

# Windows XP Unveiled

What can we expect from the latest incarnation of the Windows family? **Jon Honeyball** looks behind the Beta

**T**he arrival of Microsoft Whistler Beta 1, properly known as 'Windows XP', represents many things depending upon your perspective and whether you value history or not. It is either a momentous release in the

Windows family or a bit of a yawn. It's being used as an excuse by many corporate customers to do little right now, preferring to wait until XP is launched. It will either herald a new era in Windows' Desktop look and feel or it will turn out to be a damp squib.

Whistler is a two-faced product. There are pieces of its jigsaw that are very important to some users, but to others it will almost feel like a Windows 2000 Service Pack. This is all very confusing, so I think I ought to start at the beginning.

## Historical

Microsoft has been pursuing a twin-track approach to Windows development for the best part of a decade now. Indeed, if you cast the net a little further and incorporate the work done on OS/2 in the mid-to-late 1980s (and there is certainly justification for doing so), then you can easily argue that this twin-track approach has been there for all of Windows' life - some 15 years.

This methodology of developing has definitely worked and, unlike any other software vendor, Microsoft has managed to juggle the balls in a sufficiently convincing way that it fooled most of

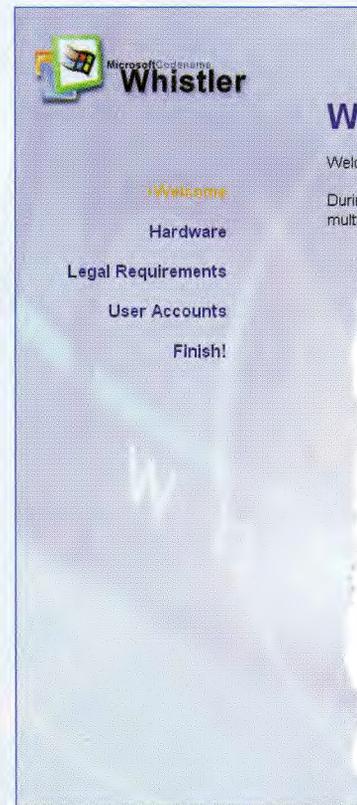
the people most of the time. The cruel interpretation is that Microsoft wanted to work on NT, but forced us to buy 3x/95/98 in the mainstream environment.

That large-volume Windows 3x/95/98 platform has been hugely successful for Microsoft. I cannot think of any piece of software that has sold in such quantities. Again, the negative spin is that it was forced into the marketplace by the bundling and licencing deals and it's certainly true to say that the market penetration has both helped Windows and hindered competitors.

There has been an upside to that market penetration, though. It's simply inconceivable to launch a product for the desktop PC marketplace without it having Windows 9x drivers. So after some five years of the 9x world, we have a quite staggering investment in that driver space. Manufacturers are traditionally appalling at doing device-driver development work and most have had to be dragged screaming to a debug computer with the Device Development Kit installed to make them do any bug fixing at all. But it has happened - the sheer weight of numbers in the 9x world has seen that the work has been done.

## The home experience

Why does this matter? Well, XP replaces the 9x world - lock, stock and barrel. With the release of XP, the 9x code base is gone forever. The implications of this are profound on that huge



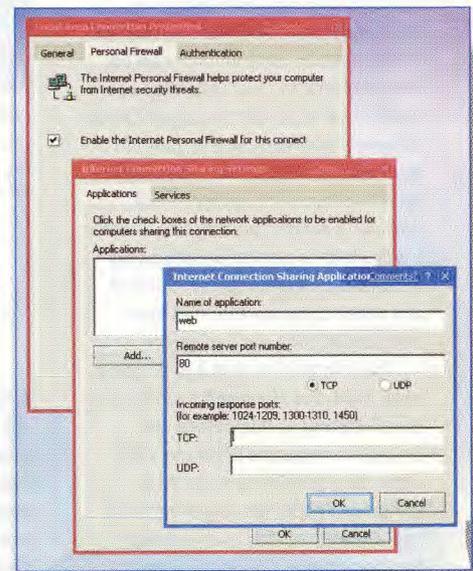
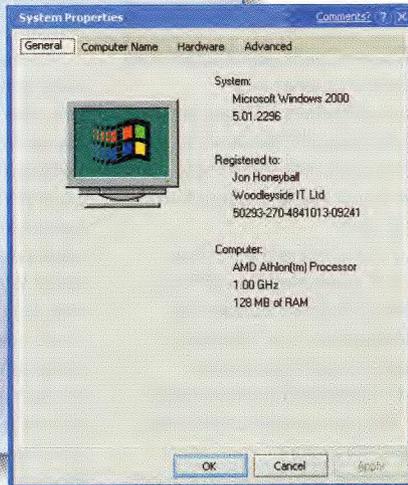
**▶ New look and feel -** expected a UI aimed at beginners with power-user capabilities, too. 'Classic Windows 2000' UI can be set up easily.

