



RED HAT
ON THE MAINFRAME
THE REASONS ARE COMPELLING



Introduction

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- Solutions Architect
- Based in Washington, D.C.
- Global responsibility for System z pre-sales efforts

Agenda

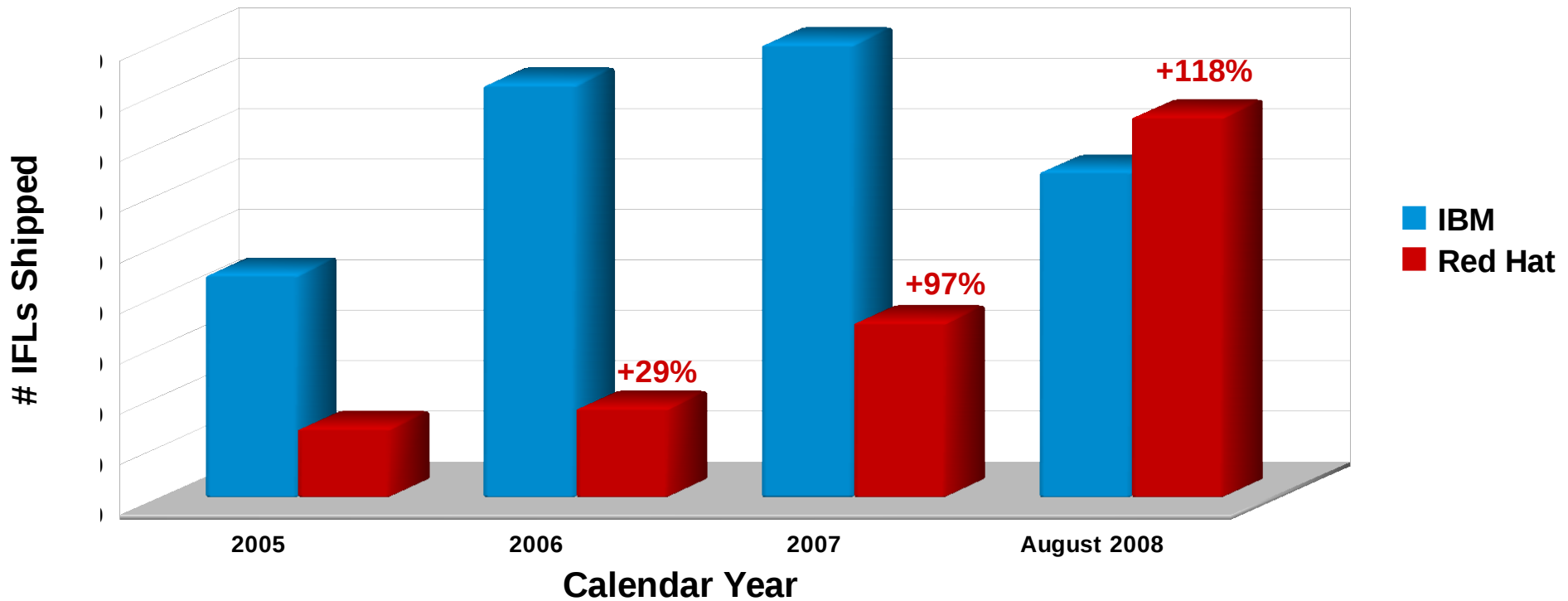
- Red Hat / IBM Relationship Overview
- Current Campaigns/Programs
- Technical Review
- New Customer References
- Upcoming Events
- Open Discussion / Q&A

Red Hat / IBM Relationship

- Cross platform relationship founded in the late 90s when Red Hat incorporated
- System z relationship formalized & announced in 2007
(<http://www-03.ibm.com/press/us/en/pressrelease/21513.wss>)
- Exponential growth since
- Red Hat has dedicated staff to System z
(we haven't done this for any other H/W platform)

