter 3, "Advanced Address Book Service Information"

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

Using Onscreen Help

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

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

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

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

To see the most recent server help topics:

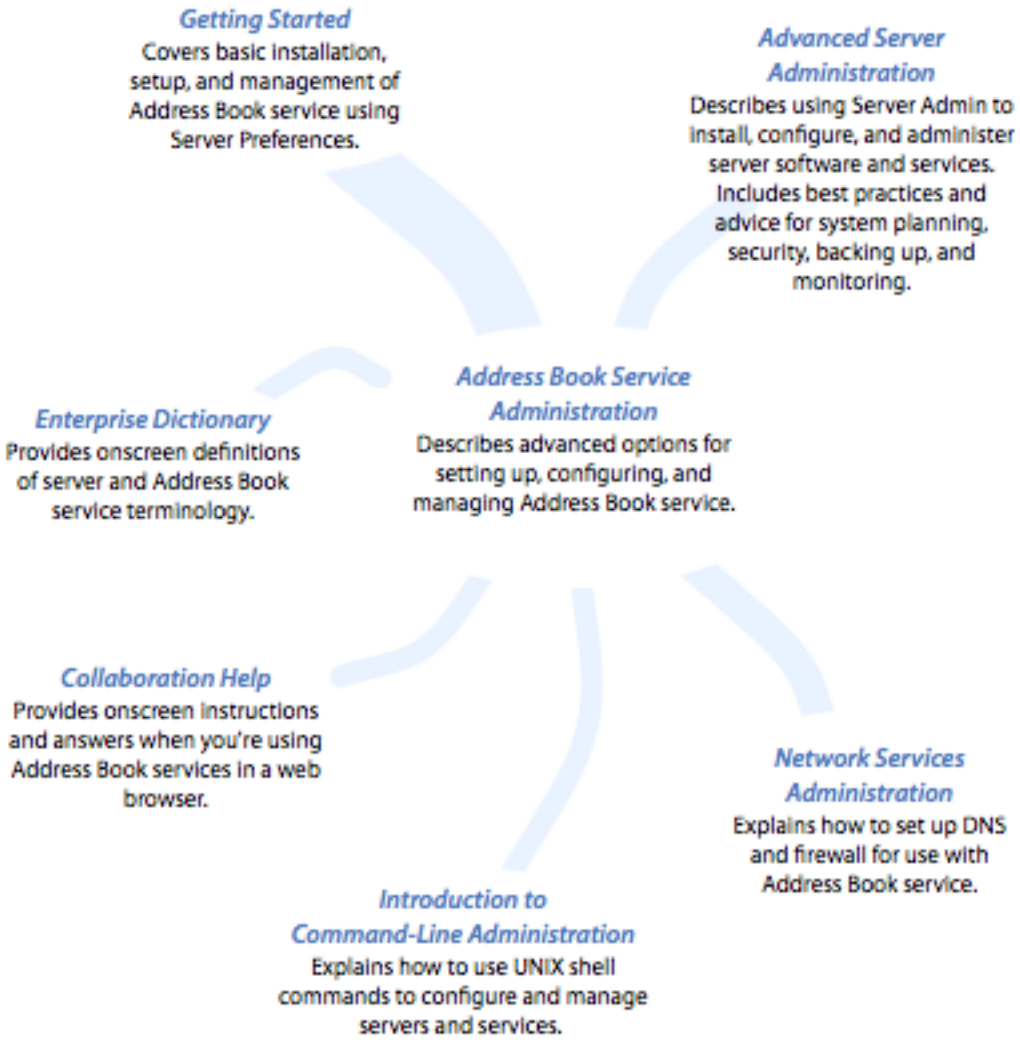
- Make sure the server or administrator computer is connected to the Internet while you're getting help.

