
Introducing NetWare 6

Despite Microsoft's dominance of the market, NetWare is still with us. And Novell's latest version of its flagship product is better than ever.

By David Norfolk

If NetWare 5 was the “pure IP” release, NetWare 6 is about Web Services and mobile computing. Fundamentally, however, NetWare 6 is a further step in the evolution of Novell's 32-bit file-and-print Network Operating Systems (NOS). It is not, though, 64-bit NetWare (aka Modesto), which is a complementary product still in development.

This analysis of NetWare 6 is based on the two-day Novell NetWare 6 First Class hands-on workshop (partnerweb.novell.com/partner/netware/nw6.html), given by Azlan (www.azlan.co.uk), using beta 2 code. The presence of debug code meant that performance was comparatively poor but the software was feature-complete and generally stable.

Installation

Installation of NetWare 6 is straightforward and uses sensible defaults, including use of Novell Storage Services (NSS) 64-bit architecture journaling file system. This now supports the SYS volume, as the NetWare core has been rewritten to use NSS journaling - hard disk change logging for recovery - for integrity, instead of the old transaction tracking facility. There is now no reason not to use NSS, although Novell's old file system is available if you want it.

Console One

One of the most obvious changes in NetWare 6 for experienced NetWare administrators is the decreasing emphasis on NWAdmin, NetWare's idiosyncratic but (when you know it well) extremely effective administration tool. Its immediate replacement is Console One, NetWare's Java-based and platform independent GUI administration tool, with added snap-in facilities. Console One can be slow unless you have a well-specified server. The days when NetWare would run fast and effectively on hardware a generation behind that needed for Windows NT are over - GUI administration tools and a directory database really eat up CPU cycles.

Novell recommends a 700 MHz Pentium III, 512 MB RAM, a 1 GB DOS partition and a 4 GB SYS partition on the server hard drive for a typical installation and, although it's not possible to assess performance based on beta code, this seems reasonable. On similar hardware, NetWare 6 is likely to be rather faster than Windows 2000 on file and print operations. One small point, however, which has been true for previous versions too: don't make the mistake of thinking that having a DOS partition means DOS has anything to do with NetWare as a NOS. It simply loads from DOS and once the server is running there is no DOS in memory or anywhere except as files (somewhat hard to get at from NetWare) in the DOS partition.

Web-based Management

The most exciting change for administrators is probably the arrival of Web-based management. Novell is committed to incorporating all of Console One's functionality in Remote Manager, previously the NetWare Management Portal. This is a powerful administration tool, ideally suited to an experienced network administrator who doesn't know NetWare well, and provides a superb user experience. For example, feedback is via traffic light symbols (red for broken, yellow for impending problem and green for OK) and there are impressive help facilities which tell you how to get a symbol that's turned red or yellow back to green.

Remote Manager is now just about fully functional. It is also, arguably, a potential security exposure since all that is between your network and the ability to dismount

vital volumes such as SYS is a little knowledge of NetWare and an admin password. This shouldn't be a problem, however, since you should already have a security policy in place, and procedures governing admin access, and NetWare is at least as secure, fundamentally, as Windows 2000. Nevertheless, increased accessibility does change your risk profile and if you've been relying on "security by obscurity", ie, assuming that no hackers understand NetWare, it's definitely time to review this.

Another exciting development is NetWare Web access, which might foreshadow the demise of the Novell client and an end to problems keeping it up to date with whatever Microsoft is doing (to say nothing of the confusion provided by Microsoft's subtly sub-functional NetWare clients). However, the client hasn't gone yet and may indeed never do so, although this must be a possibility. Client32 remains the best and most secure way to provide access in an all-NetWare system, and is needed for administration, but a new feature called "native file access" lets Windows clients share NetWare files using native CIFS. That's the Common Internet File System, the IETF standard for a platform-independent file sharing system based on Windows's low-level file system. This makes the presence of NetWare servers transparent to Windows users, subject to simple password control if necessary.

NSS File System

A more administrator-oriented innovation, or rather upgrade, is the NSS file system. This came in with NetWare 5 but early limitations precluded its regular use. It is a 64-bit journaling file system which now virtualises the hardware so, for example, any limitations as to how many partitions you can place on a drive are removed. As an aside, this implies significant internal changes during the development of NetWare 6, which now also handles multi-processor servers better (any modules that aren't multi-processor enabled are, at least, thread safe). This means that NetWare 6 is a significant update to NetWare, not just a cosmetic release, and you will want a period of parallel running and evaluation before installing it "live" and adopting its new features.

