Whatever happened to printers?

Jon Jermey - 2024 words

Fans of the BBC comedy series will know what I mean when I say that printers are the *I.T. Crowd* of modern computer hardware. Unloved, unglamorous, tucked away somewhere out of sight and hearing, printers only get our attention when they go wrong. They're dull, prone to tantrums, and they don't even come in the right colours. After all, when was the last time Apple made a *printer**?

But you can't stop progress; and over the last five years or so printers have been getting faster, better and cheaper, and acquiring some interesting new capabilities along the way – some good, some not so good. In this article I bring readers up to date with what's happening in the exciting world of putting marks on paper.

Printer speeds

The fastest printer in the world today is allegedly the IBM Infoprint 4100, with a speed of 330 pages per minute (ppm), and a price tag of half a million dollars. The Dell 5130cdn printer is priced a little more accessibly at around $1500, but will only churn out 47 ppm. Among inkjet printers the Riso ComColor 9050 claims the crown with a speed of 150 pages ppm, and a price to match – $45,000. Among more reasonably-priced models a speed rating of 32-37 ppm appears fairly standard. Bear in mind that speed maximums are measured using multiple copies of single-page documents: speed drops back considerably when real documents are involved.

Among high-speed photographic printers the HP Designjet Z6200 Photo Printer – designed for billboards – claims speeds up to 140 square metres per hour; that's about 5600 standard 15cm by 10cm photographs. Ordinary domestic printers should be able to turn out a high-quality photo on glossy paper within 35 to 50 seconds.

New capabilities

Networking – most mid-range printers now come with an option for wired and/or wireless networking. This means that the printer doesn't have to be physically connected to any PC. For wired networking, the printer will still need to be attached by cable to a router, but with wireless networking the printer can be located anywhere there is a powerpoint within about 20 metres of a wireless node. This makes it possible to un-clutter one's desk and tuck the printer away in a corner somewhere.

Networking has other advantages too: a networked computer usually gets its own device IP number, and thus becomes accessible through a web browser like Firefox or Microsoft Internet Explorer. A user with appropriate permissions can access the printer queue, cancel or reshuffle documents, and check ink or toner levels, without leaving their desk.

Card and memory stick readers – many inkjet printers and an increasing number of

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* 1997, in fact, with the LaserWriter 8500.

laser printers now come with sockets for the insertion of memory cards or USB memory sticks. The printer can read the contents of these cards, display any images on a small screen, and print them directly without the need for any intervention from a PC. This can free up the computers on the network for more important work. It also means you can print an important image while the network is down or the computers are powered off. A memory card or stick can be left in the printer and accessed through the network as a storage device; for instance, you can dump your low-priority image files there to be printed later on when the printer is less in demand.

Duplexing – During the last few years printer manufacturers have woken up to the fact that a piece of paper has two sides. Most mid-range printers can now print on both sides of a page, although finding exactly how to do this may require some searching around in the Printer Properties dialog box, and some software may still get confused about it. (One program I encountered decided that it would only print on the underside of each page – when I was using scrap paper printed on that side already.) Note too that a duplex *printer* is not always a duplex *scanner*: you may still have to scan your pages one side at a time.

PictBridge – This is a system by which an external device can be plugged directly into a printer and various pictures selected for printing. At the moment it is designed for digital cameras, but there is room for it to be expanded to include scanners, drawing tablets, oscilloscopes, ultrasound machines or any other device which produces graphic output of some kind, bypassing the need for a computer altogether.

A3 paper – Laser or inkjet printers which will take A3 paper are available, though the range is much smaller and the prices higher than for A4 models. You can even find colour laser printers with an A3 capacity, although the price of these is currently still over $2000.

Print on CD – Some inkjet printers now come with the capability to print directly on to the surface of a CD or DVD – a lot simpler than messing around with a paper label or writing it by hand. The printer will usually come with software that makes it easy to set up the labels and store the information on your PC. Note that you will need to buy special CDs or DVDs for this as well.

Preprinted stationery – many inkjet printers can now print various kinds of stationery directly. Cheaper printers usually offer a few options like graph paper and lined notepaper, while more expensive ones give a wider range and allow you to enter your own settings for the gap between the lines and the scale of the graph squares.

