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About This Guide

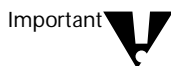
This guide explains how to install, configure, and maintain the NetWare for Macintosh 4.10 software. It assumes that you have already installed and configured these components:

- ◆ NetWare® 4.1 or later
- ◆ The AppleTalk® module (APPLETLK.NLM)

NetWare for Macintosh enables Macintosh® users to access files on a NetWare server and to print to NetWare print queues. It does not provide routing capabilities. The AppleTalk module provides AppleTalk network connectivity, and is required to run NetWare for Macintosh.

For information on installing the NetWare operating system and configuring the many NetWare features, see the NetWare 4 *Installation* manual.

For information on how to install the NetWare for Macintosh client software and access a NetWare server from a Macintosh client, see the *IntranetWare™ Client™ for Mac OS User Guide*.



The software this guide describes is compatible only with NetWare 4.1 or later. Do not attempt to install the software on a server running a previous version of NetWare.



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Additional Reading

These publications provide detailed information about AppleTalk protocols, standards, and uses:

- ◆ *AppleTalk Network System Overview*, Addison-Wesley Publishing Co., Inc. This book provides a comprehensive introduction to AppleTalk.
- ◆ *Planning and Managing AppleTalk Networks*, Addison-Wesley Publishing Co., Inc. This book contains information about planning AppleTalk networks.
- ◆ *Inside AppleTalk*, Second Edition, Addison-Wesley Publishing Co., Inc. This book contains the complete AppleTalk Phase 2 network specification, including information on the Printer Access Protocol (PAP) and print spooling architecture.
- ◆ *PostScript Language Reference Manual*, 2nd Ed., Addison-Wesley Publishing Co., Inc. This book provides a thorough reference to the PostScript Language.
- ◆ *Apple LaserWriter Reference*, Addison-Wesley Publishing Co., Inc. This book provides technical information about the Apple LaserWriter® family of printers.

User Comments

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We appreciate your comments.

Installing NetWare for Macintosh

This chapter details the system requirements and procedures for installing NetWare for Macintosh on your NetWare® server. The chapter also explains how to use the INSTALL utility to access the NetWare for Macintosh configuration utilities.

Before You Begin

Before you begin installing NetWare for Macintosh, you should make sure that you have correctly installed and configured the NetWare operating system and the AppleTalk module (APPLETLK.NLM).

For information on installing and configuring the NetWare operating system, see the NetWare 4 *Installation* manual.

NetWare for Macintosh Components

NetWare for Macintosh adds these capabilities to your NetWare network:

- ◆ Macintosh users can share files with non-Macintosh users.
- ◆ Macintosh users can send print jobs to NetWare queues.
- ◆ Non-Macintosh users can send print jobs to a printer on an AppleTalk portion of the network.

NetWare for Macintosh uses a different NetWare Loadable Module™ (NLM™) for each service it provides. All the NLMs reside in the SYS:SYSTEM directory. (An exception is PINSTALL.NLM, which is available through the NetWare installation process.) Table 1-1 lists each NLM relevant to NetWare for Macintosh.

Table 1-1
NetWare for Macintosh NLMs

Module	Description
AFP.NLM (The AppleTalk Filing Protocol module)	The AFP module enables Macintosh users to share files and applications with non-Macintosh users. For details on configuring this module, see Chapter 2, "Managing AppleTalk File Services," on page 25.
AFPCON.NLM (The AFP console utility)	AFPCON enables you to configure the AFP module. For details, see Chapter 2, "Managing AppleTalk File Services," on page 25.
ATPS.NLM (The AppleTalk Print Services module)	The ATPS module enables both Macintosh and non-Macintosh users to send a print job to a network printer. For details on configuring this module, see Chapter 4, "Planning AppleTalk Print Services," on page 75.
ATPSCON.NLM (The ATPS console utility)	ATPSCON enables you to configure the ATPS module. For details, see Chapter 5, "Setting Up AppleTalk Print Services," on page 93.
ATXRP.NLM (The AppleTalk Extended Remote Printer module)	The ATXRP module works with PSERVER to send a print job to an AppleTalk network printer from a NetWare print queue. For details, see Chapter 9, "Printing with AppleTalk XRP and PSERVER," on page 251.
HFSCD.NLM (The HFS CD-ROM module)	The HFSCD module enables you to control the interaction between NetWare for Macintosh and a CD-ROM drive. For details, see Chapter 3, "Configuring the HFS CD-ROM Module," on page 55.
HFSCDCON.NLM (The HFS CD-ROM console utility)	HFSCDCON enables you to configure the HFS CD-ROM module. For details, see Chapter 3, "Configuring the HFS CD-ROM Module," on page 55.
PINSTALL.NLM	The INSTALL utility provided with NetWare uses PINSTALL.NLM to install NetWare for Macintosh.
ATCONFIG.NLM	ATCONFIG.NLM enables you to configure NetWare for Macintosh after the installation is complete.

System Requirements

This section describes the NetWare for Macintosh system requirements for servers.

Server Software

Before you install NetWare for Macintosh, the NetWare server must meet these conditions:

- ◆ The server must be running NetWare 4.1 or later. If necessary, see the NetWare 4 *Installation* manual for instructions on installing NetWare.
- ◆ The latest versions of BTREIVE.NLM, CLIB.NLM, MAC.NAM, and NWSNUT.NLM must reside on the server or in the same DOS directory as SERVER.EXE.

When you follow the instructions in the NetWare 4 *Installation* manual to install the system files, the installation process copies all of these modules automatically. If they have been moved or deleted, you must copy them to the proper location before installing NetWare for Macintosh.

- ◆ The SYS volume must be mounted.
- ◆ If you plan to add the Macintosh name space to the SYS volume, the MAC.NAM module must reside in the startup directory. For information on the MAC.NAM module, see Step 9 on page 10.
- ◆ APPLETLK.NLM must be installed and configured.
- ◆ DSAPI.NLM and NWPSRV.NLM must be loaded for ATPS and ATPSCON to run.
 - ◆ DSAPI.NLM provides the Directory Services API library.
 - ◆ NWPSRV.NLM provides the print services API library.
- ◆ You must load PSERVER.NLM if you plan to run ATXRP.NLM.

Server Memory

NetWare for Macintosh requires memory in addition to that used by the NetWare operating system and other NetWare products. If too little memory resides on the server, performance suffers and service may be denied or abruptly terminated. The more memory available, the better your performance.

Use Table 1-2 to calculate the amount of memory required by NetWare for Macintosh services.

Table 1-2
NetWare for Macintosh Memory Requirements

Memory Required	NetWare for Macintosh Service
1 MB	Loading NLMs. Of this total, the system uses approximately 500 KB for loading BTRIEVE. If you have already calculated BTRIEVE's memory requirements when you determined NetWare operating system memory, you do not need to count these requirements again.
12 KB	Per active AFP session.
10 KB	Per Macintosh connection.
20 KB	Per ATPS print server.
20 KB	Per ATPS spooler.
10 KB	Per user currently printing to an ATPS spooler.
20 KB	Per ATXRP printer.

For example, an installation with AFP, ATPS, 100 Macintosh connections, three print servers, three ATPS spoolers, and ten people printing at the same time requires roughly 3.1 MB for NetWare for Macintosh:

$$1000\text{KB} + (100 * 10\text{KB}) + (3 * 20\text{KB}) + (3 * 20\text{KB}) \\ (10 * 10\text{KB}) = 3120 \text{ KB}$$

Refer to the NetWare 4 *Installation* manual for information on the amount of memory required by the NetWare operating system.

Installing NetWare for Macintosh

This section describes how to install NetWare for Macintosh. Whether you are upgrading an existing version or installing NetWare for Macintosh for the first time, follow these steps:



1. **Insert the disc named *NetWare 4.11* into the CD-ROM drive attached to a NetWare server.**

The CD-ROM drive can be attached to the server at which you are performing the installation, or to a remote server.

You can also copy the files from the CD-ROM disc to a NetWare volume on the hard disk of a remote server, and install the files from there. If you choose this option, you must make sure that the files on the hard disk reside in exactly the same directories as the files on the CD-ROM disc. Otherwise, the installation will not work.

2. **Load `INSTALL.NLM`.**

At the console prompt, enter this command:

```
load install <Enter>
```

The Installation Options window opens (Figure 1-1).

Figure 1-1
Installation Options
Window

Installation Options	
Driver options	(load/unload disk and network drivers)
Disk options	(configure/mirror/test disk partitions)
Volume options	(configure/mount/dismount volumes)
License option	(install the server license)
Copy Files option	(install NetWare system files)
Directory options	(install NetWare Directory Services)
NCF Files options	(create/edit server startup files)
Product options	(other optional installation items)
Server options	(install/upgrade/update this server)
Exit	

3. **Select *Product Options*.**

A new window of product options appears, and below it a menu of operations opens.

4. Select **Choose an Item or Product Listed Above** from the menu of operations.

This makes the window of product options active.

5. Select the **Install NetWare for Macintosh** option.

The window that opens specifies the path that INSTALL will use to locate the installation files. This path is the one you specified during the last product installation.

- 5a. If the installation files reside in the location appearing in the window, press <Enter>.

If the path you accepted specifies a location on a remote server, go to Step 7. If the path you accepted specifies a CD-ROM drive at the current server, go to Step 8.

- 5b. If the installation files do not reside in the location specified in the window, press <F3>.

A new window opens, asking you to specify the location of the installation files (Figure 1-2).

Figure 1-2
Specify a Directory
Path

Specify a Directory Path:
> M:NW410\INSTALL\ENGLISH

6. Enter the location of the installation files.

The value you enter in this field depends upon whether the installation files reside on a volume attached to a remote server or on a CD-ROM disc in a drive at the current server.

- 6a. If the files reside on a remote server, type *server_name\vol_name:path\NW410\INSTALL\language*.

For the *server_name* parameter, specify the name of the server on which the installation files reside. For the *vol_name* parameter, specify the name of the volume on which the installation files reside. This volume can be a CD-ROM volume or a NetWare volume on the server hard disk. For the *path* parameter, specify the path to the NW410 directory. For the *language* parameter, specify the language of the installation.

For example, if the installation files reside on the HOME volume of the MAIN server, the language of the installation is English, and the path to the NW410 directory is TEMP, specify
MAIN\HOME:TEMP\NW410\INSTALL\ENGLISH.
Then, press <Enter>, and go to Step 7.

6b. If the files reside on a CD-ROM disc in a drive at to the current server, type *path:\NW410\INSTALL\language*.

For the *path*: parameter, specify the drive or volume name for the CD-ROM. For the *language* parameter, specify the language of the installation. For example, if the CD-ROM disc resides in the X: drive and the language of the installation is English, specify
X:\NW410\INSTALL\ENGLISH. Then, press <Enter>, and go to Step 8.

7. If the installation files reside on a remote server, log in to the server.

If the path to installation files specified in Step 5 or Step 6 includes the name of a remote server, the Remote Server Authentication window appears (Figure 1-3).

**Figure 1-3
Remote Server
Authentication
Window**

**Remote Server Authentication
Server MAIN**

User Name:
Password:

Press <Enter> to continue and login.

To log in to the remote server, enter your user name and password, and press <Enter>.

8. Specify that you want to proceed with the installation.

After you specify the location of the installation files (and if necessary, log in to the remote server), a message appears, informing you that the screen will not be ready for input until INSTALL finishes loading the files it needs. Then, the window in Figure 1-4 appears.

**Figure 1-4
Install Prompt**

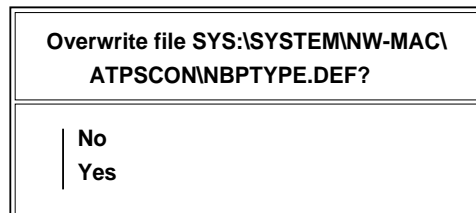


To specify that INSTALL continue with the installation, select the *Install NW-MAC* option. A window displays messages indicating that the INSTALL utility is transferring the files. Copying the files may take a few minutes.

The INSTALL utility creates a new directory in the SYS:SYSTEM directory called NW-MAC; below this directory, it creates the subdirectories FONTS, PSUTILS, PPDS, ATPSCON, and SETUP. Then, the INSTALL utility copies the files from the source path you specified to the SYS:SYSTEM directory or the proper subdirectory.

If INSTALL finds an existing NBPTYPE.DEF file, the message in Figure 1-5 appears.

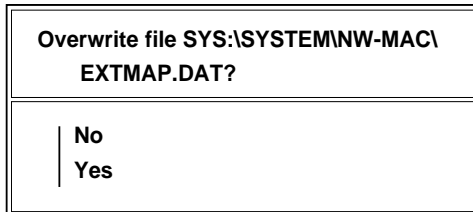
**Figure 1-5
Overwrite
NBPTYPE.DEF
Window**



The NBPTYPE.DEF file contains the database of printer models used by ATPSCON. If you select Yes to overwrite the file, any previously customized printer model information will be lost. If you do not wish to lose this information, select No.

If INSTALL finds an existing EXTMAP.DAT file, the message in Figure 1-6 appears.

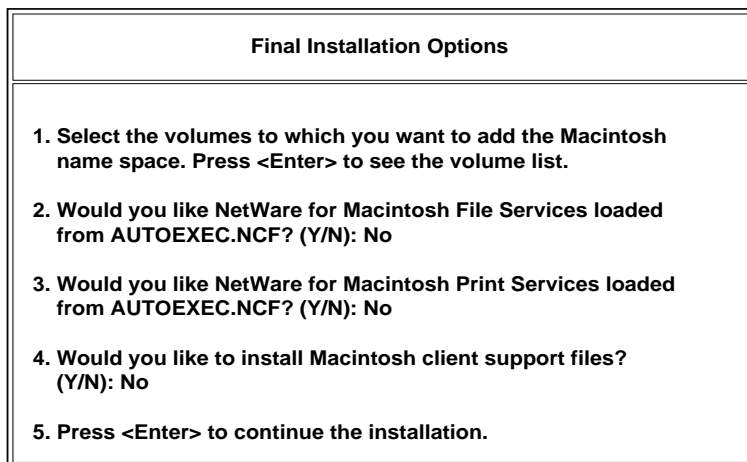
Figure 1-6
Overwrite
EXTMAP.DAT
Window



The EXTMAP.DAT file contains a list of extension mappings. If you select Yes to overwrite the file, any previously configured mappings may be lost. If you do not wish to lose this information, select No. For more information on the EXTMAP.DAT file, see “Using Extension Mapping” on page 33.

The Final Installation Options window opens (Figure 1-7).

Figure 1-7
Final Installation
Options Window



Each option enables you to configure a particular NetWare for Macintosh feature. Bear in mind that the INSTALL utility does not implement any of your settings until you select Option 5 and press <Enter>.



If you are running SFT-III, the Final Installation Options window specifies the MSAUTO.NCF file rather than the AUTOEXEC.NCF file.

9. Add the Macintosh name space to each volume that Macintosh users will access.

To accommodate the file-naming conventions of different operating systems, NetWare uses a different name space for each platform. A *name space* allows a NetWare user at a particular kind of workstation to see folder names and filenames as he or she expects to see them, even if a user at a different kind of workstation created the folders and files.

Each type of workstation operating system is associated with a name space. When a user names or renames a file, each of the name spaces on the volume derives a name according to the rules of the associated workstation platform. For example, when a Macintosh user creates a filename containing more than eight characters with no extension, the DOS name space truncates the Macintosh filename to meet DOS naming conventions. (For more information on filename conversion between Macintosh and DOS platforms, refer to *IntranetWare™ Client™ for Mac OS User Guide*.)

When you add the Macintosh name space, NetWare allocates space to store Macintosh folder names and filenames. The Macintosh name space must be present on each volume that Macintosh clients will access. If it is not present, Macintosh users cannot see the volume.

You must add the Macintosh name space to the SYS volume if you plan to install NetWare for Macintosh client support.

To add the Macintosh name space, follow these steps:

9a. Highlight Option 1 in the Final Installation Options window, and press <Enter>.

The Select Volumes window opens; this window contains the name of each volume that does not have the Macintosh name space installed on it.

9b. Select the volume(s) to which you want to add the Macintosh name space.

When you attempt to mount a volume, the operating system detects whether the Macintosh name space has been added to it. If the Macintosh name space is present, NetWare attempts to load the Macintosh name space support module, MAC.NAM. The MAC.NAM module must be loaded before you can mount any volume containing the Macintosh name space; however, you need to load MAC.NAM only once.

By default, MAC.NAM resides in the server's startup directory. If the SYS volume contains the Macintosh name space, NetWare automatically loads MAC.NAM before mounting SYS. If the SYS volume does not contain the Macintosh name space, NetWare does not load MAC.NAM when it mounts the volume. When you later attempt to mount a volume with the Macintosh name space, NetWare will not be able to find MAC.NAM, because after mounting the SYS volume, the operating system removes the startup directory from the server's search path.

To make sure that MAC.NAM is loaded when you attempt to mount a volume containing the Macintosh name space, carry out one of these tasks:

- ◆ After the SYS volume is mounted, add the startup directory to the server's search path.
- ◆ Move the MAC.NAM file to the server's SYS:SYSTEM directory.
- ◆ Add the command `LOAD MAC` to the STARTUP.NCF file (or, if you are using SFT-III, to the MSSTART.NCF file). Doing so ensures that MAC.NAM is loaded on server startup.

10. Specify whether to load AppleTalk file services automatically when you start NetWare for Macintosh.

Highlight Option 2 in the Final Installation Options window. Select Yes if you wish to load AFP.NLM automatically when you start the server. Select No if you do not want to load AFP.NLM automatically.

When you complete select Yes and press <Enter> at Option 5, INSTALL adds this command to the AUTOEXEC.NCF file:

```
load afp
```

If you are running SFT-III, INSTALL adds this command to the MSAUTO.NCF file.

For details on configuring AFP.NLM, see Chapter 2, "Managing AppleTalk File Services," on page 25.

11. Specify whether to load AppleTalk print services automatically when you start NetWare for Macintosh.

Highlight Option 3 in the Final Installation Options window. Select Yes if you wish to load ATPS.NLM automatically when you start the server. Select No if you do not want to load ATPS.NLM automatically.

When you select Yes and press <Enter> at Option 5, INSTALL adds this command to the AUTOEXEC.NCF file:

```
load atps
```

If you are running SFT-III, INSTALL adds this command to the MSAUTO.NCF file.

For information on configuring ATPS.NLM, see Chapter 5, "Setting Up AppleTalk Print Services," on page 93.

12. Install NetWare for Macintosh client support.



See the *IntranetWare Client for Mac OS User Guide* for instructions on installing NetWare for Macintosh client support.

The NetWare for Macintosh client software is a set of software components enabling you to perform network tasks from a Macintosh client. The CD-ROM disc containing NetWare for Macintosh also contains the NetWare for Macintosh client software.

When you install NetWare for Macintosh from CD-ROM by carrying out Step 8 on page 8, the INSTALL utility copies the client support files to the SYS:SYSTEM\NW-MAC directory. Now, when you choose to install NetWare for Macintosh client support, the INSTALL utility copies a Macintosh compressed file containing the NetWare for Macintosh client software to the directory SYS:PUBLIC\MAC*language*, where *language* is the language of the installation. You can then install the client software from a Macintosh workstation.

To install NetWare for Macintosh client support, follow these steps:

12a. Make sure that the Macintosh name space is added to the SYS volume.

If the SYS volume does not contain the Macintosh name space, you cannot install the client support files. For information on how to add the Macintosh name space, see Step 9 on page 10.

12b. Highlight Option 4 in the Final Installation Options window and select Yes.

12c. After completing the installation process in Step 16 on page 14, enable clear-text logins on the server using AFPCON.

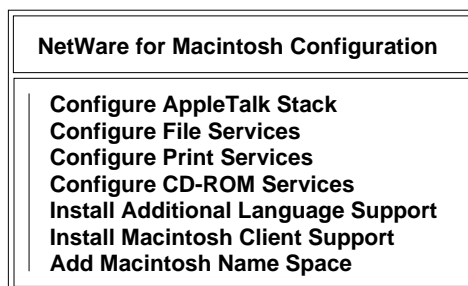
You must carry out this task in order to log in to the server and complete the client software installation from the Macintosh workstation. For instructions, see “Controlling Access to the AFP Server” on page 35.

12d. Refer to the *IntranetWare Client for Mac OS User Guide* for instructions on how to install the client software on a Macintosh workstation.

13. Highlight Option 5 and press <Enter>.

A confirmation window opens, asking you to specify whether the INSTALL utility should complete the installation. When you select Yes, a series of messages indicates that INSTALL is carrying out the tasks you specified. When the installation process is complete, the NetWare for Macintosh Configuration window opens (Figure 1-8).

Figure 1-8
**NetWare for
Macintosh
Configuration
Window**



The NetWare for Macintosh Configuration window contains the options listed in Table 1-3.

Table 1-3
Configuration Options

Option	Description
<i>Configure AppleTalk Stack</i>	This option enables you to load INETCFG.NLM, the utility that allows you to configure APPLETLK.NLM.
<i>Configure File Services</i>	This option enables you to load AFPCON.NLM, the AppleTalk Filing Protocol configuration utility. For information about AFPCON, see Chapter 2, "Managing AppleTalk File Services," on page 25.
<i>Configure Print Services</i>	This option enables you to load ATPSCON.NLM, the AppleTalk Print Services configuration utility. For information about ATPSCON, see Chapter 5, "Setting Up AppleTalk Print Services," on page 93.
<i>Configure CD-ROM Services</i>	This option enables you to load HFSCDCON.NLM, the utility that allows you to configure and manage access to HFS CD-ROM drives. For information about HFS CD-ROM management, see Chapter 3, "Configuring the HFS CD-ROM Module," on page 55.
<i>Install Additional Language Support</i>	This option enables you to install NetWare for Macintosh in multiple languages. For information on how to carry out this task, see "Installing NetWare for Macintosh in Additional Languages" on page 15.
<i>Install Macintosh Client Support</i>	This option enables you to install the NetWare for Macintosh client software on the SYS volume in one or more languages. For information on carrying out this task, see "Installing NetWare for Macintosh Client Support" on page 19.
<i>Add Macintosh Name Space</i>	This option enables you to add the Macintosh name space to each server volume that Macintosh clients will access. For information on carrying out this task, see "Adding the Macintosh Name Space after Installation" on page 21.

14. Press <Esc> to exit the NetWare for Macintosh Configuration window.

15. Exit INSTALL.

16. Down the server and bring it back up.

At the console prompt, enter these commands:

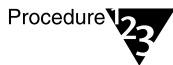
```
down <Enter>
restart server <Enter>
```

A series of messages appears, indicating that the system is loading the modules required by NetWare for Macintosh. At this point,

NetWare for Macintosh is up and running. This is a good time to verify and refine the configuration of your AppleTalk internetwork.

Installing NetWare for Macintosh in Additional Languages

By default, the INSTALL utility copies files that use the language of the installation procedure when you install NetWare for Macintosh. However, you can install the NetWare for Macintosh server and client software in more than one language. Follow these steps:



1. **Insert the disc named *NetWare 4.11* into the CD-ROM drive attached to a NetWare server.**

The CD-ROM drive can be attached to the server at which you are performing the installation, or to a remote server.

2. **Load INSTALL.NLM.**

From the server console, enter this command:

```
load install <Enter>
```

3. **Select *Product Options* from the Installation Options menu.**
4. **Select the *View/Configure/Remove Installed Products* option from the Other Installation Options window that opens.**
5. **Select the *NW-MAC* option.**

The NetWare for Macintosh Configuration window opens.

6. **Select the *Install Additional Language Support* option.**

The window in Figure 1-6 opens. (If you are using Remote Console to perform the installation, skip to Step 8.)

7. **Select the *Enter a Search Path* option.**

A window opens, asking you to specify the location of the installation files (Figure 1-9).

Figure 1-9
Specify a Directory
Path

Specify a Directory Path:
> A:\

Type the correct path and press <Enter>.

7a. If you are installing from a CD-ROM drive attached to the current server, enter *X:\NWMAC*, where *X:* is the CD-ROM drive.

7b. If you are installing from a CD-ROM drive attached to a remote server, enter *server_name\vol_name:path\NWMAC*.

The *server_name* parameter represents the name of the remote server. The *vol_name:* parameter represents the name of the volume at that server. The *path* parameter represents the path to the NWMAC directory, if any. For example, if the installation files reside on the HOME volume of the MAIN server, and the path to the NWMAC directory is TEMP, enter *MAIN\HOME:TEMP\NWMAC*.

The Select Other Languages to Install menu opens, displaying the languages you can choose. Proceed to Step 9.

8. If you are installing using Remote Console, the menu that opens includes two options instead of one. Select the *Enter a Remote Search Path* option.

If you are using Remote Console to perform the installation, the additional *Enter a Remote Search Path* option appears.

Figure 1-10
Select a Language
Path Option

Select a Language Path Option
Enter a remote search path Enter a search path

In the window that opens, specify the location of the installation files, and press <Enter>. The Select Other Languages to Install menu opens, displaying the languages you can choose. Proceed to Step 9.

9. Select one or more languages in which to install NetWare for Macintosh.

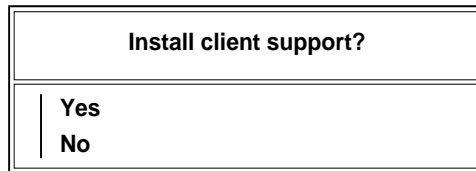
The INSTALL utility begins copying the files to the directory SYS:\SYSTEM\NLS and its subdirectories. The window that opens contains messages informing you of the progress of the installation.

After the language-specific files are copied to the server, a window opens, and the menu contains options for whether to save the changes that you have made.

10. Select an option that saves changes, abandons changes, or returns to the server installation options.

If you select the *Yes, Save Changes and Continue* option, the window in Figure 1-11 opens.

Figure 1-11
Install Client
Support Window



11. Install NetWare for Macintosh client support (available only if you installed NetWare for Macintosh from a CD-ROM disc).



See the *IntranetWare Client for Mac OS User Guide* for instructions on installing NetWare for Macintosh client support.

The NetWare for Macintosh client software is a set of software components enabling you to perform network tasks from a Macintosh client. The CD-ROM disc containing NetWare for Macintosh also contains the NetWare for Macintosh client software.

When you install NetWare for Macintosh from CD-ROM by carrying out Step 8 on page 8, the INSTALL utility copies the client support files to the SYS:\SYSTEM\NW-MAC directory. Now, when you choose to install NetWare for Macintosh client support, the INSTALL utility copies a Macintosh compressed file

containing the NetWare for Macintosh client software to the directory SYS:PUBLIC\MAC*language*, where *language* is a language in which you have installed NetWare for Macintosh. You can then install the client software from a Macintosh workstation.

If you have installed the NetWare for Macintosh in multiple languages, INSTALL creates a language subdirectory for each one, and copies a compressed file in the appropriate language to the subdirectory.

To install NetWare for Macintosh client support, follow these steps:

11a. Make sure that the Macintosh name space is added to the SYS volume.

If the SYS volume does not contain the Macintosh name space, you cannot install the client support files. For information on how to add the Macintosh name space, see “Adding the Macintosh Name Space after Installation” on page 21.

11b. Select Yes in the window that asks whether you want to install the client support files.

11c. After exiting INSTALL in Step 12, enable clear-text logins on the server using AFPCON.

You must carry out this task in order to log in to the server and complete the client software installation from the Macintosh workstation. For instructions, see “Controlling Access to the AFP Server” on page 35.

11d. Refer to the *IntranetWare Client for Mac OS User Guide* for instructions on how to install the client software on a Macintosh workstation.

12. Exit INSTALL.

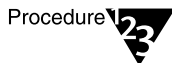
Installing NetWare for Macintosh Client Support

The NetWare for Macintosh client software is a set of software components enabling you to perform network tasks from a Macintosh client. The NetWare for Macintosh client software resides on the CD-ROM disc containing NetWare for Macintosh.

This section describes how to install NetWare for Macintosh client support if you have already installed NetWare for Macintosh from a CD-ROM disc.

While installing the NetWare for Macintosh NLMs and related files on the server from CD-ROM, you can choose to install NetWare for Macintosh client support in the default language of the installation. This process is described in “Installing NetWare for Macintosh in Additional Languages” on page 15.

However, you may wish to install client support in additional languages. Or, you may not wish to install client support at the time of the initial server installation. The steps that follow describe how to install NetWare for Macintosh client support in additional languages or after your initial installation.



1. **Make sure that the Macintosh name space is added to the SYS volume.**

If the SYS volume does not contain the Macintosh name space, you cannot install the client support files. For information on how to add the Macintosh name space, see “Adding the Macintosh Name Space after Installation” on page 21.

2. **Load INSTALL.NLM.**

From the server console, enter this command:

```
load install <Enter>
```

3. **Select *Product Options* from the Installation Options menu.**
4. **Select the *View/Configure/Remove Installed Products* option from the Other Installation Options window that opens.**
5. **Select the *NW-MAC* option.**

The NetWare for Macintosh Configuration window opens.

6. Select the *Install Macintosh Client Support* option.

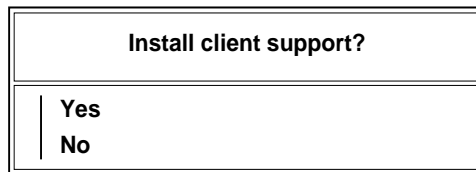
The window that opens contains a list of the languages that have been installed.

7. Select one or more languages.

After you select the languages in which you want Macintosh client software, you are asked to confirm your changes, abandon your changes, or return to the installation process.

If you decide to confirm your changes, the window in Figure 1-12 opens.

Figure 1-12
Install Client
Support Window



8. To install client support, select Yes.

When you install NetWare for Macintosh from CD-ROM by carrying out Step 8 on page 8, the INSTALL utility copies the client support files to the SYS:SYSTEM\NW-MAC directory. Now, when you select Yes, the INSTALL utility copies a Macintosh compressed file containing the NetWare for Macintosh client software to the SYS:PUBLIC\MAC*language* directory, where *language* is a language in which you have installed NetWare for Macintosh. You can then install the client software from a Macintosh workstation.

If you have installed the product in multiple languages, INSTALL creates a language subdirectory for each one, and copies a file in the appropriate language to the subdirectory.

INSTALL notifies you when the installation is complete.

9. Exit INSTALL.

10. Enable clear-text logins on the server using AFPCON.

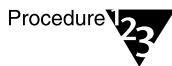
You must carry out this task in order to log in to the server and complete the client software installation from the Macintosh workstation. For instructions, see "Controlling Access to the AFP Server" on page 35.

11. Refer to the *IntranetWare Client for Mac OS User Guide* for instructions on how to install the client software on a Macintosh workstation.

Adding the Macintosh Name Space after Installation

While installing the NetWare for Macintosh NLMs and related files on the server, you have the option of adding the Macintosh name space to each volume that Macintosh clients will access. When you add the Macintosh name space, NetWare allocates space to store Macintosh folder names and filenames. The Macintosh name space must be present on each volume that Macintosh clients will access. If it is not present, Macintosh users cannot see the volume.

You can find a discussion of name spaces on Step 9 on page 10, along with a detailed explanation of how to add the Macintosh name space during installation. However, you may wish to add the Macintosh name space to a volume after you have installed NetWare for Macintosh. To do so, follow these steps:



1. **Load INSTALL.NLM.**

From the server console, enter this command:

```
load install <Enter>
```

2. **Select *Product Options* from the Installation Options menu.**
3. **Select the *View/Configure/Remove Installed Products* option from the Other Installation Options window that opens.**
4. **Select the *NW-MAC* option.**

The NetWare for Macintosh Configuration window opens.

5. **Select the *Add Macintosh Name Space* option.**

The Select Volumes window opens. This window contains the name of each volume that does not have the Macintosh name space installed on it.

6. **Select the volume(s) to which you want to add the Macintosh name space.**

A window opens, asking you to confirm that you want to add the name space. Select Yes. INSTALL adds the name space to the volume(s) you specified.

When you attempt to mount a volume, the operating system detects whether the Macintosh name space has been added to it. If the Macintosh name space is present, NetWare attempts to load the Macintosh name space support module, MAC.NAM. The MAC.NAM module must be loaded before you can mount any volume containing the Macintosh name space; however, you need to load MAC.NAM only once.

By default, MAC.NAM resides in the server's startup directory. If the SYS volume contains the Macintosh name space, NetWare automatically loads MAC.NAM before mounting SYS. If the SYS volume does not contain the Macintosh name space, NetWare does not load MAC.NAM when it mounts the volume. When you later attempt to mount a volume with the Macintosh name space, NetWare will not be able to find MAC.NAM, because after mounting the SYS volume, the operating system removes the startup directory from the server's search path.

To make sure that MAC.NAM is loaded when you attempt to mount a volume containing the Macintosh name space, carry out one of these tasks:

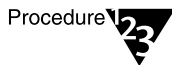
- ◆ After the SYS volume is mounted, add the startup directory to the server's search path.
- ◆ Move the MAC.NAM file to the server's SYS:SYSTEM directory.
- ◆ Add the command **LOAD MAC** to the STARTUP.NCF file (or, if you are using SFT-III, to the MSSTART.NCF file). Doing so ensures that MAC.NAM is loaded on server startup.

Configuring NetWare for Macintosh

The INSTALL utility includes options that start the configuration utilities ATPSCON, AFPCON, and HFSCDCON. You can access these utilities either from INSTALL or from the console prompt. From INSTALL, you can access these utilities when you install a new server or when you reconfigure the server.

Loading the Utilities from the INSTALL Utility

To access the configuration utilities from the INSTALL utility, follow these steps:



1. **From the server console, enter this command:**

`load install <Enter>`
2. **Select *Product Options* from the Installation Options menu.**
3. **Select the *View/Configure/Remove Installed Products* option from the Other Installation Options window that opens.**
4. **Select the *NW-MAC* option.**

The NetWare for Macintosh Configuration window opens. To load a configuration utility, select one of these options:

- ◆ ***Configure File Services:*** This option enables you to load AFPCON.NLM, the AppleTalk Filing Protocol configuration utility.

For information on using AFPCON.NLM, see Chapter 2, “Managing AppleTalk File Services,” on page 25.
- ◆ ***Configure Print Services:*** This option enables you to load ATPSCON.NLM, the AppleTalk print services configuration utility.

For information on using ATPSCON.NLM, see Chapter 5, “Setting Up AppleTalk Print Services,” on page 93.
- ◆ ***Configure CD-ROM Services:*** This option enables you to load HFSCDCON.NLM, the console utility that allows you to configure and manage access to HFS CD-ROM drives.

For information on using HFSCDCON.NLM, see Chapter 3, “Configuring the HFS CD-ROM Module,” on page 55.

Loading the Utilities from the Server Console

To load the configuration utilities from the server console, enter the appropriate command from this list:

◆ **load afpcon**

For information on using AFPCON.NLM, see Chapter 2, “Managing AppleTalk File Services,” on page 25.

◆ **load atpscon**

For information on using ATPSCON.NLM, see Chapter 5, “Setting Up AppleTalk Print Services,” on page 93.

◆ **load hfscdcon**

For information on using HFSCDCON.NLM, see Chapter 3, “Configuring the HFS CD-ROM Module,” on page 55.

◆ **load atconfig**

This command has the effect of starting the NetWare for Macintosh Configuration menu. Its options are described in Table 1-3 on page 14.

2 *Managing AppleTalk File Services*

The AFP module, AFP.NLM, provides NetWare for Macintosh file services. This chapter describes how to customize AFP for your site, and covers these topics:

- ◆ Loading AFP
- ◆ Loading AFPCON
- ◆ Managing the desktop database
- ◆ Using extension mapping
- ◆ Controlling access to the AFP server
- ◆ Finetuning AFP server performance
- ◆ Specifying a new AFP server name and login greeting
- ◆ Accessing and modifying volume status
- ◆ Re-establishing default AFP settings
- ◆ Shutting down the AFP server
- ◆ Restarting the AFP server
- ◆ Exiting AFPCON
- ◆ Unloading AFP

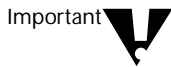
Loading the AFP Module

When you install NetWare for Macintosh, the INSTALL module copies AFP.NLM to the SYS:SYSTEM directory. When you load AFP.NLM, the NetWare[®] server can use the AppleTalk Filing Protocol (AFP) to enable a Macintosh user to log in and access data.

To load AFP.NLM, enter this command in the server's AUTOEXEC.NCF file or at the console prompt:

```
load afp
```

During installation, the INSTALL module can add this command line to the AUTOEXEC.NCF file for you. For details, see Step 10 on page 11.



Loading AFP.NLM automatically loads APPLETLK.NLM. However, you must configure APPLETLK.NLM before loading AFP.NLM.

Loading the AFPCON Utility

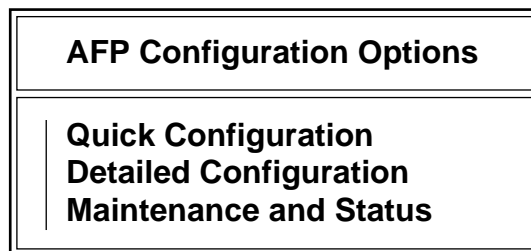
AFPCON.NLM is a server console utility that enables you to configure AFP.NLM. With AFPCON, you can customize NetWare for Macintosh file services to enhance performance and maximize your network's file services capabilities.

Loading AFPCON automatically loads AFP. To load AFPCON, enter this command at the console prompt:

```
load afpcon <Enter>
```

The AFP Configuration Options window opens (Figure 2-1).

Figure 2-1
AFP Configuration
Options Window



The window contains these options:

- ◆ *Quick Configuration*

If you change any of AFP's default values, you can use the *Quick Configuration* option to re-configure AFP with its default settings.

- ◆ *Detailed Configuration*

You can use the *Detailed Configuration* option to view and customize all AFP parameters. If you do not specify any settings, AFP uses the default values.

- ◆ *Maintenance and Status*

You can use the *Maintenance and Status* option to start or shut down AFP services, and to rebuild or monitor the desktop database.

Changes you make in AFPCON take effect immediately. You do not need to restart the server.

Managing the Desktop Database

The AppleTalk Filing Protocol requires that each server maintain a *desktop database* containing information associating files with icons and documents with applications. This information helps the Finder™ know which icon to display for each file, and which application to launch when a Macintosh user opens a document. The Finder uses the desktop database to build the familiar Macintosh graphical user interface.

The desktop database is stored in two files: ICON.BTV and APPL.BTV. These files reside in the DESKTOP.AFP folder at the root of each volume that supports the Macintosh name space. In addition to a name, every Macintosh file has a four-character **Creator code** that identifies the application that created the file, and a four-character **Type code** that identifies the nature of the file.

For example, a document created by MacWrite® has a Creator value of MACA and a Type value of WORD. The desktop database uses the value MACA to find the appropriate application to open when a user opens a file of type WORD. It uses the Type code to find the appropriate icon for files of type WORD.

When the Finder on a Macintosh workstation displays the contents of a server folder in a window, it attempts to find the appropriate icon for each file. First, the Finder looks in memory to see whether it found the correct icon in a recent search. Then, it looks on the local Macintosh hard disk. If it does not find the icon there, the Finder requests it from the server. If the server volume's desktop database contains the appropriate icon, the server sends the icon to the Macintosh. If the Finder cannot locate the icon in memory, on a local disk, or on the server, it displays a generic icon for the file.

Maintaining the Desktop Database

The Macintosh Finder and AFP.NLM share the responsibility of maintaining the desktop database.

The Macintosh Finder incrementally updates the desktop database when it copies new files to the server volume. In System 7.x, when a user copies a document to a server volume, the Finder copies the appropriate icons, if necessary. The Finder also updates the desktop database whenever it copies an application to the server volume.

The AFP server automatically rebuilds the desktop database if the database is corrupted, or if the database files are not present when the volume is mounted and AFP.NLM is loaded. Under certain circumstances, however, you may have to specify that NetWare for Macintosh rebuild the desktop database. The next section, "Rebuilding the Desktop Database" discusses how to carry out this task.

Rebuilding the Desktop Database

You should rebuild the desktop database when one of these conditions occurs:

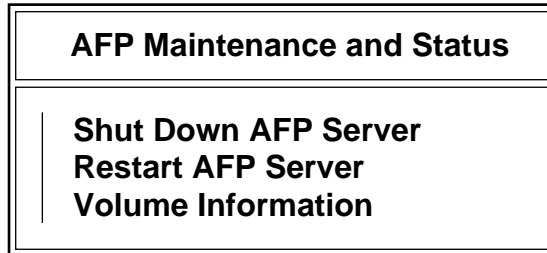
- ◆ Incorrect icons display on several Macintosh workstations.
- ◆ You restore Macintosh files to the server using a backup and restore utility.
- ◆ You install a Macintosh application using the Apple Installer utility, and the Installer does not update the desktop database.

To rebuild the desktop database, follow these steps:

1. Load AFPCON.
2. From the AFP Configuration Options window, select the *Maintenance and Status* option.

The AFP Maintenance and Status window opens (Figure 2-2).

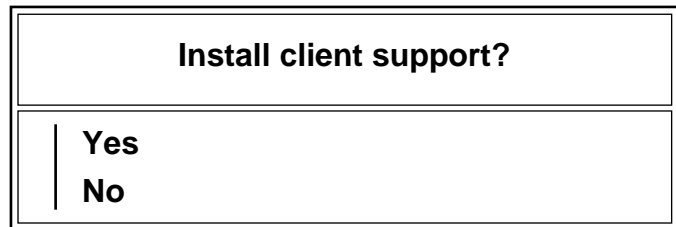
Figure 2-2
AFP Maintenance
and Status Window



3. From the AFP Maintenance and Status window, select the *Volume Information* option.

The Volume Status window opens (Figure 2-3).

Figure 2-3
Volume Status
Window

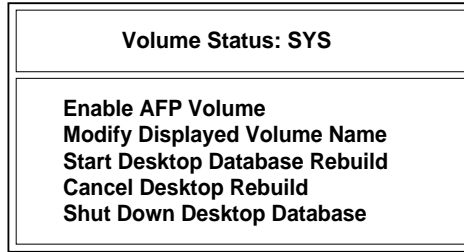


For details about the information in this window, see “Accessing and Modifying AFP Volume Status” on page 45.

4. From the Volume Status window, select the volume containing the desktop database you want to rebuild.

Another Volume Status window opens, containing options you can set for the volume you selected (Figure 2-4).

Figure 2-4
SYS Volume Status
Window



5. To rebuild the desktop database, select the **Start Desktop Database Rebuild** option.

A window opens, asking you to confirm that you want to rebuild the database. To start rebuilding the desktop database, highlight Yes. If you decide not to rebuild the database, highlight No. Then, press <Enter>. When you select Yes, NetWare for Macintosh begins rebuilding the desktop database.

The desktop database rebuilder runs as a low-priority process. Even though the server is very busy during a desktop database rebuild, running at near 100 percent utilization, other higher-priority services, such as answering requests from workstations, do not slow down.

During the desktop rebuild process, NetWare for Macintosh examines files with an attribute called the Bundle bit, looking for special Bundle resources that indicate the association between icons and file types. If NetWare for Macintosh finds a file with the Bundle bit improperly set, the system fixes this minor problem immediately. If NetWare for Macintosh finds a file with a damaged resource fork, AFP generates messages to the console and the system log. You may later need to remove damaged files and restore them from backup.

Macintosh workstations can continue using a volume during a desktop rebuild. Macintosh users can also log in during a rebuild. Because the desktop database may be incomplete when a Macintosh attempts to locate an icon, the Finder may display generic icons for some files. This problem should clear up when the rebuild is complete and you restart the Finder.

You can restart the Finder in two ways:

- ◆ Select Restart from the Special menu to restart the entire Macintosh.

- ◆ If you are running System 7.0, make the Finder the active program, and then press <Command>+<Option>+<Escape>.

The Finder quits and immediately restarts. The Macintosh, however, does not restart. Therefore, you do not lose connections to server volumes, open files, or open applications.

While it is possible to rebuild a server's desktop database using the System 6 Finder (but not MultiFinder™), doing so will not enable you to locate the new icon types used in System 7. In addition, carrying out the process on the server is much faster and more efficient than rebuilding the desktop from a Macintosh workstation.

Conserving Memory During a Rebuild

The desktop database is managed by BTRIEVE.NLM, a server-resident database facility. You may wish to change the configuration of Btrieve to use less memory. Table 2-1 summarizes the options you can modify to lower memory usage when AFP is the only Btrieve client.

Table 2-1
Configuration Options When AFP Is the Only Client

Configuration Option	Default Value	Recommended AFP Value
Number of Open Files	20	2 * # of Volumes
Number of Handles	60	2 * # of Volumes
Number of Locks	20	2 * # of Volumes
Number of Transactions	15	0
Number of Remote Sessions	15	1
Cache Allocation	256	Cache Allocation uses most of the cache memory.

Refer to the *Btrieve Installation and Operation* manual for full details on how to alter your configuration. We do not recommend allocating less than 50K of cache allocation memory per volume, because too little cache memory results in slower performance. The optimal amount varies according to the size of the desktop database.

If you make configuration changes to Btrieve, you must load BTRIEVE.NLM before AFP.NLM. If you fail to do so, AFP will autoload Btrieve and miss the configuration changes you have made. You can load Btrieve from your AUTOEXEC.NCF file to ensure proper loading order.

Cancelling a Desktop Database Rebuild

If you wish to cancel the desktop database rebuild at any point, select the *Cancel Desktop Rebuild* option from the Volume Status window for the selected volume. A window opens, asking you to confirm that you wish to cancel the database rebuild. Highlight Yes to cancel the rebuild; highlight No to continue it. Then, press <Enter>.

Shutting Down the Desktop Database

You can shut down the desktop database if you do not wish to use it for a selected volume. To do so, follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Maintenance and Status* option.**

The AFP Maintenance and Status window opens.

3. **From the AFP Maintenance and Status window, select the *Volume Information* option.**

The Volume Status window opens.

4. **From the Volume Status window, select the volume containing the desktop database you want to rebuild.**

Another Volume Status window opens, containing options you can set for the volume you selected.

5. **Select the *Shut Down Desktop Database* option.**

A window opens, asking you to confirm that you want to shut down the desktop database. To shut down the desktop database, highlight Yes. If you decide not to shut down the desktop database, highlight No. Then, press <Enter>.

Using Extension Mapping

Extension mapping is a NetWare for Macintosh feature that attaches Macintosh application information to non-Macintosh files with certain filename extensions.

DOS can use a filename extension to make assumptions about the file type. For example, the extension .EXE indicates an executable file, and the extension .DB represents a database file.

If you enable extension mapping on a NetWare 4.1 or later server, a set of default mappings exists between non-Macintosh filename extensions and Macintosh Type and Creator information. This information results in a Macintosh user seeing files with the appropriate application icons.

The Macintosh user can double-click a non-Macintosh file's icon and automatically open the specified application.

Setting Up Extension Mapping

The file EXTMAP.DAT controls the extension mapping feature. This file resides in the SYS:SYSTEM\NW-MAC directory of each server, and contains a default list of extension mappings.

The filename extensions and their associated Type and Creator values are arranged in three columns:

```
.DOC      WDBN      MSWD
.EPS      EPSF      ARTZ
.FM       FMPR      FMPR
.GIF      GIFF      BOZO
.GLY      TEXT      MSWD      # Microsoft® Word text file
```

The first column contains three-letter filename extensions. The second column contains each extension's associated Type value. The third column contains each extension's associated Creator value. A pound sign (#) preceding a word denotes that the rest of the text on that line is a comment.

You can add to or modify this list at any time, using any DOS editor. Your changes become effective when you next load AFP.NLM.

The Extension Mapper utility included with NetWare for Macintosh 4.0 has been discontinued. Do not use the Extension Mapper to set up mappings under NetWare for Macintosh 4.10; these mappings will not be effective. AFP ignores any mappings that you configured prior to NetWare for Macintosh 4.10, and no longer allows you to configure extension mappings on a per-user basis.

Enabling Extension Mapping

You can use AFPCON to specify whether or not extension mapping is turned on at your server. Follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Detailed Configuration* option.**

The AFP Configuration window opens.

3. **From the AFP Configuration window, select the *Performance Enhancements* option.**

The Performance Enhancements Configuration window opens.

4. **Specify whether the server should use filename extension mappings.**

To specify whether the server should use filename extension mappings, highlight the Use Filename Extension Mappings field and press <Enter>. A cursor appears in the field. To specify that the server use filename extension mappings, type Y and press <Enter>; the word Yes appears in the field. To prohibit the server from using filename extension mappings, type N and press <Enter>; the word No appears in the field.

The default setting is No.

Filename extension mapping consumes slightly more CPU resources on the server, but requires only a few hundred bytes more of memory.

Controlling Access to the AFP Server

This section describe how you can control Macintosh user access to a NetWare server, and covers these issues:

- ◆ Choosing user authentication methods
- ◆ Specifying whether a user can save a password for automatic login

Choosing User Authentication Methods

During the login procedure, the Macintosh user enters his or her login name and password. The server compares this information with information in the NetWare Directory, and grants or denies the connection as appropriate. The client and server can exchange this information in several different ways. Each of these is called a **User Authentication Method (UAM)**.

The Macintosh system software includes a clear-text UAM that does not use any kind of password encryption. The network transmits a user's password exactly as he or she enters it. A clear-text password is more vulnerable to eavesdropping than an encrypted password; therefore, it is significantly less secure.

NetWare provides an encrypted UAM. The encrypted UAM foils eavesdroppers by encoding the password before sending it across the network. In addition to providing enhanced security, the NetWare UAM gives you these advantages:

- ◆ The NetWare UAM allows Novell[®] Directory Services[™] authentication, including background authentication.
- ◆ The NetWare UAM enables a user to enter a password longer than eight characters, the maximum length supported by the Apple UAM.

The NetWare UAM is always enabled at the server; Macintosh users can always log in using it. Using AFPCON, you can make two other types of login available:

- ◆ Guest login
This option corresponds to logging in as the user Guest with no password.
- ◆ Apple clear-text login

At login time, the Macintosh determines which UAMs are supported by the server. If more than one is available, the user can choose among them.

You must install the NetWare UAM software on each Macintosh workstation for Macintosh users to log in using the NetWare UAM.

Only the NetWare UAM is enabled by default; therefore, unless you enable another login method, you must install the NetWare UAM software on each Macintosh workstation. Please see the *IntranetWare™ Client™ for Mac OS User Guide* for instructions.

When you install version 4.10 of the NetWare for Macintosh client software, any user object in the NetWare Directory can log in using the NetWare UAM, regardless of the object's location relative to the server object or the server's configured bindery context. For information on bindery services and the bindery context, see the *Guide to NetWare 4 Networks*.

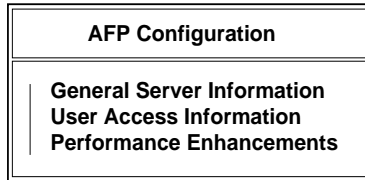
To specify the UAMs supported by the server, follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Detailed Configuration* option.**

The AFP Configuration window opens (Figure 2-5).

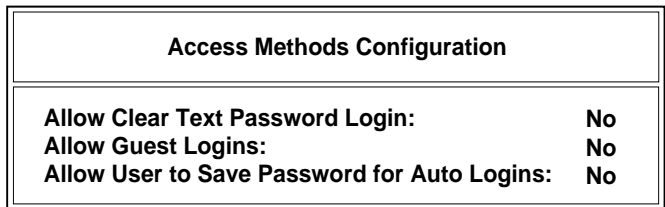
Figure 2-5
AFP Configuration Window



3. **From the AFP Configuration window, select the *User Access Information* option.**

The Access Methods Configuration window opens (Figure 2-6).

Figure 2-6
Access Methods Configuration Window



3a. Specify whether to allow clear-text logins.

You must enable clear-text logins in order to allow users at Macintosh workstations without the NetWare UAM to log in to the server.

To allow clear-text logins, you must enable bindery services on the server. Only users in the bindery context of the server can use clear-text logins. For information on bindery services, see the NetWare 4.11 *Getting Started* guide.

To change the current setting, highlight the Allow Clear Text Password Login field and press <Enter>. A cursor appears in the field. To allow clear-text logins, type Y and press <Enter>; the word Yes appears in the field. To prohibit clear-text logins, type N and press <Enter>; the word No appears in the field.

The default setting is No.

3b. Specify whether to allow Guest logins.

When you allow Guest logins, a user can log in to the server under the user name Guest in the server's bindery context. AFP creates the user Guest if it does not already exist. In order to allow Guest logins, you must enable bindery services on the server. For information on bindery services, see the NetWare 4.11 *Getting Started* guide.

To change the current setting, highlight the Allow Guest Logins field and press <Enter>. A cursor appears in the field. To allow Guest logins, type Y and press <Enter>; the word Yes appears in the field. To prohibit Guest logins, type N and press <Enter>; the word No appears in the field.

The default setting is No.

If you allow Guest logins, you may wish to use the NetWare Administrator utility to restrict the user Guest's access to network files and directories. Restricting Guest access protects against security breaches. For information on making your settings, see NetWare 4.11 *Supervising the Network*.

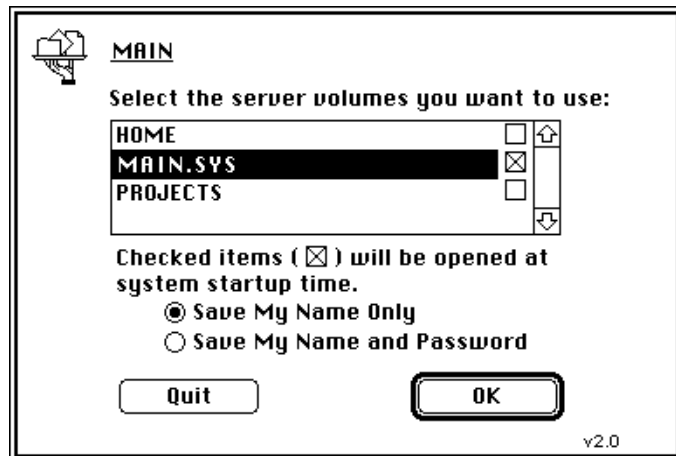
If you prohibit Guest logins, a user can still log in as Guest using another UAM, as long as the user Guest exists in the server's bindery context and has no password.

Specifying Whether a User Can Save a Password for Automatic Login

When a Macintosh user logs in through the Chooser, the Volume dialog box enables the user to select a volume to mount on the Macintosh desktop. A checkbox next to the volume name enables the user to specify whether the Macintosh should mount the volume automatically upon startup. Startup mounting is available only for a user who logs in using a clear-text UAM or a Guest login; the AppleShare[®] software does not allow startup mounting of a server's volumes if clear-text logins are disabled on the server.

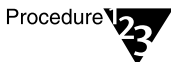
When an "X" appears in the checkbox, two radio buttons appear. One is labeled Save My Name Only. The other is labeled Save My Name and Password. The Volume dialog box looks like the one in Figure 2-7.

Figure 2-7
Startup Mounting
Enabled



If the user selects Save My Name Only, the system requires a password when mounting the volume. If the user selects Save My Name and Password, the system mounts the volume automatically, without requesting a password.

Using AFPCON, you can specify whether a user accessing the server can instruct the Macintosh to save his or her password for automatic mounting. Follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Detailed Configuration* option.**

The AFP Configuration window opens.

- 3. From the AFP Configuration window, select the *User Access Information* option.**

The Access Methods Configuration window opens.

- 4. Highlight the Allow User to Save Password for Auto Logins field and press <Enter>.**

A cursor appears in the field.

- 5. Specify whether a user can save his or her password for automatic login.**

To allow a user to save his or her password, type Y and press <Enter>; the word Yes appears in the field. When you specify Yes, a Macintosh workstation can provide the password automatically whenever a user logs in to the server at boot time.

To prohibit a user from saving his or password, type N and press <Enter>; the word No appears in the field. When you specify No, a user has to type a password at each login.

The default setting is No.

Saving Your Settings

To exit the Access Methods Configuration window, press <Esc>. A prompt appears, asking whether you want to save your changes. To save your changes, select Yes. To cancel your changes, select No. AFPCON returns you to the Detailed Configuration window. You can continue making AFPCON settings, or exit the utility.

Finetuning AFP Server Performance

Using AFPCON, you can finetune the AFP server to operate more effectively within your network environment. You can optimize performance by carrying out these tasks:

- ◆ Limit the number of Macintosh workstations that can connect to the server.
- ◆ Enable or disable filename extension mappings.

- ◆ Specify that AFP use an estimated value to determine the number of subdirectories and files in a directory.
- ◆ Determine when AFP writes file changes to disk.
- ◆ Indicate how much available cache memory AFP should set aside for storing Finder information.

To set server performance options, follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Detailed Configuration* option.**
The AFP Configuration window opens.
3. **From the AFP Configuration window, select the *Performance Enhancements* option.**

The Performance Enhancements Configuration window opens (Figure 2-8).

Figure 2-8
Performance Enhancements Configuration Window

Performance Enhancements Configuration	
Set Maximum Number of AFP Connections:	1000
Use Filename Extension Mappings	Yes
Use AFP Estimated Offspring Count:	Yes
Use NetWare Cache Control Algorithm:	Yes
Set Finder Accelerator Max Cache Percentage:	0

4. **Set the maximum number of Macintosh workstations that can log in to the server simultaneously.**

You may wish to limit the number of connections to conserve memory, to reserve connections for other platforms, or to limit congestion on a high-traffic server. Your setting does not affect NetWare Network File System (NFS) connections and NetWare for Macintosh print services connections.

In the Set Maximum Number of AFP Connections field, enter a number between 1 and the maximum number of connections allowed by your version of NetWare for Macintosh. If the number of connections reaches the value you specify, and another user

attempts to log in, a message appears, indicating that the server is not responding or is busy. The user cannot log in until another user logs out.

The default value for this field is the maximum number of connections allowed by your version of NetWare or NetWare for Macintosh, whichever is lower.

5. Specify whether the server should use filename extension mappings.

For information, see “Enabling Extension Mapping” on page 35.

6. Specify whether AFP should use a pre-set value to determine the number of subdirectories and files in a directory.

The **Offspring count** indicates the number of subdirectories and files in a directory. Counting subdirectories and files is time-consuming and can slow down AFP and the server’s processing time. Because this value is rarely used by Macintosh software, you can save the overhead needed to calculate the actual offspring count by specifying that AFP use an estimated count.

To make your setting, highlight the Use AFP Estimated Offspring Count field and press <Enter>. A cursor appears in the field. To specify that the server use an estimated count, type Y and press <Enter>; the word Yes appears in the field. To specify that the server calculate the true offspring count, type N and press <Enter>; the word No appears in the field. In the rare event that you encounter problems using software that requires the actual offspring count, you should set the field to No.

The default setting is Yes.

Some software packages may not be compatible with this feature. If you should encounter a problem that appears to be related to this setting, disable the feature and try using the software again.

7. Determine when AFP writes file changes to disk.

You can specify that NetWare determine when AFP writes file changes to disk; or, you can indicate that the Macintosh operating system or a software program make this determination.

To make your setting, highlight the Use NetWare Cache Control Algorithm field and press <Enter>. A cursor appears. To allow

NetWare to determine when to write file changes to disk, type Y and press <Enter>; the word Yes appears in the field. To specify that the Macintosh operating system or certain software programs determine when to write file changes to disk, type N and press <Enter>; the word No appears in the field.

The default setting is Yes.

If your software uses AFP cache-flushing routines to protect data from server failure, or if your server is unreliable due to inadequate hardware or electrical power, your data may be slightly safer if you set the field to No. In general, though, AFP works best when you set the field to Yes.

8. Indicate how much available cache memory AFP should set aside for storing Finder information.

The Finder Accelerator is a NetWare for Macintosh feature that stores Finder information about frequently accessed folders and files in cache buffers on the server. The Finder Accelerator helps optimize the speed of AFP; however, it requires extra memory to run.

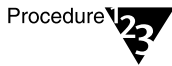
The Set Finder Accelerator Max Cache Percentage field enables you to specify the percentage of available cache memory for the Finder Accelerator to use. You can specify a value up to 5 percent. A percentage of zero disables the Finder Accelerator.

The default setting is zero.

If you set the value too high, the AFP server's performance may suffer slightly, and other NetWare modules may encounter memory allocation problems. The optimal percentage depends on your system configuration and application requirements. We recommend a low percentage for most systems.

Specifying a New AFP Server Name and Login Greeting

To specify a new AFP server name and login greeting, follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Detailed Configuration* option.**

The AFP Configuration window opens.

3. **From the AFP Configuration window, select the *General Server Information* option.**

The General Server Information Configuration window opens (Figure 2-9).

Figure 2-9
General Server
Information
Configuration
Window

General Server Information Configuration	
Server Name:	See Message
Modify Login Greeting:	See Message

4. **Specify a new AFP server name.**

The Server Name field enables you to set the name of the AFP server. AFP uses this name to make its existence and location known to the network.

Before a Macintosh can connect to a NetWare server running NetWare for Macintosh, AFP must register the name and location of the AFP server. The AppleTalk Name Binding Protocol (NBP) registers the server, identifying it to the rest of the network. The Macintosh Chooser uses NBP to display the list of AFP servers currently registered on the network.

The name of the AFP server is generally the name of the NetWare server; however, you can use the Server Name field to change this name. Most commonly, administrators use this field to change the server name to mixed case, because a server name in all uppercase letters is unattractive next to the mixed-case names in the Chooser.

To change the AFP server name, highlight the *Server Name* option and press <Enter>. The Server Name window opens. Enter the new name in the window. When you complete your changes,

press <Enter> or <Esc>. If you press <Enter>, AFPCON saves your changes automatically. If you press <Esc>, a prompt appears, asking whether you wish to save your specifications. To save your changes, highlight Yes. To cancel your changes, highlight No. Then, press <Enter>. The window closes and AFPCON returns you to the General Server Information Configuration window.

If you decide to rename the AFP server, avoid using an AFP server name that is very different from the NetWare server name. When you change the AFP server name, the new name appears immediately in the Chooser. Changing the server name does not affect users who are already logged in to the server.

5. Create or modify a login greeting.

The Modify Login Greeting field enables you to create a greeting that appears whenever a Macintosh user logs in to the server. This greeting can consist of anything from a simple “Welcome aboard” to information about scheduled network downtime. A user must click to acknowledge the message during the login procedure; having to do so may annoy some users. Nevertheless, a login greeting can be an effective way to supply information.

To create or modify a greeting, highlight the Modify Login Greeting field and press <Enter>. The Login Greeting window opens. Enter the greeting exactly as you would like it to appear on screen. Your greeting may contain up to 168 characters.

When you complete your changes, press <Enter> or <Esc>. If you press <Enter>, AFPCON saves your changes automatically. If you press <Esc>, a prompt appears, asking whether you wish to save your greeting. To save your changes, highlight Yes. To cancel your changes, highlight No. Then, press <Enter>. The window closes and AFPCON returns you to the General Server Information Configuration window.

To disable the greeting, delete all text from the Login Greeting window.

Accessing and Modifying AFP Volume Status

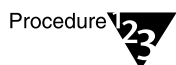
AFPCON enables you carry out these tasks concerning the status of an AFP volume:

- ◆ View information about AFP volumes.
- ◆ Enable or disable an AFP volume.
- ◆ Modify the volume name that appears at the Macintosh workstation.

The sections that follow describe how to carry out each of these tasks.

Viewing Information about an AFP Volume

To view information about an AFP server volume, follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Maintenance and Status* option.**

AFP Maintenance and Status window opens.
3. **From the AFP Maintenance and Status window, select the *Volume Information* option.**

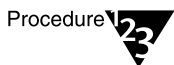
The Volume Status window opens. Each row in the window contains information about a different volume. AFPCON organizes the information into the fields listed in Table 2-2.

Table 2-2
Volume Status Fields

Field	Description
Volume Name	You specify the volume name when creating the volume. The volume name can contain up to 16 characters.
Pseudo Vol	<p>When the HFS CD-ROM module copies files from a CD-ROM disc to the server hard disk, it creates a Pseudo volume. This pseudo volume looks like a separate volume on the Macintosh desktop and in the Chooser, although it is actually a portion of a server hard disk volume.</p> <p>The Pseudo Vol field shows whether the AFP volume is a server volume or a CD-ROM pseudo volume. If the volume is a server volume, this field contains the word No. If the volume is a CD-ROM pseudo volume, this field contains the word Yes.</p>
Desktop Status	<p>This field indicates the status of the desktop database on the volume. The status can be one of the following:</p> <p>Okay: The desktop database is valid. No action is necessary.</p> <p>Not Okay: There is something wrong with the desktop database that requires you to rebuild it. See “Maintaining the Desktop Database” on page 28.</p> <p>Rebuilding: The desktop database for the volume is currently being rebuilt.</p> <p>Not An Option: This message appears for a pseudo volume; a pseudo volume does not have a desktop database.</p> <p>Uninitialized: You selected the <i>Shut Down Desktop Database</i> option as described in “Shutting Down the Desktop Database” on page 33. The status returns to Okay after you unload and reload AFP.</p>
AFP Supported	<p>This field indicates whether or not the volume supports AFP. If the volume supports AFP, this field contains the word Yes. If the volume does not support AFP, this field contains the word No.</p> <p>You can disable or re-enable AFP support by pressing <Enter> and selecting Enable AFP Server from the window that opens; for more information, see “Disabling or Re-enabling an AFP Volume” on page 48. When you disable AFP support, the volume does not appear in the Chooser volume list, and new users cannot mount the volume. A volume remains disabled until you explicitly enable it; restarting the server does not automatically re-enable a disabled volume.</p>

Disabling or Re-enabling an AFP Volume

You can disable AFP access to a volume while allowing the volume to remain mounted. To disable or re-enable an AFP server volume, follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Maintenance and Status* option.**

The AFP Maintenance and Status window opens.

3. **From the AFP Maintenance and Status window, select the *Volume Information* option.**

The Volume Status window opens.

4. **In the Volume Status window, highlight the appropriate volume and press <Enter>.**

Another Volume Status window opens, containing options you can set for the volume you selected.

5. **Select the *Enable AFP Volume* option.**

A prompt appears, asking whether you want to enable the volume. To enable the volume, highlight Yes. To disable the volume, highlight No. Then, press <Enter>.

Modifying the Volume Name Appearing at the Macintosh Workstation

Changing the name of the volume as it appears at the Macintosh workstation does not change the actual NetWare volume name. To change the volume name that Macintosh users see, follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Maintenance and Status* option.**

The AFP Maintenance and Status window opens.

3. **From the AFP Maintenance and Status window, select the *Volume Information* option.**

The Volume Status window opens.

4. In the Volume Status window, highlight the appropriate volume and press <Enter>.

Another Volume Status window opens.

5. Select the *Modify Displayed Volume Name* option.

The Modify Volume Name window opens:

Figure 2-10
Modify Volume
Name Window

Modify Volume Name	
Server defined volume name:	SYS
Administrator defined volume name:	MAIN.SYS

The first field shows the actual name of the server volume. You can neither select nor change this field.

The second field shows the volume name Macintosh users see. By default, the volume name takes the form *server_name.NW_vol_name*, where *server_name* is the standard NetWare name of the server, and *NW_vol_name* is the standard NetWare name of the volume.

To change the volume name, press <Enter>, and make your modifications. When you complete your changes, press <Enter> and then <Esc>. A prompt appears, asking whether you wish to save your settings. To save your changes, highlight Yes. To cancel your changes, highlight No. Then, press <Enter>. AFPCON returns you to the Volume Status window.

