

Competitive Guide

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Moving to Linux* from a RISC/UNIX* Environment

SUSE® Linux Enterprise Server vs. Red Hat® Enterprise Linux

Novell.

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Optimizing Your Data Center

A recent Gartner survey shows that support for Linux in the data center is growing rapidly, with data center Linux use doubling in 2006. Moreover, about 63 percent of Linux users are very happy, and 83 percent of data center managers expect to increase spending on Linux.¹

¹ Gartner report, *Linux Continues to Advance into the Data Center*, Mar. 2006, #G00138277

² IDC QST Analysis, November 2006

For the past 15 years and more, RISC/UNIX* has established a history of solid reliability in the data center. It typically runs mission-critical applications, including back-end databases, and has a reputation for good performance, high reliability, proven scalability and trustworthy security. But these benefits come at a high total cost of ownership (TCO). UNIX generally requires expensive proprietary software and hardware as well as budget-draining annual maintenance costs. These expenses are a key factor in recent, wide-spread migrations to other platforms, specifically Linux*.

A recent Gartner survey shows that support for Linux in the data center is growing rapidly, with data center Linux use doubling in 2006. Moreover, about 63 percent of Linux users are very happy, and 83 percent of data center managers expect to increase spending on Linux.

As an IT manager, you will see several opportunities to optimize your data center and control costs by migrating to Linux. You should give it serious consideration, especially if you:

- *Need to replace aging and expensive proprietary hardware*
- *Can reduce TCO by consolidating applications or systems*
- *Want to deploy or upgrade large applications*
- *Have a UNIX maintenance contract that has just expired*
- *Are tired of being locked into using a single vendor*

While there are many opportune times to migrate to Linux, all IT managers must ask themselves a vital question:

Can Linux Do the Job?

Can Linux provide the workloads (applications), performance, reliability, availability, scalability and security offered by RISC/UNIX platforms? The industry has given Linux strong votes of confidence. Gartner reports that 32 percent of respondents cite the data center as a major focus for Linux deployment. In a November 2006 report², IDC indicated that over 16 percent of Solaris' installed base (1.45 million) migrated to Linux, another UNIX, or to Windows*. And 55 percent of those that migrated moved to Linux. The increased focus on data centers reflects an intent to make Linux an important part of IT infrastructures.

Why Choose SUSE Linux Enterprise Server?

While there is an inherent similarity between Linux and UNIX, not all Linux distributions are acceptable substitutes for RISC/UNIX. SUSE® Linux Enterprise Server is the best choice for an orderly migration from RISC/UNIX, or to add new servers when application needs arise.

SUSE Linux Enterprise Server is also a clear choice for the data center. It delivers:

- *A high degree of interoperability with other platforms, including Windows*
- *Industry leading virtualization technology via Xen* along with data center-class cross platform virtualization management*
- *More than 2,200 certified ISV applications—all ready to help you meet data center application requirements*
- *Excellent scalability on a number of architectures (x86/x64, PowerPC*, Itanium* 2, z9 mainframes)—up to 1024 CPUs*
- *Performance better or comparable to that of UNIX*

- Lower total cost of ownership (TCO) via high-performance, industry-standard hardware
- Excellent security tools, including Novell® AppArmor™ security technology
- Resource- and system-management tools that interoperate with other vendors' platforms—Linux, UNIX, and Windows
- World-class technical support from more than 900 technicians in support centers all over the globe
- Compatibility with most of the important infrastructure- and business-oriented ISV applications
- Freedom from vendor lock-in

A Closer Look at SUSE Linux Enterprise Server

Cost

Red Hat's new pricing structure for RHEL 5 Server and RHEL 5 Advanced Platform at first glance may appear to make Red Hat's pricing more competitive with SUSE Linux Enterprise Server pricing. However, a closer look shows that this is not the case. SUSE Linux Enterprise Server enables an unlimited number of guest operating systems, while RHEL 5 Server supports only four guest operating systems. RHEL 5 Server is targeted, according to Red Hat, at smaller users, not enterprise users. Enterprise customers have to pay US\$1,499 for a Standard subscription for RHEL Advanced Platform, while a SUSE Linux Enterprise Server, Standard subscription is only US\$799. A SUSE Linux Enterprise Server Priority subscription is US\$1,499 per year, which is US\$1,000 per year less than a one-year Premium Edition subscription to RHEL Advanced Platform (US\$2,499 per year). It is clear that Novell still has an advantage with respect to cost. You pay less for SUSE Linux Enterprise Server and get more capability.

	Basic	Standard	Priority
Non-mainframe			
Novell	\$349	\$799	\$1,499
Red Hat	\$349 (RHEL 5 Server)	\$799 (RHEL 5 Server)	\$1,299 (RHEL 5 Server)
		\$1,499 (RHEL 5 Advanced Platform)	\$2,499 (RHEL 5 Advanced Platform)

Standard and Priority subscriptions from Novell include technical support and vouchers for training and consulting services.

