# Introducing SuperPrint

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# Introducing SuperPrint

Thank you for purchasing Zenographics SuperPrint. After you get to know SuperPrint, printing from Windows will be more satisfying – with faster, better-looking output and convenient direct-printing features you can't get from Windows alone.

It will be helpful if you've already installed SuperPrint at this point; this book contains many step-by-step tutorials on how to use the software. Installation instructions can be found on the CD insert that comes with SuperPrint.

Since you may encounter unfamiliar words in learning about Windows printing, we've included a glossary at the end of this manual. In this manual, some words that may not be familiar are underlined like a hypertext jump; this indicates their definitions are contained in the glossary.

Since this manual covers three versions of Windows – 95, 3.1*x*, and NT 3.51 – these icons are used wherever a series of instructions is version-specific. This allows you to go directly to the applicable instructions.



# Where to find the information you need

### *This book*

This “Introducing SuperPrint” book contains most of the information that typical users need to find their way around SuperPrint. This book also includes output samples (to help you learn to use SuperPrint's imaging enhancement tools) and a glossary.

(Note: This document was formated to give good results when printed on a typical desktop printer. The screen captures and some other graphics may appear illegible on the screen. If you are viewing this document on-screen, we recommend using the Page Layout view in Word and viewing the graphics at 150% zoom factor.)

### *Help files*

Help is available from many sources. If you just need a quick definition of a particular feature within a dialog, right click it. SuperQueue has a help menu and SuperDrivers have a help tab for more complete information. These two sources should provide nearly everything you need to know regarding the normal operation of SuperPrint.

### *SuperHelp*

This is Zenographics' “knowledge base” – all the information we've gathered regarding how SuperPrint interacts with other applications, configurations, and output devices. Even before you have a question, it's a good idea to browse through SuperHelp to find the latest information regarding your printer and favorite Windows programs.

### *On-line services*

The very latest information on SuperPrint can be found in several cyber-space locations:

- The World Wide Web: http://www.zeno.com
- The Microsoft Network: Go word ZENO
- CompuServe: Go ZENO

# What will SuperPrint do for you?

- **Faster printing** – If you're printing documents with graphics or scanned images, you should see faster printing performance with SuperPrint.

- **Direct printing of data files** – Printing bitmap or PostScript-language files has never been easier or faster. With SuperPrint, you can simply drag the file into the queue and it prints automatically – no other applications required!

- **Improved print quality** – You'll see outstanding graphics from your very first printout using SuperPrint. For added control, SuperPrint also lets you change all the settings that control the appearance of your output.

- **PostScript Level 2** – If you work with EPS (Encapsulated PostScript) clip art files or need the portability of the PostScript page description language, SuperPrint provides instant PostScript compatibility for all your Windows-supported non-PostScript printers. Screen preview, too!

- **Improved network operation** – SuperPrint can reduce network printing traffic and provide all network users with enhanced job processing information.

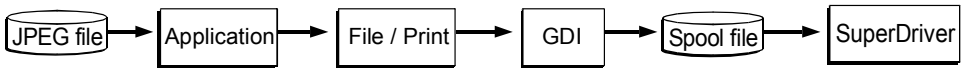
# Main SuperPrint components

## SuperQueue

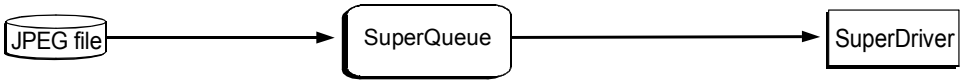
SuperQueue (pronounced: soo'-per-kyew) is an application that lets you view, organize, and modify the list of print jobs for each printer on your system. Use SuperQueue instead of the Printers folder in Windows 95 or Print Manager in Windows NT or 3.1*x* to manage your printing.

SuperQueue also lets you print and preview certain data files (such as bitmap or PostScript files) directly, without the need for any other application. This feature uses filters, which are program modules that import your data files and prepare them for printing. Filters for bitmap files also provide automatic image enhancement for the easiest way to get great looking output.

***Printing a Data File Without SuperQueue***




***Printing a Data File With SuperQueue***



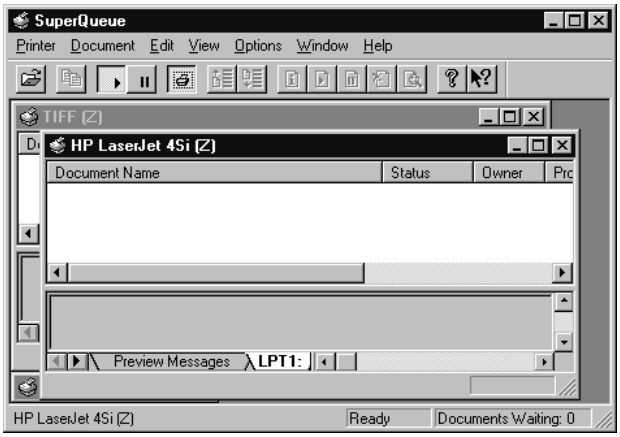

### *Starting SuperQueue*

The SuperPrint installation places a SuperQueue icon on your desktop in Windows 95. The SuperQueue icon in Windows NT or 3.1*x* appears in the SuperPrint4 group.

1. To start SuperQueue, double click its icon.

Inside SuperQueue's window are smaller windows, one for each printer.

2. To see the activity associated with a particular printer, click the title bar of that printer's window.



# SuperDrivers

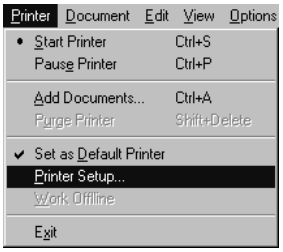
SuperDrivers are enhanced printer drivers for Windows that:

- translate your document into the printer's language
- enhance graphic output
- create bitmap files from your document

While SuperDrivers have many unique features, their basic operation is the same as the drivers that come with Windows – just choose **File / Print** from your application. They have all hardware-related options you're accustomed to, such as paper sizes, compression, and printing modes. And SuperDrivers can co-exist with the Windows-supplied drivers so you can switch back and forth if you want. To make sure you're using a SuperDriver, look for the trailing "(Z)" in the driver name.

## *Finding SuperDriver options*

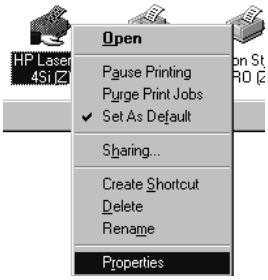
SuperDriver options can be accessed in several ways. To access them from an application:




A. In most applications, choose **Printer Setup** from the **File** menu. If your application doesn't have this choice, try choosing **File / Print** and look for a button such as **Options** or **Setup**.

B. In SuperQueue, choose **Properties** from the **Printer** menu, then choose **Details / Setup**.


To access SuperDriver settings from the Windows 95 Printers folder:



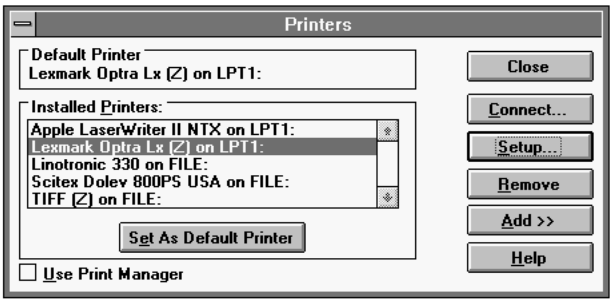

1. Open the Printers folder (**Start / Settings / Printers**).
2. Right click the printer's icon, and choose **Properties** from the resulting menu.
3. Choose the **32-bit SuperDriver Setup** tab.

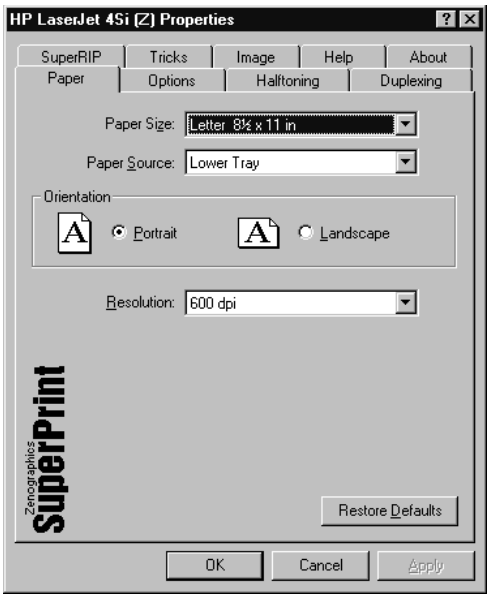

To access SuperDriver settings from the Windows NT Print Manager:

1. Open Print Manager from the **Main** group.
2. Highlight the window of the printer you want to modify and choose **Properties** from the **Printer** menu.
3. Click the **Details** button.
4. Click the **Job Defaults** button.


To access SuperDriver settings from the Windows 3.1 Control Panel:

1. Open **Control Panel** from the **Main** group and double click the **Printers** icon.
2. Choose the SuperDriver from the list of available printers and click the **Setup** button.

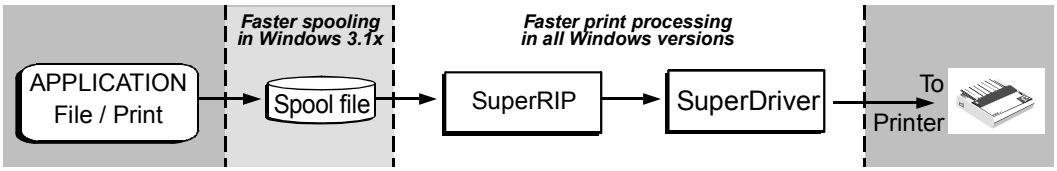


# How SuperPrint provides faster printing

SuperPrint takes the page description that your application sends and prepares it for printing faster than the standard Windows printing system. SuperPrint does most of its work from the time the application finishes sending its page description data to the time the raw printer data is sent to the printer.

**Where SuperPrint saves you time**




On the "front end" of printing in Windows 95 and NT, SuperPrint probably won't affect the amount of time it takes for an application to send its data. In Windows 3.1*x*, however, SuperPrint replaces the slow Print Manager spooler with fast, efficient metafile spooling, so you should see considerable improvement in return-to-application time.

On the "back end" of the printing process, SuperPrint cannot speed up the printer itself or the data transmission time over the printer port. However, in between those two processes, SuperPrint's 32-bit processing speeds rasterization, and its multitasking can dramatically improve your computer's foreground performance while printing is taking place in the background.

What's more, SuperPrint works its magic without the need for additional printer memory, since complex pages have already been processed to minimize the amount of work that the printer needs to do.

## *What you can expect*

In general, the more complex your document is, the more time SuperPrint will save.

| **Type of document** | **SuperPrint performance compared to standard Windows drivers** |
|---|---|
| Simple text | You probably won't see a difference. |
| Documents including bitmaps | Faster processing than other Windows printer drivers. |
| Full page bitmaps (files such as BMP, JPEG, GIF, and TIFF) | Drag the bitmap file directly into SuperQueue for the fastest image processing available! |
| Documents including graphics or full-page graphics | The fastest graphics processing available; the more complex the graphic, the more time SuperPrint will save you. |

# Printing data files directly

### *The easy way to print bitmap and PostScript files*

If you want to print a bitmap file (such as BMP, TIFF, GIF, or JPEG), there's no need to open a bitmap editor application and choose **File / Print** – just use SuperQueue! Aside from the convenience, SuperQueue also prints your bitmap faster when it reads the file directly.

You can print a PostScript file with SuperQueue using the same method as with bitmap files. Files can be level 1 or level 2 PostScript. See "PostScript printing" later in this book for more information.

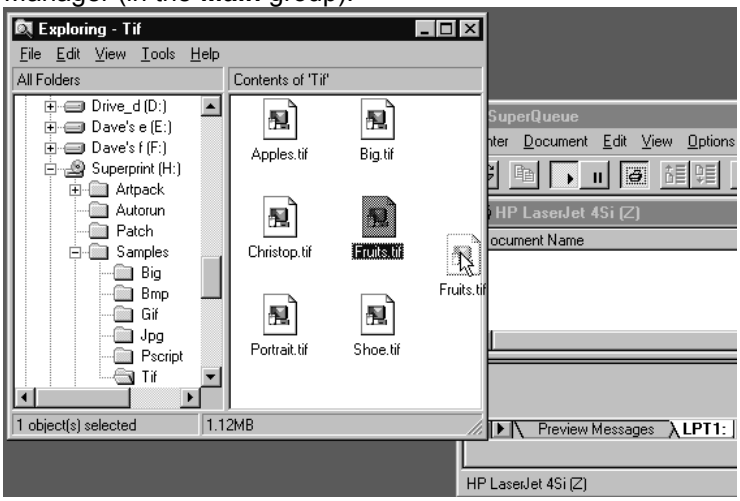
There are two ways to load your file into SuperQueue: use drag-and-drop or use **Add Documents**. In both of the examples below, we suggest using some of the sample files on the SuperPrint CD-ROM.

## Using drag-and-drop

1. Open SuperQueue by double clicking its icon.

You may find the next step easier if you resize the SuperQueue window so that it only uses half the screen.

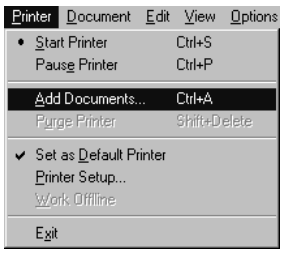
2. In Windows 95, open Windows Explorer (**Start / Programs**), or in Windows 3.1 or NT, launch File Manager (in the **Main** group).
3. Navigate to the \SAMPLES\TIF directory on the SuperPrint CD-ROM.
4. Click on the file FRUITS.TIF and drag its listing onto the printer window for your default printer in SuperQueue.




An options dialog will appear. For now, use the default options. Click OK and you're done!

## Using Add Documents

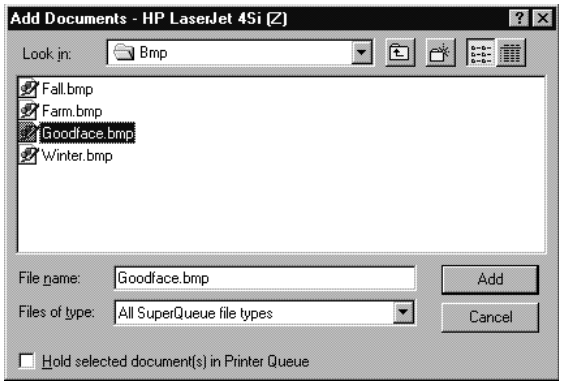
Try adding a sample document to the print queue this way:



1. Open SuperQueue by double clicking its icon.
2. Choose Printer / Add Documents.

The Add Documents dialog appears.

3. Navigate to the \SAMPLES\BMP directory on the SuperPrint CD-ROM.
4. Choose GOODFACE.BMP from the list of files and click **Add**.




This is the lady in the red hat on the back of the SuperPrint box.

5. For now, use the default options. Click OK and watch how fast SuperPrint processes this 4 Megabyte file!

Details on the options contained in the pop-up dialogs can be found later in this book under “Using automatic image enhancement" and in the SuperQueue on-line help.

# Improving print quality

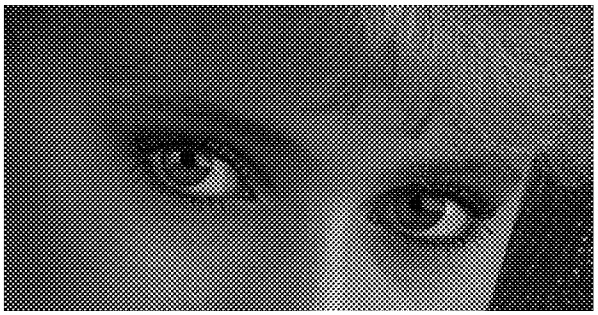
SuperDrivers give you several options to improve the appearance of your output. These are found on the **Halftoning** and **Image** tabs in the SuperDriver.

