

INFOBrief

SUSE Linux Enterprise Server 10

SUSE® LINUX Enterprise Server 10 is the enterprise server version of a family of Operating Systems products designed by Novell to cover all computing requirements from the desktop (SLED) through the workgroup and into the data center (SLES). SUSE Linux SLES 10 empowers businesses to leverage Linux and open source technology by delivering a scalable, high-performance foundation for secure enterprise computing. Built for reliability, it offers comprehensive functionality to power today's networks and meet user demands. SUSE Linux Enterprise Server also supports a broad range of hardware platforms and leading software applications.

SUSE Linux Enterprise Server 10 is backed by Novell, giving you a reliable release cycle and a complete enterprise software ecosystem for Linux: technical support, training, consulting, indemnification and an extended partner network. The Novell commitment to open source, combined with Dell's expertise in Linux integration, helps businesses of all sizes deploy Linux quickly and confidently.

SUSE Linux Enterprise Server 10 offers rich software-development capabilities through built-in network services and protocols, including CUPS, DNS, DHCP, IMAP, NTP, SLP, Postfix, PXE, Proxy, Samba, SNMP, SMTP and many others. It also includes application and database services—such as Apache, Tomcat, MySQL® and PostgreSQL—and supports popular solutions from hundreds of independent software vendors

Background to the Dell and Novell/SUSE Partnership

Novell has been a Dell strategic partner since 1990. In 2004, Dell and Novell expanded the scope of the relationship to include the SUSE Linux operating system recently acquired by Novell. This relationship unites Novell and SUSE's position in the Open Source market with Dell's commitment to meeting the demand for Linux from the edge of the Internet to the heart of the Enterprise. The partnership's goal is to accelerate the commercial acceptance and adoption of Linux and to provide customers with one source for Linux solutions. Through this partnership, Dell can provide customers with SLES 10 supplied with and supported on PowerEdge servers.

Key Benefits to Dell Customers

- Dell has tested SLES 10 on a broad range of platforms and peripherals. Customers can have full confidence that Dell has qualified, certified and quality assured all the platforms contained in the Supported Platform List (below in this document).
- Dell offers its customers the convenience of factory pre-loaded software for SLES 10 at no extra charge. Customers can be confident that their server will be up and running quickly.
- Dell offers its award winning OpenManage™ system management software on SLES 10 and Dell's 9th Generation servers. Customers who do not choose to have their OS factory pre-loaded may use the Dell OpenManage™ Server Assistant software installation 'wizard' for fast and trouble-free software loading without the need for extra 'driver disks' or web downloads.
- Customers may also use the OpenManage Server Administrator agent to monitor and instrument key events on their platforms. Events such as fan failure or thermal conditions can be detected and rectified by administrator intervention.
- Customers who choose to upgrade their OS version via the SUSE Maintenance Portal and who have access to the (Open) Source code may recompile Dell modules for their OS version and continue to use the monitoring and instrumentation packages.
- Customers have access to a full storage management application provided only by Dell. OpenManage Storage Services allows administrators to visually configure and tune their RAID layouts and effect full volume management.

- Dell offers customers full technical software support for SLES 10 on Dell's PowerEdge Server platforms. Customers may choose between Dell Silver, Gold or Platinum Enterprise Services for their SUSE systems.
- Dell customers may choose between either Dell technical support or Novell/SUSE technical support. Both organizations can assist the customer in ascertaining if a fault is hardware or software and then act accordingly.