Re-establishing Default AFP Settings

You may change several AFP parameters and then decide you want to revert to the default AFP settings. The *Quick Configuration* option enables you to automatically re-establish the default values in certain areas:

- ◆ Server name

The server name becomes the standard NetWare name.

- ◆ Volume names

Each volume name becomes *server_name.NW_vol_name*, where *server_name* is the standard NetWare name of the server, and *NW_vol_name* is the standard NetWare name of the volume.

- ◆ Login greeting

The server's login greeting is disabled.

- ◆ Server access

Guest and Apple clear-text logins are disabled, and a user cannot save his or her password for automatic login.

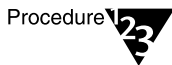
- ◆ Performance enhancements

You can automatically reset only these parameters:

- ◆ Maximum number of simultaneous Macintosh connections. For information on this parameter, see Step 4 on page 41.
- ◆ Whether AFP uses an estimated count of file and subdirectories in a directory. For information on this parameter, see Step 6 on page 42.
- ◆ Whether the server uses filename extension mappings. For information on this parameter, see "Using Extension Mapping" on page 33.

To reset any other parameters to their default values, you must go to the appropriate window and change the value manually.

To specify that AFP automatically reset certain settings to their default values, follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Quick Configuration* option.**

The Default Settings window opens (Figure 2-11).

Figure 2-11
Default Settings
Window

Default Settings	
Allow Clear Text Password Login:	No
Allow Guest Logins:	No
Allow User to Save Password for Auto Logins:	No
Set Maximum Number of AFP Connections:	1000
Use AFP Estimated Offspring Count:	Yes
Use Filename Extension Mappings:	No

This window contains a list of default settings. These settings may or may not reflect the server's active settings.

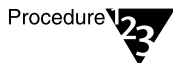
3. **Indicate whether you want to accept the default settings.**

Beneath the Default Settings window, a dialog box asks whether you want to set the default values. To re-establish the default settings, highlight Yes. To maintain the current settings established on the server, highlight No. Then, press <Enter>.

Shutting Down the AFP Server

Shutting down the AFP server from AFPCON gives connected Macintosh users advance notice that service will be terminated. Users have time to save and close any files they may have open on the server.

To shut down the AFP server, follow these steps:



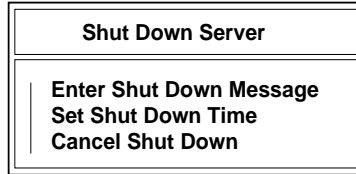
1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Maintenance and Status* option.**

The AFP Maintenance and Status window opens.

3. **From the AFP Maintenance and Status window, select the *Shut Down AFP Server* option.**

The Shut Down Server window opens (Figure 2-12).

Figure 2-12
Shut Down Server
Window



4. Enter a message for Macintosh users to see before the server shuts down.

Select the *Enter Shut Down Message* option. In the window that opens, type a message that will appear on all connected Macintosh workstations during the countdown before the AFP server shuts down. Then, press <Enter>.

When shutdown time is more than 30 minutes away, the AFP server sends the message every 30 minutes. When shutdown time is between five and 30 minutes away, the message appears every five minutes. When shutdown time is within five minutes, the message appears every minute. During the last five minutes of the countdown, the AFP server does not allow new logins and does not appear in the Chooser; as soon as the last connection is terminated, the AFP server shuts down, even if time remains.

5. Specify the amount of time before you want the server to shut down.

Select the *Set Shut Down Time* option. In the window that opens, enter the amount of time before you want the server to shut down. For example, if it is 3:00 in the afternoon, and you want the server to shut down at 8:00 at night, set the shutdown time to five hours.

Before the AFP server shuts down, all connected users see a message telling them when the server will shut down. Users should save their work and log out before shutdown, or their work may be lost. Until the shutdown occurs, you can modify the time.

When shutdown is complete, you can safely unload AFPCON.NLM and AFP.NLM. Note that shutting down the AFP server using AFPCON does not send a message to DOS workstations or down the server.

Cancelling an AFP Server Shutdown

To stop a server shutdown in progress, follow these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Maintenance and Status* option.**

The AFP Maintenance and Status window opens.

3. **From the AFP Maintenance and Status window, select the *Cancel Shut Down* option.**

This option stops a shutdown in progress and sends a message to all connected Macintosh systems indicating that the shutdown has been canceled.

Restarting the AFP Server

After shutting down the AFP server, you can restart it by following these steps:



1. **Load AFPCON.**
2. **From the AFP Configuration Options window, select the *Maintenance and Status* option.**

The AFP Maintenance and Status window opens.

3. **From the AFP Maintenance and Status window, select the *Restart AFP Server* option.**

An AFP server advertises its services when you start it. When you select the *Restart AFP Server* option, one of two messages appears.

If the AFP server is already running, this message appears:

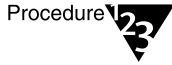
```
AFP Server is operational.
```

If the AFP server is not running, this message appears:

```
AFP Server is shut down. Restart AFP Server? Yes,  
No
```

Choose Yes to enable the AFP server and advertise its services.

Exiting the AFPCON Utility



To exit from AFPCON, follow these steps:

1. **From the AFP Configuration Options window, press <Esc>.**

A prompt appears, asking whether you want to exit.

2. **Select Yes or No.**

Select Yes to exit. If you select No, AFPCON returns to the AFP Configuration Options window and allows you to continue changing configuration values.

When you exit AFPCON, AFP remains loaded. If you down the server or unload AFP for any reason, you must reload AFP to make AppleTalk file services available to clients.

Unloading the AFP Module

To unload AFP, enter this command from the server console:

```
unload afp <Enter>
```


Configuring the HFS CD-ROM Module

NetWare for Macintosh contains built-in support for Macintosh-standard Hierarchical File System (HFS) CD-ROM discs. This technology provides the following features:

- ◆ All workstations on the network can share data stored on a CD-ROM disc.
- ◆ You can mount a CD-ROM disc as a NetWare for Macintosh volume.
- ◆ NetWare for Macintosh copies data from the CD-ROM disc to the server volume when you open a file.
- ◆ NetWare for Macintosh automatically removes CD-ROM data from the hard disk if no one has accessed it for the period of time you specify, or if keeping the file on disk exceeds the volume space limit established for CD-ROM data.

Removed files remain in the volume directory, and you can still open them from the CD-ROM disc as though they reside on the hard disk.

- ◆ The HFS CD-ROM console utility provides tools for menu-driven configuration and monitoring.

Terminology

When referring to HFS CD-ROM technology, this chapter uses the following terms:

- ◆ Hierarchical File System (HFS)

HFS provides the standard Macintosh structure for files and folders.

- ◆ HFS CD-ROM module (HFSCD.NLM)

The HFS CD-ROM module controls the process of using CD-ROM discs.

- ◆ HFS CD-ROM console utility (HFSCDCON.NLM)

The HFS CD-ROM console utility enables you to configure the HFS CD-ROM module to meet the needs of your working environment.

- ◆ Real Time Data Migration module (RTDM.NLM)

When a Macintosh user opens a CD-ROM file, RTDM.NLM copies the file to a NetWare[®] volume. This volume works like a cache, a temporary storage area designed to improve access to data. By storing files on the hard disk, NetWare for Macintosh accesses files at hard disk speed, rather than the significantly slower CD-ROM drive speed.

- ◆ Scan

The term **Scan** indicates the process by which NetWare for Macintosh copies the disc's directory tree to a NetWare volume on the server. The directory tree enables Macintosh users to see the folders and files on the disc.

- ◆ Mount

The term **Mount** describes the process of inserting a CD-ROM disc in a CD-ROM drive so that the HFS CD-ROM module knows it exists. You use the HFS CD-ROM module to mount an HFS CD-ROM disc inserted in a CD-ROM drive.

- ◆ Remove and Delete

The term "remove" indicates an action that erases a CD-ROM file's data from the server hard disk, but allows its filename to remain visible on the desktop.

The term "delete" describes the action of deleting a file from the hard disk so that its filename is no longer available on the desktop, as when a Macintosh user drags a file the Macintosh trash can. You cannot delete a file from a CD-ROM disc.

◆ Migrator

The **Migrator** controls the contents of the CD-ROM cache on the server hard disk. When no one has used a CD-ROM file for a certain amount of time, the Migrator removes that data from the NetWare volume; if necessary, you can instruct the Migrator to remove files before the specified time.

A file that the Migrator removes is still available from its original source; it appears on the Macintosh desktop, and users can still open it.

◆ Migration

The term **Migration** denotes the process of removing CD-ROM data from the NetWare server.

◆ Directory Tree

In this chapter, the term “Directory tree” denotes the NetWare file system’s tree of files and directories. It does *not* refer to the Directory Services tree.

Hardware and Software Requirements

Table 3-1 lists the NetWare for Macintosh requirements for CD-ROM support.

Table 3-1
CD-ROM Requirements

System Component	Requirement
Operating system	You must be running NetWare for Macintosh 4.10 or later.
SCSI Adapter	You can choose any CD-ROM-compatible SCSI adapter certified by Novell® for use with HFS CD-ROM drives. For a list of supported adapters, see Table 3-3 on page 68.

Table 3-1 *continued*

CD-ROM Requirements

System Component	Requirement
CD-ROM drive	<p>You can use any HFS-compatible CD-ROM drive. For a list of supported drives, see Table 3-3 on page 68.</p> <p>The number of drives NetWare for Macintosh supports is limited only by the configuration of your server. For example, if your server contains three SCSI adapters that each support seven devices, NetWare for Macintosh can theoretically use as many as 21 CD-ROM drives. <i>However, when you use a jukebox CD-ROM drive, NetWare for Macintosh can use only the first CD-ROM disc.</i></p>
CD-ROM discs	You can use any HFS CD-ROM disc.
Hard disk	<p>The server hard disk must contain at least one NetWare volume with enough space to accommodate the files you use. In addition to file space, the volume should contain enough free space for the CD-ROM directory tree. You can calculate directory tree space using this formula:</p> <p>Number of files * number of name spaces * 128 bytes = hard disk space used</p> <p>If a disc contains 100 files, and the server volume has two name spaces, the directory tree uses 25,600 bytes.</p> <p>The hard disk should have the Macintosh name space added to it. For details, see Step 9 on page 10.</p>

The CD-ROM controllers, drivers, and drives listed in Table 3-2 have been tested with HFSCD.NLM.

Table 3-2
Supported Controllers, Drivers, and Drives

Company	Adapter	Driver	Drive
Adaptec	Adaptec 1540	AHA1540.DSK ASPICD.DSK ASPITRAN.DSK CDNASPI.DSK	Toshiba XM3301B
	Adaptec 1640	AHA1640.DSK ASPICD.DSK ASPITRAN.DSK CDNASPI.DSK	Toshiba XM3301B

Table 3-2 *continued*

Supported Controllers, Drivers, and Drives

Company	Adapter	Driver	Drive
	Adaptec 1740	AHA1740.DSK ASPICD.DSK ASPITRAN.DSK CDNASPI.DSK	Toshiba XM3301B
Buslogic	Buslogic 542/545	BT40.DSK	Toshiba XM3301B
	Buslogic 640/646	BT40.DSK	Toshiba XM3301B
	Buslogic 742/747	BT40.DSK	Toshiba XM3301B
Meridian Data	You can use any of the Adaptec boards listed in this table.	AHA1x40.DSK ASPITRAN.DSK CDNASPI.DSK	Toshiba XM3301B
	You can use any of the Buslogic boards listed in this table.	BT40.DSK BTAS4I.DSK	Toshiba XM3301B
ADIC	MCA DCB	DCB3200.DSK	Toshiba XM3301B
	EISA DCB	DCB3200.DSK	Toshiba XM3301B
	ISA DCB	DCB3200.DSK	Toshiba XM3301B
DPT	PM2012B/9X	PM12NW40.DSK	Hitachi TCDR 7050
	PM2011B/9X	PM11NW40.DSK	Hitachi TCDR 7050
Novell	PS/2 SCSI w/cache 32-bit	PS2SCSI.DSK	Toshiba XM3301B
	PS/2 SCSI 16-bit	PS2SCSI.DSK	Toshiba XM3301B
	PS/2 Enhanced SCSI 32-bit w/cache	PS2SCSI.DSK	Toshiba XM3301B

You must load the drivers for the Adaptec controller in this order:

1. AHA1x40.DSK
2. ASPITRAN.DSK

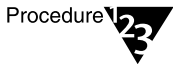
After you load AHA1x40 and ASPITRAN, you must issue a Mount command before loading CDNASPI.DSK. The Mount command does not necessarily have to mount a real volume.

3. CDNASPI.DSK

You must enable the ENABLE512 option of CDNASPI.DSK.

Planning for CD-ROM Use

The HFS CD-ROM module copies data from the CD-ROM disc to the server hard disk. Therefore, before you set up the CD-ROM drive, you should decide which server volume will contain the CD-ROM data. Use this procedure when planning for CD-ROM support:



1. Create a volume specifically for CD-ROM data storage (optional).

Because a CD-ROM disc contains a large amount of data, the server volume should be as large as possible.

2. Create a directory for the CD-ROM data.

Write down the name of this directory. You will need this information later.

3. Grant Read and File Scan rights to the CD-ROM directory for the group EVERYONE.

You can carry out this task using the NetWare Administrator utility. For more information, see NetWare 4.11 *Supervising the Network*.

4. Add the Macintosh name space to the volume.

You must add the Macintosh name space to any volume supporting HFS files. For information on how to do so, see Step 9 on page 10.

5. Make sure that the volume supports AFP.

For details on using AFPCON to specify AFP support for a volume, see the section “Disabling or Re-enabling an AFP Volume” on page 48.

Loading the HFS CD-ROM Module

NetWare for Macintosh uses the HFS CD-ROM module (HFSCD.NLM) to control CD-ROMs. To load the HFS CD-ROM module, enter this command at the console prompt or in the NetWare server's AUTOEXEC.NCF file:

```
load hfscd
```

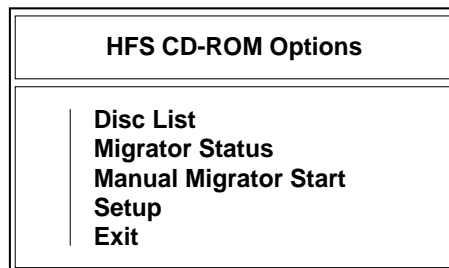
Loading the HFS CD-ROM Console Utility

You configure the HFS CD-ROM module using the HFS CD-ROM console utility (HFSCDCON.NLM). To load the utility, enter this command at the console prompt:

```
load hfscdcon
```

The HFS CD-ROM Options window opens (Figure 3-1).

Figure 3-1
HFS CD-ROM
Options Window



The options in the window are described below.

◆ *Disc List*

This option enables you to view a list of scanned discs, to monitor the status of each one, and to mount one or more discs.

◆ *Migrator Status*

This option enables you to monitor the migration process.

◆ *Manual Migrator Start*

This option enables you to manually remove files from the hard disk volume.

◆ *Setup*

This option enables you to set up the CD-ROM drive. This task includes the following steps:

- ◆ Specify whether NetWare for Macintosh should automatically mount a CD-ROM disc.
- ◆ Specify whether NetWare for Macintosh should automatically scan a CD-ROM disc's directory tree.
- ◆ Indicate when the Migrator should begin and end its process of removing CD-ROM data from the server hard disk.
- ◆ Set the number of days a CD-ROM file can remain unused before the Migrator removes it from the hard disk volume.
- ◆ Set the maximum amount of space on a network volume that NetWare for Macintosh can use for storing CD-ROM data.

◆ *Exit*

This option enables you to exit the HFS CD-ROM console utility.

The sections that follow describe the tasks the utility enables you to perform.

Setting Up the CD-ROM Drive

Follow these steps to set up the CD-ROM drive for use with NetWare for Macintosh:



1. Install the SCSI adapter and CD-ROM drive.

Follow the instructions in the documentation included with each device.

2. Start up the NetWare server.

3. Modify the AUTOEXEC.NCF file.

Enter these commands in the AUTOEXEC.NCF file:


```
load scsi_driver
load cdnaspi enable512
pause
scan for new devices
pause
load rtdm
load hfscd
```

- ◆ The `load scsi_driver` command loads the disk driver for the CD-ROM drive.
- ◆ The `load cdnaspi enable512` command loads the CDNASPI.DSK driver and specifies that it use 512K blocks.
- ◆ The `pause` command enables the server to complete the load process before carrying out the next command.
- ◆ The `scan for new devices` command ensures that the NetWare server is made aware of CD-ROM drives you may have added or enabled since the server was last booted.
- ◆ The `load rtdm` command loads the Real Time Data Migration module.
- ◆ The `load hfscd` command loads the HFS CD-ROM module.

3a. Restart the server to put the new commands in the AUTOEXEC.NCF file into effect.

If you do not want to restart the server at this time, you can enter the commands from Step 3 at the server console.

3b. Load the HFS CD-ROM console utility.

For instructions, see “Loading the HFS CD-ROM Console Utility” on page 61.

3c. From the HFS CD-ROM Options window, select the Setup option.

The Setup window opens (Figure 3-2).

Figure 3-2
Setup Window

Setup	
Auto Mount Discs:	On
Auto Scan Discs:	Off
Auto Scan Default Path:	(see path)
Start Hour (0 - 23):	0
Stop Hour (0 - 23):	0
Days Untouched Before Migration:	5
NetWare Volume Space Limits:	(see list)

The fields in the Setup window enable you to customize the way the HFS CD-ROM module operates on your server.

3d. Specify whether NetWare for Macintosh should automatically mount a CD-ROM disc.

If you have scanned the directory tree of a CD-ROM disc onto a NetWare volume, you can automatically mount the HFS CD-ROM disc when either of these situations occurs:

- ◆ You press <Ins> in the disc list.

You display the disc list by selecting the *Disc List* option from the HFS CD-ROM Options window.

- ◆ The server boots.

To automatically mount the disc, set the Auto Mount Discs field to On. When you set both this field and the Auto Scan Discs field to On, Macintosh users can see the files on the CD-ROM disc when you insert the disc into the drive.

To change the current setting, highlight the Auto Mount Discs field. Then, press <Enter> to toggle the option on or off.

3e. Specify whether NetWare for Macintosh should automatically scan a disc's directory tree.

When you set the Auto Scan Discs field to On, NetWare for Macintosh automatically scans an HFS CD-ROM disc's directory tree onto a NetWare volume when either of these situations occurs:

- ◆ NetWare for Macintosh does not find a directory tree on the NetWare volume when the server boots.

- ◆ You press <Ins> in the disc list and NetWare for Macintosh finds new media in the drive.

You display the disc list by selecting the *Disc List* option from the HFS CD-ROM Options window.

This option requires that you also enable the *Auto Mount Discs* option (as described above) and that you specify an Auto Scan Default Path (as described below).

To change the current setting, highlight the Auto Scan Discs field. Then, press <Enter> to toggle the option on or off.

3f. **Specify the path NetWare for Macintosh should use when automatically scanning a CD-ROM disc.**

The Auto Scan Default Path field enables you to specify the path NetWare for Macintosh uses when it automatically scans an HFS CD-ROM disc. When NetWare for Macintosh scans a disc, it copies its directory tree to the path you specify. This path should lead to a volume with sufficient space to accommodate the entries.

Highlight the Auto Scan Default Path field and press <Enter>. The Path window opens. Enter the path where you want the directory tree stored. If you are not sure of the directory path, press <Ins>. The directory tree of the hard disk volume appears. Select a directory; then, press <Esc>.

The HFS CD-ROM module stores the CD-ROM information in a hidden area of the specified volume. This information is inaccessible to Macintosh users, except through the CD-ROM volume. DOS users can view the information by using the NDIR command, but they cannot see it using the DIR command.

4. **Specify when the Migrator should start removing CD-ROM files from the server hard disk.**

The Start Hour field enables you to specify the hour when the Migrator starts removing CD-ROM files from the NetWare volume. To set the time, highlight the field; then, enter a number from 0 to 23. Each number denotes an hour in the day; 0 denotes midnight, and 23 denotes 11 p.m.

To reduce performance problems that may occur while the Migrator runs, start the Migrator after hours when fewer users generate network traffic.

5. Specify when the Migrator should stop searching for CD-ROM files to remove from the server hard disk.

The Stop Hour field enables you to specify the hour when the Migrator stops searching for CD-ROM files to remove from a NetWare volume if it has not already completed its search. To set the time, highlight the field, and enter a number from 0 to 23. Each number denotes an hour in the day; 0 denotes midnight, and 23 denotes 11 p.m.

If the value you specify matches the Migrator Start Hour parameter, the Migrator always runs until finished. To reduce network performance problems that may occur while the Migrator runs, you can stop the Migrator before the work day starts.

6. Specify how long a file can be unused before the Migrator removes it from the NetWare volume.

The Days Untouched Before Migration field enables you to specify the number of days a file must remain unaccessed before the Migrator removes its data from the NetWare volume. For example, if you set this option to three days, NetWare for Macintosh removes any file not used for three days.

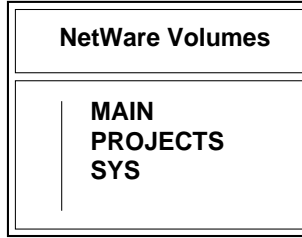
To change the current setting, select the Days Untouched Before Migration field; then, enter the number of days. To disable this function, set the value in the field to 0.

7. Specify the maximum amount of space HFS CD-ROM data can use on a NetWare volume.

The NetWare Volume Space Limits field enables you to configure the preferred maximum amount of space HFS CD-ROM data can use on a NetWare volume.

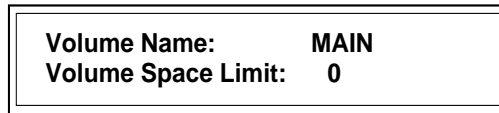
To change the current setting, highlight the *NetWare Volume Space Limits* option and press <Enter>. A list of mounted NetWare volumes appears (Figure 3-3).

**Figure 3-3
NetWare Volumes
Window**



Select a volume from the list. A window opens, allowing you to configure the space limit, in megabytes (Figure 3-4).

**Figure 3-4
Enter the Volume
Space Limit**



Select the Volume Space Limit field; then, enter the space limit.

Setting this option does not actually limit the amount of space you can use for CD-ROM files. You may exceed the space limit between Migrator passes. However, if you exceed the space limit, the next pass of the Migrator removes the data with the oldest access dates until space used on the volume falls below the specified limit.

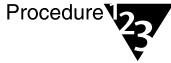
By default, the number 0 appears in the Volume Space Limit field. This value means that there is no limit to the amount of space CD-ROM files can use on a NetWare volume.

If you try to open a file that is too large for the amount of space remaining on the volume, an error occurs. If you know your volume is running out of space, you should manually start the Migrator to reduce the space used by CD-ROM files. This process is explained in “Manually Removing CD-ROM Data from the Server Hard Disk” on page 70.

You might want to create a separate NetWare volume specifically for CD-ROM data. Doing so prevents CD-ROM data from filling volume space that other files may need.

Viewing CD-ROM Disc Status

To view the status of a CD-ROM disc, follow these steps:



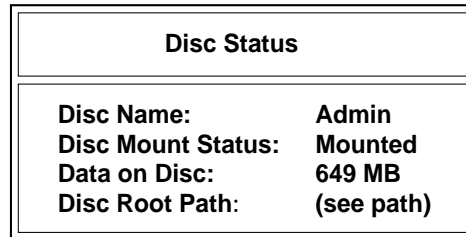
1. **From the HFS CD-ROM Options window, select the *Disc List* option.**

A list of scanned discs appears.

2. **Highlight a disc and press <Enter>.**

The Disc Status window opens (Figure 3-5).

Figure 3-5
Disc Status Window



The Disc Status window contains the fields listed in Table 3-3.

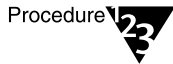
Table 3-3
Disc Status Fields

Field	Description
Disc Name	This field displays the name of the disc.
Disc Mount Status	This field indicates whether the disc is mounted. Only the first CD-ROM disc in a jukebox CD-ROM drive can be mounted. If the disc has been previously mounted and a file has been copied to the hard disk, a Macintosh user can see the file and get information about it, even if the disc is presently unmounted. However, if the user tries to access the file from an unmounted disc, a message appears, saying that the file cannot be opened.
Data on Disc	This field displays the amount of data currently written to the disc.
Disc Root Path	This field shows you where to find the CD-ROM files in the NetWare file system. Highlight the Disc Root Path field and press <Enter>. A window opens, showing where the CD-ROM files are stored. You cannot view these files with the Finder or standard file dialog boxes on the Macintosh workstation.

You cannot change the entries in the Disc Name, Data on Disc, and Disc Root Path fields. For information on how to change the entry in the Disc Mount Status field, see the next section, “Mounting or Dismounting a CD-ROM Disc”.

Mounting or Dismounting a CD-ROM Disc

To mount or dismount a CD-ROM disc, follow these steps:



1. **From the HFS CD-ROM Options window, select the *Disc List* option.**

A list of scanned discs appears.

2. **Highlight a disc and press <Enter>.**

The Disc Status window opens (Figure 3-6).

Figure 3-6
Disc Status Window

Disc Status	
Disc Name:	Admin
Disc Mount Status:	Mounted
Data on Disc:	649 MB
Disc Root Path:	(see path)

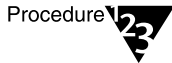
Highlight the Disc Mount Status field and press <Enter>. From the window that opens, choose either Mount Disc or Dismount Disc.

When a disc is mounted, you cannot remove it from the drive. If you wish to eject a disc from the drive, you must first dismount the disc.

Manually Removing CD-ROM Data from the Server Hard Disk

The Migrator usually runs once a day, beginning at the time you specify in the Setup window. The HFS CD-ROM console utility enables you to run the Migrator at any time. You can therefore remove CD-ROM data from the server hard disk whenever you determine, regardless of the Migrator Start Time setting.

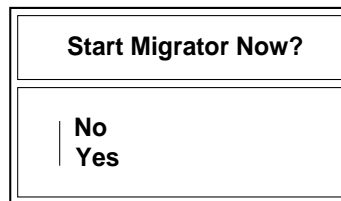
To manually start the Migrator, follow these steps:



1. From the HFS CD-ROM Options window, select the **Manual Migrator Start** option.

The Start Migrator Now window opens (Figure 3-7).

Figure 3-7
Start Migrator Now
Window



2. Select **Yes** to start the Migrator, or **No** to exit the window without removing any files.

If you select Yes, the Migrate All Files prompt appears.

3. Select **Yes** or **No**.

If you want to remove all CD-ROM data, regardless of the last access date, select Yes. If you wish only to remove the data that has been on the NetWare volumes for the amount of time specified in the Setup window, select No.

Viewing the Migrator Status

The HFS CD-ROM console utility enables you to learn whether the Migrator is running; it also displays statistics from the most recent Migrator pass.

To view information about Migrator status, follow these steps:



1. From the HFS CD-ROM Options window, select the ***Migrator Status*** option.

The Migrator Status window opens (Figure 3-8).

Figure 3-8
Migrator Status Window

Migrator Status	
Migrator Run Status:	Not Running
Stats of Last Migrator Pass:	
Files Migrated:	0
Bytes Migrated:	0
Migrator Started:	11-11-93 12:01:00 am
Migrator Stopped:	11-11-93 12:01:00 am

You cannot change any of the information in the Migrator Status window. Table 3-4 describes each field.

Table 3-4

Migrator Status Fields

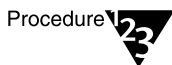
Field	Description
Migrator Run Status	This field indicates whether the Migrator is running.
Files Migrated	This field displays the number of CD-ROM files removed from the NetWare volume.
Bytes Migrated	This field indicates the amount of hard disk space freed by the removal of CD-ROM files.
Migrator Started	This field displays the date and time when the Migrator last started.
Migrator Stopped	This field shows you the date and time that the Migrator either completed its last pass or stopped before completing the pass.

If you view the Migrator Status window while the Migrator is running, the Migrator Run Status line says Running. The statistics update periodically while the Migrator is running.

2. **Press <Esc> to exit this window after examining the information.**

Deleting a Scanned CD-ROM Tree

From time to time, you may need to delete a scanned CD-ROM tree from the hard disk. Follow these steps:



1. **Make sure none of the files in the tree you wish to delete are in use.**
2. **Use the NetWare Administrator utility to perform the following tasks:**
 - 2a. **Remove the Hidden flag from the folder containing the CD-ROM directory structure on the NetWare volume.**

The folder should have the same icon as a volume in System 7. For information on determining the location of the CD-ROM files on the NetWare volume, see the discussion of the Disc Root Path in Table 3-3 on page 68.

- 2b. **Remove the Rename Inhibit flag from the Trash folder.**

2c. Remove the Delete Inhibit flag from the Trash folder.

For information on using the NetWare Administrator utility, see NetWare 4.11 *Supervising the Network*.

- 3. From a Macintosh workstation, hold down the <Option> key while you drag the folder containing the CD-ROM directory structure to the trash.**
- 4. Hold down the <Option> key and empty the trash.**

Exiting the HFS CD-ROM Console Utility

To exit the HFS CD-ROM console utility, select the *Exit* option from the HFS CD-ROM Options window.

4 **Planning AppleTalk Print Services**

This chapter describes the software components that provide NetWare for Macintosh print services in a NetWare® 4.11 environment. The chapter introduces the concepts associated with network print services, and offers guidelines for configuring AppleTalk print services under NetWare.

You can configure print services in many different ways, depending on the type of network and the nature of the services that you want to extend to clients. Use the planning information in this chapter to determine the most effective implementation of print services on your network. Later chapters present the procedures for setting up and configuring the hardware and software.

Understanding Print Services

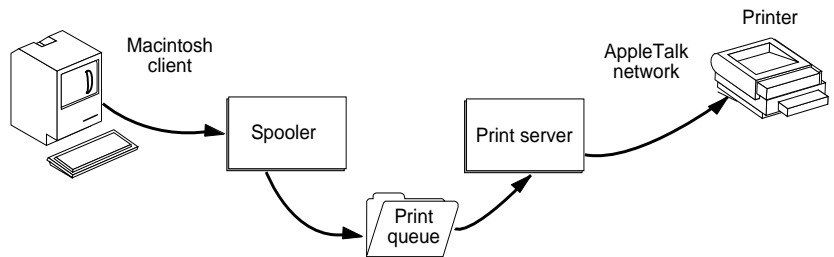
By integrating the print service environments of AppleTalk and NetWare, NetWare for Macintosh offers these benefits:

- ◆ Macintosh clients can print to PostScript and other Macintosh-compatible printers located on non-AppleTalk portions of the network.
- ◆ Non-Macintosh clients can access printers located on AppleTalk portions of the network.
- ◆ The network administrator can use NetWare security, spooling, and management features to enhance an AppleTalk print services environment.

A Macintosh user specifies the destination of a print job by choosing a “spooler.” A list of spoolers appears in the Macintosh Chooser, organized by type and zone. A spooler sends the print job to a temporary storage area called a “print queue.” A print job remains in

the queue until the “print server” directs the job to the printer and monitors the success of the operation.

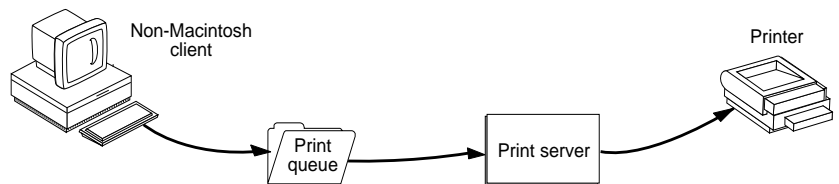
Figure 4-1
Macintosh Network Printing



In NetWare for Macintosh, you can associate more than one spooler with a print queue. For each spooler, you can specify different printing options. For example, you might require that any jobs a spooler sends to the print queue be put on hold before printing. For another spooler, you might require that a Macintosh user sending jobs to the print queue be logged in to the server.

A non-Macintosh user does not use a spooler. He or she sends the print job directly to the print queue, where the print server finds the job and sends it to the printer.

Figure 4-2
Non-Macintosh Network Printing



A print server can handle only certain types of communication channels. A **Communications channel** is a pathway that dictates the signals used and the methods employed to control the transfer of data from the server to the printer.

PSERVER.NLM can send a print job over a serial or parallel cable, or over an IPX™ network to a printer; however, it cannot send a job to a printer over an AppleTalk network, unless you also use ATXRP.NLM. The NetWare for Macintosh print server included with ATPS.NLM handles any print job destined for a printer connected to an AppleTalk network; however, it cannot send a print job over any other kind of communications channel.

When you configure NetWare for Macintosh print services, you decide which printers you want users to access. Then, you set up the spoolers, queues, and print servers that enable each user to carry out network printing over a particular communications channel.

Special Terms

This section describes some of the special terms this manual uses when describing the NetWare for Macintosh print services environment.

- ◆ Macintosh user and Macintosh client

The term “Macintosh user” refers to the user of a Macintosh workstation.

The term “Macintosh client” refers to any AppleTalk client.

- ◆ Non-Macintosh user and non-Macintosh client

The term “non-Macintosh user” refers to the user of a DOS, OS/2, Windows, or UNIX[®] workstation.

The term “non-Macintosh client” refers to a DOS, OS/2, or Windows client on an IPX connection.

- ◆ UNIX client

The term “UNIX client” refers to a client on a TCP/IP connection.

- ◆ AppleTalk printer

The term “AppleTalk printer” refers to any printer connected to an AppleTalk network.

- ◆ Front end

The **Front end** of a print services configuration consists of all the components required to transmit a print job to a NetWare print queue. These components include the client’s operating system, print driver, and communications channel; for Macintosh clients, the front end also consists of a spooler.

◆ Back end

The **Back end** of a print services configuration consists of all the components required to remove a print job from the queue and direct it to the appropriate printer. These components include the print server, communications channel, and printer interface.

Print Services Components

When you install the NetWare operating system and NetWare for Macintosh, the INSTALL program automatically copies to the server all files associated with NetWare for Macintosh print services.

Three modules form the core of NetWare for Macintosh print services. Table 4-1 describes each one.

Table 4-1
NetWare for Macintosh Print Services Modules

Name	Description	Location
ATPS.NLM (The AppleTalk Print Services module)	This module can handle the entire printing process on AppleTalk. ATPS.NLM spools a job to a print queue, and provides the print server software to send the job to the printer.	SYS:SYSTEM
ATXRP.NLM (The AppleTalk Extended Remote Printer module)	This module acts as an AppleTalk print driver for PSERVER. Instead of using ATPS, you can use PSERVER and ATXRP to send print jobs from a NetWare print queue to an AppleTalk printer. For information on choosing between ATPS and ATXRP with PSERVER, see “Choosing ATPS or PSERVER with ATXRP” on page 251.	SYS:SYSTEM
ATPSCON.NLM (The AppleTalk Print Services console utility)	This utility enables you to configure the ATPS module.	SYS:SYSTEM

The INSTALL program also copies a number of ATPS-related files to your server. Table 4-2 lists these files.

Table 4-2
ATPS-Related Files Copied During Installation

Files	Description	Location
.PPD files	These files are PostScript Printer Definition files, also called PPD files. Each PPD file describes the characteristics of a particular printer model.	SYS:SYSTEM\ NW-MAC\PPDS
.FNT files	Each .FNT file contains a default font list for a particular printer model. For information on how ATPS uses font lists, see “Managing PostScript Fonts” on page 208.	SYS:SYSTEM\ NW-MAC\FONTS
.PS files	Each .PS file is a PostScript utility. For information on these files, see Appendix A, “PostScript Utilities,” on page 317.	SYS:SYSTEM\ NW-MAC\PSUTILS
.STP files	A .STP file is a printer setup file. At installation, two .STP files exist: OVERLAY.STP and POSTTEXT.STP. For information on using printer setup files, see “Selecting a Printer Setup File” on page 120.	SYS:SYSTEM\ NW-MAC\SETUP
NBPTYPE.DEF	This file contains a database of available printer models. ATPSCON generates a list of printer models based on the contents of the NBPTYPE.DEF file. You choose a printer model when you configure a spooler or a print server.	SYS:SYSTEM\ NW-MAC\ATPSCON

The MOREPPDS directory on the CD-ROM disc labeled *NetWare 4.11* contains a collection of PPD files. To save disk space, the installation process does not copy these files to the server. You can copy those that you need to SYS:SYSTEM\NW-MAC\PPDS. If you need a PPD file not provided with NetWare for Macintosh, contact the manufacturer of your printer.

The files provided by Novell® may become out of date at some time. Therefore, you should use the most recent PPD file provided by your printer vendor in preference to ones included with NetWare for Macintosh. In addition, if you have a PostScript printer not covered by the PPD files on the CD-ROM disc, your printer vendor should be able to provide you with the appropriate one. The file should be in PPD format version 4.0 or higher for best results.

Certain configuration tasks require the DOS client utilities PCONSOLE.EXE and PRINTDEF.EXE. Installing NetWare copies these files to the server; they reside in the SYS:PUBLIC directory.

When you configure and load ATPS, NetWare for Macintosh creates other directories and files. For a complete list, please see Table 7-1 on page 205.

System Requirements

This section lists the printers and print drivers supported by NetWare for Macintosh 4.10.



Novell periodically extends support to include additional printers and print drivers. The lists shown here may not include all of the currently supported printers and print drivers. Refer to the READ.ME file for a current list.

Table 4-3 provides a list of the printers supported by NetWare for Macintosh 4.10.

Table 4-3
Supported Printers

Apple PostScript Printers	Non-PostScript Printers
LaserWriter	Apple ImageWriter [®] LQ
LaserWriter Plus	Apple ImageWriter II
LaserWriter Pro 600	HP DeskJet [®] 1200C
LaserWriter Pro 630	HP DeskWriter [®]
LaserWriter Pro 810	HP DeskWriter C
LaserWriter II ^f	HP DeskWriter 310
LaserWriter II ^g	HP DeskWriter 320
LaserWriter II NT	HP DeskWriter 510
LaserWriter II NTX	HP DeskWriter 550C
Personal LaserWriter NT	HP DeskWriter 560C
Personal LaserWriter NTR	HP PaintJet [®] XL300

Table 4-3 *continued*
Supported Printers

Apple PostScript Printers	Non-PostScript Printers
	HP PaintWriter® XL

Table 4-4 provides a list of the print drivers supported by NetWare for Macintosh 4.10.

Table 4-4
Supported Print Drivers

Printer	Drivers Supported
Apple LaserWriter	Apple Macintosh 4.0, 5.x, 6.0.x, 7.2x, 8.0, 8.1.1
Apple ImageWriter	Apple Macintosh 2.7, 7.0, 7.0.1
Apple ImageWriter LQ	Apple Macintosh 2.0, 7.0, 7.0.1
HP DeskWriter series	Apple Macintosh 5.0
HP DeskWriter 300 series	Apple Macintosh 5.0
HP PaintJet XL300	Apple Macintosh 1.02, 1.03
HP PaintWriter XL	Apple Macintosh 3.07
PostScript printers	Adobe® PSpriinter 8.0, 8.1.1



Note

NetWare for Macintosh also supports printing from version 4.x of Aldus PageMaker® for the Macintosh. This application has printing behavior different from that of other Macintosh applications. PageMaker 5.0 supports printing to a LaserWriter using a PSpriinter 8.x driver.

Designing Your Print Services Environment

Before you can begin the configuration process, you must carefully plan your print services environment. The sections that follow describe the kinds of decisions you must make, and present information to help you make the best possible design choices.

Choosing the Print Services Software

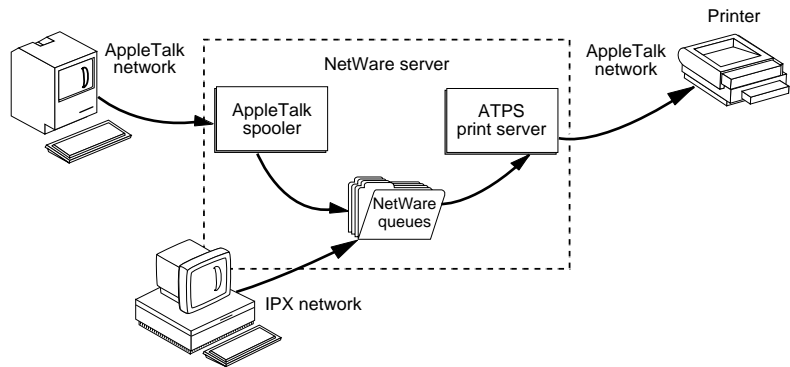
The sections that follow describe how you can use ATPS, PSERVER, and ATXRP to give both Macintosh and non-Macintosh clients access to network printers.

Using ATPS Only

The simplest configuration consists of a group of Macintosh, DOS, OS/2, and Windows clients printing through ATPS to an AppleTalk printer.

Figure 4-3 shows the four print services components: the AppleTalk spooler, the NetWare print queue, the ATPS print server, and the AppleTalk printer.

Figure 4-3
AppleTalk Spooler and Print Server



Notice that the Macintosh client submits a job to the spooler, while a non-Macintosh client submits a job directly to the print queue. The ATPS print server can direct any print job from the print queue to an AppleTalk printer, whether the job originated at a Macintosh or non-Macintosh client.

“Using ATPS to Access a LaserWriter IIg on Ethernet” on page 170 shows you how to set up an ATPS-only configuration for both Macintosh and non-Macintosh clients.

Using ATPS and PSERVER

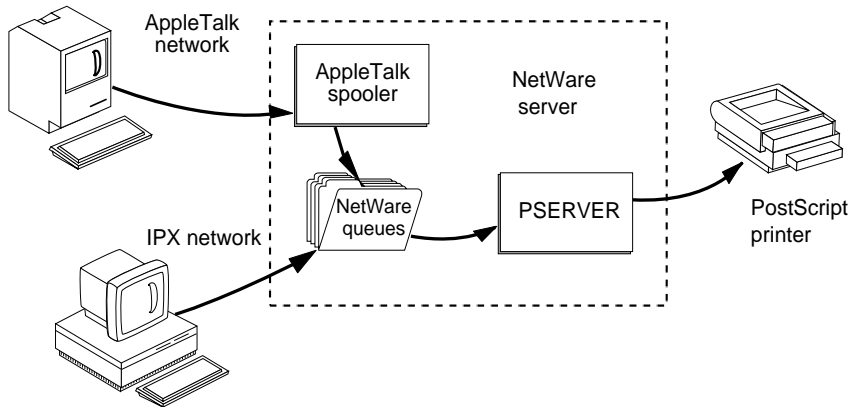
PSERVER, the native NetWare print server, monitors and services NetWare print queues and printers. PSERVER takes jobs from a NetWare print queue and directs them to the assigned printer. You can

use PSERVER to service print jobs directed to a printer on an IPX, parallel, or serial connection.

In this scenario, the ATPS front end spools the Macintosh print job to the appropriate print queue. However, because the print job is bound for a printer on a non-AppleTalk segment of the network, the ATPS back end cannot service the job. Instead, PSERVER takes each job from the print queue and directs it to the appropriate printer. As always, non-Macintosh clients bypass the spooler, and print directly to the print queue.

Figure 4-4 shows how you can use PSERVER on a network containing Macintosh and non-Macintosh clients.

Figure 4-4
PSERVER Servicing Print Jobs



The NetWare 4.11 print server software is available only as PSERVER.NLM. You can still use version 3.11 of PSERVER.EXE, which runs on a DOS or OS/2 client. However, we recommend that you run PSERVER.NLM because it offers these advantages:

- ◆ PSERVER.NLM runs on the NetWare server, and does not require a dedicated DOS or OS/2 client.
- ◆ Only PSERVER.NLM supports the ATXRP module.

The NetWare 4.11 installation process automatically copies PSERVER.NLM to the server, as described in the *NetWare 4 Installation*

manual. For more information on using PSERVER.NLM, see the NetWare 4.11 *Print Services* guide.

The present manual provides these examples of how to carry out a configuration using ATPS and PSERVER:

- ◆ “Using ATPS and PSERVER to Access an HP LaserJet IIISi Printer” on page 177 shows you how to make a printer accessible to both Macintosh and non-Macintosh clients on a Token Ring network.
- ◆ “Configuring Access to a PostScript Printer on a Serial Connection” on page 231 shows you how to use ATPS and PSERVER to give Macintosh and non-Macintosh clients access to a LaserWriter printer on a serial connection to the NetWare server or a DOS workstation.

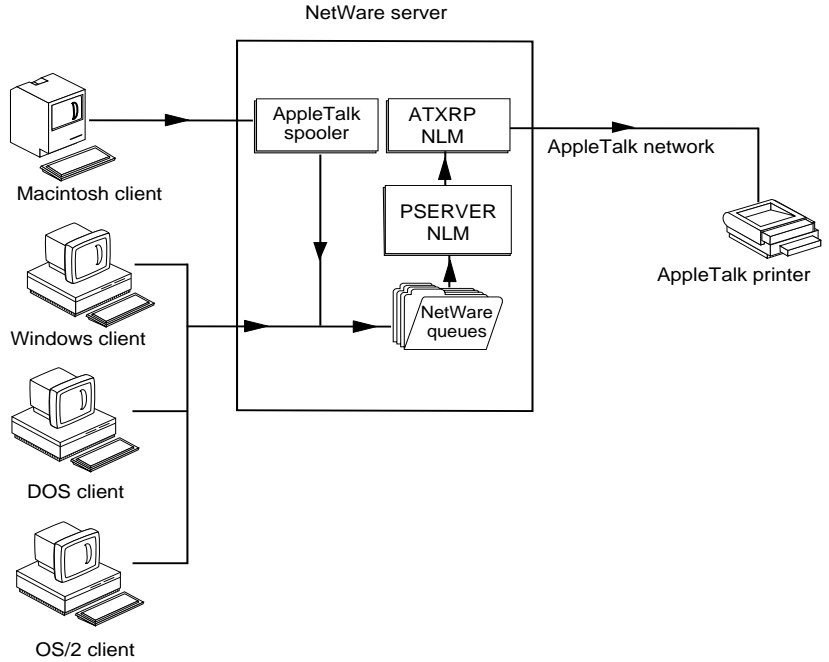
Using ATPS, PSERVER, and ATXRP

In this scenario, PSERVER and ATXRP replace the ATPS print server, working together to service a print job directed to an AppleTalk printer. The print job can originate from any client platform. However, for a Macintosh client to access the print queue, that client must use an AppleTalk spooler.

ATXRP acts as an AppleTalk print driver for PSERVER. ATXRP communicates to a printer through PAP, the AppleTalk Printer Access Protocol. When PSERVER removes a print job directed to an AppleTalk printer from a print queue, it passes the job on to ATXRP; ATXRP then sends the job to the printer.

Figure 4-5 illustrates how ATXRP works with PSERVER to allow printing to an AppleTalk network printer from a NetWare client.

Figure 4-5
ATXRP Overview



We recommend that you use ATXRP with PSERVER when both of the following conditions are true:

- ◆ You want access to both AppleTalk and non-AppleTalk printers.
- ◆ You want the print management features provided by PSERVER.

This manual provides two examples of how to carry out a configuration using PSERVER and ATXRP:

- ◆ “Using PSERVER and ATXRP to Access a LaserWriter Plus Printer” on page 186 shows you how set up a sample configuration for DOS clients only.
- ◆ “Making an AppleTalk Printer Available Using PSERVER and ATXRP” on page 254 discusses how to set up a sample configuration for Macintosh, DOS, OS/2, and Windows clients.

Choosing a Print Server for AppleTalk Printing

Table 4-5 compares the features provided by ATPS on the one hand, and PSERVER with ATXRP on the other.

Table 4-5
Comparison of ATPS with PSERVER and ATXRP

Task	ATPS	PSERVER and ATXRP
Provide print services to Macintosh and non-Macintosh clients on an AppleTalk network.	Using ATPSCON, you can configure all the necessary print services components.	Using PCONSOLE, you can set up the print queue, print server, and printer, but you must configure the spooler using ATPSCON.
Charge user accounts for individual print jobs.	ATPS supports this feature.	PSERVER and ATXRP do not support this feature.
Allow non-Macintosh clients to print to a LaserWriter on an AppleTalk network.	Using ATPSCON, you can configure all the necessary print services components.	You can set up the print queue, print server, and printer with PCONSOLE. Then, you must load PSERVER and ATXRP.
Print to PCL [®] (Printer Control Language [®]) printers from a Macintosh.	You cannot accomplish this task without a third-party print driver. ATPS has been tested with PostScript and QuickDraw drivers.	You cannot accomplish this task without a third-party print driver.
Use a remote print server to service a print queue.	The print queue must physically reside on the server running ATPS.	PSERVER can service queues anywhere on an IPX network.
Recognize the form to use for a print job.	The AppleTalk spooler can assign a form to a Macintosh print job, but the ATPS print server ignores it.	You can direct any job to a printer with the required form mounted.
Reprint jobs contained in a print queue.	ATPS supports this feature.	PSERVER and ATXRP do not support this feature.
Associate more than one spooler with a print queue.	ATPS supports this feature.	PSERVER does not support spoolers.
Cause serviced printers to appear as Directory Services objects.	ATPS printers do not appear as Directory Services objects.	Printers serviced by PSERVER appear as Directory Services objects.

Naming Conventions

When you configure your print services components, name each spooler, print queue, print server, and printer so that users can easily locate them. Follow these guidelines:

- ◆ Name each spooler, print queue, and printer in such a way that a user can identify the type and location of the printer and its associated print services components.

For example, if an HP LaserJet® IIISi printer resides in the company headquarters on the second floor, you might name the printer Hdqrtrs Upstairs IIISi. The print queue associated with the printer might be called Hdqrtrs_Upstairs_IIISi_Queue. Likewise, a print queue that services the Marketing group might be called Mktg_Queue.

- ◆ Remember that a Macintosh user chooses a spooler, while a non-Macintosh user chooses a print queue.

In this case, the simplest way to handle component names is to give the spooler and its print queue identical names. For example, you might call a spooler and a print queue servicing the Sales department Sales_Queue.

However, so that other administrators can more easily distinguish them, you may want to use a slightly different convention for naming the spooler and the print queue. For example, you might want to use spaces in your spooler name, and underscores in your queue name. The spooler for Sales_Queue might be called Sales Queue.

Be aware that when you view the names of your print services components using a utility in bindery-services mode, spaces appear as underscores, and lower-case letters appear as upper-case letters.

- ◆ If you configure multiple spoolers for a single print queue, make sure that the spooler name reflects the special options you set for it and the print queue with which it is associated.

For example, suppose you want to associate two spoolers with the print queue called Sales_Queue. Each spooler has a particular purpose:

- ◆ ATPS places the jobs submitted by one spooler on User Hold after they print; the hold must be removed before the jobs can print again. You might call this spooler Sales Hold Queue to indicate both its purpose and the print queue associated with it.
- ◆ To submit jobs to the print queue using the other spooler, a Macintosh user must be logged in to the server. You might call this spooler Sales Queue Must Login.

- ◆ Name each print server to reflect the NetWare server it runs on.

For example, a print server that runs on a NetWare server named Admin might be called Admin_Print_Server.

- ◆ Be aware of the differences between AppleTalk names and NetWare names.

AppleTalk names are handled by NBP, the AppleTalk Name Binding Protocol. As such, a printer's AppleTalk name appears in the Chooser or the ATCON utility, and you can change it using the Namer or the LaserWriter utility.

NetWare names are handled by Novell[®] Directory Services[™], and are visible there. You assign a printer's NetWare name in PCONSOLE.

A printer serviced by ATPS has an AppleTalk name only. A printer serviced by PSERVER has a NetWare name only. A printer serviced by PSERVER and ATXRP has both an AppleTalk name and a NetWare name. If a printer's AppleTalk name changes, you must make sure that you change the name specified in ATPSCON or PCONSOLE; otherwise, NetWare for Macintosh cannot find the printer.

Additional Considerations

No matter which print services configuration you choose, you must consider the following issues when planning your print services environment:

- ◆ Test print services in their native mode first before extending those services to other platforms.

For example, if a serial LaserWriter printer is already connected through PSERVER, make sure that your setup works for DOS clients printing to both a local printer and a NetWare queue. Then, you can extend print services to Macintosh clients by creating a spooler in ATPSCON.

- ◆ Determine whether a printer is legitimately an AppleTalk printer.

Try using the printer without NetWare for Macintosh running. If the printer appears in the Macintosh Chooser using an AppleTalk print driver, it is clearly an AppleTalk printer.

- ◆ Check the type of each printer, and make sure that you have the appropriate driver for each client that will use NetWare print services.

- ◆ Consider the workload issues associated with printer use.

Try to balance the creation of print queues and print servers in such a way as to distribute print services evenly among available printers. Careful planning and monitoring of network-use patterns can help you accomplish this task.

When possible, try to locate the printer on a high-performance segment of the network. For example, a printer on an Ethernet segment generally provides faster service than a printer on a LocalTalk[®] connection.

- ◆ Avoid attaching printers intended for network use to serial connections.

The complications involved in setting up and maintaining a serial printer, as well as the low performance of the serial interface, often outweigh the usefulness of this option.

- ◆ Configure one or more AppleTalk spoolers to maintain a font cache.

When you create this configuration, the server can send required fonts to the printer with each Macintosh print job. Otherwise, the Macintosh client must send the fonts to the server, which in turn must send them to the printer. Using a font cache reduces the network traffic that frequent font re-sending generates. For information on instructing ATPS to create a font cache, see “Manage Fonts” on page 142.

Choosing a NetWare Print Services Configuration Utility

NetWare and NetWare for Macintosh provide different types of utilities to manage and modify print services components. This section discusses how to choose the utility appropriate to your configuration.

Using ATPSCON

ATPSCON enables you to define all the components necessary for AppleTalk print services, including spoolers, print queues, print servers, and printers. While you can manage print queues using other NetWare utilities, AppleTalk spoolers and the ATPS print servers are unique to NetWare for Macintosh, and you must manage them using ATPSCON.

Use ATPSCON if either of these conditions are true:

- ◆ Your printers are connected to an AppleTalk network with which the server can communicate.
- ◆ You plan to set up Macintosh printing through NetWare print queues. If you want Macintosh clients to print to NetWare print queues, you must create a spooler using ATPSCON. For detailed instructions on how to carry out this task, see “Configuring a Spooler” on page 130.

Using PCONSOLE

PCONSOLE is one of the tools NetWare 4.11 provides for managing the components associated with print services. While other NetWare utilities provide some of the same functions, PCONSOLE provides the majority of configuration options. Using PCONSOLE, you can carry out these tasks:

- ◆ Create and delete print queues.
- ◆ Configure NetWare print servers and printers.
- ◆ Define Queue Users and Queue Operators.
- ◆ Control most print options and features.

- ◆ Configure access to printers on AppleTalk, IPX, parallel, and serial connections.
- ◆ Implement forms control.

If your services extend to non-AppleTalk printers, you will probably want to use PCONSOLE to perform the configuration for all printers. However, you can still use ATPSCON to configure AppleTalk printing.

Using Other NetWare Utilities

These NetWare 4.11 utilities also provide access to print queues, print servers, and printers:

- ◆ NetWare Administrator
- ◆ NETUSER
- ◆ PSETUP
- ◆ PSC

The NetWare 4.11 *Utilities Reference* describes the operation of these programs.

What's Next?

To complete the configuration of print services, you should carry out these tasks:



- Diagram the network print services structure that you want to implement. Consider both your hardware requirements and the needs of your users.
- Turn to the appropriate chapters in this guide for details on implementing the configuration that best suits your network.

Setting Up AppleTalk Print Services

To set up AppleTalk print services, you must configure one or more network printers and the AppleTalk Print Services module, ATPS.NLM. You configure ATPS.NLM using ATPSCON.NLM, the AppleTalk Print Services console utility.

ATPSCON enables you to carry out these tasks:

- ◆ Perform a quick configuration.
- ◆ Change the current Directory Services context.
- ◆ Configure a printer server.
- ◆ A **Print server** is an ATPS print server—a software entity that services a particular print queue and sends jobs to a single printer. By comparison, a NetWare[®] print server is a software entity that services multiple print queues and sends jobs to multiple printers.
- ◆ Configure a spooler.
- ◆ Define a printer model.
- ◆ View printer and system logs, and set the level of detail they contain.
- ◆ Specify a directory on the NetWare server for ATPS files.

ATPS, PCONSOLE, and Directory Services

When you set up print services under NetWare, certain components appear in the NetWare Directory, while others do not.

These print services components are Directory Services objects:

- ◆ A print queue that you create in ATPSCON or PCONSOLE
- ◆ A printer that you specify in PCONSOLE
- ◆ A print server that you create in PCONSOLE

These print services components are not Directory Services objects:

- ◆ A printer that you specify in ATPSCON
- ◆ A printer server that you define in ATPSCON
- ◆ A spooler that you define in ATPSCON

Configuring a Network Printer

This section provides general guidelines for configuring a network printer. For information about configuring specific printer models, see Appendix B, “Printer Configuration Notes,” on page 323.

A “print driver” on a workstation takes the application data you want to print and formats it using the **Page Description Language (PDL)** (PDL) that the printer uses. Several different PDLs are available. Two of the most popular are Adobe’s PostScript and Hewlett-Packard’s Printer Control Language (PCL). The Macintosh LaserWriter driver, for example, formats a print job into PostScript, and expects the printer to be in PostScript mode to receive it.

A print job must be formatted correctly before it enters the print queue. You can ensure that the job is properly formatted by installing the appropriate print driver at the workstation. Most applications can use a variety of print drivers; each print driver can configure a job for a different printer model.

However, a printer can support more than one PDL. For example, the HP LaserJet IIISi printer can run in PostScript mode or PCL mode. Some

printers can sense the type of print job arriving and switch modes automatically. If you have a dual-PDL printer that cannot switch modes automatically (such as the HP LaserJet IIISi), you must make sure that the printer is in the emulation mode the print driver expects. To do so, you can set up a header mode and a trailer mode for each spooler associated with the printer.

PRINTDEF header modes and trailer modes consist of command strings attached to a print job. These commands can set specific printer emulation modes and features when a print job begins, and then return the printer to its original settings when printing is complete. The header can not only switch the printer into a different PDL mode, but can also take advantage of vendor-specific features, such as dual paper trays and duplex printing.

You use PRINTDEF to import printer definition (.PDF) files into the NetWare print devices database found in the NetWare Directory. These .PDF files contain information about the modes available on each kind of printer. For information on setting header and trailer modes, see Step 15 on page 146 and Step 16 on page 147.

If you have a dual-PDL printer that cannot automatically sense the type of print job it is receiving, and you do not have a .PDF file containing the appropriate switching modes, follow these guidelines for best results with Macintosh print jobs:

- ◆ Set the printer to a default mode of PostScript.
- ◆ Specify that the printer reset to PostScript mode after every print job is completed, and before the next print job begins. On a Hewlett-Packard printer, you accomplish these tasks by using the following settings:

```
SYS=POSTSCRIPT  
AUTO CONT=ON
```

Loading the ATPS Module

When you install NetWare for Macintosh, the INSTALL module copies the AppleTalk Print Services module, ATPS.NLM, to the SYS:SYSTEM directory. When you configure and load ATPS.NLM, both Macintosh and non-Macintosh clients can send print jobs to an AppleTalk printer.

For ATPS.NLM to run, APPLETLK.NLM must be loaded. Loading ATPS.NLM automatically loads the AppleTalk module. However, you must configure APPLETLK.NLM before it is loaded.

To load ATPS.NLM, enter this command in the server's AUTOEXEC.NCF file or at the console prompt:

```
load atps
```

During installation, the INSTALL module can add this command line to the AUTOEXEC.NCF file for you. For details, see "Specify whether to load AppleTalk print services automatically when you start NetWare for Macintosh." on page 11.

Loading the ATPSCON Utility

To configure AppleTalk print services, you use the ATPSCON utility, ATPSCON.NLM. For ATPSCON.NLM to run, ATPS.NLM and APPLETLK.NLM must be loaded. Loading ATPSCON.NLM automatically loads both these modules.

To load ATPSCON.NLM, enter this command at the console prompt:

```
load atpscon <Enter>
```

A login window opens (Figure 5-1).

Figure 5-1
Directory Services
Login Window

Directory Services Login	
User Name:	.Admin.Acme
Password:	

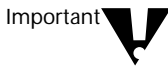
Type your full distinguished user name. Then, press <Enter>. The name now appears in the User Name field of the login dialog box.

The highlight moves to the password field. Type your password. If no password is associated with the user name, leave the Password field blank. Then, press <Enter>. Make sure you enter the password appropriate to the user name. If you enter an incorrect password, the utility gives you two more chances to enter a valid one. If you enter an invalid password three times, ATPSCON does not allow you to log in.

When you enter the correct user name and password, the system loads ATPSCON.

Note that the first time you log in to ATPSCON, the default user name is Admin at the highest container in the tree. If you enter a different user name, or the Admin user name in a different context, this user will be the default user the next time you log in to ATPSCON.

To use all of ATPSCON's functions, you must have Directory Services rights to create, delete, and modify print queues in one or more Directory Services contexts. You can set up these rights using NETADMIN or the NetWare Administrator utility. For information, see NetWare 4.11 *Supervising the Network*.

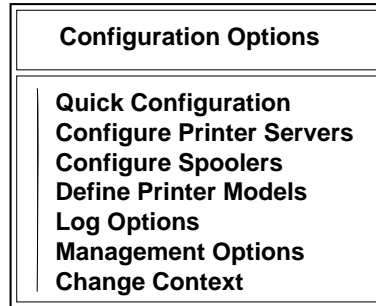


If you load ATPSCON using RCONSOLE, NetWare transmits your password across the network in an unencrypted form. Always load ATPSCON from the server console to avoid compromising the secrecy of your password. After you load ATPSCON, you can use it safely from RCONSOLE.

Using ATPSCON

When you load ATPSCON, the Configuration Options window opens (Figure 5-2).

Figure 5-2
Configuration
Options Window



The sections below briefly describe each option.

◆ *Quick Configuration*

This option enables you to quickly create a spooler, a print queue, and a printer server using default values. See “Performing a Quick Configuration for AppleTalk” on page 100 for information on using this feature.

◆ *Configure Printer Servers*

This option enables you to specify an AppleTalk printer server to service a NetWare print queue. See “Configuring a Printer Server” on page 107 for instructions on using this option.

◆ *Configure Spoolers*

This option enables you to configure Macintosh printing to NetWare print queues. Refer to “Configuring a Spooler” on page 130 for information on how to use this feature.

◆ *Define Printer Models*

This option enables you to specify any new type of printer you might have, and to provide general information about that printer type. See “Defining a Printer Model” on page 150 for details on defining printer models.

◆ *Log Options*

This option enables you to view the system and printer logs, and to specify the level of detail contained in them. See “Selecting Log Options” on page 154 for information on this option.

◆ *Management Options*

This selection enables you to carry out these ATPS management tasks:

- ◆ Specify the directory on the NetWare server in which to store ATPS internal files, such as font list files, Laser Prep files, cached PostScript fonts, and printer log files.
- ◆ View and delete fonts stored in the ATPS font cache. You can create a font cache when you configure a spooler; for details, see “Viewing and Deleting Fonts in the Font Cache” on page 161.
- ◆ Set the maximum size of the font cache.

For information on the Management Options selection, see “Using ATPSCON Management Options” on page 159.

◆ *Change Context*

This option enables you to change the current Directory Services context. Any queues you create reside in this context, unless you specify otherwise. For information on using this option, see “Selecting the Current Context” on page 105.

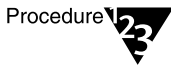
Any changes that you make and save while using ATPSCON become part of your ATPS configuration. These changes take effect as soon as you save them. You do not need to unload or reload ATPS to put the configuration settings into effect.

Performing a Quick Configuration for AppleTalk

Using the *Quick Configuration* option, you can quickly set up a spooler, a print queue, and a printer server for submitting jobs to an AppleTalk printer. This configuration allows Macintosh, DOS, OS/2, and Windows clients to print to the queue.

The *Quick Configuration* option does not let you customize the printer server or spooler. To customize a printer server, use the *Configure Printer Servers* option; for information, see “Configuring a Printer Server” on page 107. To customize a spooler, use the *Configure Spoolers* option; for information, see “Configuring a Spooler” on page 130.

To perform a quick configuration, follow these steps:



1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Quick Configuration* option.**

The Lookup Parameters window opens (Figure 5-3).

Figure 5-3
Lookup Parameters
Window

Lookup Parameters	
Printer Model:	Generic PostScript
Printer Type:	LaserWriter
Printer Zone:	Marketing
Proceed:	(Perform Lookup)

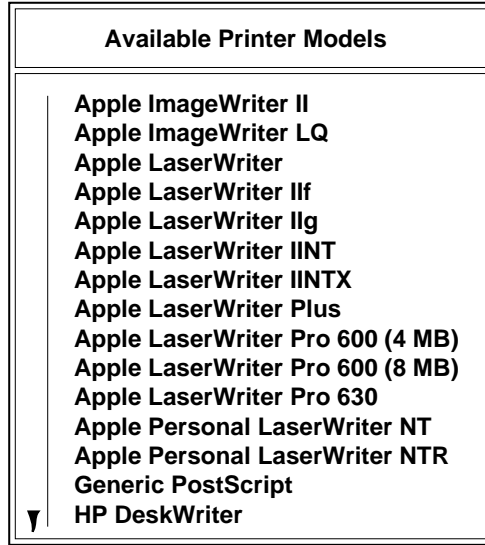
This window enables you to find the AppleTalk printer you wish to make available. When you specify the printer’s model, its AppleTalk type, and the zone in which it resides, ATPSCON uses this information to locate a list of printers meeting your criteria. You can then choose the appropriate printer from the list.

The default printer model is Generic PostScript. The default AppleTalk type is LaserWriter. The default zone is the one containing the NetWare server you are currently working at.

3. **Highlight the Printer Model field and press <Enter>.**

The Available Printer Models window opens (Figure 5-4).

Figure 5-4
Available Printer
Models Window



Highlight the model of the printer you want to make available. Accept the Generic PostScript selection if you are using a LaserWriter-compatible printer and either of these conditions is true:

- ◆ The correct model name does not appear.
- ◆ You do not know the correct model name.

Then, press <Enter>. The model you selected appears in the Printer Model field. The Printer Type field displays the appropriate AppleTalk type automatically. You cannot change the value in the Printer Type field.



If a model name does not appear in the Available Printer Models window, you can define the printer model in ATPSCON. For details, see "Defining a Printer Model" on page 150.

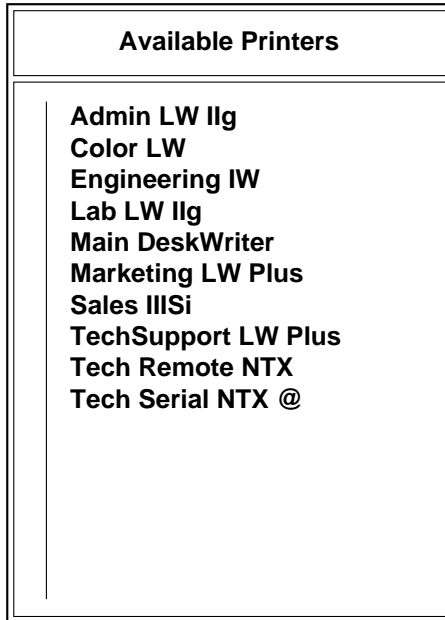
4. Highlight the Printer Zone field and press <Enter>.

The Printer Zone window opens. This window contains the name of each zone on the AppleTalk internet. Highlight the zone containing the printer; then, press <Enter>. The zone you selected appears in the Printer Zone field.

5. Highlight the Proceed field and press <Enter>.

After a few seconds, the Available Printers window opens (Figure 5-5).

**Figure 5-5
Available Printers
Window**



This window contains the name of each printer and spooler available in the selected zone.

