

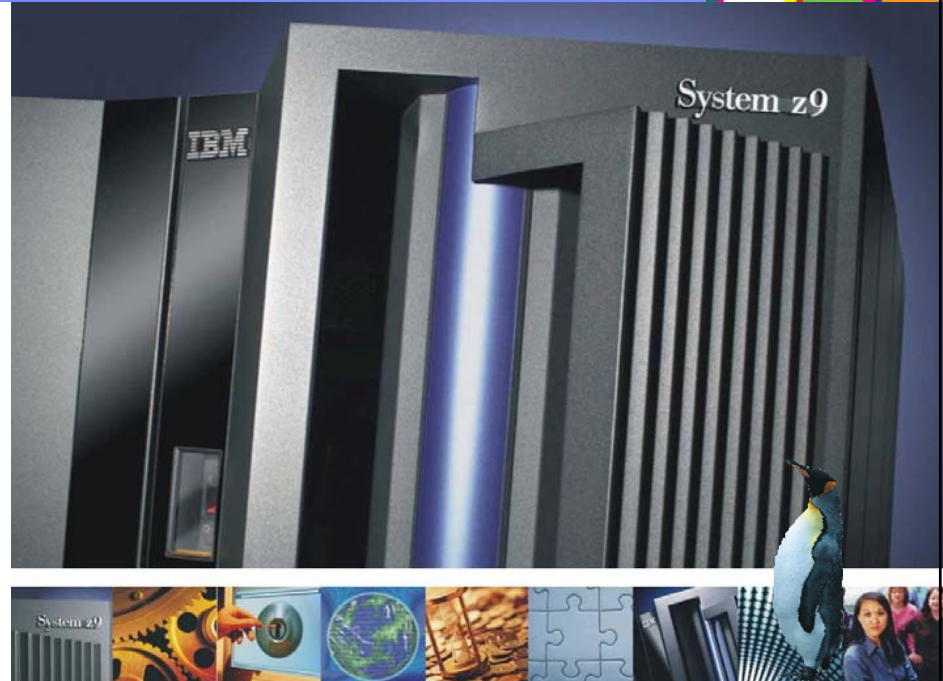


Open Computing @ IBM



## Open Computing and Linux

Jim Elliott  
Advocate – Linux, Open Source, and  
Virtualization and Manager – System z  
Operating Systems  
IBM Canada Ltd.



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## 9200 – Open Computing and Linux

- **IBM has a vision of the future which can only become a reality in a world of Open Computing.**
- **This session covers Open Standards, Open Architectures, and Open Source, including Linux.**
- **Jim will delve into the Open Computing with a focus on Linux, the benefits of Linux, and the tremendous growth of Linux around the world as a direct result of these benefits.**
- **He will also review the participation of IBM in the Open Computing world including Linux and Open Source usage at IBM.**



## Agenda

- **Open Computing**
- **Linux**
- **Linux and Open Source @ IBM**

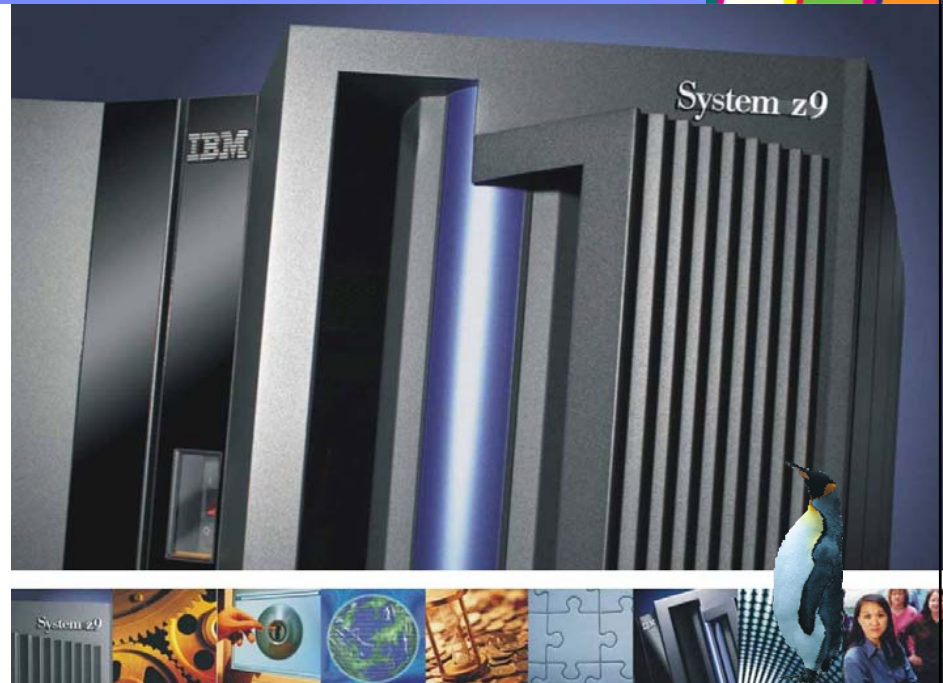




Open Computing @ IBM



# Open Computing



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## Open Computing Goals

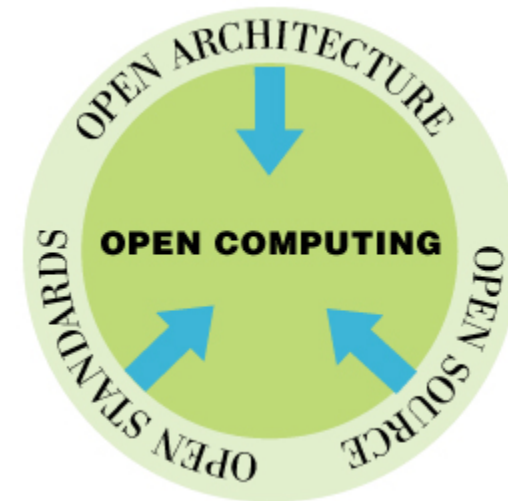
- **Ensure flexibility**
- **Ensure interoperability**
- **Avoid vendor lock-in**
- **Drive cost effectiveness**
- **Ensure future access to information**
- **Ensure a level playing field for competition**
- **Maximize freedom of action**





## The Principles of Open Computing

- **Open standards:**
  - Promoting interoperability by using open published specifications for APIs, protocols and data and file formats
- **Open architecture:**
  - Building loosely coupled, flexible, reconfigurable solutions
- **Open source software:**
  - Promotes standards
  - Leverages community development and collaborative innovation







## Open Source Software

[www.opensource.org](http://www.opensource.org)

- **Software whose source code is published and made available to the public**
  - Community develops, debugs, maintains
  - “Survival of the fittest” – peer review
  - Generally high quality, high performance software
  - Superior security – on par with other UNIX systems
- **Often built by community**
- **Redistribution rights**
- **May be a reference implementation of an open specification**
- **Examples of Open Source Software:**
  - Apache – web server
  - Eclipse – application development
  - Gnome – desktop environment
  - Mozilla – browser, mail, calendar
  - OpenOffice.org – productivity suite
  - Perl – language
  - Samba – file/print
  - SendMail – mail server
  - TCP/IP – networking





## Why does IBM consider Open Source important?

- **Can be a major source of innovation**
  - Innovation can happen anywhere – any time
  - Development through “open communities” leads to potentially broad ideas and creativity
- **Community Approach**
  - Internet has changed how enterprises address technical innovation
  - Shapes IBM technical leaders thinking and approach to broad collaboration
- **Good approach to developing emerging standards**
  - Popular Open Source projects can become de facto / open standards
  - Wide distribution/deployment
- **Enterprise customers are asking for it**
  - Increase choice and flexibility – adoption/use of Open Source can reduce time to market





