Mac OS X Server
Web Technologies Administration

For Version 10.6 Snow Leopard

Apple

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Contents

About This Guide

This guide provides instructions for setting up and managing a web server and websites, and how to use open source web technologies.

Mac OS X Server v10.6 includes Web service, which is comprised of multiple web technologies. Web service comes installed on Apple server hardware and offers an integrated, flexible environment for establishing and managing web technologies.

What's New in Web Service

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

- **Apache Modules:** mod_python and mod_xsendfile improve web-based application support and scripting.
- **WebObjects:** Support for WebObjects is removed with Mac OS X v10.6.

What's in This Guide

This guide includes the following sections:

- Chapter 1, "Web Technologies Overview," highlights key concepts and provides basic information about configuring a server, setting up websites, and understanding specialized web components.
- Chapter 2, "Working with Web Service," describes how to set up your web server for the first time and how to manage web settings and components.
- Chapter 3, "Creating and Managing Websites," provides instructions for setting up and managing websites.
- Chapter 4, "Configuring and Managing Webmail," tells you how to enable and use Webmail on your web server.
- Chapter 5, "Working with Open Source Applications," provides information and instructions related to open source components Apache, Tomcat, and MySQL.

- Chapter 6, "Managing Web Modules," describes the modules included in Mac OS X Server and explains how to install, enable, and view modules.
- Chapter 7, "Solving Web Service Problems," helps you address issues with web technologies and websites.

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

Using Onscreen Help

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

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

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

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

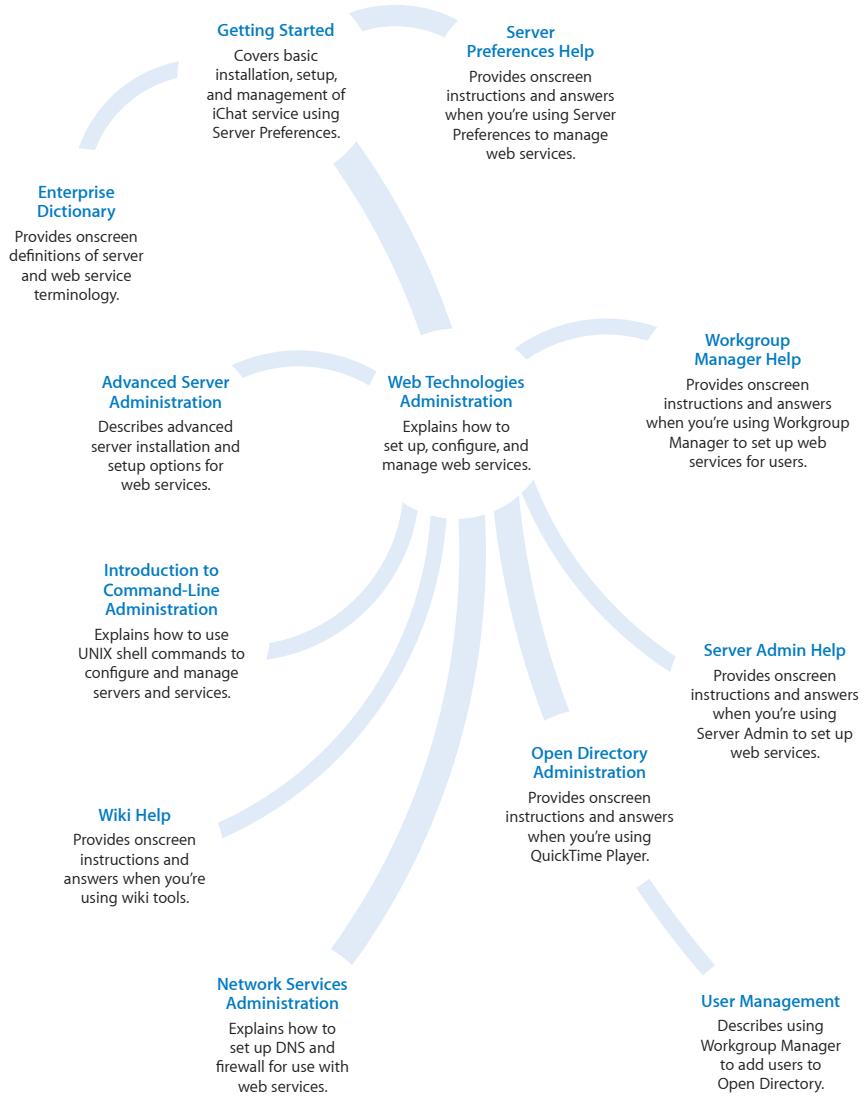
To see the most recent server help topics:

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

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

Documention Map

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



Viewing PDF Guides Onscreen

While reading the PDF version of a guide onscreen:

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

Printing PDF Guides

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

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

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

Getting Documentation Updates

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

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

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

Getting Additional Information

For more information, consult these resources:

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

Web Technologies Overview

1

Use this chapter to become familiar with web technologies and to understand the major components before setting up web services and sites.

Web service is a complex suite of tools for the configuration and management of the Apache web server, development of websites, and the integration of an application server with open-source components. This chapter helps to familiarize you with the complexities of your system before proceeding.

Web Technologies Overview

Web technologies offer an integrated Internet server solution. Web technologies—also known as Web service in this guide—are easy to set up and manage, so you don't need to be an experienced web administrator to set up multiple websites and configure and monitor your web server.

Web service is based on Apache, an open source HTTP web server. A web server responds to requests for HTML webpages stored on your site. Open source software gives you the capability to view and change source code to make changes and improvements. This has led to Apache's widespread use, making it one of the most popular web servers on the Internet today.

Web administrators can use Server Admin to administer Web service without knowing about advanced settings or configuration files. Web administrators proficient with Apache can also administer web technologies using Apache's advanced features.

Because Web service in Mac OS X Server is based on Apache, you add advanced features with plug-in modules. Apache modules let you add support for Simple Object Access Protocol (SOAP), Java, and CGI languages such as Python.

Key Web Features

Web service consists of the following key components (web technologies), which provide a flexible and scalable server environment.

- Apache Web Server
- WebDAV
- CGI Support
- SSL Support
- Dynamic Content with Server Side Includes (SSI)
- Blogs and RSS Support

Apache Web Server

Apache is an open source HTTP web server that administrators configure using Server Admin.

Apache has a modular design, and the set of modules enabled by default is adequate for most uses. Server Admin controls a few optional modules. Experienced Apache users can add or remove modules and change the server code. For information about modules, see "Apache Web Module Overview" on page 75.

Apache v2.2 is installed with Mac OS X v10.6. For information about migrating and preserving Apache v1.3 configuration settings, see "Working with Apache" on page 62.

WebDAV

Web-based Distributed Authoring and Versioning (WebDAV) is especially useful for updating content on a website. Users who have WebDAV access to the server can open files, make changes or additions, and save those revisions. On Mac OS X, users can mount WebDAV volumes and access them seamlessly from the Finder.

For more about using WebDAV for file sharing, see "Using WebDAV to Share Files" on page 52.

CGI Support

Common Gateway Interface (CGI) scripting provides a means of interaction between server and clients. For example, CGI scripts let you place an order for a product offered on a website or submit responses to information requests.

It is possible to write CGI scripts in several scripting languages, including Perl and Python. The folder /Library/WebServer/CGI-Executable is the default location for CGI scripts.

SSL Support

Web service includes support for Secure Sockets Layer (SSL), a protocol that encrypts information being transferred between client and server. SSL works with a digital certificate that provides a certified identity for the server by establishing a secure, encrypted exchange of information.

Dynamic Content with Server Side Includes (SSI)

Server Side Includes (SSI) provide a method for using the same content on multiple pages in a site. They also can tell the server to run a script or insert specific data into a page. This feature makes updating content much easier, because you revise information in only one place and the SSI command displays that revised information about many pages.

For more information about SSI, see "Enabling Server Side Includes (SSI)" on page 50.

Blogs and RSS Support

The web server provides blogs as an option for each website. The blogs comply with RSS and Atom XML standards and permit Open Directory authentication. Blog users can choose from several techniques for working with templates and style sheets.

Important: To make service access control list (SACL) changes to blog service, you must use the server interface, not the web interface.

For more information about limiting who can create new blogs and wikis and setting permissions for Blogs and wikis, see *Wiki Server Administration*.

Essential Concepts for Web Services Before You Begin

This section provides information you need before you set up your web server for the first time. Read this section even if you are an experienced web administrator. Some features and behaviors might be different from what you expect.

Configuring Your Web Server

You use Server Admin to set up and configure most features of your web server. If you are an experienced Apache administrator and need to work with features of the Apache web server that aren't included in Server Admin, change the relevant configuration files.

However, Apple does not provide technical support for modifying Apache configuration files. If you alter a file, be sure to make a backup first. Then revert to the backup if you have problems.

Providing Secure Transactions

To provide secure transactions on your server, set up SSL protection. SSL lets you send encrypted, authenticated information across the Internet. For example, to authorize credit card transactions through your website, use SSL to protect the information that's passed to and from your site.

Important: You can't use the performance cache for a website if SSL is enabled for that site.

For instructions on how to set up secure transactions, see "Enabling Secure Sockets Layer (SSL)" on page 41.

Setting Up Websites

Before hosting a website, you must:

- Register your domain name with a domain name authority
- Create a folder for your website on the server
- Create a default page in the folder for users to see when they connect
- Verify that DNS is properly configured if you want clients to access your website by name

When you are ready to publish, or enable, your site, use Server Admin. The Sites pane, located within Web service, lets you add a site and select settings for each site you host.

For more information about using WebDAV for file sharing, see "Managing Websites" on page 47.

Hosting More Than One Website

You can host more than one website simultaneously on your web server. Depending on how you configure your sites, they might share the same domain name, IP address, or port. The unique combination of domain name, IP address, and port identifies each separate site.

Your domain names must be registered with a domain name authority such as InterNIC. Otherwise, the website associated with the domain won't be visible on the Internet. (There is a fee for each extra name you register.)

For more information about multiple sites, see "Managing Multiple Sites on One Server" on page 53.

For more information about WebDAV, see "Understanding WebDAV" on page 16.

For more information about MIME formats, see "Understanding Multipurpose Internet Mail Extension (MIME)" on page 17.

Understanding WebDAV

If you use WebDAV to provide live authoring on your website, you must create realms and set access privileges for users. Each site you host can be divided into a number of realms, each with its own set of users and groups that have browsing or authoring privileges.

Setting WebDAV Privileges

The Apache process running on the server must have access to the website's files and folders. To provide this access, Mac OS X Server installs a user named www and a group named www in the server's Users & Groups List. The Apache processes that serve webpages run as the www user and as members of the www group.

You must give the www group Read access to files in websites so the server can transfer the files to browsers when users connect to the sites. The Apache process runs with an effective user ID and group ID of www and needs access to the files and directories in the WebDAV realm and in the /var/run/davlocks/ folder.

Understanding WebDAV Security

In Mac OS X Server v10.6, WebDAV lets you use a web server as a file server. Clients use their browsers from multiple locations, on many types of computers, to access and share files on the server. For more information about using WebDAV for file sharing, see "Using WebDAV to Share Files" on page 52.

WebDAV also lets users update files on a website while the site is running. When WebDAV is enabled, the web server must have write access to the files and folders in the site users are updating.

Both features of WebDAV—providing a file server with browser access, and website updating—have significant security implications when other sites are running on the server, because individuals responsible for one site might be able to change other sites. You can avoid this problem by carefully setting access privileges for the site files using the File Sharing pane of Server Admin.

Mac OS X Server uses the group www, which contains the Apache processes. You must give the www group Read & Write access to files on the website. You also need to assign these files Read & Write access by the website administrator (Owner) and No Access to Everyone. For more information, see *File Server Administration*.

Defining Realms

When you define a realm, which is typically a folder (or file system), the access privileges you set for the realm apply to all contents of that folder. If a new realm is defined for a folder in the existing realm, only the new realm privileges apply to that folder and its contents. For information about creating realms and setting access privileges, see "Using Realms to Control Access" on page 38.

Note: When an assigned user or group possesses fewer permissions than the permissions assigned to user Everyone, that user or group is deleted upon a refresh. This happens because the access assigned to Everyone preempts the access assigned to specific users or groups with fewer permissions than those possessed by Everyone.

Greater permissions always take precedence. Consequently, the list of assigned users and groups with fewer permissions are not saved in the Realms pane upon refresh if their permissions are determined to be preempted by the permissions assigned to Everyone.

After the refresh, the names are no longer listed in the list on the right in the Realms pane. Also, for a brief period of time, user Everyone will switch its displayed name to "no-user."

Understanding Multipurpose Internet Mail Extension (MIME)

Multipurpose Internet Mail Extension (MIME) is an Internet standard for specifying what happens when a web browser requests a file with specific characteristics. You can choose the response you want the web server to make based on the file's suffix. Your choices depend partly on what modules you have installed on your web server. Each combination of a file suffix and its associated response is known as a *MIME type mapping*.

