# Using the Color Printer

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# 1. Introduction

This document describes how to install and use the various color printers supported for use on the IRIS workstation.

Silicon Graphics, Inc. currently supports these color printers:

- Mitsubishi G500
- Seiko 5312
- Versatec ECP-42
- Tektronix 4692

## 1.1 Definitions and Conventions

This document uses the standard UNIX convention when referring to entries in the UNIX documentation. The entry name is followed by a section number in parentheses. For example, *cc*(1) refers to the *cc* manual entry in Section 1 of the *UNIX Programmer's Manual, Volume IA*.

In command syntax descriptions and examples, square brackets surrounding an argument indicate that the argument is optional. Variable parameters are in *italics*. You replace these variable with the appropriate string or value.

In text descriptions, filenames and UNIX commands are also in *italics*. IRIS Graphics Library routines and PROM commands are in `typewriter font`.

In examples that are set off from the text, text that the machine displays is in `typewriter font`; text that you type is in **`bold typewriter font`**.

These terms represent important concepts used in this document:

*printer* A logical name that represents a physical device, i.e., the actual printer.

*class* The name given to an ordered list of one or more printers. A printer may be assigned to more than one class, but need not be a member of any class.

*destination* The place an LP request is sent to await printing. The destination may be a specific printer or a class of printers. An output request sent to a specific printer will be printed only by that printer; a request sent to a class of printers will be printed by the first available printer in its class.

See Figure 1-1 for an explanation of the screen conventions used later in this manual.

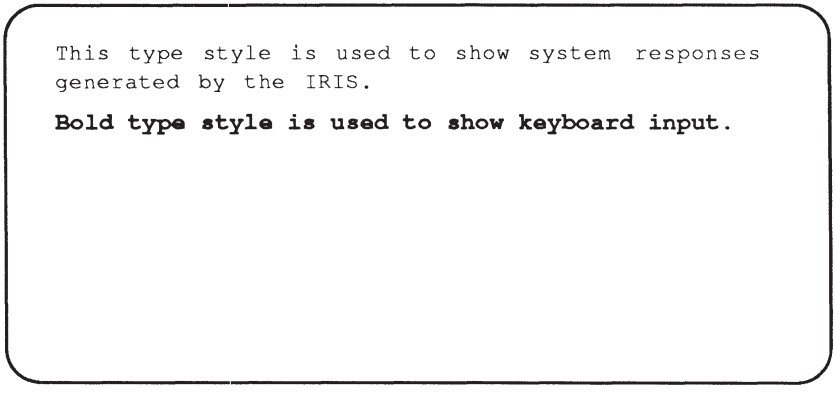


Figure 1-1: Screen Conventions

# 2. Installing the Printer

If you purchased your IRIS with the Color Printer Controller option, your workstation already has all of the necessary hardware and software installed. If you purchased the option separately, field representatives from Silicon Graphics, Inc. will make the necessary installations. The color printers connect to the IRIS' parallel interface port, which follows standard Centronics interface guidelines.

For additional information on the printer hardware, see the manuals supplied with your printer by the manufacturer.

# 3. Registering Printers in LP

After you configure the printing software, you must register your printer with the line printer (LP) spooler. This allows you to send print requests to the printer. Chapter 5 contains reference information on the LP system. The printer should be registered with the LP spooler of the IRIS to which the printer is directly connected (hardwired) and also with the LP spooler of any IRIS accessing the printer via a network. The procedures for registering a printer with LP are different depending on whether the printer is hardwired or accessed over a network; these procedures are described in the two following sections. The last section describes how to remove a printer from the LP system.

## 3.1 Registering Hardwired Printers

To register printers that are connected directly to your IRIS, follow these steps:

1. Become the superuser and change directories to */usr/spool/lp/etc/util*:

   ```
   su
   cd /usr/spool/lp/etc/util
   ```

2. Use the shell script *mkcentpr* to install the printer in the LP system:

   **./mkcentpr** *type printer-name*

   For *type*, enter **mits** if your printer is a Mitsubishi, **seiko** if it is a Seiko, **tek** if it is a Tektronix, or **vers** if it is a Versatec.

*printer-name* must be ten characters or less and consist solely of alphanumerics and underscores. It must also be unique within the LP system.

3. To set up this printer as the default printer, type:

```
/usr/lib/lpadmin -dprinter-name
```

Your printer is now registered with the LP system and is ready for printing.

## 3.2 Registering Network Printers

To access your printer over a network, follow these steps:

1. If your IRIS does not use TCP/IP network protocols, skip to step 5.
2. On the *remote* machine (the one with the printer attached), become the superuser and change directories to */usr/spool/lp/etc/util*:

```
su
cd /usr/spool/lp/etc/util
```

3. On the *remote* machine, allow your IRIS to access the remote printer via TCP/IP with the script *addclient*:

```
./addclient local-machine-name
```

4. Edit the */etc/hosts* file on both machines so that they will be aware of each other's presence on the network. For information on */etc/hosts*, see the *TCP/IP User's Guide*.
5. On the *local* machine, become superuser and change directories to */usr/spool/lp/etc/util*:

```
su
cd /usr/spool/lp/etc/util
```

6. On the local machine, add the printer to the LP spooler with the script *mknetpr*:

   **./mknetpr** *printer netaddr netprinter*

   *printer* is the local name you want for the remote printer, *netaddr* is the name of the machine the remote printer is on, and *netprinter* is the name of the printer on that machine.

7. To set up this printer as the default printer, type the following on the *local* machine:

   **/usr/lib/lpadmin -d***printer-name*

## 3.3 Removing Printers from LP

Under some circumstances, you may want to remove a printer entirely from the LP system. The shell script *rmprinter* removes all *log* and option files for a given printer. To remove a printer, follow these steps:

1. Become the superuser and change directories to */usr/spool/lp/etc/util*,

   ```
   su
   cd /usr/spool/lp/etc/util
   ```

2. Remove the printer:

   **./rmprinter** *printer-name*

Your printer is now removed from the LP system.

