and run the following (see screen 4):

```
$ sudo nvidia-glx-config enable
```

Once done, log out, press Ctrl & Alt & Backspace, and the system will switch to the new drivers.

A few extras

Although Ubuntu comes on only one CD-Rom it includes a great selection of applications. Using the main repository you can install a lot more. Some packages are already supplied on the CD and are copied across during the initial installation; these won't need to be downloaded and can be installed without a network connection. Others need to be retrieved from the repositories and may take a while if you're on a dial-up connection.

The base development utilities are included with the CD but not installed by default. There's a convenient 'meta' package that lets you install them together with one command. Use Synaptic or from a command line enter:

```
$ sudo apt-get install ↙
build-essential
```

(Key: ↙ code string continues)

This introduces the command-line front end for Apt. You can type as many packages as you want after the install option. Apt-get will come back with a confirmation and list of suggested extras (these will need to be downloaded).

Next, if you want to run Ubuntu to set up Microsoft Windows network shares, you'll need to install Samba:

```
$ sudo apt-get install samba
```

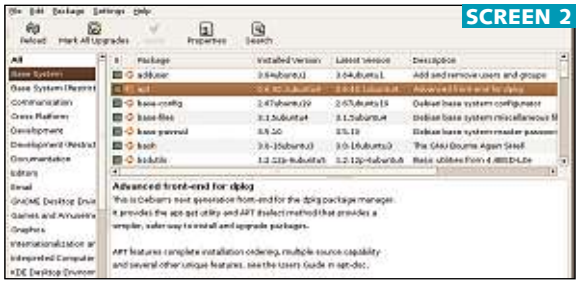
For accessing other machines the necessary software is already installed.

As standard, Ubuntu comes with a basic i386 kernel that will run on any PC. This is not ideal for recent PCs, as a CPU-optimised kernel will run much faster. The chances are you'll want to install either the 686 or k7 kernels for the Pentium II (or higher) and the AMD Athlon/Athlon 64 respectively. Several more kernels are available; do a search with Synaptic on 'linux' to find them. To install a meta-package for recent AMD processors, run:

```
$ sudo apt-get install linux-k7
```

Substitute the k7 for any alternate architecture (such as 686). After installing the new kernel, it's necessary to reboot to use the new version.

SCREEN 2



SCREEN 3

Top: The front-end GUI to package management

Bottom: Synaptic lists all packages you want to install, and their total sizes

Left: Set the system to use official Nvidia drivers

Right: Add extra repositories for more software

The Universe and Multiverse

Beyond the main repositories are the semi-official Universe and Multiverse repositories. Universe contains 'community-supported' software and has thousands of packages. Multiverse contains packages with some sort of restriction preventing them from being in the main repository, usually a restrictive licence or questionable patent; the main repository contains only free open-source software.

Almost everybody will want to enable these two repositories as they contain useful software. The simplest way is to use Synaptic. Go to the Settings menu and select 'Repositories'. A window pops up listing those currently enabled. Select the 'Ubuntu (Binary)' option and hit the 'Edit' button. In the Sections box in the next window (screen 5), add 'universe' and 'multiverse' so the image appears the same as the screen. Confirm the changes and download the updated software list as requested. With these added, the list of software displayed in Synaptic will grow and you have access to all the packages. All the software we install from now relies on at least one of these extra repositories, so ensure you've completed this step.

To install Macromedia Flash, search for 'flashplayer-mozilla' and mark it for installation. There's no need to restart Firefox; the browser picks up the plug-in immediately. Some websites rely on Microsoft's fonts to look their best. To install these fonts, mark 'corefonts' for installation.

Multimedia playback can be enhanced with a few plug-ins. Mp3 playback is added by marking 'gstreamer0.8-mad' – just double-click on an mp3 file afterwards to play it. If you install 'mpg321', you can hover your mouse over an mp3 file in the file browser to listen to it. If you want to play mp4/aac files, as used by Apple Itunes and the Ipod, install 'faad' and 'gstreamer0.8-faad'; you may also want to install the 'faac' equivalents if you intend to create aac files, and 'lame' to encode mp3 files.

Another useful program, Sox (which we covered in December), enables mouse hover-playback for wav files. An easier option for broadband users is to install all the gstreamer plug-ins with two meta packages; choose 'gstreamer0.8-plugins' and 'gstreamer0.8-plugins-multiverse'.

Next month we'll look at how to set up video and DVD playback and configure some useful applications. **PCW**

SCREEN 4

SCREEN 5