

SUSE Linux Enterprise Roadmap & Futures

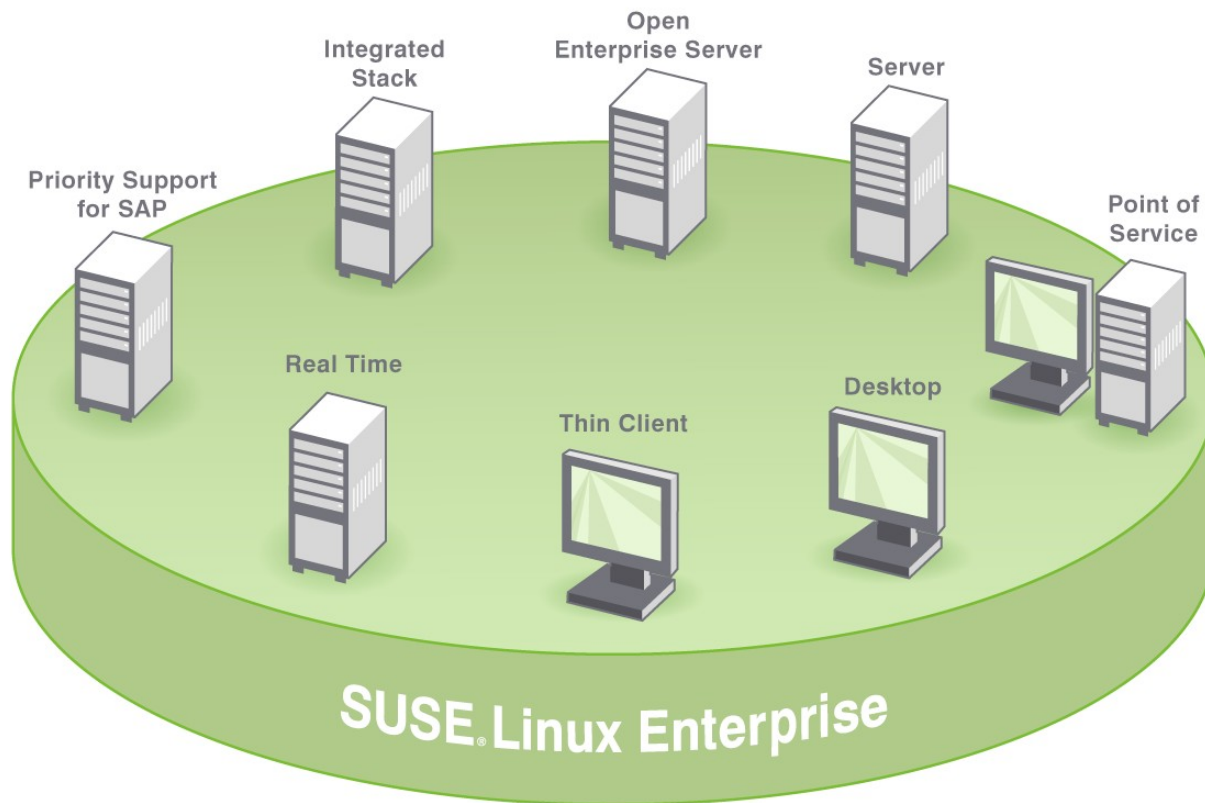
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Open Platform Solutions

Novell.[®]

SUSE® Linux Enterprise 10

A Desktop to Data Center Platform



The best engineered, lowest cost and most interoperable platform for mission-critical computing

SUSE Linux Enterprise

The Value Proposition



Best
engineered



Lowest
cost



Best
supported



Most
interoperable

Reduce costs • Manage complexity • Mitigate risk



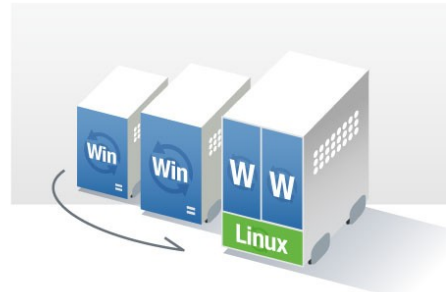
SUSE Linux Enterprise is the best platform for your mission-critical computing – from the desktop to the data center.

