

What's New on Red Hat Enterprise Linux for System z

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12590



Agenda

Red Hat Inc.

Technical highlights for System z
Red Hat Enterprise Linux 6.4 and 5.9

RHN Satellite

Oracle announcement

Customer References

Red Hat Inc.



5100+
Employees

0\$
Debts

500 000+
Red Hat certified IT Specialists

The **FIRST**
\$1 BILLION
DOLLAR

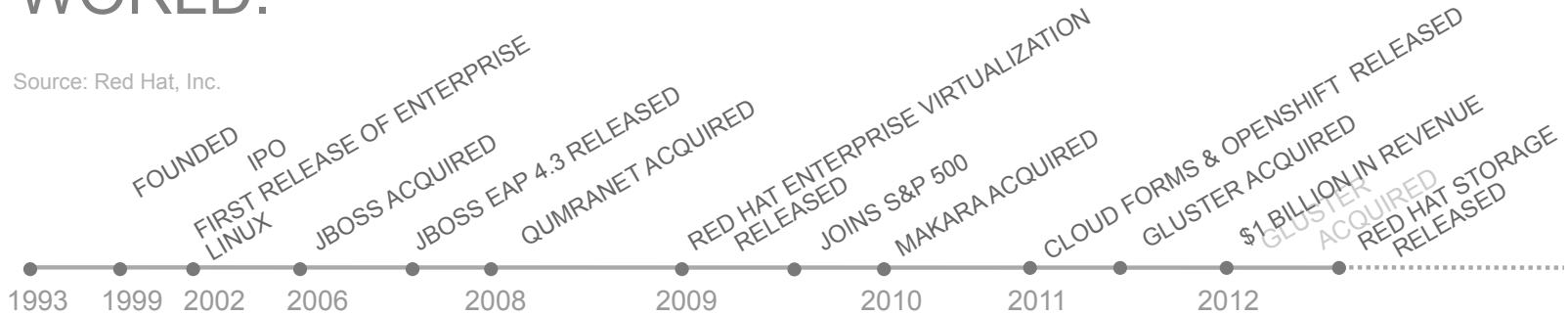
OPEN
SOURCE
COMPANY
in the
WORLD.



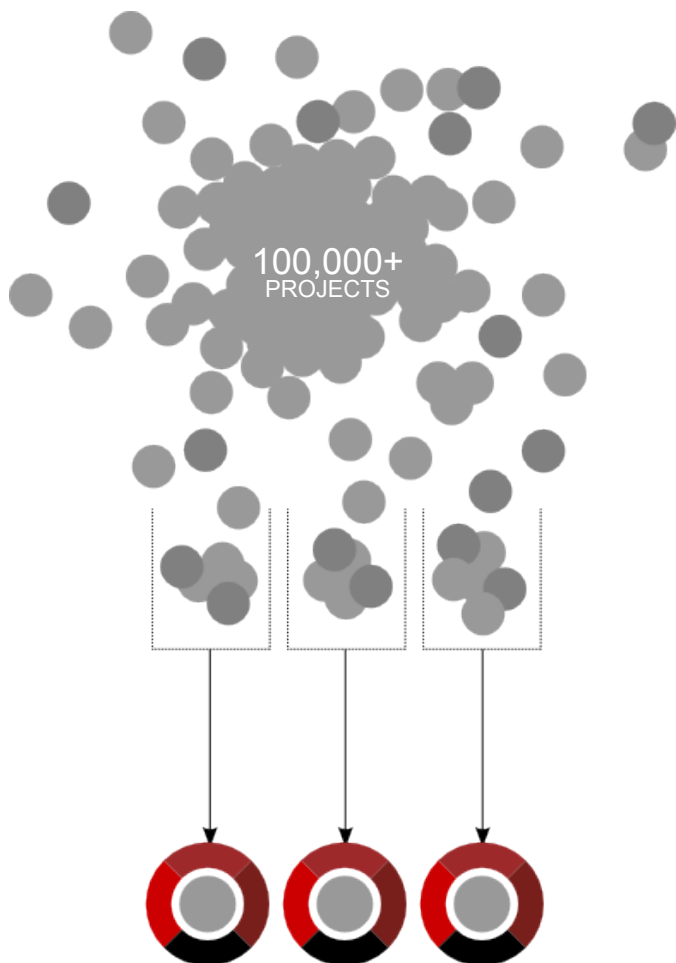
OFFICES WORLDWIDE

MORE THAN
80%
of
FORTUNE
500
COMPANIES
use
RED HAT
PRODUCTS &
SOLUTIONS.

Source: Red Hat, Inc.



Complete your sessions evaluation online at SHARE.org/SFEval



100,000+
PROJECTS

PARTICIPATE
(upstream projects)



INTEGRATE
(community platforms)



STABILIZE
(supported products
platforms, & solutions)

