

Adobe Celebrates Two Decades of Publishing Revolution

It's been 20 years since Adobe PostScript software was introduced and indelibly changed the printing and publishing industry for all time. In 1984, five visionaries at Adobe – John Warnock, Chuck Geschke, Doug Brotz, Ed Taft and Bill Paxton – authored the revolutionary PostScript, a device-independent page description language that would soon become the industry standard for printing rich text and graphical content.

With PostScript, printers and publishers were finally able to describe all the content on an electronic page independent of its final output destination. This watershed achievement not only freed print professionals from the constraints of proprietary output systems, it forever changed the workflow of content creators and publishers and ushered in a new era of communication.

Pre-Revolutionary Times

Prior to the introduction of PostScript, publishing systems relied on a strictly mechanical process employing a mix of handset type and proprietary typesetting systems. While pages of text could be assembled on a computer, adding photos to the page required a separate optical/chemical workflow. The inclusion of line art and other graphics required yet a third process – typically involving pen and ink and a very steady hand. When final projects combined elements of text, photographs, and line art, a publisher's only option was to output each component on a different proprietary system and to manually assemble them all on a single paste-up board using an X-Acto knife, tape, and glue. The board was then photographed and the resulting image was



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PostScript Turns 20



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“If anyone had told me 20 years ago that we would have a fundamental impact on the publishing industry, I wouldn’t have believed them.”

JOHN WARNOCK
CO-FOUNDER
ADOBE SYSTEMS

transferred to a printing plate. Although skilled craftsmen could produce beautiful work with this technique, the cumbersome and labor-intensive process severely hindered creativity and productivity.

In the early 1980’s, state-of-the-art digital typesetting and page composition devices each had their own proprietary page description language that created and printed pages. Content destined for multiple output devices required multiple sets of software instructions – one for each device. This process was inefficient and exceedingly expensive. At the time, typesetting systems cost \$200,000 – \$300,000 and required specially trained operators capable of programming the system with its unique language. These systems’ steep initial investment and operating costs alienated many potential participants from the publishing business.

Beyond high costs, proprietary typesetting systems also restricted creativity due to their limited font libraries. Each typesetter had its own unique font library, which used device-specific digital encoding and physical formats. The expense and complexity involved in creating and storing fonts at different sizes made designing and specifying type a difficult pursuit for individual printers and publishers.

The PostScript Solution

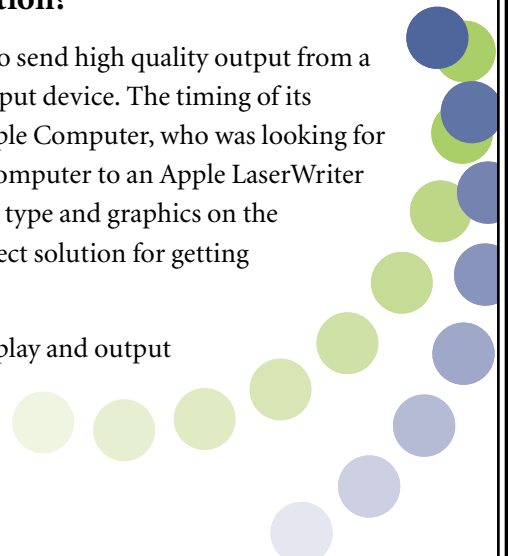
PostScript offers a robust interpretive language, making it possible to produce high quality, visually rich page content including text, photographs, and line art that’s not tethered to a solitary output method. In addition, PostScript is a device independent language, making it possible to send the same content to multiple devices – from a low-resolution laser printer to a high-resolution imagesetter – using a single software interface. Lastly, PostScript fonts are encoded and stored as machine-independent outlines, so they can scale for output at any size, on any device, with equally smooth, detailed appearance.

The introduction of PostScript freed printers and publishers from the constraints of proprietary output systems – setting the stage for a revolution in “open” system development, unrestrained content and type library creation, and independent publishing.

1984-1989: You Say You Want a Revolution?

The introduction of PostScript made it possible to send high quality output from a personal computer to any PostScript enabled output device. The timing of its introduction was ideal for Steve Jobs, CEO of Apple Computer, who was looking for a way to drive content from his new Macintosh computer to an Apple LaserWriter printer. Apple was already successfully displaying type and graphics on the Macintosh screen; Adobe PostScript was the perfect solution for getting the type and graphics onto the printed page.

