Is Microsoft* Really Going to Take You Where You Want to Go?

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COMPETITIVE WHITE PAPER

Novell® NetWare® 6: the answer to the next generation of corporate networking.

Novell®

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Is Microsoft Really Going to Take You Where You Want to Go?

This paper describes the limitations of doing business on a legacy network and provides a vision of how the next-generation network overcomes those limitations. It compares the network solutions provided by Novell and Microsoft, and illustrates that Novell delivers this vision today and Microsoft does not.

limitatioNs of legacy networks

Legacy networks do not provide the necessary foundation on which to build the network solutions that are so essential for businesses to succeed in the Net economy. That's because legacy networks have serious shortcomings.

CHAINED TO MY DESKTOP

From the user's perspective, network access is inconvenient and inflexible. A user can access the network from only a single workstation and that workstation must be located inside the firewall. Users are further "chained" to their workstations because they cannot access their applications and data on that workstation from anywhere except from the workstation itself. What's more, all user workstations must be running the same operating system (OS).

ACCESS ON THE ROAD—GOOD LUCK!

Legacy networks were not designed with the Internet in mind and did not anticipate the multiple ways users would need to access the network. Consequently, extending access from multiple devices and locations, especially those outside the firewall, is difficult and requires the addition of special virtual private network (VPN) software. As a result, accessing the network from outside the office is difficult and expensive.

IF I LOSE MY LAPTOP, I'M DEAD

Information is stored only on local hard drives. So files are frequently lost or damaged and that drags down user productivity. If a computer is lost, the information is gone forever. To try to mitigate the effects of file loss, users have to save documents on disks and on multiple machines, often on a daily basis. In addition, users have to resort to creative naming conventions in an attempt to keep up with the latest versions of documents.

STILL ON HOLD WITH THE IT GUY?

Because of the complexity of the network, problem resolution requires in-depth expertise. As a result, most users are unable to support themselves when they encounter problems. Instead, they call the IT department for help. Supporting these users requires highly trained technicians with advanced tools.

ADMINISTRATOR'S NIGHTMARE

From the administrator's perspective, the network is highly fragmented and extremely difficult to manage. Servers and user information is scattered across many different platforms on the network that don't interoperate. As a result, administrators have to deal with multiple databases for each user, making user account management cumbersome and error prone. In addition, administrators need

physical access to servers to perform many management functions.

PATCHWORK AT BEST

From the IT staff's perspective, integrating the many components of the network into a cohesive whole is difficult. That's because the network is made up of a patchwork of disparate systems that don't interoperate easily with older back-office systems and don't integrate securely with the Internet.

LICENSING BLACK MAGIC

Because licensing is charged both by device and by server, providing users with multiple devices results in huge cost increases and complicates license management. This makes predicting licensing costs a guess at best and often creates budgetary problems.

SWISS CHEESE SECURITY

The network administrators struggle to control access to information because they lack the necessary tools to accomplish the task. Add the Internet to the picture and problems multiply. Companies need to open their internal applications to the Internet, but this exposes them to serious security risks such as hackers, viruses and worms.

REMOTE OFFICE NIGHTMARES

Because the servers are scattered across wide areas, administrator productivity suffers. In addition, the IT staff has had to hire additional administrators to manage outlying servers, such as those in remote offices. What's more, user productivity suffers in remote offices because of the difficulty of network access.

LOTS OF SCATTERED SERVERS

Storage capacity is highly fragmented across many servers and locations. As a result, organizations cannot achieve efficient utilization and management of storage capacity. This wastes valuable resources and drives up already high networking costs.

BRING YOUR FORKLIFT

The inflexibility of legacy networks makes it difficult for the IT staff to keep up with the continual change required by today's dynamic business environment. Adding or updating network applications and services typically requires a complete rip-and-replace of desktop and server software, causing severe network disruption. The ability to add network resources and users is further hampered by the lack of scalability and reliability of available directory services. In addition, application platforms are typically proprietary. As a result, the organization is locked into a single vendor's platform and cannot take advantage of platform advances from other vendors without rewriting applications.