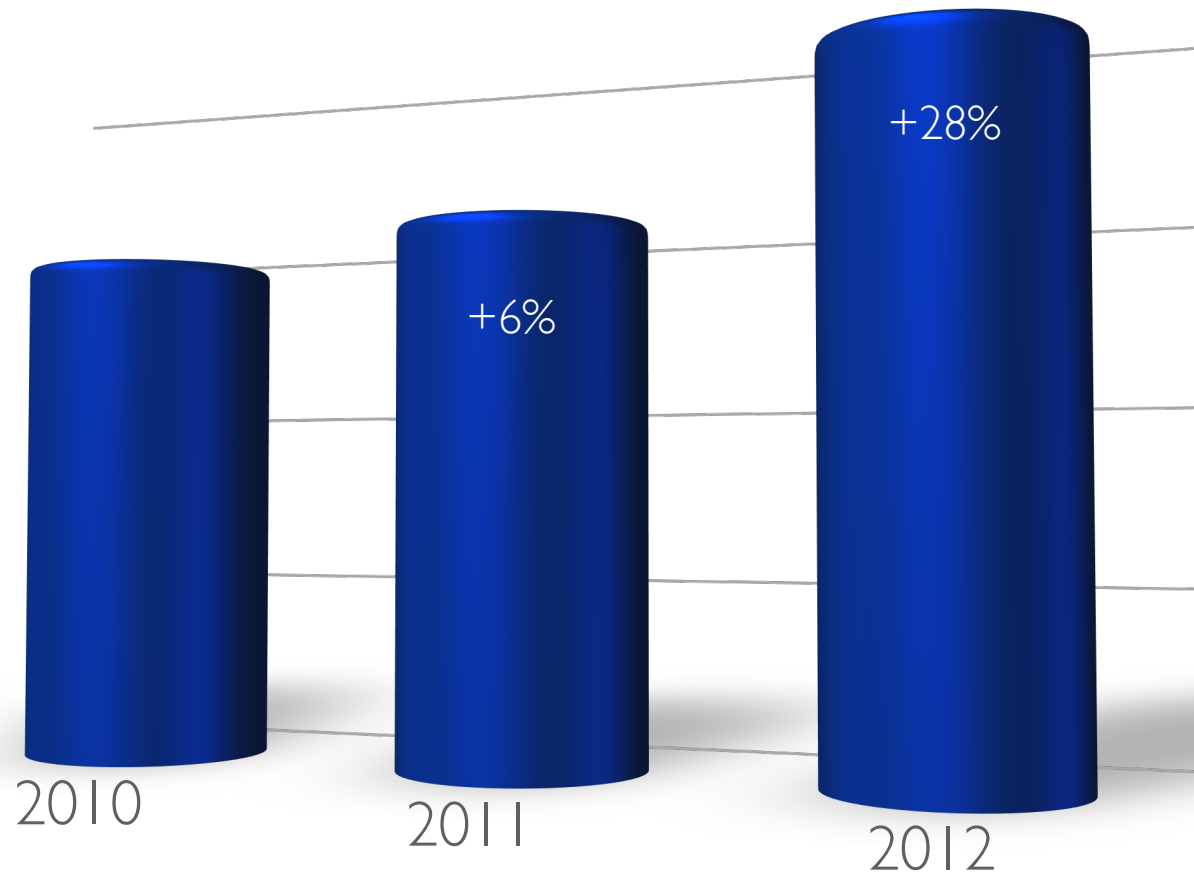
PRODUCT PROCESS

We participate in & create community-powered upstream projects.

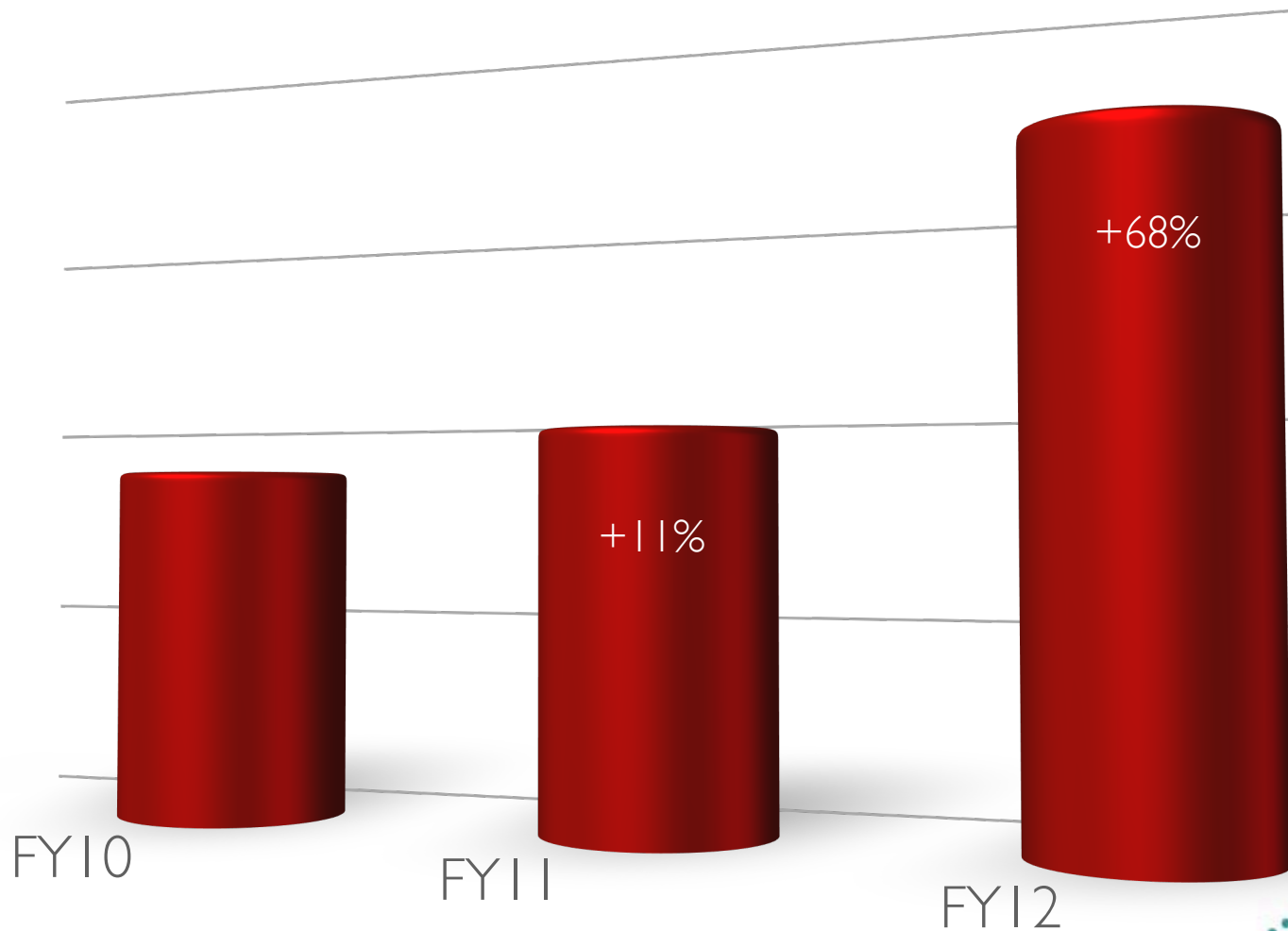
We integrate upstream projects, fostering open community platforms.