MIME Suffixes

A *suffix* describes the type of data in a file. Here are some examples:

- txt for text files
- cgi for Common Gateway Interface files
- gif for GIF (graphics) files
- php for PHP: Hypertext Preprocessor (embedded HTML scripts) used for Webmail, and so on
- tiff for TIFF (graphics) files

Mac OS X Server includes a default set of MIME type suffixes. This set includes all the suffixes in the mime.types file distributed with Apache, with a few additions. If a suffix you need is not listed or does not have the behavior you want, use Server Admin to add the suffix to the set or to change its behavior.

Note: Do not add or change MIME suffixes by editing configuration files.

Web Server Responses (Content Handlers)

When a file is requested, the web server handles the file using the response specified for the file's suffix. Responses, also known as content handlers, can be an action or a MIME type. Likely responses include:

- Return file as MIME type (you enter the mapping you want to return)
- Send-as-is (send the file exactly as it exists)
- Cgi-script (run a CGI script you designate)
- Imap-file (generate an IMAP mail message)
- Mac-binary (download a compressed file in MacBinary format)

MIME type mappings are divided into two subfields separated by a forward slash, such as text/plain.

Mac OS X Server includes a list of default MIME type mappings. You can edit these and add others using Server Admin.

When you specify a MIME type as a response, the server identifies the type of data requested and sends the response you specify. For example, if the browser requests a file with the suffix "jpg" and its associated MIME type mapping is image/jpeg, the server knows it needs to send an image file and that its format is JPEG. The server doesn't need to do anything except serve the data requested.

Actions are handled differently. If you've mapped an action to a suffix, your server runs a program or script, and the result is served to the requesting browser. For example, if a browser requests a file with the suffix "cgi" and its associated response is the action cgi-script, your server runs the script and returns the resulting data to the requesting browser.

Working with Web Service

2

Use this chapter to learn how to use Server Admin to set up Web service and to manage web settings and components.

Mac OS X Server combines the latest open source and standards-based Internet services in a complete, easy-to-use web hosting solution. Use Server Admin to configure Web service and set up web components based on your organization's needs.

Setup Overview

Here is an overview of the basic steps for setting up Web service.

Step 1: Read about essential concepts for web services. For issues to consider before setting up Web service on your network, read "Essential Concepts for Web Services Before You Begin" on page 14.

Step 2: Turn Web service on. Before configuring Web service, you must turn it on. See "Turning Web Service On" on page 20.

Step 3: Configure web general settings. Configure General settings to set connection settings and enable Tomcat. See "Configuring Web Service General Settings" on page 20.

Step 4: Configure web MIME types. Use MIME types to set up how your web server responds when your browser requests specific file types. See "Configuring Web Service MIME Types Settings" on page 22.

Step 5: Configure web proxy settings. Use proxy settings to enable a proxy that sends requests to and from the web server. See "Configuring Web Service Proxy Settings" on page 23.

Step 6: Configure web modules. Use modules settings to select or deselect which web modules are available for the web server. See "Configuring Web Service Modules Settings" on page 25.

Step 7: Configure web services. Use Web service settings to set up common settings shared between wikis, blogs, web calendars, and web-based mailing list archives for groups. See "Configuring Web Service Server Settings" on page 26.

Step 8: Start Web service. After you configure Web service, start the service to make it available. See "Starting Web Service" on page 27.

Turning Web Service On

Before you can configure web settings, you must turn on Web service in Server Admin.

To turn Web service on:

1. Open Server Admin and connect to the server.
2. Click Settings, then click Services.
3. Select the Web checkbox.
4. Click Save.

Setting Up Web Service

The following sections describe how to configure Web service using Server Admin and how to start Web service when you finish.

There are five groups of settings on the Settings pane for Web service in Server Admin:

- **General.** Set Web service connection and spare server settings.
- **MIME Types.** Set up multipurpose internet mail extension (MIME) types and content handlers.
- **Proxy.** Configure proxy settings for the web server.
- **Modules.** Select which web modules are available for Web service.
- **Web Services.** Configure settings common for web services that are hosted on any site.

Configuring Web Service General Settings

You use the General settings pane in Web service to configure web server connection settings, spare server settings, and to enable or disable Tomcat.

For more information on web server connection settings, see "Performance Tuning" on page 30.

To configure Web service General settings:

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 Web.
4. Click Settings, then click General.
5. Enter the maximum simultaneous connections.

   The default setting is 1024 connections.

   This is the number of concurrent connections that are allowed to access your web server.
6. Enter the time in seconds for the connection timeout.

   The default setting is 300 seconds.

   This is the length of time before a connection to your web server times out. This happens when a user is viewing web pages but not interacting with the site.
7. Enter the number of minimum and maximum spare servers.

   Spare server settings regulate the creation of idle spare server processes. Keep in mind the following:

   - For maximum spare servers, if more than the maximum number of spare servers are idle, the server stops adding spare servers beyond the maximum limit.
   - For minimum spare servers, if there are fewer than the minimum spare servers required, the server adds spare servers at a rate of one per second.
8. Enter the number of servers to start.

   This is the number of spare servers that get created at startup.
9. For your site to permit persistent connections, select the Allow Persistent Connections checkbox and configure the persistent connection settings:

   - Set the "Maximum allowed request." The default is 500 connections.
   - Set the "Persistent connection timeout" length in seconds. The default is 15 seconds.
10. Select the Enable Tomcat checkbox to turn Tomcat on.
11. Click Save.

From the command line:

- To view a setting:

```
$ sudo serveradmin settings web:setting
```

- To view a group of settings:

```
$ sudo serveradmin settings web:IFModule:_array_id:mod_alias.c:*
```

  You can view a group of settings that have part of their names in common by entering as much of the name as you want, stopping at a colon (:), and entering an asterisk (*) as a wildcard for the remaining parts of the name.

- To view all Web service settings:

```
$ sudo serveradmin settings web
```

- To change a setting:

```
$ sudo serveradmin settings web:setting = value
```

- To change several settings:

```
$ sudo serveradmin settings
web:setting = value
web:setting = value
web:setting = value
[...]
Control-D
```

Parameter	Description
setting	A Web service setting.
value	A relevant value for the setting.

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

Configuring Web Service MIME Types Settings

MIME is an Internet standard for specifying what happens when a web browser requests a file with specific characteristics. The MIME Types pane in Server Admin lets you set up how your web server responds when a browser requests specific file types.

Content handlers are similar and also use suffixes to determine how a file is handled. The file suffix describes the type of data in the file.

Each suffix and its associated response (such as text/plain and text/richtext) are known as a MIME type mapping or a content handler mapping. The server includes the MIME type in its response to a browser to describe the information being sent. The browser can then use its list of MIME preferences to determine how to handle the information.

The server's default MIME type is text/html, which specifies that a file contains HTML text.

The web server is set up to handle the most common MIME types and content handlers. You can add, edit, or delete MIME type and content handler mappings. In Server Admin, these files are displayed in two lists: MIME Types and Content Handlers. You can edit items in each list and add or delete items in either list.

To configure MIME Types settings:

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 Web.

4 Click Settings, then click MIME Types.

5 Add, delete, or edit MIME Type mappings:

- To add a MIME Type mapping, click the Add (+) button. Enter each part of the name (separated by a slash), then double-click "new" in the Suffixes list and enter a suffix name. Use the Add (+) or Delete (–) button (next to the Suffixes list) to add or delete suffixes in the Suffixes list. Then click OK.
- To delete a MIME Type mapping, select it from the MIME Types list and click the Delete (–) button.
- To edit a MIME Type mapping, select the mapping from the MIME Types list and click the Edit (/) button. Make your changes to the mapping, then click OK.

6 Add, delete, or edit Content Handlers mappings:

- To add a Content Handlers mapping, click the Add (+) button. Enter the name, then double-click "new" in the Suffixes list and enter a suffix name. Use the Add (+) or Delete (–) button (next to the Suffixes list) to add or delete suffixes in the Suffixes list. Then click OK.
- To delete a Content Handlers mapping, select it from the Content Handlers list and click the Delete (–) button.
- To edit a Content Handlers mapping, select the mapping from the Content Handlers list and click the Edit (/) button. Make your changes to the mapping, then click OK.

Note: If you add or edit a handler that has a Common Gateway Interface (CGI) script, make sure you enable CGI execution for your site in the Options pane of the Sites pane.

7 Click Save.

Configuring Web Service Proxy Settings

You use the Proxy settings pane in Web service to configure a forward proxy. A forward proxy is located between the web server and client browsers and passes requests for information between clients and server. The client must be configured to use the forward proxy to access other sites.

A forward proxy is commonly used to provide Internet access to internal client computers that are restricted by a firewall. A forward proxy lets users verify a local server for frequently used files. You can use a forward proxy to block access to specific sites for internal clients. A forward proxy can improve performance.

You can also use a forward proxy to speed response times and reduce network traffic. The proxy stores recently accessed files in a cache on your web server. Browsers on your network verify the cache before retrieving files from distant servers.

For additional security, restrict access to your server by setting up a forward proxy. This is especially helpful if your server hosts internal and external websites. If your web server is set up to act as a proxy, you can prevent the server from caching objectionable websites.

Important: To take advantage of this feature, client computers must specify your web server as their proxy server in their browser preferences.

When setting up a forward proxy, make sure you create and enable a website for the proxy. You might want to disable logging on the proxy site or configure the site to record its access log in a separate file from your other sites' access logs. The site does not need to be on port 80 but setting up web clients is easier if its browsers use port 80 by default.

Mac OS X Server v10.6 provides forward and reverse proxy. You configure a reverse proxy in the Web service Sites pane. For information about setting up a reverse proxy, see "Setting Up a Reverse Proxy" on page 45.

To configure Web service forward proxy settings:

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 Web.
4. Click Settings, then click Proxy.
5. Select the Enable Forward Proxy checkbox.

   If a forward proxy server is enabled, each site on the server can be used as the proxy.

   You might see this message: "Forward Proxy will not properly function with current site configuration." This issue is resolved further in the procedure, so click Ok to continue.
6. Select the Control Access To Proxy checkbox to limit access and then enter the domain name that is permitted access in the "Allowed Domain" field.

   Generally, when limiting who can use your web server as a proxy, limit access to a specific domain. Users in that domain obtain access.
7. Create the cache folder by opening a Terminal window and entering the following commands:

   ```
   $ sudo mkdir /var/run/proxy
   $ sudo chown www:www /var/run/proxy
   ```

   This is the default cache folder. You can choose or create a different folder for the cache, but make sure the owner and group are www and have Read and Write access privileges.

To choose a different folder, click the Choose button or enter the path in the Cache Folder field. If you are administering a remote server, File server must be running on the remote server to use the Choose button.

8. Set the disk cache target size and set an interval for emptying the cache.

   When the cache reaches this size, the oldest files are deleted from the cache folder.

9. To add a host to block, click the Add (+) button, enter its URL, and then add the names of all hosts you want to block.

   You can import a list of websites by dragging the list to the list of blocked hosts. The list must be a text file with host names separated by commas or tabs (also known as csv and tsv strings). Make sure the last entry in the file is terminated with a carriage return/line feed; otherwise, it is overlooked.

10. Click Save.
11. Click Sites and select the default site (the one whose IP Address is listed as *).
12. Click Aliases.
13. From the Web Server Aliases list, select the alias listed as *.
14. Click the Delete (–) button to delete the alias.
15. Click Save.

Configuring Web Service Modules Settings

You use the Modules settings pane in Web service to configure the web modules your server will use.

The Web service in Mac OS X Server is modular. This means that administrators have more flexibility in the web technologies that are added to the service. For more information on web modules, see "Working with Web Modules" on page 75.

To configure Web service modules settings:

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 Web.
4. Click Settings, then click Modules.
5. Select the Enabled checkbox next to each module you want the server to use.

   For information on how to add, change, or delete modules, see "Working with Web Modules" on page 75.

6. Click Save.

Configuring Web Service Server Settings

You use the Web Services settings pane in Web service to configure common web server settings that are hosted on any site.

Web services include wikis, blogs, web calendars, and web-based mailing list archives for groups, webmail, and web-based email rules and password changes. These services are independently enabled for each website you host.

To configure Web service settings for your server:

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 Web.
4. Click Settings, then click Wiki.
5. In the Data Store field, enter the folder where Web service will store information.

   The default folder is /Library/Collaboration/. Click Choose to browse for a different folder.
6. In the Maximum Attachment Size field, enter the maximum attachment size for files that can be attached to the Wiki.

   The default file size is 50 MB.
7. In the SMTP Relay field, click Configure and enter the name of the server used to deliver email notifications.

   If the server you are configuring is not running an SMTP server, enter a relay SMTP server that can deliver email notification messages.
8. From the Default Theme pop-up menu, choose the theme for your wiki.

   A theme controls the appearance of a wiki and blog. Themes determine the color, size, location, and other attributes of wiki and blog elements. Each theme is implemented using a style sheet. The default theme is used when a wiki or blog is initially created, but blog owners can change the theme. For more information, see *Wiki Server Administration*.
9. In Wiki Admins, enter the users or groups that are allowed to administer wikis using the User & Groups window.