Legacy Network

Network architecture assumes that users access the network from a single computer that is located inside the firewall. Extending access to other devices, especially those outside the firewall, is problematic. The network is made up of proprietary systems that don't interoperate easily, either with each other or with the Internet, so integration is difficult. Management and administration is complex, and requires physically touching numerous servers scattered across the network.

Offsite Meeting

Adding new network services typically requires rip and replace of most desktop and server software, causing severe network disruption.

Network access is based on the assumption that users access the network only from workstations that are inside the firewall. Extending network access to users who are outside the firewall is problematic and requires special VPN software.

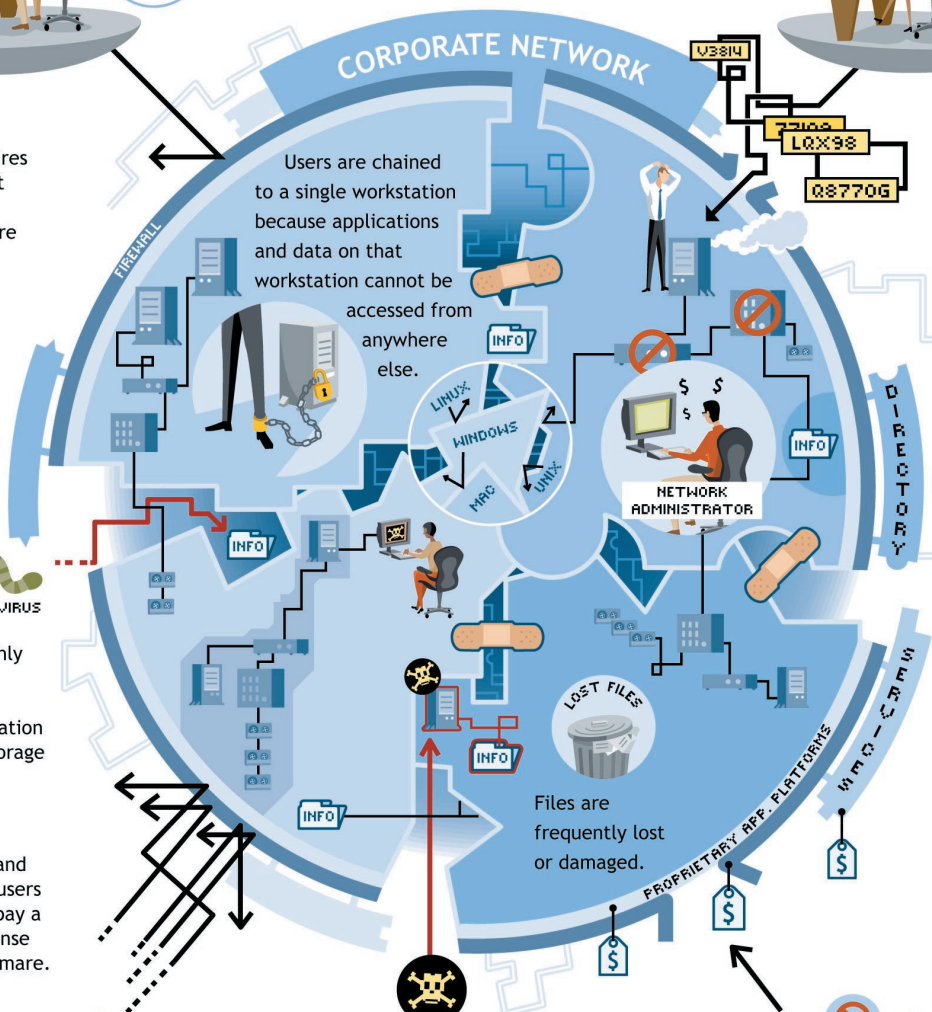
On the Road

Users must remember multiple passwords to access applications that run on different platforms or different directory services.

User information is scattered across different locations on the network, complicating user account management.

Networks are hindered by the lack of scalability and reliability of available directory services.

Customers are locked in to a single vendors application platform and cannot take advantage of platform advances from other vendors without rewriting applications.



Storage capacity is highly fragmented, so organizations cannot achieve efficient utilization and management of storage capacity.

Licensing is by device and device connection, so users with multiple devices pay a huge premium and license management is a nightmare.

Vacation

Access from devices other than desktop computers is limited and very difficult to implement.

