

ORDERING INFORMATION

This document consists of five sections:

- 1. Order Form/Fax Back
- 2. SuperPrint: Product Data Information
- 3. Technical White Paper
- 4. Reviewers Guide
- 5. International Distributor List

This demonstration version of SuperPrint will expire 30 days following installation. To order the full product, please contact BIT (UK) by printing the order form below.

To read more about SuperPrint, please take a moment to read the Product Data Information, the Technical White Paper, and the Reviewers Guide included in sections 2, 3, and 4 below.

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# SuperPrint

## Print Faster

## Get the Highest Quality Output

## Create and Print Internet Image Files

## Print and Preview PostScript Level 2 Files

## Share Printers Efficiently under all Windows Platforms

SuperPrint is a set of advanced printing tools for Windows designed to provide faster, better and smoother printing. SuperPrint replaces the Windows 16-bit print subsystem with 32-bit technology for smoother multitasking and better background processing. Included are SuperDrivers for all Windows platforms, with controls for sharpness, contrast, lightness, saturation, dot gain, and hue matching.

You can drag and drop bitmaps into SuperPrint's image filters to print without other applications. The automatic lightness and contrast enhancements provide the best possible output when you print.

SuperPrint has these tools not found in any version of Windows:

### Tools

SuperDrivers

File drivers

SuperQueue

ZScript

Print processors

Print preview

Network printing

Color correction

Halftoning

Image filters

### Features

32-bit drivers for all popular non-PostScript printers

Generate BMP, TIFF, GIF, JPEG, TGA & PCX files from any app.

Advanced Win32 spooler; job logging; supports drag & drop

Now interprets Level 2 PostScript. Preview too!

Directly print popular image files, no app needed

Preview any bitmap or PostScript file before printing

Uses fast, ultra-compact SuperMetafiles

User-adjustable RGB and CMY hue matching

Fifteen advanced halftoning methods; extensible

Optimize lightness and contrast automatically

### Fast, True 32-bit Printing

Get exceptionally fast output and the best multitasking and background printing with SuperPrint. Don't get stuck with 16-bit performance in Windows.

### Better Quality Output

SuperPrint offers more power to produce high quality output. Output controls include sharpness, contrast, lightness, saturation, grayscale, and dot gain.

### **Internet File Support**

Output World Wide Web-ready image files from any Windows application. You can also view and print downloaded files (GIF, JPEG, & PostScript) with drag-and-drop ease.

### **PostScript Level 2**

Turn your non-PostScript printers into powerful, faster PostScript devices. With SuperPrint, there's no need to buy expensive PostScript-equipped printers to print EPS and PostScript files. Includes screen preview, too!

### **SuperQueue**

A completely new SuperQueue offers more control over print job processing, helpful job status information (including job logging) and enhances, bi-directional network support. Best of all, the new SuperQueue lets you preview and print bitmap and PostScript files using drag-and-drop — without the need for any other application.

### **Image Filters**

When you drag your favorite bitmaps and PostScript files into SuperQueue, SuperPrint image filters "read" the graphics in your files and make lightness and contrast enhancements automatically. You'll get great results the very first time you use SuperPrint.

### **SuperDrivers**

SuperPrint provides 32-bit drivers for all popular non-PostScript devices. Each driver is pre-tuned for your printer model by a Zenographics print specialist to give you fast, high-quality printer performance.

### **Improved File Drivers**

We've added GIF and JPEG to our Bitmap SuperDriver so you can generate compact image files quickly and easily from any Windows application. These new formats are in addition to full support for TIFF, BMP, Targa and PCX. Making bitmaps has never been easier.

### **Print Preview**

No need to wonder if your PostScript or bitmap file will print correctly. SuperQueue comes with an on-screen print preview feature that shows how your image fits on the page, whether fonts are correct, and how your colors will look. You can also zoom in on any page to get a close-up look at the details.

### **Efficient Network Printing**

SuperPrint is the only solution that lets you print by sending compact metafiles over any Windows compatible network. In Windows 3.1 and 95, old-style raw printer data can create network bottlenecks. Our SuperMetafile architecture reduces network traffic and optimizes background printing performance on the client PC.

### **Installation requirements**

Windows 3.1 — 8MB RAM, 8MB hard disk space

Windows 95 — 8MB RAM, 4MB hard disk space

Windows NT — 16MB RAM, 4MB hard disk space

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## **SuperPrint 4.0 Advanced Printing Tools for Windows White Paper**

Much has been said about the power of Windows 95, its new 32-bit architecture and its long-awaited preemptive multi-tasking capabilities. It will therefore come as a surprise to many people that significant portions of Windows 95's printing subsystem (GDI) remain 16-bit. All applications – 32-bit or otherwise – have to interact with this 16-bit architecture, called GDI 16. GDI 16 limits performance under several conditions, e.g. 1) multi-tasking while printing, 2) multi-tasking while background printing, and 3) attempting multi-threaded processing. When a user prints or spools a print job, it is slow, inefficient, single-thread-processing GDI 16 that does virtually all the work.

