ESP Print Pro 4.4
Software Users Manual

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About This Guide

The ESP Print Pro Software Users Manual explains how to operate the ESP Print Pro software. This guide assumes that you know how to perform basic tasks on your system, such as logging into a user account and running programs.

Organization of This Guide

This guide is organized into the following sections:

- Chapter 1, "Overview of ESP Print Pro", introduces ESP Print Pro.
- Chapter 2, "Using the Printing System", shows you how to print files and control print jobs.
- Chapter 3, "Standard Printer Options", describes the standard printing options that are available for all printer drivers.
- Chapter 4, "Using ESP Print Pro with Common Applications", describes how to use ESP Print Pro with common applications. It also explains how to use the ESP Print Pro `lpwin` program to print images from the screen or a particular window.
- Appendix A, "Software License Agreement", provides the software license agreements for ESP Print Pro, CUPS, and GNU Ghostscript.

How to Use This Guide

If you are new to the ESP Print Pro software, you will probably want to read Chapters 1 and 2.

Chapter 3 is a good reference for day−to−day users and explains how each printer option affects the printed output.

Chapter 4 is required reading for anyone wanting to print from many popular applications or generate screen hardcopies.

Notation Conventions

Various font and syntax conventions are used in this guide. Examples and their meanings and uses are explained below:

Example	Description
`lpstat` `lpstat(1)`	The names of commands; the first mention of a command or function in a chapter is followed by a manual page section number.
var */usr/share/cups/data/testprint.ps*	File and directory names.
`Request ID is Printer-123`	Screen output.
lp −d printer filename ENTER	Literal user input; special keys like **ENTER are in ALL CAPS.**
12.3	Numbers in the text are written using the period (.) to indicate the decimal point.

Abbreviations

The following abbreviations are used throughout this manual:

kb
> Kilobytes, or 1024 bytes

Mb
> Megabytes, or 1048576 bytes

Gb
> Gigabytes, or 1073741824 bytes

Other References

ESP Print Pro Software Administrators Manual
> A guide for installing and configuring the ESP Print Pro software.

Chapter 1
Overview of ESP Print Pro

This chapter provides an overview of how ESP Print Pro works.

The Printing Problem

For years *the printing problem* has plagued UNIX. Unlike Microsoft® Windows® or Mac OS, UNIX has no standard interface or system in place for supporting printers. Among the solutions currently available, the Berkeley and System V printing systems are the most prevalent.

These printing systems support line printers (text only) or PostScript printers (text and graphics), and with some coaxing they can be made to support a full range of printers and file formats. However, because each varient of the UNIX operating system uses a different printing system than the next, developing printer drivers for a wide range of printers and operating systems is extremely difficult. That combined with the limited volume of customers for each UNIX varient has forced most printer vendors to give up supporting UNIX entirely.

ESP Print Pro is designed to eliminate *the printing problem*. One common printing system can be used by all UNIX varients to support the printing needs of users. Printer vendors can use its modular filter interface to develop a single driver program that supports a wide range of file formats with little or no effort. Since ESP Print Pro provides both the System V and Berkeley printing commands, users (and applications) can reap the benefits of this new technology with no changes.

The Technology

ESP Print Pro is based upon an emerging Internet standard called the Internet Printing Protocol. IPP has been embraced by dozens of printer and printer server manufacturers and is supported by Microsoft Windows 2000.

IPP defines a standard protocol for printing as well as managing print jobs and printer options like media size, resolution, and so forth. Like all IP–based protocols, IPP can be used locally or over the Internet to printers hundreds or thousands of miles away. Unlike other protocols, however, IPP also supports access control, authentication, and encryption, making it a much more capable and secure printing solution than older ones.

IPP is layered on top of the Hyper–Text Transport Protocol ("HTTP") which is the basis of Web servers on the Internet. This allows users to view documentation, check status information on a printer or server, and manage their printers, classes, and jobs using their Web browser.

ESP Print Pro provides a complete IPP/1.1 based printing system that provides Basic, Digest, and local certificate authentication and user, domain, or IP–based access control. 128–bit SSL and TLS encryption can also be enabled and used with ESP Print Pro.

Jobs

Each file or set of files that is submitted for printing is called a *job*. Jobs are identified by a unique number starting at 1 and are assigned to a particular destination, usually a printer. Jobs can also have options associated with them such as media size, number of copies, and priority.

Classes

ESP Print Pro supports collections of printers known as *classes*. Jobs sent to a class are forwarded to the next available printer in the class. A special type of class called an *implicit class* is also supported by ESP Print Pro. Implicit classes are created automatically on client machines when more than one server supports a particular printer. This allows the client machines to use any server for a particular printer transparently to the user, providing both load–balancing and failsafe operation.

Filters

Filters allow a user or application to print many types of files without extra effort. Print jobs sent to a ESP Print Pro server are filtered before sending them to a printer. Some filters convert job files to different formats that the printer can understand. Others perform page selection and ordering tasks.

ESP Print Pro provides filters for printing many types of image files, HP–GL/2 files, PDF files, and text files. ESP Print Pro also supplies PostScript and image file Raster Image Processor ("RIP") filters that convert PostScript or image files into bitmaps that can be sent to a raster printer.

Backends

Backends perform the most important task of all – they send the filtered print data to the printer.

ESP Print Pro provides backends for printing over parallel, serial, and USB ports, and over the network via the IPP, JetDirect (AppSocket), and Line Printer Daemon ("LPD") protocols. Additional backends are available in network service packages such as the SMB backend included with the popular SAMBA software.

Backends are also used to determine the available devices. On startup each backend is asked for a list of devices it supports, and any information that is available. This allows the parallel backend to tell ESP Print Pro that an EPSON Stylus Color 600 printer is attached to parallel port 1, for example.

Printer Drivers

Printer drivers in ESP Print Pro consist of one or more filters specific to a printer. ESP Print Pro includes thousands of printer drivers optimized for your printers.

Networking

Printers and classes on the local system are automatically shared with other systems on the network – the administrator of a server does not need to configure the client machines! This allows you to setup one system to print to a printer. This system can then be used as a print server or spool host for all other systems. Users may then select a local printer by name or a remote printer using "name@server".

Chapter 2
Using the Printing System

This chapter shows you how to submit, query, and cancel print jobs to different printers. It also describes how to save printer options for later use.

Submitting Files for Printing

ESP Print Pro provides both the System V (`lp(1)`) and Berkeley (`lpr(1)`) printing commands. Type the following command to print a file to the default (or only) printer on the system:

```
lp filename ENTER
```

or:

```
lpr filename ENTER
```

ESP Print Pro understands many different types of files directly, including PostScript and image files. This allows you to print from inside your applications or at the command–line, whichever is most convenient!

ESP Print Pro also includes a graphical printing command (see Figure 2.1) called `glp(1)`:

```
glp filename ENTER
```
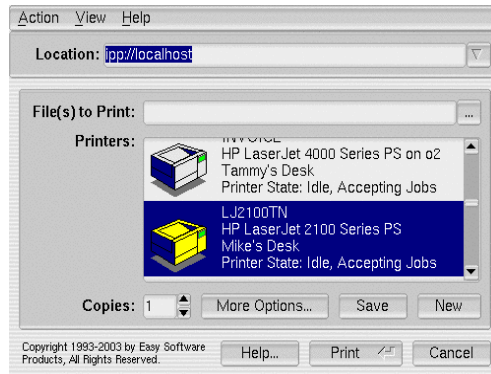
Figure 2.1: The `glp` window.

Choosing a Printer

Many systems will have more than one printer available to the user. These printers can be attached to the local system via a parallel, serial, or USB port, or available over the network.

Use the `lpstat(1)` command to see a list of available printers:

        lpstat -p -d *ENTER*

The `-p` option specifies that you want to see a list of printers, and the `-d` option reports the current system default printer or class.

Use the `-d` option with the `lp` command to print to a specific printer:

        lp -d printer filename *ENTER*

or the `-P` option with the `lpr` command:

        lpr -P printer filename *ENTER*

You can also use the `-d` option with the `glp` command or click on the printer you want to print to in the printer list:

        glp -d printer filename *ENTER*

Setting Printer Options

For many types of files, the default printer options may be sufficient for your needs. However, there may be times when you need to change the options for a particular file you are printing.

