

# SUSE Linux Enterprise Server on System z: What's new?

IBM Large System Update 2009

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**Novell**<sup>®</sup>

1) Distribution and Support - The Quality of SLES

2) Roadmap and Feature Overview

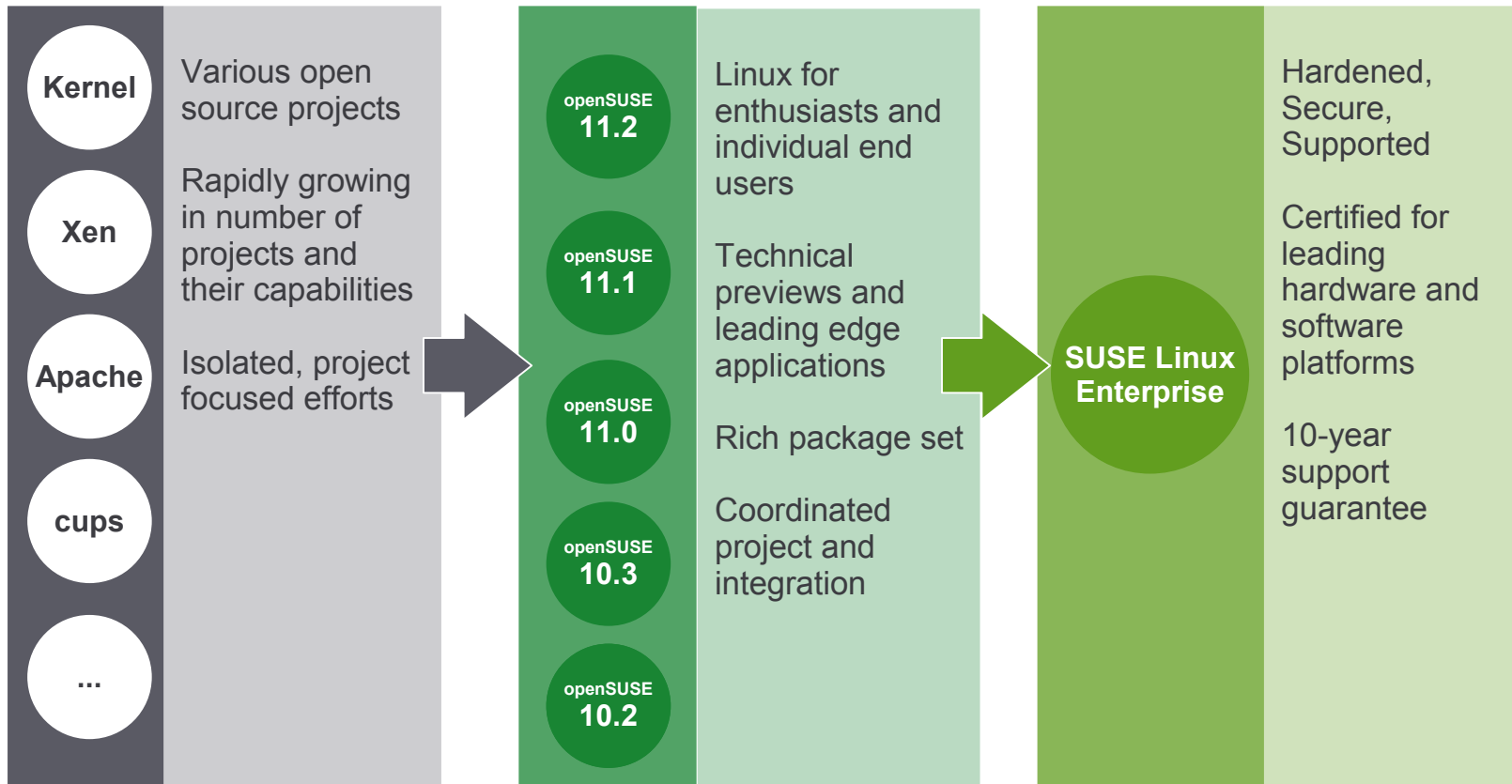
3) Tools and extensions for SLES

4) Why to choose SLES for your System-z?