### **Printing with Windows 95: The Problem**

The “Mutex” set in GDI 16 keeps Process B waiting until the GDI 16 call from process A is completed.

Graphics Device Interface (or GDI) is Windows 95's printing and display subsystem. GDI is not reentrant (meaning that once entered, no other thread can enter until the first thread exits), so it has to be shared by all processes that are currently operating.

When a 32-bit application prints, it sends 32-bit API calls to GDI 32. GDI 32 passes the data to GDI 16 in a process known as “thunking.” Two problems arise. First, GDI 16's 16-bit rasterizing engine cannot process data as efficiently as an equivalent 32-bit engine. Second, since GDI 16 is not reentrant, it cannot work on more than one process at a time. Process A therefore sets up a barrier (a “Mutex”) in GDI 16 to prevent any other process from entering GDI 16 until its work is completed. During this period, any other calls sent to GDI 16 are effectively “locked out.”

The result is inefficient multi-tasking, especially bothersome if the process being worked on by GDI 16 is very intensive and time consuming, e.g. an image, or a document with lots of fonts, lots of pages, and/or other printing elements.

Any subsequent change on the screen or in printing status has to call GDI. Launching apps, opening menus, playing games, displaying progress while downloading files from

the Internet, displaying images to the screen, background printing with Win 95's new metafile spooling, etc., all require processing by GDI. While the mutex is set for Process A, none of these activities can take place. Each of those processes is forced to "sleep."

Mutex side effects of the "sleeping" can be aggravating. Non-responsive buttons, screens not re-drawing, and partial message boxes displayed on top of applications are just a few example side effects from sleeping.

Sleeping can also significantly reduce CPU efficiency. If, for example, Process B receives a 20 millisecond time slice, makes a GDI call three milliseconds into this period, and is blocked by the mutex, it is forced to sleep, and it loses the remaining 17 milliseconds, which become unrecoverable CPU time – Process B can regain it.

Because of GDI 16, Windows 95 may not live up to users' expectations of smooth, high-performance multi-tasking while printing. Nor will CPU efficiency be optimized.

### **Background Printing with Windows 95: The Other Problem**

Windows 95 contains a 32-bit spooling subsystem, called Spool 32. When EMF spooling is selected (this is the default) GDI 32 quickly encapsulates GDI calls into an enhanced metafile (EMF), then returns control of the PC to the user. The EMF is then submitted to Spool 32. However, since the EMF has to pass through GDI 16 during playback, the same GDI bottleneck and process-blocking Mutex will hamper multi-tasking by other processes.

### **Printing with SuperPrint 4.0: The Solution**

SuperPrint minimizes the GDI 16 bottleneck by removing the rasterization process from GDI 16's control and putting it into SuperPrint's hands. Instead of setting the mutex and working on Process A's GDI calls, GDI 16 simply passes QD4 the calls to the appropriate SuperPrint modules, and clears the Mutex immediately. This drastically reduces the time that the mutex is set during print job processing.

SuperPrint allows preemptive multi-tasking even while Process A is being printed. Once Process A's calls have been passed to QD4, SuperPrint generates a new 32-bit process (Process B). Now that GDI 16 is not working on Process A's calls, the mutex is no longer blocking any other processes. Process A and Process B look to Windows 95 like 32-bit processes, and Windows' scheduler schedules time slices for each one.

While Process A uses its time slices to send print data, Process B uses its time slices to deliver that data to the rasterizer within Process B. Whenever one process gets ahead of the other, it can simply "wait," which means it yields its CPU cycles to other processes. CPU cycles aren't lost, as in the case above where a process has to "sleep." Instead, they're allocated to another process that needs them. The result is fast, 32-bit processing of print data; smooth multi-tasking; and efficient CPU utilization.

## **Background Printing with SuperPrint**

Like Windows Spool 32, SuperPrint's new 32-bit SuperQueue background printing utility encapsulates GDI calls in a SuperMetafile (SMF), then returns control of the PC to the user. Unlike Spool 32's EMF's, SuperPrint SMF's go directly to SuperPrint's rasterizer with no mutex setting. Once again, the process is very efficient, and multi-tasking is very smooth.

**Note:** EMF's are compatible with SuperPrint's architecture, so a user can handle Microsoft EMF's through SuperPrint as efficiently as it handles SuperPrint SMF's!

Unlike Windows 95's EMF's, SuperPrint's SMF's can be sent over a network. Since Windows 95 isn't able to transport an EMF over the network, it must be "un-encapsulated" and rasterized prior to being sent to the network. That means 1) client CPU time is taken away from multi-tasking other important jobs, and 2) a lot more data (raw printer data) is sent over the network.

