

WHITE PAPER

Managing Linux Operational Costs with Novell ZENworks

Sponsored by: Novell Inc.

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IDC OPINION

Numerous studies conducted by IDC have found that total cost of ownership (TCO) is highly dependent upon the long-term management costs associated with client and server systems. The use of sophisticated management tools can dramatically reduce the dependence upon IT staff to deploy, configure, maintain, and upgrade operating systems and application portfolios. With staff costs ranking as the single largest element in TCO models for supporting common business workloads, it stands to reason that investments in automating systems management can have a dramatic impact on ongoing operational costs.

IDC's previous TCO research for Novell included an analysis of savings over a three-year period using Novell's ZENworks solutions. For the IT customers interviewed in that research, the average cost savings were found to be \$355,028 per 100 users, with an average three-year return on investment (ROI) from deploying ZENworks of 1,012%.

Just as in the previous research, the customer interviewed for this white paper was interested in deploying the ZENworks Linux Management solution. The main reasons for doing so were to move away from manual processes associated with managing Linux for deploying patches, simplifying complex tasks, and deploying and supporting new applications and systems.

The net result is there are proven technologies for deploying and maintaining desktops and servers, and there are also technologies available for managing Linux environments. Readers should consider Novell's ZENworks Linux Management to see if these solutions are right for their IT environment.

IN THIS WHITE PAPER

This IDC White Paper looks at the benefits that a managed Linux environment can provide to customers compared to a similar environment without strong management tools. We also consider the benefits of managing modern Linux environments using a multiplatform solution based on Novell's ZENworks Linux Management and the benefits this product has brought to an enterprise customer. This customer was selected by Novell for analysis by IDC.

SITUATION OVERVIEW

Emerging from its humble roots in the early 1990s, Linux has grown into a viable competitor that today is displacing various aging Unix installations as well as a small percentage of Windows server operating environments (SOEs). As a client operating environment (COE), Linux has emerged as a potential alternative to Windows COEs for some categories of users, particularly for those who are technologically advanced.

Microsoft's Windows client operating environments have long been the standard in the enterprise since the first release of Windows 95 in 1995. The standardization afforded by a desktop platform with a similar look and feel (Windows 95, 98, Me, and NT Workstation; Windows 2000 Professional; and Windows XP Professional) made it possible for standard Windows management techniques to evolve throughout the enterprise. Some of the requirements for systematic management include updates of the desktop with new applications, patches to existing applications, security updates, and vulnerability assessments.

The implementation of standard management approaches is being challenged by continually changing business requirements that force IT departments to roll out new services and to extend current services to new groups of users — both internal and external — without significantly increasing headcount. In addition, a growing number of organizations are launching mobility projects to improve customer service and take advantage of productivity increases with a corresponding reduction in business process costs. For IT managers, the increased emphasis on mobility means greater security risks and the need to support larger numbers of users across a broader variety of devices.

In response to the need to manage an increasingly complex environment, organizations are seeking to enhance IT staff productivity and efficiency by automating IT processes and by optimizing the use of IT assets so that more value can be realized from existing investments. Advanced tools are now available to expedite operating system (OS) migration, track software usage, and lower the costs of maintaining resource integrity. They automate manual tasks and reduce the number of variables involved in maintaining a standard operating environment across diverse systems. Similarly, solutions that provide automated delivery of a consistent work experience for mobile users help reduce the costs of supporting an increasingly mobile workforce.

Linux as an SOE

The Linux SOE industry has undergone an inflection point during the past two years, with the emergence of so-called "enterprise" versions of Linux operating systems. SUSE Linux AG, now part of Novell Inc., launched its first enterprise-grade Linux offering in November 2002. The launch of Linux products such as SUSE Linux Enterprise Server (SLES) is, in many ways, as significant as the emergence of the Linux 2.4 kernel and the subsequent release of the Linux 2.6 kernel. With a second-generation version of its product now available (SLES 9), Novell, along with other competitors, is raising the standards for Linux distribution performance, support, and longevity.

