

Why Move from Windows NT* to SUSE. LINUX?

It's All About Choice, Flexibility and Increasing Business Value

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WHITE PAPER

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Overview

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According to IDC, as of the end of 2004, there were 2.4 million servers (or 17.2% of the Windows* installed base) running Windows NT* Server.¹ During 2005, Windows NT Server users have a decision to make regarding their upgrade path. They can *migrate to Linux** and take advantage of the reliability and security of Linux. Or they can upgrade to Windows Server 2003 and then follow a path of upgrades and service pack (SP) installations to Windows Longhorn Server over the next three to four years, while losing revenue from multiple disruptions in business.²

Support for Windows NT ceased on December 31, 2004. Microsoft will provide custom support for Windows NT Server through the end of 2006. Customers can contract for custom support at \$200,000 per year per company.³ Security fixes rated “important” and higher will be included as part of the custom support (meaning security fixes are not free). But some security patches will not be made available and security improvements such as those included in Windows Server 2003 Service Pack 1 (SP 1) will not be made available to Windows NT Server users.

One of the major issues facing Windows NT Server users (and all current and future users of Windows operating systems) is what to do about the lack of security in Windows operating systems. Windows was not designed with security in mind. Operating systems such as Linux with a UNIX* heritage have access/control and security features that make it difficult for intruders to install software such as spyware and viruses. While Microsoft is working to improve security through various service packs, they contain add-on security features for code that was developed as long as 10 years ago—when security was not a priority for Microsoft. Windows Longhorn Server

will almost certainly suffer from the same types of security vulnerabilities that its Windows predecessors do today.

As if there were not enough problems for Windows NT Server users, a recent Gartner survey of 485 companies in the United States and Europe indicated that “users consider hardware reliability, OS reliability/stability and OS security as the most important server attributes. Less-important attributes are development environment, application portfolio, ease-of set-up/configuration and server management tools.”⁴ Reliability and security are operating system features that are generally considered strengths of Linux and

¹ Source: IDC, *Worldwide Windows Server Operating Environments 2004–2008 Forecast and Analysis: Growth Continues, Version Granularity the Story for Tomorrow*, IDC #31198, April 2004.

² *Windows Longhorn Server is the next major Windows Server operating system release. It has a 2007 projected availability date. Uncertainty over the availability of Windows Longhorn Server is making some software buyers reluctant to purchase anything new from Microsoft for fear that it will be outdated when delivered.*

³ “Microsoft Enhances NT4 Custom Support, but Deadline Remains,” *Gartner Research*, G00125220, December 3, 2004.

⁴ *The Future of Windows in the Data Center*, *Gartner Data Center Conference*, November 30, 2004–December 2, 2004, Las Vegas, Nevada, page 14.

weaknesses of Windows. Gartner also noted that “The continuing maturing of Linux combined with active vendor involvement in its forward progress will drive its functionality and performance to good-enough parity with UNIX and greater overall innovation and functionality than Windows during the 2008 to 2010 time frame (0.7 probability).”⁵

Enterprises that adopt Windows operating systems are depriving themselves of the functionality and innovation of open source software such as the Firefox browser with its many innovations that are not available in Microsoft* Internet Explorer (IE). It is impossible for one company, such as Microsoft, to produce the level of innovative software (and with the speed) that thousands of open source developers at companies such as BEA, CA, Fujitsu, Hitachi, HP, IBM, MySQL, Novell, Red Hat, SAP and Sun, and many individual developers can develop collaboratively. Enterprises that deploy Windows generally use only software that Microsoft provides—they have to wait for Microsoft to provide enhancements for Windows-based software.

Migration from Windows NT Server to Linux can be strategized in terms of the merits of vendor neutrality versus vendor lock-in. Linux provides choice of hardware vendors and choice of Linux distributors whereas Windows users are locked in to Microsoft. The drivers for migrating to Linux have to do with architectural decisions and a drive toward open standards and security.

