



Mac OS X Server Tutorial

September 1999

Introduction

This tutorial walks you through the basics of using Mac OS X Server and its five key services: Apache, WebObjects, QuickTime streaming, NetBoot, and Apple file services.

The tutorial covers the following steps:

1. Setting up your hardware
2. Installing/Restoring Mac OS X Server
3. Configuring your server
4. Using Mac OS X Server
5. Configuring and using NetBoot services
6. Configuring Apple file services
7. Serving files with the Apache web server
8. Delivering digital media using QuickTime streaming
9. Installing and exploring WebObjects

This tutorial assumes you are setting up a simple network for testing, involving one server and two iMac computers on a dedicated subnet that is not connected to an external network. If you are using a different configuration, you may need to add, remove, or modify some of the steps below.

This tutorial is intended to illustrate one possible way to configure and use your systems. It is not intended as an exhaustive introduction to Mac OS X Server. For greater detail, consult the online help system or Apple's Tech Info Library at til.info.apple.com.

1. Setting Up Your Hardware

Included with your Macintosh computer is a detailed manual covering how to set up your computer. This chapter walks you through setting up the hardware as required to complete the tutorial.

This tutorial assumes you have the following equipment:

- Mac OS X Server system software
- Power Macintosh G3 with at least 64MB of RAM
- Apple Studio Display
- Bay Networks NETGEAR 8-Port 10/100-Mbps Dual-Speed Hub
- Two iMac computers
- Three Category 5 Ethernet patch cables

You will need at least a six-foot table and five available AC outlets (we recommend using a surge protector).

1. Set up the Power Macintosh G3 and Apple Studio Display. Refer to the included installation manuals for detailed information on how to optimally set up your Power Macintosh G3 and Apple Studio Display. Do not turn on the server computer yet.
2. Set up the iMac computers next to the server computer. Refer to the included installation manuals for detailed information on how to optimally set up the computers. Do not turn them on yet.
3. Set up the NETGEAR 10/100-Mbps hub between the server and the iMac systems. Refer to the included installation manuals for detailed information on how to optimally set up the hub.
4. Plug one end of the Ethernet patch cable into the NETGEAR 10/100-Mbps hub and the other end into the server. For this tutorial, we assume the simplest configuration, in which you plug the hub into the built-in Ethernet port. If you have a Macintosh Server G3, plug the patch cable into one of the ports on the four-port Ethernet card for optimal performance.
5. Plug the other two Ethernet patch cables into the NETGEAR hub and the iMac computers. The iMac Ethernet port is on the side of the computer. Pull down the access door and you will see the Ethernet port labeled as follows:



2. Installing Mac OS X Server

Depending on your needs and what equipment you purchased, you have three options:

- If you have a new Macintosh Server G3 with Mac OS X Server, the software is already installed and you can skip directly to Section 3.
- If you have the Software Restore CD for the Macintosh Server G3 with Mac OS X Server, and want to reinitialize the system to its initial configuration, follow the steps in Section 2.1.
- If you have a Power Macintosh G3 computer and the Mac OS X Server Install CDs, follow the steps in Section 2.2.

After you finish installing your software, you should also install the latest software updates, which are available at www.info.apple.com/support/macosxserver under the Update button. As of June 1999, there are server-side updates for the system and for QuickTime streaming. You should also look for the latest updates for AppleShare and for Macintosh Management clients, which you may need to install on the NetBoot system image.

2.1 Installing from the Apple Software Restore CD

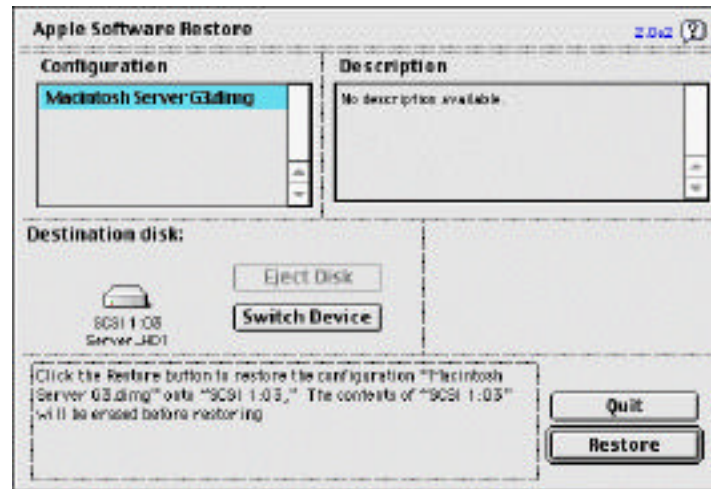
If you have purchased a Macintosh Server G3 with Mac OS X Server, you can perform a clean install by using the Apple Software Restore CD included with your server. This will restore your hard drive to the state in which it came from the factory, with all the packages for all the services preinstalled, including Mac OS X Server base services, NetBoot and Macintosh Management, and WebObjects. This process will take approximately six minutes and is the easiest method for reinstalling the complete Mac OS X Server software package on your computer. Note that this will completely reformat one of your drives, erasing all its data. Please be sure to back up any information that you want to save.

1. Restart your computer with the Apple Software Restore CD in the CD-ROM drive.
2. While restarting, hold down the C key to start from the CD.
3. The Macintosh Server G3 CD icon should appear on your desktop, and the following window should appear:

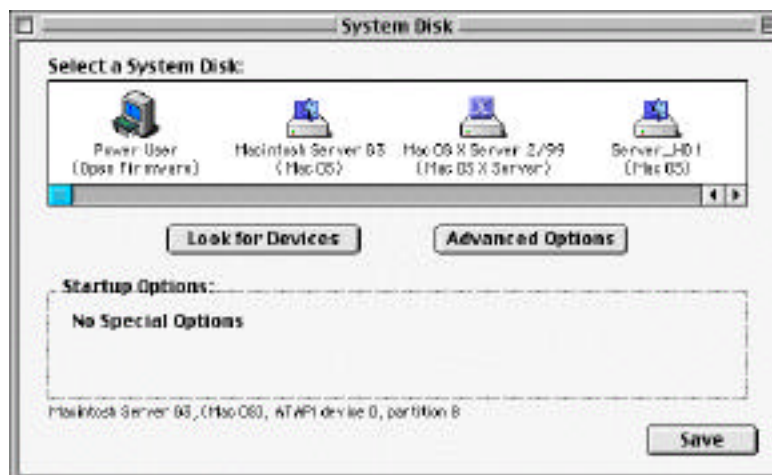


4. Double-click the Apple Software Restore icon.

5. The Apple Software Restore application will launch. Click the initial splash screen and the following window will appear:



6. Click the Switch Device button until you have selected the hard disk that will be restored to Mac OS X Server.
7. Click Restore.
8. A dialog box will appear warning you that the hard disk that you have selected will be erased. Click the OK button to continue.
9. After approximately six minutes, a dialog box will appear indicating that your hard disk volume was successfully restored. Click the Quit button to continue. You will be brought back to the Mac OS desktop.
10. Double-click the System Disk icon to launch the System Disk application located on the Apple Software Restore CD. The following window should appear:



11. Click the Mac OS X Server 2/99 (Mac OS X Server) icon to select that volume as your startup disk. The date may be different if you are using the international version. Click the Save button and then choose Quit from the File menu.
12. Restart your computer. It will now restart in Mac OS X Server.

2.2 Installing from the Mac OS X Server CDs

If you have purchased the Mac OS X Server retail package, or want to have greater control over which packages are installed, you can install directly from the Mac OS X Server CDs. Note that this will completely reformat one of your drives, erasing all its data. Please be sure to back up any information that you want to save.

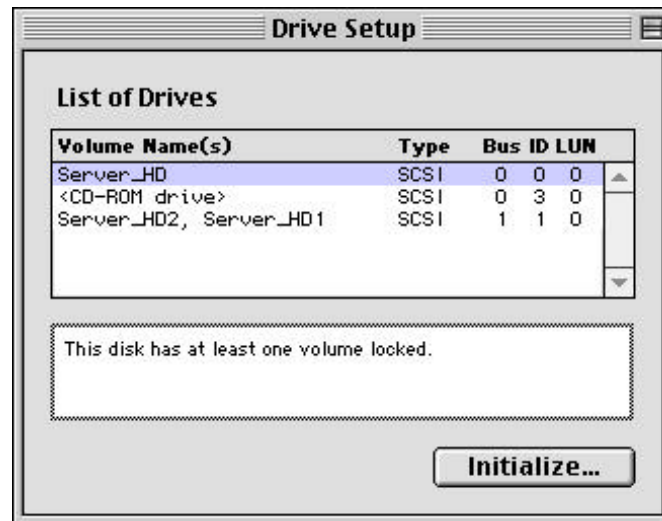
1. Read the installation instructions. You can get them in one of three ways:
 - Read the printed copy of the manual, included with both the software and hardware products.
 - Boot from the installation CD and read the HTML installation instructions.
 - Insert the installation CD in a computer running Mac OS 8, and print the PDF version of the installation manual using Adobe Acrobat.
2. Restart your computer with the Mac OS X Server CD in the CD-ROM drive.
3. While restarting, hold down the C key to start from the CD.
4. The Mac OS X Server CD icon should appear on your desktop, and the following window should appear. If you have a multilingual CD, you may need to double-click the English folder first.



4. Double-click Drive Setup in the Utilities Folder.



6. Select the disk drive on which you want to install Mac OS X Server and click Initialize. Note that this will **completely erase** everything on this drive, so you should have copied any necessary files to another disk.



7. Select Custom Setup since you need more than one partition.



8. Select two partitions, and for simplicity set them both to Mac OS Extended Format (HFS Plus). You should plan to use the last partition for Mac OS X Server (this allows you to install Mac OS 8 on the first partition, for use in a dual-boot configuration). You will choose which partition to automatically convert to Mac OS Server Format (UFS) during installation. Mac OS X Server itself takes up 300MB, so you need a minimum of 600MB, though 1GB is preferable, and 3GB is ideal if you have a large enough drive.



9. Click OK then Initialize to initialize the disk. Remember that this will **delete everything** on the selected drive. Quit Drive Setup when initialization is finished. You may want to rename the first Mac OS Extended (HFS Plus) volume "ServerHD_1" as that is the name used in the rest of the tutorial.
10. Double-click "Install Mac OS X Server" to launch the Mac OS X Server installer. Follow the instructions, and be sure to select the volume you created in Step 8.

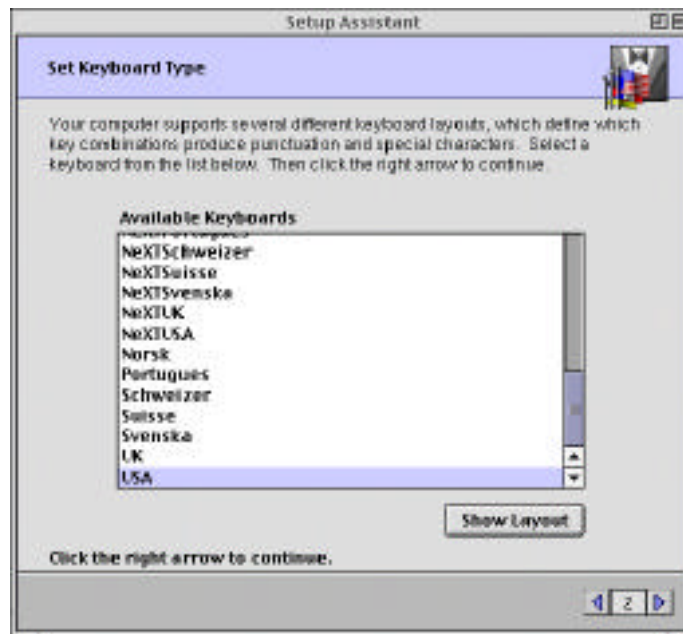
If you do this type of installation, you run the Setup Assistant twice: once for the base services on the main CD, and again for NetBoot after installing the NetBoot Server CD. In both cases the Setup Assistant will be launched automatically at the end of the installation process. Since you will be running the assistant twice, it doesn't matter what network configuration you enter the first time, as you will be given the opportunity to change it the second time around.

3. Configuring Your Server

After you finish installing software, or after starting up your preconfigured Macintosh Server G3 with Mac OS X Server, the Mac OS X Server Setup Assistant will open. Note that the screen numbers may vary slightly depending on your hardware configuration.

1. Set Keyboard Type

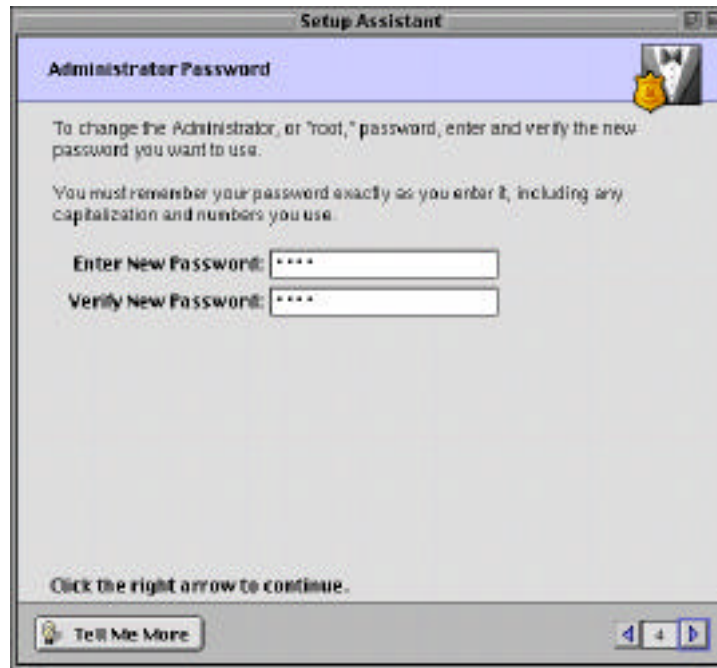
Select the type of keyboard you are using. For this release, you should always select USA, the default.