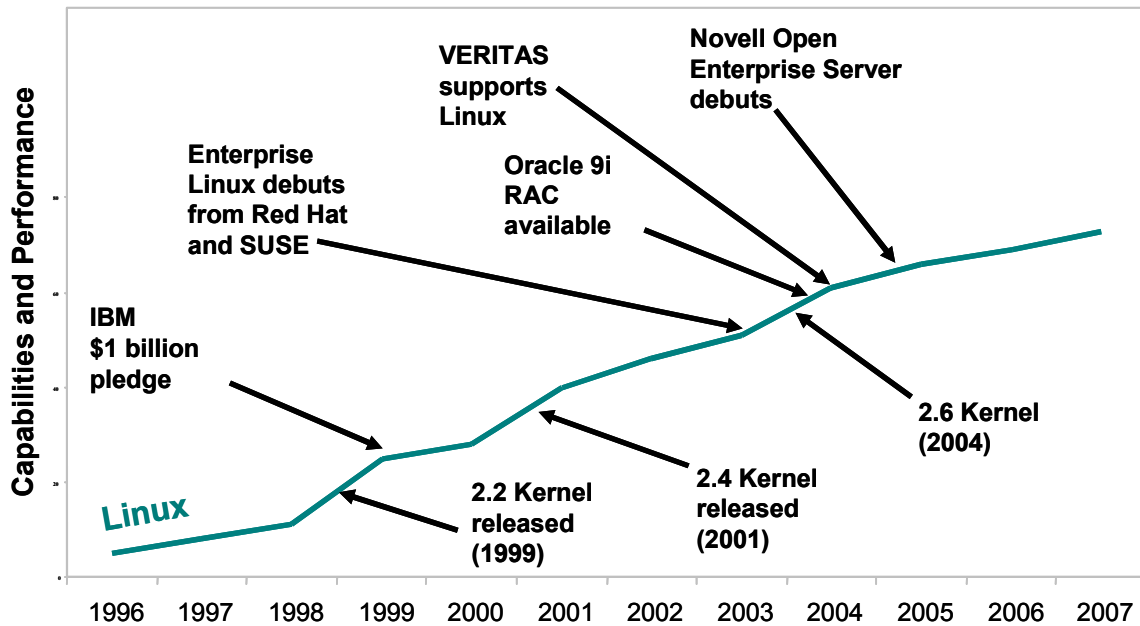
Some of the key enhancements introduced by SLES and competing products include the following:

- ☒ **Regulated release cycle.** Enterprise products are removed from the rapidly evolving Linux source tree and now operate on an intentionally slower release cycle. This helps maintain consistency from version to version, and it ensures enterprise customers a longer period of stability for features and patches.
- ☒ **Kernel API stabilization.** Incremental (dot) releases will no longer allow any system application programming interfaces to change, which in theory eliminates application breakage. In turn, this should lower the need for regression testing on the part of end users, making adoption of incremental upgrades easier.
- ☒ **Longer support cycle.** The introduction of enterprise products is built on a support program that has a minimum 5–7-year life cycle.
- ☒ **Integrated configuration and management tools.** The integration of SUSE's Yet another Setup Tool (YaST) with ZENworks (including Red Carpet/ZENworks Linux Management technologies) is a key enhancement.
- ☒ **Common operating system.** A common SLES operating system runs across a variety of hardware platforms, from desktops to mainframes. This commonality makes the use of management tools such as ZENworks even more effective.

Figure 1 shows a timeline for some of the major enhancements to the Linux SOE product family and some of the third-party developments that have helped reinforce the suitability of Linux as an enterprise operating system.

FIGURE 1

Key Linux Server Operating System Development Milestones



Source: IDC, 2005

Of significant importance in the evolution of Linux is the growth of the overall software ecosystem supporting the Linux SOE platform. IDC believes a key driver to the acceleration of this ecosystem was the introduction of the enterprise-oriented versions of Linux from Red Hat, SUSE, Turbolinux, and others.