Each "hidden" printer appears with the @ symbol appended to its name. Using ATPSCON, you can "hide" a printer so that its name does not appear in the Chooser. Macintosh users must choose the printer by its spooler name; they cannot bypass the queue by printing directly. For more information on hidden printers, see "Unloading the ATPS Module" on page 167.

6. Highlight a printer and press <Enter>.

If you highlight a spooler and press <Enter>, a warning appears, informing you that the selected entity is not a printer. When you highlight a printer and press <Enter>, the Quick Configuration Parameters window opens (Figure 5-6).

Figure 5-6
Quick Configuration
Parameters Window

Quick Configuration Parameters	
Printer's AppleTalk Name:	Admin LW IIg
Printer's AppleTalk Type:	LaserWriter
Printer's AppleTalk Zone:	Admin
Spooler's AppleTalk Name:	NW Admin LW IIg

The window contains these fields:

◆ *Printer's AppleTalk Name*

This field contains the name of the printer you selected from the Available Printers window. The name in this field becomes the name of the printer server.

◆ *Printer's AppleTalk Type*

This field contains the type of printer model you specified in the Lookup Parameters window.

◆ *Printer's AppleTalk Zone*

This field contains the zone you specified in the Lookup Parameters window.

◆ *Spooler's AppleTalk Name*

By default, this field contains the printer's AppleTalk name with the letters NW appended to the beginning.

7. Change the spooler's AppleTalk name (optional).

To change the spooler's AppleTalk name, enter a new value in the Spooler's AppleTalk Name field. The spooler name can contain up to 32 characters. You can use any characters except the following:

- ◆ Equal sign (=)
- ◆ Approximately equal sign (≈)

The spooler name you enter appears in the Chooser.

ATPSCON creates a NetWare print queue having the same name as the spooler. For example, if the spooler name is Admin LW Queue, the queue name is also Admin LW Queue. The queue resides in the current Directory Services context and physically resides on the first mounted volume returned by Directory Services. The current context is the one you set using the *Change*

Context option in the Configuration Options window; by default, the current context is the container in which the server resides.

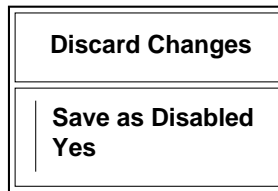
If a queue of the same name already exists and resides on the server, ATPSCON uses it. If the full distinguished name of the queue is the same as the full distinguished name of any other Directory Services object (including a queue residing on another server), ATPSCON returns an error. In this case, you must specify a different spooler name so that the default queue name will change.

8. Press <Esc>.

A prompt appears, asking whether you want to enable your changes. If you select Yes, all of your settings become effective immediately; you need not reload ATPS.

If you select No, another window opens, asking whether you want to save the configuration but disable it, or discard your changes altogether (Figure 5-7).

Figure 5-7
Discard Changes
Window



If you select Save as Disabled, ATPSCON saves the configuration and stores it as inactive. A new spooler and printer server are created on the server, and you can view and change them using ATPSCON. Select Save as Disabled if you want to modify defaults before you activate network resources; you can re-enable the configuration at any time. For information, see “Disabling and Re-enabling the Printer Server” on page 129 and “Disabling and Re-enabling the Spooler” on page 149.

If you select Yes, the configuration settings you entered are lost.

Selecting the Current Context

ATPSCON enables you to choose the default context in which to create your queues. This context is known as the “current context.” When you create a print queue using ATPSCON, you begin at the location in the Directory Services tree that matches the current context.

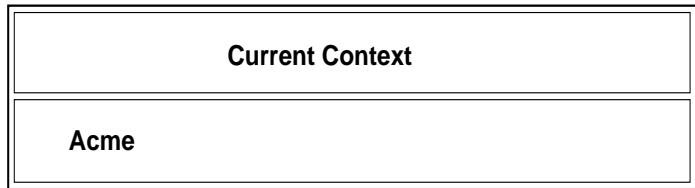
To select the current context, follow these steps:



1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Change Context* option.**

The Current Context window opens (Figure 5-8).

Figure 5-8
Current Context
Window



By default, this window contains the context in which the server resides. You can type a new context directly into the window. Or, you can press <Enter> to navigate to the context you want to set.

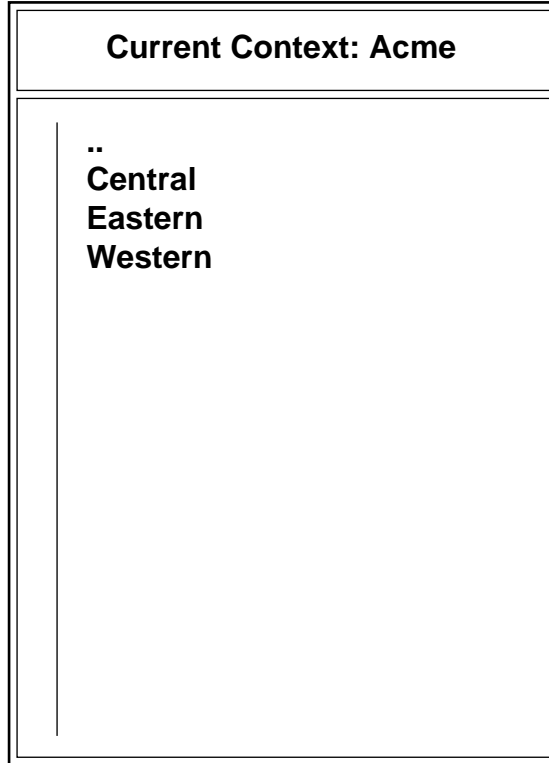
If you type in a new context directly, press <Enter> or <Esc> after you make your specification. When you press <Enter>, ATPSCON changes the context immediately. When you press <Esc>, a window opens, asking you whether you want to save your changes. To change the context, select Yes. To default to the context that appeared when you selected the *Change Context* option, select No.

If you choose to navigate to the location you want, go to the next step.

3. **To navigate the Directory Services tree, press <Enter>.**

The window in Figure 5-9 opens.

Figure 5-9
Selecting a Context



The current context appears at the top of the window. The window contains the name of each container that resides one level below the current context. To move down the Directory Services tree, highlight the appropriate container and press <Enter>. The new context appears at the top of the window. Each container one level below in the new context appears inside the window. To move up the Directory Services tree, select the double periods.

4. Locate the context you want to set.

When the context you want to select appears at the top of the window, press <F3>. ATPSCON sets the context you choose and returns you to the Configuration Options window.

Configuring a Printer Server

The *Configure Printer Servers* option enables you to create a customized printer server configuration. You can also modify the specifications of a printer server you set up using the *Quick Configuration* option.

When you configure a printer server, you carry out these tasks:

1. Specify the AppleTalk printer associated with the printer server.
2. Specify the NetWare print queue associated with the printer server.
3. Set printer server options.
4. Set log options.
5. Select a printer setup file (optional).
6. Set up accounting for the printer server (optional).
7. Enable or disable the printer server.

Bear in mind that a queue is a Directory Services object. A printer server and printer serviced by ATPS are not.

The sections that follow detail how to carry out each printer server configuration task. These sections do not include instructions on how to configure a spooler. For information, see “Configuring a Spooler” on page 130.

Specifying a Printer



To specify a printer, follow these steps:

1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Configure Printer Servers* option.**

The Configured Printer Servers window opens (Figure 5-10).

Figure 5-10
Configured Printer
Servers Window

Configured Printer Servers			
#	Printer Name	Type	Queue
1	Admin LW IIg	LaserWriter	Admin_LW_IIg_Keep_Queue
2	Engineering IW	ImageWriter	Engineering_IW_Queue
3	Lab LW IIg	LaserWriter	Lab_LW_IIg_Queue
4	Main DeskWriter	DeskWriter	Main_DeskWriter_Queue
5	Marketing LW Plus	LaserWriter	Marketing_LW_Plus_Queue
6	Sales IIISi	LaserWriter	Sales_IIISi_Queue
7	Secure LW	LaserWriter	Secure_LW_Queue
8	TechSupport LW Plus	LaserWriter	TechSupport_LW_Plus_Queue

This window contains a list of the printer servers configured on the NetWare server. Each column is described below.

- ◆ The Printer Name column contains the AppleTalk name of the printer associated with the printer server.
- ◆ The Type column contains the AppleTalk type of the printer.
- ◆ The Queue column contains the name of the queue associated with the printer server.

The information in the # column is for internal ATPSCON use; you need not concern yourself with it.

If you have disabled a printer server, the symbol (-) appears in the rightmost column. For information on how to disable or re-enable a printer server, see “Disabling and Re-enabling the Printer Server” on page 129.

3. Select a printer server to modify, or create a new one.

To select a previously configured printer server, highlight the printer server and press <Enter>. Then, go to Step 8 on page 112.

To create a new printer server, press <Ins>. The Lookup Parameters window opens (Figure 5-11).

**Figure 5-11
Lookup Parameters
Window**

Lookup Parameters	
Printer Model:	Generic PostScript
Printer Type:	LaserWriter
Printer Zone:	Marketing
Proceed:	(Perform Lookup)

This window enables you to find the AppleTalk printer you wish to associate with the printer server. When you specify the printer's model and the zone in which it resides, ATPSCON uses this information to locate a list of printers meeting your criteria. You can then choose the appropriate printer from the list.

The default printer model is Generic PostScript. The default AppleTalk type is LaserWriter. The default zone is the one containing the current NetWare server.

4. Highlight the Printer Model field and press <Enter>.

The Available Printer Models window opens (Figure 5-12).

**Figure 5-12
Available Printer
Models Window**

Available Printer Models
Apple ImageWriter II
Apple ImageWriter LQ
Apple LaserWriter
Apple LaserWriter IIc
Apple LaserWriter IIg
Apple LaserWriter IIINT
Apple LaserWriter IIINTX
Apple LaserWriter Plus
Apple LaserWriter Pro 600 (4 MB)
Apple LaserWriter Pro 600 (8 MB)
Apple LaserWriter Pro 630
Apple Personal LaserWriter NT
Apple Personal LaserWriter NTR
Generic PostScript
HP DeskWriter

Highlight the model of the printer you want to make available. Accept the Generic PostScript selection if you are using a LaserWriter-compatible printer and either of these conditions is true:

- ◆ The correct model name does not appear.
- ◆ You do not know the correct model name.

Then, press <Enter>. The model you selected appears in the Printer Model field. The Printer Type field displays the appropriate AppleTalk type automatically. You cannot change the value in the Printer Type field.



If the model name you are looking for does not appear in the Available Printer Models window, you can define the printer model in ATPSCON. For details, see "Defining a Printer Model" on page 150.

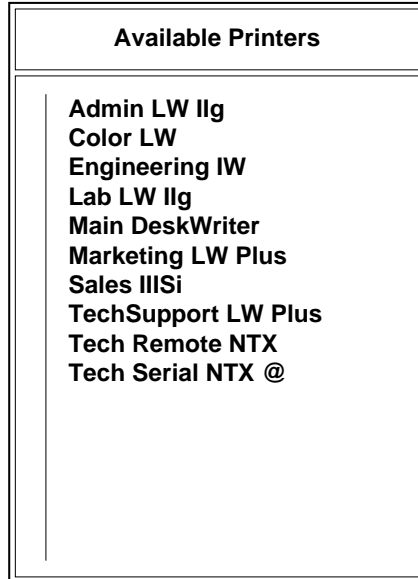
5. Highlight the Printer Zone field and press <Enter>.

The Printer Zone window opens. This window contains the name of each zone on the AppleTalk internet. Highlight the zone containing the printer; then, press <Enter>. The zone you selected appears in the Printer Zone field.

6. Highlight the Proceed field and press <Enter>.

After a few seconds, the Available Printers window opens (Figure 5-13).

Figure 5-13
Available Printers
Window



The window contains the name of each printer and spooler of the selected type available in the selected zone.

Each “hidden” printer appears with the @ symbol appended to its name. Using ATPSCON, you can “hide” a printer so that its name does not appear in the Chooser. Macintosh users must choose the printer by its spooler name; they cannot bypass the queue by printing directly. For more information, see Step 2 on page 116.

7. Select a printer.

Highlight the name of the printer you want to make available, and press <Enter>. If you select a spooler rather than a printer, a warning appears, informing you that the selected entity is not a printer. When you select a printer, the Printer Server Parameters window opens (Figure 5-14).

Figure 5-14
Printer Server
Parameters Window

Printer Server Parameters	
Printer's AppleTalk Name:	Admin LW IIg
Printer Model:	Apple LaserWriter IIg
Printer's AppleTalk Zone:	Admin
NetWare Print Queue:	<No Queue>
Keep Jobs in Queue:	
Hide Printer:	
Print Error Banners:	
Maintain Printer Log:	
Printer Log Size Control:	
Printer Log Size Limit (Kbytes):	
Printer Setup File:	
Charge Users for Jobs:	
Points Per Page:	
Points for Banner Page:	
If Insufficient User Balance:	
Print Account Summary Banner:	

8. Change the printer's name (optional).

By default, the Printer's AppleTalk Name field contains the AppleTalk name of the printer you selected in the Available Printers window. This printer name is the one that appears in the Chooser if you do not hide the printer. *You should change this name only if the NBP name of the physical printer changes.* If the name specified in the Printer's AppleTalk Name field does not match the name of the printer, ATPS cannot locate it.

To specify a different name in the Printer's AppleTalk Name field, highlight the printer name and press <Enter>; then, backspace over the existing name and type a new one. You can enter any character except @; this character is reserved for denoting a hidden printer. When you are done, press <Enter>.

The name of the printer server is the same as the name of the printer specified in the Printer's AppleTalk name field.

The Printer Model field displays the model of the printer you specified in the Lookup Parameters window. You cannot change this value.

9. Change the zone name (optional).

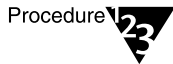
The name of the zone you selected in the Lookup Parameters window automatically appears in the Printer's AppleTalk Zone field. This zone is the one you select in the Chooser if you want to print directly to the printer (assuming the printer has not been

hidden). *Change the zone name only if the AppleTalk zone where the printer resides has changed.* If you specify the wrong zone, ATPS cannot locate the printer.

To enter a different name, highlight the zone name and press <Enter>. Then, backspace over the existing name and type a new one. When you are done, press <Enter>. Make sure that you spell the zone name correctly, and that the selected printer resides in the zone you specify. If you enter this information incorrectly, ATPS cannot locate the printer.

Specifying a Print Queue

To specify a print queue to associate with the printer server, follow these steps:

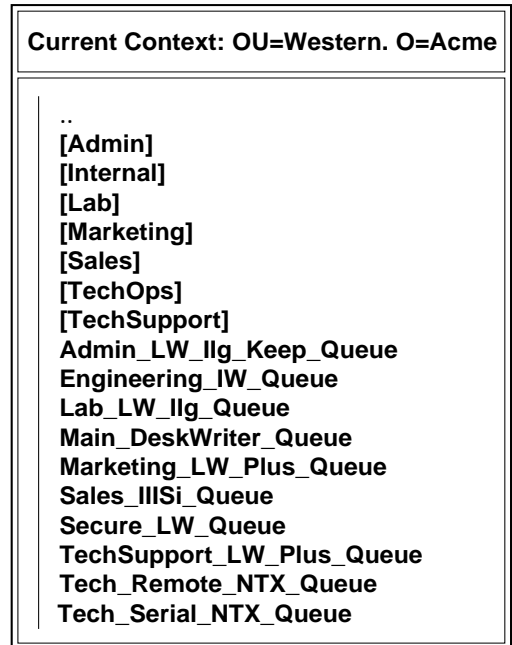


1. **In the Printer Server Parameters window, highlight the NetWare Print Queue field and press <Enter>.**

If the printer server does not yet have a queue assigned to it, the text <No Queue> appears in the NetWare Print Queue field, and the window that opens displays the queues located in the current Directory Services context. This context can be the one in which the server resides (the default) or a context you specified with the *Change Context* option of the Configuration Options window. (For information on changing the current context, see “Selecting the Current Context” on page 105.) Only queues physically residing on the server running ATPS appear.

If the NetWare Print Queue field contains the name of a print queue, the window that opens displays the queues located in the print queue’s Directory Services context. In either case, the window looks like the one in Figure 5-15.

Figure 5-15
Print Queues
Window



The window also contains the name of each container one level below the context you are viewing. The name of each container is enclosed in square brackets. To move up the Directory Services tree and view the names of queues in a container above the current one, highlight the double period and press <Enter>.

To move down the tree and view the names of queues residing in a container below the current one, highlight the name of the container and press <Enter>. The contents of the window change to reflect the queues residing in the current context.

2. **(Conditional) If you want to select an existing print queue, do the following:**
 - 2a. **Highlight the queue's name in the list.**
 - 2b. **Press <Enter>.**

The print queue name appears in the NetWare Print Queue field.

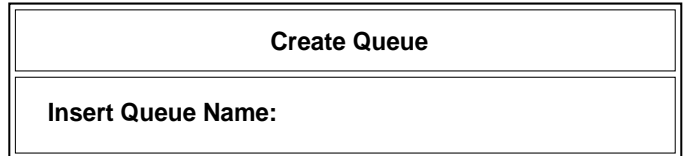
3. **(Conditional) If you want to create a new print queue, do the following:**

- 3a. **Navigate to the context in which you want it to reside.**

- 3b. **Press <Ins>.**

The Create Queue window opens (Figure 5-16).

Figure 5-16
Create Queue
Window



Create Queue
Insert Queue Name:

- 3c. **Enter the print queue's common name.**

Its full distinguished name must be unique; no two Directory Services objects can have the same distinguished name.

- 3d. **Press <Enter> and then <Esc>.**

A window opens, asking whether you want to save your changes.

- 3e. **Select Yes.**

Another window opens, asking you to specify the volume on which the queue will physically reside.

- 3f. **Select a volume from the list of mounted volumes.**

ATPSCON adds the new print queue to the list.

- 3g. **Make sure the queue name is highlighted and press <Enter> again.**

The print queue name you specified appears in the NetWare Print Queue field.

Setting Printer Server Options

To set printer server options, you specify information in several of the fields of the Printer Server Parameters window. Follow these steps:



1. Specify whether ATPS should delete jobs or keep them in the queue after printing.

The Keep Jobs in Queue field enables you to specify whether ATPS removes a job from the queue after it prints. If you choose that ATPS retain jobs in the queue, the printer server places each job on User Hold after it prints; you can reprint the job by removing the hold. You can delete a held job from the queue using any of the NetWare print queue utilities.

You might want to hold jobs in the queue for these reasons:

- ◆ A user needs to print a large document at frequent intervals, but does not want to tie up his or her workstation.

For example, several people may ask a user to print the same training manual over the course of several weeks. If you keep the job in the queue, the user need only release the User Hold to print it. His or her workstation is free for other processing.

- ◆ A user is having intermittent difficulty printing a job.

If a user has trouble printing a certain job, you can specify that the queue retain it. Then, you can attempt to print the job as many times as necessary to determine the cause of the problem. The user need not keep sending the job to the queue.

To change the current setting, highlight the Keep Jobs in Queue field and press <Enter>. A window opens, giving you two options—Yes and No. If you want ATPS to keep jobs in the print queue, highlight Yes. If you want ATPS to remove jobs from the print queue, highlight No (the default). When you press <Enter>, your selection appears in the Keep Jobs in Queue field.

2. Specify whether to hide printers.

You can hide AppleTalk printers on the network to prevent Macintosh users from submitting print jobs directly to them. If you hide a printer, the user must send a print job to the spooler; the queue receives the job from the spooler and directs it to the

printer. If you do not hide a printer, Macintosh users can bypass the spooler and send jobs directly to it.

This option is currently supported for these printers:

- ◆ All LaserWriter and LaserWriter-compatible printers
- ◆ ImageWriter II
- ◆ ImageWriter LQ
- ◆ Some non-PostScript printers that support Hewlett Packard's PCL (Printer Control Language), such as the PaintJet XL300

You should hide the printer for these reasons:

- ◆ Hiding the printer allows for a more equitable use of printer resources, because a user cannot bypass jobs in the queue and print directly to the printer.
- ◆ Hiding the printer enables you to limit which Macintosh users can access it.
- ◆ NetWare cannot track accounting charges unless jobs pass through the queue. Therefore, if you charge for print jobs, Macintosh users should not be allowed to bypass the queue. For information on charging users for jobs, see "Setting Up Accounting" on page 121.

To determine whether users can bypass the print queue, highlight the Hide Printer field and press <Enter>. The Hide Printer window opens. This window provides three options:

- ◆ *No*
This option permits users to print directly to the printer, without directing the job through the queue. Use this option to "unhide" a hidden printer.
- ◆ *Leave Unchanged*
This option does not hide the printer, unless another printer server has already hidden it.
- ◆ *Yes*
This option blocks users from bypassing the queue.

The *Leave Unchanged* option is the default.

Highlight the appropriate option and press <Enter>. Your selection appears in the Hide Printer field.



Hiding a printer is not a foolproof means of denying direct access to it. Technically sophisticated users may be able to find a way to print directly. If printer security is important to you, configure APPLETLK.NLM to limit access to the printer, or put the printer on a non-AppleTalk segment of the network.

3. Specify whether to print error banners.

The Print Error Banners field enables you to choose whether error banners print with each job. By default, PostScript errors received from the printer appear on a special banner page. This banner page enables you to troubleshoot problems when a job does not print successfully. However, for some kinds of printers (such as those that use high-resolution film), printing banner pages can be unacceptably expensive.

To change the current setting, highlight the Print Error Banners field and press <Enter>. A window opens, giving you two options—Yes and No. To print error banners, highlight Yes (the default). To prevent error banners from printing, highlight No. When you press <Enter>, your selection appears in the Print Error Banners field.

Setting Printer Log Options

ATPSCON enables you to specify whether you want to maintain a log that tracks printer activity. If you choose to maintain a printer log, you can specify its maximum size.

You set log options using the Printer Server Parameters window. Follow these steps:



1. Specify whether to maintain a printer log file.

A printer log contains records detailing all activities on the printer. It contains a history of jobs printed, including the name of the print queue that contained the jobs, the ID number, size, title, and owner of each job, and any errors that occurred. The log file also records printer actions such as printer resets, the downloading of Laser Prep files, and whether the printer was hidden. You may want to have access to this information in order to track printer utilization patterns.

To choose whether to maintain a printer log, highlight the **Maintain Printer Log** field and press <Enter>. A window opens, giving you two options—Yes and No. To maintain a printer log, highlight Yes. To specify that the server not maintain a printer log, highlight No (the default). When you press <Enter>, your selection appears in the **Maintain Printer Log** field.

By default, the printer log file resides in the SYS:\SYSTEM\ATPS directory. The filename consists of a number and a .LOG extension. If you specify a different ATPS directory using the *Select ATPS Directory* option from the Configuration Options window, the printer log file resides in the directory you choose. For details, see “Selecting the ATPS Directory” on page 160.

The Log Options selection, available from the Configuration Options window, enables you to view and clear printer logs. For more information, see “Selecting Log Options” on page 154.

2. **Specify whether ATPS should control the size of the printer log.**

While the information in the log file can help you assess printer use, the file can grow quickly and consume increasing amounts of disk space. If you choose to maintain a printer log, you can use the **Printer Log Size Control** field to control the handling of the log file.

Highlight the **Printer Log Size Control** field and press <Enter>. The Log Control Options window opens. This window provides three options:

◆ *<None>*

If you select *<None>*, the server places no limits on the size of the log file; it will grow until you manually delete it.

◆ *Delete If Over Limit*

If you select *Delete If Over Limit*, the setting in the next field, **Log Size Limit**, controls the maximum size of the log file. If the file exceeds the value set for the limit, the server automatically deletes it. The next entry logged creates a new log file.

◆ *Rename If Over Limit*

If you select the *Rename If Over Limit* option, the **Log Size Limit** still determines the maximum log file size, but the

server assigns the log file a new name when it reaches its maximum size. The renamed log file has the same name as the original log file, but ends with a .LGB extension; like the original file, it resides by default in the SYS:SYSTEM\ATPS directory. If the size of the log file reaches its limit again, the server overwrites the renamed log file when it saves new information to it.

When you choose the option to rename the log file, you should allocate twice the disk space specified in the Log Size Limit field, because the server must maintain both the current log file and the renamed log file.

<None> is the default option.

Highlight the appropriate option and press <Enter>. Your selection appears in the Printer Log Size Control field.

3. Specify the maximum size of the printer log file.

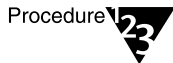
The Log Size Limit field enables you to specify the maximum size of the printer log file in kilobytes. The default is 100 kilobytes. When the log file reaches the size you specify, ATPS either deletes it or renames it. The action ATPS takes depends upon the value you specified in the Printer Log Size Control field, as explained in Step 2.

Selecting a Printer Setup File

A printer setup file contains a series of printer commands that prepare a printer for certain kinds of print jobs. A command might access a specific paper tray or change the printer's resolution. By creating a collection of printer setup files, you can take advantage of all the special features your printer offers.

The installation process copies two sample files, OVERLAY.STP and POSTTEXT.STP, to the SYS:SYSTEM\NW-MAC\SETUP directory on the server. If you are familiar with your printer's Page Description Language, you can create a printer setup file for your needs. You must manually copy any setup files you create into the SYS:SYSTEM\NW-MAC\SETUP directory for ATPSCON to find them.

To select a printer setup file to associate with the printer server, follow these steps:



1. **Highlight the Printer Setup File field in the Printer Server Parameters window; then, press <Enter>.**

The Available Files window opens. This window contains the name of each printer setup file on the server. If no setup files exist, the window contains a single option of <None>.

2. **Highlight a setup file and press <Enter>.**

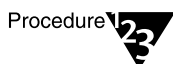
The contents of the printer setup file appear. When you finish viewing the file, press <Esc>. A window opens, asking you whether you want to select the file. Select Yes if you want the filename to appear in the Printer Setup File field. Select No to return the Printer Setup File field to its previous setting.

Setting Up Accounting

When you set up accounting, you charge each user's NetWare Account Balance for the jobs he or she prints.

Preliminary Tasks

Before you can enable user accounting in ATPS, you must carry out these tasks:



1. **Assign an initial account balance and set accounting options for each user.**

To accomplish this task, carry out these steps:

- 1a. **From a DOS workstation, log in to the NetWare Directory as Admin or another user with supervisor privileges.**
- 1b. **Run the NETADMIN utility.**
- 1c. **Select the *Manage Objects* option.**
- 1d. **Locate a user to whom you want to assign an account balance.**

You may need navigate the Directory Services tree to find this user. Highlight the user's name, and press <Enter>.

- 1e. **Select the option *View or Edit the Trustees of This Object*.**

1f. Select the *Account Restrictions* option.

1g. Select the *Account Balance* option.

The Account Balance form appears.

1h. Set the user's starting account balance.

Type a number into the Account Balance field, and press <Enter>. The next field, Allow Unlimited Credit, is highlighted.

1i. Specify whether the user should have unlimited credit.

A user with unlimited credit will never be denied printing or any other service that uses accounting, even if his or her balance becomes negative. Type Y for Yes, N for No. If you enter No, the next field, Low Balance Limit, is highlighted.

1j. Set the user's low balance limit.

The user's account balance can fall to the amount you enter before he or she is denied service. This amount can be positive or negative, but must be set equal to or lower than the user's current account balance.

1k. Press <Esc>, and save changes.

1l. Press <Esc> again until you return to the list of objects.

1m. Repeat the previous steps for each user to whom you want to assign an account balance.

1n. Exit NETADMIN.

2. Explicitly grant read and write trusteeship to the server over the accounting properties of the users you want to charge.

ATPS treats a print job owned by a user it does not have rights to charge as though the owner has an insufficient balance. You can grant appropriate rights by following these steps:

2a. From a DOS workstation, log in to the NetWare Directory as Admin or another user with supervisor privileges.

2b. Run the NETADMIN utility.

2c. Select the *Manage Objects* option.

Highlight a container that includes users to whom you want to give rights, and press <F10> to select it. You may need to navigate the Directory Services tree to find the appropriate container. The users can be located in the current container or in any containers below it.

2d. Select the option *View or Edit the Trustees of This Object*.

2e. Select the *Trustees* option.

A list of properties and their trustees appears.

2f. Press <Ins>.

A list of properties appears.

2g. Select [All Properties Rights].

A field labeled Enter Trustee Name appears. Enter the distinguished name of the NetWare Server object corresponding to the server ATPS is running on

For example, enter **CN=Acme.O=Western**. You can also press <Ins>, navigate the tree, and select the server object. When you enter or select the object's name, it appears in the list of trustees. Make sure the name is highlighted; then, press <Enter>. The list labeled Property Rights Allowed appears with Read as its only element.

2h. Press <Ins>.

The Rights Disallowed list appears. Highlight Write and press <Enter>. Then, press <Esc> and save your changes when prompted to do so.

2i. Press <Esc> until you return to the list of objects.

2j. Repeat the previous steps until all users you will charge for printing reside under a context to which ATPS has rights.

2k. Exit NETADMIN.

3. Hide printers.

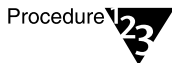
NetWare cannot track accounting charges unless jobs pass through the queue. Therefore, if you charge for print jobs, Macintosh users should not be allowed to bypass the queue. For information on hiding printers, see Step 2 on page 116.

4. Enforce queue security.

NetWare can only track accounting charges for users logged in to the server. Therefore, you must configure any AppleTalk spooler for the queue so that all users are required to log in to the server before they can print to a queue. For information on enforcing queue security, see Step 10 on page 138.

Setup Tasks

To set up ATPS accounting, you use several fields in ATPSCON's Printer Server Parameters window. Follow these steps:



1. Specify whether to use ATPS accounting.

The Charge Users for Jobs field enables you to specify whether to charge users for print jobs. Highlight the field and press <Enter>. A window opens, giving you two options—Yes and No. To set up accounting, highlight Yes. If you do not want to set up accounting, highlight No (the default). When you press <Enter>, your selection appears in the Charge Users for Jobs field.

If you select No, the next four options (Points per Page, Points for Banner Page, and so forth) are not available.

2. Specify the number of accounting points to charge per page (PostScript and non-PostScript PJJ printers only).

If you charge users to print to a PostScript printer, or to a non-PostScript printer that supports Hewlett-Packard's Print Job Language (PJJ), use the Points per Page field to specify the number of accounting points for each printed page. Highlight the field and enter the number of points. The value you enter can be any whole number from 1 to 1000. For example, if you set the field's value at 1 (the default) and the print job is 25 pages long, the user needs to spend 25 accounting points to print the job.

These events occur when a user sends a job to a PostScript or PDL printer and accounting is in effect:

- ◆ ATPS removes the job from the queue and tries to determine its page count.
- ◆ ATPS looks for the “%%Pages:” PostScript comment in the job; this comment indicates the number of pages in the printed document.
- ◆ If ATPS cannot find the “%%Pages:” comment, it uses this formula to arrive at an estimate of the document’s page count:

$$\text{pages} = \text{size (bytes)} / 10000$$

Values are rounded up to the nearest whole page.

- ◆ ATPS checks the owner’s NetWare account balance and credit limit to determine whether the account has enough points to cover the estimated cost of the entire job.
- ◆ If the account balance is insufficient, ATPS carries out the action you specify in Step 5 on page 127.
- ◆ If the user’s account balance is sufficient, ATPS queries the printer for the total number of pages it has ever printed.
- ◆ ATPS sends the job to the printer.
- ◆ ATPS queries the printer again for the total number of pages it has ever printed.
- ◆ ATPS determines the total page count for the job by subtracting the results of the two queries.
- ◆ ATPS subtracts the appropriate number of points from the user’s account balance.

In order to do accurate page-based logging and accounting, ATPS depends on the target printer to return its lifetime count of printed pages; the printer must use the PostScript “pagecount” statusdict operand. Some PostScript printers and nearly all spoolers do not support this operand. In addition, some printers may report an incorrect page count for other reasons. ATPS cannot accurately charge users for jobs if the target PostScript printer does not return the correct information.

If you require that the page count be accurate, monitor the page count after installation. If the page count is incorrect, contact your printer vendor, or consider using a different PostScript printer model.

ATPS queries printers that support Hewlett-Packard's PJI (Print Job Language) using PJI commands. Therefore, be sure that your printer supports PJI if you choose a printer model supporting PJI when you configure the printer server.

ATPS does not consider a banner page part of a job. To charge for printing a banner page, use the Points for Banner Page field, as described in Step 4.

3. Specify the number of kilobytes to charge per point (non-PostScript printers only).

If you charge users to print to a non-PostScript printer, select the Kilobytes per Point field to specify how many kilobytes equal a single accounting point. Highlight the field and enter the number of kilobytes. The value you enter can be any whole number from 1 to 1000.

For example, if you set the field's value at 10K (the default) and the print job is 25K, the user needs to spend three accounting points to print the job. For any amount greater than a whole number, ATPS always rounds up.

These events occur when a user sends a job to a non-PostScript printer and accounting is in effect:

- ◆ ATPS determines the size of the print job when it removes it from the queue.
- ◆ ATPS checks the job owner's NetWare account balance and credit limit to determine whether the account has enough points to cover the cost of the entire job.
- ◆ If the account balance is insufficient, ATPS carries out the action you specify in Step 5 on page 127.
- ◆ If the user's account balance is sufficient, ATPS sends the job to the printer.
- ◆ ATPS subtracts the appropriate number of points from the user's balance after the job prints successfully.

ATPS does not consider a banner page part of a job. To charge for printing a banner page, use the Points for Banner Page field, as described in Step 4.

4. Specify whether to charge for printing a banner page.

Depending on your print services configuration, ATPS can print an initial banner page, an error banner page, or an account summary banner page. By default, ATPS does not consider a banner page part of a job, and the server does not charge for one. However, if you charge a user for a print job, you have the option of charging to print a banner page. The charge can be any whole number from 0 to 1000 points per banner page.

To set the number of accounting points charged for each banner page, highlight the Points for Banner Page field; then, enter the number of points. If the value in the field is zero (the default), banner pages are free.

5. Specify what action to take if the user's balance is insufficient to print a job.

The If Insufficient User Balance field enables you to determine what action the server should take if the user's balance falls short of the amount needed to print a job.

Highlight the field and press <Enter>. The User Balance Options window opens. This window provides four options:

◆ *Delete Job*

This option removes the print job from the queue without printing it.

◆ *Place Job on Operator Hold*

This option puts the job on Operator Hold so that the Queue Operator can decide whether to print the job. The operator can remove the hold in PCONSOLE or in the Windows Print Queue utility. When the operator releases the hold, the print job goes to the printer, but only if the user's balance has become sufficient to print the job.

◆ *Place Job on User Hold*

This option puts the job on User Hold. The job owner can remove the User Hold to print his or her job when the user's account contains a sufficient balance.

◆ *Print Job Anyway*

This option sends the job to the printer and subtracts the points from the user's account, resulting in a negative balance.

Place Job on User Hold is the default option.

Highlight the appropriate option and press <Enter>. Your selection appears in the If Insufficient User Balance field.

6. Specify whether to print an account summary.

The Print Account Summary Banner field enables you to specify whether ATPS prints a special banner after each job. This banner shows the amount deducted for the print job and the number of accounting points remaining in the user's account.

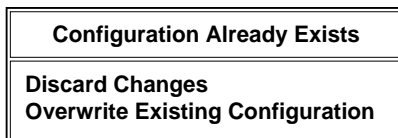
To change the current setting, highlight the Print Account Summary Banner field and press <Enter>. A window opens, giving you two options—Yes and No. If you select Yes, a special banner prints after each print job. If you select No (the default), the account summary banner does not print. When you highlight the appropriate option and press <Enter>, your selection appears in the Print Account Summary Banner field.

Saving Your Changes

When you finish setting your printer server configuration options, press <Esc>. A window opens, asking whether you want to save your specifications. To save your settings, select Yes. To discard your settings, select No.

If the print queue name, printer name, printer type, and printer zone you specified are the same as those of an existing configuration, ATPSCON informs you that the configuration already exists (Figure 5-17).

Figure 5-17
Configuration
Already Exists



To discard the new configuration and keep the older configuration intact, select **Discard Changes**. If the newer configuration has settings that you prefer over the older ones, select **Overwrite Existing Configuration**. ATPSCON replaces the older configuration with the new one.

ATPSCON returns you to the **Configured Printer Servers** window. If you saved your printer server configuration, the new entry appears in the last row of the **Configured Printer Servers** window, and the # column contains the next available number. For example, if the last row contains the number 11 before you save your configuration, the new printer server entry contains the number 12 in its # column after you save the configuration.

This situation occurs even if a gap appears in the list; that is, if the list contains entries for printer server #1 and printer server #3 but not printer server #2, ATPSCON does not put the new printer server entry in the #2 position. However, when you close the window and reopen it, ATPSCON updates all the numbers so that no gaps exist; the number associated with each printer server can change. For this reason, you should keep track of your printer servers by name—never by number. The number in the # column is for ATPSCON internal use only.

Disabling and Re-enabling the Printer Server

Each printer server is enabled when you save your settings and add the server to the **Configured Printer Servers** list. However, you may need to temporarily disable a printer server if one of these situations occurs:

- ◆ You need to troubleshoot a problem.
- ◆ You need to stop queue activity prior to powering down a printer.

ATPSCON provides a convenient means for disabling and re-enabling a printer server. Follow these steps:

1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Configure Printer Servers* option.**

The Configured Printer Servers list appears. To enable or disable a particular printer server, highlight its name and press <F3>. If you want to enable or disable several printer servers at once, highlight each server name and press <F5> each time. When the group is highlighted, press <F3>.

A window opens, asking whether you want to change the status of the printer server. To disable the print server, select Disable. The symbol (-) appears in the right column beside the server name. To re-enable a disabled printer server, select Enable.

If you disable a printer server associated with a hidden printer, that printer remains hidden on the AppleTalk network. For the printer to become visible again you must re-enable the printer server *and* select No in the Hide Printer field of the Printer Server Parameters window. For information on changing the value of the Hide Printer field, see Step 2 on page 116.

Once disabled, the printer server remains dormant after it finishes servicing the current job; it does not attempt to service its assigned print queue until you re-enable it. When you re-enable a printer server, all the values associated with the server are restored, and it begins servicing its queue.

Configuring a Spooler

The AppleTalk spooler advertises a NetWare print queue on an AppleTalk network and accepts print jobs submitted by Macintosh clients. Using a spooler, a Macintosh client can print to both AppleTalk and non-AppleTalk printers.

When you configure a spooler, you carry out these tasks:

- ◆ Specify the print queue associated with the spooler.
- ◆ Indicate the type of printer the spooler emulates.

- ◆ Specify the spooler's AppleTalk name, type, and zone.
- ◆ Set spooler options.

When you set spooler options, you specify whether ATPS should perform these tasks:

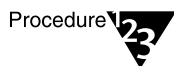
- ◆ Print a banner page with each job that the spooler receives.
- ◆ Notify the job owner when a job prints.
- ◆ Place all jobs spooled to a queue on hold.
- ◆ Enforce queue security.
- ◆ Use special PostScript options.
- ◆ Advertise a printer as a color device.
- ◆ Use a print form.
- ◆ Add PRINTDEF headers and trailers to each job.

Note that spooler options only affects jobs submitted from a Macintosh workstation to a particular spooler. Jobs sent by non-Macintosh users and jobs submitted by Macintosh users to another spooler are not affected.

You can configure a customized spooler to suit the special needs of your print users. For example, a spooler configuration can specify whether a user is notified when a job finishes printing, whether a banner page accompanies a print job, or whether a print job includes a header to activate certain printer functions. You can configure several spoolers for the same NetWare print queue, tailoring each spooler for a particular use. Each user can then choose the spooler that best suits his or her printing requirements.

Bear in mind that an AppleTalk spooler is not a Directory Services object.

To configure a spooler, follow these steps:



1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Configure Spoolers* option.**

The Configured Spoolers window opens (Figure 5-18).

Figure 5-18
Configured
Spoolers Window

Configured Spoolers		
Name	Type	Zone
Admin LW Ilg Keep Queue	LaserWriter	Admin
Engineering IW Queue	ImageWriter	Engineering
Lab LW Ilg Queue	LaserWriter	Lab
Main DeskWriter Queue	DeskWriter	Internal
Marketing LW Plus Queue	LaserWriter	Marketing
Sales IIISi Queue	LaserWriter	Sales
Secure LW Queue	LaserWriter	Internal
TechSupport LW Plus Queue	LaserWriter	TechSupport

This window contains the name of each spooler configured on the NetWare server. If no spoolers reside on the server, the list is empty.

If you have disabled a spooler, the symbol (-) appears in the right column. For information on how to disable a spooler, see “Disabling and Re-enabling the Spooler” on page 149.

To select a previously configured spooler, highlight the spooler name and press <Enter>. To create a new spooler, press <Ins>. The Spooler Parameters window opens (Figure 5-19).

Figure 5-19
Spooler Parameters Window

Spooler Parameters	
NetWare Print Queue:	<None>
Printer Model:	<None>
Spooler's AppleTalk Name:	<None>
Spooler's AppleTalk Type:	<None>
Spooler's AppleTalk Zone:	Marketing
Banner Page with Jobs:	No
Notify User on Job Completion:	Yes
Place Jobs on Hold:	No
Enforce Queue Security:	No
Advanced PostScript Options:	(See List)
Advertise Color Device:	<model default>
Spooler Form:	<None>
Spooler Device:	<None>
Spooler Header Mode:	<None>
Spooler Trailer Mode:	<None>

3. Select or create a print queue to associate with the spooler.

Highlight the NetWare Print Queue field and press <Enter>.

If the spooler is not associated with a print queue, the text <None> appears in the NetWare Print Queue field. When you press <Enter>, the window that opens displays the queues located in the current Directory Services context. This context can be the one in which the server resides (the default) or a context you specified with the *Change Context* option of the Configuration Options window. (For information on changing the current context, see "Selecting the Current Context" on page 105.) Only queues physically residing on the server running ATPS appear. The window also displays each container one level below the current context; the name of each container appears in square brackets.

If the spooler is already associated with a print queue, the NetWare Print Queue field contains the name of the queue. When you press <Enter>, the window that opens displays the queues located in the print queue's Directory Services context; the name of each container one level below that context also appears.

To move up the Directory Services tree and view the name of each queue in the container above the current one, highlight the double periods and press <Enter>. To move down the tree and view the

name of each queue residing in the container below the current one, highlight the name of the container and press <Enter>. The contents of the window change to reflect the queues residing in the current context.

To associate an existing queue with the spooler, carry out Step 3a
To create a new queue to associate with the spooler, carry out Step 3b.

3a. Select an existing print queue.

To select an existing queue, highlight the queue's name in the list and press <Enter>. The print queue name appears in the NetWare Print Queue field.

3b. Create a new print queue.

To create a new print queue, navigate to the context in which you want it to reside, and press <Ins>. The Create Queue window opens.

Enter the print queue's common name. Its name must be unique in this context; no two Directory Services objects can have the same fully distinguished name. After you enter the print queue name, press <Enter> and then <Esc>.

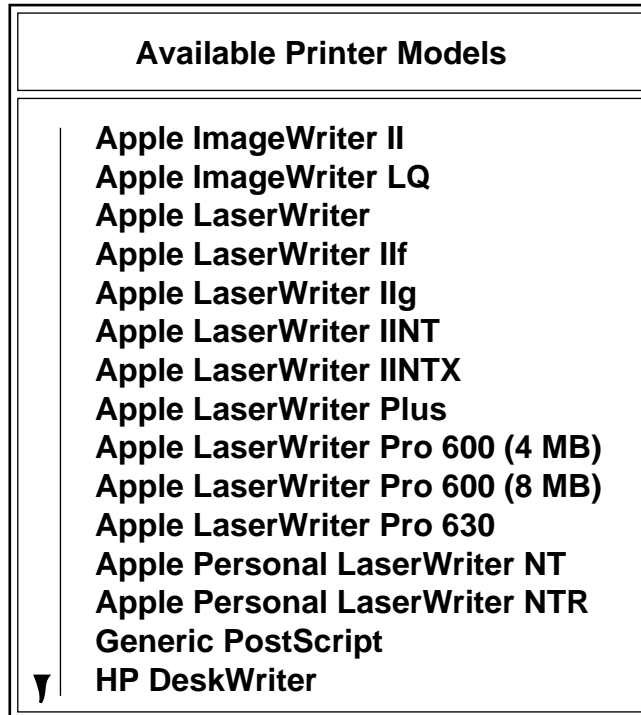
A window opens, asking whether you want to save your changes. When you select Yes, another window opens, asking you to specify the volume on which the queue will physically reside. Press <Ins> to see a list of available volumes. Select a volume from the list. ATPSCON adds the new print queue to the list.

Make sure the new queue is highlighted, and press <Enter> again. The print queue name you specified appears in the NetWare Print Queue field.

4. Select the printer model for the printer associated with the print queue.

Highlight the Printer Model field and press <Enter>. The Available Printer Models window opens (Figure 5-20).

Figure 5-20
Available Printer
Models Window



Highlight the model of the printer you want to make available. The printer model you choose determines how the spooler advertises itself on the network; the model should correspond to the printer servicing the target queue. If you change the printer model shown in this field, the spooler's AppleTalk type automatically changes as well.

Highlight the model of the printer you want to make available. The default is Generic PostScript. If the correct model name does not appear, define a new model before proceeding; for instructions, see "Defining a Printer Model" on page 150.

If you do not know the correct model name, you should ascertain it before continuing. As an alternative, you can highlight the Generic PostScript selection, but only if you are using a LaserWriter-compatible printer.

When you have highlighted the appropriate model name, press <Enter>. The model you selected appears in the Printer Model field. The Spooler's AppleTalk Type field displays the appropriate

AppleTalk type automatically. You cannot change the value in the Spooler's AppleTalk Type field.

5. Specify the spooler's AppleTalk name.

ATPS derives the default spooler name from the print queue name; both are exactly the same, except ATPS shortens the spooler name to 32 characters, if necessary.

The Spooler's AppleTalk Name field enables you to specify a different spooler name. To enter a spooler name, highlight the field and press <Enter>. In the window that appears, type the spooler name. The spooler name can contain up to 32 characters. You can use any characters except the following:

- ◆ Equal sign (=)
- ◆ Approximately equal sign (Y)

The spooler name later appears in the Macintosh Chooser and in ATCON.

6. Specify the spooler's zone.

To specify the zone in which the spooler appears, highlight the Spooler's AppleTalk Zone field and press <Enter>. The Spooler Zone window opens.

This window contains the name of each zone configured for the server's internal network or homed interface. Highlight a zone name and press <Enter>. The zone name appears in the Spooler's AppleTalk Zone field. The spooler will appear in this zone in the Chooser and in ATCON.



For the list to contain more than one zone, you must configure APPLETLK.NLM with a zone list for its internal network. If the stack is "homed" to an external interface, you do not have a choice; all spoolers appear in the stack's default zone.

7. Specify whether to print a banner page.

The Banner Page with Jobs field enables you to specify whether a banner page should print with each print job that the spooler receives. This banner page identifies the user who sent the job.

To change the current setting, highlight the field and press <Enter>. A window opens, giving you two options—Yes and No. If you want to print a banner page with each job, highlight Yes. If

you do not want to print a banner page with each job, highlight No (the default). When you press <Enter>, your selection appears in the Banner Page with Jobs field.

8. Specify whether to notify the job owner when the job has printed.

The Notify User on Job Completion field enables you to specify whether the print server should send a message to a print job owner when his or her job finishes printing. In order for the print server to notify a Macintosh user of job completion, that user must meet these criteria when he or she submits a job:

- ◆ The user must be logged in to the server, and must remain logged in to the same connection until his job is printed.
- ◆ The user must be a designated Queue User.

A Macintosh client running System 6.x must also have the Notify INIT installed.

To change the current setting, highlight the Notify User on Job Completion field and press <Enter>. A window opens, giving you two options—Yes and No. If you want the print server to notify the print job owner, highlight Yes (the default). If you do not want the print server to notify the print job owner, highlight No. When you press <Enter>, your selection appears in the Notify User on Job Completion field.

9. Specify whether to place jobs on hold.

The Place Jobs on Hold field enables you to specify whether ATPS automatically places on hold all jobs that users send to the spooler. The hold can be a User Hold, an Operator Hold, or both. Jobs placed on hold do not print until the Queue User or Queue Operator removes the appropriate hold using PCONSOLE or the Windows Print Queue utility.

You may want to place all jobs on hold for these reasons:

- ◆ Users want to change the status of jobs entering an empty queue.

For example, certain users may want to use PCONSOLE to set their jobs to print at a specified time. If a print job enters an empty queue, the print server can send the job to the printer before the user has an opportunity to change the job's

status. Putting the job on hold gives the user ample time to make his or her settings.

- ◆ You want to monitor each job that enters the queue.

If your printer uses expensive materials, you may want to control how much access each user has to the printer. In this case, you can instruct ATPS to put an Operator Hold on each job entering the queue. After examining the job, the Queue Operator can determine whether or not to release the hold.

Highlight the Place Jobs on Hold field and press <Enter>. The Place Jobs on Hold window opens. This window enables you to place jobs on Operator Hold, User and Operator Hold, User Hold, or none at all.

- ◆ When a job is on Operator Hold, only the Queue Operator can change the job status to Ready.
- ◆ When a job is on User Hold, either the owner of the job or the Queue Operator can change the job status to Ready.
- ◆ When a job is on User and Operator Hold, the Queue Operator can remove both holds, but the owner can remove only the User Hold.

The default is no hold.

Highlight the appropriate option and press <Enter>. Your selection appears in the Place Jobs on Hold field.

10. Specify whether to enforce print queue security.

The Enforce Queue Security field enables you to specify that a Macintosh user must be logged in to the server on which a print queue resides as a designated Queue User of the queue in order to print a job through it.

To change the current setting, highlight the field and press <Enter>. A window opens, giving you two options—Yes and No. If you want to ensure that only Macintosh print jobs submitted by a logged-in user can print, highlight Yes. If you want any Macintosh user to be able to print a job, highlight No (the default). When you press <Enter>, your selection appears in the Enforce Queue Security field.



In NetWare print services, a DOS user must always be a designated Queue User and must log in to a NetWare server to access its print

queues. You designate Queue Users in PCONSOLE. For more information, see the NetWare 4.11 *Print Services* manual.

11. Specify PostScript options.

To view a list of special PostScript settings, highlight the Advanced PostScript Options field and press <Enter>.

The Advanced PostScript Options window opens (Figure 5-21).

Figure 5-21
Advanced
PostScript Options
Window

Advanced PostScript Options	
Include Laser Prep in Jobs:	Yes
Query Source:	<model default>
Accept Binary Data:	No
Custom Font List:	<None>
Fast Font Response:	No
Manage Fonts:	No
Custom Printer Memory:	No
Free Printer Memory (KBytes):	No
Add Final EOF:	Yes

The sections below describe each field in this window. When you finish setting PostScript options, press <Esc> to save your settings and to return to the Spooler Parameters window.

◆ *Include Laser Prep in Jobs*

This field enables you to specify whether ATPS includes the correct version of the Macintosh Laser Prep file with each Macintosh print job.

You should include the Laser Prep file with each print job if the target printer is on a non-AppleTalk connection, or if the Macintosh clients on your network use different versions of Laser Prep. For more information on using Laser Prep files, see “Managing Laser Prep Files” on page 213.

To change the current setting, highlight the Include Laser Prep in Jobs field and press <Enter>. A window opens, giving you two options—Yes and No. If you want to include the Laser Prep file with each user’s print job, highlight Yes (the default). If you do not want to include the Laser Prep file, highlight No. When you press <Enter>, your selection appears in the Include Laser Prep in Jobs field.

◆ *Query Source*

When a Macintosh user sends a job, the PostScript driver on the Macintosh sends a PostScript query to the spooler. This query asks for the printer's list of supported fonts, the amount of memory available on the printer, the printer model, whether the printer supports color, whether the printer uses PostScript Level 1 or Level 2, whether the printer supports TrueType fonts, and other information. The Query Source field lets you to specify the source of information the spooler uses to respond to the PostScript query.

The source can be an AppleTalk printer or the PostScript Printer Definition (PPD) file for the printer model. The PPD file contains all the same information the spooler can obtain from the printer itself; however, the information may not be current. The PPD file contains information on the features installed on the printer at the factory; it does not take into account new features you may have added, such as additional fonts or memory.

Highlight the Query Source field and press <Enter>. All the printer servers configured with ATPSCON appear, along with the <model default> option. The <model default> option enables you to specify the PPD file as the query source.

Highlight the printer server associated with the printer you want to use as the query source. Ideally, the query source should be the printer servicing the queue. If the printer is not on the AppleTalk network, or if there are multiple printers servicing the queue, highlight <model default> to make the PPD file the query source.

If you created the spooler using the *Quick Configuration* option, the printer server associated with the spooler is the default selection. If you are creating the spooler using the *Configure Spoolers* option, <model default> is the default selection.

When you press <Enter>, your selection appears in the Query Source field.

If you are using PSERVER and ATXRP to service print jobs, you need to configure a printer server as a query source so that it appears in the Query Source list. For details, see "Query Source" on page 139.

- ◆ *Accept Binary Data*

The Accept Binary Data field enables you to specify whether the spooler accepts binary data.

Some Macintosh applications routinely generate binary data, such as graphic bitmaps or program code, and rely on AppleTalk to transfer this data successfully. However, most non-AppleTalk printer communications channels, such as serial and parallel channels, cannot handle binary PostScript data successfully.

Highlight the Accept Binary Data field and press <Enter>. A window opens, giving you three options—Yes, No, and Use Binary Encoding. Select Yes only if all printers servicing the spooler’s assigned queue are connected through AppleTalk or another communications channel that is binary-capable. Select No if any printer servicing the queue is connected through serial, parallel, NetWare Remote Printer, or another non-binary communications channel.

Select the *Use Binary Encoding* option to instruct the spooler to encode any binary data in a print job using the Adobe Binary Communications Protocol (BCP) or the Adobe Tagged Binary Communications Protocol (TBCP). ATPS will encode binary characters in the job using the relevant protocol; each of these protocols provides excellent results when you send PostScript data over a non-binary communications channel. If you choose the *Use Binary Encoding* option, make sure all printers servicing the queue associated with the spooler support the protocol to be used (either BCP or TBCP), and are not connected using a binary-capable communications channel, such as AppleTalk.

ATPS scans the spooler’s printer model PPD file for the ***Protocols:** keyword to determine whether the printer supports one of the protocols. If the printer model associated with the spooler supports neither BCP nor TBCP, selecting this option is the same as selecting No. If the printer model supports both protocols, ATPS uses TBCP.

The default for the Use Binary Encoding field is Yes for a spooler created using the *Quick Configuration* option, and No for a spooler created using the *Configure Spoolers* option.

- ◆ *Custom Font List*

PostScript drivers on the Macintosh query the spooler to determine which fonts are available on the target printer. The Custom Font List field enables you to choose the font list associated with the target printer or printers. You can choose a font list file provided with NetWare, or one you create yourself. For information on creating a custom font list file, see “Creating a Specialized Font List File” on page 211.

When you specify a custom font list, your selection overrides the font list obtained from the source you specified in the Query Source field.

Highlight the Custom Font List field and press <Enter>. A group of font lists appears. Highlight the appropriate font list and press <Enter>. A copy of the font list is displayed. You can examine the file to verify that it is the one you want. When you press <Esc>, the utility asks whether you want to use the file.

To use the font list file, highlight Yes. If you do not want to use the font list file, highlight No. When you press <Enter>, your selection appears in the Custom Font List field.

For guidelines on when to use a custom font list file, see “How ATPS Obtains Font Lists” on page 210.

◆ *Fast Font Response*

The *Fast Font Response* option offers faster spooling if your spooler’s query source supports a large font list; using Fast Font Response, the spooler can more quickly return its font list to Macintosh clients using versions 6.x or 7.x of the LaserWriter driver.

Do not use the *Fast Font Response* option if any client using the spooler uses a version of Aldus PageMaker for Macintosh earlier than 4.2a. In addition, using this option could cause problems for non-Macintosh AppleTalk clients.

To change the current setting, highlight the Fast Font Response field and press <Enter>. A window opens, giving you two options—Yes and No. If you want to enable fast font response, highlight Yes. If you do not want to enable fast font response, highlight No (the default). When you press <Enter>, your selection appears in the Fast Font Response field.

◆ *Manage Fonts*

The Manage Fonts field enables you to instruct ATPS to build a cache of PostScript fonts stored on the server. Macintosh jobs requiring these fonts can use them without incurring the additional network traffic that takes place when a workstation downloads fonts to the server. Better spooling performance and reduced network traffic result. In addition, storing fonts on the server rather than the printer results in increased printer memory and faster printer processing times.

Highlight the Manage Fonts field and press <Enter>. A window opens, giving you two options—Yes and No. To instruct ATPS to manage fonts, highlight Yes. If you do not want ATPS to manage fonts, highlight No (the default). When you press <Enter>, your selection appears in the Manage Fonts field.

Fonts that ATPS includes from the server for use by multiple printers may require a multi-printer license. To obtain licensing details, contact the manufacturer of the fonts that you intend to use in this manner. If your fonts are not licensed for use on all the target printers, or if you want to conserve disk space on the volume that holds the ATPS directory, select No for the Manage Fonts field.

For information on viewing and deleting the fonts in the font cache, see “Viewing and Deleting Fonts in the Font Cache” on page 161. For information on setting the maximum size of the font cache, see “Specifying the Maximum Size of the Font Cache” on page 162.



Versions of the Apple LaserWriter driver before 8.0 do not support font inclusion. The initial release (v1.0.1) of QuickDraw GX also does not support font inclusion.

◆ *Custom Printer Memory*

The Custom Printer Memory field enables you to instruct ATPS to report a different amount of printer memory than the amount specified in the printer’s PPD file.

To change the current setting, highlight the field and press <Enter>. A window opens, giving you two options—Yes and No.

When you highlight Yes, ATPSCON enables the Free Printer Memory field. In this field, you can specify the amount of available printer virtual memory for applications to use

when printing to the PostScript printer. Highlight Yes only when the Query Source field indicates the model default and your printer has a different amount of free memory than the value listed in the PPD file for the model. In addition, if the printer model was defined without reference to a PPD file, you need to supply the actual free printer memory in this field. The default is 0.

To set the amount of available memory to the value specified in the printer's PPD file, highlight No (the default).

When you press <Enter>, your selection appears in the Custom Printer Memory field.

◆ *Free Printer Memory (Bytes)*

If you selected Yes for the Custom Printer Memory field, enter a value in the Free Printer Memory field to indicate the printer memory available for applications to use. Macintosh applications such as Aldus PageMaker work best when they have an accurate assessment of the target printer's memory.

To determine the amount of free printer memory, send the PostScript utility file FREEVM.PS to the printer. For more information on this utility, see "FREEVM.PS" on page 320.

◆ *Add Final EOF*

The Add Final EOF field enables you to specify whether ATPS appends a Control-D character, indicating PostScript end of job, to each PostScript print job received by the spooler. This marker is necessary if the target printer uses a non-binary communications protocol (serial, parallel, or NetWare Remote Printer).

To change the current setting, highlight the field and press <Enter>. A window opens, giving you two options—Yes and No. If you want ATPS to append a Control-D character, highlight Yes (the default). If you want to suppress the Control-D character, highlight No. When you press <Enter>, your selection appears in the Add Final EOF field.

For AppleTalk printers, either setting works. However, if you use a spooler trailer mode for an AppleTalk printer, you may have to set Add Final EOF to No.

Press <Esc> to save your settings and to return to the Spooler Parameters window. You have now completed setting advanced PostScript options.

12. Specify whether the printer is a color device.

If you use a printer that can print either monochrome or color, such as an ImageWriter supporting a black or color ribbon, you must configure the spooler to advertise the printer as supporting the correct option. You should configure the spooler in this way for an Apple ImageWriter II, Apple ImageWriter LQ, HP DeskWriter C, HP DeskWriter 310, or HP DeskWriter 320 printer.

Highlight the Advertise Color Device field and press <Enter>. A window opens, enabling you to choose from among the options Yes, No, or <model default>.

To instruct the spooler to advertise the printer as a color device, highlight Yes. If you do not want the spooler to advertise the printer as a color device, highlight No. If you want the spooler to advertise the printer as either a color or non-color printer, depending on the features of the selected model, highlight <model default>. When you press <Enter>, your selection appears in the Advertise Color Device field.

If you choose <model default>, keep these points in mind:

- ◆ A PostScript printer is non-color, unless its PPD file specifies otherwise.
- ◆ ImageWriter and ImageWriter LQ printers are advertised as using a black ribbon.
- ◆ An HP DeskWriter C, DeskWriter 310, or DeskWriter 320 printer is advertised as having a color ink cartridge installed.

13. Choose a print form to associate with print jobs submitted to the spooler

PSERVER and other print servers use forms to ensure that jobs are printed on the appropriate physical media. The ATPS print server disregards forms.

To specify a form, highlight the Spooler Form field and press <Enter>. A window opens, containing a list of NetWare print forms defined for the selected queue's Directory Services context.

Highlight a print form and press <Enter>. Your selection appears in the Spooler Form field.

You define, delete, and modify print forms using the PRINTDEF utility. For more information on this topic, see the NetWare 4.11 *Print Services* manual.

14. Select a device for use in headers and trailers.

ATPSCON uses the value set in the Spooler Device field to determine what printer definition modes are available for a header or trailer. These commands can set specific printer modes and features when a print job begins, or return the printer to its original settings when printing is complete. The chosen device name determines the modes available for the header and trailer.

To change the current setting, highlight the Spooler Device field and press <Enter>. A window opens, containing a list of the available devices defined for the selected queue's Directory Services context. Each device is a type of printer. Highlight the kind of printer designated for spooler output, and press <Enter>. If you do not wish to add headers and trailers to your print jobs, accept the default of <None>. Your selection appears in the Spooler Device field.

In order for device names to appear, you must use the PRINTDEF utility to import printer definition (.PDF) files into the local NetWare print devices database. Each .PDF file contains the modes available for a particular type of printer. For information about carrying out this task, see "Importing Apple Printer Definitions with PRINTDEF" on page 274.

15. Choose a header mode.

A header consists of command strings attached to the beginning of a print job. The commands contained within the string set printer options and prepare the printer for the job to follow. For example, your header might instruct a dual-mode printer to enable PostScript printing.

To add a header to each print job received by the spooler, highlight the Spooler Header Mode field and press <Enter>. A list of available modes appears; these modes reside in the same context as the queue associated with the spooler. The modes that appear depend on the device selected in the Spooler Device field. For

example, if the HP LaserJet IIISi-PS printer is highlighted, the modes in Figure 5-22 appear.

Figure 5-22
Header Modes for
HP LaserJet IIISi-PS
Printer

Spooler Mode
SWITCH_TO_PS (Re-initialize)

If you change the device but not the mode, the following error message appears:

```
Invalid mode for current device
```

ATPSCON changes the selected mode to <None> if it detects an invalid mode.

Highlight a mode and press <Enter>. Your selection appears in the Spooler Header Mode field.

In order for header modes to appear, you must use the PRINTDEF utility to import printer definition (.PDF) files into the local NetWare print devices database. Each .PDF file contains the modes available for a particular type of printer. For information about carrying out this task, see “Importing Apple Printer Definitions with PRINTDEF” on page 274.

16. Choose a trailer mode.

A trailer consists of command strings attached to the end of a print job. A trailer is often used to return a printer to its original state when a print job uses a header to set a particular mode of operation. For example, if your header instructs a dual-mode printer to carry out PostScript printing, your trailer might instruct the printer to return to its original mode.

To add a trailer to each print job received by the spooler, highlight the Spooler Trailer Mode field and press <Enter>. A list of

available modes appears; these modes reside in the same context as the queue associated with the spooler. The modes that appear depend on the selected device. For example, if an HP LaserJet IIISi-PS printer is highlighted, the modes in Figure 5-23 appear.

Figure 5-23
Trailer Modes for an
HP LaserJet IIISi-PS
Printer

Spooler Mode
SWITCH_TO_PS (Re-initialize)

If you change the device but not the mode, ATPSCON changes the mode to either <Re-initialize> or <None>, depending on the valid settings for the device. The <Re-initialize> mode causes the printer to return to its default settings. <None> leaves the printer in its current state.

Highlight a mode and press <Enter>. Your selection appears in the Spooler Trailer Mode field.

In order for trailer modes to appear, you must use the PRINTDEF utility to import printer definition (.PDF) files into the local NetWare print devices database. Each .PDF file contains the modes available for a particular type of printer. For information about carrying out this task, see “Importing Apple Printer Definitions with PRINTDEF” on page 274.

Saving Your Changes

When you finish making your spooler configuration settings, press <Esc>. A window opens, asking whether you want to save changes. To save your settings, select Yes. To discard your settings, select No. When you select Yes, the Spooler Parameters window closes. The newly configured spooler appears in the Configured Spoolers list.

When you modify a currently active spooler, the changes immediately affect any new jobs submitted to the spooler. Jobs already in progress use the old parameters.

Disabling and Re-enabling the Spooler

ATPSCON automatically enables each spooler when you save your settings and adds the spooler to the Configured Spoolers list. ATPSCON provides a convenient means for disabling and re-enabling a spooler. By disabling a spooler, you hide it from Macintosh clients; the spooler name does not appear in the Chooser until you re-enable it.

To disable or re-enable a spooler, follow these steps:



1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Configure Spoolers* option.**

The Configured Spoolers list appears. To enable or disable a particular spooler, highlight its name and press <F3>. If you want to enable or disable several spoolers at once, highlight each spooler name and press <F5> each time. When the group is highlighted, press <F3>.

A window opens, asking whether you want to change the status of the spooler. To disable the spooler, select Disable. The symbol (-) appears in the right column beside the spooler name. To re-enable a disabled spooler, select Enable.

Once disabled, the spooler performs no operations and is not available to Macintosh clients for use. However, jobs currently being spooled are not interrupted. Changes take affect when you save them without interrupting or affecting jobs in progress.


Defining a Printer Model

ATPSCON enables you to view, add, or modify a printer model. You can associate a printer model with either of these print services components:

- ◆ A spooler. The spooler emulates the features and options of the printer model.
- ◆ A printer server. ATPS uses printer model information to communicate correctly with a specific printer.

When you modify a printer model, ATPS automatically updates the information used by associated spoolers and printer servers.

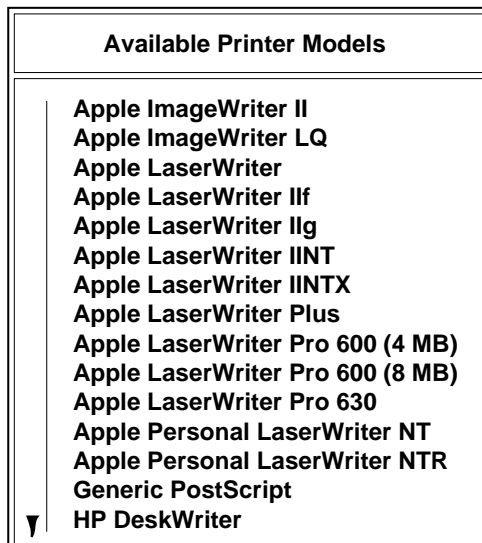
To add or modify a printer model, follow these steps:

Procedure 

1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Define Printer Models* option.**

The Available Printer Models window opens (Figure 5-23).

Figure 5-24
Available Printer
Models Window



To view or modify one of the listed models, highlight its name and press <Enter>. To define a new printer model, press <Ins>.

The Printer Model Parameters window opens (Figure 5-25).

