



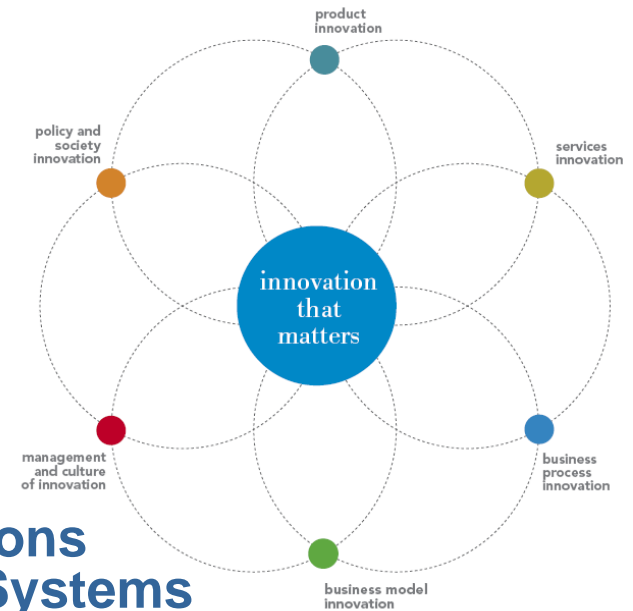
Open Computing @ IBM



Open Computing and Linux



Jim Elliott
Advocate – Infrastructure Solutions
Manager – System z Operating Systems
IBM Canada Ltd.