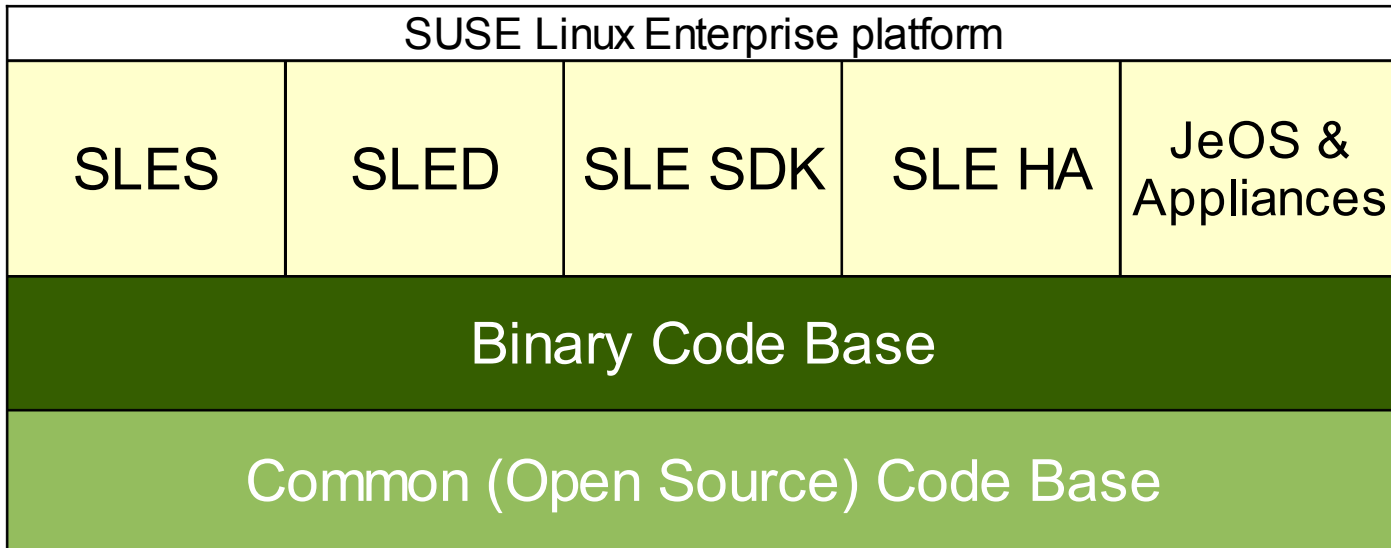
# SUSE® Linux Enterprise Development Process



Novell.

