



BarTender[®]
LABEL PRINTING SOFTWARE

White Paper

The Advantage of *Drivers by Seagull*[™]

How True Windows[®] Printer Drivers by Seagull
Help Make BarTender the Fastest, Easiest,
Most Reliable way to Print Labels

 **SEAGULL**
SCIENTIFIC

The Leader in True Windows Printer Drivers

Seagull is proud to be the world's largest developer of true Windows drivers for label printers. More than just ordinary drivers, they offer a "standard mode" for complete compatibility with standard Windows programs and an "enhanced mode" that gives BarTender full access to your label printer's most advanced features. In this white paper, we learn about the advantages of true Windows printer drivers and how Drivers by Seagull™ deliver a consistent and reliable way to print just about anything from any Windows program.

Understanding the Two Basic Label Software Architectures

There are two basic approaches to the printing architecture of label software:

- Embedded Printer Drivers
- True Windows Printer Drivers

To best understand the differences, let's briefly consider how and why true Windows drivers got started in the first place.

The Limitations of "Embedded" Printer Drivers

Through the mid 1980s, most software contained all of its functions in a single, sometimes very large program. Since this included the printer and video drivers, and they were locked inside and couldn't be separated from the program, they were said to be "embedded" in the main program. This kind of "all in one" software (especially common in the old DOS world) created two very serious limitations:

- 1) Different programs could not easily share data with each other.
- 2) More important to our discussion, every program had to have its own built-in drivers for devices such as printers and video displays.

Because each software company's "drivers" functioned only with the program in which they were embedded, companies couldn't benefit from each other's work. So they *all* had to spend time and money developing drivers for the same hardware. In those days, when you purchased a new printer, it didn't come with its own drivers. Instead, you could wait months (or even years) for some of your software products to support the printer. And then, even if you were perfectly happy with your current software and *all* you needed was new printer support, you often had to buy a whole new version of the program anyhow.

Windows® Changed Everything

In 1987, Microsoft introduced Windows, the first major business software environment to specify open printer driver standards. This allowed developers of spreadsheets, word processors, databases and other programs to avoid duplicating each other's efforts just to talk to devices like video adapters and printers. To use Windows drivers, developers simply had to write programs that obeyed certain Windows communication standards.

With open printer driver standards available, most developers of spreadsheet, word processor, database, and other software products breathed a sigh of relief. Each company could now concentrate on what their products were supposed to do best and leave printer driver development up to somebody else.

But Wait, What's a Printer Driver?

Drivers are special programs that, instead of being used by people, are used by *other programs*. The types of drivers we are concerned with help programs talk to *hardware*, specifically printers.

It helps to think of a printer driver as a kind of universal translator. Windows programs talk to printer drivers using a standardized Windows graphics language. Each driver then "translates" the various Windows commands into the appropriate printer language. It can work in reverse too: If a label printer offers status information, a properly-equipped driver will make that information available to your programs or operating system.

The Mistake of Ignoring New Technology

Despite the flexibility and convenience of the open driver architecture offered by Microsoft, many companies stubbornly ignored Windows completely and continued to "embed" their printer support into their programs. Even after some companies belatedly adopted Microsoft's video driver standards and the Windows "look," many software companies didn't want to have to redo their already existing printer support. So they stuck to the very same printing technology they had used in the old legacy versions of their DOS and main frame software products.

Constrained by numerous barriers to growth, most of these companies eventually paid for their short-sightedness by going out of business. Only a very few have survived to this day, but the limitations on their products remain. Label software based on the closed architecture of embedded printer drivers is less flexible, less Windows compatible, and much more difficult to maintain and upgrade than label software based on true Windows drivers.

Benefiting from Teamwork with Microsoft

We feel that we can deliver the best possible software by incorporating the efforts of thousands of Microsoft programmers, rather than competing against them.

Applications that embrace *true* Windows printer drivers automatically get access to the Windows' print spooler, Print Manager, advanced printer port control, high-speed network printing, extended font capabilities, and additional Microsoft-provided capabilities.

To compete with these Windows performance advantages, makers of software with "embedded" printer drivers have had to create their own competing spoolers, print managers, network printing support, and a variety of other redundant technologies. How many of these

companies have the development and testing resources to literally compete with Microsoft? How much time do they have left to work on their core label design functions?

How BarTender® and True Windows “Drivers by Seagull” Revolutionized Label Printing

BarTender was the first Windows label program to provide support for thermal label printers *and* full compatibility with true Windows printer drivers. Compared to label software with “embedded” printer drivers, this gives Seagull numerous advantages:

Access to Numerous Existing Drivers

BarTender offers full compatibility with a truly remarkable variety of thermal, laser, ink-jet and dot-matrix printers – regardless of whether or not we wrote the printer driver.

Powerful Windows Features “For Free”

Microsoft has worked aggressively to add new technologies into new versions of Windows and to make those technologies available to its development partners. That means we don’t have to write *everything* “from scratch.” For example, when Microsoft added TCP/IP networking and USB printing we were able to incorporate these capabilities with relatively little effort (which is why we sometimes say that we get certain features “for free”).

Outstanding Font Variety and Flexibility Mean Better Looking Labels

When your software prints through true Windows printer drivers, you can choose from the widest possible variety of fully scalable fonts and view them with the best available accuracy on screen before you print.

Windows Spooler Speeds up Printing

When software with “embedded” drivers prints labels, it usually uses so much CPU power that you can’t use your computer for much else until printing is complete.

In contrast, Drivers by Seagull are able to use the “Spooler” built into Windows. Since the Spooler can buffer data much faster than your printer, your programs finish generating the print job faster and you can start work on your computer again much sooner. The Windows spooler then works in the “background” to send your print job to the printer while you do other work. Alternatively, you can specify a lower spooler priority, allowing you to use other software even as your print jobs get buffered.