We commercialize these platforms together with a rich ecosystem of services & certifications.

■ New Shipped IBM IFLs WW

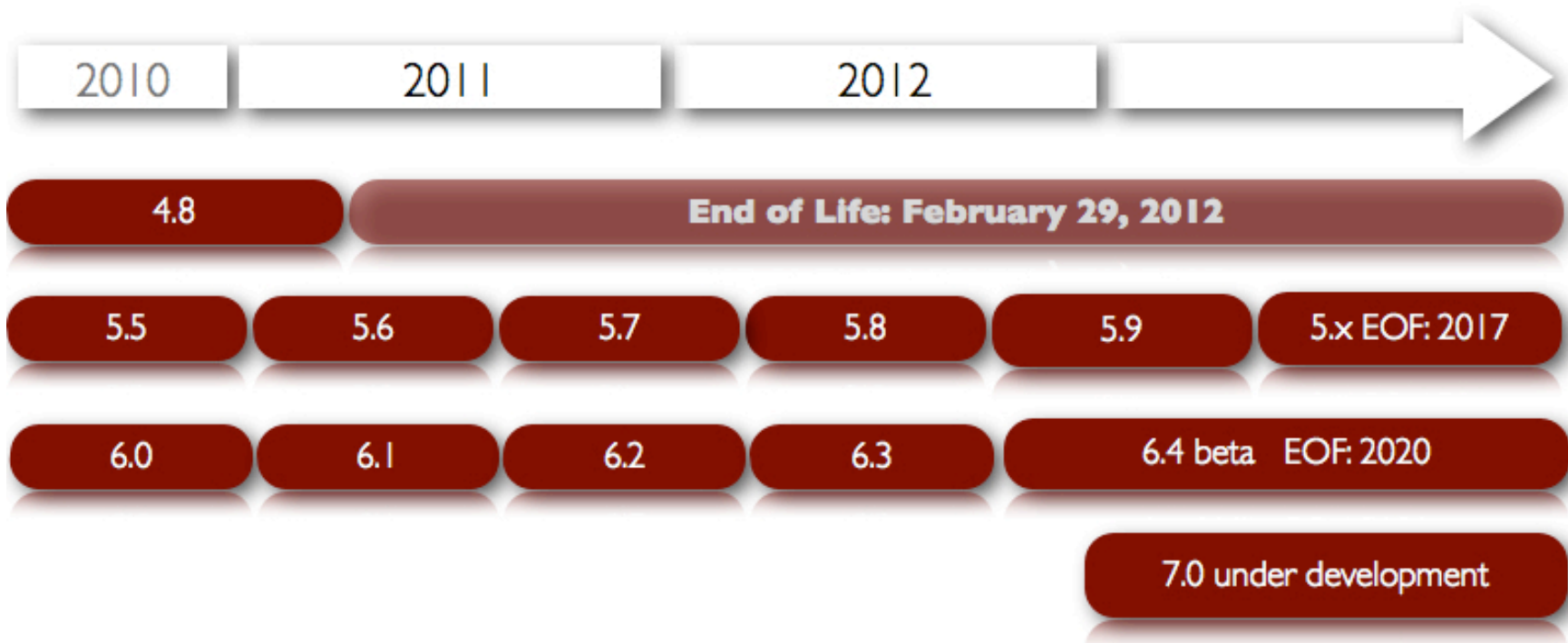


RHEL for System z subscriptions (IFLs) % of growth - installed base



Source: Red Hat SFDC

Red Hat Enterprise Linux High Level Roadmap



IBM zEnterprise certified for Red Hat Enterprise Linux



IBM

IBM zEnterprise EC12 (zEC12) 2827

Version 5		Version 6		Products
32-bits	64-bits	32-bits	64-bits	
	5.8		6.3	Red Hat Enterprise Linux

hardware.redhat.com | Certifications



IBM

IBM® zEnterprise™ System z196 (2817)

Version 4		Version 5		Version 6		Products
32-bits	64-bits	32-bits	64-bits	32-bits	64-bits	
	4.8		5.5		6	Red Hat Enterprise Linux

What version of Red Hat Enterprise Linux is required to run on the IBM EC12 mainframe? <https://access.redhat.com/knowledge/solutions/280673>