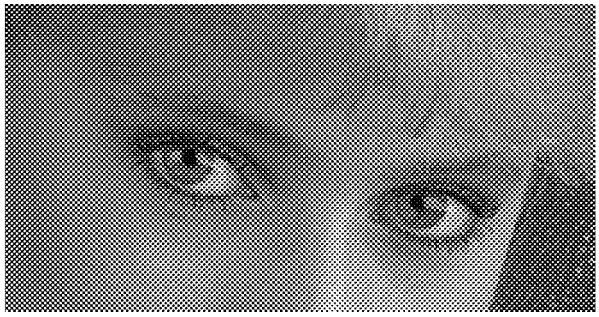
## Identifying lightness and contrast problems

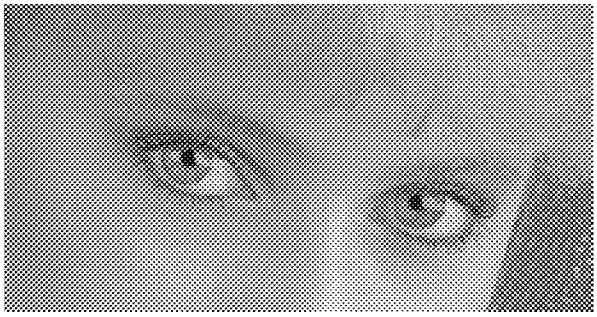
Lightness and contrast are perhaps the most important factors in making your output look good – especially if your page includes scanned images.

### *When to adjust Lightness*

Changes in lightness shift the color values in the same direction, either lighter or darker. See the samples for an idea of when you need to correct for lightness.


TOO DARK


GOOD LIGHTNESS

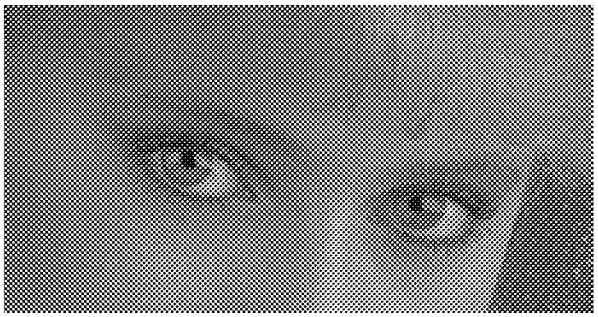

TOO LIGHT

## *When to adjust Contrast*

Contrast problems show up in an image in two ways:

- **Too stark –** mostly very light and dark areas with few shades in between.
- **Too flat –** what should be light (highlights) or dark (shadows) comes out muddy gray.

See the contrast samples for illustration. Correcting contrast involves balancing the highlights and shadows with the mid-tones. Increasing contrast makes dark mid-tones darker and light mid-tones lighter. In the case of scanned images, good contrast typically shows up as good depth in the subject.



TOO FLAT

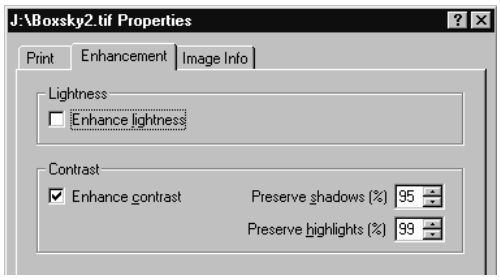
GOOD CONTRAST

TOO STARK

# Using automatic image enhancement

If you use SuperQueue to print an 8-bit grayscale or 24-bit color bitmap file directly (using drag-and-drop or **Add Documents**), you can use the bitmap filters' automatic image enhancement – the fastest and easiest way to get great looking output. These filters use a histogram (a lightness value map of all pixels in the image) to calculate the optimum settings for your output. To use automatic adjustment:

1. In SuperQueue, choose **Printer / Add Documents**. Choose a bitmap from the resulting dialog.




A dialog appears showing the properties of this print job. You can narrow the search for a particular bitmap file by making a choice in the **Files of type:** drop-down list box.

2. Click the **Enhancement** tab.

Notice that **Contrast** defaults to *on*, and **Lightness** defaults to *off*. The automatic **Contrast** feature benefits most images. **Lightness** is mainly used to compensate for under-exposed or over-exposed photographic images, so you should enable it only when you need it.

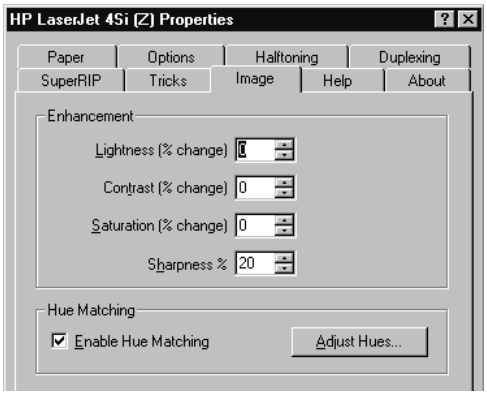
Accompanying the **Contrast** setting are **Preserve Highlights** and **Preserve Shadows**. Highlights are the color values very close to white; shadows are the color values close to black. If, for example, you were printing a picture of a snowy owl, you would want to preserve as much of the highlight information as possible to show the detail in the feathers, so you would set **Preserve Highlights** to a high number (like *99*). The shadow information in the picture might not be as important, so you could set **Preserve Shadows** lower. Using a setting of *90* would cause the darkest 10% of the pixels in the image to print as black. This would free up a greater range of tonal values to gain better contrast for the light and mid-tone shades.

Automatic enhancement features provide the fastest operation when used with SuperDrivers. While the automatic enhancement features will work with other types of drivers, these other drivers do not have the intelligent image-handling abilities that SuperDrivers have, so the SuperQueue filter has to do more work to prepare the data.

# Using SuperDriver Lightness and Contrast

These controls apply to printing from any Windows application.

1. Access SuperDriver options using **Printer Setup** from SuperQueue's **Printer** menu or another application's **File** menu.
2. Click the **Image** tab.




SuperDriver's **Lightness** control mainly affects the middle-range grays or colors. Change this setting if white, black, and very light and dark colors are OK, but the middle tones are too dark or light.

Under normal circumstances, the only time you'll increase SuperDriver **Contrast** is when you are printing a document that contains a scanned image along with text or other page elements. But remember that the SuperDriver **Contrast** setting also affects graphics (such as those from

CorelDRAW) which typically do not benefit from increased contrast – very light areas may look washed out or dark areas may become too dark.

Note that if you are adding a bitmap job directly to SuperQueue, and either **Enhance lightness** or **Enhance contrast** are checked, the SuperDriver **Lightness** and **Contrast** settings are ignored. To use the SuperDriver settings in this case, both SuperQueue filter enhancement options must be turned off.

Try changing **Lightness** and **Contrast** settings in 10% increments to start.

# Other settings on the Image tab

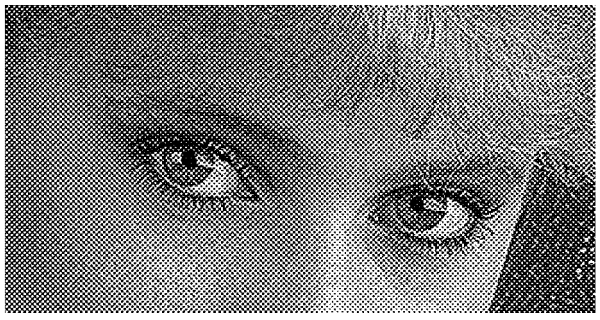
## *Sharpness*

This setting applies only to continuous tone bitmaps (24-bit color or 8-bit grayscale). It replaces the sharpness that's lost between the dots of a halftone pattern by applying an "unsharp masking" filter. This filter increases contrast just for the pixels that fall near the boundary of two very different lightness values.

Many images can benefit from quite high **Sharpness** values (in the mid-30's), but be on the lookout for artifacts in your output where "boundaries" appear around areas that should not have them. If these appear, reduce the **Sharpness** value.


NORMAL


GOOD SHARPNESS


TOO SHARP

## *Saturation and hue matching*

These settings apply to color printing. Zenographics has already determined optimal settings for your printer using the manufacturer's ink (or ribbon) and paper. However, changing these settings for certain combinations of ink, media, and document content may be necessary for optimal output.

**Saturation** controls the color intensity. If the colors in your output appear flat and grayish (or too bold and intense), try adjusting **Saturation** in 5% increments.

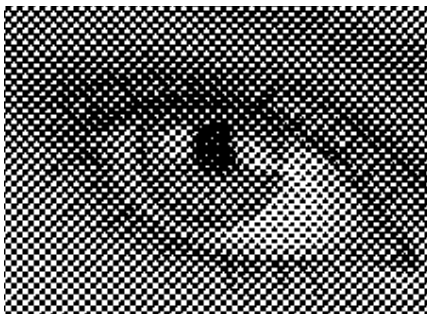
**Adjust Hues** lets you change the color values of the individual primary colors. Inks used in color printers often do not reproduce certain colors well; for example, red and blue seem to be the most difficult for color ink-jet printers. The settings here let you compensate for the inks in your printer.

Instructions on using the controls in the **Adjust Hues** dialog can be found in the SuperDriver help file (click the **Help** button on the **Help** tab). In addition, copies of the test files we use at Zenographics to adjust color are included on the SuperPrint CD-ROM. If you aren't sure if the color you're getting is correct, try using these files. Full instructions can be found in the “Beyond the basics” section toward the back of this book.

# Choosing different halftoning

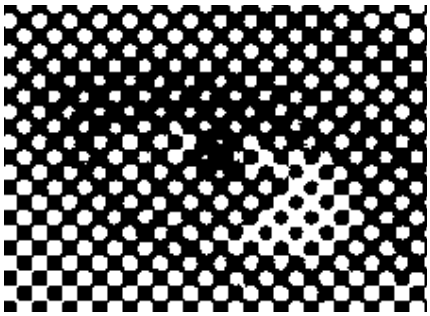
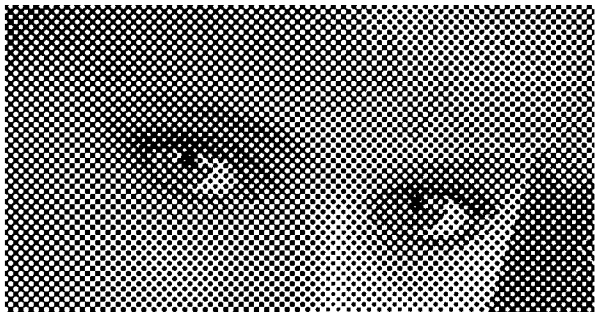
The **Halftoning** tab in the SuperDriver setup lets you give your graphics different "screens" as shown below (in regular and 3x magnification). These screens are shown as they would appear at approximately 300 dpi. If your printer prints, for example, 600 dpi, you would use double the array sizes to get the same printed result (use 6x6 instead of 3x3, or 8x8 instead of 4x4).

When detail is more important than smooth gradients or wide tonal range, try a relatively fine pattern like this 3 x 3 threshold array. Charts and other graphics look good with this setting. However, fine patterns like this may exhibit increased contrast when photocopied.

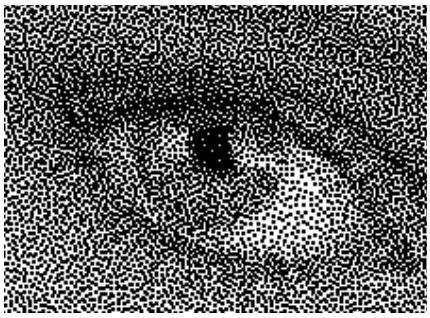


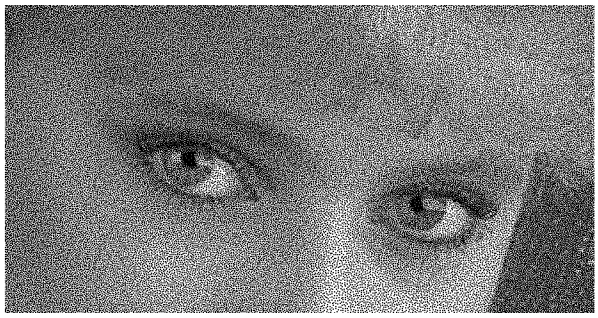

4 x 4 threshold array is the default choice for older laser printers. At 300 dpi, it provides a balance between good tonal range and good detail.


Coarser screens like this 8 x 8 threshold array work well for originals that will be faxed or photocopied. They also work well for higher-resolution laser printers (600 dpi and up).

SuperScreens use a stochastic process to give a very smooth look to your graphics. SuperScreens are good choices for color ink jets. Don't use them for photocopying or faxing, however.





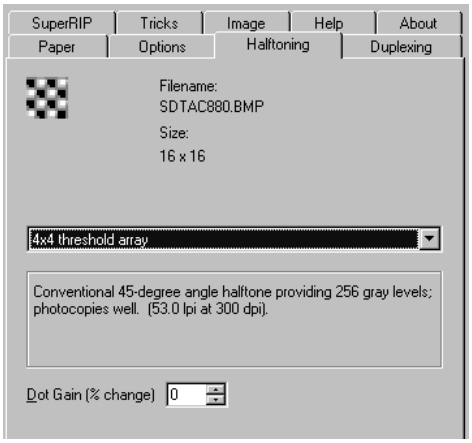
SuperPrint provides many other halftoning options. In general, when you see one set of dimensions (for example, 4x4), that represents a simple 45-degree screen. Two sets of dimensions (for example, 4x4 x 16x16S) indicates a "supercell" screen, which adds pixels to the basic 45-degree pattern to provide greater tonal range.

Of special interest to color printer users are the CMYK RT (Rational Tangent) and SRT (Super Rational Tangent) screens. RT screens are based on traditional color halftoning; they use a different screen angle for each of the CMYK color planes. SRT screens add supercells to the RT mix, offering greater color depth.

Zenographics has chosen the screen that we feel gives the best results on your printer, but we hope you'll give the other choices a try, too!

1. From SuperQueue, choose **File / Printer Setup**.
2. Click the **Halftoning** tab.
3. Make a choice from the drop-down list box.

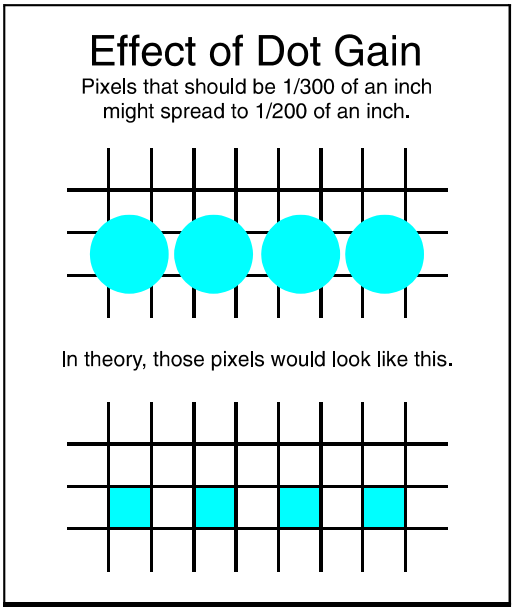
Notice the graphic representation of the halftone pattern and the descriptive text for each choice.



# Using Dot Gain

When ink or toner lands on a piece of paper, it spreads, creating a difference between your printer's addressable pixels (for example, a laser printer resolution of 300 dots per inch) and the actual spot size that appears on the output (for example, a spot of toner that's 1/200" across). This difference is called dot gain.

