Color Business Report

Color, Computers, and Reprographics

February 2004 **Volume 14 Number 2**

Xerox Adds Speedy Solid Ink and Tabloid Laser Printers

On January 29, 2004, in New York City's no-frills Metropolitan Center theater, **Xerox Corporation** (Stamford, CT) introduced five new products and renewed its commitment to its "heartland" big-company customers. Xerox announced the Phaser 8400 24-ppm solid ink printer and the Phaser 7750 35-ppm tabloid-sized color laser printer. On the monochrome side, Xerox announced a pair of monochrome DocuTech units aimed at the "mid-production" market and the Phaser 4500 black-and-white laser printer.

Customers Take Center Stage

The New York City event was an announcement for customers, and customers literally took center stage. After a brief welcome from Xerox Chairman and CEO Anne Mulcahy, the curtains on the stage were pulled back to reveal—not new products—but Xerox President of Business Group Operations Ursula Burns, seated amidst thirty or so Xerox customers. Burns asked several Xerox customers to tell the audience (composed of equal numbers of Xerox customers and Xerox staffers, with a smattering of people like us) to tell how Xerox is contributing to their businesses. "I am here with the people who are at the center of everything we do—our customers," said Burns. "We are driving a broad transformation in the way that documents are created and in the way that workflow is managed, with products and services that deliver real value. It is the foundation of a partnership that's based on listening." Two of the customers who spoke are from the commercial or quick print environment. Another is from a small business that has found that personalized leave-behinds perform

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The Phaser 8400 prints 24 ppm in Fast Color mode.
Source: Xerox Corporation

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a vital role when important decision-makers do not attend initial sales meetings. A publisher who provides information to the construction industry summarized how Xerox helped the company move into digital production and e-delivery of services.

Workflow is the Key. John Lacagnina, who has formed several demand-printing service companies, now is President and CEO of ColorCentric (Rochester, NY). "In 1992, we recognized that DocuTech was the engine, and recognized that demand printing was the value-added proposition. The company I formed ended up acquiring 21 DocuTechs, installed in 12 locations in this country and Europe." That company was eventually sold to Kinko's. "Docutech was the beginning of the revolution that Xerox started. When I saw the iGen3, I saw that it completed the puzzle by providing on-demand full-color printing, just like black and white. Basically, the full-color on-demand market revolution started with iGen3, and we jumped on it." Lacagnina, apparently, has a knack for finding customers for high-volume digital printers. Getting the volume is part of it, but when run lengths are short and turnaround is tight, bringing the jobs in, running them, and delivering the completed work can jeopardize profitability. That's when workflow comes into play. "Workflow is the key, quite frankly," said Lacagnina. "We believe in shortening the supply chain between our customers—creation, procurement, and delivery—so that it is basically a click away. Our customer generates a trusted PDF or a trusted XML file, which is automatically received by our system. The file is RIPped, composed, sent to the iGen3, totally automatic. The system creates a job ticket and the job prints, virtually untouched by human hands." Lacagnina took delivery of his iGen3 in December 2002, produced 800,000 prints the first year, and expects to double iGen3 print volume every year.

The industry continues to focus on per-page printing costs, and competitive pressure and product evolution will continue to improve raw production costs. But Lacagnina emphasized two points that are vital to survival in the digital-printing service business: focus on squeezing transaction costs and work process costs out of the formula, and make sure the equipment is busy. (If one does not watch transaction costs and work process costs closely enough, sales success will actually bleed profits away rather than contribute to profit.)

Digital Will be Used Side-by-Side Andreas Winters, of Reiner Winters, a commercial printer in Wissen, Germany added digital printing eight years ago, at the request of customers. "Digital printing has broadened

our relationships with our customers, since we have more services," he said. Winters stressed the importance of print quality, since customers are used to offset. "Our customers expect quality, and that's what we are printing," he said. "In the future, I think digital printing and offset printing will ride side by side. Digital printing will keep on growing, increasing, because it is suited for short runs, and the quality gets better and better. When customers see that the quality is good, perfect for their jobs, they use digital more. We are convinced that this in the next technology."

Impress Customers and the Sales Staff Jay Lopatin, of First Energy Group, described how his company uses a Xerox solid ink Phaser 8200 to print personalized sales documents. The first task of a sales document is to build awareness and interest. "First Energy helps companies manage energy," he explained. "Unfortunately, most businesses are naively unaware that they need to manage their energy. When we go in to talk about managing energy, it's very difficult to find a receptive audience."

Secondly, the sales document has to sell after the sales call is over. "We realize that the person we talk to typically is not going to be the only decision maker. There are going to be many decision makers, because most prospects are not set up to make a decision. When we deliver a message, it's important that we don't just deliver it to the person we are talking to, we deliver it to the person that *that* person is going to be talking to, and that *that* person is going to be talking to. The prints look extremely professional, which gives a better presentation and a better leave-behind." First Energy has actually gotten compliments on its leave-behinds, from customers who were actively considering using First Energy's services. Said Lapatin, "The morale of our representatives is much higher, because they feel like they are delivering something better. I can't tell you what a better feel is worth, but I know it is worth something to have our sales staff feel good about what they are selling and believe in what they are selling."

Revamp the Core of the Business Mark Kent, VP of Contract Management for McGraw Hill Construction, described how Xerox re-designed the basic information acquisition and delivery functions, to allow the publisher to focus on publishing. McGraw Hill Construction offers the McGraw Hill Construction Network to the construction industry. "The service covers all active building projects that are out for bid in the US, providing plans and specifications," Kent said. "That represents something like 39 million documents annually. Before we met Xerox, we were doing this ourselves. Frankly, that's not our core competence. We are publishers, we are not digitizers." Documents supporting construction bids can be huge. " Xerox found technologies that would allow us to reduce those documents and file sizes up to 60%, allowing customers to download the content faster from the Web. It also allowed us to improve the quality of our documents and the readability of our documents and reduce our expenses, and most importantly, deliver a better product to our customer. They built the platform for us so that we could convert all of our imaging to digital and serve it through the web."

Xerox Phaser 8400

Xerox extended its solid ink Phaser printer line with the Phaser 8400 Color Printer, a 600-dpi, 24-ppm (black and color) printer. The base printer (128 MB of RAM, no networking, no hard drive) sells for $999. The 8400/DP, configured for network printing and duplex, with 256 MB of RAM, sells for $1,699.

Main Concern: How Much?

Xerox addresses three market needs with the Phaser 8400. "Our customers want to buy color, but the acquisition price of the device is a big barrier," said Mike Kovalski, Product Manager for the Phaser 8400. "But they do not want the low price to affect negatively the print quality or the speed. So price, print quality, and speed are the targets. And customers don't want to lose any of the features they are used to seeing in the monochrome world."

Xerox has designed new print head with 1236 nozzles, nearly three times as many as the earlier 8200 had. The new head is capable of ejecting drops that are two-thirds the drop mass of those produced by the 8200.

