Print Server
User's Guide

Release 4

Important Safety Information

Pay attention to the following symbols to ensure your safety when working with the product.

CAUTION: MOVING PARTS, AVOID CONTACT
ATTENTION: EVITER LE CONTACT, PIECES EN MOUVEMENT
VORSICHT: BEWEGLICHE TEILE, BERUEHRUNG VERMEIDEN

<01-002>

CAUTION: HOT SURFACE, AVOID CONTACT
ATTENTION: EVITER LE CONTACT, PIECES BRULANTES
VORSICHT: HEISSE OBERFLAECHE, BERUEHRUNG VERMEIDEN

<01-003>

Contents

Introduction

In this guide, the following icons are used.

This icon indicates that you should read the caution message that follows.

This icon indicates that you should take note of the important information that follows.

The Print Server Software is designed to increase productivity and efficiency by making it possible to quickly and easily establish appropriate parameters for print jobs, and by supporting a variety of printers and printer languages.

As part of the Network Imaging System, this software for Sun Ultra 10, Ultra 30, or Ultra 60 workstations consists of a user interface that supports icons, windows, and menus. Together they provide the functionality to configure print queues to handle incoming print requests, the capability to manage those queues, and the ability to control print jobs within the queues.

This guide contains information about installing and using Print Server Software and performing other system administrator duties.

About the Network Imaging System

The Network Imaging System allows Macintosh systems, Windows-compatible personal computers (PCs), and Sun workstations to print through a print server to control the flow of print jobs from client systems to these printers. The server system must be a Sun Ultra 10, Ultra 30, or Ultra 60 workstation, while client systems can be Macintosh systems, Windows-compatible PCs, or Sun workstations.

Types of Users

There are three types of users of Print Server Software: the client user, the operator user, and the root user.

Client User

A client user can access some Queue Management options and those features that do not change workstation or Print Server Software system files. Of the three user types, client users have access to the smallest set of Print Server Software functions.

Operator User

An operator user has access to all features that a client user can access, and also can modify print requests awaiting printing and change queue states.

To specify an operator user, edit the *system_admin_user* file. This file is described in Appendix A "Configuring Database Files".

Root User

A root user has access to all features that an operator user can access, and also can modify workstation and Print Server Software system files. The root user can add, delete, and modify printers and print queues as well as modify workstation files. The root user can access all of the Print Server Software functions.

Print Server Functions

Print Server Software allows you to do the following:

• Define print queues to meet current printing needs

  For example, if many documents for three-hole binders are printed, a queue can be established to serve only three-hole-paper requests. If other documents are printed on blue paper and stapled, another queue can be established to serve only stapled-blue-paper requests.

• Monitor printing activity and take any necessary corrective action

  For example, if a three-hole-paper queue contains a large number of jobs, the printer operator can place three-hole paper in the printer and print only from the three-hole-paper queue.

  Additionally, if a blue-paper queue and a three-hole-paper queue of one printer are both receiving a large number of files, the operator user can prevent one of the queues from accepting new files so that new print requests are redirected to another printer. After files in that queue have been printed, the queue can be reset to accept files.

• Move or copy jobs between queues

• View job print options that cannot be modified

• Perform job backup

• Modify print options

Print Client Functions

Client system users print files through queues configured for the print server. Job print options can be chosen on the client system, and the jobs print through the client print server that best match those requirements.

What's in this Guide

Section 1 "Installation and Startup"—installation instructions for Print Server Software.

Section 2 "Device Configuration"—instructions for configuring Print Server Software. This chapter tells you how to check the software installation; add, modify, view, and delete devices; and change the AppleTalk version.

Section 3 "Queue Configuration"—descriptions of print queues; instructions for adding, modifying, copying, viewing, ordering, and deleting print queues; and details about selecting queue job acceptance rules.

Section 4 "Queue Management"—descriptions of how to enable and disable print queues, and how to set preferences for the Queue Management window.

Section 5 "Job Management"—information about accessing the list of jobs within a print queue in order to reorder, delete, modify print options, or check the progress of jobs. This chapter also explains how to move jobs between queues, and set the preferences for the Job Management window.

Section 6 "Backup and Restore Utility"—information about using the Backup and Restore Utility.

Section 7 "UNIX lpr Command"—information about using the UNIX *lpr* command.

Appendix A "Configuring Database Files"—information about configuring and updating database files.

Appendix B "Automatic Removal of Jobs from Archive Queues"—information about editing the *crontab* file.

Appendix C "Communications Diagnostic Utilities"—information about diagnosing communications problems.

Appendix D "UNIX lpr Troubleshooting"—information on troubleshooting the UNIX *lpr* command.

Appendix E "Printer Specific Notes"—information specific to various printers.

Section 1   Installation and Startup

This chapter provides the hardware, software, and network requirements, along with general information that you should read prior to installing the Print Server software.

Hardware Requirements

The following configuration is required to load Print Server software:

- Sun Ultra 10, Ultra 30, or Ultra 60 workstation running Solaris 2.6 and OpenWindows 3.x

- CD-ROM drive

- At least 300 MB of swap space

- At least 32 MB of RAM

- At least 32 MB of available disk space

Assumptions

You should be familiar with the following:

- Solaris 2.6 environment

- OpenWindows environment

- UNIX directory structure

- Basic file management tasks in a UNIX/OpenWindows environment

- Document printing characteristics and printer features

Installing the Software

The Print Server software is installed when you load the Network Imaging System software. See the *Installation Tool Guide* (W-818) for more information. After the installation is complete, you can verify that the Print Server software is installed or you can determine the version by opening a command tool window and typing **pkginfo -l KDKprt** [RETURN].

After the Print Server software is installed, you must:

- set up the user's environment

- configure the system environment

Setting Up the User's Environment

Each user who executes Print Server software must have specific environment variables set. The *usersertup.prt* utility is provided to set those variables in a Bourne or C shell environment. Executing *usersetup.prt* is a specific step of the installation.

When you execute *usersetup.prt*, the utility will create the specific environment variables in the */.profile* and */.cshrc* files. You must execute *usersetup.prt* for root and for all users who will execute the Print Client software. The user is assumed to have a *.profile* or a *.cshrc* file in the */home* directory prior to the execution of *usersetup.prt*.

> This procedure should not be performed by the Network Imaging System operator user (kdkoper).

To set up the user's environment:

1. Log in as the user which is to be set up.

2. Type **/usr/srv/etc/usersetup.prt** [RETURN].

   The following prompt appears:

   ```
   This user's .cshrc and .profile files have been updated. You
   must logout completely and log back in for the changes to take
   effect.
   ```

If you need to alter files in the rsrc_data directory, including document files for jobs in Print Server queues, you must set read/write permissions.

To grant non-root users read/write permission in the rsrc_data directory:

1. Log in as root and open a shell tool window.

2. Type **cd /var/spool/srv_resources** [RETURN].

   The directory changes to /var/spool/srv_resources.

3. Type **chmod 777 rsrc_data** [RETURN].

Configuring the System Environment

Before using the Print Server software, you must also configure the system environment. Section 2 "Device Configuration" discusses how to set up the system environment for good printing results.

Starting Up and Quitting the Print Server Software

You can start the Print Server software from the pop-up menu or from a command tool.

To start the software from the pop-up menu:

1. Right-click in the OpenWindows background and select Printer → Print Server Software.

   The Print Server Software main window appears.

To start the software from a command tool:

1. Open a command tool or shell tool window.

2. Type **/usr/srv/bin/launcher.prt &** [RETURN].

   The Print Server Software main window appears.

To quit Print Server software:

1. Right-click in the title bar of the Print Server Software main window and select Quit.

   The Print Server software main window closes and the OpenWindows display returns.

Section 2   Device Configuration

The Device Configuration window allows the root user to set up a unique printing environment, manage printers on the system, and specify communications interface information. Client and operator users can only view the information in the Device Configuration windows.

After you install Print Server software, but before you process any print jobs, complete the following tasks:

- **Device Installation**—view the list of printers recognized by your system, add printers to the list, and modify or delete the existing printers recognized by your system.

- **Communications Configuration**—change information about the AppleTalk and Novell protocols, if necessary.

- **Spooling Mode Selection**—select whether the Spool Off mode is disabled or enabled.

Configuring Devices

The Device Configuration window allows you to view the list of printers recognized by your system, add printers to the list, and modify or delete the existing printers.

To access the Device Configuration window:

1. From the Print Server software main window, select Configuration.

   The Device Configuration window appears. The default display is Device Installation.
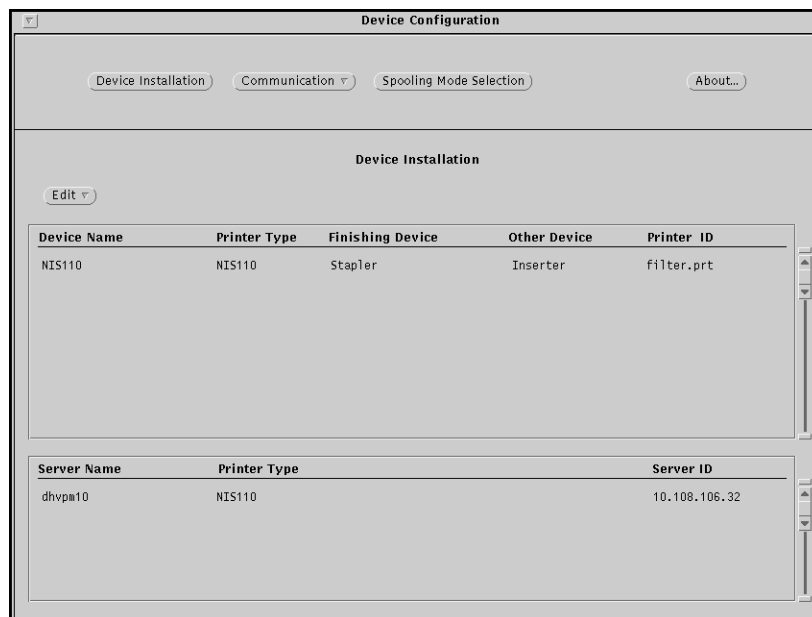
Figure 2-1 Device Configuration window

Devices already added appear in the window.

Field and Button Descriptions

Device Installation—accesses the Device Installation window, which allows you to install devices that Print Server software recognizes.

Communication—opens windows which allow you to set up AppleTalk and Novell environments.

Spooling Mode Selection—opens the Spooling Mode Selection window.

About—opens a window that contains information about Print Server software.

Edit—opens a drop-down menu that allows you to add, modify, view, or delete the devices listed in the installed devices list and the installed servers list.

Installed Devices

> **Device Name**—displays the name of the printer that is installed.

> **Printer Type**—displays the type of printer that is installed.

> **Finishing Device**—displays the type of finishing device that is installed on the printing system.

> **Other Devices**—displays other types of finishing devices.

> **Printer ID**—displays the network ID of the printer.

Installed Servers

> **Server Name**—displays the name of the server that is installed.

> **Printer Type**—displays the type of printer that is attached to the server.

> **Server ID**—displays the network ID of the server.

Adding Devices

The Add Device window allows you to specify devices that your system then associates with the Print Server software printer database. When a device is added that is not in the `/etc/hosts` file, an entry for that printer is created. You can then select the printer when you use the Queue Management option.

> Queue Management is discussed in Section 3 "Queue Configuration", Section 4 "Queue Management", and Section 5 "Job Management" of this guide.

The Add option is only available when no device is selected in the Device Installation window. Only a root user can add devices to the list.

> A separate Print Server can be specified as a "Printer" as well as a "Server." This allows you to send files to print from your system through a specified Print Server, rather than directly to a printer. However, changes made using Print Server software will update the `/etc/hosts` file. To ensure that the host name cannot be later modified unintentionally, which may cause system problems, use an alias for the Print Server name in the Device Name field, rather than the actual Print Server name.
>
> Also, if you are installing generic PostScript language devices, you must enable AppleTalk communications.

To add a device:

1. Access the Device Configuration window.

2. Select Device Installation.

    The Device Installation window appears.

3. Right-click Edit and select Add.

Add is available only when no devices are selected in the scrolling list.

The Add Device window appears.

Figure 2-2 Add Device window

4. Make any necessary changes in the Add Device window.

5. Select Apply.

    The Device Installation window reappears with the added device in the scrolling list.

    If a name already assigned to a different address is entered and applied, a prompt appears stating that the name and address of the device do not agree. Select Continue to return to the Add Device window, then enter the correct name or address.

Field Descriptions

Device Name—allows you to enter the host name of the printer being added. The entry may match the name of an existing entry in the `/etc/hosts` file or the UNIX NIS host table. When you type the name of a printer already in the `/etc/hosts` file and press [RETURN], the Address field is filled in automatically.

Valid entries in the Device Name field are all upper- and lowercase letters (A–Z, a–z), digits (0–9), periods (.), hyphens (-), and underscores (_). Spaces, tabs, and returns are not acceptable. The Device Name field can not be numeric values only.

If UNIX NIS is running on the server, the device name must be in the network hosts table.

Printer Type—allows you to select the type of printer to be added.

Device Type—allows you to select the type of device that the printer will serve, either "Printer" or "Server." Select Printer for local connections.

> The Connection Type, Interface, Finishing Device, and Postprocessor fields are not available when "Server" is selected in the Device Type field.

Connection Type—allows you to select a Local or a Remote connection type.

When Remote is selected in the Connection Type field, the Remote Machine Name and Remote Queue Name fields are available. The Interface and Address fields are not available when Remote is selected.

Adding a remote printer allows a local host to print to a printer through a Sun server referred to as the remote machine or remote host.

> The preferred method of server-to-server communications is through the Device Type "Server." This allows the normal queueing process to take place on the remote machine. When the remote printer capability is used, the normal queueing process is bypassed. Jobs go directly to the remote queue specified. Because of this, it will be possible for jobs with print options that do not match the printer's current setup to reach the printer. This may force operator intervention that could have been avoided.

Adding a remote printer to your local system does not automatically add it to the remote host. Add printers to the remote host with the appropriate local connection type specified.

A local host must have proper access for printing on the remote host. This access is established through entries in both the local and remote host's `/etc/hosts.equiv` or `/etc/hosts.lpd` files.

To set printing access for a local host:

1. Log in as root on the server *from which* the jobs will be sent.

2. In a shell tool, type **cd /etc** [RETURN].

3. Type **touch hosts.lpd** [RETURN].

4. Type **textedit hosts.lpd** [RETURN].

5. In the file on a new line by itself, type the hostname of the host *to which* the jobs will be sent.

   This hostname must also appear in the `/etc/hosts` file.

6. Save the file and close *textedit*.

7. Type **touch hosts.equiv** [RETURN].

8. Type **textedit hosts.equiv** [RETURN].

9. In the file on a new line by itself, type the hostname of the host *to which* the jobs will be sent.

   This hostname must also appear in the `/etc/hosts` file.

10. Save the file and close *textedit*.

11. Log in as root on the server *to which* the jobs will be sent.

12. In a shell tool, type **cd /etc** [RETURN].

13. Type **touch hosts.lpd** [RETURN].

14. Type **textedit hosts.lpd** [RETURN].

15. In the file on a new line by itself, type the hostname of the host *from which* the jobs will be sent.

    This hostname must also appear in the `/etc/hosts` file.

16. Save the file and close *textedit*.

17. Type **touch hosts.equiv** [RETURN].

18. Type **textedit hosts.equiv** [RETURN].

19. In the file on a new line by itself, type the hostname of the host *from which* the jobs will be sent.

    This hostname must also appear in the `/etc/hosts` file.

20. Save the file and close *textedit*.

Interface—allows you to specify how the printer is connected to the Print Server. Depending on the printer type, all choices may not be available. The following options are available:

> **Ethernet**—when selected, you must specify the internet address of the printer in the address field. If you are using a generic PostScript language printer, enter the EtherTalk zone name.

> **Other**—when selected, allows a user to specify a custom interface.

Internet Address—consists of four subfields separated by dots. You must enter the Internet address of the printer in this field.

If a printer or server is in the hosts database, the address is automatically updated when you type the name and press RETURN. If the name is not in the hosts database and the NIS is not running, the name is added to the hosts database. If you are using the UNIX NIS host table, the printer or server name must be updated on the named server.

> If the entry is not a valid address, the `/etc/hosts` file may be corrupted. You must know the printer's Internet address to enter a valid address.
>
> To add a Print Server as a printer, you must enter the Internet address of the Print Server in this field.

Finishing Device—specifies the actual output device(s) connected to your printing system.

Remote Machine Name—specifies the name of the remote host to which the printer is directly connected. This host must exist in the `/etc/hosts` file.

> The Remote Machine Name field only appears when "Remote" is selected in the Connection Type field.
>
> If you are using the UNIX host table, the remote host name must be in the network hosts file instead of the local `/etc/hosts` file.

Remote Queue Name—specifies the name of a queue at the remote host through which jobs should be printed. This is the name given to the print queue when added through Print Server software on the remote system. Your entry must be the same as the entry in the Queue Name field of the print queue on the remote machine.

Valid entries for the Remote Queue Name field are all upper- and lowercase letters (A–Z, a–z), digits (0–9), periods (.), hyphens (-), and underscores (_). Spaces, tabs, and returns are not acceptable.

> To verify that the remote queue name and the queue name are the same, refer to the queue scrolling list in the Queue Configuration window on the remote host. Compare the entry in the queue scrolling list with your entry in the Remote Queue Name field.
>
> The Remote Queue Name field appears only when Remote is selected in the Connection Type field.

Postprocessor—specifies if the printer or copier-printer has a postprocessing device.

Modifying Devices

The Modify Device window allows you to change the attributes of a device.

> **Use this option with caution, since it may change the `/etc/hosts` file. This warning is important if you have entered any Sun hosts as "printers." Modifying the names and addresses of this type of entry can prevent you from communicating with those hosts.**
>
> **The Device Type, Printer Type, and Connection Type fields cannot be modified if any print queues are attached to the printer that is being modified.**

The Modify Device window fields are the same as those in the Add Device window. Refer to "Field Descriptions" on page 2-4 for the field descriptions.

To modify a device:

1. Access the Device Configuration window.

2. Select Device Installation.

   The Device Installation window appears.

3. Select the name of the device you wish to modify.

   You can only select one device at a time.

4. Right-click Edit and select Modify.

   The Modify Device window appears.

5. Make any necessary changes in the Modify Device window.

6. Select Apply.

   If the window is unpinned, you return to the Device Configuration window.

Viewing Devices

The View Device window allows you to view the attributes of a device. The View Device window fields are the same as those in the Add Device window. See "Field Descriptions" on page 2-4.

To view a device:

1. Access the Device Configuration window.

2. Select Device Installation.

   The Device Installation window appears.

3. Select the name of the device you want to view.

   You can only select one device at a time.

4. Right-click Edit and select View.

   The View Device window appears.

Deleting Devices

The Delete option of the Edit menu in the Device Installation window allows you to delete devices from the Print Server software printer database.

To delete a device:

1. Access the Device Configuration window.

2. Select Device Installation.

   The Device Installation window appears.

3. Select the name of the device you wish to delete.

   You can only select one device at a time.

4. Right-click Edit and select Delete.

   a. If queues have been set up to print to this printer, select OK to the prompt that appears to inform you of this.

   b. If no queues have been set up to print to this printer, select Confirm to the prompt that appears asking you to confirm the deletion of the device.

   The printer is deleted from the `/etc/hosts` file.

Generic PostScript Language Printing

The generic PostScript language printing feature allows you to install and manage generic PostScript language printer devices through the Print Server software.

To print to a generic PostScript language printer device:

1. Configure (install) the generic PostScript language device on the Network Imaging System Print Server.

2. Establish both regular queues and autoqueues for the generic PostScript language device.

The root user must establish the connection to the printer as well as the autoqueueing attributes of queues associated with the generic PostScript language device.

> If you are adding a generic PostScript language printer, you can edit the "Enter path of executable" field. A valid path must be entered for print requests to be submitted to that printer. If an invalid path is entered, print requests are not submitted to the generic PostScript language printer.

Installing a Generic PostScript Language Printer Device

There are three scenarios for installing generic PostScript language printer devices:

- Local connection with an Ethernet interface
- Local connection with an Interface type of Other
- Remote connection

To install a generic PostScript language printer device with a local connection:

1. Access the Device Installation window.

2. Right-click Edit and select Add.

> Add is available only when no devices are selected in the scrolling list.

   The Add Device window appears.

3. In the Printer Type list, select PostScript.

The EtherTalk Window appears.

Figure 2-3 EtherTalk window

4. Select List Zone(s).

The available zones appear on the Zone Name(s) list. An "*" character representing the default zone instead of an actual zone name may also appear.

5. Select the desired zone name.

The selected zone name appears in the Zone Name field in the EtherTalk Window and Add Device window.

A list of available printers for the selected zone appears on the Printer Name(s) scrolling list.