This Novell® *White Paper* articulates the business value of migrating from Windows NT Server to Linux. We do this by:

- Describing the status of Windows NT Server
- Discussing the alternatives that Windows NT Server users have
- Describing why migrating to SUSE® LINUX Enterprise Server 9 is the most compelling Linux alternative—one that provides choice and flexibility, while satisfying customers’ business needs with little or no disruption during upgrades, and provides the highest business value at the lowest cost.

STATUS OF WINDOWS NT

By the end of 2005, IDC predicts about 53% of the Windows NT servers currently in use (about 1.26M) will be upgraded to another operating system—Linux or a Windows platform (most likely Windows Server 2003).⁶ Overall, the number of Windows NT Server users is decreasing rapidly from 2.4M in 2004—to 1.1M in 2005, 0.43M in 2006 and only 27,000 in 2008—and Microsoft’s interest in supporting Windows NT Server is dropping just as rapidly.

Many of the security problems in Windows NT Server can be traced back to Windows code that was developed before use of the Internet became pervasive (Windows NT Server was introduced in 1996). Only recently, after four or five years of spiraling increases in Internet activity, has Microsoft become concerned about security. Even the security enhancements in Windows Server 2003 SP1, if they were going to be made available to NT users (and they are not), would not improve security around most of the Windows code currently in use.

Windows NT Server users cannot benefit from 64-bit computing as more and more independent

⁵ *How will the UNIX Vendors Defend Their Market from Top-Down and Bottom-Up Attack?*, Gartner Data Center Conference, November 30, 2004–December 2, 2004, Las Vegas, Nevada, page 6.

⁶ *op cit.*

hardware vendors (IHVs) and independent software vendors (ISVs) shift their emphasis to 64-bit platforms based on AMD Opteron* and Intel's EM64T and Itanium* 2 architectures.⁷ They also cannot benefit from performance enhancements made available in Linux and even in newer Windows operating systems—some of which are related to 64-bit computing and some not related.

A serious problem that Windows NT Server users are facing, and will face more and more if they do not migrate, is diminishing ISV support. ISVs tend to drop support for operating systems that are disappearing from use and no longer contribute to their revenue stream. On the other hand, ISVs are rapidly porting applications to Linux. For example, more than 2,100 software applications (a fraction of the ISV applications available on Linux) have been built by ISVs using IBM software alone.

One final issue that Windows NT Server users face is the difficulty in obtaining device drivers for new devices such as printers, multimedia devices, SCSI controllers, etc. Third party vendors are no longer writing Windows NT Server drivers for new devices.

WINDOW NT SERVER USERS HAVE MULTIPLE ALTERNATIVES—BUT ONLY TWO MAKE SENSE

With the end of technical support for Windows NT Server, customers are forced to make a choice.⁸

There are four options available to today's

Windows NT Server users:

1. Stay put and upgrade to Windows Longhorn Server when it becomes available (most likely in 2007).

2. Migrate to UNIX.
3. Upgrade to Windows Server 2003 (and then upgrade again to Windows Longhorn Server in 2007).
4. Migrate to Linux.

The largest issues that Windows NT Server users face that decide to stay put are loss of competitiveness, inability to meet business needs and inability to meet market demands.

Only in unusual cases would Windows NT Server users consider migrating to UNIX. Generally, they would not migrate because of the higher cost of hardware platforms (unless the migration is to Solaris* x86), cost of system administration (some TCO studies have shown that the cost of administering UNIX is about double that of Windows (and Linux)), cost of re-training, etc.

Microsoft has suggested that Windows NT Server users could use Microsoft Virtualization Server 2005 as a migration path to Windows Server 2003. In this scenario, customers would run multiple Windows NT servers in a virtual environment that is sitting on a single hardware box running Windows Server 2003; however, using Microsoft Virtual Server 2005 is only a temporary move until Windows NT Server applications are migrated to run natively on Windows Server 2003 or Windows Longhorn Server. Even though Windows NT Server applications would be running in a virtual environment, they are still vulnerable to the threats of viruses and unexpected intruders.