Label software that uses “embedded” printer drivers can only offer buffering through a custom, proprietary spooler and Print Manager. With limited development resources and less knowledge of the internals of Windows than Microsoft, it’s very difficult for these companies to offer the same kind of performance.

No Extra Servers Required

Some other label software companies not only force you to use a proprietary spooler and Printer Manager, but require that you purchase and install a special dedicated server that does nothing except host this extra software.

Better Network Compatibility and Speed

The same capabilities that Windows uses to intercept and “spool” print jobs are also used to redirect print jobs across your network at the fastest possible speed. That’s why BarTender’s performance advantages when printing, already enhanced by the Windows spooler, increase significantly when printing multiple print jobs at the same time to different locations on your network. And BarTender doesn’t require any add-on software components in order to achieve its superior network performance.

Reduced Training, Administration and Technical Support

Whether you’re printing locally or to a network printer, unexpected issues can arise, such as running out of labels or forgetting to turn your printer on. Although Windows makes it easy to detect and clear such error conditions, doing so requires at least some knowledge beyond just pushing the “Print” button. Fortunately, with BarTender and Drivers by Seagull, you don’t have to learn anything new. You use the standard Windows interface to set access rights, add, remove and configure printers, monitor job queues and delete print jobs. There’s nothing new to learn and you definitely don’t need any extra computers.

In contrast, label software that uses “embedded” printer drivers typically use their own proprietary print spoolers and network support. This requires learning a second set of printing utilities with its own unique behavior, sometimes running on an extra dedicated server.

Easier, More Cost-Effective Upgradeability

If you use embedded printer drivers, you typically can’t support a new printer model or brand without upgrading your entire label printing program.

With BarTender, our printer drivers are available for free on our web site. So, when support becomes available for a new printer, you can simply download it *for free*.

Understanding the Need for Speed

The typical label printer moves labels about 8 times faster than a laser printer moves paper. Accordingly, there are a variety of printer performance optimizations that are crucial to preventing label printers from having to stop and wait for data from the computer to catch up.

Enhancing the Microsoft Windows Printer Driver Standard

The special high-speed features available in most label printers are not standard features

of *any* operating system, including Windows. (This is mainly because these optimizations weren't needed for "page-based" laser and inkjet printers). Accordingly, all Drivers by Seagull have two operating modes:

Standard Mode: Guarantees 100% compatibility with all standard Windows programs.

Enhanced Mode: Gives BarTender full access to high-speed label printing features without affecting the drivers' compatibility with other Windows programs.

Seagull's dual mode drivers bring label printing power to all of your Windows programs. So, whether you're using Access, Excel or BarTender, you can use the very same printer drivers.

Summary of Optimizations

The Drivers by Seagull high speed printer optimizations are listed below. (With the exception of Downloadable Fonts, these can only be accessed when used with BarTender.)

Printer-based Serialization

In label print jobs that include serial numbers, many label printers can accept a starting value and a step size to increment (or decrement) at the beginning of the print job. That allows you to print a large number of serialized labels without having to send additional data after the first label.

Printer-based Bar Codes

Printers with built-in bar codes allow software to request complex bar codes using simple text strings (such as "1234") instead of the software having to send bitmap images (or pictures) that consume hundreds or even thousands of bytes.

Downloadable Fonts

The fastest way to print text is with a printer's built-in fonts. Unfortunately, no printer offers the full variety of font styles available in Windows. Therefore, in printers that support it, Drivers by Seagull (with *or* without BarTender) can download Windows fonts into your printer. Your Windows programs can then request these fonts as quickly and easily as if they came built into the printer.

Label Formats

Label printer command languages accept two kinds of information:

Formatting Information: Describes where objects should appear and how they should look. (For example, which bar code languages, what text fonts and sizes, etc.)

Label Data: The actual data to be formatted and inserted in the specified locations. (For example, the name of a product or the data for a bar code.)

When supported by the printer, BarTender and Drivers by Seagull will send the label

formatting commands a single time at the beginning of the print job and then separately "flow" or "merge" in the data for each label.

Static Graphics and Object Caching

When printing multiple labels, some information is often repeated on each label. Therefore, many label printers can be told to store (or cache) the unchanging parts of your label data at the start of a print job so it doesn't have to be resent with each label.

Conclusion

It's been many years since Microsoft first introduced its open printer driver standards. Most label software companies that ignored this trend have already gone out of business. However, a few companies have stubbornly stuck with the same "embedded" printer driver technology that first caused compatibility and maintainability problems on DOS systems back in the early 1980s. In contrast, true Windows drivers offer the maximum possible compatibility with the widest variety of software and are easily upgraded when new printer brands and models are introduced.

When you print labels using Drivers by Seagull, you monitor and maintain label print jobs exactly as you do when printing from programs like Word or Excel, so you don't have to learn new administration skills. Windows drivers also provide better network compatibility and superior network printing speed. When you use BarTender with Drivers by Seagull, you can take advantage of high-speed label printing commands not normally available using standard Windows printer drivers.

Drivers by Seagull give you a single, common way to quickly and easily talk to your label printers from just about any Windows program.

Available Seagull White Papers

- Integration Overview
- Automated BarTender Control from Other Applications
- The Advantage of "Drivers by Seagull"
- Commander - Enterprise Integration Utility
- Understanding How BarTender Reads SAP R/3 Intermediate Documents
- BarTender Enterprise Licensing - with the Seagull License Server

For downloadable versions, visit: www.seagullscientific.com/asp/whitepapers.aspx

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