## Apache has Become *the* Standard Web Server

*news.netcraft.com*

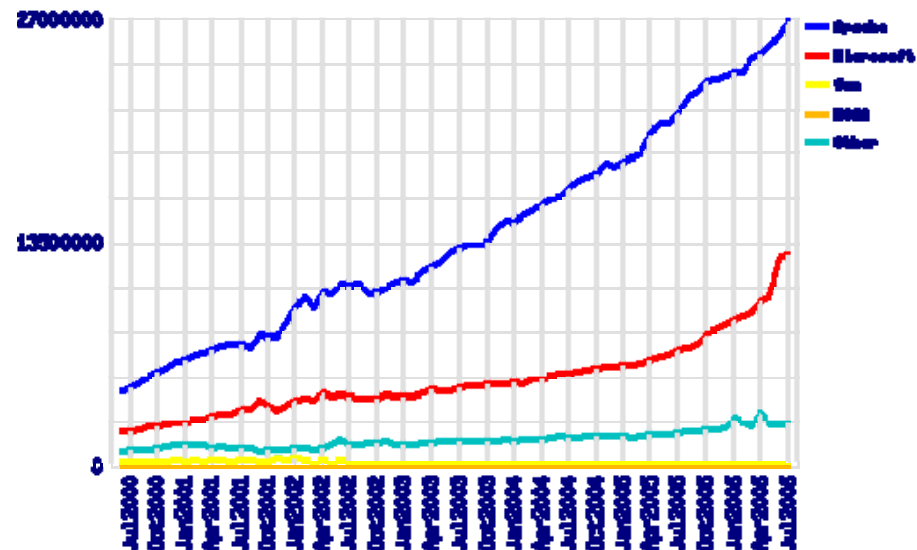
- Totals for active servers across all domains
- As of August 1, 2006

- Apache

- Sites: 27,891,065
- Share: 62%

- Microsoft IIS

- Sites: 13,720,037
- Share: 30%



The Apache Software Foundation

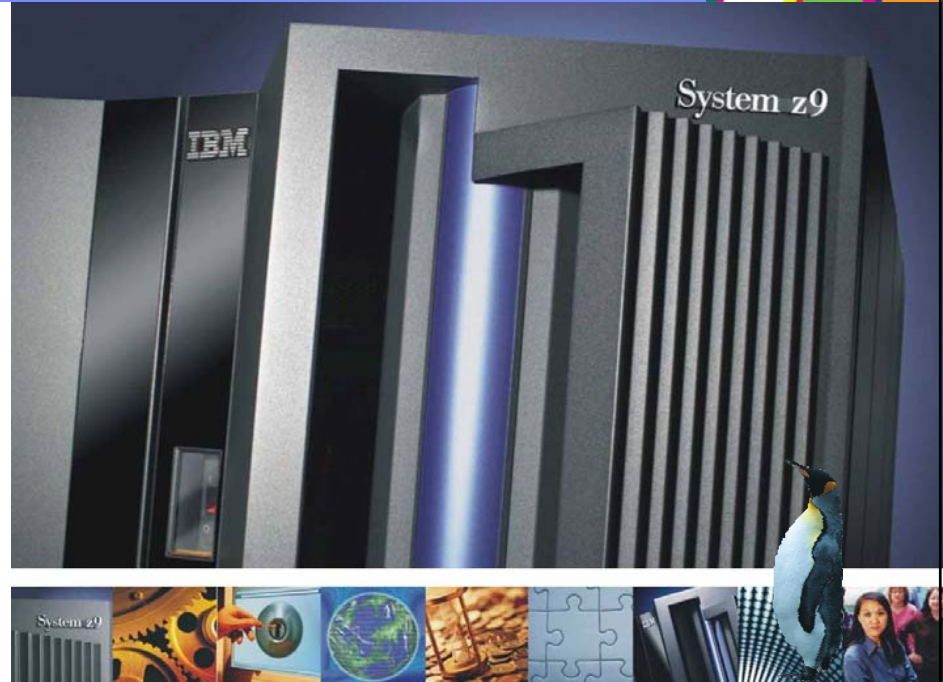
<http://www.apache.org/>



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Linux



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## What is Linux?

- A “UNIX-like” Operating System that is community developed with the source code being readily available
  - Robust functionality and scalability
  - Solid stability and security
  - Lightweight and modular
- Operates on virtually any platform – server or client
- Generally acquired on a support subscription basis from Linux Distribution Partner (LDP)
  - Novell and Red Hat dominant in NA
- Development coordinated by OSDL




Novell.





## Why is Linux is important to customers

- **Linux is about choice and flexibility**
- **Linux is secure**
- **Linux is reliable**
- **Linux drives business goals:**
  - Reduce costs
  - Simplification
  - Improve application service levels
  - Promotes innovation
  - Internally change business process and drive contribution to business
  - Generate revenue

- **Drivers to use Linux Today** 
  - Attractive hardware acquisition costs
  - Availability of low-cost, Open Source software
  - Linux runs across all hardware platforms
    - x86, x86-64, RISC and CISC (including mainframes)
  - Interest in alternatives to Windows and UNIX, offering customers choice in software platforms
  - Expectations of improved price/performance
  - Re-use of existing UNIX skills in enterprise, HPC computing

Source: IDC Directions 2005



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# Linux is an industry-wide initiative

[www.osdl.org](http://www.osdl.org)







- 10art-ni
- ActiveGrid
- a la Mobile
- Alcatel
- AMD
- BakBone
- Beijing Software Testing Center
- Berry OS Japan
- Black Duck Software
- BT Global Services
- Bull
- Cassatt
- CCIA
- Cisco
- Co-Create
- Computer Associates
- Comverse
- Cyclades Corporation
- EMC
- Ericsson
- ETRI
- Fujitsu
- Good-day
- Google
- Haansoft
- Hitachi
- HP
- IBM
- Intel
- IP Telecom
- Kobe Institute of Computing
- Korea IT Industry Promotion Agency
- Levanta
- Lynuxworks
- Marist College
- Microcost
- Miracle Linux
- Mitsubishi Electric
- MontaVista Software
- National University of Defense Technology
- NEC
- Network Appliance
- Nokia
- Novell
- NTT Corporation
- NTT Data Intellilink
- Open Country
- Open Source Japan
- Open Technologies Corporation
- Oregon State University
- Pacific Crest Securities
- Pixelworks
- Portland State University
- Radisys
- Red Flag Software
- Red Hat
- Scalix Corporation
- Search Cacher
- Siemens
- SpikeSource
- Stanford University
- Stratus Technologies
- Sun Microsystems
- Timesys
- Tokyo University of Technology
- Toshiba Solutions
- Transmeta
- Trolltech
- TurboLinux
- Unilever
- Unisys
- University of Helsinki
- Virtual Iron Software
- Voyager Capital
- Waseda University
- Wind River
- Wyse
- Xandros

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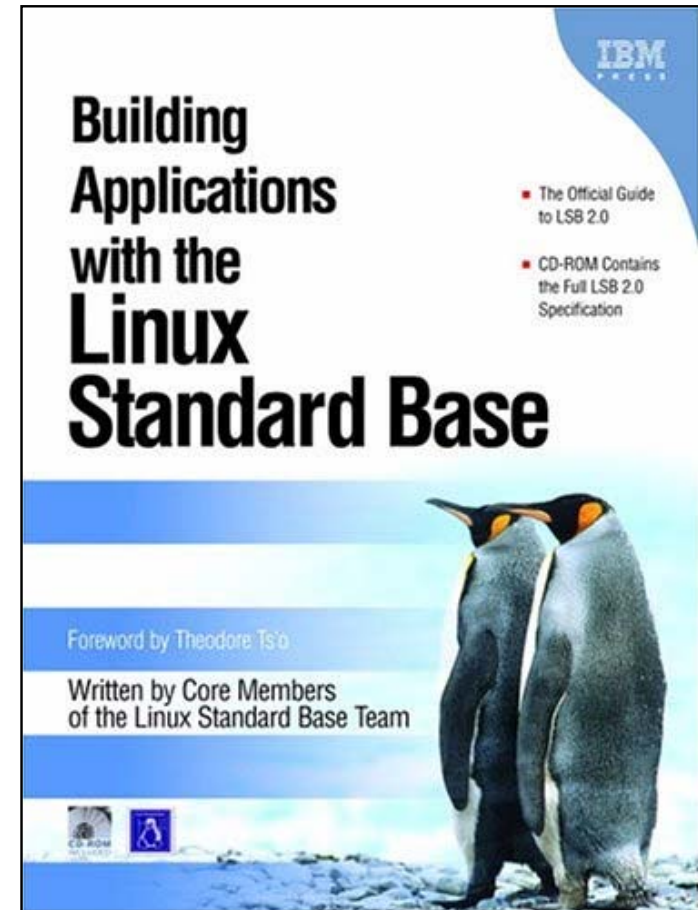