## 3.4 Resetting the LP Queue

Under rare circumstances, the line printer queue may jam, or otherwise cease to queue items properly. Chapter 7, Troubleshooting, provides a list of procedures you should follow if your jobs are not printing. If you have exhausted all other methods, you may have to reset the LP queue. The shell script *preset* flushes the queue and removes all printers. To reset the LP queue, follow these steps:

1. Become the superuser and change directories to */usr/spool/lp/etc/util*

```
su
cd /usr/spool/lp/etc/util
```

2. Reset the LP queue:

```
./preset
```

# 4. Preparing Output Files

This chapter explains how to print images from the IRIS screen.

## 4.1 Printing Screen Images

Your printer is able to reproduce almost any image displayed on the IRIS screen. You do this by writing screen information to a special "image file" which can then be printed with the standard *lp* command. Image files consist of representations of screen pixels. There are two routines found in */usr/people/gifts/mextools/imgtools* that provide a straightforward means of creating image files from the screen: *snap* and *savemap*. Each of these routines is provided as source code; to create an executable version, run *make* on the source file.

### 4.1.1 Using *snap*

*snap* creates an image file from a selected portion of the screen. You can use *snap* only when running the window manager. To use *snap*, type:

**snap** *file.sc* **[***xsize* **[***ysize***]]**

*file.sc* is the image file to which the screen data is written, *xsize* and *ysize* are optional dimensions that specify the size of the region in pixels that you want to "grab". If you do not specify a size, you can select the size of the screen area by manipulating a window "frame" on the screen. If you do specify a size, the frame is of set dimension, but can be moved anywhere on the screen, *snap* and other useful graphical routines are described in Appendix E, Window Manager Programs in the *IRIS User's Guide*, Volume II.

Before printing an image file created with *snap*, you should create a color map file to send to the printer. Use *savemap* to write the color map data to a file:

```
savemap mapfile [-r min max]
```

*mapfile* is the file to which the color map data is written; *min* and *max* are color map indices (0-4095).

To print your image files, type:

```
lp file.sc file2.sc ... mapfile
```

The files are printed one to a page; the images are scaled to fit.

### 4.1.2 Halftone Control

The print software on the IRIS uses a file located in */usr/lib/print/patterns* called *printer.pat* to generate a halftone pattern when printing. This directory also contains a series of additional files which can be written over *printer.pat* to achieve different halftoning effects. The following is a summary of the pattern files found in */usr/lib/print/patterns*:

| | |
|---|---|
| *printer.pat* | contains the pattern that will be used when printing, and should be written over with the desired pattern file below. |
| *better.pat* | is the optimal pattern for a Tektronix printer. |
| *dots.pat* | is the default pattern. |
| *dscan.pat* | simulates a halftone screen composed of diagonal lines. |
| *vscan.pat* | simulates a halftone screen composed of vertical lines. |

### 4.1.3 Image Processing

Several routines for processing image files are provided as source code in */usr/people/gifts/mextools/imgtools*.

*mapimg* takes an image file and a color map file and produces an RGB representation of the image file. *mapimg* takes the following form:

**`mapimg`** *file.sc file.rgb mapfile*

*tobw* takes an RGB file as input, and produces a black-and-white (B/W) representation. *tobw* takes the following form:

**`tobw`** *file.rgb file.bw*

RGB and B/W files do not require a color map file in order to print. To print an RGB or B/W image file, enter the following command lines:

**`lp`** *file.rgb*
**`lp`** *file.bw*

For information on more complex editing of image files, see Appendix H, Using the Image Library in the *IRIS User's Guide*, Volume II.

# 5. Using the LP Spooler

The Line Printer (LP) Spooling Utilities is a set of eleven commands that allow you to "spool" a file that you want to print. Spooling is the name for the technique of temporarily storing data until it is ready to be processed (in this case, by your printer). For LP spooling, a file (or group of files) to be printed is stored in a queue until a printer becomes available. When the printer is ready, the next file in the queue is printed.

LP spooling allows you to use your workstation without waiting for your file to print. LP spooling also lets you share printers among many users. The flow of printing throughout your system is regulated by the LP Spooling Utilities.

The LP Spooling Utilities allow you to:

- customize your system so that it will spool to a pool of printers. These printers need not be the same type.
- group printers together into logical classes to maximize throughput.
- queue print requests, thus allowing a print request (job) to be processed by the next available printer.
- cancel print requests, so that an unnecessary job will not be printed.
- start and stop LP from processing print requests.
- change printer configurations.
- determine the status of the LP scheduler.
- restart any printing that was not completed when the system was powered down.

The eleven LP spooling commands are divided into two categories: *user* commands are for general use of the LP system; *administrative* commands are for system configuration and maintenance.

## 5.1 User Commands

This section describes the five basic LP commands.

### User Command Summary

| | |
|---|---|
| *lp* | routes jobs to a destination and places them in a queue. The destination may be either a single printer or a class of printers. |
| *cancel* | cancels output requests. |
| *disable* | prevents a printer from processing jobs in the queue. |
| *enable* | allows a printer to process jobs in the queue. |
| *lpstat* | reports the status of all aspects of the LP Spooling system. |

### *lp* : Make an Output Request

The *lp* command routes a job request to a destination where it is placed in a queue to await printing. The destination may be a single printer or a class of printers. If you do not specify a destination, the request is routed to the default destination. For information on how to set the default printer destination see Chapter 6, Maintaining the LP System.

The form of the *lp* command is:

```
lp [options] file(s)
```

Every time an *lp* request is made, a "request-ID" is assigned to the job, and a record of the request is sent to you. The request-ID has this form:

*destination-seqnum*

*destination* is the printer or class of printers to which the job has been routed, *seqnum* is an arbitrary sequence number assigned to the job by the LP system.