Thus, the user is left with two realistic alternatives:

⁷ Windows operating systems are not available on IBM's POWER* architecture, including OpenPower (Linux is).

⁸ Upgrading to Windows 2000 Server is not considered a realistic option for Windows NT Server users, because Windows 2000 Server is very late in its life cycle, and Microsoft has announced that it will end support for Windows 2000 Server in 2006.

1. Upgrade to Windows Server 2003.
2. Migrate to Linux.

UPGRADING TO WINDOWS SERVER 2003

At first glance, Windows Server 2003 appears to be the logical successor to Windows NT Server, and for some users, it will be. Windows Server 2003 security is better than the security of Windows NT Server, but it has been much less secure than Microsoft promised. It has many of the security problems that plague older Windows operating systems.

Microsoft has two approaches to upgrading from Windows NT Server to Windows Server 2003: upgrading without Active Directory* and upgrading with Active Directory.⁹ To get the most from Active Directory, Windows NT Server users would have to rip out their entire NT domain structure and replace it with Windows Server 2003 Active Directory. Additionally, many Windows NT Server applications will not run on Windows Server 2003. For example, a company running Exchange NT would have to upgrade both its servers and its e-mail application to the Windows Server 2003 platform, thus requiring multiple expensive hardware purchases.

Upgrading from Windows NT Server to Windows Server 2003 may also require device driver and memory upgrades. Microsoft also recommends a clean installation when moving to Windows Server 2003 versus an upgrade to ensure improved disk efficiency and correct configuration management (for high availability systems).

Users who migrate from Windows NT Server to Windows Server 2003 during the next year and want to keep up with technology advances that

affect security, performance and availability of software are faced with installing some or all of the software in the Windows Server 2003 roadmap:

- Microsoft Virtual Server 2005—available in 1Q05
- Windows Server 2003 SP1—available in 1H05
- Windows Server 2003 64-bit Extended Systems Release for Opteron and EM64T—available in 1H05 and built on Windows Server 2003 SP1
- Server Performance Advisor Feature Pack
- Windows Update Services Feature Pack (formerly known as Software Update Services)
- Windows Server 2003 Release 2 (R2)—scheduled for availability in October 2005 (built on top of Windows Server 2003 SP1)

Windows Server 2003 R2 is intended to fill the gap between Windows Server 2003 and Windows Longhorn Server. While service packs are available at no charge, the R2 update is not free. Companies that bought individual licenses for earlier Windows server operating system products will have to buy a new license for R2. Customers who have purchased Software Assurance, Microsoft's software maintenance plan, will receive the update at no extra charge.

Windows XP SP2 is difficult to install, leading to serious disruption of business for a number of users. Users should also expect similar disruption of business scenarios if they upgrade to Windows Server 2003 and then follow the road map of upgrades above. These users are basically locking themselves into Microsoft for the foreseeable future.

In 2008, Microsoft will be strongly encouraging its Windows Server 2003 users to upgrade to the

⁹ Active Directory is a database of information about users, computers, printers and other computer-related items in an enterprise.

massive Windows Longhorn Server release; however, to meet this date Microsoft has been dropping functionality from Longhorn Server. Microsoft has announced that Longhorn features/functionality such as WinFX¹⁰ and portions of Avalon and Indigo¹¹ will be made available to Windows Server 2003 R2 users. WinFS¹² has been pushed out of the first release of Longhorn Server and will be made available in a subsequent release. Users who upgrade to Windows Longhorn Server will generally have to make hardware upgrades simultaneously to run the new operating system and get suitable performance for their applications. And Office 12, which may ship earlier and separate from Longhorn Server, will require Longhorn for installation.

MIGRATING TO LINUX: THE MOST COMPELLING SOLUTION FOR WINDOWS NT SERVER USERS

A December 2004 report published by AMR Research titled "Linux: Here to Stay and Not Just About Cost" states what customers think about several issues when evaluating Linux: controlling costs, minimizing vendor dependencies, improving stability, scalability or performance, ease of custom development and pre-existing competency with Linux or UNIX system administration.¹³

More interesting, AMR found that in the scenarios where Linux beat Windows, those customers surveyed often mentioned Linux's stability, performance, lower cost and fewer vendor dependencies. When Linux lost to Windows, those customers surveyed often mentioned the relative lack of a significant cost advantage.