# Microsoft Windows

you for purchasing a computer with Microsoft Windows Whistler. you will be guided through a few steps to enable the Internet and s computer.

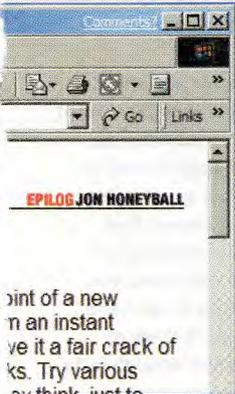
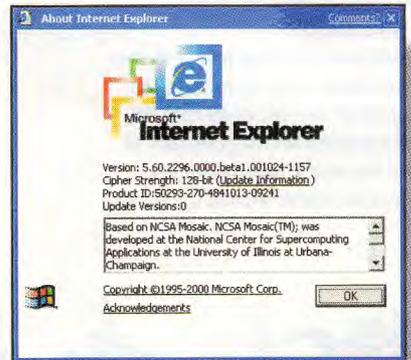
▶ New Personal Edition - aimed at the Windows 98/ ME upgrade marketplace. Does not upgrade from Windows 95.

▶ Lots of Wizards - everything has a Wizard and there's almost no manual setting up required. Obviously this is helped by the extensive Plug and Play support, which has reached new levels of sophistication.

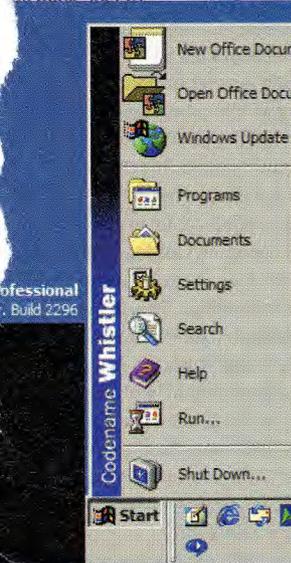
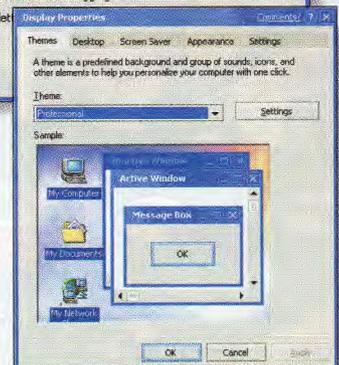
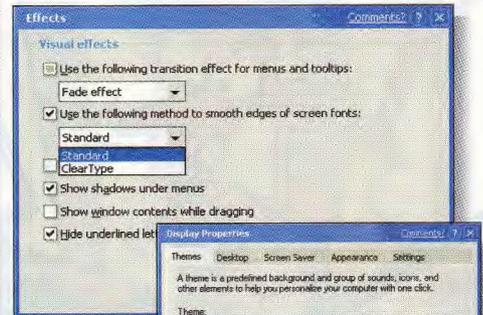
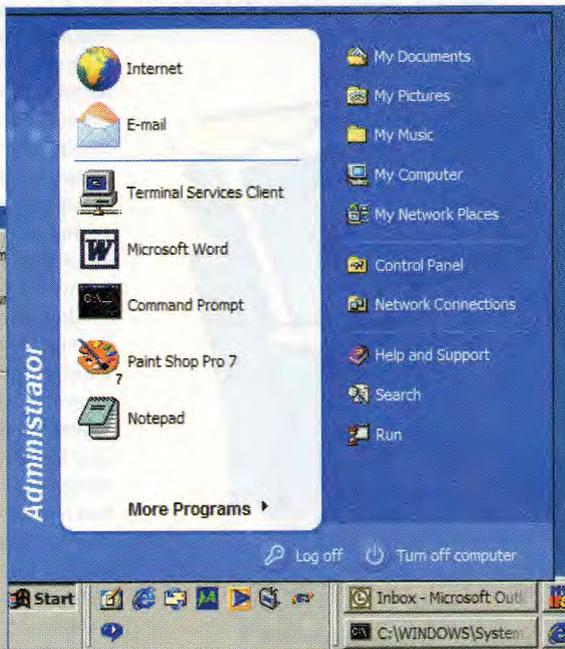


▶ Internet Awareness - new Internet Explorer 6, with emphasis on XML support and standards support. Built-in Internet firewall capabilities offer protection from XDSL, cable modem and analog modem intrusions.