Affordable, non-proprietary systems for page display and output were now available. The missing link to widespread adoption was a non-proprietary page design application – enter Aldus Corporation’s



PageMaker page layout software. In 1985, the Apple Macintosh personal computer, along with Adobe PostScript and Aldus PageMaker software moved professional printing from commercial pressrooms into the home and office, and truly sparked the publishing revolution. For the first time, page design, display, and output became a streamlined process that was easy and affordable for home users, small businesses and large printing companies. Expensive, proprietary workstations were replaced by inexpensive PCs, and personal computer-based publishing was born, a phenomenon Aldus President Paul Brainerd dubbed “desktop publishing.”

The combination of PostScript with the Apple LaserWriter yielded excellent laser printer output, up to 300 dpi, for home and office applications. PostScript was equally capable of driving high-resolution output devices. In 1985, Adobe signed an agreement with Linotype to license PostScript for the Linotronic 100 and 300 – the industry’s first PostScript imagesetters. The solution worked perfectly for high-end commercial printing applications with 1250 and 2540 dpi output. The deal was further sweetened for users when Adobe licensed fonts from the well-respected Linotype library, Helvetica and Times, the two most popular typefaces in the industry.

The Democratization of Print

PostScript and PageMaker opened up a new opportunity for those who formerly couldn’t participate in publishing due to high costs. As a result, small, independent studios proliferated, type design flourished, and typesetting shops became PostScript service bureaus. The desktop revolution put the power of creativity and publishing into the hands of the masses, which further fueled the demand for PostScript based printers and fonts. Desktop publishing unleashed a new wave of creativity. For example, color separation, the act of decomposing a color graphic or image into single-color layers for printing, could now be handled by PostScript, making color reproduction more affordable and attainable. Also, PostScript fonts became available for desktop publishers, opening up a whole new set of creative tools for the designer right at his workstation.

If PostScript had a big effect on the desktop, its impact on print provider workflows was enormous. Since PostScript data was interpreted by the printer controller board of an enabled output device – and not by the computer – valuable memory and processing power was freed up, making it easier and faster to output complex files. PostScript based systems could make short work of text and graphics that other systems could not output easily – if at all – and the demand for these systems skyrocketed.

Adobe licensed PostScript to manufacturers of printers, imagesetters and raster image processors (RIPs). By 1989, PostScript was distributed worldwide and recognized as an industry standard. The reliability, consistency, and flexibility of PostScript empowered output devices and became a springboard for numerous electronic prepress advances throughout the 1990s.



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***“PostScript
was a radically
different
approach to
describing
pages in
a device-
independent
way. It
was a real
breakthrough.”***

**JONATHAN
SEYBOLD**



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*“We were never
in this for
financial gain.
We wanted to
have an impact.
We wanted
to make a
difference in
the world.”*

CHUCK GESCHKE
CO-FOUNDER
ADOBE SYSTEMS

1990-1994: We All Want to Change the World

By 1990, Adobe PostScript was firmly established as a global printing standard. The abundance of affordable, “open” printing and publishing solutions allowed printers and publishers to configure prepress systems from a growing number of licensed vendors of PostScript. To help its PostScript OEM distributors differentiate their products, Adobe focused its efforts on enhancing performance.

2 Steps Forward

In 1990, the company announced PostScript Level 2, which offered increased printing speeds and added functionality to help printers and service bureaus process files with greater reliability. The most significant enhancements of PostScript Level 2 were its built-in support for advanced color management and its ability automate the color separation task. Prepress productivity took another giant leap forward because color separations could occur on the fly, inside the RIP. Level 2 devices were able to receive composite color files and automatically separate them into C, M, Y and K components – eliminating a time intensive step that was previously performed on the desktop.

