



## System New Technology Program

July 14-17, 2008



# Red Hat Enterprise Solutions for System z

↑  
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# Introduction

- Shawn Wells <swells@redhat.com>
  - Solutions Architect
  - Hands-on help with PoC's
  - Liaison between customers & Red Hat internal groups
  - Primary RHEL on System z contact @ Red Hat





# Agenda

- 30 minute update on Red Hat
  - Latest Company Announcements & ISV Partnerships
  - RHEL 5 for System z Update
  - Red Hat Network Satellite Overview





## Red Hat & IBM World-Wide Tour

- September: Asia Pacific
  - 8/31 – 9/10: Australia & New Zealand
  - 9/14 – 9/19: India
  - 9/23 – 9/30: Singapore
  - 10/1 – 10/3: Beijing, China (tentative!)
  
- October: Europe
  - 10/4 - ?: Europe (Madrid, Milan, Paris, Stockholm, Oslo, Munich, Cologne, England, others TBD)
  
- November: United States

*Dates tentative as of 7/14/2008*





## Red Hat & IBM World-Wide Engineering Alliance

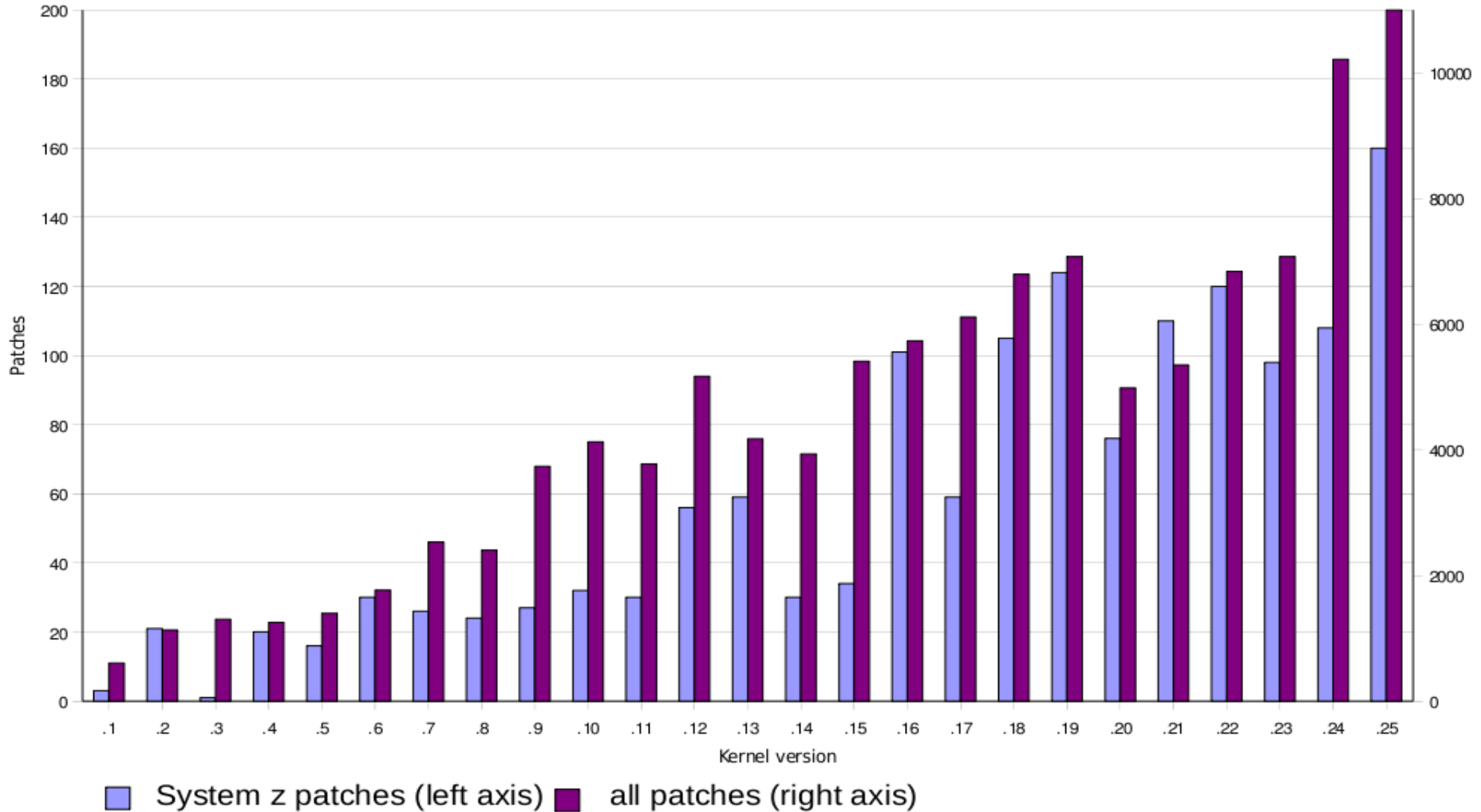
- The strength of Linux is based off having a large, vigorous development community
  - RedHat/IBM are the #1 and #2 contributors to Linux kernel
  - Of the 2.6.23 kernel, RedHat/IBM contributed ~20% of code changes [1]
  - Employ 7 of the 10 core maintainers & developers

