

In 1996, Microsoft released Windows 95. They seem to have learned from this buggy experience, for the third beta of Windows 2000 is remarkably stable

We have grown to expect a beta release of a Microsoft operating system to have more changes and new features, than a complete version upgrade to a product shipped by another vendor. The new Windows 2000 Beta 3 (list price \$59.95) meets that expectation. In fact, if you consider that this beta is being sent to more than 650,000 users and is available to anyone via Microsoft's Corporate Preview Program, this release looks more like a shipping product whose code is still under development.

The most compelling reasons to switch to Windows 2000 are architectural, and

many pertain to services provided by Active Directory or the three flavours of the OS. There are mobile and roaming enhancements, reliability improvements, Windows Installer services, and new trouble-prevention and management tools. You will also find an update to the NTFS file system that introduces encryption, plug-and-play device detection and configuration, and new support for a wide variety of device types—including USB, Zip drives, infrared and digital cameras.

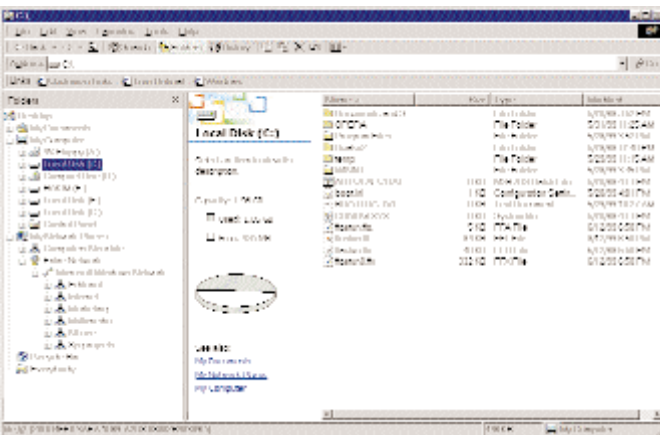
Microsoft expects this to be the last major beta of Windows 2000 before the final version ships probably this October).

User interface updates

In addition to the new underpinnings, surprisingly, there is a long list of small user interface changes that collectively enhance the tangible features of both Windows 98 and Windows NT 4.0. What is most striking about the Beta 3 'control surface' is that it is targeted at inexperienced users. In order to make the Control Panel the centre of customisation and setting changes, the developers have shuffled several elements around. This ensures that you have but one place to go when you want to make changes to, for example, the colour of your desktop, or even the memory address range your sound-

software

Beta Review



The new Explorer with 'My Network Places'

card uses. So for starters, Folder Options now appears as a Control Panel item. The same configuration screen (simplified from Windows 98) is on the new Tools menu of every Windows 2000 folder or Explorer window.

Going down the Control Panel-centric design path, a lot more changes come into view. Like the Printers and Scheduled Task folders that have been relocated from My Computer to the Control Panel. More than that, many hardware-configuration chores handled through Device Manager in Windows 98 are found in context on the Hardware or Advanced tab that is available for all applicable Control Panel applets, such as Sounds and Multimedia, Scanners and Cameras, Mouse, Display and Fax.

This is definitely a positive feature, since the Device Manager is buried a level deeper on System Properties' new Hardware tab. Most Control Panel applets also

now have a 'Troubleshoot' button that helps you solve problems. And the new Uninstall Driver option on many of the deeper configuration screens is a welcome break for system administrators.

The third beta will also appeal to first-timers, who now have several

novice-oriented user-interface features such as the Personalized Menu. This feature keeps track of the frequency with which you open programs and program folders—after a time it hides the less often used program icons and folders, so it is easier to find the program you use more frequently.

The Start Menu options screen provides ways to customise other aspects of the Start Menu as well, including turning on

or off cascading submenus for items like Control Panel, Favorites and Documents, among others. It also lets you display the Administrative tools on the Programs menu for those who do not want to retrain their memory, given that Administrative Tools is now located in... you guessed it, the Control Panel.

One utility that you might not notice at first is that you can configure your Start Menu to access any document or image file that you have placed on your hard disk—right from the Start Menu. As long as you keep your documents anywhere in the My Documents folder, you can cascade from the Start Menu right into those folders. Just place a checkmark beside 'Expand My Documents' on the Start Menu options dialog box.

Setup is easy

Whether you want to upgrade an existing NT 4.0 or Win 9x installation, or perform a clean install to an empty disk or partition, the setup in Windows 2000 is surprisingly effortless. But if you are planning to install Beta 3, be prepared to mess with

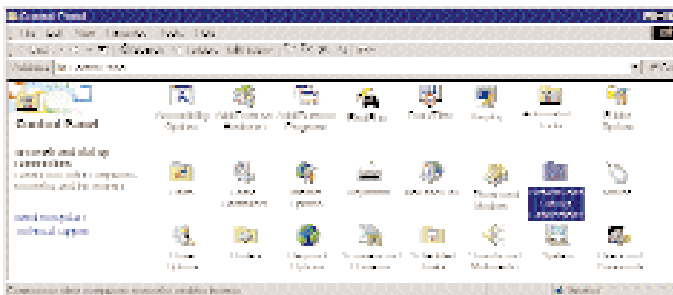
drivers or to do without a device or two until Windows 2000 ships.