Given a more stable base platform to build on, third-party ISVs have begun to address Linux as they do Unix distributions, often treating it as one of their key target platforms. Major examples include Oracle's commitment to Linux with the delivery of its 9i Real Application Clusters (RAC) and 10g RAC products. Likewise, VERITAS Software's delivery of products, such as its Storage Foundation, Storage Foundation for Oracle RAC, and VERITAS Storage Foundation Cluster File System, brings support for Linux in line with VERITAS' support for Unix. This support adds to that being provided by IBM through its WebSphere software stack, as well as the BEA WebLogic portfolio for the Linux platform.

Given the increasingly mainstream support for Linux as a SOE, the platform can be expected to continue its growth in the marketplace.

Linux as a COE

The huge installed base of Windows COEs has long remained a potentially lucrative, but largely unreachable, opportunity for the Linux desktop. Among the impediments for adoption of Linux COEs are the lack of applications needed by customers and concerns over the complexity of managing a Linux desktop for individual users. In addition, asking end users to abandon a familiar computing experience is no easy task.

The application portfolio issues are being resolved — albeit, slowly. The complexity of the Linux desktop remains a hurdle. While the early days of command-line installation scripts are (thankfully) now a distant memory, Linux desktops remain inherently both more powerful and more difficult to maintain for the average end user.

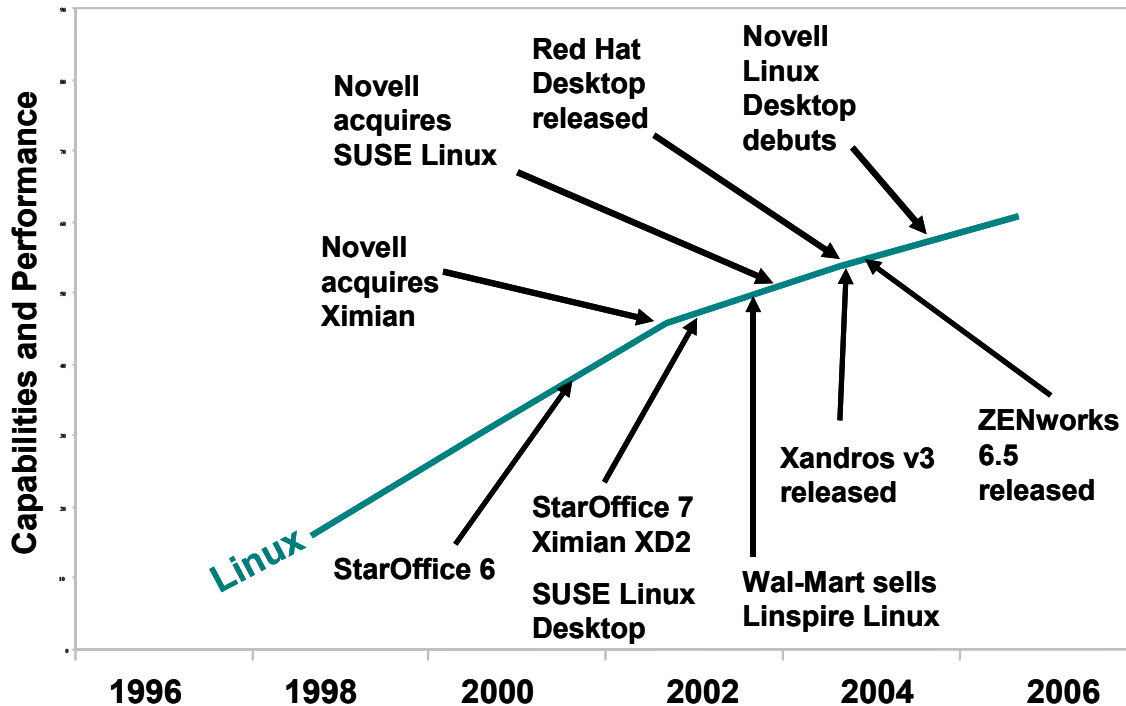
Several attempts have been made to craft a "locked down" Linux desktop, but so far, no standard has been adopted to protect the Linux desktop environment from the inexperienced user — nor to protect the inexperienced user from the Linux desktop environment. This is despite the fact that technically locking down the desktop is relatively straightforward.

