

What's New in SUSE[®] Linux Enterprise 10 SP1

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General Service Pack Information

Service Packs are available for download from Novell Customer Center located at: www.novell.com/center

Because system maintenance is an essential part of SUSE® Linux Enterprise 10, Novell provides Service Packs (SPs) for all registered customers with valid Novell® Subscription during the product's lifecycle. Service Packs are available for download from Novell Customer Center located at: www.novell.com/center

A Service Pack is an update to the original software that is mainly designed to deliver consolidated security and maintenance patches. Service Packs also deliver enhancements such as hardware enablement to the product where appropriate and where compatibility is ensured and Independent Software Vendor (ISV) certifications will not be affected. Such is the case with SUSE Linux Enterprise 10 SP1; it delivers substantial product enhancements, not just bug fixes.

The GPL requires that Novell make available certain source code that corresponds to those GPL-licensed materials. The SUSE Linux Enterprise Product Sources are available for download at: www.novell.com/linux/source

Products based on SUSE Linux Enterprise include materials licensed to Novell under the GNU General Public License (GPL). The GPL requires that Novell make available certain source code that corresponds to those GPL-licensed materials. The source code for all free software and open source packages is available for download at: www.novell.com/linux/source

SUSE Linux Enterprise 10 SP1 Summary

With the release of the first Service Pack (SP1) for SUSE Linux Enterprise 10, Novell continues to set the standard in enterprise Linux* technology. This update delivers significant advances in virtualization, security, high-performance computing, systems management, desktop usability and interoperability.

Maintenance Patches

SUSE Linux Enterprise 10 SP1 contains all of the latest security patches and bug fixes that have been released for the Linux kernel 2.6 and associated packages since July 2006, when SUSE Linux Enterprise 10 was originally released. Furthermore, it contains all of the Problem Temporary Fixes (PTFs) for each package released via the maintenance Web site (since the official release).

Through joint testing with our technology partners and maximum care, Novell works to safeguard ISV certifications with each SP, but we recommend that you check with your ISV about the certification status of your application.

Hardware and Drivers

SUSE Linux Enterprise 10 SP1 supports many new hardware components via driver and PCI ID updates. It also adds support for a number of network and storage drivers as well as support for new audio and graphics devices. Continued improvements and enhancements have been made to:

- *Hardware plug-n-play*
- *Printer standards support*
- *File standards support*
- *Network standards support*

Furthermore, we added support for new processor technologies, including Quad-Core Intel* Xeon* and Quad-Core AMD* Opteron* processors. Through the support of new chips joint-engineered with chip vendors, SUSE Linux Enterprise 10 SP1 enables multiple virtual machines to run varied data center workloads in native and Xen* virtualized environments with outstanding performance, energy efficiency and reliability.

Support for Novell Open Enterprise Server 2

SUSE Linux Enterprise 10 SP1 has new features designed to support the workgroup services in Open Enterprise Server 2, including updates to the DNS, DHCP and LDAP modules, as well as support for paravirtualized NetWare® 6.5.

Release Notes and Package Descriptions
The SUSE Linux Enterprise 10 SP1 release notes and package lists contain detailed information about all new features, version numbers, package specifications and modifications. As an additional benefit, the SP1 release notes also contain comprehensive information about SP1 installation methods, such as setting up a new server or updating a server where SUSE Linux Enterprise Server 10 is already installed. You will find them at:

- *SUSE Linux Enterprise Server 10 Service Pack 1*: www.novell.com/documentation/sles10
- *SUSE Linux Enterprise Desktop 10 Service Pack 1*: www.novell.com/documentation/sled10

The current version and description of each package can be found at the following URLs:

- *SUSE Linux Enterprise Server 10 Service Pack 1*: www.novell.com/products/server/techspecs.html?tab=1
- *SUSE Linux Enterprise Desktop 10 Service Pack 1*: www.novell.com/products/desktop/techspecs.html?tab=1

Enhanced and New Features in SUSE Linux Enterprise 10 Service Pack 1

This document describes only the most important enhancements shipped with SUSE Linux Enterprise 10 SP1; it does not give a complete and exhaustive list of all enhanced and new features.

