Digital Technology Trends *Pro Version*

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⏩ This issue offers the full blown article on DFE's that will be published in a shorter form in the next NAPL newsletter TechTrends.

Digital Front Ends: The Evolved RIP

One of the keys to productivity today is creating fast, efficient, automated digital workflow. One piece of equipment that has become the focus of this productivity is the digital front end.

If you have not heard the term digital front end or DFE, don't be concerned, like the artist formerly known as Prince - it is the product formerly known as the RIP (raster image processor).

The difference is that new features are being offered which, in essence, combine functions that used to be done during output (i.e. creating separations), on separate machines (i.e. trapping) or on servers (i.e. imposition). DFEs drive output to a variety of devices, in this article however we will focus on DFEs for digital presses such as HP-Indigos, Nexpress, Xeikons, Canon and Xerox devices

History

The most exciting developments in digital prepress and printing today are the result of seeds planted over a decade ago during a research project sponsored by the Xerox called the Palo Alto Research Conference or PARC for short. One of those events was the creation of Adobe's PostScript page description language.

The advantage of Postscript is that it was platform independent, you could print from different computers such as Mac, PC or UNIX systems. It is device independent meaning you could print the same page to your desktop printer or to a high resolution imagesetter to produce film or plates.

In fact the advantages are so pervasive that it is estimated that over 75% of commercial print is produced from PostScript.

The most important piece of equipment which uses PostScript language is the RIP. Years ago when RIPs were first created, the RIP performed only three functions:

(1) interpret the page description language (i.e. PostScript) from the program (i.e. XPress, Pagemaker, Word);
(2) generate a display list (the commands are converted to objects such as lines, boxes and filled); and

(3) rasterize or convert the data into dots and produce a bitmap (series of dots), which tells the writing engine where to place the dots.

Shifting the Server functions

Today more of the functions that were performed in different parts of the workflow during output (i.e. creating PDF files, printing separations), on separate machines (i.e. trapping, merging variable data) or on servers (i.e. imposition, applying ICC profiles) are available on the RIP.

According to René Delbar, Senior Vice-President Marketing for Esko-Graphics (the company resulting from the merger of Barco Graphics and Purup-Eskofot) "For simple workflows, today almost anything that has to do with image processing --scaling, clipping, color separation, and trapping -- is left to the RIP. In essence, many PostScript desktop workflows are now operating in a mode where essentially what the desktop software does is add specification commands to the data stream and all the work is done at the final stage at the RIP."
http://www.esko-graphics.com/

With over one million RIPS deployed worldwide, EFI recognized that their customers wanted to do more than simply RIP jobs. They began offering increased server functionality in such areas as scanning, imposition, color management, workflow and variable data printing.

"EFI's latest servers and workflow solutions are designed to meet the needs of the corporate reprographic and production markets," said Kathy Wilson, EFI Sr. Manager of Product Marketing. "For example, our newest Fierys will be able to print variable data at speeds of up to 2000 ppm in color. And our Velocity workflow software is expanding to increase efficiency throughout the production process."

Velocity users can merge and edit documents, add or delete pages, access finishing options, re-order print queues, archive jobs and override print settings. One of the biggest pushes is to make all printers available to centralized management over the Internet—something that is available now from Fiery WebTools via a Java-enabled browser. At the heart of the system is the Fiery RIPChip, the CPU that EFI claims processes files up to five times more efficiently for PostScript data.
http://www.efi.com/products/velocity_overview.html

According to Susan Ashley, product marketing manager for entry production color RIPs at Xerox, RIPs have moved to the front end. Ashley, sees RIPs performing functions like color balancing, imposing and handling of variable data. Xerox has two major product groups and different solutions for each. On the B&W side, Xerox's DocuSP 6000CX front end contains a number of workflow modules to handle different aspect of a job.