▶ New 64-bit editions of Professional, Server, Advanced Server and Datacenter Server. Offers a new 64-bit API and unlimited memory support. Of interest to the high-end data-mining community, but also for the desktop video-editing, photo-editing and data-mining community.



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▶ DirectX 8: the best games platform yet for home users. Advanced 3D-graphics capabilities extended with the OS-level features of Windows 2000, like transparent windows.

marketplace and installed base. Any traditional Windows 9x driver or 9x OS-specific code will not run on the XP platform. Just read that again carefully and ponder the significance. It means that Microsoft is going to attempt the impossible - to move the Windows 9x user base from one operating system platform to another. Such a task is almost breathtaking in its audacity and I cannot think of any other company that has ever considered such a move before.

You might think that it isn't going to be hard, but Microsoft has had one quiet attempt at this before. It's possible to take the Windows 2000 Professional CD and upgrade a Windows 9x box, leaving everything in place with all the user settings and data intact. However, almost no-one has taken this route, which is fortunate because it is the least stable and tested of all the possible Windows 2000 upgrade routes. However, it did clearly show that Microsoft was totally focussed on making this work if not in Windows 2000 then in the later release of Windows XP.

Microsoft has had plenty of time to think about this, of course. The concept of 'one Windows core OS' is not a recent one. It goes back at least five years, possibly longer. Whenever you scratched the surface



**A Simple displays are expected to help the home user, but disguise a powerful set of tools within XP.**

and realised that what was underneath Windows NT bore very little resemblance to Windows 95, it was plainly clear that some route had to be created to take users from one to the other.

I have lost count of the number of Microsoft 'road map' PowerPoint slides which have existed over the years showing that 'one Windows' was going to happen at least 24 months or more from then. Yet every time the calendar has swung around, it has never happened.

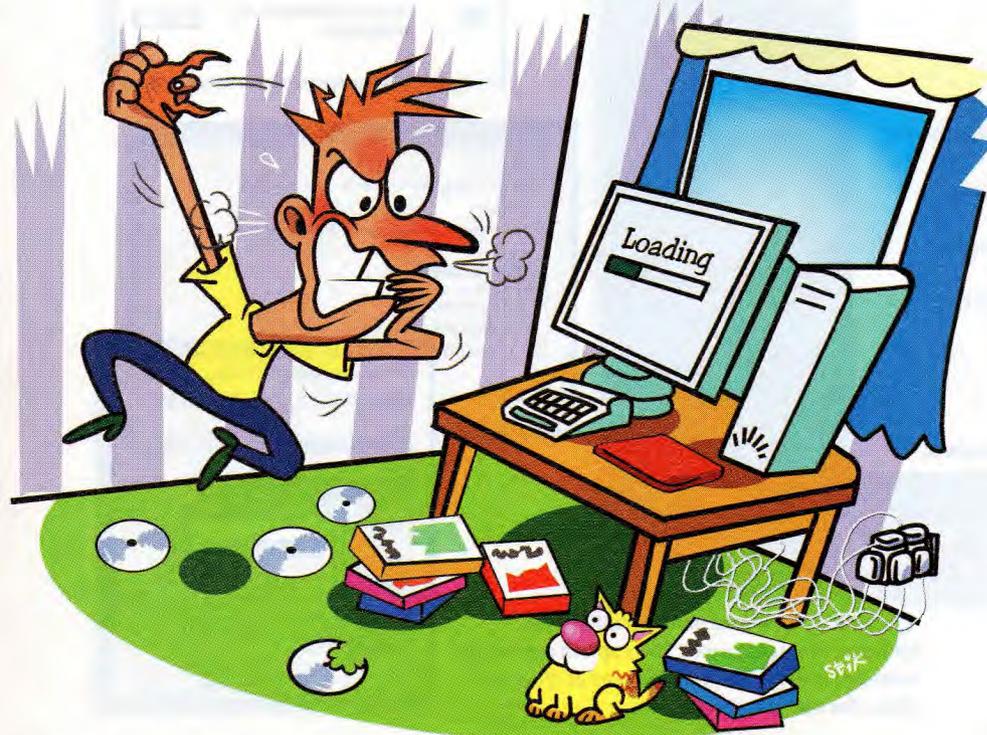
To be honest, this has been a good thing. If such a move had been attempted some years back, then there would have been carnage. Today, it's merely going to be rather difficult. By waiting for 'Windows 2000 + 1', Microsoft has given out the strongest possible signals that device