## Linux Standard Base

*lsb.freestandards.org*



- **The Linux Standard Base (LSB) is an application binary interface (ABI) for Linux and Linux-compatible platforms**
- **The LSB draws on the source standards of the IEEE POSIX standards and The Open Group's Single UNIX Specification for many of its behavioral interface definitions**
- **Partnership led by Canonical/Ubuntu, FSG/LSB, HP, IBM, Intel, Novell/SUSE, Red Hat and Usenix**

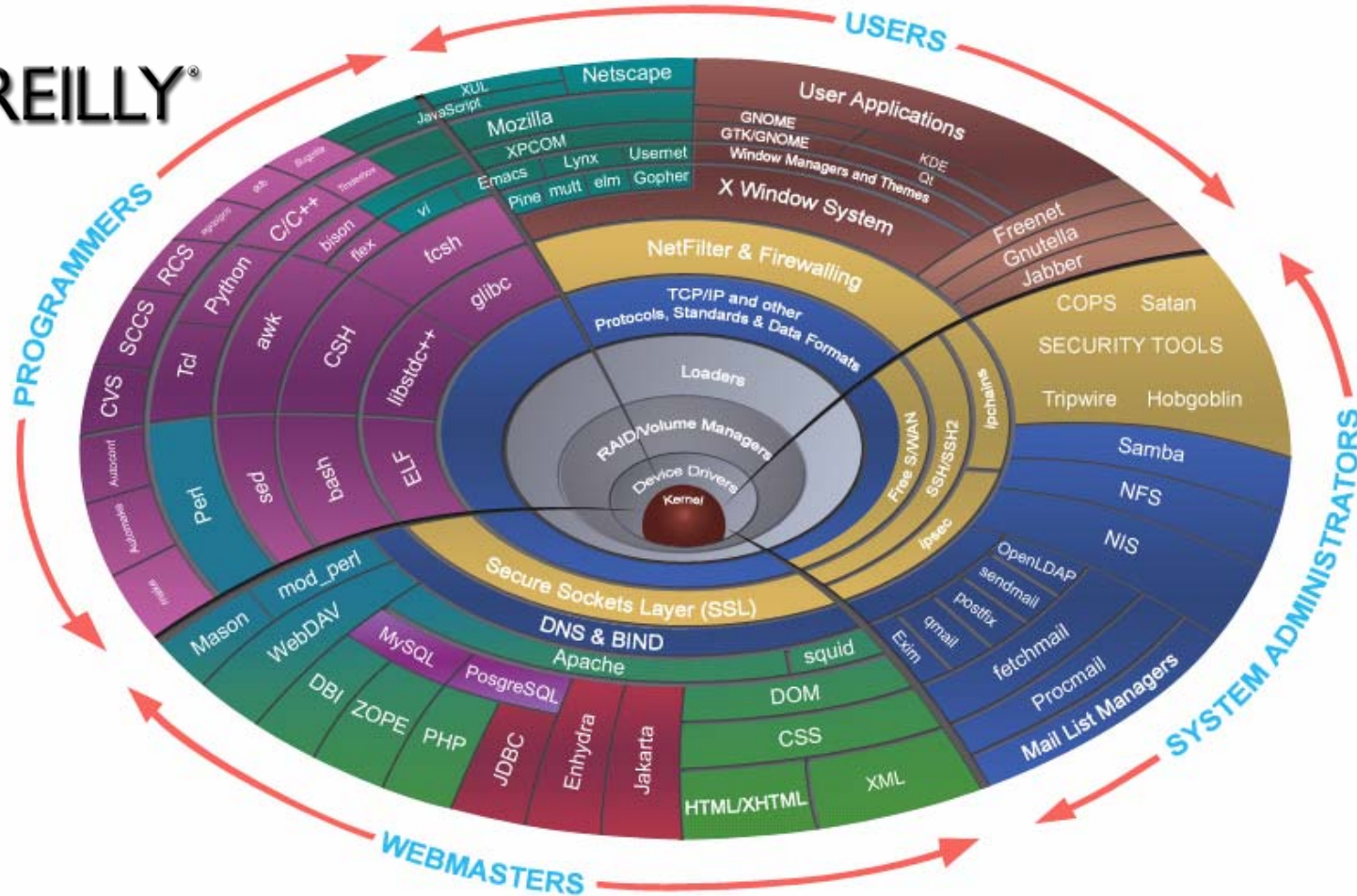


[ibm.com/ibmpress](http://ibm.com/ibmpress)





# What is a Linux distribution?





## Linux capabilities have evolved and expanded

### Linux is free

- Better TCO than Unix
- Better TCO than Windows
- Migrate to commodity hardware
- Use as a bargaining chip
- Pluck the low hanging fruit



### Linux is mature

- Drives innovation
- Provides choices
- Enables consolidation
- Facilitates simplification
- Reduces IT costs
- Results in business advantage

1998 1999 2000 2001 2002 2003 2004 2005 2006 2007

### Linux runs on x86

- Works but not enterprise ready
- Used in non-critical areas
- Good infrastructure solution



### Linux runs on multiple architectures

- Up to 16 way SMP support
- Unix-like features and enhancements
- Proven reliability, availability and stability
- Used for mission critical applications
- Runs ERP applications and databases

- **Linux is not** implemented because it is cool nor as a religious experience
- **Linux is** a facilitator of business solutions and / or IT initiatives



# Linux server growth continues to outpace all other platforms

## Worldwide Linux Server Revenue

All vendors – full year 2005

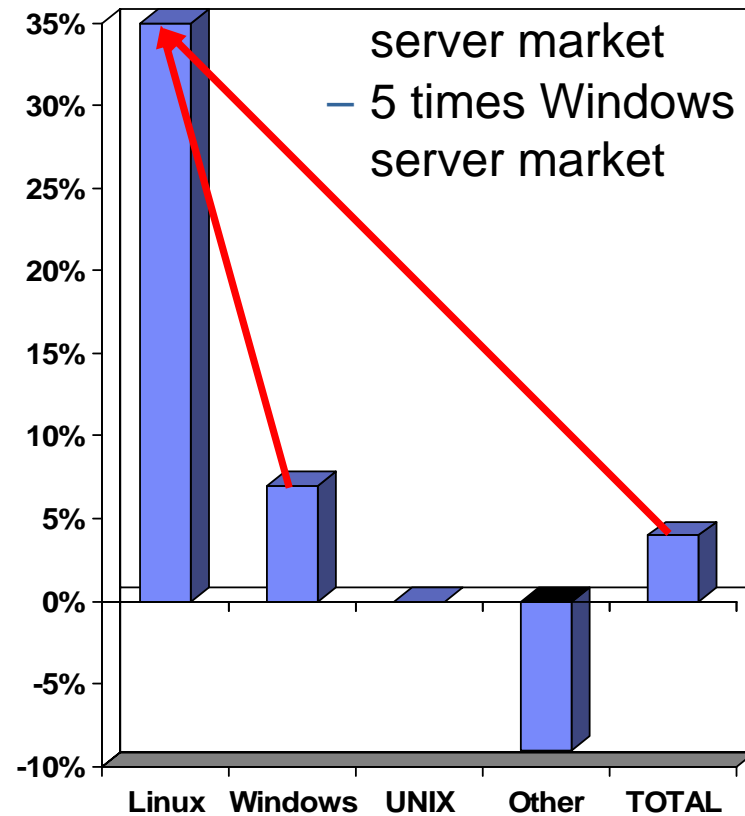
OS Family	2005 Revenue	Revenue Growth	Unit Growth
Linux	\$6,916M	35%	45%
Windows	\$18,619M	7%	11%
UNIX	\$16,251M	0%	-4%
Other	\$9,896M	-9%	-26%
	<b>\$51,683M</b>	<b>4%</b>	<b>13%</b>

9<sup>th</sup> quarter in a row of over \$1B in revenue, 4Q05 was 1<sup>st</sup> \$2B quarter for Linux