Red Hat / IBM Relationship: Q3

Global IBM System z IFL Shipments
IBM vs Red Hat

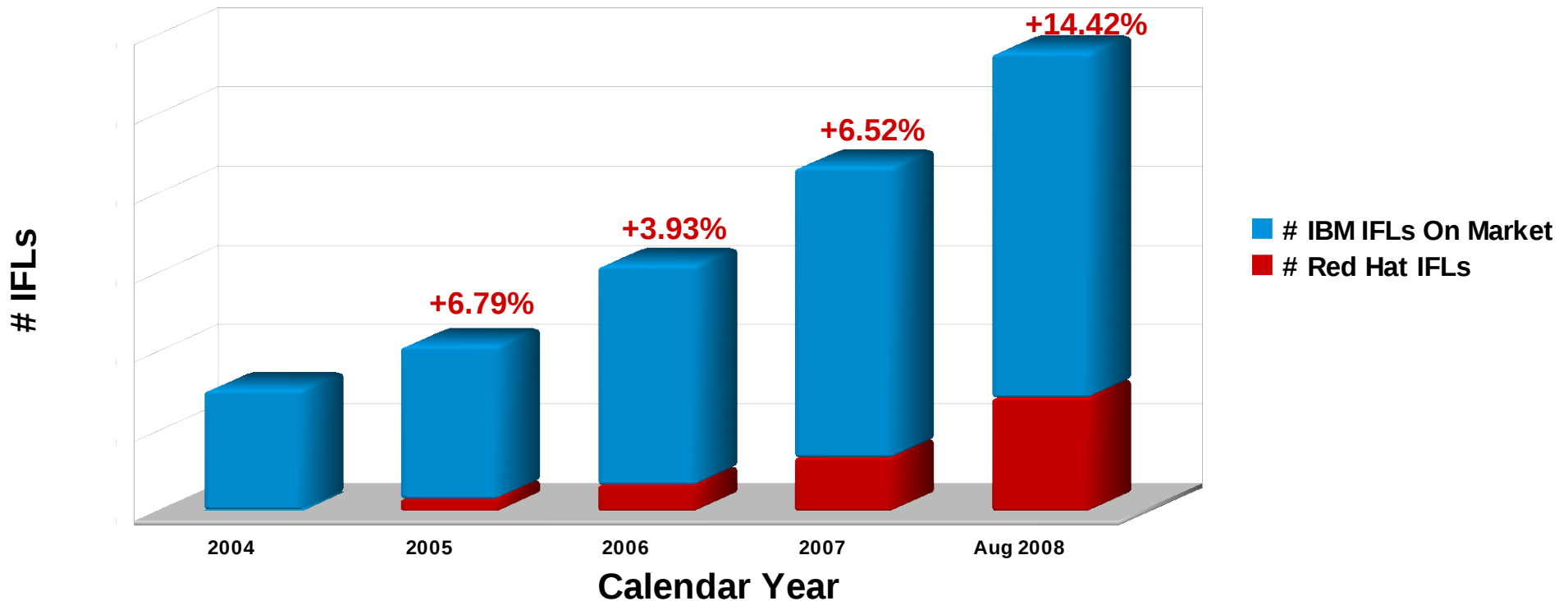


- IBM data reflects number of IFLs in inventory
- Red Hat data reflects number of active RHEL for System z subscriptions

YEAR	% RHT Of New IFL Sales
2004	-%
2005	32.30%
2006	21.08%
2007	38.62%
Aug 2008	109.61%

Red Hat / IBM Relationship: Q3

Linux on IBM System z
Red Hat Global IFL Market Share



- IBM data reflects number of IFLs in inventory
- Red Hat data reflects number of active RHEL for System z subscriptions

YEAR	% Red Hat Market Share
2004	1.34%
2005	8.13%
2006	12.06%
2007	18.58%
Aug 2008	33.00%

Red Hat / IBM Relationship: Q3

- 30-NOV marked the end of Red Hat's 3rd quarter. Results to be posted in December.
- Focus given to
 - 2008 System z Tour
 - Project SUNdown
 - Expanding into APAC (specifically, Australia)
 - Conferences & Community Participation

2008 System z Tour

- 100% funded by Red Hat
- 12 cities. 7 countries. 35 days.
 - 2x Sydney, Melbourne, 2x Canberra, Chennai, Madrid, Barcelona, Stuttgart, Munich, *Boeblingen*, Milan, Paris, Stockholm
- Results
 - Bank of New Zealand became Red Hat reference customer
 - Joint IBM/Red Hat “Attack HP” campaigns, focus on Iberia & Nordic regions
 - 26 Pipelined Q3 IFL sales (closed 23, remaining for Q4)

Upcoming System z Tours

- **You tell me. ASAP. swells@redhat.com**
(we're in the budget process now)
- Potential: Brazil
 - Considered emerging market, high potential for z10 Bcs.
 - Red Hat has local office
- Potential: Japan, China, India
 - Japan has historically been a System z hub in Asia-Pacific. That's not going to change.
 - Large potential in India as government & infrastructure projects evolve.