For a comprehensive overview of all updated and new packages, please see the package descriptions for SUSE Linux Enterprise Server 10 SP1 and SUSE Linux Enterprise Desktop 10 SP1.

The release notes include a comprehensive list of updated and added features. You will find them at:

- *SUSE Linux Enterprise Server 10 Service Pack 1*: www.novell.com/documentation/sles10
- *SUSE Linux Enterprise Desktop 10 Service Pack 1*: www.novell.com/documentation/sled10

The current version and description of each package can be found at the following URLs:

- *SUSE Linux Enterprise Server 10 Service Pack 1*: www.novell.com/products/server/techspecs.html?tab=1
- *SUSE Linux Enterprise Desktop 10 Service Pack 1*: www.novell.com/products/desktop/techspecs.html?tab=1

Virtualization

Feature or Function	Description
Xen	In SUSE Linux Enterprise 10 SP1, Xen has been updated to version 3.0.4 plus selected features backported from the upstream development tree. This new version includes new tools, supports paravirtualized frame buffering, allows 32-bit virtual machines (VMs) to run on a 64-bit hypervisor and offers improved fully-virtualized guest support.
VM installation tool	The VM installation tool has moved from the "System" category in YaST to the new "Virtualization" category. It has been rewritten to take advantage of new Xen features and to better integrate with other virtualization tools. The VM installation tool features a graphical as well as a text based interface.
VM management tool	An optional VM management tool has been added. To use it, install the virt-manager package, and look in the YaST "Virtualization" category. The tool currently does not manage VM configurations that are not known to xend (that is, those in /etc/xen/vm that are not running). To place a VM configuration under xend's control, run the "xm new" command. The VM can then be managed with virt-manager.
VM displays	The VM installation tool now defaults to displaying VMs with Virtual Network Computing (VNC) rather than SDL, to allow interoperability with the package virt-manager.
Paravirtualized drivers	Paravirtualized (PV) drivers are or will be made available for hosting SUSE Linux Enterprise Server 10, SUSE Linux Enterprise Server 9 SP3, Windows* XP, Windows 2000, Windows 2003, Red Hat* Enterprise Linux 4 and Red Hat Enterprise Linux 5 as fully virtualized guests on Xen 3.0.4. These new paravirtualized network, bus and block device drivers, together with extended hardware from Intel and AMD, allow customers to run virtual Windows and Linux workloads on SUSE Linux Enterprise Server 10 with improved performance. The PV drivers for SUSE Linux Enterprise Server 10 and SUSE Linux Enterprise Server 9 SP3 are included with SUSE Linux Enterprise Server 10 SP1.

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Feature or Function	Description
Paravirtualized drivers <i>continued</i>	<p>The PV drivers for the other operating systems are made available via 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). The Driver Pack is only available electronically via download. Paravirtualized device drivers for Red Hat Enterprise Linux 4 and Red Hat Enterprise Linux 5 will be available in the second half of 2007; they will be delivered as free updates to the Virtual Machine Driver Pack via Novell Customer Center.</p> <p>For more information about the SUSE Linux Enterprise Virtual Machine Driver Pack, visit: www.novell.com/products/vmdriverpack/</p> <p>For more information about virtualization, visit: www.novell.com/virtualization</p>
CIM Provider for Xen	A CMPI-based Common Information Model (CIM) Provider (xen-cim-cmpi) for Xen virtualization technology has been added.