2. Administrator Password

Next, select the Administrator password. If you are connected to the network or are in a public location, it is critical that you choose a password that is not easily guessed. It is also critical that you remember this password, or you will not be able to use your computer. (There are ways for an administrator to reset the password; see the Tech Info Library for more information.)

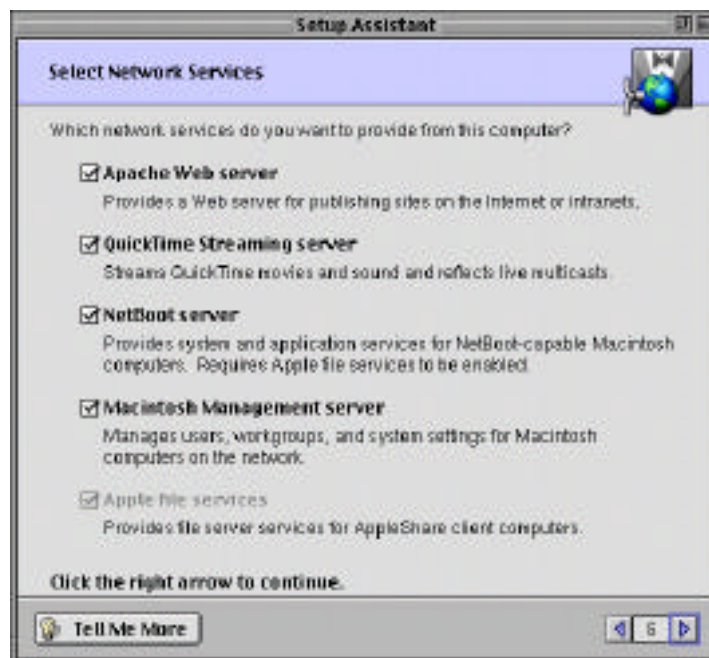
Tip: You can use the keyboard to navigate through the Setup Assistant. Use Tab to change the selected control (highlighted in blue). Use the spacebar to activate, and the up/down arrows to toggle the state of buttons.



3. Select Network Services

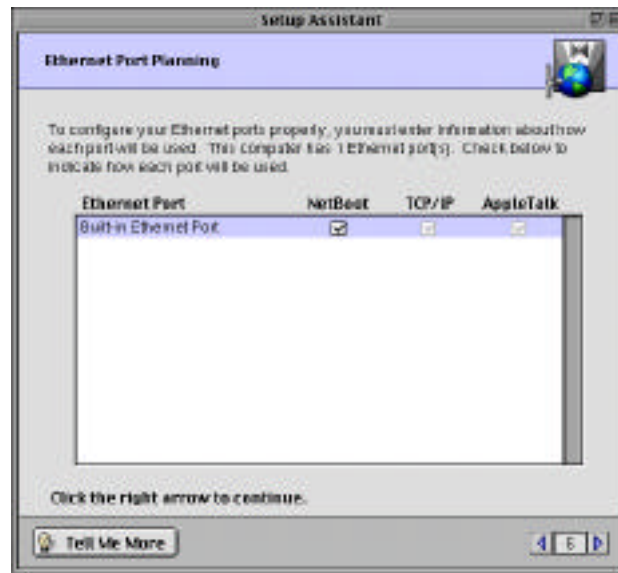
This page lists all the key services that are part of Mac OS X Server. To use this tutorial, you should select all of them. Note that some of these services may not be present, depending on the installation scenario.

The Setup Assistant knows what is required by the various services, and tries to help you avoid common mistakes. For example, it knows the NetBoot server uses the Macintosh Management server and requires Apple file services. Therefore, when you select "NetBoot server," it will also select the other two, and disable the "Apple file services" checkbox to prevent you from deselecting it.



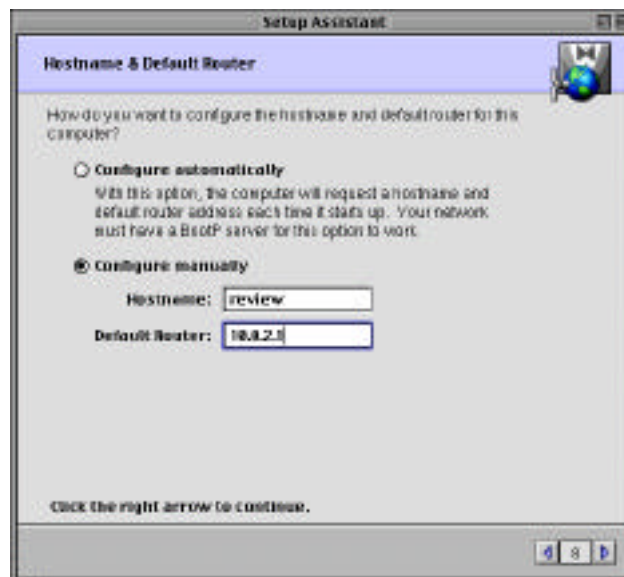
4. Ethernet Port Planning

You may have multiple Ethernet interfaces listed, but you need to configure only one for the purposes of this tutorial. If you have installed NetBoot, select the NetBoot entry, as shown below. Otherwise, select TCP/IP and AppleTalk.



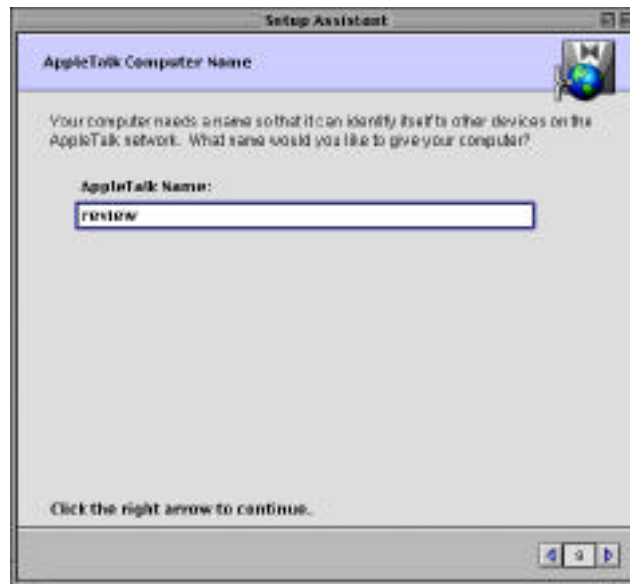
5. Hostname and Default Router

If you have assigned an IP address to this computer using BootP, you can select "Configure automatically." Otherwise, select manual configuration and enter the hostname and router. Note that this is the Internet host name, which cannot contain spaces or punctuation. For this tutorial, which is intended for an isolated subnet, we are using the name "review" and 10.0.x.x IP numbers, which are not routed. For configurations that are part of the public Internet or larger networks, you'll need to get the appropriate numbers from your system administrator.



6. AppleTalk Computer Name

Next, enter the AppleTalk hostname, which is the name that will appear in the Network Browser and Chooser for Apple file services. While this can be a normal Macintosh name, including spaces, we recommend that you use the Internet hostname for consistency.



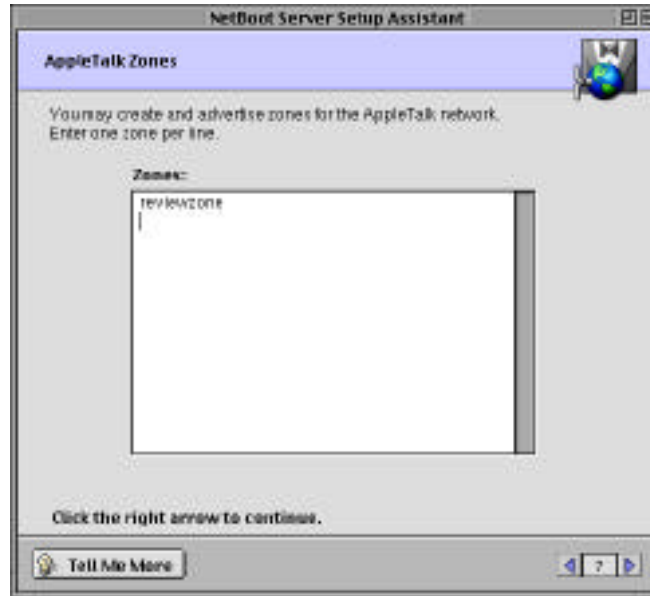
7. AppleTalk Seed Router

On our isolated network, the server must be an AppleTalk Seed Router so our NetBoot-capable Macintosh computers can access network resources over AppleTalk. For configurations that are part of the public Internet or larger networks, you'll need to get the appropriate numbers from your system administrator.



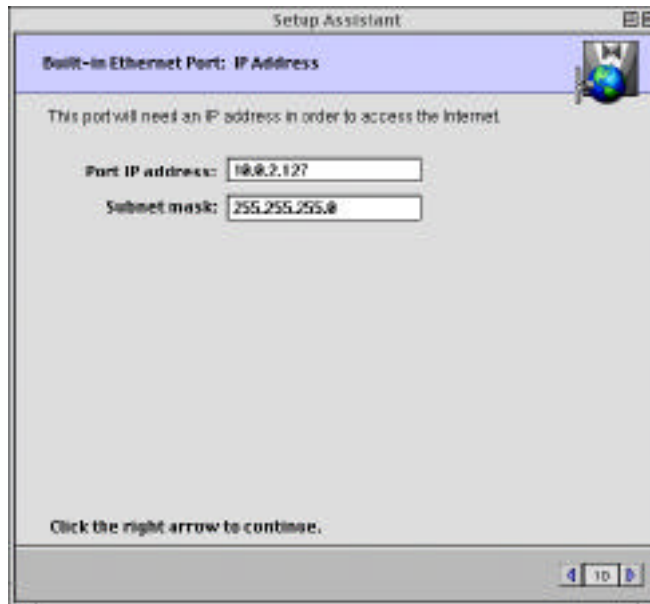
8. AppleTalk Zones

As an AppleTalk seed router, the server will broadcast an AppleTalk zone name to other computers on the network.



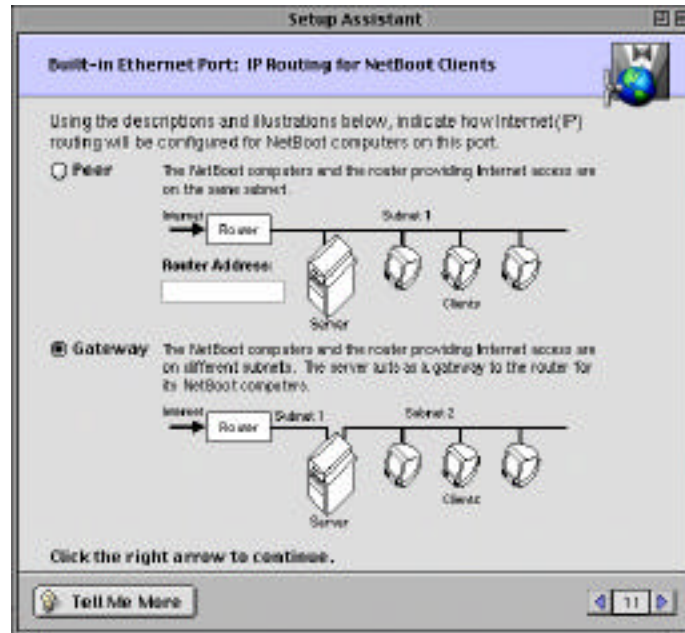
9. IP Address

Next enter the IP address and subnet mask for the first port. For the purposes of this tutorial, you can ignore the other ports.



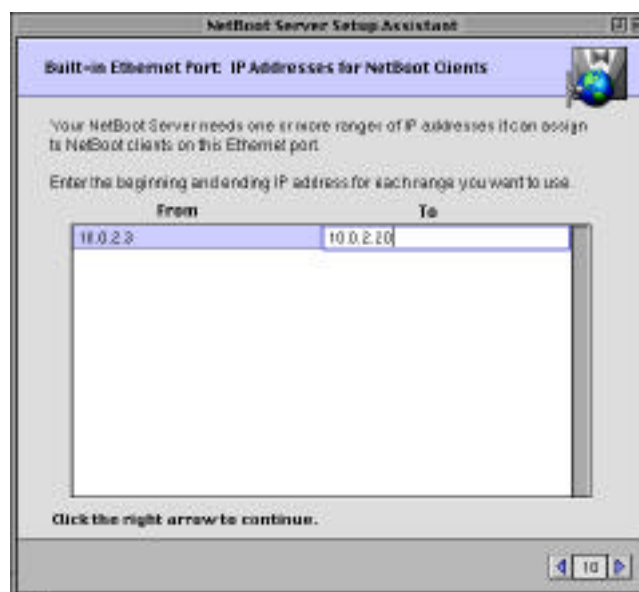
10. IP Routing for NetBoot Clients

If you are configuring a NetBoot network, you will be asked whether the server is a peer or a gateway. If you have only one active port and are part of a larger network, then you are generally a peer. If you have a stand-alone network (as we are assuming) or are connected to a larger network through a different port from the one connecting to the NetBoot clients, then you should select Gateway. Note that if you are installing from the CDs, you will not see the NetBoot setup items the first time you run the assistant.