*lp* has three options which are particularly useful: **–n**, **–d**, and **–c**.

Use **–n** to print more than one copy of a document:

`lp -n`*number files(s)*

*number* is the number of copies to print.

Use **–d** to specify a printer or class of printers other than the default printer (assuming your system is connected to more than one printer):

`lp -d`*destination file(s)*

Finally, use **–c** to ensure that no edits will be made to your files once you have issued a print request:

`lp -c` *files(s)*

You can combine these command options in any order. For a complete list of *lp* options, see the entry for *lp*(1) in the *UNIX Programmer's Manual*.

There are several different ways to request a printout with the *lp* command. The first three examples in Figure 5-1 perform identical functions, sending a simple print request to the default printer. The fourth example prints three copies on printer *foo*, and creates a copy of the file for the printer to process, thus ensuring that no changes are made to the file after the print request.

```
% lp myfile
request id is myprinter-12 (1 file)

% lp < myfile
request id is myprinter-13 (standard input)

% cat myfile |lp
request id is myprinter-14 (standard input)

% lp -n3 -dfoo -c myfile
request id is foo-15 (1 file)

%
```

Figure 5-1: *lp* Command Examples

## *cancel* : Stop a Print Request

The *cancel* command removes a job from the queue. You can *cancel* a job either before or after it has started printing, but you can *cancel* only one job at a time.

Any user may cancel any other user's job. If you cancel another user's print request, mail is sent to that user. Once you *cancel* a job, you can request again only with the *lp* command.

To cancel a job, type either:

**cancel** *printer-name*

or

**cancel** *request-ID*

Cancelling using the printer name cancels the job currently being printed. Using the request-ID cancels the specified job whether or not it is currently being printed. See Figure 5-2 for examples of the *cancel* command.

```
% cancel myprinter
request "myprinter-16" cancelled

% cancel myprinter-17
request "myprinter-17" cancelled

%
```

Figure 5-2: *cancel* Command Examples

Issuing a *cancel* command will not work when the job is being printed on a remote machine. To cancel requests on a remote machine, see Section 6.3.2 of this document.

### *disable* : Stop Printer from Processing Requests

The *disable* command prevents the printer from processing jobs in the queue. Possible reasons for disabling the printer include malfunctioning hardware, paper jams, running out of paper, or end-of-day shutdowns. If a printer is busy at the time it is disabled, the request it was printing is reprinted in its entirety when you re-enable the printer.

You can send job requests to a printer that has been disabled. The jobs are put on the queue but are not printed until the printer is enabled.

To *disable* a printer, type:

**disable [-c] [-t**"*reason*"**]** *printer(s)*

The **–c** option cancels the job currently being printed as well as disables the printer. This is useful if the output is causing the printer to behave abnormally.

The **–r** option lets you tell other users why you disabled a printer, *reason* is a character string, and must be enclosed in double quotes ("). This string is reported to anyone trying to use the disabled printer.

## *enable* : Allow Printer to Process Requests

The *enable* command permits a printer that has been disabled to begin processing jobs from the queue. To *enable* a printer, type:

**enable** *printer(s)*

Figure 5-3 contains examples of the *enable* and *disable* commands.

```
% disable -r"paper jam" myprinter
printer "myprinter" now disabled

% enable myprinter
printer "myprinter" now enabled

%
```

Figure 5-3: *disable* and *enable* Command Examples

## *lpstat* : Report LP Status

The *lpstat* command gives you a report on the status of various aspects of the LP system. To check LP status, type:

**lpstat** [*options*]

The most useful option is **–t**, which gives a complete report on the status of the LP system. For a complete list of options, see the entry for *lpstat*(1) in the *UNIX Programmer's Manual*. If you are printing on a remote printer

(i.e., one that you are accessing via a network, and not directly), see Section 6.3.1 of this document for information on how to get remote status reports.

Figure 5-4 contains an example of the *lpstat* command.

```
% lpstat -t
scheduler is running
system default destination: myprinter
members of class foo:
        myprinter
device for myprinter: /usr/spool/lp/etc/myprinter-log
myprinter accepting requests since Jul 31 21:40
foo accepting requests since Jul 30 12:23
printer myprinter now printing foo-18.
enabled since Aug 5 15:34
foo-18     mylogin    3156   Aug 7 17:11 on myprinter
%
```

Figure 5-4: *lpstat* Command Examples

## 5.2 Administrative Commands

This section summarizes the commands that are used to administer the LP system. To execute the administrative commands, you must be logged in as either *root* (i.e., as the superuser) or as *lp*. Inexperienced users should not use the LP administrative commands.

### Administrative Command Summary

*lpsched* starts the LP scheduler.

*lpshut* stops the LP scheduler.

*reject* prevents jobs from being queued at a particular destination.

*accept* permits job requests to be queued at a particular destination.

*lpmove* moves printer requests from one destination to another.

*lpadmin* configures the LP system.

## *lpsched* : Start the LP Scheduler

The *lpsched* command starts the LP scheduler. LP prints jobs only when the scheduler is running. *lpsched* is executed automatically each time the IRIS is booted.

Every time *lpsched* is executed, it creates a file called *SCHEDLOCK* in */usr/spool/lp*. As long as this file exists, the system will not allow another scheduler to run. When the scheduler is stopped under normal conditions, *SCHEDLOCK* is automatically removed. If the scheduler stops abnormally, you must remove *SCHEDLOCK* before you use the *lpsched* command. This procedure may also be necessary to restart the scheduler after the system shuts down abnormally.

To start the LP scheduler, type:

```
/usr/lib/lpsched
```

There is no response from the system to acknowledge the *lpsched* command. To verify that the scheduler is running, use *lpstat*.