Opening up internal applications to Internet access exposes organizations to security risks such as hackers, viruses and worms.

Remote Office

Network administrators need physical access to servers to perform certain management functions. This drags down productivity and may require the hiring of additional administrators to manage remote servers.

next-geNeration network

The next-generation network eliminates the shortcomings of legacy networks. The network is user-focused and allows companies to accomplish their business needs.

ANY PLACE, ANY DEVICE

In the next-generation network, users are no longer chained to their desktops. They can access the network from anywhere—inside or outside the firewall—at any time, using any device that has a browser capability. In addition, all user data is automatically synchronized across all the user's access devices. So users are always working with consistent and current information, and they see the same familiar environment—*regardless of the access device or location*.

OUTSIDE OR INSIDE THE OFFICE—NO DIFFERENCE

Remote office users can access all network resources just as easily as if the resources were local. Users aren't required to install special VPN software in order to connect to the network. And users can access all the resources they are authorized to use with a single username and password—*regardless of the platforms on which the resources reside*.

NO MORE E-MAILING FILES TO MYSELF

Users are able to get to their files from a Web browser and know they are getting the latest version. They can access their information anywhere with the same ease as if they were at the office. The files users work with are saved to their local computer as well as to the network, protecting valuable information from loss. As a result, users no longer have to grapple with cumbersome workarounds, such as e-mailing files to themselves or carrying backup diskettes wherever they go.

I'D RATHER DO IT MYSELF

Users are no longer at the mercy of complex networking procedures and foreign computer code. In addition, management functions are simplified to the point where users can perform many administrative tasks on their own. That takes a huge support and administrative load off the IT staff, freeing up their time for more strategic issues. It also increases user productivity because users don't have to wait for IT help.

ADMINISTRATION IN MY PAJAMAS

From the administrator's perspective, life is greatly simplified. The entire network can be run with a single directory—*dramatically simplifying management*. Moreover, network management is browser based and does not require administrators to physically touch servers to

manage them. So administrators can manage servers from any location using any browser-enabled device.

NETWORK PEACE AND HARMONY

Network integration is far easier for the IT staff. Network architecture is based on open standards, offering wide flexibility in selecting solutions and permitting seamless integration across solutions. The operating system supports all types of computers and devices. So users can access the network using any type of device, without requiring special software. In addition, the IT staff can extend internal applications to the Internet without jeopardizing security.

LICENSING MADE EASY

The network is licensed with the same philosophy as the network architecture; that is, the user—not the computer, server or handheld device—is the focal point. As a result, licensing models are based on the user and not on servers, connections or access devices. Companies can add computers, servers, devices and connections without penalty. In addition, administrators are equipped with built-in tools that help them quickly determine the number of users that require licenses. This frees administrators from spending countless hours trying to ensure that the network is license compliant.

HACKERS NOT WELCOME

Strong security mechanisms are built into the network right from the beginning, not as an afterthought. As a result, all network resources are secured from hackers, viruses and worms, ensuring high levels of availability.

NETWORK PROBLEM IN TOKYO?—ALREADY FIXED

Administrations have effective Web-based tools to manage remote offices from anywhere on the Internet. So they can manage remote network resources just as easily as if they were situated locally. In addition, users are able to handle many administrative functions on their own, further reducing the administrative load.

CENTRALIZATION MADE EASY

Servers are consolidated and centralized. For example, storage is consolidated into Storage Area Networks (SANs), allowing more efficient utilization of storage capacity, permitting a higher level of scalability and ensuring higher availability of data.

NO MORE RIP-AND-REPLACE

It's easy to add and update applications and services to meet changing business requirements. Web applications are based on cross-platform open standards such as Java and popular open source Web infrastructure, so the same application can be deployed on different platforms. New devices and applications can be added dynamically—*without disrupting network service*. And the directory has virtually unlimited scalability, allowing the easy addition of network resources and users.

Next Generation Network

The network is user centric, so users can access it from any device and any location—and still experience the same familiar environment. Servers are centralized and administered from anywhere on the Internet, greatly simplifying management to the point where users can perform many administrative tasks on their own. Network architecture is based on open standards, offering wide flexibility in selecting solutions and permitting seamless integration across solutions.