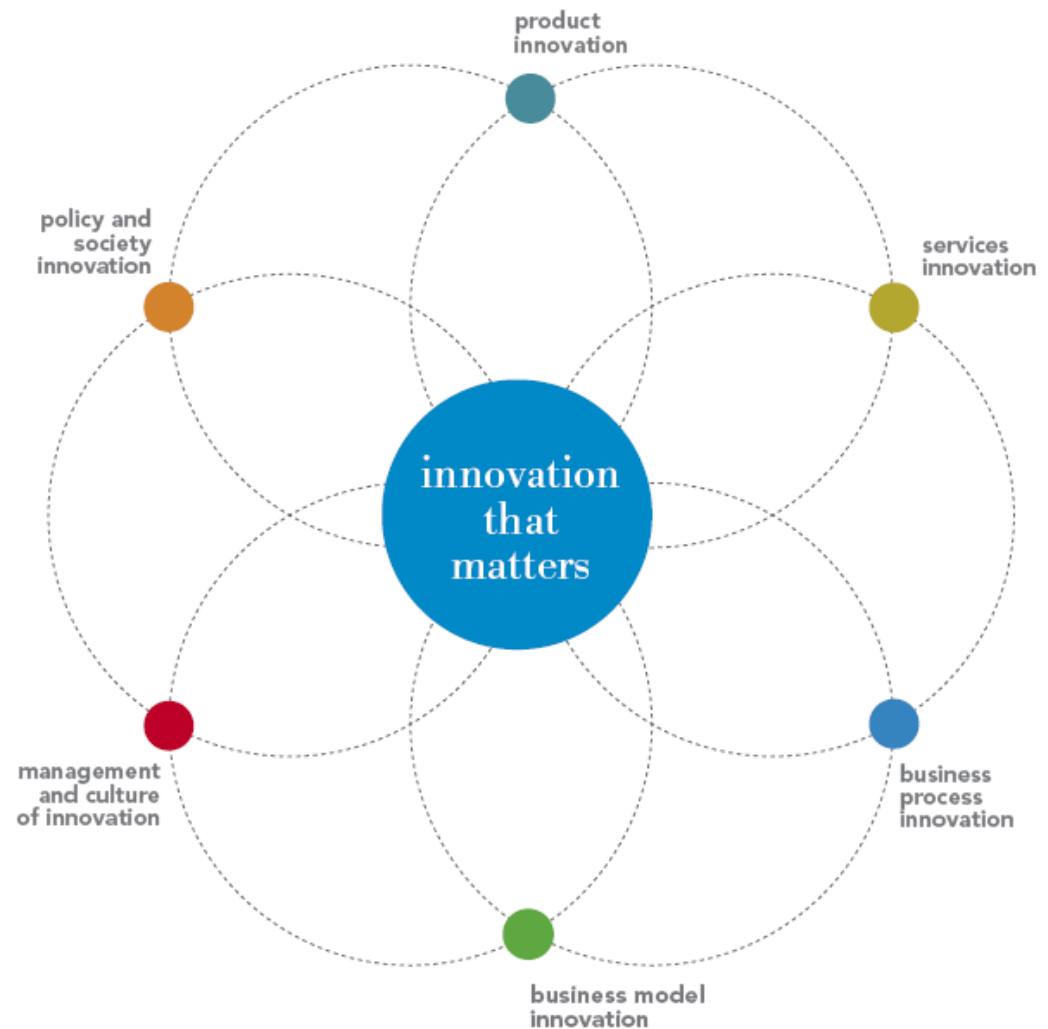


ON DEMAND BUSINESS™



Agenda

- Open Computing
- Linux
- Linux and Open Computing @ IBM





Open Computing @ IBM



Open Computing





Open Computing Goals

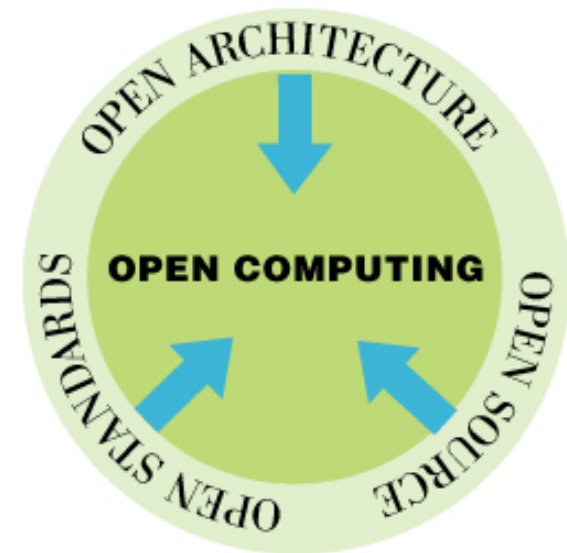
- **Ensure flexibility**
- **Ensure interoperability**
- **Avoid vendor lock-in**
- **Drive cost effectiveness**
- **Ensure future access to information**
- **Ensure a level playing field for competition**
- **Maximize freedom of action**





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

- **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 UNIXes
- **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 February 1, 2006