## *lpshut* : Stop the LP Scheduler

The *lpshut* command stops the LP scheduler and ends all printing activity. All requests that are being printed when you issue the *lpshut* command are reprinted in their entirety when the scheduler is restarted.

To stop the LP scheduler, type:

```
/usr/lib/lpshut
```

## *reject* : Prevent Print Requests

The *reject* command stops *lp* from routing requests to a destination queue. For example, if a printer has been removed for repairs, or has received too many requests, you may wish to prevent new jobs from being queued at that destination.

All requests that are in the queue when you issue the *reject* command are printed if the printer is enabled.

The *reject* command takes the form:

**`/usr/lib/reject [-r"`***reason***`"]`** *destination(s)*

The **–r** option lets you tell other users why print requests are being rejected. *reason* is a character string, and is enclosed in double quotes ("). This string is reported to anyone trying to use *lp* to send requests to the specified destination.

## *accept* : Allow Print Requests

The *accept* command allows job requests to be placed in a queue at the named printer(s) or class(es) of printers. To let a printer receive job requests, type:

**`/usr/lib/accept`** *destination(s)*

See Figure 5-5 for examples of the *reject* and *accept* commands.

```
% su

# /usr/lib/accept myprinter
destination "myprinter" now accepting requests

# /usr/lib/reject -r"printer broken" myprinter
destination "myprinter" is no longer accepting requests

#
```

Figure 5-5: *reject* and *accept* Command Examples

## *lpmove* : Move a Request to Another Printer

The *lpmove* command moves print requests from one destination to another. For example, if you have a printer removed for repairs, you may want to move all jobs pending on the queue to a destination with a working printer. You may also use *lpmove* to move specific requests from one destination to another, but only after you have halted the scheduler with the *lpshut* command. *lpmove* automatically rejects job requests rerouted to a destination without a printer.

The *lpmove* command takes two forms:

**/usr/lib/lp move** *dest1 dest2*

**/usr/lib/lpmove** *request(s) destination*

*dest1*, *dest2*, and *destination* are printers or classes of printers, *request* is a specific request-ID.

In the first form of the command, all requests are moved from *dest1* to *dest2*. After the move, the printer or printers at *dest1* will not accept requests until you issue an *accept* command. All rerouted requests are renamed *dest2-nnn*, where *nnn* is a new sequence number in the queue for destination *dest1*.

In the second form, which you may issue only after you stop the scheduler, the rerouted requests are renamed *destination-nnn*. When you restart the scheduler, the original destinations will still accept new requests.

Figure 5-6 contains examples of the *lpmove* command.

```
% su
# /usr/lib/lpmove myprinter yourprinter
# /usr/lib/lpmove foo-19 foo-20 yourprinter
total of 2 requests moved to yourprinter
#
```

Figure 5-6: *lpmove* Command Examples

## *lpadmin* : Configure Printers

The *lpadmin* command has two primary uses: adding new printers to the system, and changing printer classes and destinations. Since Silicon Graphics supplies routines to automatically add the printers supported for use with the IRIS, the options for adding printers are useful only in the case of dumb printers. These options are covered in Chapter 7 of the *IRIS Series 3000 Owner's Guide*.

Unlike most UNIX commands, *lpadmin* requires an option. The *lpadmin* command takes three forms:

**lpadmin -d[***destination***]**

**lpadmin -x***destination*

**lpadmin -p***printer*

The **–d** option sets the system default destination. The *destination* must already exist when you issue the command. For complete instructions on how to define the default destination, see Chapter 6.

The **–x** option removes the specified *destination* from the LP system. This form of the *lpadmin* command will NOT work while the scheduler is running.

You cannot remove a destination (printer or class) if it has pending requests; you must first either remove all requests with the *cancel* command or move them to other destinations with *lpmove*.

Removing the last remaining member of a class deletes that class from LP. Removal of a class, however, does not imply the removal of printers assigned to that class.

The **–p** form of the *lpadmin* command has two options that let you re-assign printers to different classes. With these options, the *lpadmin* command takes the form:

```
lpadmin  -pprinter [-cclass] [-rclass]
```

The **–c** option assigns a *printer* to the specified *class*; the **–r** option removes a *printer* from the specified *class*.

The **–p** options will not work while the scheduler is running. For a complete list of options, see the entry for *lpadmin*(1M) in the *UNIX Programmer's Manual*.

See Figure 5-7 for examples of the *lpadmin* command.

```
%  su
#  /usr/lib/lpadmin -xmyprinter
#  /usr/lib/lpadmin -dmyprinter -rfoo -cboo
#
```

Figure 5-7: *lpadmin* Command Examples

# 6. Maintaining the LP System

This chapter contains procedures for changing your default printer, clearing printer *log* files, and printing over a network.

## 6.1 Changing the Default Printer Destination

The *lp* command determines the destination of a request by checking for a **–d** option on the command line. If no **–d** is present, it checks to see if the environment variable LPDEST is set. If LPDEST is not set, then the request is routed to the default destination.

The system default destination can be a printer or a printer class. It is set by using the *lpadmin* command with the **–d** option. The system default must be set by the user. A destination must already exist on the LP system before you can designate it as the default destination.

Setting the environment variable LPDEST allows a user to have a default destination other than the system default.

Figure 6-1 illustrates examples of setting the system default with *lpadmin* and setting the user default with LPDEST.

```
% su
# /usr/lib/lpadmin -dmyprinter
#

% setenv LPDEST yourprinter
%
```

Figure 6-1: Setting the Default Printer

## 6.2 Clearing Out *log* Files

The purpose of a *log* file is to keep a record of all printing activity on a given printer. Each printer has a separate *log* file, located in */usr/spool/lp/etc/log*. The name of each printer's *log* file takes the form:

*printer-name*`-log`

Each file contains a running list of processed jobs, each of which includes the following:

- the *logname* of the user who made the request
- the request ID
- the name of the printer that processed the request
- the date and time that the printing started

Any *lpsched* error messages that occur are also recorded.