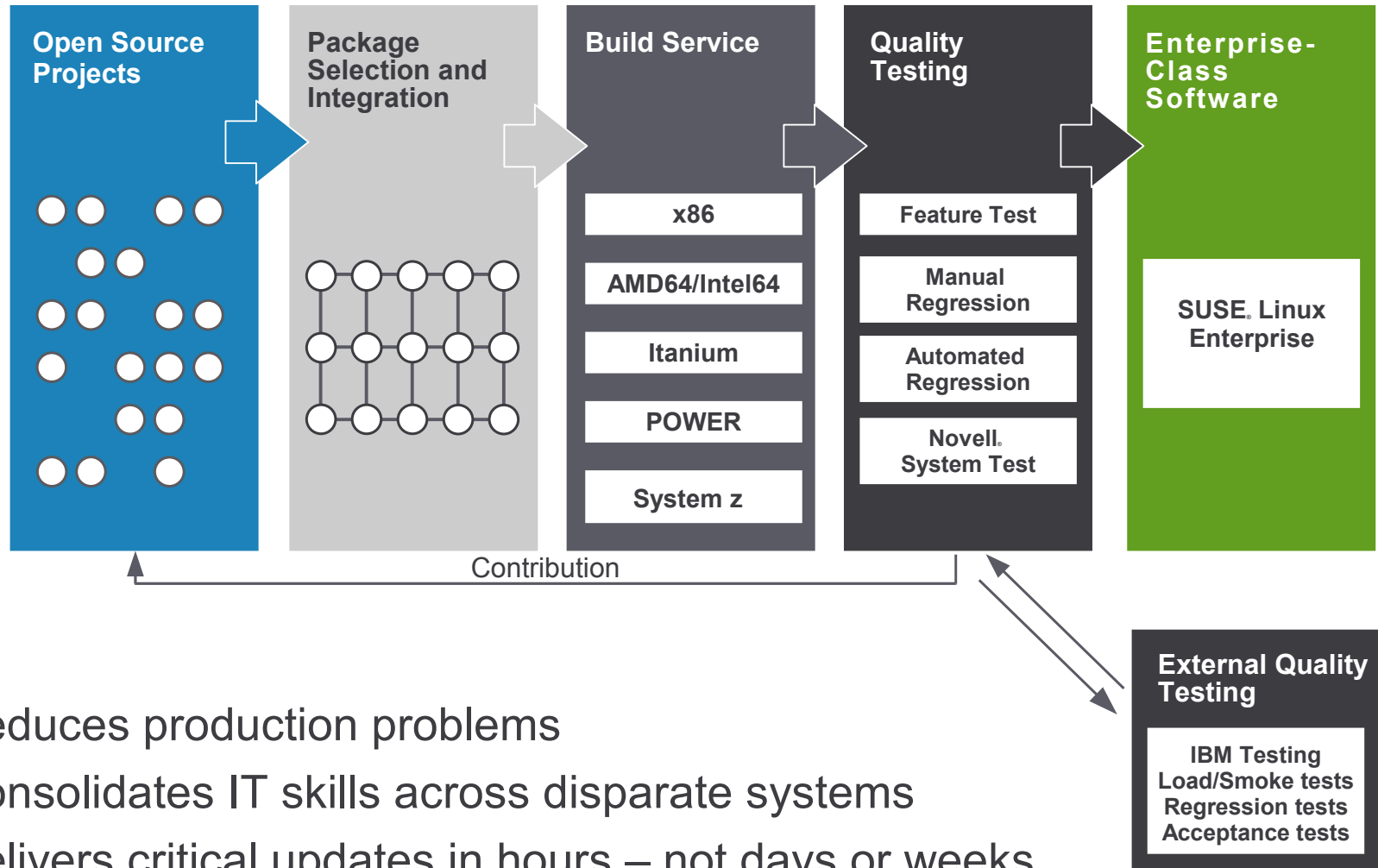


# SUSE Linux Enterprise Enterprise Base



- Foundation for SUSE Linux Enterprise products
- Fully supported core system: L3 support commitment
- Architectures:  
Intel/AMD 32-bit, AMD64/Intel 64, Itanium,  
POWER, System z

# The Build Service Advantage



Reduces production problems

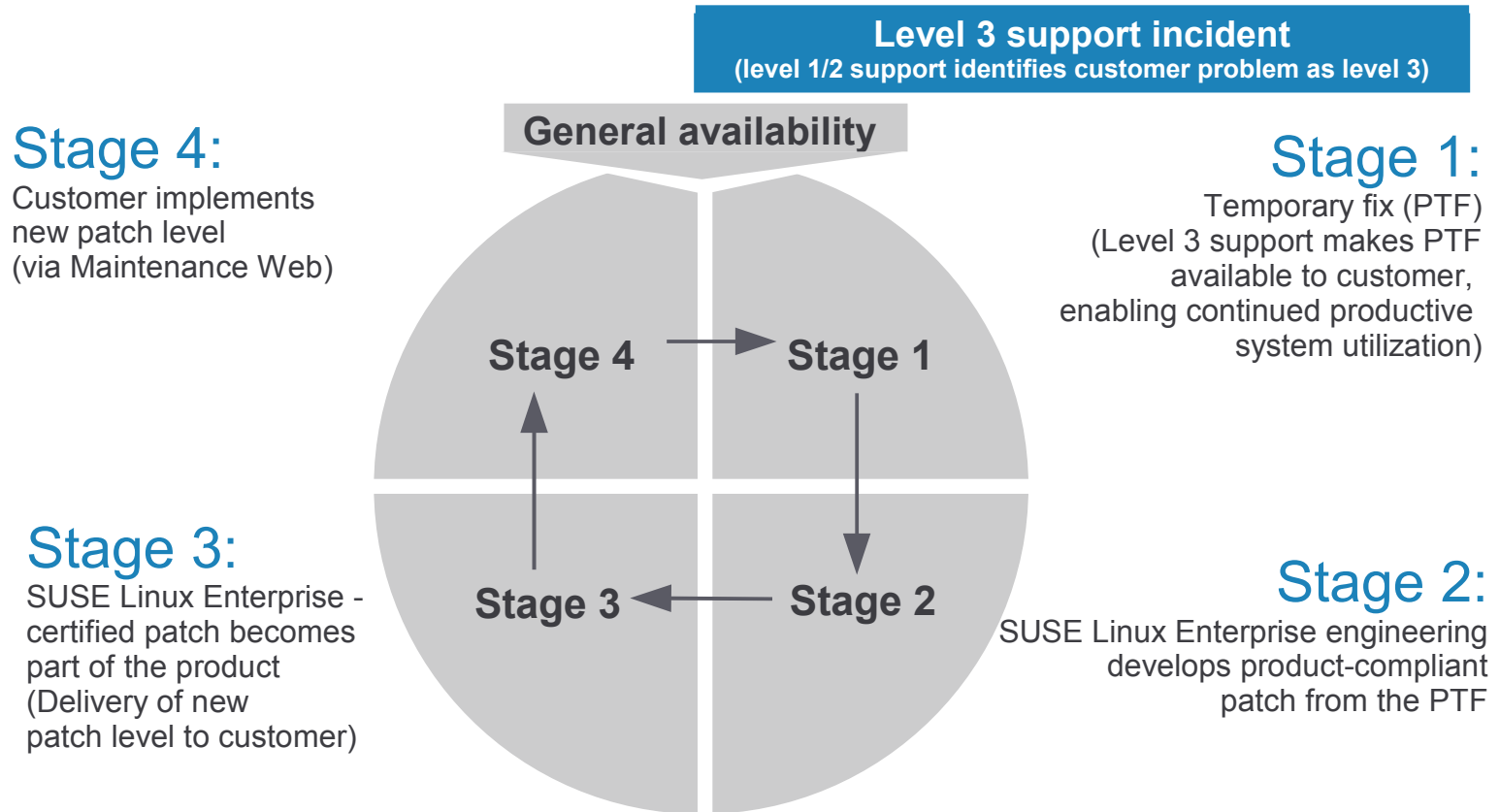
Consolidates IT skills across disparate systems

