



Linux and System Z: The Winning Combination

October 8, 2009
12pm ET, 11am CT, 9am PT



AGENDA

- ❖ **Linux and System z: The Winning Combination**
- ❖ **Distributors' Perspective: Linux for System z**
- ❖ **Q & A**

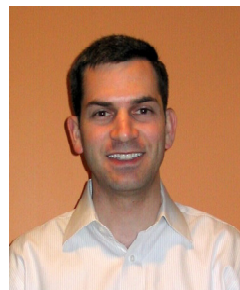
Linux and System z : The *Winning* Combination



Adam Jollans, IBM SWG
Moderator



Bob Sutor is the Vice President of Open Source and Linux for IBM. He is responsible for driving the IBM strategy, sales enablement and technical pre-sales for software running on Linux and other open-source environments. He works with customers, partners, government leaders, analysts and the media to understand the value of adopting business-critical open source and Linux. A 26-year veteran of IBM, Sutor worked for 15 years in IBM Research



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Michael Applebaum , Sr. Solution Marketing Manager , is a senior member of the marketing team for the SUSE Linux Enterprise platform at Novell. His responsibilities include go-to-market strategy for direct and indirect channels, messaging, campaign strategy, public and analyst relations, and collateral development. Prior to joining Novell, Michael held positions with Pegasystems, Iona Technologies, RetailExchange.com and Parthenon Group. Michael holds a Master in Business Administration degree from Harvard Business School and a Bachelor of Science in Engineering degree from Princeton University.



Linux and System Z: The Winning Combination

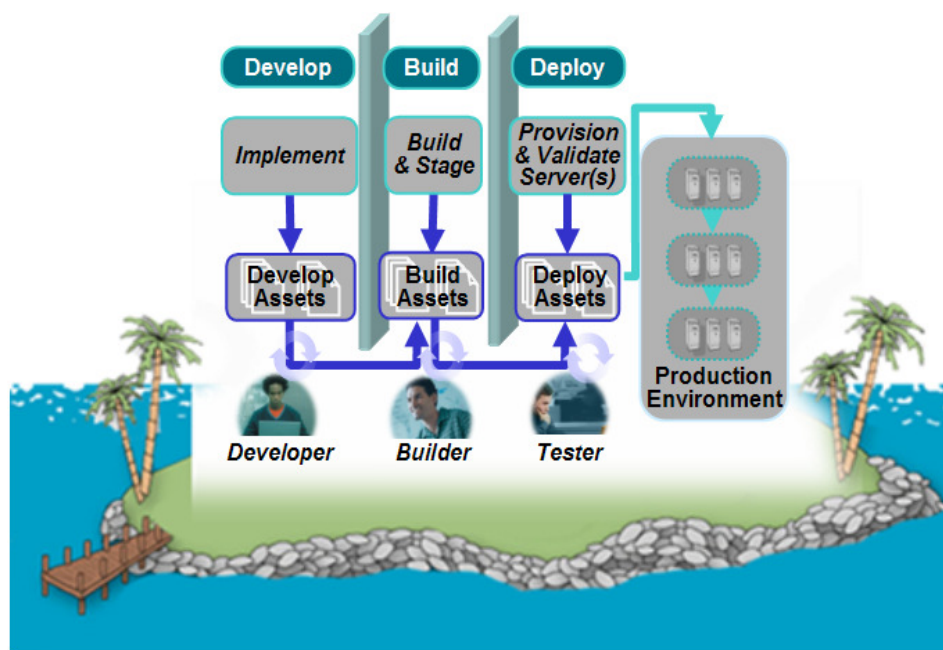
Dr. Robert Sutor
VP, Open Source and Linux, SWG



