FAQ

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SUSE® Linux Enterprise Server 10 Frequently Asked Questions

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Novell®

What is the difference between SUSE® Linux Enterprise 10 and SUSE Linux Enterprise Server 10?

SUSE Linux Enterprise Server 10 is a substantial part of SUSE Linux Enterprise 10—the Platform for the Open Enterprise™. The SUSE Linux Enterprise 10 platform comprises the following main components:

- SUSE Linux Enterprise Server: The most reliable, secure and scalable enterprise Linux* server, designed to run mission-critical applications in the data center.
- SUSE Linux Enterprise Desktop: The only enterprise-quality Linux desktop on the market, designed for the general-purpose business user.
- SUSE Linux Enterprise Real Time: A Linux server tuned for high performance and optimized for transactions per second.
- Integrated Stack for SUSE Linux Enterprise: An easy-to-deploy, integrated server stack that can be used as a file and print server, as a complete Web application and database server, or as both, depending on customer needs.
- SUSE Linux Enterprise Thin Client: The only enterprise-quality Linux solution that provides packaged thin-client images and easy customization and management of images.
- SUSE Linux Enterprise Point of Service: The only integrated Linux Point of Service environment.
- Novell® Customer Center: An online interface and single location where you can obtain support, updates and renewals for all your SUSE Linux Enterprise product subscriptions.

What is SUSE Linux Enterprise Server and why should I buy it?

SUSE Linux Enterprise Server is the latest enterprise-quality server from Novell. It includes more than 1,500 enhancements, new features and updates, and is designed to handle mission-critical workloads in the data center. SUSE Linux Enterprise Server offers an open, scalable, high-performance data center solution that comes with application security, virtualization and integrated systems management across a full range of hardware architectures. SUSE Linux Enterprise Server is deployable as a general-purpose server or can be tailored to run a variety of specialized workloads. It also offers seamless interoperability with your existing data center infrastructure. With SUSE Linux Enterprise Server, your business can dramatically reduce costs while deploying the most secure and reliable data center server on the market.

Why is SUSE Linux Enterprise Server the best choice for my mission-critical workloads?

SUSE Linux Enterprise Server has been designed to support the most important workloads in the data center. It delivers UNIX-like performance and reliability at commodity hardware prices. SUSE Linux Enterprise Server has been rigorously tested in the labs of leading hardware and software vendors, and is the only Linux distribution that includes code to optimize the operating system for Oracle* and SAP*.

What are the key technology areas of innovation in SUSE Linux Enterprise Server?

In addition to innovations in the fields of systems management and application security, which are part of the platform, SUSE Linux Enterprise Server 10 offers:

- **Integrated virtualization.** SUSE Linux Enterprise Server 10 is armed with the Xen* hypervisor and integrated management tools to support multiple virtual machines on commodity hardware. Xen hypervisor virtualization

gives data center administrators new levels of flexibility and agility in their environments at no additional charge.

- **Cost-effective storage foundation.** SUSE Linux Enterprise Server 10 addresses enterprise storage needs by being the first enterprise-class Linux distribution to deliver a fully integrated High Availability Storage Infrastructure. This storage infrastructure is composed entirely of open source components, including the HA resource manager (Heartbeat v2), the Oracle Cluster File System (OCFS2), and the cluster-aware Enterprise Volume Manager (EVMS2)—all at no additional cost.

Can you tell me more about virtualization?

- The virtualization features of SUSE Linux Enterprise Server 10 will help enterprises lower costs and improve utilization, enabling maximum data center performance and reliability. SUSE Linux Enterprise Server 10 is the first enterprise-class Linux server to include a fully integrated and supported version of Xen 3.0, the emerging open source standard for virtualization services. Novell has a strong partnership with XenSource, so you can be assured that the integration of Xen 3.0 and SUSE Linux Enterprise Server 10 is the tightest in the industry.
- Novell also supports Xen with the unique YaST-based management tools you need to quickly and easily deploy virtualization in your enterprise. SUSE Linux Enterprise Server 10 also offers support for both paravirtualization through the Xen hypervisor and full virtualization through partners like VMware.
- The platform is also the first operating system of any kind to include support for both Intel* VT and AMD-V* chipsets. Full graphical and command-line virtual machine management tools for easy VM administration and configuration are also included.