Key Solutions

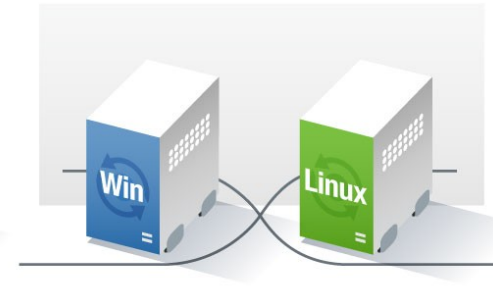
SUSE Linux Enterprise 10



UNIX to Linux Migration



Virtualization for Windows
Server Consolidation



Linux / Windows
Interoperability



Desktop Linux Migration



Real Time Linux



Linux for System z

SUSE Linux Enterprise 10 SP2

SUSE Linux Enterprise 10 SP2 Development Philosophy

- " All maintenance updates released past SLE 10 SP1
- " All PTFs (product temporary fixes) not released as maintenance updates
- " Additional bug fixes, updates and feature enhancements based on requests, upstream development and continuous testing
- " All enhancements are backported to Kernel 2.6.16 and other major pieces (glibc, gnome, kde, etc.) of our common code base
- " Enhancements to the desktop productivity environment including interoperability with Microsoft centric networks

SUSE Linux Enterprise 10 SP2

Key Platform Technologies

" Virtualization:

- Update to Xen 3.2
- Now supports multiple CPUs for fully virtualized guest systems including MS Windows Server 2003
- Continues to be available as technology preview for SLED

" Filesystems

- special patches for enablement of IBM GPFS
- Upgrade to OCFS2 1.4 to improve simultaneous write access

" Networking

- IPv6 enhancements according to US government requirements

SUSE Linux Enterprise 10 SP2

Hardware Scope

" Hardware Enablement (all systems)

- Network: e1000(e), tg3, bnx2, qla3xxx
- Storage: qla2xxx, qla4xxx, cciss, lpfc (emulex), mptsas, 3w-*xxx, aic7*xx
- support Intel ICH9 and ICH10 chipsets
- support of 4096 CPU cores on Itanium Platform

" Hardware enablement (desktop specific)

- Enhancements in wireless stack
- Intel "Weybridge" vPro
(Bearlake Graphics Driver, ICH9 audio, Dragon Lake2 LAN)
- Intel "Santa Rosa" Mobile
(IWL4965AGN Wireless Driver, Crestline Graphics Driver-Gen4)

SUSE Linux Enterprise 10 SP2 Additional Technologies

" Patterns

- minimal pattern for new installations (600MB)
- suitable for virtual machines and appliances

" Update Stack

- no changes to infrastructure design (zypp/zmd)
- new supported proxy solution for updates (to be announced in more detail in Q1 2008)
- RPM-only update to improve software management experience with 3rd party tools

SUSE Linux Enterprise 10 SP2

Desktop Highlights (1 of 3)

" **New Hardware enablement (see Hardware Scope)**

- Enable latest desktop and laptop systems
 - > ICH9 and ICH10: SATA, SMBus, USB, Audio, I2C
 - > Intel Crestline (Santa Rosa, 965GM) and Bearlake (Weybridge, G33/Q33/Q35) graphics and WiFi 4965AGN

" **Microsoft Windows integration improvements**

- Time synchronization in Pure AD environment
- Active Directory GSS-TSIG for signing dynamic DNS
- All AD related PTFs rolled in SP2
- NTFS R/W capabilities for local and removable drives

SUSE Linux Enterprise 10 SP2 Desktop Highlights (2of3)