There are several variables that can affect dot gain: printer resolution, halftoning pattern, media, ink or toner, and the adjustment of the printer's marking mechanism. Zenographics has already determined your printer model's default dot gain using manufacturer-supplied printer, paper (where applicable), and ink or toner. If there are changes in any of the variable factors, dot gain can change.




Dot gain problems appear when graphics output is uniformly too dark (more common) or too light (less common). One very good tool for diagnosing dot gain problems is the file DOTGAIN.JPG which can be found on the SuperPrint CD-ROM in the UTILS directory. Full instructions on using this file to correct dot gain problems can be found later in this manual in the “Beyond the basics” section.

# Saving your settings

Let's say you've found the perfect halftoning, dot gain, lightness, and hue correction settings for a particular combination of paper, ink, and document content. Your SuperDriver gives you a way to save those settings for future use.

1. From SuperQueue, choose **Printer / Properties / Details / Setup**.
2. On the **Paper** tab and click the **Saved Settings...** button.


"Current Settings" appears in the list box when none of the previously saved settings exactly matches the current driver option selections. If a named setting appears, that means you've already saved this configuration; you do not need to save it again.

3. Click the **Save As...** button.
4. Give your profile a name.

For example, if the current settings are the ones you want to use for glossy paper and scanned pictures, you might call it "Glossy Photo." Or if you're just doing correspondence with the current settings, you could call it "Word Processing." If you want to apply the current settings to an existing name, choose that name from the **Saved Profiles** list. You will be asked to confirm the replacement.

After you click OK, your named profile appears in the list box. Now, no matter how you change the driver settings, you can always return to these settings by choosing the name from the list. Note that ***all*** driver settings are saved, including paper size and orientation, resolution, print quality, and media type.

# Previewing documents

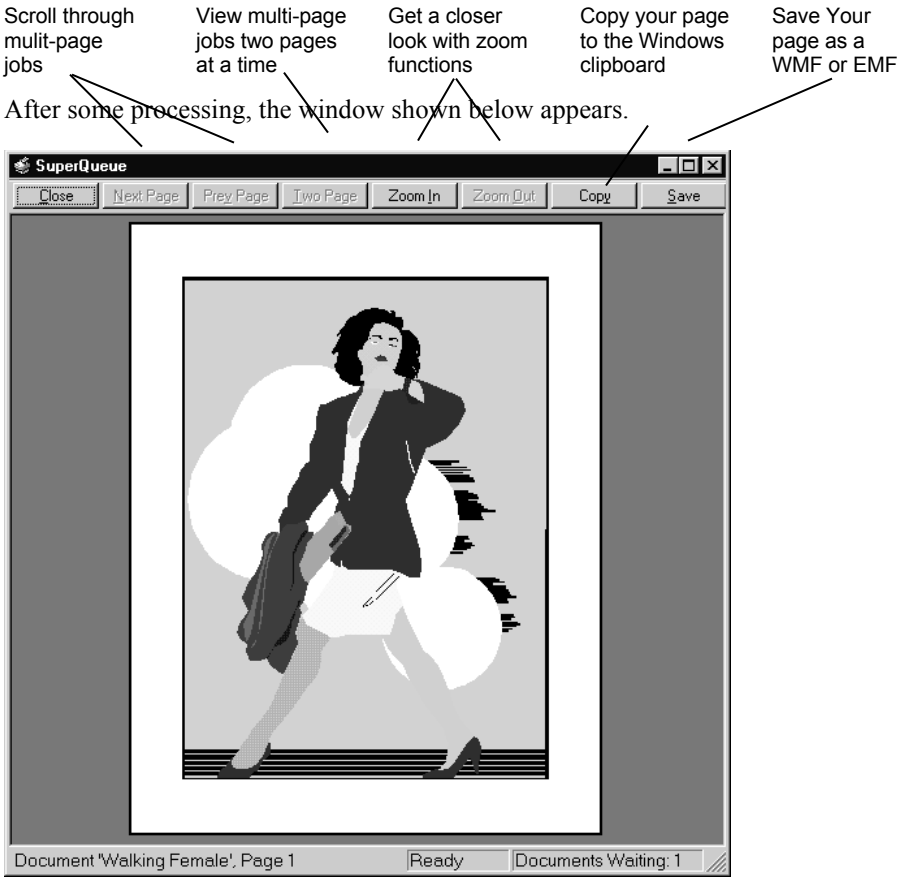
With SuperQueue's preview feature, you can view any file type for which SuperQueue has a filter (except SMF files). Preview can be especially useful if you are using, for example, an ink-jet printer that uses expensive media; you can make sure the job is going to print the way you want before investing the time and consumables for printing. For PostScript jobs, you can make sure the fonts and other page elements are correct.

Jobs added to SuperQueue using **Add Documents** are automatically held for preview. If you want to print the job without previewing it, you can clear the check box next to **Hold document(s) (for preview)**.

1. Choose **Printer / Add Documents** in SuperQueue.
2. Navigate to the directory containing your file, choose the file, and click **Add**.

The job is added to the queue as a paused job.

3. Make sure the job's name is highlighted, then click the **Preview document** button.




After some processing, the window shown below appears.

# Network printing

SuperPrint provides advantages in working with all network printing architectures. The greatest advantages are gained where both the client workstation and the printer server computer are running SuperPrint. In such a case, SuperPrint can send compact, object-based SuperMetafiles over the network (except when printing from Windows NT).

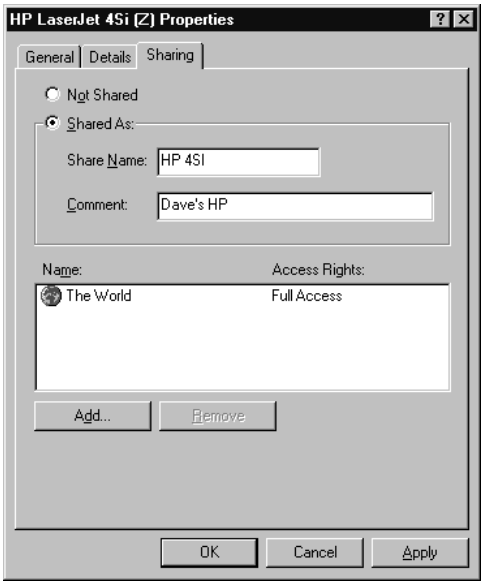
Technically, network printing with SuperMetafiles is a “peer-to-peer” process; it doesn't use a printer server architecture such as the one provided by Novell Netware, it simply shares files and messages. But for purposes of this section, we will refer to the *server* as the computer that's physically hooked to the printer, and the *client* as the remote network workstation that's sending jobs to be printed on the server.

SuperQueue's enhanced messaging system (described in the next section) gives every user on the network the ability to view the job queue and, for SuperDriver-generated jobs and data files printed directly from SuperQueue, enhanced status and error messages.

A SuperQueue-equipped client can submit filter jobs for processing on a SuperQueue-equipped server (remote processing) or “raw” printer data that's simply passed through to the server's printer (local processing). On networks where the printer server computer is not running SuperPrint, the client workstations can still get SuperPrint's improved graphics handling, processing speed, and multitasking when processing the print job locally.

# SuperPrint network printing in Windows 95

## 95 *Preparing the printer server computer*



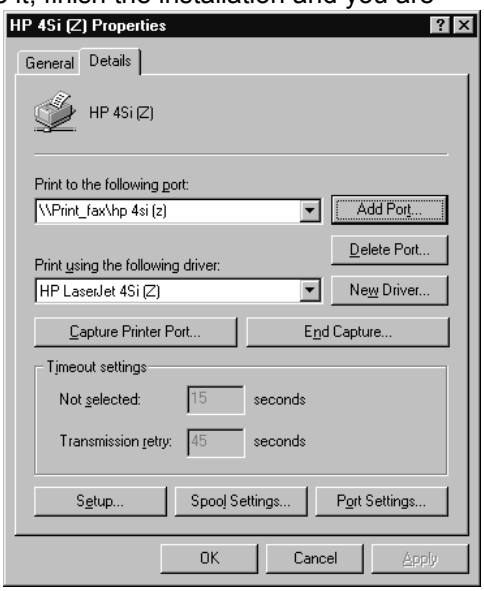

1. Install SuperPrint, following all on-screen instructions for a complete installation.
2. When SuperPrint setup is finished, open the **Printers** folder (**Start / Settings / Printers**).
3. Right click the icon of the newly-installed printer and choose **Sharing** from the resulting menu.
4. Click the **Shared As** button and give the printer a name. The comment is optional. If necessary use the **Add...** and **Remove...** buttons to edit the list of users with access. Click **Apply**.
5. Choose the **General** tab and click **Print Test Page**.

When it successfully prints, the printer is ready to be shared.

## 95 *Preparing the client workstation*

The following instructions apply whether the server is running SuperPrint or not.

1. Install SuperPrint, following all on-screen instructions for a complete installation. Choose the same printer model as the network printer. If you have previously connected to your target network printer, its address will appear in the list of available ports. If this is the case, choose it, finish the installation and you are ready to print. If the network printer address is not in the list, accept LPT1: and complete the rest of these instructions.
2. When SuperPrint setup is finished, open the **Printers** folder (**Start / Settings / Printers**).
3. Right click the icon of the newly-installed printer and choose **Properties** from the resulting menu.
4. Click the **Details** tab.
5. Click the **Add Ports** button.
6. If you don't know the exact network address of the printer, click the **Browse** button to find its location.



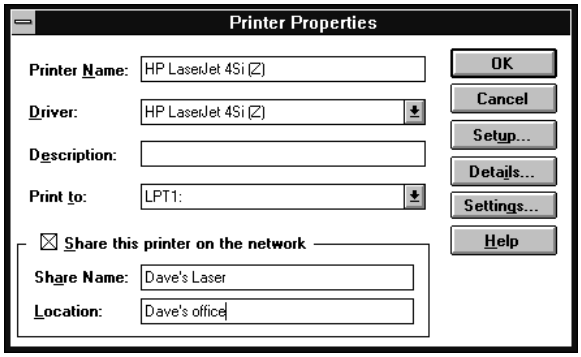
7. Once the network address is selected, click **OK** until you return to the Printers folder.

The icon for this printer will change to the network printer icon. You are now ready to print over the network.

# SuperPrint network printing in Windows NT


## *Preparing the printer server computer*

1. Install SuperPrint, following all on-screen instructions for a complete installation.
2. When SuperPrint setup is finished, open Print Manager.
3. Highlight the window of the newly-installed printer and choose **Properties** from the **Printer** menu.
4. Check the box next to **Share this printer on the network**, fill in the **Share name** and **Location**.
5. Click the **Details** button and clear the box next to **Job Prints While Spooling**. Click **OK** until you return to Print Manager.



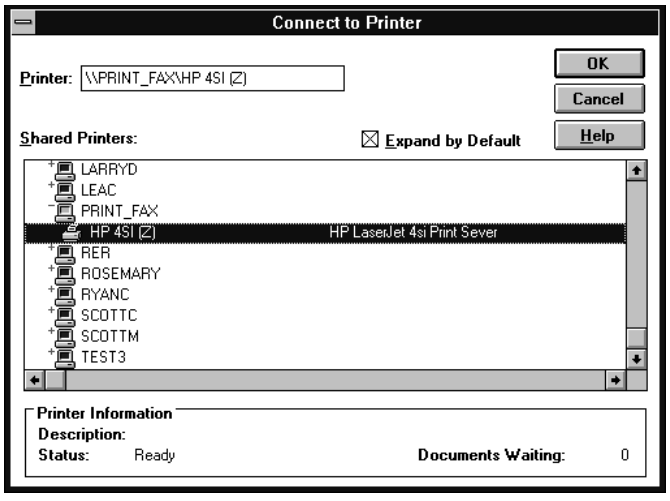

This printer is now ready to be shared.


## *Preparing the client (remote) workstation*

Note: The design of Windows NT 3.51 is not optimal for installing third-party network printer drivers. Certain port browsing and driver sharing functions do not work as they should. Therefore, to make sure the correct driver files are placed on your hard disk, it is necessary to install a local printer with the appropriate driver and supporting files first. To avoid confusion, the local printer is then removed to make way for the network printer.

The following instructions apply whether the server is running SuperPrint or not. Only raw printer data can be sent from an NT workstation.

1. Install SuperPrint, following all on-screen instructions for a complete installation. Choose the same printer model as the network printer. Choose any port for now.



2. When SuperPrint setup is finished, open Print Manager.
3. Highlight the printer you just installed and choose **Remove Printer** from the **Printer** menu.
4. Choose **Connect to Printer** from the **Printer** menu.
5. In the resulting dialog, navigate to the location of the network printer and choose it.

A new printer window appears in Print Manager with the designation of the network printer.

You are now ready to print over the network.

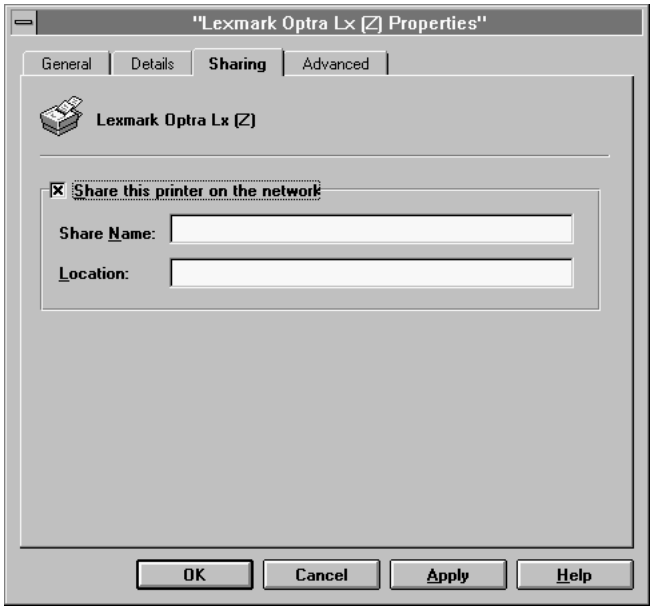
# SuperPrint network printing in Windows for Workgroups (3.11)

The following instructions allow SuperMetafiles and other SuperQueue datatypes to be shared in Windows 3.11. This is made possible by SuperPrint's installation of its own 32-bit print processor architecture – Windows by itself is only capable of sharing raw printer data using Print Manager. Print Manager can work concurrently with SuperQueue if needed.

For more information on Windows 3.11 networking with SuperPrint, we recommend that you consult the SuperQueue help file under "Networks."


## *Preparing the printer server computer*

1. Make sure that **Use Print Manager** is enabled in Control Panel / Printers.
2. Install SuperPrint, following all on-screen instructions for a complete installation.
3. When SuperPrint setup is finished, open SuperQueue.
4. Choose **Properties...** from the **Printer** menu.
5. Choose the **Sharing** tab.
6. Check the box next to **Share this printer on the network**, fill in the **Share name** and **Location**, then click OK.




SuperQueue invokes Print Manager to enable its printer sharing. Give the printer the same Share Name you used in the **Sharing** tab.

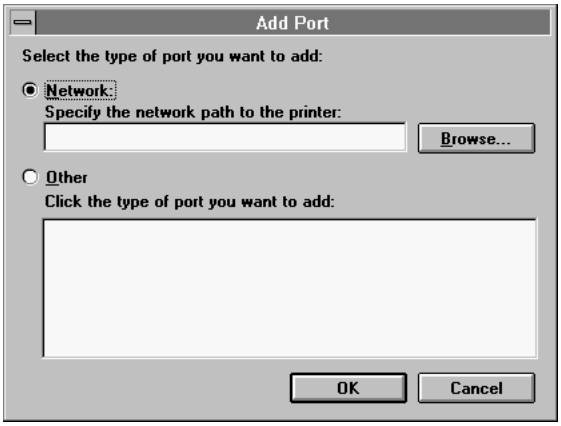
SuperQueue also requires that a specific directory be shared to enable metafile printing. You will be presented with a dialog to confirm the shared directory. By default, the directory is placed off the root of the drive that contains your TEMP directory. You may change the drive or directory, but not the "ZSpool" name.