What are the benefits of using Xen?

Armed with Xen virtual machines on commodity hardware, data center administrators can create new levels of flexibility and agility in their environments at a lower total cost of ownership. Enterprises can take advantage of integrated Xen-based virtualization in SUSE Linux Enterprise Server 10 to:

- Increase server utilization by consolidating physical servers and applications, thus lowering hardware, maintenance and electrical costs
- Increase business continuity and system uptime by migrating disparate workloads onto virtual machines without interruption
- Leverage excess data center capacity and improve response times by balancing computing loads across data center resources at peak times
- Redeploy physical server resources by migrating server workloads to virtual farms and by releasing physical resources that can be redeployed for other uses
- Provide application portability and flexibility across hardware platforms

What do I need to know about virtualization pricing and licensing?

Novell has a unique enterprise licensing strategy and holds the lead when it comes to virtualized server pricing with the most flexible and low-cost pricing model of any Linux platform. We charge a single license fee per CPU, regardless of how many virtual images run on that CPU. (Both Red Hat and Microsoft charge a license fee for each virtual server.)

In parallel with the release of SUSE Linux Enterprise Server 10 Service Pack 1, Novell now offers the SUSE Linux Enterprise Virtual Machine Driver Pack. This is a fee-based bundle of paravirtualized network, bus and block device drivers. It allows customers to run fully virtualized Windows* and Linux workloads on SUSE Linux Enterprise Server 10 SP1 and Xen 3.0.4 with near-native performance. The Driver Pack contains paravirtualized network, bus and block device drivers for Windows Server 2003 (32-bit and 64-bit), Windows 2000 (32-bit) and Windows XP (32-bit and 64-bit). The Driver Pack also contains an installation wizard, documentation and an End

User License Agreement (EULA). Paravirtualized device drivers for Red Hat Enterprise Linux 4 and Red Hat Enterprise Linux 5 will also be available in the second half of 2007; they will be delivered as free updates to the Virtual Machine Driver Pack.

Paravirtualized drivers for SUSE Linux Enterprise Server 10 SP1, however, are included in both SP1 physical and electronic media and corresponding Novell Customer Center update channels. Customers with a valid SUSE Linux Enterprise Server subscription are automatically entitled to maintenance and support for these paravirtualized drivers. The support terms and conditions for the drivers are inherited from the customer's underlying SUSE Linux Enterprise Server subscription.

What is the High Availability Storage Infrastructure?

Compliance legislation has been just one component in the seemingly exponential growth of data storage in recent years. This growth not only drives demand for capacity, it also creates a need for storage management that can handle the growing volume of data. Since business continuity relies on uninterrupted access to information and services, the storage management system must ensure both data integrity and availability.

High Availability Storage Infrastructure, an important new technology featured in SUSE Linux Enterprise 10 SP1, satisfies these needs. Unlike high-cost proprietary solutions, High Availability Storage Infrastructure keeps costs low by integrating only open source, enterprise-class components:

- Heartbeat v2, a high-availability resource manager that supports multinode failover
- Oracle Cluster File System 2 (OCFS2), a parallel cluster file system that offers scalability
- Enterprise Volume Manager 2 (EVMS2), a cluster-aware volume manager that simplifies operations in a highly available, scalable environment

Even as data volumes grow, you can keep pace with High Availability Storage Infrastructure. It’s an easy-to-manage, highly available foundation that scales as needed and helps you lower storage management costs.

SUSE Linux Enterprise Server 10 SP1 provides updates to all key components of the High Availability Storage Infrastructure—including the cluster file system, volume manager and cluster resource manager—to ensure data integrity and availability.

I heard that Oracle and Novell cooperated for OCFS2. What does this mean for SUSE Linux Enterprise Server 10?

SUSE Linux Enterprise Server 10 is the only enterprise Linux distribution to incorporate Oracle's cluster file system, OCFS2. OCFS2 is an extent-based, POSIX-compliant, general-purpose (parallel) clustering file system supported on x86, x86-64, IA-64, PPC64 and s390x architectures. It includes a network-based pluggable distributed lock manager (DLM), and is especially suitable and certified for Oracle Real Application Cluster (RAC) installations.