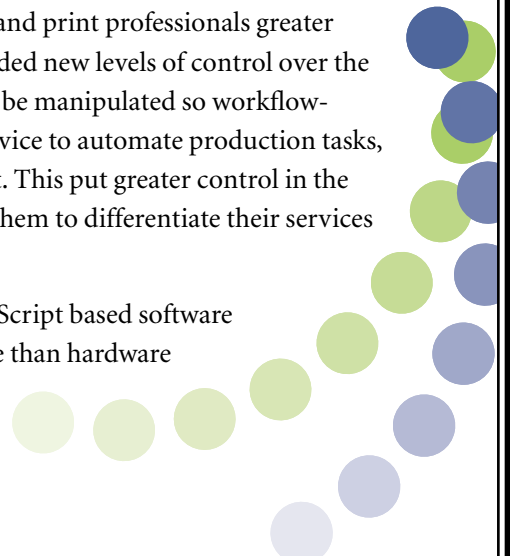
Other advancements in PostScript Level 2 included its ability to create smaller file sizes with support for industry-standard compression techniques. The compressed files were more manageable, which helped prepress teams alleviate the bottleneck of file transmission and made it possible to print complex documents faster than ever. The increased performance and processing speeds of PostScript Level 2 were ideal for the most demanding applications, and it quickly became the solution of choice for high volume production environments.

Finally, PostScript Level 2 also added support for “open” Type 1 and TrueType fonts, which included non-Roman character sets such as Japanese and Chinese. The introduction of Adobe Type Manager added more value to PostScript based printers by giving them access to the largest, and highest quality selection of digital typefaces in the world.

Open Season

Open, non-proprietary systems offered prepress and print professionals greater reliability and flexibility at lower costs, and provided new levels of control over the production workflow. The PostScript code could be manipulated so workflow-specific commands could be sent to an output device to automate production tasks, such as imposition, ganging, and step-and-repeat. This put greater control in the hands of prepress service providers and allowed them to differentiate their services from the competition.

The early 1990s also saw the introduction of PostScript based software RIPs, which were less expensive and more flexible than hardware solutions. Due in part to Adobe’s continuous development and backward compatibility of PostScript, developers continued to make the



page description language the foundation of their printing systems, further cementing its position as the industry standard.

PostScript Sets the Stage for Acrobat®

In 1993, Adobe announced Acrobat 1.0 software and the Portable Document Format (PDF). Acrobat set the stage for the emergence of PDF, another Adobe publishing standard. This one was fueled by Internet publishing rather than print publishing.

PostScript and PDF were founded on shared concepts and components. Both supported the creation of device-independent, rich page content. PostScript ensured consistent appearance from any physical output device. PDF promised perfect on-screen replication, regardless of the client operating system.

John Warnock commented on the motivation to create Adobe Acrobat and PDF: “When PostScript became a broadly-based desktop standard driving raster devices, it occurred to me that by capturing the PostScript stream and redefining the imaging operators we could write a small, static output stream that would accurately capture the ‘look’ of the document and provide page independence. It was always part of the plan to first accurately capture the look of the document and then extend the format to capture the most important aspects of the document’s structure. I am happy to see this is happening.”

Acrobat Springs New Print Workflows

Acrobat and PDF were popular in office environments where the exchange of cross-platform documentation was a daily necessity. The professional print industry also began to take note of Acrobat’s advantages. A PDF file bundled multiple native files and attachments into a single cross-platform “package” that was smaller than the sum of its original components. In addition, a single PDF could be used to RIP and trap a file for printing, enabling a faster, less error-prone production process. Properly prepared PDF files contained all fonts and color space information, so printers were able to reduce the time and costs previously spent correcting the customer’s native files. Many printers began requesting PDFs from their clients because of these benefits, and a new crop of PDF workflow solutions sprung forth that would later go on to dominate the industry.

1995-1999: You Say You Got a Real Solution

By 1995, more than 5,000 software applications and printers from most of the world’s major manufacturers supported the ability to print to PostScript. This offered print providers a broad selection of solutions and freed them to assemble hybrid workflows that suited their specific needs – a much-needed advantage in an increasingly competitive industry.

Meanwhile, between 1995 and 1997 the number of pages on the World Wide Web grew from 18 million to 350 million. People increasingly relied on the Internet to communicate and distribute information. Printers were facing new challenges from electronic media:



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*“The technology
that brought
Geschke and
Warnock 20
years of success
appears to be
the kernel for
Adobe’s future
achievements.”*

PAMELA PFIFFNER,
AUTHOR
INSIDE THE
PUBLISHING
REVOLUTION,
THE ADOBE STORY.

price pressures and demands for faster turnarounds and shorter, just-in-time print runs. Adobe responded to these developments with the introduction of PostScript 3.

