

Apple Mac: Running Mac-on-Linux under PPC/Linux

MAC



It's been said many times that Linux has no applications. Jason Walsh looks at how to expand your productivity with Mac-on-Linux

EMULATION

Despite the availability of many professional desktop applications for Linux, such as StarOffice or Corel WordPerfect Office, rumours of the dearth of Linux applications still persists. In all actuality, there is a grain of truth in it, at least for users of non-standard versions of Linux such as PPC/Linux. Last month we looked at productivity applications on PPC machines, and before that on replacing Photoshop, but what if you really want to run Quark Xpress or need access to Photoshop's CMYK tools?

What do you do if you need to use a particular application that doesn't exist under Linux and has no real equivalent? An awkward but useable solution is to boot into Windows on a separate partition or hard

drive. However, what do you do if you're running Linux on a PPC machine, such as a Macintosh? In this case, you can reboot into the MacOS (or AIX or BeOS, depending on your machine) but as with so many things in Mac land there is a more elegant alternative. Why not simply run your MacOS applications under Linux?

Introducing Mac-on-Linux

If you're running MacOS X and need to run an application that hasn't been 'carbonised', (that is, an application that hasn't yet been ported from the old MacOS to OS X) the machine will boot the 'Classic' environment and the run your application. Essentially the Mac is emulating an older version of the operating system and running the application through it.

This may be clever, but it's nothing particularly new. VMWare and WINE enable Linux users to run Windows applications on their x86 systems; SheepShaver enables BeOS users to run the MacOS in a window; and any **Power Macintosh** (PPC-based Macs) runs old applications for the 680x0-based machines, using an invisible emulation process. Incredibly, even parts of the OS were run under emulation until the release of MacOS 8.5.

Now Mac based Linux users have a similar application, and best of all it's open source.

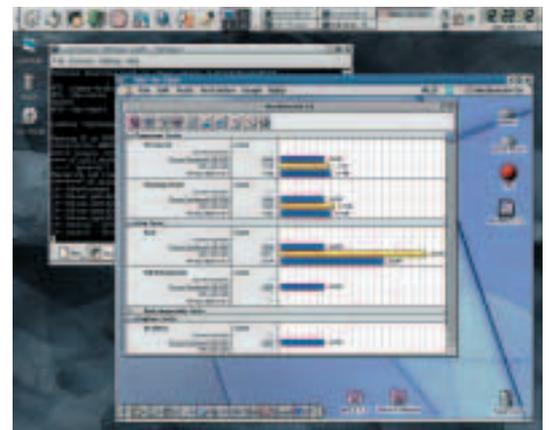
Illicit use of Mac-on-Linux

Users of non-MacOS PPC hardware are no doubt wondering whether they've just been given a Mac for free, or rather, can they boot MacOS using Mac-on-Linux on their IBM RS/6000, for example? Well, there really is no easy explanation for this.

Legally, the answer is no. You must have a machine licensed to run the MacOS, whether it is an actual Apple Macintosh or one of the many clones that were produced in the mid-nineties by the likes of Motorola and Umax. From a technical perspective, it's a different story.

Apple love standards, or rather they love helping to create them and then subverting them. Any tech-savvy Mac user will recall the acronym **CHRP**, or Common Hardware Reference Platform. This was a hardware standard developed by Apple and other tech companies, in order to replace the Intel x86 chipset. Unfortunately, not much ever came of it. However there are still some of these machines about, as well as some based on the PreP subset, and there's no technical reason why you couldn't run the MacOS on these systems in conjunction with Mac-on-Linux. This is because the Mac OS no longer needs a hardware **ROM** in order to boot. Since Mac OS 8.5 there has been a file lurking in the System folder named MacOS ROM. This file effectively replaces the physical ROM chip found in older (pre-G3) Macs, without which the OS refused to boot.

Users of x86 systems, on the other hand, can forget about it. Mac-on-Linux is a PPC native application and requires one of the following CPUs to run: The Power PC 601, 603, 603e, 604, 604e, G3 and G4.



Mac-on-Linux

Compatibility Issues

Sadly it's now time to rain on your high-tech parade: Mac-on-Linux has some downsides. First of all, if you're using a Mac based on the Power PC 603e, such as a Power Macintosh 4400 or many PowerBooks, you'll need to apply a kernel patch. Luckily, this is included in the RPM in the `/usr/doc/mol-0.9.58/` folder along with the appropriate instructions for running it.