**Figure 5-25
Printer Model
Parameters Window**

Printer Model Parameters	
Printer Model Name:	<None>
AppleTalk Type:	LaserWriter
Supports PjL:	No
PostScript Printer:	Yes
Support TrueType Fonts:	Unknown
Model PPD File	<None>

3. Specify the printer model name.

In the Printer Model Name field, specify a name for the printer model. The name can contain up to 40 characters.

The printer model name appears in two places in ATPSCON:

- ◆ When you configure a spooler using the Spooler Parameters window
- ◆ When you choose the model for a printer lookup from the Lookup Parameters window

4. Specify the printer model's AppleTalk type.

Use the AppleTalk Type field to specify the AppleTalk Name Binding Protocol (NBP) type that applies to the printer model. NetWare for Macintosh uses your entry to find printers of a specified type on the network. Spoolers representing the selected model advertise themselves as this type in the Chooser. The AppleTalk type for most PostScript printer models is LaserWriter, the default value.

The type can contain up to 32 characters and is not case sensitive. You can use any characters except the following:

- ◆ Equal sign (=)
- ◆ Approximately equal sign (≈)

Press <Enter> to confirm your entry.

5. Specify whether the printer supports PjL (Print Job Language).

If the printer supports PJI, APTS can calculate the number of pages in a print job more accurately. Recent Hewlett-Packard printers, including the LaserJet 4 series, support PJI page counting.

Highlight the Supports PJI field and press <Enter>. A window opens, giving you two options—Yes and No. If the printer supports PJI, highlight Yes. If the printer does not support PJI, highlight No. When you press <Enter>, your selection appears in the Supports PJI field.

6. Specify whether the printer's Page Description Language (PDL) is PostScript.

The PostScript Printer field defines whether the printer default Page Description Language (PDL) is PostScript.

Highlight this field and press <Enter>. A window opens, giving you two options—Yes and No. If you are defining a PostScript printer, highlight Yes. APTS enables the next two fields. If you are defining a non-PostScript printer, highlight No. When you press <Enter>, your selection appears in the PostScript Printer field.

7. Specify whether the printer model supports TrueType fonts.

If the spooler cannot determine whether a given printer supports TrueType fonts by querying the printer or by checking the printer's PPD file, it uses the information you specify in the Support TrueType Fonts field.

Highlight the Supports TrueType Fonts field and press <Enter>. The TrueType Options window opens. This window provides four options:

◆ *No*

Select this option if your printer cannot support any kind of TrueType font imaging.

◆ *Yes*

Select this option if your printer supports TrueType font imaging, but does not include a resident TrueType rasterizer.

◆ *Support Resident*

Select this option if your printer contains the TrueType font rasterizer.

◆ *Unknown*

Select this option if you are not sure what your printer supports. In this case, ATPS instructs the Macintosh to send TrueType fonts in both native TrueType (Type 42) and Type 1 formats for use on any printer.

Unknown is the default value for this field.

Highlight the appropriate option and press <Enter>. Your selection appears in the Support TrueType Fonts field.

If your printer does not support native TrueType font imaging, Macintosh users can still send jobs containing TrueType fonts to the printer. In this case, the LaserWriter driver sends the font in a Type 1 format, rather than in the standard TrueType (Type 42) format.

You can use the TRUETYPE.PS utility to determine whether or not your printer supports TrueType fonts. Refer to “TRUETYPE.PS” on page 321 for a description of how to use this utility.

8. **Select a PPD file.**

You can configure a PostScript spooler so that it searches a PPD (PostScript Printer Definition) file for information to use in response to PostScript queries. The Model PPD File field lets you specify which PPD file the spooler uses. (For information on how to configure a spooler to use a particular PPD file, see “Query Source” on page 139.)

To select a PPD file, highlight the Model PPD File field and press <Enter>. A list of PPD files appears. To examine the contents of a file, highlight the name of the file and press <Enter>.

The contents of the PPD file appear on the screen. Examine the file to ensure that the printer model and characteristics correspond to your printer. After checking the file, press <Esc> to return to the list. Highlight the name of the file you want to use, or None (the default). Then, press <Enter>. Your selection appears in the Model PPD File field.

The CD-ROM disc labeled *NetWare 4.11* contains PPD files; they reside in the MOREPPDS directory. If the file you need does not

appear in the list in ATPSCON, you can copy any file from the CD-ROM disc to the SYS:SYSTEM\NW-MAC\PPDS directory on the server.

The files provided by Novell® may become out of date at some time. Therefore, you should use the most recent PPD file provided by your printer vendor in preference to ones included on the *NetWare 4.11* CD-ROM disc. In addition, if you have a PostScript printer not covered by the PPD files on the CD-ROM disc, your printer vendor should be able to provide you with the appropriate one. The file should be in PPD format version 4.0 or higher for best results.

Selecting Log Options

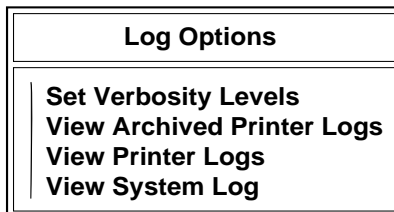
When you configure a printer server in ATPSCON, you can specify that ATPS create one or more printer logs to track print services activity. NetWare creates a system log automatically; this file contains information about NetWare server activity. Both types of log can help you monitor print services and resolve problems.

The *Log Options* selection in the Configuration Options window enables you to carry out these tasks concerning the log files:

- ◆ Set the level of information that ATPS writes to the system log, the system console, and the ATPS console screen.
- ◆ View one or more printer logs.
- ◆ View the system log.

When you select *Log Options* from the Configuration Options window, the Log Options window opens (Figure 5-26).

Figure 5-26
Log Options
Window



The sections that follow describe each of the options appearing in the window.

Setting the Level of Detail for Messages

The *Set Verbosity Levels* option enables you to set the level of detail found in log, system console, and ATPS console screen messages.

Highlight *Set Verbosity Levels* and press <Enter>. The *Set Verbosity Levels* window opens (Figure 5-27).

Figure 5-27
**Set Verbosity Levels
Window**

Set Verbosity Levels	
Current Screen Level:	Warning and above
Current System Log Level:	Critical and above
Current System Console Level:	Fatal and above

The window contains these options:

◆ *Current Screen Level*

This option enables you to set the level of detail that appears on a special ATPS console screen. You can view this screen by pressing <Ctrl>+<Esc>. In the list of current screens that appears, you then choose the ATPS console screen and press <Enter>.

◆ *Current System Log Level*

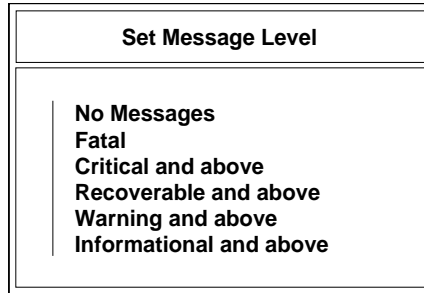
This option enables you to set the level of detail that appears in the server's system log file, SYS\$LOG.ERR. The log file resides in the SYS:SYSTEM directory.

◆ *Current System Console Level*

This option enables you to set the level of detail that appears on the system console screen.

When you select any of these options, the *Set Message Level* window opens (Figure 5-28).

Figure 5-28
Set Message Level
Window



Each option in the window provides progressively more detail.

◆ *No Messages*

Select this option if you do not want ATPS to write or display any messages to the system log or to the screen.

◆ *Fatal*

Select this option if you want ATPS to write or display messages concerning only conditions that cause one or more ATPS functions to go out of operation. Such conditions include an individual spooler or printer server failing, or ATPS unloading due to a serious problem.

◆ *Critical and above*

Select this option if you want ATPS to write or display messages concerning serious problems, such as out-of-memory conditions, in addition to messages concerning fatal errors.

◆ *Recoverable and above*

Select this option if you want ATPS to write or display messages concerning important problems you can correct, such as the printer being out of paper. ATPS will record these types of messages, along with messages concerning critical and fatal errors.

◆ *Warning and above*

Select this option if you want ATPS to write or display messages concerning less serious conditions, such as the printer being busy. ATPS will record these types of messages, along with messages concerning recoverable, critical, and fatal conditions.

◆ *Informational and above*

Select this option if you want highly detailed information from ATPS concerning all types of conditions. This level is useful for troubleshooting a problem or verifying whether a new configuration is working correctly.

If you have limited amounts of disk storage space available, or if you want to avoid directing excess data to the console screen, select one of these intermediary settings. If too many messages go to the console, the older messages scroll off the screen and are lost.

As you progressively select system log levels toward the bottom of the list of options, the SYS:SYSTEM\SYSS\$LOG.ERR file uses increasing amounts of disk space. The last option, *Informational and Above*, consumes the most disk space during logging.

Viewing the Printer Logs

ATPSCON enables you to view each printer log and its backup, if one exists. To view a current printer log, select the *View Printer Logs* option from the Log Options window; a current printer log has a .LOG extension. To view a backup log, select the *View Archived Printer Logs* option from the Log Options window; a backup log has a .LGB extension.

If there are no logs to view, a message informs you. Otherwise, ATPSCON displays a list of printer logs or backup logs, depending on the option you choose. Select the file you want to view. A window like the one in Figure 5-29 opens.

Figure 5-29
Viewing a Printer
Log

```
SYS:SYSTEMATPS\643FE.LOG

LaserWriter IIg:LaserWriter@Admin

Tue Feb 1 11:49:17 1994
Queue: ADMIN_LW_IIG_QUEUE
Job: c34001 (ADMIN.SYS:Finder)
User: SUPERVISOR (test)
Size: 60775 bytes Completion Time: 2081.6 s
Copies: 1 of 1 Banner: NO
Total Pages: 1 PostScript Errors: 0

Tue Feb 1 11:49:28 1994
printer was restarted
```

After you read the log, press <Esc> to exit. A message appears, asking whether you want to delete the log file. If you select No, ATPS continues adding information to the existing printer log file, but not to the backup log. If you select Yes, ATPS deletes the log file and starts a new file the next time it generates a printer message.

For information on directing ATPS to create a backup printer log, see “Setting Printer Log Options” on page 118.

Viewing the System Log

To view the system log, select the *View System Log* option from the Log Options window. The log for the server you are using appears (Figure 5-30).

Figure 5-30
Viewing the System
Log

```

                                SYS:SYSTEM\SYS$LOG.ERR
-----
5-1-94   5:53:00pm:           DS-4.1-26
Severity = 1   Locus = 17   Class = 19
Directory Service:  Local database is open

5-1-94   6:02:01pm:           ATPS-4.10-128
Severity = 1   Locus = 17   Class = 0
Printer <llg>:  Can't service halted queue

```

When you finish viewing the log, press <Esc>. A message appears, asking whether you want to delete the log file. If you select No, ATPS continues adding information to the existing log file. If you select Yes, ATPS deletes the log file and starts a new file when the NetWare server generates a system message.

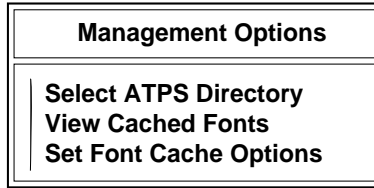
Using ATPSCON Management Options

The *Management Options* selection of the Configuration Options window enables you to carry out these ATPS managements tasks:

- ◆ Specify the directory on the NetWare server in which to store ATPS internal files, such as font list files, Laser Prep files, cached PostScript fonts, and printer log files.
- ◆ View and delete fonts stored in the ATPS font cache.
- ◆ Set the maximum size of the font cache.

When you select *Management Options* from the Configuration Options window, the Management Options window opens (Figure 5-31).

Figure 5-31
Management
Options Window



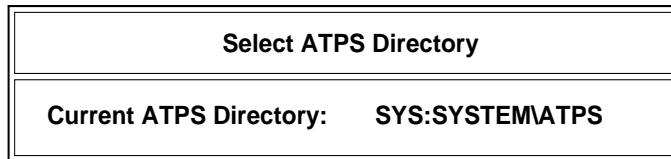
The sections that follow describe each of the options appearing in the window. For additional information on how to manage ATPS, see Chapter 7, "Managing Your Print Services Environment," on page 205.

Selecting the ATPS Directory

By default, the `SYS:SYSTEM\ATPS` directory contains files that ATPS uses internally, such as font list files, Laser Prep files, cached PostScript fonts, and printer log files. ATPSCON enables you to specify a different directory for these files.

Choose the *Select ATPS Directory* option from the Management Options window. A window opens, containing the current ATPS directory (Figure 5-32).

Figure 5-32
Select ATPS
Directory Window



To change the directory specification, press <Enter>. A second window opens. Enter the directory in the text field that appears in the window.

When making your entry, keep in mind that this option creates only the final subdirectory; it does not create the full path to that directory. The parent directories must already exist. If you change the directory path, current files remain in the old directory location. You should either manually copy these files to the new location or delete them.

To signal that your specification is complete, press <Enter> and then <Esc>. A window opens, asking whether you want to save your changes. To save your setting, select Yes. To discard your setting, select No.

For a complete list of the files written to the ATPS directory, see Table 7-2 on page 206.

Viewing and Deleting Fonts in the Font Cache

When you create a font cache in ATPSCON, Macintosh jobs requiring the PostScript fonts stored in the cache can use them without incurring the additional network traffic that takes place when a workstation downloads fonts to the server. You can create a font cache on the ATPS server by setting the Manage Fonts field to Yes in ATPSCON's Advanced PostScript Options window when configuring your spoolers; for details, see "Manage Fonts" on page 142.

To view or delete one or more fonts from the font cache, select the *View Cached Fonts* option from the Management Options window. The window in Figure 5-33 opens.

Figure 5-33
Cached Fonts
Window

Cached Fonts			
Font Name	Font Type	Size	Date
Courier	TrueTypeFont-65536-65536-1	122904	03/01/94
Helvetica	TrueTypeFont-65536-6-1	104532	03/01/94
Helvetica-Bold	TrueTypeFont-65536-65536-1	101480	03/01/94
Times-Bold	TrueTypeFont-65536-19-1	122805	03/01/94

The Cached Fonts window contains information about each PostScript font stored in the font cache. By default, each font resides in the SYS:SYSTEM\ATPS directory, and has a .PSF extension. The information in the Cached Fonts window is arranged in the following columns:

- ◆ Font Name

This column contains the name of each font.

- ◆ Font Type

This column contains the type of each font, such as TrueType or Adobe.

- ◆ Size

This column contains the size of each font file, in bytes.

- ◆ Date

This column contains the date that ATPS added each font to the font cache.

To view detailed information about a font, highlight the font name and press <Enter>. A window opens, displaying the contents of the entire .PSF file. The window title indicates the name of the file and its location. When you are done viewing the font file, press <Esc> to return to the Cached Fonts window.

To delete a font from the font cache, highlight the font in the Cached Fonts window, and press . A window opens, asking you to confirm that you want to delete the font. Select Yes to delete the font; select No to retain it in the font cache. When you select Yes, ATPSCON removes the name of the font from the Cached Fonts window.

You can also delete a font while viewing the contents of the font file. Simply press the <Esc> key and select Yes from the confirmation window that opens. ATPSCON returns you to the Cached Fonts window. The line containing the name of the font is removed.

Specifying the Maximum Size of the Font Cache

To specify the maximum size of the font cache, select *Set Font Cache Options* from the Management Options window. The window in Figure 5-34 opens.

Figure 5-34
Set Font Cache
Options Window

Set Font Cache Options	
Font Cache Size Control:	Yes
Font Cache Size Limit (KBytes):	2048

Highlight the Font Cache Size Control field and select Yes (the default). Then, highlight the Font Cache Size Limit field, and enter the cache size limit in bytes. You can enter a number between 256 and 4,194,300; the default value is 2048 kilobytes. When the font cache reaches its size

limit, ATPS deletes the least-recently used fonts first in order to reduce the amount of disk space used by the cache.

If you do not want to set a size limit for the font cache, select **No** for the **Font Cache Size Control** field. The **Font Cache Size Limit** field is disabled.

Deleting Print Services Components

Occasionally, you may find that you no longer need a particular print services component. The sections that follow explain how to delete these components:

- ◆ **Printer Server**
- ◆ **Print Queue**
- ◆ **Spooler**
- ◆ **Printer Model**

Deleting a Printer Server

When you delete a printer server, you delete a record of the printer server configuration; that is, you delete the association of printer, print queue, and options that defines the printer server. Deleting a printer server does not remove the physical printer or queue from the system; these remain available to use for a new configuration.

To delete a printer server, follow these steps:



1. **Load ATPSCON.**
2. **From the Configuration Options window, select *Configure Printer Servers*.**

The Configured Printer Servers window opens.

3. **Highlight the printer server you want to delete.**
4. **Press .**

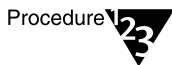
A window opens, asking you to confirm that you want to delete the printer server configuration. To delete the printer server, select Yes. To retain the printer server, select No. Any jobs currently being serviced by the printer server are completed. When you delete the printer server, it no longer appears in the Configured Printers Servers window. Any printers hidden by the printer server remain hidden after its deletion.

Deleting a Print Queue

Deleting a print queue also deletes any jobs in the queue. If you delete a print queue associated with a printer server or spooler, ATPS generates errors until you delete or disable the printer server or spooler.

You can delete a print queue using PCONSOLE, the *Configure Printer Servers* option of ATPSCON, or the *Configure Spoolers* option of ATPSCON. The sections below describe how to delete a print queue using ATPSCON. For information on using PCONSOLE, see the NetWare 4.11 *Print Services* manual.

Using the Configure Printer Servers Option



1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Configure Printer Servers* option.**

The Configured Printer Servers window opens.

3. **Highlight any printer server and press <Enter>.**

The Printer Server Parameters window opens.

4. **Highlight the NetWare Print Queue field and press <Enter>.**

A list of print queues in the current context appears.

5. **Highlight the print queue you want to delete.**

6. **Press .**

A window opens, asking you to confirm that you want to delete the print queue. To delete the print queue, select Yes. To retain the

print queue, select No. When you delete the print queue, it no longer appears in the list of print queues.

Using the Configure Spoolers Option



1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Configure Spoolers* option.**

The Configured Spoolers window opens.

3. **Highlight any spooler and press <Enter>.**

The Spooler Parameters window opens.

4. **Highlight the NetWare Print Queue field and press <Enter>.**

A list of print queues in the current context appears.

5. **Locate the print queue.**

You may need to navigate the Directory Services tree in order to find it.

6. **Highlight the print queue you want to delete, and press .**

A window opens, asking you to confirm that you want to delete the print queue. To delete the print queue, select Yes. To retain the print queue, select No. When you delete the print queue, it no longer appears in the list of print queues.

Deleting a Spooler

When you delete a spooler, you delete the entity that enables Macintosh users to print to a NetWare queue. You do not remove the queue from the system; it remains available to non-Macintosh users.

When you delete a spooler, Macintosh users cannot print to the queue associated with the spooler unless you create another spooler associated with the queue, or another such spooler exists.

To delete a spooler, follow these steps:



1. **Load ATPSCON.**

2. **From the Configuration Options window, select the *Configure Spoolers* option.**

The Configured Spoolers window opens.

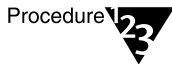
3. **Highlight the spooler you want to delete.**
4. **Press .**

A window opens, asking you to confirm that you want to delete the spooler. To delete the spooler, select Yes. To retain the spooler, select No. Any jobs currently being serviced by the spooler are completed. When you delete the spooler, it no longer appears in the Configured Spoolers window.

Deleting a Printer Model

When you delete a printer model, associated spoolers and printer servers are not affected. ATPS does not modify or delete printer model information already associated with a spooler or printer server.

To delete a printer model, follow these steps:



1. **Load ATPSCON.**
2. **From the Configuration Options window, select the *Define Printer Models* option.**

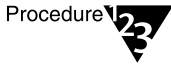
The Available Printer Models window opens.

3. **Highlight the printer model you want to delete.**
4. **Press .**

A window opens, asking you to confirm that you want to delete the printer model. To delete the printer model, select Yes. To retain the printer model, select No. When you delete the printer model, it no longer appears in the Define Printer Models window, or in the list of available printer models for a printer server or spooler.

Exiting the ATPSCON Utility

To exit from ATPSCON, follow these steps:



1. **From the Configuration Options window, press <Esc> to exit.**

A prompt appears, asking whether you want to exit.

2. **Select Yes or No.**

Select Yes to exit. If you select No, ATPSCON returns to the Configuration Options window and allows you to continue changing configuration values.

When you exit ATPSCON, ATPS remains loaded.

If you down the server or unload ATPS for any reason, you must reload ATPS to make AppleTalk print services available to clients.

Unloading the ATPS Module

Before you unload ATPS, be sure to unload ATPSCON. Then, from the server console type

```
unload atps <Enter>
```

If printing or spooling are currently in progress, a prompt appears, asking whether you want to continue unloading. If you enter Y, ATPS deletes jobs that the spooler is currently receiving, and returns jobs that are currently printing to the queue. If you enter N, the jobs continue.

As the unload operation proceeds, a prompt appears, asking whether to restore any or all currently hidden AppleTalk printers. If you choose not to restore printers, you avoid the delays that take place (up to one minute per printer) when restoring hidden printers, but these printers will not be available for direct printing from Macintosh clients while ATPS is down.

Print Services Configuration Examples

This chapter contains configuration examples to help you plan and configure print services at your site. Each example shows how to set up access to a particular type of printer or create a specialized print services environment. The configuration examples are summarized below.

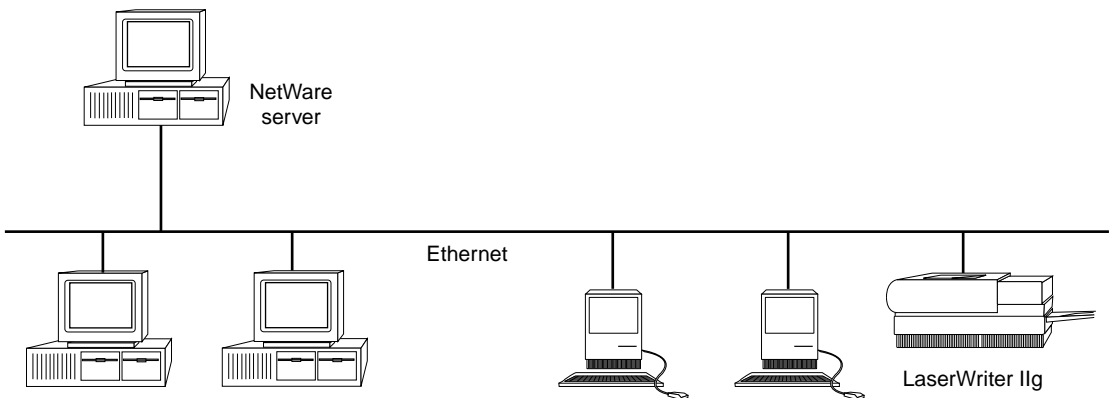
- ◆ “Using ATPS to Access a LaserWriter IIg on Ethernet” on page 170 describes how to use ATPSCON to make a LaserWriter IIg printer on Ethernet available to Macintosh and non-Macintosh clients.
- ◆ “Using ATPS and PSERVER to Access an HP LaserJet IIISi Printer” on page 177 shows you how to use both ATPSCON and PCONSOLE to make an HP LaserJet IIISi printer on Token Ring available to Macintosh and non-Macintosh clients.
- ◆ “Using PSERVER and ATXRP to Access a LaserWriter Plus Printer” on page 186 details using PCONSOLE to make a LaserWriter Plus printer on LocalTalk available to DOS clients.
- ◆ “Creating a Secure Printing Environment” on page 193 shows you how to set up print services security for Macintosh clients.
- ◆ “Setting Up ATPS Accounting” on page 197 describes how to set up ATPS accounting for both Macintosh and non-Macintosh clients.

These examples describe how to configure print services for a printer on an AppleTalk or IPX™ connection only. For examples of how to configure print services for an AppleTalk printer on a serial or a remote connection, see Chapter 8, “Configuring Serial Printer Connections,” on page 225.

Using ATPS to Access a LaserWriter IIg on Ethernet

This example involves making a LaserWriter IIg printer attached to Ethernet cabling available to Macintosh and non-Macintosh clients. Figure 6-1 shows the network segment containing the printer and its clients.

Figure 6-1
Macintosh and Non-Macintosh Clients
Printing to a LaserWriter IIg Printer



In this example, you will configure print services for the Administration department of a fictional company. You must take these conditions into account:

- ◆ The administrative assistant is responsible for putting each document into a tray marked with the appropriate user's name. Therefore, you need to specify that ATPS print a banner page with each job, identifying the job owner.
- ◆ All Macintosh clients are using version 7.x or later of the LaserWriter driver. Therefore, you need not include a Laser Prep file with each print job.
- ◆ Certain users need to print the same documents several times over an extended period. Therefore, you need to configure the printer server to keep jobs in the queue so that they are available for reprinting.

- ◆ You want to guarantee equitable user of the printer. Therefore, you must hide its name in the Chooser so that Macintosh users can only print through the queue.

Note that hiding a printer is not a foolproof means of denying direct access to it. Technically sophisticated users may be able to find a way to print directly. If printer security is important to you, configure APPLETLK.NLM to limit access to the printer, or put the printer on a non-AppleTalk segment of the network.

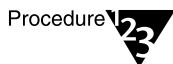
- ◆ You want to optimize printer performance. Therefore, instruct ATPS to build a font cache on the NetWare[®] server, and to use its Fast Font Response feature.

Macintosh jobs generated by the LaserWriter 8.x driver and requiring fonts stored in the font cache can use them without incurring the additional network traffic that takes place when a workstation downloads fonts to the server. In addition, storing fonts on the server rather than the printer results in increased printer memory and faster printer processing times.

For this example, you need to create and configure these print services components:

- ◆ A printer server for a LaserWriter IIg printer called Admin LW IIg
- ◆ A queue called Admin_LW_IIg_Keep_Queue in the context OU=Admin.OU=Western.O=Acme
- ◆ A spooler called Admin LW IIg Keep Queue

To make a LaserWriter IIg available to Macintosh and non-Macintosh clients using ATPS, follow the steps described below. When you set up print services at your site, substitute the appropriate information for the sample data shown in the example.



- 1. Load ATPSCON at the server.**

Enter this command at the console prompt:

```
load atpscon
```

You can also access ATPSCON from a DOS workstation running RCONSOLE. However, if you load ATPSCON using RCONSOLE, NetWare transmits your password across the network in an

unencrypted form. Always load ATPSCON from the server console to avoid compromising the secrecy of your password. After you load ATPSCON, you can use it safely from RCONSOLE.

For details on using RCONSOLE, see NetWare 4.11 *Supervising the Network*.

2. **From the Configuration Options window, select the *Change Context* option.**

A window opens, enabling you to enter the context in which the queue you create will reside. (If your current context is already set appropriately, you need not carry out this step.)

For our example, enter `OU=Admin.OU=Western.O=Acme`.

3. **From the Configuration Options window, select the *Configure Printer Servers* option.**

The Configured Printer Servers window opens. If no printer servers exist, the window is empty.

4. **To configure a new printer server, press <Ins>.**

The Lookup Parameters window opens (Figure 6-2).

Figure 6-2
Lookup Parameters
Window

Lookup Parameters	
Printer Model:	Generic PostScript
Printer Type:	LaserWriter
Printer Zone:	Admin
Proceed:	(Perform Lookup)

5. **Select a printer to associate with the printer server.**

Choose the model and zone of the printer you want to associate with the printer server. In this example, enter `Apple LaserWriter IIg` in the Printer Model field and `Admin` in the Printer Zone field. Then, select Proceed.

The Available Printers window opens. This window contains a list of the printers and spoolers configured in the selected zone. Select a printer from the list. For our example, choose `Admin LW IIg`.

The Printer Server Parameters window opens.

6. In the Printer Server Parameters window, specify the printer server configuration settings.

For our sample configuration, use the settings in Table 6-1.

**Table 6-1
Printer Server Parameters: LaserWriter IIg Settings**

Field	Setting	Explanation
Printer's AppleTalk Name	Admin LW IIg	This field contains the name of the printer you chose from the Available Printers list in Step 5. Do not change this value unless the name of the physical printer changes.
Printer Model	Apple LaserWriter IIg	This setting corresponds to the model of the printer you want to make available. You cannot change the setting in this field.
Printer's AppleTalk Zone	Admin	The printer resides in this zone. Do not change this value unless the printer moves to another zone.
NetWare Print Queue	Admin_LW_IIg_Keep_Queue	The print queue name reflects the department in which the printer is located, the printer type, and the specification that ATPS keep jobs in the queue after printing.
Keep Jobs in Queue	Yes	When you select Yes for this setting, ATPS puts the job on User Hold after it prints; the job remains in the queue, available for reprinting.
Hide Printer	Yes	When you specify Yes, Macintosh users cannot print directly to the printer. They must print to the queue instead.
Print Error Banners	Yes	This setting is the default.
Maintain Printer Log	No	This setting is the default.
Print Log Size Control	N/A	If you accept the default of No for the Maintain Printer Log field, ATPS does not enable the Print Job Size Control field.

Table 6-1 *continued*

Printer Server Parameters: LaserWriter IIg Settings

Field	Setting	Explanation
Print Log Size Limit	N/A	If you accept the default of No for the Maintain Printer Log field, ATPS does not enable the Print Log Size Limit field.
Printer Setup File	<None>	This setting is the default.
Charge Users for Jobs	No	This setting is the default.
Points Per Page	N/A	If you do not charge users for jobs, ATPS does not enable this field.
Points for Banner Page	N/A	If you do not charge users for jobs, ATPS does not enable this field.
If Insufficient User Balance	N/A	If you do not charge users for jobs, ATPS does not enable this field.
Print Account Summary Banner	N/A	If you do not charge users for jobs, ATPS does not enable this field.

For complete information on each field in the Printer Server Parameters window, see “Configuring a Printer Server” on page 107.

7. Save your settings.

Press <Esc>. A window opens, asking whether you want to save the parameters you entered.

To go back to the Printer Server Parameters window and change your settings, select No. To save your settings, select Yes. The Configured Printer Servers window now contains the new printer server.

8. Press <Esc> to return to the Configuration Options window.

9. From the Configuration Options window, select the *Configure Spoolers* option.

The Configured Spoolers window opens. If no spoolers exist, the window is empty.

10. To configure a new spooler, press <Ins>.

The Spooler Parameters window opens.

11. In the Spooler Parameters window, specify the spooler configuration settings.

For our sample configuration, enter the settings in Table 6-2.

Table 6-2
Spooler Parameters: LaserWriter IIg Settings

Field	Setting	Explanation
NetWare Print Queue	Admin_LW_IIg_Keep_Queue	The print queue name you enter here should correspond to the print queue name you specified when you configured the printer server.
Printer Model	Apple LaserWriter IIg	This setting reflects the model of the printer you are making available.
Spooler's AppleTalk Name	Admin LW IIg Keep Queue	The spooler name reflects the queue to which it will send jobs. By default, ATPSCON uses the queue name you specify.
Spooler's AppleTalk Type	LaserWriter	You cannot change this field.
Spooler's AppleTalk Zone	Admin	The spooler will advertise the queue in this zone.
Banner Page with Jobs	Yes	When you specify Yes, a banner page prints at the beginning of each Macintosh print job, identifying the job owner. To configure a DOS print job to print with a banner page, use PRINTCON. For more information, see NetWare 4.11 <i>Print Services</i> .
Notify User on Job Completion	Yes	This setting is the default.
Place Jobs on Hold	No	This setting is the default.
Enforce Queue Security	No	This setting is the default.
Advanced PostScript Options	See the list in Table 6-3.	See the list in Table 6-3.

Table 6-2 *continued*

Spooler Parameters: LaserWriter IIg Settings

Field	Setting	Explanation
Advertise Color Device	<model default>	This setting is the default.
Spooler Form	<None>	This setting is the default.
Spooler Device	<None>	This setting is the default.
Spooler Header Mode	<None>	This setting is the default.
Spooler Trailer Mode	<None>	This setting is the default.

For complete information on each field in the Spooler Parameters window, see “Configuring a Spooler” on page 130.

The settings for Advanced PostScript Options appear in Table 6-3.

Table 6-3

Advanced PostScript Options: LaserWriter IIg Settings

Field	Setting	Explanation
Include Laser Prep in Job	Yes	This setting is the default. Because each client is using version 7.x or later of the LaserWriter driver, Laser Prep information is automatically included with each print job. Therefore, the setting for this field has no effect.
Query Source	Admin LW IIg:LaserWriter@	This setting reflects the name of the target printer.
Accept Binary Data	Yes	The printer is connected to an AppleTalk network.
Custom Font List	<None>	This setting is the default.
Fast Font Response	Yes	This setting results in faster spooling for all clients using version 7.x of the LaserWriter driver.
Manage Fonts	Yes	When you select Yes, ATPS builds a library of PostScript fonts stored in a font cache on the server.

Table 6-3 *continued*

Advanced PostScript Options: LaserWriter IIg Settings

Field	Setting	Explanation
Custom Printer Memory	No	This setting is the default.
Free Printer Memory	N/A	If you accept the default of No for the Custom Printer Memory field, ATPSCON does not enable the Free Printer Memory field.
Add Final EOF	Yes	This setting is the default.

For complete information on each field in the Advanced PostScript Options window, see Step 11 on page 139.

12. Exit ATPSCON, saving your changes.

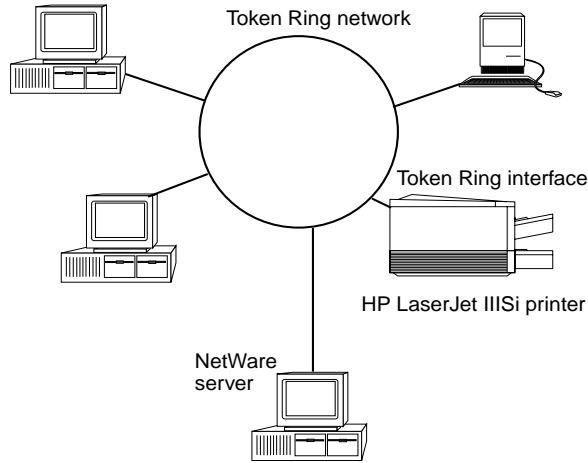
Your configuration settings are now in effect. ATPS remains loaded. Both Macintosh and non-Macintosh clients can now access the LaserWriter printer using ATPS.

Using ATPS and PSERVER to Access an HP LaserJet IIISi Printer

This example discusses how to make an HP LaserJet IIISi printer available to Macintosh and non-Macintosh clients on a Token-Ring segment. The printer contains a Token-Ring interface card for IPX communication. (The procedure is the same for an IPX printer on Ethernet.)

Table 6-3 shows the network segment to configure.

Figure 6-3
Macintosh to Token-Ring Printer



In this example, you use PCONSOLE to configure the back end and ATPSCON to configure the front end.

Using PCONSOLE, you will create and configure these print services objects:

- ◆ A queue called Sales_IIISi_Queue
- ◆ A printer object called Sales III Si representing the HP LaserJet III Si printer
- ◆ A print server called Sales_Print_Server that services Sales_IIISi_Queue

All objects will reside in the context OU=Sales.OU=Western. O=Acme.

Using ATPSCON, you will create and configure this print services component: A spooler called Sales III Si Queue.

The steps that follow describe how to set up the back end and the front end of the configuration. When you set up print services at your site, substitute the appropriate information for the sample data shown in the example.

Configuring the Back End

Follow these steps to create and configure a print queue, printer, and print server:



1. **Log in from a DOS workstation in Directory Services mode as Admin or another user with supervisor privileges.**
2. **Run PCONSOLE.**
3. **From the Available Options window, select the *Change Context* option.**

A window opens, enabling you to enter the context in which your queue services objects will reside. This context becomes the current context. (If your current context is already set appropriately, you need not carry out this step.)

For our example, enter `OU=Sales.OU=Western.O=Acme`.

4. **From the Available Options window, choose the *Print Queues* option.**

The Print Queues window opens. This window contains a list of all the print queues in the current context.

5. **To create a print queue, press <Ins>.**

In the window that opens, type the new queue name. For our example, type `Sales_IIISI_Queue`. Then, press <Enter>.

Another window opens, prompting you for the volume on which the print queue will physically reside. Press <Ins> to see a list of available volumes. To ensure Macintosh client access to the printer, you must make sure that the volume you choose physically resides on a server that runs ATPS.

Highlight the appropriate volume and press <Enter>. The volume name appears in the window. Press <Enter> again. The print queue name appears highlighted in the Print Queues list.

6. **Press <Esc> to return to the Available Options window.**
7. **From the Available Options window, select the *Printers* option.**

The Printers window opens. This window contains a list of all the printers defined in the current context.

8. To create a printer object, press <Ins>.

In the window that opens, type the new printer name. For our example, type `sales IIIsi`. Then, press <Enter>. The printer name appears highlighted in the Printers list.

9. Configure the printer.

Make sure the new printer is highlighted. Then, press <Enter>. The Printer Configuration window opens (Figure 6-4).

**Figure 6-4
Printer
Configuration
Window**

Printer Sales IIIsi Configuration	
Printer number:	0
Printer status:	(Unavailable)
Printer type:	Parallel
Configuration:	(See form)
Starting form:	0
Buffer size in KB:	3
Banner type:	Text
Service mode for forms:	Minimize form changes within print queues
Sampling frequency:	15
Print queues assigned:	(See list)
Notification:	(See list)

This window enables you to specify a number of printing options. For simplicity's sake, we will accept the default values in most of the fields. For our purposes, only these fields require explicit settings:

- ◆ Printer Type
- ◆ Print Queues Assigned

Follow the steps below to set the appropriate values for each of the fields.

9a. Highlight the Printer Type field and press <Enter>.

A list of printer types appears. In this window, the printer type refers to the type of connection, such as serial, parallel, or AppleTalk. It does not refer to the AppleTalk type as shown in ATCON.

Highlight Other/Unknown. Then, press <Enter> to return to the Printer Configuration window.

- 9b. Highlight the Print Queues Assigned field and press <Enter>.**

A list of queues assigned to the printer appears. If no queues are assigned, the list is blank.

Press <Ins>. A list of queues residing in the current context appears, along with the containers below the current context. Choose a queue to associate with the printer; the print server will take jobs from this queue and send them to the printer. For our example, choose `Sales_IIISI_Queue`. Then, press <Enter>.

A Priority window opens. If you associate more than one queue with a printer, the priority number determines which queue the print server takes jobs from first. Because our example uses only one queue per printer, accept the default of 1 by pressing <Enter>.

The queue now appears in the list of queues assigned to the printer. Press <Esc> to return to the Printer Configuration window.

- 10. Press <F10> to save your changes.**

The Printer Configuration window closes.

- 11. Press <Esc> to return to the Available Options window.**

- 12. From the Available Options window, select the *Print Servers* option.**

The Print Servers list appears. This list contains all the print servers configured in the current context.

- 13. To create a print server, press <Ins>.**

In the window that appears, type the new server name. For our example, type `Sales_Print_Server`. Then, press <Enter>. The print server name appears highlighted in the Print Servers list.

- 14. Make sure the new print server is still highlighted in the Print Servers list. Then, press <Enter>.**

The Print Server Information window opens.

- 15. From the Print Server Information window, select the *Printers* option.**

An empty list appears. This window will contain the printer you associate with the print server.

- 16. To specify a printer, press <Ins>.**

A list of printers residing in the current context appears, along with the containers below the current context.

Highlight the name of the printer you want to associate with the print server. For our example, highlight **sales IIISi**. Then, press <Enter>. The printer name appears highlighted in the list of serviced printers.

- 17. Exit PCONSOLE.**

- 18. Load PSERVER at the server, specifying the name of the print server you created.**

- 19. Run the HP PCONFIG or JETADMIN utility from a DOS workstation.**

- 20. Select the printer interface of the HP LaserJet IIISi, and link the Token Ring card to the printer.**

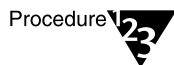
Make sure that the printer number you choose matches the printer number as it appears in PCONSOLE.

- 21. Test the configuration to be sure that it works for DOS clients.**

Send one or more print jobs from a DOS client to the HP LaserJet IIISi printer, and monitor the output.

Configuring the Front End

Follow these steps when creating and configuring a spooler for print jobs directed to an HP LaserJet IIISi printer:



- 1. Log in to the NetWare Directory as Admin or another user with supervisor privileges.**

2. Run PRINTDEF.

From the DOS prompt, enter this command line:

```
printdef <Enter>
```

In PRINTDEF, you will import the file HP3SIPCL.PDF. This file enables you to switch the HP LaserJet IIISi printer to PostScript mode and then back to its default.

3. From the Available Options window, select the *Change Current Context* option.

In the window that opens, enter the context containing the queue you created in PCONSOLE. This context becomes the current context. (If your current context is already set appropriately, you need not carry out this step.)

When you complete entering a new context, press <Enter> to close the window.

4. From the Available Options window, select the *Print Devices* option.

The Print Device Options window opens.

5. Select the *Import Print Device* option.

PRINTDEF opens a window and prompts you for the source directory containing the printer definition (.PDF) files. These files contain the modes available for different kinds of printers. Type SYS:PUBLIC at the prompt and press <Enter>. A list of .PDF files appears.

6. Highlight the file HP3SIPCL.PDF and press <Enter>.

PRINTDEF imports the file to the NetWare print services database.

7. Exit PRINTDEF, saving your changes.

8. Load ATPSCON at the server.

Enter this command at the console prompt:

```
load atpscon
```

You can also access ATPSCON from a DOS workstation running RCONSOLE. However, if you load ATPSCON using RCONSOLE, NetWare transmits your password across the network in an unencrypted form. Always load ATPSCON from the server console to avoid compromising the secrecy of your password. After you load ATPSCON, you can use it safely from RCONSOLE.

For details on using RCONSOLE, see NetWare 4.11 *Supervising the Network*.

9. From the Configuration Options window, select the *Change Context* option.

A window opens, enabling you to enter the context containing the queue you will associate with the spooler. This context becomes the current context. (If your current context is already set appropriately, you need not carry out this step.)

For our example, enter `OU=Sales.OU=Western.O=Acme`.

10. From the Configuration Options window, select the *Configure Spoolers* option.

The Configured Spoolers window opens. If no spoolers exist, the window is empty.

11. To configure a new spooler, press <Ins>.

The Spooler Parameters window opens.

12. In the Spooler Parameters window, specify the spooler configuration settings.

For our sample configuration, enter the settings in Table 6-4.

Table 6-4

Spooler Parameters: HP Laser III Si Settings

Field	Setting	Explanation
NetWare Print Queue	Sales_III Si_Queue	The print queue name matches the one you associated with the printer in PCONSOLE.
Printer Model	HP LaserJet III Si	This setting reflects the model of the printer you are making available.

Table 6-4 *continued*

Spooler Parameters: HP Laser III Si Settings

Field	Setting	Explanation
Spooler's AppleTalk Name	Sales III Si Queue	The spooler name reflects the queue to which it will send jobs. By default, ATPSCON uses the queue name you specify. Macintosh clients will see this name in the Chooser.
Spooler's AppleTalk Type	LaserWriter	You cannot change this field.
Spooler's AppleTalk Zone	Sales	The spooler will advertise the queue in this zone
Banner Page with Jobs	Yes	This setting is the default.
Notify User on Job Completion	Yes	This setting is the default.
Place Jobs on Hold	No	This setting is the default.
Enforce Queue Security	No	This setting is the default.
Advanced PostScript Options	Accept all defaults	
Advertise Color Device	<model default>	This setting is the default.
Spooler Form	<None>	This setting is the default.
Spooler Device	HP LaserJet III Si (PCL)	This setting makes modes available.
Spooler Header Mode	Switch_to_PostScript	This setting switches the printer to PostScript mode.
Spooler Trailer Mode	(Re-initialize)	This setting returns the printer to its default mode.

For complete information on each field in the Spooler Parameters window, see "Configuring a Spooler" on page 130.

13. Save your settings.

Press <Esc>. A window opens, asking whether you want to save the parameters you entered.

To go back to the Spooler Parameters window and change your settings, highlight No and press <Enter>. To save your settings, highlight Yes and press <Enter>. The Configured Spoolers window now contains the name, type, and zone of the new spooler. Press <Esc> to return to the Configuration Options window.

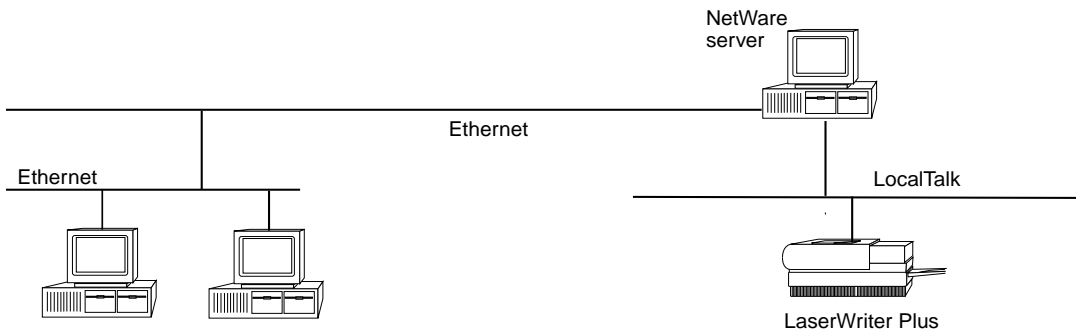
14. Exit ATPSCON.

ATPS is still loaded. With PSERVER and ATPS loaded, both Macintosh and non-Macintosh clients now have access to the HP LaserJet IIISi.

Using PSERVER and ATXRP to Access a LaserWriter Plus Printer

This example shows you how to configure printing from a DOS client to a LaserWriter Plus printer residing on an AppleTalk segment of the network. Table 6-5 shows the network segment containing the DOS clients and the LaserWriter.

Figure 6-5
DOS Clients to LocalTalk LaserWriter



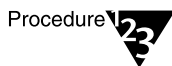
In this example, you will create and configure these print services objects:

- ◆ A queue called Marketing_LW_Plus_Queue
- ◆ A printer object called Marketing LW Plus that represents the LaserWriter Plus printer
- ◆ A print server called Marketing_Print_Server that services Marketing_LW_Plus_Queue

All objects will reside in the context OU=Marketing.OU=Western.O=Acme.

This example focuses on configuration from a DOS perspective, using PCONSOLE. The queue will be serviced by PSERVER and ATXRP, rather than ATPS. If you later want to give Macintosh clients access to the queue, print server, and printer you created in PCONSOLE, simply create a spooler in ATPSCON. Using a spooler, Macintosh clients can print to the queue you create.

To implement a configuration enabling non-Macintosh clients to access a LaserWriter Plus printer using ATXRP and PSERVER, follow the steps described below. When you set up print services at your site, substitute the appropriate information for the sample data shown in the example.



1. Load ATCON at the server.

Use ATCON to determine the name and zone of the LaserWriter that you want to make available to DOS clients. You will need this information when running PCONSOLE.

2. Log in from a DOS workstation in Directory Services mode as Admin or another user with supervisor privileges.

3. Run PCONSOLE.

4. From the Available Options window, select the *Change Context* option.

A window opens, enabling you to enter the context in which your print services objects will reside. This context becomes the current context. (If your current context is already set appropriately, you need not carry out this step.)

For our example, enter `OU=Marketing.OU=Western.O=Acme`.

5. **From the Available Options window, choose the *Print Queues* option.**

The Print Queues list appears. This list contains all the print queues in the current context.

6. **To create a print queue, press <Ins>.**

In the window that opens, type the new queue name. For our example, type **Marketing_LW_Plus_Queue**. Then, press <Enter>.

Another window opens, prompting you for the volume on which the print queue will physically reside. Press <Ins> to see a list of available volumes. Highlight the appropriate volume and press <Enter>. The volume name appears in the window. Press <Enter> again. The print queue name appears highlighted in the Print Queues list.

7. **Press <Esc> to return to the Available Options window.**

8. **From the Available Options window, select the *Printers* option.**

The Printers window opens. This window contains a list of all the printers defined in the current context.

9. **To create a printer object, press <Ins>.**

In the window that opens, type the new printer name. For our example, type **Marketing LW Plus**. Then, press <Enter>. The printer name appears highlighted in the Printers list.

10. **Configure the printer.**

Make sure the new printer is highlighted. Then, press <Enter>. The Printer Configuration window opens (Figure 6-6).

**Figure 6-6
Printer
Configuration
Window**

Edit Print Job Configuration "Image"			
Number of copies:	1	Form name:	Normal
File contents:	Text	Print banner:	Yes
Tab size:	8	Name:	Admin
Form feed:	Yes	Banner name:	
Notify when done:	Yes		
Local printer:	1	Enable timeout:	No
Auto endcap:	No	Timeout count:	
Printer/Queue: (Printer)	CN=NW Admin NT.O=Acme		
Device:	Apple ImageWriter		
Mode:	12 CPI		

This window enables you to specify a number of printing options. For simplicity's sake, accept the default values in most of the fields. For our purposes, only these fields require explicit settings:

- ◆ Printer Type
- ◆ Configuration
- ◆ Banner Type
- ◆ Print Queues Assigned

10a. Highlight the Printer Type field and press <Enter>.

A list of printer types appears. In this window, the printer type refers to the type of connection, such as serial, parallel, or AppleTalk. It does not refer to the AppleTalk type as shown in ATCON.

Highlight AppleTalk Printer. Then, press <Enter> to return to the Printer Configuration window.

10b. Highlight the Configuration field and press <Enter>.

The AppleTalk Printer Configuration window opens (Figure 6-7).

Figure 6-7
AppleTalk Printer
Configuration
Window

AppleTalk Printer Configuration	
AppleTalk name:	Marketing LW Plus
AppleTalk type:	LaserWriter
AppleTalk zone:	*
Hide AppleTalk printer:	No
Print error banners:	Yes

Table 6-5 explains each field in the AppleTalk Printer Configuration window.

Table 6-5
AppleTalk Printer Configuration Fields

Field	Explanation
AppleTalk Name	This field defaults to the printer name you selected in Step 10. If necessary, modify it to reflect the exact AppleTalk name you found in ATCON. Often, AppleTalk printer names contain a trailing space. Be sure to enter any trailing spaces in the name.
AppleTalk Type	<p>This field contains the NBP type of the printer. To select a printer type, highlight the field and press <Enter>. A window opens, displaying these printer types:</p> <ul style="list-style-type: none"> ◆ <i>LaserWriter</i> – The Apple LaserWriter family and its compatibles. This type is the default. ◆ <i>ImageWriter</i> – The Apple ImageWriter II ◆ <i>LQ</i> – The Apple ImageWriter LQ ◆ <i>DeskWriter</i> – The HP DeskWriter, DeskWriter 510, and DeskWriter C ◆ <i>DeskWriter 550C</i> – The HP DeskWriter 550C ◆ <i>PaintWriter XL</i> – The HP PaintWriter XL ◆ <i>PaintJet XL300</i> – The HP PaintJet XL300 ◆ <i>Other</i> – Enables you to enter your own type. To select a printer type that is not listed, select Other and enter the printer's type. Enter the type exactly as it appears in ATCON. Type names are not case-sensitive. <p>For our example, accept the default of LaserWriter.</p>

Table 6-5 *continued*

AppleTalk Printer Configuration Fields

Field	Explanation
AppleTalk Zone	<p>Enter the name of the AppleTalk zone in which the AppleTalk printer resides. For our example, enter Marketing. If you do not specify a zone name, ATXRP assumes the default zone. The default zone, represented by an asterisk (*), depends on the configuration of the AppleTalk module.</p> <p>We recommend that you enter the printer's actual zone name, instead of relying on the default zone name, because the default zone can change. The zone name you enter can contain up to 32 characters and is not case-sensitive.</p>
Hide AppleTalk Printer	<p>If you hide the printer, the Macintosh user must send the print job to a spooler. Hiding the printer allows for a more equitable use of printer resources, because a user cannot bypass jobs in the queue and print directly to the printer. (This feature is currently supported for use with Apple LaserWriters, LaserWriter-compatibles, ImageWriter II, and Image Writer LQ printers only.)</p> <p>For our example, select Yes.</p> <p>Note that hiding a printer is not a foolproof means of denying direct access to it. Technically sophisticated users may be able to find a way to print directly. If printer security is important to you, configure APPLETLK.NLM to limit access to the printer, or put the printer on a non-AppleTalk segment of the network.</p>
Print Error Banners	<p>This option enables you to specify whether ATXRP prints error banners. By default, job errors that a printer returns to ATXRP print on a special banner page. For printers that use high-resolution film, printing extra banner pages can cause unacceptable waste.</p> <p>For our example, select No.</p>

Press <Esc> to return to the Printer Configuration window.

10c. Highlight the Banner Type field and press <Enter>.

A list of banner types appears. Highlight the *PostScript* option and press <Enter>. The value you specified appears in the field.

10d. Highlight the Print Queues Assigned field and press <Enter>.

A list of queues assigned to the printer appears. If no queues are assigned, the list is blank.

Press <Ins>. A list of queues residing in the current context appears, along with the containers below the current context. Choose a queue to associate with the printer; the server will take jobs from this queue and send them to the printer. For our example, choose **Marketing_LW_Plus_Queue**. Then, press <Enter>.

A Priority window opens. If you associate more than one queue with a printer, the priority number determines which queue the print server takes jobs from first. Because our example uses only one queue per printer, accept the default of 1 by pressing <Enter>.

The queue now appears in the list of queues assigned to the printer. Press <Esc> to return to the Printer Configuration window.

11. Press <F10> to save your changes.

The Printer Configuration window closes.

12. Press <Esc> to return to the Available Options window.

13. From the Available Options window, select the *Print Servers* option.

The Print Servers list appears. This list contains all the print servers configured on the current server.

14. To create a print server, press <Ins>.

In the window that opens, type the new server name. For our example, enter **Marketing_Print_Server**. Then, press <Enter>. The print server name appears highlighted in the Print Servers list.

15. Make sure the new print server is still highlighted in the Print Servers list. Then, press <Enter>.

The Print Server Information window opens.

16. From the Print Server Information window, select the *Printers* option.

An empty window appears. This window will contain the printer you associate with the print server.

17. To specify a printer, press <Ins>.

A list of printers residing in the current context appears, along with the containers below the current context.

Highlight the name of the printer you want to associate with the print server. For our example, highlight **Marketing LW Plus**. Then, press <Enter>. The printer name appears highlighted in the list of serviced printers.

18. Exit PCONSOLE.

19. Load PSERVER, specifying the name of the print server you created.

Loading PSERVER automatically load ATXRP.NLM if the print server has one or more AppleTalk printers associated with it. The ATXRP module extends AppleTalk functionality to PSERVER. For information on how to load each of these modules, see “Loading PSERVER and ATXRP” on page 267.

20. Configure the DOS workstations to access the NetWare queue.

For information, see “Setting Up DOS Workstation Printing” on page 273.

Creating a Secure Printing Environment

NetWare for Macintosh print services security enables you to carry out these tasks:

- ◆ Require each Macintosh user to log in to the server running ATPS and to be a designated Queue User of a queue in order to print to it.

Prevent Macintosh users from bypassing the queue and printing directly to a printer.

You can “hide” AppleTalk printers on the network to prevent users from submitting print jobs directly to them. If you hide the printer, the Macintosh user must send the print job to a spooler; the queue receives the job from the spooler and directs it to the printer. Hiding the printer allows for a more equitable use of printer resources, because a user cannot bypass jobs in the queue

and print directly to the printer. Because this feature is controlled by the spooler, it affects only Macintosh users.



Hiding a printer is not a foolproof means of denying direct access to it. Technically sophisticated users may be able to find a way to print directly. If printer security is important to you, configure APPLETLK.NLM to limit access to the printer, or put the printer on a non-AppleTalk segment of the network.

- ◆ Specify that ATPS automatically place on Operator Hold all jobs that users send to the spooler.

If your printer uses expensive materials, you may want to control how much access each user has to the printer. In this case, you can instruct ATPS to put an Operator Hold on each job entering the queue. After examining the job, the Queue Operator can determine whether or not to release the hold. Because this feature is controlled by the spooler, it affects only Macintosh users.

Assume that the network administrator has already configured these print services components in ATPSCON:

- ◆ A printer server for a printer called Color LW
- ◆ A queue called Secure_LW_Queue in the context OU=Art.OU=Western.O=Acme
- ◆ A spooler called Secure LW Queue

To set up a secure print services environment, follow the steps described below. When you set up print services at your site, substitute the appropriate information for the sample data shown in the example.



1. Load ATPSCON at the server.

Enter this command at the console prompt:

```
load atpscon
```

You can also access ATPSCON from a DOS workstation running RCONSOLE. However, if you load ATPSCON using RCONSOLE, NetWare transmits your password across the network in an unencrypted form. Always load ATPSCON from the server console to avoid compromising the secrecy of your password. After you load ATPSCON, you can use it safely from RCONSOLE.

For details on using RCONSOLE, see NetWare 4.11 *Supervising the Network*.

- 2. From the Configuration Options window, select the *Configure Printer Servers* option.**

The Configured Printer Servers window opens. This window contains the name of each printer server configured on the NetWare server.

- 3. Highlight the name of the printer server you want to make secure.**

For our example, highlight `Color LW`.

- 4. Press <Enter>.**

The Printer Server Parameters window opens.

- 5. Highlight the Hide Printer field and press <Enter>.**

The Hide Printer window opens. This window provides three options:

◆ *No*

This option permits users to print directly to the printer, without directing the job through the queue.

◆ *Leave Unchanged*

This option does not hide the printer, unless another printer server has already hidden it.

◆ *Yes*

This option blocks users from bypassing the queue.

To hide printers, select the *Yes* option.

- 6. Press <Esc>.**

A window opens, asking whether you want to save your specifications. To save your settings, select *Yes*. ATPSCON returns you to the Configured Printers Servers window. Press <Esc> again to return to the Configuration Options window.

7. **From the Configuration Options window, select the *Configure Spoolers* option.**

The Configured Spoolers window opens.

8. **Select the spooler associated with the queue and printer you want to make secure.**

In our example, select the spooler called `Secure LW Queue`. The Spooler Parameters window opens.

9. **Highlight the Place Jobs on Hold field and press <Enter>.**

The Place Jobs on Hold window opens. This window enables you to place jobs on Operator Hold, User and Operator Hold, User Hold, or none at all.

When a job is on Operator Hold, only the Queue Operator can change the job status to Ready. Highlight the *Operator Hold* option and press <Enter>. Your selection appears in the Place Jobs on Hold field.

10. **Highlight the Enforce Queue Security field and press <Enter>.**

A window opens, giving you two options—Yes and No. To specify that only logged-in Queue Users can send jobs to the printer, select Yes. Your selection appears in the Enforce Queue Security field.

11. **Exit ATPSCON, saving your changes.**

ATPS is still loaded and your security settings are now in effect.

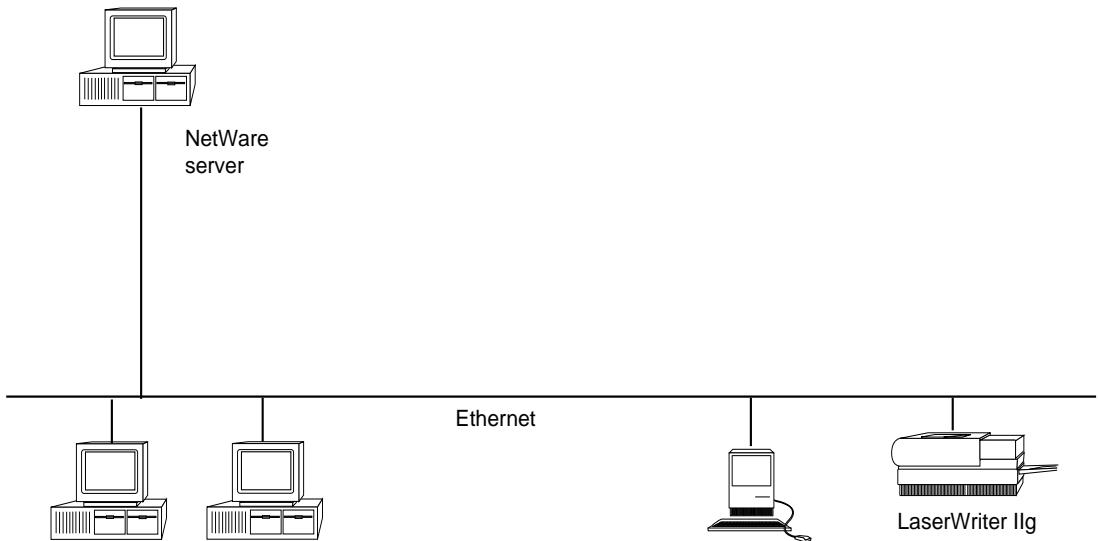
12. **Using PCONSOLE, specify the users and groups who will be Queue Users for the queue.**

For information on using PCONSOLE, see the NetWare 4.11 *Print Services* guide.

Setting Up ATPS Accounting

This example shows you how to set up ATPS accounting for both Macintosh clients and non-Macintosh clients. For this section, the clients print to a LaserWriter IIg on an Ethernet cable; however, you can set up ATPS accounting for any printer connected to the server using AppleTalk protocols. Figure 6-8 shows the network segment containing the LaserWriter IIg and the clients.

Figure 6-8
Setting Up ATPS Accounting for Clients on Ethernet



For this example, you will set up accounting for the users of a college computer lab. Assume that the network administrator has already configured these print services components in ATPSCON:

- ◆ A printer server for a printer called Lab LW IIg
- ◆ A queue called Lab_LW_IIg_Queue in the context OU=Lab.O=CS
- ◆ A spooler called Lab LW IIg Queue

Your task is to configure ATPS to charge users for the jobs they print. Your configuration must meet these specifications:

- ◆ ATPS must charge each user two points per printed page.

- ◆ ATPS should not charge a user for a banner page.
- ◆ If the user's balance falls below the amount need to print the job, ATPS should put the job on Operator Hold.

The Queue Operator can remove the hold when the user's account balance contains enough points to print the job.

- ◆ Each user should stay informed as to the status of his or her account balance.

To provide users with this information, you can specify that ATPS print a banner page containing an account summary after each job.

- ◆ ATPS must hide printers.

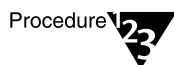
NetWare cannot track accounting charges unless jobs pass through the queue. Therefore, if you charge for print jobs, Macintosh users should not be allowed to bypass the queue.

- ◆ ATPS must enforce queue security.

NetWare can only track accounting charges for users logged in to the server. Therefore, you must make sure that all users log in to the server before they can print to a queue.

Using NETADMIN to Perform Preliminary Tasks

When you set up accounting in ATPS, you specify how many points to deduct from each user's account for printing. Before ATPS accounting can become effective, you must carry out these tasks:



1. **From a DOS workstation, log in to the NetWare Directory as Admin or another user with supervisor privileges.**
2. **Run the NETADMIN utility.**
3. **Assign an initial account balance and set accounting options for each user.**

To accomplish this task, carry out the steps described below.

- 3a. **Select the *Manage Objects* option.**

3b. Locate a user to whom you want to assign an account balance.

You may need navigate the Directory Services tree to find this user. Highlight the user's name, and press <Enter>.

3c. Select the option *View or Edit the Trustees of This Object*.

3d. Select the *Account Restrictions* option.

3e. Select the *Account Balance* option.

The Account Balance form appears.

3f. Set the user's starting account balance.

Type a number into the Account Balance field, and press <Enter>. The next field, Allow Unlimited Credit, is highlighted.

3g. Specify whether the user should have unlimited credit.

A user with unlimited credit will never be denied printing or any other service that uses accounting, even if his or her balance becomes negative. Type Y for Yes, N for No. If you enter No, the next field, Low Balance Limit, is highlighted.

3h. Set the user's low balance limit.

The user's account balance can fall to the amount you enter before he or she is denied service. This amount can be positive or negative, but must be set equal to or lower than the user's current account balance.

3i. Press <Esc>, and save changes.

3j. Press <Esc> until you return to the list of objects.

3k. Repeat the previous steps for each user to whom you want to assign an account balance.

4. Explicitly grant read and write trusteeship to the server over the accounting properties of the users you want to charge.

The ATPS server treats a print job owned by a user it does not have rights to charge as though the owner has an insufficient balance. You can grant appropriate rights by following the steps described below.

4a. Select the *Manage Objects* option.

Highlight a container that includes users to whom you want to give rights, and press <F10> to select it.

4b. Select the option *View or Edit the Trustees of This Object*.

4c. Select the *Trustees* option.

A list of properties and their trustees appears.

4d. Press <Ins>.

A list of properties appears.

4e. Select [All Properties Rights].

A field labeled Enter Trustee Name appears. Enter the distinguished name of the NetWare Server object corresponding to the server ATPS is running on

For example, enter **CN=Acme.O=Western**. You can also press <Ins>, navigate the tree, and select the server object. When you enter or select the object's name, it appears in the list of trustees. Make sure the name is highlighted; then, press <Enter>. The list labeled Property Rights Allowed appears with Read as its only element.

4f. Press <Ins>.

The Rights Disallowed list appears. Highlight Write and press <Enter>. Then, press <Esc> and save your changes when prompted to do so.

4g. Press <Esc> until you return to the list of objects.

4h. Repeat the previous steps until all users you will charge for printing reside under a context to which ATPS has rights.

5. Exit NETADMIN.

Using ATPSCON to Perform Setup Tasks

To set up ATPS accounting, follow the steps described below. When you set up print services at your site, substitute the appropriate information for the sample data shown in the example.

1. Load ATPSCON at the server.

Enter this command at the console prompt:

```
load atpscon
```

You can also access ATPSCON from a DOS workstation running RCONSOLE. However, if you load ATPSCON using RCONSOLE, NetWare transmits your password across the network in an unencrypted form. Always load ATPSCON from the server console to avoid compromising the secrecy of your password. After you load ATPSCON, you can use it safely from RCONSOLE.

For details on using RCONSOLE, see NetWare 4.11 *Supervising the Network*.

2. From the Configuration Options window, select the *Configure Printer Servers* option.

The Configured Printer Servers window opens. This window contains the name of each printer server configured on the NetWare server.

3. Highlight the name of the printer server you will charge users to use.

For our example, highlight **Lab LW IIg**.

4. Press <Enter>.

The Printer Server Parameters window opens.

5. Highlight the Hide Printer field and press <Enter>.

The Hide Printer window opens. This window provides three options:

◆ *No*

This option permits users to print directly to the printer, without directing the job through the queue.

◆ *Leave Unchanged*

This option does not hide the printer, unless another printer server has already hidden it.

◆ *Yes*

This option blocks users from bypassing the queue.

To hide printers, select the *Yes* option.



Hiding a printer is not a foolproof means of denying direct access to it. Technically sophisticated users may be able to find a way to print directly. If printer security is important to you, configure APPLETLK.NLM to limit access to the printer, or put the printer on a non-AppleTalk segment of the network.

6. Highlight the Charge Users for Jobs field and press <Enter>.

The Charge Users window opens, giving you two options—Yes and No. To set up accounting, select Yes. Your selection appears in the Charge Users for Jobs field.

7. Specify the number of accounting points to charge per page.

Highlight the Points per Page field. Then, enter the number of points you wish to charge per page. If you set the field's value at 2 and a print job is 25 pages long, the user needs to spend 50 accounting points to print the job.

ATPS does not consider a banner page part of a job. To charge for printing a banner page, use the Points for Banner Page field, as described in Step 8

8. Specify whether to charge for printing a banner page.

To set the number of accounting points charged for each banner page, highlight the Points for Banner Page field; then, enter the number of points. The charge can be any whole number from 0 to 1000 points per banner page. If the value in the field is zero (the default), banner pages are free.