Powerful PostScript® 3™

The introduction of PostScript 3 software in 1997 offered improved processing speeds, expanded graphics capabilities, more levels of grey, enhanced font capabilities and support for hi-fi color. New operators, print driver software, and special capabilities such as Fast Image, Smooth Shading, and Idiom Recognition assisted in rendering page content more efficiently, reducing download times and accelerating file processing. Most importantly, to complement its In-RIP separation capabilities, PostScript 3 had added support for In-RIP trapping, which enabled trapping through configurable hot folders and greatly enhanced productivity. These significant workflow improvements helped printers to transition from analog to a fully digital workflow, making the acquisition and implementation of digital proofing and computer-to-plate systems a viable, profitable business model.

Value for the Enterprise

PostScript 3 was also an important development for office printing solutions. After decades of settling for monochrome text printers, business users were now seeking printing devices that offered the freedom to output everything: from simple black-and-white memos, to full-color, high impact presentations, proposals and brochures.

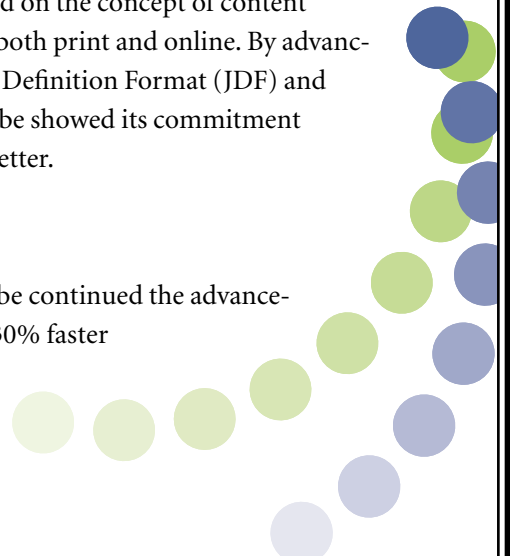
PostScript 3 drove a wide range of devices – from desktop printers to production presses – so enterprise users didn’t have to reformat documents every time they changed their output destination. Tightly integrated with Acrobat 4.0, PostScript 3 offered cross-platform file sharing and document exchange, which was ideal for office users. Offering speed, reliability, exceptional output quality, and 136 fonts at an affordable price, PostScript 3 based printers became the benchmark against which all other office printers were measured.

2000-2004: Better Free Your Mind

At the start of the new millennium, Adobe focused on the concept of content created once and output via multiple methods – both print and online. By advancing PostScript and Acrobat as well as the new Job Definition Format (JDF) and JobReady online job submission technology, Adobe showed its commitment to helping people and businesses communicate better.

PostScript 3, version 3016

With the 2003 introduction of version 3016, Adobe continued the advancement of PostScript 3. The newest version offers 30% faster throughput, direct intake of the latest PDF specification 1.5 for high quality print output, and support for JDF for enhanced



Top Ten Reasons to Upgrade to PostScript 3

- 1** Advanced multi-threaded rendering techniques deliver a 20-40% increase in system performance.
- 2** PostScript 3 RIPs are JDF-enabled, connecting you to the future of print workflow automation.
- 3** Best-in-class In-RIP Trapping and PDF Trapper features interpret and execute trapping commands automatically, speeding throughput.
- 4** Device-independent color ensures that output will appear exactly as intended.
- 5** Enhanced PostScript 3 RIPs provide output from Adobe applications with higher print quality and greater predictability.
- 6** PostScript 3 systems accept input directly from a wide range of file formats, including Adobe PDF 1.3, 1.4, 1.5, PDF/X, and JPEG 2000, offering maximum workflow flexibility.
- 7** Intelligent image handling features make it easier than ever to support transparent artwork.
- 8** PostScript 3 print drivers are backward compatible with PostScript Level 2 devices, facilitating system integration.
- 9** Twenty years of Adobe PostScript knowledge and expertise are built into every PostScript 3 system, ensuring unmatched performance and productivity.
- 10** Adobe OEM vendors offer a wide array of PostScript 3 solutions – and an upgrade program that will perfectly meet your requirements.