Today's IT Realities

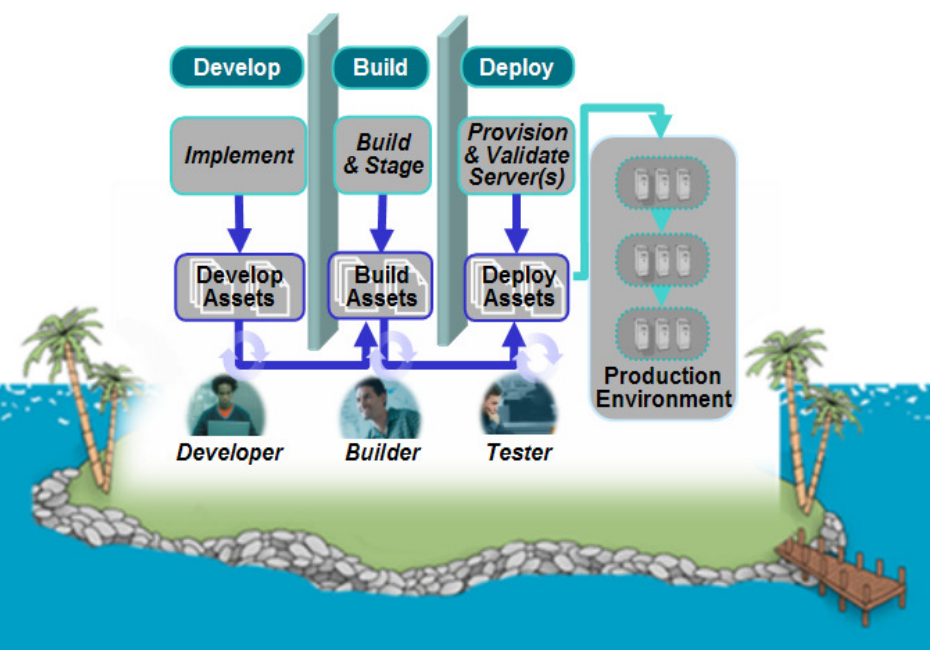
* Operational

- Duplicate infrastructures limit IT and skills flexibility and lower productivity
- Additional hardware increases energy consumption, staffing, and space use



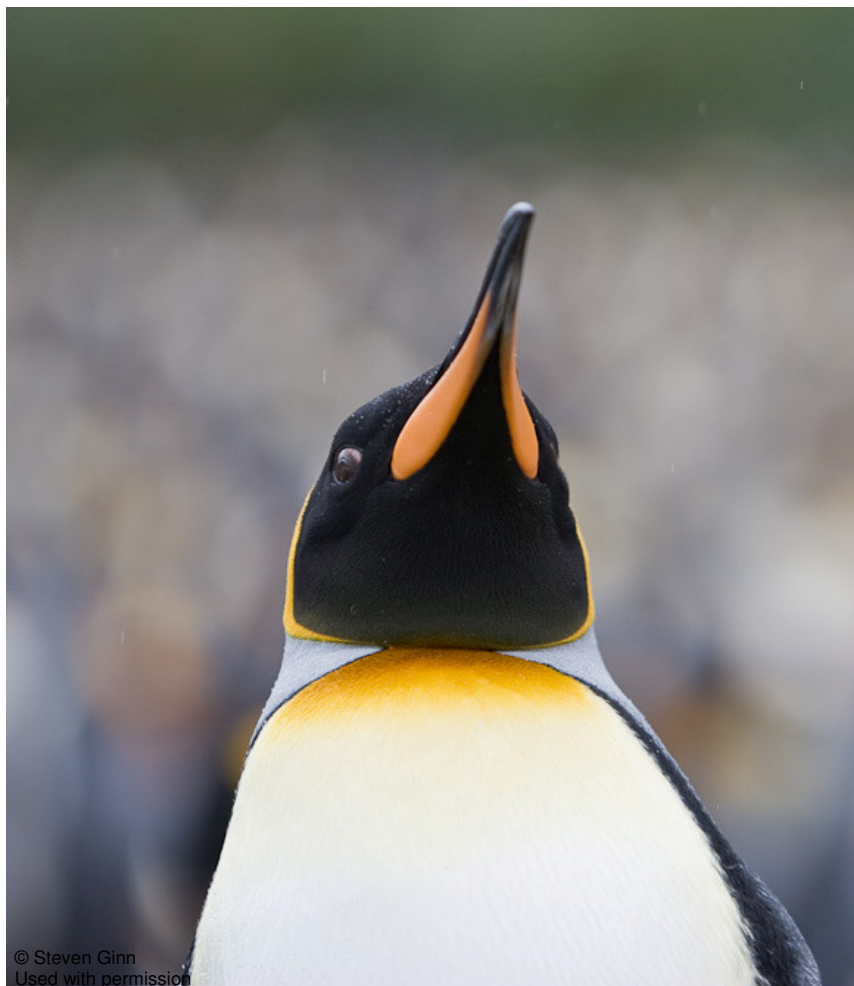
* Capital Investment

- Duplicate infrastructures tie capital that could be invested in other projects
- Additional hardware increases the need for additional software investments



Why Linux®?