Installation: YaST and AutoYaST

Feature or Function	Description
YaST mount	The default mount method was changed from mount by device name to mount by ID. If the device does not support unique IDs, the old device names are used instead.
Package manager	<p>The package manager has seen significant speed and error-handling improvements. Additional enhancements are:</p> <ul style="list-style-type: none"> ■ Visual feedback of download and operations progress has been added. ■ The list of installed patterns and packages can be exported as well as imported. ■ A "verify installed package dependencies" option has been added.
Zypper	Zypper has been added. It is a new command-line interface to libzypp, the back-end of YaST package management.
YaST CD creator	The module yast2-cd-creator now supports remote installation sources and CD/DVD sources and is able to sign the medium with a GNU Privacy Guard (GPG) key.
YaST NFS server module	The yast2-nfs-server module added Network File System version 4 (NFSv4) support.
AutoYaST	<p>AutoYaST has seen many improvements:</p> <ul style="list-style-type: none"> ■ Profiles can now be stored or located on a USB device. ■ Existing partitions can have a <resize> element. ■ Partition sizes can be configured by percentages (<size>30%</size>). ■ The <ask> feature can now store the answer in a file, making it available for scripts. ■ User Interface enhancements are available for signature handling, partitioning and more.
Additional languages	<p>Translations for the following languages were added to YaST2:</p> <ul style="list-style-type: none"> ■ Afrikaans ■ Arabic ■ Catalan ■ Gujarati ■ Marathi ■ Tamil ■ Xhosa ■ Zulu

Availability

Feature or Function	Description
Oracle Cluster File System 2	<p>Oracle® Cluster File System 2 (OCFS2) is the only symmetrical parallel cluster file system to be accepted into the Linux Mainline Kernel. It has been designed to host and perform on larger files in a clustered environment. These capabilities make it a perfect fit to host virtual server disk images in a high-availability configuration.</p> <p>In SUSE Linux Enterprise Server 10 SP1, the OCFS2 userland tools have been updated to version 1.2.2.</p>
Heartbeat	<p>Heartbeat is a subsystem that adds failover functionality to your system. It allows two Linux servers (a primary and a backup) to determine if the other is "alive." If the primary isn't functioning, Heartbeat sends failover resources to the backup. It is one of the foundational technologies of the High Availability Linux Project.</p> <p>In SUSE Linux Enterprise Server 10 SP1, Heartbeat has been updated to version 2.0.8.</p>

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Feature or Function	Description
Distributed Replicated Block Device	Distributed Replicated Block Device (DRDB) is a networked disk-management tool designed to build high-availability clusters. This is done by mirroring a whole block device via a dedicated network. SUSE Linux Enterprise Server 10 SP1 ships with DRDB version 0.7.22.
Multipathing	With multipathing, you get improved redundancy and performance, specifically in input/output (I/O) load balancing and fault tolerance. SUSE Linux Enterprise Server 10 SP1 includes multipath-tools, version 0.4.7. It provides an administrative interface for multipathing, includes improved support for EMC storage arrays and is integrated into the device hotplug infrastructure.
Device mapper	The device mapper abstracts and remaps the underlying physical block device to the user or applications. The device mapper library has been updated to version 1.02.13.
RAID device support	RAID devices can help improve your storage availability and performance by enhancing data fault tolerance and I/O performance. In SUSE Linux Enterprise Server 10 SP1, the dmraid package has been updated to 10.0.0rc13 to support additional devices (SNIA DDF1 [IBM], JBOD, Adaptec HostRAID and JMicron JMB36x). The dmraid package discovers block and software RAID devices by using a variety of metadata format handlers that support multiple formats. Furthermore, mdadm, a program that can be used to create, manage and monitor multiple devices, has been updated to version 2.6.