Delivers critical updates in hours – not days or weeks

# SUSE Linux Enterprise Maintenance & Support Process

## Maintenance

## Support



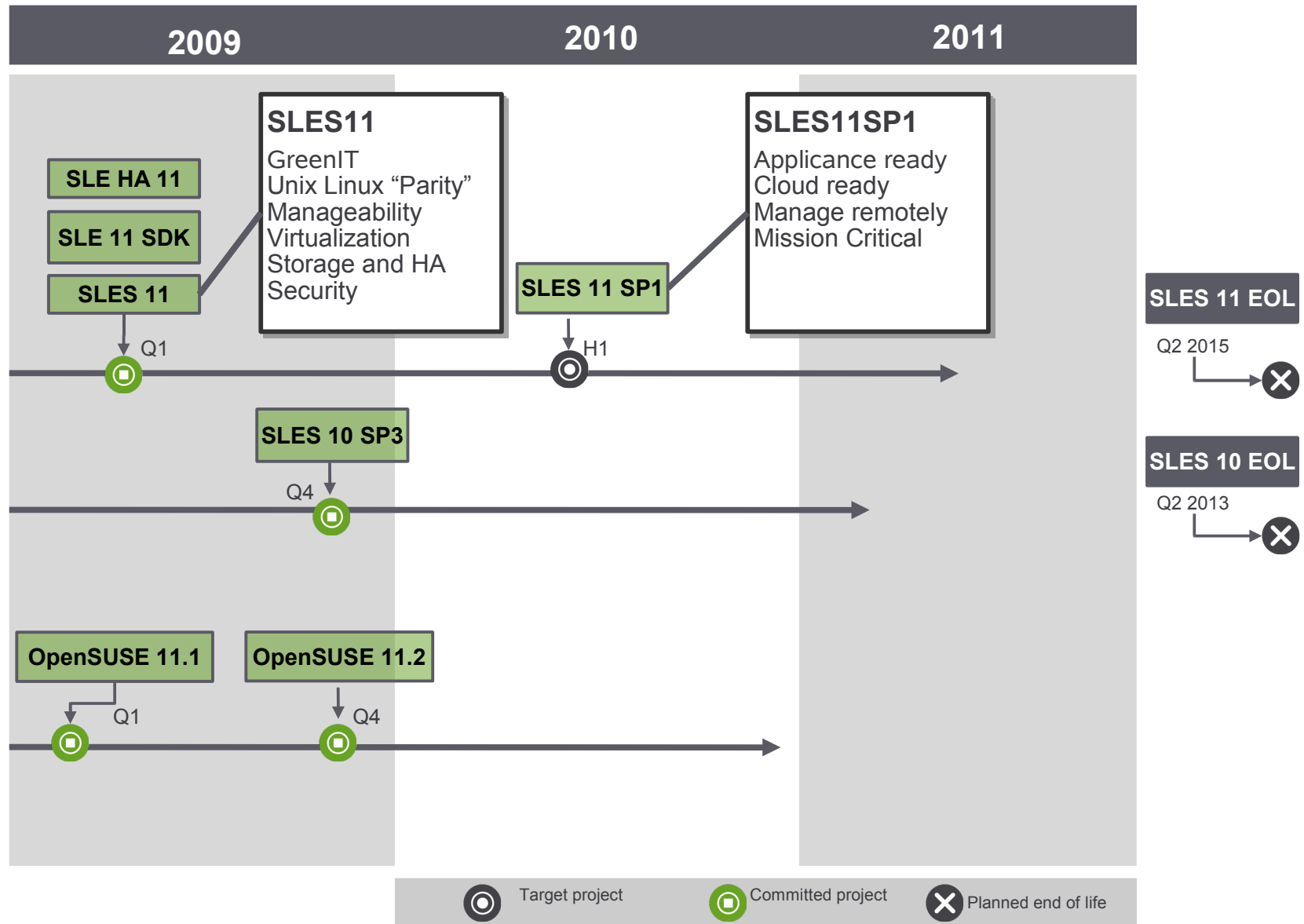
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# Roadmap



# Service Pack 3 Features Summary

## SUSE Enterprise Server 10 for System z

- Update s390-tools to version 1.8.1
- 2 OSA Ports per CHPID Support
- Selective Logging of ECKD DASD devices
- Large image dump on DASD (use multi-volume)
- DS8000: Large volume support and Disk Encryption
- Crypto Hardware Enablement Device Driver Support - toleration
- Long Random Numbers Generation
- AF\_IUCV SOCK\_SEQPACKET support
- HiperSocket Layer 3 support for Ipv6
- .....

