

A tale of two servers

TERENCE GREEN COMPARES THE NEWLY RELEASED **NETWARE 5** WITH **WINDOWS NT 5.0**. WHICH ONE WILL BEST SUIT YOUR PURPOSES?

Suddenly we are spoiled for choice. Less than a month after Microsoft released the second beta of Windows NT 5.0, Novell shipped its NetWare 5 and IBM is preparing to ship Warp Server 5 next spring. A little over a year ago, the situation had seemed cut and dried. Novell had been losing money, NetWare was history, and Windows NT was moving on to put Unix in its place. Now, the situation has

changed. Unix is not only holding its own, but is also beginning to look interesting, even to long-time Microsoft partner, Intel. But NetWare is a real turnaround tale.

Dr. Eric Schmidt, formerly of Sun, moved into the hot seat at Novell, and within a year the company had moved back into profit and released a string of innovative new products. Now it has come up with a new version of the venerable NetWare server that runs Java and native IP. The timing isn't brilliant, though. With IT managers worrying about the

introduction of the Euro on 1st January 1999, and the Year 2000, major customers are not going to be in a hurry to deploy new server operating systems. However, given the likelihood that Windows NT will not ship before mid-1999 at the earliest, NetWare 5 has at least a year's grace — and it is Year 2000-ready. During this time it can travel along “shakedown street”, clearing those troublesome bugs that appear when a major product hits the market, regardless of the amount of beta testing that has taken place beforehand. Which is where Windows NT 5.0 comes in. The beta 2 (released last August) is, apparently, virtually feature-perfect except that Microsoft's Bill Gates does not reckon we will see it in the shops until mid-1999. Nevertheless, Windows NT 5.0 beta 2 is out at the same time as NetWare 5; so do we wait for NT 5.0 or go with NetWare 5 available now?

It is necessary to draw a distinction between Windows NT 5.0 Server and Windows NT 5.0 Workstation. One product, two versions? Not quite. The Workstation version might be built on the same kernel as the server, but you get more server features with Windows NT 5.0 Server. NT 5.0 Workstation will probably be a useful workgroup server in a small office network, but it is already possible to describe it, even in beta, as an excellent desktop operating system. It blows the socks off Windows 98 in terms of stability and reliability.

File server or print server?

Network servers can be divided into file and print servers, and applications servers. In the file and print market, NetWare 5 and Windows NT 5.0 have pretty much the same objective: to be the server of choice for Windows clients, since these

Illustration by Rachel Oxley

dominate the desktop. Novell pays more attention to Windows 3.x clients than Microsoft, whose gameplan is to focus on the 32-bit Windows desktops — Windows 95, 98 and NT. In the long run, Microsoft hopes to make NT Workstation the premier business desktop, and Windows NT 5.0 begins this process by providing far better management services for NT Workstation than it does for Windows 9X.

NetWare's file and print reputation is built on years of proven performance and reliability, but it was becoming long in the tooth. With NetWare 5, Novell has updated the backup system and produced a new 64-bit indexed file system (NetWare Storage System, or NSS) that, like Windows NT's NTFS file system, supports huge amounts of storage. NSS supports file sizes of up to eight terabytes and breaks the link between RAM and storage capacity that exists in the old NetWare file system, where more RAM had to be added as the amount of storage increased. NSS also mounts and dismounts drives very quickly and, as a journalled file system, it can quickly recover from a system crash by unwinding any uncommitted changes. Support for removable drives and autochangers has been updated, and Novell's backup tools have been replaced with a new utility that is backwards compatible with the NetWare file system. Backup includes agents for Windows 95 and Windows NT clients at the server.