Users of early Power Macintosh G4 machines also have a minor issue to resolve. MOL is incompatible with the

MacOS ROM file included on the MacOS 8.6 CD, which shipped with the original G4s. However, later ROMs, such as 1.6 and 1.8.1 are available from the download page: <http://www.maconlinux.com/download.html>

MOL is also incompatible with many peripherals, such as SCSI scanners, some USB scanners, USB storage and so on. FireWire support is also patchy, as Linux currently has incomplete drivers.

Depending on how you intend to use your Mac, sound may be a problem as

MOL simply doesn't support it – nor does it support audio input or output. Lack of support for accelerated video is also a problem on a platform noted for its use in the creative industries. Finally LocalTalk networking and PPP within MacOS require workarounds, details of which can be found on the MOL Web site.

One final sad note is that MOL is not compatible with MKLinux, the only version of Linux that runs on some oddly configured older Power Macs, such as the Performa 5320.

Installing and running Mac-on-Linux

Installing Mac-on-Linux is easy – not quite 'Mac easy', but simple nonetheless. It's important to remember that you must be running a Linux distribution which uses the 2.2.10 kernel, or later.

After downloading the **RPMs**, issue the following command:

```
rpm -i mol-version.ppc.rpm
```

Alternatively, those without the Red Hat Package Manager, or the brave, can download the source and compile it themselves. Next, invoke the commands below. This copies the MacOS ROM file from the MacOS System CD.

```
mount -t hfs /dev/cdrom /mnt
strip_nwrom "/mnt/System Folder/Mac OS ROM"
/usr/lib/mol/rom/rom.nw
```

The above instruction assumes that you intend to use MacOS 8.6 or later. Should you wish to use an earlier version, you'll need to grab a copy of the ROM and convert it into a ROM image, using the ROM Grabber utility, which is available from the **MOL** downloads page: <http://www.maconlinux.com/download.html> This is reason enough to use a version of MacOS later than 8.5. The MacOS ROM file from MacOS 8.6 onwards will work on any PPC Mac.

Finally, invoke the boot command from the bash shell:

```
startmol
```

The MacOS should now be booting. If instead of booting, it is displaying a flashing question mark, this means that the MacOS cannot find a suitable partition to boot from. It is looking for a **HFS** partition with a working system folder. If this



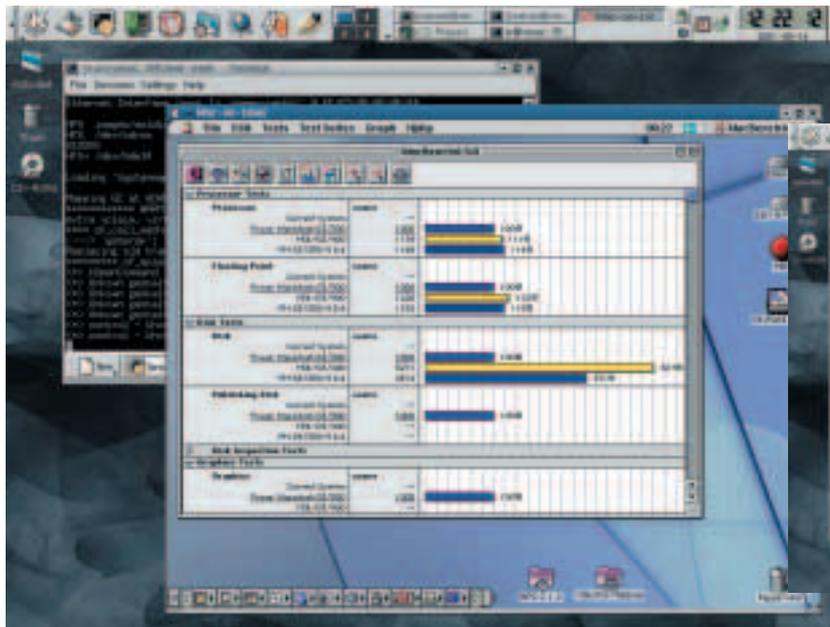
Two copies of MOL running

happens, you must configure MOL manually. Edit the `/etc/molrc` file and make the appropriate volume available.