Today, the Linux desktop accounts for about 3% of annual worldwide COE new license shipments. This percentage is expected to double by 2008, as Linux begins to expand its foothold in certain key industries, such as government, financial services, and education.

Figure 2 shows a timeline for key enhancements to the Linux COE product suite offered by Novell.

FIGURE 2

Key Linux Client Operating System Development Milestones



Source: IDC, 2005

The Integration of Novell, Ximian, and SUSE Linux

Novell has selected the best technologies from the portfolio it acquired through its purchase of Ximian Corp. and SUSE Linux. Today, with former Ximian cofounder Nat Friedman leading the development effort, Novell is selling an increasingly strong desktop solution. Although Novell continues to position Novell Linux Desktop as most suitable for workers in environments requiring standard usage scenarios, such as general office productivity workers or structured task workers in call centers, the company says it is constantly adjusting its positioning as the product evolves with each service pack release into more of a general-needs desktop.

Internally, Novell is, as the industry saying goes, "eating its own dog food." Novell continues to deploy Linux as its next-generation desktop operating system, replacing Windows XP and Microsoft Office. Early in 2004, the company had about 50% of the company configured with Linux; of that total, 30% of its desktop systems are running Linux exclusively, while the remaining 20% are configured with a dual-boot environment. The company is targeting up to 80% of its desktop systems to be running Linux by end of CY05.

Benefits of Novell's Integrated Management Suite

IDC has documented the benefits of the ZENworks Suite in other research (*Quantifying the Business Benefits of Consolidated IT Resource Management*, November 2003). Benefits from deploying solutions such as ZENworks for Desktops and/or ZENworks for Servers included cost savings, gains in productivity, and recaptured revenue. In the November 2003 research study, IDC interviewed IT executives at a number of companies using ZENworks, asking a series of questions about costs, revenue, specific IT processes, and associated time and staffing requirements, before and after deploying ZENworks. IDC determined the following investment and return:

- ☒ Over a three-year period, companies surveyed invested an average of slightly more than \$5.5 million in deploying ZENworks, including training and maintenance. This amounts to an average of \$34,216 per 100 users.
- ☒ Cost savings from increased IT efficiency over the three years averaged more than \$2.4 million, or \$14,929 per 100 users. Companies also saved an average of \$36,875 from retiring old tools. Improvements in IT productivity contributed additional cost savings over three years of more than \$2.6 million, or \$16,303 per 100 users. Increased user productivity also had a significant impact on savings, contributing more than \$14 million over three years, or \$87,323 per 100 users. Reduced downtime allowed the recapture of an average of \$153,395, or \$950 per 100 users, in revenue that was previously lost.

By automating the rollout of new operating systems and applications, ZENworks allows organizations to create a more standard operating environment sooner, with minimal disruption to users and fewer help desk calls. The software may be provisioned to one or many desktops simultaneously without the cost and wasted time incurred with travel to the desktop sites. Also, the personality of each user's desktop work environment, such as personal and applications settings, as well as local user files, are automatically migrated to the new environment.

Maintaining a standard operating environment, including the latest patches and updates, across all desktops, laptops, handhelds, and servers, reduces help desk and other support costs, and protects against security breaches and virus attacks. Desktop lock-down capabilities help to minimize human errors and prevent the spread of viruses.

ZENworks also addresses security concerns with mobile users by allowing automatic lockout or self-destruction of Palm, Windows CE, Pocket PC, and RIM BlackBerry devices, based on policies such as a defined number of failed password attempts or passage of a certain length of time without a connection. ZENworks' identity-based provisioning also helps mobility management by delivering a consistent work experience regardless of the user's location or device type. User files are backed up and available from any device, so users and administrators don't have to perform such functions manually. Key files and information follow mobile workers automatically across all locations and device types.