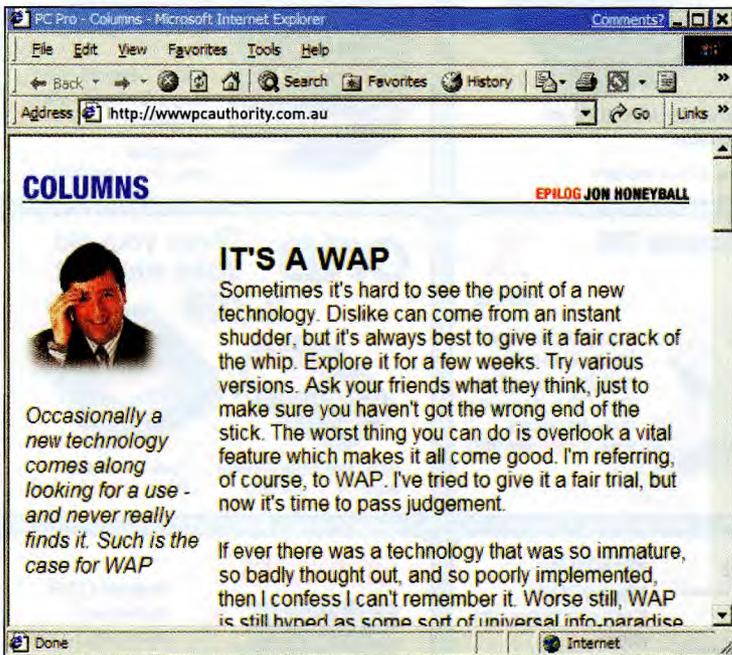
drivers need to be written for the Windows 2000 platform and that users will not accept excuses. The good news is that Windows XP will have the best hardware support of any version of Windows in history. More devices, more printers, more weird graphics card arrangements and so forth. But there are still products on sale today that have Windows 9x hard-coded drivers and these peripherals simply will not work on the XP platform until a driver is written.

It's not all doom and gloom, however. Microsoft has, to its credit, been attempting to wean software device-driver writers off the Windows 9x-specific code-base onto the more generic WDM (Windows Driver Model) system for several years. WDM code allows one driver to be used under either Windows 9x or Windows 2000. Obviously this was a good way of creating a one-shot solution to the cross-platform issues and many vendors quite rightly started releasing WDM code. Since an XP driver is the same thing as a Windows 2000 driver, the WDM code work takes them straight from 9x to XP in one jump.

If the upgrade issue was only a problem in the corporate space, then I would not be too worried. After all, they have technical support staff on hand who can sort out an offending machine. I'm sure, however, that each of us has a well-meaning but demanding relative who consumes the occasional evening or weekend doing technical support. If any of these people are foolish enough to do the upgrade themselves, then you cannot even begin to imagine the strain that will be placed on friendships and family relations.

Upgrading an operating system is the hardest of all the pantheon of difficult computing tasks. It's the equivalent of jumping in the air, having the rug pulled out from under your feet and changing clothes at the same time - all done in such a way that no-one even notices. This is the core of the problem that Microsoft faces. If every single Windows 9x installation upgrades to XP with nary a single glitch or flicker of a problem, then Microsoft will have done an 'adequate job'. After all, in the eyes of the user base, any problems that might arise are solely the responsibility of Microsoft anyway -





it's the company's Windows 9x and its XP, so it's their job to get it right.

If you have a straightforward Windows 9x box, then it will almost certainly work without pain. If you have mainstream third-party drivers, it's likely to be satisfactory. If you have anything unusual, then it's difficult to know what will happen. You will, of course, have a full backup of the machine before you start, won't you? The best approach to take is to upgrade a 9x box to the latest driver set, preferably using WDM drivers if possible, and then search the relevant manufacturer Web sites for Windows 2000 drivers, too.

It's probably surprising to you that I am majoring on this upgrade issue so much. The reason is simple - few things have the potential for splattering mud across Microsoft's name than every punter who 'thinks he knows a bit about computing' going into their local computer superstore and buying a shiny XP upgrade, taking it home, inserting the CD-ROM, running the setup and then being left with a machine that won't boot. How the Microsoft lawyers can let their development team even think they can let this scenario occur is quite beyond me.

Maybe I'm just being all gloom and doom. I have successfully upgraded a number of machines from Windows 98 and ME to XP and they've tended to be very complex existing installations with a number of third-party drivers. None have gone wrong so far and it's merely the



first beta. But consider the implications of a 0.5 per cent failure rate in the upgrade of the Windows 9x marketplace and you'll soon understand the pain involved.