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Xerox Phaser 8400: Product Specifications

Print Speed	Enhanced (default): 12 ppm Fast Color: 24 ppm Standard: 18 ppm Hi Resolution/Photo 7 ppm
Resolution	600 dpi, 2400 "FinePoint" for 2400-dpi appearance
Processor	500 MHz RISC
PDLs	Adobe PostScript 3, PCL 5c emulation
Memory	128 MB, "B" and "N" 256 MB, "DP" and "DX" expandable to 512 MB on all units 20-GB hard drive on DX, optional on others
Interface	Parallel, USB 2.0
Networking	10/100BaseTX on N, DP, and DX
Paper Handling	Duplex standard on "DP" and "DX", optional on "B" and N" 100-sheet Tray 1, 525-sheet Tray 2 DX : second 525-sheet feed standard
Paper Weights	Tray 1: 16 lb. bond to 80 lb. cover (60 gsm to 220 gsm) Tray 2: 16 lb. bond to 32 lb. bond (60 gsm to 122 gsm) Duplex: 16 lb. bond to 60 lb. cover (60 gsm to 163 gsm) Envelopes can be fed from any tray
Paper Sizes	Letter, legal, executive, statement, US folio, A4, A5, A6, B5 JIS, B5 ISO, 3" by 5" index cards, and custom sizes.
Duty Cycle	85,000 pages per month
Size	16.3" W by 14.5" H by 21" D
Weight	60 lbs.
Street Price	8400B $999 8400N $1,299 8400DP $1,699 8400DX $2,499

Source: Xerox Corporation

Xerox Phaser 8400: Supplies and Accessories

Supplies Start-up Kit	$399.99
Color 3-pack (108R00605, 6, or 7. 3,400 pages)	$99.99
Black 3-pack (108R00604. 3,400 pages)	$64.99
Black 6-pack (108R00608. 6,800 pages)	$99.99
Extended Maintenance Kit (30,000 images)	$149.99
Standard Maintenance Kit (10,000 images)	$99.99
Cleaning Kit	$5.99
525-sheet feeder	$399.00
20-GB hard drive	$499.00
Color Printing Paper, 24 lb. (16-1368-00, 500 sheets)	$22.99
High Resolution Photo Paper, 65 lb. (16-1808-00, 25 sheets)	$23.99
Premium Cover Paper, 60 lb. (16-1823-00, 100 sheets)	$19.99
Professional Solid Ink Business Cards (103R01041, 25 sheets, 250 cards)	$21.99
Color Printing Labels (16-1812-00, 100 sheets, 3,000 1" by 2.625" labels)	$39.99
Postcards, 65 lb. cover (103R01016, 100 sheets, 400 cards)	$44.99
Trifold Brochures, 65 lb. cover (103R01018, 150 sheets)	$29.99
Weather Proof Paper, 27 lb. (103R01020, 150 sheets)	$39.99
Transparency Film (103R01039, 50 sheets)	$39.99
Upgrade 8400B to 8400BD (adds duplex)	$319.00
Upgrade 8400B to 8400N (adds networking)	$349.00
Upgrade 8400N to 8400DP (adds duplex)	$499.00
Upgrade 8400N to 8400DX (adds DX features, without second tray)	$999.00
Upgrade 8400DP to 8400DX (adds DX features, without second tray)	$549.00
128 MB memory	$919.00
256 MB memory	$1,389.00

Source: Xerox Corporation

(Prints from the 8400, do, indeed, look sharper than prints from the 8200, although by the time the ejected drop solidifies on the page, the differences in dot size are subtle.) The firing frequency has been reduced from 36 kHz, to 24 kHz. Xerox has designed new inks for the Phaser 8400, and has a new "2400 FinePoint" rendering scheme that renders an image at 2400 dpi, "then selectively samples the image to 600 dpi."

The base printer holds 625 sheets, more than three times the base paper supply than the previous Phaser printer, the 8200, could hold. Paper capacity is an important differentiator, giving the solid ink platform legitimacy in supporting larger work groups, especially as *liquid* ink begins to push up-market. Up to two additional 525-sheet trays can be added, for 1,675 sheets total input capacity. Envelopes can be fed from any tray. The printer can image up to 0.2" from each edge. Custom sizes can be fed from all trays. Standard memory has been boosted from what was delivered with the earlier Phaser 8200, to 128 MB.

Design for Manufacturability and Serviceability

Xerox calls the 8400 a "clean-sheet" design. Not all of the improvements directly translate into specific printer performance. To offer the printer for $999 to $2,499 (compared prices ranging from $1,499 to $3,499 for the 8200), Xerox had to enhance the printer's manufacturability. Although the parts count is about the same, the parts are now grouped into 13 sub-

On the Phaser 8400, customers can store their printing preferences on a removable configuration card..
Source: Xerox Corporation

assemblies. The new printer requires only half the manufacturing stations that the previous printer needed. (Assembly is done in Malaysia. Final integration is done in Xerox's Wilsonville, Oregon facility.)

The subassemblies facilitate service, as well. The entire cover can be removed with only two screws. The footprint is smaller, and weight has been reduced by 25%, to 60 lbs. Part of the motivation for reducing the weight was to enable more customers to use depot service instead of one-year on-site service. (Those who need on-site service can have it as an upgrade, for an additional $99 for the first year. To extend any warranty by three years of on-site service costs $729.) The printer's configuration settings, network address, the usage profile, and other "personality" details are stored on a tiny removable configuration card. If customers have a problem that requires printer replacement, they keep the card, plug it into their replacement printer, and proceed as if they were using their old printer. Said Kovalski, "As we go to the small and medium-sized business customers that may not have a lot of IT resources, the end user might not understand what an IP address is, or how to configure a device. Now they don't need to know." The Configuration Card will be used in other Xerox products, including the monochrome Phaser 4500, also introduced on January 29, 2004.

The Phaser 8400 is upgradeable: from the base printer, one can upgrade to a printer with all possible options. For a base customer to add duplex, the customer must upgrade to the "BD" version, for $319. The base-machine customer can add networking for $349. A Phaser 8400N user can add duplexing for $499.

Ink Costs Less, Printing Costs More

In the factory, Xerox installs enough ink to fill the ink delivery system and test the print heads. Some customers will acquire a Supplies Startup Kit or $399.99. The Startup Kit includes three "ink sticks" of each color, 500 sheets of 24-lb. bond paper, 100 sheets of Phaser Premium Cover Paper, and 25 sheets of High Resolution Photo Paper.

Ink is packaged in boxes containing three ink sticks, selling for $99.99 for color, $64.99 for black. The trip to the supplies store is a little easier, since ink for the previous model was sold in boxes of five sticks, costing $174.99 for color and $94.99 for black. Although the per-stick cost for color ink is slightly lower, expected page yields have decreased more, with the result that per-page costs with the 8400 have actually *increased*—"adjusted to be in line with other printers in its price category" as Xerox puts it. The new ink sticks produce 1133 pages each, compared to 1400 pages produced by the ink sticks for the 8200. Using Xerox's page-yield information, the cost of printing color has increased 18%. When purchased three-to-a-box, the cost of black ink has increased 41%! However, many users print enough black-and-white pages to warrant buying the six-pack of ink, whose cost has increased only 11%.

Xerox Phaser 7750

Xerox also introduced the Phaser 7750, a replacement for the Phaser 7700 introduced in September 2001. The new model prints 35 color or monochrome pages per minute, compared to 22 ppm for its predecessor, the fastest tabloid-sized office color laser printer on the market. The speed is distinctive, but so is the memory and processing power to support the engine speed. Even the base unit comes with a 20-GB hard drive. Base memory is 256 MB. Memory on all configurations can be expanded to 1 GB. (Who needs 1 GB of RAM? Xerox offers that much processing capability to support graphic arts workgroups, who are expected to send demanding print jobs that have to be re-RIPped rather than printed from the hard drive.) The Xerox Phaser 7750 uses a speedy 715-MHz G4-class processor.