Complete your sessions evaluation online at SHARE.org/SFEval

IBM zEnterprise certified for Red Hat Enterprise Linux



hardware.redhat.com | Certifications

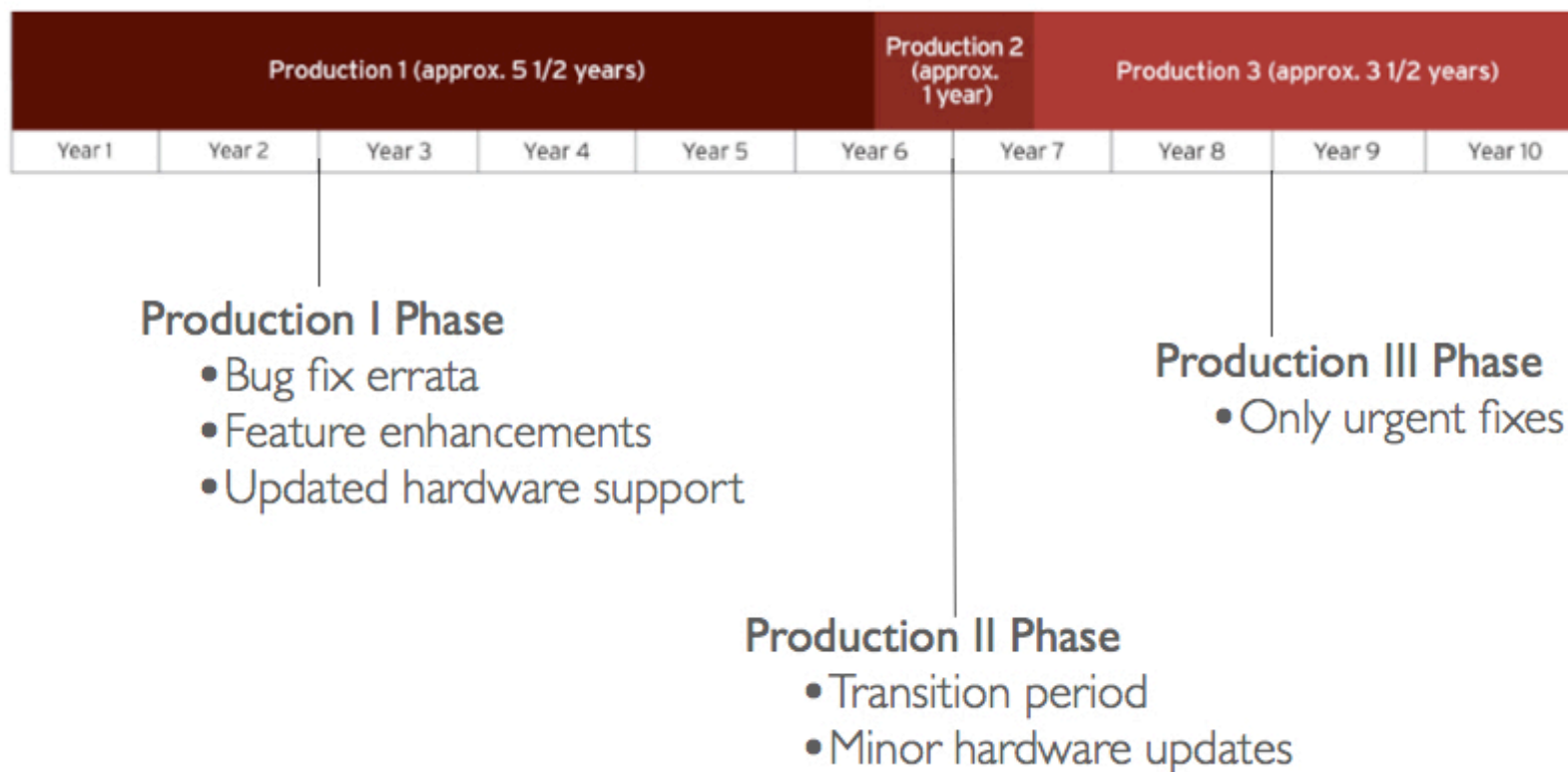
IBM

IBM® zEnterprise™ System z114 (2818)

Version 5		Version 6		Products
32-bits	64-bits	32-bits	64-bits	
	5.5		6	Red Hat Enterprise Linux

Red Hat Production Technical Support

10 years of standard official technical support



Red Hat Enterprise Linux 5.9
Target beta: Sept 11 2012
Target GA: Dec 11 2012

Mostly Bugfix release

One big feature

Enable HyperPAV for parallel I/O to ECKD
DASD



Hyper PAV enablement - Licensed feature in z/VM

HyperPAV enables parallel I/O to ECKD DASDs increasing data access performance

Hyper-Parallel-Access-Volume support for Linux on System z. This is a very flexible concept to massively improve device performance by using a set of sub channels as an ALIAS-pool.



Kernel VDSO Support

Virtual Dynamically-linked Shared Object (VDSO) is a shared library provided by the kernel. This allows normal programs to do certain system calls without the usual overhead of system calls like switching address spaces.

For Linux on System z there are three functions at the moment that are accelerated in this way: `gettimeofday`, `clock_gettime`, and `clock_gettime`. The most important one is probably `gettimeofday`.

Some user space application, for example the Java virtual machine, tend to call `gettimeofday` very often. By use of a `vdso` this operation can be accelerated by a factor of 4 thereby increasing the performance of the user space application.

JAVA 7

Due to EOL of Oracle JDK6 in November, Oracle Java 7 and IBM counterpart will be available to Red Hat Enterprise Linux 5
Its already included with Red Hat Enterprise Linux 6



Red Hat Enterprise Linux 6.4
Target beta: Dec 4 2012
Target GA: around Feb 7 2013

Bugfixes
New features



RHEL 6.4 Features may change when product becomes GA

Complete your sessions evaluation online at SHARE.org/SFEval

Support of new crypto hardware

This feature provides support for new crypto hardware: CryptoExpress4S

Linux for System z support is needed to be able to use crypto applications on future System z hardware.



Data Routing for FCP

Enable FCP to pass data directly from memory to SAN (data routing) when memory on the adapter card is blocked by large and slow I/O requests.

Improved performance by increasing the I/O rate and throughput for short and fast I/O requests when memory on the adapter is blocked by large and slow I/O requests will satisfy customer expectations regarding performance



Complete your sessions evaluation online at SHARE.org/SFEval

End-To-End data consistency checking

The T10 Technical Committee introduced an enhancement to the SCSI standard (SPC-4, SBC-3) to protect against errors in user data blocks.