Offsite Meeting

An organization can run its entire network with a single directory that has virtually unlimited scalability—dramatically simplifying management.

All user data is synchronized across all the user's access devices, so users are always working with consistent and current information—regardless of the access device or location.

New devices and services can be added dynamically—without disrupting network service.

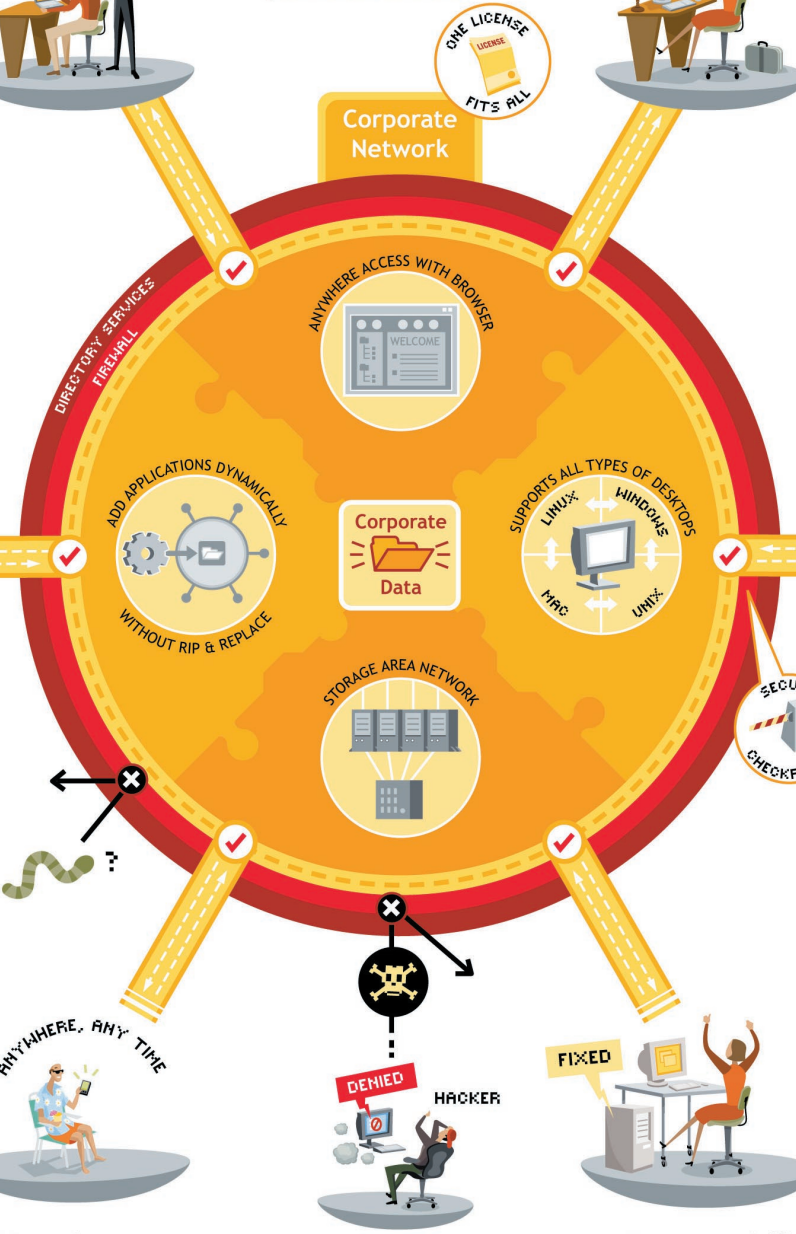
All network services use standard Internet protocols, so access does not require any special client software.

On the Road

Users can access all the resources they are authorized to use with a single username and password—regardless of the platform on which the resource resides.

Internal applications are extended to the Internet, so that users can get to all the information they need, from anywhere and at any time—without jeopardizing security.

The operating system is client independent, so all client types can access the network without special software.



Web applications are based on cross-platform open standards such as Java and popular open source Web infrastructure, so the same application can be deployed on different platforms.

Storage is consolidated into Storage Area Networks to simplify management, ensure efficient utilization of storage capacity, permit a high level of scalability and provide high availability of data.