On the color side, Xerox offers two RIPs from OEMs EFI and Creo. Each has different options for workflows and each has a different way of accomplishing similar functions.
http://www.xerox.com/

AHT (Advanced Hi-Tech Corp.) in El Segundo, Calif. is developing a number of server and networked solutions that not only act as a RIP for connected printers, but also streamline workflow and offer tools to manage documents. AHT uses a central server manages for functions such as book making, imposition, variable data printing, scanning and archiving. These solutions can be customized for companies such as Konica, Canon, Océ, Pitney Bowes and Minolta Business Systems.

"One of the main goals of our products is to provide solutions that meet customers' needs, but will grow with them as their business changes," says Jennifer Goyette, product marketing specialist at AHT. "The flexibility of our solutions allows users to add printers, features and functions as needed. Having a single server that controls multiple printers and printer types is a real benefit."

The Unify product connects to a variety of devices using a browser-based GUI. The Document Server for Canon (DSC) runs the imageRUNNER 550, 600 and 60 and the CLC 1000, 2400 and 3100 color copiers, and will support the imageRUNNER 110 in a future release. AHT's Squadron is a print server for document and printer management that controls jobs running on different B&W production printers in different locations, anywhere in the world. AHT customized a version of Squadron for Océ. EFI's Velocity workflow software connects up to 12 printers with Fiery RIPs.
http://www.aht.com/products.html

Many printers are diversifying their print offering to include digital printing and wide format printing along with their traditional print services. In many cases these printers use independent workflows or DFEs for each of these print applications. Printers are now seeking a DFE that can serve as an umbrella to all of these.

Lesley Hepditch, North American Marketing Manger for Agfa's :Apogee workflow, says :Apogee has been successful at simplifying these multiple tandem workflows while offering productivity improvements. These Graphic Enterprises, systems in which the hardware and software have been seamlessly integrated with automation workflow solutions, are the ones that will thrive. :ApogeeX further expands workflow capabilities to fit within various scales of the Graphic Enterprise. Whether it's a small print shop or a large, global organization, :ApogeeX fits any size Graphic Enterprise".
http://www.gmhabis.com/main/agfaapogee.html

Ashley from Xerox finds that customers want 4 things.

- First they want more speed and better performance.
- Second customers want to adjust color without reRIPing the job, in other words to manipulate the color curves of RIPed files.
- Third, they want to do more with RIPed files such as impose jobs and manipulate, merge and add and delete pages.

- And fourth they want the ability to handle variable-data jobs, and those with experience don't want to suffer the RIP penalty, requiring long periods of time.

Variable

Many RIP manufacturers are focusing on variable printing. "Today DFEs are more than RIPs," says Yaron Mohaban, director of the OEM team at Creo.

"We're targeting powerful systems for the most demanding customers of variable-data printing. We see more and more demand for variable data, and we believe our front ends are very powerful in terms of performance, quality, ease-of-use and variable-data solutions."

For Progressive Impressions International (Pii) of Bloomington, Ill., speeding the personalization process was an essential feature of the DFE. David Wilderman, variable-solutions supervisor found that his previous digital front ends were slower and less accurate then the Creo Spire, making variable-data printing a challenge.

With Spire, he has increased productivity and is now able to RIP a 1,000 record variable data job in about six minutes, compared to 29 minutes on his old RIP. "The faster RIPing time increases our overall productivity and allows us to handle a larger number of jobs in the same shift," says Widerman.

http://www.creo.com/global/products/print_on_demand/spire_color_servers/default.htm

EFI's VDP solutions support most common and legacy VDP languages, the industry standard PPML, and IPDS for mainframe data through its open VDP architecture.

IBM pioneered transactional printing and is positioning itself to play a role in the emerging variable data and book printing markets, with the release an IBM DFE based on AFP (Advanced Function Presentation) and Manager or Print Services Facility (PSF), IBM promises faster processing of data to drive the print engine at its maximum speed.

"As our customers look to workflow management solutions, it's not just about managing their printing needs, it's about managing their output needs," says Rich Troksa, business line executive for enterprise output solutions at IBM Printing Systems. IBM's enhanced AFP, is an object-oriented, device-independent technology, developed allow new enhancements.