Microsoft has already pulled back on the supported upgrade path for Windows XP. You cannot start from Windows 95 - it has to be 98 or ME. I'm sure they would like to pull that back to ME only, but - given that even some new hardware today is shipping with 98SE, it isn't a tenable position.

To repeat the point - no-one has attempted a large-scale migration of this sort before and it will be fascinating to see the results once the dust has settled. For myself, I cannot wait to see the end of Windows 9x. I want the quality drivers for every device on the Windows 2000 platform and it will make installation and support a whole load easier. Best of all,

With millions of users - both business and home - around the world, consider the implications of a 0.5 per cent failure rate in the upgrade of the Windows 9x marketplace.

In a bid to appeal to all levels of competence, the interfaces are generally simple.

For those who prefer the look of previous Windows iterations, it's possible to choose a retro look.



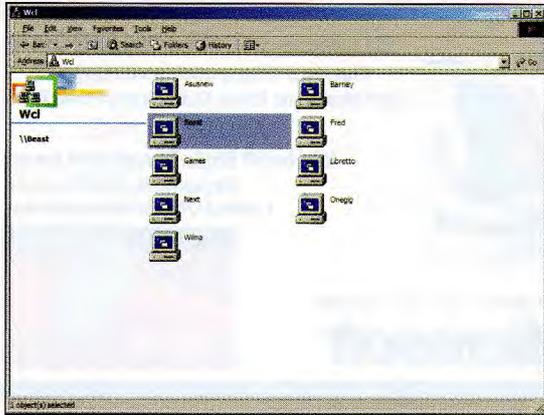
Windows 2000 (and now XP) shows just how creaky and archaic Windows 9x has become and it's long past its sell-by date.

## Corporate view

The view from the corporate desktop is completely different to that which I have just described, of course. Their migrations are planned and carefully considered and there's usually an appropriate level of testing and checking involved. The driver issues are irrelevant in this space and the implications of any potential disasters arising from the live migration from a 9x box to XP simply don't arise.

However, there's one interesting problem which is becoming obvious in the corporate space. There are a lot of very scared IT managers out there who have networks running quite happily on NT 4 servers, with a mix of NT 4 Workstation and 9x laptops. They have a solid infrastructure and it works very well. They (and/or their bosses) would love to move to the power of Exchange Server 2000 and all the other 2000-based products, but this requires the move to Windows 2000. They've bought a couple of machines and the necessary 2000 Server software and have been investigating the problem. And they've decided that it's far too complex a move for them to worry about this week. The truth is that Windows 2000 is a deeply scary proposition for these people.

They have, with justification, used almost every excuse in the book to avoid going live on Windows 2000. The first one was that you would have to be mad to deploy a Point Zero release of an OS, so let's wait for the first Service Pack. Oh yes, and the final Exchange 2000 isn't ready either. This excuse set lasted until the autumn of



2000, when Microsoft finally released Windows 2000 SP-1 and Exchange Server 2000 in shrink-wrap form.

This created a problem - a new excuse was needed. The beta release of XP played straight into their hands. The justification for not moving is now that with XP in beta, it would be far better to aim for that product release in late 2001 than go to Windows 2000 first and then move to XP.

You can see the cold, raw fear in their eyes when an IT manager tells you this. He is praying that you don't point out that, to the corporate IT manager, XP is not a big deal compared to Windows 2000. In fact, in many ways it's just a big service release to Windows 2000. It's simply not sensible to imply that the Windows 2000 to XP upgrade will be as difficult as the NT 4 to Windows 2000 one. Windows 2000 to Windows XP will be a walk in the park and is genuinely something you could do over a weekend. Going from NT 4 to Windows 2000 is a monumental change - the implications of DNS, Active Directory, new network topology, new security infrastructure and so forth is worth what has to be done to get you onto Windows 2000.

Having done that work, XP is just the second iteration of that Windows 2000 family. In truth, many corporates will deploy XP Server upgrades as the last thing in their upgrade strategy - there is not a whole heap of stuff in XP Server to make you move. Going for a period of stability on Windows 2000 servers, with some Windows XP servers when the shrink-wrap arrives, is going to be a solid, cautious approach.