- Apache

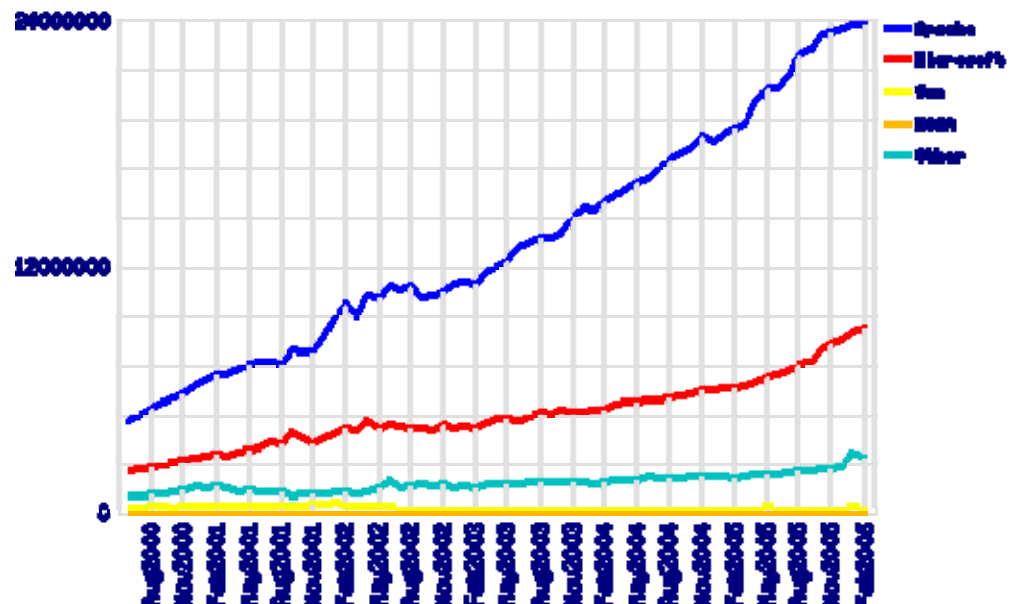
- Sites: 23,748,079

- Share: 67%

- Microsoft IIS

- Sites: 8,949,268

- Share: 25%



The Apache Software Foundation

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



Open Computing @ IBM



Linux





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 or Red Hat dominant in NA
- Development managed by OSDL





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



Cost, reliability, performance and security continue to drive Linux server adoption

Server Drivers

What are the primary reasons that your organization is using Linux in some of its servers?

	2005	2004	2003
Relatively low cost or no licensing fee	77%	79%	86%
Reliability	74%	75%	76%
Performance	73%	76%	71%
Windows security issues	65%	-	-
Needs an alternative to Windows	59%	58%	59%
Recommendations by our technical staff	59%	58%	53%
Development tools widely available through the internet	46%	45%	38%
Ability to modify source code to meet our needs	45%	38%	32%
Fast software patches and bug fixes	41%	39%	37%
Fulfills company requirements or standards	40%	39%	40%
Measurable ROI	47%	-	-
Company has an Open Source philosophy	33%	25%	27%
Need an alternative to UNIX	26%	28%	25%

Multiple responses allowed. Base of 246 sites in 2005, 290 sites in 2004, 272 sites in 2003.
 Information Week Research – Linux/Open Source Survey of 439 business technology professionals.