The Phaser 7750 uses EA HG toner, which imparts a higher gloss than Xerox's earlier EA toner. With the uniform shape of the 5-micron chemically grown toner

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Talking Trash

We look forward to Xerox's light-hearted jabs at arch-competitor Hewlett-Packard. Since last month's product announcements were made in a theater, Xerox took the opportunity to be a bit theatrical in its comparisons of ink jet and laser printer supplies consumption. Ink jet printing has the advantage of using colorant only on the parts of the page that are to be printed. With Xerox's solid ink printers, one adds little bricks of solid ink. The only items to be discarded are the little plastic tubs that hold the ink, and the cardboard box that the ink is shipped in. Laser printers, on the other hand, have a lot of consumable and replaceable components—toner cartridges, fuser units, oil rollers, imaging drums, plus the boxes, bags, and cardboard protectors used to ship and store the consumables. According to Xerox, the ratio of disposable items between a color laser printer and a solid ink printer is about ten to one. We've seen Xerox's photos comparing the pile of debris from a color laser to the neat little stack that the same number of solid ink pages would produce. On January 29, Xerox brought the piles of debris to New York. At the prompting of Jim Rise, VP and General Manager of Xerox's Solid Ink Business Unit, a cute-as-a-button 10-year-old little girl pulled a red wagon loaded with empty plastic ink stick containers across the stage, beaming at the audience the whole time. Then, from the back of the hall, a dozen burly men wearing mover's coveralls marched forward, each carrying a plastic bag full of HP 4600-laser-printer trash. The trash made a small mountain on the stage, nearly as tall as the little girl. Yes, Xerox could have used trash from one of its own color lasers, but what fun would that have been?

Xerox has to be the absolute master of squeezing costs out of laser printing while not affecting performance. One wonders how far it can go. But intuitively, it seems that ink jet has more potential for cost reduction than electrophotography. The details of any color imaging technology are tough to master, but projecting ink drops sounds so much simpler than spreading toner over a sensitized surface. Also, ink jet is not as far along as electrophotography on the technology-development time line, so the marginal cost of improvements may be lower. Xerox's comparison of solid ink waste to toner-printer waste underscores the simplicity of ink jet and the complexity of *electrophotography.*

Xerox touts the benefits of solid ink compared to color laser. Source: Xerox Corporation

What About Liquid Ink Jet?

Dataproducts tried solid ink. Howtek tried solid ink. More tenacious than both Brother tried solid ink, and to this day *still* offers solid ink printers (HS-5000 and HS-5300). Where others have *tried*, Xerox has *succeeded* with solid ink jet, in a spectacular way. The company has a lock on both the solid ink hardware and the supplies, highly desirable in the printer business. And Xerox is able to sell solid ink printers in the office environment without being stained by the brush of its liquid-ink cousins.

To support its release of the Xerox Phaser 8400, Xerox published a six-page white paper titled "The Solid Advantage." On the last page, Xerox printed a sidebar addressing liquid ink jet printers. Because of low consumables capacities, high levels of user intervention, and high prints cost, Xerox concludes that "liquid ink jet does not work well in multi-user network environments."

In fact, both liquid and solid ink share some important advantages over laser printers. First, supplies (colorant or ink) are used only on portions of the page that are to be imaged, so ink jet technology is inherently efficient. It cannot be said any color imaging technology is simple, but ink jet *is* simple compared to laser. Take just one example. Most color laser printers rely on electrostatic charges to attract or repel toner. Environmental conditions affect electrostatic charges. So color laser printers need a control system for environmental effects.

particles, page coverage is more uniform, which provides a more consistent appearance. The printer checks toner density every 20 pages or so on short runs. On long runs, density is checked every 80 pages, to maximize throughput.

Among the enhancements over the Phaser 7700 is the ability to specify custom page sizes. The new printer can accommodate 12" by 18" sheets from the paper trays, and 12" by 47 1/4" banner paper through its "Tray 1" feed.

"This Phaser 7750 has the best color quality we've ever brought out in a tabloid printer," said Xerox's Ken

Talking Trash (cont'd.)

Xerox is anxious to tell customers that solid ink is a capable network printer, while the liquid ink is not. From our perspective, we don't see too many reasons that liquid ink jet can't be configured as a multi-user network printer, except perhaps customer disdain. Xerox makes a distinction between the needs of SOHO business customers and the needs of small- and medium-sized business customers. Small workgroups within larger companies place demands on printers that few liquid ink jet printers can meet. Ink jet printers with tri-chamber cartridges, 100-sheet trays, and no duplex capability are not likely to serve as network printers supporting work groups. But liquid ink jet printers have been configured with beefed-up ink supplies, 1000-sheet input capacities and built-in duplex printing.

With printers that have permanent and semi-permanent print heads, the ink itself is the main supply component contributing to per-page costs. In 2002, with its N1000, Canon demonstrated that manufacturers have considerable latitude when pricing ink. Canon priced its supplies so that our test page printed for less than ten cents. (With our focus on color, we have not done text depletion tests.) The last solid ink jet printer we tried, the Phaser 840, prints that same page for $0.269. Both manufacturers have since increased their ink prices, but last time we looked (October 2003), the Canon N1000 still beat the Phaser 840 by a wide margin—$0.123 compared to $0.311 with the Phaser 840. For a product aimed at office users, the Canon N1000 had some shortfalls. HP is better than Canon at designing ink jet printers for office and workgroup use. The HP Business Inkjet 3000n prints our test page for $0.147. Configured with 1000 sheets for input, duplexing, and a network card, the HP Business Inkjet 3000dtn costs $1,099.

Small Ink Supplies

In addition to high consumables cost, Xerox mentions low consumables capacities and high levels of user intervention, which are related. At the point the market needs it, ink supplies can be increased. HP's Designjet wide-format printers use HP's MIDS configuration, with separate and replaceable print heads and separate ink supplies, connected with plastic tubes. Large-format applications need a lot of ink, so the products such as HP's DesignJet 1055C have 175-ml and 350-ml ink supplies. Without even re-tooling a manufacturing line, HP can introduce a network office printer that holds a quart and a half of ink. (If HP set up a future-generation Business Inkjet 3000 to hold that much ink, a set of supplies would cost about $600 at current Designjet prices. That sounds like a lot, but the a three-pack of each ink color for Xerox's new Phaser 8400 costs $360.)

Going Fast

Any liquid vs. solid comparison must take printing speed into consideration. Nozzle count is the key to speed in ink jet printing. To print faster, you have to deliver more drops to the page. Both solid and liquid ink have evolved to print faster. The early Tek Phaser printers sent a massive print head—nozzle plate, heaters, ink supply, and electronics—sailing back and forth across the page. With the Phaser 340 in March 1995 Xerox (then Tektronix) designed a happy medium between shuttling across the full page and using what would have been a costly page-wide stationary nozzle array. The image was deposited on an intermediary drum which rotated underneath a print head that moved slightly and slowly. The speed breakthrough for liquid ink jet was more recent and less dramatic. Print mechanism designers put enough precision in the head and paper transports so that print swaths did not have to be interlaced to combat banding. We have worked with liquid ink jet printers from Canon, HP, and Xerox that print acceptable text and graphics in "single-pass" mode. Considering future development, solid ink may have an edge, though. The more successful liquid ink printers are in delivering drops to a page, the wetter the page becomes. This affects print quality because it becomes more difficult to control the mixing of colors on the page, and because the page itself can weaken and change shape.

In our opinion, HP's Deskjet 3000dtn should be considered a workgroup printer. With a price of $1,099, the product won't be seen in too many SOHO businesses. So workgroups using the product will be in small- and medium-sized businesses. Most liquid ink jet printers, as Xerox says, do not work well in multi-user network environments. But at least one does, and it seems to us that there is nothing about the technology itself that bars liquid ink jet from doing more. p

Knepper, Product Manager for the 7750. In Knepper's assessment, print quality exceeds that obtained with 1999's Phaser 780.

To the Xerox Printing Scout, Xerox has added job completion notification, so that those who send long runs to the printer can be prompted to pick up their jobs, instead of lingering by the printer watching the pages fall into the bin. Such notices are also helpful if an associate's long run is ahead of your short job, so that you can time your visit to the printer.

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A Quirky Market

The market for tabloid printers for the office has always been a little quirky. Graphic artists place a lot of demands on a printer. They are attuned to color quality, and often know the ins and outs of color management. Graphic artists are not satisfied with a mere tabloid page—they want a 12" by 18" sheet so they can see their crop marks. But they work mostly on design, mostly on their Macs. They print only a few pages during various check points in their projects.