Let me put this as clearly as I possibly can. If you're the CEO or FD of a large company and your IT management is using the 'let's wait until XP before we do our Windows 2000 migration from NT 4', then

**Whether you're browsing the network or the Internet, XP has the tools to track down the right machines and materials.**

**With the Internet being part and parcel of computing, Explorer is integrally linked into XP.**

please take them out and shoot them. They're deliberating avoiding the issue and Windows XP is not a good enough excuse.

### In the box

Having laid the foundations, the next obvious question is: 'What's going to be in the box? What is this XP thing?'

Firstly, let's define the various versions of the product, because that will build up the picture. Please bear in mind that everything is cumulative, so the next member of the family inherits everything its baby brother has.

At the bottom of the heap, the new small-baby XP is called Personal Edition. It's designed for the Windows 9x upgrade marketplace and for equivalent pre-loads for home and SoHo use. It's deliberately crippled in a number of areas to help define what it can and can't do. For example, there's no support for multiple monitors. Nor any support for SMP (symmetrical multiple processors) either. For a power user, this is a significant limitation, but Personal Edition isn't aimed at them. There's no facility for joining a security domain, either in an NT 4 or Windows 2000 environment, so security is just the same sort of dispersed username/password combination that you see today in the local networking capabilities of Windows 9x. Lastly, there's no backup program either - most users in this hardware space have no tape drive, but they will like the built-in support for CD writers.

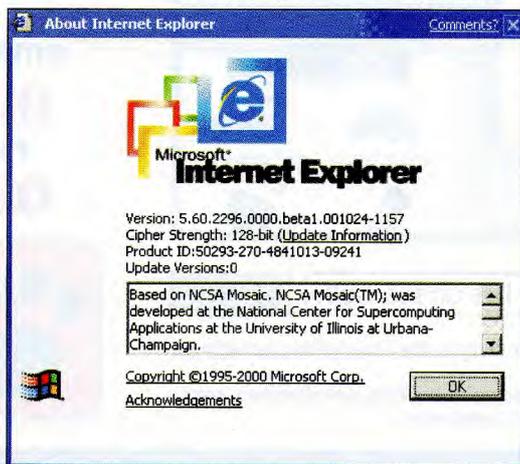
The second version is the Professional Edition - this maps directly onto the existing Windows 2000 Professional version and is aimed at being the platform for the computer professional, especially in a

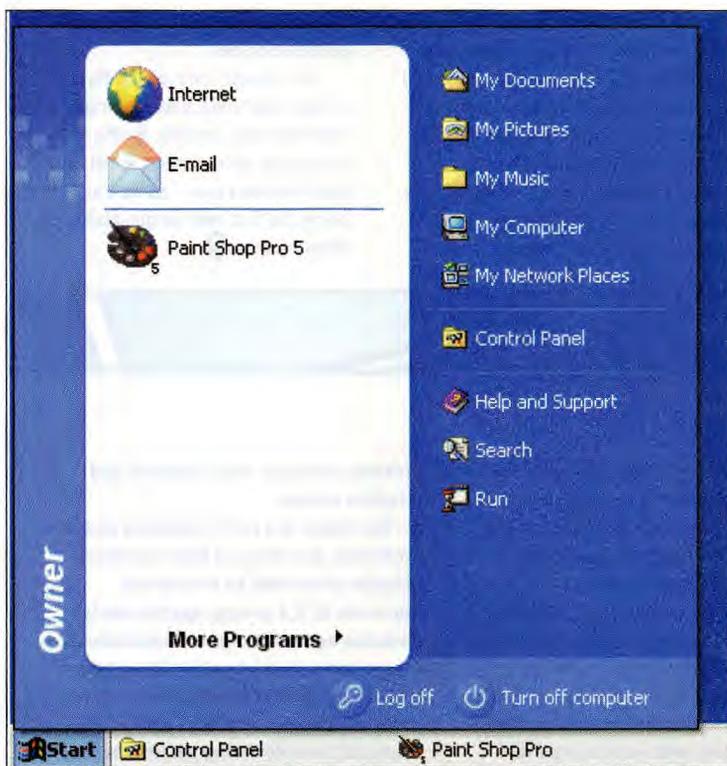
business environment. Just like its Windows 2000 equivalent, you have SMP support, multiple monitor capabilities, support for domain security and backup capabilities, too.

Moving on up the family, the mapping to Windows 2000 is very simple and straightforward. XP Server is the upgrade to Windows 2000 Server and the same applies to Advanced Server and Datacenter Server versions, too. As you can see, there is nothing here in the corporate and network-server space to cause alarm. It should just be viewed as the next one in the family series and migration from Windows 2000 to XP is extremely straightforward.