... and many more, please consult release notes for details  
<http://www.novell.com/linux/releasenotes/s390x/SUSE-SLES/11/>

# SUSE® Linux Enterprise Server 11 for System z New Features in Version 11

**Dynamic add/remove of CPU and memory:** resources of a Linux guest under z/VM can be adjusted while running. A pool of CPUs are dynamically given to a Linux guest and used as needed

★ **Vertical CPU management:** helps get the most performance out of System z10 servers by being aware of the server's NUMA characteristics

★ **Linux CPU Node Affinity:** improves performance by scheduling processes to the optimal node where the CPU is associated, exploiting the new System z10 CPU node topology

**Enhanced HiperSocket support:** Additional Layer 2 support for IPV4 and support for IPV6



★ = SLES unique feature

# SUSE® Linux Enterprise Server 11 for System z New Features in Version 11 (cont'd)

## Higher performance analysis in the disk subsystem:

gives performance analysts the same type of view into SCSI over Fibre Channel Protocol that they have with mainframe Direct Access Storage Devices (DASD)

**Large page support:** enables better performance with large memory footprints like in Java or database workloads by exploiting new System z10 large memory pages (1MB)

★ **Cross architecture debugging:** System z core dumps can be analyzed on x86 systems, negating the need for a duplicate System z server



★ = SLES unique feature

# FICON – Hyper PAV enablement

Fate 304066 / [LTC 201000]

<http://www.ibm.com/developerworks/linux/linux390/kernel-2.6.25.html> -> HyperPAV Device Drivers, Features, and Commands as available with SUSE Linux Enterprise Server 11 p.19ff

- **z IO feature exploitation:** sustained I/O performance improvements exploiting Parallel Access Volume (PAV) support for disk storage access, leads to significantly reduced configuration efforts as opposed to static PAV setups, system will dynamically self optimizing its I/O configuration.
- **Customer benefit**

technical	business
<ul style="list-style-type: none"> <li>• Less configuration overhead, better IO performance, reduced response times</li> <li>• Improved hardware utilization</li> </ul>	<ul style="list-style-type: none"> <li>• Improved response times for services bound to IO (like databases)</li> <li>• Better storage IO resource exploitation</li> <li>• Higher VM consolidation ratios</li> </ul>

SLES	10	11
GA	-	yes
SP1	-	n/a
SP2	-	n/a
SP3	-	n/a



**SLES unique feature**

**Category: Storage**

# Exploitation Of DCSS above 2GB

Fate 304031 / [LTC 201592]

<http://www.ibm.com/developerworks/linux/linux390/kernel-2.6.27.html> -> DCSS

Device Drivers, Features, and Commands as available with SUSE Linux Enterprise Server 11 p.199

- **z/VM infrastructure exploitation:** ability to have 'objects' residing in shared memory that are either > 2G in size, or several objects whose aggregate size is >2G. Requires z/VM 5.4.

## • Customer benefit

technical	business
<ul style="list-style-type: none"> <li>• More capacity and/or flexibility in using shared memory segments among VMs</li> <li>• Fast process and data access</li> <li>• Workload separation w/ data sharing</li> </ul>	<ul style="list-style-type: none"> <li>• More efficient resource consumption</li> <li>• Higher consolidation ratios</li> </ul>

SLES	10	11
GA	-	yes
SP1	-	n/a
SP2	-	n/a
SP3	-	n/a



**SLES unique feature**

**Category: z/VM integration**

# AF\_IUCV Protocol Support

Fate 302783 / [LTC 200788]

<http://www.ibm.com/developerworks/linux/linux390/kernel-2.6.31.html> -> AF\_IUCV Device Drivers, Features, and Commands as available with SUSE Linux Enterprise Server 11 p.219ff

- **z/VM infrastructure exploitation:** Use IUCV-communication through a socket interface. Improves the close collaboration between SLES and z/VM in the networking area.

## • Customer benefit

technical	business
<ul style="list-style-type: none"> <li>• Light weight protocol to connect applications in different Vms with high bandwidth, low latency</li> <li>• More choice to connect apps and VMs</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced protocol overhead allows better consolidation ratios</li> </ul>

SLES	10	11
GA	-	yes
SP1	-	n/a
SP2	-	n/a
SP3	yes	n/a

**Category: z/VM integration**

# OSA 2 Ports per CHPID support

Fate 302802 / [LTC 201360]

<http://www.ibm.com/developerworks/linux/linux390/kernel-2.6.25.html> -> OSA Device Drivers, Features, and Commands as available with SUSE Linux Enterprise Server 11 p.99ff

- **Hardware exploitation:** Provide exploitation for new OSA 2 port feature (2 ports per single CHPID) including configuration with yast

## • Customer benefit

technical	business
<ul style="list-style-type: none"> <li>• More network ports per installed card, more network traffic per card, more flexibility due to increased number of ports</li> </ul>	<ul style="list-style-type: none"> <li>• Hardware savings</li> <li>• Increased connectivity allowing more per host</li> </ul>