6. Confirm the directory and change the access rights to **Full**, then click **OK**.

This printer is now ready to be shared.

### *Preparing the client (remote) workstation*

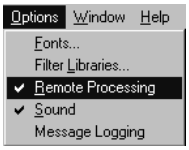
1. Install SuperPrint, following all on-screen instructions for a complete installation. Choose the same printer model as the network printer. Accept LPT1: as the port designation for the time being.
2. When SuperPrint setup is finished, open SuperQueue.
3. Choose **Properties...** from the **Printer** menu.
4. Click the **Details** tab.
5. Click the **Add Ports** button.
6. Click the **Browse** button to find the location of the network printer.
7. Once the network address is selected, click **OK** until you return to the SuperQueue main window.




Note that whenever you see this printer in a list of available printers, the port will reflect the network address (for example, “HP LaserJet (Z) on \\larry\Larry's LaserJet”). You are now ready to print over the network.

# Network printing of SuperQueue filter jobs

For jobs that you add directly to SuperQueue (a bitmap or PostScript file), SuperQueue may give you a choice as to whether you want to process the jobs locally on the client workstation or remotely on the server. That choice is called **Remote Processing** and it's found on the SuperQueue **Options** menu. (If remote processing is not available on your particular combination of client and server, the option will be grayed and unavailable. This forces the client computer to perform the rasterization and send RAW printer data over the network.)




It can pay to give some thought to where the job is processed. Since **Remote Processing** puts the computing burden on the server, you may want to take into account how busy the server machine is. Also, with **Remote Processing** *on* bitmaps and PostScript files are sent across the network in their native forms; a bitmap could be much larger or smaller than the amount of printer data it would generate, so network traffic might be an issue.

Note that **Remote Processing** is only available on the client if SuperQueue detects that the server machine also has SuperQueue and its print processor. You should also make sure that the server has all necessary filters installed.

# SuperQueue features

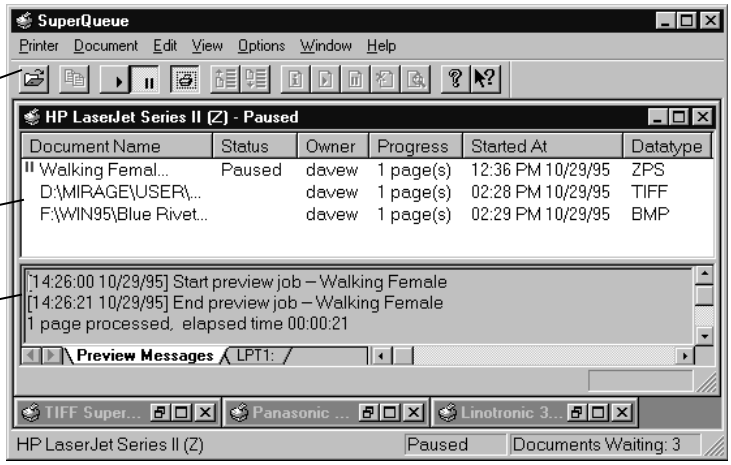
### *Use SuperQueue instead of the Printers folder or Print Manager*

For viewing and managing the list of jobs to be printed, SuperQueue is easier to use and offers more information than the Windows 95 Printers folder or the Windows NT / 3.1*x* Print Manager. For most jobs, SuperQueue also lets you see the history of jobs that have already been printed, so you can see when they were completed or if there were any errors during printing. You can even create a log file of this historical information for future reference.

Hold the mouse cursor over a tool bar button to see its function.

Top part of printer window shows jobs waiting to be printed.

Bottom of printer window shows status messages




## Printer Windows

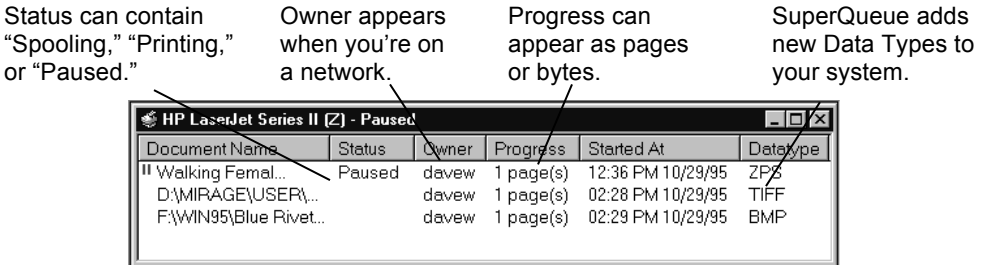
Each printer on your system (local or network) is represented by a printer window. Each printer window is divided into two main sections: the queue area and the message area.

### *The queue area*

This area shows a list of jobs waiting to be processed (similar to the Windows 95 Printers folder or Windows NT / 3.1*x* Print Manager).

Jobs in the queue can be re-ordered or removed quickly and easily:

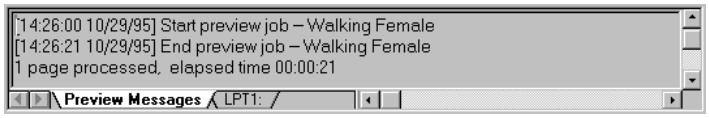
- To re-order a job, click its listing in the **Document Name** column and drag it where you want it in the list. You can also use **Promote Document** or **Demote Document** in the **Document** menu.
- To remove a job, highlight its listing in the **Document Name** column and use **Remove Document** in the **Document** menu.




The contents of the list columns are shown above. Note that the format of **Document Name** changes depending on whether the job was sent from an application or was added directly to the queue. **Datatype** refers to the format of the job: the default format when you print from an application to a SuperDriver job is SMF (SuperMetafile), while a job submitted directly to SuperQueue will show a datatype that corresponds to its file format (TIFF, JPEG, GIF, BMP, or PS). You can find more information about datatypes later in this book under "Beyond the basics."

## *The message area*

This area shows processing messages from the SuperQueue filters so you always know the status of your print jobs. If there were any errors in processing your job, they will be also described here. Jobs with the datatype RAW (low-level printer data) and Windows 95 jobs with datatypes of EMF (standard Windows Enhanced Metafile) will not display any messages.




Messages can be saved in a log file by enabling **Options / Message Logging**. Otherwise, all messages vanish when SuperQueue is closed.

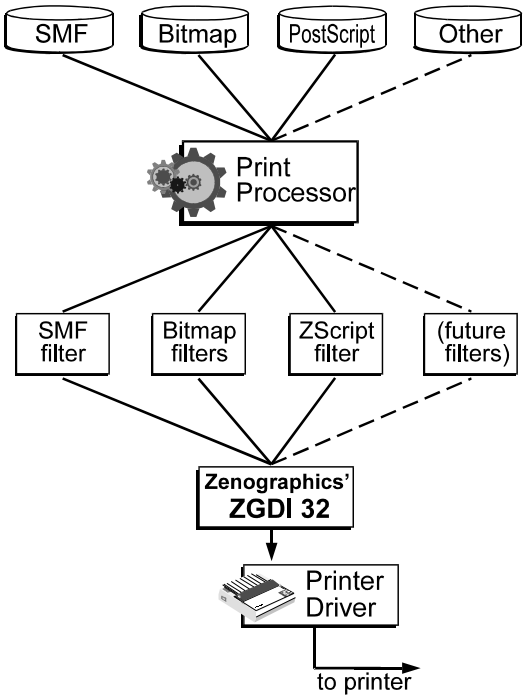
For more information, consult the SuperQueue on-line help.

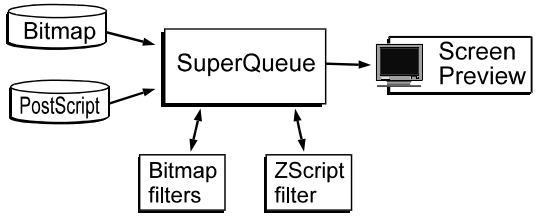
# What the filters do

Filters translate the information in data files (such as bitmap or PostScript files) into Windows' "native language," called GDI. This prepares the data to be submitted to the printer driver. SuperQueue can also use the filters directly to provide screen preview of bitmap and PostScript files (bottom diagram).

The diagram to the right shows the translation sequence for printing. When a new print job (represented by the top row of files) is submitted, SuperPrint's print processor automatically determines its datatype and routes the job to the appropriate filter. The filter translates the data into GDI and submits it to SuperPrint's 32-bit print handling routine, ZGDI32. From there it goes to either your printer or your screen.

The "Other" file format and "future filter" show that you'll be able to add filters to SuperQueue as they become available. (For the latest product news, stay in touch with Zenographics on CompuServe, MSN, or the World Wide Web. Addresses can be found under "Where to find the information you need" at the beginning of this book.)



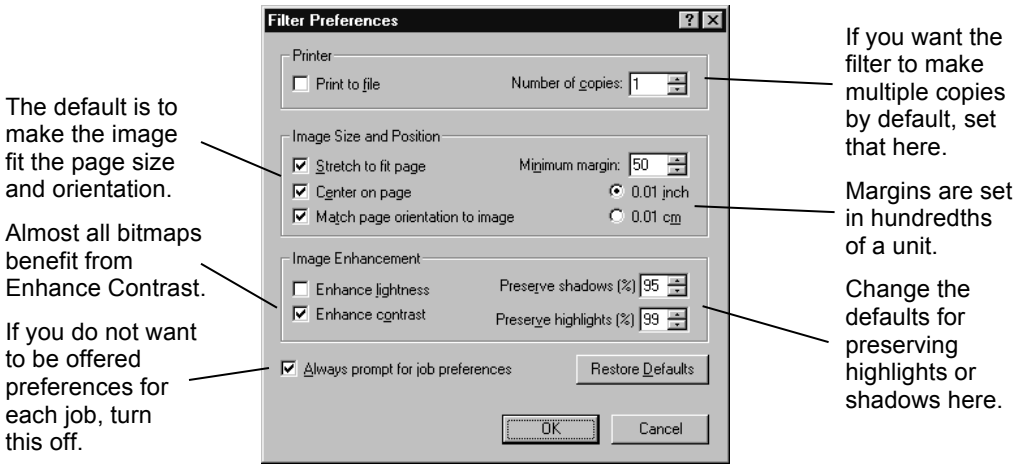



## *Filter setup*

Filters can be added, removed, and their settings modified by choosing **Filter Libraries** from SuperQueue's **Options** menu.

To modify settings, choose **Setup** from the **Manage Filter Libraries** dialog. The settings that you choose here become the default settings for all jobs processed by that filter. These settings can be overridden on a job-by-job basis in SuperQueue either by changing them at the time the job is added, or by highlighting the job in the queue and choosing **Properties** from SuperQueue's **Document** menu.

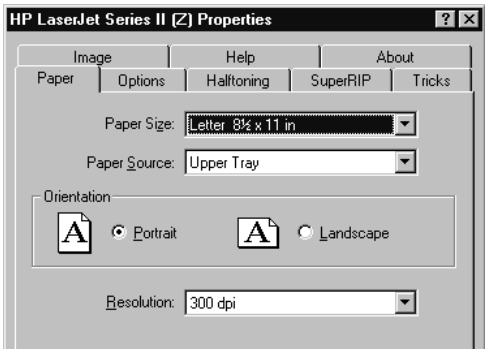
Shown below is a typical properties dialog for a bitmap filter. For information on the ZScript PostScript language filter, see the "PostScript Printing" section later in this book.



# SuperDriver features

## *Standard features*

These features are common to most printer drivers under Windows.




## *Printer-specific features*

Printer features such as Compression (for faster data transmission to the printer), ink control, and special resolution settings are found on the **Options** tab.

## *Image enhancement features*

SuperDrivers have many more options than standard Windows printer drivers for improving the appearance of your printed output. However, many users never need to use

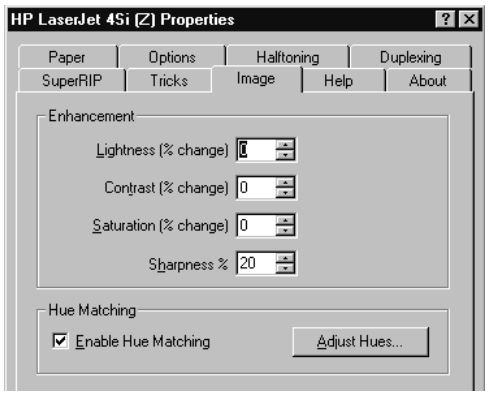
Control the lightness adjustment for mid-tone grays or colors.

Compensate for output that's too flat or too stark.

Compensate for color that's too washed out or too intense.

Enhance the details in continuous-tone images.

Compensate for variations in printer inks




them! The printing specialists at Zenographics have already fine-tuned each driver for your device, so chances are you'll find the output from the default settings to be just fine. For examples of how to use the image enhancement features, check the “Improving print quality” section earlier in this book.

### *Memory management features*

SuperDriver does its best to determine automatically how much memory is available on your computer for printing. If you know that you need to devote more or less memory to printing, you can change the memory allotment in the SuperRIP tab. For details on the dialog box choices, see the SuperDriver on-line help (click the **Help** button on the **Help** tab). For in-depth information on memory allocation, see the “Beyond the Basics” chapter at the end of this book.

### *Application-specific settings*

The **Tricks** tab in your SuperDriver is used to accommodate programs that interface with printer drivers in non-standard ways. Most users never need to access these options, but if SuperHelp or a Zenographics technician recommends changing a setting in **Tricks**, you know where to find it. See the SuperDriver help file for more details on using **Tricks**.


## SuperDriver status

**Status** is a mini-application that lets you see the progress of your print job. This application appears as an icon automatically when you print or when another application is accessing a SuperDriver. If you do not open its window while it's an icon, the Status application closes itself automatically after a few seconds of inactivity. Status can also be opened manually from the SuperPrint

group on the **Start / Programs** menu under Windows 95 or Program Manager under Windows NT.

The progress bars are allocated dynamically; the label of each bar may change during the course of a print job. For more information on the Status application, please see “SuperDriver Status” in the SuperDriver on-line help.

# Installing new SuperDrivers

SuperDrivers can be installed two ways:

A. Re-run the SuperPrint installation program and choose **Install SuperDrivers**.

B. Use the **Add Printer** wizard in Windows 95, **Create Printer** in Windows NT, or Control Panel / Printers in Windows 3.1*x*.

Option “A” might be a little faster; option “B” conforms to the standard way of installing a printer in your version of Windows.

# Creating bitmap files using Bitmap SuperDrivers

SuperPrint comes with several printer drivers that really don't drive printers – they create files in a variety of bitmap formats from any Windows application. Once they're configured, they are as easy to use as **File / Print**. There are SuperDrivers for seven different file formats: Windows BitMaP (.BMP), TIFF (.TIF), JPEG (.JPG), GIF, Targa (.TGA), PCX and a multi-page variant of PCX called DCX.

The **BMP** format was developed for Windows 3.x and its Paintbrush application. When using Paintbrush or the Windows clipboard, it is perhaps the most well-behaved format in the Windows environment. It is the only format in Bitmap SuperDriver with a 4-bit color and an 8-bit grayscale setting.

The **TIFF** format was developed by Aldus to provide a machine-independent image format for desktop publishing. Programs such as Ventura Publisher and PageMaker have TIFF import capability.