11. IP Addresses for NetBoot Clients

Next, enter the BootP addresses that can be used by the NetBoot clients that will boot from this network interface. These addresses must not be used by any other computers on the network. You will see this panel only for interfaces that you indicated in Step 4 would be used for NetBoot.



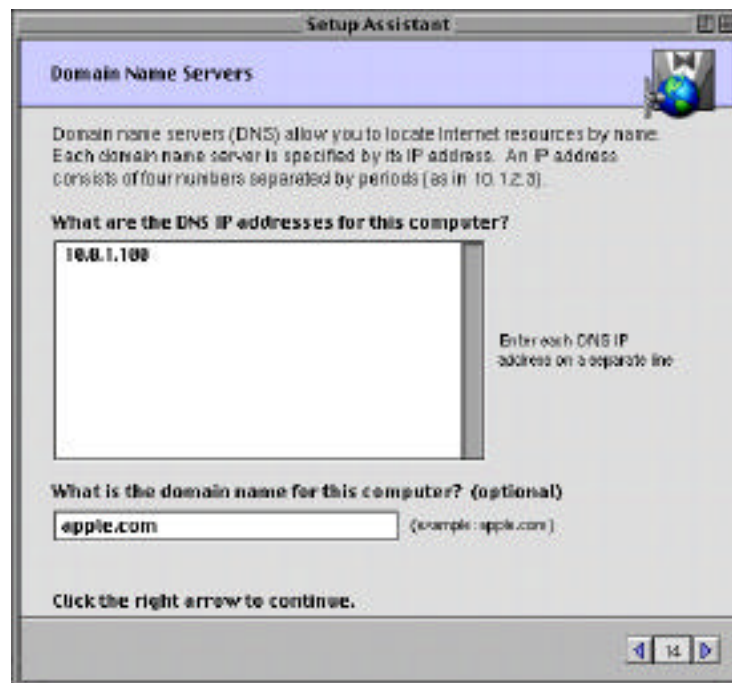
12. NetInfo

NetInfo is a way to share administrative data across multiple Mac OS X Server–based computers. If you have only one Mac OS X Server system, or have not set up a NetInfo master domain, you should select No.



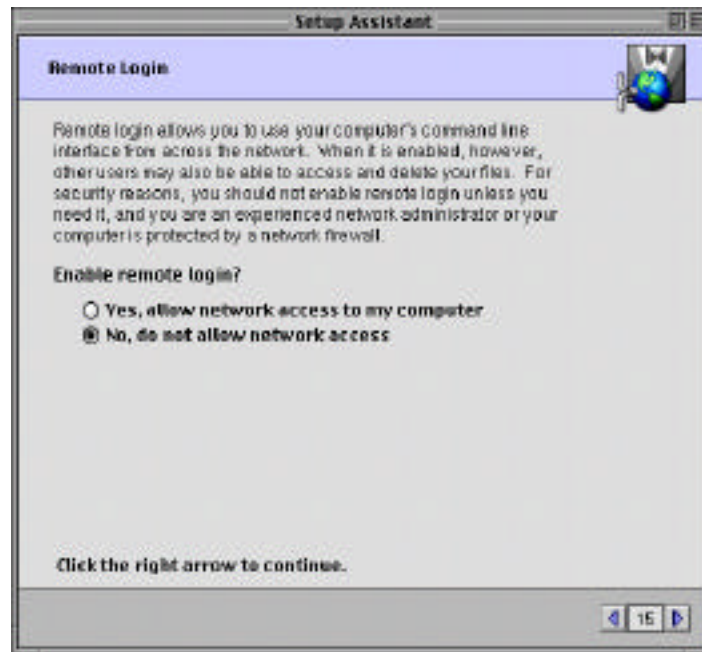
13. DNS

Normally you get the DNS values from your system administrator. For this tutorial, you can just use dummy numbers, as below.



14. Remote Login

Unless you are a skilled UNIX system administrator, it is generally best to leave Remote Login turned off. This helps your server operate with the security expected of a Mac OS system.



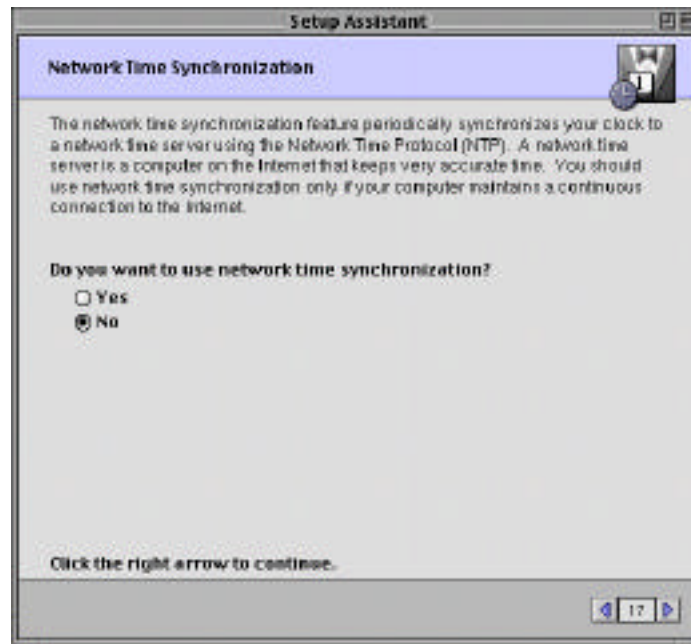
15. Time Zone

Use the map to select your time zone, and the pop-up menu to select the appropriate regional definition. Mac OS X Server stores all its time information in GMT, but displays time using the current time zone settings.



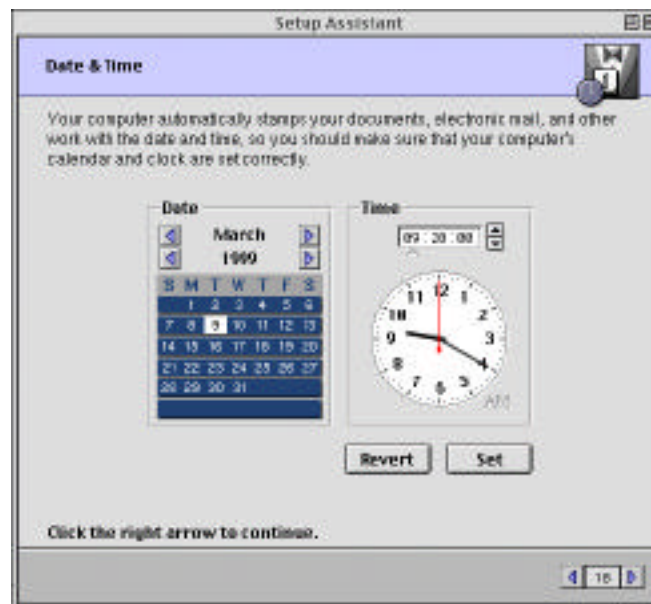
16. Network Time

If your network has a time server or you are connected to the Internet, select Yes. Otherwise, select No and set your time manually.



17. Date and Time

If necessary, you can reset the date. You can set a time by entering it into the text field, or by dragging the clock hands. You should set this to local time, and the system will convert it internally to GMT based on the time zone setting.



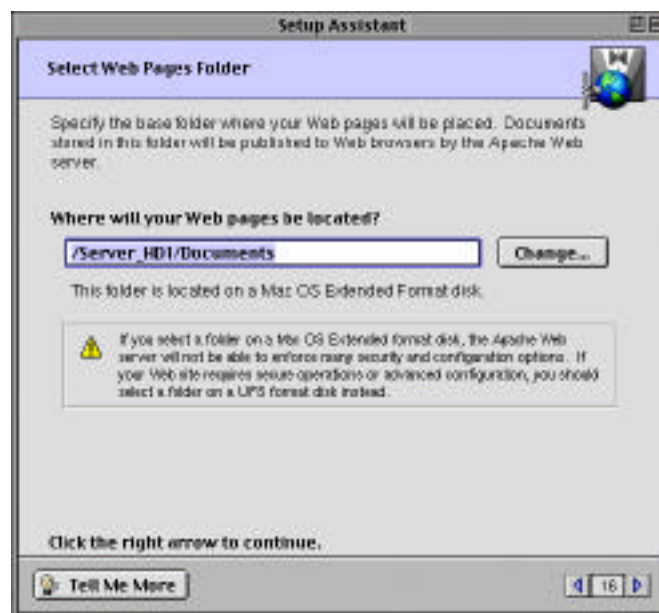
18. Select Web Server Name

To function properly as a web server, your server computer must have a registered DNS entry, and Apache must be told what that is. Typically this will be the fully qualified hostname, based on earlier entries.



19. Select Web Pages Folder

The default folder for web pages is /Local/Library/WebServer/Documents. You need to change this only if you are serving pages from a different volume or want to maintain consistency with other Apache configurations at your site. For added convenience, you can opt to serve web pages from a Mac OS Extended (HFS Plus) volume (as shown below), which can then be shared with AppleShare clients. However, you should do this only if you are behind a firewall and are not changing the Apache configuration files, because this is a potential security hole.



20. Select QuickTime Movies Folder

Similarly, the default Movies folder for the QuickTime Streaming Server preview is /Local/Library/QuickTimeStreaming/Movies, but it also can be shared via a Mac OS Extended (HFS Plus) volume. QuickTime streaming is managed differently than Apache, and therefore is not susceptible to the same types of security problems that arise with a Mac OS Extended (HFS Plus) volume.

Note that this is only a preview version of QuickTime Streaming Server. For information on compatible clients and availability of the final version, visit www.apple.com/macosx/server/.



21. Create User Accounts

This panel allows you to create user accounts, either for direct access to the server or to connect to the server via AppleShare. It is recommended you create at least one account at this time, to avoid logging in to the server as Administrator. The dimmed account "World Wide Web Server" is used by Apache, but cannot be used to log in to the server. Other system accounts, such as the Administrator (or 'root') are not shown.



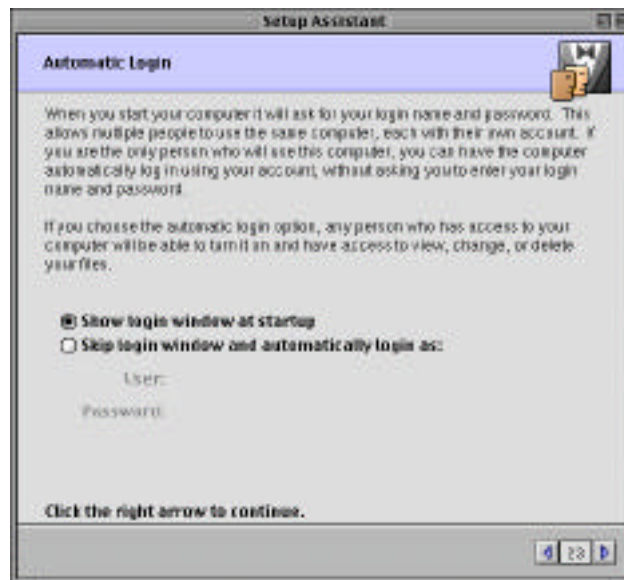
In the next section, we assume that you create a user named "demo," as shown in the next panel:



Be sure to use a different, less easily guessed password if your system is connected to the Internet. The group settings are those needed for access to the Documents and Movies directory, if created on Mac OS Extended (HFS Plus) volumes earlier.

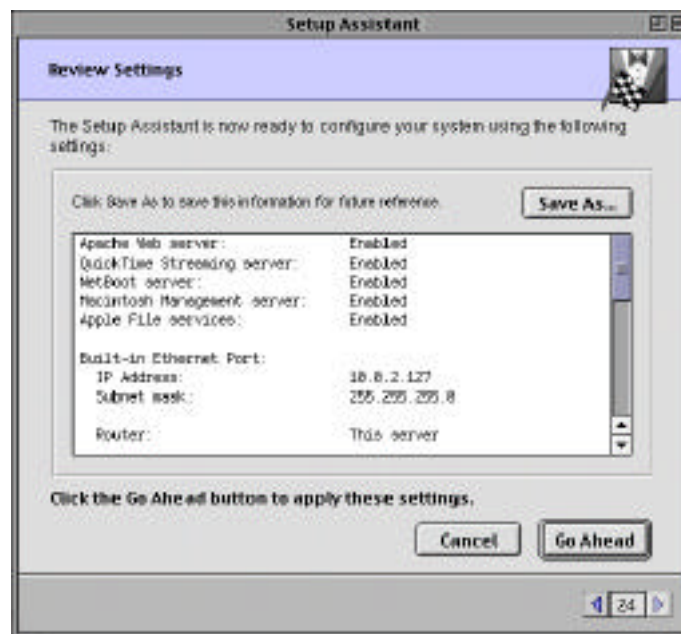
22. Automatic Login

If your server is in a secure location and used only by a single person, you may want to set up an automatic login. This allows you to bypass the login panel on system startup. This is a potential security hole, so we recommend that you do not select this option unless you are in a completely secure environment.