[1] <http://lwn.net/Articles/247582/>





# Linux Kernel – System z Specific Changes





## Results of Joint Engineering

- Upstream Code
  - DASD Driver Updates (RHEL 5.1)
  - zFCP Driver Updates (RHEL 5.1)
    - zFCP multipath support in installer
- Crypto2 Express Support (CEX2C, CEX2A models)
- DCSS: Discontiguous Saved Memory Segments
  - Shared section of memory by several guests
  - Allows XIP2 (execution in place)
  - XIP2fs integrated into ext2
- Faster minidisk access on 64-bit VMs (Diag 250)





# Results of Joint Engineering

## ■ RHEL 5.1

- Improved z/VM scheduling
- Improved performance with recompiled binaries for Z
- Enhanced NPIV Support
- Certified on Z10 since Nov 2007







# Results of Joint Engineering

## ■ RHEL 5.2

- In kernel crypto exploitation of new CP assist functions (AES 192 / 256, SHA 384 / 512)
  - S/390 implementation of the SHA384 and SHA512 digest algorithms
  - Improved encryption performance (ex: encrypted file systems)
- Software support for CP assist instructions (AES/SHA) through libica library
  - Cryptographic and device driver performance enhancements
  - Support for updated OpenSSL, PKCS#11, GSKit, and kernel crypto APIs
  - Focused on supporting customers with demanding security requirements (banking, telecom, government)





# Results of Joint Engineering

## ■ RHEL 5.2, cont

- Hipersockets MAC layer routing support
  - Implementation of L2 routing support, matching OSA MAC layer routing capabilities
  - Ability to route through intermediate VSWITCH for L2 bridging into external networks
  - IPv6 and L2 networking over hipersockets
- STSI change for capacity provisioning
  - Hardware exploitation of new STSI instruction
  - Permanent and temporary capacity provided in `/proc/sysinfo`





# Results of Joint Engineering

## ■ RHEL 5.2, cont

- OSA 2 ports per CHPID support
  - Support for new OSA 2-port feature, occupying single I/O slot
  - Each port independently configured as CHPID type OSD or OSN





## Results of Joint Engineering

- **RHEL 5.3**

- Working on installer improvements
- Focus on hardware enablement

- **RHEL 5.4 and beyond**

- Feature requests welcome: [swells@redhat.com](mailto:swells@redhat.com)