   Click the Add (+) button to open the User & Groups window. If you don't see a recently created user or group in the Users & Groups window, click the Refresh button (below the Servers list). Then drag names from the Users & Groups window to the Users or Groups column of the Wiki Admins field.
10. Click Save.

Starting Web Service

You start Web service from Server Admin. When you make configuration changes to Web service and you save your changes, the web server is restarted, causing those changes to be recognized by the httpd process.

To start Web service:

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 Web.
4. Click Start Web (below the Servers list).

   The service runs until you stop it and restarts if your server is restarted.

From the command line:

- To start Web service:

```
$ sudo serveradmin start web
```

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

Managing Web Service

This section describes typical day-to-day tasks you might perform after you set up Web service on your server. Initial setup information appears in "Setting Up Web Service" on page 20.

For more information about website management, see "Managing Websites" on page 47.

Checking Web Service Status

Use Server Admin to check the status of Web service.

To view Web service status:

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 Web.
4. To see information such as whether the service is running, when it started, Apache Server version, number of requests per second, and server throughput, click Overview.
5. To review access and error logs, click Logs.

To choose which log to view, select the logs in the list. The corresponding log appears below.

Use the Filter field in the lower right to search for specific entries.

6. To see graphs of connected users or throughput, click Graphs.

   Use the pop-up menus to choose which graph to view and the duration of time to graph data for.

7. To see a list of websites, click Sites.

   The list includes the domain name, address, port, and whether the site is enabled.

From the command line:

- To see if Web service is running:

```
$ sudo serveradmin status web
```

- To see complete Web service status:

```
$ sudo serveradmin fullstatus web
```

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

Viewing Web Service Logs

Use Server Admin to view the error and access logs for Web service, if you enabled them. Web service in Mac OS X Server uses the standard Apache log format, so you can also use a third-party log analysis tool to interpret the log data.

To view logs:

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 Web.
4. Click Logs, then choose between an access or error log by selecting the log from the list of logs.

   To search for specific entries, use the Filter field in the lower right.

From the command line:

- To view the latest entries in a log:

```
$ tail log-file
```

To see where the current error and activity logs for each site are located, use the `serveradmin getLogPaths` command.

- To view log paths:

```
$ sudo serveradmin command web:command = getLogPaths
```

- To display a log of periodic samples of the number of requests, cache performance, and data throughput:

```
$ sudo serveradmin command
web:command = getHistory
web:variant = statistic
web:timeScale = scale
Control-D
```

Parameter	Description
statistic	The value you want to display. Valid values: • `v1`—Number of requests per second • `v2`—Throughput (bytes/sec) • `v3`—Cache requests per second • `v4`—Cache throughput (bytes/sec)
scale	The length of time in seconds, ending with the current time, that you want to see samples for. For example, to see 30 minutes of data, specify `qtss:timeScale = 1800`.

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

Viewing Web Graphs

Use Server Admin to view Web service graphs.

To view web graphs:

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 Web.
4. To see graphs of connected users or throughput, click Graphs.

   To choose which graph to view and the duration of time to graph data for, use the pop-up menus.
5. To update the data in the graphs, click the Refresh button (below the Servers list).

Stopping Web Service

Use Server Admin to stop Web service. This disconnects all users, so connected users might lose unsaved changes in open files.

To stop Web service:

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 Web.

4 Click Stop Web (below the Servers list).

5 Click Stop Now.

From the command line:

- To stop Web service:

```
$ sudo serveradmin stop web
```

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

Performance Tuning

You can limit the period of time that users are connected to the server. You can also specify the number of connections to websites on the server at one time.

Setting Simultaneous Connections for the Web Server

You can specify the number of simultaneous connections to your web server. When the maximum number of connections is reached, new requests receive a message that the server is busy.

Simultaneous connections are concurrent HTTP client connections. Browsers often request several parts of a webpage at the same time, and each request creates a connection. As a result, a high number of simultaneous connections can be reached if the site has pages with multiple elements and many users are trying to reach the server at one time.

To set the maximum number of connections to your web server:

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 Web.

4 Click Settings, then click General.

5 Enter a number in the "Maximum simultaneous connections" field.

The range for maximum simultaneous connections is 1 to 1024. The default is 1024, but you can set the number higher or lower, taking into consideration the performance needs of your server.

6 Enter the time in seconds for the Connection timeout.

The default is 300 seconds.

This is the length of time before a connection to your web server times out. This happens when a user is viewing web pages but not interacting with the site.

7 Enter the number of minimum and maximum spare servers.

Spare server settings regulate the creation of idle spare server processes. Keep in mind the following:

- For maximum spare servers, if more than the maximum number of spare servers are idle, the server stops adding spare servers beyond the maximum limit.
- For minimum spare servers, if there are fewer than the minimum spare servers required, the server adds spare servers at a rate of one per second.

8 Enter the number of servers to start.

This is the number of spare servers that get created at startup.

9 Click Save.

Setting Persistent Connections for the Web Server

You can set up your web server to respond to multiple requests from a client computer without closing the connection each time. Repeatedly opening and closing connections isn't efficient and decreases performance.

Most browsers request a persistent connection from the server, and the server keeps the connection open until the browser closes the connection. This means the browser is using a connection even when no information is being transferred. The Apache documentation refers to persistent connects as Keep-Alive connections.

You can authorize more persistent connections—and avoid sending a Server Busy message to other users—by increasing the number of authorized persistent connections.

Important: Persistent connections are not compatible with the performance cache.

To set the number of persistent connections:

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 Web.

4 Click Settings, then click General.

5 Select the "Allow Persistent Connections" checkbox if it is not selected.

6 Enter a number in the "Maximum allowed request" field.

The range for maximum allowed request is 1 to 2,048. The default is 500 per connection.

7 Click Save.

Web service restarts when you save the changes.

Setting a Connection Timeout Interval

You can specify a time period after which the server can drop a connection that is inactive.

To set the connection timeout interval:

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 Web.

4 Click Settings, then click General.

5 In the "Persistent connection timeout" field, specify the amount of time that can pass between requests before the session is disconnected by the web server.

The range for connection timeout is 0 to 9,999 seconds. The default is 15 seconds.

6 Click Save.

Creating and Managing Websites

3

Use this chapter to create and manage websites that are hosted on your web server.

With Web service configured and your web server running, you can create websites. You create and modify websites on your server with Server Admin. Creating a website establishes the framework that you use to provide web hosted content in various formats.

Website Setup Overview

Here is an overview of the basic steps for setting up a website.

Step 1: Configure your web server. The default configuration works for most web servers that host a single website, but you can configure all basic features of Web service and websites using Server Admin.

For more information, see Chapter 2, "Working with Web Service," on page 19.

For more advanced configuration options, see Chapter 5, "Working with Open Source Applications."

To host user websites, you must configure at least one website.

Step 2: Set up the web folder. When your server software is installed, a folder located in /Library/WebServer/Documents/ is set up in the file system. Put items you want to make available through a website in the web folder. You can create subfolders in the web folder to organize the information, and it is generally recommended that you do so if you create additional virtual hosts.

In addition, each registered user has a Sites folder in the user's home folder. Graphics or HTML pages stored in the user's Sites folder are served from http://server.example.com/~username/.

For more information, see "Setting Up the Web Folder" on page 35.

Step 3: Assign privileges for your website. The Apache processes that serve webpages must have Read access to files and Read/Execute access to folders. (In the case of folders, Execute access means the ability to read the names of files and folders contained in that folder.)

Those Apache processes run as user www, a special user created for Apache when Mac OS X Server is installed. User www is a member of group www, so for the Apache process to access the content of the website, the files and folders must be readable by user www.

You must give group www at least Read-Only access to files in your website so it can transfer those files to browsers when users connect to the site. This applies to all parent folders as well. In other words, the folder containing your web content and the folder containing that folder, and so on, must be readable and searchable by user or group www.

You can do this by:

- Making the files and folders readable and searchable by everyone regardless of their user or group ownership.
- Making group www the owner of files and folders and making sure that the files and folders are readable and searchable by the owner.
- Making group www the owner of files and folders and making sure the files and folders are readable and searchable by the group.
- Making sure the files and folders are readable and searchable by everyone (world), regardless of their ownership and group settings. This is the default case.

For information about assigning privileges, see *File Server Administration*.

Step 4: Create the website. Use Server Admin to create a website. After the site is created, configure the settings for your network environment and web requirements. For details, see "Creating a Website" on page 36.

Step 5: Set the default page. When users connect to your website, they see the default page. When you first install the software, the file index.html in the Documents folder is the default page. Replace this file with the first page of your website and name it index.html.

To name the file something else, add that name to the list of default index files and move its name to the top of the list in the General pane of the site settings window of Server Admin. For instructions about specifying default index file names, see "Setting the Default Webpage" on page 36.

Step 6: (Optional) Configure website Apache options. Use the Sites Options pane to configure Apache web options. For details, see "Configuring Website Apache Options" on page 37.

Step 7: (Optional) Create realms to control website access. You can create a realm to control access to locations or folders in a website. Use the Sites Realms pane to configure website realms. For details, see "Using Realms to Control Access" on page 38.

Step 8: Enable website access and error logs. Use the Logging pane in the Sites pane to enable access and error logs for your website. For details, see "Enabling Access and Error Logs for a Website" on page 40.

Step 9: (Optional) Enable SSL. Use the Security pane in the Sites pane to enable SSL for your website. For details, see "Enabling Secure Sockets Layer (SSL)" on page 41.

Step 10: (Optional) Create website aliases and redirects. Use the Aliases pane in the Sites pane to configure website aliases and redirects. For details, see "Managing Access to Sites Using Aliases" on page 42.

Step 11: (Optional) Set up a reverse proxy. Use the Proxy pane in the Sites pane to configure a reverse proxy for your website. For details, see "Setting Up a Reverse Proxy" on page 45.

Step 12: (Optional) Enable optional website features. Use the Web Services pane in the Sites pane to enable optional web services. For details, see "Enabling Optional Web Services" on page 46.

Step 13: Connect to your website. To make sure the website is working properly, open your browser and try to connect to your website over the Internet. If your site isn't working correctly, see Chapter 7, "Solving Web Service Problems," on page 83.

Setting Up Your Website

The following sections provide instructions for setting up your website.

Setting Up the Web Folder

To make files available through a website, put the files in the web folder for the site. To organize the information, you can create subfolders inside the web folder. The folder is located in /Library/WebServer/Documents/.

In addition, each registered user has a Sites folder in the user's home folder. Graphics or HTML pages stored here are served from http://server.example.com/~username/.

To set up the web folder for your website:

1. Open the web folder on your web server.

   By default, the documents folder is located in /Library/WebServer/Documents/.

2. Replace the index.html file with the main page for your website.

   Make sure the name of your main page matches the default document name you set in the Sites General pane. For details, see "Setting the Default Webpage" on page 36.

3. Copy files you want available on your website to the web folder.

Creating a Website

Use Server Admin to create a website framework. This allows content from the web folder to be hosted by your web server. Before you can create a website, you must produce the content for the site and set up your site folders.

To create a website:

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 Web.
4. Click Sites, then click the Add (+) button to add a site.
5. In the Sites General pane, enter the fully qualified DNS name of your website in the Host Name field.

   Note: You can leave the Host name blank and the IP address set to "any" and the site remains operational. However, if you use a group wiki, set a Host name for the website.
6. Enter the IP address and port number for the site.

   The default port number is 80. If you are using SSL, the port is 443. Make sure the number you choose is not in use by another service on the server.

   To enable a website on the server, the website must have a unique name, IP address, and port number combination. For more information see "Hosting More Than One Website" on page 15.

   > ***WARNING:*** Do not try to access the server through the direct ports. Instead, allow your access to be proxied through Apache as it is set up. For instance, Server Admin provides no obvious way to configure wikis, and will return the xmlrpc error. In addition, do not access the wiki server on port 8086 or 8087.
7. Enter the path to the folder you set up for this website.

   You can also click the Choose button and browse for the folder you want to use.
8. In the Error Document field, enter the page you want to appear when a web page error occurs.
9. (Optional) In the Administrator Email field, enter the administrator mail address.

   The server sends website error messages to this mail address.
10. Click Save.

Setting the Default Webpage

The default page appears when a user connects to your website by specifying a folder or host name instead of a file name.

You can have more than one default page (known as a default index file in Server Admin) for a website. If multiple index files are listed for a website, the web server uses the first one listed in the web folder for that website.

To set the default webpage:

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 Web.
4. Click Sites, then select the website in the list.
5. Click General below the websites list.
6. At the right of the Default Index Files list, click the Add (+) button and enter a name (but do not use spaces in the name).

   A file with this name must be in the web folder.
7. To set the file as the default page the server displays, drag that file to the top of the list.
8. Click Save.

   Note: If you plan to use only one index page for a site, you can leave index.html as the default index file and change the content of the existing file with that name in /Library/WebServer/Documents/.

Configuring Website Apache Options

The default page appears when a user connects to your website by specifying a folder or host name instead of a file name.

To configure website Apache options:

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 Web.
4. Click Sites, then select the website in the list.
5. Click Options below the websites list.
6. Select any of the following Apache options your website requires:

   - **Folder Listing:** Displays a list of folders when users specify the URL and no default webpage (such as index.html) is present. Instead of viewing a default webpage, the server shows a list of the web folder's contents. Folder listings appear only if no default document is found.