If there is a large number of LP requests for a given printer, that printer's *log* file will soon get very large. You can manually remove the contents of these files from time to time, or you can set up the IRIS to do it for you automatically at regular intervals.

Included in */usr/spool/lp/etc/lib* is a shell script *log.rotate* which will automatically rotate (clean out) your printers' log files once per day at 4:12 AM. To set up the script for your printer(s), you must edit *log.rotate* and */usr/lib/crontab* in the following manner:

1. Become the superuser and change directories to */usr/spool/lp/etc/lib*:

   ```
   su
   cd /usr/spool/lp/etc/lib
   ```

2. In the file *log.rotate*, remove the comment marker (#) from the following line:

   ```
   #printers="PRINTER1 PRINTER1"
   ```

   In place of `PRINTER1` and `PRINTER2`, put the names of any parallel-interface (i.e., color) printers and any remote printers. Any number of printers may be included.

3. In the file *log.rotate*, remove the comment marker (#) from the following line:

   ```
   #LocalPS="PRINTER1"
   ```

   In place of `PRINTER1`, put the names of any hardwired (i.e, connected to the serial port) LaserWriters. If you have no hardwired LaserWriters, use the null string ("") in place of printer names.

4. Change directories to */usr/lib*:

   ```
   cd /usr/lib
   ```

5. Edit *crontab* by removing the comment marker from the line containing *log.rotate*.

## 6.3 Printing Over the Network

Remote printing on the IRIS allows you to send print jobs over the network with the same commands used to send jobs to a printer connected directly to your IRIS. This is accomplished by giving a remote printer a local name so that the local LP scheduler is "fooled" into thinking it is sending the request to a local printer. After the local machine's LP spooler queues the print request, it is sent across the net to the remote machine, where it is processed by that machine's LP spooler. As a result of this, one cannot accurately determine the status of a remote print request by using the *lpstat* command on the local machine.

This section covers two aspects of remote printing:

- checking the status of remote print requests
- cancelling remote print requests

### 6.3.1 Checking Remote Printer Status

When you send a print request across the net to a remote machine, the local LP system will always report that the request is being printed, regardless of its actual status in the remote machine's LP system. To check the true status, you must remotely access (using *rsh* or *xx*) the machine whose printer is processing the job. The remote LP scheduler changes the request ID of any job sent to it over the net to reflect the actual name of the printer, and gives it a new sequence number corresponding to its place in the remote queue. The way to determine a specific job's status is to look in the remote printer's *log* file (i.e., the *log* file on the remote machine) with the *tail* command. The example below uses *rsh* to access the remote machine.

```
rsh host tail logpath
```

*host* is the name of the remote machine, *logpath* is the pathname of the remote printer's log file.

### 6.3.2 Cancelling Remote Print Requests

Once you know the remote printer status, you can use the *cancel* command on the remote machine to cancel any jobs on the printer's queue. You must cancel a remote print job from the remote machine once it has been sent over the net by the local LP system.

# 7. Troubleshooting

If you send a print request to your printer with *lp*, *psroff*, or *enscript* and do not receive any output, you should use the checklists below to make sure your system is ready for printing. Use these lists as a supplement to the troubleshooting information in the manufacturer's hardware manual.

## 7.1 Troubleshooting in LP

The LP scheduler is the program in charge of spooling your files to the printer, and is invoked whenever you use the *lp*, *psroff*, or *enscript* print commands. The scheduler can be in a number of states, and each printer registered with LP can be in a number of states as well.

To check on the complete status of the LP system, type:

```
lpstat -t
```

This gives you a complete description of the status of LP. Use this information to answer these questions:

1. **Is your printer registered with LP?** If you do not see the name of your printer in the list of information produced by *lpstat*, then you will have to register your printer with LP. See Chapter 3 for procedures on how to register your printer.
2. **Is the printer enabled?** If your printer is not enabled, the *lpstat* listing will contain this line:

   ```
   printer yourprinter disabled since...
   ```

   In order to enable the printer, type:

   ```
   enable yourprinter
   ```

LP sometimes disables a printer automatically if it is unable to send a file to a remote printer, so a disabled printer is often an indication of a hardware problem, such as a host that is not communicating with the network.

3. **Is the printer accepting requests?** If the printer is not accepting requests, the *lpstat* listing will contain this line:

   *yourprinter* `not accepting requests since...`

   You will have to execute the *accept* command for that printer destination. Become the superuser (with *su*) and type:

   **`/usr/lib/accept`** *yourprinter*

4. **Is the LP scheduler running?** If the scheduler is not running, the *lpstat* listing will contain the message:

   `scheduler is not running`

   To restart the LP scheduler, become superuser (with *su*) and type:

   **`/usr/lib/lpsched`**

5. **Did you specify the right printer?** If your system has more than one printer, and you wish to send a job to a printer other than the default, remember to use the **–d** option:

   **`lp -d`***otherprinter*
   **`psroff -d`***otherprinter*
   **`enscript -d`***otherprinter*

## 7.2 Troubleshooting Network Printers

If you are having trouble with a printer you are accessing over a network, you should check the status of the LP scheduler both on your machine *and* the printer's host machine.

## 7.3 Emergency Measures

If none of the above procedures work, there are several "last resort" procedures you can try.

1. Stop the LP scheduler and then restart it. Type the following sequence:

```
su
/usr/lib/lpshut
/usr/lib/lpsched
```

2. Remove the offending printer destination from the LP scheduler, and then register it again. Before you can do this you will either have to cancel any print requests going to the printer or move them to another print destination (if you have more than one). See the sections describing the *cancel* and *lpmove* commands in Chapter 5 for instructions on cancelling or moving print requests. See Chapter 3 for the procedures for removing and registering printers.
3. As an absolute last resort, reset the LP queue, as described in Section 3.4.