6. In the Printer Name(s) scrolling list, select a printer.

The selected printer name appears in the Printer Name field in the EtherTalk Window and the Device Name field in the Add Device window.

If the zone name does not appear, select List Printer(s). All available printers in the Local zone appear in the EtherTalk window and the Local zone name appears in the Zone Name field.

7. Click the pin at the top of the EtherTalk Window.

The EtherTalk Window closes and you return to the Add Device window.

8. In the Add Device window, select the desired options.

-   If Ethernet is selected in the Interface field, the zone name selected in the EtherTalk Window appears in the Zone Name field on the Add Device window.

-   If Other is selected in the Interface field, the Zone Name field is replaced with the "Enter path of executable" field.

9. Type the path of the executable to be invoked when sending a print request from a print queue to the generic PostScript language printer.

> See your network administrator to determine the correct executable required to send the print request to the generic PostScript language printer.
>
> For each queue that is added, a new entry in `/etc/printcap` is created. If the Printer Type is PostScript and the Interface is Other, the name of the executable that was entered will be referenced in the `/etc/printcap` entry on the ":if=" line.

10. Make the appropriate selections in the Add Device window.

11. Select Apply.

    The generic PostScript language printer installation is complete.

12. Click the pin at the top of the Add Device window.

    You return to the Device Installation window. The added device appears in the scrolling list. You may now establish print queues for this device. For information about establishing print queues, refer to Section 4 "Queue Management".

To install a remote generic PostScript language printer device:

1. Access the Device Configuration window.

2. Select Device Installation.

   The Device Installation window appears.

3. Right-click Edit and select Add.

> Add is available only when no devices are selected on the scrolling list.

   The Add Device window appears.

4. In the Printer Type list box, select PostScript.
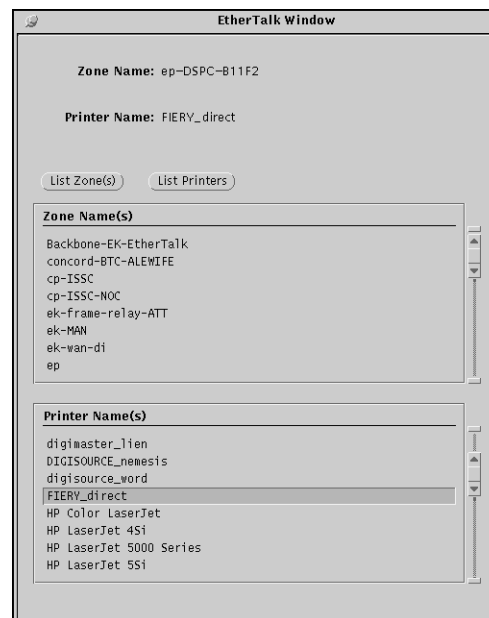
   The EtherTalk Window appears.

5. Click the pin at the top of the EtherTalk Window.

   The EtherTalk Window closes and the Add Device window returns.

6. In the Connection Type field, select Remote.

7. Make the necessary entries in the Remote Machine name and the Remote Queue name fields.

8. Select Apply.

   The remote generic PostScript language printer installation is complete.

9. Click the pin at the top of the Add Device window.

   You return to the Device Installation window. The added device appears in the scrolling list. You may now establish print queues for this device.

Establishing Print Queues for a Generic PostScript Language Printer Device

To establish print queues for generic PostScript language printers, follow the same procedure as for other supported printers. For more information about establishing print queues, refer to Section 4 "Queue Management".

> It is possible to autoqueue on features that may not be supported on the generic PostScript language printer (for example, stapling and duplex).
>
> If illegal characters exist in the EtherTalk window fields, they are replaced by underscores (_) when the device is added.

Network Communications

The Communication option allows you to set up your Print Server Software to receive documents from Macintosh systems using AppleTalk, and from PCs connected through a Novell print server.

To access the Network Communication Configuration windows:

1. Access the Device Configuration window.

2. Right-click Communication and select the desired communication medium, either AppleTalk or Novell.

Configuring AppleTalk

Changes to default AppleTalk information are made through the Communication interface window.

When Print Server software is installed, AppleTalk communications is disabled. The default for this field is disabled. It must be enabled before jobs can be submitted using the AppleTalk protocol.

When changes to the AppleTalk configuration are made and applied, the new values are saved in the configuration file `ncs_at_conf` (Network Communication Services, AppleTalk, Configuration). This file is located in `/usr/srv/lib/databases/databases.prt.` For more information about the AppleTalk configuration file, refer to Appendix A "Configuring Database Files".

To change the AppleTalk information:

1. Access the Device Configuration window.

2. Right-click Communication and select AppleTalk.

   The Communication - AppleTalk configuration appears in the Device Configuration window.

Figure 2-4 Device Configuration window

3. Make any necessary changes in the window.

   See the field descriptions that follow for more information.

4. Select Apply.

   The changes are applied.

Field Descriptions

AppleTalk Communications—enables or disables AppleTalk Communications. The default for this field is Enabled.

When you select Disabled and select Apply, AppleTalk Communications is completely disabled. This applies to both inbound and outbound connections, as well as any utilities that make use of the AppleTalk protocol. The server stops broadcasting as an available device, so clients cannot send jobs in. The server cannot send jobs out to a device that has been configured to connect via AppleTalk (generic PostScript language devices). Configuration of any new generic PostScript language devices is not possible.

> By default, the Print Server Software broadcasts as both "LaserWriter" and "LionHeart." To change the default broadcast entity types you must edit the AppleTalk configuration file `ncs_at_conf`. For more information about this file, refer to Appendix A "Configuring Database Files".
>
> If AppleTalk Communications is disabled, you cannot set up to print to a generic PostScript language device.

AppleTalk Protocol Phase—specifies the phase of AppleTalk running on your network.

The default for this field is Phase 2. If you use AppleTalk Phase 1, set AppleTalk Protocol Phase to Phase 1.

> The Zone field is inactive when Phase 1 is selected in the AppleTalk Protocol Phase field.

AppleTalk Printer ID—specifies a name for selection through the Chooser.

The default printer ID is *hostname*, where *hostname* is the name of the Print Server. If you wish to designate a broadcast name other than the default, enter it in this field.

Zone—specifies the zone name to be used for AppleTalk communications. Zone is active only when the AppleTalk Protocol Phase field is set to Phase 2.

This field may be left blank. If the Zone field is left blank and you apply your changes, it will be automatically set to the default zone (if Enabled is selected in the AppleTalk Communications field and Phase 2 is selected in the AppleTalk Protocol Phase field).

It is possible to configure Print Server software to broadcast on a zone other than the default. To do this, enter the name of the desired zone in the Zone field. The new zone must be an existing zone on the local network segment. The Print Server itself cannot define new zone names. If the zone name you enter is not valid, the zone will be automatically set to the default zone.

> If there is no zone configured on the local network segment, this field will remain blank.

Communicating in a Novell NetWare Environment

The Print Server software can interact with the Novell NetWare environment in two ways:

- Remote Printing

- Direct Printing.

Details on connecting to networks and configuring network clients for printing to the Network Imaging System can be found in the *Site Preparation and Configuration Guide* (W-820).

Remote Printing

When a job is submitted for printing from a Novell client system to the Network Imaging System via the Rprinter protocol:

- The print job is transferred from the client system to a queue on the NetWare Print Server.

- The Network Imaging System Print Server pulls the job from queue on the NetWare Print Server and transfers it to a local system file system.

- The print job is queued again on the system Print Server until it is released for printing on the appropriate physical printer.

The Network Communications Services (NCS) subsystem of the Print Server interfaces with the Novell environment by emulating the remote printing capabilities currently defined within NetWare. The system Print Server is defined to the NetWare Print Server as a "printer" attached locally to a system running the TSR program *rprinter.exe*.

To emulate the remote Print Server function, the Network Imaging System Print Server:

- executes the Novell transport protocol stack IPX/SPX.

- supports the Novell Rprinter protocol.

Connecting to a Remote Printer on a Novell Print Server

The Network Imaging System Print Server connects to a specified "printer" on a specified Novell Print Server. The system reads the configuration file `/usr/srv/lib/databases/databases.prt/ rprinter.conf` which contains the Novell Print Server names and printer numbers (sometimes referred to as "queue numbers"). The system will attempt to attach to each Novell print server/printer pair specified in the file.

When a root user selects Apply on the Communication – Novell configuration of the Device Configuration window, the software reads the *rprinter.conf* file. The system then attempts to connect to the first seven Novell Print Servers named in that file. Additional entries are ignored.

The system administrator can add Print Servers to the configuration file after the system has started. To force the system software to reread this file and update the configuration, the administrator must again select Apply on the Communication – Novell configuration of the Device Configuration window.
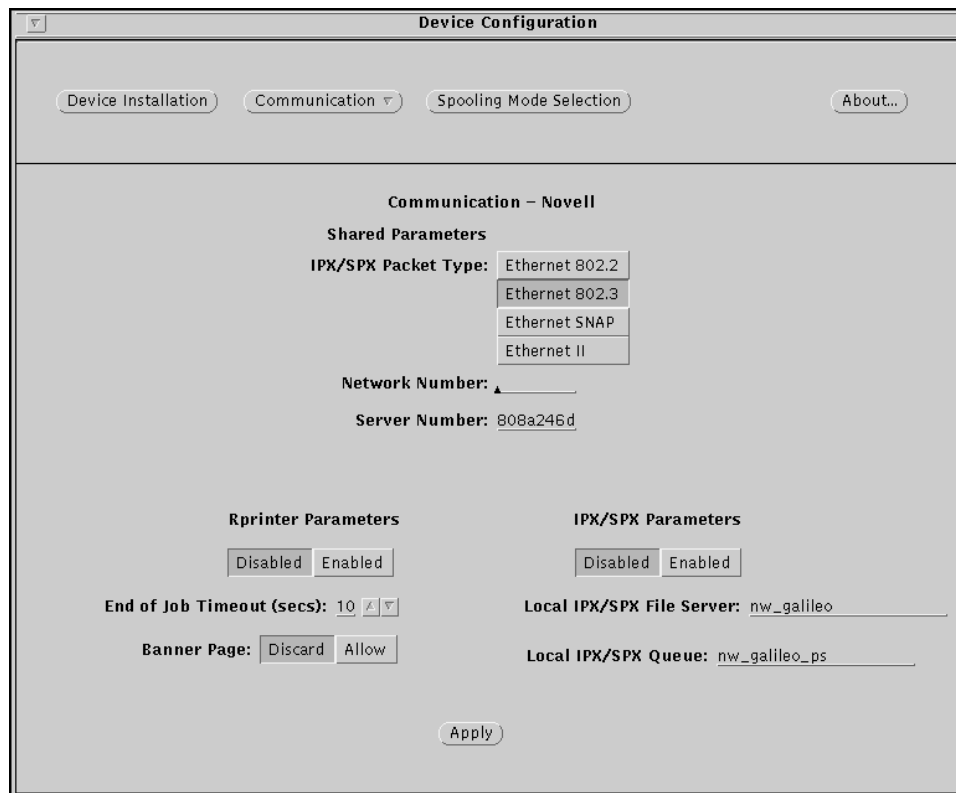
Figure 2-5 Device Configuration window

Field Descriptions

Following are field descriptions for the Communication - Novell configuration of the Device Configuration window. While the two methods of NetWare printing are independent (you may use either remote or direct printing, none, or both), they share a common IPX protocol stack. For this reason, there are three distinct areas on the Communication – Novell configuration:

Shared Parameters—common to both communication methods.

IPX/SPX Parameters—used for printing directly to a Network Imaging System.

Rprinter Parameters—used for printing through an external Novell Print Server.

> Changes to the Novell communications interface may take up to 90 seconds to take effect. However, it is not necessary to reboot.

Shared Parameters

IPX/SPX Packet Type—allows you to specify the way that data packets are constructed. The available choices are Ethernet 802.2, Ethernet 802.3, EthernetSNAP, and Ethernet II.

The system default for this field is Ethernet 802.3. The Network Imaging System network communications subsystem probes the network to determine the appropriate packet type if you leave the Network Number field blank and select Apply.

Network Number—displays the subnet number used by each system on the LAN. Every system on that segment has the same cable number or network number. This is the ID of the network to which the system's Ethernet card is connected.

This is an 8-digit hexadecimal number. Valid entries are upper and lowercase letters (A–F, a–f) and numbers (0–9).

This number must be consistent with other NetWare systems on the LAN.

On a server for which Novell communications has never been enabled, this field will be blank. If you know the correct network number, you may enter it. If you do not know or are unsure of the network number, you may force a network probe by leaving this field blank when selecting Apply.

Upon performing a network probe, one of three outcomes will occur:

- If the IPX/SPX protocol is not presently running anywhere on the network segment, then the Network Number is 1 by default and the IPX/SPX Packet Type is set to Ethernet 802.3.

- If IPX/SPX is active on the network segment with one network number and packet type, then the network number and packet type found are used.

- If IPX/SPX is active on the network segment with multiple network numbers and packet types, then the **last** network number and packet type found are used.

> The Network Imaging System Print Server can be forced to probe by clearing the Network Number field and selecting Apply.
>
> To examine all packet types and network numbers found, view the `/tmp/ipxprobe.out` file.

Server Number—identifies the unique identifier that each workstation in the NetWare network must have. It is sometimes referred to as the "Internal Network Number" (as opposed to the "Network Number" which is common to all systems on the LAN).

This is a hexadecimal number of up to 8 digits. Valid entries are upper and lowercase letters (A–F, a–f) and numbers (0–9).

The default is the system host ID. To force this field to return to its default, clear it and then select Apply.

IPX/SPX Parameters (Direct Printing)

The IPX/SPX Parameters fields allow you to modify Novell communications parameters that only apply to direct IPX/SPX connections.

IPX/SPX connections with Novell print clients may be enabled or disabled. If you select Enabled and then select Apply, the Network Imaging System Print Server will advertise its file service and print services to the Novell network.

The default for the IPX/SPX Parameters Enabled or Disabled field is Disabled.

Local IPX/SPX File Server—allows you to modify the file server name by which the Network Imaging System Print Server advertises itself on the network. This name may be up to 43 characters in length.

Upon initial installation, the Local IPX/SPX File Server name is defaulted to *hostname*, where *hostname* is the name of the machine on which the Network Imaging System software is running.

Local IPX/SPX Queue—allows you to modify the NetWare queue name which the Network Imaging System Print Server will advertise on the network. This name may be up to 43 characters in length.

By default, the Local IPX/SPX Queue name is created by taking the file server name and appending "_Q" to the end of it.

Rprinter Parameters (Remote Printing)

The Rprinter Parameters fields allow you to modify Novell communications parameters that only apply to the Rprinter communication protocol.

Rprinter connections with Novell Print Servers may be enabled or disabled. If you select Enabled and then select Apply, the Network Imaging System Print Server attempts to connect to the Novell Print Servers listed in the Rprinter configuration *rprinter.conf* file.

The default for the Rprinter Parameters Enabled or Disabled field is Disabled.

End of Job Timeout—allows you to enter the number of seconds the system should wait for an end-of-file indicator before discontinuing the current session.

The End of Job Timeout field accepts integer values between 5 and 60 inclusive. The default is 10 seconds.

Banner Page—Novell NetWare software provides the capability of printing a banner page with each job. This is defined as part of the job configuration. If the banner page is enabled, a series of ASCII characters is sent to the printer before the job is sent. The banner page contains information about the print job such as the user name and the file name. For the banner page to print correctly, the printer must be able to print straight ASCII text (this is not the case for PostScript language-only printers). Since not all printers are capable of printing straight ASCII text, you may wish to override the Novell setting for banner pages and have the Network Imaging System Print Server discard them. This may be done using the Banner Page field.

If the Novell Print Server attaches a banner page to the job, system searches it for the user name, file name, and server name, and includes this data on the system job header sheet.

If the Banner Page setting on the system server is set to Allow, banner pages will be treated as separate print jobs. If the Banner Page field is set to Discard, the Novell banner pages will be discarded. The default is Discard.

> The Novell banner page is treated as a separate print job. It might not print consecutively, which may result in system performance concerns.

Configuring Direct Printing (IPX/SPX Communications)

When the Print Server software is installed, Novell IPX/SPX communications are disabled. Some fields have defaults, others are blank. In most cases, the system administrator only needs to select the IPX/SPX Parameters Enabled and then select Apply. The network is probed to find appropriate values for those fields which do not have static defaults.

Whenever changes to the IPX/SPX configuration are made and then applied, the new values from the user interface are validated and saved by the Network Imaging System network communications subsystem.

To configure the Network Imaging System Print Server for direct printing:

1. Start the Print Server software.

2. Select Configuration.

   The Device Configuration window appears.

3. Right-click Communication and select Novell.

   The Communication - Novell configuration of the Device Configuration window appears.

4. Make any desired changes to the fields in the Shared Parameters and IPX/SPX Parameters sections of the Communication – Novell configuration.

5. Select Apply.

   The changes are applied.

> Changes to the Novell communications interface may take up to 90 seconds to take effect. However, it is not necessary to reboot.

Configuring the Network Imaging System Print Server as a Novell Remote Printer

When the Print Server software is installed, Rprinter communications are disabled. Some fields have defaults, others are blank. Setting up Rprinter communications is a two-step process. First, you must add the Network Imaging System Print Server as a configured printer on the Novell NetWare Print Server. Then you must provide the Print Server software with information about the Novell Print Server.

Whenever changes to the Rprinter configuration are made and then applied, the new values from the user interface are validated and saved by the system network communications subsystem. The Banner Page setting is stored in the `ncs_nvl_conf` file, located in `/usr/srv/lib/databases/databases.prt`. For more information on this configuration file, see Appendix A "Configuring Database Files".

To configure the system printer as a remote printer, you must configure the Novell Print Server, the Print Server software, and the system user interface.

To configure the Novell Print Server:

1. Create a print queue/remote printer on the Novell Print Server to which the Network Imaging System server may connect.

2. (Optional) Create print job configurations on the Novell Print Server.

To configure the Print Server software:

1. Set up the *rprinter.conf* file.

   For more information, refer to Appendix A "Configuring Database Files".

2. Using a text editor, make any necessary changes to the list of Novell print servers and printer numbers in the *rprinter.conf* file.

To configure the Network Imaging System user interface:

1. As root, start the Print Server software.

2. Select Configuration.

3. Right-click Communication and select Novell.

   The Communication – Novell configuration of the Device Configuration window appears.

4. Make any desired changes to the fields in the Shared Parameters and Rprinter sections of the Communication – Novell configuration.

5. Select Apply.

   The changes are applied.

> Changes to the Novell communications interface may take up to 90 seconds to take effect. However, it is not necessary to reboot.

Setting Up the *rprinter.conf* File

You must edit the `/usr/srv/lib/databases/databases.prt/rprinter.conf` file to make known to the Network Imaging System Print Server those Novell remote printers from which you want to print.

If the file does not exist, the Print Server software creates a version of the file when a root user selects Apply in the Communication – Novell configuration of the Device Configuration window. The initial content of the file is a series of comments indicating the format of the file and what the file is for. A pound sign (#) in the first column of a line indicates a comment. Comment lines are ignored.

Use the following format to add a line to the file for each remote printer that is created:

Novell_PServer_Name Printer_Number

where *Printer_Number* is the slot (0–15) under which the remote printer is listed on the Novell NetWare Print Server monitor or the Printer Configuration PCONSOLE menu.

After editing *rprinter.conf*, access the Communications – Novell configuration of the Device Configuration window and select Apply.

> The Network Imaging System Print Server will attempt connections to only the first seven entries in this file. Any others are ignored.
>
> If remote printers have not yet been created on the Novell Print Server, you must return to this step after they have been created.

Network Interface

The Novell NetWare protocol stack must be told which interface (that is, Ethernet Board) it should use to send and receive network packets.

By default, Print Server software automatically determines the appropriate Network Interface. This requires no user intervention.

Occasionally, you may have a system with multiple Ethernet cards in which you would like to force the use of a particular interface. The Print Server software looks for the *ncs_if* file in the `/etc` directory. This should be a plain text file with one entry: the name of the interface to be used (for example, le1). If this file exists, it is read when the system is rebooted and an attempt is made to use that interface.

If the *ncs_if* file exists, the Print Server software does not attempt auto-configuration. If this file becomes out of date (for example, the Ethernet card in use is removed and the *ncs_if* file is not updated), the communications configuration may become invalid.

Network Imaging System Spooling Mode

The Network Imaging System has the capability to operate in what is known as "Spool Off" mode. Under normal circumstances, the entire print job must spool to the local disk before it is processed by the RIP and Marking Engine. In "Spool Off" mode, job data is processed as it is received. This is useful for very large print files which take a long time to generate and for which quick turnaround is necessary.

This functionality applies only to locally installed Network Imaging System devices.