Novell and Oracle jointly maintain the OCFS2 open source project. Several internal Oracle tools have been integrated into the Novell quality assurance process. Successful execution of these tools is an exit criterion for every kernel update, service pack and major release of SUSE Linux Enterprise Server.

I need to develop my own applications. What does SUSE Linux Enterprise Server offer me in this area?

SUSE Linux Enterprise Server 10 is delivered with a complete software development kit for both server and desktop to facilitate the quick customization and rapid development of a broad range of applications. And it is the only enterprise-class Linux distribution to include Mono®, an open source implementation of the .NET framework. Mono allows corporate IT and ISV developers to develop new applications or port existing .NET applications to Linux without the need to invest substantial resources in rewriting their code.

I've heard that systems management for Linux is quite difficult. What does SUSE Linux Enterprise Server offer?

No other Linux server is as easy to deploy, configure and maintain as SUSE Linux Enterprise Server 10. It ships with a comprehensive set of installation, configuration, administration and deployment tools that ease the burden of systems and subscription management:

- The YaST environment is the most powerful and extensive Linux tool for installation, configuration and system administration, and it features an entirely graphic and modular design.
- AutoYaST is an extension to YaST that automates installation to a large number of machines. AutoYaST saves organizations a tremendous amount of time.
- A subscription to Novell Customer Center—the unique software patch and update service—enables customers and partners to easily manage their subscriptions and support entitlements. It also ensures uninterrupted access to software updates and security patches.
- Novell Customer Center integrates with Novell ZENworks® Linux Management. You can use a ZENworks Linux Management server to patch and update all your onsite and remote Linux machines—and ensure that all your production machines are protected behind the firewall.
- Novell ZENworks Orchestrator and ZENworks Virtual Machine Management complement the picture by adding high-level virtualization management capabilities—another advantage for SUSE Linux Enterprise. ZENworks Orchestrator allows you to manage a group of physical servers—not just Novell servers—and virtual machines in a data center. ZENworks Virtual Machine Management provides failover protection for VMs in some scenarios, live migration for paravirtualized guests, a host-based management interface for VM management, saving and restoring of paravirtualized guests, automatic balancing of VMs across physical nodes, a well-designed management interface for the whole of the data center and cross-platform VM management. The ZENworks Virtual Machine Management tool can manage virtual machines from Xen, Microsoft and VMware.

The adoption of open industry standards such as Web-based Enterprise Management (WBEM) and Common Information Model (CIM) is an important step towards true integrated systems management of distributed and heterogeneous computing environments.

Can you tell me more about the new industry standards for systems management?

It is no longer sufficient to manage personal computers, servers, subnets, network core, storage and software in isolation. These components all interoperate to provide connectivity and services. Information regularly crosses these boundaries, and management must do the same. To address these requirements, SUSE Linux Enterprise Server 10 integrates and supports the open WBEM/CIM industry standard as a vendor-independent, robust and descriptive framework for systems management. With SUSE Linux Enterprise Server 10, Novell promotes this open standard and achieves enterprise readiness for true integrated systems management in today's complex and heterogeneous networks.

Managing heterogeneous and distributed environments is a demanding challenge. Often each device defines its own representation of management information. You have to account for different semantics, terminology, data structures and protocols. Collecting the information to manage an entire data center is just one part of the challenge. Normalizing, organizing and analyzing that data is just as critical to ensuring successful systems management, and that is the goal of the open WBEM/CIM standard supported by SUSE Linux Enterprise Server 10.

What exactly is WBEM?

WBEM is an industry-based systems management architecture initiative based on a set of management and Internet standard technologies. It was developed to unify the management of enterprise computing environments across multiple vendor applications. It is an open standard managed and promoted by the Distributed Management Task Force (DMTF, http://www.dmtf.org/)—the industry organization leading the development of management standards. WBEM simplifies systems management, enabling the industry to deliver a well-integrated set of standards-based management tools by leveraging emerging Web technologies. WBEM is compatible with all the major existing management protocols, including SNMP, DMI and CMIP.

And what exactly is CIM?