Over 10 years have passed since IBM's initial public commitment to Linux

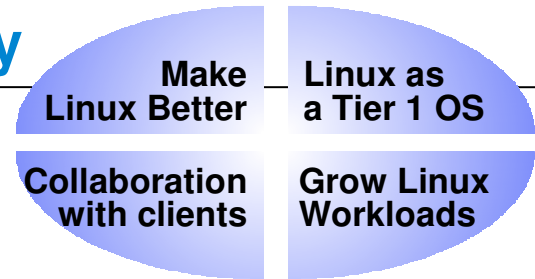


- * **Linux continues to grow in share, scale, and scope, even in the downturn**
 - Robust ecosystem enables lower cost, Linux-based alternatives to proprietary solutions
 - Linux continues to gain features that enable it to address broadening market opportunities
- * **Unique attributes of Linux enable novel simplification strategies to reduce cost**
 - Linux enables clients to stay flexible by choosing the platform that makes the most sense
 - Consolidating on Linux can reduce OS licensing costs (and CALs), generating savings up to 50%

IBM and Novell collaborate with the Linux community



- * ...has been an active participant since 1999
- * ...is one of the leading commercial contributors to Linux
- * ...has over 600 full-time developers working with Linux and open source



Who Has Contributed to Linux?
(2005 – 2009)

Company Name	Number of Changes	Percent of Total
None	26,644	18.2%
Red Hat	17,981	12.3%
Unknown	11,164	7.6%
IBM	11,151	7.6%
Novell	11,046	7.6%
Intel	7,782	5.3%
Consultant	3,657	2.5%
Oracle	3,513	2.4%
Linux Foundation	2,345	1.6%
SGI	2,317	1.6%
Parallels	1,939	1.3%
Renesas Technology	1,925	1.3%
Academia	1,712	1.2%
Fujitsu	1,592	1.1%
MontaVista	1,564	1.1%
MIPS Technologies	1,537	1.1%
Analog Devices	1,467	1.0%
HP	1,415	1.0%
Freescall	1,375	0.9%
Google	1,261	0.9%

<http://www.linuxfoundation.org/publications/whowriteslinux.pdf>

Linux Kernel & Subsystem Development

Kernel Base Architecture Support
 GNU
 Security
 Systems Management
 RAS
 Virtualization
 Special Projects
 Filesystems, and more...

Expanding the Open Source Ecosystem

Apache & Apache Projects
 Eclipse
 Mozilla Firefox
 OpenOffice.org
 PHP
 Samba, and more...



Promoting Open Standards & Community Collaboration

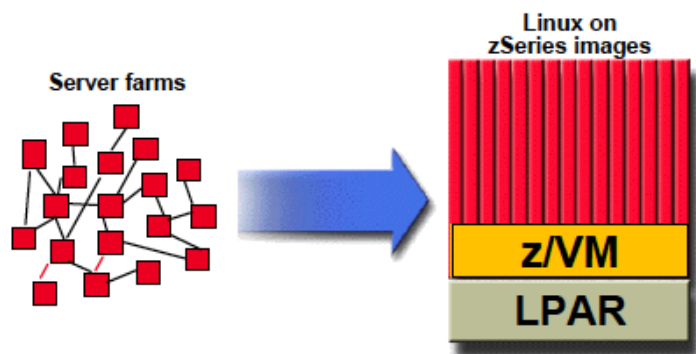
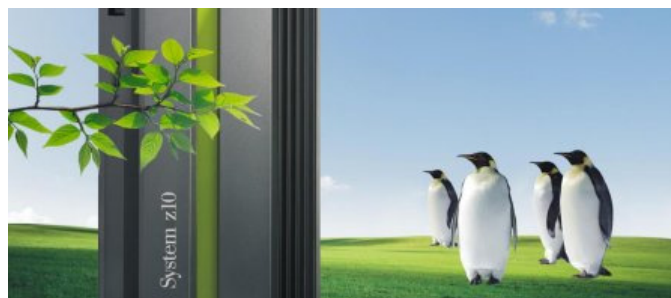
The Linux Foundation
 Linux Standards Base
 Common Criteria certification
 Open Software Initiative, and more...

Foster and Protect the Ecosystem

Software Freedom Law Center
 Free Software Foundation (FSF)
 Open Invention Network, and more...

Why System z®?