NT 5.0 also has an updated file system with improved performance, and NTFS now supports dynamic volume management, file encryption, disk quotas [Fig 1], a defragmentation utility and a link-tracking facility that can help locate broken Windows shortcuts. A hierarchical storage system enables data to be aged and archived offline. Microsoft's own distributed file system is included which enables multiple drives to be presented as a single, logical sharename. This major new server-orientated feature in NT 5.0, which NetWare 5 lacks, will prove most useful to larger organisations with many users accessing multiple shared drives for which they wish to provide load balancing and resilience. Dynamic volume management enables disk volumes to be re-sized online, and disk quotas enable the use of shared drives to be monitored and restricted. NetWare has always supported disk quotas, and volumes can be enlarged online.

NT 5.0 Workstation

Microsoft is pushing NT Workstation on the business desktop, primarily to implement a bunch of money-saving desktop and software management technologies which cannot be fully implemented in Windows 98. NT forces a user

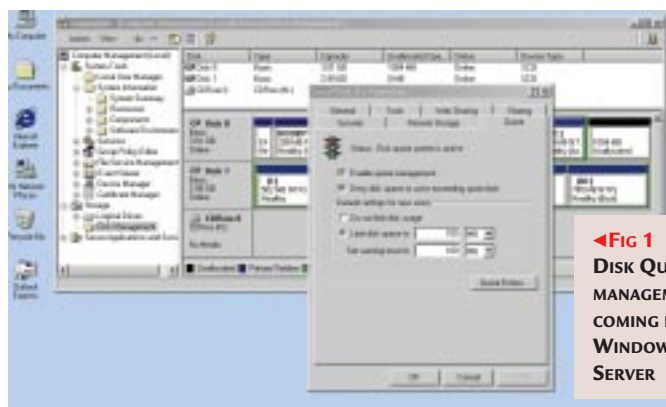
to log on with a password; Windows 98 doesn't. NT has a file system (NTFS) which supports access controls; Windows 98 doesn't. These are the basic reasons, but NT Workstation also has two great advantages over Windows 98: stability and reliability. And it supports symmetric multiprocessor systems. NT 5.0 Workstation will support the same age of hardware as Windows 98

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now does, and by means of a device driver model common to both operating systems, will enable peripheral manufacturers to deliver drivers for both, simultaneously. This has been a problem for NT 4.0 users who have often had to wait for drivers, or go without and boot into Windows 95 or 98 to use some peripherals.

The new peripheral support in NT 5.0 is great. When we installed a Diamond Monster 3DII graphics card and a Diamond Sonic Impact PCI sound card in a PC running NT 5.0, they were automatically detected just as they are in Windows 98. But, DirectX 6 support in NT 5.0 beta 2 is not yet complete and the drivers had to be manually installed. Currently, DirectX is seen as games-orientated, but once it ships in NT 5.0 it will enable business applications to add audio, graphics and video to the mix — for example, in conferencing, training and support applications.

All the new hardware devices such as DVD, IEEE 1394 (Firewire), Device Bay and Universal Serial Bus (USB) will be supported in NT 5.0 [Fig 2, p129], removing at a stroke a major dis-incentive to adopting Windows NT 4.0. USB is particularly important as it allows multiple USB devices to be attached via a single port or hub and they are self-configuring. We found it easy to attach and use a Microsoft USB keyboard and mouse.



◀Fig 1
DISK QUOTA
MANAGEMENT,
COMING IN
WINDOWS NT 5.0
SERVER

One of the main bugbears with Windows NT 4.0 is its lack of hardware support for mobiles and power management. NT 5.0 supports Advanced Power Management (APM), Plug and Play, PC Card (ex-PCMCIA) and Infra-red, and the Advanced Power and Configuration Interface enables the operating system to manage power and device configuration.

It's a better option than leaving it to the BIOS, as happens with APM and Plug and Play. As they are based on the same code, Windows NT 5.0 Server shares all of the hardware support of the Workstation version. The same goes for the updated user interface, the new wizards which step through hardware, printer and network connection setup, and the Computer Manager which collects all the local management tools under one roof. The wizards make life easier for new users at the expense of a few extra mouse clicks [Fig 3]. Those familiar with NT 4.0 will have to spend a little time un-learning the old ways, but the reward is far fewer configuration operations which trigger a system reboot.