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workflow automation, both inside and outside the enterprise. And like its predecessors, PostScript 3 version 3016 drives printers from virtually every print manufacturer – as well as office printers, proofers, and production and commercial printing systems.

The Multi-threaded Rendering (MTR) techniques utilized in version 3016 increases processing speeds up to 44% on dual-CPU systems and up to 65% on quad-CPU systems. Now, In-RIP trapping and PDF Trapper interpret and execute trapping commands automatically. New image handling features also make it easier to support transparent artwork. Plus, PostScript 3 devices are backward compatible with PostScript Level 2, and also forward-looking – providing support for JDF-enabled devices that connect print providers to the future of workflow automation.

JDF Further Expands Workflow Integration

Support for JDF in PostScript 3 version 3016 is particularly important, as this emerging standard is a key enabler of the next-generation of automated print workflows.

An XML-based file format for end-to-end job ticket specifications, JDF can integrate every



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aspect of print production – from creation to distribution, and from the business workflow to the production workflow – in order to yield greater automation, speed, cost efficiencies, and ease-of-use. JDF can facilitate the ordering and coordination of auxiliary materials that accompany a printed piece, and interface with other databases such as Customer Relationship Management (CRM) software and supply chain information to further integrate the print and business workflows. Simply put, JDF expands workflow integration beyond the presses and into the enterprise itself.

Adobe PostScript 3 Distributors

Agfa Gevaert N.V., www.agfa.com
alfaQuestTechnologies, www.alfaquest.com
Creo Inc., www.creo.com
Dainippon Screen Mfg. Co. Ltd.,
www.screenusa.com
Eastman Kodak Company (NexPress Solutions),
www.nexpress.com
E.I. Du Pont De Nemours and Company,
www.dupont.com/proofing
Electronics for Imaging, Inc., www.efi.com
Esko-Graphics, N.V., www.esko-graphics.com
Fuji Photo Film Co. Ltd., www.fujifilm.com
Fuji-Xerox Co. Ltd., www.fujixerox.co.jp/eng/
Heidelberg Druckmaschinen Aktiengesellschaft,
www.heidelbergusa.com
Hewlett-Packard Company, www.hp.com
IBM, www.printers.ibm.com
Kodak Polychrome Graphics, www.kpgraphics.com
Océ Technologies B.V., www.oceusa.com
Océ Printing Systems GmbH, www.oceusa.com
Peerless Systems Corporation, www.peerless.com
Ricoh Company, Ltd., www.ricoh.com
Rip-It Corporation, www.ripit.com
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Scanvec Amiable, Inc., www.scanvecamiable.com
SOFHA GmbH, www.sofha.com
Xante Corporation, www.xante.com
Xeikon International N.V., www.xeikon.com
Xerox Corporation, www.xerox.com

Acrobat's New Tricks Complete the Puzzle

In 2004, Adobe announced Acrobat 6.0 software with new features specifically tailored for the needs of print professionals. Along with new features like Separation Preview, Transparency Flattener Preview, and a greatly expanded selection of viewing, navigation and magnification tools, Adobe also added new preflight functionality and options in the Advanced Print Setup dialog that allow users to configure spot and process color plates or tailor output for composite workflows with In-RIP trapping. These new features work together with the Overprint Preview feature first introduced in Acrobat 5.0 and allow print professionals to accurately examine and control files on-screen to ensure that the file will print as expected.

Tomorrow and Beyond: You Know It's Gonna Be Alright

It's been 20 years since Adobe PostScript ignited the publishing revolution and spawned an era of creativity and affordable publishing solutions for home, office, and commercial applications. Today, the transformation continues as more than 25 OEM vendors distribute PostScript throughout the world, where installations now number more than 20 million.

Adobe is broadening its focus to redefine the way people communicate. PostScript is the foundation for Acrobat, PDF, and the newest Intelligent Document solutions. Adobe is continuing to prepare printers for tomorrow's new challenges and opportunities, and remains committed to carrying on the publishing revolution for the next 20 years, and beyond.