- **WebDAV:** Turns Web-based Distributed Authoring and Versioning (WebDAV) on, which allows users to make changes to websites while the sites are running. If you enable WebDAV you must also assign access privileges for the sites and for the web folders.
- **CGI Execution:** Permits Common Gateway Interface (CGI) programs or scripts to run on your web server. CGI programs or scripts define how a web server interacts with external content-generating programs. For more information, see "Enabling a Common Gateway Interface (CGI) Script" on page 49.
- **Server Side Includes (SSI):** Permits SSI directives placed in web pages to be evaluated on the server while the website is active. You can add dynamically generated content to your web pages while the files are being viewed by users. For more information, see "Enabling Server Side Includes (SSI)" on page 50.
- **Allow All Overrides:** Instructs Web service to look for additional configuration files inside the web folder for each request.

7 Click Save.

Using Realms to Control Access

You can use realms to control access and provide security to locations or folders within a website. Realms are locations at the URL or they are files in the folder that users can view.

If WebDAV is enabled, users with authoring privileges can also change content in the realm. You set up the realms and specify the users and groups that have access to them.

When an assigned user or group possesses fewer permissions than the permissions that have been assigned to user Everyone, that user or group is deleted upon a refresh. This happens because the access assigned to Everyone preempts the access assigned to specific users or groups with fewer permissions than those possessed by Everyone. The greater permissions always take precedence.

Consequently, the list of assigned users and groups with fewer permissions are not saved in the Realms pane upon refresh if their permissions are determined to be preempted by the permissions assigned to Everyone. After the refresh the names are no longer listed in the list on the right in the Realms pane. Also, for a brief period of time, user Everyone will switch its displayed name to "no-user."

To use a realm to control website access:

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 Web.

4. Click Sites, then select the website in the list.
5. Click Realms below the websites list.
6. Click the Add (+) button to create a realm.

   The realm is the part of the website users can access.
7. In the Realm Name field, enter the realm name.

   This is the name users see when they log in to the website.
8. From the Authentication pop-up menu, choose a method of authentication:
   - Basic authentication is on by default. Don't use basic authentication for sensitive data because it sends your password to the server unencrypted.
   - Digest authentication is more secure than basic authentication because it uses an encrypted hash of your password.
   - Kerberos authentication is the most secure authentication. If you want Kerberos authentication, you must join the server to a Kerberos realm.
9. Enter the realm location or folder you are restricting access to:
   - Choose Location from the pop-up menu and enter a URL to the location in the website that you want to restrict access to.
   - Choose Folder from the pop-up menu and enter the path to the folder that you want to restrict access to.

     You can also click the Browse button to locate the folder you want to use.
10. Click OK.
11. Select the new realm and click Add (+) to open the Users & Groups window.

    To switch between the Users list and the Groups list, click Users or Groups in the window.
12. To add users or groups to a realm, drag users to the Users & Groups column on the right of the Realms pane.

    When users or members of a group you've added to the realm connect to the site, they must supply their user name and password.
13. Limit realm access to specified users and groups by setting the following permissions using the up and down arrows in the Permissions column:
    - **Browse Only:** Permits users or groups to browse the website.
    - **Browse and Read WebDAV:** Permits users or groups to browse the website and also read the website files using WebDAV.
    - **Browse and Read/Write WebDAV:** Permits users or groups to browse the website and also read and write to website files using WebDAV.
    - **None:** Prevents users or groups from using any permissions.
14. Click Save.

Use the Realms pane to delete a user or group by selecting the name and clicking the Delete (–) button.

Enabling Access and Error Logs for a Website

When enabled, Web service keeps access and error logs for your website. You can set up error and access logs for individual websites that you host on your server. However, enabling logs can slow server performance.

The access log contains an entry for each access to the website, indicating what page was accessed, by whom, and whether the access was successful, along with other details.

The error log contains information about failed accesses, or various conditions of interest to the administrator. This log prioritizes messages using severity levels ranging from debug to critical. Server Admin can limit the messages logged by the level of severity. By default, messages are logged at a "warning" level threshold.

In addition to per-site logs, there is an access log and an error log for the wikid process, which provides logging for wikis.

To enable access and error logs for a website:

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 Web.
4. Click Sites, then select the website in the list.
5. Click Logging below the websites list.
6. Click the "Enable Access Log" checkbox to enable this log.
7. Set how often you want the Access log to be archived by selecting the "Archive every __ days" checkbox and entering the number of days.
8. In the Location field, enter the path to the folder where you want to store access logs.

   If you are working with multiple websites, you can name separate logs for each website. You might want to include the site domain name in the log name for easy recognition when reviewing logs. If you have only two websites, you might want to use a single log (with the default name the server uses).

   You can also click Choose to locate the folder you want to use.

   If you are administering a remote server, File service must be running on the remote server to use Choose.
9. From the Format pop-up menu, choose a log format.
10. If necessary, edit the format string.

Note: The Help button next to the format string opens the Apache documentation web page (http://httpd.apache.org/docs/mod/mod_log_config.html), which explains parameters for format strings.

11 Set how often you want the Error log to be archived by selecting the "Archive every ___ days" checkbox for the Error log and entering the number of days.

12 In the Error log Location field, enter the path to the folder where you want to store error logs.

You can also click Choose to locate the folder you want to use.

13 Choose the level of error in the Level pop-up menu to set which error message priority gets logged.

14 Click Save.

Enabling Secure Sockets Layer (SSL)

Secure Sockets Layer (SSL) provides security for a site and its users by authenticating the server, encrypting information, and maintaining message integrity.

SSL is a per-site setting that lets you send encrypted, authenticated information across the Internet. For example, to permit credit card transactions through a website, you can protect the information that's passed to and from that site.

The SSL layer is below application protocols (for example, HTTP) and above TCP/IP. This means that when SSL is operating on the server and on the client computer, all information is encrypted before being sent.

The Apache web server in Mac OS X Server uses a public key-private key combination to protect information. A browser encrypts information using a public key provided by the server. Only the server has a private key that can decrypt that information.

The web server supports SSLv2, SSLv3, and TLSv1. More information about these protocol versions is available at www.modssl.org.

When SSL is implemented on a server, a browser connects to it using the https prefix in the URL, rather than http. The "s" indicates that the server is secure.

When a browser initiates a connection to an SSL-protected server, it connects to a specific port (443) and sends a message that describes the encryption ciphers it recognizes. The server responds with its strongest cipher, and the browser and server then continue exchanging messages until the server determines the strongest cipher that it and the browser can recognize.

The server then sends its certificate (an ISO X.509 certificate) to the browser. This certificate identifies the server and uses it to create an encryption key for the browser to use. At this point a secure connection has been established and the browser and server can exchange encrypted information.

Before you can enable SSL protection for a website, you must obtain the proper certificates. For detailed information about certificates and their management, see *Advanced Server Administration*.

To set up SSL for a website:

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 Web.
4. Click Sites, then select the website in the list.
5. Click Security below the websites list.
6. In the Security pane, click the "Enable Secure Sockets Layer (SSL)" checkbox.

   When you turn on SSL, a message appears, noting that the port is changed to 443.
7. In the Certificate pop-up menu, choose the certificate you want.

   If the certificate is protected by a passphrase, the name of the certificate must match the virtual host name. If the names don't match, Web service won't restart.

   If you want to create or edit a certificate, choose Manage Certificates from the Certificate pop-up menu.

   For more information about certificates, see *Advanced Server Administration*.
8. Click Save.
9. Confirm that you want to restart Web service.

Server Admin lets you enable SSL with or without saving the SSL passphrase. If you did not save the passphrase with the SSL certificate data, the server prompts you for the passphrase upon restart but won't accept manually entered passphrases. Use the Security pane for the site in Server Admin to save the passphrase with the SSL certificate data. For more information, see "Using a Passphrase with SSL Certificates" on page 50.

Managing Access to Sites Using Aliases

You can manage access to websites by using aliases and redirect commands. An alias is an alternative name for a website, which can be useful in simplifying the name users must enter to connect to the site. You can have multiple aliases for a single site.

For example, with a host named example.com you might want to provide a server alias named www.example.com.

The Server Admin Sites Aliases panel mixes two types of aliases.

- The top half of the panel is for web server aliases that give an alternate name to the website or virtual host.

- The bottom half of the panel is for URL aliases and redirects, which are more detailed.

By default, the Sites Aliases panel lists a Web Server Alias * (wildcard) directive. To perform name-based virtual hosting, remove the wildcard. If you do not remove the wildcard, browsers trying to access your virtual hosts will access the default host instead.

Note: Server aliases and virtual hosts must be DNS names and they must resolve to the IP address of the website.

A redirect command specifies that when users ask for a specific folder or file on a site, their browser is sent to a different location that you designate.

For example, you could set up a redirect so that if the user enters a URL such as www.example.com/images/boats.jpg and the site has an images folder containing the boats.jpg file, the browser gets redirected to www.apple.com.

By default, the Sites Aliases panel lists the following redirects:

- /collaboration — used to provide the CSS required by Apple's wiki and blog pages and default index.html and Spotlight displays
- /icons/ — used to direct browsers to the standard collection of icons shipped with Apache
- /error/ — used to direct browsers to the standard collection of error pages shipped with Apache

The examples below show aliases and redirects.

Type	Pattern	Path	Description
Alias	/images	/Volumes/Data/imgs	If you make a file system change but don't want to update image URLs in your HTML files, this instructs www.example.com/images/boat.jpg to take the file from /Volumes/Data/imgs/boat.jpg.
Alias Match	^/(.*)\.gif	/Library/WebServer/Documents/gifs$1.jpg	If you store gif files in a specific folder but they must be referenced from the web server root, this instructs the alias www.example.com/logo.gif to serve the file located at /Library/WebServer/Documents/gifs/logo.gif.
Redirect	/webstore	https://secure.example.com/webstore	This redirects queries for a webstore to the secure server.
Redirect Match	(.*)\.jpg	http://imageserver.example.com$1.jpg	If you host static content such as images on a new server, this redirects requests for files ending in .jpg to a different server.

Further information and other examples of aliases and redirects are available at http://httpd.apache.org/docs/mod/mod_alias.html.

To create or edit aliases the site responds to:

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 Web.
4. Click Sites, then select the website in the list.
5. Click Aliases below the websites list.
6. To create aliases, click the Add (+) button under the Web Server Aliases list or select an alias and click the Edit button.
7. In the Server Alias field, enter an alias and click OK.

8. To create a redirect, click the Add (+) button under URL Aliases and Redirects list or select a redirect and click the Edit (/) button.
9. Choose one of the following options from the Type pop-up menu:
   - **Alias:** Maps from the URL term to a location in the file system.
   - **Alias Match:** Maps a regular expression pattern for a path to a location in the file system.
   - **Redirect:** Maps a URL term to redirect to another server.
   - **Redirect Match:** Maps a regular expression pattern for a path to redirect to another server.
10. In the Pattern field, enter the pattern for the alias or redirect.

    This is the pattern input from the incoming URL.
11. In the Path field, enter the path for the alias or redirect and click OK.

    This is the path in the file system or the redirect that gets sent back to the requester.
12. Click Save.

Setting Up a Reverse Proxy

You set up a reverse proxy using the Proxy pane in the Sites pane of Server Admin. A reverse proxy differs from a forward proxy by appearing to client computers as a normal web server. The client computers make requests to the web server. The reverse proxy then determines the location to send the requests to and returns web content as if it were the web server. Client computers do not need configuration changes to use a reverse proxy.

You can use a reverse proxy to provide Internet users with access to a server located behind a firewall. A reverse proxy can also balance network traffic among several back-end servers or provide caching for a slower back-end server. Administrators also use a reverse proxy to bring several servers into the same URL space.

Mac OS X Server v10.6 provides forward and reverse proxy. The forward proxy is configured in the Web service Settings pane. For information about setting up a forward proxy, see "Configuring Web Service Proxy Settings" on page 23.

To enable reverse proxy:

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 Web.
4. Click Sites, then select the website in the list.
5. Click Proxy below the websites list.

6 Select the "Enable Reverse Proxy" checkbox.

7 In the Proxy Path field, enter the proxy pathname.

8 In the Sticky Session Identifier field, enter a sticky session identifier or choose one from the pop-up menu.

A sticky session identifier is used to bind a user that is browsing your site to the server that the session started on. This keeps users that are browsing a website that is supported by multiple web servers connected to the server that they started with.

9 To add balancer members, click the Add (+) button below the Balancer Members list; enter a Server URL (worker URL) and define its route and load factor; then click OK.

A balancer member is a server (designated by its worker URL) that shares the network traffic generated by website sessions. Multiple balancers share the website traffic by binding and routing a predetermined load to each server. This prevents a single server from being inundated by web traffic and it improves performance.

The route of the worker URL is a value appended to the sticky session ID.

The load factor is a number between 1 and 100 that defines how much load the worker will handle.

10 Add additional balancer members as necessary, depending on your network requirements.

11 Click Save.

Enabling Optional Web Services

You can enable additional web services such as wikis, blogs, or webmail.