" Updated Firefox

- All latest security updates
- New lock-down capabilities
 - > Restrict URLs via a white list, Disable writing to disk cache
 - > Disable the ability to save pages, view pages source, print pages
- Mime HTML (MHTML) support

" Upgrade to OpenOffice.org 2.4 Novell Edition

- Technology preview: Office OEM XML translator
- Improved form input support
- VBA improvements (new functions supported)

SUSE Linux Enterprise 10 SP2 Desktop Highlights (3of3)

" Improved NetworkManager

- Radio kill switch detection and Network editing
- Wired and Wireless network security
- Introducing support for Wireless broadband (3G, UMTS)

" Updating third-party software

- Adobe Acrobat Reader
- Citrix ICA client

" YaST Firstboot improvements

- Based on SLED OEM preloads
- New capabilities in workflow

SUSE Linux Enterprise 10 Point of Service

- " First Customer Ship: February 8, 2008
- " Key Features:
 - Based on SUSE Linux Enterprise 10 SP1
 - Simplified installation (doesn't require 10+ CDs anymore)
 - New open-source image creation technology
 - New simple graphical Interface for building images
 - Six images focused on retail terminals (and branch server)

Additional roadmap information available in May 2008 following the release of SUSE Linux Enterprise 10 SP2

SUSE Linux Enterprise 10 Thin Client

" Goldmaster to partners: March 14, 2008

" Key Features

- Partner Enablement toolkit which includes:
 - > Image creation technology
 - > Base image templates for creating:
 - » Small form factor thin client devices (128M or >)
 - » Re-purposed desktops
- Images are based on the award winning SUSE Linux Enterprise 10 Desktop

" Routes to Market

- Initial release focused on strategic OEM partnerships with leading thin client manufacturers
- Indirect channels, such as strategic solution providers and system integrators

SUSE Linux Enterprise Real Time 10

Released on Nov 27, 2007 as add-on to SLES 10 SP1, entirely based on community PREEMPT_RT.

Key Features:

- Kernel pre-emption
- CPU shielding
- Priority Inheritance
- Interrupt Threads
- High Resolution Timers
- Open Fabrics Enterprise Distribution 1.2.5




SLE RT SP2

Release schedule

- RC1 - March 20th
- GMC - May 15th
- GM - May 19th

Tentative Key features

- Performance enhancements
- Update to OFED 1.3
- PTP (Precise Time Protocol)
- AMQP (qPid) Preview
- Tuning Tool

The background is a solid blue color with a pattern of diagonal lines in various shades of blue, creating a sense of motion and depth. The lines are most prominent on the right side, radiating from the edge towards the center.

SUSE Linux Enterprise 11 Themes and Development Engagement

SUSE Linux Enterprise 11

Major Themes

- " Designed for
 - Mission-critical applications
 - Unix server replacement
 - Virtualization
 - Appliances
 - Low Latency Data Centers
 - Enterprise Desktop Deployments

- " Key Technologies
 - Common Code Base
 - Integrated Management Tools

SUSE Linux Enterprise 11

Green IT

- Linux Kernel support for “tickless idle”:
this helps with completely idle systems as well as with partially loaded systems.
- Application fixes for tickless:
most (if not all daemons delivered in SLES) should behave correctly with respect to tickless idle kernel.
- Putting cores to sleep (c-states, ...)
- CIM enablement for powersaving features for UI-less systems
- YaST Interface and policy configuration at installation time

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UNIX “Parity”

- " Automated and Assisted Healing
 - Improved support for redundancy
 - Automated failure detection
(Failed disks, failed network cards)
 - Swap over network to handle out-of-memory case
 - File system check while running (as in SLE 10)
- " High-End Hardware Integration
 - Support for hardware diagnostic tools & better hardware monitoring
 - Support for embedded service processors (e.g. Intel)
 - Remote power switch & Remote console
 - Integration into existing management consoles
- " Profiling, development & debugging tools

