13 Laser printers on Test
CAPTURED
ON PAPER

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The Competence Centre took over three rooms at Linux Magazine for two weeks recently. 13 laser printers were put through their paces in a completely new, rigorous procedure.

Linux Magazine is breaking new ground with this test of laser printers, our team developed more than 200 tests to examine and assess printers in as a precise and detailed a way on the Linux platform as Windows users have long become accustomed to for their reviews. These tests fall into three distinct parts, probing for speed and gauging both graphical and photographic resolutions.

To accurately test the speed of the laser printers we used Star Office and a simple letter allowing us to also do the costing and timing calculations.

To allow us to fully compare the graphical capabilities, a complete range of graphic tests had to be produced. Written by Felix Marcon and Oliver Kluge, using CorelDRAW, which was the only package that could accurately cope with the fine detail required for such a task. Their efforts incorporate some novel features, putting the subjects through a most testing time.

As you can see from the sample printed opposite, the first part of the test is a colour saturation test, which mono printers should correctly present in spectacular shades of grey.

The second of these graphical tests is the most telling, with coloured lines on white or black backgrounds. As the lines become narrower they break down in resolution and interference patterns form. The lines begin to merge into a solid block and the size of the block, which is proportional to the resolution of the printer. Test three shows the shading capabilities of rastered images. Test five is in five per cent graduations of the main printing colours – Cyan, Magenta, Yellow and blacK (CMYK).

The remaining tests are used to try out the rastering capabilities of the printer on fine angled lines. The test with yellow text on a black background and vice versa proved very difficult for most printers once the point size was below 4.

A red-brown relief picture permits a good optical check of the overall print quality. The outer limits of the page allowed us to calculate printable coverage, colour graduations showed the ability of the tones to run into one another and the straight lines in yellow, white and black very quickly determinned the precision of printing The photographic test was carefully controlled with the set up taking longer than the actual shoot, calling on the skills of a professional photographer to arrange the still life elements. Using a large format camera means we now have a high resolution image with which we can test scanners later on.

The Agfa IT8 standard colour chart allows us to accurately determine ink saturation levels for both scanners and colour printers. The typewriter has an open side allowing us to check the colour depth of rastering, as does the toy Tux, with his image being reflected in both black and white. Bianca, the model, is a challenge for printers and scanners. Her fine flyaway hair fails to print if resolution is poor, with the dark shirt also giving a good optical impression. The resulting image was printed to the test subjects via Gimp.

Printing under Linux is one of the areas that has been running for a long time without any great problems. Obviously there are differences – and the purpose of the test was to work these out. The range of printers we tried consisted mainly of black and white laser printers with a print output of at least twenty pages per minute and built-in network interface. This class of printer, which can cost anywhere up to £1000, is the typical choice to make in furnishing small to medium sized offices, especially when the printer is likely to be used by several people on a network. A colour laser printer was also examined, for comparative purposes and to give us all a chance to dream.

Office work calls for mastery of as many emulations as possible (PCL and Postscript) and smooth data handling. It goes without saying that printing should also be fast and produce clean copy, but the weight, speed and quality must be offset by the costs. The purchasing costs are only part of the Total Cost of Ownership (the TCO), since over the printer's lifetime the cost of consumables, such as toner and drums will amount to more than the original investment. This is why we went to the trouble of printing a toner cartridge until completely empty on each printer, using a high capacity cartridge if available. Also, the laser printers were measured for electrical power consumption, which is not insignificant – when a laser printer can draw up to 800 watts in pulses, if the fixing roller has to be reheated.

Planning

In planning the installation and location of an office laser printer, you must remember that smells are given off by these devices. Although advertised as such by many manufacturers, there is no question of them being ozone-free. Toner dust and softeners in the plastics that heat up are not exactly pleasant either.

The software-end control of the printers caused no aggravation in the test. All printers could be configured on the system using – SuSE Linux 7.2 – with YaST, without any problems. The printers all got themselves an IP address from the DHCP server and worked smoothly under it. PCL or Postscript, it made no difference, apart from a rare exception, all the devices worked straight off. Both Gimp and Star Office printed willingly and with good quality on the devices offered by the system. It was only with Wine (used for CorelDRAW) that there was some initial bother. Wine has problems with over-long printer and alias names in */etc/printcap*. Names which are too long cause Wine to crash immediately after starting. If the name is edited by deleting alias names, which are defined several times, everything works.

Thus configured, there is no longer any obstacle to printing under Linux. But for use in larger companies, the configuration software, which is sometimes also available for Linux, or installation of the devices via built-in Web interfaces is recommended. The use of additional print software such as CUPS or Turboprint can be a good idea – these are also presented in this issue. ∎