IBM has over 40 years of continuous innovation in virtualization technologies



* Reduced Total Cost of Ownership (TCO)

- Environmental savings – single footprint vs. hundreds of servers
- Consolidation savings – less storage, fewer servers, fewer software licenses, less server management/support

* Mainframe capabilities complement and enhance those of Linux

- Hypervisor is integrated with the hardware
- Sharing of CPU, memory, and I/O resources allows system utilization to often exceed 90%
- Centralized management of various Linux solutions

IBM Software for Linux

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

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

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

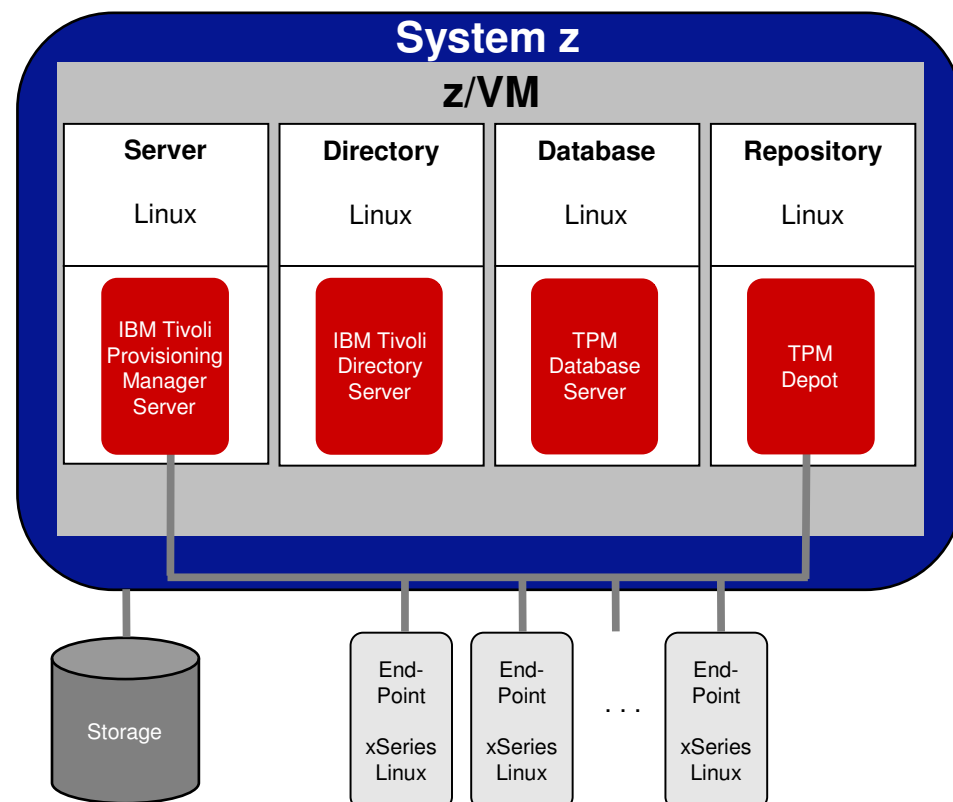
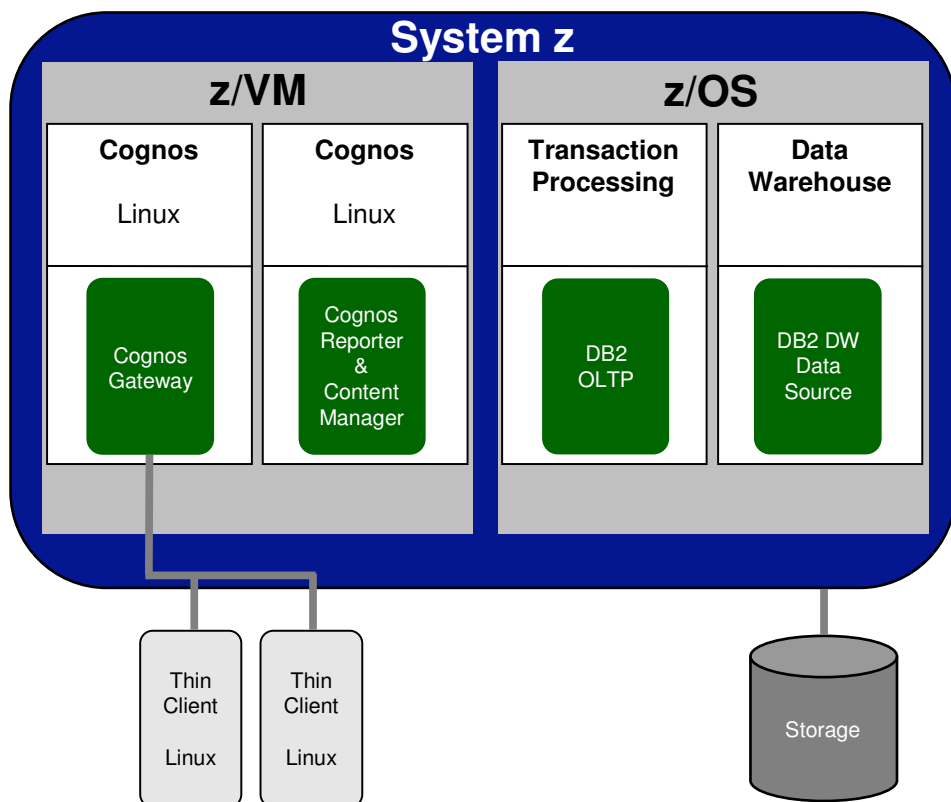
Examples of IBM Software on Linux for System z