The **JPEG** format was developed by the Joint Photographic Experts Group. It uses a "lossy" compression scheme that yields good results with considerably reduced file sizes. This is a common format for use over the Internet.

The **GIF** (Graphics Interchange Format) specification was developed by CompuServe. It is widely used there as well as on many other on-line services including the Internet. While the GIF SuperDriver represents itself to applications as a 24-bit color driver, the output it generates is 256-color palette based.

The **Targa** file format was developed by TrueVision for its line of Targa and Vista graphics cards. It is commonly used by high-end paint and image retouching software.

The **PCX** format was created by ZSoft for their PC Paintbrush and later, Publishers Paintbrush applications. The DCX format is a multi-page version of PCX, suitable for use in several digital FAX applications.

## *Installing Bitmap SuperDrivers*

Bitmap SuperDrivers can be installed two ways:

A. Re-run the SuperPrint installation program and choose **Install SuperDrivers**.

B. Use the **Add Printer** wizard in Windows 95, **Create Printer** in Windows NT, or Control Panel / Printers in Windows 3.1*x*.

We recommend option "A" since it is both faster and it automatically defaults the output port to **FILE**. Unless you have a specific reason for doing otherwise, you should always connect a Bitmap SuperDriver to **FILE**.

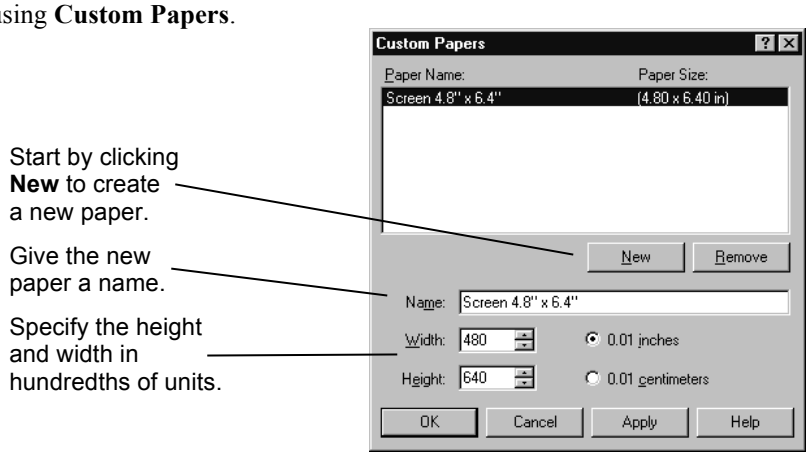
You will need to install a separate driver for each bitmap output format you want to use.

## Configuring a Bitmap SuperDriver

Most options for the Bitmap SuperDrivers are the same as those for other SuperDrivers. However, **Resolution**, **Custom Papers**, and **Bits per pixel** have special significance.

**Resolution** has a direct bearing on the size of your finished bitmap – each time you double the **Resolution** number, you quadruple the size of the uncompressed bitmap. Don't create bitmaps larger than you need – they'll only take up more disk space and create more processor work when you go to use them.

The **Custom Papers** setting is very useful for creating bitmaps in special shapes. However, you should make sure that the shape you create corresponds to the shape of the document that you are printing! If the aspect ratios don't match, it could result in either a clipped image or an image that doesn't fill the frame. Refer to the on-line help in your Bitmap SuperDriver for instructions on using **Custom Papers**.




**Bits per pixel** determines the color depth of the bitmap:

- One bit per pixel means that each pixel (short for picture element, also known as a dot) is either on or off, black or white. Grayscales are simulated using the SuperDriver's current **Halftone** setting. One bit per pixel at 200 dpi is the most common setting for use with fax software.
- In the Four bits per pixel image, each pixel can be one of 8 colors. Additional colors are simulated with halftoning.
- In an Eight bits per pixel image, each pixel can be one of 256 shades of gray.
- Full-color images are saved in 24 bits per pixel format, using eight bits for each primary color (red, green, blue). Since each eight bits represents 256 possible color levels, this means that up to 16,777,216 colors can be represented ($256^3$).

Your **Bits per pixel** choice will also determine file sizes. 24-bit image files can become quite large, especially at higher resolutions. (For example, a letter-size BMP file in 24-bit color at 100 dpi is 2.8 MB!)

## Printing with a Bitmap SuperDriver

As was mentioned earlier, creating a bitmap file is as easy as clicking **File / Print** from any Windows application. When the driver is ready to start writing the file to disk, it will prompt you for a file name.

It is possible to print multiple files and assign each a unique, numbered name automatically. For details, search the SuperDriver on-line help for **Output path**.

# PostScript printing

## Common questions about PostScript

### *What is PostScript?*

PostScript is a programming language, created by Adobe Systems, that is devoted to describing a page layout. A page layout description can include text and font information, graphics, bitmaps, and special instructions for placing and manipulating these elements. To print using PostScript, you must have a printer driver that creates the PostScript code, an interpreter that translates the code, and a rasterizer that images the page elements from the interpreted data.

Encapsulated PostScript (EPS) is a subset of PostScript typically used for clip art that can be placed within another document.

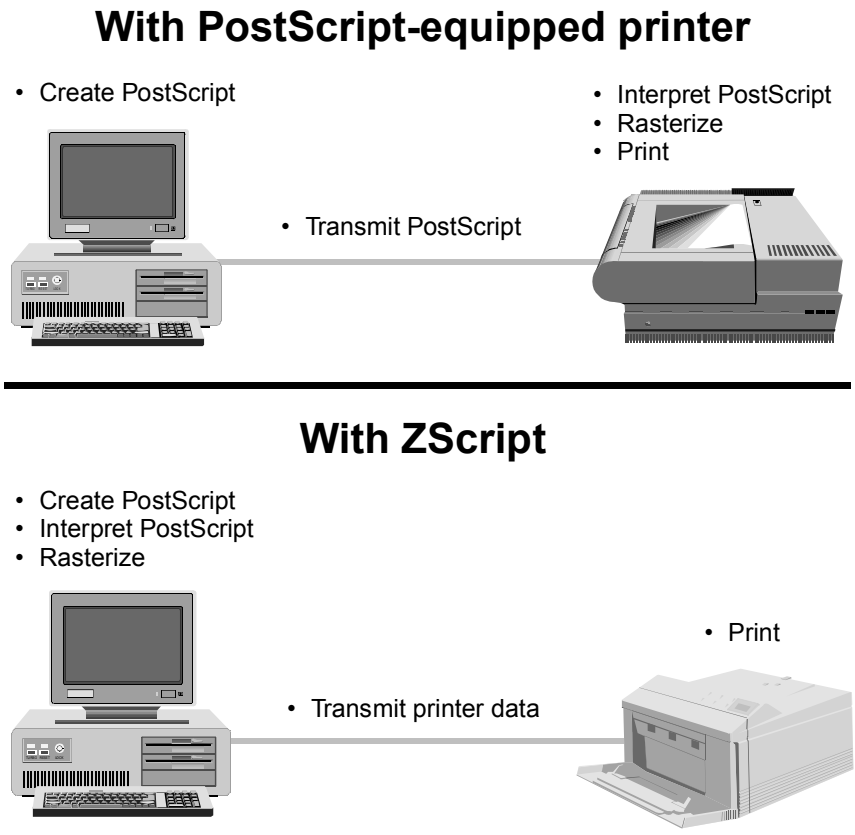
### *When do you need PostScript?*

1. If you are using an EPS file in a document, or if you are using some other PostScript element in your page (such as CorelDRAW's PostScript fill patterns), you must use a PostScript interpreter when you print.
2. You can also use PostScript to transmit page descriptions to other sites for imaging (for example, a service bureau with a Linotronic imagesetter). PostScript is the standard for this kind of device-independent exchange of page description files.
3 If you are using a Windows application that does not recognize the efficient capabilities of SuperDrivers, your job may go faster and use less disk space if you print it using PostScript. An example of this is an application that insists on scaling a bitmap to printer resolution before sending it to a non-PostScript printer.

If you don't fit into any of the above scenarios, chances are you don't need PostScript!

### *How does SuperPrint let you use PostScript?*

The most common implementation of PostScript is to have both the interpreter and rasterizer built into the printer. Unfortunately, that requires considerable memory and processing power to be resident in the printer where they're used only during printing.



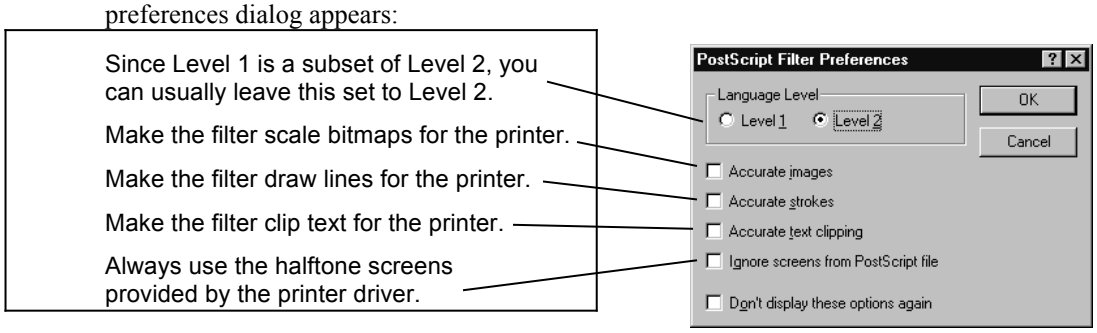

The SuperPrint ZScript PostScript filter works with the memory and processor you already have – the power that's already in your computer.

# Printing with PostScript

## Printing files

If you've received a PostScript file from another source, you can print it by loading it directly into SuperQueue. This process is described earlier in this book under “Printing data files directly.”

When you add a PostScript language page description file to SuperQueue, the following filter preferences dialog appears:




Note that the **Accurate...** settings default to *off*. Turning these options *on* gives the PostScript filter and printer driver more work to do. You should only turn them on if you are having specific problems with your output; consult the SuperQueue on-line help for details.

## Printing PostScript from a Windows application

If you fall into categories 1 or 3 described earlier under “When do you need PostScript?”, you should use the Masquerade utility to create a special PostScript driver for your particular printer.

Masquerade adds a new printer to your Windows configuration. This printer uses the PostScript language, but reports to the printing application all the attributes of your physical printer (resolution, color capabilities, paper sizes, etc.). Furthermore, when you print to this new PostScript printer, Masquerade sets your system to automatically route the PostScript output to your non-PostScript printer's queue so the ZScript filter can process the job.

### *Add the PostScript driver to your system*

If you do not already have a PostScript printer installed on your system, you will need to install the PostScript driver before running Masquerade. (If you try to run Masquerade without a PostScript driver, it will give you an error message.) The only way to get this driver is to install a PostScript printer. This PostScript printer will be a “phantom” printer. It doesn't exist as a physical device – its sole function is to leave the necessary driver files on your disk for Masquerade and ZScript to use.


Here's how to install a PostScript driver in Windows 95:

1. Open the **Printers** folder (**Start** / **Settings** / **Printers**).
2. Launch the Add Printer Wizard by double clicking on **Add Printer**.
3. When asked, choose **Local Printer**.

The Wizard then asks you to choose the manufacturer and model of your printer. For purposes of installing a PostScript driver, any PostScript printer will do. Since Apple is the first manufacturer listed, and since they make PostScript printers, we suggest choosing one of them.

4. Choose **Apple LaserWriter NTX**, then complete the installation. (Since you will not be using this printer, you might want to set the port to an unused port.)

You are asked for your Windows CD-ROM or diskettes. Follow the instructions on the screen to complete the installation. Masquerade now has the files it needs to create custom PostScript drivers.


Here's how to install a PostScript driver in Windows NT:

1. Open Print Manager from the **Main** group.
2. Choose **Create Printer** from the **Printer** menu.

In the **Create Printer** dialog, you're asked to choose the manufacturer and model of your printer. For purposes of installing a PostScript driver, any PostScript printer will do. Since Apple is toward the top of the list, and since they make PostScript printers, we suggest choosing one of them.

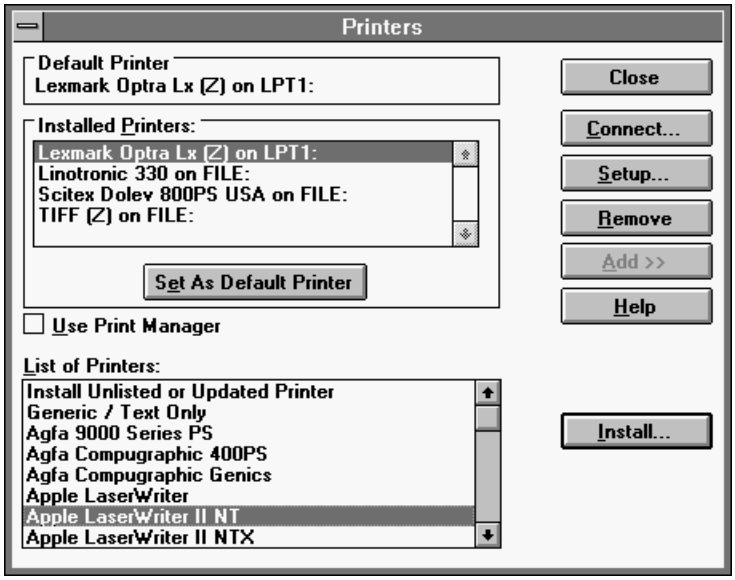
3. Choose **Apple LaserWriter II NT**, then complete the installation. (Since you will not be using this printer, you might want to set the port to an unused port.)

You are asked for your Windows CD-ROM or diskettes. Follow the instructions on the screen to complete the installation. Masquerade now has the files it needs to create custom PostScript drivers.

Here's how to install a PostScript driver in Windows 3.1*x*:

1. Open Control Panel from the **Main** group and double click the **Printers** icon.
2. Click the **Add** button.

The **Printers** dialog expands, offering a list of printer models. For purposes of installing a PostScript driver, any PostScript printer will do. Since Apple is toward the top of the list, and since they make PostScript printers, we suggest choosing one of them.



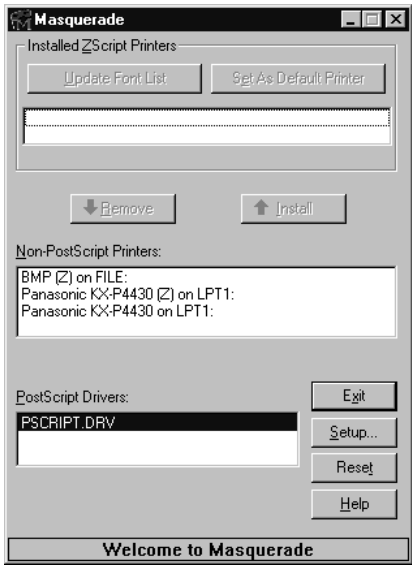

3. Choose **Apple LaserWriter II NT**, then complete the installation.

You are asked for your Windows CD-ROM or diskettes. Follow the instructions on the screen to complete the installation. Masquerade now has the files it needs to create custom PostScript drivers.

Since you will not be using this printer driver, you might want to set the port to an unused port using the **Connect** button in the Control Panel **Printers** dialog.

# How to use Masquerade

1. Open Masquerade by double clicking its icon in the **SuperPrint4** group.
2. Choose a PostScript driver (most users have PSCRIPT.DRV).
3. Choose your non-PostScript printer. This is the “target printer” – the printer on which you want to print the PostScript jobs.
4. Click **Install**.




The new printer that's added to your system shows up under **Installed ZScript Printers**. It will also appear in the list of available printers in your Printers folder (Windows 95), Print Manager (Windows NT), or Control Panel (Windows 3.1*x*) and most applications' **Printer Setup**. Any time you need to print PostScript content from a Windows application, just choose this driver.