# Appendix A: Manual Pages

These tables contain lists of manual pages for software provided with the Color Printer Controller option. The manual pages are located in the *UNIX Programmer's Manual*, Volume IB behind the "Color Printer Option" tab.

| Manual Page | Description |
|---|---|
| addclient(1M) | add remote machine to an IRIS using TCP/IP |
| mkcentpr(1M) | add a color printer to the LP spooler |
| mknetpr(1M) | add a remote printer destination to LP |
| preset(1M) | reset the LP queue and remove all printers |
| rmprinter(1M) | removes a printer from the LP spooler |

Table A-1: Printing-Related Manual Pages

# Appendix B: LP Error Messages

This section provides a description of the error messages that are associated with LP commands. The following variables are used in the error messages:

| | |
|---|---|
| *file(s)* | indicates the file or files that are to be printed. |
| *dest* | indicates the name of the destination printer. |
| *printer-id* | indicates the request identification number of the printout. For example, *myprinter-46* is the printer name followed by the request identification number. |
| *printer-name* | indicates the name of the printer. |
| *program-name* | indicates the program name that was executed. |
| *user* | indicates the user who requested the printout. |

Following each message is an explanation of the probable cause of the error and the corrective action to take. If you are not able to correct all the error conditions you encounter, call your service representative for assistance.

| Error Message | Description/Action |
|---|---|
| dest is an illegal destination name | The *dest* you used is not a valid destination name. Use the **lpstat -p** command to list valid destination names. |
| file is a directory | The file name you typed is a directory and cannot be printed. |
| xx is not a request id or a printer | The argument you used with the **cancel** command is not a valid request identification number or a printer name. Use the **lpstat -t** command to give you all the printers and requests waiting to get printed. |
| xx is not a request id | The request identification number you used with the **lpmove** command is not a valid request identification number. To find out what requests are valid, use the **lpstat -u** command. |
| xx not a request id or a destination | You used an invalid request identification number or destination with the **lpstat** command. To find out what is valid, use the **lpstat -t** command. |
| dest not accepting requests since date | Requests to the printer which you are trying to use have been stopped by the **reject** command. |
| Can't access FIFO | The named pipe file **/usr/spool/lp/FIFO** is incorrect. The mode should be 600. |
| LP Administrator not in password file | You must have an entry in the **/etc/passwd** file for "lp," and you must belong to the group "bin." |
| acceptance status of destination "printer-name" unknown | Use the **accept** command to enable the printer so that it will accept requests. |
| can't access file "xx" | The mode could be wrong on your directory or the file that you are trying to access. |

| Error Message | Description/Action |
|---|---|
| can't create class "xx"-it is an existing printer name | The class name you are trying to use has already been given to a printer. You will have to use another name or remove the printer to use the class name. |
| can't create new acceptance status file | The mode may be wrong on the **/usr/spool/lp** directory. It should be 755 with the owner "lp" and the group "bin." |
| can't create new class file | The mode may be wrong on the **/usr/spool/lp** directory. It should be 755 with the owner "lp" and the group "bin." |
| can't create new interface program | The mode may be wrong on the **/usr/spool/lp/interface** directory. It should be 755 with the owner "lp" and the group "bin." |
| can't create new member file | The mode may be wrong on the **/usr/spool/lp/member** directory. It should be 755 with the owner "lp" and the group "bin." |
| can't create new printer status file | The mode may be wrong on the **/usr/spool/lp/pstatus**. It should be 644 with the owner "lp" and the group "bin." |
| can't create new request directory | The mode may be wrong on the **/usr/spool/lp/request** directory. It should be 755 with the owner "lp" and the group "bin." |
| can't create printer "printer-name" -- it has already been used | The printer-name you are trying to use is an existing class name as a class name. You will have to assign another name for the printer. |
| can't create new output queue | The mode on the file **/usr/spool/lp/seqfile** is incorrect. It should be 644, and the mode on the directory should be 755. The owner should be "lp," and the group should be "bin." This may be corrected by typing the command at a later time. |

| Error Message | Description/Action |
|---|---|
| can't create new sequence number file | The mode on the file **/usr/spool/lp/seqfile** is incorrect. The mode of the file should be 644, and the mode of the directory should be 755. The owner should be "lp," and the group should be "bin." This may be corrected by typing the command at a later time. |
| can't create request file "xx" | The mode on the file **/usr/spool/lp/request/***printer-name*/r-id is incorrect. *Printer-name* is the name of the printer such as dqp10, and r-id is the request identification number. The mode of the file should be 444, and the mode of the directory should be 755. The owner should be "lp," and the group should be "bin." This may be corrected by typing the command at a later time. |
| can't fork | You either have several processes running and are not allowed to run anymore, or the system has all the processes running that it can handle. You will have to rerun this command later. |
| can't lock acceptance status | This is a temporary file in **/usr/spool/lp** that prevents more than one "lp" request from being taken at any given instant. You will have to rerun this command later. |
| can't lock output queue | The file **/usr/spool/lp/QSTATLOCK** prevents more than one "lp " request from being printed on a printer at a time. You will have to rerun this command later. |
| can't lock printer status | The temporary file **/usr/spool/lp/PSTATLOCK** prevents more than one "lp" request from being printed on a printer at a time. You will have to rerun this command later. |
| can't lock sequence number file | The file **/usr/spool/lp/SEQLOCK** prevents more than one "lp" request from getting the next printer-id (request identification) number at a time. You will have to rerun this command later. |