Source: Gartner Group, 4Q05

- Linux growth is:

- 8 times total server market
- 5 times Windows server market





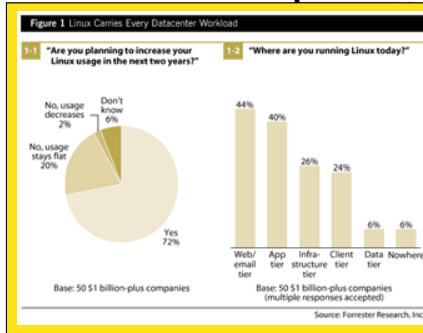
# Linux adoption and acceptance

## ■ Reports from :

- Gartner
- Deutsche Bank
- Forrester
- IDC
- DH Brown
- Goldman Sachs
- Bloor Research
- Wall Street
- IBM

## ■ Articles in :

- Business Week
- Financial Times



**Goldman Sachs**  
Technology: Infrastructure Software  
United States  
Linux handbook

**WholeView TechStrategy RESEARCH**  
Linux: Questions And Answers For Execs  
Linux will go mainstream in the datacenter in 2007. Why? Because the open source OS delivers Unix reliability at lower prices and has strong support from vendors like HP, IBM, Oracle, and SAP. But execs still wonder about the right Linux strategy.

**Deutsche Bank**  
Linux  
Enter the penguin  
waters

**Bloor Research - North America**  
Independent Technology Research & Analysis  
Research Brief  
IBM Corporation  
Route 100  
Somers, NY 10589  
http://www.ibm.com  
Linux Is Ready: IBM's Strategy

**WholeView TechStrategy Research**  
FORRESTER  
March 2003  
The Linux Tipping Point  
Shipping Business: Turn On Technology Change

**Understanding the Linux Charge**  
Lynch, Morgan Stanley and Lehman Brothers, Linux is...  
By Robert Daly



## Cost studies abound – Pick wisely!

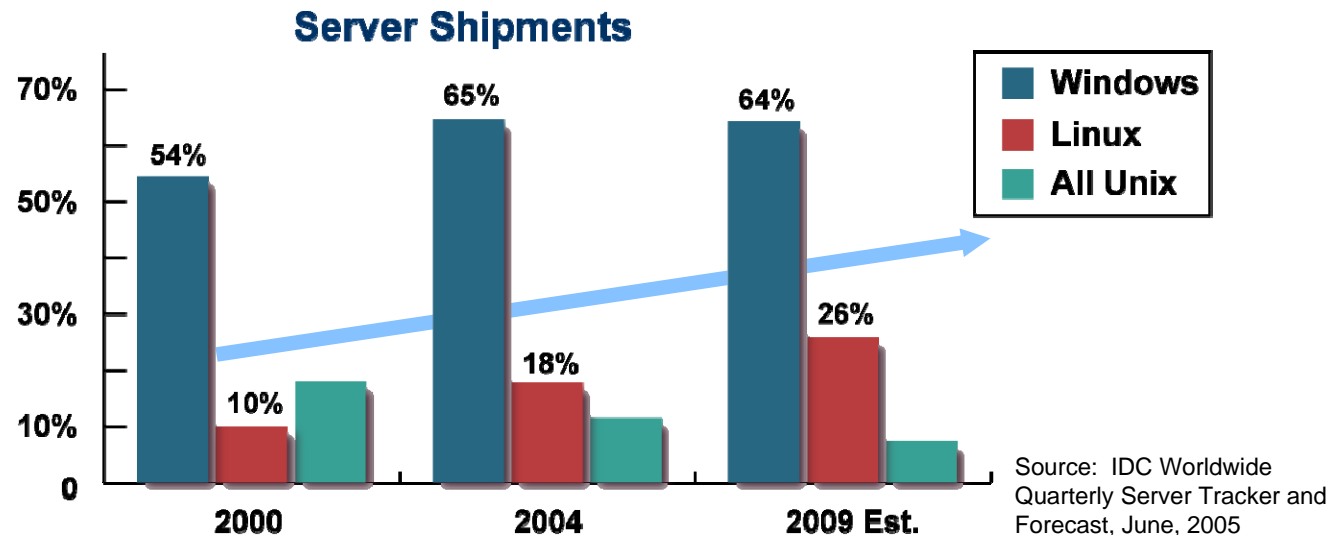




## Linux server market continues to grow



- **11th consecutive quarter (1Q05) of year-to-year double-digit growth**
  - Linux server revenue exceeded \$1.2B in quarterly revenue, 10.3% of overall quarterly server revenue – an all-time high
  - Year-to-year revenue growth of 35.2% and unit shipments up 31.1%





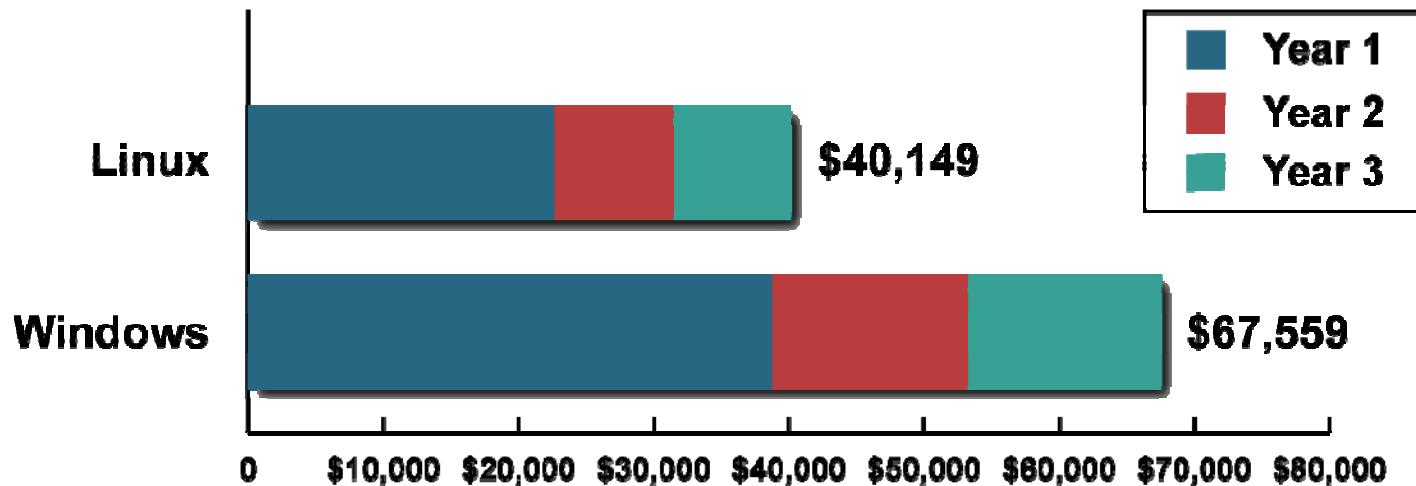


## Linux continues to deliver cost benefits

- **Linux is 40% less expensive than a comparable x86 based Windows solution**
  - Based on a 3-year period of ownership for a system supporting 100,000 operations per second on the SPECjbb benchmark