23. Review Settings

The Setup Assistant presents you with a list of the most important settings you selected before committing the changes. After you click Go Ahead, the Setup Assistant may provide some suggestions about what to do next, and offer to restart the system. While this is usually necessary only when changing your network configuration, it is safest to always restart after running the Setup Assistant.



4. Using Mac OS X Server

This section covers how to use Mac OS X Server when you are actually at the server.

1. Login

To start, log in using the Demo account you created in the Setup Assistant. While you occasionally need to log in as Administrator directly, you can run most administrative applications as a normal user if you have the appropriate privileges. In general, you should avoid logging in as Administrator whenever possible, to take advantage of the system's protection against users accidentally corrupting system configuration files.

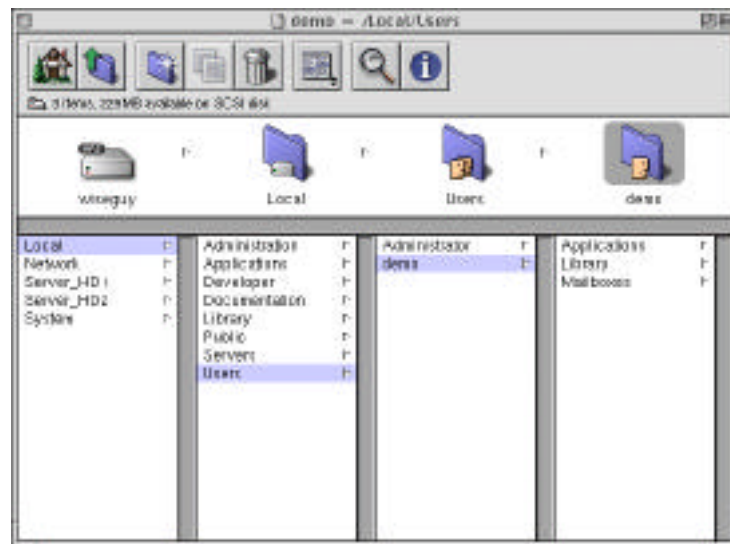


2. Home Folder

When you first log in, you will see a Viewer window opened by the Workspace Manager, which is analogous to the Mac OS Finder. This window is in Columns mode, which is very useful for navigating complex file systems. The far column shows the top, or "root" of the file system. In Mac OS X Server, your boot volume is the root of the file hierarchy. Other volumes (e.g., Server_HD1) are shown as folders under the root, as well as aliases on the desktop. The three top-level folders are:

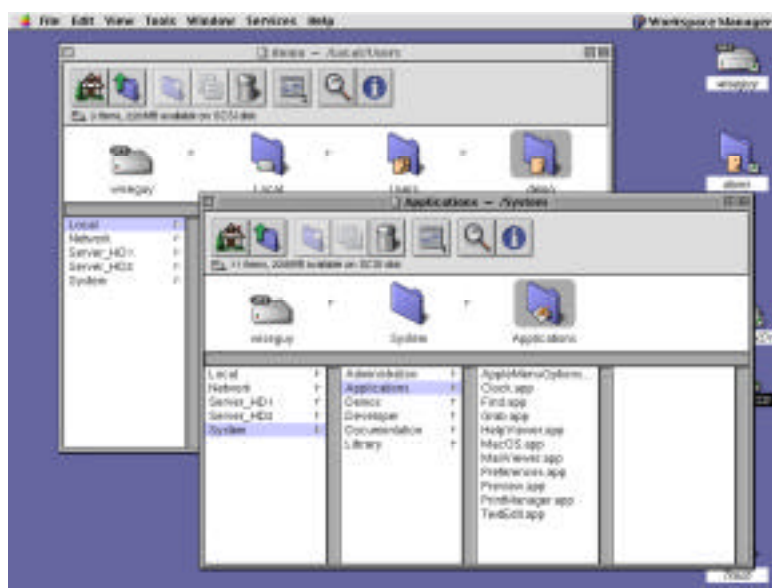
- Local: files that are specific to the particular computer
- Network: files shared (via NFS) with other Mac OS X Server or UNIX computers
- System: system files created during installation

All your personal files are stored in your home folder, which in this case is located in /Local/Users/demo. (In Mac OS X Server, paths are specified by "/", just as they are in URLs.) You can always jump back to your home folder by clicking the house icon on the toolbar, at the upper left of the Viewer window.



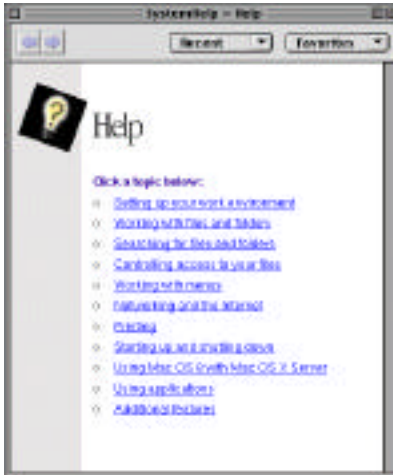
3. Navigation

The next screen shows a picture of the full desktop, after you've created a second Viewer by selecting View, then New Viewer from the Workspace Manager. To select a new folder, click System in the first column and then Applications in the second column. This folder contains the basic applications included with Mac OS X Server.



4. Help

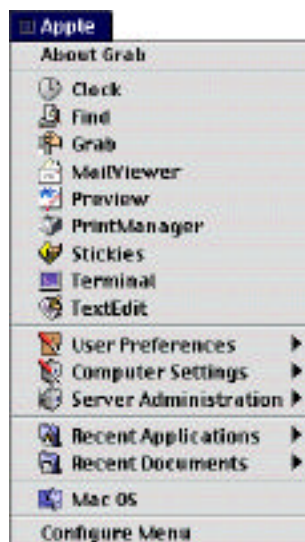
One of the basic applications is the Mac OS X Server HelpViewer. To obtain general system help, select the Help menu item from the Workspace Manager. From inside HelpViewer, select the Favorites button to see all the available online help modules, ranging from specific applications to general server administration issues.



5. Apple Menu

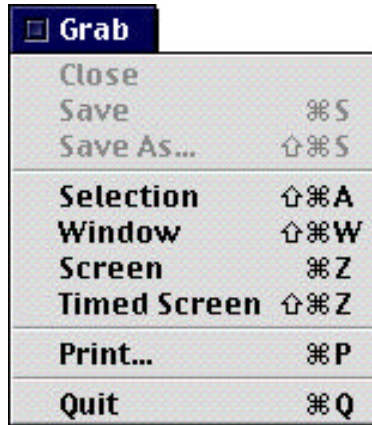
All the other applications can be accessed from the Apple menu, which is similar to the version in Mac OS 8, but with a few differences. For example, control panels are broken into User Preferences (which are tied to a specific user's login) and Computer Settings (which are tied to the computer, no matter who logs in).

The screen below was generated from a “tear-off” menu. To tear off a menu, simply click to select it as usual, but keep dragging past the edge or side of the menu.



6. Grab

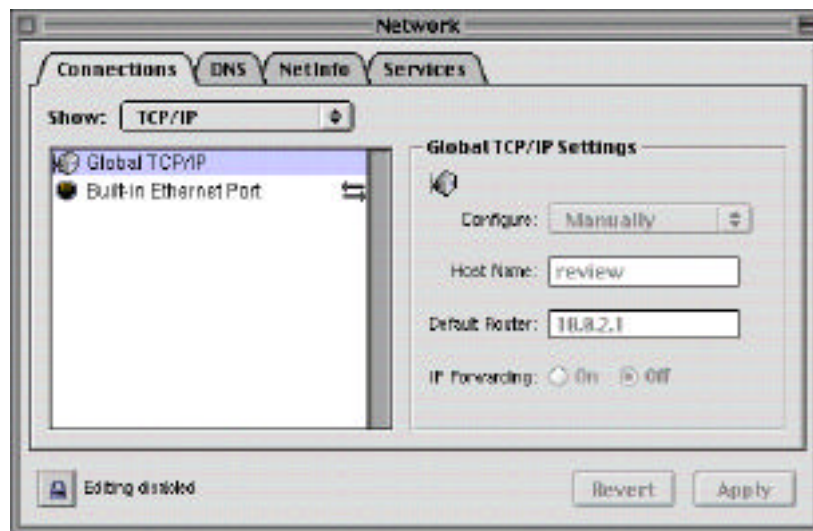
To generate screen shots, use the Grab application. Launch it from the Apple menu, then select an item from the Grab menu to determine what kind of screen shot you want. The screen shot is pulled into the Grab application, which can save it as a TIFF file. Online help is available for Grab.



7. Network Settings

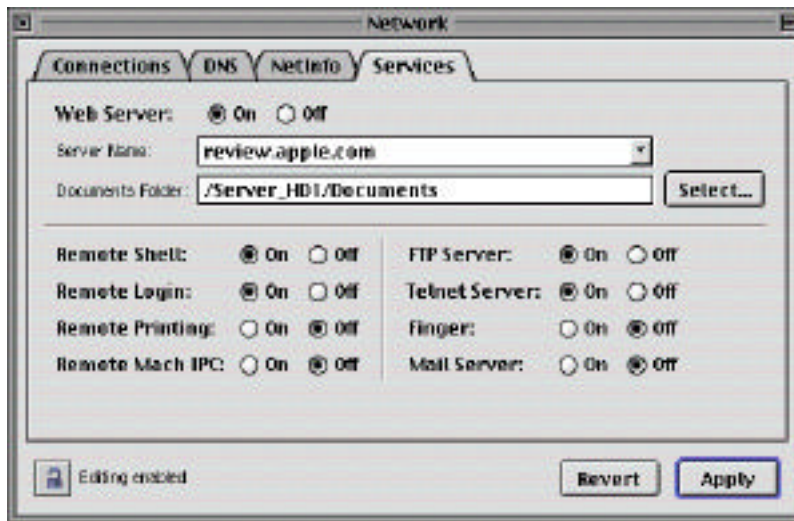
The most commonly used Computer Setting is the Network control panel. This allows you to manage TCP/IP or AppleTalk settings for one or several Ethernet ports.

By default, nonadministrator users can view but not change these settings. To enable editing, you must click the padlock icon in the lower left, and enter the Administrator password.



8. Network Services

The Network control panel also allows you to control many of the network services provided by Mac OS X Server. These include the Remote Login settings selected in the Setup Assistant, as well as the Sendmail Mail Server and other UNIX-oriented services.



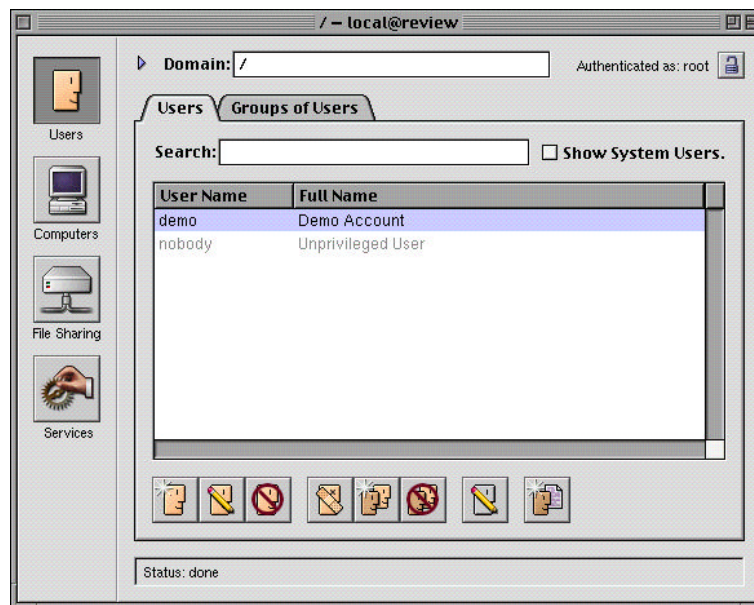
9. Server Administration

Most of the important applications for managing the server are included in the Server Administration submenu of the Apple menu. This submenu is generated dynamically from the contents of the /System/Administration, /Network/Administration, and /Local/Administration folders, so it may include third-party administrative applications. Most of these are explained in the Server Administration help file.



10. Network Manager

The Network Manager application allows you to create users and groups via a friendly graphical user interface, as an alternative to the web-based Remote Admin applications. It also includes facilities for mass-creating users or mass-importing user information from AppleShare IP 6.