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

Document Map

Snow Leopard has a suite of guides which can cover management of individual services. Each service may be dependent on other services for maximum utility. The road map below shows some related documentation that you may need to fully configure your desired service to your specifications. You can get these guides in PDF format from the Mac OS X Server documentation website:

www.apple.com/server/resources/



Viewing PDF Guides Onscreen

While reading the PDF version of a guide onscreen:

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

Printing PDF Guides

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

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

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

Getting Documentation Updates

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

- To view new onscreen help topics for a server application, make sure your server or administrator computer is connected to the Internet and click "Latest help topics" or "Staying current" in the main help page for the application.
- To download the latest guides in PDF format, go to the Mac OS X Server documentation website:

  www.apple.com/server/resources/
- An RSS feed listing the latest updates to Mac OS X Server documentation and onscreen help is available. To view the feed use an RSS reader application, such as Safari or Mail:

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

Getting Additional Information

For more information, consult these resources:

- *Read Me documents*—get important updates and special information. Look for them on the server discs.
- *Mac OS X Server website* (www.apple.com/server/macosx/)—enter the gateway to extensive product and technology information.

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

1 Understanding Address Book Service

Address Book service is the shared contact service for Mac OS X Server. Built on open standard protocols, Address Book service provides a simple to implement, secure, shared address book solution.

Now it's easy to share personal and group contacts across multiple computers within a workgroup, a small business, or a large corporation. Built on open standard protocols, Address Book service removes the schema limitations and security issues associated with LDAP and doesn't impose a per-user license, so your organization can grow without paying for additional licenses.

Address Book Service Features

Address Book service is Mac OS X Server's hosted contact management solution for your organization's needs. It includes the following features:

- Access to client address books anywhere there is a Web connection
- Shared contact lists
- Integrates with Address Book, Mail, iCal, and iChat in Mac OS X version 10.6
- Works with any applications that use the standard Address Book framework
- Caches vCards for offline access
- Standards-based
- Source code is available

Open Standards

Address Book service is based on open standards. Each part of Address Book service is a published standard. It's built upon a strong foundation of proven standards and familiar technologies, including:

HTTP (RFC 2616): HTTP serves as the method of communication between the address book clients and the server.

WebDAV Class 3 (RFC 4918): WebDAV serves as Address Book service's method for reading and writing vCard files on the server.

vCard (RFC 2426): A vCard is the data storage model for individual contacts.

CardDAVCardDAV is an extension of WebDAV to provide features specific to address books (like searches of address book individuals and groups).

For information on these and other related standards, see "Standards Documents."

Service Scalability

Because the technology is based on web standards, Address Book service has all the scalability of Mac OS X Server's world-class web services.

As your organization grows, Address Book service can take advantage of standard scalability technologies such as network load distributors, storage networks, and distributed directory servers. To maximize service scalability and minimize loss of productivity from service outages, Address Book service is optimized for use with Xsan—Apple's clustered file system. With Xsan, multiple address book servers can read and write to the same volume, making it easy to increase performance and improve service reliability by scaling for additional servers.

Directory and Client Integration

Address Book service is integrated with Mac OS X Server's foundation technologies. Address Book users are authenticated from Open Directory and Kerberos. The vCard files are flat files that can integrate with any storage system, local or networked.

There are two ways to bind a Mac OS X Client to an Address Book Server. You can bind at initial client setup or you can bind later from Address Book. Before binding a client machine, make sure the Address Book Server is running (See "Starting or Stopping Address Book Service").

Binding a Client Address Book to Address Book Server at Initial Setup of Client

1. TBD

Binding a Client Address Book to Address Book Server after Initial Setup of Client

1. Launch Address Book on the client machine.

   Note: The only Address Book clients that support using Address Book Server are those in Mac OS X version 10.6. Earlier versions of Address Book do not support binding to Address Book Server.

2. Choose Address Book > Preferences, and then click Accounts.
3. Click the Add (+) button.
4. In the Add Account dialog, select Mac OS X Server as the Account Type.

5 Enter the user's User name and password. Enter the URL of your Address Book Server.

6 Click Create.

An account is now added to the account list.

The Address Book application now shows a new group with the user's name and your server designated. Any groups in the shared address book are displayed below this via a disclosure triangle.

Mac Client Applications That Integrate with Address Book Service

The following Apple applications can use Mac OS X Server's Address Book service.