In our example, ATPS should not charge for banner pages. Therefore, accept the default of zero.

9. Specify what action to take if the user's balance is insufficient to print a job.

The If Insufficient User Balance field enables you to determine what action the server should take if the user's balance falls short of the amount needed to print the job.

Highlight the field and press <Enter>. The User Balance Options window opens. This window provides four options:

- ◆ *Delete Job*
This option removes the print job from the queue without printing it.
- ◆ *Place Job on Operator Hold*
This option puts the job on Operator Hold so that the Queue Operator can decide whether to print the job. After making sure that the user's balance is sufficient, the operator can remove the hold in PCONSOLE or in the Windows Print Queue utility. When the operator releases the hold, the print job goes to the printer if the balance is sufficient.
- ◆ *Place Job on User Hold*
This option puts the job on User Hold. If the job owner removes the User Hold when the account contains a sufficient balance, the job will print.
- ◆ *Print Job Anyway*
This option sends the job to the printer and subtracts the points from the user's account, resulting in a negative balance.

In our example, you want ATPS to put the job on Operator Hold until the administrator increases the user's account balance to contain enough points to cover the job. Therefore, highlight the *Place Job on Operator Hold* option and press <Enter>. Your selection appears in the If Insufficient User Balance field.

10. Specify whether to print an account summary.

The Print Account Summary Banner field enables you to specify whether ATPS prints a special banner after each job. This banner shows the amount deducted for the print job and the number of accounting points remaining in the user's account.

Highlight the Print Account Summary Banner field and press <Enter>. A window opens, giving you two options—Yes and No. Because you want each user to be aware of the status of his or her account, select Yes. Your selection appears in the Print Account Summary Banner field.

11. Press <Esc>.

A window opens, asking whether you want to save your specifications. To save your settings, select Yes. ATPSCON returns you to the Configured Printers Servers window. Press <Esc> again to return to the Configuration Options window.

- 12. From the Configuration Options window, select the *Configure Spoolers* option.**

The Configured Spoolers window opens.

- 13. Select the spooler associated with the queue and printer you want to charge clients to use.**

In our example, select the spooler called `Lab LW IIg Queue`. The Spooler Parameters window opens.

- 14. Highlight the Enforce Queue Security field and press <Enter>.**

A window opens, giving you two options—Yes and No. To specify that only logged-in Queue Users can send jobs to the printer, select Yes. Your selection appears in the Enforce Queue Security field.

- 15. Exit ATPSCON, saving your changes.**

ATPS is still loaded and your accounting settings are now in effect.

Managing Your Print Services Environment

After you configure and load AppleTalk print services, you need to manage your print services environment to ensure optimum performance. This chapter describes the following tasks:

- ◆ Becoming familiar with the directories and files associated with ATPS
- ◆ Managing PostScript fonts
- ◆ Managing Laser Prep files
- ◆ Managing queue directories
- ◆ Handling PostScript data formats
- ◆ Designating Queue Users and Queue Operators

ATPS Directories and Files

Table 7-1 describes the directories used with ATPS and ATPSCON.

Table 7-1
ATPS-Related Directories

Directory	Description
SYS:SYSTEM\NW-MAC\FONTS	The NetWare® installation process creates this directory. The FONTS directory contains .FNT files; these files provide the default font lists for Apple LaserWriters and other PostScript printers.
SYS:SYSTEM\NW-MAC\PSUTILS	The NetWare installation process creates this directory. The PSUTILS directory contains utility files for PostScript printers.
SYS:SYSTEM\NW-MAC\SETUP	The NetWare installation process creates this directory. The SETUP directory contains an example setup file for a PostScript printer.

Table 7-1 *continued*

ATPS-Related Directories

<p>SYS:SYSTEM\ NW-MAC\PPDS</p>	<p>The NetWare installation process creates this directory. The PPDS directory contains PostScript Printer Definition (PPD) files.</p>
	<p>Each PPD file describes the characteristics of a particular PostScript printer model. The PPD file contains the name of the printer model, a list of the printer's standard fonts, the amount of standard memory installed, whether the printer supports color, whether the printer uses PostScript Level 1 or Level 2, and other information. The PPD file contains a list of the features installed on the printer at the factory; it does not take into account any fonts or memory you may have added.</p>
<p>SYS:SYSTEM\ATPS</p>	<p>By default, loading ATPS.NLM creates the ATPS directory within the server's SYS:SYSTEM directory. The ATPS directory contains files that ATPS uses internally, such as font list files, Laser Prep files, cached PostScript fonts, and printer log files. You can use ATPSCON to specify a different name and location for the ATPS directory. For information, see "Selecting the ATPS Directory" on page 160.</p>
<p><i>vol_name</i>: QUEUES\ *.QDR</p>	<p>When you configure a new queue in ATPSCON or PCONSOLE, a .QDR directory is created in the QUEUES directory at the root of a volume you specify. The queue directory name is the queue's unique Directory ID followed by the .QDR extension.</p> <p>Each.QDR directory contains the print jobs spooled to that queue. Each print job resides in the queue as a file with a .Q extension. The server must have enough disk space to accommodate incoming print jobs on the volume containing the .QDR directories.</p>

Table 7-2 describes the files used with ATPS and ATPSCON.

Table 7-2

ATPS-Related Files

File	Description
<p>SYS:SYSTEM\ ATPSCON.NLM</p>	<p>You use this utility to configure ATPS spoolers and printer servers, and to customize your print services environment.</p>
<p>NW-MAC\ ATPSCON\ NBPTYPE.DEF</p>	<p>NBPTYPE.DEF contains a database of printer models available to ATPSCON.</p>
<p>SYS:SYSTEM\ NW-MAC\ATPSCON\ *.PRN</p>	<p>ATPSCON creates a .PRN file every time you configure a printer server. The file contains configuration information about the printer server.</p>

Table 7-2 *continued*
ATPS-Related Files

File	Description
SYS:SYSTEM\ NW-MAC\ATPSCON\ *.PRE	These files represent disabled printer server configurations.
SYS:SYSTEM\ NW-MAC\ATPSCON\ *.SPL	ATPSCON creates a .SPL file every time you configure a spooler. The file contains configuration information about the spooler.
SYS:SYSTEM\ NW-MAC\ATPSCON\ *SPE	These files represent disabled spooler configurations.
SYS:SYSTEM\ NW-MAC\ATPSCON\ ATPS.DAT	This file stores system-wide ATPS configuration information, such as the location of the ATPS directory and the current verbosity settings.
SYS:SYSTEM\ATPS\ *.FNT	Each .FNT file is a font list file. ATPS creates one .FNT file for each spooler emulating a PostScript printer. ATPS derives the contents of each .FNT file from an AppleTalk printer, a PPD file, or a custom font list.
SYS:SYSTEM\ATPS\ SERVER.FNT	SERVER.FNT is a font list file that ATPS creates for all spoolers that use ATPSCON's <i>Manage Fonts</i> option. The list reflects the contents of the ATPS font cache.
SYS:SYSTEM\ATPS\ *.QRY	When a Macintosh client sends a print job, it queries the spooler to find out whether the printer is initialized with the version of the Laser Prep file present on the Macintosh. ATPS stores this query in a .QRY file. The ATPS printer server uses the .QRY file whenever it needs to query a printer for that particular Laser Prep version.
SYS:SYSTEM\ATPS\ *.PRS	Each .PRS file contains a different version of the Laser Prep file. When ATPS receives a query from a Macintosh client, it checks the current version of the Laser Prep file stored in the ATPS directory. When a Macintosh uses a Laser Prep version that ATPS does not have, ATPS creates a new .PRS file.
SYS:SYSTEM\ATPS\ *.PRI	A file with a .PRI extension is a *.PRS file modified for inclusion in jobs.
SYS:\SYSTEM\ATPS\ *.PSF	Each .PSF file contains a PostScript font that ATPS font management has captured.
SYS:\SYSTEM\ATPS\ *.LOG	A .LOG file is an ATPS printer log file. The file's name consists of a number and the .LOG extension.

Table 7-2 *continued*
ATPS-Related Files

File	Description
SYS:SYSTEM\ATPS\ *.LGB	ATPS creates a backup file with a .LGB extension when a printer log reaches its size limit. Except for its extension, the backup file has the same name as the original .LOG file.

Managing PostScript Fonts

This section discusses the use of PostScript fonts with ATPS and NetWare.

How ATPS Handles Font Lists

Each type of PostScript printer has a set of resident fonts available in ROM when you turn on the printer. A printer can also support additional fonts that you download using any Macintosh application made for that purpose. If the printer does not have an external hard disk, downloaded fonts reside in the printer's RAM until you turn the printer off. If the printer supports an external hard disk, you can store downloaded fonts on the external disk; in such a case, the fonts are still available after you power the printer off and on.

If a Macintosh user prints directly to a printer, the Macintosh LaserWriter driver queries the printer for its font list. If the printer does not have all the required fonts for the job, the Macintosh includes the missing fonts as part of the print job. If the Macintosh does not have a required font, it may send a bitmap of the font or substitute a different font. The printer uses the included fonts for the current print job only.

In NetWare for Macintosh, the ATPS module handles interactions between the Macintosh application and the printer. Each time you load the ATPS module, ATPS generates a font list for each PostScript-defined spooler. The ATPS module responds to the query from the Macintosh application based on the generated font list. If ATPS cannot identify a font list for a spooler, it advertises that the printer does not support any fonts.

If the spooler does not advertise a font that is actually resident on the printer, the spooler requests that the Macintosh application include the font. This situation causes unnecessary delays in printing, or

substitution of a bitmapped font when a required font is unavailable on the Macintosh. If the spooler advertises a font that the printer does not support, the printer substitutes a default font, usually the monospaced Courier font.

The NetWare installation process copies several font list files to SYS:SYSTEM\NW-MAC\FONTS. Table 7-3 describes each file.

Table 7-3
Font List Files Provided with NetWare

Filename	Description
APPLW.FNT	Default fonts for the original Apple LaserWriter
APPLWG.FNT	Default fonts for the Apple LaserWriter IIg
APPLWNT.FNT	Default fonts for the Apple LaserWriter II NT
APPLWNTX.FNT	Default fonts for the Apple LaserWriter II NTX
APPLWPLS.FNT	Default fonts for the Apple LaserWriter Plus
HPLASER.FNT	Default fonts for the HP LaserJet family with the installed PostScript option
PERSLWNT.FNT	Default fonts for the Apple LaserWriter NT
PRSLWNTR.FNT	Default fonts for the Apple Personal LaserWriter NTR
PM42.FNT	Custom font list file for PageMaker 4.2

How ATPS Obtains Font Lists

ATPS obtains a font list for a spooler in one of these ways:

- ◆ ATPS can query a PostScript printer on an AppleTalk connection. ATPS then creates a .FNT file containing that printer's current font list, and stores it in the ATPS directory.

To specify that ATPS query the printer, select the Advanced PostScript Options field from the Spooler Parameters window in ATPSCON. In the window that opens, highlight the Query Source field and select the printer server configured for the printer. For more information on using the Query Source field, see "Query Source" on page 139.

- ◆ ATPS can read the printer model's PPD file.

The PPD file contains a list of the printer's standard resident fonts. It does not take into account additional fonts that may reside on a printer's external disk or in the printer's RAM.

If your printer is on a non-AppleTalk connection, ATPS cannot query the printer for its list of fonts. You can therefore specify that ATPS use the font list in the PPD file.

To make this specification, select the Advanced PostScript Options field from the Spooler Parameters window in ATPSCON. In the window that opens, highlight the Query Source field and select <model default>. For complete information on using the Query Source field, see "Query Source" on page 139.

- ◆ ATPS can use a custom font list.

You may want to use a custom font list for one of these reasons:

- ◆ Your printer is not on an AppleTalk connection and the PPD list for the printer does not contain all the fonts your printer stores.
- ◆ Your printer is not on an AppleTalk connection and you do not have a PPD file for the printer.

You can specify one of the font list files provided with NetWare, or create a specialized font list. For information on how to create a custom font list, see "Creating a Specialized Font List File" on page 211.

If the Spooler's Font List Becomes Inaccurate

The spooler's font list can become inaccurate if one of these situations occurs:

- ◆ The AppleTalk printer is reset or power-cycled after ATPS.NLM is loaded.
- ◆ You download one or more fonts to the printer's RAM or external hard disk using a font downloader application.

If you specified an AppleTalk printer as the font list source, the spooler periodically communicates with the printer in order to update the font list and receive other PostScript information. If the printer's font list changes, you can direct ATPS to update the spooler information immediately by disabling and re-enabling the spooler in ATPSCON. For information, see "Disabling and Re-enabling the Spooler" on page 149.

For non-AppleTalk printers, make sure the PPD file or custom font list for the spooler always reflects the printer's actual font list.



Download fonts directly to the printer, not through a queue. Most font downloader applications cannot download a font through a spooler.

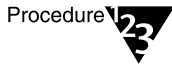
Creating a Specialized Font List File

You should create a customized font list file if all of these conditions are true:

- ◆ Your PostScript printer is connected to a non-AppleTalk communications channel.
- ◆ Your printer accesses additional fonts through an expansion board or an attached hard disk drive, so the PPD file does not reflect the fonts actually available on the printer.

You do not need to create a specialized font list file for a printer residing on an AppleTalk network, because ATPS can retrieve a font list directly from the printer.

To create a customized font list, you need a workstation with a text editor. Follow these steps:



1. Send the file FONTLIST.PS to a printer.

FONTLIST.PS is a PostScript file that instructs the printer to print a current list of fonts in the correct format. If you are using a DOS workstation, go to Step 1a. If you are using a Macintosh workstation, go to Step 1b.

1a. From a DOS workstation, use NPRINT to send the file FONTLIST.PS to the queue.

Make sure that the DOS workstation's print configuration is set correctly for PostScript. For details on setting the DOS workstation print configuration, see "Setting Up DOS Workstation Printing" on page 273.

1b. From a Macintosh workstation, use a PostScript utility such as SendPS to send the FONTLIST.PS file to a spooler.

2. Change directories to SYS:SYSTEM\NW-MAC\FONTS.

3. Use a text editor to create a font list file.

Create a new file and enter a list of the printer's fonts exactly as they appear on the printed output. When creating the file, follow these guidelines:

- ◆ Append the .FNT extension to the name of the file.
For example, you might call your new file NEWFONTS.FNT.
- ◆ Store the file in the directory SYS:SYSTEM\NW-MAC\FONTS.
- ◆ Use the pound-sign character (#) at the beginning of any line that is a comment; ATPS does not process a line beginning with a # symbol.

You can refer to one of the .FNT files supplied with NetWare for Macintosh to find an example of how to set up your own font list file.

Managing the ATPS Font Cache

When you create a font cache in ATPSCON, Macintosh jobs requiring the PostScript fonts stored in the cache can use them without incurring the additional network traffic that takes place when a workstation includes fonts in jobs sent to the server. In addition, storing fonts on the server rather than the printer results in increased printer memory and faster printer processing times. You can create a font cache on the ATPS server by setting the Manage Fonts field to Yes in ATPSCON's Advanced PostScript Options window; for details, see Step 11 on page 139.

Managing the font cache involves deleting unneeded fonts and setting the maximum size of the font cache. For details on deleting unneeded fonts from the font cache, see "Viewing and Deleting Fonts in the Font Cache" on page 161. For information on setting the maximum size of the font cache, see "Specifying the Maximum Size of the Font Cache" on page 162.

Managing Laser Prep Files

This section discusses the use of Laser Prep files with ATPS and NetWare.

How ATPS Handles Laser Prep Files

A Macintosh Laser Prep file contains a dictionary of PostScript shorthand commands used by the LaserWriter driver on the Macintosh when formatting PostScript print jobs. The Macintosh downloads this file to initialize the printer before sending it a print job.

Version 7.0 and later of the LaserWriter driver includes all the necessary Laser Prep information for print jobs. No Laser Prep file should be present on the printer when you print using this version of the LaserWriter driver.

To handle printing of Macintosh jobs created by Version 6.x and earlier of the LaserWriter driver, the correct version of Laser Prep must be available on the printer when the job prints. ATPS can use one of these methods to ensure that the correct version is present:

- ◆ The ATPS printer server can ensure that the printer has the proper version of the Laser Prep file.

When a Macintosh application sends a ProcSet query to determine which version of the Laser Prep file initialized the printer, the ATPS spooler stores the query in a .QRY file residing in the ATPS directory. If ATPS reports that the Laser Prep file is not on the printer, the Macintosh downloads its Laser Prep file, and ATPS stores it in a .PRS file that resides in the ATPS directory. ATPS only reports that the Laser Prep file is not present if the file does not reside in the ATPS directory.

When the ATPS printer server removes a job from a queue, it examines the file to determine the version of the required Laser Prep file. It then uses the corresponding .QRY file to determine whether the required Laser Prep file resides on the printer. If the printer cannot find the Laser Prep file, ATPS downloads the corresponding .PRS file.

- ◆ The ATPS spooler can include the correct version of the Macintosh Laser Prep file with each Macintosh print job placed on the queue. Files for this purpose have a .PRI extension.

If a non-ATPS print server services your AppleTalk printer, you must direct the spooler to include the correct Laser Prep file in each Macintosh print job as it is placed on the queue.

Aldus Prep is a special Prep file used by pre-5.0 versions of Aldus PageMaker for Macintosh. You can use either of these methods to ensure that the printer has the correct version of the Aldus Prep file.

Avoiding Printer Reinitialization

When a Macintosh user sends a job either directly to the printer or through a queue, the printer is reset if it is initialized with a version of Laser Prep other than the one required by the current job. Reinitializing takes about 30 seconds and can cause the printer to generate its startup page.

Print performance improves significantly if you can avoid printer reinitialization. Use one of these strategies:

- ◆ Install the LaserWriter driver version 7.x or later on each Macintosh workstation accessing the printer.
- ◆ Install the same version of the LaserWriter driver (5.2, 6.x, or 7.x) on each workstation accessing the printer. However, you can use version 8.x of the LaserWriter driver with any other version and still avoid printer reinitialization.
- ◆ Instruct the ATPS spooler to include the appropriate version of the Laser Prep file in each print job it handles.

Including the Laser Prep file with each job has these disadvantages:

- ◆ Printing performance may suffer slightly.

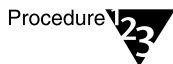
Including a Laser Prep file with each job increases the amount of data per job by about 30 KB. Therefore, print performance can suffer when a user prints over a slow connection. However, since the delay occurs at the printer server (rather than at the spooler), users are generally less aware of the delay.

- ◆ You must ensure that users running version 6.x or earlier of the LaserWriter driver do not print directly to a printer.

Direct printing causes the print job to bypass the spooler and queue, and may load the printer with the wrong version of Laser Prep. To ensure that users do not print directly to a printer, you must select Yes for the Hide Printer field in ATPSCON's Printer Server Parameters window. For information, see Step 2 on page 116.

Preventing the Printer from Generating Its Initialization Page

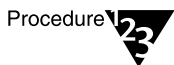
To prevent the printer from printing its initialization page after it is reset or turned on, follow these steps:



1. **At a DOS workstation, change to the SYS:SYSTEMNW-MAC\PSUTILS directory.**
2. **Use NPRINT to send the file named NOSTRTPG.PS to the queue.**

NOSTRTPG.PS, a PostScript file, prevents the printer from printing its initialization page, even if the printer power is cycled off and on.

To re-enable printing of the initialization page, follow these steps:



1. **From a DOS workstation, change to the SYS:SYSTEMNWMAC\PSUTILS directory.**
2. **Use NPRINT to send the file named STRTPGON.PS to the queue.**

STRTPGON.PS, a PostScript file, instructs the printer to resume printing its initialization page whenever it is reset or power is cycled off and on.

Managing Queue Directories

When you create a queue in ATPSCON or PCONSOLE, the utility creates a .QDR directory in the QUEUES directory at the root of a volume you specify. The queue directory name is the queue's unique Directory ID followed by the .QDR extension. The Directory ID appears as the print queue ID in PCONSOLE.

Each queue directory contains the print jobs spooled to that queue. Each print job resides in the queue as a file with a .Q extension. The server must have enough disk space to accommodate incoming print jobs on the volume containing the .QDR directories. Also, make sure that you create your queues on a volume containing sufficient disk space.

A DOS user can place print jobs in a queue serviced by ATPS, even when the ATPS module is not loaded. Of course, the print jobs cannot go to an AppleTalk printer until you load the ATPS module again.

When a print server sends a job from a queue to a printer, it deletes the file from the queue directory. Because NetWare keeps deleted files on the disk until they are old enough to be "purged," it is possible for deleted print jobs to use up all available disk space very rapidly. To prevent this situation from occurring, use the NetWare FLAGDIR command to purge deleted queue files immediately. For example, you might use this command line:

```
FLAG SYS:QUEUES\*.QDR P /DO <Enter>
```

The QUEUES directory resides at the root of the volume and contains the queue directories. (If you place the queue directories in another location, substitute the appropriate pathname.) The FLAG command marks a queue directory for immediate purging when its files are deleted. You cannot recover deleted files in the queue directory after you use this command.

You can also reduce the space used by the queue job files by specifying that they use NetWare compression. If the queue directories reside on the SYS volume, use this command line:

```
FLAG SYS:QUEUES\*.QDR Ic /DO <Enter>
```

Handling PostScript Data Formats

PostScript is Adobe's page description language. The data representation used by PostScript contains the commands that control printer output. PostScript data can be communicated to a printer in a variety of ways. The set of allowable characters in PostScript data varies according to how the data will be transmitted.

PAP, AppleTalk's Printer Access Protocol, provides a binary-capable communications channel. On a binary-capable channel, the methods of handling flow control, requesting status, and signaling the end of a job do not depend on a print job's data stream. A binary-capable channel allows all 8-bit characters to be received by the printer.

Serial and parallel communications channels are not binary-capable. These channels use control codes in the data stream to signal special functions to the PostScript printer's communications interface. When a serial or parallel printer receives a PostScript data stream containing control codes, the printer's communications interface traps, removes, and acts on the control codes. Table 7-4 lists some of the control codes.

Table 7-4
Non-Binary Communications Control Codes

Control Code	Function
0x03	Abort job request
0x04	End-Of-File (EOF) marker
0x11	X-On in X-On/X-Off flow control

Table 7-4 *continued*

Non-Binary Communications Control Codes

Control Code	Function
0x13	X-Off in X-On/X-Off flow control
0x14	Job status request

Direct printer connections to NetWare networks using Remote Printer or Queue Server protocols are generally implemented as virtual serial connections and are therefore non-binary.

This section discusses the implications of sending PostScript data over binary and non-binary channels. It covers these issues:

- ◆ Sending non-binary PostScript data on a binary communications channel
- ◆ Sending binary PostScript data on a non-binary communications channel

Sending Non-Binary PostScript Data on a Binary Communications Channel

Many DOS and Windows applications generate PostScript data to be transmitted across a serial or parallel interface. These applications often include the Control-D (0x4) character to signal the end of the job. If this data goes to a queue serviced by an AppleTalk printer (which is on a binary channel), the Control-D character is passed to the printer's PostScript interpreter instead of being intercepted by the printer's serial or parallel interface. PostScript errors or job failures can result.

ATPS and ATXRP remedy this problem by filtering Control-D characters in data from non-Macintosh print jobs sent to AppleTalk PostScript printers. The characters are replaced by PAP End-Of-File (EOF) characters.

Some DOS and Windows applications may generate binary PostScript data, which could use a Control-D character as data rather than to signal the end of a job. For these applications, you should create a print job configuration using the PostScript Binary Graphics mode in

PRINTCON. For details, see “PostScript Binary Graphics Mode” on page 279.

Sending Binary PostScript Data on a Non-Binary Communications Channel

This sections addresses the following issues:

- ◆ Handling binary data sent from a Macintosh workstation
- ◆ Appending a Control-D character to Macintosh jobs
- ◆ Configuring a LaserWriter printer to accept 8-bit data
- ◆ Limitations of setting up a PostScript printer on a non-AppleTalk connection

For complete information on setting up serial printing, see Chapter 8, “Configuring Serial Printer Connections,” on page 225

Handling Binary Data Sent From a Macintosh Workstation

Some Macintosh applications routinely generate binary data, such as graphic bitmaps or program code, and rely on AppleTalk to transfer this data successfully. Ordinarily, if you direct binary data to a non-binary communications interface, some data values will be misinterpreted as control characters and erroneously stripped out. The resulting printer output will be distorted, or PostScript errors may result and no output may appear at all.

Using ATPSCON, you can specify what kind of PostScript data a spooler accepts from Macintosh workstations and how it treats the binary data it receives. The Accept Binary Data field of the Advanced PostScript Options window enables you to specify whether the spooler should accept binary data, and if so, whether it should be encoded.

If you specify Yes for the Accept Binary Data field, ATPS expects a Macintosh workstation to send binary data; the data is passed to the printer unmodified. This setting is appropriate if the target printer is on an AppleTalk or other binary-capable communications channel.

If you specify No for the Accept Binary Data field, Macintosh users should not send binary data to the spooler. If they send binary data,

ATPS replaces the characters listed in Table 7-4 with spaces. Specify No for this setting if the spooler is associated with a non-AppleTalk printer that does not support the Adobe Binary Communications Protocol (BCP) or the Adobe Tagged Binary Communications Protocol (TBCP), or if the queue is serviced by both AppleTalk and non-AppleTalk printers.

If you specify Use Binary Encoding, Macintosh workstations should send binary data to the spooler; ATPS encodes the data using BCP or TBCP, as long as the PPD file associated with the printer indicates that the printer supports one of these protocols. If you choose the *Use Binary Encoding* option, make sure all printers servicing the queue associated with the spooler support the protocol to be used (either BCP or TBCP), and are not connected using a binary-capable communications channel, such as AppleTalk. If neither protocol is supported, the spooler behaves as though you specified No for the Accept Binary Data field. If the printer supports both protocols, the spooler uses TBCP.

If your printer supports neither raw nor encoded binary PostScript data, specify “ASCII” or “hex” PostScript printing in applications and drivers that offer this option.

Appending a Control-D Character to Macintosh Jobs

When configuring a spooler under ATPSCON, you can specify that ATPS append a Control-D character to the end of each job received by a spooler. This provides support for target PostScript printers that are connected through a non-binary communications channel. For details on making this setting, see “Add Final EOF” on page 144.

Configuring a LaserWriter to Accept 8-Bit Data

Most Macintosh applications and print drivers generate Clean8Bit PostScript data. Clean8bit is a PostScript classification adopted by Adobe Systems, Inc. Clean8bit PostScript data does not rely on the binary-capable nature of AppleTalk, but it does require 8 bits per character.

Most serial interfaces can accept either 7- or 8-bit data. Apple LaserWriters, by default, accept 7-bit data. When you are printing a Macintosh file to a LaserWriter-compatible printer connected through a serial interface, make sure that the printer interface is configured to accept 8-bit data. If both the sender and the printer port are not properly

configured, characters in the upper ASCII range (over 127 decimal) are replaced by characters in the lower ASCII range.

To change a serial printer's interface to accept 8-bit data, download the SERIAL.PS utility to the printer. You can download the file using the NetWare NPRINT command:

```
nprint serial.ps /s=server /q=queue /nff /nb
```

The SERIAL.PS file remains resident on the printer permanently, even if the printer is powered on an off.

For the sender, specify 8 data bits when configuring the serial printer in PCONSOLE. For information, see Chapter 8, "Configuring Serial Printer Connections," on page 225.

Limitations

If you set up a PostScript printer on a non-AppleTalk connection, these limitations apply:

- ◆ You cannot send unmodified binary PostScript data to the printer unless the printer supports the Adobe Binary Communications Protocol (BCP) or the Adobe Tagged Binary Communications Protocol (TBCP).
- ◆ You cannot receive PostScript error reports.

Designating Queue Users and Queue Operators

The sections that follow describe the tasks that a user can carry out with Queue User or Queue Operator status.

Queue User Privileges

In order to own a job sent to a queue, a Macintosh user must be logged in to the server running ATPS as a designated Queue User of that queue. By default, all members of the Directory Services tree are automatically Queue Users. If queue security is enabled, the user must be logged in as a Queue User or the user's job will be rejected.

A Macintosh user must own his or her job in order to receive notification that the job printed, or that a problem occurred at the printer. The user must remain logged in continuously from the time he or she submits the job until the time it prints.

With Queue User status, a user can carry out these tasks on each of the jobs he or she owns:

- ◆ Place a job on hold.
- ◆ Release a job from hold.
- ◆ Determine the date and time a job will print.
- ◆ Delete a job.

In addition, the user can view information about *any* print job, including its name, its owner, and its position in the queue. The user can also view information about the queue itself, including its Queue ID and the number of jobs it contains.

A Queue User cannot move any job in the queue, even if the user is the owner of the job.

To assign Queue User status, use the PCONSOLE utility. Refer to the NetWare 4.11 *Print Services* manual for details on using PCONSOLE.

Queue Operator Privileges

With Queue Operator status, a user can carry out these tasks on any job in the queue:

- ◆ View information about a print job, including its name, its owner, and its position in the queue.
- ◆ Place a job on hold.
- ◆ Release a job from hold.
- ◆ Determine the date and time a job will print.
- ◆ Delete a job.

- ◆ Change a job's position in the queue.

In addition, the user can view information about the queue itself, including its Queue ID and the number of jobs it contains.

A user with supervisor privileges can explicitly assign Queue Operator status by using the PCONSOLE utility. Refer to the NetWare 4.11 *Print Services* manual for details on using PCONSOLE.

Configuring Serial Printer Connections

You can use PCONSOLE to configure PSERVER for the following types of serial printer connections:

- ◆ Connecting a PostScript or other Macintosh-compatible printer directly to a serial port on the server
- ◆ Connecting a PostScript or other Macintosh-compatible printer to a serial port on a DOS workstation

This chapter explains these procedures and covers the technical details associated with establishing serial connections to Macintosh-compatible printers.

Serial Printing with PSERVER

When establishing a connection with a Macintosh-compatible printer, you should attempt to use one of these types of connection (in order of preference):

1. AppleTalk
2. IPX™ (Remote Printer or Queue Server)
3. Parallel

However, you may find PSERVER's support for serial printer interfaces a convenient and direct approach to providing print services. In such cases, be aware of the following factors:

- ◆ Serial printing configurations using PSERVER result in slower performance than AppleTalk or IPX configurations.

Typically, Macintosh jobs are larger than DOS or Windows jobs; Macintosh users, in particular, suffer from poorer performance. Performance may be as much as 10 to 100 times slower.

- ◆ Communication errors occur more frequently when using typical serial protocols.
- ◆ Serial printing is difficult to set up and configure correctly.

Additionally, if you set up a PostScript printer on a non-AppleTalk connection, these limitations apply:

- ◆ You cannot send unmodified binary PostScript data to the printer unless the printer supports the Adobe Binary Communications Protocol (BCP) or the Adobe Tagged Binary Communications Protocol (TBCP).
- ◆ You cannot receive PostScript error reports.

Preparing the Hardware

This section contains guidelines for setting up your printer on a serial connection. It covers these hardware issues:

- ◆ Handshaking used by different PostScript models
- ◆ How to prepare serial cables

The suggestions in this section are intended for the network administrator or technician who has experience working with computer hardware. For additional information, please refer to your printer's documentation. The NetWare 4.11 *Print Services* manual contains general rules for setting up serial printing, as well as information on standard limitations.

Handshaking for Local Serial PostScript Printers

Handshaking enables devices on both ends of a connection to synchronize the flow of data. You can use two types of serial port handshaking: software handshaking and hardware handshaking.

Software handshaking uses control codes in the data to control the flow of data through the cable. These codes are XON and XOFF. Hardware handshaking uses an extra pair of serial port wires to handle the flow control of data in the cable. These wires are called DSR and DTR.

Table 8-1 lists common PostScript-compatible printers and the type of handshaking they use for data exchange. Use these tables as a guide when planning a network serial printing configuration.

Table 8-1
Serial and Parallel Communications Support

Printer Type	Serial XON/XOFF	Serial DSR/DTR	Parallel	Binary Protocols
LaserWriter	Yes	No	No	None
LaserWriter Plus	Yes	No	No	None
LaserWriter Pro 600, 630, 810	Yes	Yes	Yes	BCP
LaserWriter Select 310, 360	Yes	Yes	Yes	BCP
LaserWriter II NT	Yes	Yes	No	None
LaserWriter II NTX	Yes	Yes	No	None
LaserWriter II f	Yes	Yes	No	BCP
LaserWriter II g	Yes	Yes	No	BCP
Personal LaserWriter NT	Yes	Yes	No	None
Personal LaserWriter NTR	Yes	Yes	Yes	BCP
HP DeskJet 1200C	Yes	Yes	Yes	TBCP
HP LaserJet IIP, IID	Yes	Yes	Yes	None
HP LaserJet III, IIIP, IIID	Yes	Yes	Yes	TBCP
HP LaserJet IIISi	Yes	Yes	Yes	None
HP LaserJet 4, 4S	Yes	Yes	Yes	TBCP
HP PaintJet XL300	Yes	Yes	Yes	TBCP
HP PaintWriter XL	Yes	Yes	No	None

Please note the following points:

- ◆ The LaserJet III, IIID, and IIIP support TCBP only if the PostScript Cartridge Plus is in use.
- ◆ The HP LaserJet IIISi, 4, 4Si, and the HP DeskJet 1200C support serial and parallel communications only if the appropriate I/O interface card is installed.
- ◆ The HP PaintJet XL300 supports serial communications only if the appropriate I/O interface card is installed.

Preparing Serial Cables

This section provides guidelines for preparing your cables to attach a printer to a serial port.

Setting Pinouts

Generally, personal computers have either a male 9-pin (DB9) or male 25-pin (DB25) serial port. Serial printers generally have a female 25-pin serial port. The table below gives you the ideal serial cabling pinout configurations.

Table 8-2
Serial Cabling Pinout Configurations

Computer with DB25 Port (XON/XOFF Handshaking)		
	<i>Computer with DB25 port</i>	<i>Printer with DB25 port</i>
	2	3
	3	2
	7	7
		4-5-6-8

Computer with DB9 Port (XON/XOFF Handshaking)		
	<i>Computer with DB9 port</i>	<i>Printer with DB25 port</i>
	2	2
	3	2

Table 8-2 *continued*

Serial Cabling Pinout Configurations

5	7
	4-5-6-8
Computer with DB25 Port (DSR/DTR Handshaking)	
<i>Computer with DB25 port</i>	<i>Printer with DB25 port</i>
2	3
3	2
5-6	20
7	7
	4-5-6-8
Computer with DB9 Port (DSR/DTR Handshaking)	
<i>Computer with DB9 port</i>	<i>Printer with DB25 port</i>
2	2
3	3
6-8	20
5	7
	4-5-6-8

Using Ready-Made Cables

If you cannot find cables that exactly fit the specifications covered in the previous section, follow these suggestions for adapting ready-made cables:

- ◆ The cable must have at least one ground pin.

Use pin 7 for ground, rather than pin 1, when possible. Pin 1 is grounded using the system's power cable, and the printer and PC may get their power's ground from a different source. You can solder pin 1 to the cable's aluminum sheathing, or to the hood itself.

- ◆ The cable must have both a CTS (Clear-to-Send) line and an RTS (Request-to-Send) line.

These lines are attached to pins 2 and 3 in most cables. Because you need to set up a null-modem cable, reverse pins 2 and 3.

- ◆ An XON/XOFF (software handshaking) cable needs only a ground pin (1 or 7) and CTS/RTS (2 and 3) in a null-modem configuration.

For this type of configuration, standard two-pair 22-gauge untwisted pair cabling works. However, we recommend that you use a four-pair cable or larger, in case you snag or crimp wires, or decide you need a second printer. Check each newly made cable with an Ohm meter to detect any problems in its construction.

- ◆ A DSR/DTR (hardware handshaking) cable is essentially the same as XON/XOFF cable, but also requires the DSR and DTR pins.

These pins are usually pins 6 and 20 on a DB25 connector. The signals must be crossed in a null-modem configuration.

- ◆ When you print using a queue, NPRINT.EXE and NPRINT.NLM query the status of pin 5; when you print directly, DOS generally queries pin 6.

In order to use both of these pins, their signals must be "pulled high"; that is, the voltage must be up for both pins. We strongly recommend you tie pins 4, 5, 6, and 8 together at the printer end, but not at the computer end. If you do not tie these pins together,

you may find the printer mysteriously going off-line on the PSERVER console.

- ◆ If a cable that you purchase has additional live pins, find out what they are connected to by using an Ohm meter or similar device.

If none of the additional pins are used for ground, CTS, RTS, DSR, and DTR, then there is a good chance the cable will work. However, the only sure way to find out whether a cable works is to test it in the actual configuration. A serial-diagnostic device, such as a breakout box, can be useful if you frequently work with serial cables.

Avoiding Problems

Be careful to avoid these common serial cable problems:

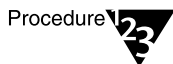
- ◆ Incorrect cable pinouts
- ◆ Mismatched handshaking on either side of the cable
- ◆ Cabling that is too long

In addition, check that no other boards are using the same hardware interrupts as your serial port. These are usually IRQ 4 for COM1 and IRQ3 for COM2.

Configuring Access to a PostScript Printer on a Serial Connection

This section discusses how to set up print services for both Macintosh and non-Macintosh clients directing print jobs to a PostScript printer on a serial connection.

The procedure consists of these steps:



- 1. Configure the print services back end (for all clients).**
 - 1a. At a DOS workstation, run PCONSOLE.**
 - 1b. Select a context.**
 - 1c. Create a queue.**

- 1d. **Create and configure a printer object.**
- 1e. **Associate the print queue with the printer.**
- 1f. **Create a print server.**
- 1g. **Associate the printer with the print server.**
- 1h. **Exit PCONSOLE.**
- 1i. **Test the configuration for non-Macintosh clients.**

For information on carrying out these steps, see “Configuring the Back End” on page 235.

2. **Configure the print services front end (for Macintosh clients only).**
 - 2a. **Create a custom font list file (optional).**
 - 2b. **Determine the amount of memory available at the printer (optional).**
 - 2c. **At the NetWare[®] server, load ATPSCON.**
 - 2d. **Configure a spooler.**
 - 2e. **Exit ATPSCON.**

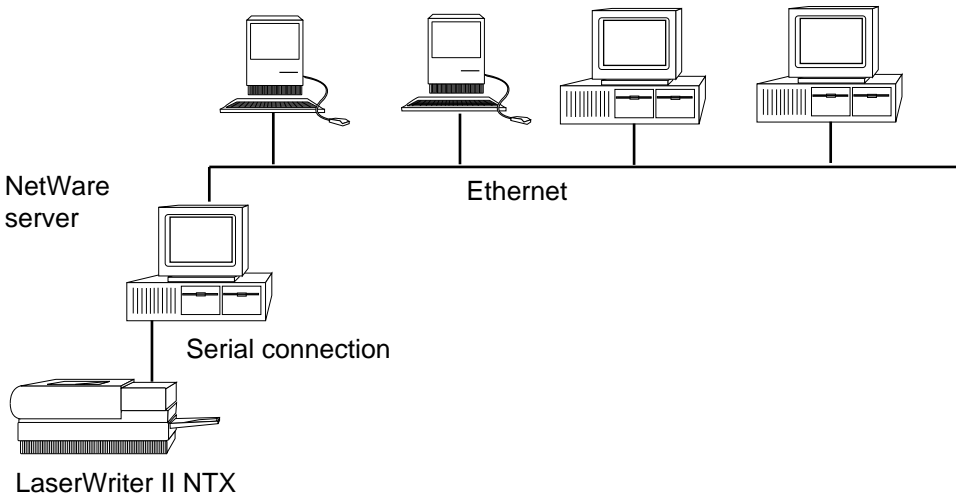
For information on carrying out these steps, see “Configuring the Front End” on page 241.

Configuring the Print Services Components

The sections that follow describe how to set up the back end and the front end of a sample configuration. When you set up print services, substitute the appropriate information for the sample data shown in the example.

In this example, the printer is on a serial connection to the server. However, you can follow the example if your printer is remotely connected to a DOS workstation; the procedures for setting up both types of configuration are virtually identical. Figure 8-1 shows the network segment used in the example.

Figure 8-1
Macintosh and Non-Macintosh Clients to
Serial Laserwriter



On this network, some Macintosh clients are running System 6.x, while others are running System 7.x. The printer is a LaserWriter II NTX with these special features:

- ◆ The printer has an external disk attached; this disk contains many non-standard fonts.
- ◆ Additional memory is installed.

Using PCONSOLE, you create and configure the back end, consisting of these print services objects:

- ◆ A queue called Tech_Serial_NT_X_Queue
- ◆ A printer called Tech Serial NTX that receives jobs from Tech_Serial_NT_X_Queue
- ◆ A print server called Tech_Serial_Server that services Tech_Serial_NT_X_Queue

All objects will reside in the context OU=Tech.OU=Western.O=Acme.

Using ATPSCON, you create and configure the front end, consisting of this print services component: A spooler called Tech Serial NTX Queue that will advertise the queue in the TechOps zone.

You create a spooler so that Macintosh clients can see the printer in the Chooser.

You must carry out these tasks when configuring the spooler:

- ◆ Specify that ATPS include the correct version of the Laser Prep file with each print job.

Because Macintosh clients are using versions 6.x and 7.x of the LaserWriter driver, you must make sure that the appropriate version of the Laser Prep file is available on the printer. On a non-AppleTalk connection, the ATPS printer server cannot handle this process. Therefore, you must instruct the spooler to handle inclusion of the Laser Prep file with each job.

- ◆ Specify that the spooler use the PPD file for the LaserWriter II NTX as its source of all information about the printer (except information about the fonts the printer stores).

Because the printer is on a non-AppleTalk connection, the spooler cannot query the printer directly.

- ◆ Instruct the spooler not to accept binary data. A non-AppleTalk channel cannot handle binary data successfully.
- ◆ Specify that the PostScript drivers use a custom font list file as their source of information about the fonts resident on the printer.

Because the printer has an external hard disk with many fonts, you should not depend upon the PPD file as the spooler's source of font information. The PPD file contains only those fonts installed on the printer at the factory. The custom font list can contain any additional fonts you have installed.

- ◆ Because additional memory is installed at the printer, instruct ATPS to report a different amount of printer memory than the amount specified in the printer's PPD file.
- ◆ Instruct ATPS to append a Control-D character, indicating end of file, to each PostScript job obtained by the spooler. This marker is

necessary for sending a PostScript print job over a serial connection.

Configuring the Back End

Follow these steps to create and configure a print queue, printer, and print server:



1. **Log in from a DOS workstation in Directory Services mode as Admin or another user with supervisor privileges.**
2. **Run PCONSOLE.**
3. **From the Available Options window, select the *Change Context* option.**

A window opens, enabling you to enter the context in which your print services objects will reside. This context becomes the current context. (If your current context is already set appropriately, you need not carry out this step.)

For our example, enter `OU=Tech.OU=Western.O=Acme`.

4. **From the Available Options window, choose the *Print Queues* option.**

The Print Queues list appears. This list contains all the print queues in the current context.

5. **To create a print queue, press <Ins>.**

In the window that opens, type the new queue name. For our example, type `Tech_Serial_NTX_Queue`. Then, press <Enter>.

Another window opens, prompting you for the volume on which the print queue will physically reside. Press <Ins> to see a list of available volumes. To ensure Macintosh client access to the printer, you must make sure that the volume you choose physically resides on a server that runs ATPS.

Highlight the appropriate volume and press <Enter>. The volume name appears in the window. Press <Enter> again. The print queue name appears highlighted in the Print Queues list.

6. **Press <Esc> to return to the Available Options window.**

7. From the Available Options window, select the *Printers* option.

The Printers window opens. This window contains a list of all the printers defined in the current context.

8. To create a printer object, press <Ins>.

In the window that opens, type the new printer name. For our example, type `Tech Serial NTX`. Then, press <Enter>. The printer name appears highlighted in the Printers list.

9. Configure the printer.

Make sure the new printer is highlighted. Then, press <Enter>. The Printer Configuration window opens (Figure 8-2).

Figure 8-2
Printer
Configuration
Window

Printer Tech Serial NTX Configuration	
Printer number:	0
Printer status:	(Unavailable)
Printer type:	Parallel
Configuration:	(See form)
Starting form:	0
Buffer size in KB:	3
Banner type:	Text
Service mode for forms:	Minimize form changes within print queues
Sampling frequency:	15
Print queues assigned:	(See list)
Notification:	(See list)

This window enables you to specify a number of printing options. For simplicity's sake, accept the default values in most of the fields. For our purposes, only these fields require explicit settings:

- ◆ Printer Type
- ◆ Configuration
- ◆ Banner Type
- ◆ Print Queues Assigned

- 9a. Highlight the Printer Type field and press <Enter>.

A list of printer types appears. In this window, the printer type refers to the type of connection, such as serial, parallel,

or AppleTalk. It does not refer to the AppleTalk type as shown in ATCON.

Highlight Serial. Then, press <Enter> to return to the Printer Configuration window.

9b. Highlight the Configuration field and press <Enter>.

The Serial Printer window opens (Figure 8-3).

**Figure 8-3
Serial Printer
Window**

Serial Printer	
Port:	COM1
Location:	Auto Load (Local)
Interrupt:	None (polled mode)
Baud rate:	9600
Data bits:	8
Stop bits:	1
Parity:	None
Use XON/XOFF:	No
Address restriction:	No
Network address:	
Node address:	

This window enables you to enter the values reflecting the printer's serial configuration. Table 8-3 contains an explanation of each field, and lists the values for our sample configuration. When setting up your serial connection, remember to enter the values corresponding to the specifications of your own site.

**Table 8-3
Serial Printer Parameters**

Field	Value	Explanation
Port	COM1	This field specifies the port on the NetWare server to which you have attached the serial cable. You can enter COM1, COM2, COM3, or COM4.

Table 8-3 *continued*

Serial Printer Parameters

Field	Value	Explanation
Location	Specify Auto Load for a serial connection to the server; specify Manual Load for a remote connection to a DOS workstation.	When you set this field to Auto Load, NPRINT.NLM loads automatically when you load PSERVER. When you set this field to Manual Load, you must load NPRINT.EXE manually at the remote workstation.
Interrupt	None	This field contains the interrupt number the serial connection uses. A value of None indicates that the connection uses polling to control communication on the cable.
Baud rate	9600	This field contains the baud rate of the connection.
Data bits	8	This field specifies whether the printer receives 5-bit, 6-bit, 7-bit, or 8-bit characters.
Stop bits	1	This field specifies how many bits the serial connection uses to signify the end of a data transmission.
Parity	None	This field specifies the type of error checking the serial connection uses: odd parity, even parity, or none.
Use XON/XOFF	Yes	This field specifies whether the connection uses software handshaking or hardware handshaking. To indicate software handshaking, enter Yes. To indicate hardware handshaking, enter No.
Address restriction	N/A	
Network address	N/A	
Node address	N/A	

When you finish entering your specifications, press <Esc> to return to the Printer Configuration window.

9c. Highlight the Banner Type field and press <Enter>.

A list of banner types appears. Highlight the *PostScript* option and press <Enter>. The value you specified appears in the field.

- 9d. Highlight the Print Queues Assigned field and press <Enter>.**

A list of queues assigned to the printer appears. If no queues are assigned, the list is blank.

Press <Ins>. A list of queues residing in the current context appears, along with the containers below the current context. Choose a queue to associate with the printer; the server will take jobs from this queue and send them to the printer. For our example, choose **Tech_Serial_NTX_Queue**. Then, press <Enter>.

A Priority window opens. If you associate more than one queue with a printer, the priority number determines which queue the print server takes jobs from first. Because our example uses only one queue per printer, accept the default of 1 by pressing <Enter>.

The queue now appears in the list of queues assigned to the printer. Press <Esc> to return to the Printer Configuration window.

- 10. Press <F10> to save your changes.**

The Printer Configuration window closes.

- 11. Press <Esc> to return to the Available Options window.**

- 12. From the Available Options window, select the *Print Servers* option.**

The Print Servers list appears. This list contains all the print servers configured in the current context.

- 13. To create a print server, press <Ins>.**

In the window that opens, type the new server name. For our example, enter **Tech_Serial_Server**. Then, press <Enter>. The print server name appears highlighted in the Print Servers list.

- 14. Make sure the new print server is still highlighted in the Print Servers list. Then, press <Enter>.**

The Print Server Information window opens.

15. From the **Print Server Information** window, select the *Printers* option.

An empty list appears. This window will contain the printer you associate with the print server.

16. To specify a printer, press <Ins>.

A list of printers residing in the current context appears, along with the containers below the current context. Highlight the name of the printer you want to associate with the print server. For our example, highlight **Tech Serial NTX**. Then, press <Enter>. The printer name appears highlighted in the list of serviced printers.

17. Exit PCONSOLE.

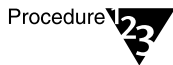
18. Test the configuration to be sure that it works for non-Macintosh clients.

First, load the print server software, as described in “Printing on a Serial Connection to the Server” on page 246. Then, send a print job from each type of workstation that will access the serial printer, and monitor the output.

For information on setting up non-Macintosh clients to access a PostScript printer, see Chapter 10, “Printing from Non-Macintosh Platforms,” on page 271.

Configuring the Front End

Follow these steps when creating and configuring a spooler:



1. Create a custom font list file called SERIAL.FNT, containing all the fonts resident on the printer.

You will need to supply the name of the font list file when you configure the spooler. For instructions on creating this file, see “Creating a Specialized Font List File” on page 211.

2. Determine the amount of memory available at the printer.

From a DOS workstation, set up a PostScript print job configuration in PRINTCON. Then, use the NetWare utility NPRINT to send the file FREEVM.PS to a network printer; this file resides in the SYS:SYSTEM\NW-MAC\PSUTILS directory.

The resulting output page contains the exact amount of free memory available on the printer. Save this information; you will need it when you configure the spooler.

3. Load ATPSCON at the server.

Enter this command at the console prompt:

load atpscon

You can also access ATPSCON from a DOS workstation running RCONSOLE. However, if you load ATPSCON using RCONSOLE, NetWare transmits your password across the network in an unencrypted form. Always load ATPSCON from the server console to avoid compromising the secrecy of your password. After you load ATPSCON, you can use it safely from RCONSOLE.

For details on using RCONSOLE, see NetWare 4.11 *Supervising the Network*.

- 4. From the Configuration Options window, select the *Change Context* option.**

A window opens, enabling you to enter the context of the queue you will associate with the spooler. This context becomes the current context. (If your current context is already set appropriately, you need not carry out this step.)

For our example, enter `OU=Tech.OU=Western.O=Acme`.

- 5. From the Configuration Options window, select the *Configure Spoolers* option.**

The Configured Spoolers window opens. If no spoolers exist, the window is empty.

- 6. To configure a new spooler, press <Ins>.**

The Spooler Parameters window opens.

- 7. In the Spooler Parameters window, specify the spooler configuration settings.**

For our sample configuration, enter the settings in Table 8-4.

Table 8-4

Spooler Parameters: Serial Settings

Field	Setting	Explanation
NetWare Print Queue	Tech_Serial_NTX_Queue	The print queue name is the one created in PCONSOLE. It reflects the department in which the printer is located, the type of connection on which it resides, and the printer type.
Printer Model	Apple LaserWriter II NTX	This setting reflects the model of the printer you are making available.
Spooler's AppleTalk Name	Tech Serial NTX Queue	The spooler name reflects the queue to which it will send jobs. By default, ATPSCON uses the queue name you specify.
Spooler's AppleTalk Type	LaserWriter	You cannot change this field.
Spooler's AppleTalk Zone	TechOps	The spooler will advertise the queue in this zone.
Banner Page with Jobs	No	This setting is the default.
Notify User on Job Completion	Yes	This setting is the default.
Place Jobs on Hold	No	This setting is the default.
Enforce Queue Security	No	This setting is the default.
Advanced PostScript Options	See the list in Table 8-5 on page 244.	For best results, you should set several advanced PostScript options for a printer on a serial or remote connection.
Advertise Color Device	<model default>	This setting is the default.
Spooler Form	<None>	This setting is the default.
Spooler Device	<None>	This setting is the default.
Spooler Header Mode	<None>	This setting is the default.
Spooler Trailer Mode	<None>	This setting is the default.

For complete information on each field in the Spooler Parameters window, see “Configuring a Spooler” on page 130.

The settings for Advanced PostScript Options appear in Table 8-5.

Table 8-5

Advanced PostScript Options: Serial Settings

Field	Setting	Explanation
Include Laser Prep in Job	Yes	This setting is the default. Because a non-ATPS print server cannot make sure that the appropriate version of the Laser Prep file resides on the printer, you must specify that the spooler include the Laser Prep file with each job.
Query Source	<model default>	This setting is the default. Because the printer is on a non-AppleTalk connection, the spooler cannot query the printer directly. Therefore, you must specify <model default> to indicate that the spooler use the PPD file to gather information about the printer.
Accept Binary Data	Use Binary Encoding	Use this setting to take advantage of any binary communications protocols your printer supports.
Custom Font List	SERIAL.FNT	This setting overrides the font list specified in the printer model's PPD file. Because the printer has an external disk containing fonts not appearing in the PPD file, you need to specify a custom font list that includes the additional fonts you want to make available.
Fast Font Response	Yes	You should enable this option if your printer has fonts installed on an attached hard disk.
Manage Fonts	No	This setting is the default.

Table 8-5 *continued*

Advanced PostScript Options: Serial Settings

Field	Setting	Explanation
Custom Printer Memory	Yes	Because additional memory is installed at the printer, the PPD file associated with the LaserWriter II NTX does not reflect the actual amount of memory available. When you select Yes for this field, ATPSCON enables the next field, Free Printer Memory.
Free Printer Memory	N/A	Enter the exact amount of memory listed on the output page that resulted from sending FREEVM.PS to the printer in Step 2 on page 241.
Add Final EOF	Yes	This setting is the default. An EOF marker is necessary when sending data over a serial connection.

For complete information on each field in the Advanced PostScript Options window, see Step 11 on page 139.

8. Save your settings.

Press <Esc>. A window opens, asking whether you want to save the parameters you entered.

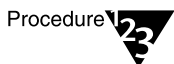
To go back to the Spooler Parameters window and change your settings, select No. To save your settings, select Yes. The Configured Spoolers window now contains the name, type, and zone of the new spooler. Press <Esc> to return to the Configuration Options window.

9. Exit ATPSCON.

Printing on a Serial Connection to the Server

This section describes how to run the software that enables users to print over a serial connection to the server.

At the server containing the newly created queue, follow these steps:



1. Load PSERVER.

At the console prompt, enter this command line:

```
load pserver print_server <Enter>
```

For the *print_server* parameter, substitute the distinguished name of the print server you configured.

2. Make sure that ATPS is still loaded.

Loading ATPSCON automatically loads ATPS. If you have unloaded the NLM™, enter this command at the console prompt:

```
load atps <Enter>
```

3. From a DOS workstation, log in to the server to which the serial printer is connected.

4. Change directories to SYS:SYSTEMNW-MAC\PSUTILS.

5. Use NPRINT to send the program SERIAL.PS to the queue.

You need to carry out this step only once.

Most Macintosh applications and print drivers generate Clean8Bit PostScript data. Clean8bit is a PostScript classification adopted by Adobe Systems, Inc. Clean8bit PostScript data does not rely on the binary-capable nature of AppleTalk, but it does require 8 bits per character.

Most serial interfaces can accept either 7- or 8-bit data. Apple LaserWriters, by default, accept 7-bit data. When you are printing a Macintosh file to a LaserWriter-compatible printer connected through a serial interface, make sure that the printer interface is configured to accept 8-bit data. If both the printer and the printer port are not properly configured, characters in the upper ASCII range do not print.

To change a serial printer's interface to accept 8-bit data, download the SERIAL.PS utility to the printer. You can download the file using the NetWare NPRINT command:

```
nprint serial.ps /s=server /q=queue /nff /nb
```

The SERIAL.PS file remains resident on the printer permanently, even if the printer is powered on an off.



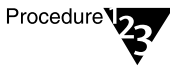
A few Macintosh applications rely on the binary-capable nature of AppleTalk to send bitmap information or other binary data. Most of these applications offer an option to send non-binary, or "ASCII," PostScript data. See your application's documentation for more details.

Both Macintosh and non-Macintosh clients can now print to the serial printer.

Running the Software to Support Remote Printing

This section describes how to run the software that enables users to print to a printer connected by a serial line to a DOS workstation.

At the server containing the newly created queue, follow these steps:



- 1. Load PSERVER.**

At the console prompt, enter this command line:

```
load pserver print_server <Enter>
```

For the *print_server* parameter, substitute the distinguished name of the print server you configured.

- 2. Make sure that ATPS is still loaded.**

Loading ATPSCON automatically loads ATPS. If you have unloaded the NLM, enter this command at the console prompt:

```
load atps <Enter>
```

- 3. Go to the DOS workstation to which the printer is connected.**

- 4. Modify the NET.CFG file to contain the following line:**

```
SPX=50
```

5. Reload the NetWare shell to make the change to the NET.CFG file effective.

6. Run NPRINT.EXE.

NPRINT.EXE enables a remote workstation to service print jobs from a queue. The file resides in the server's SYS:PUBLIC directory. Copy NPRINT.EXE to a local volume or run it from the server. At the DOS prompt, enter this command line to run the program:

```
NPRINT <Enter>
```

7. From the main NPRINT window, select the print server that you configured earlier and press <Enter>.

A list of remote printers defined for this print server appears.

8. Choose the name of the remote printer that you defined for this print server and press <Enter>.

The program returns you to DOS. If the installation was successful, a message appears, indicating that the remote printer has been installed.

9. From the DOS workstation, log in to the server where the queue resides.

10. Change directories to SYS:SYSTEMNW-MAC\PSUTILS.

11. Use NPRINT to send the program SERIAL.PS to the queue.

You need to carry out this step only once.

Most Macintosh applications and print drivers generate Clean8Bit PostScript data. Clean8bit is a PostScript classification adopted by Adobe Systems, Inc. Clean8bit PostScript data does not rely on the binary-capable nature of AppleTalk, but it does require 8 bits per character.

Most serial interfaces can accept either 7- or 8-bit data. Apple LaserWriters, by default, accept 7-bit data. When you are printing a Macintosh file to a LaserWriter-compatible printer connected through a serial interface, make sure that the printer interface is configured to accept 8-bit data. If both the printer and the printer

port are not properly configured, characters in the upper ASCII range do not print.

To change a serial printer's interface to accept 8-bit data, download the SERIAL.PS utility to the printer. You can download the file using the NetWare NPRINT command:

```
nprint serial.ps /s=server /q=queue /nff /nb
```

The SERIAL.PS file remains resident on the printer permanently, even if the printer is powered on an off.



A few Macintosh applications rely on the binary-capable nature of AppleTalk to send bitmap information or other binary data. Most of these applications offer an option to send non-binary, or "ASCII," PostScript data. See your application's documentation for more details.

Both Macintosh and non-Macintosh clients can now print to the remote serial printer.

Printing with AppleTalk XRP and PSERVER

The AppleTalk XRP (Extended Remote Printer) NLM™ works with PSERVER, the NetWare® 4.11 print server, to send a print job to an AppleTalk network printer from a NetWare print queue. This chapter describes the use of the ATXRP module.

The NetWare installation program copies ATXRP.NLM into the SYS:SYSTEM directory when you install the NetWare operating system. ATXRP works in conjunction with the APPLETLK NLM. Therefore, before using ATXRP, you must configure, load, and bind AppleTalk.

Choosing ATPS or PSERVER with ATXRP

Both ATPS.NLM and ATXRP.NLM facilitate printing to AppleTalk network printers. While these NLMs are similar in some respects, each one has a unique role to play in managing print operations. ATPS provides integrated AppleTalk print spooling and print serving. ATXRP acts as a driver to PSERVER, the NetWare print server, and offers the benefits of PSERVER to those users who want to print to AppleTalk printers.

The sections that follow summarize the advantages of using each NLM. Use this information to determine which module best suits your printing needs.

Advantages of ATPS

ATPS supports the following features not provided by PSERVER:

- ◆ ATPSCON, the configuration utility for ATPS, provides an integrated configuration environment for AppleTalk printing.

If both Macintosh and non-Macintosh clients print to NetWare queues, you can use ATPSCON to configure the back end for all

clients, and the front end required for Macintosh clients. You need not use any other utility.

- ◆ You can set up accounting services to monitor and limit printer use by clients.

ATPS lets you specify the amount to charge to a user's NetWare account for printing a job. If the user's balance is insufficient, the job cannot print.

- ◆ You can keep a job in a queue after it prints, and reprint it at a later time.

The administrator can specify that jobs remain on hold in a queue, making them available for reprinting. To reprint a job, the owner or administrator releases the hold. After printing, ATPS places the job on hold again.

- ◆ You can use printer setup files.

A printer setup file contains a series of printer commands that prepare a printer for certain kinds of print jobs. A command might access a specific paper tray or change the printer's resolution. By creating and using printer setup files, you can take advantage of all the special features your printer offers.

Advantages of PSERVER with ATXRP

PSERVER and ATXRP support the following features not provided by ATPS:

- ◆ PSERVER and ATXRP provide integrated configuration and management of both AppleTalk and non-AppleTalk printers.

- ◆ PSERVER can manage forms.

After configuring PSERVER to recognize NetWare forms, you can use these forms to ensure that jobs are printed on the proper media.

- ◆ You can configure a print server to service multiple queues by priority.

You can configure PSERVER so that one printer can service multiple print queues in a prioritized order. ATPS services all queues equally.

- ◆ You can create a notification list for a printer.

Using PCONSOLE, you can create a list of users for PSERVER to notify when printer errors occur. If the printer is out of paper or off line, for example, each user on the notification list receives a message at his or her workstation.

- ◆ ATXRP provides integration of AppleTalk printers into Novell[®] Directory Services[™].

If you want an AppleTalk printer to appear as an object in the Directory Services tree, configure it using ATXRP.

- ◆ PSERVER and ATXRP can service queues on remote NetWare servers.

The print queue you are sending your job to does not need to be on the same server as PSERVER and ATXRP. This flexibility increases the number of configuration options available for your network.

Supported Printers and Features

ATXRP supports most printers that use PAP (the AppleTalk Printer Access Protocol), including the following:

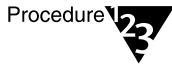
- ◆ Apple LaserWriter family and compatible printers
- ◆ Apple ImageWriter II
- ◆ Apple ImageWriter LQ
- ◆ HP DeskWriter family
- ◆ HP PaintWriter XL
- ◆ HP PaintJet XL300

ATXRP supports most PSERVER features, except for certain print job controls, such as rewinding print jobs.

Making an AppleTalk Printer Available Using PSERVER and ATXRP

This section discusses how to set up print services for both Macintosh and non-Macintosh clients directing print jobs to a LaserWriter Plus printer serviced by PSERVER and ATXRP.

The procedure consists of these steps:



1. **Configure the print services back end (for all client access).**
 - 1a. **At a DOS workstation, run PCONSOLE.**
 - 1b. **Select a context.**
 - 1c. **Create a queue.**
 - 1d. **Create and configure a printer object.**
 - 1e. **Associate the print queue with the printer.**
 - 1f. **Create a print server or choose an existing one.**
 - 1g. **Associate the printer with the print server.**
 - 1h. **Exit PCONSOLE.**

For information on carrying out these steps, see “Configuring the Back End” on page 256.

2. **Load PSERVER.**

Loading PSERVER automatically loads ATXRP if the print server has one or more AppleTalk printers associated with it. For information, see “Loading PSERVER and ATXRP” on page 267.

3. **Configure the non-Macintosh clients to access the NetWare queue.**

For information, see “Setting Up DOS Workstation Printing” on page 273.

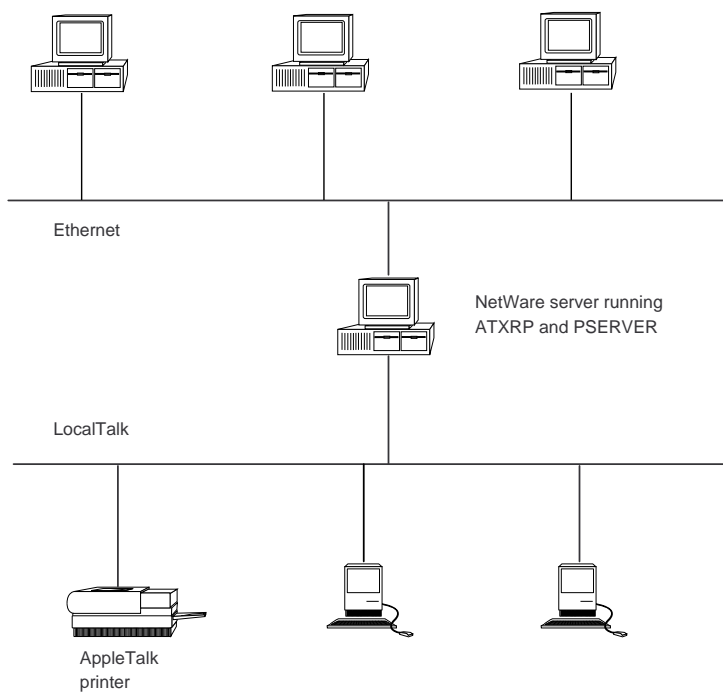
4. **Test the configuration for non-Macintosh clients.**
5. **Configure the print services front end (for Macintosh client access only).**

- 5a. At the NetWare server, load ATPSCON.
- 5b. Configure a printer server as a query source.
- 5c. Configure a spooler.
- 5d. Exit ATPSCON.

For information on carrying out these steps, see “Configuring the Front End” on page 263.

The sections that follow describe how to set up the back end and the front end of a sample configuration. When you set up print services, substitute the appropriate data for the sample information shown in the example. In the sample configuration, the NetWare clients that can print using ATXRP include Macintosh, DOS, OS/2, and Windows clients.

Figure 9-1
Typical ATXRP
Network
Configuration



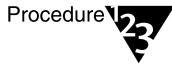
In our example, you use PCONSOLE to create and configure these print services objects in the context OU=TechSupport.OU=Western.O=Acme:

- ◆ A queue called TechSupport_LW_Plus_Queue
- ◆ A LaserWriter Plus printer called TechSupport LW Plus that receives jobs from TechSupport_LW_Plus_Queue
- ◆ A print server called TechSupport_Server that services TechSupport_LW_Plus_Queue

Using ATPSCON, you create and configure this print services component: a spooler called TechSupport LW Plus Queue.

Configuring the Back End

Follow these steps to create and configure a print queue, printer, and print server:



1. Load ATCON at the server.

Use ATCON to determine the name and zone of the LaserWriter Plus that you want to make available. You will need this information when running PCONSOLE.

2. Log in from a DOS workstation in Directory Services mode as Admin or another user with supervisor privileges.

3. Run PCONSOLE.

4. From the Available Options window, select the *Change Context* option.

A window opens, enabling you to enter the context in which your print services objects will reside. This context becomes the current context. (If your current context is already set appropriately, you need not carry out this step.)

For our example, enter `OU=TechSupport.OU=Western.O=Acme`.

5. From the Available Options window, choose the *Print Queues* option.

The Print Queues list appears. This list contains all the print queues configured in the current context.

6. To create a print queue, press <Ins>.

In the window that opens, type the new queue name. For our example, type `TechSupport_LW_Plus_Queue`. Then, press <Enter>.

Another window opens, prompting you for the volume on which the print queue will physically reside. Press <Ins> to see a list of available volumes. To ensure Macintosh client access to the printer, you must make sure that the volume you choose physically resides on a server that runs ATPS.