Notice that Masquerade has added a new port to your system called **ZPS*n***. This is a special port that manages the redirection of the PostScript data to the target printer. When printing locally, you should not change this port setting for a Masquerade-generated driver.

If you previously installed a “phantom” PostScript printer (for example, an Apple LaserWriter) just to load the driver files on your hard disk, once you have run Masquerade and generated a driver, you can delete the phantom PostScript printer if you want to have a clean printer list. Just remember that if you subsequently use Masquerade's **Reset** button to remove all its drivers, you'll have to re-install a PostScript driver if you want to run Masquerade again.

# Driver settings

The Masquerade-generated PostScript drivers should have the following settings to optimize performance.

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When printing to a Masquerade-generated printer in Windows 95, you'll get optimum speed and quality if you disable font downloading within the PostScript data stream. This means that the font is requested by name only, reducing file sizes and processing time. To suppress downloading:

1. Access the printer setup for the Masquerade-generated printer. (Right click the printer's icon in the Printers folder and choose **Properties**.)
2. On the **Fonts** tab, click **Send Fonts As...**.
3. Change Send TrueType fonts as: to Don't Send.
4. Change Send PostScript fonts as: to Don't Send.
5. Click **OK**.
6. Back on the **Fonts** tab, click **Edit the Table...**.

7. Change all fonts to “Don't Send.”

For a more in-depth discussion of Windows 95 PostScript font handling, see the “More about PostScript printing” section in the “Beyond the basics” chapter.


Windows NT handles PostScript fonts differently than other versions of Windows. There is no need for a Type 1 font handler such as Adobe Type Manager in Windows NT – the **Fonts** utility in the Windows NT Control Panel can install Type 1 fonts directly. This utility also creates equivalent TrueType outlines for use on the screen and with non-PostScript printers. These TrueType equivalents are high-quality translations of the original outlines. In fact, if you have no other need for the Type 1 outlines (for example, if you do not plan to create PostScript files for processing on another computer or RIP), you might consider installing only the TrueType translations without the corresponding Type 1 outlines. This can save disk space and speed up font handling with very good quality results.

When adding a Masquerade-generated driver to Windows NT, you do not need to make any changes in the printer setup; it should work optimally with the default settings.

The Windows NT PostScript driver handles the basic PostScript plus fonts differently than other typefaces. If you use many Type 1 fonts, you should read the NT portion of “More about PostScript printing” in the “Beyond the basics” chapter.


In Windows 3.1*x* there is only one setting you need to change:

1. In the **Printers** windows of Control Panel, highlight the Masquerade-generated driver and click the **Setup** button.
2. From the resulting dialog, click the **Options** button, then the **Advanced** button.
3. Turn Use Printer Fonts for all TrueType Fonts *on*.

With this setting, the PostScript file will contain only a font name request with the text of your document.

4. Click **OK** until you return to Control Panel.

For a more in-depth discussion of Windows 3.1*x* PostScript font handling, see the “More about PostScript printing” section in the “Beyond the basics” chapter.

# Beyond the basics

## Dot Gain and Hue correction

Zenographics has tested your printer model with factory-provided ink (or toner) and paper to determine optimal settings for color correction and dot gain using the default SuperDriver halftoning pattern. If you have changed ink, paper, or halftoning pattern, or if you are not happy with the color that you get with default settings, we have provided two tools to help you adjust your color.

The DOTGAIN.JPG file (in the \UTILS directory on the SuperPrint CD-ROM) contains color gradients and a gray-on-gray box that will help you adjust for the spread of ink or toner on the paper or other media. ADJ_HUE.JPG gives you sample swatches that let you correct hue values quickly and easily for the pure additive and subtractive primary colors. The first test you should run uses DOTGAIN.JPG.

### *Adjusting Dot Gain*

First, you need to print the DOTGAIN.JPG file as follows:

1. Open SuperQueue.
2. Choose **Properties** from the **Printer** menu.
3. Navigate to the **Image** tab.

The next step overrides your current settings. If you have previously modified them, you may want to write them down so you can restore them later.

4. Set **Lightness**, **Contrast**, and **Saturation** to zero (*0*). Click **OK** to exit the dialog.

You are now ready to print the file.

5. With the target printer window highlighted in SuperQueue, choose **Printer / Add Documents**. Navigate to the UTILS directory on the SuperPrint CD-ROM and choose DOTGAIN.JPG. When the preferences dialog appears, make sure **Automatic Lightness** and **Automatic Contrast** on the **Enhancement** tab are *off*.

When the printout is in hand, you are ready to evaluate the results.

Hold the page so the color bars are horizontal and the black & white test pattern is at the bottom of the page. Inside the black & white pattern, the small box on the right contains a 50% gray while the surrounding gray is a pre-halftoned monochrome pattern. Those two gray values should match. (Hint: Squinting or viewing the page at a distance helps in evaluating the difference between the two grays.) If they do not match:

6. Access the SuperDriver **Halftoning** options (**Printer / Printer Setup / Halftoning** in SuperQueue).
7. If the small box is darker than the surrounding gray, raise the **Dot Gain** value. If it's lighter, lower the **Dot Gain** value. Try 5% increments to start.

Repeat this sequence until the grays match in intensity. If you have a color printer, there is one more thing to check to confirm that your dot gain setting is correct. Once the grays match in intensity, check the gradient color bars for the placement of the mid-point color intensity. Cyan, Yellow and Magenta (the colors of the inks in your printer) will probably be the best indicators. The color values near the center line should be close to pure, that is, with little or no white showing through a halftoning pattern, or little or no darker halftoning dots appearing. If colors around the center line are too light or too dark, some additional fine-tuning may be required.

## *Adjusting Hue Matching*

If the solid color boxes on the DOTGAIN.JPG output do not contain correct hues, the ADJ_HUE.JPG file can help you adjust the hues. There are two ways to begin this test: starting from existing settings or starting "from scratch." If there are only minor discrepancies in the hues, you should first try to modify existing settings. If this is the case, skip to step 3.

To start from scratch:

1. Access SuperDriver's **Adjust Hues** dialog (click the **Adjust Hues...** button on the **Image** tab).

As with the **Lightness**, **Contrast**, and **Saturation** settings, if you have previously modified any of these settings, you may wish to write down the **Red**, **Green**, and **Blue** values in case you want to restore them later. If you have not modified them before, they can be restored with the **Restore Defaults** button.

2. Change the color values for each hue to the following:

| | **Components** | | |
|---|---|---|---|
| ***Hues*** | **Red** | **Green** | **Blue** |
| *Red* | 255 | 0 | 0 |
| *Yellow* | 255 | 255 | 0 |
| *Green* | 0 | 255 | 0 |
| *Cyan* | 0 | 255 | 255 |
| *Blue* | 0 | 0 | 255 |
| *Magenta* | 255 | 0 | 255 |

3. Make sure that **Lightness**, **Contrast**, and **Saturation** values are set to zero (*0*) on the **Image** tab.
4. Print the file ADJ_HUE.JPG using the same method as you used to print DOTGAIN.JPG.

Holding the page so the numbers read correctly, the center column contains the pure hues as rendered with the current settings. To the left and right of the pure hues are hues that contain more or less of the related red, green, or blue (RGB) components. If one of these other boxes appears to be closer to the hue you want, note the value shown in that box. For example, if your center-column red is too orange, the box containing "+20B" might contain a better red. The

"+20B" indicates that 20 units of blue (out of a possible 255) have been added to that red. If you think the hue you want falls in between two suggested values, feel free to use an interpolated value.

Once you have determined which changes need to be made:

5. Access the SuperDriver's hue correction dialog and use your modification values to add to or subtract from the RGB values of the errant hue.

Using the previous example of "+20B", you would increase the blue component of the red hue by 20 units. If it was previously 0, you would make it 20. If it was previously 25, you would make it 45.

You may wish to print out another test page to confirm your results.

Now you have corrected for your printer's marking mechanism and ink colors. Further correction – especially of **Lightness**, **Contrast** and **Saturation** – may be needed depending on your document content.

# Performance considerations

## *Advanced memory management*

This discussion applies to circumstances when SuperRIP's **Expected printing performance** shows **FAIR** with **Automatic memory management** *on*. This indicates that SuperRIP does not think there is enough memory for full-frame rasterization in RAM, so the driver is set to use banding to rasterize the page in segments. (Banding refers to internal memory segmentation. It has no effect on output.) If your SuperRIP automatically finds enough RAM for full-frame rasterization, you can probably skip this section.

When a SuperDriver prints, it first allocates a specific amount of your computer's RAM for the rasterized data, and then consumes additional memory on a dynamic basis for processing the list of objects that are on your page. The rasterizing memory allocation can be controlled from the **SuperRIP** tab in the SuperDriver options, which, in turn, controls the amount of memory that remains available for other processing.

Under normal circumstances, leaving **Automatic memory management** *on* works just fine. You may want to consider manually setting the SuperRIP memory allocation when:

A. You are printing a very complex document with limited available RAM, and you get a SuperRIP error, or

B. You are printing a simple document and the **Maximum SuperRIP allocation** is less than the **Image memory required**, but you are confident that there is enough free RAM to allocate the full requirement for rasterization.

When **Automatic memory management** is *on*, SuperRIP uses the following rules to determine its maximum memory allocation: If there is more than 6 MB free, SuperRIP allows itself to take all but 3 MB of free RAM. If there is less than 6 MB of free RAM, SuperRIP allows itself to take up to half. At a minimum, SuperRIP allocates one-eighth of the RAM installed on your computer for rasterization. In the case of a 8 MB computer printing to a 300-dpi laser printer, that 1 MB is sufficient for full-frame rasterization of a letter-size page. However, that same 1 MB is insufficient for a 300-dpi color ink-jet printer, which requires 4 MB for rasterization of the same size page.

## *What makes a document simple or complex?*

When SuperDriver accepts the page description from an application, and banding is taking place, SuperRIP buffers the page; it makes an internal list of all the page elements – their positions,

attributes, and the area that each object occupies on the page. The rectangle that encompasses an object's area is often referred to as a bounding box. During the banded rasterization process, each object's bounding box is examined to see if any part of it falls within the current band.

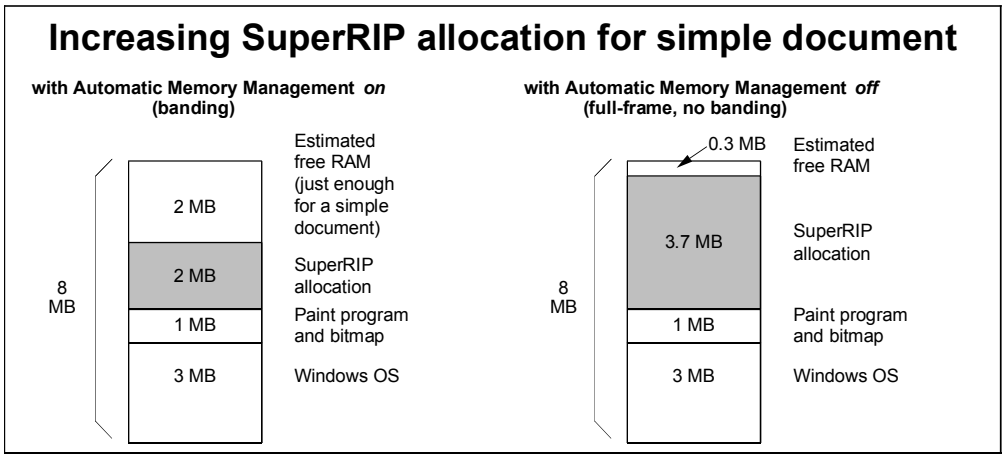
In a simple document, objects on the page are submitted to the SuperDriver in an orderly flow (typically top to bottom) and few objects span the boundaries of the SuperRIP bands. A page of text from a word processor or a single bitmap from an image editor (or SuperQueue filter) are examples of simple documents.

In a complex document, objects are submitted to the driver in no particular spatial order, with many objects spanning two or more bands.

## *How to manipulate the SuperRIP allocation*

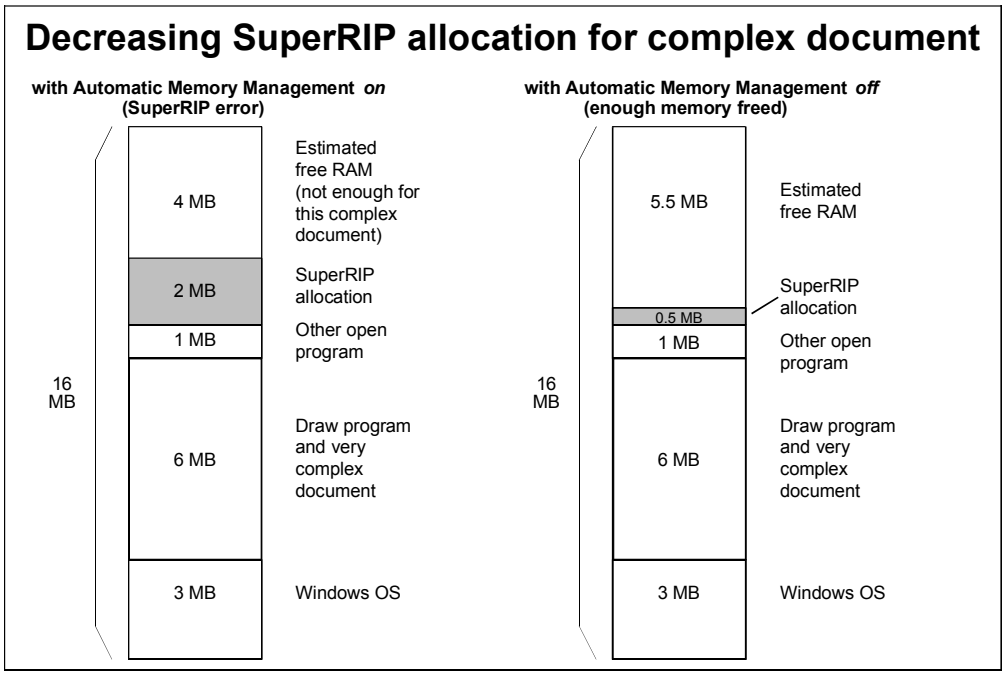
If you are printing a simple document *and* the **Maximum SuperRIP allocation** is less than the **Image memory required** *and* you are not running multiple Windows applications concurrently (that is, you're not making any additional demands on memory during the printing process), you can achieve better printing performance by turning **Automatic memory management** *off* and setting **Maximum SuperRIP allocation** to equal the **Image memory required**. This causes the page to be rasterized in a full-frame memory buffer, considerably reducing disk access and processing time. Full-frame rasterization also has the advantage of being able to process tremendously complex pages with greater speed and reliability.

If you use a limited number of small applications and print mostly simple documents, you can probably leave the full-frame SuperRIP setting in place. If you use large applications and print complex documents as well, you should probably turn **Automatic memory management** back on when you are finished printing the simple job.




An example is shown in the diagram above. On a computer with 8 MB of RAM, SuperRIP automatically allocates only 2 MB for rasterization. The 300-dpi color ink-jet printer requires 3.7 MB for rasterization. You're running a small application, Windows Paint, which is sending orderly data to the printer. By manually setting the SuperRIP allocation to 4 MB (full-frame memory), you substantially increase printing performance.

If you are printing a very complex document and you get a SuperRIP error, you should turn **Automatic memory management** *off* and substantially reduce the **Maximum SuperRIP allocation**. This gives the system more memory to handle processing of the object list.