* Cognos® Business Intelligence

- Analyze data to find answers to key business questions
- Translate complex information into high-impact presentations

* Tivoli® Provisioning Manager

- Automate discovery, deployment, and configuration of IT resources
- Take full advantage of Linux for System z and z/VM virtualization



Project Big Green Linux: Reducing consumption, reducing cost



* Addressing rising energy infrastructure costs

- Linux is enabled to utilize advanced features on all IBM Systems, helping to avoid other costs
 - Virtualize workloads on new or existing systems that are more efficient than before
 - Increase utilization rates with RAS and virtualization features on large systems
 - Consolidation can reduce floorspace or avoid costly datacenter expansion
 - IBM offers middleware to manage energy use

* Reducing the cost of heterogeneous hardware environments during M&A

- Linux empowers users to choose the platform that makes sense
 - Linux as a common denominator can drive faster integration of disparate platforms

* Reducing OS license costs

- Manage more with less using Linux
 - Standardizing on Linux can reduce the amount of skill needed to manage multiple OS environments when resources are tight
- Reduce OS license costs, avoid upgrade penalties
 - Subscription model guarantees that OS license costs remain predictable and smooth over time
 - Directly avoid costs by eliminating the need to pay for CALs, in addition to end-user licenses

Univar USA

An international chemical company turns to Linux and IBM System z for a simplified, virtualized, and more powerful operating environment

* The Challenge

- Incremental responses to rapid growth led to an increasingly complex IT infrastructure
- A successful acquisition increased data processing requirements

* The Solution

- System z9 with zIIP to support ERP, CRM, data warehousing, and zAAP for Web 2.0 workloads
- IFLs running Linux for Java workloads

* The Advantage

- Univar has implemented a mixed Linux and z/OS virtualized environment, meeting their growth needs
- Univar reports a simplified infrastructure, improved disaster recovery capabilities, and lower CPU utilization per transaction

One of the problems we've had over the last decade is that we were looking for a new box every 15 to 18 months. We wanted something that would stay with us for a while.

The IBM System z9 Enterprise Class fit this requirement."

Greg Mueller, Univar USA

"Sirius met every commitment they made to us ... we're an unequivocally satisfied customer at this point."

Dean Schultz, Univar USA



Novell.

<http://ibm.com/software/success/cssdb.nsf/CS/DLAS-7CFMG8>

**"We're attempting to try to leverage virtualization on all of our platforms."
Greg Mueller, Univar USA**

- * Offer choice and flexibility by enabling Linux on the broadest range of hardware, software and services

Focus on open technologies and high-value solutions

- * Offer choice and flexibility by enabling Linux on the broadest range of hardware, software and services

Deliver integration and innovation to clients

- * Deliver high value solutions with Linux including innovative customer collaborations built on our experiences in over 15,000 Linux engagements.

Become the premier Globally Integrated Enterprise

- * Leverage Linux within IBM for integrating systems and businesses to address client needs across the globe

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NOTES:

Linux penguin image courtesy of Larry Ewing (lewing@isc.tamu.edu) and [The GIMP](#)

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Linux for System z and Solaris Migration

The Smart Choice for Saving Money and Optimizing Resources

Michael Applebaum

Sr. Solution Marketing Manager

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October 2009

Novell[®]

Linux for System z

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Corporate IT Objectives Today

- Reduce costs
- Flexible next generation data center
- Green IT
- Maximize performance

CIOs Will Cut Costs, not Projects

“Cost-cutting, virtualization and Green IT will be at the top of all CIOs heads”

- CXOtoday.com, January 02, 2009

Linux on the Mainframe

What is it?