Interoperability

Almost all data centers have some combination of Linux, UNIX, and Windows operating systems. And a very, very large percent have Windows. Each year about 20 percent of the UNIX installed base migrates to Linux, another UNIX, or to Windows. This amounts to between 600,000 and 650,000 UNIX systems migrated each year³, and more than 80 percent of the migrated UNIX systems end up on Linux and Windows. Data center directors desire as much interoperability among systems as they can get. Directors that migrate their UNIX platforms to SUSE Linux Enterprise Server receive all of the benefits of the best Linux platform on the market and achieve much higher degrees of interoperability with their Windows systems than if they migrate to Red Hat* Enterprise Linux:

- **Virtualization**
 - SUSE Linux Enterprise Server interoperates with Microsoft* Virtual Server 2005 R2, Windows Server 2003 R2 and Windows Longhorn Server. Because of this interoperability, customers can run SUSE Linux Enterprise Server on Windows Longhorn Server and Windows Longhorn Server on SUSE Linux Enterprise Server.
- **Heterogeneous systems management**
 - Interoperability for managing mixed environments of SUSE Linux Enterprise and Windows with WS-Management

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3 IDC Report, *Unix Migration: Market Analysis and End-User Survey Results*

Novell Consulting and Training has more than 1,900 professionals worldwide to help deploy SUSE Linux Enterprise Server quickly within an organization, regardless of workload. Red Hat lacks this level of enterprise experience.

Because Novell has long been involved in integrating its solutions with those of other vendors, its technical support personnel can tackle the toughest problems—at any scale and on any platform or combination of platforms.

- **Directory/Identity federation**
 - *Improved identity interoperability and improved access control between Microsoft and Novell products and IT resources managed with either Novell eDirectory™ or Microsoft Active Directory**
 - *Authorized users can seamlessly access Web-based systems whether their user accounts principally reside in Novell eDirectory or Microsoft Active Directory*

Red Hat claims that it includes the most popular applications at no charge and that all of these applications are interoperable with Microsoft counterparts. It also claims that Red Hat Enterprise Linux includes technologies to allow it to plug and play in a Microsoft-centric environment. While Red Hat does not list these applications, it is clear from other Red Hat messaging that it is referring to Novell Evolution™ (e-mail) and OpenOffice.org for viewing and editing Microsoft format documents. This level of interoperability with Microsoft products pales when compared to the work that is occurring between Novell and Microsoft around the interoperability efforts listed above.

Technical Support

With over 20 years experience supporting complex, mixed-source environments in companies of every size, Novell Technical Services™ makes Novell the only Linux vendor to have achieved the certified status of SCP (Support Center Practice), an industry-leading, standards-based support designation only given to organizations that are truly

ready to support your enterprise needs. Novell has more more than 900 dedicated support personnel (Red Hat has about 250 support personnel) located in seven support centers covering every region of the world.

Because Novell has long been involved in integrating its solutions with those of other vendors, its technical support personnel can tackle the toughest problems—at any scale and on any platform or combination of platforms. Novell and Red Hat take different approaches to providing support. Red Hat's support is bundled with subscriptions, reducing support choices for the customer.

Novell Consulting and Training has more than 1,900 professionals worldwide, with specialized practices in enterprise platform services, data center technologies and open source development, to help deploy SUSE Linux Enterprise Server quickly within an organization, regardless of workload. Red Hat lacks this level of enterprise experience.

Virtualization

SUSE Linux Enterprise Server was first to market with Xen 3.0, the integrated hypervisor-based virtualization technology. With SUSE Linux Enterprise 10 SP1, Novell adds to its virtualization advantage over Red Hat by providing an unlimited number of guest operating systems at no extra charge across all subscriptions. Red Hat customers have to purchase RHEL Advanced Platform to get an unlimited number of guests. In addition, SUSE Linux Enterprise enables many more guest operating systems than does RHEL (see Table 2 on the following page).

The Novell industry-wide recognized virtualization advantage over Red Hat is about more than just numbers of guest operating systems. It is about lowering the TCO. SUSE Linux Enterprise with the capability to enable more guest operating systems gives customers more flexibility and more

opportunities for server consolidation and reducing the cost of maintaining a data center than does Red Hat. RHEL via Xen only allows the Red Hat installed base to be consolidated; whereas, SUSE Linux Enterprise enables far broader server consolidation. Add the virtualization interoperability that SUSE Linux Enterprise has with Microsoft Windows and you get even more ways to reduce TCO via server consolidation with SUSE Linux Enterprise and Xen.