Current Campaigns/Programs

z10 BC Migration Offer

Intended Target: Customers with *new* workload

Promotion: 50% off MSRP

Timing:

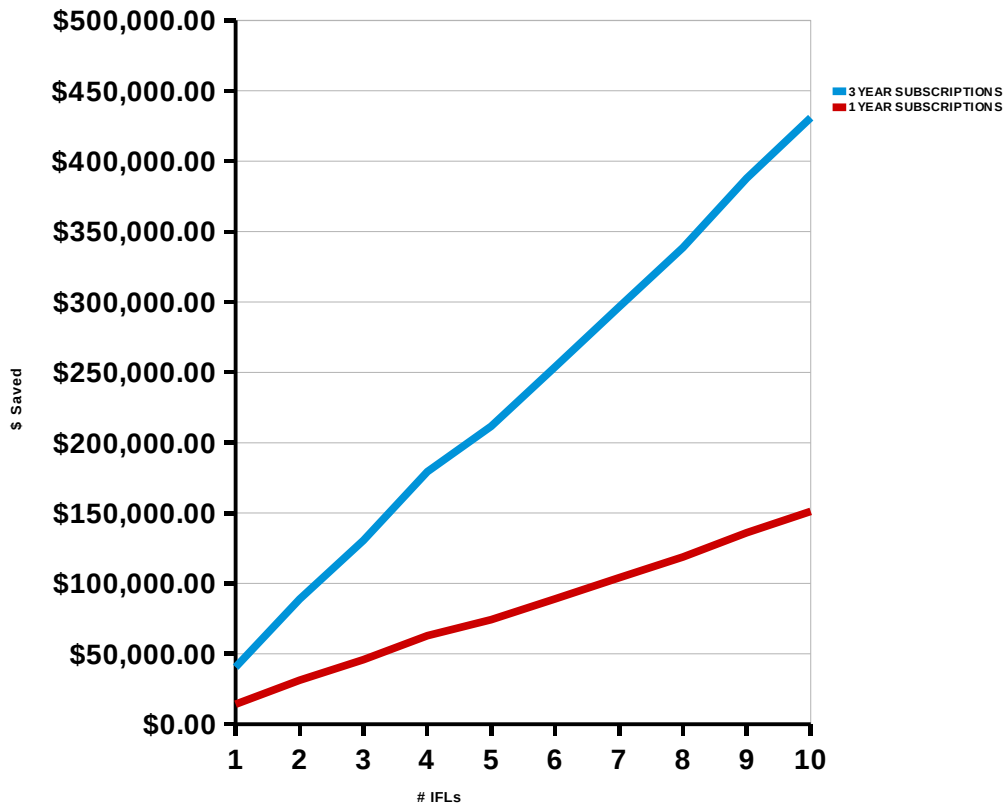
Begins: 21-OCT 2008

Ends: 30-JUNE 2009

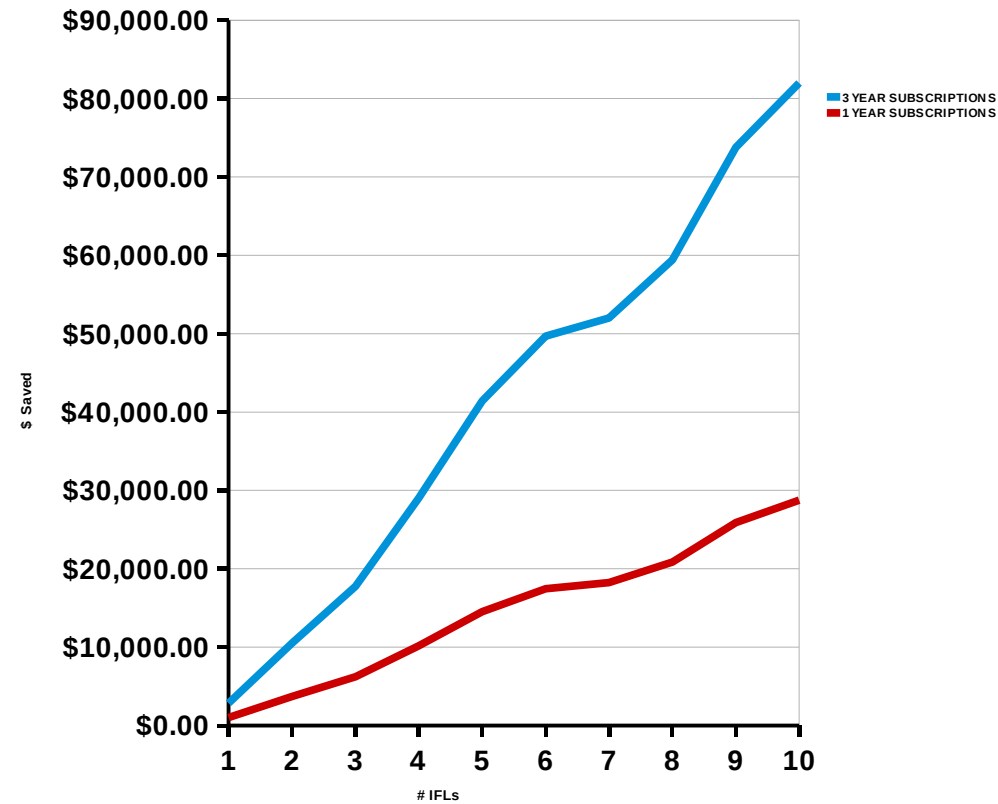
Current Campaigns/Programs

z10 BC Migration Offer

RHEL Savings on IBM System z10 BC
10-to-1 Consolidation Ratio



RHEL Savings on IBM System z10 BC
4-to-1 Consolidation Ratio



MIGRATE TO LINUX WITH RED HAT AND IBM.

Solaris → Linux Migration (Project SUNdown)

<http://www.redhat.com/sundown>

<http://www-03.ibm.com/systems/migratetoibm/sun/>

- SUN announced EOL for UltraSPARC-IV and UltraSPARC-IV+ processors as of 8-JAN 2009. Translates into and end of life for all of their servers that have more than 4 sockets, including the venerable E25k.
- Global program with Red Hat & IBM.
 - Special focus on APAC, which contains immense SUN footholds.

SUN financial reports @

http://www.sun.com/aboutsun/investor/earnings_releases/call_slides.jsp

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- SUN's x86 volume went up 39% last quarter (versus same quarter last year)
- Overall server volume only grew 2% between quarters
- SUNs profit margin has fallen from 47% to a mere 35%

In Sun's attempt to hang on to market share by giving deep discounts on their “volume” servers (1-2 socket systems) they have cannibalized not only their Higher margin SPARC hardware, but also their profit margins and revenue stream as well.