There are several reasons why Linux is a better migration choice for Windows NT Server users than Windows Server 2003:

1. Enterprises that adopt Windows Server 2003 (and subsequently upgrade to Windows Longhorn Server) are essentially prohibiting themselves from taking advantage of open standards and the functionality and innovation available in open source software solutions.
2. Linux leads Windows with respect to reliability and security—attributes considered not to be among Windows' strongest attributes.
3. Windows users have to pay license fees to Microsoft for Windows operating systems and Windows applications and then face loss of support unless they pay for upgrades to the next releases.
4. Linux provides users with choice—choice of hardware and choice of Linux operating system vendors.
5. Users that migrate from Windows NT Server to Windows Server 2003 (and subsequently to Windows Longhorn Server) will almost certainly have to buy new hardware and purchase upgrades to Windows applications.
6. Linux developers are not limited to Visual Basic or .NET. They have access to multiple development platforms, many of which are open source, such as Eclipse, and cross-platform applications such as MONO[®]. There are no licensing fees for open source developer tools, compilers or runtime engines.

¹⁰ WinFX ("Win Effects") is the new API in Longhorn (and some Windows Server 2003 operating systems with the WinFX feature pack) for writing Windows applications. It replaces Win32, the primary API for previous versions of Windows.

¹¹ Indigo consists of communications and Web-related functionality, and Avalon is a complete overhaul of Windows graphics and presentation capabilities.

¹² WinFS interposes a relational DBMS (SQL Server) between NTFS and clients (users, organizations) for optimizing searching.

¹³ The three surveys had just under 3,000 respondents with almost 90% of the interviews completed via telephone (with SMBs) in 10 countries.

7. The Linux development process encourages openness, collaboration and testing of software by tens of thousands of developers and users.

Long-term, Linux will offer greater innovation and functionality than Windows because many of the technologies that have made RISC/UNIX into the kingpin of the enterprise and data centers are being implemented at a rapid rate in Linux, and the hardware platform vendors such as HP and IBM are making contributions to the kernel. Combined with the other new functionality that is routinely added to Linux, Linux functionality should exceed that of RISC/UNIX within four to five years.

Windows users have been plagued for years by security vulnerabilities, and Microsoft does not always respond quickly. With Linux, developers are constantly looking at the source code. If a security issue is discovered, the Linux community quickly publishes code to close the vulnerability. This rapid response is in contrast to Microsoft's three-month delay in closing a "critical" Windows XP SP2 security issue.¹⁴ Xfocus, a Chinese security group, recently identified a number of security vulnerabilities in Windows Server 2003 and older Windows operating systems.¹⁵

Linux distributors typically sell subscriptions (generally on a year by year basis) for their Linux offerings. A subscription provides users with service/support, upgrades, security patches, etc. When a subscription expires, the user has the option to renew. If a user chooses not to renew a subscription, he can obtain security patches and other patches to fix bugs, etc., from the Linux/open source

communities for free. A recent informal survey of about 300 users indicated that about 8% of Linux users provide their own support. Linux users can also utilize any number of open source applications such as Evolution™, Firefox, MySQL*, OpenOffice.org, etc., for free by simply downloading and installing them.

The roadmap for Linux and the features implemented in Linux are based on what users deem necessary to meet their market needs—users are encouraged to submit features for inclusion in Linux. With closed source environments such as Microsoft's, the software vendor controls the roadmap and may, or may not, engage customers during its creation.

IF LINUX, THEN WHICH LINUX DISTRIBUTOR?

Windows NT Server users that decide to migrate to Linux must determine which distributor will provide them with Linux. There are only two enterprise Linux distributors—Novell/SUSE and Red Hat. Making the correct choice is important because Linux will be replacing Windows NT Server in many of an organization's business critical applications. Enterprises must be careful to select a vendor that can deliver the enterprise-level technology and support they require as more and more of their business moves to Linux.