Highlight the appropriate volume and press <Enter>. The volume name appears in the window. Press <Enter> again. The print queue name appears highlighted in the Print Queues list.

7. Press <Esc> to return to the Available Options window.

8. From the Available Options window, select the *Printers* option.

The Printers window opens. This window contains a list of all the printers defined in the current context.

9. To create a printer object, press <Ins>.

In the window that opens, type the new printer name. For our example, type `TechSupport LW Plus`. Then, press <Enter>. The printer name appears highlighted in the Printers list.

10. Configure the printer.

Make sure the new printer is highlighted. Then, press <Enter>. The Printer Configuration window opens (Figure 9-2).

**Figure 9-2
Printer
Configuration
Window**

Printer TechSupport LW Plus Configuration	
Printer number:	0
Printer status:	(Unavailable)
Printer type:	Parallel
Configuration:	(See form)
Starting form:	0
Buffer size in KB:	3
Banner type:	Text
Service mode for forms:	Minimize form changes within print queues
Sampling frequency:	15
Print queues assigned:	(See list)
Notification:	(See list)

This window enables you to specify a number of printing options. For simplicity's sake, accept the default values in most of the fields. For our purposes, only these fields require explicit settings:

- ◆ Printer Type
- ◆ Configuration
- ◆ Banner Type
- ◆ Print Queues Assigned

10a. Highlight the Printer Type field and press <Enter>.

A list of printer types appears. In this window, the printer type refers to the type of connection, such as serial, parallel, or AppleTalk. It does not refer to the AppleTalk type as shown in ATCON.

Highlight AppleTalk Printer. Then, press <Enter> to return to the Printer Configuration window.

10b. Highlight the Configuration field and press <Enter>.

The AppleTalk Printer Configuration window opens (Figure 9-3).

Figure 9-3
AppleTalk Printer
Configuration
Window

AppleTalk Printer Configuration	
AppleTalk name:	TechSupport LW Plus
AppleTalk type:	LaserWriter
AppleTalk zone:	*
Hide AppleTalk printer:	No
Print error banners:	Yes

Table 9-1 explains each field in the AppleTalk Printer Configuration window.

Table 9-1
AppleTalk Printer Configuration

Field	Explanation
AppleTalk Name	This field defaults to the printer name you specified in Step 9. You must make sure that the field contains the printer's AppleTalk name visible in ATCON, including any trailing spaces.
AppleTalk Type	<p>This field contains the NBP type of the printer. To select a printer type, highlight the field and press <Enter>. A window opens, displaying these printer types:</p> <ul style="list-style-type: none"> ◆ <i>LaserWriter</i> – The Apple LaserWriter family and its compatibles. This type is the default. ◆ <i>ImageWriter</i> – The Apple ImageWriter II ◆ <i>LQ</i> – The Apple ImageWriter LQ ◆ <i>DeskWriter</i> – The HP DeskWriter, DeskWriter 320, DeskWriter 510, and DeskWriter C ◆ <i>DeskWriter 550C</i> – The HP DeskWriter 550C and 560C ◆ <i>PaintWriter XL</i> – The HP PaintWriter XL ◆ <i>PaintJet XL300</i> – The HP PaintJet XL 300 ◆ <i>Other</i> – Enables you to enter your own type. To select a printer type that is not listed, select Other and enter the printer's type. Type names are not case-sensitive. <p>For our example, accept the default of LaserWriter.</p>

Table 9-1 *continued*

AppleTalk Printer Configuration

Field	Explanation
AppleTalk Zone	<p>Enter the name of the AppleTalk zone in which the AppleTalk printer resides. For our example, enter TechSupport.</p> <p>If you do not specify a zone name, ATXRP assumes the default zone. The default zone, represented by an asterisk (*), is the zone in which the server resides. We recommend that you enter the print server's actual zone name, instead of relying on the default zone name, because the default zone can change. The zone name you enter can contain up to 32 characters and is not case-sensitive.</p>
Hide AppleTalk Printer	<p>If you hide the printer, the user must send the print job to the spooler. Hiding the printer allows for a more equitable use of printer resources, because a user cannot bypass jobs in the queue and print directly to the printer. When you select Yes for this option, ATXRP hides the AppleTalk printer by changing its AppleTalk type. (This feature is currently supported for use with Apple LaserWriters, LaserWriter-compatibles, ImageWriter II, and Image Writer LQ printers only.)</p> <p>For our example, select Yes.</p> <p>Note that hiding a printer is not a foolproof means of denying direct access to it. Technically sophisticated users may be able to find a way to print directly. If printer security is important to you, configure APPLETLK.NLM to limit access to the printer, or put the printer on a non-AppleTalk segment of the network.</p>
Print Error Banners	<p>This option enables you to specify whether ATXRP prints error banners. By default, job errors that a printer returns to ATXRP print on a special banner page. For printers that use high-resolution film, printing extra banner pages can cause unacceptable waste.</p> <p>For our example, select No.</p>

Press <Esc> to return to the Printer Configuration window.

10c. Highlight the Banner Type field and press <Enter>.

A list of banner types appears. Highlight the *PostScript* option and press <Enter>. The value you specified appears in the field.

Note that you must set this field correctly even if you do not plan to print banners. You should specify Text for most printers that are not LaserWriter-compatibles.

10d. Highlight the Print Queues Assigned field and press <Enter>.

A list of queues assigned to the printer appears. If no queues are assigned, the list is blank.

Press <Ins>. A list of queues residing in the current context appears, along with the containers below the current context. Choose a queue to associate with the printer; the server will take jobs from this queue and send them to the printer. For our example, choose **TechSupport_LW_Plus_Queue**. Then, press <Enter>.

A Priority window opens. If you associate more than one queue with a printer, the priority number determines which queue the print server takes jobs from first. Because our example uses only one queue per printer, accept the default of 1 by pressing <Enter>.

The queue now appears in the list of queues assigned to the printer. Press <Esc> to return to the Printer Configuration window.

11. Press <F10> to save your changes.

The Printer Configuration window closes.

11a. Press <Esc> to return to the Available Options window.

11b. From the Available Options window, select the *Print Servers* option.

The Print Servers list appears. This list contains all the print servers configured in the current context.

11c. Create or select a print server.

11d. To create a print server, press <Ins>.

In the window that opens, type the new server name. For our example, enter **TechSupport_server**. Then, press <Enter>. The print server name appears highlighted in the Print Servers list.

11e. To select a print server, highlight its name in the list.

11f. Make sure the appropriate print server is highlighted in the Print Servers list. Then, press <Enter>.

The Print Server Information window opens.

11g. From the Print Server Information window, select the *Printers* option.

An empty list appears. This window will contain the printer you associate with the print server.

11h. To specify a printer, press <Ins>.

A list of printers residing in the current context appears, along with the containers below the current context. Highlight the name of the printer you want to associate with the print server. For our example, highlight **TechSupport LW Plus**. Then, press <Enter>. The printer name appears highlighted in the list of serviced printers.

11i. Exit PCONSOLE.

11j. Load PSERVER, specifying the name of the print server you created.

Loading PSERVER automatically loads ATXRP if the print server has one or more AppleTalk printers associated with it. For detailed information, see “Loading PSERVER and ATXRP” on page 267.

11k. Configure the non-Macintosh clients to access the NetWare queue.

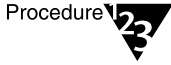
For information on carrying out this task, see Chapter 10, “Printing from Non-Macintosh Platforms,” on page 271.

11l. Test the configuration to be sure that it works for non-Macintosh clients.

Send a print job from each type of workstation that will access the printer, and monitor the output.

Configuring the Front End

Follow these steps to create and configure a spooler:



1. Load ATPSCON at the server.

Enter this command at the console prompt:

```
load atpscon
```

You can also access ATPSCON from a DOS workstation running RCONSOLE. However, if you load ATPSCON using RCONSOLE, NetWare transmits your password across the network in an unencrypted form. Always load ATPSCON from the server console to avoid compromising the secrecy of your password. After you load ATPSCON, you can use it safely from RCONSOLE.

For details on using RCONSOLE, see NetWare 4.11 *Supervising the Network*.

2. From the Configuration Options window, select the **Change Context** option.

A window opens, enabling you to enter the context containing the queue you will associate with the spooler. This context becomes the current context. (If your current context is already set to the one in which the queue resides, you need not carry out this step.)

For our example, enter `OU=Tech.OU=Western.O=Acme`.

3. Configure a printer server as a query source.

When a Macintosh user sends a job, the PostScript driver on the Macintosh sends a PostScript query to the spooler. This query can ask for the printer's list of supported fonts, the amount of memory available on the printer, and other information. The source of information the spooler uses to respond to the PostScript query can be a printer or the PostScript Printer Definition (PPD) file for the printer model.

Ideally, the query source should be the printer servicing the queue; in this example, the query source should be the printer **TechSupport LW Plus**. When we configure a spooler later in this example, we will choose that printer as the query source. When we do so, we will select the printer server associated with the printer. At this point, therefore, we must configure a printer server associated with TechSupport LW Plus.

4. From the Configuration Options window, select the **Configure Printers Servers** option.

The Configured Printer Servers window opens. If no printer servers exist, the window is empty.

5. To configure a printer server, press <Ins>.

The Lookup Parameters window opens (Figure 9-4).

Figure 9-4
Lookup Parameters
Window

Lookup Parameters	
Printer Model:	Generic PostScript
Printer Type:	LaserWriter
Printer Zone:	TechSupport
Proceed:	(Perform Lookup)

6. Select a printer to associate with the printer server.

Choose the model and zone of the printer you want to make available as the query source. In this example, enter **Apple LaserWriter Plus** in the Model field and **TechSupport** in the Zone field. Then, select *Proceed*.

The Available Printers window opens. This window contains a list of the printers and spoolers configured on the NetWare server. Select a printer from the list. For our example, select *TechSupport LW Plus*.

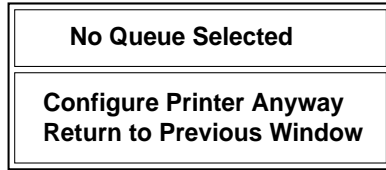
The Printer Servers Parameters window opens.

7. Accept the settings in the window.

To configure the printer server as a query source while making it unavailable to service print jobs, do not specify a queue name in the NetWare Print Queue field. To accept the settings in the window, press <Esc>.

A window opens, asking whether you want to save your changes. Select Yes. The Printer Server Parameters window closes, and another window opens (Figure 9-5).

Figure 9-5
No Queue Selected
Window



Highlight the *Configure Printer Anyway* option and press <Enter>. By configuring a printer server without a NetWare queue attached, you have created the printer server as a query source. The printer server name now appears in the Configured Printer Servers window.

8. **Press <Esc> to return to the Configuration Options window.**
9. **From the Configuration Options window, select the *Configure Spoolers* option.**

The Configured Spoolers window opens. If no spoolers exist, the window is empty.

10. **To configure a new spooler, press <Ins>.**

The Spooler Parameters window opens.

11. **In the Spooler Parameters window, specify the spooler configuration settings.**

For our sample configuration, enter the settings in Table 9-2.

Table 9-2
Spooler Parameters

Field	Setting	Explanation
NetWare Print Queue	TechSupport_LW_Plus_Queue	The print queue name reflects the department in which the printer is located and the printer type.
Printer Model	Apple LaserWriter Plus	This setting reflects the model of the printer you are making available.
Spooler's AppleTalk Name	TechSupport LW Plus Queue	The spooler name reflects the queue to which it will send jobs. By default, ATPSCON uses the queue name you specify.

Table 9-2 *continued*

Spooler Parameters

Field	Setting	Explanation
Spooler's AppleTalk Type	LaserWriter	You cannot change this field.
Spooler's AppleTalk Zone	TechSupport	The spooler will advertise the queue in this zone.
Banner Page with Jobs	No	This setting is the default.
Notify User on Job Completion	Yes	This setting is the default.
Place Jobs on Hold	No	This setting is the default.
Enforce Queue Security	No	This setting is the default.
Advanced PostScript Options	Accept all defaults except those for the Query Source and Accept Binary Data fields. For the Query Source field, select the name of the printer server you configured as the query source. For the Accept Binary Data field, specify Yes.	
Advertise Color Device	<model default>	This setting is the default.
Spooler Form	<None>	This setting is the default.
Spooler Device	<None>	This setting is the default.
Spooler Header Mode	<None>	This setting is the default.
Spooler Trailer Mode	<None>	This setting is the default.

For complete information on each field in the Spooler Parameters window, see "Configuring a Spooler" on page 130.

12. Save your settings.

Press <Esc>. A window opens, asking whether you want to save the parameters you entered.

To go back to the Spooler Parameters window and change your settings, select No. To save your settings, select Yes. The Configured Spoolers window now contains the name, type, and zone of the new spooler. Press <Esc> to return to the Configuration Options window.

13. Exit ATPSCON.

Loading PSERVER and ATXRP

At the server containing the newly configured queue, enter this command line:

```
load pserver print_server <Enter>
```

Substitute the *print_server* argument with the name of the print server you configured.

Loading PSERVER automatically loads ATXRP if the print server has one or more AppleTalk printers associated with it. However, if you wish to load ATXRP with one or more of its available options, or if you have unloaded ATXRP and wish to reload it, enter this command line at the console prompt:

```
load atxrp [-v] [-1] <Enter>
```

The `-v` option sets the verbose mode so that ATXRP will display a console screen containing troubleshooting information. To access this screen, you press <Ctrl>+<Esc> and choose the ATXRP console screen from the list of screens that appears. Use the verbose setting whenever you are troubleshooting or if you need more information to monitor a particular situation.

The `-1` option causes ATXRP to write troubleshooting information to the system log file, `SYSSLOG.ERR`.

Note that loading ATXRP automatically loads PSERVER.

ATXRP Printer Status Messages

Table 9-2 lists the messages that can appear on the ATXRP console screen while ATXRP is running.

Table 9-3
ATXRP Printer Status Messages

Message	Explanation
Aborting job	ATXRP received a command to abort the current job.
Busy	The specified printer is not accepting connections because it is currently processing another job or is in an error state. Check that printer to be sure that it is on line and connected to the network
Connecting	ATXRP is attempting to open an AppleTalk connection with the printer.
Disconnected	ATXRP experienced a fatal error servicing this printer.
Hiding Printer	ATXRP is making the specified printer unavailable for direct printing by Macintosh workstations.
Job Error	A print job has generated a PostScript exception error or its non-PostScript equivalent. For information on resolving this error, see "Print Services Management Problems" on page 311.
Not Connected	ATXRP is not loaded.
Not Responding	ATXRP is attempting to establish an AppleTalk connection with the printer, but the printer is not responding to the connection request. ATXRP will retry the connection request.
Paused	ATXRP received a command to pause the printer while it was servicing a job.
PostScript Error	A print job has generated a PostScript exception error or its non-PostScript equivalent. For information on resolving this error, see "Print Services Management Problems" on page 311.
Printing	ATXRP is printing the current job.
Restoring Printer	ATXRP is making the printer available to Macintosh users for direct printing.

Table 9-3 *continued*

ATXRP Printer Status Messages

Resumed	The paused printer has been restarted.
Stopped	ATXRP received a command to stop the printer or to pause the printer while it was currently servicing a job.
Unreachable	ATXRP cannot locate the printer on the network. Try to locate the printer in ATCON. If you can locate it there, make sure that the printer's name, type, zone are correctly specified in PCONSOLE, including trailing spaces. If you cannot locate the printer in ATCON, check the cabling connecting the printer to the network. If the connection is secure, check that the AppleTalk module is configured correctly.
Waiting for Job	The printer is waiting for the next print job.

Unloading PSERVER and ATXRP

You must unload ATXRP before you can unload PSERVER. To unload both of these modules, enter the following commands from the server console:

```
unload atxrp <Enter>
unload pserver <Enter>
```

If there are any hidden printers when you unload ATXRP, a message appears, informing you that some printers are hidden and asking whether you want to restore them:

```
Restore the hidden printers? (0=None, 1=All, 2=Some)
```

If you select Some (by entering a 2), the system prompts you with the name of each hidden printer. You can enter Y to restore the printer or enter N to keep the printer hidden.

If you attempt to unload PSERVER with ATXRP still loaded, an error message appears. However, you can down PSERVER with ATXRP still loaded. If you do so, both PSERVER and ATXRP unload. If there are any hidden printers when you down PSERVER, they remain hidden until you power the printer off and then on.

Printing from Non-Macintosh Platforms

NetWare for Macintosh 4.10 supports printing from a Macintosh, DOS, OS/2, UNIX[®], or Windows client to an AppleTalk printer. To configure cross-platform printing, you must accomplish each of the following tasks:

- ◆ Set up a NetWare[®] print queue, print(er) server, and printer from ATPSCON or PCONSOLE. If Macintosh clients need access, you must also configure a spooler using ATPSCON.
- ◆ Configure the workstation to access the AppleTalk printer.

In some cases, this task involves selecting a print driver, assigning it to a printer port, and setting the port to use the appropriate print queue. In other cases, your job involves using the `CAPTURE` command to redirect print jobs from a workstation printer port to a queue.

Before beginning your workstation configuration, make sure that you have defined and configured the print queue, print(er) server, and printer. You can then proceed to the section that describes each type of workstation for configuration details.

In many instances, once you configure your print services environment, you need not perform any kind of setup to prepare the workstation. Generally, you can print directly from a NetWare-aware application to a printer. Check your software documentation to determine whether your DOS, OS/2, UNIX, or Windows application can accomplish direct network printing.

To accommodate applications that may be non-NetWare aware, or to configure specific printer ports to direct print jobs to a queue, refer to the appropriate sections of this chapter.

NetWare Print Utilities for Non-Macintosh Platforms

Table 10-1 provides an overview of NetWare print utilities for non-Macintosh platforms.

Table 10-1
NetWare Print Utilities for Non-Macintosh Platforms

Utility Name	Functionality
PRINTDEF	The PRINTDEF utility imports printer definition (.PDF) files to the NetWare print devices database found in the NetWare Directory, and creates new forms.
PRINTCON	The PRINTCON utility creates print job configurations and adds them to each user's individual print job database, PRINTJOB.DAT.
PCONSOLE	The PCONSOLE utility creates queues, print servers, and printer configurations, and displays information about network printing.
NETUSER	The NETUSER utility displays details about the local DOS network printing configuration.
NetWare Administrator	The NetWare Administrator utility performs high-level management of network objects, including servers, print queues, and users under Directory Services.
NPRINTER.NLM	NPRINTER.NLM lets you attach network printers directly to a NetWare server.
NPRINTER.EXE	Lets you attach network printers to non-dedicated DOS and OS/2 workstations.
NPRINT.EXE	NPRINT.EXE prints files from a workstation to a network printer. These files must be DOS text files or encapsulated files formatted by an application for your specific printer.
PSC	The PSC utility lets you view printer and print server status from the command line.
CAPTURE	The CAPTURE utility redirects print jobs from a workstation port to a designated network printer.

Setting Up DOS Workstation Printing

A DOS user can print to a NetWare print queue using the CAPTURE or NPRINT commands. The user must ensure that the job is properly formatted before it goes to the print queue; the queue will not confirm that the job is formatted correctly.

To ensure proper formatting, carry out one of these tasks:

- ◆ Install the appropriate print driver.

Most applications include a variety of print drivers that can configure a job for different printer models.

- ◆ Set up a print job configuration for each client to use.

You need to set up a print job configuration under these circumstances:

- ◆ Instead of using a print driver, the client application simply outputs unformatted ASCII text to a PostScript printer.

The print job configuration inserts the proper PostScript formatting codes at the beginning of the print job. If you do not use a print job configuration in this case, the PostScript printer will return an error.

- ◆ You have a dual-mode printer, such as an HP LaserJet III Si, that can accept both PostScript- and PCL-formatted jobs.

The formatting codes inserted by the print job configuration at the beginning of the print job can switch the printer to a mode other than its default if the print driver on the workstation cannot do so.

A typical workstation print job configuration setup may have a PostScript ASCII text mode for LPT1, a standard PostScript mode for LPT2, and another mode (such as PCL) for LPT3. You then set up the proper drivers for each port—a TTY or ASCII driver for LPT1, a PostScript driver for LPT2, and a PCL driver for LPT3.

To set up a print job configuration enabling DOS users to print to LaserWriter and ImageWriter printers, follow these steps:

1. Use PRINTDEF to import Apple printer definition (.PDF) files into the NetWare print devices database found in the NetWare Directory.

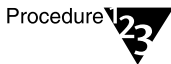
These .PDF files contain information about the modes available on each kind of printer. For instructions on carrying out this task, see “Importing Apple Printer Definitions with PRINTDEF” on page 274.

2. Use PRINTCON to assign each workstation its particular print job configuration.

Each print job configuration tells the workstation the type of header information it should include with each print job to set and reset printer modes. For instructions on carrying out this task, see “Creating a Print Job Configuration with PRINTCON” on page 276.

Importing Apple Printer Definitions with PRINTDEF

Printer definitions appear as .PDF files; these files reside in the SYS:\PUBLIC directory on each NetWare server. To import the required .PDF files, log in to the selected server as Admin (or as a user with the necessary rights and privileges) at a DOS workstation. Then, follow these steps:



1. **Load PRINTDEF.**

From the DOS prompt, enter this command line:

```
printdef <Enter>
```

2. **From the Available Options window, select the *Change Current Context* option.**

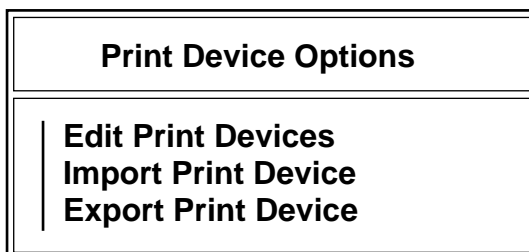
In the window that opens, enter the context containing the server on which your queues reside. This context becomes the current context. (If your current context is already set appropriately, you need not carry out this step.)

When you complete entering a new context, press <Enter> to close the window.

3. From the Available Options window, select the *Print Devices* option.

The Print Device Options window opens (Figure 10-1).

Figure 10-1
Print Device
Options Window



4. Select the *Import Print Device* option.

PRINTDEF opens a window and prompts you for the source directory containing the printer definition files. Type SYS:PUBLIC at the prompt and press <Enter>. A list of .PDF files appears.

5. Import the Apple printer definition files.

Use the <F5> key to mark the files listed in Table 10-2, and press <Enter>. The files appear in the table in the same order they appear on the screen.

Table 10-2
Apple Printer Definitions Files

Filename	Printer
APLASER2.PDF	Apple LaserWriter, LaserWriter Plus, LaserWriter II NT, LaserWriter II NTX, Personal LaserWriter II NT
APPIMAGE.PDF	Apple ImageWriter II, ImageWriter LQ
APPLW2FG.PDF	Apple LaserWriter II/IIg, LaserWriter Pro, LaserWriter Select, Personal LaserWriter II NTR
PSTSCRPT.PDF	Any PostScript printer

PRINTDEF imports the .PDF files to the NetWare print services database.

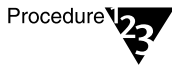
6. Exit PRINTDEF, saving your changes.

Creating a Print Job Configuration with PRINTCON

Each DOS user can access the print job configurations stored in the PRINTJOB.DAT database. Under Directory Services, this database is an attribute of the user object.

The queue you specify in the print job configuration is the default queue. The user's print jobs automatically go to that queue. A DOS user can use PRINTCON to modify the job configuration.

To create print job configurations for DOS users, follow these steps:



1. **At each DOS workstation, create or alter the NET.CFG file.**

Add this command line to the file:

```
PRINT HEADER=255
```

NetWare will now allow up to 255 characters to appear at the beginning of a print job.

2. **Restart the DOS workstation so that changes to the NET.CFG file take effect.**

3. **Run PRINTCON.**

At the DOS prompt, enter this command line:

```
printcon <Enter>
```

4. **From the Available Options window, select the *Change Current Object* option.**

The window that opens contains your login name. Type the name of the user for whom you are creating the configuration. Then, press <Enter>.

5. **From the Available Options window, select the *Edit Print Job Configurations* option.**

The Print Job Configurations window opens. This window contains a list of available configurations. If you have not yet defined any print job configurations, the list is empty.

6. **To create a new print job configuration, press <Ins>.**

In the window that opens, enter a name for the new configuration that suggests its intended use. Then, press <Enter>. The new configuration name appears in the window.

7. Highlight the configuration name and press <Enter>.

The window that opens enables you to enter the values that apply to the print job you are creating. Table 10-3 describes each field.

Table 10-3
Fields in the PRINTCON Window

Field Title	Explanation
Number of copies	This field defaults to 1. You can enter a higher number for DOS print jobs that require multiple copies.
File contents	If you set this field to Text, the print server locates tabs and expands them to equivalent spaces. PostScript print drivers require Byte Stream.
Tab size	This field sets the number of spaces for expanding tabs if you set the File Contents field to Text.
Form feed	When you specify Yes, the printer issues a form feed at the end of each job. Set this field to No for PostScript printers.
Notify when done	The value in this field defaults to No. You can type Y here if you want the user notified when his or her print job is done.
Local printer	The value in this field defaults to 1, for LPT1. You can use this value with the DOS CAPTURE command to reroute command-line print directions, such as dir > lpt1, to the NetWare queue.
Auto endcap	The value in this field defaults to Yes. Accept the default if you want the DOS CAPTURE command to automatically determine the end of a print job.
Printer/Queue	The value in this field must show the name of the printer or print queue to which NetWare sends the print job. Press <Enter>. A window opens, enabling you to enter the name of the printer or queue.
Device	Press <Enter> to display a list of available printer types; then, choose Apple ImageWriter, Apple LaserWriter, or Apple LaserWriter IIf/IIg, or PostScript.

Table 10-3 *continued*

Fields in the PRINTCON Window

Mode	Press <Enter> to open the Modes window. Then choose the appropriate mode for the print job configuration. For an Apple LaserWriter, the mode must be PostScript, PostScript (Binary Graphics), Diablo 630 with a CPI (characters per inch) specification, or PostText with a CPI specification. For an Apple ImageWriter, the mode must be a CPI specification. For details, see “Sample Print Job Configurations” on page 278.
Form name	This field enables you to specify the form on which PSERVER prints a job. ATPS ignores this field.
Print banner	The default value for this field is Yes. Accept the default if you want to print a banner page with each job.
Name	The value in this field defaults to the DOS user's login name. This name appears in PCONSOLE, in other queue utilities, and on the banner page.
Banner name	If you enter a name in this field, the print server includes the name as a tag on each banner page; the tag identifies the job. By default, the tag consists of the name of the file being printed.
Enable timeout	The value in this field defaults to No. If you type Y in this field, NetWare assumes a DOS CAPTURE print job is finished if it hasn't received any input for the number of seconds specified in the Timeout Count field.
Timeout count	The value in this field specifies the number of seconds DOS CAPTURE waits if a timeout is enabled.

For examples of print job configurations, see “Sample Print Job Configurations” on page 278.

8. Exit PRINTCON, saving your changes.

Sample Print Job Configurations

The following sections provide examples of print job configurations.

Apple LaserWriter in PostScript Mode

Figure 10-2 shows a sample print job configuration for an Apple LaserWriter in PostScript mode. A DOS or Windows application must have a PostScript driver in order for the client to use this configuration.

Figure 10-2
PRINTCON
PostScript
Configuration

Edit Print Job Configuration "PostScript"			
Number of copies:	1	Form name:	Normal
File contents:	byte stream	Print banner:	Yes
Tab size:		Name:	Admin
Form feed:	No	Banner name:	
Notify when done:	Yes		
Local printer:	1	Enable timeout:	No
Auto endcap:	No	Timeout count:	
Printer/Queue: (Printer)	CN=NW Admin NT.O=Acme		
Device:	Apple LaserWriter		
Mode:	PostScript		

For a LaserWriter II NT, these are the required values:

Device: Apple LaserWriter

Mode: PostScript

PostScript Binary Graphics Mode

When in PostScript Binary Graphics mode, the AppleTalk print server does not replace Control-D characters in the print job with Printer Access Protocol (PAP) EOFs. Use this mode for DOS or Windows applications that produce binary PostScript data. For information on binary PostScript data, see "Accept Binary Data" on page 141.

Apple LaserWriter in PostText Mode

Figure 10-3 shows a sample print job configuration for an Apple LaserWriter in PostText mode. PostText mode allows applications to send ASCII text to a PostScript printer.

Figure 10-3
PRINTCON PostText
Configuration

Edit Print Job Configuration "Plain_text"			
Number of copies:	1	Form name:	Normal
File contents:	Text	Print banner:	Yes
Tab size:	8	Name:	Admin
Form feed:	No	Banner name:	
Notify when done:	Yes		
Local printer:	1	Enable timeout:	No
Auto endcap:	No	Timeout count:	
Printer/Queue: (Printer)	CN=NW Admin NT.O=Acme		
Device:	Apple LaserWriter		
Mode:	PostText Courier with Form Feeds		

The Mode field contains the only value that must be different from the value in the PostScript configuration shown in Figure 10-2 on page 279. For the PostText configuration, these are the required values:

Device: Apple LaserWriter

Mode: PostText Courier with Form Feeds

Choose the mode "with Form Feeds" if you wish form-feed characters (0XC) to cause the output to skip to the next page. Or, choose a characters per inch (CPI) specification from the Mode menu. CPI specifies the relative size of the characters: the higher the number of CPI, the smaller the character size.

Apple ImageWriter

An Apple ImageWriter (including the ImageWriter LQ) uses plain text mode to print jobs submitted from DOS. The jobs use the ImageWriter resident font, which produces output similar to that of a line printer. Figure 10-4 shows a configuration for an Apple ImageWriter.

Figure 10-4
PRINTCON
ImageWriter
Configuration

Edit Print Job Configuration "Image"			
Number of copies:	1	Form name:	Normal
File contents:	Text	Print banner:	Yes
Tab size:	8	Name:	Admin
Form feed:	Yes	Banner name:	
Notify when done:	Yes		
Local printer:	1	Enable timeout:	No
Auto endcap:	No	Timeout count:	
Printer/Queue: (Printer)	CN=NW Admin NT.O=Acme		
Device:	Apple ImageWriter		
Mode:	12 CPI		

For the ImageWriter configuration, these are the required values:

Device: Apple ImageWriter
 Mode: 12 CPI

You can choose a different characters per inch (CPI) specification from the Mode menu. CPI specifies the relative size of the characters: the higher the number of CPI, the smaller the character size.

Using a Print Job Configuration

To use a print job configuration other than the default, include the `/J` option in the `CAPTURE` command:

```
CAPTURE /J=Print_Job_Configuration_Name <Enter>
```

Or, you can use the `NPRINT` command:

```
NPRINT [filename] /J=Print_Job_Configuration_Name  
<Enter>
```

Setting Up OS/2 Workstation Printing

You can print a job from any of these locations on an OS/2 workstation

- ◆ The OS/2 command prompt
- ◆ The desktop
- ◆ A running OS/2 application

From the OS/2 command prompt, you can access an AppleTalk printer using either of these methods:

- ◆ Configure a physical printer port using the NetWare CAPTURE utility. Then, issue the OS/2 PRINT command from the command line, designating the selected port for output.
- ◆ Use the NetWare NPRINT command, indicating the server and queue that are serviced by the AppleTalk printer. No setup is required for this method of printing.

From the OS/2 desktop, you can access an AppleTalk printer using either of these methods

- ◆ Use the NetWare CAPTURE utility to configure a physical port associated with the AppleTalk printer. You can then drag a document from the desktop to the OS/2 printer icon that represents the AppleTalk printer.
- ◆ Set up the OS/2 network printing options. You can then drag a document to a network printer icon located in the Network object window.

If you print from within a NetWare-aware application, no particular setup is required.

If you print from within an application that is not NetWare-aware, use the NetWare CAPTURE utility to indicate the server and queue to use when printing to the AppleTalk printer. The CAPTURE utility redirects print jobs to the specified queue whenever you print from the application.

Setting Up UNIX Workstation Printing

To set up printing to a NetWare queue from a UNIX client (or a client on another platform that uses TCP/IP), you must load PLPD.NLM. This NLM™ is available with NetWare NFS and NetWare Flex/IP, sold separately. These products also offer support for printing to UNIX-based printers from NetWare clients, including Macintosh workstations. For further information, see the documentation that accompanies your copy of NetWare NFS or NetWare Flex/IP.

Setting Up Windows Workstation Printing

To set up network printing from a Windows workstation, refer to the appropriate Windows documentation. Alternatively, you can use CAPTURE before entering Windows; for information, see “Using a Print Job Configuration” on page 281.

When you use the Adobe Printer Driver for Windows, enable the *Send Data in Binary* option and choose the None (AppleTalk) protocol option in the PostScript Options window.

Troubleshooting AppleTalk File Services

This chapter presents guidelines for diagnosing problems concerning AppleTalk file services.

If your attempt to resolve a problem fails and you purchased NetWare for Macintosh from an authorized dealer, please call your dealer for assistance. Be prepared to give a complete description of the problem, including what happens, when it happens, and what you've done to isolate the cause.

In addition, we recommend that you keep a written record of your file services configuration. This written record can be essential to solving problems that occur. The record should include network connectivity diagrams showing printers, servers, and workstations.

Diagnosing Problems

The sections that follow describe problems you might encounter when logging in to or using a NetWare server running NetWare for Macintosh. For each problem, the section recommends one or more solutions.

Symptom: The NetWare Server Does Not Appear in the Chooser

The NetWare server is not registered in the Chooser and one of the following two error messages appears:

- ◆ AFP-4.10-99 Failure registering AFP Server *server_name* in Zone *zone_name*: that name already exists.

This message indicates that the server's name is being used by another computer. Change the server's name using AFPCON. For details, see "Specifying a New AFP Server Name and Login Greeting" on page 44.

- ◆ AppleTalk-5.0-1465 AppleTalk DDP-AppleTalk clients open while stack is unbound.

This message indicates that the AppleTalk stack is not bound to a network interface card.

Symptom: A Macintosh User Can See the Server But Cannot Log In

This symptom can derive from several different conditions.

- ◆ The user is attempting a clear-text login using a user name that is not in the server's bindery context. The user should use the NetWare UAM to log in.
- ◆ The user does not have a login account.

In the first two cases, the Macintosh user is likely to see an error message such as the one in Figure 11-1.

Figure 11-1
Unknown User or
Disabled Login



- ◆ The user entered his or her password incorrectly.

In this case, the Macintosh user is likely to see an error message such as the one in Figure 11-2.

Figure 11-2
Incorrect Password
Prevents Login



- ◆ System accounting is turned on, but the user does not have a balance.

When you create new users and accounting is active on the server, you must use NETADMIN or the NetWare Administrator utility to assign an accounting balance to a user before he or she can log in. For information, see NetWare 4.11 *Supervising the Network*.

- ◆ Clear-text and Guest logins are disabled on the server, but you did not correctly install the NetWare User Authentication Method (UAM) software on the Macintosh client. The message in Figure 11-3 appears.

Figure 11-3
Install the NetWare
UAM



Install the NetWare UAM following the instructions detailed in the *IntranetWare™ Client™ for Mac OS User Guide*.

- ◆ The supervisor has disabled logins at the server console.
- ◆ There are no available AFP connections.

The maximum number of users that can be logged in to the server at one time depends upon the version of NetWare® installed. If the number of logins reaches its maximum, a message like the one shown in Figure 11-4 appears.

Figure 11-4
AFP Connections
Used Up



To remedy the problem, one Macintosh user must log out of the server before another can log in.

Symptom: A Macintosh User Cannot See a Volume Name in the Chooser

A Macintosh user can see the NetWare server and begin the login process, but cannot see the name of a particular volume.

This problem has two possible causes:

- ◆ You did not add the Macintosh name space to the volume. You must explicitly add the Macintosh name space to each volume that supports Macintosh workstations.

To add the Macintosh name space, use the INSTALL utility. For instructions, see “Adding the Macintosh Name Space after Installation” on page 21. You need only add the name space once, unless you remove it with VREPAIR.

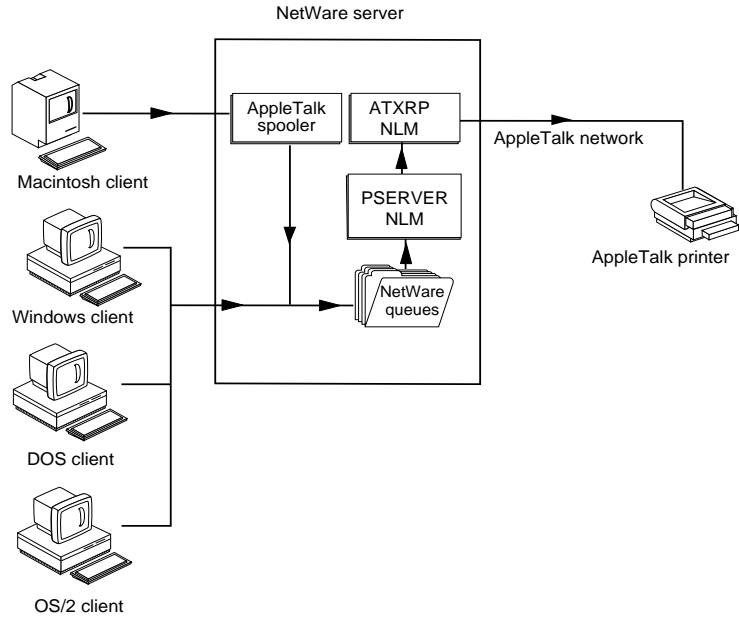
- ◆ AFP support for the volume was disabled in AFPCON.

For information on re-enabling AFP support for the volume, see “Disabling or Re-enabling an AFP Volume” on page 48.

Symptom: A Volume Name Is Dimmed in the Chooser

A Macintosh user can see the NetWare server and begin the login process. However, a volume name is dimmed, so the user cannot select it.

Figure 11-5
Volume Name Is
Dimmed



The user does not have any rights to the volume. Use the NetWare Administrator utility to grant rights to the user. For information, see NetWare 4.11 *Supervising the Network*.

Symptom: The AppleShare Icon Does Not Appear in the Chooser

This condition means that you have not installed the AppleShare Workstation software on the Macintosh workstation. Please see the *IntranetWare Client for Mac OS User Guide* for instructions.

Symptom: The Finder Cannot Locate Applications

If Macintosh users report that double-clicking an application icon produces a message stating that the application cannot be found, check to be sure that the application resides on a mounted volume, and that the user has sufficient rights to use it. If both these conditions are true, you need to rebuild the desktop database on the volume containing the application. Use the *Start Desktop Database Rebuild* option in AFPCON, as explained in “Rebuilding the Desktop Database” on page 28.

Symptom: Macintosh Icons Do Not Appear in Server Folders

If Macintosh users report that Macintosh document and application icons appear as generic icons, you should rebuild the desktop database. Use the *Start Desktop Database Rebuild* option in AFPCON, as explained in “Rebuilding the Desktop Database” on page 28.

When you use the DOS COPY command to copy Macintosh files or applications to the server, the files lose their icons, long names, and resource forks. If you use the NetWare NCOPY command to copy the applications and files, the icons should appear as proper Macintosh icons to Macintosh workstations.

Macintosh files or applications that you copy to a server from a Macintosh workstation using the drag-copy method should not appear as DOS icons.

Symptom: Special Characters Sent from the Network Display Incorrectly

Some special characters are not sent over the network properly and do not display correctly within the NetWare for Macintosh utilities. This can cause misconfiguration of AppleTalk services, including routing.

The NetWare server can display characters only in the server code page (usually 850 or 437); however, AppleTalk devices use MacASCII. Some characters that can be displayed on the NetWare server cannot be displayed on the network, and vice versa. You must be aware of how NetWare server characters are translated into MacASCII before they are sent to the network.

Here is a strategy to consider. When you configure AppleTalk, be aware of translation problems. If you are upgrading an installed NetWare for Macintosh 3 to NetWare for Macintosh 4 Version 4.1 (and by necessity, upgrading NetWare 3 to NetWare 4 Version 4.11 as well), be aware that the translation scheme has changed. Check your AppleTalk LOAD and BIND lines for any characters that might not translate properly.

To ensure proper configuration, follow these rules:

1. Characters in the lower seven bits of ASCII (lower 128 characters) never need translation and are always safe to use.
2. In general, if a character can be displayed on the server screen and is also in the MacASCII character set, type that character so that it displays properly on the server screen. Such characters are translated correctly.
3. To use characters that are in MacASCII but not in the server code page, refer to the file CHARACTR.PS, supplied with NetWare for Macintosh. This is a PostScript file containing the decimal codes for the MacASCII characters you can use. These characters generally do not display properly on the server screen, but they do go out onto the network correctly.

12 *Troubleshooting AppleTalk Print Services*

This chapter presents guidelines and strategies for resolving problems concerning AppleTalk print services. The chapter contains the following:

- ◆ General troubleshooting guidelines
- ◆ A series of flowcharts to help you narrow down the source of a problem
- ◆ A collection of specific problems and solutions, organized by category

In the space of this chapter we cannot introduce and resolve every possible problem. However, the flowcharts and problem-solution sections suggest the systematic techniques you can use to isolate and correct print services difficulties.

If your attempt to resolve a problem fails and you purchased NetWare for Macintosh from an authorized dealer, please call your dealer for assistance. Be prepared to give a complete description of the problem, including what happens, when it happens, and what you have done to isolate the cause.

In addition, we recommend that you keep a written record of your print services configuration. This record can be essential to solving problems that occur. The record should include these items:

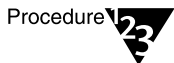
- ◆ Names of volumes, spoolers, print queues, and print servers
- ◆ Printer model definitions
- ◆ Network connectivity diagrams showing printers, servers, and workstations

General Guidelines

To successfully print a job across the network, you must correctly configure the software components that provide print services. You must make sure that the print queue and print(er) server are set up properly; for Macintosh users to print, you must also configure a spooler.

The hardware configuration—including the printer, workstation, and network equipment—is equally important. The physical state of the printer, the condition of cables and connectors, the arrangement of network resources, and state of your power sources are all factors in ensuring a working pathway from workstation to printer.

The following checklist provides general advice to follow when trying to solve a network printing problem.



1. **Verify that the network is functioning.**

Without a functioning NetWare server and active network communication, a workstation cannot direct a print job to a queue in order to reach a network printer. Many network printing problems originate at the network or internet level. You can save time in the troubleshooting process by examining the network components from a top-down perspective to ensure that the network is functioning and that all necessary devices and resources are available.

From the Macintosh Chooser, you can determine whether a particular AppleTalk spooler is available, or whether a whole portion of the network is inaccessible. Those resources available to a workstation appear in the Chooser, in their applicable zones. Look in the Chooser first to verify how much of the network appears to your Macintosh workstation.

Items such as zone names and printer names should not be fading in and out; all lists should stabilize after 2-3 seconds. Chooser items fading in and out signal a network-level problem. (You may also see items disappearing if you are using System 6.x and reach the limit for the number of devices that can appear in the Chooser.) In addition, if resources such as servers and spoolers do not appear in the Chooser, and the Macintosh workstation is properly configured to access the network, you must resolve this large-scale network access problem before attempting to solve more particular print services problems.

If the Chooser displays spoolers, but print jobs directed to these spoolers return error messages or never arrive, your problem may be hardware related. The next item in the checklist addresses hardware-related issues.

2. Ensure that the physical devices in use are powered on, set for use, and properly cabled.

Physical problems, such as broken cables, pins, and connectors, account for many network failures. Printers that are off line or have been turned off also account for a fair share of problems. In addition, you should try using each device locally, if possible, before adding it to the network. By verifying the physical integrity of network resources, you can eliminate these items from consideration and proceed to other levels of investigation.

3. Monitor the events that occur in the problem area to assess reported problems.

To obtain the maximum amount of information for diagnosing conditions or verifying print services operations, you can set the verbosity level for ATPS, or load ATXRP in verbose mode. Carrying out either task enables you to see diagnostic and error messages that do not otherwise appear.

To set the ATPS verbosity level, use Log Options in ATPSCON. Set the log, system console, and ATPS console screen levels to “Informational and above.”

To start ATXRP in verbose mode, enter this command at the server console:

```
load atxrp -v <Enter>
```

To look at the diagnostic and error messages, send a print job to a queue; then, go to the system console. View the ATPS or ATXRP information window by pressing <Ctrl>+<Esc> and selecting the appropriate screen from the list that appears.

On the ATPS console screen, you can view messages about what occurs when a Macintosh workstation submits jobs to a spooler and the print server attempts to communicate with the AppleTalk printer. You can review these messages by viewing the printer log in ATPSCON. For more information about using the ATPSCON utility to set the verbosity level and view the log files, see “Selecting Log Options” on page 154.

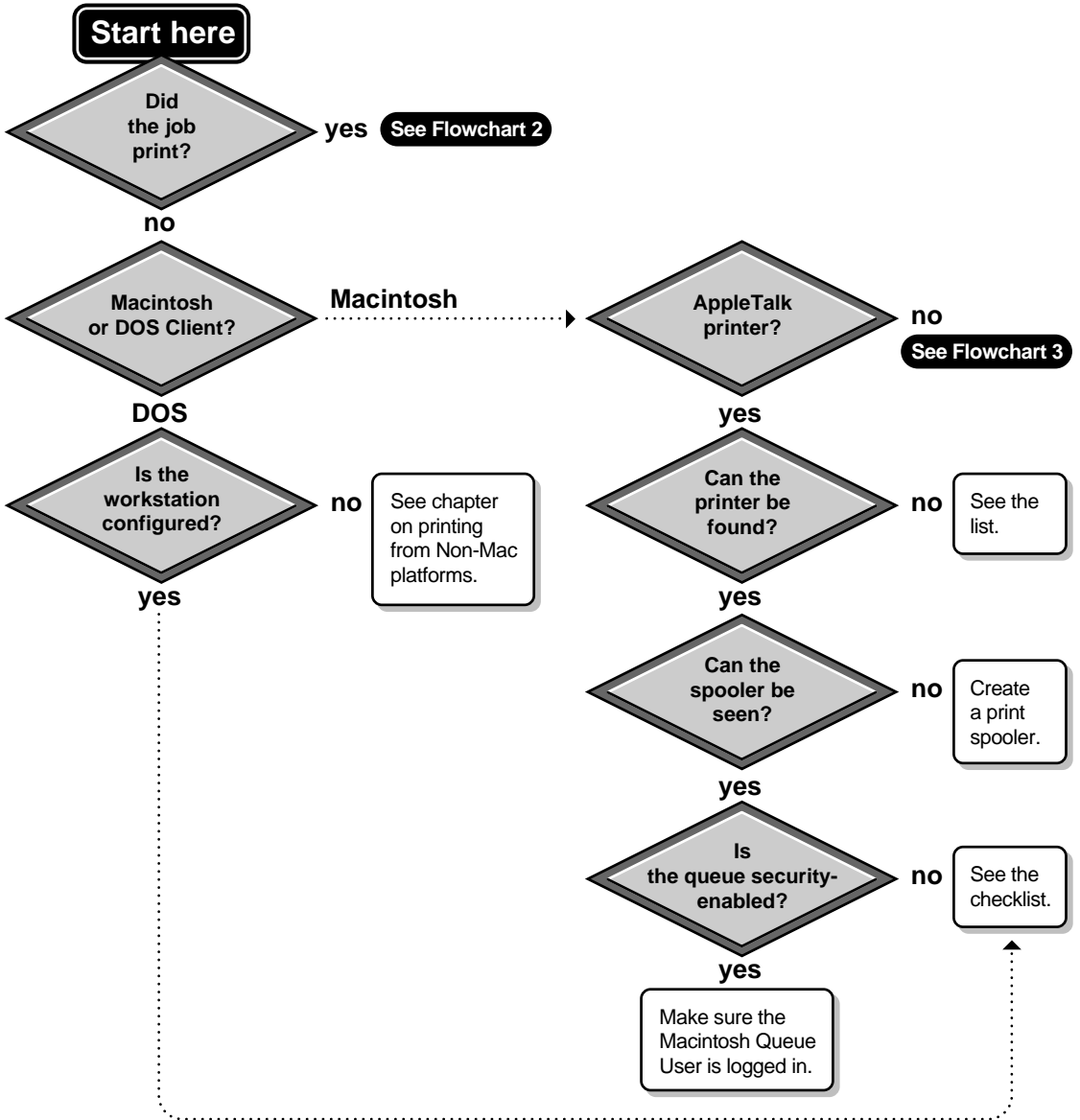
Problem-Solving Flowcharts

This section provides three flowcharts to help you diagnose and remedy print services problems.

Flowchart 1

When a print services problem occurs, start your diagnostic process using Flowchart 1.

Figure 12-1
Flowchart 1



Did the job print?

If the job printed successfully, refer to Flowchart 2 to identify the nature of the problem.

If the job did not print at all, continue to the next item in Flowchart 1.

Did the print job originate from a Macintosh client or a DOS client?

Depending on whether the print job originated from a Macintosh or DOS workstation, the problem-solving flow takes a different path.

A Macintosh workstation requires a spooler, which you create using ATPSCON. For details on creating a spooler, see “Configuring a Spooler” on page 130.

A DOS workstation requires a configuration procedure to prepare it for sending a job to a queue, regardless of whether the target printer resides on an AppleTalk or non-AppleTalk segment of the network.

Is the DOS workstation configured?

Check the configuration of the DOS workstation, following the guidelines in “Setting Up DOS Workstation Printing” on page 273. You can find additional advice under “DOS Configuration Problems” on page 313.

Is the printer on an AppleTalk connection?

If the target printer is not an AppleTalk printer, proceed to Flowchart 3 for more information.

If the printer is on an AppleTalk connection, continue to follow the current sequence.

Load ATPSCON.

ATPSCON enables you to verify whether you configured each print services component correctly. For information on loading and using ATPSCON, see Chapter 5, “Setting Up AppleTalk Print Services,” on page 93.

Can you locate the printer?

Carry out these steps to see whether the designated printer is accessible:

1. Ensure that the printer is powered on and on line.
2. Check the printer interface card and cabling to ensure that the printer is properly connected to the server or remote workstation. Replace any malfunctioning cables.
3. Ensure that the server is operable on the network segment containing the printer.
4. See whether the printer appears in ATCON. If the printer is visible, it should be accessible when you properly configure the spooler, queue, and print server.

If you cannot locate the printer after following these steps, refer to “Routing Problems” on page 308 for more information.

Can you locate the spooler?

Does the spooler appear in the Macintosh Chooser? If not, and you have AFP loaded, does the server appear?

If the server does not appear, check the network configuration and operation. If the server appears, but the spooler is not visible, check the spooler configuration in ATPSCON. Verify that no other object in the zone has the same name and type. For information on checking the spooler configuration, see “Configuring a Spooler” on page 130.

Is queue security enabled?

If queue security is enabled, the job cannot print unless the user who submits the job has Queue User status and is logged in to the server containing the queue. If queue security is not enabled, and the Macintosh job fails, refer to the checklist on “General Guidelines” on page 294.

Did fonts fail to download properly?

If you use a Macintosh font-downloading program or other printer utility that do not work with ATPS, the Macintosh client may hang. This is because such programs or utilities are designed to work directly with printers, not with print spoolers.

To solve this problem, use the font-downloading program to download fonts directly to the printer, not to the print spooler. Once the fonts are downloaded to the printer, jobs sent to the print spooler should be able to print the fonts correctly.

Is a “hidden” printer still visible, or does it remain hidden unexpectedly?

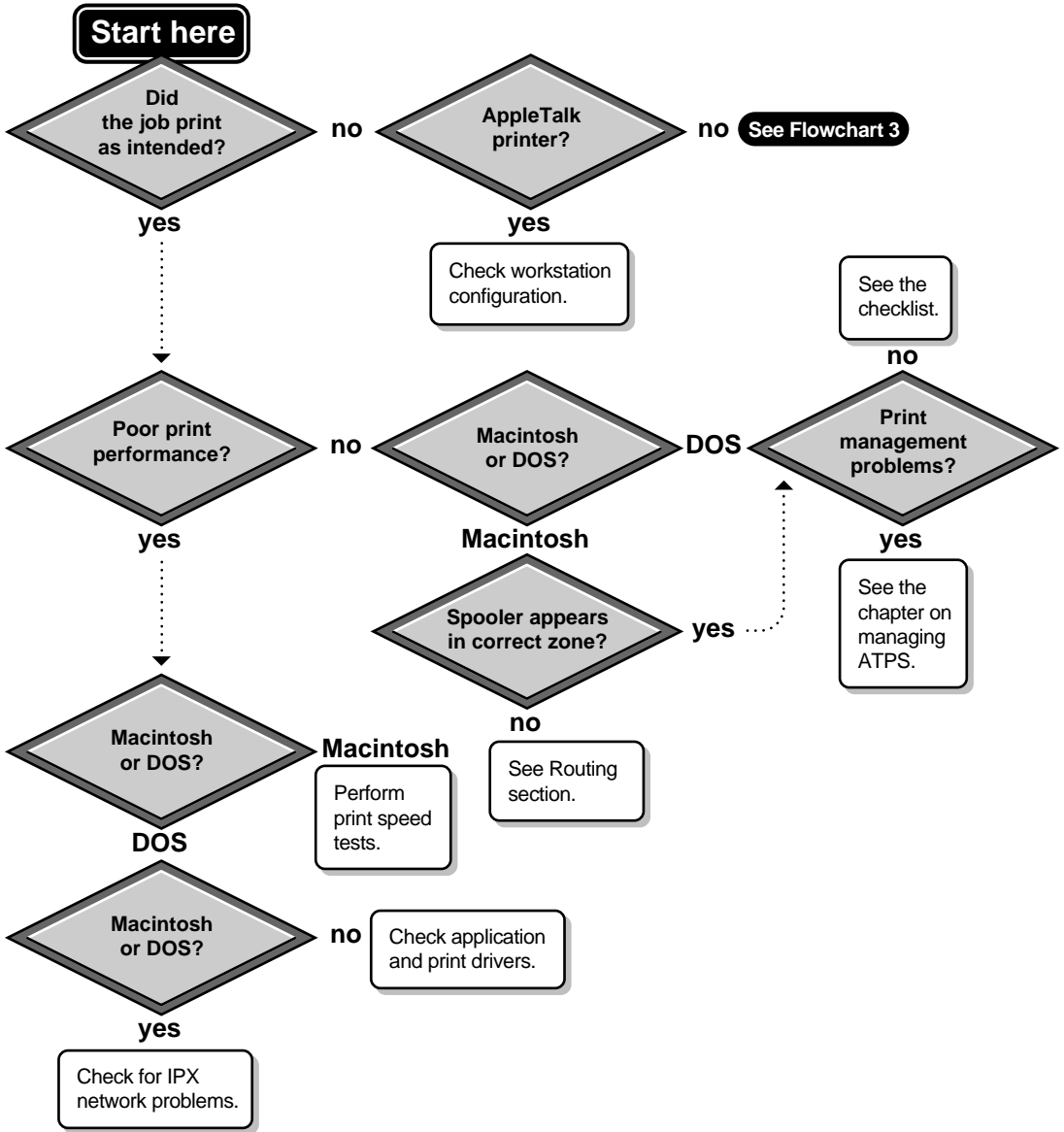
If you use the HIDE.PS utility (described in “HIDE.PS” on page 320) to hide a printer on the network, be aware that the utility works only with certain printer models. Moreover, HIDE.PS does not work with printers with names exceeding 19 characters. Read the instructions in HIDE.PS to determine whether your printer is supported; if you need to hide a supported printer, edit its name appropriately with the printer Name or LaserWriter utility.

You cannot use ATPSCON to restore a printer hidden with HIDE.PS, even if nor can you power-cycle the printer to make it visible on the network. To restore a printer hidden with HIDE.PS, use the UNHIDE.PS utility (described in “UNHIDE.PS” on page 322).

Flowchart 2

Use Flowchart 2 if your job printed, but you still encounter problems such as incorrect output or poor overall performance.

Figure 12-2
Flowchart 2



Did the job print as intended?

If the job printed as intended, with the correct fonts and page layout, but the performance was unacceptably slow or print management difficulties were evident, continue down the flowchart to the next step.

If the job printed, but the output did not look as you intended, proceed to the decision point to the right.

Is the printer on an AppleTalk connection?

If you are printing from a DOS workstation to an AppleTalk printer and the output appears flawed or a PostScript error results, the problem may be associated with the configuration of the DOS workstation. To check the DOS configuration, refer to “Setting Up DOS Workstation Printing” on page 273. For help with problems involving DOS configurations, refer to “DOS Configuration Problems” on page 313.

If the target printer was not on an AppleTalk connection, proceed to Flowchart 3 for more information.

Is print performance poor?

If your print performance is unacceptably slow, follow these steps:

1. Determine whether the submitting client was a Macintosh or DOS client.
2. Determine whether the delay occurs in getting the job from the workstation to the queue, or from the queue to the printer.
3. If the delay occurs between the queue and the printer, check for a poor connection between the server and printer, including a faulty router.

If a Macintosh client sent the job, perform a print performance test. First, print through the queue; then, print directly to the target printer. If printing through the queue is noticeably slower, the problem could stem from any of these causes:

1. Font list inaccuracies are causing the print driver on the Macintosh to include unnecessary fonts, greatly increasing the

size of the job. For information on managing font lists, see “Managing PostScript Fonts” on page 208.

2. The spooler supports a large font list, and the advanced PostScript option *Fast Font Response* is not in use. For information on this option, see “Fast Font Response” on page 142.
3. Macintosh workstations are printing to a server across an unreliable link.

In addition, check how long it takes to copy a file from the workstation to the server on which the queue resides. Slow transfers of data to the server indicate network setup or traffic problems.

If file transfer to the server appears normal, check the print services back end:

- ◆ Using ATPSCON, make sure that the print server is properly configured.

For information, see “Configuring a Printer Server” on page 107.

- ◆ Check the printer log to ensure that jobs are being serviced at proper intervals.

For information on the printer log, see “Viewing the Printer Logs” on page 157.

- ◆ Print a file to disk. Then, use PCONSOLE to insert the job into the queue, and check to see whether the job is serviced correctly. If it reaches the printer successfully, you know that the print services back end is functioning normally.

For information on using PCONSOLE, refer to the NetWare® 4.11 *Print Services* guide.

If a DOS client sent the job, observe whether other network services appear to be running slowly. If so, check for IPX™ network problems. If network services appear normal, check the print drivers and the applications that generate the print output.

If the printer performance appears normal, but other print management problems exist, proceed to the next decision point to the right.

Are print jobs incorrectly formatted, or do they disregard printer options?

Macintosh jobs that are submitted through ATPS to non-PostScript printers with special options may be incorrectly formatted or may not use paper in special printer sources. This occurs because the ATPS print spooler does not support special options such as these:

- ◆ Sheet feeder with the ImageWriter II or ImageWriter LQ
- ◆ Multiple paper bins with the ImageWriter LQ
- ◆ Envelope printing with the HP DeskWriter
- ◆ Manual-feed printing with the HP PaintWriter XL

To take advantage of these special options with non-PostScript printers, print directly to the printer and not to the print spooler.

Do users fail to receive print job notifications?

Users may not receive the appropriate print job notifications that normally appear on their workstations, such as notice of a successful completion, an empty paper bin, or a paper jam. This can occur when users are not logged in to the server and not designated users of the queue to which they print their own print jobs.

The best way to insure that Macintosh users receive appropriate print job status messages is to make sure that they have rights to the print queues that they need to use. You can assign Queue User rights with the PCONSOLE or NWADMIN utilities.

Do print management problems exist?

If the job originated at a Macintosh workstation and print management problems appear to exist, check to see whether the spooler is visible in the desired zone. If it is not, refer to “Routing Problems” on page 308. If the spooler is properly located, refer to “Print Services Management Problems” on page 311.

If the job originated at a DOS workstation and print management problems appear to exist, refer to “Print Services Management Problems” on page 311. If no print management problems exist, return to “General Guidelines” on page 294.

Do “open font file” messages appear unexpectedly?

ATPS can generate this and other unexpected messages if you change the ATPS directory in ATPSCON while ATPS is in operation. If you need to change the ATPS directory, first disable all ATPS print spoolers and print servers. Then copy all files in the old directory to the new directory. Then re-enable the disabled ATPS print spoolers and printer servers.

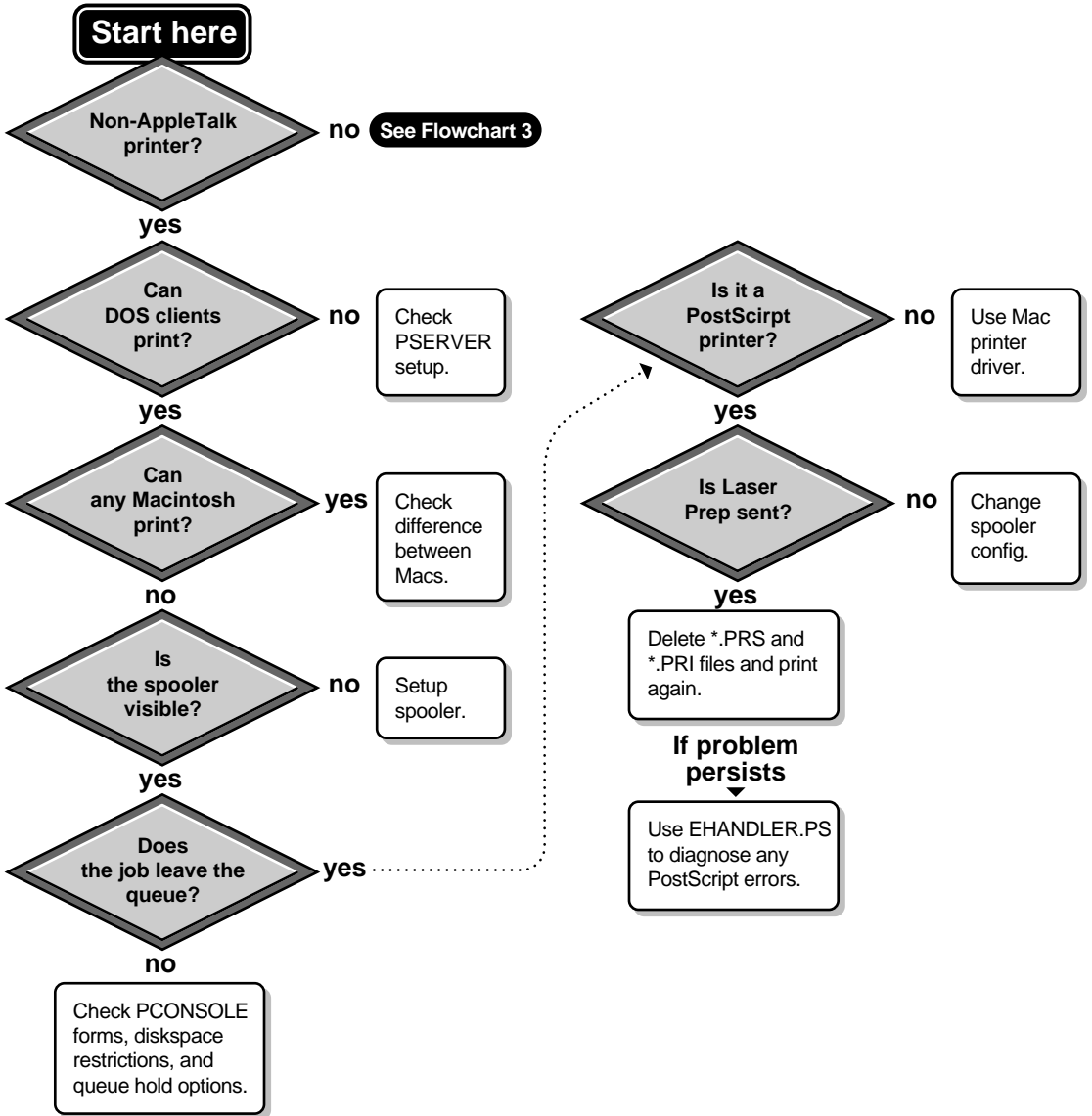
Do “unreleased resources” messages appear when ATPS is unloaded?

If you unload the ATPS NLM, it may not release all of its resources, particularly if printing is in progress. In that case, the operating system releases the resources. You can safely ignore these messages.

Flowchart 3

Flowchart 3 addresses only problems that apply to non-AppleTalk printers. If you are troubleshooting a problem involving AppleTalk printers, return to the appropriate point in Flowchart 1 or 2.

Figure 12-3
Flowchart 3



Can DOS clients print?

If a DOS client cannot print to the target printer, check PSERVER setup. Refer to NetWare 4.11 *Print Services* for more information.

Can any Macintosh client print?

If one Macintosh client can print to the target printer, but others cannot, try to determine which elements differ between the workstations. Check the individual workstation cabling, workstation configuration, and the network resources visible through the Chooser.

Is the spooler visible?

If the spooler configured to access a particular printer is absent, no printing can take place from a Macintosh workstation. If the spooler is absent, use ATPSCON to set up the spooler as described in “Configuring a Spooler” on page 130.

Did the job leave the queue?

Often, a printer has a flashing light on its front panel to indicate that the printer is attempting to process a job. This condition usually indicates that the job has left the queue. Several conditions can cause a job to remain in the queue without being serviced. Check these areas:

- ◆ If a Macintosh job remains in the queue, the spooler may not be using the appropriate form. For information about assigning a form to a spooler, see Step 13 on page 145.
- ◆ If the job never readies the queue, be sure that the user attempting to print a job has sufficient disk space allotment for the queue. You can examine and modify this user information using NETADMIN. For details, see NetWare 4.11 *Supervising the Network*.
- ◆ Check to see whether the spooler submitting jobs to the queue has been configured to place jobs on hold. If so, Macintosh jobs cannot print until you remove the hold. For information, see Step 9 on page 137.

Is the printer a PostScript printer?

If the printer is a non-PostScript printer, make sure that the spooler emulates the correct printer model and that you have selected the correct Macintosh print driver to support the printer. If the driver does not correspond to the Page Description Language (PDL) required by the printer, jobs cannot print successfully. For information on checking the

printer model associated with the spooler, see “Defining a Printer Model” on page 150.

If the printer is a PostScript printer, check whether the print job includes a Laser Prep file. For non-AppleTalk printers, you must set the Include Laser Prep in Jobs field in ATPSCON to Yes. For details, see “Include Laser Prep in Jobs” on page 139.

Assuming the correct setting, you can test for a corrupted file by deleting the .PRS and .PRI files from the ATPS directory. ATPS generates these files for Macintosh print jobs routed to PostScript printers. If the job prints successfully after you purge these files, file corruption was probably the source of your difficulty.

If you still have problems after deleting the .PRS and .PRI files, download EHANDLER.PS to your printer. This utility reports PostScript errors, supplying you with more information on why jobs are not printing successfully. Refer to Appendix A, “PostScript Utilities,” on page 317 for information on using the EHANDLER.PS utility.

Problems and Solutions

The following sections include a number of problem-solving scenarios.

Routing Problems

The following scenarios involve difficulties that occur because of misconfigured routing.

Symptom: The Print Job Does Not Reach the Printer.

You have a LocalTalk printer connected to a server on an Ethernet network. Having configured a spooler under ATPSCON, you try to print from a Macintosh workstation to the spooler and queue. Although the job reaches the print queue without problems, this message appears on the ATPS console screen:

```
Can't find printer  
<printer_name:LaserWriter@zone_name>  
Retrying
```

You then attempt to print directly to the printer by selecting the appropriate zone on the LocalTalk network and choosing the printer. This print attempt results in a new message:

```
The LaserWriter is either disconnected or switched  
off; please try printing again.
```

Printing from within an application such as Microsoft® Word results in a different message:

```
Word is unable to print this document. Make sure  
you've selected a printer.
```

Although the printer is clearly visible in the Chooser, and the spooler is properly configured to access the queue, repeated attempts to reach the printer fail.

