

Printer potential

Look at your printer: it's working, right, and it does just the job you want? Maybe; but it could do better. Why not upgrade it? Roger Gann explains how.

The humble printer is arguably the most important computer peripheral you can buy, perhaps second only to the PC itself. Printers have traditionally tended to be fixed-function devices, capable of performing the actions they were designed to and nothing else, and largely incapable of being upgraded. If you had a daisywheel printer (remember them?) you could change the daisywheel or add a cut-sheet feeder, but that was about it. Things weren't much better for dot-matrix printers, either.

Expansion potential increased with the advent of laser printers. Many had at least one slot for a font cartridge, a slot for additional memory or perhaps an interface to the printer's "video" engine. It was now possible to upgrade your printer. Today, most laser printers are built with expansion in mind and feature things like SIMM slots, MIO ports for network interface cards, font card slots and comprehensive paper-handling options. Upgrade options for inkjet printers are less extensive, however. Nevertheless, it's surprising just how far you can upgrade a printer. But why would you want to?

There are several reasons. First in line is cost — it can be cheaper than buying a new replacement printer if all you're missing is a feature that an add-on can provide. And add-ons protect your investment in a printer: you only have to pay for the features you wish to add. You might think it doesn't make economic sense to upgrade an old laser printer, but printers like the LaserJet II and III were built like tanks and even today still have plenty of life left in them.

Printer upgrades neatly fall in to two categories, hardware and software.

Hardware Memory

Laser printers, or more accurately, page printers, hold a whole page of data in memory before printing it. The amount of installed memory isn't too important when it comes to printing text but it's crucial if you want to print graphics: a 300dpi printer needs a full megabyte of memory to print an A4-sized image. The move to higher resolutions, to 600dpi, actually quadruples the memory requirement, but the application of memory compression technology has kept the amount of RAM required to just a couple of megabytes. Even so, putting in extra RAM will always help when it comes to printing complex graphics, especially if PostScript is involved.

In the past, extra printer memory took the form of expensive proprietary custom memory cards, but most current printers take standard SIMMs so adding more RAM needn't be too painful, especially as

memory is still relatively cheap. Don't forget that if you have a GDI printer you can add more memory to the host PC to improve printing performance, with the benefit that it goes into the PC's general memory "pool".

Some printers, such as the EcoSys range from Kyocera and the LaserJet 5, can take flash memory as well. This special kind of memory is used to semi-permanently store downloaded print images, e.g. forms or letter headings. Every time you wanted to print a letter you could send a code to the printer to print the scanned-in header first. This way you'd print on plain paper and so wouldn't have to keep stocks of specially-printed headed paper: you'd never run short either. More importantly, it would mean that you could dispense with the need for a second paper tray to hold the headed paper.

Paper handling

It's highly likely that, regardless of what printer you've got, additional paper handling add-ons are available for it, so that you can use different sorts or sizes of paper with

Enhancing your parallel port

This is one of the few printer hardware upgrades that you fit in your PC. I'm not talking about any sort of printer port, I'm talking about the very latest bi-directional (bi-di) parallel port. This is available in several flavours, sometimes called an Enhanced Parallel Port (EPP) or Extended Capabilities Port (ECP). Either way, a "bi-di" parallel port enables a two-way conversation between your PC and the printer, allowing the printer to pass status messages back to the PC, vital things

like "Paper Jam" or "Low toner". These "8-bit" parallel ports are faster than the standard 4-bit parallel port fitted to most PCs, and if you have a GDI printer you'll appreciate a faster parallel port. So, if your printer has a "bi-di" port, it makes sense for the PC to have one as well. The best one I've come across is a VL-Bus multi I/O combo card with an IDE interface plus fast serial ports. Price £29 from Dabs Direct ((0800) 558866) but check the ads in *PCW* for other deals.

Updated printer drivers

The Windows printer drivers that shipped with your printer have most probably been superseded, the ones that came with Windows almost definitely have. Getting the latest driver means you'll be using a less buggy (hopefully!) version that's probably a bit faster and possibly with more controls or features. You can check the version number by opening Printers in the Control Panel, clicking on Setup and then clicking on the "About..." button. The best way to get the

latest drivers is to download them from bulletin boards such as CIX, CompuServe or over the internet, from the manufacturer's web site. For example, the latest PostScript driver, v4.1, is available from the Adobe Systems web site at www.adobe.com and this has numerous extra features compared to the plain vanilla Win95 version written by Microsoft. You can also download the latest PPD and INF files for your PostScript printer to ensure it's correctly installed.

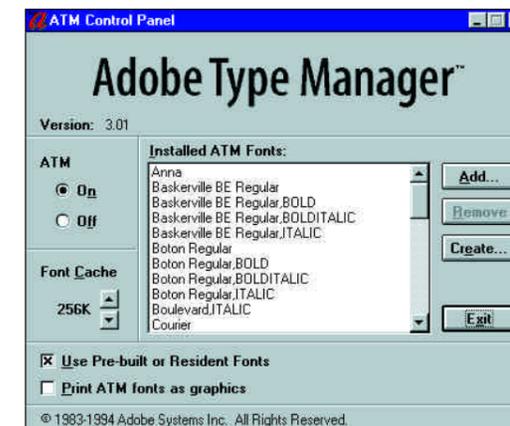
your printer. Take the dot-matrix printer — printing sticky labels can be a risky proposition with a push tractor feed that many dot-matrix printers have as standard. Many allow the fitting of a pull-tractor feed specifically for this task. Or you might want to do a lot of mail merges so you need a cut-sheet feeder instead, something a little more advanced than that rudimentary cut-sheet tray that came as standard with the printer.