After the IT infrastructure has been migrated to Linux, the next phase of migration involves moving enterprise applications to Linux. It is crucial to select a vendor that can support the extension of Linux from the edges of an enterprise

¹⁴ www.theregister.co.uk/2004/12/17/windows_bug_roundup

¹⁵ *The report by Xfocus (http://techrepublic.com.com/5100-6264_11-5517400.html) indicated that Windows systems patched with Windows XP SP2 were vulnerable to some of the attacks. Several of the security improvements in Windows Server 2003 SP1 are based on those in Windows XP SP2.*

to business-critical applications. This requires that the vendor provide comprehensive system administration and management tools. In addition, an enterprise should look for a vendor with an in-place, enterprise-ready Linux ecosystem—including technical support, business and IT consulting, training and certification, partner network and legal protection—that can meet the support demands of large enterprises.

A Linux distribution should include integrated, enterprise-level, value-added software such as system administration and management tools, network services, an application development environment and server-side productivity applications such as e-mail and collaboration software. The Linux distribution should also provide enterprise-level scalability, performance, reliability and manageability. The vendor should have sufficient development resources to evolve its Linux distribution to keep up with rapid advances in Linux and open source technology.

Novell is the Choice

Novell has worldwide sales and support organizations with over 800 Linux-trained support staff operating 24x7x365 in seven support centers covering all geographies. Windows NT Server users can feel comfortable that Novell support technicians are trained on Windows as well as Linux and can provide support to NT users who are migrating to SUSE LINUX Enterprise Server 9 worldwide. While some Linux distributors, such as Red Hat, are rushing to enter the markets in emerging countries such as China and India, Novell has had established

relationships with local companies, government agencies and universities in Asia for many years.

Novell has more than 4,200 channel partners worldwide in its PartnerNet[®] program with thousands more that sell Novell technologies. This network ensures that enterprises can get local, certified industry-specific sales and service support on SUSE LINUX Enterprise Server 9 when and where they need it. Novell partners with the leading hardware vendors such as Dell¹⁶, HP, IBM and Sun, who test and certify hardware compatibility with SUSE LINUX Enterprise Server 9 or bundle SUSE LINUX Enterprise Server 9 with their hardware platforms. Novell also partners with major ISVs including BMC, CA, IBM Software Group, Oracle, SAP, Software AG and Veritas to ensure that their applications run on SUSE LINUX Enterprise Server.

WHY SUSE LINUX ENTERPRISE SERVER 9 IS THE OPTIMUM CHOICE TO REPLACE WINDOWS NT SERVER

Novell is the vendor best positioned to help you make the move to Linux. Novell has more than 20 years experience delivering enterprise-class software to large organizations and has earned a well-deserved reputation for reliable, high-quality software. In November 2003, Novell acquired SUSE, the company that delivered one of the first Linux distributions—SUSE LINUX. Novell has focused its extensive experience, expertise and considerable development resources on SUSE LINUX. The result is SUSE LINUX Enterprise Server 9, built with the most advanced Linux technology available. What's more, Novell backs SUSE LINUX Enterprise Server 9 with a global, enterprise-class

¹⁶ Dell recently signed a partnership agreement with Novell so that it could offer cost-effective Linux solutions across its customer base. Dell claimed that Red Hat Enterprise Linux (RHEL) was too expensive for some of its customers.

Linux ecosystem that includes technical support, service, training and certification, legal protection and partner network.