Setting up a simple TCP/IP network is easier too. Windows 2000 offers a small LAN proxy server, called Internet Connection Sharing (ICS

is a variation on the same functionality offered in Windows 98 Second Edition). ICS can be added from the Windows Setup—it provides automatic IP address assignment, which helps with network configuration. ICS offers excellent benefits for small or home office businesses.

Reliability at last

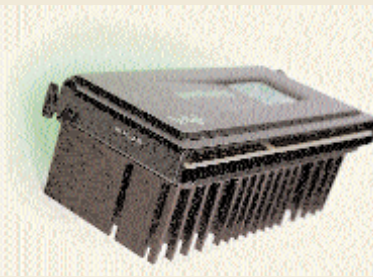
The most reliable Windows on the block is still improving. Microsoft is touting increased reliability in several areas, and many of the improvements are evident for the first time in Beta 3. For example, developers say they have eliminated the need for system reboots previously caused by system configuration changes. No need to restart Windows each time



Check out the new options in the Control Panel

NOT-SO-HARD REALITIES

Microsoft has issued tentative minimum system requirements for Windows 2000 with Beta 3 that may surprise you. For the Windows 2000 Professional desktop client, the minimum hardware requirement is a 166 MHz Pentium (or equivalent) or higher CPU, 32 MB RAM (64 MB recommended), and a 2 GB hard drive with at least 650 MB of free disk space. The server versions require at least a 166 MHz Pentium (or equivalent) or higher CPU with at least 64 MB RAM (128 MB recommended). With Intel architecture, Windows 2000 Server can



address a maximum of 4 GB RAM. The RAM requirements are right on the mark, but we recommend at least a 200 MHz Pentium or equivalent for the Windows

BETTER POWER MANAGEMENT

Windows 2000 is a big improvement over NT 4.0 in the power management department unlike NT 4.0, it actually has advanced power management (APM) features. It was possible to get rudimentary APM support in NT 4.0 with third-party utilities, but rudimentary was the operative word. Windows 2000 supports everything APM, and very robustly.

Open the Power Options icon in the Control Panel, and you will see a Properties page that bears a great deal of similarity to the one in Windows 98. The user can set different power schemes, such as Always On or Max Battery Life, each with its own customisable behaviour for shutting down hard drives, dimming the display or putting the entire PC on standby.

Alarms can be set to go off when power runs low, the Taskbar can show current battery levels, and behaviours for closing the case or pressing the computer's power button can be configured.

The power features are also security conscious: when you bring Windows 2000 out of hibernation or standby, you are asked for the user password before you can proceed.

Also new to Windows 2000 is hibernation support for laptops (with the new OS). Hibernation allows you to copy the entire contents of RAM to a file on the laptop's hard drive, then power the machine down. Next time the machine is powered up, the memory is restored from the hard drive and you pick up from exactly where you left off. The Standby and Hibernate options are also added to the Log off/Shutdown/Reboot menu if you have an APM-compatible PC.

ACPI improvements for Beta 3

Advanced Configuration and Power Interface (ACPI), a broad PC 98-required hardware standard for power and device management (basically an expanded version of Plug and Play), has

you change the drivers of a particular hardware.

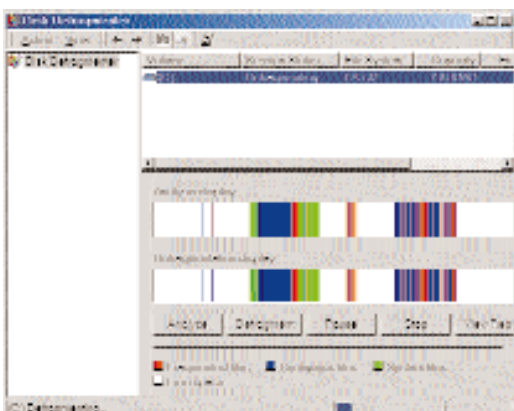
Some of the other fixes aim to eliminate problems caused by drivers. Windows 2000 offers improved kernel-mode write protection, lets the system mark occupied memory pages and prevents other processes from writing to them. This change should help avoid kernel-mode software, such as drivers or the operating system itself, from causing a

crash by trying to write to memory that is already in use.