The new user interface includes a bunch of web-based navigation features, special folders for Recent documents and a much-updated search function. The Start menu now remembers your most-used applications and puts them in a quicklist. Document types are automatically associated with applications as you use them, and the Start menu even works out which applications you use most and puts them at the head of the menu.

Mobile users will love the encrypting file system. It's not really a server feature, as servers should be protected from unauthorised access, but there are utilities which allow NTFS disks to be read on any desktop or client that can be booted from a DOS disk. If your laptop is stolen and you had the foresight to encrypt your confidential files, you can sleep easy.

Laptop users will also be able to work offline more easily thanks to client-side caching and the Synchronisation Manager, which replaces the largely useless Briefcase. Synchronisation Manager replicates network files to local drives for offline working, and synchronises them when next connected to the network. In short, Windows NT 5.0 Workstation fixes Windows NT for desktops and laptops. It's a shame Microsoft cannot ship it now and let Windows NT 5.0 Server come when it may.

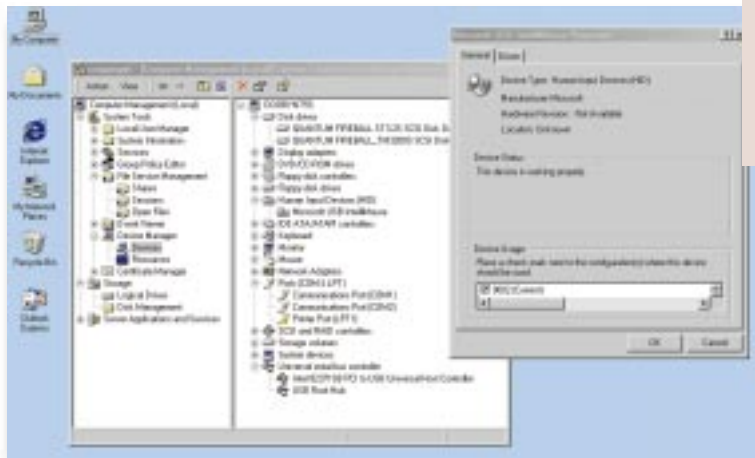


Fig 2 **HARDWARE MANAGEMENT WITH THE COMPUTER MANAGER SHOWING USB SUPPORT**

NetWare 5

NetWare 5 is the first version to support native internet protocol (IP) networking. NetWare 5 can run an open-standards IP-only network without a hint of Novell's proprietary IPX network protocol, or it can coexist with IPX. NetWare 5 also includes a Java environment, a Java-based administrative console called ConsoleOne [Fig 4, p130], and a standard set of internet services including

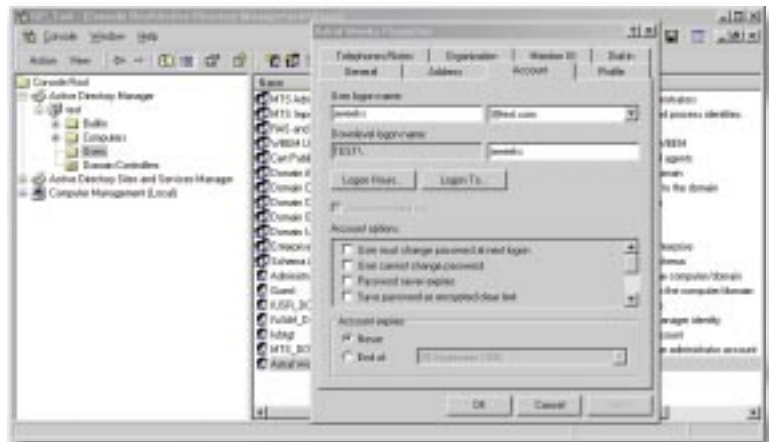


Fig 3 **ADDING A NEW USER IN THE MICROSOFT MANAGEMENT CONSOLE**

Netscape FastTrack web server and Netscape Communicator web browser. For management, NetWare 5 includes a subset of the Z.E.Nworks suite covering software distribution and workstation management. The full suite costs \$39 per client and has desktop asset management and administration, and helpdesk tools.