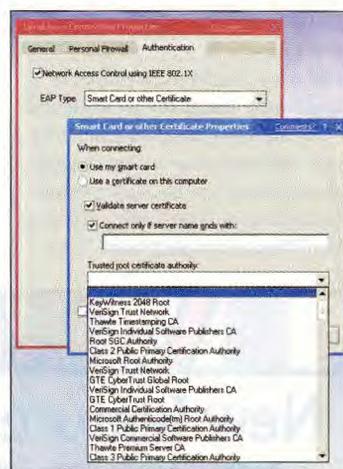
There is, however, one big difference between Windows XP and Windows 2000 and this is the support for 64-bit processors. It was unclear when 64-bit processing would come to the Windows NT/Windows 2000 family and this was caused by a number of factors. Firstly, the hardware just didn't exist. Yes, I know that my trusty 533MHz Digital Alpha NT 4 server could, and should, run a 64-bit operating system rather than a 32-bit one. But with just 256Mb of RAM, there would be almost no upside to the 64-bit version, so why bother? With the release of Datacenter hardware like the awesome Unisys ES7000 server, which can take 32 processors and vast amounts of memory, there's finally a credible platform for doing 64-bit work in the Windows environment. Intel still has to ship its Itanium processor, of course, but this is due some time in 2001.

The 64-bit version of Windows XP really comes into its own when you have many gigabytes of memory. The classic example is large-scale data warehousing, where you want to consolidate many gigabytes of databases into one server for data mining and exploration. Having so much data held in memory can make a fantastic difference to the speed and responsiveness of issuing queries and getting answers back. Reducing this cycle time can sometimes offer dramatic cost benefits to an organisation. However, a little reality check is worthwhile - current 32-bit Windows 2000 is actually more than 32-bit in size. It allows the use of the PAE (Physical Address Extensions) system on the Intel 32-bit processors when running Advanced Server and





▶ For administrators there is an abundance of security functionality.



▶ For the first time Microsoft is to provide a Desktop operating system that works across the board.

For the corporate user, the decision is simple - if you have a Windows 2000 infrastructure in place, then XP will be more of the same. If you have some extreme high-end users who need maximum hardware horsepower, then XP offers a great platform, too. It isn't, and shouldn't be, the ideally timed excuse to stick with an existing NT 4 infrastructure, although even my core network servers are still NT 4. This has been caused by extreme lack of spare time in recent months to go live on Exchange Server 2000. By the time you read this, my battle-tired and extremely faithful servers, Barney (533 Alpha) and Wilma (dual Pentium

Datacenter Server. This works by extending the memory-addressing capabilities from 32- to 36-bits. It might not seem like a big change, but do the numbers - 32-bit gives 4GB of RAM addressing, whereas 36-bit gives you 64GB of RAM. The full 64Gb is reserved for the Datacenter version, with the Advanced Server version stopping at 8GB (33-bit). You can't just run standard code on these environments and then get the full memory benefit. You need PAE-extended 32-bit code to make it work, but there are versions of SQL Server, Oracle and so forth which do this.

The move to a 64-bit Windows is a far bigger change, best compared to the move from 16-bit Windows to 32-bit Windows. It's a completely new set of 64-bit wide APIs and the PAE extensions are quietly forgotten about, relegated to history as being a passing kludge.

I have here in my hands 64-bit Windows XP builds for Professional and Advanced Server. They exist for Server and Datacenter, too. The push for 64-bit XP on the desktop is a fascinating one. Be in no doubt that there's a real need for huge memory spaces on the desktop. Architectural CAD work, large-scale video editing and intensive hands-on data mining all will benefit greatly from lots of RAM. It isn't unusual for a graphics

professional to have a gigabyte of RAM in their desktop machine for working on photographic slidescans in Photoshop. With the rise in resolution of the slide-scanner marketplace to 4,000lpi and the need to work on images running hundreds of megabytes at a time, then the need is obvious. For the mainstream, it will not impact any time soon because the potential power from the Pentium 4 family - and AMD equivalents - especially in an SMP environment, will suffice for the time being.

### Shall I jump?

Microsoft is finally delivering on its promise of one unified Windows Desktop operating system. The installed base of hardware is perfectly good enough to run such an OS and it's time to jettison the past.



233MMX), will have been put out to grass to spend their retirement years as NT 4 test machines. Windows XP should be no reason to wait any longer.

For the home user, it's going to be a major shift and mean a lot of changes. If the migration can be accomplished with minimal difficulty then it will be an astonishing accomplishment. To be

honest, given the rate at which hardware is increasing in speed and decreasing in cost, I would be tempted to avoid the upgrade route completely and go with a brand new machine for XP Personal. I know that this is a sizeable investment of money, but you will ensure that you have the latest graphics cards, for example, and the

fastest memory-bus designs and processors, too.