Network management is browser-based and administrators need not physically touch network resources to manage them. This enables management of all resources using any browser-enabled device from any location.

Vacation

Users can access the network from anywhere, at any time, using any device with a browser.

All network resources are secured from hackers, viruses and worms.

Remote Office

Remote office users can access all network resources just as easily as if the resources were local.

Microsoft Windows—legacy or next-generation Network?

The Microsoft Windows* operating system is based on a desktop operating system and is certainly not the foundation for a next-generation network. As a result, organizations that deploy it remain mired somewhere between a legacy network and a next-generation network.

WINDOWS OR ELSE

Windows does not free users to access the network from any location using any device. That's because it has been designed with only Windows components in mind. It operates with proprietary protocols that lock organizations into a Microsoft-or-nothing future. To gain full advantage of Windows 2000 features requires users to access the network from Windows 2000 Professional computers. In addition, although Windows 2000 can be configured to support Macintosh computers, it requires an add-on product to support UNIX clients.

WORKING AWAY FROM THE OFFICE?—BETTER CALL FOR HELP

Remote or mobile access with Windows 2000 Intellimirror Offline Files (IOF) requires direct connections, via either modem or VPN. This, in turn, necessitates administrative implementation of either a RAS modem pool or VPN software on both servers and clients.

I CAN SET UP YOUR PRINTER NEXT WEEK

Users are at the mercy of the IT staff to get even the simplest of jobs done. Setting up a printer, for example, requires knowledge of the printer's name and its unique network name. In the event the printer fails, users have to call the support desk to get it back into operation. As a result, the IT staff is under constant pressure to help users. This places the staff in a reactive mode that leaves little time to address more strategic issues.

DON'T FORGET TO E-MAIL YOURSELF THE PRESENTATION

Users cannot get to their documents from a Web browser and are forced to create clumsy workarounds, such as e-mailing documents to themselves or carrying diskettes wherever they go. These workarounds create additional problems such as the inadvertent deletion of important files because users have lost track of which version is the latest. Users are told to save their documents to the network to take advantage of backup, but they don't heed the advice because they can't

access these documents when they are not connected to the network. The resulting lack of adequate backup puts valuable data at risk.

ANOTHER WEEKEND AT THE OFFICE

Because Windows 2000 is built on a desktop operating system, it is difficult to keep it performing at the level required by today's business network requirements. The servers require a lot of attention and are difficult to administer. So administrators spend a lot of time rebooting the servers and helping users that can't help themselves. In addition, security holes require continual monitoring and continual installation of new security patches.

FORGET BEST OF BREED

Perhaps the most damaging shortcoming of Windows 2000 is that, although Microsoft has belatedly adapted its operating systems to networking and Web technology and is working on its own *.Net* Web services initiative, the company continues to pursue a course of proprietary standards. Microsoft claims to embrace open standards only to hijack them and pervert them into proprietary standards. As a result, to take full advantage of Windows 2000 capabilities, the IT staff must lock in to an environment that consists entirely of Microsoft products. That severely limits the choice of solutions by making it difficult to integrate with solutions from other vendors. In fact, Progressive Strategies notes that the potential disadvantages of lock-in to an all-Windows environment is the single-most compelling drawback to moving forward with a network based on Windows 2000 Server.

FORCED UPGRADES EVERY YEAR FOR EVERY MAN, WOMAN, CHILD, DEVICE AND SERVER

To make matters worse for the IT staff, Microsoft's licensing schemes are complex, making management and compliance extremely difficult. An organization must purchase licenses for clients as well as separate licenses for all servers on the network. And that's still not the end. Microsoft is changing over to licensing on a subscription basis. After that happens, when a license expires, the customer will have to make additional license purchases—and that means additional expense. When customers are forced over to the subscription model, they will have to pay every year, regardless of whether new features are released or not.

According to Neil MacDonald of Gartner[1], "Microsoft has been using changes in licensing terms as a way to generate revenue for years. It allows Microsoft to come in under the radar screen with something not as blatant and obvious as raising the prices." He warns Microsoft customers to expect even more aggressive licensing changes in the future. "People should expect more of this. Our guidelines to our clients are that at least for 2002, they can look at their budget for Microsoft software and add 40 percent per year compounded." He adds, "If you don't have enough more to offer, you're going to squeeze more out of the people using your products."