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Mission Critical Enhancements

- " Improved Kernel Instrumentation
 - Lightweight instrumentation of userspace and kernel code
 - Lower the barrier of using InstrumentationTools
- " Kernel Resource Management
 - replacing CKRM
(Classbased Kernel Resource Management)
 - (tentative) "Container Technology"
- " Improved crash dumping (and configuration)
 - System-Wide Segfault Handling (tentative)
 - common crash screen and reporting wizard

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High Availability

- " Heartbeat 2 with openAIS Cluster Resource Management
- " Full POSIX conforming Cluster Filesystem
 - OCFS2 (flock(), lockf(), extATTRs, ACLs)
 - GFS2 with SP1
- " DRBD L3-supported
- " “single-node cluster”
 - based on Heartbeat 2
 - to support “self-conscious” servers systems
- " long-term goal: “self-healing” system

SUSE Linux Enterprise 11 Virtualization

- " QoS on dynamic resources: CPU, RAM, IO, Network
- " Real Time capabilities
- " Power Saving
- " NUMA support, HVM vSMP support
- " Supported: Xen
 - Under discussion: KVM / Lguest / OpenVZ / ...
- " More management & IO domains for larger machines
- " Enhanced VT hardware support (IOAT3, VMDq, etc)
- " More detailed CIM support (agents and monitoring)
- " Target: **pDistro-vDistro approach**

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Enterprise Desktop Themes

- " Timely hardware enablement
- " Effective collaboration
 - Integration with Novell Team + Conferencing
 - Evolution with strong integration to Microsoft Exchange
- " Enterprise Interoperability
 - Strong focus on Active Directory and eDirectory
 - OpenOffice.org continue focus on productivity and doc. fidelity
- " Ground-breaking Linux desktop security
 - Policy-based security, Certificate Store, Smart cards, biometrics, wireless networks
- " Desktop Virtualization
 - Client-hosted desktop virtualization
 - Shared-remote desktop virtualization

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Common Code Base

" Packaging and Support

- No non-L3-packages in core system
- No new packages without L3 support
- No new non-Open Source packages
- “Marketplace” approach for SDK, i.e. supportable offerings according to different user profiles

" Networking

- IPv6 readiness and re-certification (Server and Desktop profiles)

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Common Code Base

" Storage

- LVM2 replaces EVMS2
- Enhanced YaST partitioner
- SMI-S providers for integration into Aperi and other storage management solutions

" Security:

- AppArmor: network and IPC confinement
- TPM / Trusted Computing
- tentative: Labeling Support to match EAL 4+ requirements (not available in standard offering)

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Common Code Base *(cont'd)*

- " Leverage generic open source tools
 - Linux Kernel 2.6.25+
 - Xen 3.4+/4.x
 - Latest GNU toolchain
 - > GCC 4.3+
 - > GDB 6.7+
 - > GLIBC 2.6+
 - Latest Gnome and KDE
 - Latest critical packages (Samba, Apache, BIND, ...)

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Systems Management

- " Extended built-in management infrastructure (CIM)
 - openPegasus instead of openWBEM
 - YaST enhancements
 - > improved installation workflow
 - > under discussion: YaST Web-UI
- " New streamlined update management stack
- " Installation Patterns to be “Appliance Ready”
- " Extended external management capabilities
 - Novell Customer Center
 - Enterprise Maintenance Proxy
 - ZENworks Configuration Management
 - ZENworks Orchestrator

Discontinued Technology

- " Logical Volume Management
 - LVM2 replaces EVMS
 - SLE 11 will not ship EVMS
- " SLE 12 will not support creating new ReiserFS file systems (but existing ones will be supported)

Out of Scope (Not in Plan)

- " embedded (except appliances)
- " GFS 2 in SLE 11 GA (but we do it in SLE 11 SP1)

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