To use spool off mode, you must:

*   Have a local Network Imaging System device configured
*   Enable Spool Off mode at the system Print Server
*   Request Spool Off mode by including `%KDKSpool: off` in the job header
*   Use a communications protocol for which the system Print Server can support Spool Off mode

Enabling Spool Off Mode at the Network Imaging System Print Server

It may not always be desirable to allow jobs to be run in Spool Off mode. For this reason, the root user has the ability to disable or enable Spool Off mode at the Network Imaging System Print Server. Spool Off mode is disabled by default.

To enable Spool Off mode at the server:

1. As root, form the Print Server Software main window, select Configuration.

    The Device Configuration window appears.

2. Select Spooling Mode Selection.

    The Spooling Mode Selection window appears.

3. Select Enabled.

4. Select Apply.

    Spool Off mode is now enabled.

Requesting Spool Off Mode for a Specific Job

Enabling Spool Off mode at the server does not mean that all jobs which come in for the local Network Imaging System will automatically be printed in Spool Off mode. It only means that requests for Spool Off mode will be honored. Requests for Spool Off mode are made on a job-by-job basis by including a `%KDKSpool` comment in the job header. The syntax of the `%KDKSpool` comment is as follows:

`%KDKSpool: off`

When Spool Off mode is enabled and the job header contains `%KDKSpool: off`, the job will actually bypass the Network Imaging System Print Server and go straight to the local system RIP. If the `%KDKSpool` comment is not present in the job header, the job will be treated as a normal print job, regardless of whether Spool Off Mode is Enabled or Disabled.

If Spool Off Mode is Disabled, `%KDKSpool` will be ignored.

Communications Protocols for Spool Off Jobs

The Network Imaging System Print Server is not able to support Spool Off mode for all of the available communications protocols. The protocols for which the system is able to support Spool Off mode are as follows:

EtherTalk—The Apple/Ethernet printing protocol

LPR—Standard TCP/IP print utility

DQP—Distributed Queueing Protocol

BQP—Bidirectional Queueing Protocol

If one of the other protocols (such as NetWare) are used, the `%KDKSpool` will be ignored and the job will spool fully and queue through the system Print Server before printing.

Holding Spool Off Jobs at the RIP

It may be desirable to have spool off jobs temporarily held at the RIP before printing. This could be accomplished by including an operator message in the job header. All jobs containing operator messages are held at the RIP until the operator releases them. The syntax to use is:

`%%Operator Message: textline`

where *textline* is an alphanumeric string of up to 80 characters.

Section 3   Queue Configuration

Print Queues

The Queue Configuration window allows the root user to configure print queues.

These print queues contain Job Acceptance Rules. Only jobs with matching print options can print through print queues. Printing through print queues allows jobs with similar requirements (paper type, job size, and printer language, for example) to be printed sequentially, which decreases operator intervention.

Types of Print Queues

Different types of print queues can be created within the Print Server software. Some queues are necessary for the system to function properly and have restrictions associated with them.

Regular Queues

The root user can install and name a regular queue, establish the queue's Job Acceptance Rules, and set initial "Accepting" and "Releasing" states. Only the operator or root user can modify the queue's "Accepting" and "Releasing" states through the Queue Management window.

The default queue associated with a device must be installed before a regular queue can be installed. Several regular queues can be associated with each installed device.

All regular queues are first in the queue order list. You can determine the order of the regular queues.

Default Queues

A default queue is the first queue to be installed to a given device. If a device has no queues attached to it, the Print Server Software designates the first installed queue as a default queue.

Default queue names are established by the Print Server software, and are in the format:

default_devicename

where *devicename* is the name given to the device when it is installed through the Device Configuration option.

The following are true for default queues:

* There is only one default queue for each device.

* The Job Acceptance Rules for default queues cannot be modified.

* All default queues must be last in the queue order list. However, default queues can be ordered among the other default queues. The last default queue acts as the system default queue.

* The Queue State "Accepting" field must always be checked (turned "on") for default queues.

Archive Queues

An archive queue allows you to store jobs in a particular queue until a predetermined time (by creating a crontab entry), or until the operator or root user determines the job no longer needs to be stored and manually moves or deletes the job. For crontab entry information, refer to Appendix B "Automatic Removal of Jobs from Archive Queues".

Archive queues are automatically named in the format:

archive_devicename

where *devicename* is the name given to the device when it is installed through the Device Configuration option.

> Refer to "Backing Up Jobs (Job Archive)" on page 3-22 for instructions on setting up archive queues.

The following are true for archive queues:

- There is only one archive queue for each device. When an archive queue is established for a device, any job submitted to any queue is also submitted to that device's archive queue. For example, if a printer (*printer1*) has two queues associated with it *(queue_a* and *queue_b)*, any jobs submitted to either *queue_a* or *queue_b* are also submitted to *archive_printer1*.

- The Job Acceptance Rules for archive queues cannot be modified.

- All archive queues are placed after regular queues and before default queues in the queue order list. The order of archive queues is not important since each archive queue receives jobs when they are submitted to regular queues associated with the device.

- The Queue State "Accepting" field should always be checked (accepting jobs) for archive queues. This ensures that an archive queue is able to receive jobs.

- The Queue State "Releasing" field must always be unchecked (turned "off") for archive queues. This ensures that print jobs remain in the queue and are not sent to the device. If the operator or root user would like to send a job located in an archive queue to a device, the job must be moved or copied to a regular queue.

Process Queues

Process queues allow you to use a custom program or script to modify a job before it is printed, for example, to change the print options of the job. The program you specify will process the jobs in this queue instead of sending them directly to the printer. If you wish to use a custom program, contact your software support provider.

Queue Selection

A queue's acceptance criteria, the selected print options, and the queue sequence together determine the queue through which a job prints.

> Normally, archive queues can hold a maximum of 1000 jobs. To increase the number of jobs that archive queues can hold, refer to "archive_queue_limit" on page A-1.

Queue Acceptance Criteria

When queues are established, rules are assigned that control which jobs are to be accepted into that queue. Jobs with options that do not match the assigned rules are not accepted by those queues. The acceptance criteria for a queue can be restrictive or non-restrictive.

For example, if a queue is set up to accept jobs requesting duplexing and blue covers from a client with the host name "host1," a print job from that address requesting duplexing and red covers would not be accepted. Also, a queue set up to accept jobs requesting "plain letter"-type paper would accept jobs with varying options, as long as all jobs request "plain letter"-type paper (that is, White, 8.5 x 11 inches, 20# Bond (75 gsm)).

A non-restrictive queue does not indicate any specific attributes for the acceptance criteria.

> A queue can hold up to 10,000 jobs. When a job is sent to a queue already containing 10,000 jobs, one of the 10,000 jobs will be lost and an error message will appear in the Print Server Console window.

Selected Print Options

Print options are specified when print jobs are set up. These options define how the printers process jobs. The Job Acceptance Rules assigned to a queue accept only jobs that have matching print options.

If a queue does not accept a job, it is because the job's print options do not match the acceptance criteria for that queue. The job attempts to match the acceptance criteria for the next queue. If all defined acceptance criteria for a queue are met, a match occurs even if additional options are requested for the print job.

Queue Sequence

Queues are positioned within the queue sequence when they are added. Regular queues are positioned first, then archive queues, and default queues are last in the sequence. This sequence specifies the order that jobs will attempt to print through queues. When the server receives a print job, the job attempts to match the first queue in the sequence. If that queue's Job Acceptance Rules do not match the job's print options, the job attempts to match the next queue in the sequence. Until the job's print options match a queue's Job Acceptance Rules, the job will continue to move through the available queues.

Place the most restrictive queues at the top of the sequence. It may be helpful to reposition the queues (using the Move option described in "Moving Print Queues" in this chapter) and place more restrictive queues above less restrictive queues. The root user can change the position of queues in the sequence.

Default queues are always last in the queue sequence and accept any job that can be printed by the associated queue's printer type. Jobs that do not match any other queue will print through one of the default queues.

Autoqueueing for Multiple Printer Types

Each print queue has a set of job acceptance criteria associated with it that determine if a queue accepts an incoming job as specified by its print options. A job must meet the job acceptance criteria of a queue to be accepted by that queue.

For each printer, the first queue created is a default print queue. Its acceptance criteria are defined so that any job that can be printed by that printer is accepted. For example, a print job requesting duplex covers is not accepted by a default print queue for a printer that cannot print duplex covers. The last default print queue specified in the queue selection order serves as the system default print queue.

If a job specifies a particular printer name, the non-default queues associated with the specified printer are tried. If no match is found, then the default queue for the specified printer is tried.

If a job specifies a printer type, all non-default queues associated with the specified printer type are tried. If no match is found, default queues of the specified printer type are tried. If a match is still not found, then the last default queue in the queue list is tried, whether or not it is of the specified printer type.

If a job does not specify a printer name or printer type, all regular queues utilizing autoqueueing are tried. If no match is found, all default queues are tried.

If a job cannot be printed by the printer represented by the appropriate default print queue, the error configuration file (*autoq_error_file*) controls the handling of the error.

> For more information about the error configuration file, refer to Appendix A "Configuring Database Files".

Autoqueueing checks only the first two or three paper types depending on your printer type, even though more paper types may be requested by a print job. If more paper types are requested, operator intervention at the printer may be necessary. To avoid this, set up a queue that only accepts jobs which do not require more paper types than can be loaded in the printer at any one time.

> To capture all jobs that require more paper types than can be loaded in the printer at one time, use the Number of Paper Types field on the Job Acceptance Rules window (see page 3-13).
>
> Header pages from a Novell system may print through a queue other than the one through which its associated job printed. This occurs because the header sheet is queued as a separate job.
>
> When you create a paper definition in the Job Acceptance Rules window and specify a gram weight that has a pound weight equivalent with a PCS value, the created paper definition is stored with the pound weight PCS value. This allows for correct queue matching, but the displayed paper entry may show the pound weight.

For queues attached to devices that have a Device Type of Server, autoqueueing does not check the job's finishing requirements. Queues for Server Devices will accept any finishing request.

Print Queue Configuration

Print queue configuration is the process of adding, modifying, and deleting print queues for printers, as well as setting the print queue accepting and releasing states. For example, a printer can be configured with a variety of queues (for example, a 3-hole-only queue or a duplex-only queue). The types of queues on your system depend on the system and your printing needs.

When printing from a client system, select a Sun Print Server through which to print and the print options to be sent with your job. The job is sent to the specified Print Server and is placed in the queue that best matches the job's print options.

> Novell NetWare banner pages may be sent to a queue other than the queue that accepted the print job.

The Queue Management window lists all print queues installed on the system through the Print Server software. The Queue Configuration window, accessed through the Queue Management window, allows you to add, copy, modify, order, and delete print queues, and view print queue settings.

> Print queues from other software packages do not appear and cannot be used with the Print Server software.

Accessing the Queue Configuration Window

To access the Queue Configuration window:

1. From the Print Server Software main window, select Queue Management.

   The Queue Management window appears.

2. Select Configuration.

   The Queue Configuration window appears.
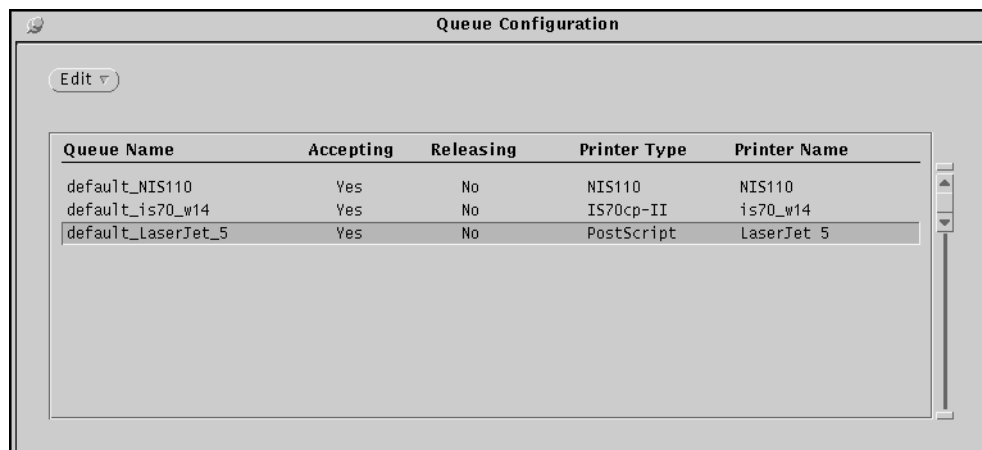
Figure 3-1 Queue Configuration window

Field and Button Descriptions

Edit—accesses a drop-down menu and allows you to edit the queues listed in the Queue scrolling list. The following choices are available on this menu:

Add—accesses the Add Print Queue window which allows you to add a print queue to the Queue scrolling list.

Copy—accesses the Copy Print Queue window which allows you to copy an existing print queue and add it to the Queue scrolling list.

Modify—accesses the Modify Print Queue window which allows you to modify the attributes of an existing print queue.

View—accesses the View Print Queue window which allows you to view the attributes of the selected print queue.

Delete—allows you to delete print queues from the Queue scrolling list.

Move—allows you to reorder the queues within the Queue scrolling list.

Queue—displays the following information:

Queue Name—displays the list of queues available for jobs.

Accepting—indicates whether or not a queue is accepting jobs.

Releasing—indicates whether or not a queue is releasing jobs.

Printer Type—displays the type of printer with which the queue is associated.

Printer Name—displays the name of the printer or server with which the queue is associated.

The Queue scrolling list is a static display of the queues at the time the Queue Configuration window was opened. Therefore, if the "Accepting" or "Releasing" state is changed in the Queue Management window, it is not reflected in this list.

Queue Configuration Options

Adding Print Queues

The Add Print Queue window allows you to add print queues to your system. A single printer can have a number of queues printing to it with each queue using a different name and accepting varying printing parameters.

> The first queue created for each printer is automatically a default queue.
>
> You will not be able to change the Queue State. Default queues always have a Queue State of Accepting.

To access the Add Print Queue window:

1. From the Queue Configuration window, right-click Edit and select Add.

   The Add Print Queue window appears.

Figure 3-2 Add Print Queue window

Field Descriptions

The fields in this window differ, depending on the printer type and options selected.

Queue Name—specifies the name of the print queue being added. Valid entries in this field are upper-and lowercase letters (A–Z, a–z), digits (0–9), periods (.), hyphens (-), and underscores (_). Spaces, tabs, and returns are not acceptable.

The first queue created for each printer is automatically a default queue with the name *default_<printername>*. "Releasing" in the Queue State field is the only feature that can be modified for a default queue.

If you enter a name already in use, a message stating that the print queue name already exists in the *printcap* file will appear.

If you enter an invalid character in the Queue Name field, an error message will appear.

If Archive Queue: Create is selected, the Queue Name will automatically be set to *archive_<printername>*.

Printer Type—specifies the type of printer with which the queue to be added is associated. Only the printer types installed on your system are available from the drop-down list. The following list shows all possible printer types:

Printer—specifies a printer for the print queue. A drop-down list displays the available printers for the selected printer type.

The printers that are shown in the list were set up through the Device Installation window, which is accessed through the Device Configuration window.

Queue State—indicates the queue's initial "Accepting" and "Releasing" states. This allows you to manipulate the intake and output of jobs in the queue. The Releasing check box indicates whether or not the queue is set to release jobs. A check in the box indicates the queue is releasing jobs. Clicking on the check box changes the state of the queue.

> **Accepting**—determines if the queue receives jobs. If Accepting is selected, the queue accepts jobs sent to it. When this box is not checked, the queue does not accept jobs.

> **Releasing**—determines if the queue sends jobs to the printer. When Releasing is selected, the queue send jobs to the printer as soon as the printer is able to receive them. When this box is not checked, the queue holds all jobs until "Releasing" is checked.

> The Accepting check box is selected for default queues. You cannot change this setting. If Releasing is changed while jobs in the queue are being modified, those jobs will be deleted.
>
> Only the operator or root user can modify the queue's Accepting and Releasing states.

> When the queue state is changed to Releasing, all jobs are sent to the printer as soon as the printer is able to receive them. The final print order is the order in which the complete print jobs are received at the printer. Therefore, smaller files might arrive first, and the printer order will not necessarily match the order in which the jobs appeared in the queue.

> The Releasing field may be disabled in some cases (archive queues and when the system is in Exclusive Use mode). Refer to page 5-2.

Archive Queue—allows you to automatically create an archive queue.

Process Queue—allows you to choose a program (script or executable) for the queue.

> This program will replace *filter.prt*. It will be run on every job as it is release from the queue.

Job Acceptance Rules—accesses the Job Acceptance Rules window. This window allows you to select the printing parameters for the queue. See "Job Acceptance Rules" on page 3-13 for more information.

> The Job Acceptance Rules cannot be changed for default queues or archive queues.

Path to Executable- Normally, this is set to the standard printing programs, *filter.prt*. If Process Queue is selected, you may enter into this field the path to the custom processing program to apply to jobs in this queue. For more information, see "Process Queues" on page 3-2

Queueing—allows you to select Remote or Secondary.

> **Remote**—allows you to select where print jobs will queue. When Remote is selected, jobs queue at the RIP, as well as on the host. When Remote is not selected, jobs queue only on the host.

> This feature is not available on the Network Imaging System. See Appendix E "Printer Specific Notes" for more information.

> **Secondary**—allows you to indicate how print-ready jobs will queue. When Secondary is selected, print-ready files are spooled to an alternate queue on the host to allow another job to process. When Secondary is not selected, print-ready jobs queue on the host until the printer RIP accepts them.

> This feature is not available on the Network Imaging System. See Appendix E "Printer Specific Notes" for more information.

Server Collation—when checked, the Print Server will prevent chunk collation by the attached printer by turning a multiple set job into multiple one set jobs. This field is "off" (not checked) by default.

Select the Server Collation check box for complex PostScript language jobs where the printer RIP may not be able to compile the entire job before printing.

> When the Server Collation box is checked, the Secondary Queueing field is automatically checked.

> This feature is not available on the Network Imaging System. See Appendix E "Printer Specific Notes" for more information.

To add a print queue to your system:

1. Access the Queue Configuration window.

2. Right-click Edit Queue and select Add.

   The Add Print Queue window appears.

> You can also access the Edit Queue menu by holding down the right mouse button within the Queue scrolling list.

> The Add option is available only when no queues are selected in the Queue scrolling list.

3. Make any necessary changes in the Add Print Queue window.

4. Select Apply.

   You return to the Queue Configuration window and the newly added print queue appears in the Queue scrolling list.

> If an error occurs while adding a queue, a message appears. The system will attempt to remove changes that it already has made for adding a queue.

> Job Acceptance Rules are described later in this chapter.

Copying a Print Queue

The Copy Print Queue window allows you to add a new print queue by copying the attributes from an existing queue, then renaming the queue. You can change the fields in the copied queue as needed. Using Copy saves time when you want to add a queue that is similar to an existing queue.

The Copy Print Queue window fields are the same as those in the Add Print Queue window. See "Adding Print Queues" on page 3-6 for field descriptions.

To add a new queue through the Copy Print Queue window:

1. Access the Queue Configuration window.

2. Select the name of the queue to copy.

3. Right-click Edit Queue and select Copy.

   The Copy Print Queue window appears.

4. In the Queue Name field, type the new name of the print queue.

5. Make any necessary changes in the Copy Print Queue window.

6. Select Apply.

   The Queue Configuration window returns and the newly added print queue appears.

> If an error occurs while adding a queue, a message appears. The system attempts to remove changes that it already has made for adding a queue.
>
> Job Acceptance Rules are described on page 3-13.

Modifying a Print Queue

The Modify Print Queue window allows you to change the attributes of a print queue. When modifications are applied, the previous settings are deleted and the new ones added.

The Modify Print Queue window fields are the same as those in the Add Print Queue window. See"Adding Print Queues" on page 3-6 for field descriptions.

> The Queue Name, Printer Type, and Printer fields cannot be modified.

To change a queue or reset a queue's settings:

1. Access the Queue Configuration window.

2. Select the name of the queue you want to modify.

3. Right-click Edit Queue and select Modify.

   The Modify Print Queue window appears.

4. Make any necessary changes in the Modify Print Queue window.

> Job Acceptance Rules are described on page 3-13.

5. Select Apply.

If the print queue is not empty, a prompt appears telling you that there are jobs in the print queue and asking you for confirmation. If this prompt appears, continue to step 6.

If the print queue is empty, a different prompt appears. If this prompt appears, skip to step 8.

6. Select Confirm to continue with the modify operation.

   The Queue Configuration window returns and the selected print queue is modified. All jobs in the queue are deleted.

7. Select Cancel to cancel the operation.

8. Select Confirm.

   The Queue Configuration window returns and the selected print queue is modified.

Viewing a Print Queue

The View Print Queue window allows you to view existing print queue attributes. This is helpful when you are setting up alternate systems that support the same queues. Fields cannot be changed when viewing a queue.

> To change queue fields, access the Modify Print Queue window.