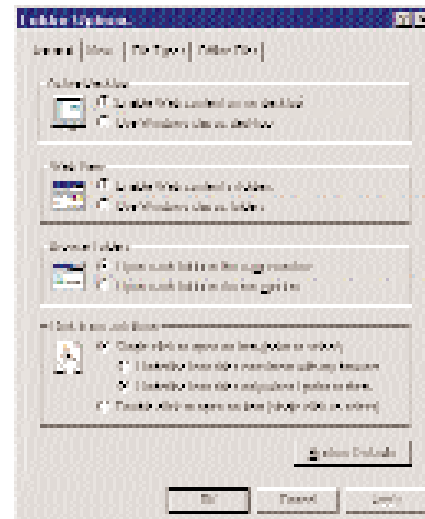
One of the biggest frustrations with NT has been Service Packs. Beginning with Windows 2000, the operating system will no longer require you to reinstall service packs after making base-level configuration changes to Windows or hardware. What's more, Microsoft has vowed to keep Windows 2000 service packs simple and bug-free, sans additional new features. Optional add-on packs and interim upgrades will add new functionality.

Trouble?

Windows 2000 has beefed up defences for more than just drivers. The new Windows Installer Service defines and enforces application setup. And this includes installing, repairing (recopying key files from the original install file or CD), uninstalling, program updating, and dependency tracking of shared software components (like spellcheckers). The Windows Installer is a great con-



Defragment at last in NT!



The new 'Folder Option' dialog box

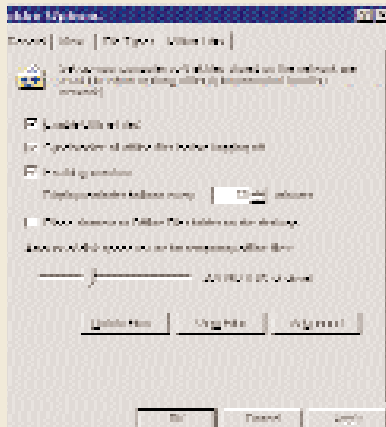
cept. The only drawback is that Windows applications have to be designed to take full advantage of it.

What about a dysfunctional application that you may want to purge from memory? The improved kill process tree in Task Manager no longer ends just a single offending process, but also terminates any processes started by the original routine. This means fewer problems get left behind, requiring fewer reboots. If something does go wrong, though, Windows 2000 offers an optional safe-mode boot that will be very familiar to Windows 9x users, while retaining NT 4.0's last known and reliable boot configuration as a viable alternative. There is even an optional command-line boot capability.

However, the best protection may come from Windows 2000's new System File Protection feature. This is the first tentative step toward ending a famous Windows condition that is come to be known as 'DLL Hell'. This feature keeps track of critical OS and application support files. Ever since Windows was born, some programs that you install have been overwriting system DLLs on other support files, apparently with newer versions of those files. The truth is, they sometimes overwrite these files with older versions and, at other times, with files that have been specifically tweaked to support that application—something that can wreak havoc on other programs. The older a specific version of Windows gets, the more vulnerable it is to this problem. Windows 2000 is the first Windows OS to do something about it.

OFFLINE FILE SYNCHRONISATION

Windows 95 and NT 4.0 featured the Briefcase, the first attempt at file synchronisation in Windows. Windows 2000 adds a Synchronize function that allows mobile users to update data on both a PC and a network. You can specify files or folders that are to be automatically kept



concurrent, so if you lose your network connection you can still work on a local copy of a file or folder. Synchronisation can be set to take place at prescheduled times, before logoff or shutdown, or after a certain amount of idle time.

Also, if the host machine is running Windows 2000, the administrator can decide how network-shared files are to be handled, like setting all files to be automatically made available of line when they are opened, or forcing the remote user to specify which files are to be made available of line. The technology can

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When installing an application, the support files can be installed in its own program directory, or even overwritten in your Windows folder and its subfolders. But when it does overwrite important system files in the Windows folder, System File Protection automatically writes the original version back over the new version. What if a new application needs a newer DLL? For the first time, Microsoft's Windows 2000 team has committed to issuing regular updates to shared DLLs.

Test results: the right road at last?

Yes! The third beta has improved installation features and was flawless on a standard Intel 333 MHz Pentium. Microsoft has come a long way in improving Windows 2000 over the last six months, delivering in large measure on its original promise for this major upgrade of Windows NT. The company has improved NT, and the proof is in Beta 3. It is much easier to set up and configure and somewhat easier to use, and supports a wide variety of devices and technologies. It does indicate that Windows 2000 is on track—and getting ready for the big time.

System Requirements

Windows 2000 Professional: At least 166 MHz Pentium (or equivalent) or higher processor; 32 MB RAM (64 MB recommended), 2 GB hard drive with at least 650 MB of free disk space.

Windows 2000 Server: Minimum 166 MHz Pentium (or equivalent) or higher processor; 64 MB RAM (128 MB recommended), 2 GB hard drive with at least 850 MB of free disk space.