An alternative to x86 platforms for consolidating or virtualizing workloads

Typical utilization rates are in the 70-80 percent range

Used often for new workloads (Web applications, databases)

How does it work?

Most efficient resource sharing
Server consolidation and dynamic reallocation of resources

Co-location of applications/data in same “box”

Virtualization via z/VM

Room for growth (by adding IFLs and z/VMs)

IFLs “decrease” in cost: As you add workloads, the cost per virtual server drops

Proof Points

More than 1,300 customers running Linux on the mainframe

More than 4,000 IFLs installed

~1,700 IFLs sold worldwide in 2007

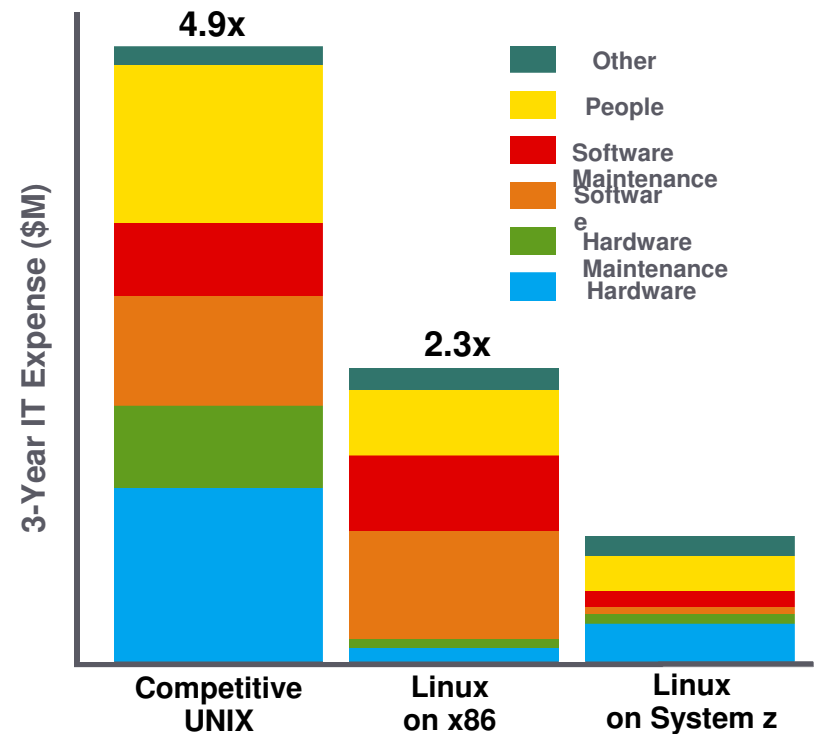
50 percent of largest mainframe customers use Linux

TCO Impact of Server Consolidation to Mainframes

Many types of benefit:

- Potential for dramatic reductions in software cost for processor-based licenses
- Cost curve for Linux on System z is not linear
- Significant reductions in power and cooling costs are typical
- People savings from virtualization
- Increased processor utilization

Web Trading Application Costs
WebLogic/Oracle
3 Year TCO



Source: Scorpion Study 1999 - 2005

Source: Capricorn whitepaper

Workload consolidation using Linux on a mainframe can result in significant TCO savings

Why Customers Prefer SUSE® Linux Enterprise Server for System z



The optimized version of SUSE Linux Enterprise Server for System z offers key advantages and benefits:

- Fully supported by IBM
- Offers full benefits of the mainframe (reliability, scalability, security)
- Five years ahead of competition
- SUSE Linux Enterprise Server is #1 in mainframe Linux and #1 for SAP-on-Linux (75% share)
- Ideal for workload consolidation, providing major cost savings
- New features specific to System z
- Starter System available for testing & proofs of concept – only for SUSE Linux Enterprise Server
- Mono for .NET applications on System z
- More than 1,000 certified applications available





Financial Client Consolidates Sun and HP Servers To System z10 and Saves 96% on Power and Cooling

	FROM ...	TO ...
	Sun and HP servers	System z10 EC
Footprints	61	1
Cores/Memory	442 cores / 1440 GB	16 IFLs / 82GB
Avg Utilization	13.3%	40%
Peak Utilization	28.7%	92%
# DBs	61	61
Application	Oracle databases	Oracle databases
Operating System	Sun Solaris	SUSE Linux Enterprise Server on z/VM
Energy usage: Power & cooling (Whr)	345,618 Whr	14,766 Whr => 95% less
Heat (BTUs/hr)	737,030 BTUs/hr	39,648 BTUs/hr => 94% less

