



## Playing the game

Cliff Joseph drools over the new G4 from Apple and **gives thanks for** the inclusion of AGP.

**I**t's almost Christmas and I feel a sudden urge to talk about games and 3D graphics. First, though, it might be a good idea to take a look at what Apple has been doing recently to beef up the Mac's graphics capabilities.

They may be in short supply, but the new G4 Power Macs are gorgeous bits of techno-kit. There's been plenty written about their stylish design and the sheer speed of the new G4 processor, but there's another feature inside these machines that's worth taking a closer look at.

The low-cost 400MHz model is based on the same motherboard used in the previous generation of G3 Macs. However, the 450 and 500MHz models use a new motherboard design that includes AGP – an expansion slot not previously found in Mac designs.

**Designed by Intel**, AGP stands for 'accelerated graphics port', and was designed specifically to speed up 3D graphics by providing the ability to transfer large amounts of texture data into and out of system memory. The PC industry has been using AGP for well over a year now, but the new G4s are the first Macs to use this technology. This is another example of Apple's new realism – going with the flow of popular technologies, rather than constantly trying to reinvent the wheel.

Besides, AGP is well worth adopting as it's a lot faster than the PCI slots Apple normally uses for graphics cards. The AGP port provides data transfer speeds of up to 532Mbit/sec, compared to just 132Mbit/sec for PCI. So not only do the

G4 Macs have a faster processor, they also have a much faster graphics sub-system. This means G4s are superb machines for 3D design work, playing games, and handling large image files in 2D graphics programs such as Photoshop.

Most manufacturers of graphics cards have now standardised on AGP, although some do still provide PCI versions of their cards. This means that, in

theory at least, it should be easier for these companies to produce Mac versions of their cards. In fact, they don't have to do anything to their cards at all – just produce a Mac version of the driver software that controls the card.

This is good news, because it means greater choice and, hopefully, lower prices for Mac users. The company

behind the Voodoo range of cards, 3dfx, has recently released a beta version of the Mac driver for its new Voodoo3 cards, and nVidia, the company that produces the stonkingly powerful GeForce graphics card has also indicated that it might do something similar in the near future.

Apple has been closely tied to ATi for the past couple of years, and uses ATi graphics chips in all of its desktop and laptop systems. However, ATi looks as if it may be falling behind newer products, such as the GeForce card, so the more choice that Mac users have the better.

### ■ Exploring 3dfx

On the subject of 3dfx, it's worth noting that this company produces both PCI and AGP versions of its Voodoo3 cards. So even if you've got an older Mac that is only equipped with PCI slots, you still have the option of upgrading your system with the Voodoo3. There are quite a lot



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of older Macs out there that use the ATI Rage and Rage Pro graphics chips. These are nowhere near as fast as the Voodoo3, so this is an option worth considering, especially when it comes to playing 3D games such as the rather wonderful Unreal Tournament. (Don't ask about Quake III because I just cannot get the test version to run properly on my machine for some reason.)

Running Unreal on a G4/450 with its built-in Rage 128 graphics card produced a score of 35 frames per second. Using a Voodoo3 2000 PCI card in the same machine increased the game's performance by a full 50 per cent to an impressive 54fps. The only problem is 3dfx doesn't provide any technical support for these beta drivers, and it's not clear whether the company will release the final drivers to the public.

We've heard that ixMicro will be

licensing the Voodoo3 chip to produce genuine Mac-specific Voodoo3 cards, but we don't have any definite news about the availability of these cards.

There are also some compatibility problems when using the beta Voodoo3 drivers with a number of games, and this is where we get to the guts of the Mac-games problem. All Voodoo cards use a 3D API (applications programming interface) called Glide, that was designed by 3dfx for its own use. There are quite a few games that work with Glide, but there are plenty that don't. The test version of Quake III, for instance, uses another type of 3D software known as OpenGL.

## ■ OpenGL

OpenGL is pretty much the industry standard for 3D graphics and there are major games developers – such as id with the Quake games – that prefer to use OpenGL. That's why the Mac has been starved of games for so many years. The big games companies were using OpenGL, but Apple was wasting its time trying to flog its own 3D software called QuickDraw 3D.

Apple has now decided to adopt OpenGL and is working with ATI to develop

OpenGL software for the Mac OS. This makes it easier for companies such as id to produce Mac versions of their OpenGL games. At the moment, though, the Mac version of OpenGL is specifically designed to work with ATI graphics cards because, as we've already mentioned, ATI has a monopoly on providing graphics cards to Apple. Monopolies are always a bad thing, and in this instance it means Apple's OpenGL software doesn't yet work with cards such as the Voodoo3, which in turn means OpenGL games won't work with anything but ATI graphics cards.

Fortunately, there is a kind of 'open-source' version of OpenGL, called Mesa, which seems to work quite well and will allow you to use a Voodoo3 card with Quake III. Hopefully, the final version of Quake III will work with both Glide and OpenGL, making life easier for everyone. What we do need, though, is for Apple to produce a general purpose OpenGL driver that will work with a wide range of graphics cards. Because, frankly, this reliance on ATI worries me.

## ■ Further info

Voodoo graphics for Mac – [www.mac3dfx.com](http://www.mac3dfx.com)  
Mac 3D performance – [www.xlr8yourmac.com](http://www.xlr8yourmac.com)  
Mesa OpenGL software – [www.mesa3d.org/mac/](http://www.mesa3d.org/mac/)

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**Using a Voodoo3 2000 PCI card increased the game's performance by 50 per cent**

## MAC GAMES ON THE NET

I can't finish this discussion of Mac games without giving a hearty plug to GameRanger, the first online games service specifically designed for Mac users.

There are plenty of online games services on the Internet, but many of them require you to install special software before you can use the service. And, needless to say, this software is generally only available

for Windows PCs. Until now, Mac users who wanted to play games online depended on the sterling efforts of amateur programmer Scott Kevill, who produced the Quake Finder and Unreal Finder games utilities.

Now, though, Scott has launched GameRanger at [www.gameranger.com](http://www.gameranger.com). Download the free GameRanger software and you can immediately

join in with online sessions of games such as Quake 1, 2 and 3, Unreal, and Age of Empires.

The software also handles a series of chat rooms for topics such as action games, strategy and simulations. And, of course, everyone in the chat rooms will be a Mac user.

If you get the urge to roam the Internet and play against PC users as well, the software also includes an option for locating servers that host various games. The GameRanger software is free and easy to use – all you need is the Mac version of the game that you want to play and stacks of money to pay the phone bill.