To enable optional web services:

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 Web.

4 Click Sites, then select the website in the list.

5 Click Web Services below the websites list.

6 To enable blogs for your website, select the "User blogs" checkbox.

A blog is a chronological journal on your website that is updated with content added by users. For more information, see *Wiki Server Administration*.

7 To enable group website functionality, select the "Group wikis and blogs" checkbox.

This website functionality makes it easy for groups to create and distribute information in their own shared websites. For details, see *Wiki Server Administration*.

8 If you want calendar functionality for your website, select the "Group web calendar" checkbox.

Users can access a group calendar to track meetings and deadlines.

For details, see *Wiki Server Administration*.

9 To enable webmail for your website, select the Webmail checkbox.

Webmail adds mail functionality for each user of your website. For more information about setting up Webmail, see "Configuring Webmail" on page 60.

10 Click Save.

Connecting to Your Website

In this section you learn how to connect to your website and verify that everything appears as intended.After you configure your website, you view the site with a web browser to verify that everything appears as intended.

To connect to your website:

1 Open a web browser and enter the web address of your server.

You can use the IP address or the DNS name of the server. If SSL is enabled, use "https" in the URL instead of "http."

2 If you are not using the default port, enter the port number.

3 If you've restricted access to specific users, enter a valid user name and password.

> *WARNING:* Do not try to access the server through the direct ports. Instead, allow your access to be proxied through Apache as it is set up. For instance, Server Admin provides no obvious way to configure wikis and will return the xmlrpc error. Do not access the wiki server on port 8086 or 8087.

4 Verify that the website default index page appears.

Managing Websites

This section describes typical tasks you might perform after you create a website on your server. Initial website setup information appears in "Setting Up Your Website" on page 35.

Viewing Website Settings

You use the Sites pane of Server Admin to see a list of your websites. The Sites pane lists configuration information for each site, including:

- Whether a site is enabled
- The host name and IP address for a site
- The port being used for the site

To view website settings:

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 Web.
4. Click Sites, then select the website in the list.

You can view or change the settings for a site by selecting the site in the Sites pane list and clicking a setting pane.

Changing the Web Folder for a Site

The web folder is used as the root for the site (known as DocumentRoot in Apache). In other words, the default folder is the top level of the file system structure for the site.

To change the web folder for a site hosted on your server:

1. Log in to the server you want to administer.

   You need access to the file system on the server.
2. Drag the contents of your previous web folder to your new web folder.
3. Open Server Admin and connect to the server.
4. Click the triangle at the left of the server.

   The list of services appears.
5. From the expanded Servers list, select Web.
6. Click Sites, then select the website in the list.
7. In the website General pane, enter the path to the web folder in the Web Folder field, or click Choose and navigate to the new web folder location.
8. Click Save.

Changing the Access Port for a Website

By default, the server uses port 80 for connections to websites on your server. You might need to change the port used for an individual website (for example, if you want to set up a streaming server on port 80).

Make sure the number you choose does not conflict with ports being used on the server (for FTP, Apple File Service, SMTP, and others). If you change the port number for a website you must change all URLs that point to the web server to include the new port number you choose.

Note: If you turn SSL on for a site, the port for that site is changed to 443. If you turn SSL off, the port changes to 80, regardless of what it was previously. A message on the screen alerts you to the port change when you turn off SSL.

To set the port for a website:

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 Web.
4. Click Sites, then select the website in the list.
5. In the General pane, enter the port number in the Port field.
6. Click Save.

> ***WARNING:*** Do not try to access the server through the direct ports. Instead, allow your access to be proxied through Apache as it is set up. For instance, Server Admin provides no obvious way to configure wikis and will return an xmlrpc error. Do not access the wiki server on port 8086 or 8087.

Enabling a Common Gateway Interface (CGI) Script

Common Gateway Interface (CGI) scripts (or programs) send information between your website and applications that provide different services for the site.

If a CGI script is to be used by only one site, install the script in the Documents folder for the site. The script file name must end with the suffix ".cgi."

If a CGI script is to be used by all sites on the server, install it in the /Library/WebServer/CGI-Executable folder. In this case, clients must include /cgi-bin/ in the URL for the site (for example, http://www.example.com/cgi-bin/test.cgi).

Make sure the file permissions for the CGI script permit it to be executed by the user www. Because the script typically isn't owned by www, Everyone should be able to execute it.

To enable a CGI for a website:

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 Web.
4. Click Sites, then select the website in the list.
5. In the Options pane, select CGI Execution.
6. Click Save.

Note: Disabling CGIs for a site does not disable CGIs in the CGI-Executables folder.

Enabling Server Side Includes (SSI)

Enabling Server Side Includes (SSI) permits a block of HTML code or other information to be shared by different webpages on your site. SSIs can also function like CGIs and carry out commands or scripts on the server.

To enable SSI in Server Admin:

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 Web.
4. In the Options pane, select Server Side Includes (SSI).
5. Click Save.

Monitoring Website Activity

Use website logs to monitor your website activity and server events. You can configure logs to record events as messages for specific website activity. Website logs are used to track who accesses a website and what errors occur on a website. This information is useful when troubleshooting problems or monitoring malicious activity.

For more information on setting up logs, see "Enabling Access and Error Logs for a Website" on page 40.

To view website logs:

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 Web.
4. Click Logs, then select the log for your website in the list.

   The log messages display below the log list.

   Switch between logs by selecting them in the list.
5. Search the contents of a log by entering a search term in the Filter field located in the lower right corner below the log.

Using a Passphrase with SSL Certificates

If you manage SSL certificates using Server Admin and you use a passphrase for your certificates, Server Admin ensures that the passphrase is stored in the system keychain.

When a website is configured to use the certificate and that web server is started, the getsslpassphrase(8) utility extracts the passphrase from the system keychain and passes it to the web server, as long as the certificate name matches the virtual host name.

If you do not want to rely on this mechanism, you can have the Apache web server prompt you for the passphrase when you start or restart it. Use the `serveradmin` command-line tool to configure this.

To configure Apache to prompt you for a passphrase when it starts:

1. Open Terminal and enter the following command.

```
$ sudo serveradmin settings web:IfModule:_array_id:mod_ssl.c:SSL
PassPhraseDialog=builtin
```

2. Start Apache with the command:

```
$ sudo serveradmin start web
```

3. When prompted, enter the certificate passphrase.

Using WebDAV to Manage Website Content

WebDAV lets you or your users make changes to websites while the sites are running. With WebDAV, users or groups can collaboratively manage website files and folders. For more information on how WebDAV works, see "Understanding WebDAV" on page 16.

Work with WebDAV as explained in the following sections.

Enabling WebDAV on Websites

If you enable WebDAV, you must also assign access privileges for the sites and web folders.

To enable WebDAV for a site:

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 Web.
4. Click Sites, then select the website in the list.
5. Click Options below the websites list.
6. Select the WebDAV checkbox.

   This option turns WebDAV on, allowing users to make changes to websites while the sites are running. If you enable WebDAV, you must also assign access privileges for the sites and web folders.

Note: If you turned off WebDAV in the Modules pane of Server Admin, you must turn it on again before WebDAV takes effect for a site. This is true even if the WebDAV option is selected in the Options pane for the site. For more about enabling modules, see "Apache Web Module Overview" on page 75.

7 Click Save.

After WebDAV is turned on, you can use realms to control access to the website. For more information about configuring realms, see "Using Realms to Control Access" on page 38.

Using WebDAV to Share Files

You can use WebDAV to permit authorized users to connect to a website and to share files on that site. The steps below provide a brief example of setting up and sharing files using WebDAV.

Users can connect to the website using a WebDAV-enabled application, such as the Finder in Mac OS X, Adobe GoLive, Adobe Dreamweaver, or Microsoft Internet Explorer.

Browsers are not generally WebDAV-enabled, but a browser can access a WebDAV-enabled site and perform read operations (limited by realm permissions configured on the web server), because WebDAV is a superset of HTTP.

Write operations cannot be performed by a web browser. They require a WebDAV client, such as Goliath, or the client built into the Mac OS X file system and typically used through the Finder. For more information about Goliath, see www.webdav.org/goliath.

Step 1: Turn on WebDAV for the site in Server Admin. See "Enabling WebDAV on Websites" on page 51.

Step 2: Set up realms for the site in Server Admin to control access to the site. See "Using Realms to Control Access" on page 38. For example, you could create a folder for shared documents inside the website folder and give specific people Browse and Read/Write access to that folder.

Step 3: Tell authorized users how to connect to the site using the WebDAV client built into Mac OS X (or Mac OS X Server).

To use Finder to connect to a website using WebDAV:

1 Open Finder.

2 Choose Go > Connect to Server.

3 In the Server Address field, enter the HTTP URL.

The URL for connecting is http://<serverURL>:<server port>/<folder, or folder where collaborative files are stored>.

4 Click Connect.

Note: To connect from another platform, see the platform-specific documentation for the relevant WebDAV client. Microsoft platforms use an authentication mechanism that can make it difficult or impossible to mount WebDAV volumes from Mac OS X.

Configuring Web Content File and Folder Permissions

You can use file and folder permissions to control WebDAV access to website content that is located by default in the /Library/WebServer/Documents/ folder.

Mac OS X Server imposes the following constraints on web content files and folders:

- For security reasons, web content files and folders must not be writable by Everyone.
- Web content files and folders are owned by user Root and Group Admin by default, so they are modifiable by an administrator but not by user or group www.
- To use WebDAV, web content files must be readable and writable by user or group www, and folders must be readable, writable, and executable by user or group www.
- If you need to change web content files and folders while you are logged in as an administrator, those files or folders must be modifiable by the administrator.

To use WebDAV you must enable it in Server Admin. When enabled, Server Admin changes the group ownership of the WebDAV folder to www.

If you are using WebDAV and you want to make changes to web content files or folders while logged in as an administrator, you must change the web content file and folder permissions to admin, make your edits, and then restore the file and folder permissions to www.

To add sites to your web server while using WebDAV:

1. Change the group privileges of the folder containing your websites to admin.

   The default folder location is /Library/Webserver/Documents/.
2. Add your new site folder.
3. Change the group privileges of the folder containing your websites back to www.

Managing Multiple Sites on One Server

You can create multiple sites on the same web server, at the same IP address (also referred to as virtual hosts), or at separate, secondary IP addresses (referred to as multihoming).

Virtual hosts are multiple sites on the same server. These sites can be name-based (such as www.example.com) or they can use IP addresses (such as 10.201.42.73). You can use Server Admin to manage name-based and IP-based websites.

If you configure multiple sites on your server using the Sites pane in Server Admin, each site is considered a virtual host. For more information on setting up a site, see "Creating a Website" on page 36.

A multihomed site is a site that has more than one connection to the Internet. Multihoming is typically done to improve reliability and performance. Those multiple connections might be through the same Internet service provider (ISP) or through multiple ISPs, and they might involve multiple IP addresses or one address.

Using Aliases to Have a Site Respond to Multiple Names

If you want a website to respond to multiple names, choose one name as the primary and add the other names as aliases.

To set up a website this way, use the primary name as the site name in Server Admin (by clicking the site and entering the primary host name in the General pane for the site, then adding the other names in the Aliases pane for that site). For the procedure, see "Managing Access to Sites Using Aliases" on page 42.

For example, if you want your website to respond to example.com, www.example.com, and widget.example.com, you could set it up as follows (the names and IP addresses are examples only):

- **Primary name:** www.example.com (entered in the Host name field in the General pane for the site)
- **Secondary names:** example.com and widget.example.com (entered in the Web Server Aliases list for the site)

Make sure your DNS server aliases your web server address to all three domain names.

Websites and Multiple Network Interfaces

By default, the web server is configured with a single wildcard website or virtual host. Such a website is useful for these reasons:

- It responds on all network interfaces and on all IP addresses on all those interfaces.
- It responds to the DNS name that maps to one of those addresses.

You can add other websites using the Sites pane in Server Admin. When websites are added, the administrator can associate a specific IP address or a wildcard address with each website.

If the web server has multiple interfaces and multiple addresses, configuring Apache to use them is a matter of configuring websites to use the specified addresses. An even simpler scenario is to let the wildcard website respond to all addresses, which it does by default.

User Content on Websites

Mac OS X client has a Web Sharing feature, which allows a user to place content in the Sites folder of his or her home folder and have it visible on the web. Mac OS X Server also has a much broader web service capability, which can include a form of personal web sharing, but there are important differences between Mac OS X client and Mac OS X Server.

Web Service Configuration

All folder listings in Web service use Apache's FancyIndexing directive, which makes folder listings more readable.

In Server Admin, the Options pane in the Sites pane for each site has a Folder Listing checkbox. This setting enables folder listings for a specific virtual host by adding a "+Indexes" flag to Apache's Options directive for that virtual host. If folder listings are not explicitly enabled for each site (virtual host), file indexes are not shown.

The site-specific settings do not apply outside the site; therefore, site-specific settings do not apply to home directories. For users to have folder-indexing capability on their home directories, you must add suitable directives to Apache's configuration files.