This line item introduces the zfc-specific part in the Linux on System z I/O stack for E2E data consistency checking.

This RAS item provides improved service and control of data flow between adapter and storage device by introducing the zFCP specific part of the enhanced SCSI standard for E2E data consistency checking



New Crypto Algorithms

For Customers require acceleration of complex cryptographic algorithms:

The libICA library provides an interface to cryptographic hardware.
This feature adds new algorithms that support
Message Security Assist (CP ACF) extension 4, on top of libica 2.1

For block cipher DES and 3DES, the new feature will support the following modes of operation:

- Cipher Block Chaining with Ciphertext Stealing (CBC-CS)

For block cipher AES, this feature will support the following modes of operation:

- Cipher Block Chaining with Ciphertext Stealing (CBC-CS)
- Counter with Cipher Block Chaining Message Authentication Code (CCM)
- Galois/Counter (GCM)

This feature also adds support for DES Block Cipher Based Message Authentication Code (CMAC).



libhugetlbfs support for System z (LPAR)

System z support added to libhugetlbfs that is a library which provides easy access to huge pages of memory. Applications can use huge pages to fulfill malloc() requests without being recompiled.

This RAS feature allows for transparent exploitation of large pages in C/C++ programs. So ISV programs don't need changes/recompilation to profit from the performance benefits of large pages

Support for new storage device on System z (LPAR)

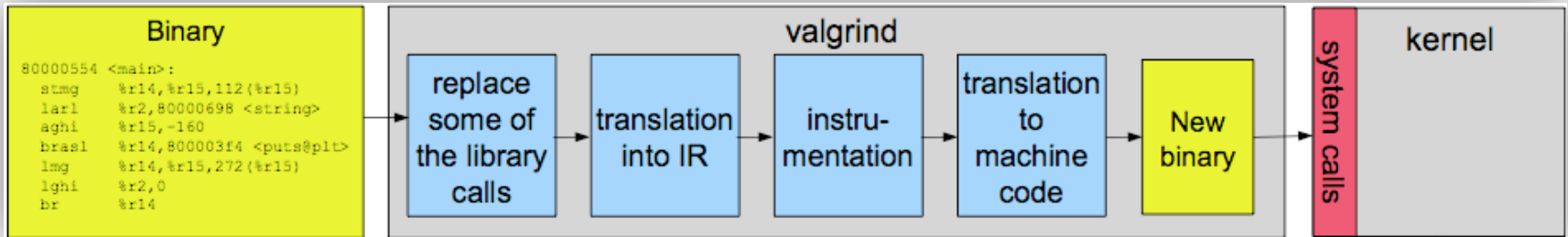
Allow Linux to access a new storage device as a block device using a new interface. That includes the adaption of common IO functions to allow to attach, configure and operate the new sub channels.

This feature provides access to a future new storage device, for example: SCM via EADM sub channels
With this feature, Linux can access Storage Class Memory as a block device.

Valgrind >= 3.7.0

Valgrind has proven to be a valuable tool debugging user-space memory management problem on x86 and PPC platforms.

This tool is available for System z and besides the capabilities to debug memory problems other plugins (cachegrind) enable us to analyze the cache access patterns to get the best performance on z10 machines.



Eclipse IDE Platform

Eclipse is an open source software development project dedicated to providing a robust, full-featured, commercial-quality, industry platform for the development of highly integrated tools.

Eclipse IDE in Linux on System z will allow developers to develop eclipse application direct on Linux on System z.