SuperPrint allows preemptive multitasking even while Process A is being printed. When using Windows 95 with SuperPrint, the compact SMF can be sent right to the printer server for processing. That means 1) no rasterization overhead on the client processor, and 2) efficient network traffic.

## **ZGDI: Perfecting the Solution**

Zenographics has developed an "alternate GDI 32" called ZGDI 32 that understands the calls that GDI 32 normally processes for certain file types, such as BMP, TIFF, TGA and PostScript. (EMF support will be provided shortly in a free maintenance release, which will allow any Windows document to be processed this way). This allows SuperPrint 4.0 to bypass Win 95 GDI altogether.

SuperPrint 4 enables true 32-bit processing through use of its own GDI. Bypassing GDI 16 allows SuperPrint to break through the 32,000 scanline limitation imposed by Windows GDI, which limits large format printing to 80" at 400 dpi, and limits imagesetter printing at 2400 dpi to 13-14". With SuperPrint's ZGDI, print length and resolution are virtually unlimited!

## **Advantages of SuperPrint's Multi-Threading**

Some printers (e.g. wide format printers, high-resolution film recorders, continuous tone color laser copiers) require large amounts of rasterization or "Ripping" (from Raster Image Processor). If there isn't sufficient PC memory, this process has to be broken down into pieces or "bands." With Windows 95 and GDI 16, rasterizing and sending data must occur in a serial fashion: This is because there's no ability to launch a new thread in a 16-bit environment until a given process has been completed.

In contrast, SuperPrint 95 can rasterize a band, and then, while it is being sent, another thread can be started to send the band. Ripping and sending data can take place concurrently, significantly reducing overall print time.

## Summary

Windows 95 will continue to have a “hybrid” 16-bit/32-bit architecture for the foreseeable future. End users are upgrading to Windows 95 for two primary reasons: to utilize the new interface, and to get increased multitasking performance in the new “32-bit environment.” Users will experience a lack of smooth, efficient multi-tasking while printing from Windows 95. SuperPrint 4.0 provides the missing link, replacing the 16-bit print process with a true 32-bit multitasking print system.

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## SuperPrint 4.0 Reviewers Guide

### Introduction

SuperPrint 4.0 is a set of advanced printing tools for Windows designed to provide faster, better and smoother printing. SuperPrint transforms printing in all versions of Windows into a true 32-bit process. For example, in Windows 95, SuperPrint replaces the 16- and 32-bit hybrid technology with complete 32-bit performance (for an in-depth discussion, please see the SuperPrint 4.0 White Paper above).

Through implementation of SuperPrint’s 32-bit queuing architecture and 32-bit “SuperDrivers,” its technology produces more efficient background printing and smoother multitasking. Windows NT users will especially benefit from SuperPrint’s wide range of SuperDrivers, as many devices don’t otherwise print from Windows NT. SuperPrint’s SuperDrivers dramatically enhance the appearance of your output from any Windows applications. The SuperDrivers offer controls for sharpness, contrast, lightness, saturation and dot gain. Each SuperDriver is pre-tuned to its corresponding printer by Zenographics’ printing experts to optimize the capabilities of the printer. SuperPrint’s image filters let users preview and print images without opening applications, and add automatic lightness and contrast enhancements, providing the best possible output from the first time SuperPrint is used.

### SuperPrint includes a set of tools designed to make printing easier:

#### Tools

File Drivers  
SuperQueue  
ZScript

#### Features

Generate BMP, TIFF, GIF, JPEG, TGA & PCX files from any app.  
Advanced Win32 spooler; job logging; supports drag-and-drop  
Now interprets Level 2 PostScript; screen preview



Print Processors	Directly print popular images files; no other apps needed
Print Preview	Preview any bitmap or PostScript file before printing
Network Printing	Fast, compact SuperMetaFiles for more efficient printing
Color Correction	User-adjustable hue matching
Halftoning	Forty-one advanced halftoning methods
Image Filters	Automatic adjustments to lightness and contrast

## **Getting Started**

SuperPrint includes “Getting Started” information in a README.TXT file on the CD with quick and easy setup procedures for installing the software. Note: for Help with this product, please contact BIT (UK) Ltd. at the address and telephone listed at the end of the Order Form in Section 1 of this document.

There’s also a README4.WRI file, which includes up to the minute information about the software, and a section in SuperHelp (the program’s in-depth help system) to guide new users.

## **SuperPrint Documentation**

To get the best results from SuperPrint, please review the Introducing SuperPrint manual enclosed in the SuperPrint box. Quick help about what commands, buttons, and menus do inside SuperPrint is available in the help files.