The View Print Queue window fields are the same as those in the Add Print Queue window. Refer to "Adding Print Queues" on page 3-6.

To view a print queue:

1. Access the Queue Configuration window.

2. Select the name of the queue you want to view.

3. Right-click Edit Queue and select View.

   The View Print Queue window appears.

> To close the View Print Queue window, click the pin at the top of the View Print Queue window.

Deleting a Print Queue

The Delete option on the Edit Queue menu in the Queue Configuration window allows you to delete a print queue.

To delete a print queue:

1. Access the Queue Configuration window.

2. Select the name of the queue you want to delete.

3. Right-click Edit Queue and select Delete.

4. If print jobs are in the selected print queue(s), continue to step 5. If no print jobs are in the selected print queue(s), skip to step 8.

5. If print jobs are in the selected print queue(s), a prompt appears telling you that there are jobs in the print queue and asking you for confirmation.

6. Select Confirm to continue with the delete operation or select Cancel if you do not want to delete the queue.

7. If no print jobs are in the selected print queue(s), a prompt appears asking you for confirmation.

8. Select Confirm.

   The print queue is deleted.

Moving a Print Queue

The Move option on the Edit menu in the Queue Configuration window allows you to rearrange the existing print queue sequence if a queue would be more effective in another location. For example, if a highly restrictive queue is located near the bottom of the queue sequence, it can be moved up so jobs can attempt to print through it before trying less restrictive queues.

Print queues are arranged in a specific order in the Queue scrolling list. Regular queues are listed first, archive queues are listed next, and default queues are listed last. Queues can be moved within their own group, but not between groups (that is, regular queues can be moved within the group of regular queues, archive queues within the group of archive queues, and default queues within the group of default queues).

To change the queue sequence:

1. Access the Queue Configuration window.

2. Select the name of the queue you want to move.

3. Right-click Edit Queue and select Move, then one of the following:

   Up—the selected queue moves up one position.

   Down—the selected queue moves down one position.

   Top—the selected queue moves to the top of the list.

   Bottom—the selected queue moves to the bottom of the list.

Job Acceptance Rules

Job acceptance rules are guidelines that are used by queues to determine which print jobs to accept. Job acceptance rules are set through the Job Acceptance Rules window. The rules vary depending on the printer type and queue.

You cannot change Job Acceptance Rules for default or archive queues.

To access the Job Acceptance Rules window:

1. From the Add, Modify, Copy, and View Print Queue window, select Job Acceptance Rules.

   The Job Acceptance Rules window appears.

Figure 3-3 Job Acceptance Rules window

If you click Job Acceptance Rules for a default or an archive queue, the message "Job Acceptance Rules cannot be changed for a Default Queue" will appear.

Field Descriptions

Following is a list of all possible fields in the Job Acceptance Rules window.

View—accesses a menu which allows you to open the subwindows for the Job Acceptance Rules window.

Queue Name—displays the name of the currently selected queue (for example, "3holeduplex"). This is a display-only field and cannot be modified.

Printer Type—displays the type of printer to which the queue prints. This is a display-only field and cannot be modified.

Total Job Size (Bytes)—allows you to enter a range for the number of bytes that is accepted for printing through a queue. The total job size is the number of copies times the job size in bytes.

When the Total Job Size check box is not checked, any size job is accepted. When the box is checked, jobs with a total number of bytes (that is, bytes multiplied by the number of copies that fall within the range in this field) are accepted. The default is 1 to 999,999,999.

Client Name—only jobs from certain hosts will be accepted into this queue. You may enter up to 31 characters may be entered in the field. Valid entries are all printable characters. A client name cannot consist entirely of spaces.

If the Client Name check box is not checked, the queue has no client name restrictions and jobs from any client system are accepted. If the box is checked, only jobs sent from one of the client names specified in the Client Name window are accepted by the queue.

Check the "Specific" box to access the Client Name window. This window displays the names of the client systems that the print queue accepts. If no client names are specified in the Client Name window, the queue accepts jobs from any client system. If the Client Name window displays specific client names, the queue only accepts jobs from those clients.

> The client name is not the name of the client in the print server's /etc/hosts file. Client names are specified at the client system on print tickets for client print jobs.

Charge Number—indicates if jobs specifying any charge numbers can be printed through the queue or if only certain charge numbers are accepted. Up to 31 characters may be entered in the text field. Valid entries are all printable characters. A charge number cannot consist entirely of spaces. Tabs and returns are not acceptable.

If the Charge Number check box is not checked, the queue has no charge number restrictions and jobs requesting any charge number (or no charge number) are accepted. If the box is checked, only jobs requesting one of the charge numbers specified in the Charge Number window are accepted into the queue.

Check the Specific box to access the Charge Number window. This window displays the charge numbers that the print queue accepts. You can enter new charge numbers or delete charge numbers from this window. If no charge numbers are specified in the Charge Number window, the queue accepts any charge number.

Number of Paper Types—specifies how many paper types are allowed. When the Number of Paper Types check box is not checked, any number of paper types are allowed. When the box is checked, a minimum and maximum number of paper types can be specified for the queue.

Body Paper(s)—specifies the paper on which the main portion of a document is printed. Body paper is normally fed from the printer's main paper supply. Paper used for covers and separators is called "Other Paper" and is described later in this chapter.

The Body Paper field allows you to indicate if any type of body paper request or only specific body paper types can be sent through the queue.

If the Body Paper check box is not selected, the queue has no body paper restrictions (wildcard) and jobs requesting any type of body paper are accepted. If the box is checked, only jobs requesting a body paper type specified in the Body Papers window are accepted into the queue. If the incoming job does not have cover/insert/separator/.. as the "Other Paper", the selection will be treated as a wildcard as well. Queueing works like a chain of command; in order for a job to move into the designated queue, all three paper types must match.

Table 3-1 Job Specifications

Job Name	Body Paper	Other Paper #1	Other Paper #2
A	Letter	None (*)	None (*)
B	Color	Letter	None (*)
C	Letter	Transparency	Color

Table 3-2 Job Acceptance Rules

Queue Name	Body Paper	Other Paper #1	Other Paper #2	Will Accept Job/Will Reject Job
Q1	Letter	* (not selected)	* (not selected)	Accept Job: **A** - Body Paper matches Other Paper #1 matches via wildcard Other Paper #2 matches via wildcard **C** - Body Paper matches Other Paper #1 matches via wildcard Other Paper #2 matches via wildcard Reject Job: **B** - Body Paper does not match Other Paper #1 and #2 are no longer relevant; the job is rejected.
Q2	* (not selected)	Transparency	Color	Accept Job: **A** - Body Paper matches via wildcard Other Paper #1 matches via wildcard Other Paper #2 matches via wildcard **C** - Body Paper matches via wildcard Other Paper #1 matches Other Paper #2 matches Reject Job: **B** - Body Paper matches via wildcard Other Paper #1 does not match; the job is rejected.

Comment—only jobs with this exact entry in the comment field of their print tickets are accepted into the queue. If no entry is made in this field, this queue has no comment restrictions and jobs requesting any or no comments are accepted. Up to 80 characters may be entered in the text field.

Printer Language—indicates if jobs specifying any printer language are accepted by the queue, or if a restriction is placed on the printer languages accepted. The choices in this field depend on the type of printer. When a printer language box is selected, the queue accepts jobs in that language.

The available languages are PostScript 1, PostScript 2, PostScript 3, PCL 5, PCL 6, CCITT, Lineprinter, PDF, and KGL.

> Not all printer languages are available for all printers.

Job Mode—indicates the type of sides settings that can be sent through the queue.

Simplex—only jobs requesting one-sided (simplex) printing are accepted into the queue.

Duplex—only jobs requesting two-sided (duplex) printing are accepted into the queue.

> Pamphlet jobs will not be accepted into a duplex queue unless the duplex option is specified in the job.

Check the Specific box to access the Other Paper window. This window displays the types of other paper that the print queue accepts. When no other paper types are specified in the Other Paper window, the queue accepts any type requested. If the Other Paper window displays specific types of other paper, the queue accepts only those types of paper.

Destination—allows you to auto-queue on a specific finishing device. If this box is checked, the queue will accept jobs requesting the indicated Destination only. If it is not checked, the queue will accept jobs with any destination tht the associated printer has within its configuration.

Inserter—sets the queue to accept Inserter jobs only. If the box is checked, the queue can be set to Accept (the queue will only accept jobs requesting an Inserter) or Reject (the queue will not accept jobs requesting an Inserter). If the box is not checked, the queue will accept jobs whether or not they request an Inserter.

Other Paper—lists the papers to match against the alternate papers in the job. Other paper may be used for covers, separators, or slip sheets. The Other Paper field also allows you to indicate if jobs with any type of other paper setting can be sent through the queue, or if a restriction is placed on the other types of paper accepted.

When the Other Paper field check box is not checked, the queue has no other paper restrictions and jobs requesting any type of other paper are accepted. When the box is checked, only jobs requesting one of the other paper types specified in the Other Paper window are accepted into the queue.

Queueing works like a chain of command; in order for a job to move into the designated queue, all three paper types must match. If a you want to queue on Other Paper, you should also specify the Body Paper criteria as well. If you do not specify a body paper, it will be set to a wildcard value. This queue accepts all jobs with known Body Paper. For jobs that do not have Other Paper #1 and Other Paper #2, the default (wildcard) value for these criteria will match anything, and fall into this queue as well. When you organize a series of queues to queue on different paper types, make sure you enter all the restrictions that may apply. It is advisable to have complex paper queues on the top of the list. This will prevent queues with more general rules capturing the majority of the job first.

Table 3-3 Job Specifications

Job Name	Body Paper	Other Paper #1	Other Paper #2
A	Letter	None (*)	None (*)
B	Color	Transparency	Color
C	Letter	Transparency	Color
D	A4	Legal	Tabloid

Table 3-4 Job Acceptance Rules

Queue Name	Body Paper	Other Paper #1	Other Paper #2	Will Accept Job/Will Reject Job

Q1	Letter	Transparency	Color	Accept Job:
				A - Body Paper matches
				    Other Paper #1 matches via wildcard
				    Other Paper #2 matches via wildcard
				C - Body Paper matches
				    Other Paper #1 matches
				    Other Paper #2 matches
				
				Reject Job:
				B - Body Paper does not match
				    Other Paper #1 and #2 are no longer
				    relevant; the job is rejected.
				D - Body Paper does not match
				    Other Paper #1 and #2 are no longer
				    relevant; the job is rejected.

Q2	* (not selected)	* (not selected)	Color	Accept Job:
				A - Body Paper matches via wildcard
				    Other Paper #1 matches via wildcard
				    Other Paper #2 matches via wildcard
				B - Body Paper matches via wildcard
				    Other Paper #1 matches via wildcard
				    Other Paper #2 matches
				C - Body Paper matches via wildcard
				    Other Paper #1 matches via wildcard
				    Other Paper #2 matches
				
				Reject Job:
				D - Body Paper matches via wildcard
				    Other Paper #1 matches via wildcard
				    Other Paper #2 does not match; the job
				    is rejected.

Queue Name	Body Paper	Other Paper #1	Other Paper #2	Will Accept Job/Will Reject Job

Q3	Color (A4)	* (not selected)	Tabloid	Accept Job:
				D - Body Paper matches
				    Other Paper #1 matches via wildcard
				    Other Paper #2 matches
				
				Reject Job:
				A - Body Paper does not match
				    Other Paper #1 and #2 are no longer
				    relevant. The job is rejected.
				C - Body Paper does not match
				    Other Paper #1 and #2 are no longer
				    relevant. The job is rejected.
				D - Body Paper matches
				    Other Paper #1 matches via wildcard
				    Other Paper #2 does not match; the job
				    is rejected.

Job Acceptance Rules – Body Paper

Following is a default Job Acceptance Rules - Body Paper window. This is the window that opens for a queue with no specified body paper. The Job Acceptance Rules - Other Paper windows for the Other Paper fields are similar.
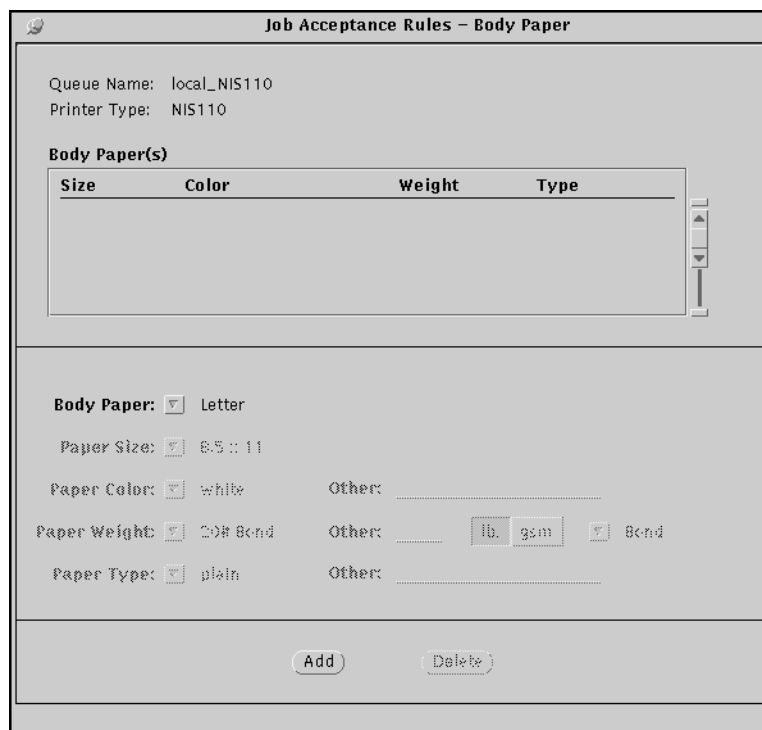
Figure 3-4 Job Acceptance Rules - Body Paper

Field Descriptions

Body Paper(s)—displays the size, color, weight, and type of paper in the Body Paper list.

Body Paper—accesses a drop-down list which allows you to choose from the available papers. Select More in this field to enable the Paper Size, Paper Color, Paper Weight, and Paper Type fields.

Paper Size—accesses a drop-down list which allows you to specify the paper size. This field is accessible only when More is selected in the Body Paper field. The default is 8.5 x 11.

Paper Color—accesses a drop-down list which allows you to specify the paper color. This field is accessible only when More is selected in the Body Paper field. The default is white.

> The Paper Color field is case sensitive. "Red" and "red" are treated as two different colors. Use lowercase letters to define a paper color. Otherwise, standard paper options may be treated as special paper and may autoqueue incorrectly.

Paper Weight—accesses a drop-down list box which allows you to specify the paper weight. This field is accessible only when More is selected in the Body Paper field. The default is 20# Bond (75 gsm).

Paper Type—accesses a drop-down list box which allows you to specify the paper type. This field is accessible only when More is selected in the Body Paper field. The default is plain.

> The Paper Type field is case sensitive. Use lowercase letters to define a paper type. Otherwise, standard paper options may be treated as special paper and may autoqueue incorrectly.

Add—adds the new body paper to the Body Paper(s) list.

Delete—deletes the selected paper from the Body Paper(s) list.

To add papers to the body paper list:

1. From the Job Acceptance Rules window, select the Body Paper Specific check box.

   The Job Acceptance Rules - Body Paper window appears. The default body paper is Letter (that is, white, 8.5 x 11, 20# Bond (75 gsm)).

2. From the Body Paper drop-down list, select More to access additional paper selections.

> The "*" in the selection lists for Paper Size, Paper Color, Paper Weight, and Paper Type should be used when any size, any color, any weight, and any type is to be accepted.

> Selecting "*" in the Paper Size field and 80 gsm, 160 gsm, or 200 gsm in the Paper Weight field is not recommended.

3. Make the necessary selections in the Paper Size, Paper Color, Paper Weight, and Paper Type fields.

4. Select Add.

   The selected body paper is added to the Body Paper(s) scrolling list.

5. Repeat step 3 and step 4 for each paper added to the Body Paper(s) scrolling list.

6. Click the pin at the top of the window.

   The Body Paper window closes and the Job Acceptance Rules window returns.

To delete a body paper:

1. In the Job Acceptance Rules window, select Body Paper.

   The Job Acceptance Rules - Body Paper window appears.

2. Select the entry you want to delete.

3. Select Delete.

   A prompt appears asking you for confirmation.

4. Select Confirm.

   The selected body paper is deleted from the Body Paper(s) list.

5. Repeat step 2-step 4 for each body paper you want to delete.

6. Click the pin at the top of the window.

   The Body Paper window closes and the Job Acceptance Rules window returns.

To specify a charge number:

1. In the Job Acceptance Rules window, right-click Edit and select Charge Number, or select the Charge Number check box.

   The Charge Number window appears.

2. In the Charge Number text field, type the appropriate charge number.

3. Select Add.

   The charge number is added to the Charge Number(s) list.

4. Repeat step 2 and step 3 for each charge number you want to specify.

5. Click the pin at the top of the window.

   The Charge Number window closes and the Job Acceptance Rules window returns.

To delete a charge number:

1. In the Job Acceptance Rules window, right-click Edit and select Charge Number.

   The Charge Number window appears.

2. Select the charge number you want to delete.

3. Select Delete.

   A prompt appears asking you for confirmation.

4. Select Confirm.

   The charge number is deleted from the Charge Number(s) list.

5. Repeat step 2-step 4 for each charge number you want to delete.

6. Click the pin at the top of the window.

   The Charge Number window closes and the Job Acceptance Rules window returns.

To add a client name:

1. In the Job Acceptance Rules window, right-click Edit and select Client Name, or select the Client Name check box.

   The Client Name window appears.

2. In the Client Name text field, type the client name (for example, *pc1*).

3. Select Add.

   The client name is added to the Client Name(s) scrolling list.

4. Repeat step 2–step 3 for each client name you need to specify.

5. Click the pin at the top of the window.

   The Client Name window closes and the Job Acceptance Rules window returns.

To delete a client name:

1. In the Job Acceptance Rules window, right-click Edit and select Client Name.

   The Client Name window appears.

2. Select the client name you want to delete.

3. Select Delete.

   A prompt appears asking you for confirmation.

4. Select Confirm.

   The client name is deleted from the Client Name(s) scrolling list.

5. Repeat step 2–step 4 for each client name you want to delete.

6. Click the pin at the top of the window.

   The Client Name window closes and the Job Acceptance Rules window returns.

To specify an "other paper":

1. In the Job Acceptance Rules window, right-click Edit and select Other Paper #1 (or Other Paper #2), or select the Other Paper #1 (or Other Paper #2) check box.

   The Other Paper window appears.

   The Job Acceptance Rules - Other Paper window fields are the same as those in the Job Acceptance Rules - Body Paper window. See "Field Descriptions" on page 3-19.

   The default other paper is Letter (that is, white, 8.5 x 11, 20# Bond (75 gsm)).

2. In the Other Paper field, select More to access further paper selections.

   When you select "*" in the Paper Size field, selecting 80 gsm, 160 gsm, or 200 gsm in the Paper Weight field is not recommended.

3. Make the necessary selections in the Paper Size, Paper Color, Paper Weight, and Paper Type fields.

4. Select Add at the bottom of the Job Acceptance Rules - Other Paper window.

   The selected other paper is added to the Other Paper(s) list.

5. Repeat step 3–step 4 for each paper added to the Other Paper(s) list.

6. Click the pin at the top of the window.

   The Other Paper window closes and the Job Acceptance Rules window returns.

To delete an "other paper":

1. In the Job Acceptance Rules window, right-click Edit and select Other Paper #1.

   The Job Acceptance Rules - Other Paper window appears.

2. Select the entry you want to delete.

3. Select Delete.

   A prompt appears asking you for confirmation.

4. Select Confirm.

   The selected other paper is deleted from the Other Paper(s) list.

5. Repeat step 2–step 4 for each "other" paper you want to delete.

6. Click the pin at the top of the window.

   The Other Paper window closes and the Job Acceptance Rules window returns.

Closing the Job Acceptance Rules Window

Click the pin at the top of the Job Acceptance Rules window. The window from which you accessed the Job Acceptance Rules window (that is, the Add, Copy, View, or Modify Print Queue window) returns.

Backing Up Jobs (Job Archive)

Job backup allows you to recover jobs sent to printers through the Print Server's etiquette mechanism. When job backup is enabled for a printer, you can resend jobs to the printer without resubmitting the jobs from other applications.

Job backup is enabled whenever an archive queue is installed to a specific printer. Job backup can be enabled for more than one printer. You must create an archive queue for each printer for which you want to enable job backup.

Job backup is not available for remote devices.

When an archive queue is installed, jobs sent to any queue associated with the printer that has the archive queue attached to it are submitted to two queues: the first queue for printing (which cannot be an archive queue), and the archive queue associated with the printer.