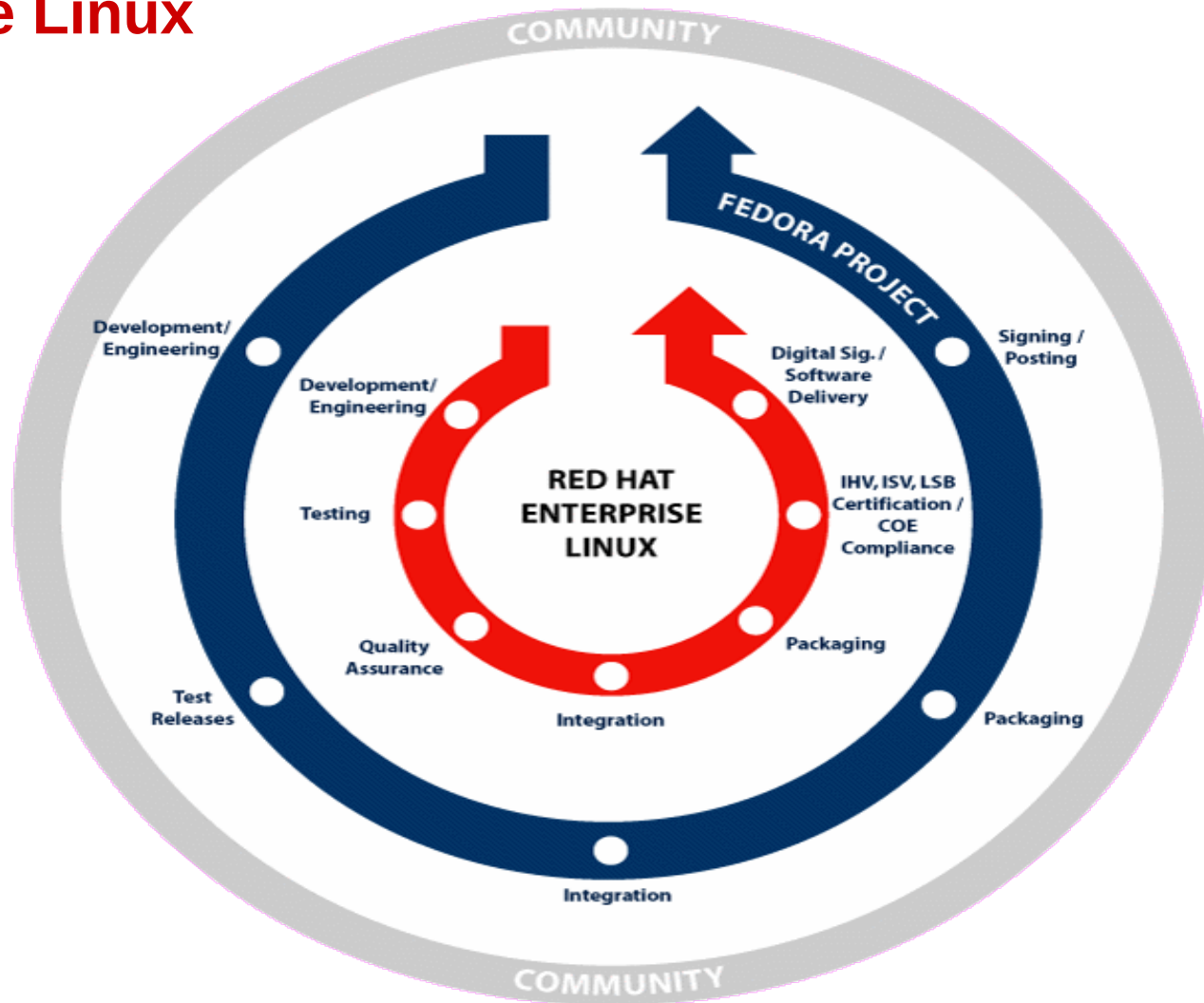


# Fedora for System z



## Red Hat Enterprise Linux

- Stability, Maturity
- Q&A
- 7yr maintenance
- ABI compatibility guarantee
- IBM & ISV certifications





## Other Red Hat Announcements

- Distributed Virtualization (oVirt)
- Identity Management (Enterprise IPA)
- JBoss
- Systems Management (Red Hat Network, Spacewalk)
- ISV Partnerships
- SELinux





## What is Red Hat Network?

**A systems management platform designed to provide complete lifecycle management of the operating system and applications.**