Explanation

Duplicate network numbers may exist. The routers are unable to identify and access the different networks.

Solution

Reassign a unique network number to the LocalTalk network. Doing so allows you to re-establish printing from the designated NetWare queue.

Symptom: The Spooler Does Not Appear in the Correct Zone

Your spooler appears in the Chooser and works properly, but does not appear in the appropriate zone.

Explanation

An AppleTalk spooler appears in the zone in which the NetWare for Macintosh server appears, unless you configure the spooler to appear elsewhere. Changes in the configuration of the AppleTalk module can affect the zone in which the spooler is advertised.

Solution

To have a choice of zones in which to advertise the spooler, you must enable routing for the AppleTalk module; then, you must assign zones to the internal network. After configuring the zones you need, you use ATPSCON to select the proper zone for the spooler in question.

If routing is disabled for the AppleTalk module on the server, or if the AppleTalk module is configured without an internal network, you must advertise the spooler in the server's default zone.

Directory Services Problems

The following scenarios involve difficulties that occur because of the nature of the interaction between ATPS and Directory Services.

Symptom: PCONSOLE Queues Do Not Appear in ATPSCON

As an administrator who manages both Macintosh and DOS segments of the network, you want to make some existing queues available to Macintosh users. However, these queues do not show up in ATPSCON, though they are visible in PCONSOLE.

Explanation

ATPSCON can only find queues resident on the server where ATPS is loaded.

Solution

Relocate the queues to the server where ATPS.NLM and ATPSCON.NLM are loaded. Alternately, you can relocate ATPS.NLM and associated files to the server where the queues reside.

Symptom: ATPSCON Queues Do Not Appear in PCONSOLE

You are logged into PCONSOLE as Admin, but you cannot see any of the print queues that you created using ATPSCON.

Explanation

PCONSOLE selectively views different portions of the Directory Services tree.

Solution

Use the *Change Context* option to navigate through the Directory and find the container object where the queues reside.

If you do not specifically know where the queues are located, the NetWare Administrator utility includes a browse function that enables you to search through different parts of the tree. For information, see NetWare 4.11 *Supervising the Network*. You can also use the DOS command `cx /t /a` to obtain a full representation of the tree.

Print Services Management Problems

The following scenarios involve difficulties that occur when you attempt to manage jobs in a queue or troubleshoot PostScript errors.

Symptom: A DOS User Cannot View the Print Jobs in the Queue

The user of a DOS workstation can see a list of print queues when using PCONSOLE, but cannot view the jobs in the queue because the *View Queue Contents* option does not appear.

Explanation

A user must have Queue User or Queue Operator status before he or she can use the *View Queue Contents* option in the PCONSOLE utility.

Solution

Use PCONSOLE to make the user a Queue User of the queue. For details, see the NetWare 4.11 *Print Services* manual.

Symptom: Intermittent PostScript Errors Occur

On a complex network containing Macintosh, DOS, OS/2, UNIX®, and Windows workstations, most users print to a LaserWriter printer through a NetWare queue. Despite many months of operation and considerable fine-tuning of the configuration, some PostScript errors continue to occur. This message appears:

```
9:35am Error: undefined;  
Offending Command: _bp
```

The error rate ranges between 1% and 2% of the total print jobs.

Explanation

The complexity of a PostScript printer's Page Description Language (PDL) and the nature of the printing process allows errors to be injected into the print path at many different points. Each of the following items can be a potential source of error:

- ◆ PostScript generation
Each client application sending output to the printer does not always generate a perfect PostScript file. Variations in the drivers for different PostScript printer models can also result in less-than-perfect compatibility.
- ◆ PostScript transmission to the queue
For DOS and Windows clients, the transmission takes place as the result of direct NetWare calls; for Macintosh clients, the transmission includes handling by an ATPS spooler.

While NetWare printing is reliable when set up correctly, the client's print job setup can cause problems. For example, DOS PostScript printing requires choosing the right printing modes and allocating sufficient space for headers. Problems can also result from incorrect CAPTURE timeouts or an inappropriate Windows setup. For details on how to configure non-Macintosh clients to print to PostScript printers, see Chapter 10, "Printing from Non-Macintosh Platforms," on page 271.

- ◆ PostScript transmission from the queue to the printer

ATPS handling of PostScript transmission to AppleTalk printers has proven very reliable. However, if some network servers are using early versions of PSERVER, you should update the software to avoid possible data-corruption problems.

Solution

The most exacting, vigilant administrator cannot eliminate all PostScript errors that occur during printing. If the error rate does not exceed 2%, and no particular discernible patterns emerge as to the type of error, there is no cause for concern. Ensuring that network software and drivers are current, and performing careful setup of each client can help keep PostScript errors to an absolute minimum.

DOS Configuration Problems

This section describes problems that can derive from a faulty DOS workstation configuration.

Symptom: DOS Print Jobs Generate an Error Page

Although a Macintosh user can print to a NetWare queue without any difficulties, a DOS client cannot. Each time a DOS client tries to print, the printer generates an error page.

Explanation

In many cases, this problem relates to the printer's Page Description Language (PDL). The majority of Apple LaserWriters support only PostScript. If a DOS client sends non-PostScript output to the printer, the job fails.

Solution

Many DOS applications allow you to select PostScript output for printing. If your application does not provide this option, you can set up a print job configuration that will convert text to PostScript format. Refer to Chapter 10, "Printing from Non-Macintosh Platforms," on page 271 for more information.

Symptom: DOS Print Jobs Generate an Error Banner Page

A DOS user prints to a LaserWriter printer attached to a queue you created using ATPSCON. Although the job prints, a banner page appears following the last page, and contains this message:

```
Error: Undefined; Offending Command: string
```

Explanation

Someone may have inserted several functions into the definition of PostScript mode in PRINTDEF. PostScript mode should not contain any functions.

Solution

Run PRINTDEF and choose the *Print Devices* option. Select Edit Print Devices, and, from the list that appears, choose the Apple LaserWriter. The window titled PostScript functions should not contain any printer functions. Delete any functions that appear in this window. Exit from PRINTDEF, saving your changes. Then, reissue the CAPTURE command.

Symptom: DOS Print Jobs Have Truncated Lines

When a DOS user prints to a LaserWriter IIg using PostText mode, he notices that the first two characters of every line are cut off.

Explanation

You specified the wrong device in PRINTCON when setting up the user's print job configuration.

Solution

Specify the PostScript device, rather than the Apple LaserWriter device, when you set up the print job configuration in PRINTCON. For details, see “Creating a Print Job Configuration with PRINTCON” on page 276.

A *PostScript Utilities*

NetWare for Macintosh includes nine PostScript utilities for troubleshooting and configuration purposes. Table A-1 summarizes the functions of these utilities.

Table A-1
PostScript Utilities

Utility	Function
BINARY.PS	Allows you to enable the Adobe Binary Communications Protocol manually for printers that support it.
EHANDLER.PS	Helps you troubleshoot printing problems by trapping and printing PostScript language exceptions that occur during print processing.
FONTLIST.PS	Causes the printer to print a formatted list of fonts.
FREEVM.PS	Determines the amount of free printer memory available and prints the results.
HIDE.PS	Lets you prevent selected LaserWriter printers from being displayed in the Chooser, even after you have re-initialized the printer or powered it on or off.
NOSTRTPG.PS	Directs a PostScript printer not to print its initialization page, even if power is cycled on and off.
STRTPGON.PS	Directs the printer to resume printing its initialization page after you power on or reset the printer.
SERIAL.PS	Configures the Apple LaserWriter's serial interface to use 8 data bits rather than 7 data bits. This setting supports the majority of Macintosh print jobs.
TRUETYPE.PS	Runs a test to determine whether your printer supports native True Type font rasterization.
UNHIDE.PS	Restores a printer hidden with HIDE.PS.

Using the PostScript Utilities

When you install NetWare for Macintosh, the INSTALL module copies the PostScript utilities into the SYS:SYSTEM\NW-MAC\PSUTILS directory. How you access these utilities depends upon whether you are working from a Macintosh workstation or a DOS workstation.

- ◆ From a Macintosh workstation, use a PostScript downloader, such as Adobe's SendPS, to download the selected PostScript utility directly to an AppleTalk printer. If the printer is on a non-AppleTalk connection, download the utility to the spooler associated with the printer. Be aware, however, that some downloaders, such as Apple's LaserWriter Utility, cannot download a utility to a spooler.
- ◆ From a DOS workstation, set up a job in PRINTCON using PostScript mode. Then, use the NetWare® utility NPRINT to send the selected .PS file to a network printer.

BINARY.PS

The BINARY.PS utility allows you to enable “manually” a non-AppleTalk printer to use the Adobe Binary Communications Protocol so that binary PostScript data can successfully be sent to the printer. For more information about binary data and non-AppleTalk printer communications channels, see “Accept Binary Data” on page 141.

EHANDLER.PS

The EHANDLER.PS utility is provided by Adobe Systems, Inc. When you download it to a printer, EHANDLER.PS acts as a resident PostScript error handler. It causes your printer to print PostScript language exceptions. EHANDLER.PS can assist you in troubleshooting problems you may have with a non-AppleTalk PostScript printer. ATPS cannot detect errors from a printer on a non-AppleTalk connection.

EHANDLER.PS is not persistent. You must re-send it each time the printer is power-cycled or reinitialized.

FONTLIST.PS

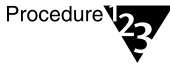
FONTLIST.PS is a PostScript file that instructs a printer to print a current list of fonts in the correct format.

You can create your own font list file by using FONTLIST.PS. You may need to create a font list file under these circumstances:

- ◆ A standard font list file is not applicable for the model of PostScript printer you are using
- ◆ Your printer has fonts not represented in a standard font list file.

You need not create a font list file if you are accessing a printer on an AppleTalk connection, because ATPS retrieves a font list directly from the printer.

To create a customized font list file, you need a workstation with a text editor. Follow these steps:



1. Send the file FONTLIST.PS to a printer.

FONTLIST.PS is a PostScript file that instructs the printer to print a current list of fonts in the correct format. If you are using a DOS workstation, go to Step 1a. If you are using a Macintosh workstation, go to Step 1b.

1a. From a DOS workstation, use NPRINT to send the file FONTLIST.PS to the queue.

Make sure that the DOS workstation's print configuration is set correctly for PostScript. For details on setting the DOS workstation print configuration, see "Setting Up DOS Workstation Printing" on page 273.

1b. From a Macintosh workstation, use a PostScript utility such as SendPS to send the FONTLIST.PS file to a spooler.

2. Change directories to SYS:SYSTEMNW-MAC\FONTS.

3. Use a text editor to create a font list file.

Create a new file and enter a list of the printer's fonts as they appear on the printed output. When creating the file, follow these guidelines:

- ◆ Append the .FNT extension to the name of the file.
For example, you might call your new file NEWFONTS.FNT.
- ◆ Store the file in the directory SYS:SYSTEM\NW-MAC\FONTS.
- ◆ Use the pound-sign character (#) at the beginning of any line that is a comment; ATPS does not process a line beginning with a # symbol.

You can refer to one of the .FNT files supplied with NetWare for Macintosh to find an example of how to set up your own font list file.

FREEVM.PS

The FREEVM.PS utility enables you to determine the amount of free memory available on your non-AppleTalk printer. In ATPSCON, you enter this information in the "Free Printer Memory" field of the Advanced PostScript options. Enter the number in the field exactly as it appears on the resulting printer output page. For details, see "Custom Printer Memory" on page 143.

HIDE.PS

HIDE.PS is a PostScript file that allows persistent hiding of older Apple LaserWriter printers. This utility prevents printers from resuming their normal NBP type when power-cycled or reinitialized.

HIDE.PS does not work with these printers:

- ◆ Apple LaserWriter IIf
- ◆ Apple LaserWriter IIg
- ◆ LaserWriter Pro series

- ◆ LaserWriter Select series
- ◆ Personal LaserWriter NTR
- ◆ Most third-party PostScript printers
- ◆ Any printer whose name contains more than 19 characters

To restore a printer hidden with HIDE.PS, use UNHIDE.PS, as described in “UNHIDE.PS” on page 322.

NOSTRTPG.PS

NOSTRTPG.PS is a PostScript file that directs the printer to suppress printing of its initialization page. When you use this utility, the initialization page does not print even if you power the printer off and on, or reset it.

To direct the printer to start printing its initialization page again, use the STRTPGON.PS utility described in “SRTPGON.PS” on page 321.

SERIAL.PS

The SERIAL.PS utility configures the Apple LaserWriter’s serial interface to use 8 bits of data rather than 7 bits. You should send SERIAL.PS to a serial printer to enable Macintosh jobs to print there correctly.

You need send SERIAL.PS to the printer only once. The configuration it creates will not change if the printer is power-cycled or reinitialized.

SRTPGON.PS

STRTPGON.PS is a PostScript file that directs the printer to begin printing its initialization page following a reset or power on.

TRUETYPE.PS

The TRUETYPE.PS utility enables you to determine whether or not your printer supports TrueType font rasterization. For more information about TrueType font support, see Step 7 on page 152.

UNHIDE.PS

The UNHIDE.PS utility enables you to “unhide” a printer you have hidden with HIDE.PS. The utility does not enable you to restore a printer hidden using ATPSCON.

Printer Configuration Notes

This appendix contains notes for configuring specific LaserWriter and HP LaserJet printers. You may need to call the printer manufacturer for help with properly connecting and configuring an unlisted printer.

Apple LaserWriter Plus

Keep these points in mind when configuring an Apple LaserWriter Plus printer's serial port:

- ◆ The serial port on this printer uses only software handshaking (XON/XOFF).
- ◆ Make these settings in PCONSOLE:
 - ◆ Set the printer type in PCONSOLE to Serial (COM 1-4).
 - ◆ Set the "UsepX-On/X-Off" parameter to Yes.
- ◆ Turn the LaserWriter off, and turn the four-position switch to 9600.

The printing of the numbers 9600 on the printer's label may not be directly aligned under the four-position switch. You can make sure you have set the four-position correctly using either of these methods:

- ◆ If the printer prints a starting page every time you turn it on, cycle the printer off and on, and wait for the startup page to eject. The active port, type, and speed appears on the starting page.
- ◆ If the starting page has been turned off, turn the four-position switch clockwise until it won't turn any more. Then, turn it counter-clockwise one "click." The printer is now set

to 9600 baud, no matter what value appears on the label beneath.

Apple LaserWriter IINT

Keep these points in mind when configuring an Apple LaserWriter IINT printer's serial port:

- ◆ You need to set the switches for a serial connection. For 9600 baud, switch 1 should be up and switch 2 should be down.
- ◆ The Apple LaserWriter IINT uses software (XON/XOFF) handshaking by default.

If you want the printer to use hardware (DSR/DTR) handshaking, you need to send a PostScript program to the printer. Create this program using a simple ASCII editor, with no formatting commands:

```
statusdict begin 25 sccbatch exch pop
4 eq {stop} if
serverdict begin 0 exitserver
statusdict begin 25 9600 4 setsccbatch
```

If the printer resides on an AppleTalk network, you can send the program using the Apple LaserWriter Font Utility program that comes with most Apple printers.

If you want to send the PostScript program from DOS, make sure to set the DOS workstation's serial port to 9600 baud, 8 data bits, 1 stop bit, and no parity; you can do so using either PCONSOLE or the DOS MODE command. Use PCONSOLE if you plan to send the PostScript program through a queue using NPRINT; use the DOS MODE command if you plan to send the PostScript program directly to a local port.

Apple LaserWriter IINTX

Keep these points in mind when configuring an Apple LaserWriter IINTX printer's serial port:

- ◆ You need to set the switches for a serial connection. For 9600 baud, switch 1 should be up and switch 2 should be down.
- ◆ Switches 3 and 4 control the printer mode. Switch 2 down and switch 3 up put the printer in Diablo 630 mode. Switch 3 down and Switch 4 down put the printer into HP LaserJet mode. Do not send PostScript commands to set the LaserWriter IINTX into Diablo 630 mode if you have set it to HP LaserJet as its non-PostScript mode.
- ◆ You can use either software (XON/XOFF) handshaking or hardware (DSR/DTR) handshaking with the serial port of this printer.
- ◆ The Apple LaserWriter IINTX printer uses software handshaking by default. To change the printer to hardware handshaking, use either of these methods:
 - ◆ Place switch 5 in the up position and switch 6 in the down position.
 - ◆ Send a PostScript program to the printer to change its internal settings. Create this program using a simple ASCII editor, with no formatting commands:

```
statusdict begin 25 sccbatch exch pop
4 eq {stop} if
serverdict begin 0 exitserver
statusdict begin 25 9600 4 setsccbatch
```

If the printer resides on an AppleTalk network, you can send the program using the Apple LaserWriter Font Utility program that comes with most Apple printers.

If you want to send the PostScript program from DOS, make sure to set the DOS workstation's serial port to 9600 baud, 8 data bits, 1 stop bit, and no parity; you can do so using either PCONSOLE or the DOS MODE command. Use PCONSOLE if you plan to send the PostScript program through a queue using NPRINT; use the DOS MODE command if you plan to send the PostScript program directly to a local port.

- ◆ If you set your printer's switches to hardware handshaking, and then send a PostScript program to set the printer to software handshaking, the printer will be configured to use software

handshaking. Therefore, never rely on the switch settings you find; always reset them to be sure.

- ◆ To set the XON/XOFF (software) handshake, place both switch 5 and switch 6 in the same position, either up or down.

If the LaserWriter IINTX does not print, check the switch settings and change them as required. If the settings are correct, reverse the switch 1 setting, wait 30 seconds, and switch it back. Then turn the power off and on again. The test page should show the correct choice of mode (either PostScript or emulation), and the correct port (either LocalTalk or serial).

HP LaserJet IIP, HP LaserJet IIIP, HP LaserJet III, HP LaserJet IIID

To make an HP LaserJet printer available to NetWare for Macintosh, you can use the printer's existing parallel or serial ports, or you can install an interface card.

- ◆ If you use an interface card that supports AppleTalk (such as an HP MIO card or Extended Systems EtherFlex® cards), you can use ATPS as the print server.
- ◆ If you use an interface card that supports only IPX™, you must use PSERVER (or another third-party print server product), as your print server.

HP LaserJet IIISi

You can make an HP LaserJet IIISi available to NetWare for Macintosh in these ways:

- ◆ If you use an interface card that supports AppleTalk (such as an HP MIO card or Extended Systems EtherFlex cards), you can use ATPS as the print server.
- ◆ If you use an interface card that supports only IPX, you must use PSERVER (or another third-party print server product), as your print server. Alternately, you can use the Hewlett-Packard

JetDirect interface card. This card supports IPX “Queue Server” mode, enabling it to service queues directly.

- ◆ A dual-function board may allow multiple ports to be active simultaneously, or may support more than one protocol. In cases like these, PSERVER or ATPS can consider each active port to be a separate printer.

Using Third-Party Print Drivers

This appendix lists third-party software that enables your Macintosh workstation to print jobs to a network printer for which the vendor does not supply a Macintosh print driver that supports AppleTalk networking. This software is not necessarily Novell-tested and approved, nor is it necessarily tested by the supplier for use as described here.

PostScript Printers

Printing from a Macintosh workstation to a PostScript printer or clone is relatively easy; you should be able to use the Macintosh LaserWriter driver in almost all cases. Two other Macintosh PostScript print drivers are available for general use with PostScript printers:

- ◆ PSPrinter driver, Adobe Systems, Inc.

This driver supports PostScript Level 2 and device-specific features using PPD files. It is distributed by Apple Computer, Inc. as LaserWriter 8.x.

- ◆ OnPAGE™ driver, Computer Applications, Inc.

This driver also supports PostScript Level 2 and device-specific features using PPD files. It is distributed by printer vendors under different names.

Non-PostScript Printers

This category covers the following types of printer:

- ◆ HP LaserJet printers and compatibles that do not support PostScript
- ◆ Inkjet and dot-matrix printers

These drivers are available:

- ◆ PaintJet XL300 driver, Hewlett-Packard, Company

This driver works for the following printers:

- ◆ PaintJet XL300
- ◆ LaserJet III Si
- ◆ LaserJet 4 series
- ◆ DeskJet 1200C

Hewlett-Packard ships the driver with the non-PostScript version of the PaintJet XL300. It is a color PCL 5 driver, generating data suitable for printing to any LaserJet Series III or 4 printer or compatible. Unfortunately, the driver embeds HP PPL commands in the data, which results in a wasted page with every print job sent to a LaserJet III printer other than the LaserJet III Si.

The PaintJet XL300 driver offers an alternative to purchasing the PostScript option for Macintosh workstations to be able to use the printer. Simply set a spooler up of type PaintJet XL300 for a queue serviced by the PCL printer.

- ◆ DeskWriter series, Hewlett-Packard Company

You can use a Macintosh driver for the HP DeskWriter series of printers to print to an HP DeskJet printer, but a page is wasted for each job with control codes specific to the DeskWriter.

Table C-1 lists the equivalent DeskWriter model for each kind of DeskJet. Set up the spooler using the correct model, and use a Macintosh printer driver that supports that model.

Table C-1

DeskJet Printers and Associated DeskWriter Models

Printer	Corresponding DeskWriter Model
HP DeskJet 500	DeskWriter
HP DeskJet 510	DeskWriter 510
HP DeskJet 520	DeskWriter 520
HP DeskJet 500C	DeskWriter C
HP DeskJet 550C	DeskWriter 550C
HP DeskJet 560C	DeskWriter 560C
HP DeskJet 310	DeskWriter 310
HP DeskJet 320	DeskWriter 320
HP PaintJet XL	PaintWriter XL

Set up a spooler of the appropriate DeskWriter type for each DeskJet printer.

◆ PowerPrint™/NW drivers, GDT Softworks, Inc.

The PowerPrint/NW series offers Macintosh print drivers specifically for use with NetWare®. These drivers support the following printers:

- ◆ The HP LaserJet series and compatibles
- ◆ The HP DeskJet series and compatibles
- ◆ The Canon® BubbleJet™ and compatibles
- ◆ The Epson® FX™ and Epson LQ™ dot-matrix printer and compatibles
- ◆ The NEC PinWriter® and compatibles
- ◆ The HP DeskJet 500C and 550C

- ◆ MacPlot® drivers, Microspot

These Macintosh drivers support a variety of plotters. The drivers support AppleTalk printing to NetWare for Macintosh via the Microspot AppleTalk Printer Tool.

- ◆ DesignPlot drivers, GDT Softworks, Inc.

Use these NetWare-compatible drivers for HP DesignJet plotters.

Connecting LocalTalk Devices to Ethernet and Token Ring Networks

This appendix describes how to attach an AppleTalk device with a LocalTalk connection to an Ethernet network that supports EtherTalk protocols. It also briefly discusses connecting a LocalTalk device to a Token Ring network.

The Macintosh ordinarily supports communication through only one port at a time. A user may be connected to the network through the EtherTalk port and to a local printer through the LocalTalk port; this user can attach to the NetWare® server on Ethernet or to the printer, but not to both simultaneously. In fact, if the server appears in the Chooser, the printer does not seem to advertise itself at all. Activating the LocalTalk driver through the Network Control Panel enables the printer to appear in the Chooser again, but then the NetWare server is no longer visible there.

You have four options for connecting a LocalTalk device to an EtherTalk network:

- ◆ Install a LocalTalk network interface card in the NetWare server.
- ◆ Use a LocalTalk/EtherTalk converter box.
- ◆ Use a software router on the Macintosh.
- ◆ Use a LocalTalk/EtherTalk hardware router.

Using a LocalTalk Network Interface Card

Installing a LocalTalk interface card in the NetWare server allows the server to route packets between LocalTalk and EtherTalk segments. After you configure the APPLETLK NLM properly, through either the AUTOEXEC.NCF file (in the NetWare 3 environment) or the INETCFG NLM (in the NetWare 4 environment), users on the EtherTalk segment

can access devices on the LocalTalk segment, and vice versa. These are the LocalTalk cards that have been certified by Novell®:

- ◆ The DL/2, a 16-bit MCA card
- ◆ The DL2000, an 8-bit ISA card

Both cards are manufactured by Dayna Communications, Incorporated.

Using LocalTalk/EtherTalk Converter Boxes

A LocalTalk/EtherTalk converter box lets you connect a LocalTalk printer directly to an EtherTalk segment. A converter box is a special class of hardware device with two ports. One is an EtherTalk port; the other is a LocalTalk port. The converter box handles the translation between the two protocols and offers a plug-and-play connection to the network. By allowing printers to be daisy-chained together, a converter box can usually support more than one LocalTalk printer at a time. Here are some examples of converter boxes:

- ◆ Ether*Write® from Compatible Systems
- ◆ AsantePrint® from Asante Technologies
- ◆ EtherPrint® and EtherPrint Plus® from Dayna Communications
- ◆ SprintTalk®/254E4 from Digital Products

The LaserBridge® by Sonic Systems is a software version of these converter boxes. This application is installed on a Macintosh attached to the network through its EtherTalk port and to a printer through its LocalTalk port. The LaserBridge lets a Macintosh act as an EtherTalk-to-LocalTalk router for print jobs sent from EtherTalk nodes to LocalTalk printers. While this application allows the Macintosh to function like a router, it does not give the Macintosh the full functionality of a router.

Using Hardware and Software Routers

You can use a full hardware or software router that supports both LocalTalk and EtherTalk. Generally, configuring a router is more complex than configuring a converter box, but a router can support many more devices, gives you the option of placing the LocalTalk devices in a different zone, and may offer administrative capabilities such as filtering. Using a router requires that the LocalTalk devices be placed nearby or that a LocalTalk wiring plant be maintained in addition to the Ethernet.

Here are some examples of hardware routers:

- ◆ Multi-Protocol Router by Novell
- ◆ Fastpath® by Shiva Corporation
- ◆ Cisco 2500, 3000, and 4000 by Cisco Systems, Incorporated
- ◆ Etherbridge® by Dayna Communications
- ◆ GatorBox® by Cayman Systems

A software router uses an EtherTalk-attached Macintosh to do the work for you. The LaserWriter is attached to the LocalTalk port of the Macintosh, and the software runs in the background of the Macintosh workstation, using up to 10% of its CPU cycles. The Macintosh acts as a pass-through AppleTalk router, letting all other devices see the printer (including the server). This is an example of a software router: Apple Internet Router

A Note on LocalTalk/Token Ring Solutions

You can attach a LocalTalk device to a TokenTalk network in much the same way that you attached the device to an EtherTalk network. However, you are more limited in the products you can choose from. These are some examples:

- ◆ The LocalTalk interface solution described for Ethernet, presented earlier in this appendix
- ◆ TokenPrint® and TokenPrint Plus® from Dayna Communications

These are LocalTalk-to-TokenTalk hardware devices that connect LocalTalk printers directly to Token Ring networks. They are analogous to the EtherPrint and EtherPrint Plus products for EtherTalk.

- ◆ Apple's Internet Router from Apple Computer, Inc.

The Apple Internet Router also supports Token Ring interfaces.

Error Messages

This appendix lists the most important error messages that appear at the server during the use of NetWare for Macintosh; messages generated by ATPS that appear at the client are also covered. The error messages appear in these categories:

- ◆ AppleTalk File Services (AFP.NLM). For details on these messages, see “AppleTalk File Services Error Messages” on page 336.
- ◆ HFS CD-ROM (HFSCD.NLM and HFSCDCON.NLM). For information on these messages, see “HFS CD-ROM Error Messages” on page 344.
- ◆ AppleTalk Print Services (ATPS.NLM). For details on these messages, see “AppleTalk Print Services Error Messages” on page 358.
- ◆ ATXRP.NLM. For information on these messages, see “ATXRP Error Messages” on page 401.
- ◆ Messages appearing at the Macintosh client. For details on these messages, see “Messages That Can Appear at the Macintosh Client” on page 409.

Each section describes the error messages and provides suggestions for resolving each one.

AppleTalk File Services Error Messages

These messages are documented in numeric order. They can appear on the system console screen or in the system log.

AFP-4.10-1: Desktop allocation error on Volume *vol_name*.

Explanation: The server does not have enough memory to run AFP.NLM.

Action: You should add more RAM to the server, or reduce the size of the volumes the server supports.

AFP-4.10-5: Desktop reset error on Volume *vol_name*.

Explanation: AFP could not close and delete the desktop database files on the volume specified by *vol_name*.

Action: Make sure that no other applications, including backup and restore programs, have the desktop database files open on the volume.

AFP-4.10-6: Desktop has been reset on Volume *vol_name*.

Explanation: The network administrator has used AFPCON to specify that the desktop be rebuilt for the volume specified by *vol_name*.

Action: No action is necessary. This message is informational.

AFP-4.10-9: Insufficient memory to enable Reply Cache

Explanation: The server does not have enough available memory to make using the Finder Accelerator worthwhile.

Action: Under these conditions, the memory would be better used in the server's file cache buffers. Try adding more memory to the server.

AFP-4.10-12: An invalid user access method was entered. Access method was not updated.

Explanation: The AFP configuration file contained invalid data concerning available login methods. AFP will restore the default values for this item.

Action: If you want to enable an login method that is not enabled by default, use AFPCON to do so.

AFP-4.10-13: Btrieve record manager inactive - unable to access desktop database on volume *vol_name*.

Explanation: The state of BTRIEVE.NLM prevents AFP.NLM from using Btrieve.

Action: Check the system log for messages from BTRIEVE.NLM regarding this problem.

AFP-4.10-14: Unable to write to desktop database on volume *vol_name*

Explanation: AFP was unable to write to the disk, probably because the disk was full or the volume specified by *vol_name* is corrupted.

Explanation: Remove unneeded files from the disk, and make sure that the volume is not corrupted.

AFP-4.10-17: An invalid value for maximum number of AFP connections was entered. Value will not be updated.

Explanation: The AFP configuration file contained invalid data concerning the maximum number of AFP connections allowed. AFP will restore the default value for this item.

Action: If you want to specify a setting different from the default, use AFPCON to do so.

AFP-4.10-19: Unable to write configuration data to file (*filename*).

Explanation: AFP was unable to write the file specified by *filename* to the disk, probably because the disk was full or the volume is corrupted.

Action: Remove unneeded files from the disk, and make sure that the volume is not corrupted.

AFP-4.10-23: Could not read configuration data file (*filename*). File does not exist or data format is invalid. Using internal default configuration data.

Explanation: The AFP configuration file specified by *filename* contained invalid data. AFP will restore the default values for all items.

Action: None

AFP-4.10-28: AFP Server unregistered with NBP because the NetWare® Directory is inaccessible.

Explanation: The Directory Services database on this server is no longer accessible. This problem may be caused by improper installation, by a faulty backup, or by a faulty DSRepair operation. Because users cannot log in while Directory Services is unavailable, the server will not appear in the Chooser.

Action: When you reinitialize Directory Services, NetWare for Macintosh will complete the NBP registration.

AFP-4.10-53: Created directory *dir_name* on volume *vol_name*.

Explanation: AFP.NLM created the directory specified by *dir_name* to hold the desktop database files. This directory resides on the volume specified by *vol_name*, and is hidden.

Action: No action is necessary. This message is informational.

AFP-4.10-56: Unable to create directory *dir_name* on volume *vol_name*: error num.

Explanation: Because of a disk error or corrupted volume, AFP could not create the directory specified by *dir_name* to hold the desktop database files on the NetWare volume *vol_name*.

Action: You may be able to use VRepair to remedy the problem.

AFP-4.10-74: NetWare for Macintosh License violation detected: Server *server_name* in zone *zone_name* has a duplicate serial number!

Explanation: This message occurs when AFP.NLM detects a license violation.

Action: Unless you are using a version of NetWare for Macintosh bundled with NetWare, you must install a separate copy of AFP.NLM on each server.

AFP-4.10-80: NOTICE: The NetWare for Macintosh license file is invalid. Please reinstall the license from the license diskette, or delete the file SYS:SYSTEM\NW-MAC\LICENSE.AFP.

Explanation: Your copy of LICENSE.AFP has become corrupted.

Action: Reinstall the file from the license diskette, or delete the file from SYS:SYSTEM\NW-MAC.

AFP-4.10-81: NOTICE: This is a pre-release version of NetWare for Macintosh, which expired *date*.

Explanation: You are using a beta version of NetWare for Macintosh after the final version has been released.

Action: Use the later version.

AFP-4.10-82: NOTICE: This software will expire after *date*.

Explanation: The beta version of NetWare for Macintosh will expire after the date specified by *date*.

Action: Update your version of NetWare for Macintosh before the specified date.

AFP-4.10-86: NetWare for Macintosh v4.10

Directory Services Tree Name: *name1*

Bindery Services Context: *name2*

Explanation: *name1* represents the name of the Directory Services tree in which the server resides. *name2* represents the server's bindery services context.

This information is displayed each time AFP is loaded. It may be helpful in problem determination.

Action: No action is necessary. This message is informational.

AFP-4.10-90: Incompatible version of Appletalk (APPLETLK.NLM).

Explanation: AFP.NLM was not meant to be used with this version of APPLETLK.NLM.

Action: Check your AUTOEXEC.NCF file to be sure you are loading the version of APPLETLK.NLM shipped with the version of NetWare for Macintosh you are running.

AFP-4.10-98: AFP server *server_name* registered in Zone *zone_name*.

Explanation: This message indicates that the server specified by *server_name* will accept connections from Macintosh users. In the Macintosh Chooser, you can find the server in the zone specified by *zone_name*.

Action: No action is necessary. This message is informational.

AFP-4.10-99: Failure registering AFP server *server_name* in Zone *zone_name*: that name already exists.

Explanation: There are two servers with the name specified by *server_name* in the zone specified by *zone_name*. Each server must have a unique name.

Action: This problem can be caused by copying an AUTOEXEC.NCF file from one server to another. Check to see that the server name is correct in your AUTOEXEC.NCF file and in the General Server Information window of AFPCON.

AFP-4.10-101: AFP Server not registered because the NetWare Directory is inaccessible.

Explanation: The Directory Services database on this server is no longer accessible. This problem may be caused by improper installation, by a faulty backup, or by a faulty DSRepair operation. Because users cannot log in while Directory Services is unavailable, the server will not appear in the Chooser.

Action: When you reinitialize Directory Services, NetWare for Macintosh will complete the NBP registration.

AFP-4.10-103: Memory allocation failure during AFP initialization.

Explanation: The server does not have enough memory to load and initialize AFP.NLM.

Action: Add more memory to the server, or reduce the size or number of volumes that the server supports.

AFP-4.10-125: Memory allocation failure during AFP initialization.

Explanation: The server does not have enough memory to load and initialize AFP.NLM.

Action: Add more memory to the server, or reduce the size or number of volumes that the server supports.

AFP-4.10-126: Volume *vol_name* is unavailable to AFP clients due to a memory allocation problem.

Explanation: Macintosh clients cannot access the volume specified by *vol_name* because the server does not have enough memory to load and run AFP.NLM.

Action: Add more memory to the server, or reduce the size or number of volumes the server supports.

AFP-4.10-127: Volume *vol_name* is unavailable. Maximum number of pseudo volumes has been allocated.

Explanation: The volume specified by *vol_name* is unavailable because the maximum number CD-ROM discs (63) have the same NetWare home volume.

Action: Move some CD-ROMs to other volumes.

AFP-4.10-133: Desktop Rebuild started on Volume *vol_name*.

Explanation: The administrator began rebuilding the desktop database on the volume specified by *vol_name* by selecting the *Start Desktop Database Rebuild* option in AFPCON. The rebuild runs as a low priority operation, and then produces a completion message.

Action: No action is necessary. This message is informational.

AFP-4.10-134: Desktop rebuild halted on volume *vol_name*: Found *num1* application(s) and *num2* icon(s).

Explanation: The administrator cancelled the desktop database rebuild on the volume specified by *vol_name* by selecting the *Cancel Desktop Rebuild* option in AFPCON. The operation is halted immediately, and partial status information is displayed. *num1* represents the number of applications found. *num2* represents the number of icons found.

Action: No action is necessary. This message is informational.

AFP-4.10-136: Desktop rebuilt on volume *vol_name*: Found *num1* application(s) and *num2* icon(s).

Explanation: This message appears when a desktop database rebuild on the volume specified by *vol_name* finishes without interruption. *num1* represents the number of applications found. *num2* represents the number of icons found.

Action: No action is necessary. This message is informational.

AFP-4.10-138: This file has no resource fork. Bundle bit cleared.

Explanation: Many Macintosh files are distributed with a Bundle flag; this flag indicates that a file contains icons that the desktop database rebuilder

should collect. On many files, the Bundle flag is set, but no icon exists. This message indicates that this minor anomaly has been corrected.

Action: No action is necessary. This message is informational.

AFP-4.10-139: This file has a damaged resource fork. It should be removed.

Explanation: If the desktop database rebuilder finds a file with a corrupted resource fork, it produces this message, but cannot fix the problem. The problem is usually caused by faulty Macintosh software, and cannot be fixed by Vrepair.

Action: You should recopy the file from your original Macintosh floppy disk, or delete it. It is probably unusable.

AFP-4.10-140: Unable to open file due to error *num*: *filename*

Explanation: The desktop database rebuilder was unable to process the file specified by *filename*, probably due to the internal error specified by *num*.

Action: Please contact the Novell® technical support department for assistance.

AFP-4.10-141: This file has no Bundle resource. Bundle bit cleared.

Explanation: Many Macintosh files are distributed with a Bundle flag; this flag indicates that a file contains icons that the desktop database rebuilder should collect. On many files, the Bundle flag is set, but no icon exists. This message indicates that this minor anomaly has been corrected.

Action: No action is necessary. This message is informational.

AFP-4.10-152: Memory Allocation error during operation: refused new session.

Explanation: The server does not contain enough memory to support another user connection. If this problem occurs after the server has been operative for a long time, it is most likely due to a “memory leak” in another module.

Action: You may be able to determine which module is leaking memory using the Memory Utilization menu in the MONITOR utility.

AFP-4.10-153: No users are connected; shutting down immediately.

Explanation: If all users have logged out of the server and the shutdown time set in AFPCON is less than five minutes, the shutdown operation will complete immediately. You can then safely unload AFP.NLM.

Action: No action is necessary. This message is informational.

AFP-4.10-154: No new logins will be accepted. Cancelling NBP registration.

Explanation: When the shutdown time set in AFPCON reaches five minutes or less, no new users are allowed to log in to the server. The server will not appear in the Macintosh Chooser.

Action: No action is necessary. This message is informational.

AFP-4.10-155: AFP Shutdown complete.

Explanation: The AFP shutdown operation has completed. All users have been disconnected, and the server will no longer appear in the Macintosh Chooser.

Action: You can now safely unload AFP.NLM.

AFP-4.10-164: Connection *num* died because the AppleTalk Stack was unbound.

Explanation: Changing the configuration of the AppleTalk stack terminated the connection specified by *num*.

Action: The user at connection *num* must log in again.

AFP-4.10-167: Error *num* creating Network Trash Folder on volume *vol_name*.

Explanation: The initialization of the volume specified by *vol_name* could not be completed, probably because of a disk error.

Action: Use VRepair to fix the problem.

AFP-4.10-168: Error *num* creating Trash Can Usage Map file on volume *vol_name*.

Explanation: The initialization of the volume specified by *vol_name* could not be completed, probably because of a disk error.

Action: Use VRepair to fix the problem.

AFP-4.10-174: Memory allocation failure during AFP initialization.

Explanation: The server does not have enough memory to load and run AFP.NLM

Action: Add more memory to the server, or reduce the size or number of the volumes that the server supports.

AFP-4.10-175: Volume *vol_name* is unavailable to AFP clients due to a memory allocation problem.

Explanation: Macintosh clients cannot access the volume specified by *vol_name* because the server does not have enough memory to load and run AFP.NLM.

Action: Add more memory to the server, or reduce the size or number of volumes the server supports.

AFP-4.10-176: Volume *vol_name* is unavailable to AFP clients due to a memory allocation problem.

Explanation: Macintosh clients cannot access the volume specified by *vol_name* because the server does not have enough memory to load and run AFP.NLM.

Action: Add more memory to the server, or reduce the size or number of volumes the server supports.

AFP-4.10-177: Desktop on volume *vol_name* is unavailable to AFP clients.

Explanation: Because of an initialization problem, the volume specified by *vol_name* is not available to NetWare for Macintosh clients. The volume will not appear in the Macintosh Chooser and cannot be mounted by Macintosh users.

Action: Refer to previous messages in the server's error log to determine the exact nature of the problem.

HFS CD-ROM Error Messages

These messages are documented in numeric order. They can appear on the system console screen or in the system log.

HFSCD.NLM Error Messages

HFSCD-4.10-12: Resource tag allocation failure.

Explanation: An error occurred when HFSCD.NLM tried to obtain a resource tag from the operating system; memory at the server is probably low. HFSCD.NLM unloads when this error occurs.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory. Then, try loading HFSCD.NLM again.

HFSCD-4.10-13: Unable to create CD-ROM Migrator process.

Explanation: When you load HFSCD.NLM, the module creates the process that enables you to remove CD-ROM data from the server hard disk. This process is present all the time that HFSCD.NLM is loaded, but it runs only when you specify that the Migrator carry out its task. This error is returned when HFSCD.NLM is loaded and it was unable to create the Migrator process, probably because the server does not have enough memory.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCD-4.10-14: No memory for launching Asynchronous Event Scheduler init process.

Explanation: The server is probably low on memory. HFSCD.NLM cannot be loaded.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory. Then, try loading HFSCD.NLM again.

HFSCD-4.10-15: Error *num* registering application with Data Migration Manager.

Explanation: An error occurred when HFSCD.NLM attempted to register with RTDM.NLM. You may not be using the current versions of RTDM.NLM and HFSCD.NLM. Or, the server may be low on memory. HFSCD.NLM unloads when this error occurs.

Action: Make sure that the versions of RTDM.NLM and HFSCD.NLM you are loading are current. If you are loading the correct versions, check memory at the server. If memory is low, add more memory, or unload unnecessary modules to free additional memory. Then, try loading HFSCD.NLM again.

HFSCD-4.10-16 Error *num* registering application with Media Manager.

Explanation: An error occurred when HFSCD.NLM attempted to register with the Media Manager in the NetWare operating system. You may not be using the current versions of the operating system and HFSCD.NLM. Or, the server may be low on memory. HFSCD.NLM unloads when this error occurs.

Action: Make sure that the versions of NetWare and HFSCD.NLM you are loading are current. If you are loading the correct versions, check memory at the server. If memory is low, add more memory, or unload unnecessary modules to free additional memory. Then, try loading HFSCD.NLM again.

HFSCD-4.10-17: This version of HFSCD.NLM is not compatible with the version of NetWare currently loaded. HFSCD.NLM requires NetWare v4.01 or higher.

Explanation: You are running a version of NetWare earlier than 4.01.

Action: Upgrade the server to run NetWare 4.01 or later.

HFSCD-4.10-18: Error *num* registering application for volume events.

Explanation: You may not be using the current versions of the operating system and HFSCD.NLM. Or, the server may be low on memory. HFSCD.NLM unloads when this error occurs.

Action: Make sure that the versions of NetWare and HFSCD.NLM you are loading are current. If you are loading the correct versions, check memory at the server. If memory is low, add more memory, or unload unnecessary modules to free additional memory. Then, try loading HFSCD.NLM again.

HFSCD-4.10-19: Error *num* registering application for media events.

Explanation: You may not be using the current versions of the operating system and HFSCD.NLM. Or, the server may be low on memory. HFSCD.NLM unloads when this error occurs.

Action: Make sure that the versions of NetWare and HFSCD.NLM you are loading are current. If you are loading the correct versions, check memory at the server. If memory is low, add more memory, or unload unnecessary modules to free additional memory. Then, try loading HFSCD.NLM again.

HFSCD-4.10-20: Unable to allocate memory for Migrator stack.

Explanation: HFSCD.NLM was unable to allocate sufficient memory for a process stack in order to start the Migrator process.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCD-4.10-25: Unloading HFSCD will make migrated CD-ROM files inaccessible.

Explanation: This warning message appears when you attempt to unload HFSCD.NLM. Any CD-ROM files that have been removed from the server hard disk will no longer be accessible.

Action: No action is necessary. This message is informational.

HFSCD-4.10-31: No memory for processing media event. Event #*num1* Media #*num2*

Explanation: A media event occurs whenever you insert a disc into or remove a disc from a disc drive, or whenever a disc drive experiences a fatal error. If a media event cannot be processed because memory is low, the status of discs appearing in the HFSCDCON Disc List may not be accurate.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCD-4.10-52: Migration Key created with newer version of HFSCD.NLM.

Explanation: This error can occur when you run a pre-4.10 version of HFSCD.NLM on the same machine on which the 4.10 version has been run.

Action: Run version 4.10 of HFSCD.NLM.

HFSCD-4.10-53: Attempt made to de-migrate file '*filename*' from the '*disc_name*' disc. Disc not found!

Explanation: A user attempted to access the file *filename* on the CD-ROM disc *disc_name*, but the disc is not in any CD-ROM drive.

Action: Insert the appropriate disc in the drive.

HFSCD-4.10-54: Attempt made to de-migrate file '*filename*' from the '*disc_name*' disc. Disc not mounted!

Explanation: A user attempted to access the file *filename* on the CD-ROM disc *disc_name*, but the disc is not mounted.

Action: Insert the appropriate disc in the drive.

HFSCD-4.10-55: Attempt made to de-migrate file '*filename*' from the '*disc_name*' disc. Error *num* activating the disc!

Explanation: A user attempted to access the file *filename* on the CD-ROM disc *disc_name*, but an error occurred when HFSCD.NLM attempted to activate the disc.

Action: Make sure that the disc is inserted into the disc drive and that the drive is operating properly.

HFSCD-4.10-56: Migration Key created with newer version of HFSCD.NLM.

Explanation: This error can occur when you run a pre-4.10 version of HFSCD.NLM on the same machine on which the 4.10 version has been run.

Action: Run version 4.10 of HFSCD.NLM.

HFSCD-4.10-191: Error *num* initializing disc. Disc cannot be mounted.

Explanation: This error occurs when HFSCD.NLM attempts to mount a non-HFS disc.

Action: Insert an HFS disc in the drive.

HFSCDCON.NLM Error Messages

HFSCDCON-4.10-1: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-2 Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-3: This version of HFSCDCON.NLM is not compatible with the HFSCD.NLM that is currently loaded.

Explanation: HFSCD.NLM and HFSCDCON.NLM are released as a set and have internal version numbers associated with them to ensure that the two are compatible. This error message indicates that the version of HFSCDCON.NLM you are running is either older or newer than the version of HFSCD.NLM currently loaded.

Action: Obtain and run the appropriate version of HFSCDCON.NLM.

HFSCDCON-4.10-7: Resource tag allocation failure.

Explanation: An error occurred when HFSCD.NLM tried to obtain a resource tag from the operating system; memory at the server is probably low. HFSCD.NLM unloads when this error occurs.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory. Then, try loading HFSCD.NLM again.

HFSCDCON-4.10-9: Error *num* opening a screen.

Explanation: HFSCDCON.NLM generated this error when attempting to open a screen for display at the console. The most likely reason for this error is a low memory condition at the server.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-11: Unable to allocate memory for Main Process stack.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-25: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-27: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-32: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-34: The specified directory does not exist.

Explanation: You specified that HFSCD.NLM should scan CD-ROM files into a directory that does not exist.

Action: Specify the proper directory in HFSCDCON.NLM.

HFSCDCON-4.10-36: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-39: The specified directory does not exist.

Explanation: You specified that HFSCD.NLM should scan CD-ROM files into a directory that does not exist.

Action: Specify the proper directory in HFSCDCON.NLM.

HFSCDCON-4.10-40: Unable to find the selected disc.

Explanation: HFSCD.NLM cannot find a disc that appeared in the disc list. This error is most likely to occur on SFT III systems when duplicate discs are not available on each system and one of the systems goes down.

Action: Make sure that duplicate discs are available on each system.

HFSCDCON-4.10-41: No root path found for this disc.

Explanation: The disc has not yet been scanned onto a mounted NetWare volume.

Action: If the disc was scanned onto a NetWare volume that is not mounted, you should mount that NetWare volume. Or, you can scan the disc onto any mounted NetWare volume.

HFSCDCON-4.10-43: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-45: Unable to find the selected disc.

Explanation: HFSCD.NLM cannot find a disc that appeared in the disc list. This error is most likely to occur on SFT III systems when duplicate discs are not available on each system and one of the systems goes down.

Action: Make sure that duplicate discs are available on each system.

HFSCDCON-4.10-46: Disc has not been scanned. Scan disc now?

Explanation: This message appears when you attempt to mount a previously unscanned disc volume.

Action: To scan the disc, specify Yes. If you do not want to scan the disc at this time, specify No.

HFSCDCON-4.10-48: Error *num* scanning disc: No Macintosh name space on this volume.

Explanation: HFSCD.NLM cannot scan the disc contents onto a NetWare volume because the Macintosh name space has not been added to the volume.

Action: Add the Macintosh name space to the NetWare volume. For information, see "Adding the Macintosh Name Space after Installation" on page 21.

HFSCDCON-4.10-49: Error *num* scanning disc.

Explanation: An error occurred while HFSCD.NLM was scanning a disc onto a NetWare volume.

Action: Refer to the error message specified by *num* for more information on how to proceed.

HFSCDCON-4.10-50: Error *num* Mounting Disc.

Explanation: An error occurred while HFSCD.NLM was attempting to mount a disc.

Action: Refer to the error message specified by *num* for more information on how to proceed.

HFSCDCON-4.10-51: Disc in use! Cannot be dismounted.

Explanation: You attempted to dismount a disc that is currently in use.

Action: Wait until the disc is no longer in use before attempting to dismount it.

HFSCDCON-4.10-52: Error *num* Dismounting Disc.

Explanation: An error occurred while HFSCD.NLM was dismounting a disc.

Action: Refer to the error message specified by *num* for more information on how to proceed.

HFSCDCON-4.10-54: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-56: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-59: Unable to add an entry to a menu.

Explanation: HFSCDCON.NLM generated this error when attempting to add items to a menu for display at the console. The most likely reason for this error is a low memory condition at the server.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-60: Unable to find the selected disc.

Explanation: HFSCD.NLM cannot find the disc you selected. This error is most likely to occur on SFT III systems when duplicate discs are not available on each system and one of the systems goes down.

Action: Make sure that duplicate discs are available on each system.

HFSCDCON-4.10-63: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-64: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-66: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-67: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-70: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-71: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-73: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-75: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-92: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-93: Unable to find the selected volume.

Explanation: HFSCD.NLM cannot find a disc that appeared in the disc list. This error is most likely to occur on SFT III systems when duplicate discs are not available on each system and one of the systems goes down.

Action: Make sure that duplicate discs are available on each system.

HFSCDCON-4.10-95: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-96: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-98: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-99: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-100: Error *num* saving the specified space limit on volume.

Explanation: HFSCD.NLM could not limit the NetWare volume space to be used by scanned files as specified in HFSCDCON.NLM.

Action: Refer to the error message specified by *num* for more information on how to proceed.

HFSCDCON-4.10-103: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-115: Error *num* saving parameters.

Explanation: HFSCDCON.NLM could not save the configuration parameters you entered to the SYS: volume.

Action: Refer to the error message specified by *num* for more information on how to proceed.

HFSCDCON-4.10-116: Unable to allocate memory.

Explanation: HFSCDCON.NLM was unable to allocate sufficient memory for the process you attempted to carry out.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-119: ERROR - Unable to start Migrator.

Explanation: HFSCD.NLM could not start the Migrator, probably because the server is low on memory.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-125: Unable to add an entry to a menu.

Explanation: HFSCDCON.NLM generated this error when attempting to add items to a menu for display at the console. The most likely reason for this error is a low memory condition at the server.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-127: Unable to add an entry to a menu.

Explanation: HFSCDCON.NLM generated this error when attempting to add items to a menu for display at the console. The most likely reason for this error is a low memory condition at the server.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-129: Unable to add an entry to a menu.

Explanation: HFSCDCON.NLM generated this error when attempting to add items to a menu for display at the console. The most likely reason for this error is a low memory condition at the server.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-131: Unable to add an entry to a menu.

Explanation: HFSCDCON.NLM generated this error when attempting to add items to a menu for display at the console. The most likely reason for this error is a low memory condition at the server.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-133: Unable to add an entry to a menu.

Explanation: HFSCDCON.NLM generated this error when attempting to add items to a menu for display at the console. The most likely reason for this error is a low memory condition at the server.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

HFSCDCON-4.10-135: Error *num* scanning disc: Migration disabled on volume or volume not found.

Explanation: You attempted to scan a disc onto a NetWare that either has migration disabled or is not mounted.

Action: Enable migration on the volume, or mount the appropriate volume.

HFSCDCON-4.10-136: Error *num* scanning disc: Automatic scan of another disc is already in progress.

Explanation: You attempted to have HFSCD.NLM scan a disc while another disc scan is in progress. HFSCD.NLM can only scan one disc at a time.

Action: Wait until one disc scan is complete before you attempt another one.

HFSCDCON-4.10-255: This version of HFSCDCON.NLM is not compatible with the HFSCD.NLM that is currently loaded.

Explanation: HFSCD.NLM and HFSCDCON.NLM are released as a set and have internal version numbers associated with them to ensure that the two are compatible. This error message indicates that the version of HFSCDCON.NLM you are running is either older or newer than the version of HFSCD.NLM currently loaded.

Action: Obtain and run the appropriate version of HFSCDCON.NLM.

AppleTalk Print Services Error Messages

Numbered Messages That Can Appear During ATPS Operation

These messages are documented in numeric order. Depending on the severity of the error and your ATPS verbosity setting, each message can appear in the system log, on the system console screen, on the ATPS console screen, or all three.

ATPS-4.10-4: Request for printer's status timed out.

Explanation: ATPS failed to receive an expected response from the printer within an allotted time. This message can indicate a network error or a printer problem, but is more often associated with normal printer operation.

Action: If the message appears repeatedly, make sure that the printer is turned on, and not in an error condition. Then, check the connection between the printer and the network.

ATPS-4.10-5: Logging in as *object_name*.

Explanation: ATPS is attempting to log in to and access the Directory Services tree as the object specified by *object_name*.

Action: No action is necessary. This message is informational.

ATPS-4.10-18: No files that match *filename* were found.

Explanation: ATPS cannot locate necessary configuration file in the appropriate directory. *filename* indicates the name and path of the configuration file. This warning message may simply indicate that you have not yet configured a printer server.

Action: Configure the appropriate ATPS components, if necessary.

ATPS-4.10-19: Can't create spooler specified in configuration file *filename*.

Explanation: This message indicates ATPS cannot use a spooler configuration. This error might be caused by a memory problem or a file syntax error. *filename* is the name of the configuration file.

Action: Make sure that memory is not running low on the server. If the server has sufficient memory, you can resolve the problem by disabling and re-enabling the spooler in ATPSCON.

ATPS-4.10-23: No files that match *filename* were found.

Explanation: ATPS cannot locate necessary configuration file in the appropriate directory. *filename* indicates the name and path of the configuration file. This warning message may simply indicate that you have not yet configured spoolers.

Action: Configure the appropriate ATPS components, if necessary.

ATPS-4.10-24: Can't create printer server specified in configuration file *filename*.

Explanation: ATPS cannot use a printer server configuration. This error might be caused by a memory problem or a file syntax error. *filename* is the name of the configuration file.

Action: Make sure that memory is not running low on the server. If the server has sufficient memory, you can resolve the problem by deleting the queue and recreating it in ATPSCON.

ATPS-4.10-36: Printer returned bad dictionary status: *string*.

Explanation: The printer returned an unexpected response to a query for the presence of a Laser Prep file.

Action: Delete the .QRY files in the ATPS directory and try printing again.

ATPS-4.10-39: Getting spooler PostScript information from PPD file *filename*.

Explanation: ATPS is using the PPD file specified by *filename* to retrieve information that the spooler needs to respond to PostScript queries.

Action: No action is necessary. This message is informational.

ATPS-4.10-53: Couldn't send ProcSet query file *filename*.

Explanation: ATPS cannot send the contents of the ProcSet file specified by *filename* to the printer. The file may be missing or in use, or the printer may be turned off or disconnected.

Action: If the file does not exist, print to the queue again using the appropriate Laser Prep file. If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-100: Created log file *filename* for printer *printer*.

Explanation: ATPS has created a new printer log file. *filename* represents the name of the printer log. *printer* represents the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-110: Couldn't log message—[*message*].

Explanation: ATPS cannot write an entry to the printer log.

Action: Make sure that the log is not currently being viewed from ATPSCON. Then, check that the volume contains enough free disk space to handle updates to the printer log. If enough space exists, use the MONITOR utility to make sure that no one else has the printer log file open.

ATPS-4.10-112: Could not initialize queue *queue_name*.

Explanation: ATPS cannot initialize the queue designated by *queue_name*.

Action: Reselect the queue in the Printer Server Parameters window of ATPSCON.

ATPS-4.10-114: Unable to charge user *user_name*.

Explanation: ATPS could not charge the user specified by *user_name* for printing his or her job.

Action: The owner's Directory Services user object may be deleted, or the user object may reside in a portion of the Directory Services tree currently unavailable to ATPS. Make sure that the user object exists. If it does, refer to the appropriate documentation to resolve the Directory Services problem that may be causing parts of the tree to be inaccessible.

ATPS-4.10-116: *object_name* cannot read *user_name*'s account balance.

Explanation: ATPS experienced an error while trying to read *user_name*'s Directory Services accounting properties. *object_name* is the name of the object ATPS is using to obtain rights in Directory Services. The most likely reason for this error is that ATPS does not have sufficient rights to the user object's accounting properties.

Action: Use the NETADMIN utility to grant read and write trusteeship to the server over the accounting properties of the users you want to charge.

ATPS-4.10-121: Can't open printer configuration *filename*.

Explanation: ATPS cannot open the specified configuration file. *filename* indicates the name of the configuration file. The file may be in use.

Action: Use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-122: Can't open spooler configuration *filename*.

Explanation: ATPS cannot open and read the specified configuration file. *filename* indicates the name of the configuration file. The file may be in use.

Action: Use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-128: Can't service halted queue.

Explanation: The queue status is set so that ATPS cannot access jobs stored in it.

Action: Change the queue's status using PCONSOLE.

ATPS-4.10-133: Discarding remaining job data due to error received from printer.

Explanation: Because of a message indicating that the printer is flushing a job, ATPS is discarding the remainder of the job.

Action: No action is necessary. This message is informational.

ATPS-4.10-135: Font resource file *filename* has invalid format.

Explanation: A PostScript font received by the spooler has invalid syntax; therefore, ATPS cannot use it.

Action: Delete the specified file.

ATPS-4.10-138: Creating queue *queue_name*.

Explanation: ATPS is creating a queue it was configured to service that does not exist. The queue specified by *queue_name* may previously have been configured and deleted.

Action: No action is necessary. This message is informational.

ATPS-4.10-140: Font file *filename* has invalid format.

Explanation: A PostScript font received by the spooler has invalid syntax; therefore, ATPS cannot use it.

Action: Delete the specified file.

ATPS-4.10-142: Problem writing end-of-file to queue.

Explanation: The ATPS spooler cannot write a terminating Control-D character at the end of a PostScript job entry.

Action: Check the volume to see whether space remains. Delete all unnecessary files.

ATPS-4.10-143: Incompatible dictionary resident in printer.

Explanation: ATPS detected the wrong Laser Prep version on the printer. ATPS will reset the printer and replace the file with the proper version.

Action: No action is necessary. This message is informational.

ATPS-4.10-147: Unable to identify job owner for accounting purposes.

Explanation: ATPS could not identify the print job owner in order to charge the user for printing the job. The job will not print.

Action: The owner's Directory Services user object may be deleted, or the user object may reside in a portion of the Directory Services tree currently unavailable to ATPS. Make sure that the user object exists. If it does, refer to the appropriate documentation to resolve the Directory Services problem that may be causing parts of the tree to be inaccessible.

ATPS-4.10-148: Attached printer *printer* to queue *queue_name*.

Explanation: ATPS will begin sending jobs from the specified queue to the designated printer. *printer* indicates the name, type, and zone of the printer. *queue_name* indicates the name of the queue.

Action: No action is necessary. This message is informational.

ATPS-4.10-162: No queue Directory Services context specified in file *filename*.

Explanation: The configuration file specified by *filename* does not contain the Directory Services context in which the queue object resides. This error probably occurred because the configuration was created under a version of NetWare for Macintosh prior to 4.1.

Action: Reselect the queue in the Spooler Parameters window or Printer Server Parameters window of ATPSCON.

ATPS-4.10-165: Client must be logged in to be able to include a file.

Explanation: The Macintosh client submitted a job with a request to add file data to the print job. ATPS could not honor the request, because the client is not logged in to the server.

Action: The user at the client should log in to the server and resubmit the request.

ATPS-4.10-167: Servicing job *job_number*, *num1* bytes; printing *num2* copies.

Explanation: ATPS has begin to service the job specified by *job_number*. The job contains *num1* bytes. ATPS will print *num2* copies.

Action: No action is necessary. This message is informational.

ATPS-4.10-169: Unable to verify that printer *printer* was hidden.

Explanation: After hiding the printer specified by *printer*, ATPS cannot locate it on the network to confirm its status.

Action: Make sure that the printer is turned on, and not in an error condition. Then, check the connection between the printer and the network.

ATPS-4.10-175: Servicing job *job_number*, *num* bytes; printing one copy.

Explanation: ATPS has begin to service the job specified by *job_number*. The job contains *num* bytes.

Action: No action is necessary. This message is informational.

ATPS-4.10-177: Unable to verify that printer *printer* was restored.

Explanation: After restoring the printer specified by *printer*, ATPS cannot locate it on the network to confirm its status.

Action: Make sure that the printer is turned on, and not in an error condition. Then, check the connection between the printer and the network.

ATPS-4.10-178: Printer *printer* was successfully queried.

Explanation: ATPS was able to communicate with the printer in order to get a list of its resident PostScript fonts and information about the printer's capabilities. *printer* specifies the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-185: Couldn't create a file to hold the spooler font list.

Explanation: ATPS cannot create a file to hold the server-wide font list.

Action: Check that there is enough disk space on the SYS volume.

ATPS-4.10-186: Couldn't create file *filename* to hold the spooler 's font list.

Explanation: ATPS cannot open the internal font list file specified by *filename*. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-187: Error using PPD file for the spooler.

Explanation: ATPS cannot read PostScript information from the designated PPD file. The file may be missing or in use.

Action: Refer to earlier messages appearing in the log or on the screen for specific information on how to proceed.

ATPS-4.10-189: Using custom font list file *filename*.

Explanation: ATPS will obtain a font list for the spooler using the custom font list file specified by *filename*.

Action: No action is necessary. This message is informational.

ATPS-4.10-190: Requested spooler zone *zone_name* is no longer valid.

Explanation: The AppleTalk stack has reported that the zone configured to advertise the spooler is no longer valid. *zone_name* indicates the name of the AppleTalk zone. The spooler will be registered in the server's default zone.

Action: Reselect the spooler zone in ATPSCON.

ATPS-4.10-191: The spooler will use form *form_name*.

Explanation: Jobs received by the spooler will be marked for printing on the form specified by *form_name*.

Action: No action is necessary. This message is informational.

ATPS-4.10-193: Unable to read information for form *form_name*.

Explanation: ATPS experienced an error while reading information for the form specified by *form_name* from the PRINTDEF database.

Action: Reselect the form specified in the Spooler Parameters window.

ATPS-4.10-194: The spooler will use header mode *device: mode*.

Explanation: The spooler will add the specified PRINTDEF header to all the jobs it receives. *device* indicates the PRINTDEF device name. *mode* indicates the PRINTDEF mode name.

Action: No action is necessary. This message is informational.

ATPS-4.10-196: Unable to read information for header mode *device: mode*.

Explanation: ATPS encountered an error while reading header mode data from the PRINTDEF.DAT database. *device* indicates the PRINTDEF device name. *mode* indicates the PRINTDEF mode name.

Action: Reselect the mode in ATPSCON.

ATPS-4.10-197: The spooler will use trailer mode *device: mode*.

Explanation: The spooler will add the specified PRINTDEF trailer to all the jobs it receives. *device* indicates the PRINTDEF device name. *mode* indicates the PRINTDEF mode name.

Action: No action is necessary. This message is informational.

ATPS-4.10-199: Unable to read information for trailer mode *device: mode*.

Explanation: ATPS encountered an error while reading trailer mode data from the PRINTDEF.DAT database. *device* indicates the PRINTDEF device name. *mode* indicates the PRINTDEF mode name.

Action: Reselect the mode in ATPSCON.

ATPS-4.10-200: Restoring printer *printer*.

Explanation: ATPS is un hiding the printer specified by *printer*, making it available for direct printing.

Action: No action is necessary. This message is informational.

ATPS-4.10-201: Problem writing print job's header information to queue.

Explanation: ATPS cannot write PRINTDEF header information to the queue with the print job.

Action: Check the volume to see whether space remains. Delete unnecessary files.

ATPS-4.10-203: Problem writing print job's trailer information to queue.

Explanation: ATPS cannot write PRINTDEF trailer information to the queue with the print job.

Action: Check the volume to see whether space remains. Delete unnecessary files.

ATPS-4.10-211: Receiving PostScript query from AppleTalk client.

Explanation: The spooler is receiving a PostScript query from a Macintosh client.

Action: No action is necessary. This message is informational.

ATPS-4.10-212: Problem writing dictionary file *filename* to the queue.

Explanation: ATPS cannot write the internal PostScript ProcSet resource file specified by *filename* to the queue.

Action: Check the indicated volume to see whether space remains. Delete all unnecessary files.

ATPS-4.10-213: Problem writing font file *filename* to the queue.

Explanation: ATPS cannot write the internal PostScript font resource file indicated by *filename* to the queue.

Action: Check the volume to see whether space remains. Delete unnecessary files. Also, check that the resource file exists.

ATPS-4.10-216: Couldn't create file *filename* to hold the spooler 's font list.

Explanation: ATPS cannot create the internal font list file specified by *filename*. The file may be in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open. In addition, make sure that the volume contains sufficient disk space.

ATPS-4.10-221: No font list source available for this spooler.

Explanation: ATPS could not locate a font list source for the spooler. The spooler will use a null font list.

Action: In ATPSCON, select a PPD file, custom font list file, or printer as the spooler's query source.

ATPS-4.10-234: Fatal spooler error for *spooler_name*.

Explanation: The spooler indicated by *spooler_name* encountered an internal problem and is shutting down.

Action: Refer to previous messages in the log or on the console screen to determine the exact nature of the problem.

ATPS-4.10-237: Couldn't store AppleTalk job in queue.

Explanation: ATPS cannot store a Macintosh user's job in the queue. The job will be lost.

Action: Refer to earlier messages appearing in the log or on the screen for specific information on how to proceed.

ATPS-4.10-241: Printer *printer* hardware error: *explanation*

Explanation: The specified printer has reported a hardware error. *printer* indicates the name, type, and zone of the printer. *explanation* indicates the nature of the error.

Action: Check the printer and correct the physical problem.

ATPS-4.10-248: Receiving PostScript EPSF data from AppleTalk client.

Explanation: The spooler is receiving Encapsulated PostScript Format data from a Macintosh client.

Action: No action is necessary. This message is informational.