**Operating System TCO for Enterprise J2EE**

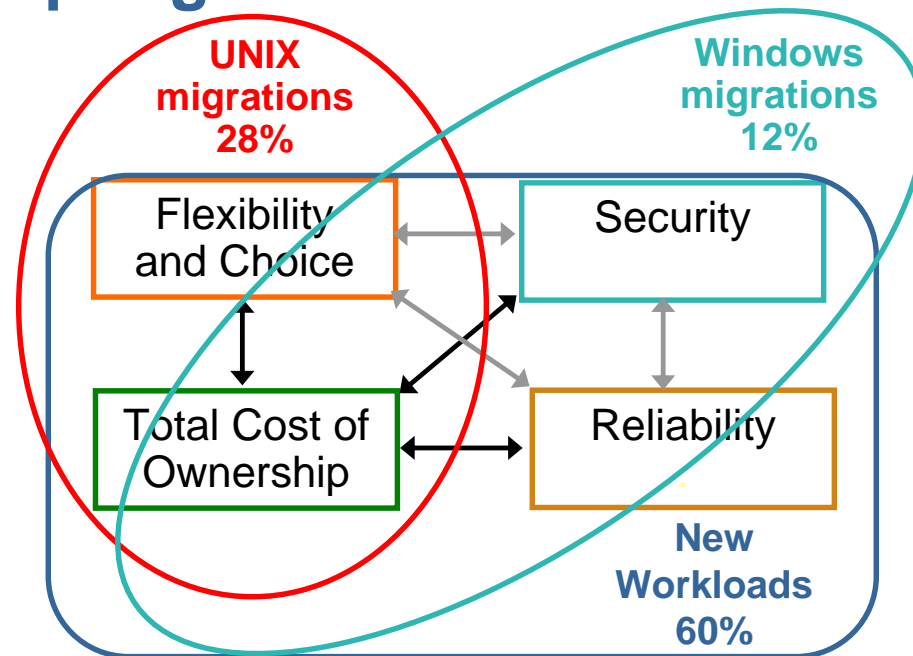


Source: Robert Frances Group: TCO for Application Servers Study, August, 2005



## How customers are adopting Linux

- **New workloads are being added to gain the full benefits of platform and vendor flexibility, low cost of ownership, solid security, and solid reliability**
- **Linux is replacing proprietary UNIX as Linux offers UNIX-like features and platform independence with lower cost of ownership**
- **Linux is replacing Microsoft servers due to choice, attractive cost of ownership, and enhanced security**



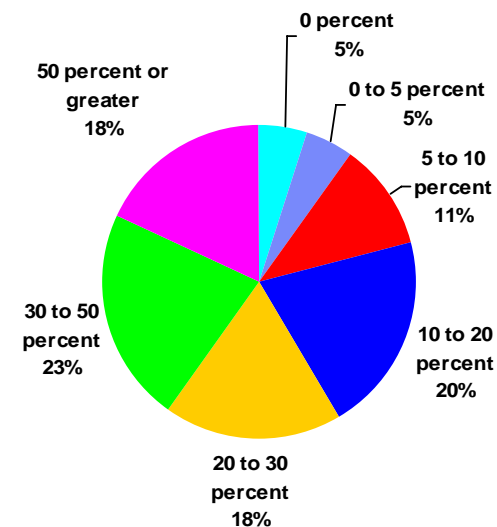
Note: Percentages on this chart are based on my personal observations of the Canadian marketplace



## Can Linux and Windows coexist peacefully?

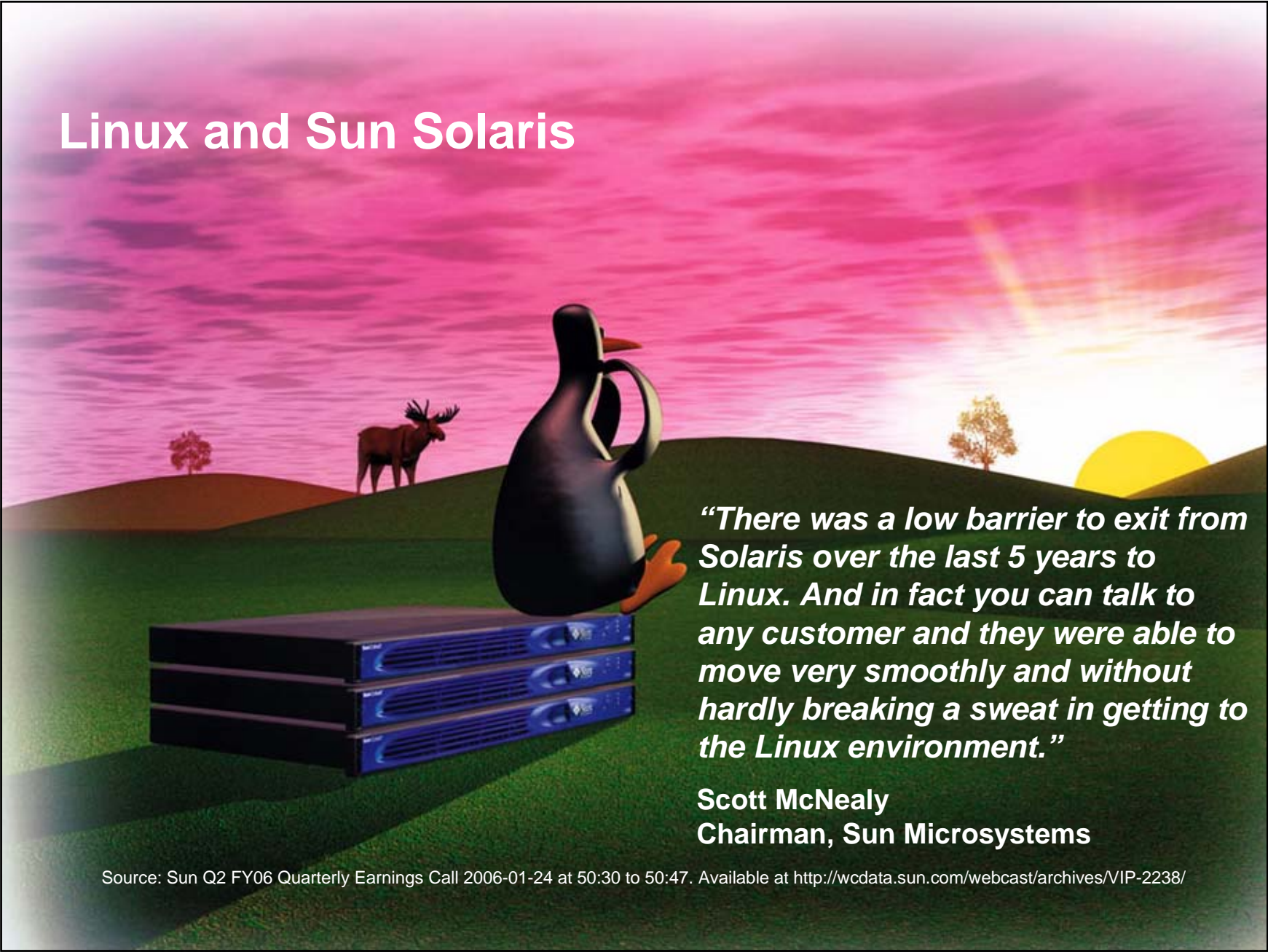
- **Linux is here and Windows is not going away**
  - Corporate users must address interoperability and integration issues
  - Microsoft, LDPs, and ISVs must deliver interoperability
  - Linux now accounts for 20% of the worldwide installed base of server operating systems
  - The majority of corporate networks are heterogeneous environments

**Linux is Complementary to Windows**  
Estimate Linux's share in your environment as a complementary server alongside Windows



Source: Yankee Group, *Heterogeneous Linux, Windows Networks Heighten Integration Challenges*, May 19, 2005  
Source: <sup>1</sup> Yankee Group 2005 North American Linux TCO Survey

## Linux and Sun Solaris



***“There was a low barrier to exit from Solaris over the last 5 years to Linux. And in fact you can talk to any customer and they were able to move very smoothly and without hardly breaking a sweat in getting to the Linux environment.”***

**Scott McNealy**  
**Chairman, Sun Microsystems**

Source: Sun Q2 FY06 Quarterly Earnings Call 2006-01-24 at 50:30 to 50:47. Available at <http://wcddata.sun.com/webcast/archives/VIP-2238/>



## Linux and Oracle



- **Linux will pass Sun Solaris as the leading Oracle deployment platforms according to a groundbreaking study**
  - This survey of more than 800 enterprises using Oracle database technology revealed that while 49 percent of the respondents currently run Oracle on a Solaris platform, that number should slip to 43 percent next year
  - At the same time, 39 percent of the respondents currently run Oracle on Linux, a figure that should climb to 44 percent by next year, making Linux the top Oracle deployment platform

March 2, 2006 – Full report located at <http://www.ioug.org/Research.pdf>





## Insuring success for Open Source software implementations

- **Secure executive sponsorship**
  - Critical to secure appropriate program support and funding
    - Design, quality assurance, implementation, migration, training, support
  - Identify valid pilots for initial programs
    - Server based, problem solving, TCO based
- **Develop education and certification programs for open source software**
  - Sponsor workshops for contractors, ISVs, innovators
  - Leverage existing Linux certification programs
- **Establish open source and Linux pilot projects**
  - Focus on server implementations
- **Develop partnership with implementation partner for service, migration, and support**