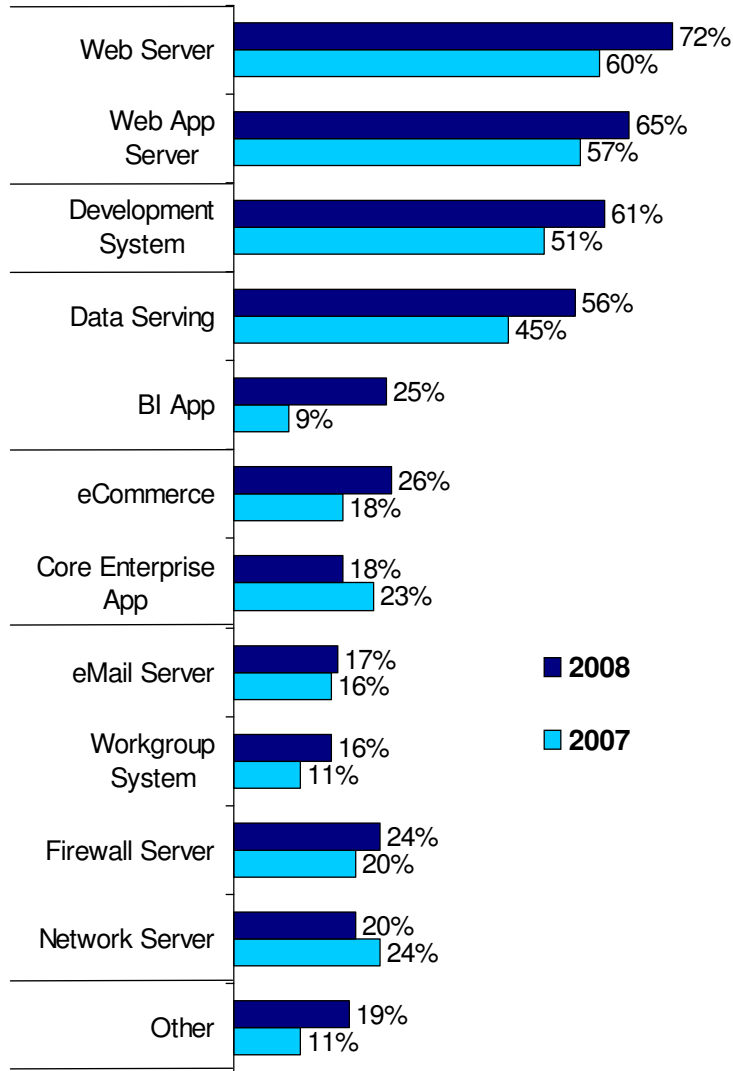
Benefits: Software savings, reduced energy consumption, better utilization

Data is based on real client opportunity and on internal standardized costing tools and methodologies.

Client results will vary by types of workloads, technology level of consolidated servers, utilization factor, and other implementation requirements. Savings will vary by client.



What to Consolidate?



Percentage of survey respondents

Surveys indicate IBM System z customers use Linux for:

- Web serving and Web application serving
- Data serving
- Systems development

“Best Fit” Workloads for Linux on System z:

- **Business connectors:** WebSphere MQSeries, DB2 Connect, CICS Transaction Gateway, IMS Connect for Java
- **Business critical applications:** e.g. SAP
- **Development and test** of WebSphere and Java applications
- **WebSphere Application Server (WAS)**
- **Email & collaboration:** Domino, Web 2.0
- **Network Infrastructure:** FTP, NFS, DNS, etc. and Comm Server and Communications Controller for Linux, Communicate Pro (VoIP)
- **Data services:** Cognos, Oracle, Informix, Information Server, Builders WebFOCUS
- **Applications requiring top end disaster recovery model**
- **Virtualization and Security Services**

Solaris to Linux Migration

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Sun/Oracle: Risk and Uncertainty

- Oracle's plan to acquire Sun Microsystems leaves a lot of uncertainty about the future of Sun products
- The future of SPARC is unknown; the role of Solaris is unclear
- "It will be interesting to see what Oracle does if the Sun Microsystems acquisition goes through, as IBM has had recent success in getting users to consolidate Oracle applications currently running in a Solaris on SPARC environment onto Linux on System z." (Gartner, "Common Questions about Linux on Mainframe Trends", Aug. 2009)
- "The playing field is getting incredibly more difficult to compete on. With the macro economy, tighter budgets, margins coming down and head counts shrinking, Oracle and Sun have some great challenges to overcome." (George Weiss, Gartner, <http://www.eweek.com/c/a/IT-Infrastructure/Sun-Reports-201M-Quarterly-Loss-235362/>)
- "Do not assume that all Sun's [hardware] products will survive in the long term." (Gartner, "After Oracle: Deciding Whether to Invest in Sun Servers", May 2009)