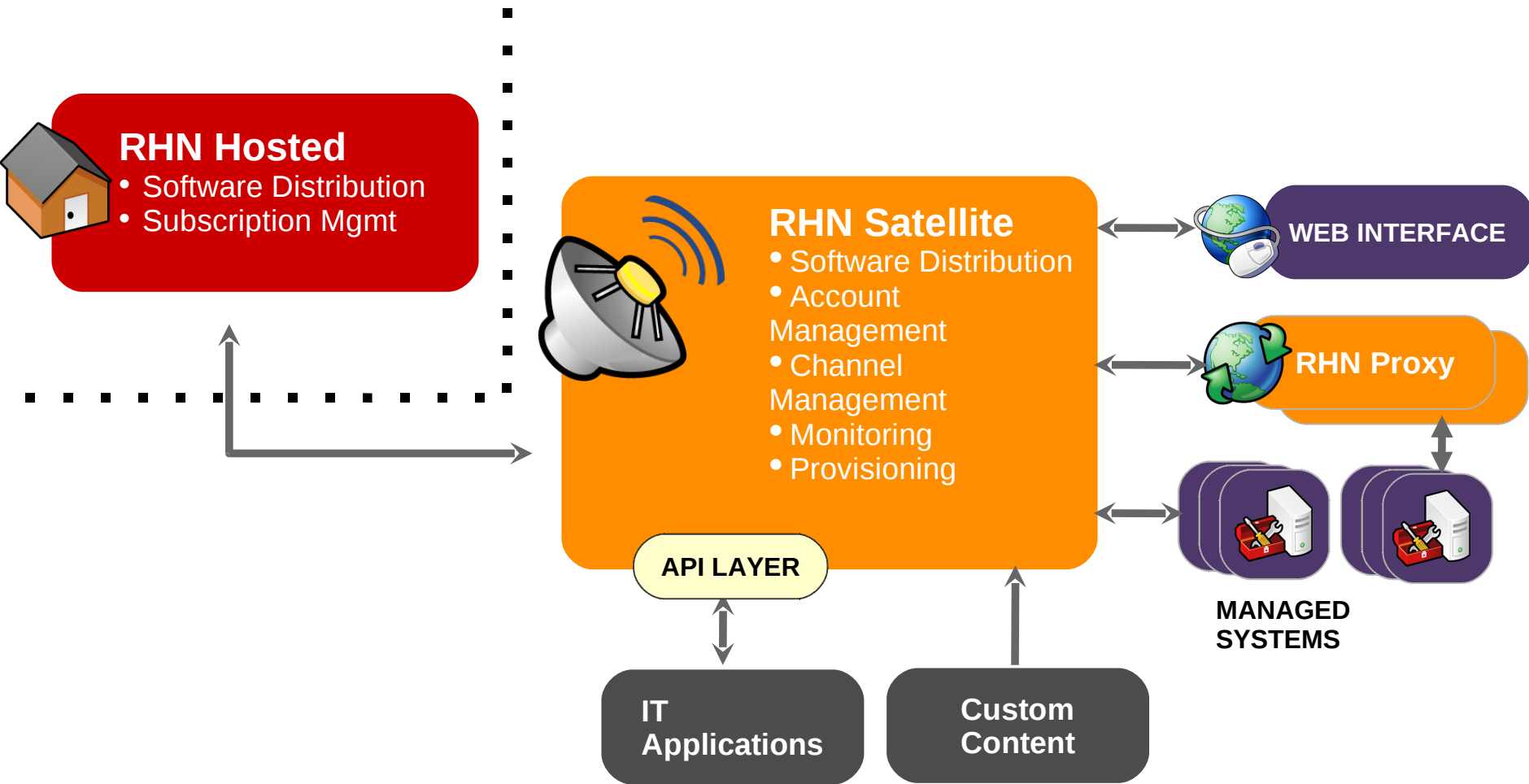
- Provision/reprovision machines without touching them
- Manage 1,000 systems as easily as 1
- Ensure security fixes / config changes applied consistently across enterprise







# Typical Red Hat Network Deployment



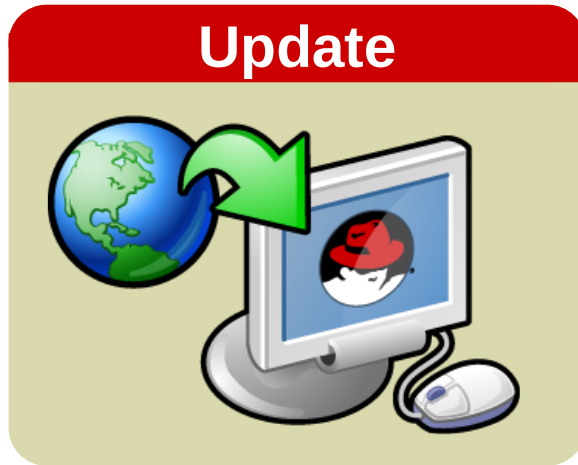


# Modules for Red Hat Network





# Modules for Red Hat Network





# Modules for Red Hat Network

## Update



## Manage



## Provision





# Modules for Red Hat Network

## Update



## Manage



## Provision



## Monitor





## Satellite is now Open Source!

<http://spacewalk.redhat.com>

- Announced at Red Hat Summit 2008  
.... remember the Fedora -> RHEL model?





# Thank You!

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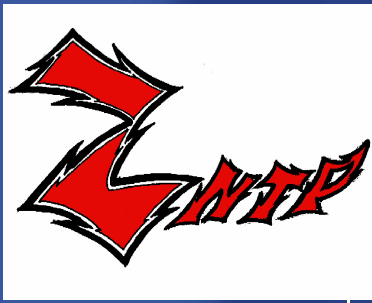
<http://redhat.com/z>





#1

IN VALUE. **AGAIN.**



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## Red Hat Enterprise Solutions for System z

## Supplimental Information





## Useful Links

- Technical mailing list ([linux-390@vm.marist.edu](mailto:linux-390@vm.marist.edu))
  - Subscribe: <http://www2.marist.edu/htbin/wlvindex?linux-390>
  - Archive: <http://www.mail-archive.com/linux-390@vm.marist.edu/>
  
- RHEL 5 Virtualization Cookbook
  - <http://www.linuxvm.org/present/misc/virt-cookbook-RH5.pdf>
  - Update to 5.2 coming soon (currently under technical review, 6/2008)
  