Most laser printers are now designed with add-on paper tray "stacking" in mind and so can take a second paper tray that fits to the underside of the printer. Fitting a second paper tray allows you to put your letter-heading in one tray and your continuation sheets in the other. Or, if the printer is a busy one, being shared on a network, the second tray can be used to expand the printer's overall paper capacity: such trays typically have a 250-sheet capacity. Some inkjet printers even have a second paper tray option. Most are a doddle to fit — the printer just sits on the second paper tray and once you've made a few changes to the configuration via the front panel or through the printer driver, you're away.

Colour

You may not be able to upgrade your laser printer to colour (though the NEC SuperScript 610/660 can do spot colour) but both inkjet and dot-matrix printers can commonly be upgraded from mono. By far the easiest to convert are inkjet printers: providing they are "colour ready", all you do is remove the black ink cartridge and replace it with a snap-in tri-colour cartridge. You then specify "colour" in the printer

driver (or install a colour driver) and, hey presto, you've got colour, for about £25 or less. If only all upgrades were this simple.



The ATM Control Panel. The create panel allows you to make customised versions of Adobe Multiple Master fonts

Font cartridges

One of the original printer upgrades was to increase its stock of internal fonts. This took the form of a cartridge or card that you plugged into a special socket on the printer.

Expanding the number of internal fonts might not seem relevant to Windows users; after all, scaleable TrueType fonts are a dime a dozen these days. But there's still a compelling reason not to turn your back on resident fonts — speed. When a font resides in the printer, not only is there no time wasted downloading soft fonts, but the print time is also quicker. If you have to do a lot of printing in the same font, then you should consider making that font a permanent, resident printer font.

Pacific Data Products produces one of the best known font cartridges, the 25 in One. This cartridge contains 172 fonts and is available for the II, III and 4 Series printers, plus IBM and Epson laser printers. It's also available as a SIMM for the LaserJet 5.

PostScript upgrades

The ultimate font upgrade has to be the one that installs PostScript on your laser printer as these typically also install the basic "family" of 35 PostScript fonts. You get the exacting typographical accuracy of PostScript, too.

Installation is simple: you just plug in the PostScript cartridge (or SIMM in the case of the LaserJet 4 and 5) to get instant, high-quality PostScript fonts. This is undeniably simple, but there's a price to be paid as most genuine PostScript printers have relatively powerful processors, something lacking in older LaserJets, and this can make for slow printing. You may need to top up printer memory, too. Expect to pay about £200 to £250 for a PostScript upgrade, from Hewlett-Packard. Pacific Data has the PacificPage Level 2, a PostScript Level 2 language emulation SIMM module for the LaserJet 4 and 4 Plus printers.

Pacific Data Products also sells a range of plug-in accelerator cards, designed to speed up sluggish print performance in a LaserJet fitted with a PostScript cartridge. There are two versions: the PacificPage



IIXL, for the LaserJet II, which consists of the PostScript cartridge plus an accelerator board; and the PacificPage PE/XL, which is for the LaserJet IIP, IIP Plus, III, IIID and IIIP.

Software upgrades

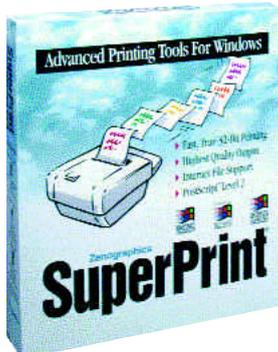
The software driver plays a significant part in the printing process, having a major influence on both speed and print quality. The drivers that come with Windows are pretty good but, as ever, there's always room for improvement, either adding features that don't exist or doing existing tasks better.

Perhaps the simplest printer enhancement you can buy is to add extra TrueType fonts to your Windows installation — these are available from Microsoft, Monotype, Bitstream.

More sophisticated upgrades fall into two categories — accelerators and print enhancements.

Adobe Type Manager

Adobe Type Manager (ATM) predates TrueType and was the original scalable font manager for Windows. For most Windows users, it



carries out much the same function as TrueType — it allows a printer font to be accurately displayed on-screen at all point sizes, thus removing the need for a raft of separate fixed-point screen and printer fonts. ATM also lets you use superior PostScript soft fonts with a non-PostScript printer, and its Multiple Master fonts feature is useful if you want to fine-tune the appearance of a font. However, much of ATM's thunder was stolen by TrueType

SuperPrint's comprehensive colour correction options

which has the redeeming virtue of costing zilch. As a result, only those that really need to use genuine PostScript fonts will fork out £30 for ATM, i.e. those submitting work to a print bureau or typesetter.

SuperPrint 4.0

SuperPrint's job is simple — it speeds up Windows printing, especially colour printing, which has always been a relatively slow process. It does this by using highly-optimised 32-bit printer drivers and sending the data to the printer in a special compressed "metafile" format. It comes complete with "SuperDrivers" for Windows 3.1x, 95, and NT 3.51, with controls for sharpness, contrast, lightness, saturation, dot gain and hue matching. Like ATM, it allows you to turn your non-PostScript printers into PostScript devices, but this time for graphics as well.

While you can get speed gains when used in conjunction with low-end colour printers, I guess that the true benefits of SuperPrint only become apparent when used in conjunction with high-end output devices where fine control of the output print quality is important. You will need a fairly well specified PC in order to run SuperPrint; basically, the more RAM you have the better, and I'd start at 16Mb. This amount allows its "SuperRIP" to perform full-frame rasterisation of the entire image to be "printed" in RAM; with lesser amounts of RAM it has to break down the image into bands, which is of course slower.