MIGRATE TO LINUX WITH RED HAT AND IBM.

Solaris → Linux Migration (Project SUNdown)

Reference Customer:



Story: Consolidated 131 SUN machines into
2x z10 EC's @ 10x IFLs.

Current Campaigns/Programs

Certify Once, Deploy Anywhere

- We want to enable IT choice, not dictate it
- Delivery of a consistent RHEL platform across all H/W lines
- Recent ISV additions include
 - JBoss
 - RHN Satellite
 - SAP
 - MicroFocus
 - Tripwire

Current Campaigns/Programs

Destination z & IBM Academic Programs

- Joined Destination z
- Free RHEL to IBM Academic Partners
 - Marist College
 - Binghamton
 - NCCU
 - San Diego State



Technical Review

RHEL 5.2

- Support for z10
- Dynamic CHPID reconfiguration
- Improved “ssh -X” with VPN during installation process
- Better network performance with skb scatter-gather support
- Implementation of SCSI dump infrastructure

Technical Review

RHEL 5.2

- **Accelerated in-kernel Crypto**
 - Support for crypto algorithms of z10
 - SHA-512, SHA-384, AES-192, AES-256
- **Two OSA ports per CHPID; Four port exploitation**
 - Exploit next OSA adapter generation which offers two ports within one CHPID. The additional port number 1 can be specified with the qeth sysfs-attribute “portno”
 - Support is available only for OSA-Express3 GbE SX and LX on z10, running in LPAR or z/VM guest (PFT for z/VM APAR VM64277 required!)