| Error Message | Description/Action |
|---|---|
| can't move request printer-id | *Printer-id* is the request identification number that cannot be moved. You will probably have to change the modes on the files and directories in **/usr/spool/lp/request**. Also, you will have to manually move the request from the disabled printer directory to the new destination after you shut down the LP scheduler. |
| can't open class file | The **lp** program is trying to access the list of classes for printers. One reason it may not be able to open the class file is that the system could have the maximum number of files open that are allowed at any time. This can be corrected by typing the command at a later time. |
| can't open member file | The **lp** program is trying to access the list of members in the directory **/usr/spool/lp/member**. The system could have the maximum number of files open that are allowed at any time. This can be corrected by typing the command at a later time. |
| can't open xx file in MEMBER directory | There are a couple of reasons why file xx in the **/usr/spool/lp/member** directory cannot be opened. The mode on the file could be incorrect. It should be 644. Another possibility is that the system could have the maximum number of files open that are allowed at any time. This can be corrected by typing the command at a later time. |
| can't open xx file in class directory | One possibility why file *xx* cannot be opened is that the mode on the file or directory is incorrect. The file mode should be 644, and the directory mode should be 755. Another possibility is that the system has the maximum number of files open that are allowed at any time. The latter problem can be corrected by typing the command at a later time. |
| can't open xx | You cannot print on printer *xx* because the mode is incorrect on **/dev/tty**. The mode should be 622. |
| can't open FIFO | The mode on the named pipe file **/usr/spool/lp/FIFO** may be incorrect. It should be 600. Or, the system could have the maximum number of files open that are allowed at any time. The latter problem can be corrected by typing the command at a later time. |

| Error Message | Description/Action |
|---|---|
| can't open MEMBER directory | The mode on the directory **/usr/spool/lp/member** could be incorrect. It should be 755. Another possibility is that the system could have the maximum number of files open that are allowed at any time. If the maximum number of files are open, try typing the command at a later time. |
| can't open acceptance status file | The mode on the file **/usr/spool/lp/qstatus** may not be correct. It should be 644. Another possibility is that the system could have the maximum number of files open that are allowed at any time. The latter problem can be corrected by typing the command at a later time. |
| can't open default destination file | Check the mode on the file **/usr/spool/lp/default**. The mode should be 644. If the mode is okay, it could be that the system has the maximum number of files open that are allowed at any one time. This can be corrected by trying the command at a later time. |
| can't open file filename | The *filename* was incorrectly typed or you don't have the correct modes set. The mode should be at least 400 if you are the owner. |
| can't open output queue file | Check the mode on the file **/usr/spool/lp/outputq**. It should be 644. This error message could also be generated if the system has the maximum number of files open that are allowed at any one time. Try entering the command at a later time. |
| can't open printer status file | The mode on the file **/usr/spool/lp/pstatus** is incorrect. The mode should be 644. It could also be that the system has the maximum number of files open that are allowed at any one time. This can be corrected by trying the command at a later time. |
| can't open request directory directory name | The mode on the directory **/usr/spool/lp/request** is incorrect. The mode should be 655. It could also be that the system has the maximum number of files open that are allowed at any one time. This can be corrected by trying the command at a later time. |

| Error Message | Description/Action |
|---|---|
| can't open request file xx | The mode on the file **/usr/spool/lp/member/request/***xx* is incorrect. The mode should be 644. It could also be that the system has the maximum number of files open that are allowed at any one time. This can be corrected by trying the **lpmove** command at a later time. |
| can't open system default destination file | The mode on the file **/usr/spool/lp/default** is incorrect. The mode should be 644. It could also be that the system has the maximum number of files open that are allowed at any one time. This can be corrected by trying the command again at a later time. |
| can't open temporary output queue | The mode on the file **/usr/spool/lp/outputq** is incorrect. The mode should be 644. It could also be that the system has the maximum number of files open that are allowed at any one time. This can be corrected by trying the command at a later time. |
| can't proceed -- scheduler running | Many of the **lpadmin** command options cannot be executed while the scheduler is running. Stop the scheduler using the lpshut command and then try invoking the command again. |
| can't read current directory | The **lp** and **lpadmin** commands cannot read the directory containing the file to be printed. The directory name may be incorrect or you do not have read permission on that directory. |
| can't remove class file | The mode may be wrong on the **/usr/spool/lp/class**. It should be 755. The owner should be "lp," and the group should be "bin." Another possibility is the file in that directory may have the wrong mode. It should be 644. |
| can't remove printer | The mode may be wrong on the **/usr/spool/lp/member** directory. It should be 755, and the files in that directory should be 644. Both the directory and the files should be owned by "lp," and the group should be "bin." |

| Error Message | Description/Action |
|---|---|
| can't remove request directory | The mode may be wrong on the **/usr/spool/lp/request** directory. It should be 755 and should be owned by "lp," and the group should be "bin." The directory may still have pending requests to be printed which will have to be removed before the directory can be removed. |
| can't set user id to LP Administrator's user id | The **lpsched** and **lpadmin** commands can only be used when you are logged in as "lp" or "root." |
| can't unlink old output queue | The **lpsched** program cannot remove the old output queue. You will have to remove it manually by using the command **rm /usr/spool/lp/outputq**. |
| can't write to xx | The **lpadmin** command cannot write to device *xx*. The mode is probably wrong on the /dev/ttyxx file. It should be 622 and owned by "lp." |
| cannot create temp file filename | The system may be out of free space on the **/usr** file system. Use the command **df /usr** to determine the number of free blocks. Several hundred blocks are required to insure that the system will perform correctly. |
| class "xx" has disappeared! | Class *xx* was probably removed since the scheduler was started. The system may be out of free space on the **/usr** file system. Use the command **df /usr** to find out. Use the **lpshut** command to stop the scheduler and restore the class from a backup. |
| class "xx" non-existent | The class *xx* may have been removed because the system is out of free space on the **/usr** file system. Use the command **df /usr** to find out how much free space is available. The class will probably have to be restored from a backup. |
| class directory has disappeared! | The **/usr/spool/lp/class** directory has been removed. The system may be out of free space on **/usr**; use the **df /usr** command to find out. The class directory contains all the data for each printer class. To restore this directory, get these files and directory from a backup. |