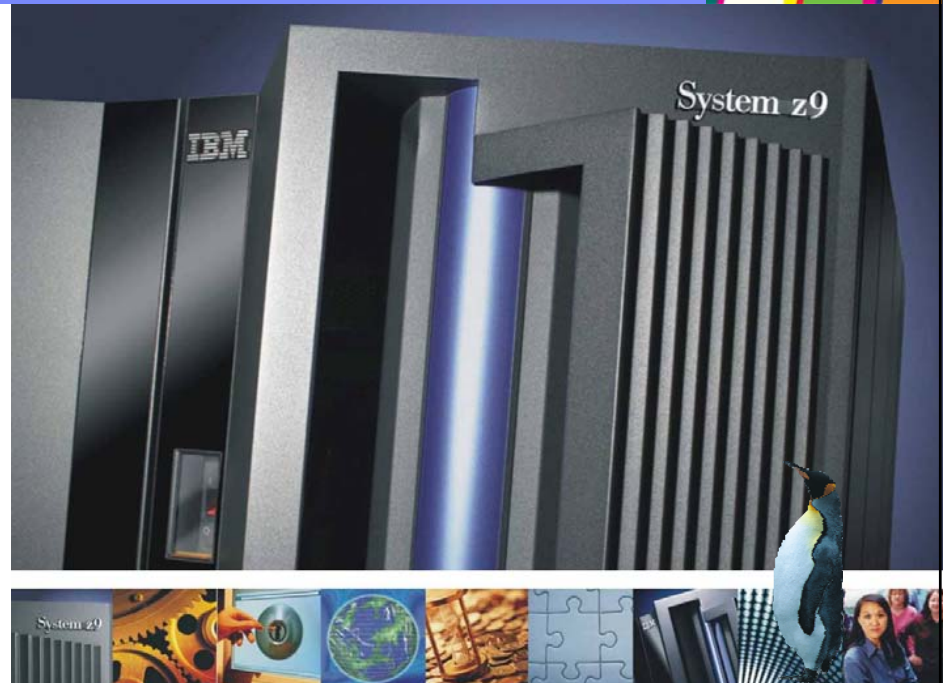




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**Linux and Open Source  
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*[ibm.com/linux](http://ibm.com/linux)*



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## Linux @ IBM Investments



- **Systems**
  - x86 **1998**
  - Mainframe **1999**
  - POWER **2001**
  - BladeCenter **2002**
  - BlueGene **2004**
- **Software**
  - Information Management **1999**
  - WebSphere **2000**
  - Tivoli **2001**
  - Lotus **2001**
  - Rational **2003**
- **Linux Services**
  - **1999**
- **Linux Technology Center**
  - **1999**
- **Chiphopper**
  - **2005**
- **Open Source Contributions**
  - **1998 to 2006**
- **Patent Commons**
  - **2005**
- **Open Source Development Lab**
  - **2000**
- **Linux Partners**
  - EAL2 **2003**
  - EAL3 **2004**
  - EAL4 **2005**

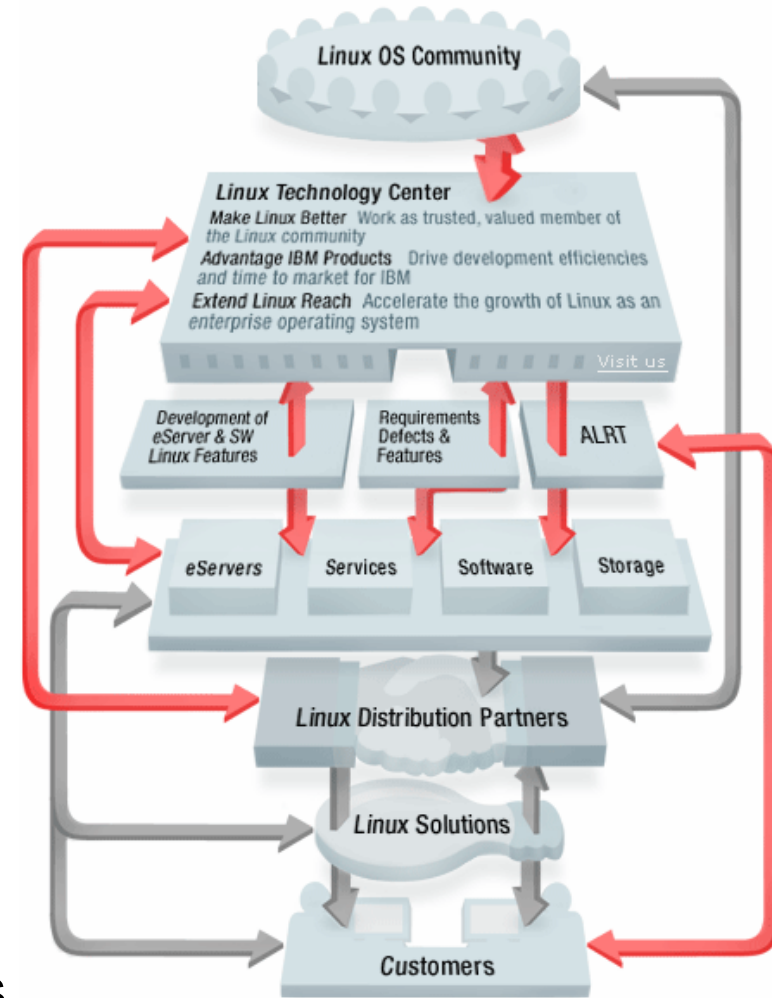




## Linux Technology Center

[ibm.com/linux/ltc](http://ibm.com/linux/ltc)

- **LTC development mission:**
  - Help make Linux better
  - Assist the IBM Hardware, Software, and Services brands win with Linux
  - Expand the reach of Linux
  - Remain trusted, valued members of the Linux community
- **IBM participates in over 160 Open Source projects**
  - LTC members participate in over 90 Open Source projects



Note: Red denotes scope of LTC mission



## IBM alliances with Linux distribution partners

### ■ Novell



- SUSE Linux Enterprise Server

[www.novell.com/products/linuxenterpriseserver/](http://www.novell.com/products/linuxenterpriseserver/)

- Common Criteria CAPP/EAL4+ on 23 Feb 2005

### ■ Red Hat



- Red Hat Enterprise Linux

[www.redhat.com/software/rhel/](http://www.redhat.com/software/rhel/)

- Common Criteria CAPP/EAL4+ on 14 Feb 2006

### ■ Support for all IBM server products

### ■ Service available from IBM or distributors



# IBM Open Standards leadership



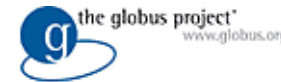
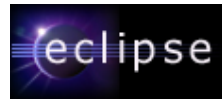
1998 / 1999	2000	2001	2002	2003	2004
<ul style="list-style-type: none"> <li>Java, XML and ebXML</li> <li>Co-founder and lead architect for RosettaNet</li> <li>Author of XML4J</li> <li>Chair OMG XML Metadata Interch. Format</li> <li>Co-author W3C Document Object Model</li> <li>Founder XML.org</li> <li>Elected to Board of Directors in OASIS</li> </ul>	<ul style="list-style-type: none"> <li>Web Services and UDDI</li> <li>Co-author of SOAP 1.1 and submission to W3C</li> <li>Cofounder of UDDI.org and author of original UDDI specification</li> <li>Co-author of WSDL</li> <li>IBM contributes SOAP4J to Apache</li> </ul>	<ul style="list-style-type: none"> <li>Web Services and Tools</li> <li>Led submission of WSDL to the W3C</li> <li>Co-chaired W3 Web Services Workshop</li> <li>Founder of Eclipse.org</li> <li>Co-author of W3C XML Schema standard</li> <li>Chair of Web Services Interactive Applications TC</li> </ul>	<ul style="list-style-type: none"> <li>Web Services and Security</li> <li>Founder and chair, WS-I Organization</li> <li>Co-author of web services bus process specification (BPEL, WS-TX, WS-TC)</li> <li>Co-author for Web Services Security roadmap and specification</li> </ul>	<ul style="list-style-type: none"> <li>Web Services Interoperability</li> <li>Submission of BPEL to OASIS and co-chair WSBPELTC</li> <li>Submission of Common Base Events and WS-Manageability to OASIS</li> <li>Co-chair WSDM TC in OASIS</li> <li>Led workgroup responsible for finalization of SOAP 1.2</li> </ul>	<ul style="list-style-type: none"> <li>Web Services Management</li> <li>Chair of workgroup responsible for WS-I Basic Profile 1.1</li> <li>Co-chair of working group responsible for OASIS WS-Security 1.0</li> <li>Co-chair of OASIS WS-Notification TC</li> <li>Eclipse becomes independent organization</li> <li>More than 1,000 developers devoted to XML and more than 1,500 focused on Linux.</li> </ul>