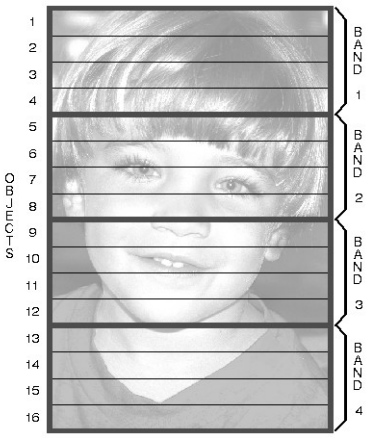

In this example, a 16 MB computer is running two applications – one is a large drawing application that's printing a page with thousands of objects. SuperRIP automatically allocates 2 MB, but with the overhead of the Windows operating system and the two applications, that leaves too little memory for processing. Reducing the SuperRIP allocation (in this case to 512K) frees up 1.5 MB to help processing. (If it's possible to close the second application, that would help, too.)

Dividing the number in **Image memory required** by the number in **Maximum SuperRIP allocation** should give you the number of bands that will be used. SuperRIP can use up to 128 bands. SuperRIP uses a minimum of four bands, even when memory is sufficient for using fewer bands. With SuperRIP's preemptive multitasking, four bands is actually more efficient than two, since it can send data to the printer and rasterize simultaneously.

## *A tip for printing large bitmaps with SuperRIP banding*

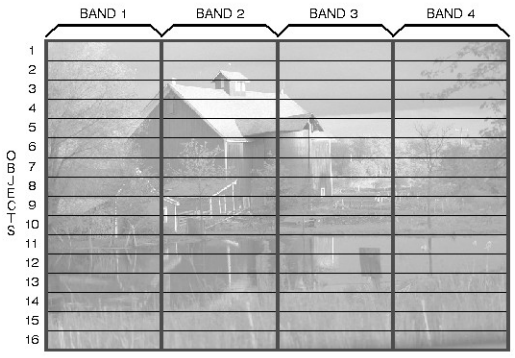
When they're submitted to a SuperDriver, large bitmaps are divided into several objects for easier handling. These divisions typically correspond to large, “round” binary numbers. For purposes of SuperRIP's banding, these smaller bitmap segments are handled the same as any other object submitted by an application – they have attributes and bounding boxes.

Every printer has a natural orientation; for most desktop printers, that orientation is portrait, or "top-down." For devices such as film recorders or wide-format printers using media that's fed long-edge first, the natural orientation is landscape.




When SuperRIP is processing a set of objects, the processing goes much faster when the order of the objects corresponds to the natural orientation of the printer. In such a case, the objects contained in only the top band can be ignored for subsequent bands. If the orientation of the bitmap goes against the natural orientation of the printer, then a portion of each object is contained in every band, so SuperRIP has more work to do. In the simple examples shown here, you can see that for a 16-object bitmap, a

portrait image on a naturally portrait printer requires SuperRIP to process only 4 objects per band. However, for each band of the landscape image, SuperRIP must deal with all 16 objects in each band. To further complicate things, the bitmap segments must also be rotated 90 degrees before they're sent to the printer.




So, if you are scanning a photo that you intend to print, and you have no other layout constraints, consider scanning it to correspond to the natural orientation of your printer; your printing will go much faster.

For even faster printing of bitmaps, save your scanned image – in your printer's natural orientation – in BMP format. Submit the BMP file directly to SuperQueue, and SuperQueue will use a special memory mapping technique that avoids nearly all banding overhead. The images will fly from your printer!

# More about PostScript printing

Before reading this section, you should already be familiar with the concepts that were introduced in “Printing with PostScript” earlier in this manual. In this section, you'll find more about how ZScript works within the different Windows environments.

## *GDI Limitations*

The ZScript filter translates PostScript into the Windows GDI environment. In general, the PostScript imaging model is more robust than GDI – certain PostScript operators simply have no equivalent in GDI. When GDI equivalent commands exist, ZScript and SuperDriver should provide a good match to the output of a PostScript-equipped printer using similar marking technology (laser, ink-jet, color thermal, etc.) For those few commands not supported by GDI, ZScript provides the closest match possible.

ZScript works with all Windows printer drivers. However, some non-SuperDrivers do not directly support even the entire range of GDI operators, much less all of PostScript's. The most common deficiencies of such drivers have to do with halftoning and grayscale or color bitmap handling. When in doubt, try a SuperDriver!

## *Cross-platform PostScript*

Masquerade automatically creates a printer description file for each printer driver you process through it. This PPD (PostScript Printer Description) file contains printer-specific information such as paper sizes and trays, resolution, and color capabilities. PPD files are used with Adobe Systems' Windows drivers and on Macintosh and NeXT computers and Sun workstations. If your system or application on these other machines can use a PPD file, you can create cross-platform PostScript files that will work cleanly with ZScript and your target output device.

The PPD files can be found in the Windows SYSTEM directory and can be identified easily – their file names are abbreviations of the printer name, and the extension is PPD.

### *Font handling*


The Windows NT PostScript driver is "hard-wired" to allow only a select set of fonts to be considered resident in a PostScript printer; these include the 35 "plus fonts" and a supplementary set of typefaces. This means that when you install a Type 1 outline that's not one of this set, it's always downloaded in the PostScript file; if you've installed only the TrueType translation of the Type 1 font, the TrueType font is downloaded in the file.

If the font is one of the hard-wired fonts (Type 1 or TrueType equivalent), it is never downloaded in the PostScript data stream, even when the driver options are set to **Download as Softfont**. That's OK because the ZScript filter recognizes the names of these fonts and handles the font call seamlessly.


Windows 95 and 3.1*x* PostScript drivers get font information from two sources: (1) information built into the driver (.DRV) file; (2) information listed in WIN.INI. The driver files typically contain the font information for the 35 "plus fonts." For other typefaces, Windows PostScript drivers must get information from WIN.INI listings.

These listings are grouped by ***port***. Section headers look like this:

```
[PostScript,LPT1]
```

Each port can have its own font information. The information contained in these sections tells the PostScript driver the name of the typeface, its font metrics (the width of each character in the typeface and the kerning pairs), and whether the typeface is resident or must be downloaded.

Masquerade handles adding typefaces into WIN.INI for use with all ZPS ports and ZScript. If you are using only ZScript for PostScript output, you probably won't need the following information. If, however, you are sending PostScript files to other PostScript-equipped printers, this information may be helpful.

Typefaces are listed in the [PostScript,*port*] section following the line *Softfonts=n* where *n* equals the number of typeface listings to follow. Each resident font is shown on a line in this form:
*Softfont#=d:\pathname\metricfile.PFM*

When only the PFM (Printer Font Metric) file is listed, the Windows PostScript driver assumes that the actual outline is resident in the printer.

Each downloaded font is shown on a line in this form:
*Softfont#=d:\pathname\metricfile.PFM,d:\pathname\outlinefile.ext*

The *outlinefile* can be either a Type 1 or Type 3 file. Adobe Type 1 files typically have a .PFB extension.

ZScript does not allow downloaded Type 1 soft fonts in its [PostScript,ZPS*n*] sections, since it assumes that they're installed in ATM. If the Type 1 file has a .PFB extension, ZScript automatically removes the last section of the listing, thereby forcing the listing to represent a resident font. Type 3 files do not normally use the .PFB extension, so their listings remain as downloadable fonts.

NOTE: If you print PostScript to more than one target device (for example, **LPT1:** and **ZPS:** and **FILE:**), there is a separate Softfont listing in each [PostScript,*port*] section. If you do not have the same list in each section, your typeface availability will change when you change ports!

Here are a couple of sample WIN.INI Softfont listings:

```
[PostScript,FILE]
ATM=placeholder
```

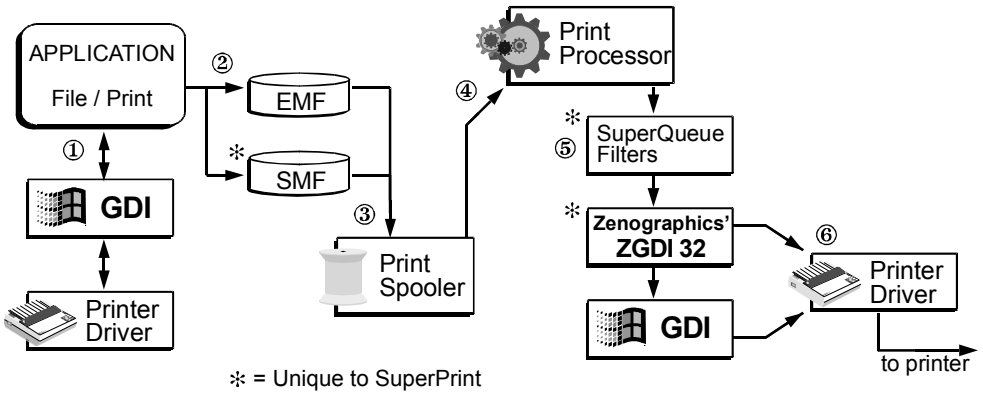
```
softfonts=4
softfont1=c:\psfonts\pfm\op______.pfm,c:\psfonts\op______.pfb
softfont2=c:\psfonts\pfm\opb_____.pfm,c:\psfonts\opb_____.pfb
softfont3=c:\psfonts\pfm\opbo____.pfm,c:\psfonts\opbo____.pfb
softfont4=c:\psfonts\pfm\opo_____.pfm,c:\psfonts\opo_____.pfb

[PostScript,ZPS1]
ATM=placeholder
softfonts=4
softfont1=c:\psfonts\pfm\op______.pfm
softfont2=c:\psfonts\pfm\opb_____.pfm
softfont3=c:\psfonts\pfm\opbo____.pfm
softfont4=c:\psfonts\pfm\opo_____.pfm
```

These sections install the Adobe Optima family on both the ZPS1: and FILE: ports. Note that the typefaces are downloaded when sending to FILE:, but not when printing to ZPS1:.

# Windows spooling and printing

This section is intended to help you understand how SuperPrint works in the Windows environments. The number in each subhead corresponds to a number in the diagram below. (Note that italicized words in this section can be found in the glossary at the end of this book.)




Windows 95 and Windows NT use a very different way of spooling print jobs than previous versions of Windows – they spool page descriptions rather than raw printer data. SuperPrint has been providing this spooling method to older versions of Windows since 1990, and continues to provide the fastest and most complete spooling solution for all current Windows versions.

## *1. What happens when your application prints*

When you click **File / Print**, the application asks Windows GDI and the printer driver how it should send the page description. Variables include the abilities of the printer driver (such as "stretching" bitmap images), and physical properties of the printer (like resolution and paper sizes). Under Windows 95 and NT, the datatype is also determined by the driver.

## *2. How the page description is spooled*

The page description is stored on disk using the appropriate datatype. Under Windows 95, the default datatype is EMF (Enhanced MetaFile). In Windows NT, it's a *Journal* file. Since Windows 3.1*x* does not have print processors, and its Print Manager spools only low-level printer data, its only native datatype is RAW. SuperPrint adds the SMF (SuperMetaFile) datatype to Windows 3.1*x* and Windows 95; SMFs are generally speedier and more compact than raw low-level printer data.

## *3. What the spooler does*

The Windows print spooler keeps track of the location and order of the page description files. Under Windows 95 and NT, SuperPrint does nothing to change this operation – it is completely compatible with the spooling subsystems that are already there. Under Windows 3.1*x*, SuperPrint adds a whole new spool subsystem so that spooling operates just like the later, more advanced Windows versions.

## *4. What the print processor does*

The print processor manages the process of sending the spooled metafile to the correct system-level programs so they can prepare the contents of the metafile for the printer driver. SuperPrint adds a new, fully compatible print processor to your Windows installation. In Windows 95 and NT, the original print processor is still there, but the SuperPrint version has many more features

including the ability to use special translating filters. In Windows 3.1*x*, the SuperPrint 32-bit print processor is added, completely circumventing the old, slow 16-bit printing architecture.

## 5. Where the real work gets done

Now comes the job of translating the incoming data into data that will be useful to your printer driver. For nearly all modern printers, that process is called rasterization. To fully understand SuperPrint's advantages, it helps to know how Windows handles printing without SuperPrint.

In Windows 3.1*x* and Windows 95, the core of Microsoft's own rasterizer runs in a 16-bit implementation of GDI. Even though your computer is using a 32-bit microprocessor, this older 16-bit programming cannot take advantage of its capabilities. In Windows 95, even when the data is being sent by a 32-bit application, before the data is rasterized it goes through a process which Microsoft engineers call "thunking" so that the page description instructions are submitted to 16-bit GDI for rasterization.

GDI16 uses cooperative mutlitasking, in which each program that's running takes full control of the CPU for as long as it wants before it releases control to allow other programs to run. Furthermore, while GDI16 is busy processing the printing code for the current job, it sets up a block called a "mutex" so no other GDI activity can be processed. Since GDI controls everything you see on the screen as well as many other Windows functions, this results in "chunky" foreground performance.

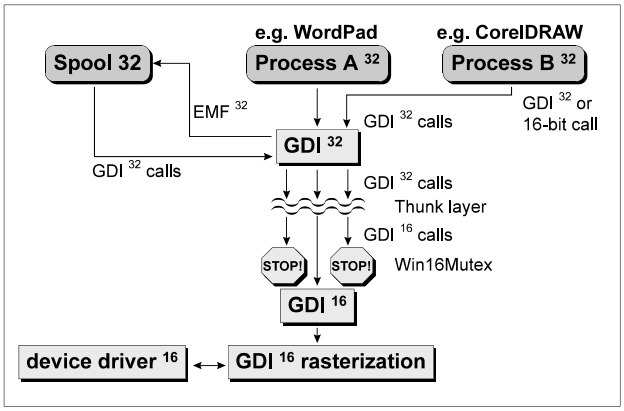



*Figure 1 – Windows 95 printing without SuperPrint*

Wherever possible, SuperPrint avoids thunking and the GDI16 mutex. In Windows 95, the thunk layer is unavoidable when printing from an application – the print subsystem requires it. But when you're printing to a SuperDriver, SuperPrint's 32-bit rasterizer re-acquires control very quickly, and almost completely avoids the mutex. Note that when you are printing a job through a SuperQueue filter, thunking is bypassed altogether, and you get true 32-bit performance from start to finish.

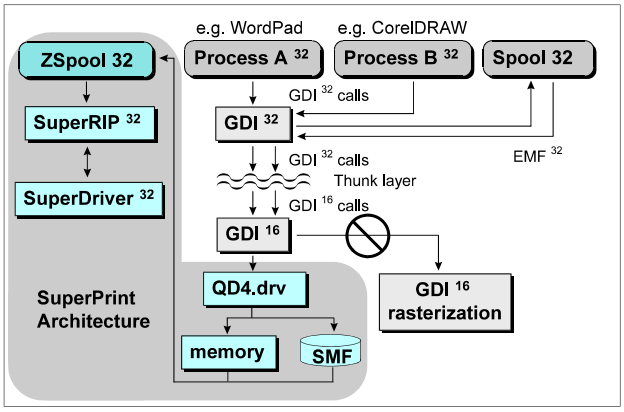



*Figure 2 – Windows 95 printing with SuperPrint*

SuperPrint's rasterizer (running under ZGDI32) uses true preemptive multitasking instead of cooperative multitasking; this places the Windows operating system in charge of how much CPU time each program gets. This multitasking is also multithreaded, so ZGDI32 can perform multiple functions simultaneously (for example, in the case of banded page processing, sending one band to the printer while rasterizing the next band). The result is smoother foreground performance and faster page processing.

As shown at number 5 in the main diagram, a job that goes through SuperPrint's print processor is first examined to see if it's able to be processed by a SuperQueue filter (including the SuperMetafile filter). If so, it is processed under ZGDI32. If the job is targeted to a 16-bit driver (a non-SuperDriver), ZGDI32 releases control and passes the job through to Windows GDI16 for processing.