| Error Message | Description/ Action |
|---|---|
| corrupted member file | The **/usr/spool/lp/member** directory has a corrupted file in it. You should restore the directory from backup. |
| default destination "dest" non-existent | Either the default destination is not assigned or the printer *dest* has been removed. Use the **lpadmin** to set up a default destination or set **LPDEST** to the value of the destination. |
| destination "dest" has disappeared! | A destination printer, *dest* has teen removed since **lpsched** was started. Use the **lpadmin** command to remove the printer. |
| destination "printer-name" is no longer accepting requests | The printer has been disabled using the **reject** command. The printer can be reenabled using the **accept** command. |
| destination dest non-existent | The destination printer you specified as an argument to the **accept** or **lpadmin** command is; not a valid destination name, or it has been removed since the scheduler was started. |
| destination "printer-name" was already accepting requests | The destination printer was previously "enabled." Once a printer is accepting requests, any further **accept** commands are ignored. |
| destination "printer-name" was already not accepting requests | A **reject** command was already sent to the printer. Use the **accept** command to allow the printer to start accepting requests again. |
| destination printer-name is not accepting requests move in progress... | The printer has been disabled by the **reject** command, and requests are being moved from the disabled printer to another printer. The printer can be enabled again by the **accept** command. |
| destinations are identical | When using the **lpmove** command, you need to specify a printer to move the print requests from and a different printer to move the requests to. |
| disabled by scheduler: login terminal | The login terminal has been disabled by the LP scheduler. The printer can be reenabled by using the **enable** command. |

| Error Message | Description/Action |
|---|---|
| error in printer request printer-id | *Printer-id* is the actual request identification number. The error was most likely due to an error in the printer. Check the printer, and reset it if needed. |
| illegal keyletter "xx" | An invalid option, *xx*, was used. See the manual page for the correct options. |
| keyletters "-xx" and "-yy" are contradictory | This combination of options to the **lpadmin** program cannot be used together. |
| keyletter "xx" requires a value | The option *xx* requires an argument. For example, in the command line **lpadmin -m** *model* the argument to the **-m** option is the name of a model interface program. |
| keyletters -e, -i, and -m are mutually exclusive | These options to the **lpadmin** command cannot be used together. Refer to the manual page for more information on usage. |
| lp: xx | In this message the variable *xx* could be one of several arguments. Typically, it is a message telling you the default destination is not assigned. |
| member directory has disappeared! | The **/usr/spool/lp/member** directory has been removed. The system is probably out of free disk space in the **/usr** file system. You need to clean up the **/usr** file system, and then install the LP commands or retrieve them from a backup. |
| model "xx" non-existent | The name that you are using for a model interface program is not a valid one. A list of valid models is in the **/usr/spool/lp/model** directory. |

| Error Message | Description/Action |
|---|---|
| new printers require -v and either -e, -i, or -m | A printer must have an interface program, and this is specified by **-e**, **-i**, or **-m** options. The **-v** option specifies the device file for the printer. For more information on these options, refer to the **lpadmin** manual page. |
| no destinations specified | There are no destination printers specified. Use the **lpadmin** command to set one up. |
| no printers specified | There are no printers specified. Use the **lpadmin** command to set one up. |
| non-existent printer xx in PSTATUS | A printer with the name *xx* is in the **/usr/spool/lp/pstatus** file but no longer exists. The printer should be removed using the **lpadmin** command. |
| non-existent printer printer-name in class xx | The printer that you are trying to address in class *xx* has been removed from that class. |
| out of memory | Implies the system is in trouble. The message implies that there is not enough memory to contain the text to be printed. |
| printer "printer-name" already in class "xxP" | The printer you are trying to move to class xx is already in that class. You cannot move a printer to a class that it is already in. |
| printer "printer-name" has disappeared! | The printer has been removed, and the **enable** command cannot find it. The printer was most likely removed since the machine was rebooted or since the scheduler was started. |
| printer "printer-name" non-existent | *Printer-name* is the name of a printer that has been removed since the scheduler has been started. You must use the **lpadmin -x***printer-name*. |
| printer status entry for "printer-name" has disappeared | The **/usr/spool/lp/pstatus** file must have been corrupted. You will have to resubmit the printer request. |

| Error Message | Description/Action |
|---|---|
| printer "printer-name" was not busy | The printer is not printing a request at this time. Either the request you wanted to cancel is finished printing or you have specified the wrong printer. |
| request "printer-id" non-existent | You are attempting to cancel a request that does not exist. You may have given the wrong printer name or wrong request id number or the request may have finished printing. |
| request not accepted | The request was not accepted by **lp**. The scheduler may not be running. Use the **lpstat -t** command to find out more information. |
| requests still queued for "printer-name" -- use lpmove | *Printer-name* is the printer that still has requests waiting to get printed. You need to use the **lpmove** command to get those requests moved to another printer. |
| scheduler is still running -- can't proceed | You cannot perform this command while the scheduler is running. You will have to use the **lpshut** command first. |
| spool directory non-existent | The directory **/usr/spool** has been removed. You will have to use the **mkdir** command to restore the directory. This has probably removed some of the necessary LP files. You may have to reinstall the LP commands. |
| standard input is empty | You specified an invalid file name either by incorrectly typing a name or by specifying a nonexistent file. Nothing will be printed on the printers from this request. |
| this command for use only by LP Administrators | This command is restricted to someone logged in as root. |
| too many options for interface program | The **lp** command called the appropriate interface program with too many arguments. For more information on the options and arguments that can be used with the **lp** command, refer to the **lp** manual page. |