Address Book 5.0: The version of Address Book that ships with Mac OS X v10.6 has built-in support for CardDAV and therefore Address Book service.

Mail 4.0: The version of Mail that ships with Mac OS X v10.6 has built-in support for Address Book service. This is configured in the Composing Preferences.

iChat 5.0: The version of iChat that ships with Mac OS X v10.6 has built-in support for finding users and groups via Address Book service.

To enable these applications to access contacts in your Address Book Server, just bind the appropriate computers to the Address Book Server as described in "Directory and Client Integration."

Third-Party Applications

Any applications that use the Address Book framework also inherit support for the Address Book service if the machine is bound to an Address Book Server. See "Directory and Client Integration."

For a client to use Address Book service, the client must support the CardDAV protocol. Any applications that support the CardDAV protocol will work with the Address Book service although they might not take advantage of Mac OS X-specific additions to the CardDAV protocol.

Address Book Service in Action

TBD - Need Artwork - This section will give a brief overview of the request/response and authentication cycles

Setting Up and Managing Address Book Service

2

Address Book services is configured using Server Admin, authenticated using Open Directory, and accessed using a CardDAV compatible client.

This chapter provides the planning steps and tasks necessary to set up Address Book service. It also provides information about how to manage and monitor Address Book service.

Minimum Requirements

TBD - These will reflect the Mac OS X Server 10.6 System Requirements

Setting up Address Book Service

Address Book service depends on other Mac OS X Server features. The following steps give the basic setup instructions and considerations for the first time you deploy Address Book service.

Step 1: Plan your deployment

Make sure your target server meets the minimum Mac OS X Server system requirements. Make sure the number of servers is adequate for the estimated traffic. Make sure the storage space for contacts is sufficient for the estimated amount of data. Additional information that can help you make these storage decisions can be found in Chapter 3, "Advanced Address Book Service Information."

Step 2: Gather your information

You need the following information before you begin: Host name of the server TCP port to respond to Address Book service connections Authentication method (Digest, Kerberos v5, or Any) Location of the data store Estimated storage quota per user Certificate information for SSL connections (optional) This not only helps to make sure the installation goes smoothly, but it can help you make planning decisions.

Step 3: Set up the environment

If you are not in complete control of the network environment (DNS servers, DHCP server, firewall, and so forth), coordinate with your network administrator before installing. If you are planning on connecting the server to an existing directory system, you must also coordinate efforts with the directory administrator.

Step 4: Configure and start Address Book service

Configure the service parameters and turn on the Address Book service. As users log in to the service with their CardDAV-enabled applications, the service creates the needed directories and files. For more information about enabling, configuring, and starting Address Book service, see the following sections:

"Enabling Administration of Address Book Service"

"Starting or Stopping Address Book Service"

"Changing Address Book Service Administration Settings"

Enabling Administration of Address Book Service

You must turn on Address Book service administration before you can use Server Admin to configure or enable it. This allows Server Admin to start, stop, and change settings for Address Book service.

To enable Address Book Service for administration:

1. Open Server Admin.
2. Select a server, click the Settings button in the toolbar, and then click the Services tab.
3. Select the checkbox for Address Book service.

You can now configure and control the Address Book service using Server Admin.

Starting or Stopping Address Book Service

To start or stop the service:

1. Open Server Admin.
2. Select a server, then click the service disclosure triangle to show the services for administration. These instructions assume Address Book service has been enabled in the service administration list of Server Admin. If not, see "Enabling Administration of Address Book Service."
3. In the service list beneath the server, select Address Book service.
4. Click Start Address Book, the service start button below the server list. If the service is running, click Stop Address Book.

From the command line:

Start and stop the Address Book Server using the `serveradmin` command.