ATPS-4.10-249: AppleTalk print client not logged in to server, connection refused.

Explanation: ATPS rejected a print job because the user submitting the job was not logged in to the NetWare server and the spooler has queue security enabled.

Action: Make sure that the user logs in to the server containing the print queue.

ATPS-4.10-251: Couldn't open custom font list file *filename*.

Explanation: ATPS cannot open the custom font list file specified by *filename*. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-259: Included font *font_name*.

Explanation: The spooler added the PostScript font specified by *font_name* to the user's print job.

Action: No action is necessary. This message is informational.

ATPS-4.10-261: Closing AppleTalk connection with printer due to communications error.

Explanation: This message indicates a network error or a printer problem.

Action: Refer to previous messages in the log or on the console screen to determine the exact nature of the problem. Also, make sure that the printer is turned on, and not in an error condition. Then, check the connection between the printer and the network.

ATPS-4.10-262: Couldn't create file *filename* to hold the spooler's font list.

Explanation: ATPS cannot create the internal font list file specified by *filename*. The file may be in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open. In addition, make sure that the volume contains sufficient disk space.

ATPS-4.10-265: Loading printer with new dictionary.

Explanation: ATPS is sending a Laser Prep or Aldus Prep ProcSet dictionary to the printer to prepare it for the coming job.

Action: No action is necessary. This message is informational.

ATPS-4.10-272: Couldn't open PPD file *filename*.

Explanation: ATPS cannot open the specified PostScript Printer Definition file. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-274: Attempt to attach to queue *queue_name* failed.

Explanation: The ATPS spooler cannot initialize the queue designated by *queue_name*.

Action: Reselect the queue in the Spooler Parameters window of ATPSCON.

ATPS-4.10-287: Can't find printer *printer*; still trying.

Explanation: ATPS is still attempting to locate the designated printer on the AppleTalk network. *printer* indicates the name, type, and zone of the printer.

Action: Try to locate the printer in ATCON. If you cannot locate it, check the cabling connecting the printer to the network. If the connection is secure, check that the AppleTalk module is configured correctly.

ATPS-4.10-293: Can't log in via directory services -- fatal error.

Explanation: ATPS was not able to access the Directory, so it is shutting down.

Action: The Directory Services tree is unavailable to ATPS. Refer to the appropriate documentation to resolve the Directory Services problem that may be causing this error.

ATPS-4.10-300: Error using custom font list file.

Explanation: ATPS was unable to read the fonts from the custom font list file specified in ATPSCON. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-301: Connection to AppleTalk client timed out.

Explanation: The AppleTalk connection to a print client timed out; ATPS will discard the incomplete job.

Action: Check the connection between the network and the Macintosh workstation.

ATPS-4.10-309: Couldn't open the ATPS screen.

Explanation: The ATPS console screen could not be activated because of an internal error.

Action: Call Novell's technical support department.

ATPS-4.10-311: Added job *job_number* to queue on hold.

Explanation: ATPS successfully placed the job specified by *job_number* in the queue in a hold state.

Action: No action is necessary. This message is informational.

ATPS-4.10-314: Dictionary file *filename* not present.

Explanation: ATPS cannot locate the Laser Prep file specified by *filename*.

Action: No action is necessary. This message is informational.

ATPS-4.10-320: Unable to initialize spooler *spooler_name*.

Explanation: ATPS cannot initialize the spooler indicated by *spooler_name* because of an internal AppleTalk error or a system error.

Action: Refer to earlier messages appearing in the log for specific information on how to proceed.

ATPS-4.10-323: Couldn't create file *filename* to hold the server's font list.

Explanation: ATPS cannot open the internal font list file specified by *filename*. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-324: Charging user *user_name* *num* point(s).

Explanation: ATPS charged the user specified by *user_name* the number of points specified by *num* for printing a job.

Action: No action is necessary. This message is informational.

ATPS-4.10-341: *user* not a queue user; won't own job.

Explanation: The Macintosh user who submitted the job is logged in to the server but it not a designated Queue User of the queue. *user* indicates the login name of the Macintosh user. The user will not be able to manipulate the job in the queue or receive notification of job completion.

Action: Using PCONSOLE, assign Queue User status to the user if you want him or her to have ownership rights on the job.

ATPS-4.10-343: Can't find printer *printer*; retrying.

Explanation: ATPS cannot locate the configured printer on the AppleTalk network. *printer* indicates the printer name, type, and zone.

Action: Try to locate the printer in ATCON. If you cannot locate it, check the cabling connecting the printer to the network. If the connection is secure, check that the AppleTalk module is configured correctly.

ATPS-4.10-344: Detached printer *printer* from queue *queue_name*.

Explanation: The specified printer will no longer service jobs from the designated queue. *printer* indicates the name, type, and zone of the printer. *queue_name* indicates the name of the queue.

Action: No action is necessary. This message is informational.

ATPS-4.10-345: Replaced *num* control characters with spaces.

Explanation: The spooler replaced the number of characters indicated by *num* with spaces.

Action: In ATPSCON, set Accept Binary Data to Yes to turn off the filter. Also, configure the Macintosh application to omit ASCII PostScript data.

ATPS-4.10-350: Insufficient memory for configuration *filename*.

Explanation: ATPS could not allocate sufficient memory to store the configuration information in *filename*.

Action: Make more memory available.

ATPS-4.10-352: No queue specified in file *filename*.

Explanation: The file specified by *filename* does not include a valid NetWare print queue name.

Action: To avoid this message, use ATPSCON to create your configuration.

ATPS-4.10-353: No printer name specified in file *filename*.

Explanation: The configuration file specified by *filename* does not contain a valid AppleTalk printer name.

Action: To avoid this message, use ATPSCON to create your configuration.

ATPS-4.10-361: No queue specified in file *filename*.

Explanation: The file specified by *filename* does not include a valid NetWare print queue name.

Action: To avoid this message, use ATPSCON to create your configuration.

ATPS-4.10-363: Unable to connect to printer; returning job to queue.

Explanation: The current job is being returned to the queue because the workstation cannot establish a connection with the printer.

Action: Make sure that the printer is turned on, and not in an error condition. Then, check the connection between the printer and the network.

ATPS-4.10-365: Unable to create dictionary file *filename*.

Explanation: ATPS cannot create the internal file specified by *filename* because of a NetWare file error.

Action: Make sure that the volume contains enough free disk space to create the file. If enough space exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-370: Found printer *printer*.

Explanation: ATPS was able to locate the missing printer on the network. *printer* indicates the printer's AppleTalk name, type, and zone.

Action: No action is necessary. This message is informational.

ATPS-4.10-371: Operating in bindery mode on NetWare 4.0x server.

Explanation: ATPS is using bindery services to operate on a pre-NetWare 4.1 server.

Action: No action is necessary. This message is informational.

ATPS-4.10-372: Can't find printer *printer*; retrying.

Explanation: ATPS cannot locate the configured printer on the AppleTalk network. *printer* indicates the printer name, type, and zone.

Action: Try to locate the printer in ATCON. If you cannot locate it, check the cabling connecting the printer to the network. If the connection is secure, check that the AppleTalk module is configured correctly.

ATPS-4.10-373: Error querying printer; using defaults.

Explanation: The ATPS spooler encountered a problem retrieving PostScript information from a printer. It will report default values to Macintosh clients.

Action: Refer to previous messages in the log or on the console screen to determine the exact nature of the problem. In addition, check the status of the query source printer associated with the spooler.

ATPS-4.10-376: Could not attach to queue *queue_name*.

Explanation: ATPS is unable to service the queue specified by *queue_name*. The queue may have been deleted, or its status may have been changed in PCONSOLE so that new print servers cannot attach to it.

Action: Check to see whether the queue still exists. If it has been deleted, recreate it. If it exists, check its status in PCONSOLE. If its PCONSOLE status is correct, reselect the queue in ATPSCON.

ATPS-4.10-377: Job *job_number* was returned to the queue.

Explanation: The job specified by *job_number* was returned to the queue after printing because ATPS is set to keep jobs in the queue after they print.

Action: No action is necessary. This message is informational.

ATPS-4.10-378: Spooling job *job_number*.

Explanation: ATPS is adding the job specified by *job_number* to the queue.

Action: No action is necessary. This message is informational.

ATPS-4.10-379: No queue Directory Services context specified in file *filename*.

Explanation: The configuration file specified by *filename* does not contain the Directory Services context in which the queue object resides. This error probably occurred because the configuration was created under a version of NetWare for Macintosh prior to 4.1.

Action: Select the queue using NetWare for Macintosh 4.1.

ATPS-4.10-380: Printer *printer* is already in the requested state.

Explanation: The user request to hide or restore the indicated printer was unnecessary. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational, and usually denotes a normal condition.

ATPS-4.10-385: Printer *printer* busy - *reason*.

Explanation: The specified printer is not accepting connections because it is currently processing another job or is in an error state. *printer* indicates the name, type, and zone of the printer. *reason* indicates the reason the printer is busy.

Action: This message is informational. Check the printer if the problem persists.

ATPS-4.10-386: Can't find printer *printer*; retrying.

Explanation: ATPS cannot locate the configured printer on the AppleTalk network. *printer* indicates the printer name, type, and zone.

Action: Try to locate the printer in ATCON. If you cannot locate it, check the cabling connecting the printer to the network. If the connection is secure, check that the AppleTalk module is configured correctly.

ATPS-4.10-387: Printer *printer* is configured with an illegal AppleTalk name.

Explanation: The values supplied for the printer were not valid. *printer* indicates the name, type, and zone of the printer.

Action: Give the printer a valid AppleTalk name.

ATPS-4.10-388: Couldn't connect to printer *printer*; retrying.

Explanation: ATPS was unable to connect to the printer specified by *printer* in order to print to it, query it, or change its hidden state. This message indicates a network error or a printer problem.

Action: Refer to previous messages in the log or on the console screen to determine the exact nature of the problem. Also, make sure that the printer is turned on, and not in an error condition. Then, check the connection between the printer and the network.

ATPS-4.10-389: Couldn't access font file *filename* while building server font list.

Explanation: ATPS cannot open the internal font list file specified by *filename*. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-390: Printer returned bad page count: *string*.

Explanation: The printer returned an invalid string in response to a query for the number of total printed pages. *string* indicates the string returned by printer.

Action: No action is necessary.

ATPS-4.10-393: Control-D characters in the current job will be sent as AppleTalk EOFs.

Explanation: The current job is being filtered for Control-D characters.

Action: This message is informational. To stop filtering for Macintosh jobs, configure the spooler to accept binary data. To stop filtering for DOS jobs, choose the PostScript (Binary Graphics) print mode.

ATPS-4.10-396: The ATPS screen could not be closed.

Explanation: The ATPS console screen could not be closed because of an internal error.

Action: Call Novell's technical support department.

ATPS-4.10-399: Printer *printer* is a type that can't be hidden.

Explanation: ATPS does not support hiding of the specified printer model.

Action: No action is necessary.

ATPS-4.10-400: Connection with printer *printer* was lost.

Explanation: While trying to hide the current printer, the AppleTalk connection was interrupted. This message indicates a network problem or a bad printer connection. *printer* indicates the name, type, and zone of the printer.

Action: Check the connection between the network and the printer.

ATPS-4.10-401: Problem connecting to printer *printer*; retrying.

Explanation: ATPS cannot open an AppleTalk connection to the specified printer. This message may indicate a printer or network problem. *printer* indicates the name, type, and zone of the printer.

Action: If the problem persists, check the printer's connection to the network. If its connection is secure, try power-cycling the printer.

ATPS-4.10-402: Couldn't connect to printer *printer*; retrying.

Explanation: ATPS cannot open an AppleTalk connection to the specified printer. This message indicates that the printer is busy or off line. *printer* indicates the name, type, and zone of the printer.

Action: If the problem persists, check the printer's connection to the network. If its connection is secure, try power-cycling the printer.

ATPS-4.10-404: Could not change hidden state of printer *printer*; unknown error.

Explanation: An attempt to change the AppleTalk type of the printer failed for unknown reasons. *printer* indicates the name, type, and zone of the printer.

Action: Make sure that printer supports being hidden.

ATPS-4.10-406: Can't verify that correct dictionary is resident in printer; job may fail.

Explanation: ATPS cannot communicate with the printer to ensure that the correct version of the Laser Prep or other ProcSet dictionary is resident.

Action: Refer to earlier messages appearing in the log or on the screen for specific information on how to proceed.

ATPS-4.10-431: Logged in as *object_name*.

Explanation: ATPS is logged in to the server as the Directory Services object specified by *object_name*.

Action: No action is necessary. This message is informational.

ATPS-4.10-433: Unable to open include file *filename*.

Explanation: ATPS cannot open the file specified by *filename* for inclusion in the print job. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-435: Unable to open dictionary file *filename*.

Explanation: ATPS cannot open the internal PostScript ProcSet resource file specified by *filename*. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-437: Unable to open dictionary file *filename*.

Explanation: ATPS cannot open the internal PostScript ProcSet resource file specified by *filename*. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-438: Requested font *font_name* is unavailable on the server.

Explanation: The current PostScript job requires a font that is not available at the printer or at the server. The printer will probably substitute Courier for the font specified by *font_name*.

Action: You should install the font either at the Macintosh or at the printer.

ATPS-4.10-443: Printer returned bad page count: *string*.

Explanation: The printer returned an invalid string in response to a query for the number of total printed pages. *string* indicates the string returned by printer.

Action: No action is necessary.

ATPS-4.10-444: Printer *printer* was found to be not hidden.

Explanation: ATPS expected the printer to be hidden. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational, and usually denotes a normal condition.

ATPS-4.10-445: Receiving PostScript ExitServer job from AppleTalk client.

Explanation: ATPS is receiving a PostScript job that will change the permanent state of the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-446: Won't save bitmap font *font_name*.

Explanation: ATPS did not create an internal file in order to store the font specified by *font_name* on the server permanently.

Action: No action is necessary. This message is informational.

ATPS-4.10-448: Unable to open font file *filename*.

Explanation: ATPS cannot open the specified font list file. The file might be missing or in use. *filename* indicates the full path name of the font list file.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open. If the file is not in use, disable and re-enable the affected spooler.

ATPS-4.10-449: Logged in as *object_name*.

Explanation: ATPS is logged in to the server as the bindery object specified by *object_name*.

Action: No action is necessary. This message is informational.

ATPS-4.10-455: Initializing queue *queue_name*.

Explanation: The spooler is making sure that the queue specified by *queue_name* is ready to accept jobs.

Action: No action is necessary. This message is informational.

ATPS-4.10-463: Sending banner data to printer.

Explanation: ATPS is printing a banner page.

Action: No action is necessary. This message is informational.

ATPS-4.10-465: Timed out after waiting for response from printer.

Explanation: ATPS failed to receive an expected response from the printer within an allotted time. This message indicates a network error or a printer problem.

Action: Try power-cycling the printer.

ATPS-4.10-466: Sending job data to printer.

Explanation: ATPS is sending a job to the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-469: The current job contains no data.

Explanation: ATPS cannot detect any data for the job currently being directed to the printer. The workstation sending the data may have crashed while printing.

Action: No action is necessary. This message is informational.

ATPS-4.10-472: Detected a Control-D character; signaling PostScript end of job.

Explanation: ATPS has detected a Control-D character in the current PostScript print job. It is sending an AppleTalk EOF marker to the printer in place of the Control-D character.

Action: No action is necessary. This message is informational.

ATPS-4.10-477: Printer *printer* unexpectedly hidden.

Explanation: ATPS did not expect the printer to be hidden. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational, and usually denotes a normal condition.

ATPS-4.10-479: Adding job “*job_name*” to queue from AppleTalk client “*user_name*”.

Explanation: The ATPS spooler is adding the job specified by *job_name* to the queue. *user_name* represents the name of the Macintosh user who sent the job.

Action: No action is necessary. This message is informational.

ATPS-4.10-481: Receiving PostScript data from AppleTalk client.

Explanation: The ATPS spooler is receiving valid PostScript data.

Action: No action is necessary. This message is informational.

ATPS-4.10-482: Font file *filename* has invalid syntax

Explanation: The captured font list file indicated by *filename* contains incorrect syntax.

Action: Delete the file.

ATPS-4.10-483: Printer *printer* is unable to service queue *queue_name*

Explanation: The printer server is shutting down because it cannot send jobs from the queue specified by *queue_name* to the printer specified by *printer*.

Action: Check that the queue exists. Then, re-select it in ATPSCON.

ATPS-4.10-484: Adding job “*job_name*” to queue from AppleTalk client “*user_name*”.

Explanation: The spooler is receiving the job specified by *job_name* from the Macintosh user represented by *user_name*.

Action: No action is necessary. This message is informational.

ATPS-4.10-489: *NW_server_name* has no rights to charge *user_name*'s account balance.

Explanation: ATPS is unable to charge the user specified by *user_name* for printing a job. The NetWare server on which ATPS is running (specified by *NW_server_name*) does not have sufficient rights to charge the indicated user.

Action: Use the NETADMIN utility to grant read and write trusteeship to the server over the accounting properties of the users you want to charge.

ATPS-4.10-490: Accessing directory as *object_name*.

Explanation: ATPS is accessing the Directory Services tree and the local server as the object specified by *object_name*.

Action: No action is necessary. This message is informational.

ATPS-4.10-499: Couldn't open the ATPS information file.

Explanation: ATPS could not open the file SYS:SYSTEM\NW-MAC\ATPS.DAT. This file is created by ATPSCON, and contains configuration information, such as verbosity settings and the ATPS directory specification.

Action: Make sure that the file still exists; it may have been inadvertently deleted. If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-504: Couldn't create query file *filename*.

Explanation: ATPS could not create the file specified by *filename*.

Action: Check that there is enough disk space on the SYS volume. If enough space exists, use the MONITOR utility to check whether the file already exists and is in use. If the file is not in use, make sure that the ATPS directory exists and is available on a mounted volume.

ATPS-4.10-506: Printer connection timed out.

Explanation: The AppleTalk session with the printer was lost due to a timeout error.

Action: Check that the printer is on line and securely connected to the network. Also, check the printer log for any sign of network communication errors. If the problem persists, check your network configuration.

ATPS-4.10-507: Printer connection closed by printer.

Explanation: The printer closed the AppleTalk session with the client because the print job was aborted at the printer or a timeout error occurred.

Action: The most likely cause for this error is a bad print job. No action is necessary.

ATPS-4.10-515: Job data was sent to the printer.

Explanation: ATPS successfully transmitted the data for one copy of the current job to the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-516: Temporarily unable to query the printer; using old information.

Explanation: The ATPS spooler encountered a problem retrieving PostScript information from the query source printer. ATPS will retry the operation later.

Action: Refer to previous messages in the log or on the console screen to determine the exact nature of the problem.

ATPS-4.10-517: User *user* logged out; can't be notified.

Explanation: ATPS cannot notify the job owner of a job completion or problems; the owner is no longer logged into the same station. *user* indicates the job owner's NetWare user name.

Action: No action is necessary. This message is informational.

ATPS-4.10-518: Printer *printer* was found to be not hidden.

Explanation: ATPS expected the printer to be hidden. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational, and usually denotes a normal condition.

ATPS-4.10-519: Printer *printer* was found to be not hidden.

Explanation: ATPS did not expect the printer to be hidden. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational, and usually denotes a normal condition.

ATPS-4.10-522: Send connection *conn_num* message: user message buffer full.

Explanation: ATPS was unable to send a message to the user on connection number *conn_num* because the user already has too many unread messages.

Action: The user must read and clear his or her messages in order to receive new ones.

ATPS-4.10-523: Send connection *conn_num* message: invalid connection number.

Explanation: ATPS was unable to send a message to the user on connection number *conn_num* because the user's connection number is not longer valid. The user may have logged out during the printing process

Action: The user must be logged in continuously for the entire printing process in order to receive notification messages.

ATPS-4.10-524: Send connection *conn_num* message: message blocked.

Explanation: ATPS was unable to send a message to the user on connection number *conn_num* because the user has disabled broadcast notification.

Action: For the user to receive messages about job status and completion, he or she must re-enable broadcast notification.

ATPS-4.10-548: Initialized printer with dictionary *filename*.

Explanation: ATPS sent the Laser Prep or Aldus Prep file specified by *filename* to the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-551: Couldn't send include file *filename*.

Explanation: ATPS was unable to include the file specified by *filename* in the current job. This error may indicate that the file does not exist, that the job owner does not have rights to read the file, or that a printer communication problem exists.

Action: Refer to previous messages in the log or on the console screen to determine the exact nature of the problem. Also, check that file exists and that the job owner has rights to read the file. If the user has sufficient rights, check that the printer is powered on and not in an error state. Finally, make sure that the printer's connection to the network is sound.

ATPS-4.10-555: Could not verify the spooler's AppleTalk network address for queue *queue_name*.

Explanation: The spooler could not check its AppleTalk network address against the one stored with the queue for Directory Services.

Action: The Directory Services queue object may be deleted, or may reside in a portion of the Directory Services tree currently unavailable to ATPS. Make sure that the queue object exists. If it does, refer to the appropriate documentation to resolve the Directory Services problem that may be causing parts of the tree to be inaccessible.

ATPS-4.10-556: Updated the spooler's AppleTalk network address for queue *queue_name*.

Explanation: ATPS detected a change in the spooler's zone and/or network number, and is applying this information to the queue object's Network Address attribute.

Action: No action is necessary. This message is informational.

ATPS-4.10-557: Restarting printer *printer*.

Explanation: ATPS is performing a software reset of the printer specified by *printer*.

Action: No action is necessary. This message is informational.

ATPS-4.10-558: The spooler is not available on the network; check AppleTalk configuration.

Explanation: AppleTalk reports that the stack is not bound to an interface.

Action: Reconfigure the stack appropriately.

ATPS-4.10-562: Couldn't include font *font_name*.

Explanation: ATPS could not include the PostScript font specified by *font_name* in the current job. The specified .PSF file may be missing or in use.

Action: Using ATPSCON, check the font cache to see whether ATPS has the font file in the cache. If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-564: Querying printer *printer*.

Explanation: ATPS is querying the printer for specific information about the printer's font list, available free memory, and other features.

Action: No action is necessary. This message is informational.

ATPS-4.10-565: Included font *font_name*.

Explanation: ATPS included the PostScript font specified by *font_name* in the current print job.

Action: No action is necessary. This message is informational.

ATPS-4.10-568: Unable to create dictionary file *filename*.

Explanation: ATPS cannot create the internal file specified by *filename* because of a NetWare file error.

Action: Make sure that the volume contains enough free disk space to create the file. If enough space exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-569: Created dictionary file *filename*.

Explanation: ATPS generated the .PRI file specified by *filename*.

Action: No action is necessary. This message is informational.

ATPS-4.10-570: Couldn't include dictionary file *filename*.

Explanation: ATPS could not include the ProcSet dictionary specified by *filename* in the current job. The specified .PRI file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-571: Detected a “%%EOF” comment; signaling PostScript end of job.

Explanation: ATPS detected a comment that directed it to send a PAP EOF marker to the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-573: Querying printer *printer* for fonts.

Explanation: ATPS is querying the printer for a list of its resident PostScript fonts. *printer* specifies the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-576: Hiding printer *printer*

Explanation: ATPS will make the specified printer unavailable for direct printing by Macintosh workstations. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-578: Unable to open font list file *filename*.

Explanation: ATPS cannot open the specified font list file. The file might be missing or in use. *filename* indicates the full path name of the font list file.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-580: Unable to open font list file *filename*.

Explanation: ATPS cannot open the specified font list file. The file might be missing or in use. *filename* indicates the full path name of the font list file.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open. If the file does not exist, disable and re-enable the affected spooler to create the file.

ATPS-4.10-581: Created file *filename* for font *font_name*.

Explanation: ATPS created *filename* to hold the PostScript font specified by *font_name*.

Action: No action is necessary. This message is informational.

ATPS-4.10-582: Created dictionary file *filename*.

Explanation: ATPS created Laser Prep file specified by *filename*.

Action: No action is necessary. This message is informational.

ATPS-4.10-583: Created query file *filename*.

Explanation: ATPS created *filename* to hold a PostScript ProcSet query.

Action: No action is necessary. This message is informational.

ATPS-4.10-584: Couldn't create file *filename* for font *font_name*.

Explanation: ATPS could not create a file to hold the font specified by *font_name*.

Action: Check that there is enough disk space on the SYS volume. If enough space exists, use the MONITOR utility to check whether the file already exists and is in use. If the file is not in use, make sure that the ATPS directory exists and is available on a mounted volume.

ATPS-4.10-586: Printer *printer* was hidden.

Explanation: You specified that ATPS hide the specified printer. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-590: Created dictionary file *filename*.

Explanation: ATPS created Laser Prep file specified by *filename*.

Action: No action is necessary. This message is informational.

ATPS-4.10-593: Deleted incomplete PostScript resource file *filename*.

Explanation: Because of a communication error or other problem, ATPS did not receive a full PostScript font, ProcSet file, or query, so it will delete the portion it has received so far.

Action: Resend the print job.

ATPS-4.10-597: Can't advertise because named object already appears in zone; will retry.

Explanation: The spooler could not register itself as an AppleTalk entity because its name is already in use. You may have another spooler with the same name that is active for the moment.

Action: Allow ATPS to try advertising the spooler again.

ATPS-4.10-609: Client aborted job.

Explanation: The ATPS spooler received an incomplete print job because the client aborted the job. ATPS will discard the print job.

Action: No action is necessary. This message is informational.

ATPS-4.10-615: Insufficient balance: user needs num1 point(s), has num2 points.

Explanation: ATPS rejected the specified user's job because of an insufficient accounting point balance. *user* indicates the name of the job owner. *num1* indicates the number of additional points needed to complete the job. *num2* indicates the number of points currently remaining to the user.

Action: Increase the user's account balance.

ATPS-4.10-617: user has no rights to queue queue_name.

Explanation: The user specified by *user* is not a designated Queue User of the queue specified by *queue_name*. The user's job will be refused.

Action: Give the user rights to place jobs in the queue.

ATPS-4.10-621: Couldn't print accounting banner

Explanation: ATPS cannot print an account summary banner after charging a user for a print job.

Action: Refer to earlier messages appearing in the log or on the screen for specific information on how to proceed.

ATPS-4.10-660: Unable to open file filename containing font list.

Explanation: ATPS cannot open the specified font list file. The file might be missing or in use. *filename* indicates the full path name of the font list file.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-664: Discarded unwanted ExitServer data.

Explanation: The spooler deleted some extraneous PostScript data.

Action: No action is necessary. This message is informational.

ATPS-4.10-666: Unable to open font list file *filename*.

Explanation: ATPS cannot open the specified font list file. The file might be missing or in use. *filename* indicates the full path name of the font list file.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-687: Printer *printer* hardware error: *explanation*

Explanation: The specified printer has reported a hardware error. *printer* indicates the name, type, and zone of the printer. *explanation* indicates the nature of the error.

Action: Check the printer and correct the physical problem.

ATPS-4.10-688: Printer *printer* hardware error: *explanation*

Explanation: The specified printer has reported a hardware error. *printer* indicates the name, type, and zone of the printer. *explanation* indicates the nature of the error.

Action: Check the printer and correct the physical problem.

ATPS-4.10-693: Couldn't create dictionary file *filename*.

Explanation: ATPS cannot create the internal file specified by *filename* because of a NetWare file error.

Action: Make sure that the volume contains enough free disk space to create the file. If enough space exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-694: Insufficient memory for configuration *filename*.

Explanation: ATPS could not allocate sufficient memory to store the configuration information in *filename*.

Action: Make more memory available.

ATPS-4.10-695: No spooler name specified in file *filename*.

Explanation: The configuration file specified by *filename* needs an AppleTalk spooler name.

Action: To avoid this message, use ATPSCON to create your configuration.

ATPS-4.10-702: Unable to open file *filename* containing font list.

Explanation: ATPS cannot open the specified font list file. The file might be missing or in use. *filename* indicates the full path name of the font list file.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-708: Disabled spooler *spooler_name*.

Explanation: ATPS is disabling the spooler specified by *spooler_name*.

Action: No action is necessary. This message is informational.

ATPS-4.10-714: Couldn't open file *filename*.

Explanation: ATPS cannot open the file specified by *filename*. The file may be missing or in use.

Action: If the file exists, use the MONITOR utility to make sure that no one else has the file open.

ATPS-4.10-717: Named object already appears in zone.

Explanation: The spooler cannot advertise itself because another entity in the zone is using the same AppleTalk name.

Action: Give the spooler a unique name, rename the other entity, or remove the other entity.

ATPS-4.10-724: Problem writing end-of-file to queue.

Explanation: The ATPS spooler cannot write a terminating Control-D character at the end of a PostScript job entry.

Action: Check the indicated volume to see whether space remains. Delete all unnecessary files.

ATPS-4.10-728: Problem reading job from queue.

Explanation: ATPS cannot read print job data. The job may have been deleted from the queue.

Action: Make sure that the print job was not deleted.

ATPS-4.10-738: Removing unconfirmed AppleTalk network address from queue *queue_name*.

Explanation: The spooler detected out-of-date AppleTalk information and removed it from the queue's Directory Services object.

Action: No action is necessary. This message is informational.

ATPS-4.10-740: Encoded *num* control characters.

Explanation: The spooler encoded the indicated number of characters in the job using BCP or TBCP.

Action: In ATPSCON, set Accept Binary Data to Yes to stop encoding.

ATPS-4.10-744: Couldn't create ATPS directory.

Explanation: ATPS could not create or access the default ATPS directory, SYS:SYSTEM\ATPS.

Action: The ATPS directory or its parent directory may have been deleted. Or, the volume on which the directory resides may not be mounted.

ATPS-4.10-746: ATPS is using directory *dir_name*.

Explanation: ATPS is using the directory specified by *dir_name* to store printer logs, Laser Prep files, and other files that ATPS uses internally. By default, this directory is SYS:SYSTEM\ATPS, but you can change it using ATPSCON.

Action: No action is necessary. This message is informational.

ATPS-4.10-749: ATPS is using directory *dir_name*.

Explanation: ATPS is using the directory specified by *dir_name* to store printer logs, Laser Prep files, and other files that ATPS uses internally. By default, this directory is SYS:SYSTEM\ATPS, but you can change it using ATPSCON.

Action: No action is necessary. This message is informational.

ATPS-4.10-752: Can't find spooler configuration *filename* to disable it; it may have previously suffered a fatal error.

Explanation: ATPS is unable to disable the spooler configuration contained in *filename*, probably because it is already disabled.

Action: Refer to previous messages in the log or on the console screen to determine the exact nature of the problem.

ATPS-4.10-754: Can't find printer server configuration *filename* to disable it; it may have previously suffered a fatal error.

Explanation: ATPS is unable to disable the printer server configuration contained in *filename*, probably because it is already disabled.

Action: No action is necessary. This message is informational.

ATPS-4.10-760: Queue *queue_name* not found on server.

Explanation: The queue specified by *queue_name* exists on another NetWare server; therefore, ATPS cannot access it.

Action: Use ATPSCON to specify a queue that resides on the NetWare server running ATPS.

ATPS-4.10-764: Job *job_number* (*num* bytes) was not received successfully and thus was aborted.

Explanation: ATPS did not detect valid data while receiving the job indicated by *job_number*; the job is being discarded. *num* bytes had been received before the job was aborted.

Action: Refer to earlier messages appearing in the log or on the screen for specific information on how to proceed.

ATPS-4.10-765: Job *job_number* contained no data and thus was aborted.

Explanation: ATPS did not detect valid data while receiving the job indicated by *job_number*; the job is being discarded. This message usually indicates that ATPS received a query from the spooler. The query contained no print data; this is a normal condition.

Action: No action is necessary.

ATPS-4.10-767: Added job *job_number* to queue.

Explanation: ATPS successfully sent the job specified by *job_number* to the queue.

Action: No action is necessary. This message is informational.

ATPS-4.10-768: Job *job_number* was placed on User Hold.

Explanation: ATPS put the job indicated by *job_number* on User Hold.

Action: No action is necessary. This message is informational.

ATPS-4.10-769: Job *job_number* was placed on Operator Hold.

Explanation: ATPS put the job indicated by *job_number* on Operator Hold.

Action: No action is necessary. This message is informational.

ATPS-4.10-772: Job *job_number* was removed from the queue.

Explanation: ATPS removed the job specified by *job_number* from the queue after it printed successfully.

Action: No action is necessary. This message is informational.

ATPS-4.10-776: Queue *queue_name* resides on another server.

Explanation: ATPS could not attach to the print queue specified by *queue_name* because it resides on another server.

Action: Select a queue that resides on the NetWare server on which ATPS is running.

ATPS-4.10-778: Queue *queue_name* resides on another server.

Explanation: ATPS could not attach to the print queue specified by *queue_name* because it resides on another server.

Action: Select a queue that resides on the NetWare server on which ATPS is running.

ATPS-4.10-786: Deleted old log file.

Explanation: The previous printer log reached its size limit and was deleted.

Action: No action is necessary. This message is informational.

ATPS-4.10-787: Renamed old log file *filename*.

Explanation: The previous printer log reached its size limit and was renamed with a .LGB extension. *filename* represents the name of the previous log file.

Action: No action is necessary. This message is informational.

ATPS-4.10-788: Printer returned null dictionary status.

Explanation: This message indicates the printer returned an unexpected response to a PostScript query.

Action: Call the Novell technical support department for assistance.

ATPS-4.10-789: Couldn't allocate memory to manage print connection; rejecting print request.

Explanation: ATPS is dropping a client connection because of an error allocating sufficient memory to handle the connection.

Action: Add more memory at the server, or unload unnecessary modules to free additional memory.

ATPS-4.10-800: Registered spooler *spooler_name:spooler_type* in zone *zone_name*.

Explanation: The spooler specified by *spooler_name* registered itself in the AppleTalk zone specified by *zone_name*. The *spooler_type* parameter indicates the AppleTalk type the spooler will appear under in the Chooser.

Action: No action is necessary. This message is informational.

ATPS-4.10-801: Couldn't rebuild the server's font list.

Explanation: ATPS cannot create the file SERVER.FNT to hold the server-wide font list.

Action: Check that there is space available in the ATPS directory, and that the file is not in use.

ATPS-4.10-804: Unable to send printer setup file.

Explanation: ATPS cannot send the user-designated setup file to the printer because of a possible communication problem.

Action: Refer to previous messages in the log or on the console screen to determine the exact nature of the problem.

ATPS-4.10-819: Unable to allocate memory for header mode *device: mode.*

Explanation: ATPS was unable to allocate sufficient memory to store the header mode information. *device* indicates the PRINTDEF device name. *mode* indicates the PRINTDEF mode name. No header will be used.

Action: Unload unnecessary modules, or add additional memory to the server. Then, disable and re-enable the spooler.

ATPS-4.10-821: Unable to allocate memory for trailer mode *device: mode.*

Explanation: ATPS was unable to allocate sufficient memory to store the trailer mode information. *device* indicates the PRINTDEF device name. *mode* indicates the PRINTDEF mode name. No trailer will be used.

Action: Unload unnecessary modules, or add additional memory to the server.

ATPS-4.10-823: Can't identify job owner for accounting purposes.

Explanation: ATPS could not identify the print job owner, and so could not charge the owner for printing his or her job. ATPS will take the action specified in ATPSCON for a job whose owner has an insufficient account balance.

Action: The owner's Directory Services user object may be deleted, or the user object may reside in a portion of the Directory Services tree currently unavailable to ATPS. Make sure that the user object exists. If it does, refer to the appropriate documentation to resolve the Directory Services problem that may be causing parts of the tree to be inaccessible.

ATPS-4.10-827: Problem writing include file *filename* **to queue.**

Explanation: ATPS cannot write the internal PostScript resource file specified by *filename* to the queue.

Action: Check the volume to see whether space remains. Delete unnecessary files. Also, check that the resource file exists and is not in use.

ATPS-4.10-829: Printer returned null font list.

Explanation: The printer responded to our query attempt, but the response contained no data.

Action: Call Novell technical support for assistance.

ATPS-4.10-830: Printer returned null query response.

Explanation: The printer responded to our query attempt, but the response contained no data.

Action: Call Novell technical support for assistance.

AATPS-4.10-898: Job owner not found in directory.

Explanation: ATPS could not identify the print job owner for purposes of notification, logging, accounting, and printing banner pages.

Action: The owner's Directory Services user object may be deleted, or the user object may reside in a portion of the Directory Services tree currently unavailable to ATPS. Make sure that the user object exists. If it does, refer to the appropriate documentation to resolve the Directory Services problem that may be causing parts of the tree to be inaccessible.

ATPS-4.10-915: Couldn't add AppleTalk network address to queue *queue_name*.

Explanation: The spooler could not add AppleTalk information to the Directory Services queue object specified by *queue_name*.

Action: Make sure that the queue object exists. The rights that ATPS assigned to the queue may have been lost; reselect the queue in ATPSCON to remedy the problem. If the problem remains unresolved, refer to the appropriate documentation to resolve the Directory Services problem that may be causing the queue object to be inaccessible.

ATPS-4.10-916: Couldn't remove AppleTalk network address from queue *queue_name*.

Explanation: The spooler could not remove AppleTalk information from the Directory Services queue object specified by *queue_name*.

Action: The Directory Services queue object may be deleted, or may reside in a portion of the Directory Services tree currently unavailable to ATPS. Make sure that the queue object exists. If it does, refer to the appropriate documentation to resolve the Directory Services problem that may be causing parts of the tree to be inaccessible. In order to remove the obsolete address, reload ATPS on the affected server when the problem has been corrected.

ATPS-4.10-926: Could not get all accounting information for *user_name*.

Explanation: ATPS experienced an error while trying to read *user_name*'s Directory Services accounting properties. The most likely reason for this error is that ATPS does not have sufficient rights to the user object's accounting properties.

Action: Use the NETADMIN utility to grant read and write trusteeship to the server over the accounting properties of the users you want to charge.

ATPS-4.10-940: Removing unconfirmed AppleTalk network address from queue *queue_name*.

Explanation: The spooler detected out-of-date AppleTalk information and removed it from the queue's Directory Services object.

Action: No action is necessary. This message is informational.

ATPS-4.10-942: Queue *queue_name* was deleted.

Explanation: ATPS was spooling a job to the queue indicated by *queue_name* when the queue was deleted.

Action: Recreate the queue and re-select it in ATPSCON.

ATPS-4.10-957: Added the spooler's AppleTalk network address to queue *queue_name*.

Explanation: ATPS added the spooler's AppleTalk information to the Directory Services queue object specified by *queue_name*.

Action: No action is necessary. This message is informational.

ATPS-4.10-959: Sending file *filename* to the printer.

Explanation: ATPS is sending the file specified by *filename* to the printer.

Action: No action is necessary. This message is informational.

ATPS-4.10-962: Couldn't send ProcSet file *filename*.

Explanation: ATPS cannot send the contents of the ProcSet file to the printer.

Action: Refer to earlier messages appearing in the log or on the screen for specific information on how to proceed.

Unnumbered Messages That Can Appear During ATPS Operation

These two messages appear on the system console screen if you try to unload ATPS while it is in active operation.

ATPS: Printing is currently in progress! Jobs currently being printed will be interrupted but will remain in the queue.

Explanation: When you try to unload ATPS, this message appears if ATPS is currently directing jobs to an AppleTalk printer.

Action: Respond with No if you do not want to unload ATPS and interrupt printing. You can try unloading ATPS later, perhaps after disabling spoolers and printer servers to stop processing of new jobs.

ATPS: Spooling is currently in progress! Jobs currently being received will be lost.

Explanation: When you try to unload ATPS, this message appears if the ATPS spooler is currently receiving jobs from AppleTalk clients.

Action: Respond with No if you do not want to unload ATPS and interrupt printing. You can try unloading ATPS later, perhaps after disabling spoolers and printer servers to stop processing of new jobs.

Messages That Can Appear When You Unload ATPS or ATXRP

These messages are documented in alphabetical order. The ATPS or ATXRP Unload screen displays each of the messages listed here.

Can't find printer.

Explanation: ATPS or ATXRP cannot locate the possibly hidden printer.

Action: Check to ensure that the printer is on line and properly connected.

Couldn't restore the hidden printer *printer*.

Explanation: ATPS or ATXRP was unable to unhide the specified printer during unload time. *printer* indicates the name, type, and zone of the printer.

Action: Turn the printer off and on to restore it.

Connection with printer was lost.

Explanation: The hidden printer cannot be restored at unload time because of connection problems.

Action: Turn the printer off and on to restore it.

Hidden printers do not appear in the Macintosh Chooser for direct printing.

Explanation: This message describes the consequence of keeping a printer hidden: Macintosh users cannot see it in the Chooser and print directly to it.

Action: No action is necessary. This message is informational.

Module ATPS [or ATXRP] has been unloaded; some of the printers it was serving are hidden.

Explanation: This message informs you that some of the printers that ATPS or ATXRP services are hidden.

Action: No action is necessary. This message is informational.

Printer *printer* is already restored.

Explanation: The printer you tried to restore was not hidden. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

Printer *printer* was restored.

Explanation: ATPS or ATXRP has made the specified printer available to Macintosh users for direct printing. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

Printer was busy or off line.

Explanation: The hidden printer cannot be restored at unload time because it is busy or off line.

Action: Turn the printer's power off and on to restore the printer.

Restore hidden printer *printer*?

Explanation: This message enables you to restore previously hidden printers. *printer* indicates the name, type, and zone of the printer.

Action: Respond by answering Y to each printer you want to make available to Macintosh users.

Restore the hidden printers? (0=None, 1=All, 2=Some)

Explanation: This message enables you to restore previously hidden printers.

Action: Restore any printers that you want Macintosh users to have access to. Specify 0 to not restore any printers, 1 to restore all printers, and 2 to restore some printers. When you specify 2, ATPS or ATXRP displays the message Restore hidden printer? for each hidden printer.

Successfully restored hidden printer *printer*.

Explanation: ATPS or ATXRP successfully restored the printer specified by *printer*.

Action: No action is necessary. This message is informational.

These printers will remain hidden until they are restored or power-cycled.

Explanation: This message informs you that you can make hidden printers visible by choosing to restore them on the ATPS or ATXRP Unload screen or by power-cycling them.

Action: No action is necessary. This message is informational.

Unknown problem restoring hidden printer.

Explanation: ATPS or ATXRP cannot restore the hidden printer for undetermined reasons.

Action: Turn the printer off and on to restore it.

ATXRP Error Messages

Numbered Messages That Can Appear During ATXRP Operation

These messages are documented in numeric order. Depending on the severity of the error and your verbosity setting, a message can appear in the system log, on the system console screen, on the ATXRP console screen, or all three.

ATXRP-4.10-4: Printer *printer* illegal AppleTalk name.

Explanation: ATXRP could not print the job because the AppleTalk information specified for the printer is invalid. *printer* indicates the AppleTalk name, type, and zone of the printer.

Action: Check the AppleTalk printer information specified in PCONSOLE for illegal characters such as the equal sign (=) and approximately equal sign (≈).

ATXRP-4.10-5: Couldn't read configuration information for printer *num*.

Explanation: The system was unable to initialize the driver for the printer. *num* is the number of the printer as known to PSERVER.

Action: Try unloading and reloading ATXRP.

ATXRP-4.10-7: Registered printer *printer* as XRP *num*

Explanation: ATXRP successfully registered itself as the driver for the printer specified by *printer*. *num* is the number of the printer as known to PSERVER.

Action: No action is necessary. This message is informational.

ATXRP-4.10-8: Couldn't register printer *num*.

Explanation: ATXRP was unable to register itself as the driver for the printer. *num* is the number of the printer as known to PSERVER.

Action: Try unloading and reloading ATXRP.

ATXRP-4.10-34: Reconfiguring printer *num*

Explanation: ATXRP received a command to change the configuration of the printer. *num* is the number of the printer as known to PSERVER.

Action: No action is necessary. This message is informational.

ATXRP-4.10-35: Couldn't reconfigure printer *num*

Explanation: ATXRP experienced an error reconfiguring the printer. *num* is the number of the printer as known to PSERVER.

Action: Try unloading and reloading ATXRP.

ATXRP-4.10-47: Control-D characters in the current job will be sent as AppleTalk EOFs.

Explanation: The current job is being filtered for Control-D characters.

Action: No action is necessary. This message is informational.

ATXRP-4.10-49: Printer *printer* not responding; retrying.

Explanation: ATXRP is attempting to establish an AppleTalk connection with the printer specified by *printer*, but the printer is not responding to the connection requests. ATXRP will retry the connection request.

Action: If the condition persists, check that the printer is on line and securely connected to the network. Also, check the system log for any sign of network communication errors. If the error occurs intermittently, the printer may simply be slow to respond.

ATXRP-4.10-53: Printer *printer* unexpectedly not hidden.

Explanation: ATXRP expected the printer to be hidden. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational, and usually denotes a normal condition.

ATXRP-4.10-54: Printer *printer* unexpectedly hidden.

Explanation: ATXRP did not expect the printer to be hidden. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational, and usually denotes a normal condition.

ATXRP-4.10-96: Printer *printer* unexpectedly not hidden.

Explanation: ATXRP expected the printer to be hidden. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational, and usually denotes a normal condition.

ATXRP-4.10-97: Printer *printer* unexpectedly hidden.

Explanation: ATXRP did not expect the printer to be hidden. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational, and usually denotes a normal condition.

ATXRP-4.10-103: Detected a Control-D character; signaling End of Job.

Explanation: ATXRP has detected a Control-D character in the current PostScript print job. It is sending an AppleTalk EOF marker to the printer in place of the Control-D character.

Action: No action is necessary. This message is informational.

ATXRP-4.10-104: Can't find printer *printer*; retrying.

Explanation: ATXRP cannot locate the configured printer on the AppleTalk network. *printer* indicates the printer name, type, and zone.

Action: Try to locate the printer in ATCON. If you can locate it, be sure that the AppleTalk name, type, and zone you entered in PCONSOLE exact match the AppleTalk name, type, and zone you see in ATCON. If you cannot locate the printer in ATCON, check the cabling connecting the printer to the network. If the connection is secure, check that the AppleTalk module is configured correctly.

ATXRP-4.10-105: Printer *printer* busy; retrying.

Explanation: The specified printer is not accepting connections because it is currently processing another job or is in an error state. *printer* indicates the name, type, and zone of the printer. ATXRP will make another attempt to connect to the printer.

Action: This message is informational. Check the printer if the problem persists.

ATXRP-4.10-106: Can't find printer *printer*; retrying.

Explanation: ATXRP cannot locate the configured printer on the AppleTalk network. *printer* indicates the printer name, type, and zone.

Action: Try to locate the printer in ATCON. If you can locate it, be sure that the AppleTalk name, type, and zone you entered in PCONSOLE exact match the AppleTalk name, type, and zone you see in ATCON. If you cannot locate the printer in ATCON, check the cabling connecting the printer to the network. If the connection is secure, check that the AppleTalk module is configured correctly.

ATXRP-4.10-107: Connection with printer *printer* was lost.

Explanation: The AppleTalk session with the printer was lost due to a timeout error. *printer* represents the AppleTalk name, type, and zone of the printer.

Action: Check that the printer is on line and securely connected to the network. Also, check the system log for any sign of network communication errors.

ATXRP-4.10-108: Couldn't change hidden state of printer *printer*, unknown error.

Explanation: ATXRP could not hide or restore the printer. *printer* represents the AppleTalk name, type, and zone of the printer.

Action: The printer model may not support hiding. If the printer does support hiding, unload and reload ATXRP to try hiding the printer again.

TXRP-4.10-109: Printer *printer* was hidden.

Explanation: You specified that ATXRP hide the specified printer. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

ATXRP-4.10-110: Printer *printer* was restored.

Explanation: ATXRP has made the specified printer available to Macintosh users for direct printing. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

ATXRP-4.10-115: Printer *printer* is a type that can't be hidden.

Explanation: ATXRP does not support hiding of the specified printer model.

Action: No action is necessary.

ATXRP-4.10-119: Successfully printed job *job_number*.

Explanation: The print job specified by *job_number* printed successfully.

Action: No action is necessary. This message is informational.

ATXRP-4.10-125: Illegal AppleTalk printer name.

Explanation: ATXRP could not print the job because the AppleTalk information specified for the printer is invalid.

Action: Check the AppleTalk printer information specified in PCONSOLE for illegal characters such as the equal sign (=) and approximately equal sign (≈).

ATXRP-4.10-130: Can't find printer *printer*; still trying.

Explanation: ATXRP is still attempting to locate the designated printer on the AppleTalk network. *printer* indicates the name, type, and zone of the printer.

Action: Try to locate the printer in ATCON. If you can locate it, be sure that the AppleTalk name, type, and zone you entered in PCONSOLE exactly match the AppleTalk name, type, and zone you see in ATCON. If you cannot locate the printer in ATCON, check the cabling connecting the printer to the network. If the connection is secure, check that the AppleTalk module is configured correctly.

ATXRP-4.10-134: Unable to connect to printer; can't print job *job_number*.

Explanation: The job specified by *job_number* cannot be printed because the workstation cannot establish a connection with the printer. ATXRP will make another attempt to print the job.

Action: Refer to earlier messages appearing in the log or on the screen for specific information on how to proceed.

ATXRP-4.10-138: Aborted job *job_number* due to user command.

Explanation: ATXRP did not print the job specified by *job_number* because the administrator aborted it during printing.

Action: No action is necessary. This message is informational.

ATXRP-4.10-139: Problem connecting to printer *printer*; retrying.

Explanation: ATXRP cannot open an AppleTalk connection to the specified printer. This message may indicate a printer or network problem. *printer* indicates the name, type, and zone of the printer.

Action: Check the printer's connection to the network, and check the system log for network communication errors.

ATXRP-4.10-149: Servicing job *job_number*, printing one copy.

Explanation: ATXRP has begun to service the job specified by *job_number*, and will print one copy.

Action: No action is necessary. This message is informational.

ATXRP-4.10-150: Unknown problem restoring hidden printer.

Explanation: ATPS cannot restore the hidden printer for undetermined reasons.

Action: Turn the printer off and on to restore it.

ATXRP-4.10-152: Unable to print job *job_number* due to error reading job.

Explanation: ATXRP could not print the job specified by *job_number* because it experienced an error receiving the print job from PSERVER. ATXRP will try printing the job again.

Action: Make sure that the server has sufficient disk space to hold the print job.

ATXRP-4.10-180: Printer connection timed out.

Explanation: The AppleTalk session with the printer was lost due to a timeout error.

Action: Check that the printer is on line and securely connected to the network. Also, check the system log for any sign of network communication errors.

ATXRP-4.10-185: Printer *printer* busy; retrying.

Explanation: The specified printer is not accepting connections because it is currently processing another job or is in an error state. *printer* indicates the name, type, and zone of the printer. ATXRP will make another attempt to connect to the printer.

Action: This message is informational. Check the printer if the problem persists.

ATXRP-4.10-191: Printer connection closed by printer.

Explanation: The printer closed the AppleTalk session with the client because the print job was aborted at the printer or the printer timed out while printing the job.

Action: Make sure that the print job contained valid data and was not cancelled at the printer.

ATXRP-4.10-192: Couldn't start printer *num*.

Explanation: ATXRP is unable to service the printer specified by *num*.

Action: The server may not have sufficient memory. Make more memory available by unloading other modules or by adding more RAM to the server. Then, unload and reload ATXRP.

ATXRP-4.10-193: Printer connection timed out.

Explanation: The AppleTalk session with the printer was lost due to a timeout error.

Action: Check that the printer is on line and securely connected to the network. Also, check the system log for any sign of network communication errors.

ATXRP-4.10-194: Servicing job *job_number*, printing *num* copies.

Explanation: ATXRP has begin to service the job specified by *job_number*. ATXRP will print *num* copies.

Action: No action is necessary. This message is informational.

ATXRP-4.10-195: Fatal error for printer *num*.

Explanation: ATXRP is unable to service the printer specified by *num*.

Action: Refer to earlier messages appearing in the log or on the screen for specific information on how to proceed.

ATXRP-4.10-196: Couldn't initialize printer *num*; insufficient memory.

Explanation: ATXRP is unable to service the printer specified by *num*.

Action: The server may not have sufficient memory. Make more memory available by unloading other modules or by adding more RAM. Then, unload and reload ATXRP.

ATXRP-4.10-203: Printer connection closed by printer.

Explanation: The printer closed the AppleTalk session with the client because the print job was aborted at the printer or the printer timed out while printing the job.

Action: Make sure that the print job contained valid data and was not cancelled at the printer.

ATXRP-4.10-205: Closing AppleTalk connection with printer due to communications error.

Explanation: The AppleTalk session with the printer was lost due to a communications error.

Action: Refer to earlier messages appearing in the system log or on the screen for specific information on how to proceed.

ATXRP-4.10-210: Sending banner data to printer.

Explanation: ATXRP is printing a banner page.

Action: No action is necessary. This message is informational.

ATXRP-4.10-223: Printer connection closed by printer.

Explanation: The printer closed the AppleTalk session with the client because the print job was aborted at the printer or the printer timed out while printing the job.

Action: Make sure that the print job contained valid data and was not cancelled at the printer.

ATXRP-4.10-226: Deregistered printer *num*

Explanation: ATXRP is no longer acting as a driver for the printer. *num* is the number of the printer as known to PSERVER.

Action: No action is necessary. This informational message usually appears when you unload ATXRP.

ATXRP-4.10-228: Sending job data to printer.

Explanation: ATXRP is sending a job to the printer.

Action: No action is necessary. This message is informational.

ATXRP-4.10-229: Hiding printer *printer*

Explanation: ATXRP will make the specified printer unavailable for direct printing by Macintosh workstations. *printer* indicates the name, type, and zone of the printer.

Action: No action is necessary. This message is informational.

ATXRP-4.10-230: Restoring printer *printer*.

Explanation: ATXRP is un hiding the printer specified by *printer*, making it available for direct printing.

Action: No action is necessary. This message is informational.

ATXRP-4.10-236: Received down command

Explanation: PSERVER is going down and has instructed ATXRP to unload.

Action: No action is necessary. This message is informational.

ATXRP-4.10-267: Unable to print job *job_number* due to error communicating with printer.

Explanation: ATXRP could not print the job specified by *job_number* because of a communications error. This message indicates a network error or a printer problem.

Action: Refer to earlier messages appearing in the system log or on the screen for specific information on how to proceed.

Messages That Can Appear at the Macintosh Client

These messages are documented in alphabetical order. They can appear in the PrintMonitor window or the foreground printing window. They can also be delivered by the Notify Init or its equivalent.

Aborted job *job_number*.

Explanation: ATPS cannot immediately print the job specified by *job_number*; the job was returned to the queue.

Action: Examine additional error messages for indications as to how to proceed.

Can't place job in queue: *reason*.

Explanation: ATPS cannot place the job in a queue for the reason specified by *reason*.

Action: When *reason* states that the user has no queue rights, the message indicates that queue security is on and that the user is not a valid Queue User or is not logged in to the server. When *reason* states that no space is left on the device, you must create free disk space on the server volume to continue.

Incompatible Prep version; restarting printer

Explanation: The printer has a version of the Laser Prep (or other Prep) file incompatible with the one required for the current job. The printer is being reinitialized before it downloads the correct version.

Action: No action is necessary. This message is informational.

Job *job_number* was deleted.

Explanation: Job *job_number* was deleted from the queue before all the data was received by ATPS.

Action: No action is necessary. This message is informational.

***job_name*: PostScript error**

***job_name*: Job error**

Explanation: The job indicated by *job_name* generated a PostScript exception error or its non-PostScript equivalent.

Action: For information on resolving PostScript errors, see "Print Services Management Problems" on page 311.

***job_name* printed on *printer*.**

Explanation: The print job specified by *job_name* printed successfully on the printer called *printer*.

Action: No action is necessary. This message is informational.

Pr=*printer*, chg=*num1*, bal=*num2* for *job_name*

Explanation: This message is returned to the user when accounting is in use and the job is completed. *printer* indicates the name of the printer. *num1* indicates the number of points the user was charged. *num2* indicates the

user's new account balance. *job_name* indicates the name of the print job.

Action: No action is necessary. This message is informational.

Spooling Job to *server_name/queue_name*.

Explanation: The spooler is sending the client's print job to the queue specified by *queue_name* on the NetWare server specified by *server_name*.

Action: No action is necessary. This message is informational.

You need *num* account point(s) to print *job_number*.

Explanation: The client lacks sufficient accounting points to print the job specified by *job_number*. The *num* parameter indicates the number of accounting points necessary to print the job.

Action: You can increase the user's accounting points.

You must log into server *server_name*.

Explanation: ATPS cannot print the job because the job owner is not logged in to the server containing the queue and was trying to access a spooler that enforces queue security. *server_name* indicates the NetWare server name.

Action: The job owner must log in to the appropriate server.

Glossary

AFPCON.NLM

AFPCON.NLM, the AppleTalk File Services console utility, enables you to configure AFP.NLM from the server console. *See also* **AppleTalk File Services (AFP) module**.

AppleTalk

AppleTalk is a set of protocols and network software produced by Apple Computer, Inc. Together, these components make up a complete network architecture. AppleTalk enables the hardware and software on a network to interact and to route data so that users can share files, access printers, and communicate with one another.

AppleTalk Extended Remote Printer (ATXRP) module

The AppleTalk Extended Remote Printer module (ATXRP.NLM) works with PSERVER to send print jobs from a NetWare® client to an AppleTalk printer. *See also* **PSERVER.NLM**.

AppleTalk File Services (AFP) module

The AppleTalk File Services module (AFP.NLM) enables Macintosh users to share files and applications with non-Macintosh users.

AppleTalk printer

An AppleTalk printer is a printer connected to an AppleTalk network.

AppleTalk Print Services (ATPS) module

The AppleTalk Print Services module (ATPS.NLM) enables Macintosh clients to print to NetWare queues, and non-Macintosh clients to print to AppleTalk printers.

AppleTalk spooler

The AppleTalk spooler is a component of ATPS.NLM. The spooler advertises a NetWare print queue on an AppleTalk network and accepts print jobs from Macintosh clients. The spooler is a logical representation of a queue; the spooler name makes a queue visible to Macintosh clients. *See also* **Front end**.

AppleTalk zone

An AppleTalk zone organizes network devices into logical divisions so that users can locate and use servers and network printers.

ATPSCON.NLM

ATPSCON.NLM, the AppleTalk Print Services console utility, enables you to configure ATPS.NLM from the server console. Using this utility, you can create and configure spoolers, create and assign print queues, set options, and administer printer servers. *See also* **AppleTalk Print Services (ATPS) module**.

ATPS print server

The ATPS print server is a component of ATPS.NLM. The print server processes print jobs from a NetWare print queue and directs them to an AppleTalk printer. *See also* **Back end**.

Back end

The print services back end consists of all the components necessary to remove each job from the queue and direct it to the appropriate printer.

Banner page

A banner page supplies information about a print job, such as the name of the user who initiated the job, and the time and date of printing.

Binary capable

On a binary-capable printer communications channel, the ways that the protocol handles flow control and signals the end of a print job do not depend on a print job's data stream. Therefore, a binary-capable channel allows the printer to receive all 8-bit characters, and can handle both ASCII and binary PostScript print jobs.

Chooser

The Chooser enables Macintosh users to access devices available on the network, such as servers and printers. Users can select the spoolers you configure in ATPSCON by locating them in the Chooser.

Clear-text UAM

A clear-text UAM does not use any kind of password encryption. The network interprets a user's password exactly as he or she enters it. A clear-text password is more vulnerable to eavesdropping than an encrypted password. One of the Apple Standard UAMs is a clear-text UAM.

Communications channel

A printer communications channel is a pathway that dictates the signals used and the methods employed to control the transfer of data from a server or workstation to the printer.

Creator code

Every Macintosh file has a four-character Creator code that identifies the application that created the file. *See also* **Type code**.

Desktop database

The server's desktop database contains information associating files with icons and documents with applications. This information helps the Finder know which icon to display for each file, and which application to launch when a Macintosh user opens a document. The Finder uses the desktop database to build the familiar Macintosh graphical user interface.

Extension mapping

Extension mapping attaches Macintosh application information to non-Macintosh files with certain filename extensions. This information enables a Macintosh user to double-click a non-Macintosh file's icon and automatically open the specified application.

Font list

A font list contains the name of each font resident on a printer. ATPS can obtain a font list directly from a printer, from the printer's PPD file, or from a custom font list file that you create.

Front end

The print services front end consists of all the components required to transmit a job to a NetWare print queue. *See also* **AppleTalk spooler**.

Handshaking

Handshaking refers to a controlled sequence for data exchange. A set of handshaking signals coordinates each phase of the data-exchange transaction over a serial connection.

HFSCDCON.NLM

HFSCDCON.NLM, the HFS CD-ROM console utility, enables you to configure the HFS CD-ROM module for use with NetWare for Macintosh. *See also* **HFS CD-ROM module**.

HFS CD-ROM module

NetWare for Macintosh uses the HFS CD-ROM module (HFSCD.NLM) to control the process of using CD-ROM discs.

Hidden printer

ATPS and ATXRP enable you to hide printers from Macintosh users by preventing the printer names from displaying in the Chooser. When you hide a printer, a user must access it by using a NetWare queue. Because the queue processes print jobs on a first-come, first-served basis, using hidden printers ensures more equitable access to them.

Hierarchical File System (HFS)

HFS provides the standard Macintosh structure for files and folders.

Laser Prep file

A Laser Prep file contains a dictionary of PostScript shorthand commands used by the LaserWriter driver on the Macintosh when formatting PostScript print jobs. The Macintosh downloads this file to initialize the printer before sending it a print job. In most cases, the Macintosh operating system handles this process transparently.

LocalTalk

LocalTalk is a system of cables, cable extenders, and connector boxes that connect computers and network devices on an AppleTalk network. LocalTalk kits are manufactured by Apple Computer.

Macintosh client

The term *Macintosh client* refers to any AppleTalk client.

Macintosh user

The term *Macintosh user* refers to the user of a Macintosh workstation.

Migration

The term *migration* denotes the process of removing CD-ROM data from the NetWare server.

Migrator

The Migrator controls the contents of the CD-ROM cache on the server hard disk. When no one has used a CD-ROM file for a certain amount of time, the Migrator removes that data from the NetWare volume; if necessary, you can instruct the Migrator to remove files before the specified time.

Mount

The term *mount* describes the process of inserting a CD-ROM disc in a CD-ROM drive so that the HFS CD-ROM module knows it exists. You use the HFS CD-ROM module to mount an HFS CD-ROM disc inserted in a CD-ROM drive.

Name Binding Protocol (NBP)

AppleTalk uses NBP to map device names to specific network addresses. The Macintosh Chooser and ATCON.NLM find AppleTalk entities using NBP.

Name space

A name space allows a NetWare user at a particular kind of workstation to see folder names and filenames as he or she expects to see them, even if a user at a different kind of workstation created the folders and files. NetWare uses a different name space for each platform.

NetWare UAM

The NetWare UAM provides password encryption. In addition, it allows Novell® Directory Services™ authentication, including background authentication, and enables a user to enter a password longer than eight characters, the maximum length supported by the Apple Standard UAMs.

Node

A node can be any device on the network designated with a network address and capable of sending and receiving information. A server, router, workstation, and network printer each represent a node on a network.

Non-Macintosh client

The term *non-Macintosh client* refers to a DOS, OS/2, or Windows client on an IPX™ connection.

Non-Macintosh user

The term *non-Macintosh user* refers to the user of a DOS, OS/2, or Windows workstation.

Offspring count

The offspring count indicates the number of subdirectories and files in a directory.

Page Description Language (PDL)

A PDL is a collection of commands that control all aspects of reproducing text and graphic images on a printed page. Adobe PostScript is an example of a commonly used PDL.

Parallel printer interface

A parallel printer interface accepts data routed on a bus in parallel format, 7 or 8 bits at a time. Parallel printer communication is generally faster than serial printer communication, and the parallel printer interface is easier to configure. However, if the printer cable extends beyond 10 feet, data transfers can be unreliable.

PostScript

PostScript is a Page Description Language implemented on many different types of printers and supported by numerous applications. PostScript commands control fonts, text formatting, graphic images, page layout, and other aspects of printed images.

PostScript Printer Definition (PPD) file

A PPD file contains printer model information that a spooler can use to answer PostScript queries. Certain PPD files are automatically installed with NetWare. The Model PPD Field of the ATPSCON Spooler Parameters window displays the current list of PPD files installed on the server.

Printer Access Protocol (PAP)

PAP is part of the AppleTalk protocol suite. Macintosh clients and the NetWare for Macintosh server use PAP to communicate with printers on an AppleTalk network.

Printer Control Language (PCL)

PCL is a Page Description Language used by Hewlett-Packard LaserJet printers and compatibles.

Printer server

A printer server is an ATPS entity that services a single print queue and sends jobs to a single printer.

Print queue

A print queue is a storage area for print jobs. Jobs in the queue can be monitored, managed, and serviced by one or more print servers.

Print server

In NetWare, a print server is a software entity that services multiple print queues and sends jobs to multiple printers. More generally, the term print server refers to a software entity that removes print jobs from queues or sends them to printers. *See also* **Back end**.

Protocol

A protocol consists of a set of guidelines specifying some aspect of computer-based communication and data exchange. Network protocols, such as AppleTalk, are usually structured in layers, starting from the machine level (physically connecting computers by cables) and building to the application level (controlling how programs interact with the network software).

PSERVER.NLM

PSERVER.NLM is the NetWare print server module. This software can send a print job over a serial, parallel, or IPX connection to a printer; with ATXRP.NLM, it can also send a job to a printer over an AppleTalk connection. *See also* **AppleTalk Extended Remote Printer (ATXRP) module**.

Pseudo volume

When the HFS CD-ROM module copies files from a CD-ROM disc to the server hard disk, it creates a pseudo volume. This pseudo volume looks like a separate volume on the Macintosh desktop and in the Chooser, but it represents the portion of a server volume containing the CD-ROM files and directory structure.

Real Time Data Migration module (RTDM.NLM)

When a Macintosh user opens a CD-ROM file, RTDM.NLM copies the file to a NetWare volume.

Remote printer

In NetWare, a remote printer is a network printer that is not directly connected to the server, but to a workstation. A remote printer can also be directly connected to the network.

Scan

The term *scan* indicates the process by which NetWare for Macintosh copies the disc's directory tree to a NetWare volume on the server. The directory tree enables Macintosh workstation users to see the folders and files on the disc.

Serial printer

A serial printer is a printer connected using a serial (RS232) interface. A serial printer accepts data transferred a bit at a time and assembled into bytes using handshaking techniques. Serial interfaces generally require more configuration and setup than parallel interfaces, but can support longer printer cables.

TokenTalk

TokenTalk is Apple's implementation of the AppleTalk protocol over Token Ring. AppleTalk provides the rules for low-level communication over Token Ring media.

TrueType fonts

TrueType is a font rasterization and type manager technology jointly developed by Microsoft Corporation and Apple Computer, Inc. Like PostScript fonts, TrueType fonts are scalable, since they are stored as mathematical representations of their outline form. TrueType fonts can be converted to Adobe Type 1 fonts on the fly for outputting to PostScript printers.

Type code

Every Macintosh file has a four-character Type code that identifies the nature of the file. *See also* **Creator code**.

UNIX® client

A UNIX client is a node on a TCP/IP connection.

User Authentication Method (UAM)

Using a User Authentication method, the server compares the user name and password a user enters with information in the NetWare directory, and grants or denies the connection as appropriate. NetWare supports an Apple Standard UAM and a NetWare UAM. *See also* **Clear-text UAM**; **NetWare UAM**.

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