Multi-purpose printers

A multi-purpose printer combines other functions – especially scanning – with printing. Depending on the cost and model of the printer, its features may include single-page scanning, sheet-feed scanning, faxing scanned documents, a 'photocopy' function for making quick replicas, and even an answering machine. As with memory card slots, inkjets were the pioneers in this area, but some multi-purpose laser printers are beginning to appear. Normally the printing mechanism, which works a lot harder, wears out before the scanner does, but prices have now come down to the point where

throwing away a perfectly good scanner is financially feasible, even if it isn't ecologically sound. Be warned when buying multi-purpose devices with sheet-feed scanners, however: the scanner may be limited in the size and thickness of pages it can scan. If you're planning to scan from anything other than standard A4 paper, check with the salesperson or manufacturer first.

Colour laser printers

Colour laser printing has taken a long time to reach mainstream computer use, but that day might finally be here. Colour laser printers work like colour photocopiers, with four trays of toner instead of one, all of which have to be loaded separately on to the roller before a page can be printed. Toner costs remain high, but the price of the devices themselves has dropped to the point where a bottom-end model can be purchased for less than $200, and a reliable workhorse should be available for well under $1000. Speeds are still slower than for monochrome lasers, with mid-range models being rated at around 20 ppm.

Accessories

Printer companies have recently discovered a lucrative sideline in selling add-on extras for functioning printers. These include additional memory, additional paper trays, and devices like collators to sort large batches of output. As with most other items of this kind, you can expect to pay a greater mark-up on extras than on the original device; so check eBay and other suppliers first to see if there are generic alternatives.

Consumables

The bad news is that the huge price mark-up on name brand consumables – specifically ink and toner – remains very much in force. Low-end manufacturers in particular have taken the marketing slogan 'Give away the razor and sell the blades' to heart, and most suppliers will have at least one printer in stock that costs more to refill than it does to buy. The charming practice of selling printers with 'introductory' half-full cartridges also continues, forcing the customer to come back and buy a refill much sooner than they ought to. Depending on the type of printer and the type of refill, you may easily find yourself paying more per ounce for your ink than you would for fine cognac.

But there are ways to reduce the pain. Before buying an inkjet printer, look up some reviews and check the ongoing costs per page. These often outweigh any savings on the purchase of the printer itself. Unless you are a professional photographer or designer, avoid printers that use five colour cartridges instead of three: these just add complications and increase the risk of failure. Also avoid printers which offer a single colour cartridge that has to be replaced when just one of the colours runs out.

There are many sources of 'generic' cartridges for the major brands of inkjet printers, and most of these will work perfectly well. Be aware, though, that the manufacturers are now adding identifying microchips to their cartridges, and only a generic replacement with the right microchip will work. So ensure that you supply *all* the details of your printer model when you order, right down to the last character: a

generic cartridge designed for printer model TF-407-BA-x may not work in model TF-407-BA-y. There are many generic consumable suppliers in Australia, and along with many others they can usually be found through eBay.

More ambitious users can order ink bottles, and empty cartridges with removable plugs which they can fill and refill themselves, although once again they will have to match the originals exactly when ordering. Less messy, though more complicated, is an CIS, or continuous ink system, in which the ink is mounted in a rack at the side of the printer and the ink is fed to the cartridge through a manifold of flexible tubes. If you don't mind your printer looking like a Heath Robinson gizmo, and you're prepared to tinker to get it working, this can reduce your ink costs to the barest minimum.

Laser printer users have fewer cost-saving options available, though a Google search will usually turn up some tips for getting the best out of any particular model. Both toner cartridges and printer drums – which need to be replaced every 20,000 pages or so – are available through eBay or from generic suppliers.

3D printing

Finally, in keeping with the current craze for 3D films, it's only right to introduce the 3D printer. This is a device which builds up a solid model of an object by gradually adding layer upon layer until the shape is complete. One method uses UV light to set successive layers of liquid resin, while another 'fixes' layers of white plastic powder with the application of heat. Complex models are embedded in supporting material to hold them upright until connections are finished. The supporting material is then dissolved in acid. A system using metal powder instead of plastic – and much more heat – allows metal objects to be made in the same way. There are many YouTube videos depicting the fascinating process.

Once restricted to high-end medical uses, 3D printers are now finding their way into architect's offices and designers' studios. Basic models are currently available for around $10,000 – the price of colour laser printers a few years ago – and prices are dropping rapidly, so by 2020 we may all be printing our own curtain rings and chess pieces. Coupled with a 3D scanner, which uses lasers to build up a digital replica of a solid object, it will make it possible to duplicate anything that will fit in a 3D printer's output tray. Lost a button off your favourite jacket? Just scan in one of the others and print a perfect duplicate! Want to record just how your baby looked when it came home from hospital?

Well, maybe not; but printing technology is certainly taking us to some strange new places.