You will want NSS, however, because it can mount volumes almost instantaneously regardless of size and it doesn't require more RAM memory as volumes get bigger. It is altogether a better and more modern file system than Novell's classic file system. Now that it supports almost the full functionality of the classic file system, including compression and space allocation restrictions, and is far easier to install and administer than it was under NetWare 5 (using Console One instead of NWADMIN or NSS MENU) there is no reason not to adopt it. Another plus point is that NSS can now be configured dynamically without restarting NetWare.

If some of NSS's features, however, don't have an obvious application for you, remember that NSS is really targeted on providing clustering services and system reliance. The few things that NSS doesn't support aren't that significant: block suballocation isn't supported, but with a consistent 4 KB block size for NSS files, the overheads of wasting a half-filled block are small, for example.

Administrators used to tuning NetWare should be aware that classic file system tweaks won't apply to, and might impact, NSS by taking memory away from it. You must allocate NSS enough memory to itself to allow it to keep its core modules and cache in memory.

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Clustering And IFolder

Novell's clustering needs an article in itself. It scales to 32 nodes out of the box (although the license only covers 2 node clusters) and promises to work well, partly because NSS is properly cluster aware. You can even access clustered drives from several servers at the same time without risking data integrity.

IFolder is another of the new user-oriented facilities in NetWare 6. In essence it allows administrators to define an area of a user's hard disk - on a laptop perhaps - which is automatically synchronised with an equivalent area of the server whenever you connect. This "IFolder" is a directory which is personal to a specific user (the server copy of the content can be encrypted) but which is automatically backed up and is available wherever the user happens to be, perhaps from a simple browser connection. This will have many useful applications but there are issues associated with managing and tuning such a facility. It should overcome users' reluctance to

put data on the server where their rivals might be able to see it, but an encrypted backup is no backup at all if the user forgets their key or falls under a bus.

Users may also know that they have many GB of free space on their laptop and object to having limited iFolder space (default is 200 MB but increasing this impacts server storage). The solution to all this, of course, is to design your iFolder facility in advance to address identified user needs and then to sell it, in association with the appropriate disciplines and procedures, to your user community.

Novell's iFolder is more efficient than equivalent Windows 2000 utilities because it only copies "deltas" (changes) during synchronisation. However, be warned that this cannot work as you'd like it to with MS Office .doc files and possibly others. When Word updates a document it makes changes in a temporary file and then copies this over the old version when you save it - so if you modify a file, in practice a new file is always created and synchronisation will copy the whole file to the server, not just the changes. Bad news for network traffic, and there isn't much Novell can do about it.

However, the obvious issue of what happens when two people update local copies of the same file on the server is avoided by making the iFolder personal: only one person can update it. This restriction could, potentially, be removed, after some work to handle contention issues. For an idea of where the iFolder concept could be taken, look at eSupport from Previo (www.previo.com/products) - although remember this is an extra-cost PC support product and iFolder may provide everything you really need: access for mobile users to their data from wherever they are, and automated backup/restore functionality for disconnected laptops.

Printing

NetWare 6 also addresses printing for mobile users. Imagine that you arrive at a new overseas site overseas with your laptop and need to print something. Will it come out back in your home office, or will you simply not find a printer or find that you have inappropriate drivers? With NetWare 6 you simply access a Web site and click on a list of printers. This list can be presented as links from a Web page showing a hierarchy of linked graphics - a map showing company sites, linked to floor plans showing available printers (nothing complicated, just bitmaps and hotlinks).

You click on a printer shown on the map as near to where you are working, and the required drivers, if needed, are downloaded automatically. This is based on IPP (the Internet Printing Protocol standard) and Novell's NDPS (NetWare Distributed Print Services) so no new hardware is needed to enable this (and Novell provides a utility to assist with designing the Web pages you need).

NDPS was introduced in NetWare 5 but is now easier to install and configure. NetWare's Internet Printing provides an ideal way to transmit files around the business reliably, since it doesn't have the "store and forward" delays sometimes associated with email and, unlike fax, is fully integrated with the network infrastructure.