Tabloid-Sized Networked Color Lasers

With its introduction of the Phaser 7750/DN, Xerox is hoping to take market share from the HP Color Laserjet 9500n. The chart below compares these printers and other tabloid color lasers available on the market.

Brand/Model	Engine Mfr.	Intro. Date	Current Price	Speed (color/ black)	Print dpi	Paper Capacity (std.)	Comments
Konica Minolta CF2001P	Minolta	11/01	$15,995	20/20	600	750	Print-only version of the CF2001 color copier. Includes an EFI Fiery X3e embedded print controller. Duplex unit costs $525.
HP Color Laserjet 9500n	Canon	9/03	$6,799	24 /24	600	1,100	Duplex unit costs $499, and a 10-GB hard disk is available for $599.
Xerox Phaser 7750/DN	Fuji Xerox	1/04	$6,799	35/35	1200	650	Duplex unit included in price.
Ricoh AP3850C	Ricoh	6/02	$6,795	28/38	1200	1,100	10/100BaseT ethernet connectivity standard. Duplex unit costs $779.
Konica 7830n	Oki Data	1/03	$6,599	30/37	1200 by 600	650	Duplex unit costs $425.
Kyocera-Mita FS-C8008N	Kyocera Mita	7/03	$5,795	8/31	600	1,150	The duplex-capable FS-C8008DN costs $6,195.
Xante CL 30	Oki Data	1/03	$5,495	30/37	1200	650	10/100BaseT ethernet connectivity standard. Duplex unit costs $356.
Ricoh Aficio CL7000	Ricoh	3/03	$4,695	28/38	1200	1,100	10/100BaseT ethernet connectivity standard. Duplex unit costs $300.
IBM InfoPrint Color 1357n	Casio	4/03	$4,660	28/28	600	650	LED printer, provided to IBM by Lexmark.
Lexmark C912n	Casio	4/03	$4,499	28/29	600	650	Duplex unit costs $686.
Toshiba e-STUDIO280CP	Casio	11/03	$4,499	28/29	600	1,100	Provided to Toshiba by Lexmark. 10/100Base T ethernet connectivity standard. Duplex unit costs $686.
Konica 7820n	Oki Data	1/03	$3,999	20/24	1200 by 600	630	Duplex unit costs $395.
Xerox Phaser 7300/N	Oki Data	11/02	$3,899	30/37	600 by 2400	600	The duplex-capable 7300/DN costs $4,199.
Xante ColorLaser 1200	Hitachi	1/00	$3,646	6/24	1200	250	10/100BaseT ethernet connectivity standard. Duplex unit costs $719.
Xante ColorLaser 600	Hitachi	1/00	$3,646	6/24	600	250	10/100BaseT ethernet connectivity standard. Duplex unit costs $719.
HP Color Laserjet 5500n	Canon	9/02	$3,549	21/21	600	600	Duplex unit costs $150.
Oki Data C9300n	Oki Data	10/02	$3,411	30/37	1200 by 600	650	Duplex unit costs $341.
TallyGenicom T8406	Hitachi	1/01	$3,399	6/24	600	250	10/100BaseT ethernet connectivity standard. Duplex unit costs $825.
Konica Minolta magicolor 7300	Minolta	7/03	$3,199	20/20	600	750	10/100BaseT ethernet connectivity standard. Duplex unit costs $499.
Ricoh Aficio CL5000	Ricoh	2/03	$2,999	10/36	1800 by 600	350	10/100BaseT ethernet connectivity standard. Duplex unit costs $340.

When it is time to print, though, graphic artists are just like the rest of us—they don't want to wait. So they need a highly capable printer, but their page volumes are relatively low. Where the corporate pockets are not deep enough to acquire a high-performance color laser, ink jet is the answer. The trade-off is time; ink jet printers are notoriously slow, especially in "Photo" mode that is favored for proofs.

The other part of the quirky tabloid-printer market is departmental—marketing or training departments, for instance, who need tabloid printing for short-run promotions or publications. They may not be as sensitive to color quality issues as graphic artists (though no one is likely to admit that they want something less than the best quality), but they make up for it in demand for flexible paper handling and finishing.

With the Phaser 7750, Xerox has deftly used a single product to satisfy two very different sets of needs, thus maximizing the number of print engines it will be able to ship. Both groups need a fast printer. When a graphic artist is finished with a design, the next step is to have a print in hand as soon as possible. Graphic artists will install a lot of memory and hold back on the finishing options. The marketing group wants production quantities finished as soon as possible. A departmental or work group tabloid-sized printer may not have the maximum memory, but it may have the maximum input capacity. *(continued on page 10)*

Xerox Phaser 7750: Supplies and Accessories

Supplies Start Kit (One of each toner color, 500 sheets of letter-sized bond, 500 sheets of tabloid-sized bond, 50 sheets of transparencies)	$1,019.99
Black Toner (32,000 pages)	$149.99
Colors Toner (C, M, or Y; 22,000 pages)	$279.99
Fuser (60,000 pages)	$189.99
Transfer Roller (100,000 pages)	$139.99
Imaging Unit (32,000 pages)	$329.99
Waste Cartridge (27,000 pages)	$19.99
Belt Cleaner Assembly	$99.99
High-capacity Feeder	$1,249.00
Lower Tray Deck (three 500-sheet trays)	$999.00
7750B-to-7750N Upgrade	$1,499.00
1000-sheet Finisher	$1,499.00
512 MB Memory	$1,529.00
256 MB Memory	$1,389.00
128 MB Memory	$919.00
PhaserMatch Color Management Software	$699.00
1-year Add-on On-site Service	$1,249.00
2-year Add-on On-site Service	$1,999.00
3-year Add-on On-site Service	$2,899.00

Source: Xerox Corporation

Xerox Phaser 7750: Product Specifications

Print Speed	35 ppm, "Standard" mode, color and black and white 22 ppm "Enhanced" and "Photo Mode", color and black and white
Resolution	1200 dpi (1200 by 600 in Standard mode on 7750B)
Processor	715 MHz G4-class processor
PDLs	Adobe PostScript 3, PCL 5c emulation
Memory	256 MB on "B" 384 MB on "DN" 512 MB on "GX" and "DXF" Expandable to 1 GB on all units
Interface	USB 2.0 on "B"
Networking	10/100BaseTX on DN, GX, and DFX
Paper Handling	Duplex standard on "GN", DX, and "DXF", optional on "B" 150-sheet Tray 1, 500-sheet Tray 2 1,500-sheet lower tray deck on GX 2,500-sheet feeder, 1,000-sheet finisher (staple/stack) on DXF
Paper Weights	Tray 1: 18 lb. bond to 80 lb. cover (65 gsm to 220 gsm) Tray 2 - 5: 18 lb. bond to 60 lb. cover (65 gsm to 169 gsm) 2,500—sheet feeder: 18 lb. bond to 60 lb. cover (65 gsm to 169 gsm) Duplex: 18 lb. bond to 28 lb. bond (60 gsm to 105 gsm)
Paper Sizes	Tray 1: Letter, Executive, Statement, US Folio, Legal, Tabloid, Tabloid Extra*, Banner*, A, A4, A5, A6, A3, B4 JIS, B5 JIS, ISO B5, SRA3*, custom. * Not on "B" Tray 2: Letter, Statement, US Folio, Legal, Tabloid, A, A4, A5, A3, B4 JIS, B5 JIS, ISO B5, custom. Tray 3 - 5: Letter, Statement, US Folio, Legal, Tabloid, A, A4, A5, A3, B4 JIS, B5 JIS. 2,500-sheet feeder, tray 3: Letter, Statement, US Folio, Legal, Tabloid, A, A4, A5, A3, B4 JIS, B5 JIS 2,500-sheet feeder, trays 4 and 5: Letter, A, A4, B5 JIS
Duty Cycle	150,000 per month
Size	B and N: 25.4" W by 19.4" H by 28.1" D GX: 25.4" W by 19.4" H by 28.1" D DFX: 47.0" W by 42.0" H by 28.1" D
Weight	B and N: 194 lbs. GX: 255.7 lbs. DFX: 354.9 lbs.
Street Price	7750B $5,599 7750DN $6,799 7750GX $7,899 7750DFX $9,599