11. Terminal

Finally, we include a Terminal application, for advanced troubleshooting as well as for UNIX-trained administrators who prefer a command-line interface. We also include a variety of shells and scripting languages, such as Perl. Virtually all of the time, Terminal is unnecessary, but it is there when you need or want it.

```
/bin/tcsh (tty1)

[review:~] demo% ls -l
total 6
drwxr-xr-x  2 demo  staff  1024 Jan 25 20:27 Applications
drwxr-xr-x  2 demo  staff  1024 Jan 25 20:27 Library
drwxr-xr-x  3 demo  staff  1024 Feb 11 18:59 Mailboxes
[review:~] demo% ls /bin/tcsh
/bin/bash /bin/csh /bin/vsh /bin/tcsh /bin/zsh
[review:~] demo% perl -v

This is perl, version 5.005_02 built for rhagoody

Copyright 1987-1998, Larry Wall

Perl may be copied only under the terms of either the Artistic License or the
GNU General Public License, which may be found in the Perl 5.0 source kit.

Complete documentation for Perl, including FAQ lists, should be found on
this system using 'man perl' or 'perldoc perl'.  If you have access to the
Internet, point your browser at http://www.perl.com/, the Perl Home Page.

[review:~] demo%
```

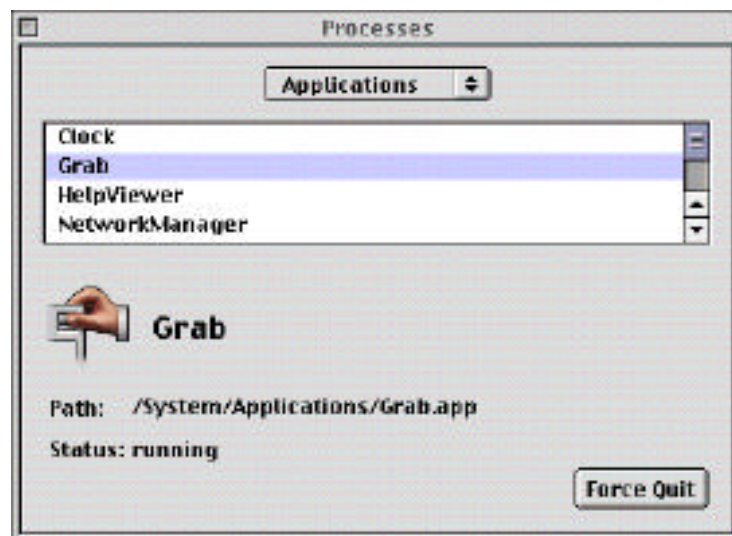
12. Applications Menu

To help you keep track of all the applications on your server, we provide a variety of tools. The basic one is the Applications menu on the right side of the menu bar, very similar to its counterpart in Mac OS 8.5 and later. By default, this menu is labeled with both the icon and the name of the active application. When torn off, it uses the generic name "Applications," but still dynamically updates to reflect the current list of applications.



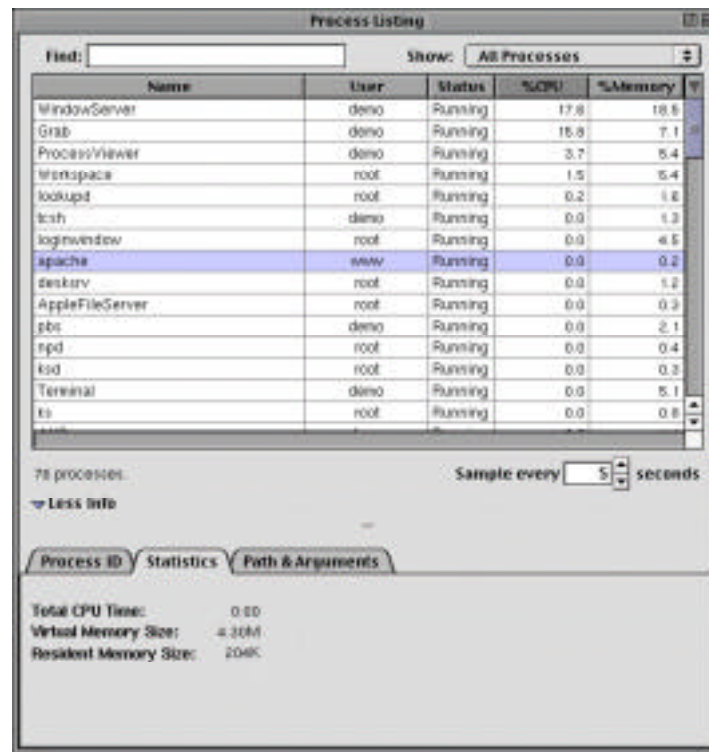
13. Process Panel

For greater control over these processes, you can bring up the Process Panel via "Show Workspace Processes." This allows you to view or quit all user-initiated processes. This panel can also be used to track any background workspace actions in progress, such as file copies.



14. Process Viewer

To find all the services that are running on your computer, you use the Process Viewer, accessed via Show All Processes on the Applications menu. The “Show” popup on the upper right allows you to focus on User, NetBoot, or Administrator processes. Select More Info at the bottom of the screen to display a list of detailed information about the selected process. You can also attempt to “kill” selected processes by selecting Processes then Force Quit, or by double-clicking them. However, unless you are logged in as the Administrator, Process Viewer will not allow you to kill processes that belong to other users or that are critical for system functionality.



5. Configuring and Using NetBoot Services

If you already filled in the NetBoot Setup Assistant panels in Section 3, you can skip directly to Section 5.2. Otherwise you need to install from the NetBoot Server CD, as described in Section 5.1.

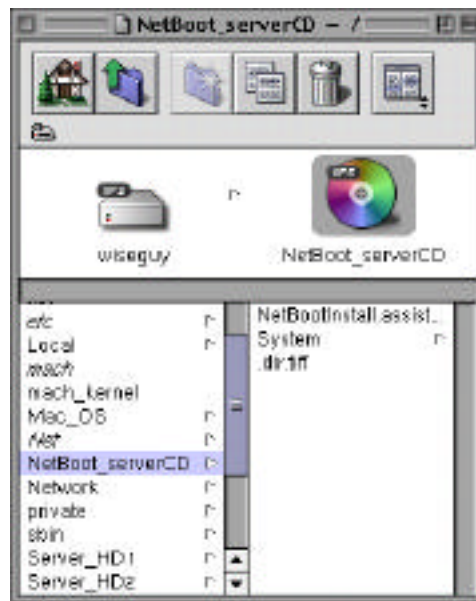
5.1 Installing NetBoot

To install NetBoot from the CD, follow the instructions in Chapter 5 of your *Mac OS X Server Installation Manual*. Note that you need to be logged in as Administrator on the Mac OS X Server system. You will not be able to view or use the CD from a Mac OS 8 system.

The key steps are as follows.

1. Run the NetBoot Install assistant

This is located at the top level of the NetBoot Server CD. Double-click the icon to launch a version of the assistant, which walks you through the Read Me and licensing information. When finished, click Install to launch the Installer.



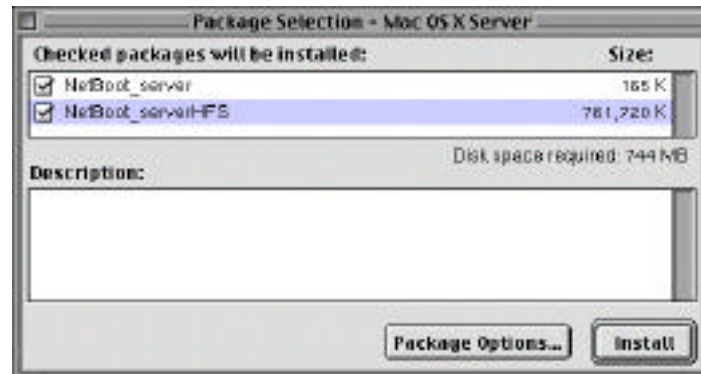
2. Select the disk

The first question the installer asks is which volume you want to install the NetBoot software on. For simplicity, just select the volume you chose earlier to host the Apache and QuickTime streaming folders. This list shows only Mac OS Extended (HFS Plus) volumes that can be used for NetBoot.



3. Start the installation

Next, click Install to begin the installation. Note that two different packages are installed. The server software is installed on the root (UFS) volume, whereas the data files and client software are stored on the selected Mac OS Extended (HFS Plus) volume.



4. Run the Setup Assistant

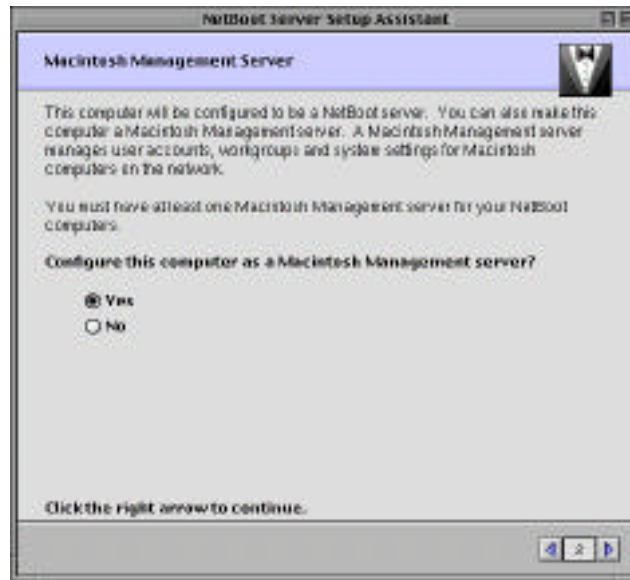
Next, the computer will ask you to complete the NetBoot Server Setup Assistant panels.



This information is almost identical to Setup Assistant items 4 through 13 of Section 3. The main exceptions are as follows:

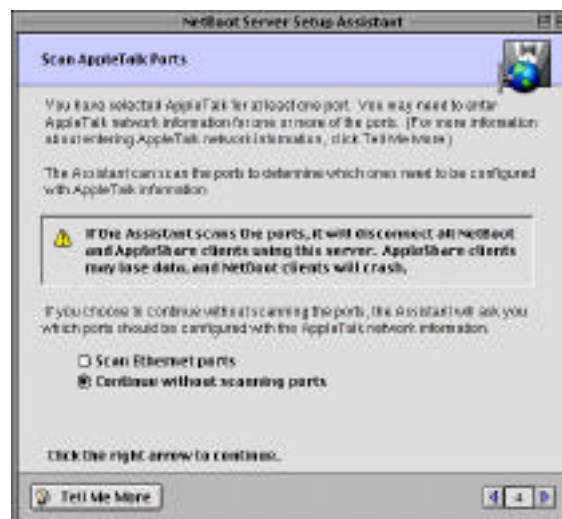
- **Macintosh Management Server**

The assistant asks whether you want to set up a Macintosh Management server. You should say Yes, since you won't be setting up any other Macintosh Management servers.



- **Scan AppleTalk Ports**

Scanning ports is dangerous on a preconfigured system because it causes a disruption of service. However, since you should not yet have connected any clients, it is safe to say Yes.



After you run the Setup Assistant, it will ask you to confirm your settings, and then reboot.

5.2 Using the NetBoot Server

Confirm that you've physically connected your network as described at the beginning of the section. While starting your NetBoot-ready Macintosh, hold down the N key until you see the Mac OS welcome screen. Your computer should start up quickly. Note that you can use the Startup Disk to configure your NetBoot-ready Macintosh so that it always boots from the NetBoot volume.

The first time you use the NetBoot server, this message will appear:

This Macintosh Manager Server is not set up for use. To either change servers or administer this server, press Stop. A password may be required.

Press stop. You will see another message:

Information on the Macintosh Manager server is not complete or there was a problem accessing it.

Would you like to select a different server?

Choose No. The computer will continue to the Finder.

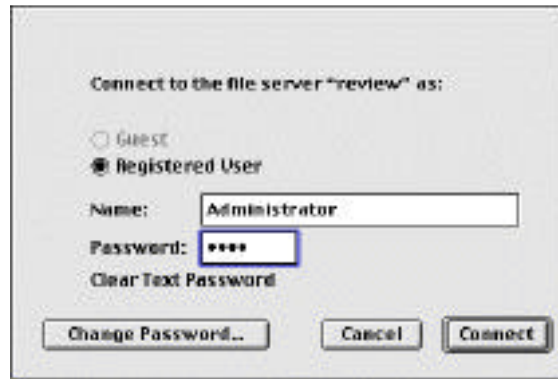
5.3 Using Macintosh Manager

Before using the system, you must set up the Macintosh Management server. Follow these steps to use Macintosh Manager to create users and set system policies. Note that you must be on a Macintosh system running Mac OS 8.5 or later to run the Macintosh Manager application; you cannot run this application directly from inside Mac OS X Server (though you can run it inside the Mac OS compatibility environment).

The Macintosh Manager application is installed on a Mac OS Extended (HFS Plus) volume of the server during the installation process. For Macintosh Server G3 configurations, this would be the volume Server_HD1; otherwise, it would be the volume you chose during NetBoot software installation. If you forgot the volume, you can easily browse the file system from within Mac OS X Server. Macintosh Manager is located in a folder called "Admin folder," which will be at the top of the relevant volume, along with other NetBoot documents.