SLES	10	11
GA	-	yes
SP1	-	n/a
SP2	-	n/a
SP3	yes	n/a

**Category: Networking**

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# Integrated Systems Management YaST

- Unified and consistent single interface to all systems management tasks via modules
  - Desktop environment independent
  - Graphical and text mode interfaces
  - Development platform for 3rd party modules
- Configure every aspect of the server
  - Installation / configuration: partitioning-zfcp and storage, bootloader, timezone
  - Software management: update, software selection, product creation, installation server
  - User management (local, NIS, LDAP, Kerberos, SMB), sudo
  - Hardware: DRBD, multipath, s390x, tv, sound and more
- Enhanced YaST Partitioner
- CIM Standard adopted

# SUSE® Linux Enterprise Server for System z Subscription Management Tool Hosting



## Subscription and patch management made easy

- A local package proxy tightly integrated with Novell Customer Center
- Included at no cost with SUSE Linux Enterprise Server and fully supported

## Benefits

- Secure centralized deployment within the firewall
- In cooperation with NCC, automatically assigns registration codes
- Reduces bandwidth use
- Accurately and automatically tracks entitlements
- Uses your existing customer interface

## Key Features

- Staging of patches
- Central deployment
- Support of “sneakernet” configurations
- Works with new integrated supportability infrastructure



# SUSE® Linux Enterprise Server for System z Starter System for System z

**Historically**, one of the biggest hurdles to implementing Linux on the mainframe has been gaining network access to the installation media from the mainframe (Installation routine cannot access built-in DVD reader, Firewall rule changes needed)

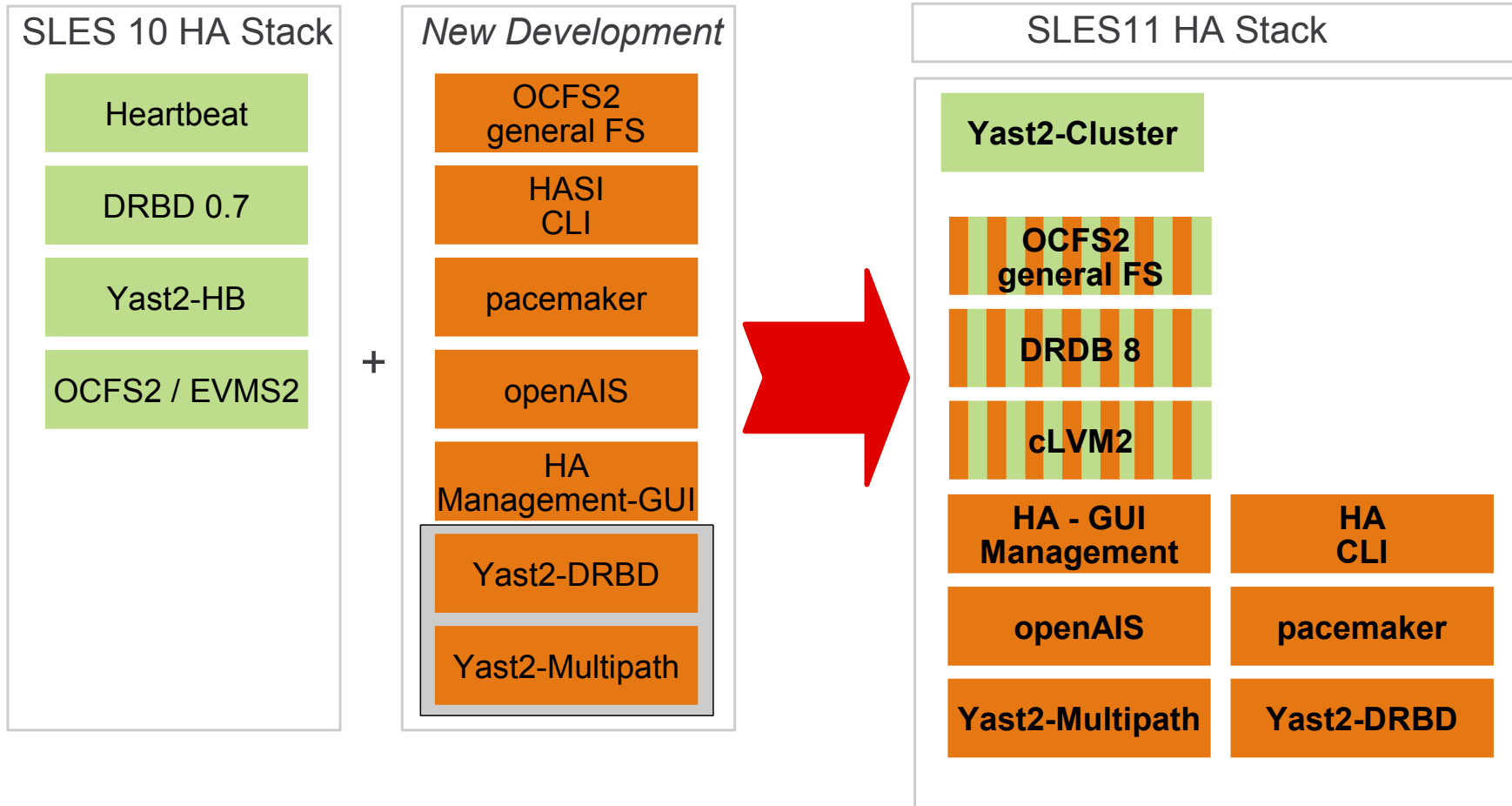
**SUSE Linux Enterprise Server** Starter System for System z is a pre-built installation server — facilitates installation of SUSE Linux Enterprise Server for System z on a z/VM system