The Common Information Model (CIM), developed by the Distributed Management Task Force, is an industry standard providing a consistent and common definition and structure of management information data for applications, systems and services, ensuring interoperability across enterprises. System administrators and management programs will be able to control devices and applications from different manufacturers or sources in the same way. For example, a business that purchased different kinds of storage devices from different companies would be able to view the same kind of information (such as device name and model, serial number, capacity, network location and relationship to other devices or applications) about each of them or could access the information from a program.

I’ve heard that Novell is sponsoring a new open source project on systems management. Can you tell me more?

Open Management with CIM (OMC) is an open-source umbrella project to promote standardization of data center management processes and integrated systems management for heterogeneous networks. It includes implementations of the open standards management profiles and specifications defined by the Distributed Management Task Force (DMTF). OMC is designed as a system of components and providers based on the CIM standards.

Novell is contributing software code and significant engineering, management and infrastructure resources to support the project. Our goal is to make it easier and less expensive for organizations to manage distributed and heterogeneous computing environments.

The OMC project is specifically designed to support the Systems Management Architecture for Server Hardware (SMASH) initiative at DMTF. SMASH represents a suite of specifications that deliver architectural semantics, industry standard protocols and profiles to unify the management of the data center. As an example, the Server Management (SM) Command Line Protocol (CLP) specification enables simple and intuitive management of

heterogeneous servers in data centers independent of machine state, operating system state, server system topology or access method. SMASH is also a building block for virtualization, storage and GRID-based computing models.

On what kind of hardware does SUSE Linux Enterprise Server run?

SUSE Linux Enterprise Server is supported by all leading hardware vendors. You can run SUSE Linux Enterprise Server on the following architectures: x86, AMD64, Intel64, Itanium* Processor Family (Itanium II or newer), IBM* POWER* (former IBM iSeries* and IBM pSeries* systems), IBM zSeries* (64-bit) and IBM System z*.

Novell works closely with the chip manufacturers Intel and AMD and supports 32-bit and 64-bit architectures as well as the latest single- and, dual-core processors. With SUSE Linux Enterprise Server Service Pack 1, Novell adds support for new processor technologies, including Quad-Core Intel Xeon* and Quad-Core AMD Opteron* processors. Through chips joint-engineered with chip vendors, SUSE Linux Enterprise enables multiple virtual machines to run varied data center workloads in native and Xen virtualized environments with outstanding performance, energy efficiency and reliability.

Does SUSE Linux Enterprise Server support the latest hardware devices?

SUSE Linux Enterprise Server 10 includes a new driver process—the Partner Linux Driver Process. This process solves Linux device driver compatibility issues, allows customers to obtain drivers independently of Novell kernel updates, and supplies a straightforward approach third parties can use when developing device drivers for SUSE Linux Enterprise products. And it allows hardware and software vendors to provide Linux drivers and driver updates for their products to customers directly and transparently, in a manner completely integrated with SUSE Linux Enterprise Server delivery and support.

What other areas have improved in comparison with previous versions?

The following features have been enhanced to improve on the functionality available in previous versions:

- **Industry-leading performance and scalability.** With advanced memory management and processor support, Native POSIX Thread Library (NPTL) and advanced I/O capabilities, SUSE Linux Enterprise Server 10 rivals RISC/UNIX systems in performance and scalability for large-scale server deployments. SUSE Linux Enterprise Server 10 scales to 1,024 processors and supports up to 10 TB of RAM. It also supports the latest network acceleration technologies to gain network performance for I/O-intensive applications (Intel QuickData Technology).
- **Reliability and high availability.** Today's enterprises are expected to be 24x7 operations. Maximizing uptime can mean the difference between winning and losing business. SUSE Linux Enterprise Server 10 is built for mission-critical use and minimal downtime, maximizing the probability that systems will remain up and running. With Heartbeat v2, SUSE Linux Enterprise Server 10 ships a fully integrated, multinode, high-availability solution at no extra cost. The integrated cluster software can easily be installed and configured by using the YaST setup tool. SUSE Linux Enterprise Server 10 also provides cluster-aware multipath fault tolerance for a wide variety of industry-standard storage subsystems.
- **Versatile storage management.** Enterprises are continually seeking cost-effective storage methods. With the integration of new iSCSI technology, SUSE Linux Enterprise Server 10 combines SCSI, Ethernet and TCP/IP to create simple, yet powerful IP-based storage area networks (SANs). iSCSI SANs provide a