Still Going Strong

So, NetWare 6 looks pretty impressive. Novell has certainly not abandoned NetWare and has no intention of doing so. On the surface NetWare 6 is reasonably similar to NetWare 5 with added functionality, but underneath it is a major upgrade - the virtualisation of the NSS file system is a case in point. Assuming the launch is trouble-free (Microsoft can release design flaws and bugs which lead the FBI to warn of imminent Internet meltdown and its customers smile indulgently, but Novell's remaining acolytes will be less tolerant) the product looks good, although the beta releases are perhaps changing a tad more than one would like at this late stage.

There now appears to be no technological reason to abandon NetWare in favour of Windows 2000, and some compelling reasons to upgrade (the way NSS handles large files, for example), although some of what's useful in NetWare 6 can be retrofitted to NetWare 5.1 - which supports NSS, for example, apart from on SYS.

Futures

So why are so many people talking as though NetWare, and Novell, is finished? Boardroom mindshare for a start, and the fact that "XYZ is still using NetWare

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despite having installed some Windows 2000 workstations” makes for a dull news story. The CEO may have heard of Bill Gates, Microsoft and Windows 2000. He’s probably used a dual-processor 1 GHz NT workstation to read his email and now sees no reason why the same technology shouldn’t run the corporate network too (cue Dilbert cartoon). He has never heard of Eric Schmidt and certainly never knowingly used NetWare, even if it is actually running his network already.

Windows 2000 isn’t threatening, for the CEO to pay for or for the IT manager to ask for, and Novell’s purchase of Cambridge Technology Partners, a services consultancy which promises to market Novell solutions aggressively at Board level, hasn’t kicked in with any major results yet. More seriously, perhaps, Microsoft has bent over backwards to make Windows accessible to developers, in a way Novell has never managed with NetWare, so there are more applications available for Windows, Windows versions come out earlier, and Windows drivers may even have been tested more carefully. Similarly, Microsoft has a strong community of third-party utility providers, all providing the utilities Microsoft left out of Windows 2000/Active Directory and all predicting the imminent demise of NetWare. They have to, they have bet their future on Windows 2000, but at least Microsoft is unlikely to step on the providers’ toes by providing better utilities of its own.

Novell, in contrast, produces good utilities itself and always strives to make them better: it has sometimes appeared to be in competition with its own third-party supplier community and Novell solution consultants, even if this isn’t its intention. Nevertheless, when someone warns of the impending demise of NetWare always check for ulterior motives - income from servicing the Windows community and/or lack of knowledge and experience with NetWare - even if you realise that these ulterior motives can be quite compelling. So far so bad for Novell, but all is not black. Its directory, eDirectory, is more mature, more functional, easier to manage and more open than Microsoft’s Active Directory - it isn’t limited to its own NOS for a start and is available today for a range of platforms including Sun’s Solaris. Novell’s technology is excellent - even IT managers contemplating an imminent move to Windows 2000 usually appear to regret losing Novell’s technology.

Ideas

If you attend BrainShare events (Novell’s annual user conferences) it becomes clear that Novell still has a lot of good ideas to sell and NetWare’s Internet caching (now the basis of the Volara spinoff, www.volara.com), its clustering technology, its Directory technology, its 64-bit OS technology all attract interest. Also, you mustn’t forget that Novell claims 81 million NetWare users worldwide, which may explain why companies like Compaq have a high profile at BrainShare despite supporting Windows elsewhere.

NetWare is “pure IP” these days and has Web-based management. You don’t really need a NetWare client any more because “native file access” lets you access NetWare files seamlessly from Windows. The Novell eDirectory runs on a wide range of non-Novell operating systems. Utilities to migrate NetWare/directory to Windows 2000 (if you must) are available from third-party vendors such as Quest/Fastlane or NetIQ. So staying on NetWare isn’t much of a risk, and even moving to NetWare from other platforms offers benefits to balance any risk it introduces.

However, if Cambridge Technology Partners doesn’t grab the CEO mindset, and asking the bean counters for NetWare is just too hard, you can always consider the NetDevice storage appliance (www.novell.com/products/netdevice/) - software which you can run on any (compatible) hardware to give you an additional increment of storage space with its own IP address. You needn’t tell anyone that this advanced and fashionable “black box” solution to your storage problems runs a specially configured version of NetWare 6.

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