Source: Xerox Corporation

Going for Market Share

Ken Knepper explained the product's competitive role. "Between graphic arts, with the color image quality, and the departmental level of finishing we have available, we have a one-two punch. We are going right after Hewlett-Packard to gain market share." Knepper figures that with the duplexer and the hard drive standard in the 7750 DN, Xerox's price will be less than the price of an HP 9500n, to which customers must add duplexing ($499) and a hard drive ($599) as options. "We are trying to take all of the reasons why you would buy a 9500 out of the picture."p

Printers

HP Adds to Indigo Line

On February 10, 2004, **Hewlett-Packard Company** (Palo Alto, CA) took the unusual step of pre-announcing a set of printers. The products are targeted at commercial and quick printers, and will be shown at the giant DRUPA trade show in Germany in May, 2004.

HP announced the Color 9850mfp, its version of the 50-ppm Konica 8050, to be available in the summer of 2004. The product will ship with an optional EFI Fiery S300 controller. The 600-dpi printer can handle sheets up to 13" by 19", in basis weights up to 110 lb. index, from all trays. The multipurpose tray can feed sheets up to 140 lb. index.

HP also announced the Indigo press 5000, able to print 4,000 letter-sized pages per hour (68 letter-sized pages per minute). The printer will be available with no minimum monthly printing requirement. HP has augmented the print engine with more input and output options. The standard printer has an input capacity of 5,500 sheets, in three trays. No friction or air adjustments are required when adding or changing paper. The printer's output capacity is 6,000 sheets. The Indigo press 5000 will be available in the summer of 2004, for $395,000. (HP also announced the HP Indigo press 3050, which replaces the Indigo press 3000. For the 3050, HP has improved the paper path, and improved paper handling for light-weight papers.)

The HP Indigo 5000 prints 4,000 pages per hour.
Source: Hewlett-Packard Company

The Indigo press 5000 will use CMYK Plus transformations. CMYK Plus is a CMYK-to-CMYK transformation that maintains hue and lightness relationships while selectively boosting saturation. The problem HP is addressing with CMYK Plus is that files prepared for conventional presses may not work well on digital printers. Due to elemental differences between offset ink and (usually) toner, there is no reason to expect the gamuts of the destination devices to match. The mis-match in gamuts caused by the use of different colorants will probably cause a difference in appearance. With HP's CMYK Plus, commercial print shops can send a file that was prepared for offset to a digital printer, and then rely on the transformation to improve the rendering to the extent the digital device will allow.

CMYK Plus goes through the following steps:

1. Preserve the black channel, including black-only areas such as text and lines.
2. Apply a press ICC profile to the un-tagged CMYK source data.
3. Transform the dynamic range of the source data to match the dynamic range of the digital destination printer.
4. Increase colorfulness while maintaining the appearance of familiar colors like skin tones and not modifying the hue. (In HP's Tech Notable, one can tell where the color scientists stopped writing and the liberal artists took over. Somewhat incongruously, the result of applying CMYK Plus is that "the output color looks just like offset, only better.")
5. Compute CMYK values.
6. Render the results for the destination printer.

Customers benefit from CMYK Plus in several ways. First, once the system is trusted, files prepared for offset can be used in digital work flows, without manual intervention. In addition, because hue is preserved, work that is to be spread out over several devices will match better when the final document is assembled. Also, comps and proofs will be improved, while still providing a reasonable prediction of what to expect from the press.

Finally, on February 10, 2004, HP also announced the Designjet 30 and Designjet 130, six-color large-format ink jet printers. The printers use separate "MIDS" ink supplies and print heads—No. 84 for black, and No. 95 for colors. The Designjet 30 handles sheets up to 13" by 19". The Designjet 130 handles cut sheets

The Designjet 130 handles 18" by 24" sheets.
Source: Hewlett-Packard Company

to 18" by 24", and can make larger prints up to 24" wide. Those with frequent large-print requirements can order the Designjet 130nr, which includes a 24" roll. Since the new Designjets are intended to be used by graphic artists as proofers, customers can select from two Adobe Postscript 3 RIPs and an EFI/Best RIP.

On January 19, 2004, **Toshiba America Business Solutions Inc.** (Irvine, CA) introduced the e-STUDIO3511/4511 series of MFDs. Toshiba calls the products "monochrome multifunction products offering color output," positioning the products as everyday MFDs rather than special color devices. The 3511 prints and copies monochrome documents at 35 ppm, while the 4511 prints monochrome pages at 45 ppm. Both units print and copy color pages at 11 ppm. Standard input capacity is 1200 sheets (two 550-sheet trays and a 100-sheet bypass tray), expandable to 3,700 sheets. The faster e-STUDIO4511 sells for $14,325, while the e-STUDIO3511 sells for $11,895.

On February 4, 2004, **Ricoh Corporation** (West Caldwell, NJ) introduced the Aficio 2232C and Aficio 2238C multifunction devices. The new printers include an 80-sheet document feed, duplex standard, and an 1,110-sheet input capacity. Copy resolution is 600 dpi. Prints can be made at 600 dpi or 1200 dpi. Paper sizes from 2.5" by 5.8" to 12" by 18" can be accommodated. The printer will feed sheets from 16 lb. bond to 90 lb. index. The Aficio 2232C prints 32 monochrome pages per minute, and 24 color pages per minute. The Aficio 2238C prints 38 monochrome pages per minute, and 28 color pages per minute. Standard features include an 80-GB hard drive, 768 MB of memory, and a 10/100BaseTX network connection. Options include Adobe PostScript 3, and a host of feed and finishing devices. Scan-to-e-mail, scan-to-folder, scan-to-FTP, Internet fax, and inbound/outbound paperless fax are part of the Ricoh's Document Software Solutions package included. Base-unit pricing: $14,415 for the Aficio 2232C, $16,865 for the Aficio 2238C.

On February 12, 2004, **Lanier Worldwide, Inc**. (Atlanta GA) introduced the LD232c and LD238c Digital Multifunction Products, its versions of Ricoh's latest color copier/printers. The devices print or copy at 32 monochrome pages per minute and 38 pages per minute, respectively, imaging at 1200 dpi. Color speed is 28 ppm on the LD232c, and 24 ppm on the LD238c. The MFDs feature automatic color selection, which detects mixed originals prior to copying or printing, and adjusts imaging accordingly. Lanier's pricing is in sync with Ricoh's: $14,415 for the LD232c, and $16,865 for the LD328c.

On February 9, 2004, **Epson America** (Long Beach, CA) introduced several printers. By introducing the PictureMate, Epson is going into territory HP said it wouldn't—offering a printer that produces 4" by 6" lab-quality prints at a discount-store price of 29 cents. The prints resist fading four times longer than lab prints, Epson says. PictureMate reads all types of memory cards, and will print directly from PictBridge cameras. No computer connection is required. Menu selections allow basic crops, wallet-sized photos, and addition of borders. Storage devices such as CD-R, ZIP, or thumb drives can be connected for one-button archiving. A Bluetooth adaptor is available for wireless printing, including printing from PDAs and camera-equipped cell phones. The PictureMate will be available in the Summer of 2004, for $199. PictureMate PrintPacks, which include 100 sheets of photo paper and a PictureMate ink cartridge, will sell for $29.00.