Linux is an industry-wide initiative

www.osdl.org



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

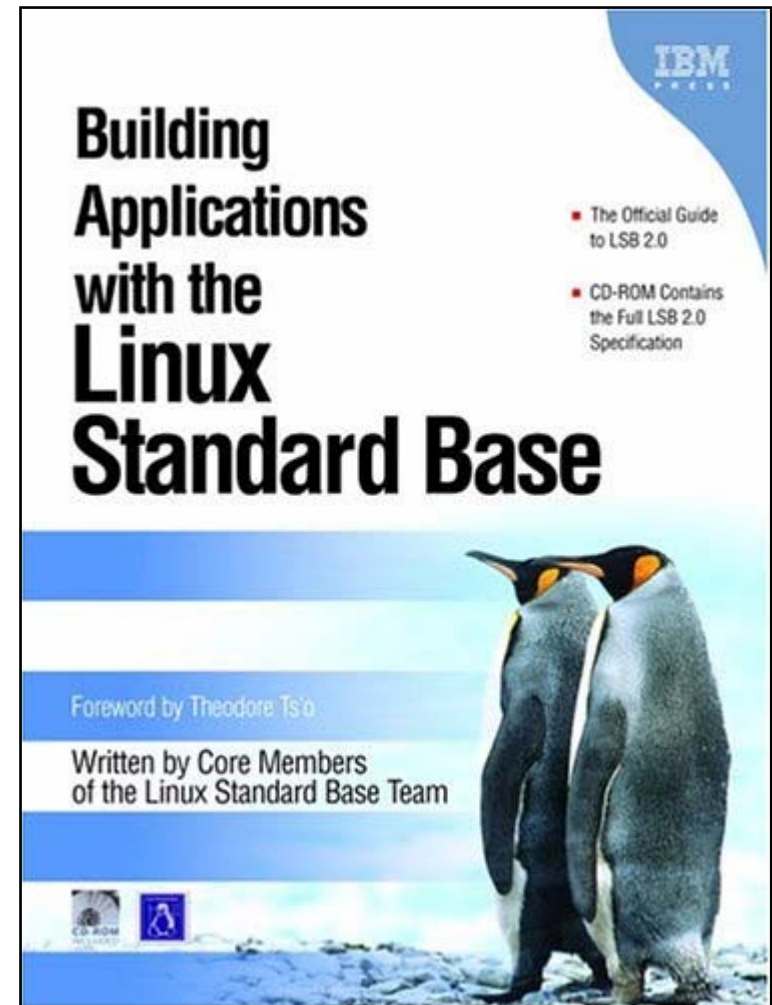




Linux Standard Base

www.freestandards.org

- LSB supporters include AMD, Dell, HP, IBM, Intel, Novell's SUSE LINUX, and Red Hat
- This groundswell of support is significant as it promises to keep Linux from forking and going the way of proprietary systems in the past
- Because of the reduced costs for software vendors writing to the Linux, adoption of the LSB will also result in an increase in the number of applications written to the operating system

