

The
Adobe®
PostScript®
Printing
Primer



A·dō·bē Pōst·Script

Since Adobe Systems introduced the PostScript standard in 1985, Adobe PostScript software has sparked a revolution in how we communicate on the printed page. By changing the look of our documents and expanding our own sense of what is possible to print, Adobe PostScript has become synonymous with quality and leadership.



Adobe® PostScript®

In this booklet, we'll describe the Adobe PostScript printing system and how it functions to allow you to produce the widest range of documents, at an unmatched level of quality, from virtually any kind of printer.

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Why is Adobe PostScript important?

A decade ago, users of personal computers found themselves empowered with a new and quite unexpected capability.

Thanks to the introduction of Adobe PostScript—software that tells an output device how to print different elements onto a page—people could now take full control of how their documents looked.

That's because instead of using preformed characters, the PostScript page-description language stores mathematical representations, or outlines, of fonts and shapes. So for the first time, people could choose from a wide range of typefaces, sizes, and styles for their text.

And with Adobe PostScript printers—regardless of make or resolution—people could produce extremely complex output consisting of integrated text, graphics, and even scanned images. The results were visually rich pages, produced easily and consistently.

Now, ten years later, as we begin to demand more and more from our printers, these and other benefits of Adobe PostScript are no less important. But in today's mixed environment of multiple computers, operating systems, application software, and printing technologies, we find new obstacles and challenges.

Today, we want to be confident that we can print our documents, without regard for this heterogeneous mix of devices, platforms, and printer resolutions.

We want to know that we can print in color, with the assurance that no matter what the output device, what we see is a faithful representation of what we intended.

We want to know that we can print documents that we ourselves may not have created—whether sent in e-mail from a colleague across the country, imported from new media technologies such as CD-ROM, or downloaded from a page on the digital highway.

We want to know that the printer we bought ten years ago—or the one we buy ten years from now—will print the pages that our new technologies create. And we want to know that we have a choice in purchasing these printers, and can select from among the widest variety of manufacturers.

With Adobe PostScript, we know.



Giampero Benvenuti

How does Adobe PostScript printing work?



Because it is supported by virtually every **software application**, Adobe PostScript software lets you print any kind of document—from memos and spreadsheets to illustrated brochures and annual reports.

Think of Adobe PostScript as a translation program between the application you're using and the output device that lets you view your work.

When you press the PRINT key, a special software module in your computer called a **printer driver** automatically generates a new, and separate, program.

This program, a **PostScript language file**, includes descriptions for the style and size of the type, where graphics should be placed, and how color should be treated.

In other words, the PostScript language file tells your printer how to lay the pixels, or dots, of your document onto a page.

Once sent down the cable to the **printer**, the PostScript language file is processed by a controller called a **raster image processor**, or RIP, inside the device. Although the Adobe PostScript RIP is sometimes found within the host computer itself, it is here—in the brains of the printer—where it usually resides.

The Adobe PostScript RIP is often referred to as an **interpreter** because it translates the instructions in the PostScript language file that came from your application. Other Adobe software within the printer's controller optimizes the PostScript language file to the specific characteristics of that printer—such as whether it's a black-and-white or color printer, or how many dots per inch the device is capable of printing.

Finally, the Adobe PostScript printing system creates a rectangular array of pixels—called a **raster image**—which is then relayed to the device's marking engine to be printed.

Exactly the way you envisioned it in your original application.

Adobe PostScript printing today: versatile and **colorful**

Since its introduction, one of the most powerful characteristics of Adobe PostScript software has been its ability to print correctly and consistently, regardless of the application, computer, or make or resolution of the printer.

This independence—of device, platform, and resolution—is unique to Adobe PostScript printing. Even in today's networked environment of Macintosh, PC, and UNIX® based machines, as long as the application and output device support the PostScript language, you are assured of getting the best results possible.

Today's Adobe PostScript extends this idea of device independence one step further, to the most difficult issue in printing today: color.

Because reproducing color is such a complex process, Adobe participates actively in color standards consortiums to ensure that PostScript continues to be the highest quality color printing standard in the industry.



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As a result, Adobe PostScript is the only rendering software that can guarantee true, device-independent color. You get accurate and consistent color reproduction on a variety of displays and printers, no matter what the printing technology is or how the document was created.

Beyond color But there is even more to today's printing technologies than color. Documents have become more complex; files have grown in size; and it has become increasingly more important to transmit information between the computer and printer at greater speeds. Adobe PostScript software includes special algorithms for compressing and decompressing data to accomplish this.

To allow fast and efficient printing in other languages, Adobe invented the CID (Character IDentifiers) font format. This simpler format produces more efficient PostScript language files, which results in faster printing. Adobe also provides technology to improve the printing performance of text set in languages based on large character sets, such as Chinese, Japanese, Korean, and even Cyrillic.

Adobe has developed technology that lowers the cost of printing. Adobe Memory Booster™, for example, reduces the amount of printer memory needed without sacrificing quality. This means that manufacturers can ship a printer with less memory, in turn lowering printer cost. In addition, Adobe Type Connection technology uses advanced font substitution methods that enable the production of low-cost Asian-language printers.

Device and resolution independence also make PostScript technology ideal for sending and receiving faxes. Adobe PostScript Fax, for example, turns a PostScript printer into a plain-paper fax machine. You can send a document from your computer to any fax machine in the world with perfect quality and receive faxes on plain paper at high resolution.