The `lp`, `lpr`, and `glp` commands allow you to pass printer options using the `-o` option:

        lp -o landscape -o scaling=75 -o media=A4 filename.jpg
        lpr -o landscape -o scaling=75 -o media=A4 filename.jpg
        glp -o landscape -o scaling=75 -o media=A4 filename.jpg

The available printer options vary depending on the printer. The standard options are described in Chapter 3, "Standard Printing Options".
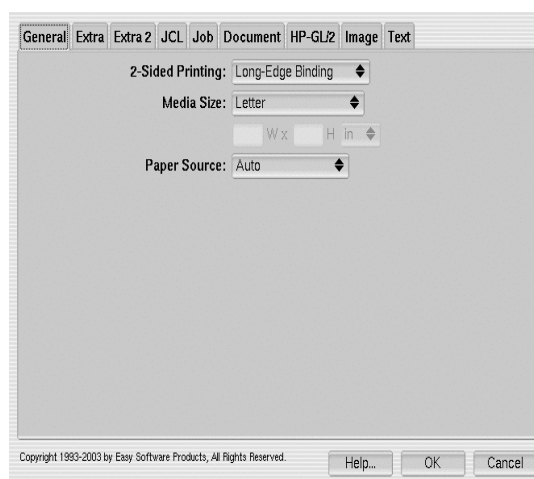
Figure 2.2: The `glp` *options window.*

The `glp` command also provides a graphical option window that is available by clicking on the *More Options* button (see Figure 2.2.)

Printing Multiple Copies

Both the `lp` and `lpr` commands have options for printing more than one copy of a file:

```
lp -n num-copies filename ENTER
lpr -#num-copies filename ENTER
glp -n num-copies filename ENTER
```

Copies are normally *not* collated for you. Use the `-o collate=true` option to get collated copies :

```
lp -n num-copies -o collate=true filename ENTER
lpr -#num-copies -o collate=true filename ENTER
glp -n num-copies -o collate=true filename ENTER
```

The `glp` command also provides a control for setting the number of copies to print (see Figure 2.1.)

Saving Printer Options

Rather than specifying these options each time you print a file, ESP Print Pro allows you to save them as "default" options for the printer. Note that saving options as user root will save for all users unless they saved their own configuration.

Saving Options from the Command–Line

The `lpoptions(1)` command saves the options for your printers. Like the `lp` and `lpr` commands, it accepts printer options using the `-o` argument:

```
lpoptions -o prettyprint ENTER
lpoptions -o media=a4 -o sides=two-sided-long-edge ENTER
lpoptions -o media=legal -o scaling=100 ENTER
```

Once saved, any print command will use them when you print a file or document.

Setting Options for a Specific Printer

The previous example shows how to set the options for the default printer. The `-p printer` option specifies the options are for another printer:

```
lpoptions -p laserjet -o prettyprint ENTER
lpoptions -p laserjet -o media=a4 -o sides=two-sided-long-edge ENTER
lpoptions -p deskjet -o media=legal -o scaling=100 ENTER
```

Removing Options from the Command–Line

The previous two examples shows how to set options for the default and a specific printer. Below, shows you how to remove the saved option using the `-r` argument:

```
lpoptions -r prettyprint ENTER
lpoptions -p laserjet -r prettyprint ENTER
```

Saving Options from the Print Panel

The `glp` command supports saving of options. After running `glp`, click on the *More Options* button to select the options you want, and then click on the *Save* button to save them.

```
glp ENTER
```

Saving Options from the Printer Manager

The `printers` command supports saving of options as well. After running `printers`, click on the desired printer and select *Set Default Options* from the *Action* menu.

```
/usr/sbin/printers ENTER
```

Viewing the Current Defaults

The `lpoptions` command can also be used to show the current options by not specifying any new options on the command–line:

```
lpoptions ENTER
media=a4 sides=two-sided-long-edge
lpoptions -p deskjet ENTER
media=legal scaling=100
```

The current default options are also available when displaying the printer option panel from the `glp` or `printers` commands.

Viewing Options for a Specific Printer

You can display the supported options using the `lpoptions` command with the `-l` option, as follows:

```
lpoptions -p BJC2000 -l ENTER
Resolution/Resolution: 360fast *360dpi
PageSize/Media Size: Env10 A4 A5 B5 EnvC5 EnvDL EnvISOB5 Legal *Letter \
    EnvMonarch
```

```
PageRegion/PageRegion: Env10 A4 A5 B5 EnvC5 EnvDL EnvISOB5 Legal Letter \
    EnvMonarch
```

The `glpoptions` command can be used as well. `glpoptions` displays the graphical printer options panel and allows users to select the available printer options.

> **glpoptions -p BJC2000** *ENTER*

The output of glpoptions is a single line consisting of all of the selected options. These options can then be used from a shell script or application as input to the `lp` or `lpr` commands.

Setting the Default Printer

The administrator normally will set a system–wide default printer that is normally used as the default printer by everyone. Use the `-d printer` option to set your own default printer:

> **lpoptions -d deskjet** *ENTER*

The printer can be local (`deskjet`) or remote (`deskjet@server`).

The default printer can also be set from the Printer Manager:

> **/usr/sbin/printers** *ENTER*

Click on the desired printer and choose *Set Default* from the *Action* menu.

Printer Instances

Besides setting options for each print queue, ESP Print Pro supports *printer instances* which allow you to define several different sets of options for each printer. You specify a printer instance using the slash (`/`) character:

> **lpoptions -p laserjet/duplex -o sides=two-sided-long-edge** *ENTER*
> **lpoptions -p laserjet/legal -o media=legal** *ENTER*

The lp, lpr, and `glp` commands also understand this notation:

> **lp -d laserjet/duplex filename** *ENTER*
> **lpr -P laserjet/legal filename** *ENTER*
> **glp -d laserjet/legal filename** *ENTER*

The `glp` command also supports creating new printer instances. After setting the printer options by clicking on the *More Options* button, click on the *New* button and type in the instance name.

Removing Instances

Use the `-x printer/instance` option to remove a printer instance that you no longer need:

> **lpoptions -x laserjet** *ENTER*
> **lpoptions -x laserjet/duplex** *ENTER*
> **lpoptions -x laserjet/legal** *ENTER*

The −x option only removes the default options for that printer and instance; the original print queue will remain until deleted with the `lpadmin(8)` or `printers` commands by the administrator.

Checking the Printer Status from the Command−Line

The `lpstat` command can be used to check for jobs that you have submitted for printing:

```
lpstat ENTER
DeskJet-1 johndoe 4427776
DeskJet-2 johndoe 15786
DeskJet-3 johndoe 372842
```

The jobs are listed in the order they will be printed. Use the −p option to see which files and printers are active:

```
lpstat -p ENTER
printer DeskJet now printing DeskJet-1.
```

Use the −o and −p options together to show the jobs and the printers:

```
lpstat -o -p ENTER
DeskJet-1 johndoe 4427776
DeskJet-2 johndoe 15786
DeskJet-3 johndoe 372842
printer DeskJet now printing DeskJet-1.
```

Checking the Printer Status from the Web

Since ESP Print Pro uses the Internet Printing Protocol, it is also a fully−functional Web server. To use your Web browser to monitor the printers on your system, open the following URL:

```
http://localhost:631
```

From there you can view the status of classes, jobs, and printers with the click of a button!

Canceling a Print Job

The `cancel(1)` and `lprm(1)` commands cancel a print job:

```
cancel job-id ENTER
lprm job-id ENTER
```

The `job-id` is the number that was reported to you by the `lp` or `lpstat` commands.

Managing Print Jobs from the Printer Manager

The Printer Manager is a graphical utility that is normally used by the system administrator to manage printers, classes, and jobs on the system. You access the Printer Manager by double−clicking on the *Printer Manager* icon or running the `printers(8)` command:

```
/usr/sbin/printers ENTER
```
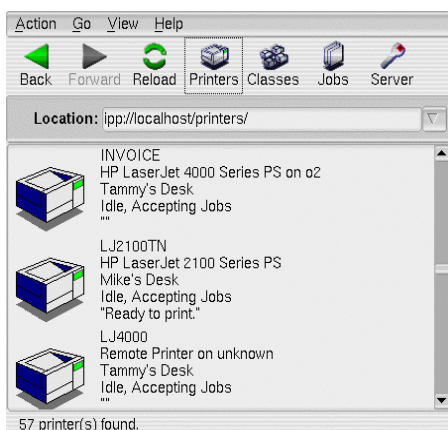
Figure 2.3: The Printer Manager window.
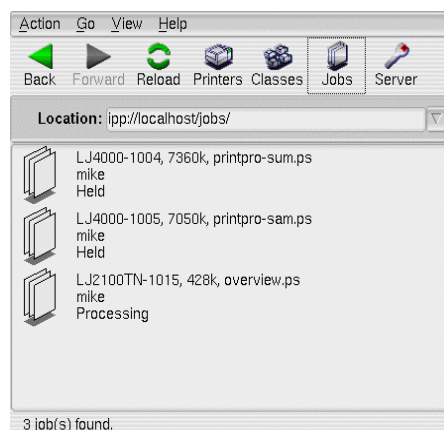
Figure 2.4: Jobs in the Printer Manager window.

The Printer Manager (Figure 2.3) works very much like a web browser. Initially the Printer Manager displays a list of available printers and information about each printer. To see the jobs in the queue double−click on a printer icon or click on the *Jobs* button at the top of the window (Figure 2.4.)

To cancel a pending job, click on the job icon and choose *Delete* from the *Action* menu.

Changing Your View Settings

The printer, class, and job list, as well as the refresh rate of the Printer Manager window can be controlled from the *Settings* dialog. To access this dialog, choose *Settings* from the *View* menu in either the Print Panel (`glp`) or Printer Manager (`printers`) windows. The *Settings* dialog window (Figure 2.5) will appear.