Technical Review

RHEL 5.2

- **Large Page Support**

- This adds hugetblfs support on System z, using both hardware large page support if available, and software large page emulation (with shared hugetblfs pagetables) on older hardware

- **skb scatter-gather support for large incoming messages**

- This avoids allocating big chunks of consecutive memory and should increase networking throughput in some situations for large incoming packets APAR VM64277 required!)

Full Release Notes At: [redhat.com](http://www.redhat.com)

[http://www.redhat.com/docs/en-](http://www.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/5.2/html/Release_Notes/s390x/index.html)

[US/Red_Hat_Enterprise_Linux/5.2/html/Release_Notes/s390x/index.html](http://www.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/5.2/html/Release_Notes/s390x/index.html)

Technical Review

RHEL 5.2

- **SELinux per-packet access controls**
 - Replaces old packet controls
 - Add Secmark support to core networking
 - Allows security subsystems to place security markings on network packets
- **Add nf_conntrack subsystem**
 - Common IPv4/IPv6 generic connection tracking subsystem
 - Allows IPv6 to have a stateful firewall capability (not previously possible)
 - Increased security
 - Enables analysis of whole streams of packets, rather than only checking the headers of individual packets
 - scatter-gather support for large incoming messages

Technical Review

RHEL 5.2

- **Audit subsystem**

- Support for process-context based filtering
- More filter rule comparators

- **Address space randomization**

- Address randomization of multiple entities – including stack & mmap() region (used by shared libraries) (2.6.12; more complete implementation than in RHEL4)
- Greatly complicates and slows down hacker attacks

- **High resolution timers**

- Provide fine resolution and accuracy depending on system configuration and capabilities - used for precise in-kernel timing

Technical Review: Roadmap

RHEL 5.3 [[BugZilla Search Link](#)]

Verified Features

BugZilla	Severity	Priority	Summary
184770	high	high	LTC18425-62140: (big) xDR system Initialization for LPAR Clients
439479	high	high	LTC:5.3:201474:Include gcc 4.3 as Add-On for latest z10 instruction set support
439440	high	high	LTC:5.3:201160:Long Random Numbers Generation
439482	high	high	LTC:5.3:201542:FCP - Enhanced Trace Facility
447379	high	high	LTC:5.3:200994:Linux CPU Node Affinity
439461	high	high	LTC:5.3:201360:OSA 2 Ports per CHPID Support - Installer Enhancements
439484	high	high	LTC:5.3:201490:Libica Library: Integration of Icainfo

Technical Review: Roadmap

- **CPU Affinity** ([Red Hat BugZilla 463537](#))
 - The z10 supports an interface which can be used to get information about the cpu topology of an LPAR. This can be used to optimize the Linux scheduler which bases its decisions on which process gets scheduled to which cpu on the cpu topology. This feature should increase cache hits and therefore overall performance as well. [This code has been accepted upstream.](#)
 - **Target: RHEL6**
- **ETR Support** ([Red Hat BugZilla 463518](#))
 - This feature enables Linux images to synchronize with a parallel Sysplex or GDPS. In particular it supports maintaining data consistency groups for the XRC data mover. [This code has been accepted upstream.](#)
 - **Target: RHEL6**
- **Link: [RHEL5.x Features In Progress](#)**
- **Link: [RHEL6 Features In Progress](#)**

Customer References

- **City Government of Recife, Brazil**

<http://www.redhat.com/about/news/prarchive/2007/emprel.html>

- Red Hat customer since 1998
- Mainframe RHEL since September, 2007
- DB2, Oracle, JBoss, WebSphere, Apache
- 83% of Recife's servers are RHEL
on IBM System z hardware (50 of 60 servers)

“With Red Hat Linux, Emprel was able to make its processing solutions available online, allowing the organization to take the municipal tax and urban planning systems to the city's service centers. Then, the company updated and developed its tax, planning, health, education, budget, financial and shopping port software.”