The **benefits** of Adobe PostScript

As we've seen in the last few pages, Adobe PostScript is the only technology that lets you print any document—text, graphics, images, and color—from any computing platform to any supported device, at the very highest quality possible.

What is it about Adobe PostScript that makes this possible?

Quality Adobe PostScript software has been designed from the outset to work seamlessly with every major operating system and color management system. A component within the PostScript RIP, called a pixel reducer, guarantees precise placement of pixels, which yields crisp text and accurate lines. This is the best assurance of getting the highest quality results from a printing device.

With Adobe PostScript technology, text, graphics, images, line art, and halftones all print reliably and look superb, and Adobe's device-independent support of color models ensures the accurate and consistent reproduction of color on any Adobe PostScript printer.

Performance As users migrate to higher-resolution printing, image files have become extremely large. Electronic document distribution has also spawned new performance requirements.

Adobe has recognized and addressed the need to print these new and larger documents by continually optimizing PostScript software to improve performance. Some of the many enhancements include built-in compression technology that allows information to be transmitted faster and special-purpose integrated circuits that speed up processing.

Compatibility As the only standard page-description language recognized by the International Standards Organization (ISO), PostScript is



supported in every computing environment.

And unlike other printing technologies, Adobe PostScript includes native support for both the Type 1 and TrueType font formats as well as for large character sets. This guarantees seamless, worry-free printing of virtually any file, including international documents.

Adobe is also a founding member of the International Color Consortium (ICC), ensuring that PostScript is always on the leading edge of advancements in color printing

technology. In fact, PostScript is the first and only page-description language to offer native support of the new ICC profile formats.

And because the company sets and owns the PostScript standard, only Adobe is in a position to define extensions to the language and add new functionality.

Easy to share Because Adobe PostScript technology is supported on every major platform, Adobe PostScript printers are ideal for networks, large or small. Designed from the start to be easy to share, these printers work independently of any network configuration, ensuring seamless operation in any environment.

Adobe PostScript and the **future**



Eric Wumrow

PostScript is a living language. Since introducing PostScript in 1985 as an open standard, Adobe has continually made improvements to the software. This has yielded powerful new capabilities such as Adobe PostScript Fax printers and the coming generation of multifunction products, which will include fax, copying, and scanning capabilities in one unit.

But throughout all of these enhancements, there has been one constant: compatibility through time.

Today's PostScript savvy application software and printer drivers can easily take advantage of the latest PostScript features while remaining compatible with previous Adobe PostScript products. And they'll remain compatible with products to come.

The result is that Adobe PostScript printing devices never become obsolete, and an investment in Adobe PostScript technology today will always be protected into the future.

Why is this important? As the world becomes more connected, and as it becomes easier to access information from other sources electronically, we will want the assurance of being able to print documents created by others with the same high quality with which we print our own. Again, that means Adobe PostScript.

In this future, Adobe PostScript software's independence—from resolution capabilities and from the devices on which it prints—makes it especially well suited to the increasingly important area of electronic document exchange. Adobe PostScript is, in fact, the foundation upon which a new communications technology—called Adobe Acrobat®—is built.

Adobe Acrobat contains a portable document format, or PDF, technology that enables users to get instant access to documents in their original form, independent of the computer platform or even of the originating application. Users can view these documents and print them at the highest quality possible on an Adobe PostScript printer.

Similarly, Adobe Acrobat software gives users the same assurance that they can produce and send *their* documents, and that colleagues elsewhere will be able to read and print them.

The future of printing is here now. As always, it's Adobe PostScript.

Glossary

Here are some commonly used terms that relate to printing and Adobe PostScript technology.

Character Identifiers (CID) A new type of font with a simplified internal structure and compact file size that result in improved performance for large character sets such as Chinese, Cyrillic, Japanese, and Korean.

Color Management System (CMS) A software system that consists of profiles and a processing component that manage color. The profiles describe the relationship between a device's color components and a color standard. The processing component transforms colors between the color spaces defined by profiles to ensure calibrated color.

Device-Independent Color (DIC) A way to describe colors to achieve consistency as colors are transported from device to device—for example, from a monitor to a printer. By using DIC, each device only needs to know about its own color characteristics relative to a color standard. Adobe PostScript supports device-independent color.

Dots Per Inch (DPI) A measure of the resolution of a device. The higher the number, the sharper the type and images.

International Color Consortium (ICC) A group of companies whose charter is to develop, use, and promote cross-platform standards so that applications and devices can exchange color data without ambiguity. Founding members include Adobe, Agfa, Apple, FOGRA, Kodak, Microsoft, Silicon Graphics, Sun, and Taligent.

Page-Description Language (PDL) Software that resides within a printer and defines how elements such as text and graphics appear on the printed page. PostScript is the industry-standard page-description language.

Pages Per Minute (PPM) The maximum speed of the printer's marking engine as rated by the manufacturer. Personal printers typically carry a rating of 4 to 10 ppm.

Pixel The smallest dot that can be produced on a computer screen.

Raster Image Processor (RIP) The hardware and/or software that translates data from PostScript and other high-level languages into dots or pixels in a printer or imagesetter.

Resolution The sharpness of text and graphics provided by any printer or output device, measured in dots per inch.

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