Over 160 business integration technology patents      First Web Services Gateway      First integrated private UDDI directory





# IBM Open Source leadership



1999 – 2001	2002	2003	2004	2005
<ul style="list-style-type: none"> <li>IBM forms Linux Technology Center – contributions to serviceability, performance</li> <li>Leads Apache XML projects Xalan Xerces, SOAP</li> <li>Forms Open Source Steering Committee</li> <li>Creates OSI-approved IBM &amp; Common Public Licenses</li> <li>Participation in Mozilla</li> <li>Founder of Eclipse</li> </ul>	<ul style="list-style-type: none"> <li>Linux contributions to scalability (8-way+), reliability (stress testing, defect mgmt, doc)</li> <li>Leads Apache Web Services projects WSIF and WSIL</li> <li>Leads Eclipse projects GEF (editing), EMF (modeling), XSD (XML Schema)</li> <li>IBM contributes eServer support for Globus Toolkit 2x</li> </ul>	<ul style="list-style-type: none"> <li>IBM and SUSE achieve EAL2+ Common Criteria security cert</li> <li>Leads Apache projects Pluto (Portlet API) and WSRP4J (Remote Portal)</li> <li>Leads Eclipse projects Hyades (testing), Visual Editor, AspectJ, Equinox rich client</li> <li>Globus Toolkit 3 contributions for OGSA, OGSi</li> </ul>	<ul style="list-style-type: none"> <li>IBM and Novell/SUSE achieve EAL3+ and Common Operating Environment compliance</li> <li>Linux additional RAS</li> <li>Incubates Apache project Derby (Cloudscape Java database)</li> <li>Dialog components to Apache Jakarta taglibs</li> <li>Eclipse becomes independent org – IBM contributes UML2, Web Tools, Voice Tools</li> <li>Globus Toolkit 4 to be WS-I compliant</li> <li>IBM contributes voice recognition technology to Apache and Eclipse</li> </ul>	<ul style="list-style-type: none"> <li>Contributions to Xen hypervisor, Linux accessibility</li> <li>Contributions to Apache WSDL4J 2.0 (Woden), Web Services Security</li> <li>Database extensions to PHP</li> <li>Redeploy 30+ developerWorks projects on SourceForge.net</li> <li>IBM pledges 500 patents to OSS</li> </ul>

**More than 1000 developers involved in OSS projects**

**IBM leads 80+ OSS projects**

**IBM contributes to 150+ OSS projects**






## Linux – Transforming IBM's IT infrastructure

*Providing key business solutions*

- **3,000+ production servers worldwide**
  - 25,000+ clients
- **ibm.com/linux and w3.ibm.com**
  - Supports 320,000+ employees worldwide
- **IGS Internet vulnerability security scanning**
  - Scanning 30k IP addresses/ week
- **Web fountain data mining service**
  - A development environment of over 300 Linux servers
  - A production environment of over 500 Linux servers
- **IBM global e-mail anti-virus management**
  - Scans incoming/outgoing mail for viruses
- **300mm wafer manufacturing automation and equipment control**
  - 200+ production Linux servers

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## Linux at IBM

**Linux at IBM**

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- Solutions
- The Linux at IBM competitive advantage
- Business partners
- Developers
- Linux Technology Center & Competency centers
- Sports
- Geography
- Education
- Events
- News
- Linux links

**OPEN. FOR BUSINESS.**  
**LinuxWorld**  
 San Francisco, CA  
 August 14-17, 2006  
 → Learn more

**Why IBM**  
 IBM extends open source virtualization solutions by partnering with Novell to offer clients' benefits from Xen™ virtualization technology. IBM's portfolio of middleware and systems platforms will support SUSE Linux Enterprise 10 offerings.

**Spotlight**

**Get moving!**  
 → Move from Solaris to Linux quickly. Our Redbook will show you how.

**Linux integration**  
 → Wondering why everyone else is adding Linux to their environment?

**The Linux at IBM competitive advantage**  
 Linux can help your business expand beyond the limitations of proprietary vendor software and hardware and offer the enterprise computing qualities of UNIX with cost-effective hardware choices, from x86 servers to 64-bit computing and supercomputers.

- Linux vs. Microsoft® Windows®
- Linux vs. Sun Solaris

**We're here to help**

 Ask the experts  
 → Get expert advice on Linux solutions

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 Get more information about migrating from Solaris to Linux.  
 → Click here

**Contact me about Linux, Windows integration**  
 Get more information about Linux integration with Windows environments.  
 → Click here

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developerWorks > **Linux** Updated 01 Aug 2006

**Top story**

**Theading compared: LinuxThreads and NPTL**  
 If you haven't ported your Linux apps to the Native POSIX Thread Library (NPTL) threading model yet, this is a good time to learn its advantages over LinuxThreads. [More >](#)

**Linux initial RAM disk (initrd) overview:** Explore the initial RAM disk (initrd) for Linux 2.6, including its creation and use in the Linux kernel, whether in a desktop or server Linux system or in an embedded system.

**Better error handling using Flex and Bison:** Make your custom-built compilers and interpreters easier to use through Flex and Bison's built-in features and one or two tricks.

**Knock-based commands for your Linux laptop:** Hitting your computer has never felt so good -- or proven so useful -- as it will after you set it up to accept commands by knocking on it.

**Notes from O'Reilly's Open Source Convention 2006:** David Mertz wraps up the conference by talking to Josh Berkus about PostgreSQL, the ZFS file system, and the importance of free and open source software to online voting systems.

**Porting to the Linux Standard Base:** If you want to make sure your code runs reliably on as many Linux flavors as possible, port your apps to the Linux Standard Base, then run the LSB test tools to verify conformance. Here's how.

**Web development with TurboGears and Python:** Build a data-based online shopping application using Python, Ajax, and this model-view-controller-style application framework.

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**Spotlight**

- **New site feature:** Evaluate Rational Application Developer online
- Linux certification-prep tutorials
- Lotus Notes for Linux
- Free trial download: WebSphere Application Server Community Edition V1.0.1.1
- Linux briefing: Navigating the future with IBM, Intel, and Red Hat

**Editor's picks**

- Inside the Linux scheduler

35 | SHARE 107 - Session 9200 | 2006-08-14 | **IBM Systems**  
Simply your IT.

The screenshot shows the IBM Redbooks website interface. At the top, there is a blue header with the IBM logo and the text "Open Computing @ IBM". Below this is a navigation bar with links for Home, Products, Services & solutions, Support & downloads, and My account. A search bar is located in the top right, with a dropdown menu set to "Redbooks".

The main content area features a sidebar on the left with a "Redbooks Home" menu and a "Redbook Domains" list including Application Development, BladeCenter, Information Mgmt software, IBM System i, IBM System p, IBM System x, IBM System z, IBM System Storage, Linux, Lotus, Networking, On Demand/Grid, Solutions, Tivoli, WebSphere, and Windows.