Customer References

- **Fratelli Carli [Italy]**

<http://www.europe.redhat.com/solutions/info/casestudies/italian-olive-oil/index.php>

- Olive Oil Manufacturer
- Standardized on RHEL5
- Mainframe RHEL since December, 2007

They currently maintain response times under one second, efficiently manage various databases with over 24 gigabytes of data and simplify communication among operating systems through use of XML within their Mainframe

“Red Hat’s strong points? Definitely support, which was provided at any time necessary. The attitude of the company in gladly accepting our challenge was excellent as well,” said Gardini. “Red Hat Enterprise Linux offers versatility and standardization to a variety of users, as it sets no restrictions.”

Customer References

- **EDB Business Partner [Nordics]**

<http://www.redhat.com/about/news/prarchive/2008/edb.html>

- One of the largest IT services companies in the Nordic region
- All business critical applications
 - Mostly Oracle Databases
- Mainframe RHEL since May, 2008

“We now utilize Red Hat Enterprise Linux for in house mainframe computing and we’ve experienced a rising demand among customers to whom we can offer Red Hat Enterprise Linux on IBM System z.”

Customer References

- **Salt River Project [USA]**

<http://customers.press.redhat.com/2008/10/17/salt-river-project-migrates-to-red-hat-enterprise-linux-on-ibm-mainframes-for-flexibility-and-performance/>
http://www.redhat.com/f/pdf/customers/SRP_CaseStudy_web.pdf

- 100 year old utilities provider, including thermal, natural gas, nuclear, and hydro-electric sources
- Approx 50 RHEL VMs, using RHN Satellite to manage
- Red Hat support quality was deciding factor

“We were very interested in Linux on the mainframe for the enhanced utilization, flexibility, workload consolidation, and management capabilities offered there. Above all, it could help us mitigate the risk of the server sprawl which had plagued us. In fact, whether on the mainframe or a distributed architecture, Linux would allow us to run more workloads per server than our traditional environment.”

Customer References

- **Bank of New Zealand [New Zealand]**
 - One of the top 50 largest banks in the world
 - Offices in 4 continents, 15 countries
 - First production z10 in Southern Hemisphere
 - Mainframe RHEL since September, 2008
 - SWIFT (\$10B/day)
 - PCBB (\$4M/day)
 - Teller Banking Applications

Customer References

- **Bank of New Zealand (cont)**
 - Goal to be carbon neutral by 2010
 - Consolidated 131 SUN servers to RHEL on z10
 - Mix of small, medium, large: 280Rs, V440s, E10Ks

	SUN	RHEL & z10	
Power (kW/hr)	36	22	38% less
Heat (kBTUs/hr)	110	74	33% less
Space (Racks)	6.5	4.5	31% less
Carbon Emissions	66	40	39% less

Upcoming Events

- SHARE Austin (March 1- 6th, 2009)
 - Session 9277: Fedora for System z: The Open Source Build Process Explained
 - Session 9290 - Managing Your Red Hat Enterprise Linux Guests with RHN Satellite
 - Session 9293 - What's New in Red Hat Enterprise Linux 5

Upcoming Events

- WAVV Orlando (May 15th-19th, 2009)
 - Linux Audit Subsystem
 - SELinux Deep Dive
 - Managing RHEL VMs With Red Hat Network Satellite
- Suggestions welcome!
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Future Initiatives

- Starter kit for RHEL on System z
- RHEL on System z Workshop offerings
- Continue System z Tours
 - We seek guidance from IBM & business partners on which geographies to visit.

Closing Remarks

- Executive alignment from helpdesk to EVP levels for System z
- Integration between Red Hat & IBM has *significantly* progressed.
 - Need to work on joint PoC's
 - Need to work on joint training seminars
- Hardware enablement has progressed, both technical and business processes
- Red Hat seeks your input on future activities, globally

Open Discussion / Q&A