## **Suggested Test Procedures**

### **Test 1: Drag-and-drop printing**

SuperPrint’s drag-and-drop feature enables you to print bitmaps by simply dragging them to the printing queue (SuperQueue). Unlike Windows, which also supports drag-and-drop printing, SuperPrint does not open associated programs in the background prior to printing. Windows will only print files which have an associated program. For example, if you drag a GIF file to a Windows printer and do not have a program which opens GIF files, Windows 95 cannot print the file. SuperPrint solves this with filters which translate bitmaps without the need for associated programs.

#### ***Example***

Printing graphic files via drag-and-drop is faster, easier and more efficient with SuperQueue than dragging files to Windows’ standard printer queues.

1. With SuperQueue closed, open the standard Windows printer queue for your printer. Drag WINTER.BMP from the SAMPLES\BMP directory on the SuperPrint CD to the queue (if you are using Windows NT, drag the file over from File Manager). Note how Windows opens Paintbrush (PBRUSH.EXE) in the background, and the amount of time taken before the file is printed.

2. Open SuperQueue. Drag WINTER.BMP to your printer's queue in SuperQueue. Notice that Paintbrush is not launched in the background. Instead, the file is immediately processed by the BMP filter, and sent to the printer much faster.

### **Other Bitmaps**

If you were to follow the same steps above using a GIF, JPEG, or TIFF file, you would not be able to print without one of SuperPrint's filters. Windows does not include a program which supports GIF, JPEG or TIFF files. Therefore, unless you have installed a program which supports these types of bitmaps, you could not print these files without SuperPrint.

### **Level 1 & 2 PostScript Support**

In the same manner that you can drag bitmaps files into SuperQueue, Level 2 PostScript files may be printed. Just drag your PostScript or EPS files to a printer queue SuperQueue, and the PostScript filter will translate the file to Windows GDI for printing to non-PostScript printers. To try this, just drag a file from the SAMPLES\PSCRIPT directory on your SuperPrint CD.

### **Test 2: Print Preview**

SuperPrint provides a print preview feature for bitmap and PostScript added to SuperQueue.

#### ***Example***

Using the Print Previewing feature can help you identify problems prior to printing, enable you to copy and paste images into documents (a great tool for PostScript files), and save jobs to metafiles.

1. Open SuperQueue. Add a BMP, TIFF, GIF, JPG, or PostScript file to a printer queue using the File/Add menu option or the Add Documents button. Select a file to add and click the Add button.
2. Click the OK button on the filter dialog and the file will be processed. The file becomes a paused print job in the queue.
3. Using your mouse, highlight the job, and select the Document/Print Preview menu option, or click on the Print Preview button. In Windows 95, you can also click the right mouse button to bring up a menu with the Print Preview option.
4. The Print Preview screen provides you options to view pages in succession, or up to two pages simultaneously. You can also zoom in and out on pages, copy their contents to the clipboard, or save to a metafile (enhanced or Windows).

**Note:** To print a file after previewing, click the Close button and then release the document to the printer by using the Document/Release Document menu option or the Release Document button. In Windows 95, you can also click the right mouse button to bring up a menu with the Release Document option.

### **Test 3: Bitmap SuperDrivers**

SuperPrint provides SuperDrivers for creating bitmap files from any application. This ability enables you to export work from one application to another without any complications.

#### ***Example***

Creating image files for the Internet from any application is easy using the GIF or JPEG SuperDriver.

1. Start an application such as MS Word and open or create a document. Print your document, using the GIF or JPEG SuperDriver as your target printer (instead of your usual printer). You will be asked to name the output file. See online **Help** for information on naming files.

You can also use the BMP, PCX, DCX, or TGA SuperDrivers to create bitmap files. These files can then be imported into documents, distributed as image files, or printed.

### **Test 4: Improving output quality**

The SuperDrivers in SuperPrint allow for adjustments for the unique characteristics of each printer, providing the sharpest graphics and most vibrant colors possible. Each SuperDriver is “factory pre-tuned” by Zenographics printing experts so users can get dramatic improvements the first time they use SuperPrint. The easy to use controls allow further manual adjustment to provide the look that suits users’ needs.

#### ***Example***

Printing a graphic using SuperPrint versus a standard printer driver will demonstrate the difference in output quality.

1. Open GOODFACE.BMP (found in SAMPLES\BMP on your SuperPrint CD) using Paintbrush or other graphics application. Print the image with your standard printer driver selected.
2. Next, print GOODFACE.BMP by dragging the file to your printer’s queue in SuperQueue. (Make sure you drag it to the SuperDriver!)
3. Compare both printed images and note the difference in quality between the two. Specifics to look for are the differences in the colors (brightness, clarity), sharpness of lines (strands of hair, eye lashes) and halftones (smooth patterns in gray areas and solid

colors).

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