Click on the *OK* button to confirm and apply your setting changes, or the *Cancel* button to cancel all changes.
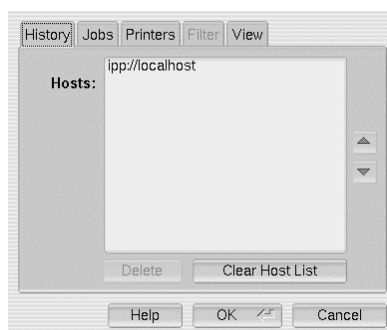
Figure 2.5: The Settings Dialog and History Tab.

The *History* tab shows all of the servers you have visited in the past – you can pick a server from this list by clicking on the down arrow next to the location field in either the *Printer Manager* or *Print Panel* windows.

Click on the *Clear Host List* button to remove all of the hosts from the list, or click on a URL and the *Delete* button to remove a single host. The up and down arrow buttons can be used to reorder the list.
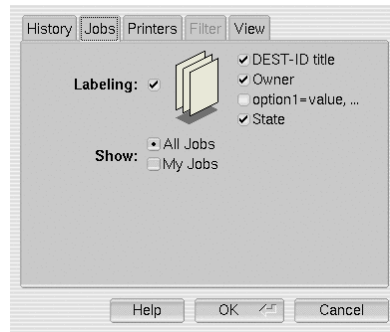
Figure 2.6: The Jobs Tab.

The *Jobs* tab (Figure 2.6) controls which jobs are shown and what information is shown for each job. Check the boxes for the information you want to see and uncheck the boxes for the information you don't want to see.

Similarly, click on the *All Jobs* radio button to show all jobs or the *My Jobs* radio button to show the jobs associated with your username.
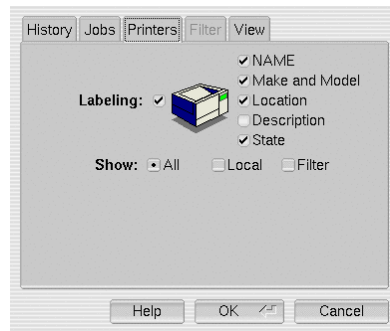
Figure 2.7: The Printers Tab.

The *Printers* tab (Figure 2.7) controls which printers or classes are shown and what information is shown for each printer or class. Check the boxes for the information you want to see and uncheck the boxes for the information you don't want to see.

Clicking on the *All* button will show all printers or classes, while clicking on the *Local* button will only show local printers and classes. The *Filter* button enables the *Filter* tab for fine−grained control of which printers and classes are visible.
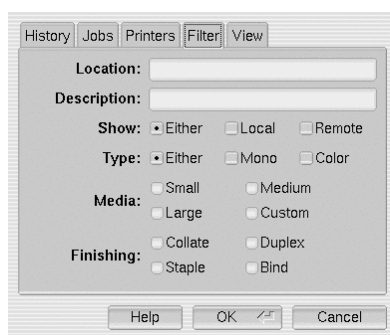
Figure 2.8: The Filter Tab.

The *Filter* tab (Figure 2.8) controls the fine−grained filtering of printers and classes that are shown. Enter a string in the *Location* field to show printers and classes in that location, for example "Room 123". The location string must match the location information associated with the printer or class; case is not significant.

The *Show* group controls whether to show local, remote, or all printers and classes.

The *Type* group controls whether to show monochrome, color, or all printers and classes.

The *Media* check boxes enable you to restrict the list to contain only those printers and classes that are capable of printing *Small* (up to 9x14"), *Medium* (up to 13x19"), or *Large* (greater than 13x19") size documents. The *Custom* check box restricts the list to printers that can support custom page sizes.

The *Finishing* check boxes enable you to restrict the list to contain only those printers and classes that can perform the indicated finishing options. The *Collate* check box refers to the printer's ability to produce collated copies on its own, which is generally faster than sending the document multiple times to achieve the same effect. The other check boxes indicate a specific printing ability that cannot be emulated by software alone.
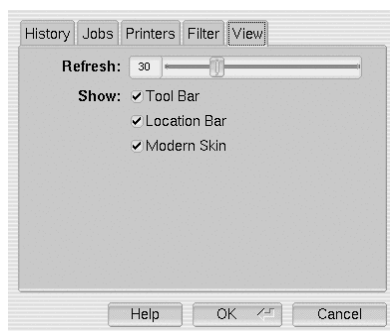
Figure 2.9: The View Tab.

The *View* tab (Figure 2.8) controls the refresh rate of the *Printer Manager* window and whether to show the tool and location bars.

Drag the *Refresh* control until it shows the correct number of seconds to wait between refreshes. Set the control to 0 to disable the automatic refresh feature.

Check or uncheck the *Tool Bar* and *Location Bar* boxes as desired to control the appearance of each element.

Changing Your View Settings

Chapter 3
Standard Printer Options

This chapter describes the standard printer options that are available when printing with the `lp`, `lpr`, and `glp` commands.
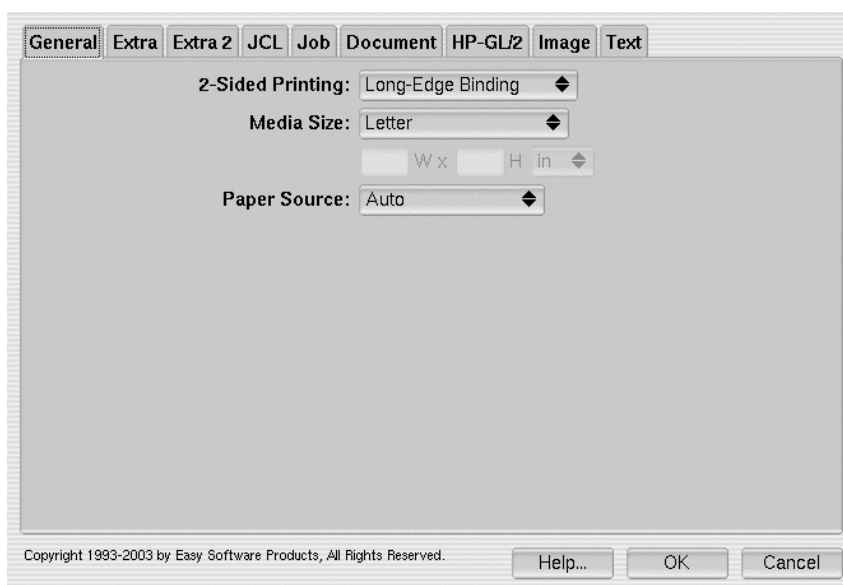
Figure 3.1: General Options

General Options

The general options apply when printing all types of files. Figure 3.1 shows the *General* options tab which is accessable by running the `glp` program and clicking on the *More Options...* button.

Selecting the Media Size, Type, and Source

The *Media Size*, *Media Source*, and *Media Type* choosers select the media size, source, and type for a print job. Use the the `-o media=xyz` option to set the media size, type, and/or source from the command–line:

```
lp -o media=letter filename ENTER
lp -o media=letter,multipurpose filename ENTER
lpr -o media=letter,transparency filename ENTER
glp -o media=letter,multipurpose,transparency filename ENTER
```

The available media sizes, types, and sources depend on the printer, but most support the following options (case is not significant):

- `letter` – US Letter (8.5x11 inches, or 216x279mm)
- `legal` – US Legal (8.5x14 inches, or 216x356mm)
- `a4` – ISO A4 (8.27x11.69 inches, or 210x297mm)
- `com10` – US #10 Envelope (9.5x4.125 inches, or 241x105mm)
- `dl` – ISO DL Envelope (8.66x4.33 inches, or 220x110mm)
- `transparency` – Transparency media type or source
- `upper` – Upper paper tray
- `lower` – Lower paper tray
- `multipurpose` – Multi–purpose paper tray
- `largecapacity` – Large capacity paper tray

The actual options supported are defined in the printer's PPD file in the `PageSize`, `InputSlot`, and `MediaType` options.

Printing On Both Sides of the Paper

The *Duplex* chooser selects single– or double–sided output. On the command–line the `-o sides=two-sided-short-edge` and `-o sides=two-sided-long-edge` options will enable duplexing on the printer, if the printer supports it. The `-o sides=two-sided-short-edge` option is suitable for landscape pages, while the `-o sides=two-sided-long-edge` option is suitable for portrait pages:

```
lp -o sides=two-sided-short-edge filename ENTER
lpr -o sides=two-sided-long-edge filename ENTER
glp -o sides=two-sided-long-edge filename ENTER
```

The default is to print single–sided:

```
lp -o sides=one-sided filename ENTER
lpr -o sides=one-sided filename ENTER
glp -o sides=one-sided filename ENTER
```


Figure 3.2: Job Options

Job Options

The job options apply when printing all types of files. Figure 3.2 shows the *Job* options tab which is accessable by running the `glp` program and clicking on the *More Options...* button.