Serviceability

Feature or Function	Description
Kernel crash dumping kexec-tools	Kexec is a user space utility for loading another kernel and asking the currently running kernel to do something with it. A currently running kernel may be asked to start the loaded kernel on reboot, or to start the loaded kernel after it panics. In SUSE Linux Enterprise Server 10 SP1, kexec-tools has been updated, and IA-64 support for kexec/kdump has been added. Going forward, this is Novell recommended dumping solution for IA-64 (except for SGI systems). The upcoming release of SUSE Linux Enterprise Server 11 will not include Linux Kernel Crash Dump (LKCD).
OpenIPMI	OpenIPMI delivers an extensible and open standard for monitoring, logging, recovery and inventory, as well as control of system hardware, sensors and events. In SUSE Linux Enterprise 10 Server SP1, OpenIPMI has been updated to version 2.0.7
IPMItool	IPMItool provides a simple command-line interface to the Baseboard Management Controller. Using IPMItool, your systems can: <ul style="list-style-type: none"> ■ Read the sensor data repository (SDR) and print sensor values ■ Display the contents of the System Event Log (SEL) ■ Print Field Replaceable Unit (FRU) inventory information ■ Read and set LAN configuration parameters ■ Perform remote chassis power control In SUSE Linux Enterprise Server 10 SP1, IPMItool has been updated to version 1.8.9.
SystemTap	SUSE Linux Enterprise Server 10 SP1 includes SystemTap, which was previously released as a maintenance update for SUSE Linux Enterprise Server 10. This release adds s390x (IBM* System z*) support. SystemTap provides free software infrastructure to simplify the gathering of information about the running Linux system. This assists diagnosis of a performance or functional problem.
Nagios	Nagios is an open source host, service and network monitoring program. SUSE Linux Enterprise Server 10 SP1 updated Nagios to version 2.6.
SPident	SPident delivers consolidated package information. It reviews all service packs and identifies which ones are installed. In SUSE Linux Enterprise Server 10 SP1, it is updated to contain maintenance update and SP1 data.

Security

Feature or Function	Description
Linux Unified Key Setup (LUKS) support	SUSE Linux Enterprise Server 10 SP1 added Linux Unified Key Setup (LUKS) support. LUKS is the emerging standard for Linux hard-disk encryption. By providing a standard on-disk format, it not only facilitates compatibility among distributions, but also provides secure management of multiple user passwords. In contrast to existing solutions, LUKS stores all necessary setup information in the partition header, enabling the user to transport or migrate data seamlessly. SUSE Linux Enterprise Server 10 SP1 also includes cryptconfig, a utility to configure encrypted home directories and LUKS partitions.

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Feature or Function	Description
Linux Audit framework	<p>Linux Audit allows you to comprehensively log and track any access to your system files, directories or resources and to trace system calls. It enables you to monitor your system for application misbehavior or code malfunctions. By creating a sophisticated set of rules, including file watches and system call auditing, you can make sure that any violation of your security policies is noticed and properly addressed.</p> <p>In SUSE Linux Enterprise Server 10 SP1, the audit subsystem has been updated to version 1.2.9; Python-bindings for libaudit (audit-libs-python) have also been added.</p>
Novell AppArmor™	<p>AppArmor provides enterprise-class, flexible and easy-to-use Linux application security. It protects your operating system and its applications from the harmful effects of attacks, malicious applications and viruses. No matter where an attack originates—internally or externally—your enterprise can ensure data integrity and reduce system administration.</p> <p>SUSE Linux Enterprise Server 10 SP1 updated AppArmor by adding:</p> <ul style="list-style-type: none"> ■ A Pluggable Authentication Module (PAM) called pam_apparmor that adds AppArmor change_hat functionality to session-aware applications ■ A Tomcat 5 plugin (tomcat_apparmor) for AppArmor change_hat ■ A CIM provider (apparmor-provider-notifications) for managing the AppArmor notification system ■ A CIM provider (apparmor-provider-reporting) for managing the AppArmor reports configuration