The new kernel of NetWare 5 supports multiprocessor systems [Fig 5, p130] and virtual memory, enables server applications to be prioritised, and allows applications to be loaded into protected memory (Ring 0) where, if they crash, they cannot affect the core server processes. Hardware detection at installation time, and support in general, has been enhanced. Also, the old monolithic storage and network drivers have been shunted aside in favour of the Host Adapter Module (HAM) introduced in NetWare 4.

The major new advance is support for Hot Plug PCI. NetWare 5 implements its core services, including NetWare Directory Services, via IP, but compatibility with NetWare 4.x and 3.x networks running IPX is provided through gateways. Novell's IPX-based Service Address Protocol, which advertises the presence of NetWare services to client workstations, has been replaced by a new Service Location Protocol based on IP standards. This enables NDS to be used to authenticate logins on intranets, extranets and the internet. Secure Authentication Services for NDS provides secure internet communications via the Secure Socket Layer and a framework for extending the cryptographic services when emerging internet standards, such as the public key infrastructure, are settled.

Domain Name Server (DNS) and DHCP (Dynamic Host Configuration Protocol) IP services are integrated with NDS in NetWare 5, along with a Catalog service which maintains a global database of IP names and host addresses. The catalogue can be queried by users or applications and can be used to control access to the network, based on IP addresses.

NetWare 5 includes a Java Virtual Machine and a Java development environment. Novell is betting the business on Java and this has two implications. At last, it's providing Novell with a credible applications strategy at the expense of being less mature and less widespread than Microsoft COM. And it also means that you now need a lot more memory on the server because the new storage system can cope with huge amounts of storage. With no more than 32Mb RAM, the Java environment means that you need at least 64Mb in a NetWare server. Novell is weaving Java into the fabric of the NetWare 5 server with NetWare services accessible through Java via published APIs, JavaBeans for NetWare, and a CORBA-compliant ORB (Object Request Broker). Scripting in JavaScript, Perl 5 and Novell NetBasic interpreter will also be supported.

Java is a fine match for NetWare because it provides the missing applications environment. But it also enables network application developers to provide cross-platform components which will run on many platforms, not only on NetWare. Beyond that, NetWare provides an additional benefit which will become increasingly important as extranets become widespread. Because NetWare 5 NDS is accessible through any Information Provider connection and can authenticate access to applications, companies can provide business partners such as suppliers and customers with selective, authenticated access to their internal applications.

Windows or NetWare?

The industry perception is that NetWare is the premier file and print server while Windows NT's forte is as an applications server. Windows NT 5.0 is certainly going to prove that. It would take an entire issue of *PCW* to explain the wealth of applications server features in NT 5.0 and the heavy focus on web-based applications backed up by transaction services. It's all good stuff, and there's an enormous amount of cross-support for



◀ **FIG 4** NOVELL'S NEW JAVA-BASED CONSOLEONE ADMINISTRATION UTILITY WORKS WITH NETWARE 5 AND EARLIER VERSIONS



▼ **FIG 5** MULTIPROCESSOR SUPPORT IS STANDARD IN NETWARE 5.0

the 32-bit Windows desktop [Fig 6, p132].

NT 5.0 also places a heavy emphasis on communications services and security. And, of course, Windows Terminal Server, a centrally-managed applications server for Windows-based terminals, is included.