Key Points of the Dell implementation

- SLES 10 is offered as a factory preload with a media and documentation kit with the purchase of a server.
- The currently implemented version is SLES 10, Service Pack 0. Dell will continue to offer SLES 9 as an 'N-1' version on the same platform set as SLES 10.
- Customer kits for the Dell OEM version of SLES 10 are not available from Dell without the sale of a server.
- SLES 10 is sold at 2 different price points, dependent on the processor capacity of the platform it is purchased with: 1, and more than 1 processor sockets. The price is set by the capacity of the platform, not the number of processors purchased at the time of order.
- The Dell supported version of SLES 10 is the EM64T version **only**. Customers using software that is not found on the distribution disks are strongly encouraged to verify that their application mix is supported in an EM64T environment.
- Dell's award winning Open Manage utilities are supported on the combination of SLES 10, Dell 9th generation servers and select 8th generation servers. Other Dell platforms are supported with SLES 10 but without Open Manage (or fiber channel) support. Please see the supported platforms list later in this document for a full list.
- SLES 10 is supplied as part of a SUBSCRIPTION service. The pricing for SLES 10 enables users to receive patches, updates and upgrades to the SLES software during the life of the subscription, including major version upgrades. The product updates are available via the Novell Customer Center. Dell offers both a one year pre-

paid subscription and a three year pre-paid subscription. **The three year subscription is required for all customers wishing to take out Dell Platinum, Gold, and Silver support contracts.**

- Dell will not be supporting the HA clustering technology within SLES 10.
- Xen virtualization technology is supported by the SUSE SLES 10 release. The pre-loaded image supplied by Dell does not include Xen, and customers wishing to use this technology should follow the instructions included in the Xen media and documentation kit. Please see the section on Xen 3.x Hypervisor implementation in this document.

Novell Customer Center

SUSE Linux Enterprise Server customers will automatically receive access to the new Novell Customer Center. Novell Customer Center is an online interface that makes it easy for customers to manage their business and technical interactions with Novell. From one location, you can review the status of all your Novell products, subscriptions and services—and obtain critical Linux* updates and support. Novell Customer Center combines the innovative tools and automated services you need to ensure licensing compliance and reduce systems-management costs. The Novell Customer Center will replace the SUSE Linux Maintenance portal, although the SUSE portal will continue to exist for a short time while existing customers migrate to the new site.

Novell Customer Center users will benefit from automated registration for new SUSE® Linux Enterprise products; manual access to patches and updates for all shipping SUSE Linux Enterprise products; order-history logs for all Novell products, subscriptions and services; entitlement visibility for all SUSE Linux Enterprise subscriptions; the ability to view Linux subscription-renewal status; and subscription renewals via partners or Novell. Because Novell Customer Center is primarily focused on managing your business relationship with Novell, it addresses the needs of organizations' purchasers, IT administrators and IT directors.

For more information on how Novell Customer Center works, please visit these links:

<http://www.novell.com/customercenter/faq.html>

<http://www.novell.com/customercenter/demo.html>

Xen 3.x

Xen™ is a virtualization technology that allows users to create virtual machines (domains) within the underlying Operating System (often referred to as Domain 0). A secondary Operating System (guest) is then bootstrapped into a virtual machine. This allows a single physical server to contain multiple virtual environments (domains), with each domain running logically separate Operating Systems. These virtual machines are normally referred to as 'User Domains' or 'Dom-U' (for Domain User) to differentiate them from the underlying Operating System, known as Domain 0. The software code to implement Domain 0 and create the user domains is normally referred to as the Xen hypervisor.

As delivered, the factory image does not contain the Xen hypervisor. Customers who wish to use Xen will need to install the software from the disks contained in the media and documentation kit that shipped with the platform. Once installed the system will need to be restarted and the Xen hypervisor selected from the boot menu. Once the system has been restarted please consult the documentation for instructions on how to create User Domains and boot operating systems within those domains.

Dell will support its systems while running the hypervisor, but will be unable to offer support for the Operating Systems that may be running in any of the User Domains. That support will need to come either from Novell or the OS vendor themselves. Prior to installing Xen please make sure you are aware of the support situation for any operating system you wish to run in a User Domain as well as any other software you may need to run in Domain 0, such as storage volume managers, EMC® PowerPath® or backup software. Please note that Dell will only support the Xen hypervisor running on 9th Generation server platforms, or later.

Platform Availability

The following platforms are supported with SLES10, OpenManage tools and full fiber channel implementation:

PE1950, PE1900,
PE2950, PE2900, PE1955
PE SC1435, PE SC1430, PE SC440,
PE860, PE840,
PE6800, PE6850.