SUSE LINUX Enterprise Server 9 is the fastest Linux distribution in the world, and it scales better than any other Linux distribution. Unisys recently selected SUSE LINUX Enterprise Server 9 over Red Hat* Enterprise Linux 3 (RHEL 3) for its 16- and 32-way ES7000 servers because SUSE LINUX Enterprise Server 9 scales better than Red Hat Enterprise Linux 3. Microsoft touts the performance gains that Windows NT Server users will receive if they upgrade to Windows Server 2003, but SUSE LINUX Enterprise Server 9 set the world record for price/performance on non-clustered transaction processing on Intel processors, beating the previously published Microsoft SQL Server 2000 result on the same server.¹⁷

Working with Novell Eases the Windows NT Server Migration to Linux

The experience Novell has working with Windows operating systems over the past 15 years gives it a huge advantage over Red Hat and other Linux distributors for Windows NT Server migration.

Working with Novell makes migration easy.

If you are using Windows NT Server just as an application server, then SUSE LINUX Enterprise Server 9 will be enough to meet your needs; however, if you are using Windows NT Server for file, print and general IT infrastructure purposes, then you need a Linux distribution that can offer those value-added services. Novell Open Enterprise Server includes SUSE LINUX Enterprise Server 9 and advanced network services to run on top of

the Linux kernel. These services include Novell iFolder-, Novell iPrint, Novell eDirectory™, Novell NetStorage and the Novell Client for Windows.

Novell is the only Linux distribution to offer value-added networking software that runs natively on a Linux kernel. Most importantly, the Open Enterprise Server package of SUSE LINUX Enterprise Server 9 with Novell network services provides *standard protocols to talk to existing Windows clients*. In addition, Open Enterprise Server includes Windows NT Server migration utilities that make it easy to move and provides support for existing file/print shares and user management. Windows NT Server users that migrate to Linux from Novell have three choices:

1. They can take advantage of Novell network services to ease the migration.
2. They can choose to mix Novell network services with open source services on a selective basis.
3. They can utilize open source-only services.

Some of the Novell network services already run on Windows, and importantly they integrate with Microsoft's Active Directory. Users moving to SUSE LINUX Enterprise Server 9 can run Novell eDirectory (or an open source directory) that can manage more users and resources than any other commercially available directory. Instead of having to rip out an entire Windows NT Server domain structure and replace it with Windows Server 2003 Active Directory, it can be migrated from Windows NT Server to SUSE LINUX Enterprise Server 9, one server at a time, making migration transparent to end-users.

¹⁷ http://tpc.org/tpcc/results/tpcc_price_perf_results.asp

CONCLUSION

Windows NT Server users are being forced to migrate to another operating system platform or face a "no support" situation from Microsoft after 2006. There are only two realistic choices: Windows Server 2003 and Linux. They can upgrade to Windows Server 2003 and then follow a roadmap of feature and security service packs to subsequent release(s) of Windows Server 2003 and then to Windows Longhorn Server (in the 2007 time frame). This path is fraught with several upgrades and almost certain loss of revenue due to disruption of business. Enterprises that migrate from Windows NT Server to Windows Server 2003 are locked into Microsoft more than ever. As a result, they prevent themselves from taking advantage of the reliability, innovation and functionality that is the trademark of Linux and open source software.

For many Windows NT Server users Linux will be the choice, for many reasons:

- Linux offers a clear and open roadmap
- Linux is more reliable, secure and stable than Windows operating systems
- Linux provides users with choice of hardware vendors and Linux distributors

- Linux gives users the opportunity to utilize open source software applications such as Evolution, Firefox, OpenOffice.org, etc., for free via downloads
- Within the next four to five years Linux will offer greater innovation and functionality than Windows operating systems and surpass RISC/UNIX in terms of functionality

Once companies have decided to move to Linux, then SUSE LINUX from Novell is the obvious choice of Linux distributors:

- Novell has the best Linux engineering organization in the world
- Novell has as many Linux-trained support staff worldwide (800) as Red Hat has employees
- Novell has over 15 years experience with Windows operating systems to help ease the migration from Windows NT Server to SUSE LINUX Enterprise Server 9 from Novell
- Novell Open Enterprise Server combines SUSE LINUX Enterprise Server 9 with a collection of proven network services to shorten the time and effort required to move to Linux
- Novell is leveraging relationships with NetWare® ISVs to speed up ports of their applications to SUSE LINUX Enterprise Server 9

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