FUTURE OUTLOOK

TCO is impacted by an IT organization's ability to get new management software installed and integrated so that it can automate manual processes, or consolidate multiple processes into fewer or a single process. At Novell's 2005 BrainShare event in Salt Lake City, Utah, the company discussed its two-pillar strategy incorporating a platform business unit (including NetWare, Linux, and the new Open Enterprise Server technology) and an Identity business unit, focused on managing and securing user and system identity, and providing management, portal and workflow capabilities. These groupings are expected to focus product development to generate products that allow customers to integrate identity into their management and application software.

Since 2000, Novell has had the capability of running ZENworks on a Microsoft Active Directory structure within a pure Windows environment. Novell's current road map continues that independence further toward management of other systems without dependence on NetWare, which forms the base of its revenue. Novell's ZENworks family of products falls into the Identity resource management focus. These products leverage the rest of the Identity management product line with the idea that identity is more than just passwords and security. You need to manage the what, how, and who of information delivery. The road map for ZENworks includes:

- ☒ ZENworks 6.5 support pack 1, shipping since February 2004, continues improvements to the flagship product line, including offering support for Novell Open Enterprise Server 9 and continued support for the NetWare kernel.
- ☒ Novell's acquisition of Tally Systems for increased strength in asset management. This acquisition adds the capability to track and manage software licenses.
- ☒ ZENworks 7 Suite release, due this summer, will have updated functionality to handle server and desktop management, adding incremental features to further manage Linux systems with the ZENworks suite by using Web services to address creation and policy-based management of system images. These automated and intelligent policies allow administrators to provide centralized control throughout the life cycle of Linux systems for workstation lockdown, imaging, remote management, inventory and software management. The result is a comprehensive solution that eliminates IT effort by dramatically reducing the overhead needed to manage Linux systems.
- ☒ ZENworks Suite refresh 2006, code-named Brimstone, will further the use of Web services to include an architecture for the handheld, desktop, and server. Significant code-based changes are in beta now and promise to even further simplify infrastructure management, completely using the client from the Web.

Given market and competing vendor directions, the above plans position Novell uniquely as a strong system management vendor with a Linux focus that also addresses cross-platform environments. The overall change and configuration market consists of vendors that provide many levels of management capabilities for the server and desktop.

CHALLENGES/OPPORTUNITIES

While Novell continues to offer a strong set of IT solutions, the company continues to face a number of challenges, including:

- ☒ The misperception that Novell is NetWare-centered and that associated products are directly dependent upon NetWare. In fact, this dependency has been decreasing for the past several years, and products such as ZENworks have been free of NetWare dependency since 2000. This misperception continues to handicap Novell, particularly when it tries to penetrate organizations unfamiliar with the company's evolution.
- ☒ The possibility that IT departments will shift from Novell's directory service toward Microsoft's Active Directory to support their Windows 2000 and Windows Server 2003 environments. However, since Active Directory is a Microsoft-only solution, and Novell can provide heterogeneous platform support through eDirectory and glue eDirectory to Active Directory through DirXML, Novell has a good story to tell. However, Novell's sales force must be able to capture the attention of potential customers. Also, ZENworks is doing well with the number of seats sold.

CASE STUDY

Credence Systems Corp. Reduces Costs Using Novell ZENworks

Credence Systems Corp. is an industry leader in providing design-to-test solutions for semiconductor production. Formed in 1982 in Milpitas, California, Credence has been applying innovative technology to lower the cost of test. Credence delivers competitive cost and performance advantages to integrated device manufacturers (IDMs), wafer foundries, outsource assembly and test (OSAT) suppliers, and fabless chip companies worldwide. Designed to meet diverse test requirements — from mixed-signal analog to digital applications to memory, wireless, or system-on-chip (SoC) devices — Credence's design-to-test portfolio is designed to deliver increased reliability and functionality.

Credence is a heavy user of IT, as its engineers need state-of-the-art technology to design the company's products. Under the direction of Dan Anolik, Software Engineering Infrastructure Architect, the company selected Ximian's Red Carpet (now a part of Novell ZENworks via acquisition) to reduce the cost of deploying and maintaining Linux desktop engineering workstations. Red Carpet was chosen in 2004 because it provided the interoperability, management functionality, and ease of use Credence required to integrate Linux users and systems into its mixed corporate computing environment.