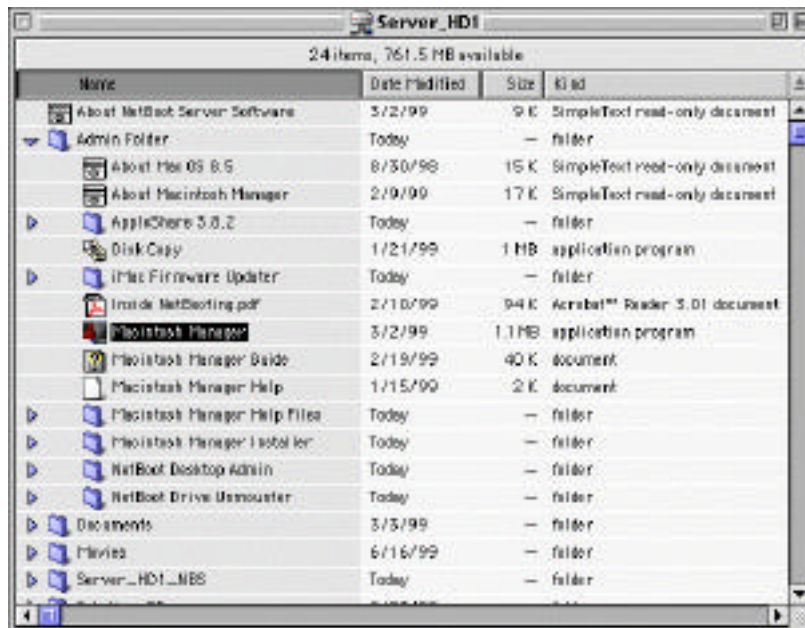
1. Connect to the server as Administrator

- Open the Network Browser from the Apple menu.
- Select the name of your Mac OS X Server ("review") in the appropriate zone, if any.
- Enter Administrator for the name and enter the password you used to set up the administrator account in the Mac OS X Server Setup Assistant.



2. Launch Macintosh Manager

- Open the available volumes and navigate to the Admin folder (depending on your installation, the location of the Admin folder may vary).
- Open the Admin folder and double-click the Macintosh Manager icon.
- Macintosh Manager will present a login panel.



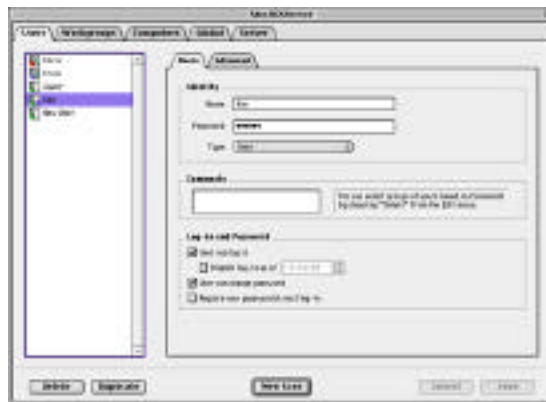
5.4 Creating Users and Workgroups

Follow these steps to create new users and workgroups.

1. Create a new user

Macintosh Manager lets you add users to your Macintosh network. You must define a user with Macintosh Manager before that user can log in to a NetBoot-ready Macintosh. To add a new user:

1. Click New User.
2. Type the name of your new user in the Name field.
3. Click Save.
4. Repeat the steps to add a second user.



You've successfully added users to your network.

2. Create a workgroup and add users to the new workgroup

Each user must be a member of a workgroup. Workgroups can represent departments or classes. To set up a new workgroup:

1. Type the name of your workgroup in the Workgroup Name field.
2. In the All Users frame, select the two users you added in the previous section and assign them to the workgroup by clicking the Add button.

3. Click Save.



You've successfully created a new workgroup and assigned users to it. The other panels in this section allow you to define access to applications, network volumes, and printers. Investigate the other panels at your convenience.

5.5 Personal Desktop

With NetBoot and the included Macintosh Management server software, users can securely access their applications, files, and personal desktops from any Macintosh on the network—including non-NetBoot-capable Macintosh computers (by installing the Macintosh Management client software included in the Admin folder on the NetBoot server). To try this feature, log in as one of the users you just added in Macintosh Manager.

1. From the Apple menu, choose Control Panels, then Appearance.
2. Click the Themes tab.
3. Choose a new Theme.
4. Close the Appearance control panel.
5. From the Finder, choose Quit and Logout from the File menu.
6. Move to another iMac.
7. Log in as the same user, and repeat the previous steps using a different theme.
8. From the Finder, choose Quit and Logout from the File menu.
9. Log in again as the first user.

The desktop appearance should have changed to reflect the theme you set as your own. A user's personal environment is defined by the appearance of the desktop, personal files, and the specific preferences associated with the applications he or she uses, such as the default home page or the e-mail settings. The Macintosh Management server included with the NetBoot server manages these things for each user. So users can sit at any Macintosh on the network and securely access their applications, files, and personal desktops. It's like having your Macintosh follow you around the network.

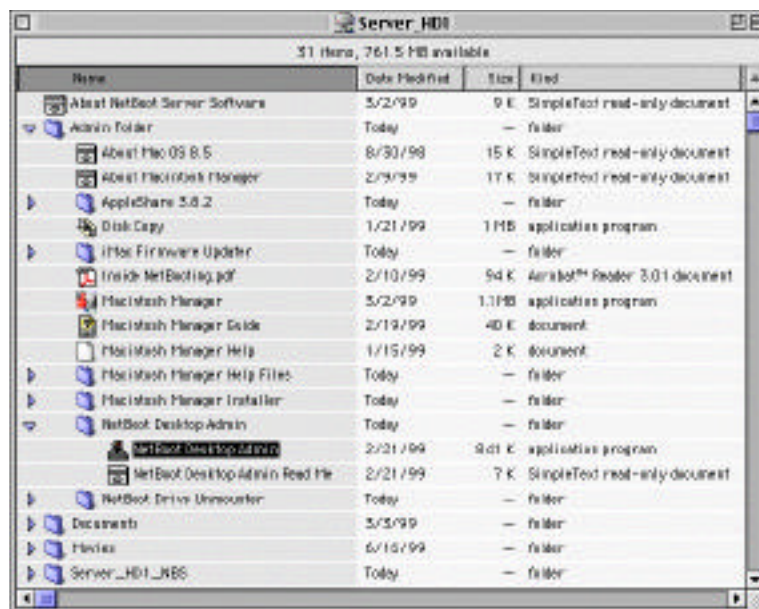
5.6 Adding Applications

Because applications are stored on the server and because every NetBoot-ready Macintosh on the network shares the same copy of an application, adding an application for use on all your Macintosh computers is done in one place, one time. The System Folder and application volumes used by NetBoot-ready Macintosh computers are actually disk images stored on the server.

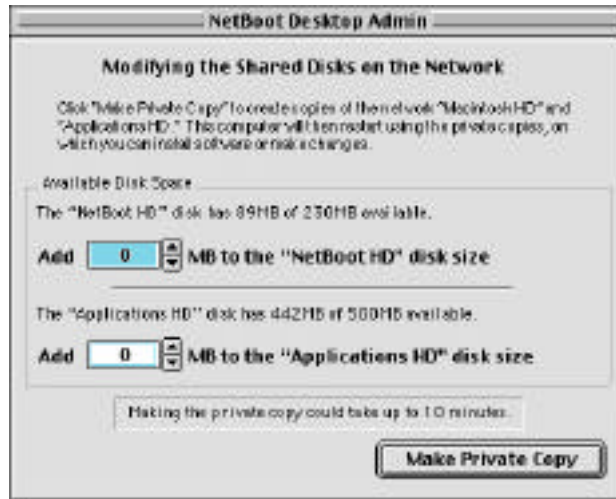
Because every NetBoot-ready Macintosh on the network operates from the same disk images, the images are locked so users can't corrupt them. To make changes, administrators must put their computers into a special mode that will allow the changes they make to persist after rebooting. Included with the NetBoot server software is NetBoot Desktop Admin. This application puts the administrator's computer into this special persistent mode so the administrator can make changes to the system or application images. For example, you should use this to update your NetBoot system to Mac OS 8.6, which offers some dramatic performance improvements for NetBoot clients.

From a NetBoot client computer:

1. Connect to the Server as Administrator (use the Network Browser, as described in Section 5.3).
2. Launch NetBoot Desktop Admin.
 - Navigate to the Admin folder, as before.
 - Open the NetBoot Desktop Admin folder and double-click the NetBoot Desktop Admin icon.

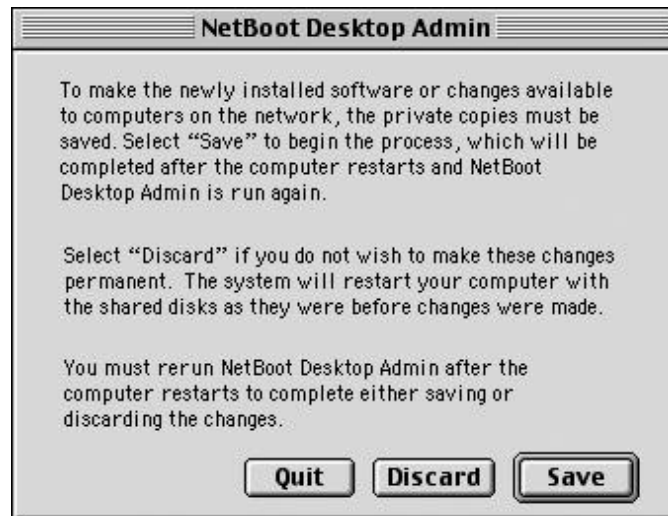


3. Click Make Private Copy.



4. Choose Continue.
5. You will see a message indicating that a copy is taking place and approximately how long the copy will take. Once the copy is finished, your computer will restart.

6. Once your Macintosh has restarted, you are ready to make changes. Install applications as you would normally. Follow the instructions for installing and restarting your system if necessary. After you have installed your application it is important that you run the application at least once, because some applications write configuration information the first time they run.
7. Once you've finished installing applications, rerun the NetBoot Desktop Admin application.
8. Click Save to save the changes you've just made to the master images. Your computer will restart.



9. Once your computer is restarted, you need to run the NetBoot Desktop Admin application for the third and final time. This will make the new System and Applications folders the default for all your NetBoot systems.
10. Click Restart.



Your new applications and system settings are available to all the NetBoot-capable Macintosh systems on the network.

That's it! Managing all the Macintosh computers on your network really is as easy as managing a single Macintosh.

6. Configuring Apple File Services

Initially, you can only connect to the file server as Administrator, and the only share points (shared volumes or folders) are all the Mac OS Extended (HFS Plus) volumes present on the server. As you create users, they are able to connect to the server, but are unable to mount volumes until you assign them share points.

1. Launching Remote Administration

To create share points, as well as to manage users and groups when you are not at the server, you need to use the web-based Remote Administration application. From a Java-capable web browser, enter the hostname of the server (or the IP address), followed by the port number 311.

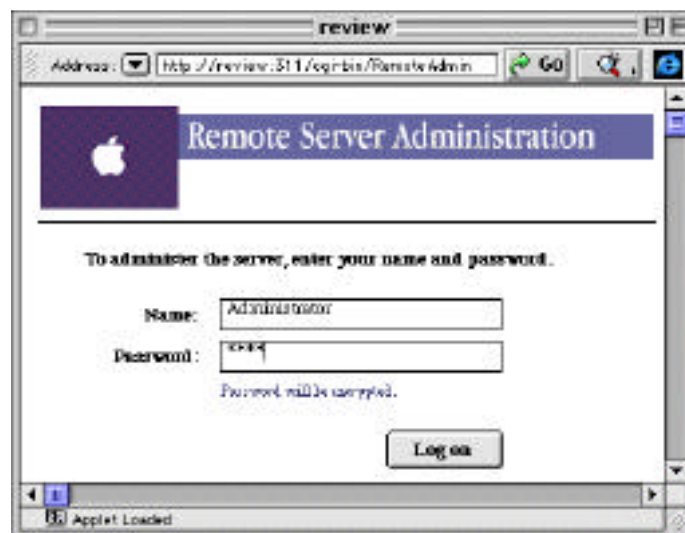
`http://review:311`

If you do not have a DNS server (as in our suggested sample subnet), you need to enter the IP address of the server that you chose in the Setup Assistant. For example:

`http://10.0.2.127:311`

2. Logging in

After you enter the proper URL, your web browser will display the Remote Administration login page for the server. To login, enter the username Administrator and the password you set earlier in the Setup Assistant.



3. Status

Initially, you are placed in the Status page, where you can view or change the status of the server.



4. Users

The Users page allows you to add and delete users or groups. You can also change a user's type to Administrator, which allows that user to use Remote Administration to manage the server (but does not give the user Administrator privileges when logging directly onto the server).



5. File Activity

The File Activity page under the File section allows you to view and control the current usage of the server.



6. Disks and Share Points

The Disks and Share Points page allows you manage share points, which are the folders that can be shared with remote users.



7. Settings

The Settings page allows you to control server limits. Note that the user interface currently only allows you to specify a maximum of 1,100 connections, but the server itself is not so limited. See the Tech Info Library for information on possible workarounds.



8. Sharing Apache Documents

The combination of the Setup Assistant and Remote Administration makes it very easy to configure a server to share files supporting Apache or QuickTime streaming. To start, go back to the Disks and Share Points page (Item 6) and select the disk Server_HD1.



Next select the Documents folder, then click Set Privileges.



Now all you need to do is select "Make this a share point and set privileges," and click Save. If you followed the instructions in Section 3, the Demo account and the folder were both already set to the group webpage_authors by the Setup Assistant, so you don't need to do anything else.

You can repeat the same procedure to share the Movies folder with the group movie_authors.



7. Serving Files with the Apache Web Server

If you've followed this configuration, it is now extremely easy to add files to your Apache web server from any Mac OS client.