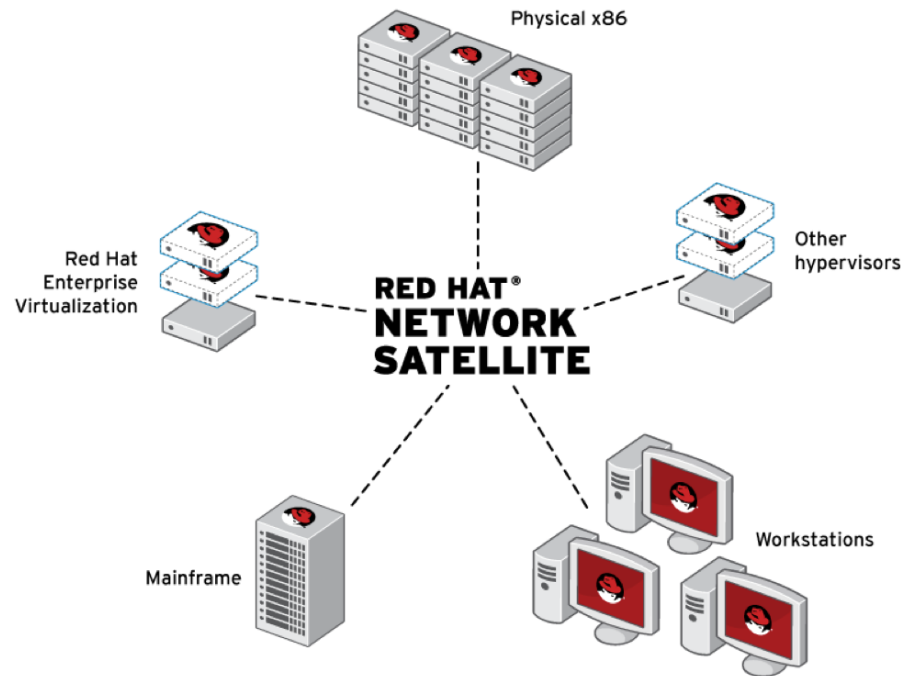


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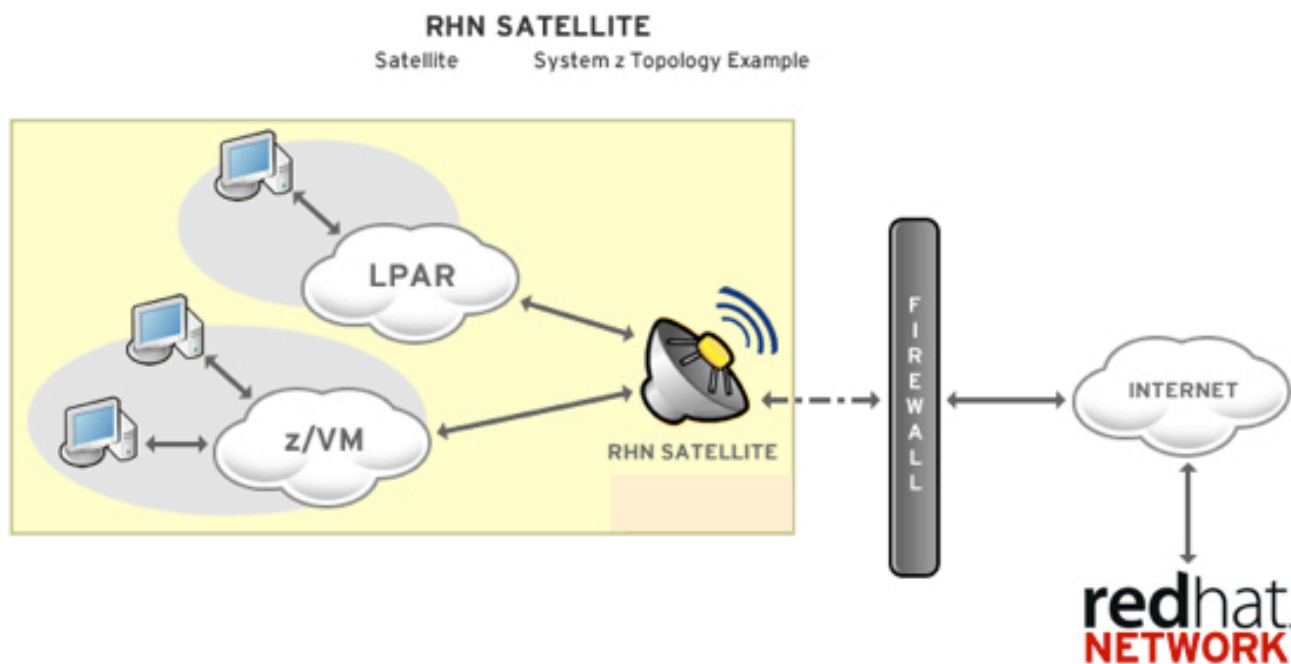
RHN Satellite Overview

Manage the lifecycle of Red Hat systems from x86 to Mainframe from a centralized console.

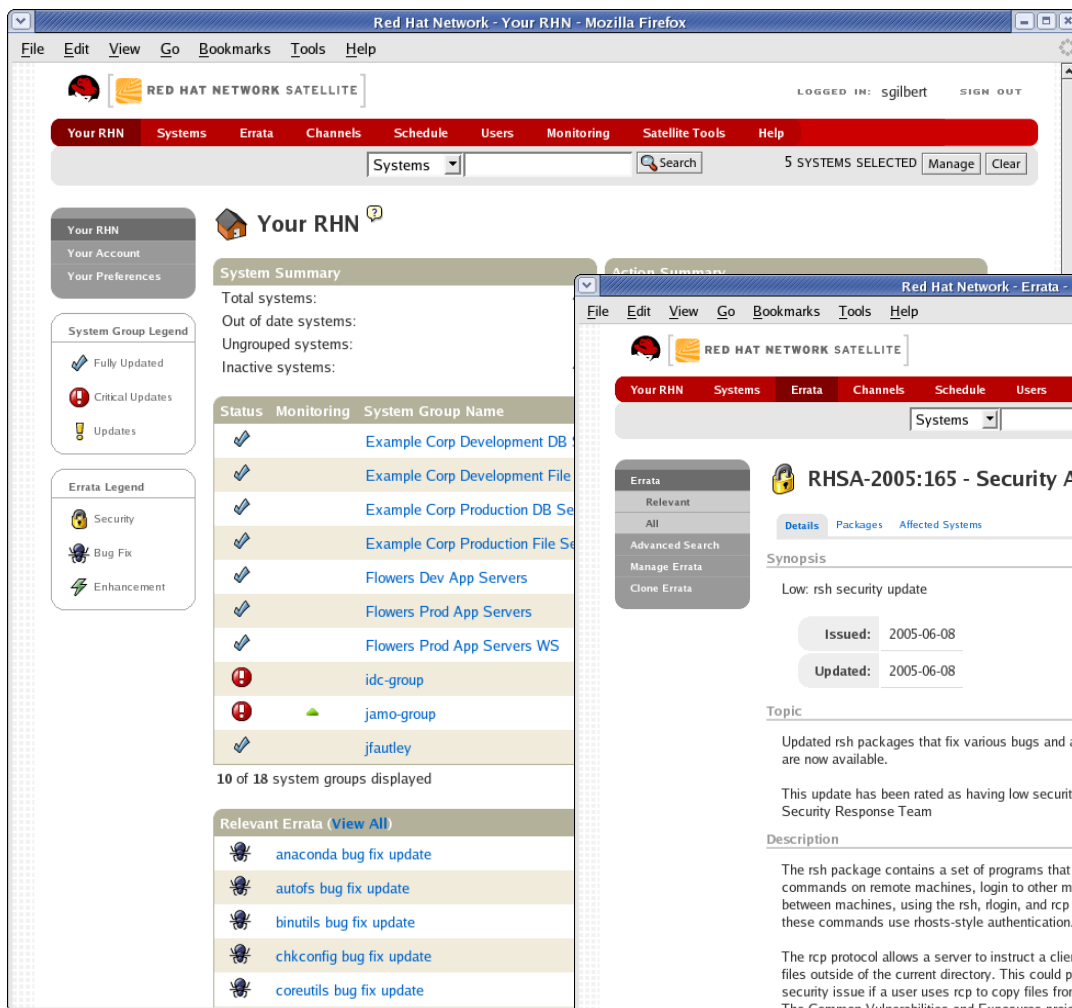
Simplify software updates, change of configuration files, remote access, and more.