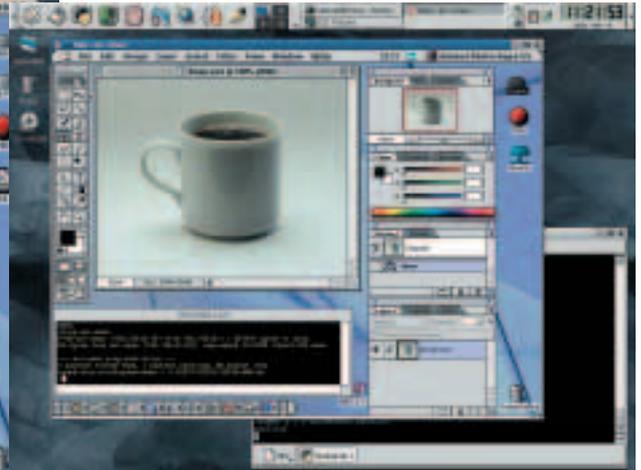
Performance issues

Running software through emulation or API layers will always cause some loss of performance. However, depending on your machine and what kind of application you want to run, it may prove to be worth it for the sake of convenience, particularly given how long the MacOS (and Linux) can take to boot.

Some software is not designed to boot up for a bit of quick work. While you may want to quickly load an image editor to alter file formats, or boot up a word processor to fire off a letter, it is difficult to see why you would ever want to run the likes of Quark XPress for a few seconds. In cases like this you would probably be better served by rebooting natively into the MacOS.



Running MacBench



Users of MacOS X and Photoshop, which has not as yet been 'carbonised', will know that heavy-duty graphics manipulation under emulation is a pain. PPC/Linux users would be better served by rebooting to MacOS 9, or using the Linux native GIMP, which offers most of Photoshop's features at, wait for it, no cost.

However, the performance tests for Mac-on-Linux are rather revealing. The Linux Icebox section of the famed Mac Web site, ResExcellence, found that Mac-on-Linux was only slightly slower than the OS X 'Classic' environment. I cannot compare like for like as I currently run PPC/Linux on an iMac G3/233 and OS X on a Power Mac G4/400, but I will state this:

MOL seems to be little or no slower than 'Classic', even on this older machine.

If your MacOS requirements are more in the AppleWorks or MYOB accounting vein, then MOL is perfect.

Conclusions

All in all, Mac-on-Linux can only be a good thing. The performance loss your system will suffer when using it is minimal, to say the least. Mac-on-Linux opens up a whole world of applications to PowerPC Linux users and though the MacOS must still boot, not forcing you to halt Linux is a fantastic boon.

Perhaps the best thing about MOL is that it makes Linux a true alternative to MacOS X for users of older Power Macs, which simply won't run Apple's next generation operating system. By offering similar features to the 'Classic' environment in OS X it enables users to have the power of Unix alongside the familiarity and legendary ease of use of the Mac. Without MOL, Linux would not compare to the functionality of OS X, but with it you can really get productive on your computer – after all, isn't that why you bought a Mac in the first place?

However, the best news has been kept for last. Though I haven't personally tried it, MOL will apparently boot BeOS, and MacOS X compatibility is being worked on. Imagine that, a computer than can natively run, MacOS 9.1, MacOS X, BeOS and of course Linux. Now that is a workstation. ■

CHRP Common Hardware Reference Platform. A basic open platform developed by several hardware companies, including Apple, for producing machines that would run a series of operating systems, including Unix, MacOS, BeOS and, interestingly, Windows NT. This plan never came to full fruition as Apple effectively pulled the plug.

HFS Hierarchical File System. The native disk format for MacOS. Also known as the MacOS Standard.

HFS+ An improved disk format for PPC Macs. Also known as the MacOS Extended.

MOL Mac-on-Linux

Power Macintosh Macintosh computers that use the Power PC processor. Earlier Macs used the Motorola 680x0 series, commonly referred to as **68k**.

PPC PowerPC. A chip series developed by Apple, IBM and Motorola. Used in Macs since the mid 1990s and in high-end IBM servers. To be used in the Nintendo Gamecube.

ROM Read Only Memory (chip). A non-writeable area of computer memory. In this case it contains booting information and basic OS services for the Mac.

RPM Red Hat Package Manager. An installation application for Linux.

68k Motorola 680x0 series of CPUs. Included the 68000, 68020, 68030, 68040 and 68060. Used in the original Macintoshes and also in the Amiga, Atari ST/TT/Falcon and the Japanese M680x0 computer.

Info

The Linux Icebox PPC site http://www.resexcellence.com/linux_icebox/
 The Mac-on-Linux site <http://www.maconlinux.org>