- Presentations from SHARE user conferences and other links
  - <http://www.linuxvm.org/present/>
  - <http://www.linuxvm.org/>





## RHEL 5.2 Bug Fixes, Installer Related

- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=237508](https://bugzilla.redhat.com/show_bug.cgi?id=237508) [Private]
  - Summary: LCS device not found at install
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=305331](https://bugzilla.redhat.com/show_bug.cgi?id=305331) [Private]
  - Summary: sudo-1.6.8p12-10 segfaults when using ldap on s390
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=354661](https://bugzilla.redhat.com/show_bug.cgi?id=354661) [Private]
  - Summary: multipath paths fail using PAV Devices on DS8000 DS6000
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=279201](https://bugzilla.redhat.com/show_bug.cgi?id=279201) [Private]
  - Summary: zfcpcnf.sh fails in rc.sysinit if / partition and /usr partition are separated





## RHEL 5.2 Bug Fixes, Storage Related

- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=360701](https://bugzilla.redhat.com/show_bug.cgi?id=360701) [Private]
  - Summary: swap\_dup: Bad swap file entry <xxxxxxxx> without swap configured
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=360611](https://bugzilla.redhat.com/show_bug.cgi?id=360611) [Private]
  - Summary: FICON DS8000: File ID Miscompare after CHPID off via HMC





## RHEL 5.2 Bug Fixes, I/O Related, p1

- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=360821](https://bugzilla.redhat.com/show_bug.cgi?id=360821) [Private]
  - Summary: qdio: too many interrupts on qdio-driven devices
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=360631](https://bugzilla.redhat.com/show_bug.cgi?id=360631) [Private]
  - Summary: qdio: time calculation is wrong
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=354801](https://bugzilla.redhat.com/show_bug.cgi?id=354801) [Private]
  - Summary: cio: Disable channel path measurements on shutdown/reboot





## RHEL 5.2 Bug Fixes, I/O Related, p2

- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=354831](https://bugzilla.redhat.com/show_bug.cgi?id=354831) [Private]
  - Summary: cio: Handle invalid subchannel set id in stsch
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=354821](https://bugzilla.redhat.com/show_bug.cgi?id=354821) [Private]
  - Summary: cio: Device status validity





## RHEL 5.2 Bug Fixes, Networking Related

- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=281241](https://bugzilla.redhat.com/show_bug.cgi?id=281241) [Private]
  - Summary: tcpdump does not show outgoing packets with fake\_ll=1
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=354891](https://bugzilla.redhat.com/show_bug.cgi?id=354891) [Private]
  - Summary: qeth: recognize/handle RC=19 from Hydra 3 OSA
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=354851](https://bugzilla.redhat.com/show_bug.cgi?id=354851) [Private]
  - Summary: qeth: increment sequence number for incoming packets
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=267381](https://bugzilla.redhat.com/show_bug.cgi?id=267381) [Private]
  - Summary: QDIO based network connections hang with QIOASSIST ON







## RHEL 5.2 Bug Fixes, Stability Related, p1

- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=360591](https://bugzilla.redhat.com/show_bug.cgi?id=360591) [Private]
  - Summary: Operating System Message: Kernel panic - not syncing: Fatal exception in interrupt
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=253275](https://bugzilla.redhat.com/show_bug.cgi?id=253275) [Private]
  - Summary: Placing a kprobe on 'bc' instruction can crash the system
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=354811](https://bugzilla.redhat.com/show_bug.cgi?id=354811) [Private]
  - Summary: I/O stall, system crash due to scanning for units from FC transport class
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=354871](https://bugzilla.redhat.com/show_bug.cgi?id=354871) [Private]
  - Summary: qdio: System hang with zfcp in case of adapter problems





## RHEL 5.2 Bug Fixes, Stability Related, p2

- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=350861](https://bugzilla.redhat.com/show_bug.cgi?id=350861) [Private]
  - Summary: Kernel panic with lcs interface as dhcp server
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=330211](https://bugzilla.redhat.com/show_bug.cgi?id=330211) [Private]
  - Summary: qeth: crash during reboot after failing online setting
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=380981](https://bugzilla.redhat.com/show_bug.cgi?id=380981) [Private]
  - Summary: Kernel Panic during activation of OSA-devices with fake\_ll
  
- BZ: [https://bugzilla.redhat.com/show\\_bug.cgi?id=325451](https://bugzilla.redhat.com/show_bug.cgi?id=325451)
  - Summary: ptrace compatibility problem with PTRACE\_{PEEK,POKE}USR\_AREA





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