1. Default Apache home page

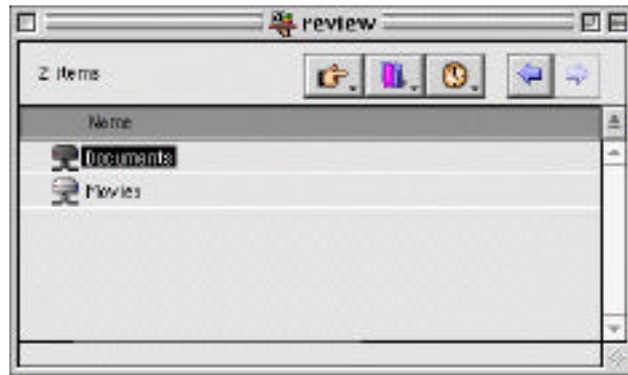
To connect to the server and get the default home page, launch your web browser and go to <http://review>, or <http://10.0.2.127> if you are on the isolated subnet created before.

Note that you can use the “Powered by Apache” and “Powered by Mac OS X Server” web badges on your own web site, according to the terms at www.apple.com/about/webbadges.



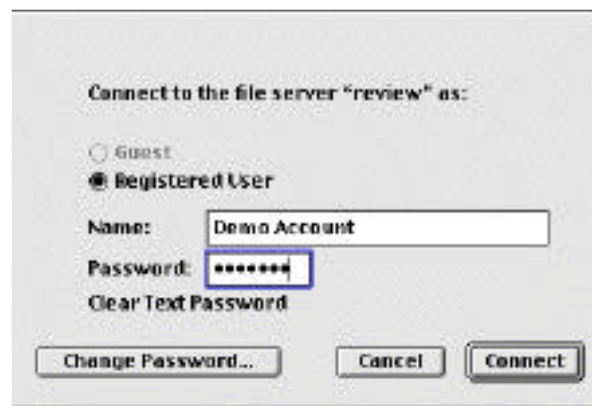
2. Connect to the server

To add files to the server, first connect to the server via AppleShare using Network Browser or the Chooser. Navigate to the proper zone, and select it via its AppleTalk name "review." Note that even though you use the AppleTalk name to identify it, all communication with the server usually takes place over TCP/IP.



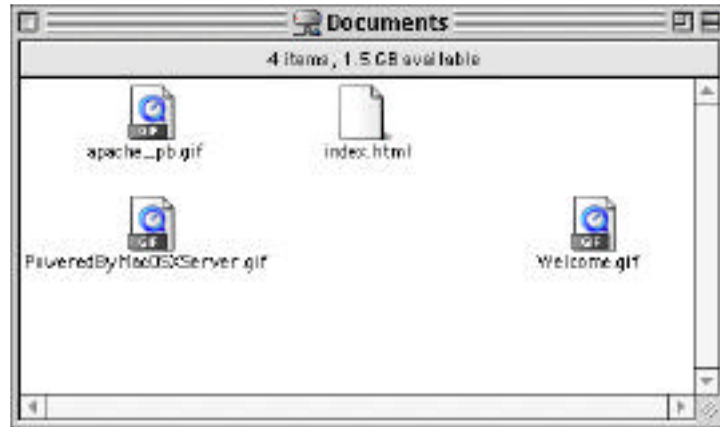
3. Log in as Demo

Next, log in as the Demo Account created earlier.



4. Mount documents

Since the Demo account is a member of the group `webpage_authors`, it can access the Documents share point we just created. Mount and open this folder.



5. Copy new web pages

Now edit one of these files, or copy in a whole new site.

6. Update web browser

Now just go back to your web browser and click Refresh. There's your new page, already on the server being served by Apache.

8. Delivering Digital Media Using QuickTime Streaming

One of the most exciting new features of Mac OS X Server is its ability to stream QuickTime movies over industry-standard protocols to any QuickTime 4 client. Mac OS X Server shipped with a preview version of the QuickTime Streaming Server, which must be updated to work with the QuickTime 4. You also need to apply at least the first Mac OS X Server patch to address some critical bugs that affect QuickTime streaming.

8.1 Updating Mac OS X Server to Support QuickTime Streaming

You need to perform the following steps in order to properly support QuickTime streaming on your Mac OS X Server computer. You must be logged in as Administrator on the server in order to perform this update.

1. Update your system to the latest Mac OS X Server patch from the Apple support site (www.apple.com/support).
2. Update to the latest version of the QuickTime Streaming Server.

See the article at til.info.apple.com/techinfo.nsf/artnum/n59004 for more information.

8.2 Administering the QuickTime Streaming Server

If you are logged in to the server, you can control various parameters of the server using the QuickTime Streaming Admin application.

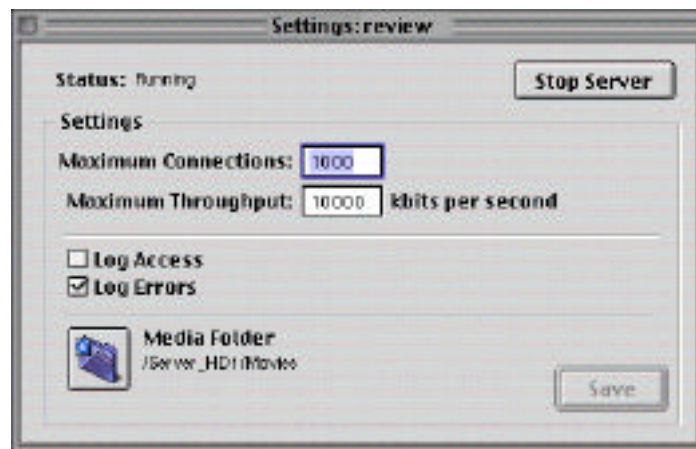
1. QuickTime Streaming Admin

Use the Server Administration submenu of the Apple menu, or use the Workspace Manager to navigate to `/System/Administration/QuickTimeStreamingAdmin.app`.



2. Settings

The application starts up with the Settings panel. You can use this panel to view the current configuration. If you want to change any of these parameters, you need to authenticate using the Administrator password.

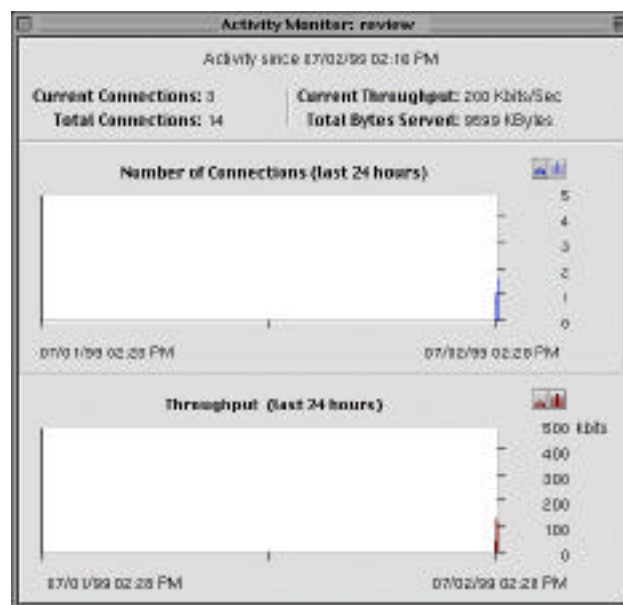


3. Server menu

To obtain more information about the logs, use the Server menu.



This can bring up windows showing activity and errors, such as the following:



8.3 Installing Sample Movies

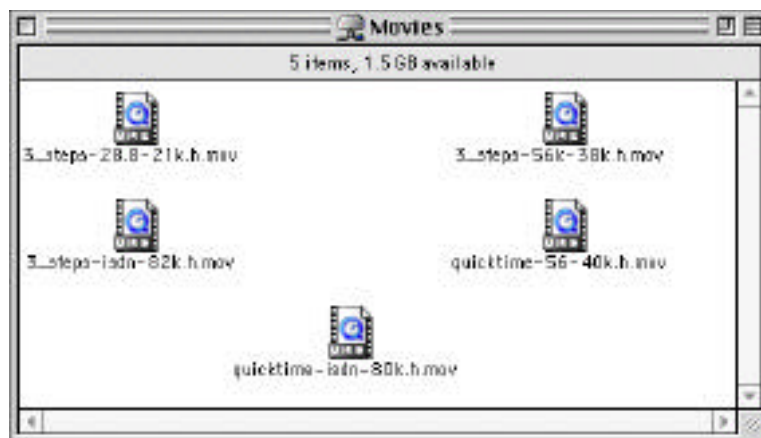
The sample movies should be available in the same place as the QuickTime Streaming Server Update (that is, <http://asu.info.apple.com/swupdates.nsf/artnum/n11357>). If you are logged in to the server, you need to:

1. Download the files.
2. Unpackage them (double-click the ".tar" file).
3. Copy them into the Movies directory.

If you followed the directions in Section 3, then your Movies directory is on a Mac OS Extended (HFS Plus) volume, such as /ServerHD_1/Movies. Otherwise, it defaults to /Local/Library/QuickTimeStreaming/Movies.

You can also upload files directly from a Macintosh client, if you've placed the movies on a Mac OS Extended (HFS Plus) directory in Section 3 and made it a share point in Section 6. This is useful for installing sample movies if you're not on the server, or for uploading your own movies.

To upload files, simply log on to the file server as explained in Section 7, but select Movies instead of Documents.



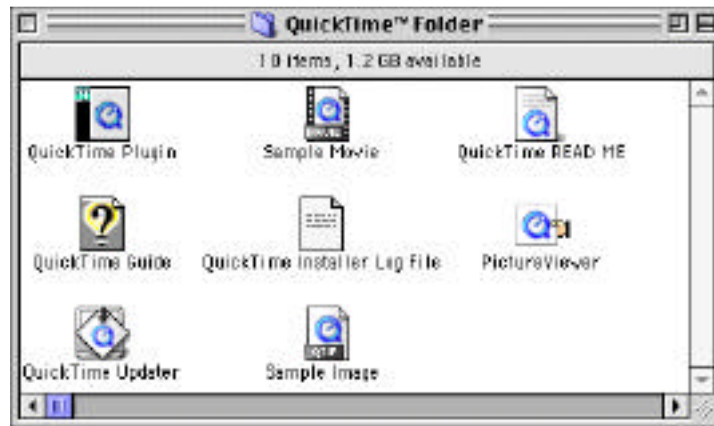
You can stream any movie that has a hint track. If you have QuickTime 4 Pro, you can easily export any movie as a hinted movie, using the Export item from the File menu of the QuickTime Player.

8.4 Accessing Streaming Movies from a QuickTime Client

You can receive streamed movies from any QuickTime 4–enabled client application.

1. Install QuickTime 4

Download QuickTime 4 from www.apple.com/quicktime, and install it on your client system. Note that if you are using a NetBoot client, you need to perform the installation using the NetBoot Desktop Administrator.



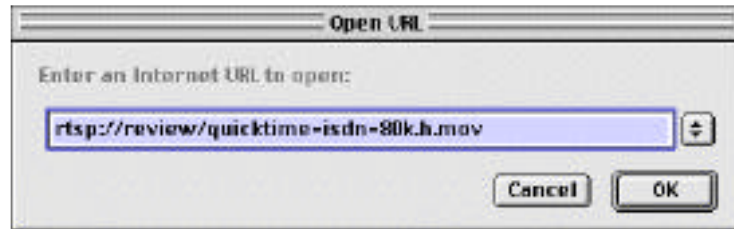
2. Launch QuickTime Player

You can easily do this via the alias on the desktop. The player defaults to the QuickTime showcase movie, which takes you to the QuickTime web site.



3. Enter URL

To access movies stored on the server, simply go to the File menu of the QuickTime Player and select Open URL. Enter a URL for RTSP (Real-Time Streaming Protocol) services. All you need is the name (or IP address) of the server and the name of the file relative to the Movies directory. Future versions of the server may allow you to view the list of available movies dynamically.



4. View movies

The movie starts playing directly from the server. If it is a stored movie (as opposed to a live broadcast), you can use the slider to select precisely which part of the movie you want to view, without having to download the intervening content.



9. Installing and Exploring WebObjects

If you are interested in adding dynamic content to your web site, you may want to make use of WebObjects. However, WebObjects is intended for use only by web developers, so you may want to skip this section. This section only touches on the features of WebObjects. If you are interested in learning more, you should study the developer documentation (`/System/Documentation/Developer/WebObjects`) and visit the WebObjects web site, at www.apple.com/webobjects.

9.1 Installing WebObjects

If you are installing from the software CDs, you need to install WebObjects from the WebObjects 4 Developer CD. Otherwise, WebObjects should have been installed automatically on your hard drive, and you can skip directly to Section 9.2.

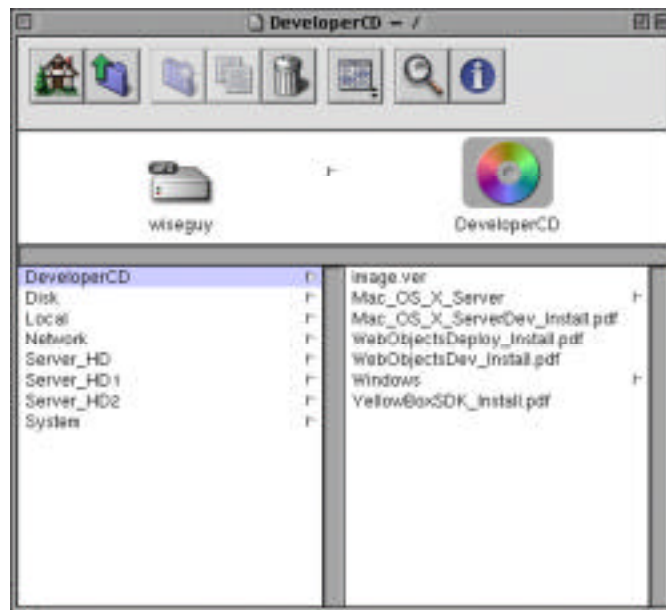
The WebObjects CD actually contains several versions of the WebObjects software, which can be unlocked using different serial numbers. You should have a serial number for WebObjects Developer for Mac OS X Server on your CD envelope cover. You would need to purchase additional licenses to use other functions of WebObjects.