Eliminates the network access hurdle to try out Linux on the mainframe — **gaining network access** to the installation media from the mainframe

Allows **customers** with little or no Linux or z/VM experience to initiate evaluations of SUSE Linux Enterprise Server for System z

<http://www.novell.com/partners/ibm/mainframe/starterpack.html>

# SUSE Linux Enterprise for System-z High Availability Extension included



Part of SLES10

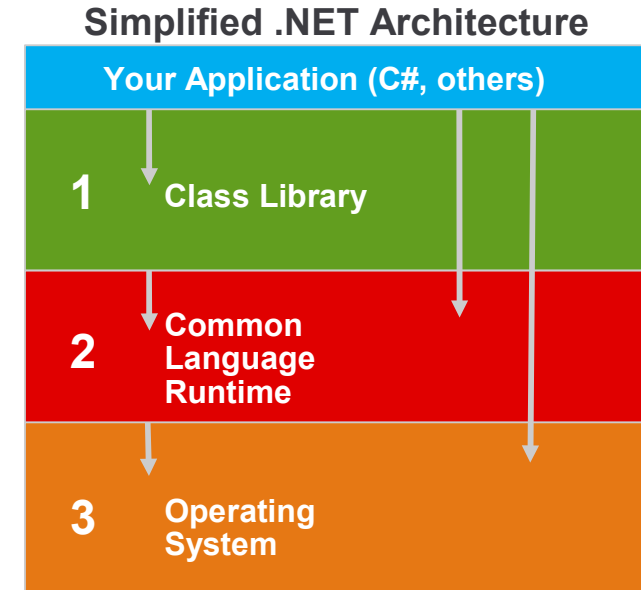
New for SLES11

Major new code for SLES11

# Complete Development Environment for System z .NET Applications on Linux: Mono®

## Mono

- A complete and modern development platform for Linux
- The necessary software to develop and run .NET client and server applications **across platforms** on Linux, Solaris, Mac OS X, Windows, and Unix
- An thriving open source project with a growing community



## What Can You Do with Mono?

- Migrate Microsoft .NET desktop and server applications to Linux without significant investment in rewriting code
- Target multiple platforms and increase addressable market
- Leverage existing expertise in computer languages for more efficient development

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# SUSE® Linux Enterprise Server – Mainframe success



- **Starting in 1999**, SUSE GmbH started their cooperation with IBM and the Marist College to move the available Linux code into an Enterprise ready Linux distribution - Since then SUSE took over the responsibility for Linux on System z.
- **Available since 2000**: SUSE Linux Enterprise Server for System z is available to customers since 2000, either through IBM or directly through SUSE.
- **100% market share in 2004**: Entering this new market SUSE Linux Enterprise Server was the only available enterprise-class Linux, which was maintained and supported and which delivered the Reliability, Availability and Scalability (RAS) as expected by IBM's Mainframe customers.
- **80+% market share in 2009**: Although other enterprise-like Linux offerings entered the market, Novell with SUSE Linux Enterprise Server clearly leads the Linux Mainframe market with a share of more than 80%.