When job backup is enabled, the actual job submitted for printing is placed into the archive queue associated with the printer. The archive queue cannot release jobs. If too many jobs reside in the archive queue, the disk that contains the spooling directory may become too full to accept additional print requests. Therefore, managing the contents of archive queues is extremely important.

Jobs remain in an archive queue until removed by the user. Jobs can be removed by doing one of the following:

- Moving the job to another queue of the same printer type

- Deleting the job from the queue

- Creating a crontab entry to remove jobs from the queue at a specified time

> For crontab entry information, refer to Appendix B "Automatic Removal of Jobs from Archive Queues".

Since jobs are saved in the archive queue, Job Management functions can be performed on the jobs. Jobs can be deleted or copied to different queues, and job options can be modified.

Select the Display Queues–Archive check box in the Queue Management Preferences window to have the archive queue appear in the Job Management Queue scrolling list. See Section 4 "Queue Management" for more information.

> Normally, archive queues can hold a maximum of 1000 jobs. To increase the number of jobs that archive queues can hold, refer to "archive_queue_limit" on page A-1.

Enabling Job Backup

To enable job backup for a printer, you should create an archive queue for the printer.

To create an archive queue:

1. Access the Queue Configuration window.

2. Right-click Edit Queue and select Add.

   The Add Print Queue window appears.

3. Select Archive Queue: Create.

> Verify that the Printer Type and Printer are correct before you apply the Add Print Queue changes.

4. Select Apply.

   A prompt appears asking you to confirm that you are creating an archive queue.

5. Select Confirm.

   The Add Print Queue window closes and the *archive_devicename* queue appears in the Queue scrolling list of the Queue Configuration window. Job backup is now enabled for the selected printer.

> Archive queues are visible only when the Archive box is checked in the Display Queue(s) field in the Queue Management Preferences window. For more information about the Queue Management Preferences window, refer to Section 4 "Queue Management".

Disabling Job Backup

To disable job backup for a printer, you should delete the archive queue for that printer.

To delete an archive queue:

1. Access the Queue Configuration window.

2. Select the archive queue you want to delete.

3. Right-click Edit Queue and select Delete.

   The *archive_devicename* queue is deleted and job backup for that printer is disabled.

Section 4   Queue Management

The Queue Management window allows the root user and the operator user to control the *Accepting* and *Releasing* states of print queues.

Accessing the Queue Management Window

1. From the Print Server Software main window, select Queue Management.

   The Queue Management window appears.
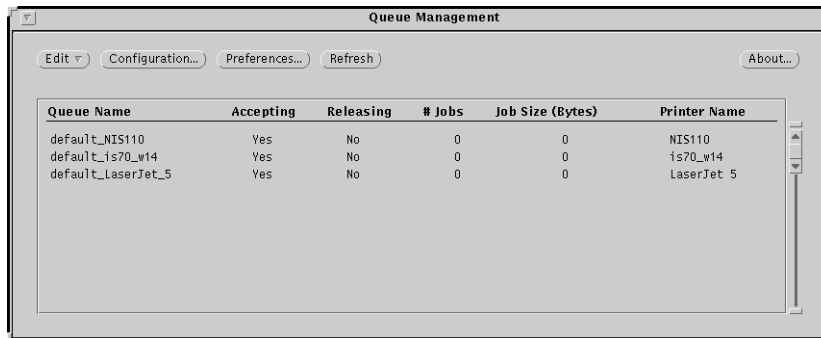
Figure 4-1 Queue Management window

> The Queue Management window can be resized vertically to allow more or fewer queues to be visible in the window. The maximum size is the size of the screen. The minimum size is such that at least two queues are visible.

Field and Button Descriptions

Edit—allows access to the following choices in the drop-down menu when a queue name is selected in the Queue scrolling list.

> **Job Management**—accesses the Job Management window for the selected queue. This window allows you to manage jobs within the queue. Job Management is discussed in Section 5 "Job Management".

> **Change Queue State**—accesses the Change Queue State window for the selected queue. This window allows you to change the queue's accepting and releasing states.

Configuration—accesses the Queue Configuration window. This window allows you to configure the print queues used by your system.

Preferences—accesses the Queue Management Preferences window described in this chapter. This window can only be accessed when no queues are selected in the Queue scrolling list. The Queue Management Preferences window allows you to specify the type of information displayed in the Queue scrolling list of the Queue Management window.

Refresh—updates the queue list information displayed in the Queue Management window before the normal update period elapses.

About—accesses a window that contains information about Print Server software.

Queue—displays a list of the queues configured for your system and contains the following information:

Queue Name—displays the list of queues available for jobs.

Accepting—indicates whether or not a queue is accepting jobs. The Accepting state of default queues and archive queues is always turned on and cannot be modified.

Releasing—indicates whether or not a queue is releasing jobs. The Releasing state of archive queues is always turned off and cannot be modified. If an asterisk (*) appears next to a Releasing Yes indication for a queue, the queue is in Exclusive Use mode. When one queue is in Exclusive Use mode, all other queues will be set to non-releasing.

 # Jobs—displays the number of jobs in each queue.

Job Size—displays the size of the job in bytes, megabytes, kilobytes, or pages. You can designate the job size units through the Preferences window.

Printer Name—displays the name of the printer with which the queue is associated.

To exit the Queue Management window:

1. Right-click in the title bar of the Queue management window and select Quit.

   The Queue Management window closes.

Viewing Queues

The Queue scrolling list in the Queue Management window displays the state of all print queues. It also allows you to determine which queues are accepting and releasing jobs, the number of jobs in each queue, the size of the jobs in the queues, and the names of the printers with which the queues are associated.

> If many jobs (more than 1000) are queued in the Print Server, screen update problems may occur. In such a case, avoid leaving the Queue Management screen open or increase the screen Update Period. For more information, see "Accessing the Queue Management Preferences Window" on page 4-4.

Change Queue State

The Change Queue State window allows you to change the queue's Accepting and Releasing states without deleting any jobs in the queue.

> The state of a queue is set when the print queue is added. The queue must be empty or the jobs in it will be lost when you change the queue state using this window.
>
> If queue attributes need to be changed, you can change them through the Modify Print Queues window, accessed from the Configuration button on the Queue Management window.

Field Descriptions

Queue Name—shows the name of the queue. This field cannot be modified.

Queue State—allows the operator user to control the job flow for all print queues. For example, if a queue directs jobs to a printer already running at capacity, you can turn off the Accepting field. Jobs could then be moved to other queues by using the Move/Copy option of the Job Management window.

> **Accepting**—allows the operator user to determine if a print queue accepts the jobs sent to it. When this check box is deselected, that queue is disabled (that is, jobs are rerouted through a queue that is lower in the queue sequence). For example, if you need to change the configuration of a particular queue, you can prevent it from accepting new jobs. After the jobs already in the queue have printed, the queue can be reconfigured.

> A default queue always accepts jobs. You cannot change the Accepting setting for a default queue.

> **Releasing**—allows you to determine if print jobs are released from a queue. When this check box is deselected, jobs remain in the print queue until the box is checked. For example, if multiple queues have been configured for one printer, the Print Server can manage the print flow by releasing jobs only from queues that match the setup of the printer at that time.

> When the queue state is changed to Releasing, all jobs are sent to the printer as soon as the printer is able to receive them. To improve overall system performance, multiple jobs may be sent concurrently through parallel processes. The final print order is the order in which the complete print jobs are received at the printer. Therefore, smaller files might arrive first, and the printer order will not necessarily match the order in which the jobs appeared in the queue.

Exclusive Use—allows you to set one queue to exclusively release jobs to the print engine. Once the "Exclusive Use" mode is selected for a queue, the system sets the selected queue to releasing and sets all other queues to non-releasing. When the Exclusive Use mode is disabled, the original queue states are restored. If queue states were changed after Exclusive Use was selected, when Exclusive Use mode is disabled, those states will be overridden and replaced by the original states.

Apply to—allows you to determine to which queue(s) the changes will be applied. The choices are Selected Queue and All Queue(s).

> Default and archive queues always accept jobs. You cannot change the Accepting state for default or archive queues. Archive queues never release jobs.

> If Exclusive Use is selected, the Apply to selection will be grayed out. Only the selected queue will be modified.

To change the queue state using the Edit menu:

1. Access the Queue Management window.

2. Select a queue name.

3. Right-click Edit and select Change Queue State.

   The Change Queue State window appears.

> You can "pin" the Change Queue State window so it remains open until you unpin it. With the window open, you can change several queues by selecting them in the Queue Management window and making the changes to the Change Queue State window, although each change must be made and applied separately for each queue.
>
> To pin the window, position the pointer over the pin in the top left corner of the window and click the left mouse button.

4. Select or deselect the Accepting, Releasing, or Exclusive Use check boxes for the appropriate queue.

5. In the Apply to field, make the appropriate selection.

6. Select Apply.

   If unpinned, the Change Queue State window closes and the change(s) are reflected in the Queue scrolling list.

To change the queue state from within the Queue scrolling list:

1. Access the Queue Management window.

2. Select a queue name.

3. Right-click the Queue scrolling list and select either Accepting, Releasing, or Exclusive Use.

   The change(s) are reflected in the Queue scrolling list.

Accessing the Queue Management Preferences Window

The Queue Management Preferences window allows you to select the type of information to appear in the Queue Management window.

Field Descriptions

Update Period—specifies the amount of time (in seconds) between window refreshes for the Queue Management window. The default is 15 seconds. If queues contain large numbers of jobs, specify a longer update period.

The Queue Management window, accessed through the Queue Management icon, is periodically refreshed and brought up-to-date with current information. When the Queue Management window is accessed and left open, any changes in the state of the queues appears when the window is refreshed.

> If many jobs (more than 1000) are queued in the Print Server, screen update problems may occur. In such a case, avoid leaving the Queue Management screen open or increase the screen Update Period.

Size Units—specifies the size of displayed jobs in bytes, kilobytes, megabytes, or pages. Job Size appears under the Job Size heading in the Queue Management window. The default is Bytes.

> The Pages setting is dependent upon the individual lines-per-page setting of applications and may not record the expected number.
>
> If Pages is selected in the Queue Management Preferences window, the display may have a question mark ("?") after the number of pages if the print options do not reflect the actual number of pages in the print job.

Display Queue(s)—if checked, archive queues will appear in the Queue Management window scrolling list.

To modify the Queue Management Preferences:

1. Access the Queue Management window.

2. Select Preferences.

   The Queue Management Preferences window appears.

3. Make any necessary changes in the Queue Management Preferences window.

4. Select Apply.

   The changes are made and the Queue Management window returns.

> When changes are made to the Queue Management Preferences window, all open queue-related windows are updated to reflect the changes.

Print Server User's Guide

Section 5   Job Management

The Job Management function of Print Server software allows you to view all files that are waiting to be printed. Job Management also provides both the operator user and the root user the ability to move jobs between queues, modify print options of jobs waiting to be either printed or processed, delete jobs from the queue, and re-order jobs within the queue. Client users can delete their own jobs from the queue. A client user cannot modify print options, move or copy jobs between queues, or re-order jobs within the queue.

> If many jobs (more than 1000) are queued in the Printer Server, screen update problems may occur. In such a case, avoid leaving the Queue Management screen open or increase the screen Update Period. For more information, see "Accessing the Job Management Preferences Window" on page 5-7.

Accessing the Job Management Window

To access the Job Management window:

1. From the Print Server Software main window, select Queue Management.

   The Queue Management window appears.

2. Select a queue.

   You may only select one queue at a time.

3. Right-click Edit and select Job Management.

   The Job Management window appears displaying information for the selected queue.

Figure 5-1 Job Management window

If Server Collation is enabled, a separate Waiting for Translation scrolling list appears.

Field and Button Descriptions

Edit—accesses a drop-down menu with the following choices:

Delete—accesses a submenu which allows you to delete either the selected job or all the jobs in the queue.

Top of Queue—allows you to move the selected job to the top of the queue.

Modify Options—accesses the Print Client software which allows you to modify the print options of the selected job.

Move/Copy Jobs—allows you to move or copy the selected job(s) to a different queue.

Preferences—accesses the Job Management Preferences window (described in this chapter). This window allows you to specify the type of information displayed in the Job scrolling list in the Job Management window.

Refresh—updates the information displayed in the Waiting for Printer list.

About—accesses a window that contains Print Server software information.

Queue—displays the name of the queue you are currently viewing.

Printer—displays the name of the printer with which the queue is associated.

Releasing—when checked, the queue is releasing jobs. Selecting the check box changes the state of the queue. Only the operator or root user can modify this option.

The Releasing field may be disabled in some cases (for archive queues and when the system is in Exclusive Use mode). Refer to page 4-2.

Waiting for Printer—displays a scrolling list of jobs that displays the rank, user, filename, language, # of sets, job size, and server job ID.

To view the full file name of a print job, right-click the print job and select Full Filename.

The Job Management window displays the state of the jobs that exist in the queue. The root and operator users can view the processing stage of any of the jobs and their positions in the print queue. These users can also perform editing functions on the jobs.

If a filename is too long to fit in the allotted space, it is truncated and a plus sign (+) is appended to the file name.

To exit the Job Management window:

1. Right-click in the title bar of the Job Management window and select Quit.

   The Job Management window closes.

Job Management Functions

If a job is selected in the Job Management window, an Edit menu is available.

Following are descriptions of the options on the Edit menu.

Delete—removes jobs from the queue. The Delete option accesses a submenu with the following choices:

Selected—removes only the selected jobs from the queue.

All—removes all of the jobs currently in the queue.

> The operator user and the root user may delete any jobs with the Delete option. Client users can delete only jobs that they own.

To delete a job from a print queue using the Edit menu:

1. Select the job to be removed.

> You can select more than one job.

2. Right-click Edit and select Delete.
3. Select a Delete option.

    A prompt appears asking you for confirmation.

4. Select Confirm.

    The selected job is removed from the print queue.

To delete a job from a print queue from within the job scrolling list:

1. Select the job to be removed.

> You can select more than one job.

2. Right-click the Job scrolling list and select Delete.

    A prompt appears asking you to confirm the deletion of the selected jobs.

3. Select Confirm.

    The selected job is removed from the print queue.

Top of Queue—allows the operator and root user to move jobs within each queue. This option does not allow jobs to be moved from one queue to another or to be moved between waiting states within the same queue.

For example, you can move a file in the Waiting for Printer list to the top of that list, but you cannot move a file from the Waiting for Printer list to the top of the Waiting for Translation list.

To move a job to the top of the queue using the Edit menu:

1. Select the job to be moved.

2. Right-click Edit and select Top of Queue.

   The file is moved to the top of the queue.

To move a job to the top of the queue from within the job scrolling list:

1. Select the job to be moved.

2. Right-click the Job scrolling list and select Top of Queue.

   The file is moved to the top of the queue.

Full Filename—allows you to view the entire filename of a job in the queue.

To view the full filename of a job in the queue from within the job scrolling list:

1. Select the job whose filename you want to view.

When more than one job is selected, Full Filename is not available.

2. Right-click the Job scrolling list and select Full Filename.

   The Full Name window appears and the entire file name is displayed.

Modify Options—allows the root user and the operator user to view or modify some of the print options of jobs in the print queue.

Move/Copy Jobs—allows the operator and root user to move jobs from one queue and place them into another queue of the same printer type.

To modify the options of one or more jobs:

1. Access the Job Management window.

2. Select the job(s) to be modified.

3. Right-click Edit and select Modify.

The Modify Options window appears.
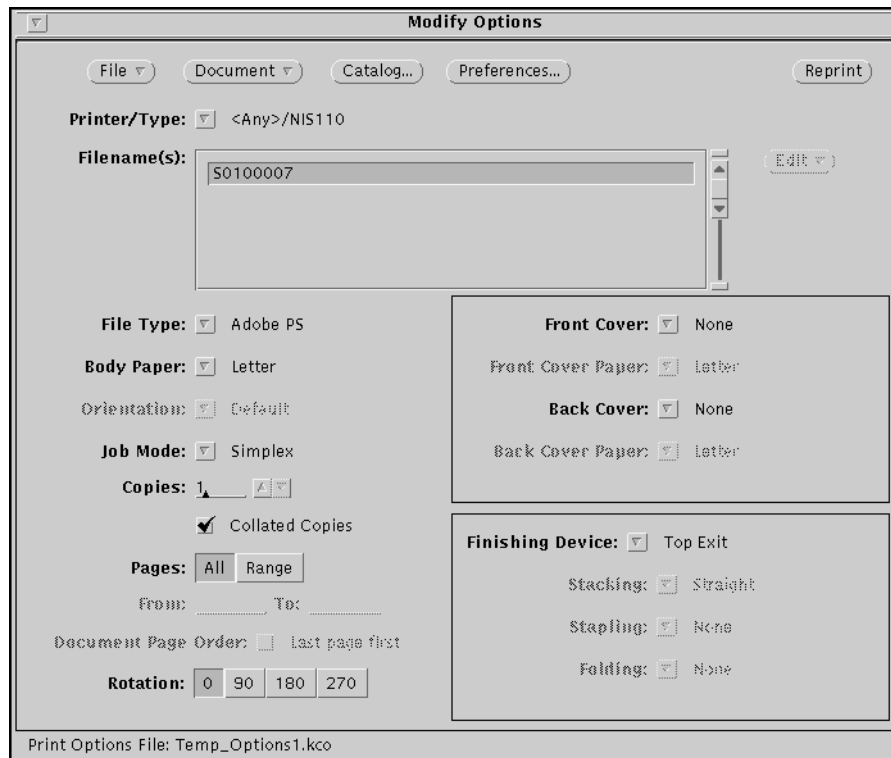
Figure 5-2 Modify Options window

The selected jobs will disappear from the Job Management window. They will be listed in the Modify Options window by their Job IDs.

4. Select the desired print options for each job in the list.

Refer to the *Print Client User's Guide* (W-816) for details on setting print options using this window.

While it is possible to modify the file type using the Modify Options window, in many cases the job will not print correctly when this is done.

5. Select Reprint.

All jobs in the list will be resubmitted to the Print Server.

To cancel the Modify Options function, select File → Exit Application from within the Modify Options window. The jobs will be placed back in the Job Management window.

Changes that you make to the print options may cause the jobs to be placed in a different print queue.

Moving/Copying Jobs Between Queues

To move or copy jobs from one print queue to another:

1. Access the Job Management window.

2. Select the job(s) to be moved or copied.

3. Right-click Edit and select Move/Copy Job(s).

   The Move/Copy Jobs Between Queues window appears.

4. Make any necessary changes in the Move/Copy Jobs Between Queues window.

5. Select Apply.

   The changes are applied to the job and the Move/Copy Jobs Between Queues window closes, if it is not pinned.

Copying a job from one queue to another will cause the copy to be assigned a new Job ID.

For archive queues only, moving a job from an archive queue to another queue will cause the job to be assigned a new Job ID.

When jobs are moved or copied to a print queue which has archive queuing enabled, an archive copy is NOT placed in the archive queue.

Jobs can be moved or copied to queues with job acceptance rules that do not match the job. Doing this may conflict with the intended use of the target queue.

Moving/Copying Jobs Between Queues Attached to Unlike Printer Types

Moving/Copying jobs between unlike printer types is also allowed. It functions similarly to moving/copying jobs between queues of the same printer type with the following exceptions:

- Minimal checking is performed by the software to verify the suitability of the print job for the printer type of the queue to which the job is being moved. It is the operator's responsibility to know both the feature requirements of a particular print job and the capabilities of each printer before determining to which printer queue to move or copy a job. Inappropriate choices may lead to unexpected results.

- When transferring a print job between queues attached to unlike printer types, we recommend keeping a copy of the original print job in the original Print Server queue until you verify that the job prints as desired on the new printer type. Do this by initially copying the original print job to the new queue and printing one copy of it. If the set prints as desired, then move the original job to the new queue.

The following restrictions apply to moving or copying a print job to a queue attached to an unlike printer:

- The job must be an Adobe PostScript language file.

- The print job must not request pamphlet mode printing.

This option is normally enabled. However, it may be disabled by support personnel, if desired. A log file records information on print jobs moved between unlike printer queues to assist support personnel. See Appendix A "Configuring Database Files" for more information on enabling and disabling this option and log file.

Field Descriptions

Source Queue—displays the name of the queue that contains the selected job.

Target Queue—lists the available queues where the selected job can be placed.

Requested job(s)—allows you to determine whether the job(s) are moved from the source queue into the target queue or copied into the target queue.

If Move is selected, the job is deleted from the source queue and placed into the target queue. If Copy is selected, a copy of the job is placed into the target queue. The job will reside in both the target queue and the source queue.

Accessing the Job Management Preferences Window

The Job Management Preferences window allows you to select the type of information to appear in the Job Management window. You cannot access the Job Management Preferences window if a job is selected in the Job Management window.

Each queue has its own defined preference settings.

Field Descriptions

Update Period—specifies the amount of time (in seconds) between window refreshes for the Job Management window. The default is 15 seconds. If queues contain large numbers of jobs, specify a longer update period.