Where does all of this fit into the data center? SUSE Linux Enterprise is the best Linux operating system for migrating your UNIX to Linux because once you get all of your line of business applications on SUSE Linux Enterprise Server then you can better interoperate with those Windows systems in your data center, leading to even lower TCO. And if you want, you can run the Windows applications in VMs on a SUSE Linux Enterprise Server 10 SP1 host server, saving even more money.

SUSE Linux Enterprise is the best Linux operating system for migrating your UNIX to Linux because once you get all of your line of business applications on SUSE Linux Enterprise Server then you can better interoperate with those Windows systems in your data center, leading to even lower TCO.

Table 2. SUSE Linux Enterprise Server versus Red Hat Enterprise Linux Virtualization Comparison

Features	SUSE Linux Enterprise Server 10	SUSE Linux Enterprise Server 10 SP1	Red Hat Enterprise Linux Server	Red Hat Enterprise Linux Advanced Platform
Number of enabled VMs (guests)	Unlimited	Unlimited	Four	Unlimited
Enabled paravirtualization guests	SUSE Linux Enterprise Server 10 (x86, PAE, x86-64)	SUSE Linux Enterprise Server 10 SP1 (x86, PAE, x86-64) Novell Open Enterprise Server 2 Linux (x86, PAE, x86-64) Novell Open Enterprise Server 2 NetWare- 6.5 SP7 (x86, PAE)	Red Hat Enterprise Linux 4 Update5 (PAE, x86-64) Red Hat Enterprise Linux 5 (PAE, x86-64)	Red Hat Enterprise Linux 4 Update5 (PAE, x86-64) Red Hat Enterprise Linux 5 (PAE, x86-64)
Enabled full-virtualization guests (requires Intel VT or AMD-V technology)		SUSE Linux Enterprise Server 9 SP3 (x86, PAE, x86-64) SUSE Linux Enterprise Server 10 SP1 (x86, PAE, x86-64) Windows 2000 Server (x86) Windows Server 2003 (x86) Windows XP (x86) Red Hat Enterprise Linux 4 (x86)	Red Hat Enterprise Linux 3 Red Hat Enterprise Linux 4 Red Hat Enterprise Linux 5 Third-party operating systems (not specified)	Red Hat Enterprise Linux 3 Red Hat Enterprise Linux 4 Red Hat Enterprise Linux 5 Third-party operating systems (not specified)
Management	Control of entire VM environment from the command line Novell ZENworks Orchestrator	Control of entire VM environment from the command line Novell ZENworks Orchestrator Novell ZENworks Virtual Machine Management Xm ⁴ vm-install ⁵ virt-manager-GUI virsh	Red Hat Network virt-manager – GUI ⁶ virsh ⁷	Red Hat Network virt-manager - GUI virsh
Storage virtualization	Yes	Yes	No	Yes

- 4 Command-line VM lifecycle management
- 5 GUI, command-line, and scriptable VM creation and installation
- 6 A graphical interface for virtualization functions such as create, start, stop, suspend, resume, monitor and more
- 7 A scriptable command shell

Source: Novell, Red Hat, April 2007

A quick look at Table 2 illustrates another advantage for Novell and SUSE Linux Enterprise: *virtualization management*. Today, Red Hat does not have a high-level virtualization management capability to compare with Novell ZENworks® Orchestrator and ZENworks Virtual Machine Management from Novell. ZENworks Orchestrator allows users to manage a group of physical servers, not just Novell servers, and virtual machines in a data center. Red Hat's virtualization management tools are integrated with RHEL making them useful only for Red Hat systems.

ZENworks Virtual Machine Management provides for:

- *Failover of failed VMs in some scenarios*
- *Live migration for paravirtualized guests (also available with YaST)*
- *A host-based management interface for VM management (also available with YaST)*
- *Saving and restoring of paravirtualized guests (also available with YaST)*
- *Automatic balancing of VMs across physical nodes*

- *An elaborated management interface for the whole of the data center*
- *Cross platform VM management*

The ZENworks Virtual Machine Management tool is interoperable with VMware* ESX and VMware GSX, and it can manage VMware ESX 3 VMs when the customer has VMware's Virtual Center installed. It does not require VMware Virtual Center to manage VMware GSX 3 VMs. Overall it can manage virtual machines from Xen, Microsoft and VMware.

If you're migrating from RISC/UNIX—or simply adding new servers to your data center—there's no better choice than SUSE Linux Enterprise Server. With this enterprise-quality server, there's no more scrambling to meet emerging threats. No more vendor lock-in. No more running under utilized servers dedicated to particular applications. SUSE Linux Enterprise Server is specifically designed to handle mission-critical workloads in your data center. You get maximum reliability and security—and a way to cut your infrastructure costs by up to 70 percent. For more information on SUSE Linux Enterprise Server, visit: www.novell.com/products/server



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