Selecting the Banner Page(s)

The *Start Banner* and *End Banner* choosers enable you to set the banner page(s) to print with a job. Set either or both to *None* to disable the corresponding banner.

On the command–line the `-o jobsheets=start,end` option sets the banner page(s) to use for a job:

```
lp -o job-sheets=none filename ENTER
lpr -o job-sheets=standard filename ENTER
glp -o job-sheets=classified,classified filename ENTER
```

If only one banner file is specified, it will be printed before the files in the job. If a second banner file is specified, it is printed after the files in the job.

The available banner pages depend on the local system configuration; ESP Print Pro includes the following banner files:

- `none` – Do not produce a banner page.
- `classified` – A banner page with a "classified" label at the top and bottom.
- `confidential` – A banner page with a "confidential" label at the top and bottom.
- `secret` – A banner page with a "secret" label at the top and bottom.
- `standard` – A banner page with no label at the top and bottom.
- `topsecret` – A banner page with a "top secret" label at the top and bottom.
- `unclassified` – A banner page with an "unclassified" label at the top and bottom.

Adding Page Labels

Page labels consist of a single line of text that is placed at the top and bottom of each printed page. Page labels are usually used to mark documents as "Draft", or to add caveats when the server is configured with security classification labelling turned on.

The *Page Label* field contains the text that will be placed at the top and bottom of each printed page. The text is displayed as–is without modification.

The `-o 'page-label="some text"'` option specifies the page label on the command–line. The extra quotes are only necessary if your label string contains spaces, as follows:

```
lp -o page-label=NOFORN filename ENTER
lpr -o page-label=Draft filename ENTER
glp -o 'page-label="This is Bob\'s Document"' filename ENTER
```

Holding Jobs

Jobs are normally printed immediately, however you can tell ESP Print Pro to hold the job indefinitely or until a specific time. The following pre–defined hold times are supported:

- `day-time` – Hold the job until 8am.
- `evening` – Hold the job until 6pm.
- `indefinite` – Hold the job until explicitly released for printing.
- `none` – Do not hold the job; print immediately.
- `second-shift` – Hold the job until 4pm.
- `third-shift` – Hold the job until 12am (midnight).
- `weekend` – Hold the job until the weekend; if the job is submitted before 12am Monday, the job is printed immediately. Otherwise the job is held until the next weekend.

The *Hold Until* field specifies the hold until time, if any. Choose a pre–defined hold time or select *HH:MM* to enter your own time in 24–hour format.

The `-o job-hold-until=value` option specifies the hold until value on the command–line:

```
lp -o job-hold-until=indefinite filename ENTER
lpr -o job-hold-until=day-time filename ENTER
glp -o job-hold-until=123456 filename ENTER
```

The last example specifies a hold time of 12:34:56.

Setting the Job Priority

Print jobs are usually printed in the order received. The job priority can be increased to print the job sooner or decreased to print the job later. The job priority is a number from 1 to 100, where 1 has the lowest priority and 100 has the highest priority. The default priority is 50.

Move the *Priority* slider to change the priority your print job or use the `-o job-priority=value` option specifies the job priority on the command–line:

```
lp -o job-priority=1 filename ENTER
lpr -o job-priority=50 filename ENTER
glp -o job-priority=100 filename ENTER
```

Adding Billing Information

ESP Print Pro keeps track of a billing information string for each print job. This can be an account number, a project name, or any other text string you wish to associate with the print job. If defined, billing strings are displayed on banner pages and in the *page_log* file.

Enter the job billing string in the *Billing Info* field or use the `-o job-billing=string` option on the command–line:

```
lp -o job-billing=acme-123 filename ENTER
lpr -o job-billing=MyProject filename ENTER
glp -o 'job-billing="This is Bob\'s Billing Info"' filename ENTER
```
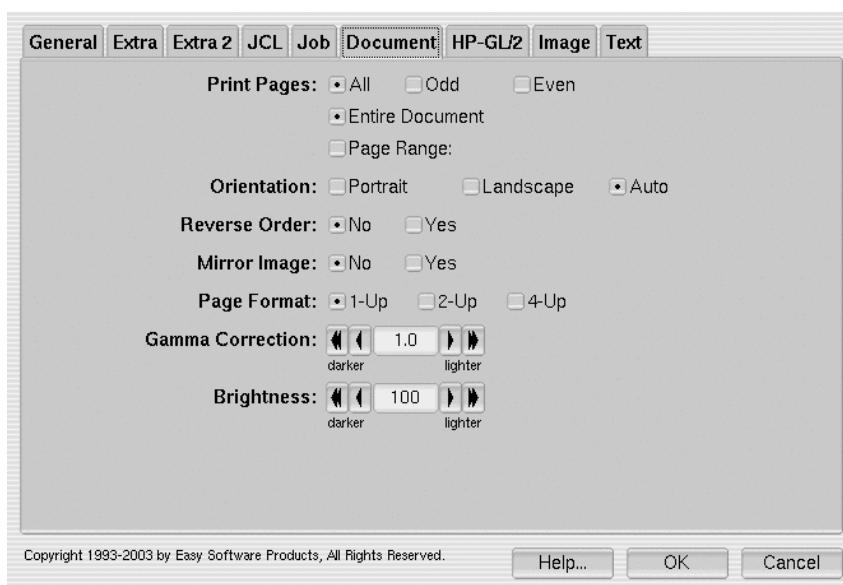
Figure 3.3: Document Options

Document Options

The document options also apply to all types of files. Figure 3.3 shows the *Document* options tab which is accessable by running the `glp` program and clicking on the *More Options...* button.

Setting the Orientation

The *Orientation* buttons control the orientation of the print job – portrait or landscape. Click on the appropriate radio button to set the orientation.

On the command–line, the `-o portrait` option will print in portrait orientation:

```
lp -o portrait filename ENTER
lpr -o portrait filename ENTER
glp -o portrait filename ENTER
```

The `-o landscape` option will rotate the page 90 degrees counter–clockwise to print in landscape orientation:

```
lp -o landscape filename ENTER
lpr -o landscape filename ENTER
glp -o landscape filename ENTER
```

Selecting a Range of Pages

To print a range of pages, click on the *Page Range* radio button in the *Pages* group, then enter the range of pages in the text field next to the button.

The page range can be a single page, a range of pages, or a collection of page numbers and ranges separated by commas. The pages will always be printed in ascending order, regardless of the order of the pages in the text field, e.g. a page range of "5–6,1–2" will print in the same order as "1–2,5–6".

On the command–line the `-o page-ranges=pages` option selects a range of pages for printing:

```
lp -o page-ranges=1 filename ENTER
lpr -o page-ranges=1-4 filename ENTER
glp -o page-ranges=1-4,7,9-12 filename ENTER
```

The default is to print all pages.

Selecting Even or Odd Pages

Click on the *Even Pages* or *Odd Pages* radio buttons in the *Pages* group to print only the even or odd–numbered pages in the file.

Use the `-o page-set=even` and `-o page-set=odd` options to select the even or odd pages on the command–line:

```
lp -o page-set=odd filename ENTER
lpr -o page-set=even filename ENTER
glp -o page-set=even filename ENTER
```

The default is to print all pages.

N–Up Printing

The `-o number-up=value` option selects N–Up printing. N–Up printing places multiple document pages on a single printed page. CUPS supports 1, 2, 4, 6, 9, and 16–Up formats; the default format is 1–Up:

```
lp -o number-up=1 filename ENTER
lp -o number-up=2 filename ENTER
lp -o number-up=4 filename ENTER
lpr -o number-up=16 filename ENTER
```

The `-o number-up-border=value` option chooses the border to draw around each page:

- `-o number-up-border=double`; draw two hairline borders around each page
- `-o number-up-border=double-thick`; draw two 1pt borders around each page
- `-o number-up-border=none`; do not draw a border (default)
- `-o number-up-border=single`; draw one hairline border around each page
- `-o number-up-border=single-thick`; draw one 1pt border around each page

The `-o number-up-layout=value` option chooses the layout of the pages on each output page:

- `-o number-up-layout=btlr`; Bottom to top, left to right
- `-o number-up-layout=btrl`; Bottom to top, right to left
- `-o number-up-layout=lrbt`; Left to right, bottom to top
- `-o number-up-layout=lrtb`; Left to right, top to bottom (default)
- `-o number-up-layout=rlbt`; Right to left, bottom to top
- `-o number-up-layout=rltb`; Right to left, top to bottom
- `-o number-up-layout=tblr`; Top to bottom, left to right
- `-o number-up-layout=tbrl`; Top to bottom, right to left

Setting the Brightness

You can control the overall brightness of the printed output using the *Brightness* control. On the command–line the `-o brightness=percent` option specifies the print brightness:

```
lp -o brightness=100 filename ENTER
lpr -o brightness=120 filename ENTER
glp -o brightness=80 filename ENTER
```

Values greater than 100 will lighten the print, while values less than 100 will darken it. The default value is 100.