All Job Management windows accessed through the Queue Management window are periodically refreshed and brought up-to-date with current information. When a window is accessed and left open, any changes in the state of the jobs appears when the window is refreshed.

> The update period for the Queue Management window is entered in the Queue Management Preferences window. This menu is discussed in "Accessing the Queue Management Preferences Window" on page 4-4.

> If many jobs (more than 1000) are queued in the Print Server, screen update problems may occur. In such a case, avoid leaving the Queue Management screen open or increase the screen Update Period.

Size Units—specifies the size of displayed jobs in Bytes, Kilobytes, Megabytes, or Pages. The job size appears under the Job Size heading in the Job Management window. The default is Bytes.

> If the Job Size field is specified in pages, the accuracy of the job size displayed cannot be guaranteed.
>
> The Pages setting is dependent upon the individual lines-per-page setting of applications and may not record the expected number.
>
> If Pages is selected in the Queue Management Preferences window, the display may have a question mark ("?") after the number of pages if the print options do not reflect the actual number of pages in the print job.

Show Comment—if checked, comments entered in the Comment field on the Printer Options window appear in the Job Management window. This box is deselected by default.

Display as Icon—if checked, the Job Management window should close to an icon if there are no jobs present in the queue, and an iconified window will open if a job is received into the queue. If the box is unchecked, the window remains open even if no jobs are present in the queue. The box is deselected by default.

> If this field is enabled, the Job Management window does not close immediately if no jobs are present in the queue. There must be three consecutive update periods with no jobs in the queue before the window closes to an icon. This prevents the window from closing and opening constantly if time lapses occur between jobs submitted into the queue.

To modify the Job Management preferences:

1. From the Job Management window, select Preferences.

   The Job Management Preferences window appears.

2. Make any necessary changes in the Job Management Preferences window.

3. Select Apply.

   The changes are made and the Job Management Preferences window closes, if the window is not pinned.

   If the window is pinned, the changes are made and the Job Management Preferences window remains open. Click the pin at the top of the window to close it.

> Once changes are applied to the Job Management Preferences window, the respective Job Management window is updated.

Section 6   Backup and Restore Utility

UNIX File System Backup

Full and incremental system backups are an important part of the preservation of the system database. If a major system problem occurs and data is lost, the tapes are used to return the system to the state it was in before the problem occurred. Loading the files from tape saves recreating "lost" files.

> This documentation assumes familiarity with the backup and restore functions associated with UNIX system administration. What backups of your system are done and the frequency with which they are done depends on how your system is being used. This documentation does not dictate what backups need to be done when. However, the sections that follow provide general guidelines for full and incremental backups, tape rotation, and tape labeling.

About Backups

Before a backup is done, the system administrator should perform a file system check to ensure that no corrupted files are on the system and should alert users that a system backup is about to begin.

The system administrator should perform a full backup ("0" dump) on a regular basis. A full backup should be done once a week to protect all files, and also before and after system software updates.

The number of tapes needed for a backup depends on the size of the file systems being backed up.

Label each backup tape and tape case with the name of the file system it contains and the tape number (that is, No. 1 of 2), as well as the date and time the backup was performed.

Full System Backups

Full system backups should be done weekly.

Three complete sets of rotating backup tapes should be kept: one set for the first week's full backup, one for the second week's backup, and another for the third week's backup. This way you have a complete set of backup tapes not older than one or two backup sessions, and you are protected in case something were to happen to the latest tapes.

Incremental Backups

An incremental backup should be done every day to ensure that daily changes are stored. The easiest time to perform a daily incremental backup is when no users are on the system (usually at night) and no unprotected tapes are in the tape drive.

One incremental backup tape is needed for every day the system is used, and three weeks of incremental backup tapes should be kept. For example, if a system is used five days a week, a three-week backup cycle requires at least 15 incremental tapes. Refer to the following chart.

```
                    Incremental Backup Tapes
        Three sets—one set used every third week.
        Five tapes per set—one tape for each work day in the week.

        ┌─────────────────┐  ┌─────────────────┐  ┌─────────────────┐
        │  Monday—1       │  │  Monday—2       │  │  Monday—3       │
        │  Tuesday—1      │  │  Tuesday—2      │  │  Tuesday—3      │
        │  Wednesday—1    │  │  Wednesday—2    │  │  Wednesday—3    │
        │  Thursday—1     │  │  Thursday—2     │  │  Thursday—3     │
        │  Friday—1       │  │  Friday—2       │  │  Friday—3       │
        └─────────────────┘  └─────────────────┘  └─────────────────┘
             week 1               week 2               week 3
             week 4               week 5               week 6
             week 7...            week 8...            week 9...
```
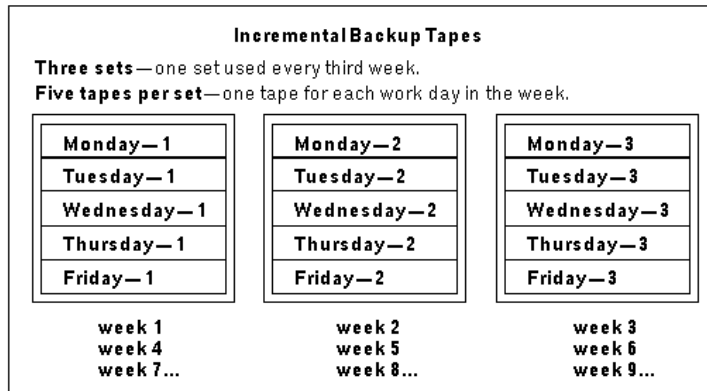
Figure 6-1 Incremental Backup Tapes screen

An incremental backup copies files added or edited since the last backup (incremental or full) occurred.

The Add Backup menu allows you to perform an incremental backup automatically at a predetermined date and time, or on demand.

When the automatic incremental backup time and day are selected and this option is executed, you need only to insert a tape into the tape drive at the end of each day the backup is scheduled. The incremental backup takes place at the set time automatically.

An automatic incremental backup terminates if there is too much data for one tape. If this occurs, the system administrator should perform a full backup for all disk areas. This ensures that a complete copy of all files is available, and that the next incremental backup will fit on a single tape.

> You must use a write-enabled tape when attempting a write operation. If the tape is not in the "write" position, you will get an error message and the data will not be saved.

All backups should be verified. In the event of an unsuccessful backup, an on-demand incremental backup should be performed.

One complete set of incremental backup tapes following each full backup should be kept. These tapes (in addition to the three sets of full backup tapes) ensure the existence of files no older than one complete backup cycle.

Cleaning the Tape Drives

The user should follow the manufacturer recommendation for cleaning the tape drive using the manufacturer tape cleaning tapes once a week.

The tape drives should be cleaned more often if you begin to experience tape read or write failures as a result of an excessively dirty environment, or if the number of tape operations (in hours) exceeds the manufacturer recommendation for tape cleaning.

For the Travan NS tape drive which is built into the Network Imaging System, use a cleaning cartridge; for example, the Imation Travan NS Drive Head Cleaning Cartridge.

Write-Enabling Backup Tapes

To back up your system, the tape on which you are going to place your data must be in the write-enabled mode. If the tape is not write-enabled, you will get an error message and the data will not be saved.

The write-protect tab on your tape cartridge must be set to the "REC" or "unlocked" position to allow writing to the tape. Refer to the illustration below.
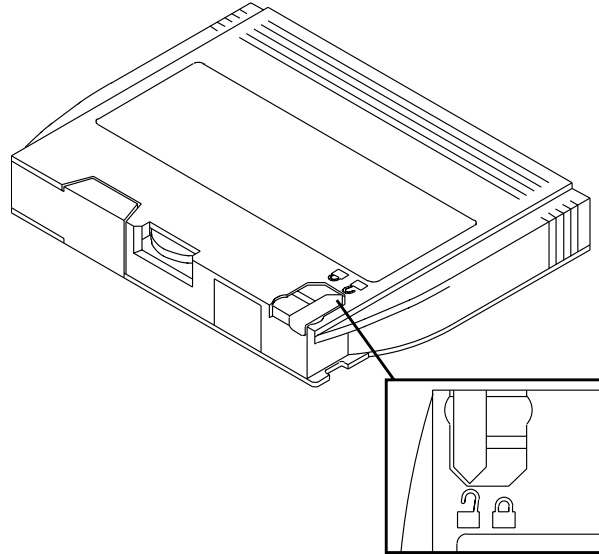
Figure 6-2 Tab in "unlocked" position on Travan NS Tape

Starting the Backup/Restore Utility

The Backup/Restore utility provides an interface to the UNIX commands used to back up the file system onto tape and retrieve files from backup tapes.

To start the Backup/Restore utility:

You can access the Backup/Restore main window from an OpenWindows command tool or shell tool window.

1. Right-click in the OpenWindows background and select Printer → Print Server Software.

   The Print Server Software main window appears.

2. Left click on the Backup/Restore icon.

3. In the User Name field, type any admin or service class user name.

4. In the password field, type the password for the user name you entered.

5. Select Accept.

   The Backup/Restore Utility window appears.
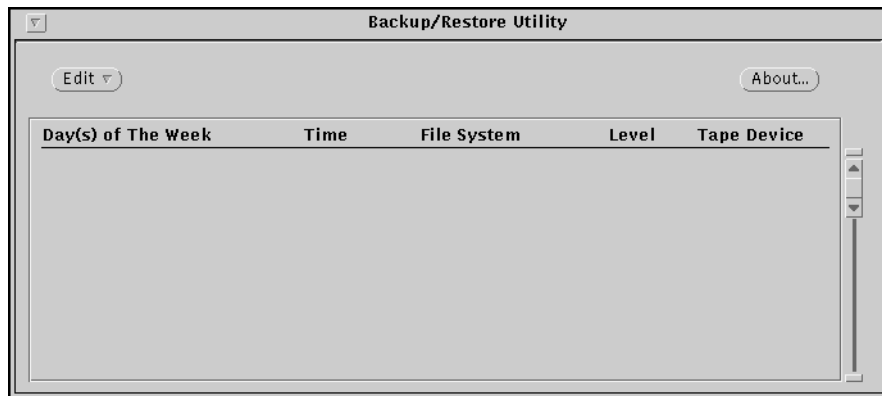
Figure 6-3 Backup/Restore Utility window

To start the Backup/Restore utility in a command window:

1. Open a command tool.

2. Type **/usr/srv/bin/launcher.prt** [RETURN].

   The Print Server Software main window appears.

3. Left click on the Backup/Restore icon.

4. In the User Name field, type any admin or service class user name.

5. In the password field, type the password for the user name you entered.

6. Select Accept.

   The Backup/Restore Utility window appears. See Figure 6-3.

To quit the Backup/Restore utility:

1. Right-click in the title bar of the Backup/Restore Utility window and select Quit.

   The Backup/Restore window closes and the OpenWindows display returns.

Adding a Backup

The Add Backup option copies every file currently in a selected file system (that is, for most full backups, copies of every file system are made). You can set up and run a full backup or an incremental backup with this feature.

Figure 6-4 Add Backup window

Field Descriptions

Mount Directory—indicates the names of each file system. The names will vary depending on the type of disks mounted on your system.

> To backup the Network Imaging System Document Library, select Document Library as the Mount Directory.

Tape Device—allows you to choose from the type of tape device you will be using.

> If your tape drive is marked with "NS20" on its front cover, use Travan NS 10/20 GB tapes (e.g., Tandberg NS20 Pro, 10/20 GB, Tandberg p/n 431819) to backup the Network Imaging System workstation. Otherwise, use Travan NS 4/8 GB tapes (e.g., Tandberg NS8 Pro, 4/8 GB, Tandberg p/n 431679).

Other—specifies another tape drive that may be available in an open environment. You must fill in this field correctly.

The Other Device Name field appears when you select Other.

> Additional fields for specifying the blocking factor, tape density, and tape length appear at the bottom of the Add Backup menu when you make certain selections in the Tape Device field.

Tape Drive Location—allows you to select the location of the drive on your system. The default locations for the tape drives are the following:

- first external tape drive
- second external tape drive
- third external tape drive
- fourth external tape drive
- fifth external tape drive
- sixth external tape drive

If your system configuration is different from the default settings, you can use the Tape Drive Location field to select the tape device.

Tape Drive—allows you to specify whether the backup will occur at a local or a remote host. When you select Remote, you can either enter the remote system name in the Hostname field or select Browse to access the Remote Hosts window.

Browse—opens the Remote Hosts window, allowing you to scroll down the list to find the name of the remote host. Use the mouse to select it. The host name automatically appears in the Hostname field.
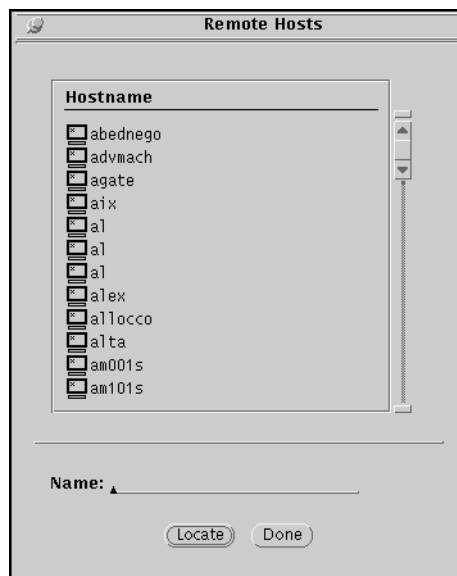
Figure 6-5 Remote Hosts window

If you are not sure about the complete name of the remote host or if many host names are in the list, use the Locate button to find a specific host name. Type one or more letters in the Name field and select Locate. The scrolling list stops at the first match on the list. Select the correct name and select Done.

> If the Locate button is unavailable, you may need to cancel a previously selected name in the list.

Backup Level—allows you to choose the backup level as described below. When Full is selected and executed, a complete backup begins. When Incremental is selected, a new field, Which Level, appears and the appropriate level must be chosen. When a level is chosen, all files that have been modified since the most recent backup of a lower level will be backed up.

For example, if you did a level 2 backup on Monday, and a level 4 backup on Tuesday, all files modified or added after Monday's backup will be backed up on Tuesday. If you schedule a level 3 backup on Wednesday, all files modified or added after Monday's backup will be backed up on Wednesday.

Tape Position—used to put more than one backup on a tape. When creating the first backup on a tape, this field should be set to 1" To put another backup on the same tape (that is, adding the `/usr` file system backup to the `/` backup tape), set this field to 2. The first tape file will be bypassed before the second is written.

When—specifies the time of day to run the backup.

> **Now**—specifies the backup runs immediately after you select Apply.
>
> **Later**—specifies the backup will run at a scheduled time (usually for an incremental backup). Two new fields, Date and Time, appear when Later is selected.
>
> • **Date**—lists the date for the backup.
>
> • **Time**—lists the time for the backup.
>
> **Scheduled**—displays the Time field plus a field called Days of the Week. Select the days of the week that backups are to occur. You can select more than one day by using the left mouse button.

> The system administrator should run a file system check or reboot the system if neither activity has been recently performed. You can only backup one file system at a time.
>
> It is possible, but it is not recommended, for users to work on a system while it is being backed up. The system administrator should warn users when the backup is to be performed, and request them to log off the system. Files worked on during a backup will not be included on the backup tape.

> If no days of the week are selected, the backup utility will add all seven days to be scheduled for backup. The main window will show all seven days under Day(s) of the Week.
>
> The Add Backup and Change Backup windows will not show all seven days selected.

Adding a Full Backup

A full backup saves every file in the selected system.

To backup all files on the system:

1. Notify system users that a backup is about to begin.

> The system administrator should run a file system check or reboot the system if neither activity has been performed recently. You can only backup one file system at a time.

2. Right-click Edit and select Add Backup.

   The Add Backup window appears.

3. Make any necessary changes in the Add Backup window.

4. Insert a write-enabled tape into the tape drive.

5. Select Apply.

   A command tool window opens. Status messages appear as the backup processes.

> The Network Imaging System built-in tape drive may take more than an hour to perform this function. Allow sufficient time for the operation to complete.

   When the backup is completed, the message "`Hit [return] to continue`" appears in the command tool window.

6. Press [RETURN].

   The tape rewinds. The command tool window closes.

7. Repeat step 2–step 6 to back up each file system.

> When additional tapes are required for the file system being backed up, the system issues a prompt to insert another tape. Label any additional tapes properly.
>
> To put more than one file system on a tape, type **2** in the Tape Position Number field when adding the backup for the second file system.

Adding an Incremental Backup

An incremental backup represents the cumulative incremental backup from the last complete or incremental backup. It does not represent changes made to documents on a specific day.

To add a scheduled incremental backup:

1. Right-click Edit and select Add Backup.

   The Add Backup window appears.

2. From the Backup Level field, select Incremental.

3. Make any necessary changes in the Add Backup window.

4. Select Apply.

5. Notify system users when the backup is scheduled.

6. Insert a write-enabled tape into the tape drive at the end of each day the backup is scheduled.

   The incremental backup will run at the scheduled time.

To add an on-demand incremental backup:

1. Right-click Edit and select Add Backup.

   The Add Backup window appears.

2. From the When field, select Now.

3. Make any other necessary changes in the Add Backup window.

4. Select Apply.

   A command tool window opens. Status messages appear as the backup processes.

   The Network Imaging System built-in tape drive may take more than an hour to perform this function. Allow sufficient time for the operation to complete.

   When the backup is completed, the message "Hit [return] to continue" appears in the command tool window.

5. Press [RETURN].

   The tape rewinds. The command tool window closes.

   If an on-demand incremental backup contains too much information, a prompt asking for the next tape appears. Label additional tapes properly.

Changing a Scheduled Backup

The Change Backup option on the Edit menu allows the scheduled backup to be changed. This function utilizes the UNIX *cron* command.

To change a scheduled backup:

1. Select a scheduled backup from the list.

2. Right-click Edit and select Change Backup.

   The Change Backup window appears.

3. Make any necessary changes in the Change Backup window.

   The Change Backup window fields are the same as those in the Add Backup window. See "Field Descriptions" on page 6-5.

4. Select Apply.

   A prompt appears asking you to confirm that you want to change the selected entry.

5. Select Confirm.

Deleting a Scheduled Backup

The Delete Backup option on the Edit menu allows a scheduled backup to be deleted.

To delete a scheduled backup:

1. Select a scheduled backup from the list of backups in the Backup/Restore Utility window.

2. Right-click Edit and select Delete Backup.

   A prompt appears asking you to confirm the deletion of the selected backup.

3. Select Confirm.

Restoring Backup Files

The Restore option on the Edit menu is used to restore files to the system from a full backup or incremental backup tape.

Figure 6-6 Restore window

Before using Restore, you should determine when the file was last changed. For example, if the file was last changed on Monday, the latest copy would be on the Monday night incremental backup tape.

> The System Administrator can specify the files to restore by using the Restore Selected Files option in the Operation field.
>
> The entire contents of a tape can be restored, but enough space must exist in the file system. To avoid overwriting files, you should rename all files that should be left as they currently exist in the user's directory. This ensures that these renamed files are left intact.

Field Descriptions

Tape Device—allows you to choose from the type of tape you will be using.

> If your tape drive is marked with "NS20" on its front cover, use Travan NS 10/20 GB tapes (e.g., Tandberg NS20 Pro, 10/20 GB, Tandberg p/n 431819) to backup the Network Imaging System workstation. Otherwise, use Travan NS 4/8 GB tapes (e.g., Tandberg NS8 Pro, 4/8 GB, Tandberg p/n 431679).

 Other—specifies another tape drive that may be available in an open environment. You must correctly fill in this field.

The Other Device Name field appears when you select Other.

> Additional fields for specifying the blocking factor, tape density, and tape length appear at the bottom of the Add Backup menu with certain selections in the Tape Device field.

Tape Position—allows you to specify which backup to retrieve (if more than one is present on the tape). To restore the first backup, set this field to 1. To bypass the first backup and retrieve the second, set this field to 2, and so forth.

Tape Drive Location—allows you to change the location of the drive on your system. The default locations for the tape drives are:

- first external tape drive
- second external tape drive
- third external tape drive
- fourth external tape drive
- fifth external tape drive
- sixth external tape drive

If your system configuration is different from the default settings, you can use the Tape Drive Location field to select the tape device.

Tape Drive—allows you to specify whether the backup occurs at a local or a remote host. When you select Remote, you can either enter the remote system name in the Hostname field or select Browse to access the Remote Hosts window.

Browse—opens the Remote Hosts window, allowing you to scroll down the list to find the name of the remote host. Use the mouse to select it. The host name automatically appears in the Hostname field. See page 6-6 for an example of the Remote Hosts window.

If you are not sure about the complete name of the remote host or there are many host names in the list, use the Locate button to find a specific host name. Type one or more letters in the Name field and select Locate. The scrolling list stops at the first match in the scrolling list. Select the correct name and select Done.