When to Consider Migrating

- Need to replace aging and expensive Solaris hardware
- Have an expensive Solaris maintenance contract that is expiring
- Worried about Solaris' decline with respect to ISV enthusiasm/support
- Need to reduce cost of software licensing
- Seeking to consolidate workloads with virtualization to reduce TCO
- Want to deploy or upgrade applications on hardware that you know will be supported in the future

Solaris Customers are Migrating to SUSE® Linux Enterprise Server



- Linux is the universal operating system across hardware platforms, from x86 to mainframe, from scale-out to scale-up
- More than 50 percent of Solaris/SPARC users have stated they will not migrate to Solaris 10 on x86 (Gartner – Feb. 2009)
- Uncertainty about Sun products creates unnecessary risk for customers
- SUSE Linux Enterprise Server is proven for mission-critical computing and is the #1 Linux on System z
- Recommended by SAP
- Strong ISV support with more than 4,000 certified applications



Summary

- Linux is the universal operating system across hardware platforms
- SUSE Linux Enterprise offers UNIX-level performance and scalability with better price/performance
- SUSE Linux Enterprise Server for System z offers all the “native” benefits of mainframe (RAS)
- Slash TCO, consolidate servers, and reduce energy / floor space
 - Save 50-80 percent on overall server costs
- Leverage the economics of IFLs: Cost of incremental workloads decreases as # of workloads grows; as opposed to distributed systems, where cost increases linearly with workloads
- SUSE Linux Enterprise Server offers more than 1,000 certified applications for System z
- Hundreds of proven mainframe Linux deployments

Take the Next Step Today

Learn more about **SUSE Linux Enterprise Server for System z** at www.novell.com/products/systemz

Download the SUSE Linux Enterprise Server **Starter System for System z** at www.novell.com/partners/ibm/mainframe/starterpack.html

Learn more about **Solaris to Linux migration** at www.novell.com/solaris

Estimate your own migration benefits using the **Solaris to Linux TCO calculator** on www.novell.com/solaris

See the **benefits other customers have achieved** with Linux on System z and Solaris migration at www.novell.com/success

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Polling Questions

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Q1. How did you hear about this teleconference

If IBM rep press star 1

If email press star 2

If e-Newsletter press star 3

If Business Partner press star 4

If Internet Search press star 5

If Twitter press star 6

If other press star 7

Q2. Please evaluate your level of satisfaction with today's teleconference

If it was High, press STAR ONE

If it was Medium, press STAR TWO

If it was low, press STAR THREE

Q3. Was the level of technical information presented in this teleconference

If it was At the right level, press STAR ONE

If it was Not technical enough press STAR TWO

If it was More technical than I needed to hear, press STAR THREE

Q4. We hope you have enjoyed the teleconference today. Please let us know if you are interested in receiving additional information or follow-up regarding the products discussed today.

If yes press star one

If no press star two

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Questions?

Need More Info?

Key Websites

- Cloud Computing.....ibm.com/cloud
- DeveloperWorks Linux..... ibm.com/developerworks/linux/
- Linux & IBM.....ibm.com/linux
- Linux and System zibm.com/systems/z/linux
- Linux Software Evaluation Kitibm.com/developerworks/offers/sek
- Linux Technology Center.....ibm.com/linux/ltc
- Linux Integration Center.....ibm.com/linux/lic.html
- Novell Software Evaluation Kithttp://www.novell.com/linux/download_linux.html
- Novell<http://www.novell.com/home>

White Papers .

- **IDC: Linux in the Mainstream: Growing Linux Deployments for Critical Workloads**, written by Al Gillen
ftp://ftp.software.ibm.com/linux/pdfs/IDC-Business_Critical_Workloads_on_Linux.pdf
- **Linux on the Desktop : Lessons from Mainstream Business Adoptions**, by Freeform Dynamics
ftp://ftp.software.ibm.com/linux/pdfs/Freeform_Dynamics-Desktop_Linux.pdf
- [IDC: Adding business value with cross-platform solutions: Linux on IBM Systems](#)

Webcast (Replay)

- [Lower TCO for Business Critical Workloads with Linux and IBM](#)





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