Setting the Gamma Correction

You can control the overall gamma correction of the printed output using the *Gamma Correction* control. On the command–line the `-o gamma=value` option specifies the print gamma correction:

```
lp -o gamma=1000 filename ENTER
lpr -o gamma=2200 filename ENTER
glp -o gamma=1700 filename ENTER
```

Values greater than 1000 will lighten the print, while values less than 1000 will darken it. The default gamma is 1000. Most computer monitors use a gamma of 1700 (1.7).
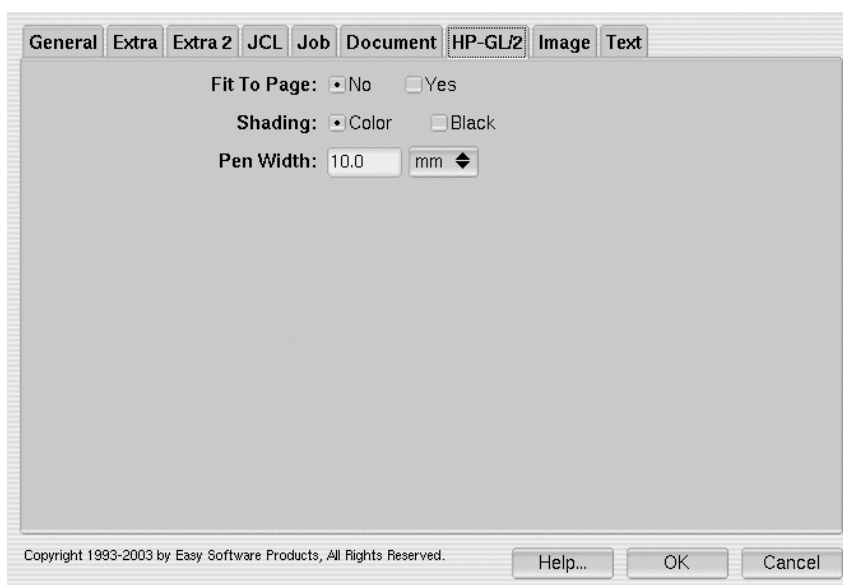
Figure 3.4: HP–GL/2 Options

HP–GL/2 Options

The HP–GL/2 options apply when printing HP–GL/2 files. Figure 3.4 shows the *HP–GL/2* options tab which is accessable by running the `glp` program and clicking on the *More Options...* button.

Fitting the Plot on the Page

The *Fit to Page* and the `-o fitplot` option specify that the plot should be scaled to fit on the page:

```
lp -o fitplot filename ENTER
lpr -o fitplot filename ENTER
glp -o fitplot filename ENTER
```

The default is to use the absolute distances specified in the plot file.

> **Note:**
>
> This feature depends upon an accurate plot size (`PS`) command in the HP–GL/2 file.
> If no plot size is given in the file than the HP–GL/2 filter assumes that the plot is
> ANSI E size.

Printing in Black

The *Black* radio button in the *Shading* group and the `-o blackplot` options specifies that all pens should plot in black:

```
lp -o blackplot filename ENTER
lpr -o blackplot filename ENTER
glp -o blackplot filename ENTER
```

The default is to use the colors defined in the plot file or the standard pen colors defined in the HP–GL/2 reference manual from Hewlett Packard.

Setting the Default Pen Width

The *Pen Width* control and the `-o penwidth=value` option specify the default pen width for HP–GL/2 files:

```
lp -o penwidth=value filename ENTER
lpr -o penwidth=value filename ENTER
glp -o penwidth=value filename ENTER
```

The pen width `value` specifies the pen width in micrometers. The default value of 1000 produces lines that are 1 millimeter in width. Specifying a pen width of 0 produces lines that are exactly 1 pixel wide.

> **Note:**
>
> This option is ignored when the pen widths are set in the plot file.
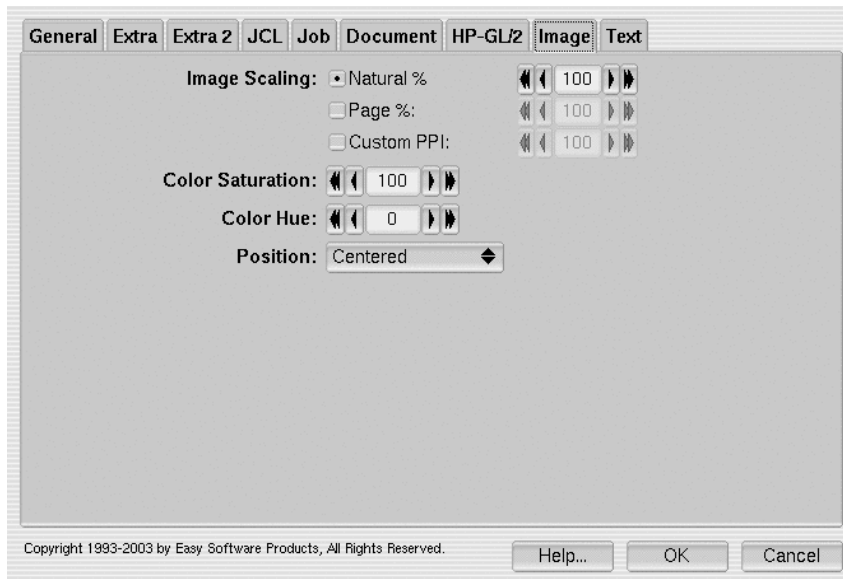
Figure 3.5: Image Options

Image Options

The image options apply when printing image files. Figure 3.5 shows the *Image* options tab which is accessible by running the `glp` program and clicking on the *More Options...* button.

Scaling the Image

Images are normally scaled to their "natural" size as defined by the resolution information in the image file. If an image file has no resolution defined, the default resolution of 128 pixels per inch is used.

The *Image Scaling* controls determine how an image is scaled before printing. Click on *Natural %* to print the image at its natural size, *Page %* to scale the image as a percentage of the page size, and *Custom PPI* to scale the image using a custom resolution.

The `-o scaling=percent`, `-o ppi=value`, and `-o natural-scaling=percent` command–line options change the size of a printed image:

```
lp -o scaling=percent filename ENTER
lpr -o natural-scaling=percent filename ENTER
glp -o ppi=value filename ENTER
```

The `scaling=percent` value is a number from 1 to 800 specifying the size in relation to the page (*not* the image.) A scaling of 100 percent will fill the page as completely as the image aspect ratio allows. A scaling of 200 percent will print on up to 4 pages.

The `ppi=value` value is a number from 1 to 1200 specifying the resolution of the image in pixels per inch. An image that is 3000x2400 pixels will print 10x8 inches at 300 pixels per inch, for example. If the specified resolution makes the image larger than the page, multiple pages will be printed to satisfy the request.

The `natural-scaling=percent` value is a number from 1 to 800 specifying the size in relation to the natural image size. A scaling of 100 percent will print the image at its natural size, while a scaling of 50 percent will print the image at half its natural size. If the specified scaling makes the image larger than the page, multiple pages will be printed to satisfy the request.

Adjusting the Saturation (Color) of an Image

The *Color Saturation* control and the `-o saturation=percent` option adjusts the saturation of the colors in an image, much like the color knob on your television:

```
lp -o saturation=percent filename ENTER
lpr -o saturation=percent filename ENTER
glp -o saturation=percent filename ENTER
```

The `percent` argument specifies the color saturation from 0 to 200. A color saturation of 0 produces a black–and–white print, while a value of 200 will make the colors extremely intense.

The default saturation is 100.

Adjusting the Hue (Tint) of an Image

The *Color Hue* control and the `-o hue=value` option will adjust the hue of the printed image, much like the tint control on your television:

```
lp -o hue=value filename ENTER
lpr -o hue=value filename ENTER
glp -o hue=value filename ENTER
```

The `value` argument is a number from −360 to 360 and represents the color hue rotation. The following table summarizes the change you'll see with different colors:

Original	hue=−45	hue=45
Red	Purple	Yellow−orange
Green	Yellow−green	Blue−green
Yellow	Orange	Green−yellow
Blue	Sky−blue	Purple
Magenta	Indigo	Crimson
Cyan	Blue−green	Light−navy−blue

The default hue adjustment is 0.