For a specific user, you add the following directives inside the <IfModule mod_userdir.c> block in the httpd.conf:

```
<Directory "/Users/refuser/Sites">
Options Indexes MultiViews
AllowOverride None
Order allow,deny
Allow from all
</Directory>
```

Default Content

The default content for the user's Sites folder is an index.html file along with a few images. This index.html file has text that describes the Personal Web Sharing feature of Mac OS X client. The user must replace the index.html file with one suited to the content of his or her Sites folder.

Accessing Web Content

After the home folder is created, the content of the Sites folder in the user's home folder is visible when Web service is running. If your server is named example.com and the user's short name is refuser, the content of the Sites folder can be accessed at http://example.com/~refuser.

If the user has multiple short names, one name can also be used after the tilde (~) to access that same content.

If the user places a content file named foo.html in his or her Sites folder, that file must be available at http://example.com/~refuser/foo.html.

If the user places multiple content files in his or her Sites folder and cannot change index.html to include links to those files, the user might benefit from the automatic folder indexing described previously. If the "Enable folder listing" setting is enabled, an index listing of file names is visible to browsers at http://example.com/~refuser.

Indexing settings also apply to subfolders placed in the user's Sites folder. If the user adds a content subfolder named Example to the Sites folder and an index.html file is present inside the Example folder, or if folder indexing is enabled for that user's site, the folder is made available to browsers at http://example.com/~refuser/Example.

Securing Web Content on Case Insensitive File Systems

The recommended practice for serving web content whose access is controlled via the Realm mechanism is to serve it from case-sensitive volumes, such as UFS or HFSX, where a folder named "Protected" and another folder named "PrOtECted" are two different folders.

If you use the default case-insensitive HFS file system to serve access-controlled web content, consider using location-based realms rather than folder-based realms. However, to use folder-based realms on a case-insensitive file system, Apple provides a layer of protection for that scenario for Apache 2.2 using mod_hfs_apple.

The HFS Extended volume format commonly used for Mac OS X Server preserves the case of file names but does not distinguish between a file or folder named "Example" and one named "eXaMpLe." Without mod_hfs_apple, this insensitivity could be an issue when your web content resides on such a volume and you are attempting to restrict access to all or part of your web content using security realms.

If you set up a security realm requiring browsers to use a name and a password for Read-Only access to content in a folder named "Protected," browsers must authenticate to access the following URLs:

- http://example.com/Protected
- http://example.com/Protected/secret
- http://example.com/Protected/sECreT

However, they could bypass it by using something like the following:

- http://example.com/PrOtECted
- http://example.com/PrOtECted/secret
- http://example.com/PrOtECted/sECreT

Fortunately, mod_hfs_apple prevents those types of efforts to bypass the security realm, and this module is enabled by default.

Note: mod_hfs_apple operates on folders; it is *not* intended to prevent access to individual files. A file named "secret" can be accessed as "seCREt". This is correct behavior, and does not permit bypassing security realms.

Configuring and Managing Webmail

4

Use this chapter to learn how to enable Webmail for the websites on your server in order to provide access to basic mail operations via a web connection.

Webmail adds basic mail functions to your website. If your web service hosts more than one website, Webmail can provide access to Mail service on all sites. Mail service looks the same on all sites.

Webmail Basics

Webmail software is included in Mac OS X Server and is disabled by default.

Webmail is based on SquirrelMail (v1.4.9a), which is a collection of open source scripts run by the Apache server. For more information about SquirrelMail, see www.squirrelmail.org.

Webmail User Services

If you enable Webmail, you users can:

- Compose and send messages
- Receive messages
- Forward or reply to received messages
- Maintain a signature that is appended to each sent message
- Create, delete, and rename folders and move messages between folders
- Attach files to outgoing messages
- Retrieve attached files from incoming messages
- Manage a private address book
- Set Webmail preferences, including the color scheme displayed in the web browser

Users access the Webmail page of your website by appending /webmail to the URL of your site (for example, http://mysite.example.com/webmail/).

To use Webmail, a user must have an account on your mail server. Therefore, you must have Mail service set up if you want to offer Webmail on your websites.

Users log in to Webmail with the name and password they use for logging in to their regular mail service. Webmail does not provide its own authentication. For more information about mail service users, see *Mail Server Administration*.

When users log in to Webmail, their passwords are sent over the Internet in clear text (not encrypted) unless the website is configured to use SSL. For instructions on configuring SSL for website, see "Enabling Secure Sockets Layer (SSL)" on page 41.

More information about Webmail is available in the SquirrelMail user manual, located at http://squirrelmail.org/wiki/DocumentationHome.

Webmail and Your Mail Server

Webmail relies on your mail server to provide mail service. Webmail merely provides access to mail service through a web browser. Webmail cannot provide mail service independently of a mail server.

Webmail uses the mail service of your Mac OS X Server by default. You can designate a different mail server using Terminal and UNIX command-line tools. For instructions, see "Configuring Webmail" on page 60.

Webmail Protocols

Webmail uses the following standard mail protocols that your mail server must support:

- Internet Message Access Protocol (IMAP), for retrieving incoming mail
- Simple Mail Transfer Protocol (SMTP), for exchanging mail with other mail servers (sending outgoing mail and receiving incoming mail)

The SquirrelMail configuration script authorizes setting the IMAP server type:

- The setting `macosx = Mac OS X MailServer` refers to the older Apple MailServer in Mac OS X Server v10.2.
- In Mac OS X v10.3 and later, the correct setting (set by default) is `cyrus = Cyrus IMAP Server`.

Webmail does not support retrieving incoming mail using Post Office Protocol (POP). Even if your mail server supports POP, Webmail does not.

Enabling Webmail

Use Server Admin to enable Webmail for websites hosted on your web server. Changes you make take effect when you restart Web server.

Important: Webmail will not work on a site if the mail protocols and Mail service are not configured and started.

To enable Webmail for a site:

1. Make sure your mail service is started and configured to provide IMAP and SMTP service.
2. Make sure IMAP mail service is enabled for the user accounts of users that want Webmail access.

   For details on mail settings in user accounts, see *User Management*.
3. Open Server Admin and connect to the server.
4. Click the triangle at the left of the server.

   The list of services appears.
5. From the expanded Servers list, select Web.
6. Click Sites.
7. In the Sites list, click the site you want to enable Webmail for.
8. Click Web Services.
9. Select the Webmail checkbox.
10. Click Save.

When you turn Webmail on, the PHP module is enabled (if it was not already). If you turn webmail off, PHP remains on until you turn it off. For more information, see "PHP" on page 79.

Configuring Webmail

After enabling Webmail to provide basic mail functions on your website, you can change settings to integrate Webmail with your site.

You do this by editing the SquirrelMail configuration file, /etc/squirrelmail/config/config.php, or by using Terminal with root privileges to run the interactive configuration script. This Perl script operates by reading original values from config.php and writing new values back to config.php.

You can configure the following SquirrelMail options to integrate Webmail with your site:

- **Organization Name:** The name that appears on the main Webmail page when a user logs in. The default is Mac OS X Server Webmail.
- **Organization Logo:** The relative or absolute path to an image file.
- **Organization Title:** The title of the web browser window while viewing a Webmail page. The default is Mac OS X Server Webmail.

- **Trash Folder:** The name of the IMAP folder where Mail service puts messages when the user deletes them. The default is Deleted Messages.
- **Sent Folder:** The name of the IMAP folder where Mail service puts messages after sending them. The default is Sent Messages.
- **Draft Folder:** The name of the IMAP folder where Mail service puts the user's draft messages. The default is Drafts.

Important: If you use the interactive configuration script to change SquirrelMail settings, you must also use the script to enter the domain name of your server. If this is not done, Webmail can't send messages.

Webmail configuration settings apply to all websites hosted by Web service.

To configure Webmail options using a Perl configuration script:

1. Open Terminal and enter the following command:

   ```
   $ sudo /etc/squirrelmail/config/conf.pl
   ```

2. Access and change the SquirrelMail settings as needed using the menu options.
3. Change the domain name to your server's real domain name, such as example.com.

   The domain name is the first item on the SquirrelMail script's Server Settings menu.

   If you don't enter the server's domain name correctly, the interactive script replaces the original value, getenv(SERVER_NAME), with the same value but enclosed in single quotes. The quoted value no longer works as a function call to retrieve the domain name, and as a result Webmail can't send messages.
4. Save your data after you complete the configuration changes.
5. Quit the interactive script.

Webmail configuration changes do not require restarting Web service unless users are logged in to Webmail.

To further customize the appearance (for example, to provide a specific appearance for each website), you must know how to write PHP scripts. In addition, you must be familiar with the SquirrelMail plug-in architecture and you must write your own SquirrelMail plug-ins.

Working with Open Source Applications

5

Use this chapter to become familiar with open source applications Mac OS X Server uses to administer and deliver web services.

Several open source applications provide essential features for Web service. These applications include:

- Apache web server
- Tomcat servlet container
- MySQL database
- Ruby on Rails

Working with Apache

Apache is the open source HTTP web server provided with Mac OS X Server. You can use Server Admin to manage most web server operations, but in some instances you might want to add or change parts of the Apache server. In such situations, you must modify Apache configuration files and change or add Apache modules.

Mac OS X Server v10.6 supports Apache web server v2.2. Apache v2.2 runs as a 64-bit process on appropriate hardware.

In a clean installation of Mac OS X Server v10.6, Apache v2.2 is installed. If you are using Apache v1.3 on Mac OS X Server v10.4 or later and you upgrade to Mac OS X Server v10.6, your Apache v1.3 configuration files are preserved in the /etc/httpd/ folder. You can migrate Apache using one of the following methods:

- Use the translateApache.rb script to automate the Apache v1.3 to v2.2 migration.
- Use the Web settings in Server Admin to customize the Apache v2.2 configuration.
- Use a text editor to customize the Apache v2.2 configuration.

To migrate from Apache v1.3 to Apache v2.2, see *Upgrading and Migrating*.

The locations of key Apache files are listed in the following table.

File Description	Apache 2.2 Location
Configuration file for Web service	/etc/apache2/ folder
Site configuration files	/etc/apache2/sites/ folder
Executable file	/usr/sbin/httpd
Web modules	/usr/libexec/apache2/ folder
Error log	/var/log/apache2/ folder (with a symlink that lets the folder be viewed as /Library/Logs/WebServer/)
Temporarily disabled virtual hosts	/etc/apache2/sites_disabled/ folder

Static content for both Apache versions defaults to /Library/WebServer/Documents/.

CGIs for both Apache versions default to /Library/WebServer/CGI-Executables/.

All files in /etc/apache2/sites/ are read and processed by Apache when it performs a hard or soft (graceful) restart. Each time you save changes, the server does a graceful restart.

If you edit a file using a text editor that creates a temporary or backup copy, the server restart might fail because two files with almost identical names are present. To avoid this problem, delete temporary or backup files created when editing files in this folder.

Editing Apache Configuration Files

You can edit Apache configuration files if you need to work with features of the Apache web server that are not part of Server Admin.

To edit configuration files, you must be an experienced Apache administrator and you must be familiar with text-editing tools. Be sure to make a copy of the original configuration file before editing it.

The httpd.conf configuration file handles directives controlled by Server Admin. You can edit this file as long as you follow the text conventions and comments in the file.

This file also has a directive to include the .../sites/ folder. That folder contains virtual hosts for that server. The files are named with the unique identifier of the virtual host (for example, 0000_17.221.43.127_80_www.example.com.conf). You disable specific sites by moving them to the sites_disabled folder and then restarting Web service. You can also edit site files as long as the conventions in the file are followed.

One hidden file in the sites_disabled folder is named "default_default.conf." This file is used as the template for new virtual hosts created in Server Admin. An administrator can edit the template file to customize it, taking care to follow the conventions established in the file.

For more information about Apache and its modules, see "Apache Web Module Overview" on page 75.

Restoring the Default Configuration

It is possible to restore a factory setting or default configuration of Apache without reinstalling Mac OS X Server. The various .default files in the Apache configuration directories are put there for this purpose and are installed as Read-Only files to discourage administrators from modifying them.

To restore the default configuration:

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

```
$ sudo serveradmin settings web:command=writeSettings
     web:variant=withDefaults
```

A ReadMe.txt file that describes the Apache configuration is available in the /etc/apache2/ folder.

Using the apachectl Script

The default way to start and stop Apache on Mac OS X Server is to the use the `apachectl` command with Server Admin.

The `apachectl` command controls Apache v2.2. Apache v2.2 runs as a 64-bit process on relevant hardware.

If you want to use the `apachectl` script to start and stop Web service instead of using Server Admin, be aware of the following:

- When Apache is started using the `apachectl` script, the soft process limit is 100, the default limit. When you use CGI scripts, this limit might not be high enough. In this case, you can start Web service using Server Admin, which sets the soft process limit to 2048. Alternatively, you can enter `ulimit -u 2048` before using `apachectl`.
- The `apachectl` script does not start Apache when the server restarts.

Because of the issues noted above, if you must control Apache from a script, the recommended approach is to use the `serveradmin` command-line tool.

To start Apache from a script:

1. Open your script.
2. Enter the following command:

```
serveradmin start web
```

This starts Apache and places a flag in /etc/hostconfig to start Web service on restart.