- To start the Address Book Server:

```
sudo serveradmin start addressbook
```

- To stop the Address Book Server:

```
sudo serveradmin stop addressbook
```

Changing Address Book Service Administration Settings

The following settings are available for customization using Server Admin:

Setting	Description
Directory Searching	This allows clients bound to Address Book Server to get contacts and groups from directory servers that the Address Book Server is bound to. To change this setting, see "Configuring Directory Search for Address Book Server."
Data Store	This is where the server stores all the users' vCards. To change this setting, see "Changing the Address Book Data Store Location."
User Quota	This is the total size of all the user's collection of vCards. The default is 100MB. To change this setting, see "Changing Address Book User Quotas."
Authentication	This is the authentication method required for address book access. To change this setting, see "Configuring Security for Address Book Service."
Host Name	This is the fully qualified domain name in DNS. It should be in the reverse lookup domain as well. To change this setting, see "Setting the Address Book Service Host Name."
SSL	This determines whether or not to use SSL encryption of network traffic. To change this setting, see "Configuring Security for Address Book Service."

Setting	Description
HTTP Port Number	This is the port that the Address Book service will use for connections. The default port is 8800. To change this setting, see "Setting the Address Book Service Port Number."
SSL Port Number	This is the port that the Address Book service will use for SSL connections (if enabled). The default port is 8843. To change this setting, see "Configuring Security for Address Book Service."
Log Level	This is the degree of granularity with which Address Book service logs are recorded. The default log level is Info. To change this setting, see "Changing the Address Book Service Logging Levels."

Configuring Directory Search for Address Book Server

Directory searching allows your Address Book Server clients to search through directory services that your Address Book Server is bound to. This can include Mac OS X Server version 10.5 implementations that are configured with the Directory application. It can also include existing LDAP or Active Directory implementations in your environment.

To allow searching of existing directory services:

1. In Server Admin, select a server and choose the Address Book service.
2. Click the Settings button in the toolbar.
3. In the Directory Searching field:
   - Select Allow searching for users if you wish to allow searching of users in directory services that the server is bound to.
   - Select Allow searching for public contacts if you wish to allow access to public users configured with Directory on Mac OS X Server version 10.5
4. Click Save, then restart the service.

To convert public users configured with Directory on Mac OS X Server version 10.5 to regular Address Book Server users, see "Upgrading Contacts From Directory in Mac OS X Server Version 10.5"

Changing the Address Book Data Store Location

The data store is where the server stores all the users' contacts as vCards. The default location is /Library/AddressBookServer/Documents/. This location is relative to the local file system, so if the storage location is on a network volume, enter the local filesystem mount point and not a network URL.

To change the default data store:

1. In Server Admin, select a server and choose the Address Book service.
2. Click the Settings button in the toolbar.
3. In the Data Store field, enter the new location.

   Alternately, click the Choose button and navigate to the new location.
4. Click Save, then restart the service.

Changing Address Book User Quotas

Each Address Book user has a disk quota. This quota is the total possible size of all the user's address books and vCards. Quotas are not set on a per-user basis. They are set globally for all users. Do not allow the total of all your users' quotas to exceed the storage capacity of the data store.

To change the user quota:

1. In Server Admin, select a server and choose the Address Book service.
2. Click the Settings button in the toolbar.
3. In the User Quota field, enter the quota amount (in MB).
4. Click Save, then restart the service.

Setting the Address Book Service Host Name

When setting up Address Book service, you must specify the host name of the Address Book Server. It should be a fully qualified domain name matched with a reverse lookup record. Be sure to make the appropriate changes to your firewall to allow network access to the server.

To set the host name:

1. In Server Admin, select a server and choose the Address Book service.
2. Click the Settings button in the toolbar.
3. In the Host Name field, enter the host name.
4. Click Save, then restart the service.

Setting the Address Book Service Port Number

When setting up the Address Book service, the server is set to use TCP port 8800. If you want to change the port, you can do so in Server Admin. Be sure to make the appropriate changes to your firewall to allow network access to the server.

To set the port number:

1. In Server Admin, select a server and choose the Address Book service.
2. Click the Settings button in the toolbar.
3. In the HTTP Port Number field, enter the port number.

4 Click Save, then restart the service.

Changing the Address Book Service Logging Levels

The default logging levels for the Address Book service is *Info*. The *Info* level of logging is the second highest level (of four levels) of detail of logging. You can change this to a lower level of logging (*Error* or *Warning*) or a higher level (*Debug*).