Positioning the Image

The *Position* chooser and the `-o position=`*name* command–line option specifies the position of the image on the page:

- `center` – Center the image on the page (default)
- `top` – Print the image centered at the top of the page
- `left` – Print the image centered on the left of page
- `right` – Print the image centered on the right of the page
- `top-left` – Print the image at the top left corner of the page
- `top-right` – Print the image at the top right corner of the page
- `bottom` – Print the image centered at the bottom of the page
- `bottom-left` – Print the image at the bottom left corner of the page
- `bottom-right` – Print the image at the bottom right corner of the page
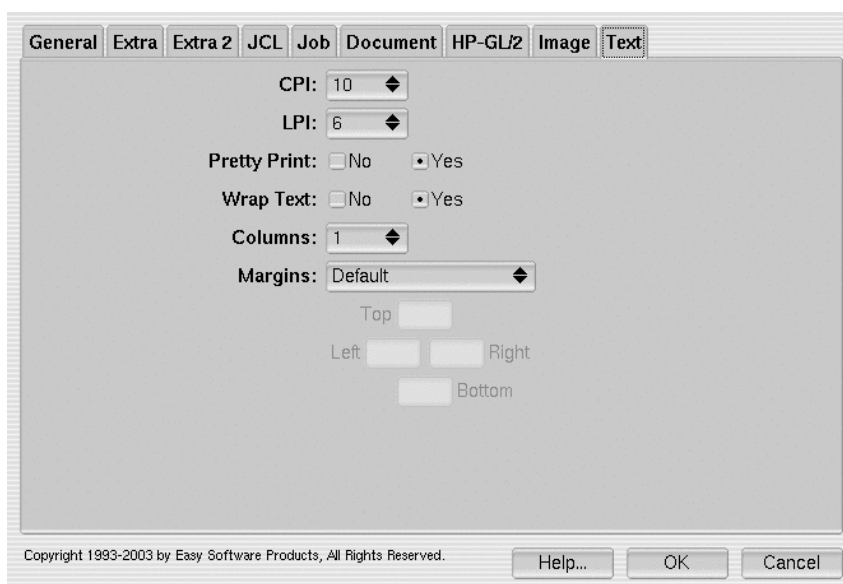
Figure 3.6: Text Options

Text Options

The text options apply when printing text files. Figure 3.6 shows the *Text* options tab which is accessable by running the `glp` program and clicking on the *More Options...* button.

Setting the Number of Characters Per Inch

The *Characters Per Inch* chooser selects the number of characters per inch that are printed. To specify this number on the command–line use the `-o cpi=`*value* option:

```
lp -o cpi=10 filename ENTER
lpr -o cpi=12 filename ENTER
glp -o cpi=17 filename ENTER
```

The default characters per inch value is 10 which provides 80 columns of characters on a standard page.

Setting the Number of Lines Per Inch

The *Lines per Inch* chooser selects the number of lines per inch that are printed. To specify this number on the command–line use the −o lpi=value option:

```
lp −o lpi=6 filename ENTER
lpr −o lpi=8 filename ENTER
glp −o lpi=8 filename ENTER
```

The default lines per inch value is 6 which provides 60 lines of text on a standard page.

Setting the Number of Columns

The *Columns* chooser and −o columns=value option set the number of text columns:

```
lp −o columns=2 filename ENTER
lpr −o columns=3 filename ENTER
```

The default number of columns is 1.

Setting the Page Margins

Normally the page margins are set to the hard limits of the printer. Select *cm*, *in*, or *mm* from the *Margins* chooser and enter the left, right, top, and bottom margins in the appropriate fields. Use the −o page−left=value, −o page−right=value, −o page−top=value, and −o page-bottom=value options to adjust the page margins on the command–line:

```
lp −o page-left=value filename ENTER
lp −o page-right=value filename ENTER
lp −o page-top=value filename ENTER
lp −o page-bottom=value filename ENTER
lpr −o page-bottom=value filename ENTER
```

The value argument is the margin in points; each point is 1/72 inch or 0.35mm.

Pretty Printing

ESP Print Pro supports "pretty printing" of text files. The pretty print mode puts a header at the top of each page with the page number, job title (usually the filename), and the date. Also, shell script, perl, C, and C++ keywords are highlighted, and comment lines are italicized.

Choose *Yes* from the *Pretty Print* group or use the −o prettyprint option on the command–line:

```
lp −o prettyprint filename ENTER
lpr −o prettyprint filename ENTER
glp −o prettyprint filename ENTER
```

Raw or Unfiltered Output

The -o raw option allows you to send files directly to a printer without filtering. This is sometimes required when printing from applications that provide their own "printer drivers" for your printer:

```
lp -o raw filename ENTER
lpr -o raw filename ENTER
glp -o raw filename ENTER
```

The -l option can also be used with the lpr command to send files directly to a printer:

```
lpr -l filename ENTER
```

Chapter 4
Using ESP Print Pro with Common Applications

This chapter describes how to use ESP Print Pro with common applications. It also covers the `lpwin(1)` utility which provides the screen printing (hardcopy) functionality.

Using ESP Print Pro with Netscape Navigator

The default printer command will work with Netscape Navigator. If you want to pick a printer and its options when printing, set the print command to `/usr/bin/glp` (Figure 4.1).
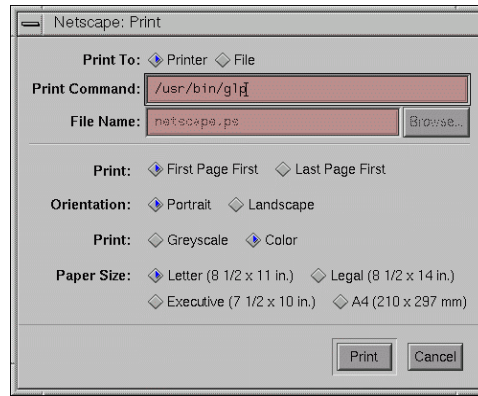
Figure 4.1: Netscape Print Dialog

Using ESP Print Pro with Star Office

Star Office provides its own printer setup dialog that associates printer queues with printer drivers. The Star Office PostScript printer driver works well with the PostScript Printer Description ("PPD") files used by ESP Print Pro.
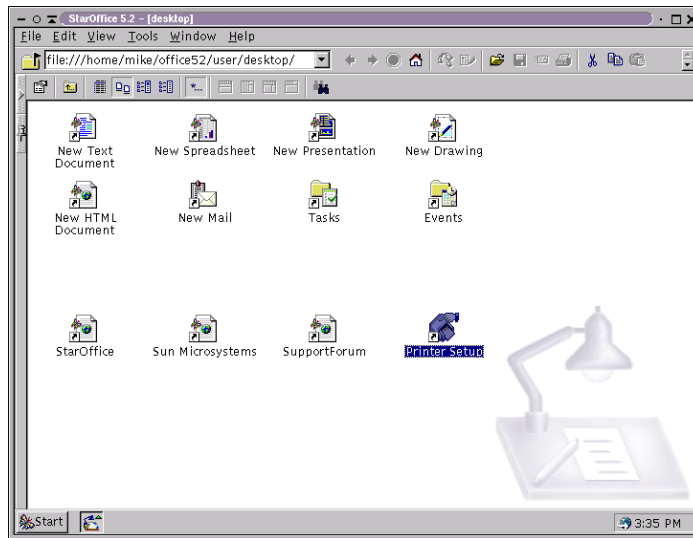
Figure 4.2: Star Office Desktop Window

Start by running the Star Office application. Double−click on the *Printer Setup* icon (Figure 4.2) in the Star Office desktop window.
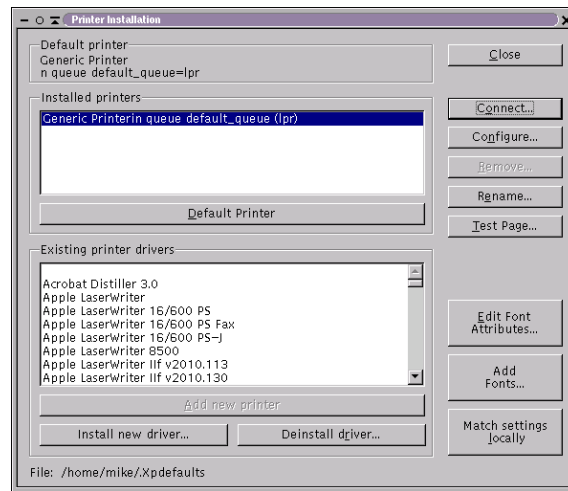
Figure 4.3: Star Office Printer Installation Dialog

The printer installation window that appears (Figure 4.3) shows a list of installed printers and printer drivers. Click on the *Install new driver...* button to add the ESP Print Pro drivers to the list.
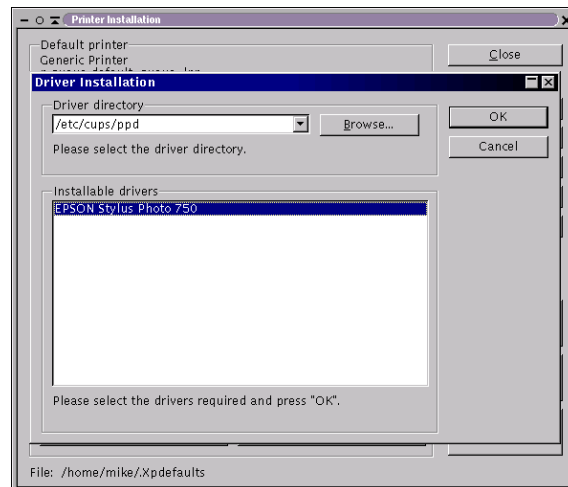
Figure 4.4: Star Office Printer Driver Installation Dialog

The driver installation window (Figure 4.4) shows all of the drivers in the driver directory. If you have never added an ESP Print Pro driver before, click on the *Browse...* button and choose the */etc/cups/ppd* directory.