CALL THE DOCTOR, WE'VE GOT ANOTHER VIRUS

Windows NT* and Windows 2000 have been widely criticized for gaping security holes that open the

[1] Microsoft Customers Balk at License Changes, CNET News.com, Joe Wilcox, September 20, 2001.
[2] "Drop Microsoft IIS now" by Wendy McAuliffe, *ZDNet* (UK), September 25, 2001.

door to vandals, hackers and viruses. For example, these environments are highly susceptible to viruses and worms such as Nimda and Code Red.

An article in *ZDNet News* states, "With the emergence of the Nimda worm—the latest in a long series to attack Microsoft's Internet Information Server (IIS) and other software—Gartner believes it's time for businesses with Web applications to start investigating less vulnerable Web server products." A *ZDNet* (UK) article reports that Gartner recommends replacing Microsoft IIS with servers that are less susceptible to attacks.[2] Gartner recommends Web server software such as iPlanet* and Apache, which have much better security records than Microsoft IIS and are not under massive attack by the majority of virus and worm writers.

In an attempt to plug the security holes, Microsoft continually releases patches and updates. That means organizations need to install numerous patches and service packs on virtually every server and PC running Internet Explorer (IE), IIS Web servers and on all desktops running Outlook* Express e-mail clients. According to Gartner, patches come out almost weekly. Implementing every patch necessary to maintain protection drives up ownership costs dramatically.

WHO CAN WE CALL IN THE TOKYO OFFICE TO REBOOT THE SERVER?

Administrators are required to be on location at remote offices because of the complexity of the servers and because the servers require physical attention. Since administrators are scattered around the network, management of the network is less disciplined and network integrity declines.

SCALABLE?—DON'T THINK SO

Windows 2000 only partially supports storage consolidation. The Windows 2000 Server environment limits storage planning to the physical storage capacity currently available. To add capacity requires considerable system reconfiguration. Furthermore, the editions of Windows 2000 Server that permit attachment of SANs require separate third-party products to manage them. And that's not the only limitation to scalability. To get two nodes of clustering requires moving up to the more expensive Windows 2000 Advanced Server. Then, if more than two nodes are required, an organization must move up again, this time to the most expensive version of Windows 2000 Datacenter Server. And even that only gets the cluster to four nodes.

SAME OLD RIP-AND-REPLACE

The IT staff will find it difficult to upgrade to Windows 2000 because upgrading requires a rip-and-replace of the current network environment. Upgrading to Windows 2000 Server, even from the previous version of Windows (NT 4), ultimately requires the replacement of all servers and workstations with new equipment, operating systems and applications. If users need new features or services, the IT staff must get ready to replace every desktop and server. The products are tied together, which aggravates the problem. So to get the products it needs, an organization will also have to pay for many that it doesn't want or need.

building the next-generation Network with NetWare 6

Unlike Microsoft Windows, NetWare 6 is indeed the complete solution for the next-generation corporate network. NetWare 6 allows companies to achieve their business inititiatives and delivers the value companies require in today's business environment.

FREE AT LAST

With Novell® next-generation network technology, users are no longer chained to a specific computer. Features such as Novell iFolder™, iPrint, Native File Access, iManager, NetWare Remote Manager and NetWare WebAccess allow users to work from any location and any device. And they can access all resources they are authorized to use with a single username and password.

REMOTE FILES ARE AS CLOSE AS A WEB BROWSER

With NetWare WebAccess, users can securely access all their information from any computer using only a browser. It's as easy as getting their stock quotes from the Web. There's no special setup or VPN software required.

HOME, OFFICE, REMOTE—ALWAYS CONSISTENT

Novell iFolder eliminates the hassle typically associated with creating, storing and managing files across multiple devices and locations. With iFolder, users access their files effortlessly from any computer and any location. All they need is a browser. What's more, Novell iFolder provides users with automatic, secure and transparent synchronization of files between their hard drives and the Novell iFolder server to ensure the complete backup and consistency of all the user's information—regardless of access device or location.

