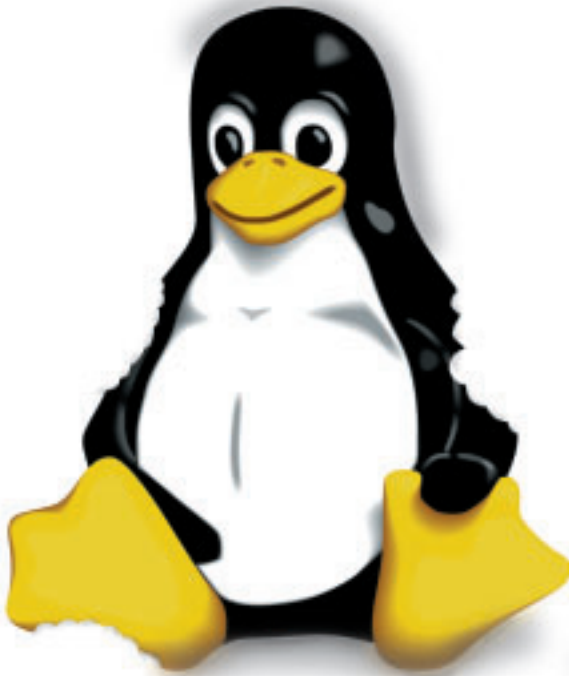# iBook and PowerBook
APPLE PIE

MICHAEL ENGEL

If you're at all interested in notebooks, you can't fail to have noticed the introduction of Apple's innovative iBook and Powerbook into these markets. But how do they fare under Linux?

We tested a first-generation iBook and a Powerbook G3 Firewire. The G3 processor, clocked at 500MHz, is the heart of the Powerbook, which, with its 14.1inch TFT display with XGA resolution, 128MB RAM, 20GB hard drive, DVD-ROM drive and diverse ports, truly represents a complete desktop replacement.

The Powerbook is persuasive when it comes to details, too. Peripheral components such as batteries and drives fit into two slots in the notebook, on the left and right. The DVD drive can be swapped for a second battery or a different drive. The range of accessories from third party suppliers runs from ZIP via MO to CD-RW. It is even possible to do a hot swap in Mac OS, although unfortunately, Linux can't do this yet. Another nice detail is the target mode, which can be selected at start up. This mode allows a second Mac to address the hard drive of the Powerbook like a normal external Firewire disk.

Linux on the Powerbook G3

The installation of SuSE Linux 7.0 for PPC went smoothly, thanks to Yast 2 and, since the Powerbook has a 20GB hard disk, no space problems were anticipated. Unfortunately, not all hardware is supported – IrDA only works as SIR at a maximum of 115200 bps, the Fast-IrDA mode, which the Powerbook should have been able to handle, could not be activated. And we couldn't play DVDs at first, despite using various tools. The soundcard refused to work after installation – but that was quickly corrected with *modprobe dmasound*. Yast had forgotten the corresponding entry in the */etc/modules.conf*. Otherwise the Powerbook G3 proved to be a stable and fast-working device.

iBook

The iBook is Apple's entry-level notebook, which is obvious from the equipment. There is an out-moded 12inch TFT display with SVGA resolution (800x600 pixels) together with a 3GB hard disk. There are no Firewire ports, PCMCIA slots or external monitor connections whatsoever, the memory, at a measly 32MB RAM, is very small and even at maximum expansion can only be doubled. Overall, this device is scarcely capable of expansion.

On the other hand, processing and speed are good. The iBook has a very robust plastic casing, which would undoubtedly survive the odd tumble from the edge of a table, a usable keyboard (even if

The Powerbook G3 offers all the ports you'd expect from a desktop.

Apple Powerbook G3-500 Firewire

the key travel is short) and a 300MHz G3 processor. Fast Ethernet, USB and Airport capability are all available.

Linux on the iBook

Unlike the installation of SuSE 7.0 on the G3 Powerbook, on the iBook things went slightly awry. This was due to the insufficient memory. At just 32MB, SuSE's installation routine felt itself forced to do without Yast 2's graphical installation and opted for the tried and trusted Yast 1 instead. The text interface would come as something of a culture shock for a seasoned Mac OS user. A full installation was not possible with 2GB free hard disk space. This resulted in a trimmed-down system, in which a few vital X11 components could not be installed, necessitating many later installations. The start up of the X-Server was successful, although after that the iBook was largely tied up with swapping, thanks to KDE.

Airport support

All the latest Apple computers offer the option of adding on an economical Airport card. The necessary slot and the aerial are already built in. Airport in this case is actually Wireless Ethernet standardised to IEEE 802.11b with a transfer rate of up to 11MB per second. With this, connections can be made both to other computers equipped with Wireless Ethernet and also to special base stations, which provide routers to Ethernet and modem connections. Airport is compatible with other

products that work to IEEE 802.11b, such as Lucent Wavelan or Elsa Airlancer. While cards from other manufacturers usually sit in a normal PCMCIA slot, Apple has implemented a trimmed-down solution, which is why the normal Linux driver for Wavelan cards (wvlan_cs) does not work. An appropriate driver has been developed by Benjamin Herrenschmidt and can be found at *http://www.penguinppc.org/benh/*.