Platforms supported WITHOUT OpenManage or Fiber Channel:

PE1855, PE1800, PE2800, PE2850,
PE SC1425, PE SC1420, PE SC430,
PE800, PE830, PE850.

Features and Benefits of SLES 10

Feature	Function	Benefit
Kernel 2.6.x	The most current of the 2.6 kernel series.	The latest technology in a stable, tested kernel.
Logical Volume Manager (LVM)	LVM allows disk storage to be combined into a logical pool then partitioned according to application requirements. Also includes the ability to dynamically expand logical volumes.	Previously customers needed to purchase expensive third-party volume management products.
Upgraded compiler tool-chain	Glibc 2.4, gcc 4.x	The latest set of compiler tools for application stability
Enhanced Standards Support	SLES 10 is Linux Standards Base 3 (LSB 1.3) compliant.	Supports commercial and government standards for application compatibility and security.
Updated CIM support	Delivers vendor neutral system management and instrumentation	Enables customers to begin the adoption of the IPMI and CIM system management tools.
Native Posix Thread Library	High-performance multi-threading capability.	Helps improve performance for multi-threaded applications (for example, Java).
Support for High Performance File Systems	Support for ReiserFS, Ext2/3, JFS, XFS and Lustre.	Offer high performance I/O for enterprise users.

Feature	Function	Benefit
System Management Tools	ZENworks and ZENworks Dell Edition support	Wide ranging system management tools designed to manage large numbers of Linux servers
Xen 3.x Hypervisor	Virtual machine technology support	Customers can create virtual environments for the support of legacy Operating Systems and dependent applications
Built in Firewall and Proxy Server	Network Security	Customers no longer need to purchase 3 rd party network security tools.
VPN support	Network Security	Customers can create their own secure 'Virtual Private Network' across otherwise insecure public networks.
NFS 4.x client and server	Latest version of NFS support, both client and server	NFS 4 is intended to deliver higher performance networking file system support

Product Restrictions

High Availability Clustering

Cluster Suite will **not be supported by Dell**.

SLES 10 Clustering is a software product that enables a customer to add high availability technology to an existing system.

Customers who require support of HA configurations are advised to contact Novell/SUSE direct.

Xen

The Xen hypervisor is only supported on Dell 9th Generation platforms and later.

AppArmor

AppArmor is included by default in SLES 10. Customers looking for a security framework that proactively protects the operating system and applications from external or internal threats, even zero-day attacks, by enforcing good program behavior and preventing even unknown software flaws from being exploited are encouraged to evaluate AppArmor.

AppArmor security profiles completely define what system resources individual programs can access, and with what privileges. A number of default policies are included with AppArmor, and using a combination of advanced static analysis and learning-based tools, AppArmor policies for even very complex applications can be deployed successfully in a matter of hours.

Most operating systems have a built-in security mechanism known as access control. Linux employs Discretionary Access Control (DAC) which means that a program runs with the permissions of the user executing it. Since we have seen that attackers often exploit flaws in programs that allow them to compromise systems, giving a program all the privileges of the user running the program is highly risky.

AppArmor supplements the discretionary access control mechanism of Linux with Mandatory Access Control (MAC). Under mandatory access control, each program runs with a very strict set of permissions that are specified by the system, not the user. AppArmor enforces the idea of least

privilege for programs, that is, granting programs only the privileges they need to do their job and nothing else.

Many security vulnerabilities result from bugs in “trusted” programs. A trusted program runs with a privilege that some attacker would like to have, and the program fails to keep that trust if there is a bug in the program that allows the attacker to acquire that privilege. AppArmor is an application security solution designed specifically to provide least privilege confinement to suspect programs. AppArmor allows the administrator to specify the domain of activities the program can perform by developing a security profile for that application: that is, a listing of files that the program may access and the operations the program may perform. AppArmor provides sufficient security to prevent the exploitation of software vulnerabilities in Internet servers, while minimizing performance, implementation and administrative costs. *

Support and Service Products

Dell Infrastructure Services: Execution Without Excuses

Dell brings pure execution to IT Services. The planning, implementation and maintenance of your IT infrastructure deserves nothing less. Variability in execution can compromise user productivity, IT resources, and ultimately, your reputation. By leveraging our heritage of process driven excellence, Dell Services can deliver a smarter way.