To set the logging level:

1 In Server Admin, select a server and choose the Address Book service.

2 Click the Settings button in the toolbar.

3 In the HTTP Log Level field, select the desired level.

4 Click Save, then restart the service.

Configuring Security for Address Book Service

Security for Address Book service consists of two main areas:

- *Securing the authentication:* This means using a method of authenticating users that is secure and doesn't pass the login credentials in clear text over the network. The high-security authentication used pervasively in Mac OS X Server is Kerberos v5. To learn how to configure secure authentication, see "Choosing and Enabling Secure Authentication for Address Book Service."
- *Securing the data transport:* This means encrypting the network traffic between the address book client and the address book server. When the transport is encrypted, no one can analyze the network traffic and reconstruct the contents of the address book. Address Book service uses SSL to encrypt the data transport. To learn how to configure and enable SSL for Address Book service, see "Configuring and Enabling Secure Network Traffic for Address Book Service."

Choosing and Enabling Secure Authentication for Address Book Service

Users authenticate to Address Book service through one of the following methods:

- *Kerberos v.5:* This method uses strong encryption and is used in Mac OS X for single sign-on to services offered by Mac OS X Server.
- *Digest:* (RFC 2617) This method sends secure login names and encrypted passwords without the use of a trusted third-party (like the Kerberos realm), and is usable without maintaining a Kerberos infrastructure.
- *Any Method:* This includes both Kerberos v.5 and Digest authentication. The client can choose the most appropriate method for what it can support. You can set the required authentication method using Server Admin. To enable the highest security, choose a method other than "Any Method."

To choose an authentication method:

1. In Server Admin, select a server and choose the Address Book service.
2. Click the Settings button in the toolbar.
3. Select the method from the Authentication pop-up menu.
4. Click Save, then restart the service.

Configuring and Enabling Secure Network Traffic for Address Book Service

When you enable Secure Sockets Layer (SSL), you encrypt all the data sent between the Address Book Server and the client. To enable SSL, you must select a Certificate. If you use the Default self-signed certificate, the clients must choose to trust the certificate before they can make a secure connection. You can use a certificate on the server, or choose to use a certificate on another computer.

To enable secure network traffic using SSL transport:

1. In Server Admin, select a server and choose the Address Book service.
2. Click the Settings button in the toolbar.
3. For SSL, select Use or Redirect.
4. Choose the certificate to be used for encryption.
5. Choose a TCP port for SSL to communicate on. The default port is 8443.
6. Click Save, then restart the service.

Monitoring Address Book Service

To keep Address Book service operating smoothly, you must monitor service logs as well as current statistics. The following sections contain more information about monitoring Address Book service:

- "Viewing Address Book Service Vital Statistics"
- "Viewing Address Book Service Logs"

The Address Book service Overview pane lets you keep track of the following vital statistics:

- Whether the service is running
- When the services started running
- How many requests are being responded to each hour

Viewing Address Book Service Vital Statistics

To view Address Book service statistics:

1. In Server Admin, select a server and choose the Address Book service.
2. Click the Overview button in the toolbar.

Viewing Address Book Service Logs

Address Book service keeps two logs: one for access and one for errors. You can view and filter the logs to troubleshoot the service or monitor overall service reliability.

To view the logs:

1. In Server Admin, select a server and choose the Address Book service.
2. Click the Logs button in the toolbar.
3. Select a log from the View pop-up menu.
4. Filter the log for specific text strings by using the text filter field.

Maintaining Address Book Service

The following sections contain information that will assist an Address Book service administrator in keeping the Address Book service working smoothly.

Understanding Address Book Service Administration Configuration Files

You should administer Address Book service using Server Admin or the `serveradmin` tool. Server Admin and `serveradmin` both look at the same configuration files.

The following files are used to run Address Book service:

/etc/carddavd/carddavd.plist: The main configuration file for `carddavd`

It is an XML property list of server options and provides such information as the port to bind to and whether to use SSL. You can specify the names of other files.