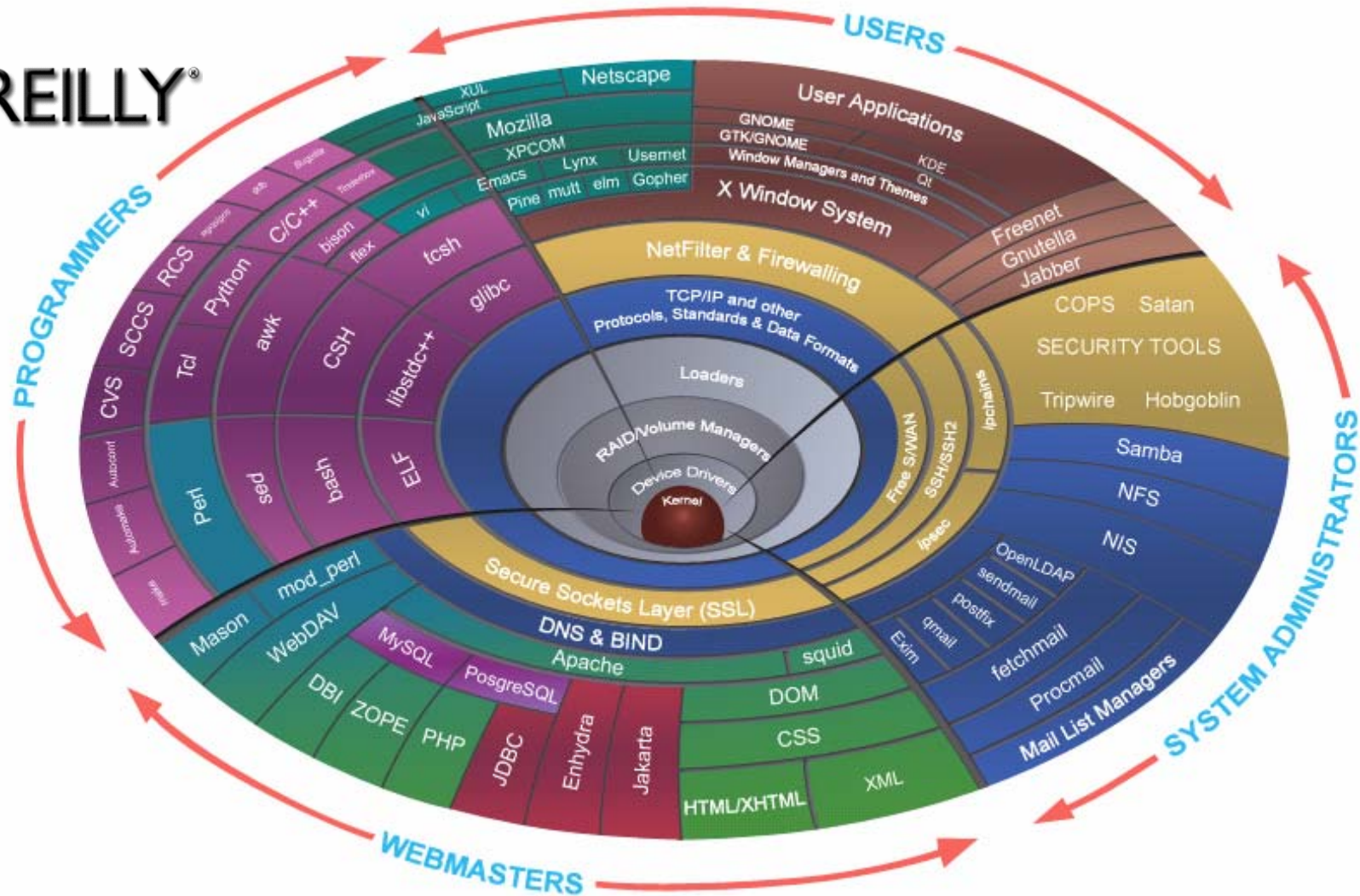


ibm.com/ibmpress



What is a Linux distribution?

O'REILLY®





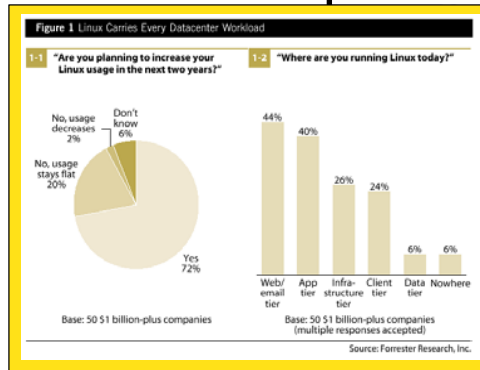
Linux adoption and acceptance

■ Reports from :

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

■ Articles in :

- Business Week
- Financial Times



Technology: Infrastructure Software
United States

Linux handbook

WholeView TechStrategy RESEARCH

Linux: Questions And Answers For Execs

By Ted Soder
With David Hadas

Linux will go mainstream in the datacenter in 2003. Why? Because the open source OS delivers Unix reliability at Intel prices and has strong support from vendors like HP, IBM, Oracle, and SAP. But execs still wonder about the right Linux strategy.

27 March 2003

Linux

Enter the penguin

Deutsche Bank

Emerging Themes

Linux has become a stable operating system... (text continues)

NOVEMBER 2002

Bloor Research - North America
Independent Technology Research & Analysis

Research Brief

IBM Corporation
Route 109
Somers, NY 10589
<http://www.ibm.com>

Linux Is Ready: IBM's Strategy

Preface
In 1999, Bloor Research took a very close look at the "enterprise readiness" of Linux. We Linux side-by-side with Windows NT — comparing the two operating environments as it database, application, and groupware servers. And we concluded that:

As a file and print server, Linux comes out on top, particularly for large organizations with users where vendor management is an important option. The same goes for Web and mail servers, where it excels, although NT doesn't come badly in combination with Exchange either. For a server environment, there is little or no difference between the two... I really depends on the use of the database and the vendor's advice. The scale tips to Windows NT when it comes to servers, because there is so much more software available for the platform, even if Linux is catch up. And for groupware servers, the application will determine the ultimate choice. For Linux users, NT is the baseline here. If you have mixed workloads (Web server, mail server, print server, etc.) from Bloor Research says by all means, go for Linux. <http://www.bloor.com>

Now, almost three years later, we've been asked by IBM to reexamine our Linux position, provide our thoughts on Linux "enterprise readiness" for mission-critical computing. Who wants to know is:

1. Is Linux enterprise ready (how is Linux faring from reliability, availability, scalability, flexibility, security, manageability, and server consolidation perspective toward being enterprise ready?); and,
2. How is IBM doing from a strategic/product/services/applications perspective with products and services?

This Research Brief represents the result of our analysis.