3. Save and run your script.

To stop Apache from the command line:

1. Open your script.
2. Enter the following command:

```
serveradmin stop web
```

This stops Apache and places a flag in /etc/hostconfig to not start Web service on restart.

3. Save and run your script.

About Apache Multicast DNS Registration

Do not use Apache multicast DNS registration with the server.

Important: Do not try to turn on Apache multicast DNS (MDNS) registration for the server. It does not support virtual hosts, and the server uses virtual hosts.

Using Apache Axis

Apache Extensible Interaction System (Axis) is an implementation of Simple Object Access Protocol (SOAP). More about SOAP can be found at www.w3.org/TR/SOAP. More about Axis can be found at:ws.apache.org/axis.

You can use Axis by writing web applications that use the Axis libraries and then deploy the applications in Tomcat. Unlike Tomcat, Axis is not usually used as an application server.

Mac OS X Server v10.6 includes a preinstalled version of Apache Axis (v1.1), which operates with the preinstalled Tomcat (v4.1.x).

The Axis libraries are in the /System/Library/Axis/ folder. By default, Apple installs an example Axis web application into Tomcat. The web application, known as axis, is found in /Library/Tomcat/webapps/axis/.

After you enable Tomcat in the Web Service Settings pane in Server Admin, you can validate the preinstalled Apache Axis by accessing http://example.com:9006/axis/. Replace "example.com" with your host name. Note the nonstandard Tomcat port.

The first time you exercise the preinstalled Axis by accessing http://example.com:9006/axis/ and selecting the link entitled "Validate the local installation's configuration," you see the following error messages:

- Warning: could not find class javax.mail.internet.MimeMessage from file mail.jar. Attachments will not work.

  See ava.sun.com/products/javamail.

- Warning: could not find class org.apache.xml.security.Init from file xmlsec.jar. XML Security is not supported.

  See xml.apache.org/security.

Follow the instructions that accompany the warning messages if you require those optional components.

Consult *Axis User's Guide* to learn more about using Axis in your own web applications. This guide is located at ws.apache.org/axis/java/user-guide.html.

Working with Tomcat

Tomcat adds Java servlet and JavaServer Pages (JSP) capabilities to Mac OS X Server. Java servlets are Java-based applications that run on your server, in contrast to Java applets, which run on the user's computer. JavaServer Pages let you embed Java servlets in your HTML web pages.

The Java Servlet and JavaServer Pages specifications are developed by Sun Microsystems under the Java Community Process. The current production series is the Tomcat 4.1.x series, which implements Java Servlet 2.3 and JavaServer Pages 1.2 specifications.

For more information about Tomcat and documentation for this software, see http://tomcat.apache.org/.

For information about Java Servlets that you can use on your web server, see:

- java.sun.com/products/servlet
- java.sun.com/products/jsp

By default, the Tomcat management console and status service are turned off. Consult the Apache Tomcat documentation (http://tomcat.apache.org/tomcat-6.0-doc/index.html) to enable and secure these services for your deployment environment. It is recommended that Web service be secured behind a firewall.

For more resources, consult the O'Reilly book *Tomcat the Definitive Guide* (www.oreilly.com).

Setting Tomcat as the Application Container

You use Server Admin to work with Tomcat. You can set Tomcat to start when the server starts. This ensures that the Tomcat module starts after a power failure or after the server shuts down.

You can use Server Admin or Terminal to enable Tomcat.

To start Tomcat using Server Admin:

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 Web.

4 Click Settings, then click General.

5 Select the Enable Tomcat checkbox.

6 Click Save.

From the command line:

- To start Tomcat:

```
$ sudo /Library/Tomcat/6.0/bin/startup.sh
```

To verify that Tomcat is running, use a browser to access port 9006 on your website server by entering the URL for your site followed by :9006. If Tomcat is running, this URL shows the Tomcat home page.

Working with MySQL

MySQL provides a relational database management solution for your web server. With this open source software, you can link data in different tables or databases and provide the information on your website. For more information about MySQL, see www.mysql.com/.

The MySQL Manager application is replaced by the MySQL service in Server Admin.

Turning MySQL Service On

Before you can configure your database manager, you must turn MySQL service on in Server Admin.

To turn MySQL service on:

1 Open Server Admin and connect to the server.

2 Click Settings, then click Services.

3 Select the MySQL checkbox.

4 Click Save.

Setting Up MySQL Service

Use MySQL service settings in Server Admin to specify the database location, to enable network connections, and to set the MySQL root password.

To configure MySQL service settings:

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 Click MySQL.

4 Click Settings.

5 Select the "Allow network connections" checkbox to permit users to access MySQL service.

This grants users access to database information through the web server.

6 Enter the path to the location of your database in the Database location field.

You can also click the Choose button and browse for the folder you want to use.

7 Click Save.

From the command line:

- To set/change the root password:

```
$ sudo /usr/sbin/serveradmin stop mysql
$ sudo /usr/sbin/serveradmin settings mysql:rootPassword = password
$ sudo /usr/sbin/serveradmin start mysql
```

- To change the database location:

```
$ sudo /usr/sbin/serveradmin stop mysql
$ sudo /usr/sbin/serveradmin settings mysql:databaseLocation = /path/
   to/new/ database/
$ sudo /usr/sbin/serveradmin start mysql
```

MySQL is preconfigured to use /var/mysql/ as the default database location. By default, changing the database location creates a database at the chosen path if one does not exist at that location.

- To move a database to a new location:

```
$ sudo /usr/sbin/serveradmin stop mysql
$ sudo cp -Rp /oldpath/mysql /newpath/
$ sudo /usr/sbin/serveradmin settings mysql:databaseLocation = /
   newpath/ mysql
$ sudo /usr/sbin/serveradmin start mysql
```

- To set the network option:

```
$ sudo /usr/sbin/serveradmin stop mysql
$ sudo /usr/sbin/serveradmin settings mysql:allowNetwork = yes
```

Or

```
$ sudo /usr/sbin/serveradmin settings mysql:allowNetwork = no
$ sudo /usr/sbin/serveradmin start mysql
```

Starting MySQL Service

You start MySQL service from Server Admin.

To start MySQL service:

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 MySQL.

4 Click Start MySQL (below the Servers list).

The service runs until you stop it and restarts if your server is restarted.

From the command line:

- To start mysqld:

```
$ sudo /usr/sbin/serveradmin start mysql
```

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

Checking the Status of MySQL Service

You can use Server Admin to monitor MySQL service.

To check the status of MySQL service:

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 MySQL.

4 Click Overview to see if MySQL service is running, the time it started if it is running, and if network connections are allowed.

Viewing MySQL Service and Admin Logs

MySQL service keeps two types of logs:

- **The MySQL service log,** which records the time of events such as when MySQL service is started and stopped.
- **The MySQL admin log,** which records information such as when clients connect or disconnect and each SQL statement received from clients. This log is located at /Library/Logs/MySQL.log.

You can view MySQL service logs using Server Admin.

To view MySQL service logs:

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, click MySQL.

4 Click Logs.

Use the Filter field to search for specific entries.

Stopping MySQL Service

You can use Server Admin to stop MySQL service.

To stop MySQL service:

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 MySQL.
4. Click Stop MySQL (below the Servers list).

Upgrading MySQL

Mac OS X Server v10.6 includes the latest version of MySQL, v5.0. Because it's preinstalled, you won't find it in /usr/local/mysql. Instead, its elements are distributed in the file system according to standard UNIX file layout as follows:

- MySQL executables are located in the /usr/sbin/ and /usr/bin/ folders.
- MySQL man pages are located in the /usr/share/man/ folder.
- Other MySQL parts are located in the /usr/share/mysql/ folder.

When installed, the MySQL database resides in the /var/mysql/ folder.

At some point a newer version of MySQL will be posted to www.mysql.com. At that time you can download the source and build it (if you have the developer packages installed) or you can download the relevant binary distribution and install it, following the instructions posted on that website.

By default, such installations reside in the /usr/local/mysql/ folder. If you install your own version of MySQL, you'll have two versions of MySQL present on your system. This causes no harm as long as you don't try to run the two versions at the same time.

Be sure to use commands intended for the new version by specifying the full path (starting with /usr/local/mysql/), or make sure your shell's path variable is set to search in your local folder first.

Working with Ruby on Rails

Ruby on Rails is a web application framework, becoming very popular because of its ease of development, scalability, and support for the Model-View-Controller architecture, and because it uses Ajax via the Prototype and Script.aculo.us libraries. Details can be found at www.rubyonrails.org.

In Mac OS X Server v10.6, Ruby on Rails is installed with several useful gems (component packages), including the Mongrel web server.

The Mongrel web server comes with the `mongrel_rails` tool to manage it. Mac OS X Server v10.6 supports the deployment of Ruby on Rails applications in the following ways:

- It includes an enhanced version of the `mongrel_rails` tool called `mongrel_rails_persist`, which creates a `launchd` plist file to run Mongrel persistently (across reboots) and causes it to register with Bonjour.

  This is helpful because it allows the Server Admin Web Site Proxy panel to find instances of Mongrel running on the same machine, and presents their URLs in the Balancer Members popup. More details about `mongrel_rails_persist` are available on its main page.

- It allows administration of Apache 2.2 mod_proxy_balancer in the Server Admin web service Sites Proxy panel. This allows several instances of Mongrel (or another back-end http server) to be accessed via a single URL and allows Apache to distribute its load to those services in a configured proportion.
- It includes mod_fastcgi for customers who have used it to solve configuration issues and prefer to use it over mod_proxy_balancer. This module is disabled by default.

Managing the Deployment of Ruby on Rails Applications

You can use Server Admin to manage the deployment of Ruby on Rails applications with the Apache 2.2 mod_proxy_balancer module.

You can dedicate your website (virtual host) to Ruby on Rails or you can share your website with Ruby on Rails. The following scenarios describe how to do this:

- In the first scenario, the website is dedicated to the Ruby on Rails web application.
- In the second scenario, the website is shared with the Ruby on Rails application.

In these scenarios, the default wild-card website, which has the asterisk in the address column of the websites list, is used as an example. There are other variations depending on how you organize your websites and how you organize your Ruby on Rails applications, but these scenarios illustrate the general mechanism. You can check the knowledge base for additional techniques.

Scenario 1 — Dedicating a Website (Virtual Host) to the Proxied Web Application

1 Open Terminal and enter the following commands to create your Ruby on Rails application outside the document root of an existing web virtual host (for example in /Library/WebServer/*MyWebApp*, where *MyWebApp* is the name of your rails application).

```
$ cd /Library/WebServer
$ rails MyWebApp
$ ...
```

2 Start the Mongrel web server using the `mongrel_rails_persist` command:

```
$ sudo mongrel_rails_persist start -p 3001 -c /Library/WebServer/MyWebApp
```

This wrapper for the `mongrel_rails` command registers the instance of Mongrel with Bonjour and provides a launchd plist file so the instance of Mongrel restarts on server startup.

3. Use Safari to browse the local Rails URL to confirm that the web application is responding:

   http://127.0.0.1:3001

   If you specified a model or scaffold in your Rails application, the URL might be something like http://127.0.0.1:3001/<ModelName>.

   You should see the "Welcome Aboard / You're riding the rails" page.

4. Open Server Admin and connect to the server.
5. Click the triangle at the left of the server.

   The list of services appears.

6. From the expanded Servers list, select Web.
7. Click Sites, then select the website in the list.
8. Click Proxy below the websites list.
9. Select the Enable Reverse Proxy checkbox.
10. Verify that the Proxy path field is set to "/."

    This requires URLs within the website to be proxied to the balancer group.

11. Leave the Stick Session Identifier field blank unless you have reason to specify a value.
12. To add a balancer member, click the Add (+) button below the Balancer Members list.
13. From the Server URL pop-up menu, designate the URL for the load balancer member.

    Each instance of Mongrel running locally has its URL shown in the pop-up menu, so you should be able to select one.

    Create additional balancer members if you have multiple instances of Mongrel serving your web application on this host or other reachable hosts. Each balancer member corresponds to an instance of Mongrel, running on the local host or other hosts.

14. If there is only one balancer member, set the Load Factor to 100.

    Use the Load Factor field to distribute the load among balancer members.

15. Leave the Route field blank unless you have a specific reason to enter a value.
16. Click OK.
17. Click Save.
18. Start Web service, if it is not running.
19. Use Safari to access the proxy URL to confirm that the web application is responding:

    http://127.0.0.1

If you specified a model or scaffold in your Rails application, the URL might be something like http://127.0.0.1/<ModelName>.

It is not necessary to enter a trailing slash.

Scenario 2 — Sharing a Website (Virtual Host) with the Proxied Web Application

1. Open Terminal and enter the following commands to create your Ruby on Rails application outside the document root of an existing web virtual host (for example in /Library/WebServer/*MyWebApp*, where *MyWebApp* is the name of your rails application).

```
$ cd /Library/WebServer
$ rails MyWebApp
$ ...
```

2. Start the Mongrel web server using the `mongrel_rails_persist` command and using the `--prefix` argument:

```
$ sudo mongrel_rails_persist start -p 3001 --prefix /rails -c /Library
/WebServer/MyWebApp
```

3. Use Safari to access the local Rails URL to confirm that the web application is responding:

   http://127.0.0.1:3001/rails/

   If you specified a model or scaffold in your Rails application, the URL might be something like http://127.0.0.1/rails/<ModelName>.