/var/log/carddavd/access.log: The server's main log file

/var/run/carddavd.pid: The server's process ID file

/var/run/carddavd-pydir.sock: Internal mplementation file

/var/run/carddavd-stats.sock: Internal mplementation file

/var/run/carddavd.sock: Internal mplementation file

/usr/share/carddavd: Implementation and support files

Backing Up and Restoring Address Books

In addition to backing up the configuration files listed in "Understanding Address Book Service Administration Configuration Files," you should back up the data store. The location of the data store is shown in the Settings tab of the Address Book service administration pane of Server Admin.

Because Address Book service files are flat files, you can use any backup procedure you want to save the files. You should maintain the original files' POSIX permissions and ACL entries. Your backup solution must preserve extended attributes. Your backup software needs root access to the /Library/AddressBookServer/Documents/ folder and its subfolders to back them up.

Mac OS X Server provides several command-line tools for data backup and restoration:

- `rsync`. Use to keep a backup copy of your data in sync with the original. The `rsync` tool only copies files that have changed, but copies all extended attributes always.
- `ditto`. Use to perform full file-level backups.
- `asr`. Use to back up and restore an entire volume at disk block-level.

For more information about these commands, see their man pages and *Introduction to Command-Line Administration*. Time Machine is not recommended for server file and system backup of advanced configuration servers.

Note: You can use the launchdctl command to automate data backup using the mentioned commands. For more information about using launchd, see *Introduction to Command-Line Administration*.

Upgrading Contacts From Directory in Mac OS X Server Version 10.5

If you have been using Shared Contacts in Mac OS X Server Version 10.5, you can upgrade these to use Address Book Server in Mac OS X Server Version 10.6. To do this:

To use the ContactsMigrator tool:

1. Upgrade your Mac OS X Version 10.5 Server to Mac OS X Version 10.6.

   See *Mac OS X Server: Upgrading and Migrating* for more information on the basic upgrade process.

2. Log into your server and launch Terminal.
3. Run the following command:

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

   Where:

   - *`yourserverName`* is the fully qualified domain name of your Address Book Server
   - *`username`* is the username of a system administrator
   - *`password`* is the password of the system administrator whose username you entered

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

Deleting Unused Address Books

For security, privacy, or disk usage reasons, you may need to delete unused contacts and address books. After vCard files and folders are created in the data store, they are not removed when a user is removed from the directory. This could potentially cause unintended service behavior if a user is created at a future time with the same name as the defunct one.

When a use is no longer actively using the address book, you can easily delete the vCards that correspond to that users' address books. To do so, delete the user folder from the data store manually.

If you delete the files for security or privacy reasons, use a secure-delete tool like the Mac OS X command-line tool `srm`. For command usage, see the `srm` man page.

To delete the files, you need root access to the /Library/AddressBookServer/Documents/ folder and its subfolders.

Advanced Address Book Service Information

3

This chapter contains detailed information about Address Book service that is suitable for advanced system administrators.

Address Book service provides contact sharing, collaboration, and synchronization through the CardDAV protocol.

CardDAV is a standard for accessing contacts using WebDAV. It is used to store, query, and retrieve collections of vCards (.vcfs) from a CardDAV enabled server to any suitable client. It is an open standard that allows different software products from many development sources to interoperate.

The CardDAV architecture treats all contacts as HTTP resources. The contacts are transferred using standard HTTP with additional functionality to handle the special needs of contact management.

For example, a CardDAV server must use WebDAV access control (RFC3744) and must be able to parse vCards files (RFC2426).

Each contact is a standard vCard (.vcf) formatted file. These events are grouped in collections (user-perceived groups) and indexed for searching and quick retrieval.

Understanding Service Implementation Details

The following sections describe Address Book service implementation details including tools, user provisioning, and process management.