For the last year, Credence has been migrating its engineering development workstations to Linux, as this environment offers increased reliability, robustness, lower cost of support, and reduced deployment time than its other computing platforms. "Linux just simply keeps on working compared to other operating systems," says Anolik. He explains that his group must support over 400 software development

engineers, and each engineering group has custom configuration needs. Over 100 workstations have been migrated to Linux from either Solaris or Windows, and further migrations are imminent. Credence decided right from the start to seek a Linux desktop management solution prior to deploying its first Linux workstation. Ximian's Red Carpet was selected for various reasons. "We looked across the board at different Linux management solutions, including home-grown scripts, and open source products like CF Engine, Red Hat Satellite, and Tivoli. We compared different tools, features/functions, and cost effectiveness. Ximian was our top choice."

Building and configuring a Credence software development workstation had traditionally required a high degree of technical competency and approximately eight man hours to load and configure. Today, that same task using ZENworks takes less than one hour and doesn't require a high level of technical skill. This represents a savings of 87.5% in deployment time alone. Considering the cost of the typical IT support person, Credence has been able to realize thousands of dollars of savings in deploying its last 100 systems. The lower skill set now required adds to the savings.

Credence has also experienced savings by reducing the support staff needed for managing the Linux environment, reducing hours for workstation upgrades and configuration modifications, as well as reduced downtime. Expanding on the benefits of a reduced IT staff, Anolik states, "We use ZENworks to manage Linux, and the primary benefit is the fewer number of technical resources Credence needs to have on duty for support requirements. Linux is currently supported using just a small staff of four Linux IT professionals. Managing Linux is also accomplished from a central location, requiring few (if any) local support resources for our remote development sites."

ZENworks also provided Credence with greater control of workgroup environments. Each workgroup needs to be managed differently, and Credence has found that the flexibility and granular control of ZENworks are superior to other solutions evaluated, especially in a centralized management capacity. Anolik notes, "There's no limit to what you can do to centrally manage a Linux desktop. But there are significant issues inherent in other (non-Linux) clients. Local applications often conflict with one another. You can't upgrade one application without upgrading the other. Limitations exist and special procedures had to be followed in applying patches, and reboots were frequent. By contrast, Linux management under ZENworks is very smooth, rarely required users to reboot, or even logout."

Credence has encountered few obstacles in their efforts to manage Linux. "There have been no major issues or obstacles, and we'll continue to use the product as more Linux systems are added. Our overall experience with ZENworks is very positive," says Anolik. "It's one of the infrastructure software decisions that we've deployed over the past few years that has done extremely well. We would make the same decision again, the same way."

CONCLUSION

IDC has found that TCO is highly dependent upon the long-term management costs associated with client and server systems. Sophisticated management tools can dramatically reduce the dependence upon IT staff to deploy, configure, maintain, and upgrade operating systems and application portfolios, as shown in this and other referenced research.

IDC's previous TCO research for Novell included an analysis of savings over a three-year period using Novell's ZENworks solutions. For the IT customers interviewed in that research, the average cost savings were found to be \$355,028 per 100 users, with an average three-year ROI from deploying ZENworks of 1,012%.

Credence Systems has benefited from the implementation of ZENworks Linux Management. Credence's benefits come from simplifying the management tasks, requiring less technically skilled people and less time. Today, that same task using ZENworks takes less than one hour, representing a savings of 87.5% in deployment time alone.

On the near-term horizon, IDC expects Novell to continue to make significant investments in its management suite. Its road map over the next 12 months includes further integration of the ZENworks products with its evolving product lines, along with new features and functions developed internally or from acquisitions like Tally Systems. Given Novell's large cash position, IDC would not be surprised to see additional capabilities brought in from outside Novell. These continuing developments, and the results with happy customers, suggest that Novell's technology is adding value for customers in tangible ways.

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