The worry is that the more you invest in the Windows platform, the more you need. Take desktop management and applications distribution. NetWare 5 gives you basic facilities for Windows clients in the box with Z.E.Nworks Lite. If you want more, you can add the full Z.E.Nworks or purchase a third-party management application. If you also want to

Microsoft's current NT 4.0 Workstation business push

If you haven't used it before, now is a good time to investigate Windows NT because Microsoft is currently promoting NT 4.0 through a number of special pricing and upgrade offers. For the cost of a phone call you can try out Windows NT 4.0 Workstation with the Business Readiness Kit

CD. It includes a 120-day free trial version, new device drivers and updates, evaluation tools, and white papers. The Kit explains how Windows NT Workstation outperforms Windows 98 on the same hardware, and how it is the best client for both Windows NT Server and NetWare.

manage your Windows NT Servers through NetWare, you can invest in Novell's NDS for NT. These products are available today and they are all integrated with NDS.

At present, in order to do the same with Microsoft products, you have to follow the Zero Administration for Windows (ZAW) Kit guidelines (which work best if your client desktops run NT Workstation) and purchase Systems Management Server which includes Microsoft SQL Server. And, you may need to purchase another PC server to manage the load. Or you wait until NT 5.0 ships and install IntelliMirror, as the ZAW tools will be called. To provide a complete management solution, you must purchase System Management Server because, according to Microsoft, "machine objects and inventory do not benefit from being stored in a directory" (i.e. Active Directory). This seems to go against all of the claims for Active Directory, which Microsoft says is "the ideal long-term foundation for...common management of network resources".

Microsoft's strategy isn't really a secret — it would prefer you to have an all-Microsoft network from the desktop to the servers. But Novell has twice the installed base, so the company provides coexistence. Microsoft can also provide options for everything you need in the way of additional services to run your network the Microsoft way — groupware and messaging, proxy services, management, connectivity, database, web services, and applications.

Novell, with no desktop operating system or desktop applications, focuses on networking and associated services so they provide good support for the dominant Windows desktop client. NetWare 5 also integrates well with Windows servers, provides basic management services in the box, and communications support for WAN and internet connectivity. Additional management services and network applications



◀FIG 6 THE 32-BIT WINDOWS NETWARE ADMINISTRATOR WITH NETWARE 5 AND NETWARE 4

for messaging and groupware and for firewall/proxy services are available from Novell or third-party suppliers. A Netscape web server is included with NetWare 5 and a five-user version of the Oracle 8 database is free.

Unless you have hundreds or thousands of client workstations, the purchase cost is a minor

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Microsoft provides a jumbo pack of building blocks...

proportion of the overall cost of setting up and running the network. Novell's pricing is based on the number of clients. You purchase the base product for "x" number of clients and then purchase additive client licences as necessary. Clients can access any NetWare server provided its client count has not been exceeded. Microsoft has a more complicated arrangement where client access licences are required for each Windows NT Server to which it will connect.

Conclusion

It is up to the individual to decide which suits them best. Novell provides the basic building

blocks for a network which you can grow incrementally. Microsoft provides a jumbo pack of building blocks in a single package. Both platforms provide communications services and offer messaging groupware, firewall/proxy services and network management as extras. Both platforms are supported by a good range of network applications. For the company that needs a network server today, detailed comparisons taking into account what NT 5.0 will do in a year's time are a bit pointless. There is no saying where NetWare 5 will be in terms of comparable features by the time Windows NT 5.0 Server ships. As far as the client desktop is concerned, NT 5.0 Workstation cannot ship too soon: it's the Windows 98 you always wanted.

Novell NetWare 5 and Windows NT 5 recommended system requirements

	NetWare 5	NT 5.0 Server
Processor	Pentium 100	Pentium 166
RAM	64Mb	128Mb
Hard disk	1Gb	1Gb
Available	Now	mid-1999
Supplied by	Novell	Microsoft
Phone	01344 724100	0345 002000
URL	www.novell.co.uk	www.microsoft.co.uk

Prices (street price from Action Online www.action.co.uk):

NetWare 5. (five-user version) £550;

Windows NT 4.0 Server (five-user version)* £570

*Windows NT 4.0 is the currently available version