Configuration Tools

Address Book service uses four front-end tools:

- Server Admin for Mac OS X
- The tool `serveradmin` for Mac OS X
- Server Preferences for Mac OS X
- The tool `carddavd` for Mac OS X

In all cases, the front ends read from a configuration plist file (/etc/carddavd/carddavd.plist) to set service parameters. The plist file is an XML property list that specifies server options such as:

- The network TCP port to bind to
- Whether to use SSL
- The names and locations of support files

User Provisioning

Address Book service users are provisioned in Open Directory. The Address Book Server requires that the computer running the server is also acting as an Open Directory Master.

Process and Load Management

The daemon for Address Book service has several functional modes. It can be run in master, slave, or combined mode.

The master process: Acts as a load balancer for slave mode daemons. When Address Book service is running in this mode, it forwards connection requests to another instance of the daemon running in slave mode.

The slave process: Accepts forwarded connections delegated by the master process. This process replies to client requests and accesses the contact data store, answers HTTP requests, and does event parsing.

The combined process (default): Acts as both master and slave. It spawns one slave process for every processor core available on the system. It also acts as its own load-balancing master, delegating connections to its own spawned slave mode daemons. For these processes to be balanced, they must have a shared storage location. This can be as simple as a single file system location for a multiprocessor Xserve. If the processes are spread between several servers, the servers must use a shared storage solution like Xsan.

If the master processes can't adequately distribute the load, you can use a hardware load balancer built to handle web connections.

Implementation Details

Address Book service is implemented using Python v2.6 or later, using the Twisted network framework. This open source framework gives excellent network performance using an asynchronous networking model without needing to use threads.

The Twisted framework does not support WebDAV level 2 locking or WebDAV versioning (neither of which is required for CardDAV).

The following are software dependencies in implementing the Address Book service:

Third-party tools	Apple-provided tools
Twisted	PyKerberos
pyXML	PyOpenDirectory
pyOpenSSL	
pysqlite	
vobject	
xattr	
dateutil	
ZOPEInterface	

Understanding the Data Store and File Hierarchy for Address Book Server

By default, the main data store location is /Library/AddressBookServer/Documents/, but you can specify another location using the Settings tab of the Address Book service administration pane in Server Admin.

The contents of /Library/AddressBookServer/Documents/ include both the individual vCards and their groups as well as lists of the users that are authorized to access these address book collections. The groups and users authorized to access the address book data are referred to as principals. In the data store implementation, these are defined by their generated user identification number (GUID).

/Library/AddressBookServer/Documents/ is not a folder that you should manually interact with. Users and groups should be managed through Workgroup Manager, Server Preferences, or from the command line with `serveradmin`.

You can and should back up /Library/AddressBookServer/Documents/. Since the principals are determined by GUID, you should only restore this folder onto a computer with the same directory service settings. Otherwise Address Book Server will not work as expected.

About the Source Code for the Address Book Server

Apple makes available a reference implementation of a CardDAV server as a part of the Darwin Server project.

Differences Between the Darwin CardDAV Server and Address Book Server

The Mac OS X Server Address Book Server uses the Darwin CardDAV server at its core, but adds the following features which are not a part of the Darwin CardDAV Server:

- Searching of Address Book contacts and groups

- Directory gateway that allows viewing of existing directory service contacts through the Address Book Server

  See "Configuring Directory Search for Address Book Server."

Getting the Source Code

TBD (Currently this is not available. When it is available, this section will be updated accordingly.)

Where to Go for Additional Information

Related Web Sites

- Open Source project site: TBD
- Industry address book consortium: http://tools.ietf.org/wg/vcarddav/

Standards Documents

CardDAV is a product of the Internet Engineering Task Force (IETF) Vcarddav working group. The CardDAV work includes:

vCard Extensions to WebDAV See draft-ietf-vcarddav-carddav-04.

vCard Format Specification Changes See draft-ietf-vcarddav-vcardrev.

Extended MKCOL for WebDAV See draft-ietf-vcarddav-webdav-mkcol.

CardDAV is based on the following existing IETF documents:

vCardSee RFC2426.

HTTP, ETags See RFC2616.

WebDAV Class 3 See RFC4918.

WebDAV ACL See RFC3744.

SSL/TLS See RFC2818 and RFC2246.

WebDAV Versioning See RFC3253.