USERS HELP THEMSELVES

iPrint enables users to print effortlessly to any printer that they are authorized to use—regardless of its location. Users locate the printer they want from a map of their building, point and click on the printer icon, and they are done. iPrint does the rest, including automatically loading the print driver if necessary. iPrint makes Internet printing a reality by allowing users to find the right printer, automatically receive the right printer driver and, with a click of the mouse, send the job to that printer. This point-and-click setup for printing significantly reduces help desk calls.

ADMINISTRATION FROM THE BEACH

Users are not the only ones to benefit. Administrators enjoy the advantages of single-point administration through the directory. They can manage the network from anywhere using productivity-enhancing tools such as the browser-based Novell Remote Manager and iManager. With

these tools, network administrators do not have to touch servers physically to perform management functions, and they can work from any client that is equipped with a Web browser.

ALL PLATFORMS SUPPORTED

Novell technology supports all major industry standards, including communication protocol standards, file access protocol standards and directory standards. So organizations are not at the mercy of a proprietary, single-vendor solution. They are free to choose the solutions that best meet their business requirements. In addition, access is client independent. This provides out-of-the-box networking capabilities for any computers running Windows, MacOS, UNIX*, Linux*, or from any Web browser—without the need to install any special client software.

LICENSING—COUNT YOUR USERS AND YOU'RE DONE

The NetWare licensing model reflects the Novell network model—the user is the focal point of the network. Unlike a legacy network that licenses by device and by connection, Novell licenses by user. This greatly simplifies license administration, placing compliance information at the administrator's fingertips. With NetWare licensing, companies can add as many servers, computers, connections and devices as users require, without being charged additional licensing fees.

NETWARE AND VIRUSES?—NEVER HEARD OF ONE

The words "NetWare" and "virus" are rarely, if ever, mentioned in the same sentence. That's because NetWare is built with security as a fundamental architecture component. NetWare also utilizes secure socket technology to provide even greater security. In addition, Novell pioneered the network directory concept, and the directory makes it possible to provide fine-grained access control to all network resources.

POINT-AND-CLICK ADMINISTRATION FROM ANYWHERE

Browser-based management tools such as NetWare Remote Manager and iManager virtually eliminate the need to dispatch administrators to remote offices. That's because administrators can manage remote offices from anywhere on the Internet.

32X32 SCALABILITY AND A BILLION OBJECTS TO BOOT

NetWare 6 provides companies the scalability they need to consolidate and simplify their networks by supporting multi-processor servers (up to 32 processors) and storage area networks (SANs) with up to 32 clustered servers. Novell Storage Services™ provide next-generation file services that enable consolidation of resources into SANs that can support almost unlimited files. Novell Storage Services also allows companies to better manage their storage space by giving them the flexibility to pool their existing storage space and even dynamically add additional disk space as needed.

NetWare 6 is based on a directory—Novell eDirectory™—that has the kind of capabilities a next-generation network needs. eDirectory is mature, having been field proven by over 230 million users worldwide. And its scalability is virtually limitless. It can grow to over one billion objects in a single tree.

THROW THE FORKLIFT AWAY

The beauty of Novell next-generation network technology is that organizations can incorporate it into their current network environments, leveraging what they already have—*without ripping and replacing*. For example, NetWare customers can add a single NetWare 6 server to take advantage of Novell iFolder or iPrint—without upgrading all the other NetWare servers.

SUMMARY

When considering upgrading their networks, organizations need to choose the path that leads all the way to a true next-generation network. They do not want to choose a path that leaves them stranded part of the way.

With this in mind, NetWare 6—a true next-generation network—is the obvious choice. NetWare 6 provides all the next-generation capabilities that both users and the IT staff need to help their companies seize the opportunities presented by the new Net economy.

NetWare 6 gives users the freedom they need to take full advantage of technology to help them do their jobs effectively and with maximum productivity. No longer chained to their workstations, users get full access to the network from any device, in any location and at any time.

NetWare 6 also gives the IT staff, including network administrators, the capabilities they need to ensure that the network is delivering the functionality, availability and performance their company needs—all while reducing the cost of managing and maintaining the network. Most importantly, the IT staff can move into NetWare 6 without the trauma of ripping and replacing their current infrastructure—and without having to bet the future of their company on a single vendor's solutions.

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