   You should see the "Welcome Aboard / You're riding the rails" page.

4. Open Server Admin and connect to the server.
5. Click the triangle at the left of the server.

   The list of services appears.

6. From the expanded Servers list, select Web.
7. Click Sites, then select the website in the list.
8. Click Proxy below the websites list.
9. Select the Enable Reverse Proxy checkbox.
10. In the Proxy path field, enter the prefix you specified for mongrel_rails_persist, but with a leading and trailing backslash.

    In our example, this would be /rails/.

11. Leave the Sticky Session Identifier field blank unless you have a reason to specify a value.
12. To add a balancer member, click the Add (+) button below the Balancer Members list.
13. From the Server URL pop-up menu, designate the URL for the load balancer member.

    Each instance of Mongrel running locally has its URL shown in the pop-up menu, so you should be able to select one (for example, http://127.0.0.1:3001/rails).

14 If there is only one balancer member, set the Load Factor to 100.

Use the Load Factor field to distribute the load among balancer members.

15 Leave the Route field blank unless you have a specific reason to enter a value.

16 Click OK.

17 Click Save.

18 Start Web Service, if it is not running.

19 Use Safari to access the proxy URL to confirm that the web application is responding:

http://127.0.0.1/rails/

If you specified a model or scaffold in your Rails application, the URL might be something like http://127.0.0.1/rail/<ModelName>.

If a trailing slash is required, use the Server Admin Web Alias panel for the site and add a RedirectMatch entry that maps /rails to /rails/.

20 Use Safari to access to the local URL to confirm that other content is available at other URLs within the website:

http://127.0.0.1

Managing Web Modules

6

Use this chapter to become familiar with Apache web modules that provide key features and controls for Web service.

The Apache web server includes a series of modules that control the server's operation. In addition, Mac OS X Server provides modules with specialized functions for the Macintosh.

Apache Web Module Overview

Modules plug in to the Apache web server software and add functionality to your website. Apache comes with several standard modules, but you can purchase additional modules from software vendors or download them from the Internet. You can find information about available Apache modules at www.apache.org/docs/mod.

Note: The discussion of Rails, where it appears, refers to mod_proxy_balancer, which is a standard Apache v2.2 module. Rails is not based on a separate web module.

Working with Web Modules

The Apache web server has a modular design that enables you to expand the core functionality of your web server by enabling additional modules. You can enable or disable using Server Admin.

Although enabling or disabling Apache web modules is easy in Server Admin, generally you should have a specific functionality goal and fully understand the implications of enabling or disabling modules.

Some web modules are mutually exclusive or are interdependent. Here are some examples:

- auth_digest_module and digest_module must never be enabled simultaneously.
- proxy_module must be enabled if proxy_connect_module, proxy_ftp_module, proxy_http_module, proxy_ajp_module, or proxy_balancer_module are enabled.

- dav_module and dav_fs_module should be in the same state.
- encoding_module requires that headers_module, dav_module, and dav_fs_module are enabled.
- cache_module is required for mem_cache_module and disk_cache_module.
- mod_userdir is disabled by default.
- mod_userdir_apple, a secure replacement for mod_userdir, does not distinguish between nonexistent users and users who cannot access to userdir. mod_userdir_apple is also disabled by default
- When both mod_userdir and mod_userdir_apple are disable, a web browser can't access content from a user's Sites folder. For example, if your server is named example.com and the user's short name is refuser, the content of the Sites folder can no longer be accessed at http://example.com/~refuser.
- mod_userdir and mod_userdir_apple must never be enabled simultaneously.
- mod_bonjour is disabled by default, but requires at least one of the two mod_iserdir modules for full functionality.

Viewing Web Modules

You can view a list of modules in use or available for use on the server.

To view web modules:

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 Web.
4. Click Settings, then click Modules.
5. Scroll through the modules list to see modules in use or available for use on the web server.

Adding Web Modules

You can use Server Admin to add web modules to your web server.

Before you can add a web module to the server, the module must be installed. To install a module, follow the instructions that came with the module software. The web server loads modules from the /usr/libexec/apache2/ folder.

To add web modules to the server:

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 Web.

4 Click Settings, then click Modules.

5 Click the Add (+) button to add a module to the list of available modules.

6 In the Module Name field, enter the module name.

7 Select the Enabled checkbox if you want the module enabled.

8 In the Module Path field, enter the path to the installed module or click the browse button to select the folder.

9 Click OK.

10 Click Save.

Enabling Web Modules

You can use Server Admin to enable modules for your web server.

To enable Web service modules:

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 Web.

4 Click Settings, then click Modules.

5 Scroll through the modules list to see the set of modules in use or available for use on the web server.

6 Click the Enable checkbox next to the module you want to enable.

7 Click Save.

Changing Web Modules

You can use Server Admin to change web modules on your server.

To modify web module settings:

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 Web.

4 Click Settings, then click Modules.

5 Scroll through the modules list to see the set of modules in use or available for use on the web server.

6 Select the module you want to change and click the Edit (/) button.

You can also duplicate an existing module and modify its settings by selecting the module, clicking the Duplicate button, and then changing the duplicate module settings.

7. In the Module Name field, enter the module name.
8. If you want the module enabled or disabled for your web server, select or unselect the Enabled checkbox.
9. In the Module Path field, enter the path to the installed module or click the browse button to select the folder.
10. Click OK.
11. Click Save.

Deleting Web Modules

You can use Server Admin to remove web modules from your server.

To delete web modules:

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 Web.
4. Click Settings, then click Modules.
5. Scroll through the modules list to see the set of modules in use or available for use on the web server.
6. Select the module you want to remove and click the Delete (–) button.
7. Click Save.

Macintosh-Specific Modules

Web service in Mac OS X Server installs the following modules specific to the Macintosh.

mod_auth_apple

This module allows a website to authenticate users by looking for them in file system service domains in the server's search policy. When authentication is enabled, website visitors are prompted for a user name and password before they can access information about the site.

mod_hfs_apple

This module requires users to enter URLs for HFS volumes using the correct case (lowercase or uppercase). This module adds security for case-insensitive volumes.

mod_auth_digest_apple

This module enables digest authentication for a WebDAV realm. This is the newer digest authentication module, based on Apache's mod_auth_digest but modified to use Open Directory rather than htdigest files. It is disabled by default because it requires that the Open Directory master use Mac OS X v10.6.

mod_spnego_apple

This module provides Kerberos authentication for Open Directory users via the SPNEGO/Negotiate protocol.

mod_encoding

This open source module, customized by Apple, along with a modification to WebDAV module mod_dav, allows WebDAV files to include Japanese characters in their names.

mod_bonjour

This module allows administrators to control how websites are registered with multicast DNS.

Open Source Modules

Mac OS X Server includes several popular open source web modules. These include Tomcat and PHP.

Tomcat

This module, which uses Java-like scripting, is the official reference implementation for Java Servlet and JavaServer Pages developed under the Java Community Process.

Tomcat must be enabled before it can be used.

For more information about Tomcat, as well as how to enable Tomcat, see "Working with Tomcat" on page 66.

PHP

PHP Hypertext Preprocessor (PHP) lets you handle dynamic web content by using a server-side, HTML-embedded scripting language resembling C. Web developers embed PHP code in HTML code, allowing programmers to integrate dynamic logic directly in an HTML script rather than writing a program that generates HTML.

PHP provides functions similar to those of CGI scripts but it supports a variety of database formats and can communicate across networks by using many protocols.

The PHP libraries are included in Mac OS X Server but are disabled by default.

Unlike client-side JavaScript, PHP code is executed on the server. PHP is also used to implement Webmail on Mac OS X Server. For more information about this module, see www.php.net/.

mod_perl

This module integrates the verify Perl interpreter into the web server, letting existing Perl CGI scripts run without modification. This integration means that the scripts run faster and consume fewer system resources.

For more information about this module, see perl.apache.org/.

mod_encoding (open-source)

To improve WebDAV's interoperability with non-ASCII file names, Web service includes the open-source Apache module named mod_encoding.

By default, mod_encoding is disabled. The module is installed and configuration directives are present in the Apache config file, but they are not activated because the LoadModule and AddModule directives that inform Apache about mod_encoding are disabled.

To support non-ASCII file names, you must enable mod_encoding. Make sure dav_module is also enabled.

The mod_encoding module extends Apache's functionality and is controlled by a set of configuration directives.

The Apache configuration file supplied with Web service contains a specific set of directives that should be sufficient for most needs. To modify those directives you must to use a text editor and edit the /etc/apache2/httpd.conf file.

The following describes the directives supported by mod_encoding.

EncodingEngine directive: This directive enables and disables mod_encoding. Correct operation of mod_encoding also requires that the special version of mod_dav, mod_dav_encoding be enabled as well.

Syntax	Default	Context	Compatibility
`EncodingEngine [ on | off ]`	Off	Server Config	Apache v2.2.x; Mac OS X Server only

AddClientEncoding directive: Although WebDAV clients are expected to send data in UTF-8 or any other properly detectable style, some clients send data in non-autodetectable platform-local encoding, thus requiring this directive, which maps encoding names to client types.

This directive specifies encodings expected from each client type. The clients are identified by agent name. The agent name can be specified as a pattern using extended regexp. Never use ".*" for agent name. Instead, use DefaultClientEncoding.

This module uses CoreFoundation's CFString and supports all encoding supported by it. In general, IANA-registered encoding names are supported.

Syntax	Default	Context	Compatibility
`AddClientEncoding agent-name encoding [ encoding...]`	None	Server Config	Apache v2.2.x; Mac OS X Server only

DefaultClientEncoding directive: This directive tells the default set of encodings what to expect from various clients in general. You don't need to specify UTF-8 because it is the default.

Syntax	Default	Context	Compatibility
	UTF-8	Server Config	Apache v2.2.x; Mac OS X and Mac OS X Server only

NormalizeUsername directive: This directive is introduced to support the behavior of Windows XP when accessing a password-protected resource. Windows XP clients prepend "hostname\" to the real username. Enabling this option strips off the "hostname\" part, so only "real" username is passed to the authentication module.

Syntax	Default	Context	Compatibility
`NormalizeUsername [ on | off ]`	Off	Server Config	Apache v2.2.x; Mac OS X and Mac OS X Server only

For additional information about mod_encoding, download a version and read additional documentation provided in the source distribution from www.denpa.org/~go/denpa/200302/mod_encoding+mod_dav-macosx.tar.gz.

mod_xsendfile

This module is a small Apache2 module that processes X-SENDFILE headers registered by the original output handler. If it encounters the presence of such a header, it discards all output and sends the file specified by that header instead, using Apache internals and including all optimizations like caching-headers and sendfile or mmap if configured. It is useful for processing script output of PHP, Perl, or other CGI programs.

For additional information about mod_xsendfile, download a version and read additional documentation provided in the source distribution from tn123.ath.cx/mod_xsendfile/.

mod_python

This module allows you to write web-based applications in Python that run much faster than traditional CGI scripts. It also provides the ability to retain database connections and other data between hits and access to Apache internals.

For additional information about mod_python, download your own version and read additional documentation provided in the source distribution from www.modpython.org/.

Solving Web Service Problems

7

If you experience a problem with Web service or its components, use the tips and strategies in this chapter.

From time to time you might encounter a problem when setting up or managing web services. Situations that might cause a problem for administering Web service or for client connections are outlined here.

If Users Can't Connect to a Website on Your Server

Try these strategies to uncover the problem:

- Make sure Web service is turned on and the site is enabled.
- View the Overview pane of Web service to verify that the server is running.
- Verify the Apache access and error logs. (If you are not sure what the messages mean, see the Apache website at www.apache.org.)
- Make sure users enter the correct URL to connect to the web server.
- Make sure the correct folder is selected as the default web folder. Make sure the correct HTML file is selected as the default document page.
- If your website is restricted to specific users, make sure those users have access privileges to your website.
- Verify that users' computers are configured correctly for TCP/IP. If the TCP/IP settings appear correct, use a pinging utility to verify network connections.
- Verify that the problem is not a DNS problem. Try to connect with the IP address of the server instead of using its DNS name.
- Make sure your DNS server's entry for the website's IP address and domain name are correct.

If a Web Module Is Not Working as Expected

Try the following strategies to uncover the problem:

- Read the error log in Server Admin for information about why the module might not be working.
- If the module came with your web server, read the Apache documentation for that module and make sure the module is intended to work the way you expected.
- If you installed the module, read the documentation that came with the web module to make sure it is installed correctly and is compatible with your server software.

For more information about supported Apache modules for Mac OS X Server, see "Working with Web Modules" on page 75 and the Apache website at www.apache.org/docs/mod.

If a CGI Script Does Not Run

View the CGI script's file permissions to make sure the script is executable by www. If not, the script won't run on your server even if you enable CGI execution in Server Admin.

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