Then click on the printer driver to install. If you have more than one printer driver to install, hold the **CTRL** key down while you click on each driver.

Click on the *OK* button to install the drivers into Star Office.
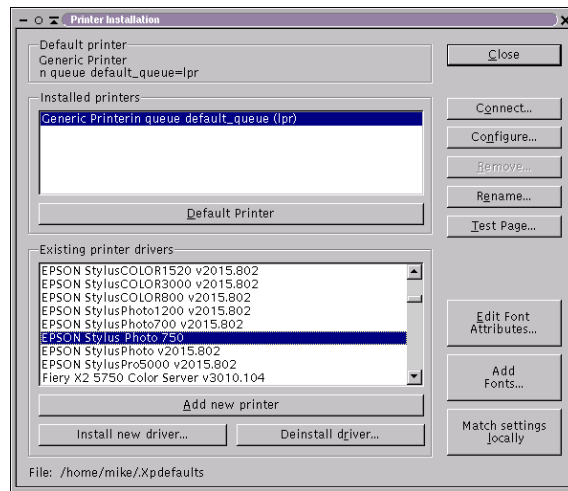
Figure 4.5: Adding a printer to StarOffice.

Now that you have installed the ESP Print Pro drivers in Star Office, scroll the *Existing printer drivers* list (Figure 4.5) until you see the driver that you just added. Click on the driver in the list and then click on the *Add new printer* button to add the printer to Star Office.
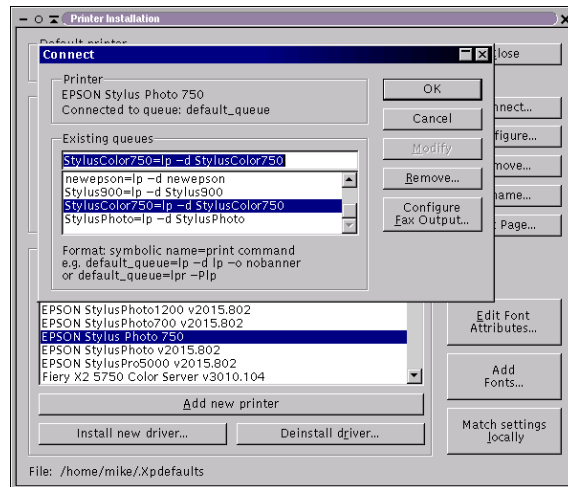
Figure 4.6: Star Office Printer Connection Dialog

After you have added the printer to Star Office, click on the *Connect...* button to show the printer connection dialog. Scroll the *Existing queues* list and click on the printer queue for your printer. Click on *OK* to finish the configuration process for this printer.

Using ESP Print Pro with Corel WordPerfect 8

Corel WordPerfect 8 currently supports black and white printing through ESP Print Pro. In order for WordPerfect to see the available printers, the `Printcap` directive must be enabled (the default configuration) in the ESP Print Pro server as outlined in Chapter 5 of the Software Administrators Manual, "Printing System Management".

Start WordPerfect and choose *Print* from the *File* menu. Click on the *Select...* button in the print dialog to begin configuring a printer (Figure 4.7.)
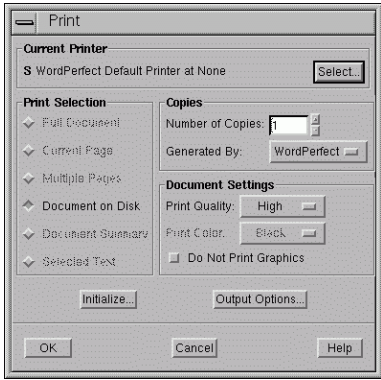
Figure 4.7: WordPerfect Print Dialog

After you click on the *Select...* button the printer selection dialog (Figure 4.8) will appear.
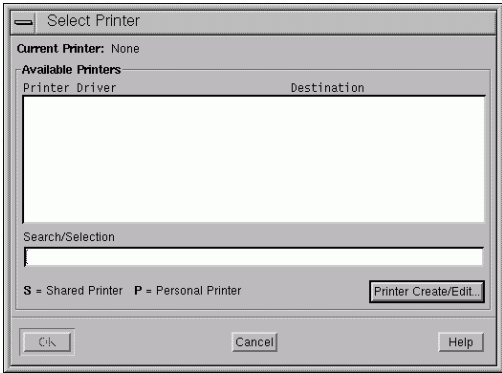
Figure 4.8: WordPerfect Printer Selection Dialog

Click on the *Printer Create/Edit...* button to setup a printer.
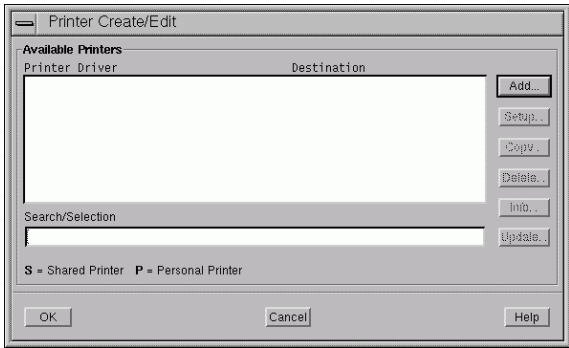
Figure 4.9: WordPerfect Printer Creation Dialog

The printer creation dialog (Figure 4.9) lists the available printers. Click on the *Add button to add a printer.*
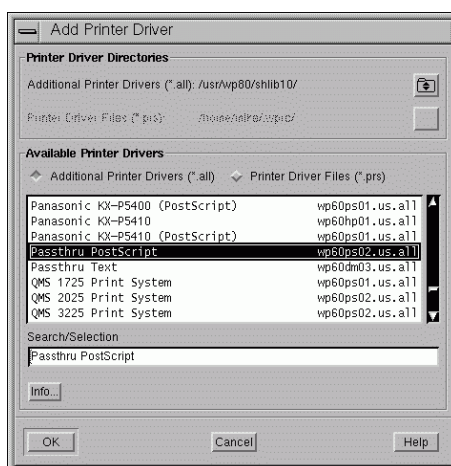
Figure 4.10: WordPerfect Add Printer Dialog

The add printer dialog (Figure 4.10) lists the available printer drivers. Scroll the driver list downward until you see the "Passthru PostScript" driver. Click on this driver and then click on the *OK* button.
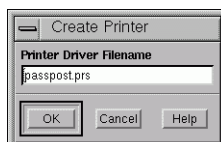
Figure 4.11: WordPerfect Create Printer Dialog

When the create printer dialog appears (Figure 4.11), click on the *OK* button.
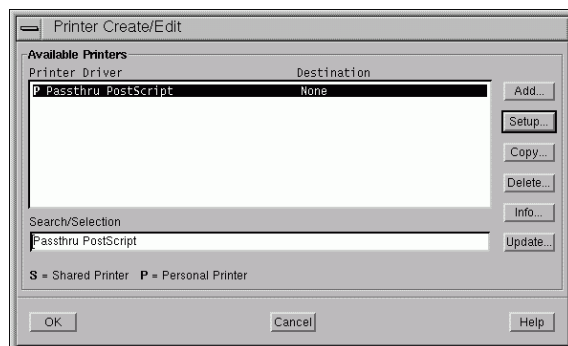
Figure 4.12: WordPerfect Printer Creation Dialog

The new printer driver should appear in the available printers list. Click on the *Setup...* button to associate the driver with a printer.
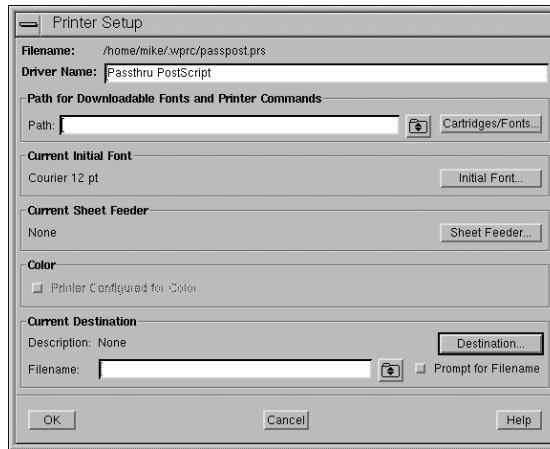
Figure 4.13: WordPerfect Printer Setup Dialog

The printer setup window (Figure 4.13) shows the options for the printer driver. Click on the *Destination...* button to select a printer queue.
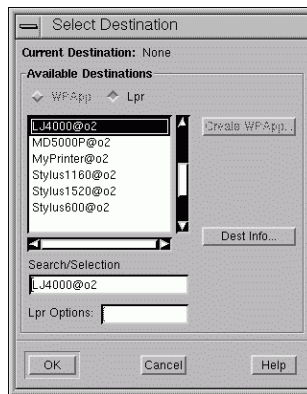
Figure 4.14: WordPerfect Select Destination Dialog

Scroll the destination list in the select destination dialog (Figure 4.14) until you see the desired print queue. Click on the printer in the list and then the *OK* button to make the selection.