RHN Satellite high level architecture for System z



RHN Satellite console screenshots



Red Hat Network - Your RHN - Mozilla Firefox

LOGGED IN: sgilbert SIGN OUT

Systems

5 SYSTEMS SELECTED Manage Clear

Your RHN

System Summary

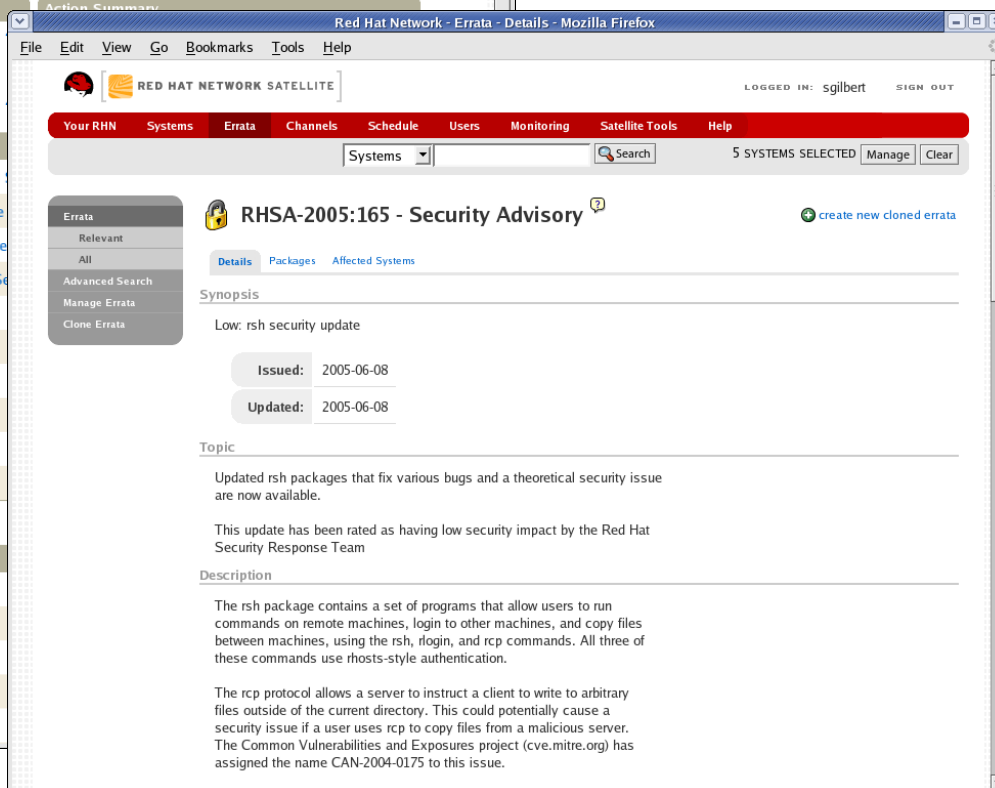
Total systems:
Out of date systems:
Ungrouped systems:
Inactive systems:

Status	Monitoring	System Group Name
✓	✓	Example Corp Development DB
✓	✓	Example Corp Development File
✓	✓	Example Corp Production DB Se
✓	✓	Example Corp Production File Se
✓	✓	Flowers Dev App Servers
✓	✓	Flowers Prod App Servers
✓	✓	Flowers Prod App Servers WS
!		idc-group
!	▲	jamo-group
✓	✓	jfautley

10 of 18 system groups displayed

Relevant Errata (View All)

- anaconda bug fix update
- autofs bug fix update
- binutils bug fix update
- chkconfig bug fix update
- coreutils bug fix update



Red Hat Network - Errata - Details - Mozilla Firefox

LOGGED IN: sgilbert SIGN OUT

Errata

RHSA-2005:165 - Security Advisory create new cloned errata

Details Packages Affected Systems

Synopsis

Low: rsh security update

Issued: 2005-06-08
Updated: 2005-06-08

Topic

Updated rsh packages that fix various bugs and a theoretical security issue are now available.

This update has been rated as having low security impact by the Red Hat Security Response Team

Description

The rsh package contains a set of programs that allow users to run commands on remote machines, login to other machines, and copy files between machines, using the rsh, rlogin, and rcp commands. All three of these commands use hosts-style authentication.

The rcp protocol allows a server to instruct a client to write to arbitrary files outside of the current directory. This could potentially cause a security issue if a user uses rcp to copy files from a malicious server. The Common Vulnerabilities and Exposures project (cve.mitre.org) has assigned the name CAN-2004-0175 to this issue.



IDC ROI Study* of Red Hat Network Satellite

IDC conducted in-depth interviews with staff members of 10 IT organizations that have deployed RHN Satellite Server.