Server Functionality, Application and Developer Services

Feature or Function	Description
Apache Web Server	<p>Apache Web Server is the number-one HTTP server on the Internet. In SUSE Linux Enterprise Server 10 SP1, it has been updated to version 2.2.3.</p>
Domain Name System (DNS) network services	<p>SUSE Linux Enterprise Server 10 SP1 ships with the Berkeley Internet Name Domain (BIND) name server version 9.3.3, which includes support for Domain Name System (DNS) security, Internet Protocol version 6 (IPv6), limited views, multiprocessing and several DNS protocol enhancements.</p>
Binary utilities	<p>Binutils is a collection of binary utilities that includes tools capable of linking and managing archives, including handling object code, libraries, profile data and symbol names. POWER6 support for binutils has been added to SUSE Linux Enterprise Server 10 SP1.</p>
GNU Compiler Collection (GCC)	<p>GNU Compiler Collection (GCC) is a set of programming language compilers developed by the GNU Project. It is:</p> <ul style="list-style-type: none"> ■ A free software project ■ The key component of the GNU toolchain ■ The standard compiler for Linux operating systems ■ A collection that supports multiple architectures and diverse environments <p>With SUSE Linux Enterprise Server 10 SP1, GCC has been updated to version 4.1.1, and now features support for IBM POWER6 and AMD Family 10h processors.</p>
GNU Project Debugger (GDB)	<p>The GNU Project Debugger (GDB) has been updated to version 6.6. GDB allows you to see what is going on "inside" another program while it executes—or what another program was doing at the moment it crashed.</p>
Libraries	<p>GLib is the low-level core library that forms the basis for projects such as GTK+ and GNOME. GLib2 provides data structure handling for C, portability wrappers, and interfaces for runtime functionality such as event loops, threads, dynamic loading and an object system. SUSE Linux Enterprise Server 10 SP1 ships with GLib2 version 2.8.6.</p> <p>The GNU C Library (glibc) provides the most important standard libraries used by nearly all programs: the standard C library, the standard math library and the POSIX thread library. Without glibc, a system is not functional. In SUSE Linux Enterprise Server 10 SP1, POWER6 processor optimization and True Performance Index (TPI) support for measuring the performance of CPU chips from AMD has been added.</p>
Logical Volume Manager 2	<p>Logical Volume Manager 2 (LVM2) provides a method of allocating space on mass storage devices that is more flexible than conventional partitioning schemes. In SUSE Linux Enterprise Server 10 SP1, LVM2 has been updated to version 2.02.17.</p>
Mono®	<p>Mono provides interoperable support for .NET client and server applications for heterogeneous environments. SUSE Linux Enterprise Server 10 SP1 ships with Mono version 1.2.2, which contains improvements to the C# compiler, the Windows.Forms and ASP.NET.</p>
OpenLDAP	<p>OpenLDAP has been updated to version 2.3.32 in SUSE Linux Enterprise Server 10 SP1. It allows administrators to manage large user bases and control access to networks and applications using the Lightweight Directory Access Protocol (LDAP) standard.</p>
SAP runtime initialization	<p>The package sapinit, which sets the kernel parameters to recommended values for SAP systems and provides an optional startup/shutdown mechanism for certain SAP instances, has been updated to version 2.0.1.</p>