Continue clicking on *OK* until all dialog windows are closed.

Using ESP Print Pro with the GIMP

The GIMP includes a print plug–in that can be used with ESP Print Pro very easily. Start by opening an image with the GIMP (Figure 4.15).
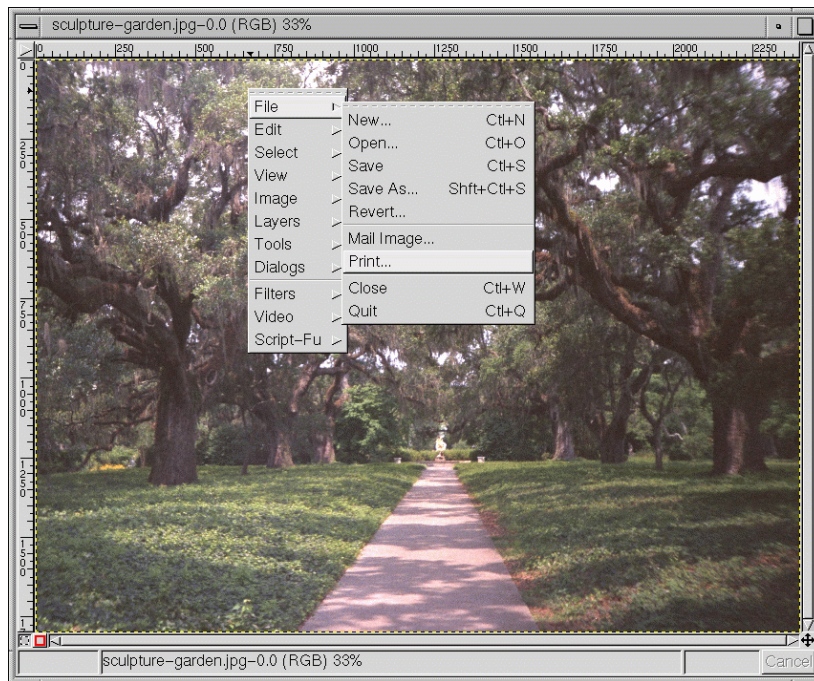
Figure 4.15: GIMP Print Menu

Choose *Print* from the *File* menu to display the print dialog (Figure 4.16).
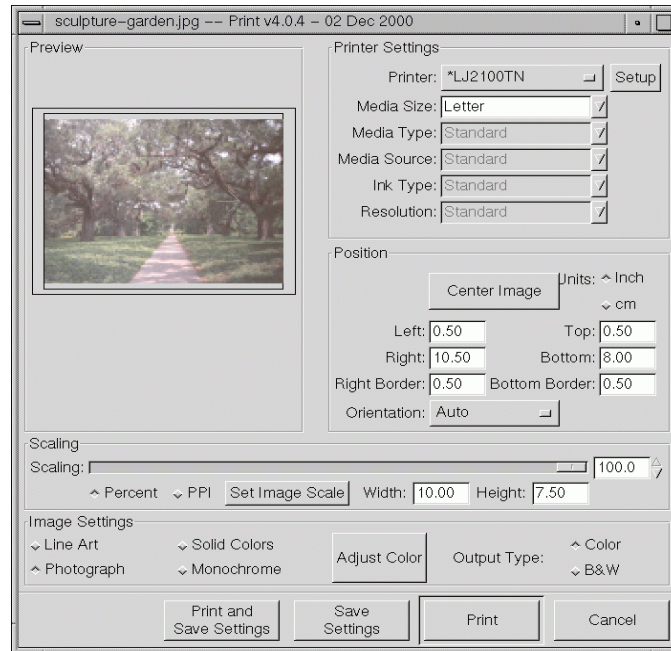
Figure 4.16: GIMP Print Dialog

Choose the destination printer and click on the *Setup* button to display the setup dialog (Figure 4.17).
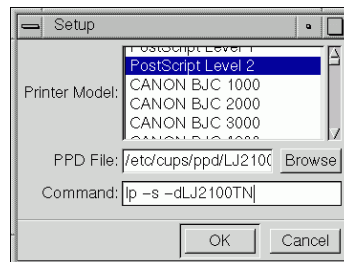
Figure 4.17: GIMP Printer Setup Dialog

Choose the *PostScript Level 2* driver and then set the PPD file for the printer. PPD files for local printers will be located in the */etc/cups/ppd* directory.

Finally, change the print command to read:

```
lp -s -d name
```

where *name* is the name of the print queue.

The Screen Hardcopy Utility

The `lpwin` program provides screen and/or window hardcopy support on X Window System displays. `lpwin` can be configured to print a snapshot of the entire screen, the window with input focus, or a specific window ID. It can also write PPM files for later printing or incorporation into software documentation.

Because of the flexibility of the X Window System, you can attach `lpwin` to a keypress or window menu quite easily in many window managers.

Using `lpwin` from the Command–Line

Without options `lpwin` will send the current window or screen to the default printer. Use the `-d` option to specify a different printer :

        lpwin -d MyPrinter *ENTER*

Alternately, you can have `lpwin` start the `glp` program which allows users to select printers and options via a graphical interface by using the `-gui` option:

        lpwin -gui *ENTER*

Printing the Entire Screen

If you would like the `lpwin` program to print the entire screen everytime a hardcopy is requested, use the `-window root` option:

        lpwin -window root *ENTER*

Printing a Portion of the Screen

If you would like the `lpwin` program to print a specific rectangular area on the screen everytime a hardcopy is requested, use the `-geometry WxH+X+Y` option:

        lpwin -geometry 400x200+100+200 *ENTER*

The example will print a 400x200 pixel rectangle starting 100 pixels from the left and 200 from the top of the screen.

Using `lpwin` from the IRIX Interactive Desktop (`4DWm`)

You need to customize the window manager configuration file to attach `lpwin` to a keypress within the IRIX Interactive Desktop. For the standard 4Dwm window manager you need to edit the */usr/lib/X11/system.4Dwmrc* file. To add the keypress to a single user's account, copy this file to *~/.4Dwmrc* and edit the copy instead.

Search for the *4DwmKeyBindings* section and add the following line:

```
Keys 4DwmKeyBindings
{
Alt<Key>Print root|window f.exec "/usr/bin/lpwin"
...
}
```

Save the changes and then restart the window manager with:

        tellwm restart *ENTER*

After answering *Yes* when asked if you want to restart the window manager you will be able to print the current window by holding the **ALT** key down and pressing **PrintScreen**. If the mouse pointer is in the desktop area when you press **ALT-PrintScreen**, the entire screen will be printed instead.

Using `lpwin` from the Motif Window Manager (`mwm`)

You need to customize the window manager configuration file to attach `lpwin` to a keypress within the Motif Window Manager. For the standard mwm window manager you need to edit the */usr/lib/X11/system.mwmrc* file. To add the keypress to a single user's account, copy this file to *~/.mwmrc* and edit the copy instead.

Search for the *DefaultKeyBindings* section and add the following line:

```
Keys DefaultKeyBindings
{
Alt<Key>Print root|window f.exec "/usr/bin/lpwin"
...
}
```

Save the changes and then logout and log back in to make the changes take effect. You will be able to print the current window by holding the **ALT** key down and pressing **PrintScreen**. If the mouse pointer is in the desktop area when you press **ALT-PrintScreen**, the entire screen will be printed instead.

Using `lpwin` from the Common Desktop Environment (`dtwm`)

You need to customize the window manager configuration file to attach `lpwin` to a keypress within the Common Desktop Environment. For the standard dtwm window manager you need to edit the */usr/dt/config/C/sys.dtwmrc* file. To add the keypress to a single user's account, copy this file to *~/.dt/dtwmrc* and edit the copy instead.

Search for the *DtKeyBindings* section and add the following line:

```
Keys DtKeyBindings
{
Alt<Key>Print root|window f.exec "/usr/bin/lpwin"
...
}
```

Once you have saved the changes, logout and log back in to make the changes take effect. You will be able to print the current window by holding the **ALT** key down and pressing **PrintScreen**. If the mouse pointer is in the desktop area when you press **ALT-PrintScreen**, the entire screen will be printed instead.

Appendix A
Software License Agreements

Software License Agreement for ESP Print Pro

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1. A **DESIGNATED MACHINE** is a computer that has been licensed to use the SOFTWARE for directly printing to one or more printers.
2. A **CLIENT MACHINE** is a computer that uses the SOFTWARE to send print jobs through a DESIGNATED MACHINE that has a Multi–User, Mission–Critical, or Enterprise license.
3. The **BASE SOFTWARE** consists of the basic printing software without the printer drivers. The BASE SOFTWARE is installed on both DESIGNATED MACHINES and CLIENT MACHINES.

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

    a. Accompany the work with the complete corresponding machine−readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine−readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is

understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

   b. Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
   c. If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
   d. Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side−by−side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

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