Therefore it can support delivery via HTML, fax, e-mail, computer and TV screens. AFP will interact with databases under the control of layout tools such as PageFlex, Xstream and Elixir, as well as middleware such as SAP, Tivoli and PeopleSoft.

http://www.printers.ibm.com/R5PSC.NSF/Web/power

Today companies such as HP, EFI and Adobe are banding together under the Print On Demand initiative (PODi) to create an industry-standard variable data language format. "Many believe VDP adoption will increase rapidly once the graphic arts community can produce standardized VDP jobs. http://www.podi.org/

HP is working to make PPML (personalized page markup language) that VDP standard and the fastest method to perform variable data printing. The leaders in DFE products for the commercial print marketplace recognize this and are actively involved in the development of PPML". says Scott Sipherd, HP Digital Publishing Solutions, DFE Product Line Manager.

http://h30011.www3.hp.com/about.html?ticket=f2utzsNj32512&pageseq=869883

http://globalgraphics.com/

Module Approach

Looking at the list above one thing becomes very clear – there are many options. The toughest challenge may be identifying your needs a fitting a solution to those needs. That is why more and more suppliers are taking a module approach.

Heidelberg has taken this approach with their new Prinect Printready system which is designed as a less expensive solution and a fully modular solution. Prinect Printready product manager Dennis Ryan says "Companies might not need the database module, or already may be trapping in the application software, or may be using some other components available to them."

Breaking the workflow into separate modules allows a company to pick and choose what it wants to make its own workflow system." In addition to modularity the Prinect Printready system is the first prepress workflow allows for a common front end for traditional CtP output (Prosetter/Topsetter), DI output (Speedmaster DI 74, Quickmaster DI 46) or digital output (Digitmaster/Nexpress).

http://www.us.heidelberg.com/03_pro/prinect/printready.asp

Rather than create a comprehensive application that can do all things for all users, Océ designed PRISMA in modules so users can put them together to meet their specific needs. "Front ends need more flexibility in today's business environment," says Gretchen DeWeese, marketing manager at Océ.

"And they need to do more than just RIP. Besides RIPing documents, customers need to proof, impose files, access databases, create documents and balance the print load between printers. Instead of a server box, we create a comprehensive solution based on what the customer requires."

http://www.oce.com/en/Software/SF/Concept/Lifecycle/default.htm

Features & Functions

Today, raster image processors (RIPs) are being transformed into digital front ends (DFEs) through the addition of functions once performed either in different part of the workflow, on separate machines, or on servers.

Here's a look at DFE features and some of the companies that offer them:

- Automatic picture replacement, open prepress interface (APR/OPI):. The ability to swap low resolution image files used in file creation with higher resolution images (Harlequin, Creo's Spire, Xerox DocuSP, Rampage).
- **Color conversion (RGB to CYMK)**: Provides the ability to send smaller RGB files which are then converted to CYMK (Harlequin, hp production flow, EFI Fiery EXP6000 for Xerox, Xerox DocuSP, Creo's Spire, Xeikon eXpert, Rampage).
- **Preflight**: (EFI Velocity, Rampage, Creo's Spire, Agfa's Apogee).
- **In-RIP color management profiles**: (Harlequin, hp production flow with Harlequin RIP, EFI Fiery EXP6000 for Xerox, Xeikon with eXpert DFE, Esko-Graphics for Xeikon, and EFI's Colorwise, Creo Spire, Xerox DocuSP, Agfa Apogee, Rampage ICC).
- **In-Rip trapping** (IRT): Allows smaller untrapped files to be sent (Harlequin, Creo Spire, Xeikon eXpert, HP-Indigo TurboRip, EFI, Agfa Apogee, Rampage).
- **In Rip Imposition**: Enables the use of low-resolution thumbnails and templates to create the imposition (Nexpress, Esko-Graphics for Xeikon, Creo Spire, EFI Fiery EXP6000 for Xerox DocBuilder Pro, Xerox DocSP, Xeikon IntelliStream, Agfa Apogee, hp production flow).
- **Soft preview:** Permits viewing of either the RIPed or PDF file. (Harlequin, HP-Indigo using the TurboRip, Xeikon IntelliStream, EFI's Graphic Arts Package, EFI Fiery EXP6000, Creo Spire, Xerox DocuSP, Agfa Apogee, Rampage FFP, hp production flow).
- **Large volume storage capacity**: All pages of a job or several jobs can be stored. (Harlequin, Esko-Graphics for Xeikon, Xeikon IntelliStream, Agfa Apogee, Rampage, Creo Spire, hp production flow).
- **Data compression with a proprietary image compression**: (Harlequin, Rampage, Xeikon eXpert, IntelliStream DFE, Creo Spire, hp production flow).
- **Connectivity**: The ability to translate to other popular languages and file formats. (Creo Spire GAP, EFI's GAP with TIFF/IT, Rampage Export Option).
- **Parallel processing**: Allows operators to parcel big jobs between multiple processors and process multiple jobs at one time. (Harlequin, EFI's Z5, Z18 and Q4000, NexStation, Agfa Apogee, Rampage ALB, hp production flow with Harlequin)
- **Concurrent input and output**: The ability to have RIP files in the RIP, while the print engine is imaging pages. (Harlequin, Creo Spire GAP, Prinergy, Brisque, EFI's RIP-while-print, Agfa Apogee, Xeikon eXpert, Rampage, hp production flow).
- **Cluster printing**: The ability to use one RIP to drive several output engines (T/R Systems MicroPress, AHT's Unify, EFI Velocity, Agfa Apogee, Rampage, hp production flow).
- **Variable proprietary solutions**: (Creo Spire Xerox VIPP (Variable data Intelligent PostScript Printware, EFI Xerox VIPP PLUS PPML and EFI's FreeForm, EFI Fiery EXP6000, Xerox DocuSP, hp production flow using J-Layout (JLYT) and PPML)
- **Job ticketing**: Allows operators to change job parameters without affecting content. It can be part of a proprietary on demand printing system (Xerox, IBM, Xeikon) or part of the CIP4/JDF specification (Nexpress, Agfa Apogee, Rampage Pick-a-plate, hp production flow CIP4 JDF).
- **1 bit tiffs**: The data that drives the marking engine in ROOM workflows (Rampage, ArtWork Systems, Esko-Graphics, Harlequin, Heidelberg).
- **Normalize once, render many** (NOOM): A PDF workflow (Prinergy, Apogee).
- **Backup and restore**: Provides ability to backup ripped jobs to a wide range of storage media. (Esko-Graphics Digital Printing System RIP, Xeikon IntelliStream or eXpert, Agfa Apogee, Creo Spire).
- **Optimized variable data printing**: The variable and static portions of the page after ripping decreasing the bottleneck associated with RIPing variable pages. (Xeikon eXpert / IntelliStream, Creo Spire, hp production flow with both PPML and enhanced PPML).
- **Web based interfaces and web enabled** (Nexpress, Xerox DocSP, HP-Indigo TurboRip EFI Fiery EXP600 Color Server / RIP for Xerox, Heidelberg Launch HeiPort, HP-Indigos Production Flow,T/R Systems Digital StoreFront Web, T/R Systems 2.0 e-Ticket software, Rampage Remote).

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Summary

The key to enhancing productivity in the printing business is automating the process without paying a penalty in time, flexibility or costs. The addition of new functions to a RIP and the new product called the DFE is one way to enhance productivity. The challenge for most people is knowing which of these processes is best served late in the process and which can performed with no penalty in time, flexibility or costs.

Adding or Removing Names

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To switch from Professional Version to End User version - email and write in the subject “switch from Pro to End User”

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Questions about the alphabet soup

- **CTP (computer to plate)**
- **QC (Quality Control)**
- **PDF (Acrobat Training: Customers or Staff)**
- **CMS (Color Management)**
- **TOC (Theory of Constraints aka bottlenecks**

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