The central content area is titled "IBM Redbooks" and "ibm.com/redbooks/linux". It includes a "Linux at IBM" logo and a large green banner with the text "Linux and IBM Redbooks". Below the banner, there are several sections:

- Linux Redbooks Domain**: A dark blue header for the main content area.
- Latest Drafts ... show all**: A list of draft documents with arrows pointing to titles like "z/VM and Linux on IBM System z: The Virtualization Cookbook for Red Hat Enterprise Linux 4".
- New Redbooks/Redpapers ... show all**: A list of new publications with arrows pointing to titles like "Using Discontiguous Shared Segments and XIP2 Filesystems With Oracle Database 10g on Linux for IBM System z".
- New Technotes ... show all**: A list of new technotes with arrows pointing to titles like "Using the z/VM INDICATE Command".
- Most popular ... show Top 15**: A list of popular documents with arrows pointing to titles like "Solaris to Linux Migration: A Guide for System Administrators".
- Skills Development**: A list of development resources with arrows pointing to "Residencies" and "Workshops".
- More info ...**: A section with an arrow pointing to an XML RSS feed link.

At the bottom of the page, there is a blue footer containing the page number "36", the session information "SHARE 107 - Session 9200", the date "2006-08-14", and the IBM Systems logo with the tagline "Simply your IT."



## Linux on IBM hardware

[ibm.com/eserver/linux](http://ibm.com/eserver/linux)

- |                                |                                       |
|--------------------------------|---------------------------------------|
| ▪ <b>System x</b>              | Intel Xeon, AMD Opteron               |
| ▪ <b>System p, System i</b>    | IBM POWER                             |
| ▪ <b>BladeCenter</b>           | Intel Xeon, AMD Opteron,<br>IBM POWER |
| ▪ <b>System Cluster</b>        | Intel Xeon, AMD Opteron,<br>IBM POWER |
| ▪ <b>System Blue Gene</b>      | IBM POWER                             |
| ▪ <b>System z</b>              | IBM z/Architecture                    |
| ▪ <b>System Storage</b>        |                                       |
| ▪ <b>Intellistation</b>        | Intel Xeon, AMD Opteron,<br>IBM POWER |
| ▪ <b>Point-of-Sale, Kiosks</b> | Intel Pentium                         |



## IBM software and Linux

*[ibm.com/software/linux](http://ibm.com/software/linux)*

- **Solutions available across all product lines**
  - WebSphere – middleware, application server, e-business, and infrastructure software
  - Information Management – database software
  - Lotus – collaboration and messaging software
  - Tivoli – system and storage management software
  - Rational – software development tools
- **Over 500 IBM software products available today on Linux**
- **Linux editions of software products are available the same day as all other platforms**
- **Primary software solutions to be available on Linux**





# IBM software product availability matrix

[ibm.com/linux/matrix](http://ibm.com/linux/matrix)

## IBM @server® xSeries

DB2	Version	Hardware	Kernel/Distribution	Sources
Data Management Software	8.1	POWER	POWER	POWER
DB2 Administration Client	8.1	POWER	POWER	POWER
DB2 Alphablox				

## IBM @server® POWER

Tivoli software	Version - Release	Hardware	Kernel/Distribution	Sources

## IBM @server® zSeries

WebSphere software	Version - Release	Hardware	Kernel/Distribution	Sources
WebSphere Application Server	6.0.2	zSeries	Red Hat Enterprise Linux 3 Update 2,3,4 Red Hat Enterprise Linux 4 SUSE Linux Enterprise Server 8 SP3, SP4 SUSE Linux Enterprise Server 9 SUSE Linux Enterprise Server 9 SP1	Supported Platforms
WebSphere Application Server	6.0.1	zSeries	Red Hat Enterprise Linux 3 Update 2, 3, or 4 SUSE Linux Enterprise Server 8 SP3 SUSE Linux Enterprise Server 9	Supported Platforms

Available December 2, 2005  
Software Announcement 205-312  
November 29, 2005  
Software Announcement 203-315



## IBM Global Technology Services and Linux

- **High performance cluster integration services**
- **Enhance your e-business with Linux solutions**
- **SupportLine for Linux – unmatched 24x7 remote support**
  - Fast and accurate problem resolution
  - Helpful, skilled IBM services specialists to supplement your internal staff
  - Electronic support and problem submission that saves you time and allows you to track open support issues
- **Middleware enablement services for Linux**
- **IBM e-business Hosting**
- **IBM Technical Training**

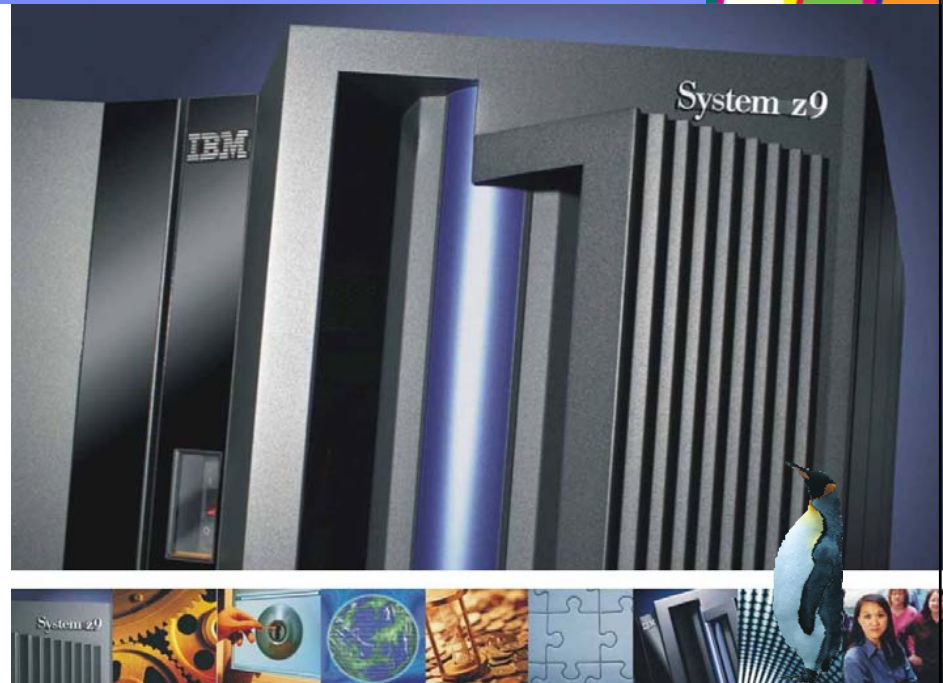


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# Summary



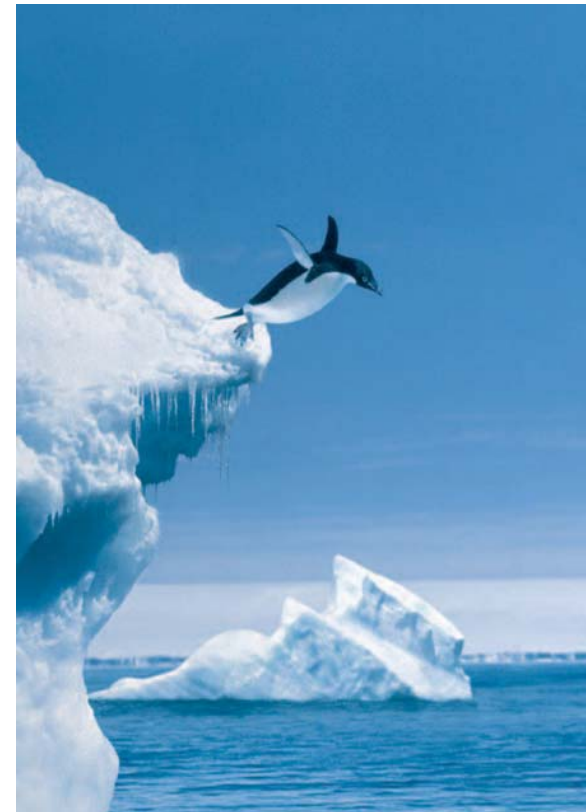
**IBM Systems**  
*Simplify your IT.*

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## What next?

- **Familiarize yourself with the facts**
- **Establish an Open Policy**
  - It should be inclusive, not exclusive!
- **Align to Open Standards**
  - Insist on them!
- **View Open Source and Linux as valid alternatives for IT systems**
- **Make decisions based on business value; not hype and hope!**
  - Be pragmatic
- **Be prepared for change!**





## Thank you

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[ibm.com/linux](http://ibm.com/linux)

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[ibm.com/vm/devpages/jelliott](http://ibm.com/vm/devpages/jelliott)

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