Apple iBook

■ Notebooks at a glance

Manufacturer, Model, designation	Apple Powerbook G3-500 Firewire	Apple iBook	Apple Powerbook G4-400
Category	Top class	Entry-level model	High end
Memory [MB]	128	32	128
Hard drive [GB]	20	3.2	10
Diskette drive	–	–	–
CD-ROM	–	24x/internal	–
DVD-ROM	8x/plug-in	-	8x/internal
Drives open sideways	yes	yes	no
Expansion slot usable for drives/ Second battery	yes	not included	not included
Ports:			
PS/2 / serial / parallel / Line	– / – / – / +	– / – / – / + (Line Out only)	– / – / – / + (Line Out only)
USB / Irda / TV	+ / + / +	+ / – / + (later models only)	+ / + / +
Docking port / ext. drives	no / yes (Firewire)	no / yes (later models only)	no / yes (Firewire)
Display: Type / Size [Inch]	TFT / 14.1	TFT / 12.1	TFT / 15.2
Colour distribution / Brightness control	yes / yes	yes / yes	yes / yes
Keyboard: Key travel / Pressure point	good / noticeable	good / noticeable	good / noticeable
Offset cursor block	yes	yes	yes
Cursor functions without Fn key	yes	yes	yes
Loudspeaker covered when typing	no	no	no
Mouse type / Keys	Touchpad / 1	Touchpad / 1	Touchpad / 1
Battery: Type / Capacity [Wh]	Lithium-Ion / 45	Lithium-Ion / 50	Lithium-Ion / 50
Accessories:			
Special power cable for mains	yes	yes	yes
Modem / Ethernet cable / Video adapter	+ / – / +	+ / – / –	+ / – / +
Factory-installed operating system / Media	Mac OS 9.04 / Install Install and recovery CD	Mac OS 8.6 / Install and recovery CD	Mac OS 9.1 / Install and recovery CD
Graphics chip	ATI Mach 64	ATI Mach 64	ATI Rage 128
Memory [MB]	4	4	8
Modem chip (addressable)	Apple's own (+)	Apple's own (+)	Apple's own (+)
Ethernet chipset (addressable)	Apple's own (+)	Apple's own (+)	Apple's own (+)
Sound chip (addressable)	Apple's own (+)	Apple's own (+)	Apple's own (+)
Cardbus chipset	TI PCI1131 (+)	not included	TI PCI1131 (+)
Cardbus slots	1 x Type II or Type III		1 x Type II or Type III
Cardbus cover	Spring shutter		Spring shutter
Irda chipset (addressable)	- (SIR)		- (SIR)
TV-output / port	+ / SVHS	not included	+ / SVHS
usable at the same time as display	+ / +		+ / +
max. useful resolution	1024x768		not stated
Power off / sleep / suspend to disk usable	+ / + /–	+ / + / –	+ / + / –
Usable on text console / under X11	+ / +	+ / +	+ / +
W / D / H [cm] (Weight [kg])	32.3 / 26.4 / 4.3 (3.0)	34.4 / 29.4 / 4.6 (3.0)	34.1 / 24.1 / 2.6 (2.4)
Guarantee [in months]	12	12	12
Market launch	February 2000	September 1999	January 2001
Price [£]	**1650**	**1050**	**2300**

Apple Powerbook G4-400

General

Many people will be wondering whether Linux on Powerbooks actually makes any sense. There are still very few commercial applications available for PPC-based Linux systems – SuSE Version 7.0, seems to provide just about everything you could need; and the porting of Open Office onto PowerPC is coming on apace. Apple's Powerbook and iBook deliver solid hardware at competitive prices – but in the case of the iBook, you have to make a lot of compromises in return, while the Powerbook G3, on the other hand, keeps up well with the top models from the x86 range.

You have to live with a few Apple idiosyncrasies: Many people will curse the lack of second and third mouse buttons under X11. The support for external Firewire devices could easily be improved and, unfortunately, the latest 2.4 kernel versions don't have fully-integrated PPC support yet, forcing you to seek out a few patches.

However, MOL (Mac On Linux), a virtual Mac OS machine, gives you the option of running Mac OS in an X-window in a similar way to VMware on x86 systems (though MOL comes under the GPL).

The integral Fast-Ethernet port, the expandability with IEEE 802.11 wireless Ethernet with 11MB/sec and the connection option for external Firewire devices of the G3 Powerbook are a combination of characteristics which you'd be hard pressed to find on x86 notebooks.

Titanium Powerbook G4

The latest Powerbook, G4, has seen Apple make a radical break in design terms: The new Powerbook casing is manufactured completely out of titanium. Anodising the metal means that many colour ranges can be created, so we can look forward eagerly to future design ideas.

Apart from the chic new outside, the Powerbook offers a Motorola G4-Processor (PPC7410) clocked at either 400 or 500MHz, 128 or 256MB RAM (expandable up to 1GB), a hard drive with 10 or 20GB capacity, a 15.2 inch TFT display (in 3:2 picture format), a slot-in DVD drive, Airport capability, Fast Ethernet, Firewire, USB and infrared ports together with a lithium polymer battery with a capacity of up to 5 hours' operation.

At MacWorld Expo, held at the beginning of January in New York, the developers of LinuxPPC succeeded in booting up a G4 Powerbook with LinuxPPC 2000 Q4. There is now also a HowTo, describing the Linux installation on one of these little gems, which can be found at *http://www.powermaclinux.net/php/powermaclinux_g_h.php3?single=53+index=0*. ∎

Info
Powerbook info
http://www.powerbooklinux.org
Linux on Macs
http://linux.macnews.de
LinuxPPC developers
http://www.penguinppc.org

The author

Michael Engel is involved with RISC processors and Linux. His latest interests include Embedded Linux, particularly its use in mobile devices.