Custom Factory Integration

Dell's Custom Factory Integration is a frontline solution that integrates hardware, images, applications, peripherals, and documents with your systems, as they're being built. It can help simplify and speed up deployment, can lead to improved consistency and compatibility, and can help keep maintenance standards under control.

SUSE Linux can be installed in our factory environment based on your requirements and schedule.

Enterprise Support Services

Dell Enterprise Support Services are a modular suite of robust offerings, covering system support and maintenance. The suite provides alternative levels of technical phone support, on-site services, and account management features designed to address increasing levels of system uptime. Platinum Plus, Gold and Silver Enterprise Support include 7x24

software troubleshooting, and are designed to support your SUSE Linux environment.

Platinum Plus Enterprise Support: Dell's most comprehensive level of support which combines rapid response and resolution for critical issues with customized account planning and reporting to proactively improve uptime. This level of support is appropriate for servers that are being used in datacenters and mission critical environments.

Gold Enterprise Support: Provides 7x24 rapid response and resolution of critical issues including escalation management and on-site Emergency Dispatch procedures to quickly restore operations. This level of support is appropriate for servers that are being used for email systems, database applications and virtualization.

Silver Enterprise Support: Silver support provides convenient 7x24 phone access for hardware and core software troubleshooting with 4-hour 7x24 on-site¹ services following completion of phone-based troubleshooting. This level of support is appropriate for file and print servers and other non-production testing and development.

Optional Enterprise Support Features

Onsite Response Options –include 7x24 4-hour onsite¹ response with 6-hour repair service.

Enterprise Assistance – Provides phone-based “how-to” configuration, optimization, migration and installation assistance.

Keep Your Hard Drive – Under the Keep Your Hard Drive service, in the event of a hard drive failure covered by your Dell limited warranty,² a replacement hard drive will be dispatched and you can keep the defective drive.

On-Site Technical Account Manager (TAM) – Dedicated, highly skilled Dell TAM works on-site at your location, providing high-level support to identify areas for improving availability and on-site management of critical situations.

On-Site Spare Parts – Offers you the opportunity to plan and manage your own inventory of spare parts.

On-Site Engineer – A dedicated, highly skilled Dell-certified engineer works on-site at your location, providing insight into your specific environment with expert knowledge of Dell processes and technology.

On-Site Troubleshooting – Instead of phone-based troubleshooting, a Master Dell-certified system expert travels to your location to help troubleshoot issues.

Professional Services

Dell Professional Services (DPS) offers a full suite of services that can help you quickly realize the cost savings and performance advantages of running a Novell SUSE Linux Enterprise Server 10 operating system on Dell industry-standard technology.

All professional services are delivered through Dell, offering a single point of accountability, and leverage the expertise of Dell, Novell and other best-in-class service partners to deliver a solution to meet your current and future business needs. Skilled DPS consultants leverage proven methodologies and best practices in designing solutions that encompass Dell server and storage products and a Linux operating system. Offerings include:

- **Internet Infrastructure Services** – Helps clients create an efficient, highly available and scalable IT infrastructure.
- **Migration Services** – Designed to reduce risk and speed transition from UNIX environments to the Linux platform.

Please note: Some Dell services vary by region. Please contact your local representative for more information, or visit

<http://www.dell.com/content/topics/global.aspx/services/en/index?c=us&l=en&s=gen>.

¹Service may be provided by third-party. Technician will be dispatched if necessary following phone-based troubleshooting. Subject to parts availability, geographical restrictions and terms of service contract. Service timing dependent upon time of day call placed to Dell. U.S. only.

² For a copy of our guarantees or limited warranties, please write Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, TX 78682. For more information, visit www.dell.com/warranty.

* As referenced from Novell published whitepaper "Installing a Secure Server with SUSE enterprise server 9 and Novell.App Armor. (www.novell.com/collatera/4622008/4622008.pdf)

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