On February 11, 2004, Epson introduced the Stylus Photo RX600, a "photographic all-in-one." In addition

(continued on page 12)

Distribution Notes

	Date	Comments
IKON reports sales growth in color gear	1/29/2004	IKON logs a 45% increase in revenue from sales of color gear during the first quarter of 2004, compared to the same period in 2003.
IKON to sell Ricoh Aficio 2232C, 2238C	2/11/2004	IKON to distribute Ricoh's Aficio 2232C and 2238C color copier/printers.
Liberty to sell Scanvec Amiable RIPs	2/10/2004	Liberty Photo Products to become a value-added reseller of Scanvec Amiable's PhotoPRINT RIP for large-format ink jet printers.

to handling common computer printing and conventional copying tasks, the RX600 has a built-in transparency adaptor to support 2,400 by 4,800, 48-bit film scanning. For digital film, the RX600 offers a range of memory card slots. In addition, the RX600 can print directly from PictBridge or USB-equipped digital cameras. The unit can also scan photos *in to* memory cards. A built-in 2.5-inch LCD screen provides scan previews and facilitates selecting images from memory cards. Ink is delivered in six separate ink tanks. The Epson Stylus Photo RX600 is available now, for $349. Also on February 11, 2004, Epson introduced the Stylus Photo RX200, a $99 six-color printer that can print directly to CDs and DVDs, as well as print on paper.

On February 9, 2004, **Canon USA, Inc.** (Lake Success, NY) introduced the i9900 printer, a top-of-the-line ink jet printer that adds a red and green colorant to the more common six-color set of dye-based inks, for a total of eight colors. Canon says the red ink allows for a 60% increase in the red/orange gamut, and the green ink adds 30% to the green gamut. The i9900 prints on sheets up to 13" by 19". The printer has 6,144 nozzles, firing 2-picoliter drops at 20 kHz. At 4800 dpi by 2400 dpi, the i9900's resolution is twice the resolution of the earlier i9100. A 13" by 19" photo will print in less than three minutes, in default mode with Canon Photo Paper Pro selected on the menu. Standard text and graphics pages print at 16 ppm monochrome, 12 ppm color, in draft mode. The i9900 is PictBridge-compatible. The printer includes Canon's Easy-PhotoPrint v2.1 software, which acknowledges color-space information, including Adobe RGB. Canon's i9900 printer should be available in May 2004, for $499.

On February 6, 2004, **Primera Technology, Inc.** (Plymouth, MN) introduced the Bravo II Disc Publisher, an automated device that burns disks then transports them to an integrated ink jet printer. The Bravo II prints at 4800 dpi, while the earlier Bravo uses a 2400-dpi print engine. (Lexmark supplies print heads and print-engine parts to Primera.) The new unit is 15% faster, and has an improved picking mechanism. The system has a 50-disc capacity. The CD-R version of Bravo II sells for $2,195. The model that does DVD+R, DVD-R and CD-R sells for $4,695. Ink cartridges sell for $42. Discs sell for between $0.200 and $0.500, but Mark Strobel, Primera's VP of Sales and Marketing, told us that most people buy discs on the open market. Specializing in CD/DVD duplication and printing equipment, Primera was founded in 1998 as a spin-off from dye-sub pioneer Fargo. In addition to the Bravo II, Primera offers the Composer family of disc duplicators, Signature CD/DVD ink jet printers, and the Inscripta thermal disc printers.

On February 2, 2004, **Spectra, Inc.** (Lebanon, NH) announced the Apollo II Printhead Support Kit, to be used by customers of Spectra's 256-channel or 128-channel print heads. The development aid includes the following:

Head Pneumatics Module for de-gassing fluids, and for providing positive or negative pressure for head maintenance operations.

Control and Datapath Module for such functions as head firing patterns, monitoring operating conditions, and adjusting system configuration parameters such as the fluid delivery system, pressure control, and temperature control.

Head Drive Electronics Module allows adjustment of firing parameters such as height and width, as well as rise and fall times.

Fluid Supply Module is used to dispense liquids into the printhead reservoirs.

The modules have been installed in a floor-standing console. Spectra develops and licenses print technology, and, as is customary, would not provide a price for the product.

Spectra's Apollo II is a test platform for ink jet print head designs. Source: Spectra, Inc.

From the December ***MFP Report*** (Bisset Communications Corp., Cerritos, CA), we learned that Ricoh in Japan has announced two desktop ink jet printers, based on its own internal development effort. (The photo in the MFP Report shows a product that is almost retro in design. To us, it looks a lot like an HP 1200C from almost a decade ago.) Product details are few, and so might be the prospects. Looking back at Xerox's costly foray into ink jet with its own technology, it is hard to imagine how Ricoh could capture enough market share to support a desktop product line. However, ink jet end products may not be Ricoh's ultimate objective. It could be Ricoh has a hybrid product in mind, using ink jet to colorize documents that are printed with Ricoh eletrophotographic or duplicating equipment, as duplicating competitor Riso does. Another possibility is for Ricoh to license the technology to manufacturers in China.

PDLs/Interpreters

On February 12, 2004, **Canon**, **Epson**, and **Hewlett-Packard** announced the Mobile Imaging and Printing Consortium to drive standards for printing images captured by camera-equipped cell phones. The three companies collaborated on PictBridge, a standard for printing images directly from digital cameras without requiring a PC. The new cell-phone-printing standard will be based on PictBridge for wired printing. Bluetooth will be the basis for wireless camera-phone printing. Removable media will be accommodated, as well. The companies expect to begin delivering wireless home-printing capability by the second half of 2004.

Short-Run Printing

We haven't seen anything official, but the February 2, 2004 issue of ***Graphic Communications World*** (Quoin Communications, Port Orchard, WA) noted in its "Scuttlebut" section that **Océ** (Venlo, The Netherlands) is expected to introduce a $200,000, 100-ppm color press at the end of the month.

Supplies

On February 12, 2004, **Pantone, Inc.** (Carlstadt, NJ) announced that in the Spring of 2004, it will begin shipping pigment-based ColorVantage inks and matched papers for Canon's i960 and i9100 ink jet printers. In November 2003, Pantone introduced ColorVantage inks and papers for Epson printers (see *Color Business Report*, December 2003, page 5).

PMA Highlights

The PMA International Convention and Trade Show (Las Vegas, NV, February 12- February 15, 2004) is always the stage for major announcements from imaging industry vendors. Film giants Kodak and Fuji both announced retail photofinishing kiosks geared toward digital camera users, while HP has funneled its resources into digital camera development. A host of digital cameras were introduced at the show. While professional models offered resolutions of 12 and 14 megapixels, consumer cameras were of particular interest. Canon, Concord, HP, Kodak, and Sony all introduced 5-megapixel models. Prices ranged from $349 for HP's Photosmart R707 to $499 for Canon's PowerShot S500 Digital ELPH. We have summarized some of the announcements from PMA below.

Kodak

Digital Cameras

Model	Price	Megapixels	Comments
DCS Pro SLR/n	Not Available	14.0	SLR digital camera designed for professionals. Uses F-mount SLR lenses. The camera has an ISO range of 6 to 1600. Available in March 2004.
EasyShare LS743	$349	4.0	The LS743 features 2.8X optical zoom, low-light autofocus, and automatic shooting modes. Compatible with Kodak's EasyShare digital camera dock. Available in April 2004.
EasyShare LS753	Not Available	5.0	Equipped with a 2.8X optical zoom lens. Compatible with Kodak's EasyShare digital camera dock. Available in June 2004.
EasyShare CX7430	$279	4.0	Features include 3X optical zoom, TTL autofocus, automatic shooting modes, and manual exposure settings. Depending on available memory, the camera can capture up to 80 minutes of video. Available in March 2004.
EasyShare CX7300	$129	3.2	Basic point-and-shoot camera. Offers 3X digital zoom, automatic flash, automatic exposure, and movie mode. Available in March 2004.
EasyShare CX7220	$149	2.0	The CX7220 features 2X optical zoom, automatic flash, automatic shooting modes, and automatic exposure. Available in May 2004.
EasyShare DX7630	$499	6.0	Designed for the photography buff, the DX7630 has a 3X optical zoom lens, low-light autofocus system, automatic exposure, and manual controls for aperture and shutter speed.