For myself, I'm running Beta 1 on two machines. It works and it interoperates just fine. By the time the shrink-wrap comes, it will be the best Windows ever - as well as being the first ever single-platform Windows, too. **B**

## New features

Possibly the biggest new thing in Windows XP is arrival of a new desktop look and feel. Microsoft has traditionally kept to an approximate five-year UI design plan and this is maintained with Whistler. Windows 1 shipped in approximately 1985 and the Windows 2x changes introduced overlapping windows, but still had a similar methodology. 1990 saw the arrival of Windows 3x with its greyed look and feel. 1995 saw the release of the new Desktop from Windows 95, which was then incorporated into Windows NT

4. Windows 2000 introduced a few minor changes, but the big push comes with Windows XP.

I wish I could be more definitive on the 'look and feel' changes. However, I have a very sneaky feeling, based on conversations with people inside the development team, that the current 'look and feel' is a passing lash-up designed to introduce new capabilities and ideas without letting too much out in terms of future intentions. The release of Apple Macintosh OS X in early 2001 will set new standards for beautifully-crafted UI design, and Microsoft is very aware that it has to be better than OS X. That's why Beta 2, due this year, will be fascinating, just to see how adventurous Microsoft is prepared to be.

Fortunately, it's simplicity itself to return the Desktop look and feel to a standard Windows 2000 system. This will be very important in a corporate space where control of such items really does matter. To be honest, I prefer the Windows 2000 design to the current Beta 1 design - hopefully this will change before product shipment.

There is a fantastic set of capabilities in the base OS and graphics subsystems of most machines today - enough to do far

more than Windows 2000 attempts. For example, window transparency is built in, but not used. This could be leveraged to give a radical new way of expressing Z-order on the Desktop. Z-order is the 'front-to-back' ordering of windows to express how recently you had used them. At present, we have 'foreground and everything else', with no differentiation on recently used items. I hear that Microsoft is experimenting with increasing the transparency of a window to indicate its Z-order age.



The inclusion of ClearType, which uses font dithering in colour, dramatically improves the readability of XP on a TFT colour flat-panel screen. With their rise in the business environment, there are big gains in perceived sharpness to be made and this matters when so much of our

daily information is read from the screen. DirectX 8, the 3D graphical-drawing system, has radically improved the games performance of Windows 2000 and DX8 is built into Windows XP. This is obviously very necessary for the Personal Edition

customers, a sector that includes many serious high-end games addicts. Justifying DX8 on the Datacenter version just brings forth wry smiles from senior Microsoft management.

The Web browser experience is much improved, too. The push to Internet Explorer 5.6 in the current Beta 1, with IE 6 being in place for the final release, gives Microsoft an exceptionally powerful XML-rendering technology and this will really matter with the ongoing work on

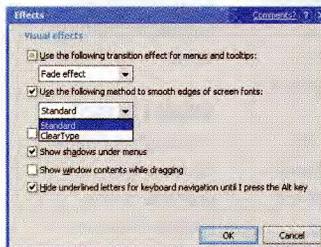
making desktops more natural and intuitive to use.

Yes, there is a raft of gotchas and other problems, but many of them are beta glitches which will be ironed out. Currently IE 5.6 seems spectacularly unstable on multimonitor installations, for example. Just when you thought you had a clear idea of where Microsoft was going, it changes direction again. Microsoft is undergoing yet another conversion, which will have a huge impact on the company and its users. The conversion is to XML, and having been late to the HTML/Web party, the company isn't about to make the same mistake again.

Take a look at what it's doing. It has dumped its entire development tools platform, replacing it with a completely new platform based around a new Just-In-Time compiler and run-time engine. The languages you put on top of this is up to you - Visual Basic, C++, C#, plus a myriad choice from third parties, ranging from Eiffel to Perl. Since the tools are changing, the whole Office suite is also changing to encompass this. Then there's the effect on all of the BackOffice server services. The BizTalk Server framework is just the start - it impacts SQL Server, Exchange Server and every-

thing else in-between. Then it hits the OS platforms too - desktop definitions in XML, and significant impacts on the next version of Windows.

It's a huge gamble, but one that I'm convinced Microsoft will



pull off. In two years time, it will have a development, deployment and implementation platform that's streets ahead of the competition. It will be a top to bottom, enterprise to single laptop and PDA vision.