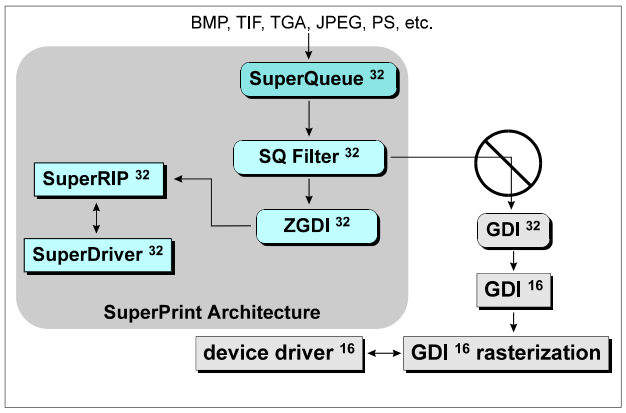



*Figure 3 – Printing through a SuperQueue filter*

## 6. The printer driver

By the time the actual printer driver is called upon to perform the output, most of the work is already done. The driver handles the protocols between the printer and computer, and translates the rasterized information from the SuperPrint core into the language required by the printer.

# Glossary

**Additive primary colors –** The colors red, green and blue (RGB) that are used to create all other colors when direct, projected or transmitted light, such as a computer monitor, is used. When pure red, green, and blue are superimposed on one another they create white. To make a color composed of RGB darker, values are reduced; to make it lighter than its pure form, all three RGB values are increased (for example, R=100% is pure red, R=50% is dark red, R=100% G=50% B=50% is light red). *See also* RGB, Subtractive primary colors.

**Application –** A program that typically requires user interaction and creates some form of output.

**Aspect ratio –** The ratio of distance, or resolution, between one plane and another. Using distance as an example, and when creating a 35mm slide, the aspect ratio is 3:2 which refers to Long edge and Short edge respectively. As Windows printing is designed to be paper-based, one would set a custom page size for the long edge distance to be 11" and the short edge to be 7.333" (or 12" X 8" if integers have to be used).

**Bit specifications (e.g., 32-bit) –** 1) Size of the computer's internal word, or registers, which is the amount of data the CPU can compute at the same time. If the clock rates (33 MHz, 100 MHz etc.) and basic architecture are equal, a 32-bit computer works twice as fast internally as a 16-bit computer.

2) Size of the computer's data bus, which is the pathway over which data is transferred between memory and the CPU and between memory and the peripheral devices. If the bus clock rates are equal, a 32-bit bus transfers data twice as fast as an 16-bit bus.

**Bitmap –** A file that describes a picture by specifying the color of each pixel (dot) within a rectangular area. Generated by “paint” programs and scanners. *See also* Graphics.

**BMP –** BitMaP. A Windows raster graphics format.

**Buffer –** A holding area for data that will be sent for printing or further processing.

**Cache –** A place (whether in RAM or on disk) for the temporary storage of data that is intended to be re-used. Caches are primarily used to increase efficiency and speed of accessing data.

**Client –** In strict computer terms, a client computer is one that requires a server for resources such as programs and data, and services such as printing. For purposes of SuperPrint printing, a client is the computer or workstation that generates print data (in the form of metafiles, raw printer data, or other SuperQueue-supported data files) and transmits it to the SuperQueue “server” computer.

**CMYK –** Refers to the color model based on the subtractive colors Cyan, Magenta, Yellow, and Black. These colors are used in printing inks and can be combined on the page to provide nearly all visible colors. While there is a theoretical inverse relationship between CMY and the additive color model of Red, Green, and Blue (RGB), imperfections in inks cause discrepancies. It is these discrepancies that SuperDrivers' Hue Matching

works to overcome. Many high-end graphics and image-editing programs allow editing in a CMYK color space. *See also* RGB, Subtractive primary colors.

**Color correction –** Process of enhancing or altering color or grayscale output appearance. Specifically, using SuperPrint **Image** tools (lightness, contrast, sharpness, saturation and hue matching) to compensate for limitations in hardware devices or target media. In the printing industry, any process that compensates for deficiencies in the color separation process and process inks.

**Color model –** A method of representing the color spectrum. Two of the most common primary color models are RGB and CMYK. *See also* additive primary colors, subtractive primary colors.

**Color value –** Values assigned to a color based on a color model. For example, in the RGB model, red has a color value of (100%, 0%, 0% RGB). Using the CMYK color model, red has a color value of (0%, 100%, 100%, 0% CMYK).

**Compression –** A method of reducing the number of bytes required to store or transmit a file. Usually accomplished by grouping repetitive data – the resulting group description contains fewer bytes than the group itself.

**Continuous tone image –** An image, such as a color or black and white photograph, where discrete levels of color are imperceptible..

**Contrast –** The degree of difference between the highlights, midtones and shadows in an image. Adjusting contrast on a computer is like adjusting contrast on a television set.

**CPU –** Central Processing Unit. For example, on Intel-based computers, the 80386, 80486, or Pentium microprocessor.

**Datatype –** For purposes of printing, the format in which a page description is stored in a print spool file. (Examples: RAW, EMF, SMF.)

**Default printer –** The printer to which most programs will print automatically.

**Device resolution –** The number of dots, or pixels, a device is able to render when producing an image. Device resolution is normally expressed in dots per inch (DPI ).

**DIB –** Device Independent Bitmap. *See* BMP.

**Dithering –** A method of simulating on digital devices the halftone dots used in traditional printing. On black and white devices, dithering produces simulated grayscale; on color devices, it provides varying degrees of color intensity. Also called Halftoning**.**

**DLL (Dynamic Link Library) –** A program module that cannot run on its own; a DLL is designed to be utilized on demand by another program. DLLs provide a way for more than one program to use the same program modules. They are more disk- and memory-efficient than incorporating redundant code into the main program.

**Downloading –** The process of sending either a font or a typeface to a printer. Early LaserJet Series printers accepted only downloaded bitmap fonts. PostScript printers and newer LaserJet Series printers accept both typeface outlines and bitmap fonts.

**DPI –** Dots Per Inch. The number of addressable dots measured in a vertical or horizontal inch on a device. Older laser printers offered 300 dpi resolution. Printers offering 600 and 1200 dpi are now common.

**Drag and drop –** Ability to execute a function by using a pointing device to graphically place a data file icon on top of a program window.

**Duplex –** Printing on both sides of the sheet of paper automatically.

**EMF –** Enhanced Metafile, a Windows datatype in the form of an object-based page description. Multiple page documents have a separate EMF description for each page. An EMF is not device specific.

**Emulation –** One system is said to emulate another when it performs in exactly the same way, though perhaps not at the same speed. A typical example would be emulation of one type of printer by another.

**EPS –** Encapsulated PostScript. A subset of the PostScript graphics file format developed by Adobe Systems. EPS is used for PostScript graphics files that are to be incorporated into other documents. An EPS file includes pragmas (special Postscript comments) giving information such as the bounding box, page number and fonts used.

Some programs generate EPS files that include a low resolution version of the PostScript image; this is referred to as a preview header.

**Escape –** When used in the context of Windows printing, Escape refers to a special sequence of coded instructions that informs the printer driver about the kind of data that is to follow. Escape codes (ASCII 27 followed by specific letters and numbers) are also used with many printers to transmit information about text attributes and page descriptions.

**Filter –** A process such as a conversion routine (import or export filter) that changes one data, text or graphics format into another. Also, a pattern or mask through which only selected data is passed.

**GDI (Graphics Device Interface) –** The internal "language" used by Windows to describe how text, graphics, bitmaps, and other objects are displayed on the page and screen.

**GIF –** Graphics Interchange Format. Popular raster graphics format developed by CompuServe that handles 8-bit color (256 colors) with high compression ratios.

**Gradient or gradient fill –** The gradual change from one value to another of either hue, lightness, and/or saturation involving a colored object or gray-scaled pattern. Gradient or sometimes expressed as gradient fill.

**Graphics –** Broadly defined, a picture or design element on a page. Narrowly defined, a picture made up of objects (or "primitives") such as circles, rectangles, lines, and polygons, generated by a "draw" program. Also referred to as object graphics or vector graphics. *See also* Bitmap.

**Grayscale –** Adjective used to describe graphics or bitmap images where each element is assigned a level of gray (lightness /darkness). Typical scales are 8, 64, or 256 levels of gray between black and white.

**High end SuperDrivers –** SuperDrivers, packaged and sold separately, for specialty devices such as film recorders, plotters, dye-sublimation printers, etc. Compare Standard SuperPrint, which contains a collection of SuperDrivers for laser, ink jet, dot matrix and inexpensive thermal printers.

**Hue –** The position of a color along the color spectrum (as in hues of the rainbow). For example, green is between yellow and blue. In SuperDriver's Color Correction dialog, hues are represented by a number between 0 and 240. *See also* Luminosity and Saturation

**JPEG –** Joint Photographic Experts Group (JPEG). The original name of the committee that designed the standard image compression algorithm. JPEG is designed for compressing either full-color or gray-scale digital images of "natural", real-world scenes. It is not as suitable for non-realistic images, such as cartoons or line drawings. JPEG does not handle compression of black-and-white (1-bit-per-pixel) images.

**Lightness –** In general, the relative position of a color between white and black. In SuperDriver Color Correction, a non-linear compensation curve that mainly affects mid-tone values of gray or color.

**Log –** Record of computer activity used for statistical purposes. Logging is the act of creating a log or record of activity.

**Luminosity –** The brightness of a color on a scale from black to white. *See also* Hue, Saturation, and Lightness.

**Metafile –** An intermediate file, the contents of which represent actual output. Typically used for graphics (as in Computer Graphics Metafile) or page descriptions (SuperMetafile).

**Multitasking –** Running two or more programs in one computer at the same time, controlled by the operating system. The number of programs that can be effectively multitasked depends on the amount of memory available, CPU speed, hard disk capacity and speed as well as the efficiency of the operating system.

**Pattern fill –** A bitmapped matrix used to fill an area.

**Pattern scaling –** The process of manipulating or re-sizing a given pattern fill to fill a particular area.

**Pixel –** Short for picture element. A pixel is one dot of a bitmap. *See also* Bitmap.

**Plus fonts –** A specific assortment of PostScript Type 1 typefaces that became popular after their introduction as resident fonts on the Apple LaserWriter Plus. The 35 typefaces consist of ITC Zapf Chancery Medium-Italic, ITC Zapf Dingbats, Symbol, and Regular, Italic, Bold, and Bold-italic variants of each of the following typeface families: ITC Avant Garde, ITC Bookman, Courier, Helvetica, Helvetica-Narrow, New Century Schoolbook, Palatino, and Times.

**PostScript –** A page description language from Adobe Systems used in a wide variety of printers, imagesetters and display systems. Its primary application is to describe the appearance of text, graphical shapes and images on printed or displayed pages.

PostScript Level 2, which includes all the functionality of Level 1, adds several features such as data compression and enhancements especially for color printing.

**Preemptive multitasking –** A feature of the hardware and operating system that allows the CPU to share processing time with all running programs. Preemptive multitasking gives the appearance that all programs are running simultaneously, as opposed to cooperative or “round robin” multitasking (used in older versions of Windows) in which each program can control the CPU for as long as it needs it.

**Print processor –** Software (DLL) that manages the process of sending spooled page descriptions of specific datatypes to the correct system level programs so they can prepare the data for the printer driver. System level programs include filters (such as Zenographics' ZScript filter), Windows Graphical Device Interface (GDI) and ZGDI32 (Zenographics' fully 32-bit version of GDI).

**Printer drivers –** Program modules that provide the software interface to translate information from the application or operating system into the language needed by the printer.

**Queue –** A list of stored data or programs awaiting processing.

**Rasterize –** To break down an image into individual scan lines. Nearly all modern graphics monitors and printers are raster-based.

**RAW –** A Windows datatype in the form of printer data, such as PCL (Printer Control Language). RAW data is device specific.

**Resolution –** The number of pixels, both horizontally and vertically, of an image. For output devices such as a computer monitor or a printer, resolution is normally expressed as dots per inch (dpi).

**RGB –** Refers to the color model based on the additive colors Red, Green, and Blue. These colors are used in computer monitor phosphors and can be combined on the screen to provide nearly all visible colors. The internal Windows GDI color model and most continuous-tone color bitmaps store information in RGB space, using 8 bits of data for each of the three color planes (8 bits = 256 values for each color plane, 24 bits provide approximately 16.7 million colors). *See also* Additive primary colors.

**Saturation –** The purity of a color's hue, moving from gray to the pure color. In SuperDriver's Color Correction, the value in the **Saturation** box is a representation of the intensity of the color, from solid color (240) to gray (0).

**Server –** In strict computer terms, a server is a powerful computer that provides resources such as programs and data, and services such as printing for less-powerful network client workstations. For purposes of SuperPrint printing, the server is a computer that's physically attached to a printer and accepts print jobs from other computers on the network.

**SMF –** SMF stands for SuperMetafile (or colloquially "smurf"). The SuperPrint metafile consists of a number of elements such as bitmaps, vectors and font descriptors. It also contains specific data for the intended output device (or target printer).

SMFs are generally much more compact than conventional printer data. They provide a simple, convenient and efficient method to describe the printable elements of single or multiple pages. Furthermore, the structure of these SMFs allow for an easy regional analysis of the page contents to optimize the speed of printing.

**SMF server –** A SMF server is a term generally applied to the PC or workstation that automatically processes the SuperMetafile (SMF) and provides output to a target printer. In a network configuration, it is a dedicated server (or workstation) that processes the SMF printing remotely from the originating workstation.

**Spooler –** Software that accepts print jobs and manages the queue to provide orderly sequential access to the printer. A spooler allows printing to take place in the background while other tasks are being performed in the foreground.

**Stochastic Process –** A process dealing with events that develop in time or space and that cannot be described precisely except in terms of probability theory. SuperPrint's SuperScreen threshold arrays were created using a stochastic process, distributing tonal values within a group of pixels in an apparently random (yet carefully controlled) way.

**SuperRIP –** A software rasterizer produced by Zenographics and used by SuperDrivers to send complex graphics, bitmaps and scalable fonts to your output device.

**Subtractive primary colors –** The colors cyan, magenta, and yellow (CMY), most often used in printing inks. In theory, black is produced when C=M=Y=100%. In real-world printing applications, black ink (K) is added to: (a) achieve true black, since CMY inks generally do not produce true black, (b) to substitute for areas where C=M=Y, which produces shades of gray, and (c) to replace portions of CMY combinations where all three inks are present (known as the gray component). To obtain lighter shades of colors, the amount of each color is reduced using halftoning. *See also* CMYK.

**Target printer –** The destination print device set up by the user through an application to print a file. Some applications automatically choose the default printer as the target printer, while others retain the selected printer that was in effect when a file is created and saved.

**TIFF –** Tagged Image File Format. Widely used raster graphics file format developed by Aldus and Microsoft that handles monochrome, gray scale, 8- and 24-bit color.

**TEMP Directory –** The directory that Windows and some DOS programs use for storage of temporary files. It is usually designated by the line SET TEMP=*[path]* in your AUTOEXEC.BAT file.

**Threshold array –** A bitmap file used as an electronic version of a graphic arts halftone screen during printing. When the threshold array is applied to the page's underlying tones of gray or color, only pixels that meet or exceed the value of the matching pixel in the threshold array are printed; others are filtered out and do not print.

**Utility –** A program that typically requires minimal or no user interaction and performs an ancillary or supporting function. *See also* Application.

**Win32 –** A programming specification (API) for Windows' 32-bit mode (uses Intel 80386 and later microprocessors, also RISC processors in NT). The W32 API surpasses the W16 API in features and complexity. It is implemented fully in Windows NT, mostly implemented in Windows 95, and partially implemented in Windows 3.1x with the Win32S option.

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