Photo Printers

At PMA, Kodak introduced the Photo Printer 6800, a dye-sub photo printer targeted at event photographers and photography studios. The 6800 can print a 5" by 7" photo in 20 seconds. Print resolution is 300 dpi. The device prints on roll-fed paper, and can print up to 375 5" by 7" photos (or 750 4" by 6" prints) without operator intervention. The Photo Printer 6800 will be available in the second quarter of 2004 for a list price of $3,000.

Kiosks

Kodak introduced the Picture Maker G3 Film Processing Station, a 35-mm film processor that uses "dry" technology developed by Applied Science Fiction (acquired by Kodak in 2003). The machine applies a small amount of developing fluid to make the image on the film visible for scanning, and stores scanned images on a CD. To use it, customers drop their roll of film into the processing station, and receive a receipt with an ID number. The Kodak Picture Maker G3 Film Processing Station can process a roll of film in about seven minutes. Once processing is complete, the customer goes to a Picture Maker kiosk attached to the processor to preview images and order prints. Along with their prints, customers receive an index print and a Kodak Picture CD containing all the prints on the roll. Kodak expects to begin installations of the Kodak Picture Maker G3 Film Processing Station in the U.S., Canada, and Europe later this year.

At PMA, Kodak announced that its retail photofinishing partners plan to upgrade their existing Kodak Picture Maker self-serve kiosks to Kodak's new platform, the Picture Maker G3. The Picture Maker G3 Digital Station LS kiosks accept digital camera media, and an available accessory will allow users of camera-equipped cellular phones to transmit and print images using Picture Maker kiosks.

Large Format

At PMA, Kodak subsidiary Encad introduced the NovaJet 1000i large-format ink jet printer. The first large-format printer to be jointly developed by Kodak and Encad, the NovaJet 1000i prints up to 150 square feet per hour. The print head has 640 nozzles. The NovaJet 1000 uses Kodak-developed Quantum Ink, available in dye- and pigment-based formulations. Maximum print resolution is 1200 dpi.

(continued on next page)

PMA Highlights (cont'd.)

Fuji

Digital Cameras

Model	Price	Megapixels	Comments
FinePix S20 Pro	$999	6.2	SLR-type digital camera designed for professionals. The FinePix S20 Pro has a 6X optical zoom lens, and uses Fuji's Super CCD SR sensor. Available in March 2004
FinePix S3 Pro	Not Available	12.3	SLR-type digital camera designed for professionals. Uses Fuji's Super CCD SR sensor, and takes Nikon F-mount lenses. Fuji will announce availability and pricing "soon."
FinePix A330	$199	3.2	Pocket-sized digital camera with 3X optical zoom. Available March 2004.
FinePix A340	$249	4.0	Pocket-sized digital camera with 3X optical zoom. Available March 2004.

Kiosks

At PMA, Fuji also introduced the Digital Photo Center Express, a retail kiosk designed for digital camera users. A countertop model, the Digital Photo Center Express allows users to view and order prints for up to three images on a single screen. The device accepts most digital camera removable media types, including xD-Picture Cards, SmartMedia, CompactFlash, Sony Memory Sticks, and Secure Digital. The system can also receive images via wireless, from infrared- and Bluetooth-enabled devices. The Digital Photo Center Express can be networked to a Fuji Frontier minilab or PrintPix NC-1000 printer; it will be available during the fourth quarter of 2004.

Online Services

Fuji also demonstrated its Get the Picture Mobile Service, an online photofinishing service designed for users of camera-equipped cellular telephones. The service allows users to upload, view, share, and order prints of images captured with their phones. Users can select a local photofinishing retailer for printing, or one close to friends or relatives, to minimize shipping charges when sending sets of prints as gifts. The Get the Picture Mobile Service works with several wireless phone platforms, including WAP, BREW, Java, and Symbian. Fuji is offering the service through cellular carriers AT&T Wireless and Sprint.

Canon

Digital Cameras

Model	Price	Megapixels	Comments
PowerShot S500 Digital ELPH	$499	5.0	The diminutive S500 ELPH measures 3.4" W by 2.2" H by 1.1" D. Features include 3X optical zoom, built-in flash, fast 1/2000th sec. shutter speed, and a 1.5" LCD display. Available in April 2004.
PowerShot S410 Digital ELPH	$399	4.0	The S410 ELPH offers the same features as the S500, but at 4.0-megapixel resolution. Available in April 2004.
PowerShot S110 Digital ELPH	$299	3.2	The smallest ELPH yet, at 3.3" W by 2.2" H by 0.9" D. Offers users 2X optical zoom, automatic and manual exposure modes, movie mode, and 1.5" LCD display. Available in April 2004.
PowerShot Pro1	$999	8.0	SLR digital camera designed for advanced amateur photographers. Features include 7X optical zoom, TTL autofocus, manual and automatic exposure modes, and shutter speeds up to 1/4000th sec. Available in April 2004.
PowerShot S1 IS	$499	3.2	Sports 10X optical zoom, autofocus, and a movie mode that captures 640 by 480 resolution videos at 30 frames per second.
EOS-1D Mark II	$4,499	8.2	SLR digital camera designed for professional photographers. Sports a 45-point autofocus system, and captures up to 8.5 frames per second in burst mode. Compatible with Canon EF, TS-E, and MP-E lenses.

Photo Printers

Canon introduced the i9900, and eight-color ink jet photo printer (see page 12).

Large Format

At PMA, Canon introduced the imagePROGRAF W6200, a large-format six-color ink jet printer designed for photo retailers and corporate graphics departments. The imagePROGRAF W6200 prints on media up to 24" wide. Maximum print resolution is 1200 dpi. The machine makes a 24" by 36" print in about 1.5 minutes in draft mode (300 by 1200 dpi), 4.5 minutes in standard mode (600 by 1200 dpi), and 7 minutes at maximum resolution (1200 dpi). The print head has 7,680 nozzles (1,280 per color). The imagePROGRAF W6200 is available for a retail price of $3,495.

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PMA Highlights (cont'd.)

HP

Digital Cameras

At PMA, HP introduced the Photosmart R707 digital camera. The R707 boasts 5.1-megapixel resolution, and has a 3X optical zoom lens. The camera also has 8X digital zoom, 10 pre-set shooting modes, and 32 MB of internal memory. Other camera features include in-camera red-eye removal and a multi-shot panorama mode. The Photosmart R707 is available for $349.

The Photosmart R707 is just the start of a complete revamp of HP's digital camera product line. In all, HP will introduce seven more models, as part of the company's strategy to boost its presence in the digital camera market. HP has doubled its R&D budget on digital camera research and design, which has resulted in several technologies, including in-camera red-eye removal, an image advisor that examines a user's photo-taking errors, and adaptive lighting technology, which automatically balances high-contrast photos. HP is also undertaking a massive effort to train retail salespeople in its technologies, to ensure that customers get the message about how they can capture and work with digital images.

Also at PMA, HP introduced the Photosmart R-series digital camera dock. The Photosmart R camera dock acts as a digital camera battery-charging station, and allows users to transfer digital photos to their PC or print them with the press of a button. Users can also preview images on a TV, using the included remote control. The Photosmart R digital camera dock is compatible with the Photosmart R707 digital camera. It is available for $79.