# IBM Software for Linux

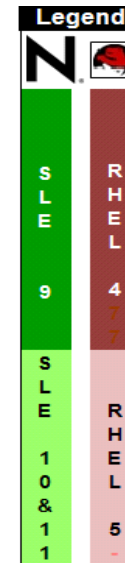
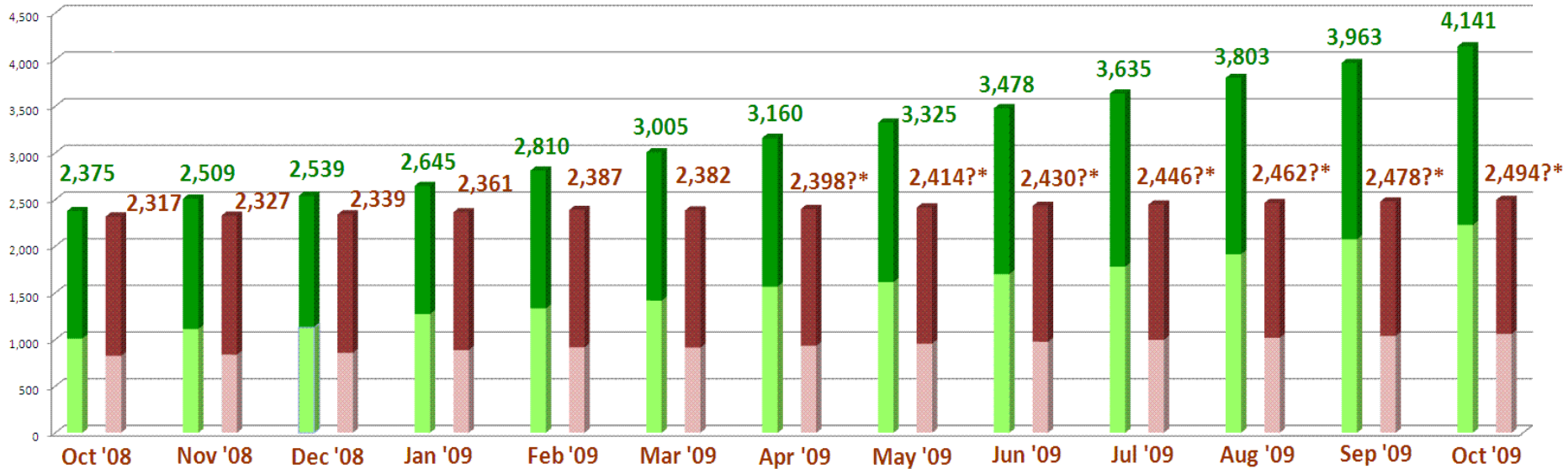
<p><b>Rational</b></p> <ul style="list-style-type: none"> <li>• Modeling, design and development tools</li> <li>• Architecture management</li> <li>• Change and release management</li> <li>• Process and portfolio management</li> <li>• Quality management</li> </ul>	<p><b>WebSphere</b></p> <ul style="list-style-type: none"> <li>• Application and transaction infrastructure</li> <li>• Application transformation</li> <li>• Business integration</li> <li>• Commerce</li> <li>• Mobile and speech middleware</li> <li>• Portals</li> <li>• Express Middleware</li> </ul>	<p><b>Information Management</b></p> <ul style="list-style-type: none"> <li>• Database Servers</li> <li>• Database Tools</li> <li>• Data Warehousing</li> <li>• Enterprise Content Management</li> <li>• Information Integration</li> <li>• Master Data Management</li> <li>• Express Middleware</li> </ul>	<p><b>Lotus</b></p> <ul style="list-style-type: none"> <li>• Application design and development</li> <li>• E-mail, calendaring and collaboration</li> <li>• Instant messaging and web conferencing</li> <li>• Mobile and wireless</li> <li>• Social software</li> <li>• Team collaboration</li> <li>• Express Middleware</li> </ul>	<p><b>Tivoli</b></p> <ul style="list-style-type: none"> <li>• Business Application Management</li> <li>• Security Management</li> <li>• Server, Network and Device Management</li> <li>• Service Management</li> <li>• Service Provider Solutions</li> <li>• Storage Management</li> <li>• Express Middleware</li> </ul>
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*Linux – on x86, x86-64, POWER (System i, System p), System z*

Rational. software	WebSphere. software	Information Management. software	Lotus. software	Tivoli. software
<ul style="list-style-type: none"> <li>• Reliable and efficient platform for enterprise software development</li> <li>• Cross-platform Eclipse tools on and for Linux</li> </ul>	<ul style="list-style-type: none"> <li>• Robust and flexible web infrastructure</li> <li>• Scalable and low TCO SOA platform and tools on Linux</li> </ul>	<ul style="list-style-type: none"> <li>• Horizontal scalability and low cost Linux database clusters</li> <li>• Balanced data warehousing on Linux</li> </ul>	<ul style="list-style-type: none"> <li>• Secure and reliable email on Linux</li> <li>• Open client solutions built on Eclipse RCP</li> </ul>	<ul style="list-style-type: none"> <li>• Systems management on and for Linux</li> <li>• Linux integrated into enterprise systems management</li> </ul>

Over 500 Linux offerings – see the matrix at <http://www.ibm.com/linux/matrix>

# Certified Linux ISV Applications: SLE 9+ vs. RHEL 4+



# SUSE Linux Enterprise Server for System z Resources

## Marketing Website: Linux for System z :

Consolidate and virtualize servers, while leveraging efficiencies of Linux, for greater availability and lower TCO

<http://www.novell.com/mainframe>

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## Starter System for System z

Simplify Deployment of Linux on the mainframe with SUSE Linux Enterprise Server for System z

<http://www.novell.com/partners/ibm/mainframe/starterpack.html>

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## Download SUSE Linux Enterprise Server for System z

Simplify Deployment of Linux on the mainframe with SUSE Linux Enterprise Server for System z

<http://www.novell.com/products/server/eval.html>



# SUSE® Linux Enterprise Server for System z Customer Success



# Who to contact



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