Desktop

Feature or Function	Description
Desktop experience and usability	<p>Improvements in SUSE Linux Enterprise Desktop 10 SP1 include the following:</p> <ul style="list-style-type: none"> ■ A new menu editor (Alacarte) ■ Redesigns to the Novell main menu, control center and logout and screensaver dialogs ■ Updates to the desktop effect engine (Xgl, compiz and enhanced 3-D accelerated graphics) ■ New international clock applet ■ New disk-space usage utility (Baobab) ■ Changes that allow for much faster boot-up speeds
Security	<p>SUSE Linux Enterprise Desktop 10 SP1 now includes desktop lockdown tools and encrypted home directories.</p> <p>SP1 also adds support for ThinkFinger, a driver for the UPEK/SGS Thomson Microelectronics fingerprint reader.</p>
OpenOffice.org support	<p>SUSE Linux Enterprise Desktop 10 SP1 includes the latest version of OpenOffice.org Novell Edition (version 2.1), including the new OpenXML/ODF translator to convert Microsoft® Word 2007 documents to OpenOffice.org. It also includes additional Visual Basic (VBA) macro support and improved Impress presentation functionality, including the ability to play embedded video within a presentation.</p>
Active Directory integration	<p>SUSE Linux Enterprise Desktop 10 SP1 now fits more seamlessly into existing environments due to enhancements in Microsoft Active Directory® authentication.</p>
Networking	<p>NetworkManager keeps an active network connection available at all times. It makes network configuration and setup as painless and automatic as possible. SUSE Linux Enterprise Desktop 10 SP1 delivers enhancements to wireless security and the connection manager.</p>
Web browser	<p>Via broad standards support and compatibility features, the Mozilla Firefox® Web browser works with most Web pages and applications that would otherwise require Microsoft Internet Explorer. In SUSE Linux Enterprise Desktop 10 SP1, Mozilla Firefox has been updated to version 2.0.</p>
Multimedia	<p>SUSE Linux Enterprise Desktop 10 SP1 ships with the following:</p> <ul style="list-style-type: none"> ■ Improved Helix® Banshee™ music player/manager. Banshee can easily import, manage and play selections from music collections. ■ Enhanced F-Spot photo management software. F-Spot offers full-scale photo management that is completely integrated into the Linux desktop. ■ Updated X.org Radeon video driver. This driver is xorg-x11-driver-video-radeon for enhanced 3-D acceleration.
Voice over IP (VoIP)	<p>SUSE Linux Enterprise Desktop 10 SP1 adds support for Voice-over IP (VoIP) via the Ekiga Session Initiation Protocol (SIP) client, a VoIP and video conferencing application for GNOME and Windows. Ekiga is fully interoperable with any other SIP-compliant application and with Microsoft NetMeeting. It supports many high-quality audio and video codecs.</p>
E-mail management	<p>Novell Evolution™ has been updated to version 2.6. It enables complete e-mail management via direct connections to Novell GroupWise®, Microsoft Exchange 2000/2003 and any collaboration server that supports the Internet Message Access Protocol (IMAP) and Post Office Protocol (POP) standards.</p>
Productivity tools	<p>SUSE Linux Enterprise Desktop 10 SP1 provides enhancements for:</p> <ul style="list-style-type: none"> ■ Instant messaging with Kopete and Gaim ■ Tomboy, the desktop note-taking application for Linux integrated in SUSE Linux Enterprise Desktop 10 ■ Beagle®, the desktop search engine that offers integrated desktop search capabilities, allows real-time indexing throughout your entire desktop, and delivers easy and fast access to all content
Desktop virtualization	<p>SUSE Linux Enterprise Desktop 10 SP1 includes Xen virtualization software as a technology preview.</p>

How to Update to SUSE Linux Enterprise 10 Service Pack 1

Products based on SUSE Linux Enterprise 10 offer various migration paths for updating to SP1. You can either update to SP1 via patches or update by using SP1 installation media.

For installing SP1 via patches, the following tools are supported:

- YaST Online Update (YOU)
- `zen-updater`
- `rug`

Alternatively, you can download the full SP1 media (CD or DVD ISO image(s)) and use one of the following procedures, especially in environments without network access:

- *Booting from SP1 media*
- *Using "Patch CD update"*

Furthermore, we recommend extra care if you plan to migrate a system that has any add-on products or kernel module packages installed, such as third-party drivers from ATI or NVIDIA.

Update via Patches

Attention: The update process must be finished completely, from beginning to reboot. There is no automatic way to undo changes. Furthermore, the server has to maintain an online connection throughout the update process.

Prerequisites: First, ensure your system is registered. If you have not done this already, you can do so either by using the "Novell Customer Center Configuration" module in YaST or with the `suse_register` command-line tool. This will add an update source to your system. We recommend that all available updates be installed; however, this is not mandatory.