Sony

Digital Cameras

Model	Price	Megapixels	Comments
Cyber-shot DSC-W1	$400	5.0	The compact DSC-W1 has 3X optical zoom, a five-area multi-point autofocus system, multi-spot metering, and six pre-set scene modes. The camera has an ISO range of 6 to 1600. Available in May 2004.
Cyber-shot DSC-P100	$400	5.0	The P100 offers automatic and manual control over flash and exposure settings. Sports a Zeiss 3X optical zoom lens and a 1.8" LCD display. Available in May 2004.
Cyber-shot DSC-P93	$350	5.0	Features include 3X optical zoom, automatic exposure, manual controls, a 1.5" LCD display, and nine-shot burst mode. Available in May 2004.
Cyber-shot DSC-P73	$300	4.0	The P73 has a 3X optical zoom lens, automatic exposure, manual controls, and a 1.5" LCD display. Captures up to four frames in burst mode. Available in May 2004.
Cyber-shot DSC-P41	$200	4.0	Features include 3X digital zoom, automatic exposure, automatic flash, a 1.5" LCD display, and four-shot burst mode. Available in May 2004.

Photo Printers

Sony introduced the DPP-EX50 PictureStation, a dye-sub printer that allows users to make photo prints directly from PictBridge-enabled digital cameras and camcorders. The device features image-editing functions which users can access through their TV sets. Adjustments include red-eye reduction, sharpness, and image size. The DPP-EX50 makes a 4" by 6" print in about 80 seconds. The printer will be available in March for $180.

Digital Camera Media

Sony has introduced a new version of its venerable Memory Stick removable digital camera media cards. The new Memory Sticks offer data transfer rates up to four times faster than the previous version. Pricing for the Memory Sticks, which can also hold digital music files, is $30 for a 32 MB card, $40 for a 64 MB card, $60 for a 128 MB card, and $100 for a 256 MB card. The Sony MSAC-USM1 USB reader/writer, compatible with the new media, will be available in the fall for $30.

Uniden

At PMA, cordless telephone manufacturer Uniden America introduced the Polaroid x530 digital camera. The 4.5-megapixel x530 is the first consumer digital camera to use Foveon's X3 direct image sensor. The camera has a 3X optical zoom lens, enhanced by 4X digital zoom. Other features include a four-mode automatic flash, video capture mode, and a 2" LCD display. The x530 will be available in June 2004 for a retail price of $399.

(continued on next page)

PMA Highlights (cont'd.)

Concord Camera

Digital Cameras

Model	Price	Megapixels	Comments
Eye-Q 4363z	$249	4.0	The Eye-Q 4363z offers 3X optical zoom, seven pre-set shooting modes, 16 MB of memory, macro focus, and movie mode.
Eye-Q 4343z	$199	3.0	Identical to the Eye-Q 4363z, but captures 3.0-megapixel images.
Eye-Q 5345z	$379	5.0	Compact digital camera designed for novices. Features 3X optical zoom, 19 pre-set shooting modes, movie mode, macro focus mode, and a 1.6" LCD screen.
Eye-Q 5062 AF	$229	5.0	A 5.0-megapixel camera for the budget-conscious, the Eye-Q 5062 AF offers 6X digital zoom, seven pre-set shooting modes, automatic flash, and a 1.8" LCD display.
Eye-Q 4062 AF	$199	4.0	The 4.0-megapixel Eye-Q 4062 AF offers the same functionality as the Eye-Q 5062 AF, but has a 1.5" LCD display.
Eye-Q 3040	$129	3.0	Features include 4X digital zoom, autofocus, 7 MB of memory, video mode, and a 1.6" LCD display.
Eye-Q 2040	$109	2.0	The Eye-Q 2040 sports 4X digital zoom, autofocus, 7 MB of memory, video mode, and a 1.6" LCD display.
Eye-Q 640	$39	1.2	Entry-level digital camera features automatic exposure, movie mode, and 8 MB of internal memory.
Eye-Q 1200	$39	640 by 480	Rudimentary digital camera offers automatic exposure, movie mode, and 8 MB of internal memory. Also doubles as a web cam.
Eye-Q 1000	$69	1.2	The Eye-Q 1000 ships with 16 MB of internal memory. Other features include automatic exposure, macro focus, and movie mode.
Eye-Q Splash	$49	640 by 480	Waterproof digital camera with built-in automatic flash. Handles depths up to 10 feet.

Konica Minolta

Digital Cameras

Model	Price	Megapixels	Comments
DiMAGE Z2	$449	4.0	Offers 10X optical zoom, rapid autofocus, and video capture mode.
DiMAGE A2	$1,099	8.0	SLR digital camera with 7X optical zoom lens. Features Konica Minolta's Anti-shake function, CXProcess II Image Processing technology, and 3D Predictive Focus Control.
DiMAGE Xg	$299	3.2	Compact digital camera with 3X optical zoom lens weighs 4.2 oz. Also features a 1.6" LCD display and five pre-set shooting modes.

Olympus

Digital Cameras

Model	Price	Megapixels	Comments
C-770 Ultra Zoom	$599	4.0	The metal-encased C-770 has a hot-shoe connector, to allow users to attach an external flash unit. Other features include 10X optical zoom, a movie mode and 1.8" LCD display. Available in April 2004.
C-765 Ultra Zoom	$499	4.0	In all other respects identical to the C-770, the C-765 has a plastic case, and no hot-shoe connector. Available in April 2004.
Stylus 410	$379	4.0	The compact Stylus 410 weighs 5.6 oz. Features 3X optical zoom, 10 pre-set shooting modes, and a 1.5" LCD.
D-580 Zoom	$299	4.0	The D-580 sports 3X optical zoom, movie mode, and 1.8" LCD display.
C-8080 Wide Zoom	$999	8.0	The C-8080's wide-angle 5X optical zoom lens is equivalent to a 28mm to 140mm lens in 35mm photography. Also features manual and automatic controls, pre-set shooting modes, and a 1.8" LCD.
D-540 Zoom	$199	3.2	Features include 3X optical zoom, seven pre-set shooting modes, movie mode, and a 1.8" LCD display.

Industry Notes	Date	Comments
EFI to acquire ADS Communications	2/5/2004	EFI to acquire ADS Communications, a provider of service automation software for office equipment.
EFI to consolidate brands	1/29/2004	As part of a global branding strategy, EFI to consolidate products and services of recently acquired companies such as T/R Systems, Best GmbH, and Printcafe under the EFI brand name.
Fuji creates photo imaging service entity	2/6/2004	Fuji to establish the Photo Imaging Technical Operations organization, to provide technical service and field support for Fuji's installed base of photo minilabs.
Kodak seeks to acquire Chinon	1/22/2004	Kodak submits tender offer to purchase the outstanding shares of Chinon, a Japanese developer and manufacturer of digital cameras. Through an unnamed subsidiary, Kodak already owns a 59% stake in Chinon.
Kodak sells Remote Sensing operation to ITT	2/9/2004	Kodak to sell its Remote Sensing Systems operation, which provides imaging systems to the aerospace and defense industries, to ITT.
Kodak to host images for Verizon customers	2/12/2004	Kodak, through its Ofoto subsidiary, to offer image hosting services to Verizon Wireless customers with camera-enabled cellular telephones
Konica Minolta MFDs use Global Graphics technology	2/3/2004	The print controllers in Konica Minolta's recently introduced monochrome MFDs (Di2010, Di2510, Di3010, Di3510) use Global Graphics' direct PDF printing technology and PostScript 3 compatible Jaws RIP.
KPG to buy RealTimeImage's graphic arts business	1/27/2004	Kodak Polychrome Graphics to acquire RealTimeImage's graphic arts division, including the company's RealTimeProof online proofing system.
Peerless extends license agreement with Adobe	1/29/2004	Peerless Systems and Adobe to extend their licensing agreement through July 2007. Under the agreement, Peerless acts as a licensing agent for Adobe PDF and PostScript technologies.