> If the Locate button is unavailable, you may need to clear a previously selected name in the list.

Restore Path—allows you to enter the name of the directory to which you are restoring the files. You should keep in mind the amount of disk space available on the system.

Operation—contains three options:

Restore Entire Tape—restores the entire tape.

Restore Selected Files—restores selected files.

List Tape—displays the tape contents.

To restore user files:

> The Network Imaging System built-in tape drive may take more than an hour to perform this function. Allow sufficient time for the operation to complete.

1. Right-click Edit and select Restore.

   The Restore window appears.

2. Make any necessary changes in the Restore window.

3. Insert the tape from which the file restoration will occur into the tape drive.

   If you selected Restore Selected Files in the Operation field, a list appears, allowing you to select the file(s) to be restored. You may need to open several layers of directories before you can select your file(s).

4. Select the file to be restored.

> You may select more than one file at a time.

5. Select Apply.

   A command tool window opens and restore messages appear. Your files are copied into the directory that was specified on the Restore menu and your files are restored.

   After a few minutes, a number of messages display, ending with the following:

   ```
   Extract requested files
   You have not read any volumes yet.
   Unless you know which volume your file(s) are on you should
   start with the last volume and work towards the first.
   Specify next volume #:
   ```

   The term "volume" refers to the number of the tape within the set of tapes used for a backup. If a single backup uses more than one tape, and you know which tape the file or set of files that you are restoring is on, type the tape number.

6. Type the tape number (e.g., 1 for the first tape of the backup, 2 for the second, etc.) [RETURN].

   If you do not know which tape the file is on, enter the number of the last tape in the backup and work backwards toward the first.

7. Type **1** if only one tape was used during the dump process [RETURN].

   After the selected file(s) are extracted, the following message appears:

   ```
   Set directory mode, owner, and times.
   set owner/mode for '.'? [yn]
   ```

8. Type **n** [RETURN].

   The following message appears:

   ```
   Directories already exist, set modes anyway? [yn]
   ```

9. Type **n** [RETURN].

   The restore operation is complete.

   If you type the wrong value for the volume # and press [RETURN], and a tape for that number does not exist, see the procedure below to recover. For example, the user entered 2 incorrectly for the volume # instead of the correct volume # 1 for the backup tape.

   The following message appears

   ```
   Mount volue 2

   then enter volume name (default: /dev/rmt/4hbn)
   ```

To recover from entering the wrong volume number:

1. Remove the tape from the tape drive.

2. Insert the tape into the tape drive.

3. Press [RETURN].

   The following message appears:

   ```
   Wrong volume (1)
   You have not read any volumes yet.
   Unless you know which volume your file(s) are on you should
   start with the last volume and work towards the first.
   Specify next volume #:
   ```

4. Type the correct tape number [RETURN].

   The following message appears:

   ```
   Mount volume 1
   then enter volume name (default: /dev/rmt/4hbn)
   ```

5. Remove the tape from the tape drive.

6. Insert the tape into the tape drive.

7. Press [RETURN].

   After the selected file(s) are extracted, the following message appears:

   ```
   Set directory mode, owner, and times.
   set owner/mode for '.'? [yn]
   ```

8. Type **n** [RETURN].

The following message appears:

```
Directories already exist, set modes anyway? [yn]
```

9. Type **n** [RETURN].

The restore operation is complete.

Indexing a Tape

The Index Tape option on the pop-up menu is used to provide a list of the tape's contents.

To index a tape:

1. Right-click Edit and select Index Tape.

   The Index Tape window appears.
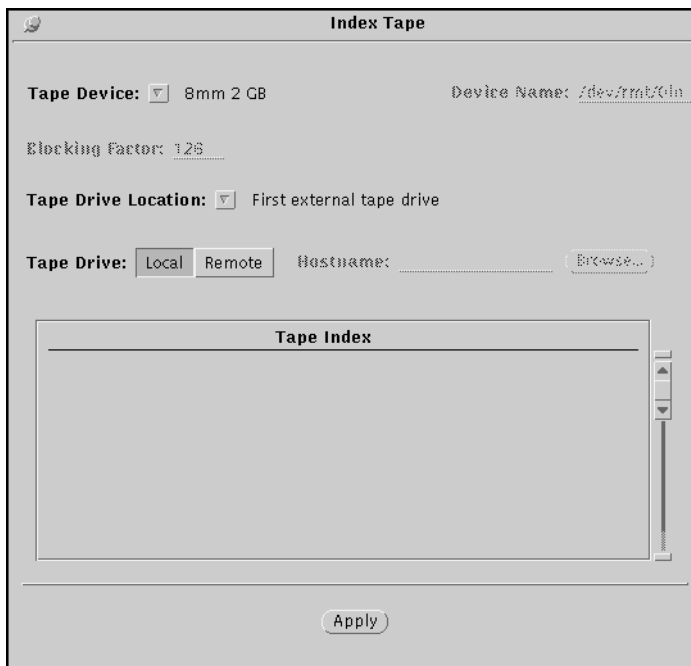
Figure 6-7 Index Tape window

2. Make any necessary changes in the Index Tape window.

3. Select Apply.

   Items on the tape appear in Index Tape window.

   When you are through viewing the Tape Index window, right-click in the title bar and select Quit.

   The Network Imaging System built-in tape drive may take more than an hour to perform this function. Allow sufficient time for the operation to complete.

Section 7   UNIX lpr Command

A standard UNIX utility, *lpr* is used for submitting print requests to a given destination. This utility is generally available wherever TCP/IP is in place. Because *lpr* is so common, it will frequently provide a convenient method of submitting print jobs to the Network Imaging System print server software. *lpr* printer objects can be set up on client systems to submit jobs directly from native applications.

Print requests for the Print Server should be directed to a virtual printer called *hostname*_lpr. The standard system autoqueue mechanism will then place them into system queues.

> When printing to *hostname*_lpr directly from a native application, the print-ready file sent to the Network Imaging System Print Server may not contain all of the information required for proper queueing. Some care may be required in arranging the queues so that jobs queue as desired. Refer to Section 3 "Queue Configuration" for more information on queuing.

In order to print directly from native applications, a printer object which references *hostname*_lpr must be set up on the client machine. The following sections describe how to set up a printer object on various platforms.

Network Imaging System Operator User Desktop

To set up a printer object on an operator user desktop:

1. Open a command tool.

2. Type **/usr/openwin/bin/printtool &** [RETURN].

3. Double-click the Print Tool icon.

4. Select *<hostname>*_lpr, where *hostname* is the name of the printer.

5. Select Properties.

6. Select Override Default Print Method.

7. Select Apply.

8. On the Print Method line, type **cat $FILE | /usr/bin/lp**.

9. Deselect Header Page.

10. Select Save as Defaults.

11. Close the Properties window.

12. Minimize the Print Tool icon.

SunOS 5.6 (Solaris 2.6) Workstation

If the Network Imaging System Print Server software is not present on the workstation, the Solaris *admintool* utility can be used to add a printer object for the *hostname_*lpr printer.

To create a Solaris printer object using admintool:

1. Log in as root and start *admintool* from the command line.

2. Select Browse.

3. Select Printers.

4. Right-click Edit and select Add → Access to Printer.

5. In the Printer Name field, type **hostname_lpr**.

   hostname is the name of the system host machine.

6. In the Print Server field, type the name of the Network Imaging System host machine.

7. Enter a description.

8. Select OK.

9. Right-click File and select Exit.

The command *admintool* cannot be used if the Print Server software is running on the workstation being configured. This is due to a limitation of the *admintool* utility.

In this case, there are two ways to communicate with the remote system print server:

• On the local system Print Server, set up a remote server device for the machine to which you want to print. Setting up a remote server is described in Section 2 "Device Configuration" and Section 3 "Queue Configuration".

• Use Solaris command line utilities to create a printer object.

To create a Solaris printer object using command line utilities:

In the following steps, where "Remote_Machine" appears, substitute the hostname of the Print Server to which you want your *lpr* requests to go. Wherever "Local_Print_Queue" is used, substitute the name of the print queue on your workstation.

1. As root, type **/usr/sbin/lpsystem -y "Remote_Machine hostname_lpr" Remote_Machine** [RETURN].

   hostname is the name of the system host machine.

2. Type **/usr/sbin/lpadmin -p Local_Print_Queue -s Remote_Machine\!hostname_lpr -I any** [RETURN].

   hostname is the name of the system host machine.

You can also execute *lpr* from the command line by typing **/usr/ucb/lpr -p printer filename** [RETURN].

printer is the name of the printer object defined on the client machine and *filename* is the name of a print-ready file.

SunOS 5.5.1 (Solaris 2.5.1) Workstation

The Solaris *admintool* utility can be used to add a printer object for the *hostname*_lpr printer.

To create a Solaris printer object using the admintool:

1. Log in as root and start *admintool* from the command line.

2. Select Browse.

3. Select Printers.

4. Right-click Edit and select Add → Access to Printer.

5. In the Printer Name field, type **hostname_lpr**.

hostname is the name of the system host machine.

6. In the Print Server field, type the name of the Network Imaging System host machine (SCS).

7. Enter a description.

8. Select OK.

9. Right-click File and select Exit.

You can execute *lpr* from the command line by typing **/usr/ucb/lpr -p printer filename** [RETURN].

printer is the name of the printer object defined on the client machine and *filename* is the name of a print-ready file.

SunOS 4.x Workstation

On a UNIX workstation running SunOS 4.x, a printer object is created by adding an entry to the /etc/printcap file. A typical /etc/printcap entry looks like the following example:

```
Local_Print_Queue:\
:lp=:\
:rm=Remote_Machine:\
:rp=hostname_lpr:\
:sd=/var/spool/Local_Print_Queue:
```

Remote_Machine is the host name of the print server to which you want your *lpr* printing requests to go, where *hostname* is the name of the system host machine, and *Local_Print_Queue* is the name of the print queue on your workstation.

You also need to create a spool directory called `/var/spool/Local_Print_Queue` on the client system.

You can also execute *lpr* from the command line by typing **/usr/ucb/lpr -p queue_name filename** [RETURN].

queue_name is the name of the queue in the `/etc/printcap` file and *filename* is the name of a print-ready file.

Appendix A Configuring Database Files

This appendix describes how to configure and update database files. This section assumes you have a working knowledge of the UNIX operating system.

Following are descriptions of the Print Server software database files.

archive_queue_limit

`/usr/srv/lib/databases/databases.prt/archive_queue_limit`

The *archive_queue_limit* file is used to specify the maximum number of print jobs that can reside in an Archive Queue. Once this maximum number is reached, no more print jobs will get archived. The print job itself will print however.

The file consists of comments (indicated by a pound sign [#] in the first column) and a single line that contains a number from 0 to 5000, which represents the maximum number of jobs to allow in the Archive Queue.

If no number is present, or the specified number is outside the range of 0-5000, then the default value of *1000* shall be used.

If a value is specified that is less than the total number of jobs already in the Archive Queue, then no new jobs will be archived. The jobs that were already in the Archive Queue shall remain.

autoq_device.—

`/usr/srv/lib/defaults/defaults.prt/autoq_device.IS70cpS2`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.92p`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.DS9110`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.PostScript`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.Finisher`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.Hopper`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.NoFinishingDevice`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.DS9110_NoFinishing`
`Device`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.Postprocessor`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.Stacker`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.DS9110_Stacker`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.Stapler`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.DS9110_Stapler`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.Stitcher`

`/usr/srv/lib/defaults/defaults.prt/autoq_device.DS9110_BookMaker`

These files are PCS files that contain secondary queue job acceptance rules. These job acceptance rules are based on the capabilities of the specific printer and finishing device associated with a given queue. If a job specifies an option that cannot be provided by the printer and finishing device associated with the queue being examined, the job is not accepted by that queue. These files should never be edited.

autoq_error_file

```
/usr/srv/lib/databases/databases.prt/autoq_error_file
```

The *autoq_error_file* file is used by the autoqueueing algorithm to determine how to handle jobs that cannot be printed, as specified by their print options, by the appropriate default queue. If no client print queues, including default queues, are found that can accept a print job as specified by its print options, the autoqueueing software reads this file to determine the course of action.

The file *autoq_error_file* contains optional comments (indicated by a pound sign [#] in the first column) and one of the following strings:

> **error handling**—the job is deleted. An error page is generated and sent to the printer represented by the default queue.

> **no error handling**—the job is sent to the printer represented by the appropriate default queue.

The default is *no error handling*.

dqp_wait_time

```
/usr/srv/lib/databases/databases.prt/dqp_wait_time
```

The *dqp_wait_time* file is used to set the amount of time that *dqp.prt* waits for a data request message from the printer. After the specified amount of time has elapsed, the request is cancelled and *lpd.prt* will try the job again. However, the job may not retain its original position in the queue on the RIP.

Time is specified in seconds and "0" indicates to wait forever. If "0" is specified and the RIP goes off-line, the first job in a Print Server queue must be deleted after the RIP is back on-line to restart the queue.

Comments are indicated by a pound sign (#) in the first column.

The default is *7200* (2 hours). The minimum wait time is one minute (60) and the maximum is 18 hours (64800).

dsd.cf.hostname

```
/usr/srv/lib/defaults/dsd.prt/dsd.cf.hostname
```

The *dsd.cf.hostname* file is created by the Print Server software installation. It contains configuration information for the directory scan *dsd.prt*. The *dsd.cf.hostname* file is a fixed-format file that contains the following lines:

> **Line 1**—scan interval in seconds. The default is *15*.

> **Line 2**—user to whom all mail should be sent in case of error. The default is *root*.

> **Line 3, 8, . . .** —pathname of the directory to scan.

> **Line 4, 9, . . .**—pathname of the application to run if the scan finds something in the directory.

> **Line 5, 10, . . .** —pathname of the applications configuration file (usually blank).

> **Line 6, 11, . . .** —scanning of named directory is enabled (1) or disabled (0).

> **Line 7, 12, . . .** —cleanup interval in hours. Files remaining in the named directory are deleted when this interval passes (0 = never clean, maximum wait is 9,000 hours).

error_file.kpo

```
/usr/srv/lib/databases/databases.prt/error_file.kpo
```

The *error_file.kpo* file is a PCS file that contains the print options used when sending an "exception print" to a printer. An exception print is generated by the Network Imaging System software when a non-standard event occurs (for example, an error occurred while printing).

⚠ **The *error_file.kpo* file must never be edited.**

installed_printer_db

```
/usr/srv/lib/databases/databases.prt/installed_printer_db
```

The *installed_printer_db* file is a database of all print devices (printers and print servers) defined to Print Server software. The information in this file is specified using the Printer Installation option of the Configuration icon.

⚠ **The *installed_printer_db* file must never be edited.**

installed_printer_db.backup

```
/usr/srv/lib/databases/databases.prt/installed_printer_db.backup
```

The *installed_printer_db.backup* file is a prior (backed-up) version of the *installed_printer_db* file.

io_err_file

```
/usr/srv/lib/defaults/defaults.prt/io_err_file
```

Many Network Imaging System print server application programs write log files to a `/tmp` subdirectory. If an error is encountered when one of the log files is opened, an error message may be printed.

⚠ **The *io_err_file* file must never be edited.**

jobid_sequence_file.prt

```
/usr/srv/lib/databases/databases.prt/jobid_sequence_file.prt
```

The *jobid_sequence_file.prt* file contains the next valid job ID number that will be assigned to an incoming print job that does not already have a job id assigned to it.

⚠ **The *jobid_sequence_file.prt* file must never be edited.**

jobid_server_id_file.prt

```
/usr/srv/lib/databases/databases.prt/jobid_server_id_file.prt
```

The *jobid_server_id_file.prt* file contains a two-digit number that uniquely identifies the Network Imaging System Print Server. The two-digit identification number is used along with the number in the *jobid_sequence_file.prt* file to generate a unique job ID for a print job. In an environment where there are multiple servers, each server must have a unique two-digit identification number for its *jobid_server_id_file.prt* file. This file is set up at installation and should never be modified. If more than one server has the same two-digit identification number, problems could result when moving jobs between servers.

> ⚠ **The *jobid_server_id_file.prt* file must never be edited.**

joblog.cfg

/usr/srv/lib/databases/databases.prt/joblog.cfg

The job logging daemon (*joblog.prt*) writes data to the `/var/log/prt.log/joblog` file. The *joblog.cfg* file affects how the job logging daemon writes data and other messages. This configuration file allows the root user to alter the following items:

• The maximum size of the log file before it is truncated

• Whether job logger messages should be written to the *joblog* file

• Where error and other important messages will be written

The file begins with comments that describe the contents of the file and the syntax to use when the file is edited.

jslockn.prt

```
/usr/srv/lib/defaults/defaults.prt/jslockn.prt
```

The *jslock*n.*prt* files (where *n* is a number from 1 to 10) limit the number of printing applications allowed to run at the same time. Three *jslock*n.*prt* files (*jslock1.prt*, *jslock2.prt*, and *jslock3.prt*) are added when the Print Server software is installed. You can add up to seven additional *jslock*n.*prt* files.

Lock files are "empty" files (that is, they contain no data) owned by root and with permissions of 644. Adding too many lock files may degrade server performance since lock files are used to limit the number of running processes.

media_db

```
/usr/srv/lib/databases/databases.prt/media_db
```

The *media_db* file contains a list of any custom media defined on a Network Imaging System Print Server. A default database file is created when Print Server software is installed. You can update this database as needed.

The custom media database file can consist of a number of lines, but only one line can exist for each media definition. The lines must be in the format:

```
papername  width  height  weight  color  type
```

where *papername* is the paper name (up to 10 characters), *width* is the paper width in PostScript language units (1/72"), *height* is the paper height in PostScript language units (1/72"), *weight* is the paper weight in grams per square meter (gsm), *color* is the paper color (up to 19 characters), and *type* is the paper type (up to 19 characters).

All fields are required. Fields must be separated by a space, a tab, or both.

If a paper color or type is not applicable to a particular media, a null string (a pair of parentheses) should be used for that field. If the *papername*, *color*, or *type* entry includes a space, the entire string must be enclosed within parentheses. Any other line format is invalid.

move_info.prt

```
/usr/srv/lib/databases/databases.prt/move_info.prt
```

The *move_info.prt* file is a file that is used to enable or disable the functionality to move print jobs between queues that are attached to different printer types and to restrict the size of the log file.

Below is an example of the contents of the *move_info.prt* file:

Enable
50

This example shows that the feature is enabled and indicates that the size of the log file is restricted to a maximum of 50 Kbytes. To disable the functionality to move print jobs between unlike printer queues, delete the keyword "Enable" from this file. Whenever this file is modified, the Network Imaging System job management program must be restarted for the changes to take effect. This can be accomplished by closing, then reopening the Job Management window of the Print Server software.

msglog.cfg

```
/usr/srv/lib/databases/databases.prt/msglog.cfg
```

The message logging daemon (*message_logger.prt*) writes data to the `/var/log/prt.log/msglog` file. This process may be fine-tuned by altering the contents of the message logger configuration file *msglog.cfg*. This configuration file allows the root user to alter the following items:

- The types of information that are logged

- The maximum size of the log file before it is truncated

- The names of users who should receive any mail messages that are generated by the message logger

- The name of the device or file to which any console messages should go

The file begins with comments that describe the contents of the file and the syntax to use when the file is edited.

ncs_at_conf

```
/usr/srv/lib/databases/databases.prt/ncs_at_conf
```

The *ncs_at_conf* file contains values used by Print Server software to configure the AppleTalk interface. This file contains the Network Imaging System Print Server EtherTalk communications configuration information. If it does not exist, the Network Imaging System software will create it. Most of this information can be found on the Communications Interfaces window which is accessed by selecting Communications Configuration from the Configuration icon. The following items are included in the file.

ET_ACTIVE—turns AppleTalk communications on or off. A value of 1 specifies that AppleTalk is to be completely disabled. The Network Imaging System Print Server will stop advertising itself and will not appear in the Macintosh Chooser. The Network Imaging System Print Server will be unable to print to devices that are configured as generic PostScript. A value of 2 specifies that AppleTalk is to be enabled. The value is obtained from the AppleTalk Communications field in the Communications Interface window.

ET_SPOOLING—included for upward compatibility. This field should have a value of 1 and should not be modified.

ET_EMULATION—included for upward compatibility. This field should have a value of 3 and should not be modified.

ET_PHASE—EtherTalk phase. A value of 1 specifies Phase 1 AppleTalk protocol while a value of 2 specifies Phase 2 AppleTalk protocol. The value is obtained from the AppleTalk Protocol Phase field in the Communications Interfaces window.

ET_PRINTER_ID—AppleTalk printer ID of the Print Server. The value is an ASCII string of fewer than 32 characters that does not contain an asterisk (*) or an equals sign (=). The default is system_*hostname*, where *hostname* is the name of the Print Server obtained from the AppleTalk Printer ID field in the Communications Interface window.