Update by Using YaST Online Update

- Start the *Online-Update* module from the YaST control center.
- Select the optional *move-to-sles10-sp1* (for SUSE Linux Enterprise Desktop 10 updates, use *move-to-sled10-sp1*) patch. Do not select any other patch at the same time.
- Start *Online-Update* module from the YaST control center.
- Select only the patch with the name "YOU update for YaST2". (It should be the only preselected patch.)
- Now, update all other packages. After this, your system is updated to SP1.
- Reboot your system.

Update by Using zen-updater

- Start *zen-updater* from the system tray.
- Select the "move-to-sles10-sp1" or "move-to-sled10-sp1" patch. Do not select any other patch at the same time.
- Press the "Update" button.
- Wait for the message indicating a successful update.
- A small popup will appear, informing you about changing the update server to `nu.novell.com`.
- Later, a popup asking you to provide the root password will appear.
- After installing the maintenance stack update, a window with patch selection will appear.
- Select/unselect the required patches and press "Accept".
- After the update has finished, reboot the system.

Update by Using rug

- Open a root shell.
- Run "`rug in -y -t patch switch-update-server`". Do not select any other patch at the same time.
- Run "`/usr/bin/switch-update-server`".
- Verify that your update server is now `nu.novell.com` (call `rug sl` to find out).

- Run `"rug sub SLES10-Updates"`.
 - Run `"rug in -y -t patch move-to-sles10-sp1"` (or `"rug in -y -t patch move-to-sled10-sp1"` accordingly).
 - Run `"rug refresh"`.
 - Run `"rug sub SLES10-SP1-Online"` (or `"rug sub SLED10-SP1-Online"` accordingly).
 - Run `"rug in -y -t patch slesp1o-liby2util-devel"` (or `"rug in -y -t patch sledp1o-liby2util-devel"` accordingly).
 - Run `"rczmd restart"`.
 - Run `"rug up"`.
 - Run `"rug in -y -t patch product-sles10-sp1"` (or `"rug in -y -t patch product-sled10-sp1"` accordingly) to install the update stack patch.
 - Reboot your system.
- Technical Background**
- These are the steps involved when you update with YaST online update, zen-updater or rug.
- You have to install a patch to enable manual migration to SUSE Linux Enterprise SP1. The patch is called `"move-to-sles10-sp1"` or `"move-to-sled10-sp1"`, depending on the product.
 - The patch installs two additional packages: the updated `"suseRegister"` package and the `"switch-update-server"` package.
 - Via `"switch-update-server"` script, the update source is migrated from NU service `"update.novell.com"` to NU service on `"nu.novell.com"`.
 - The SP1-Migration product is installed.
 - `"suse_register"` is called to add the SLES10-SP1-Online/SLED10-SP1-Online catalog. Additionally for SUSE Linux Enterprise Desktop, third-party vendor packages such as ATI and NVIDIA are added.
 - The online tools now offer a full set of patches to move the system to SP1.
 - By installing the `patch-liby2util-devel-*` patch, the package manager stack is updated first.
- After that, all patches to install SP1 are installed, including a new kernel and a patch that updates the product information to `"SLES10-SP1-Online/SLED10-SP1-Online"`. The product patch is important for registration after reboot to succeed. The newly introduced packages in SP1 are delivered as optional patches.
 - You are asked to reboot the machine. This is not done automatically.
 - After reboot, the `"suse-register"` script detects that a new registration is needed and starts the registration on background. (However, if the host is using NetworkManager, the registration at boot time is skipped, and is triggered via NetworkManagerDispatcher.)
 - The registration can take quite some time. There is no visual feedback regarding its status except for zen-updater turning orange if maintenance updates are already waiting for the new SP1 installation.

Update Using SP1 Installation Media

Update by Booting from SP1 Media

To start the standard update from CD-ROM or DVD, reboot your computer with this medium in your CD-ROM or DVD drive. Select "System Update" instead of fresh installation.