RED HAT NETWORK SATELLITE SERVER ROI ANALYSIS

CATEGORY	VALUE
Three-year cost of investment	\$274,410
Annual cost savings	\$500,905
Net present value (NPV of three-year savings)	\$927,778
Payback period	4.8 months
Three-year ROI	338%

* IDC White Paper sponsored by Red Hat, Linux Management with Red Hat Network Satellite Server: Measuring Business Impact and ROI, Doc # 220346, October 2009 <https://inquiries.redhat.com/go/redhat/idc-rhn-satellite>



SALT RIVER PROJECT MIGRATES TO RED HAT ENTERPRISE LINUX ON IBM MAINFRAMES FOR FLEXIBILITY AND PERFORMANCE

FAST FACTS

Industry:	Utilities, Government
Geography:	Arizona
Challenge:	Searched for a replacement for proprietary software for its IBM mainframe servers that could provide greater flexibility, manageability, and utilization opportunities
Migration Path:	HP-UX to Red Hat® Enterprise Linux®
Software:	Red Hat Enterprise Linux, Red Hat Network Satellite
Hardware:	IBM® System z® mainframe servers
Benefits:	Experienced cost savings, boosted performance, stable and reliable management, consolidation, and valuable technical support after migrating to Red Hat Enterprise Linux on IBM System z




Oracle Announcement

Oracle 11gR2 available!



 **Oracle Database 11.2.0.3.0 is certified on IBM: Linux on System z Red Hat Enterprise Linux 6**


 **Oracle Real Application Clusters 11.2.0.3.0 is certified on IBM: Linux on System z Red Hat Enterprise Linux 6**

Customers Reference



BANCO PASTOR REDUCES COSTS AND IMPROVES SCALABILITY WITH RED HAT, SAP®, AND IBM SOLUTIONS

FAST FACTS

Industry	Financial Services: Banking		Banco Pastor
Geography	EMEA: Headquarters in Spain		
Business Challenge	Improve payroll and human resource systems management and achieve cost savings and performance improvements with an upgrade of the email infrastructure		
Migration Path	From distributed platform to Red Hat Enterprise Linux on IBM System z10 Business Class mainframes		
Solution	The implementation of Red Hat Enterprise Linux running on IBM System z10 Business Class mainframes to run SAP NetWeaver®, SAP ERP, and IBM Lotus Notes software		
Software	Red Hat Enterprise Linux Server v5.3, SAP NetWeaver 7.0 SR3, SAP ERP 6.0 SR3, and IBM Lotus Notes for Collaboration 7.0.2		
Hardware	Two IBM System z10 Business Class mainframes, with three and four IFLs		
Benefits	The new email platform reduced recurrent costs by 30 percent, improved performance for IBM Lotus Notes for Collaboration software and SAP applications, and guaranteed an exhaustive and scalable control of resources		

ALLIANZ UPDATES IT INFRASTRUCTURE WITH RED HAT ENTERPRISE LINUX ON IBM SYSTEM Z AND JBOSS ENTERPRISE MIDDLEWARE

FAST FACTS

Company	Allianz Australia Insurance Limited
JBoss Innovation Award	Carved Out Costs
Industry	Insurance
Geography	Australia
Business Challenge	Rebuild Allianz's IT infrastructure based on a flexible and scalable platform that could leverage new virtualisation technology to generate hardware and support savings, and reduce its underlying software and operations costs for several strategic business application projects
Migration Path	Windows-based infrastructure to Red Hat Enterprise Linux on IBM System z10 mainframe and from Websphere to JBoss Enterprise Middleware on Intel processor based HP ProLiant servers
Software	Red Hat Enterprise Linux, Red Hat Network Satellite, JBoss Enterprise Middleware, JBoss Operations Network, Red Hat Consulting
Hardware	IBM System z10 mainframe, HP ProLiant servers
Benefits	Significant reduction in middleware software and support costs, reallocation of IT budget from software licensing to staff and resources, resolved data centre power limitations with new capacity for growth, superior workload management and operational efficiency, reduced carbon footprint, increased flexibility, scalability, and freedom from vendor lock-in



BANK OF NEW ZEALAND REDUCES CARBON FOOTPRINT WITH RED HAT ON THE MAINFRAME

FAST FACTS

Industry	Financial Services
Geography	New Zealand
Business Challenge	Address environmental and space issues in the datacentre and achieve the corporate goal of becoming carbon neutral by 2010
Migration Path	From distributed Intel and SUN SPARC servers to Red Hat Enterprise Linux 5 running under z/VM on IBM z9 and z10 mainframes
Solution	Software: Red Hat Enterprise Linux 5, Red Hat Network (RHN) Satellite, Oracle database, WebSphere Application Server, ESB, Process Server, TX and MQ Hardware: 1x IBM z9 and 1x IBM z10 mainframe (with 3 x IFL engines in each)
Benefits	<ul style="list-style-type: none"> • Recovered 30 percent of datacenter floor space • Reduced power consumption by 38 percent • 20 percent return on investment (ROI) over the life of the platform • Simplified, more efficient deployment



Citigroup: Red Hat Innovation Award Winner



June 17, 2010

Customer: Citigroup Global Markets, Inc.

Industry: [Financial Services \(/solutions/industry/financial/\)](#)

Geography: North America

Country: United States

Business Challenge:

Reconciling two independently developed and supported Linux platforms to run mission-critical applications for Citi's globally distributed business units

Software:

Red Hat Enterprise Linux

Hardware:

x86 servers, IBM System z mainframes

Benefits:

By delivering a common global Linux build across the enterprise that can be leveraged across both x86 and IBM mainframe platforms, Citi has been able to retire a number of one-off infrastructure software products and their associated costs.

Thank you
Vielen Danke
Gracias
Grazie
Obrigado

Filipe Miranda
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Red Hat Inc.



High Availability and Clustered File System



New ISV Support

- Sine Nomine Associates: zLinux R&D company
- Support High Availability/GFS2 for RHEL on System z
- Also support 3 other clustered file systems (AFS, Ceph, GLusterFS).
- Contacts: Filipe Miranda <fmiranda@redhat.com>
Sine Nomine directly <info@sinenomine.net>