1. Log in directly to the server as Administrator

You must be the Administrator to install System files such as WebObjects.

2. Insert the WebObjects 4 CD

This is an ISO 9660 CD, since it is also used by other WebObjects platforms.



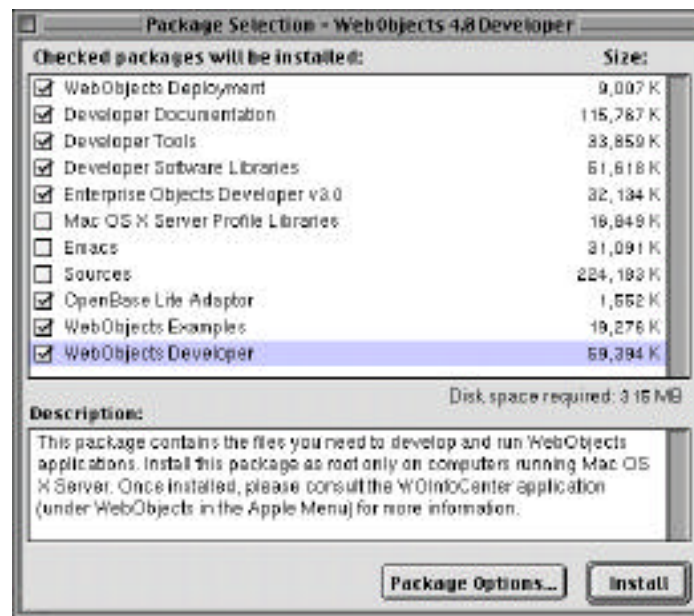
3. Open and read the file WebObjectsDev_Install.pdf

You need only read the first chapter, about Mac OS X Server installation.



4. Open the WebObjectsDeveloper.mpkg multipackage

This is located in the Mac_OS_X_Server folder. You should deselect some of the rarely used packages (Profile Libraries, Emacs, and Source) to speed installation, but leave the rest because they are needed for the examples.



5. Run the installer and enter the serial number

Click Install, and then Continue when it warns you that programs will be run during installation. The installation can take up to 30 minutes, largely due to the size of the documentation. You may need to click OK a couple of times as it overwrites certain existing files.

Toward the end, it will ask you for the WebObjects Developer Serial Number. You must enter the number exactly as shown on the label of your CD cover.

6. Log out from the Administrator account

You can access WebObjects from any account, or even another computer.

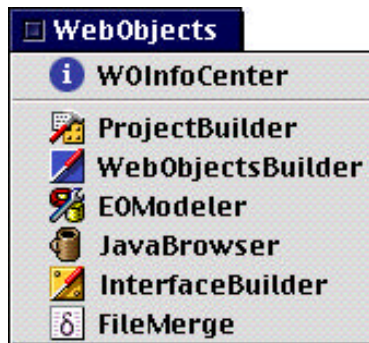
9.2 WebObjects InfoCenter

The simplest way to familiarize yourself with the WebObjects tools is to use the WOInfoCenter application. Since this is best done from the console of the server, you should do this only on a Mac OS X Server computer that is not currently in use as a production server.

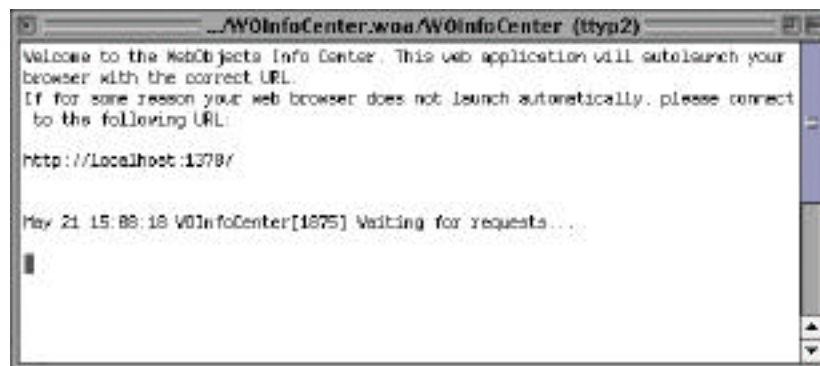
This assumes you have installed and licensed a browser such as OmniWeb (located on the install CD) on your server. If not, you can also use a web browser from inside the MacOS.app compatibility environment, which you configure just like a normal Mac OS system (with its own IP address).

1. Launch WO Info Center

You need to do this from the WebObjects submenu of the Apple menu, at the console.



It will attempt to launch a web browser on the server. If one is not available, you need to point your browser to the indicated port on the server system, for example, <http://10.0.2.127:1378>. Note that the port used (e.g., 1378) varies between invocations, and may be different from that shown here.



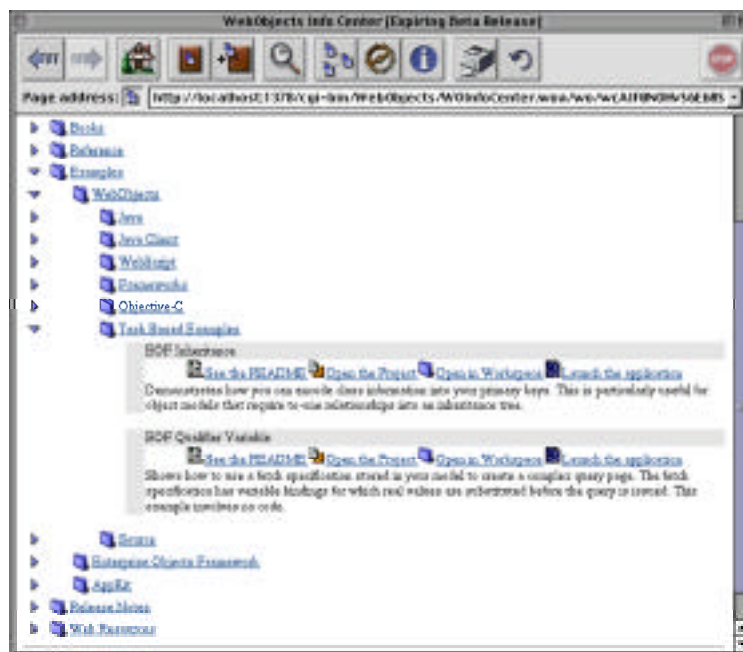
2. View Info Center Help

You will see the following page on your web browser. This is the home page for the WOInfoCenter application. It shows the type of information available, as well as help and searching capabilities.



3. Select a specific example

We will select a task-based example. Click Examples, WebObjects, and Task-based Examples. After each click, the page will be reloaded.



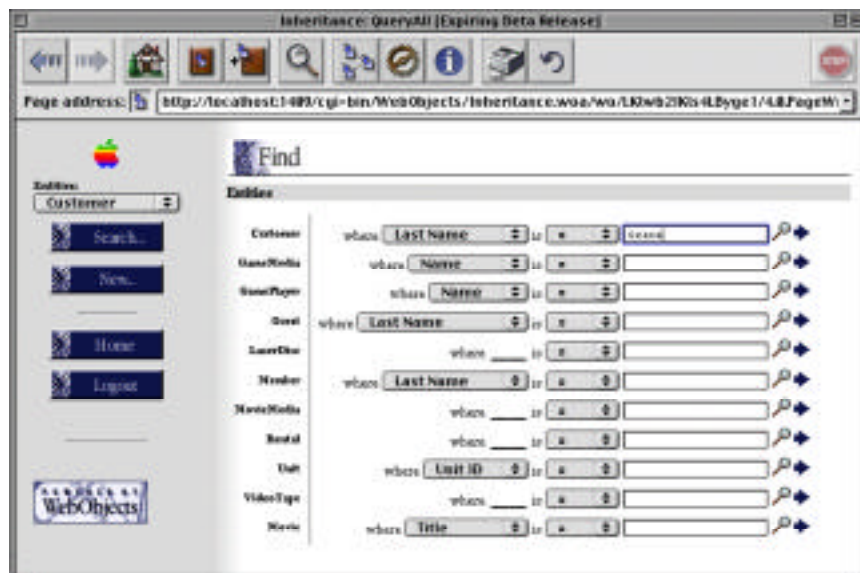
4. Launch the example

WOInfoCenter allows you to both view and run the application. To start with, run the EOF Inheritance example by clicking "Launch the application." This will launch another browser window containing a login screen. For this example, you can log in as "guest" with password "guest."

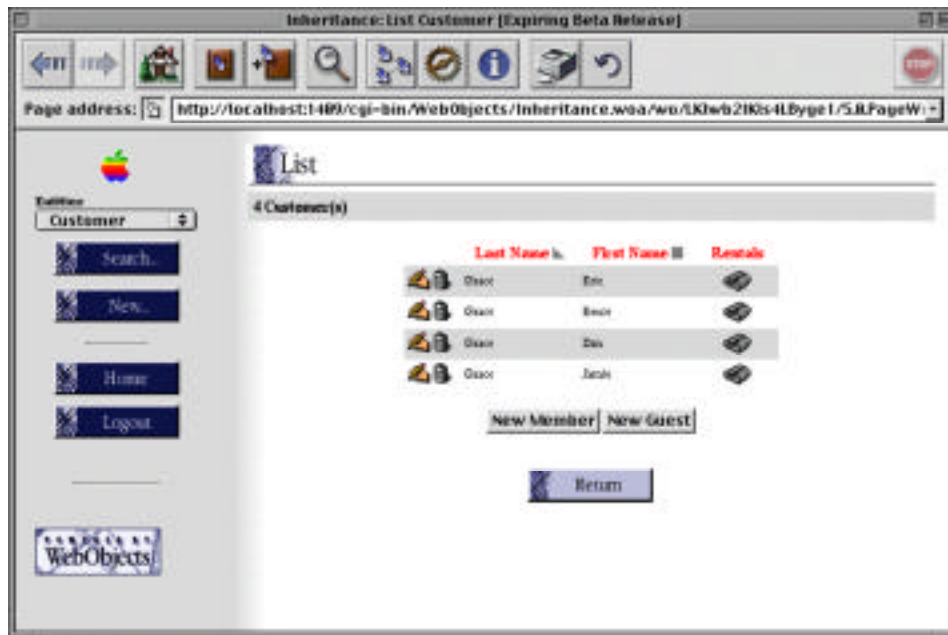


5. Enter a search

This brings up a data entry window for browsing the Movies database, which is an OpenBase Lite database used for many of the examples. For instance, you can enter the customer last name "Grace" and click the magnifying glass icon.

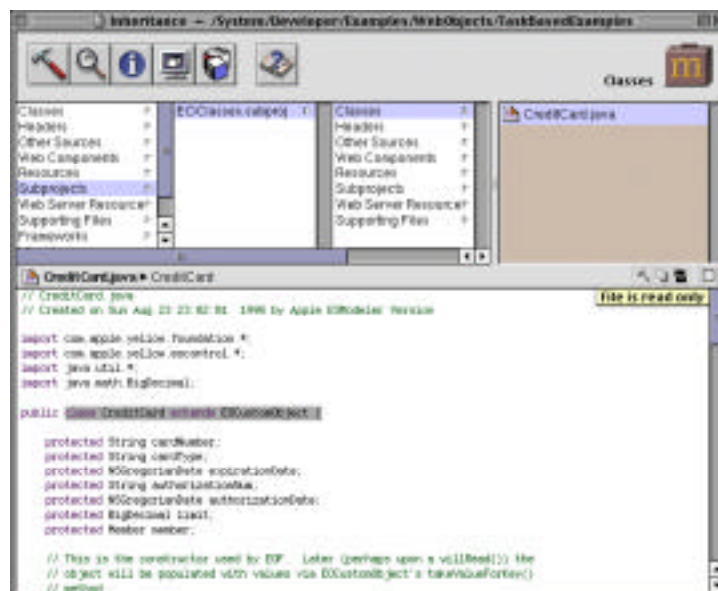


This returns a list of all the customer records containing that last name.



6. Open the project

If you are a developer and want to understand how that is done, you can look at the actual source code for the application. Go back to the WOInfoCenter page for the EOF Inheritance example, and select "Open the Project." This opens ProjectBuilder, the primary tool for managing source code and other resources associated with an application. Note that if you are running the web browser in MacOS.app, you need to switch back to the main server environment using the Application menu in order to see ProjectBuilder. You can copy this code to your own directory, and modify and recompile the application to help you learn more about WebObjects.



If you are planning a major development project with WebObjects, you should attend one of the many WebObjects training sessions being held around the U.S., and occasionally in other countries. For more information, visit www.apple.com/webobjects.

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www.apple.com

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L04585A September 1999