WholeView TechStrategy Research

FORRESTER

March 2003
The Linux Tipping Point

Helping Business Thrive On Technology Change

Understanding the Linux Charge

Lynch, Morgan Stanley and Lehman Brothers, Linux is to risk applications, equity options calculators and mainframe.

By Robert Daly

...still Linux is one of the few Linux actively displacing Linux on the mainframe. The IBM efforts mentioned development is part of an effort to create a virtual server environment, and over the past year virtual server provisioning and Linux has led Merrill Lynch to reported server performance and cost savings.

"The goal here is to come up with the same scaling as a storage area network, for our servers," says McKinley. "We're putting a layer of abstraction between the application and the server it's running on." This allows the system to serve applications in different processes depending on the current workload for a given day.

Currently, Merrill Lynch deployed virtual servers using two different methods — running various instances of Linux on the mainframe and using VMware distributed computing software to host together servers on a single processing farm. Linux is appropriate for creating this environment because unlike other popular within the data center, Linux-based applications never run on any available processor without concern for their architecture.

"Methods of server virtualization in our distributed environments," says McKinley. "We're in Charge One of the Data Center's work both approaches and focusing on the TCO. Both require understanding the server type for a given set of requirements than through this technique. Merrill Lynch has seen a 40 percent to 50 percent cost savings. "We see this virtualization as an enabler and as a 2003-2004 planning strategy for the organization," says McKinley. "We're in an operating mode, that makes a big."

...the ongoing the speed of provisioning, making them efficient use of required expenditures and allowing more flexibility.

All Right Reserved, Used by Permission. **waters** | November 2002



Cost studies abound – Pick wisely!