ET_BROADCAST_TYPES—comma-separated list of identifiers indicating which devices the Print Server should advertise itself as. The default is *LaserWriter*.

ET_FIRST_ZONE—zone name under which the Network Imaging System Print Server appears in the Macintosh Chooser when *ET_PHASE* is 2. The value in this field is obtained from the Zone field in the Communications Interfaces window. The default is *NULL*.

ncs_if

```
/etc/ncs_if
```

This is the Network Communications Services Interface file. This file is used when you have multiple Ethernet cards and you want to specify which card the Network Communications Subsystem should use to send and receive network packets.

By default, this file does not exist. It is a plain text file that you must create. It contains one line: the name of the preferred interface as shown by `ifconfig -a` (for example, hme1, le1, ie0). If *ncs_if* exists, it specifies the only interface that will be tried. After this file is created, you must reboot the system for the changes to take effect.

To revert back to an automatically configured setup, remove this file and reboot the system.

ncs_nvl_conf

```
/usr/srv/lib/databases/databases.prt/ncs_nvl_conf
```

The *ncs_nvl_conf* file contains information regarding the processing of Novell banner pages as follows:

NVL_BANNER_PAGE—The Novell banner page. The Novell server has the ability to send a banner page along with the print job. It is possible to override the Novell setting, and discard the banner page at the Network Imaging System Print Server, before the job reaches the printer. The value in this field is obtained from the Banner Page field in the Communications Interface window.

NVL_BP_PAPER_TYPE—Banner Page Paper Type. This is the Printer Command Set (PCS) value describing the paper to be used when printing the banner page. The format for this field is "n,n,n,n" where n represents one of the various Paper Type options that are contained within the Network Imaging System printer command set documentation. The default is *1,2,7,1* (white, letter-sized paper). This value can only be changed by editing this file.

plockn.prt

```
/usr/srv/lib/defaults/defaults.prt/plockn.prt
```

The *plock*n*.prt* files (where *n* is a number from 1 to 10) limit the number of *lpd.prt* filter processes (including server to printer file transmissions) allowed to run at the same time. Two *plock*n*.prt* files (*plock1.prt* and *plock2.prt*) are added when Print Server software is installed. You can add up to eight additional *plock*n*.prt* files.

Lock files are "empty" files (that is, they contain no data) owned by root and with permissions of 644. Adding too many lock files may degrade server performance since lock files are used to limit the number of running processes.

print_data_defaults.kpo

```
/usr/srv/lib/defaults/defaults.prt/print_data_defaults.kpo
```

The *print_data_defaults_file.kpo* file is a PCS file that contains the print options used when sending a "Print-Data" job to a printer.

⚠️ **The *print_data_defaults.kpo* file must never be edited.**

printer_attributes

```
/usr/srv/lib/defaults/defaults.prt/printer_attributes.IS70cpS2
```

```
/usr/srv/lib/defaults/defaults.prt/printer_attributes.92p
```

```
/usr/srv/lib/defaults/defaults.prt/printer_attributes.DS9110
```

The *printer_attributes* files are used for the dynamic creation of the possible choices for the associated printer in the Modify Print Options window accessed through Job Management.

queue_order

```
/usr/srv/lib/databases/databases.prt/queue_order
```

The *queue_order* file lists the client queues according to the queue sequence. This sequence determines the order in which queues are checked when attempting to queue a client print job for printing. The contents of this file are specified using the Queue Configuration option of Queue Management.

⚠️ **The *queue_order* file must never be edited.**

r3_font_list

```
/usr/srv/lib/databases/databases.prt/r3_font_list
```

The Print Server software returns the list of fonts to a PostScript font list query. The font list is the intersection of the sets of fonts available at all printers (of all types) attached to the Network Imaging System print server.

The font file can consist of a number of lines, but only one font name can be on each line. Each line must end in a UNIX newline character. The file must end in a line containing only an asterisk (*). Comments and blank lines are not allowed.

Make sure that all printers attached to a server are installed with the fonts listed in the response to a font list query.

This feature is not available on the Network Imaging System.

See Appendix E "Printer Specific Notes" for more information.

rprinter.conf

```
/usr/srv/lib/databases/databases.prt/rprinter_conf
```

The *rprinter.conf* file lists the Novell Print Server names and print queue numbers used by Remote Printer to determine the queues to which it is connected.

One Print Server name should be followed by one print queue number on each line. You can use up to 43 characters for the server name. The queue number must be a number between 0 and 15. Comments are indicated by a pound sign (#) in the first column.

Delete any blank lines from the end of this file. If there are blank lines at the end of the server/queue list, errors will occur.

srv_print

```
/usr/srv/lib/databases/databases.prt/srv_print
```

The *srv_print* directory contains information determining how print jobs are accepted into print queues (queue job acceptance rules). The information contained within this directory is specified using the Print Queue Management option of the Configuration icon.

system_admin_user

```
/usr/srv/lib/databases/databases.prt/system_admin_user
```

The *system_admin_user* file is used to specify the user name of the user designated as "operator" (that is, a user with "root" privileges for certain operations). There can only be one operator user identified in this file. If a new operator user is to be established, the *system_admin_user* file must be updated with the new user name. This user name must also be entered in the `/etc/passwd` file.

Comments are indicated by a pound sign (#) in the first column.

The operator user name must start in the first column. You can use up to eight characters for the operator user name.

In the Network Imaging System, the operator user is set to *kdkoper* at installation.

sys_rsrc_err_file

```
/usr/srv/lib/defaults/defaults.prt/sys_rsrc_err_file
```

Many Network Imaging System Print Server application programs write log files to a `/tmp` subdirectory. If an error is encountered when one of the log files is opened, an error message may be printed.

> ⚠ **The *sys_rsrc_err_file* file must never be edited.**

system_print_defaults.kpo

```
/usr/srv/lib/defaults/defaults.prt/system_print_defaults.kpo
```

The *system_print_defaults.kpo* file is a PCS file that contains the default print options used for all jobs printing on a system. All documents print using the parameters listed in this file unless those parameters are superseded by the user-level or document-level print options.

> ⚠ **The *system_print_defaults.kpo* file must never be edited.**

Appendix B Automatic Removal of Jobs from Archive Queues

Manually Entering crontab Entries

A *crontab* file contains executables that are run at chronological intervals. Files that exist after processes are run and are no longer required (for example, jobs in archive queues) should be removed. These files can be removed automatically using *crontab* files.

Each line in a *crontab* file consists of six fields, separated by spaces or tabs, as follows:

```
minutes  hours  day-of-month  month  day-of-week  command
```

Table B-1 Crontab entries

Field	Description	Range of Values
minutes	Minutes	0 to 59
hours	Hours	0 to 23
day-of-month	Day of the month	1 to 31
month	Month of the year	1 to 12
day-of-week	Day of the week	0 to 6, where Sunday is day 0
command	Command to be run	A percent character (%) in this field (unless escaped by a backslash (\) character) is translated to a newline character. Only the first line (up to a % or end of line) of the command field is executed by the shell. The other lines are made available to the command as standard input.

The regularly scheduled commands can be specified in *crontab* files found in the directory **/var/spool/cron/crontabs**. Users can submit their own *crontab* files using the *crontab* command.

If the root user wishes to enter a backup schedule in the *crontabs* directory, root should run the *crontab –e* command. The *–e* command makes a copy of the current user's *crontab* file, or creates an empty file if it does not exist. Root can then edit that file using the vi editor, and enter the *cron* entries.

To create a crontab entry:

1. Open a shell tool and log in as root.

2. Type **`setenv EDITOR vi`** [RETURN].

3. Type **`crontab -e`** [RETURN].

   The vi editor is invoked.

   You might see the following output:

   ```
   7 2 * * * /usr/etc/fpa/fparel >/dev/null 2>&1

   15 3 * * * /find / -name .nfs\* -mtime +7 -exec rm -f { }\; -o -
   fstype nfs -prune

   5 4 * * 6 /usr/lib/newsyslog >/dev/null 2>&1

   15 4 * * * find /var/preserve/ -mtime +7 -a -exec rm -f { } \;

   0 1 * * 1,2,3,4,5 /usr/local/scripts/9dump
   ```

4. At the end of the file, enter your crontab entry:

   ```
   15 3 * * 0 cd /var/spool/srv_print/Karchive_leo; /bin/rm cf* df*
   pf*
   ``` [RETURN]

   ```
   05 16 * * * cd /var/spool/srv_print/Karchive_leo; /bin/rm cf*
   df* pf*
   ``` [RETURN]

   The first command runs at 3:15 a.m. on Sunday. It removes the print files from archive queue *leo*. The second command runs at 4:05 p.m. every day. It removes the print files from archive queue *leo*.

5. Exit vi and you are finished.

Appendix C Communications Diagnostic Utilities

This appendix describes several utilities that may be used for diagnosing communications problems. This section assumes a working knowledge of the UNIX operating system and various communications protocols.

atalkinfo

```
/usr/srv/bin/atalkinfo
```

This program may be run from the command line with no arguments. It displays AppleTalk address and router information.

lh_editconf

```
/usr/srv/bin/lh_editconf
```

This utility provides access to the configuration of the ncs daemon. It is used to access the parameters for various communications protocols. It can only be run by the root user.

Although *lh_editconf* allows the root user to set or read parameters, there should be no need for a user to run *lh_editconf* to set parameters. The Network Imaging System Print Server provides a graphical user interface to *lh_editconf* for configuring EtherTalk and Rprinter. The configuration of DQP and iprsend is automated. *lh_editconf* may be useful as a diagnostic tool to view current settings.

The following options are available:

- **d**—reads DQP configuration from handler.
- **D**— sets DQP configuration from handler.
- **i**—reads iprsend configuration from handler.
- **I**—sets iprsend configuration from handler.
- **l**—reads Lpd configuration from handler.
- **L**—sets Lpd configuration from handler.
- **r**—reads Novell configuration from handler.
- **R**—sets Novell configuration from handler.
- **e**—reads EtherTalk configuration from handler.
- **E**—sets EtherTalk configuration from handler.
- **c**—reads current configuration from handler.
- **C**—sets current configuration from handler.

> It is best to use *lh_editconf* in read only mode. Using *lh_editconf* to set parameters may result in the user interface becoming out of sync with the actual configuration.

localzones

```
/usr/srv/bin/localzones
```

This program may be run from the command line with no arguments. It displays all EtherTalk zones that the router claims are valid on the local network segment.

lookup

```
/usr/srv/bin/lookup
```

This program is used to display information about network-visible entities on the AppleTalk network. It supports options for specifying name, type, and zone.

```
lookup [-n name] [-t type] [-z zone]
```

Any field left blank is treated as a wildcard. If this program is run with no arguments, all network-visible entities will appear.

nconns

```
/usr/srv/bin/nconns
```

This command may be run from the command line with no arguments. It is used to display information showing active NCS connections (inbound only; idle Rprinter connections are not included).

njobs

```
/usr/srv/bin/njobs
```

This command may be run from the command line with no arguments. It is used to display information about jobs that are currently in NCS.

status

```
/usr/srv/bin/status
```

This command may be run from the command line with no arguments. It is used to display the status that NCS is advertising to Macintosh systems.

tnistat

```
/opt/totalnet/bin/tnistat
```

This command may be run from the command line with no arguments. It is used to display information about the status of the IPX stack.

zones

```
/usr/srv/bin/zones
```

This command may be run from the command line with no arguments. It is used to display a list of all of the AppleTalk zones known to the router.

Appendix D UNIX lpr Troubleshooting

The UNIX command *lpq* can be used to verify the status of the *hostname*_lpr print queue and the state of the *lpr* environment.

Windows NT 4.x Workstation

Type **%SystemRoot%\System32\lpq –S *hostname* –P *hostname*_lpr** [RETURN], where *hostname* is the name of the print server host machine.

SunOS 5.x (Solaris) Workstation

Type **/usr/ucb/lpq –P *printer*** [RETURN], where *printer* is the name of the printer object defined on the client machine.

SunOS 4.x Workstation

Type **/usr/ucb/lpq –P *queue_name*** [RETURN], where *queue_name* is the name of the queue defined in the /etc/printcap file.

The response to the *lpq* command should either be "no entries" or something that looks like a valid queue entry. If this is not the case, consider the following:

• The Print Client must be identified to the Print Server.

• There must be a printer object defined on the machine from which you want to print, that references the *hostname_lpr* print queue.

Identifying a Print Client

In order for the Solaris Print Server to fulfill an *lpr* print request, it needs to know the hostname and IP address of the *lpr* client system. If there is a name service such as NIS+ in place, the client system may already be present in the name service database, in which case, no further action is required. If there is no name service in place, the client system must be present in the /etc/hosts file on the Network Imaging System host machine.

To verify that the client is known by the Print Server, from a shell on the system host machine type **/usr/sbin/ping *hostname*** [RETURN], where *hostname* is the name of the client system.

If the client system is not found in the name service database or local host table, the system will respond:

```
ping: unknown host hostname
```

If the host is unknown, it must be either added to the name service database or the local host table.

To add the client host name to the local host table:

1. As root, start *admintool* from the command line.

2. Select Browse.

3. Select Hosts.

4. Right-click Edit and select Add.

5. Type the *hostname* of the client machine.

6. Type the IP address of the client machine.

7. Click OK.

8. Right-click File and select Exit.

Defining Printer Objects

Refer to Section 7 "UNIX lpr Command" for more information about creating printer objects on various client systems.

In both SunOS 4.x and Solaris, the command **`/usr/bin/lpstat –t`** [RETURN] can be used to display status information about all of the UNIX print queues on a given machine.

Appendix E Printer Specific Notes

Network Imaging System

Job Acceptance Rules

Job acceptance rules are guidelines that are used by queues to determine which print jobs to accept. Job acceptance rules are set through the Job Acceptance Rules window. The rules vary depending on the printer type and queue.

You cannot change Job Acceptance Rules for default or archive queues.

Field Descriptions

Other Paper—lists the papers to match against the alternate papers in the job. Other paper may be used for covers, separators, or slip sheets. The Other Paper field also allows you to indicate if jobs with any type of other paper setting can be sent through the queue, or if a restriction is placed on the other types of paper accepted.

> The Other Paper #2 option is available for Network Imaging Systems, and generic PostScript language printers.

Table E-1 Options for the Job Acceptance Rules - Body Paper window

Feature	Options
Body Paper	Letter
	Letterhead
	Legal
	A4
	3-hole
	More
Paper Size	* (any size)
	8.5 x 10
	8.5 x 11
	8 x 10
	8 x 10.5
	8.5 x 14
	11 x 17
	14 x 17
	12 x 18
	14 x 18

Feature	Options
Paper Size	9 x 11 Tab
	A4
	A3
	RA3
	RA4
	A4 Tab
	manual
Paper Color	* (any color)
	blue
	clear
	green
	red
	yellow
	white
	Other
Paper Weight	* (any weight)
	20# Bond
	24# Bond
	28# Bond
	32# Bond
	50# Cover
	60# Cover
	65# Cover
	90# Index
	110# Index
	75 gsm
	80 gsm
	90 gsm
	105 gsm
	120 gsm
	135 gsm

Feature	Options
Paper Weight	160 gsm
	165 gsm
	175 gsm
	200 gsm
	Other
Paper Type	* (any type)
	plain
	transparency
	letterhead
	3hole
	2hole
	label
	recycled
	color
	cover
	punched
	insert
	Other
	tab
	special

70cp-II Printers

Adding Print Queues

The Add Print Queue window allows you to add print queues to your system. A single printer can have a number of queues printing to it with each queue using a different name and accepting varying printing parameters.

Field Descriptions

The fields in this window differ, depending on the printer type and options selected.

Queueing—allows you to select Remote and Secondary.

> **Secondary**—allows you to indicate how print-ready jobs will queue. When Secondary is selected, print-ready files are spooled to an alternate queue on the host to allow another job to process. When Secondary is not selected, print-ready jobs queue on the host until the printer RIP accepts them.

Server Collation—when checked, the Print Server will prevent chunk collation by the attached printer by turning a multiple set job into multiple one set jobs. This field is off (not checked) by default.

Select the Server Collation check box for complex PostScript language jobs where the printer RIP may not be able to compile the entire job before printing.

When the Server Collation box is checked, the Secondary Queueing field is automatically checked.

Job Acceptance Rules

Job acceptance rules are guidelines that are used by queues to determine which print jobs to accept. Job acceptance rules are set through the Job Acceptance Rules window. The rules vary depending on the printer type and queue.

You cannot change Job Acceptance Rules for default or archive queues.

Field Descriptions

Other Paper #1/Other Paper #2—lists the papers to match against the alternate papers in the job. Other paper may be used for covers, separators, or slip sheets. The Other Paper field also allows you to indicate if jobs with any type of other paper setting can be sent through the queue, or if a restriction is placed on the other types of paper accepted.

Table E-2 Options for the Job Acceptance Rules - Body Paper window

Feature	Options
Body Paper	Letter
	Letterhead
	Legal
	A4
	3-hole
	More
Paper Size	* (any size)
	8.5 x 11
	8.5 x 14
	11 x 17
	9 x 11 Tab
	A4
	A3
	A4 Tab
Paper Color	* (any color)
	blue
	clear
	green
	red
	yellow
	white
	Other
Paper Weight	* (any weight)
	20# Bond
	24# Bond
	28# Bond
	32# Bond
	50# Cover
	60# Cover
	65# Cover

Feature	Options
Paper Weight	90# Index
	110# Index
	75 gsm
	80 gsm
	90 gsm
	120 gsm
	160 gsm
	200 gsm
	Other
Paper Type	* (any type)
	plain
	letterhead
	3hole
	2hole
	label
	recycled
	color
	cover
	punched
	Other
	shortedge
	inserttray
	tab
	special
	tray1
	tray2
	tray3

Configuring Database Files

r3_font_list

The default `/usr/srv/lib/databases/databases.prt/r3_font_list` file contains the standard set of 70cp-II printer fonts. This file is loaded when Print Server software is installed. You can edit this file if additional fonts are installed on the printer.

92p/92sp Printers

Adding Devices

Field Descriptions

Device Name—allows you to enter the host name of the printer being added. The entry may match the name of an existing entry in the `/etc/hosts` file or the UNIX NIS host table. When you type the name of a printer already in the `/etc/hosts` file and press [RETURN], the Address field is filled in automatically.

> When configuring a 92p/92sp device on the Network Imaging System Print Server, the device name should be the name of the remote host computer on which the 92p/92sp printer interpreter software is running.

Table E-3 Options for the Job Acceptance Rules - Body Paper window

Feature	Options
Body Paper	Letter
	Letterhead
	Legal
	A4
	3-hole
	More
Paper Size	* (any size)
	8.5 x 11
	8.5 x 14
	9 x 11 Tab
	A4
	A4 Tab
Paper Color	* (any color)
	blue
	clear

Feature	Options
Paper Color	green
	red
	yellow
	white
	Other
Paper Weight	* (any weight)
	20# Bond
	24# Bond
	28# Bond
	32# Bond
	50# Cover
	60# Cover
	65# Cover
	90# Index
	110# Index
	75 gsm
	80 gsm
	90 gsm
	120 gsm
	160 gsm
	200 gsm
	Other
Paper Type	* (any type)
	plain
	transparency
	letterhead
	3hole
	2hole
	label
	recycled
	color

Feature	Options
Paper Type	cover
	punched
	insert
	Other

LionHeart Print Servers

Adding Devices

The Add Device window allows you to specify devices that your system then associates with the Print Server software printer database. When a device is added that is not in the `/etc/hosts` file, an entry for that printer is created. You can then select the printer when you use the Queue Management option.

> If you will be sending jobs from a LionHeart Print Server version 4.2 or earlier, you must configure the system Print Server as a server device in Device Configuration on the Lion-Heart version 4.2 or earlier server. If instead, the system Print Server is configured as a remote printer, the print jobs that are placed in the queue will not be transferred to the system Print Server.

Job Acceptance Rules - Body Paper Window Options

Following is a table of the options available for generic PostScript printers.

Table E-4 Options for the Job Acceptance Rules - Body Paper window

Feature	Options
Body Paper	Letter
	Letterhead
	Legal
	A4
	3-hole
	More
Paper Size	* (any size)
	8.5 x 11
	8.5 x 14
	11 x 17
	9 x 11 Tab
	A4
	A3
	A4 Tab

Feature	Options
Paper Color	* (any color)
	blue
	clear
	green
	red
	yellow
	white
	Other
Paper Weight	* (any weight)
	20# Bond
	24# Bond
	28# Bond
	32# Bond
	50# Cover
	60# Cover
	65# Bond
	90# Index
	110# Index
	75 gsm
	80 gsm
	90 gsm
	120 gsm
	160 gsm
	200 gsm
Paper Type	Other
	* (any type)
	plain
	transparency
	letterhead
	3hole
	2hole

Feature	Options
Paper Type	label
	recycled
	color
	cover
	punched
	Other

Printer Specific Notes

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