high-speed, low-cost, long-distance storage solution for Web sites, service providers and enterprises. iSCSI builds on stable and familiar standards and creates a SAN with a reduced total cost of ownership. Installation and maintenance costs are low since the TCP/IP suite can use commodity hardware. The technology enables Ethernet transmissions to travel over the Global IP Network, eliminating any distance limitations. It also provides a high degree of interoperability by reducing disparate networks and cabling, and by using regular Ethernet switches instead of special Fiber Channel switches. Finally, it is scalable to 10 Gigabit. SUSE Linux Enterprise Server 10 is the only enterprise-class Linux server to:

- Provide graphical iSCSI management tools, allowing easy configuration of both iSCSI initiators on clients and iSCSI targets on servers
- Support iSCSI as both initiator and target
- Integrate iSCSI with an open source storage foundation to provide high availability for mission-critical workloads such as LAMP stacks, Oracle Real Application Clusters, and virtual server (Xen) image stores
- Audit subsystem enrichment. Major improvements and extensions to the audit subsystem now enable SUSE Linux Enterprise Server 10 with Service Pack 1 to meet strict government standards and vertical industry requirements. The updates include modules for security certification provided by the Common Criteria for Information Security Evaluation (CC-CAPP/EAL 4+).

I need to run UNIX* and Windows machines in my enterprise and would like to add some Linux. Can I integrate SUSE Linux Enterprise Server?

Every large enterprise has a mix of operating systems and hardware. SUSE Linux Enterprise Server 10 has been designed with that heterogeneous environment in mind. Leveraging Samba technology, SUSE Linux Enterprise Server seamlessly integrates into and supports existing Windows file and print environments. In addition, it plugs into existing directory and domain infrastructures, including Microsoft* Active Directory* and Domains, Novell eDirectory™ and openLDAP. With its broad use of open standards, SUSE Linux Enterprise Server enables you to share information across any IT system so that you can easily communicate between business divisions or business partners.

We plan to implement Linux but have no in-house experience. How can Novell help us?

The Novell consulting and partner organizations back SUSE Linux Enterprise Server 10 with a comprehensive set of offerings for implementation and training partners.

Novell Consulting® has more than 1,900 professionals worldwide, with specialized practices in enterprise platform services, data center technologies and open source development. All are ready to help you quickly deploy SUSE Linux Enterprise Server inside your organization.

Novell also has more than 900 commercial and academic training partners worldwide, offering training and certification programs, including Novell Certified Linux Professional℠ 10 (Novell CLP) and Novell Certified Linux Engineer℠ 10 (Novell CLE).

Finally, Novell has a broad partner and reseller network with more than 1,300 members, all trained and ready to help you deploy SUSE Linux Enterprise Server inside your organization.

We need to have our Linux systems up and running. Can we rely on Novell for Linux support?

SUSE Linux Enterprise Server 10 is backed by the world-class and award-winning Novell technical support team. With 11 major global support centers and 800 Linux-trained engineers providing 24x7x365 availability, our support service has global around-the-clock reach.

You already know that SUSE Linux Enterprise is the leader when it comes to technology, but now, an independent marketing research survey by Lighthouse Research confirms it–Novell leads also in overall quality of Linux-based technical support (see **www.novell.com/linux/support-survey.html**).

Why does Novell offer only one type of support for SUSE Linux Enterprise Desktop and three types of support for SUSE Linux Enterprise Server?

SUSE Linux Enterprise Server comes with three types of support: basic (updates only), standard (12x5, four-hour response) and priority (24x7, one-hour response). For the desktop, we offer only a basic support subscription, which includes patches and updates. Each organization's deployment of SUSE Linux Enterprise Desktop is different, so we recommend that customers negotiate a tailored support contract with Novell or their preferred hardware or services vendor to cover their unique support needs. As our desktop support business grows, we expect that certain patterns will emerge and at that point we will introduce more standardized desktop support offerings.

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