Install via the Network

It is also possible to provide the installation media via the network. SUSE Linux Enterprise 10 SP1 is a complete product, so it can be added to an Installation Server in the same way as every other SUSE Linux Enterprise product.

The procedure on how to set up an installation server and to add the service pack is described in the installation notes for SUSE Linux Enterprise Server 10 SP1. You will find this document in the README file on the first CD. Within this document, see chapter 3.1, "Setting Up an Installation Server".

You will find a more detailed guide in the documentation of your SUSE Linux Enterprise Server 9 or SUSE Linux Enterprise Server 10 GA version. For SUSE Linux Enterprise Server 10, please see chapter 4.2.1, “Setting Up an Installation Server Using YaST” in the file `sles-admin.pdf`, which you can find on the first CD/DVD in the directory `/docu/en`. For SUSE Linux Enterprise Server 9, you can find this chapter in the file `docu/en/manual.pdf`.

To **start** the update, proceed as follows:

- *You need a bootable medium to initialize the process. Booting via network/PXE is also possible. For ready-to-apply configuration examples for PXE boot, see chapter 4.3 in the SUSE Linux Enterprise Server 10 documentation mentioned above.*
- *Boot the machine and choose “Installation”.*
- *If your installation source is announced via SLP, enter “install=slp” in the “Boot Options” field (or change the installation source via “F3”, if this is available on your platform).*
- *After the machine boots, it shows a selection of install options it has found via SLP.*
- *If SLP is not configured on your installation server, you have to enter the IP and path to your installation source to the “Boot Options” field manually. If the installation source is configured as NFS share, see the following example:*

```
install=nfs://IP_ADDRESS_OF_YOUR_SERVER/PATH_TO_SP1
```

For other server types, see the documentation mentioned above.

- *Select “System Update” instead of performing a fresh installation.*

Update by Using “Patch CD update”

Note: This installation option is available only for SUSE Linux Enterprise Server, not for SUSE Linux Enterprise Desktop.

The procedure is described in the installation notes for SUSE Linux Enterprise Server 10 SP1. You will find this document in the README file on the first CD; see chapter 5.3.

Migration to SP1 with Kernel Module Packages/Add-on Products Installed

As already mentioned, we recommend extra care if you plan to migrate a system that has any add-on products or kernel module packages installed, such as third-party drivers from ATI or NVIDIA.

Updating the system via PatchCD is only possible if no further installation source was registered previously. If you depend on this update path, the workaround is to provide the PatchCD via FTP/NFS/HTTP as the installation source. Please find further information at: http://developer.novell.com/wiki/index.php/Migration_to_SP1_with_Add-on_and_kmps

Conclusion

SUSE Linux Enterprise 10 SP1 from Novell lets organizations take advantage of the latest technical advances in the best-engineered, lowest-cost and most-interoperable platform for mission-critical computing.

Enhancements include enhanced virtualization support and management, updated high-availability storage infrastructure and support for new processor technologies, including Quad-Core Intel Xeon and Quad-Core AMD Opteron processors.

It also has enhanced security features, audit subsystem enrichment and support for Novell Open Enterprise Server 2. For the desktop, SP1 features expanded OpenOffice.org support and an updated desktop user experience, along with a desktop virtualization technology preview and advances in enterprise integration capabilities.

Leading organizations from around the world participated in the beta program for SUSE Linux Enterprise 10 Service Pack 1. They were instrumental in putting the platform through its paces, testing its new virtualization

capabilities, improved usability, enhanced desktop features, and more. The enhancements in SUSE Linux Enterprise 10 SP1 and the capabilities of the Virtual Machine Driver Pack are a direct result of customer feedback and the Novell commitment to meeting their needs. As enterprise adoption of Linux grows, so does Linux development and innovation.

For more information about SUSE Linux Enterprise 10 SP1 and the Virtual Machine Driver Pack for SUSE Linux Enterprise Server 10, including pricing, subscription and support options, visit: www.novell.com/linux

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