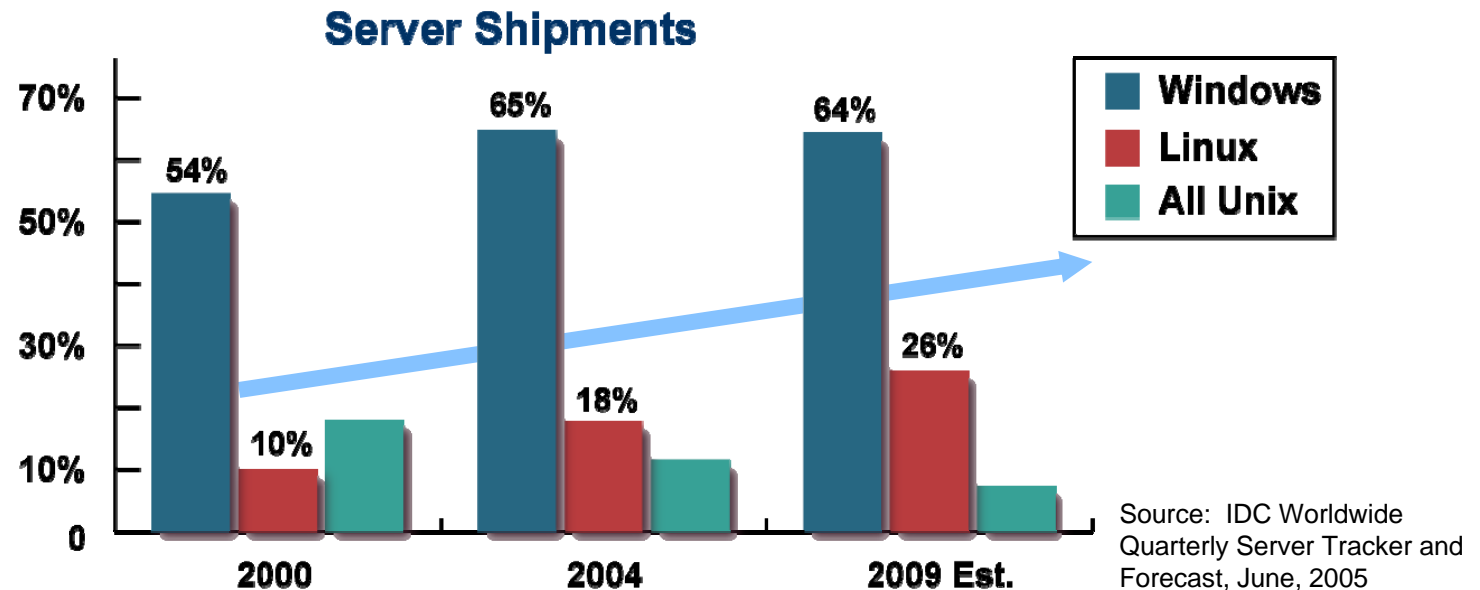




Linux server market continues to grow



- **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%



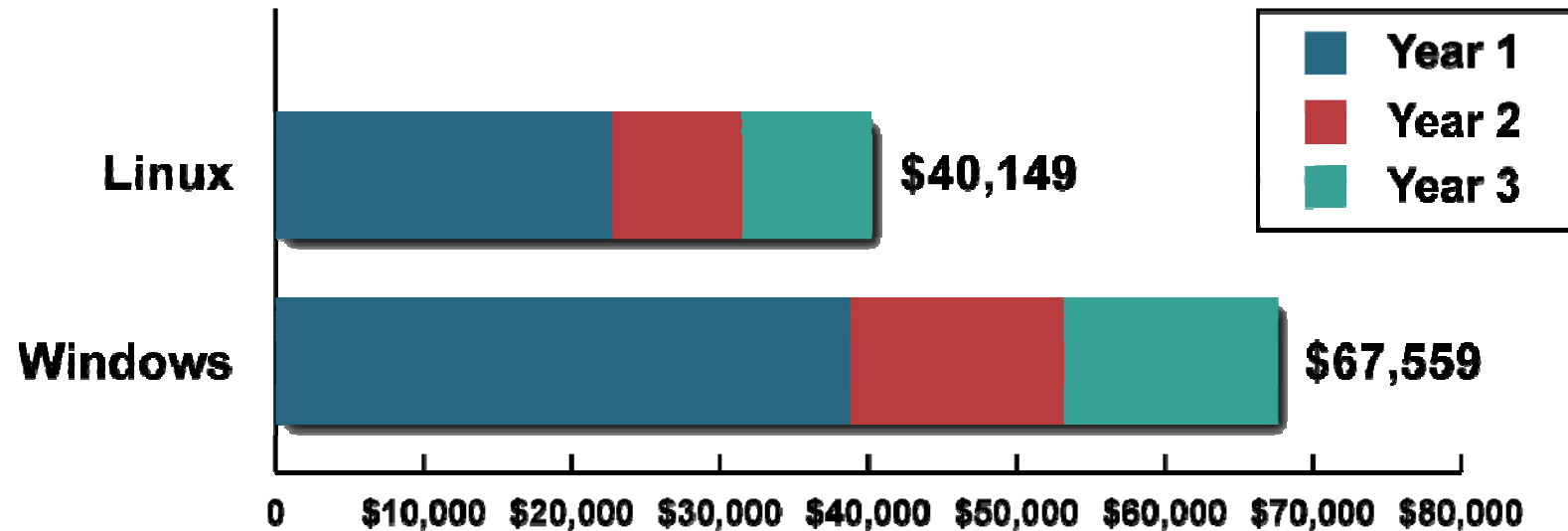


Linux continues to deliver cost benefits

- **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



Key accelerators for Linux growth

Gartner

“Accelerators outweigh the inhibitors of Linux's increasing acceptance in enterprises. Enterprises must adopt sound business practices to achieve the promised benefits if they use Linux.”

Accelerators	Force and influence in decision process
Cost pressures and platform standardization/consolidation	Very strong
Security and reliability concerns of Microsoft platforms	Very strong
Openness and low-cost availability	Very strong
Negotiation and platform flexibility	Strong
Peer acceptance, skills pool and development	Strong
Concerns with Microsoft licensing and business practices	Very strong
Platform vendor enthusiasm	Moderately strong

Gartner Research Note: Linux Accelerators Outstrip the Inhibitors Technology, T-21-0334



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



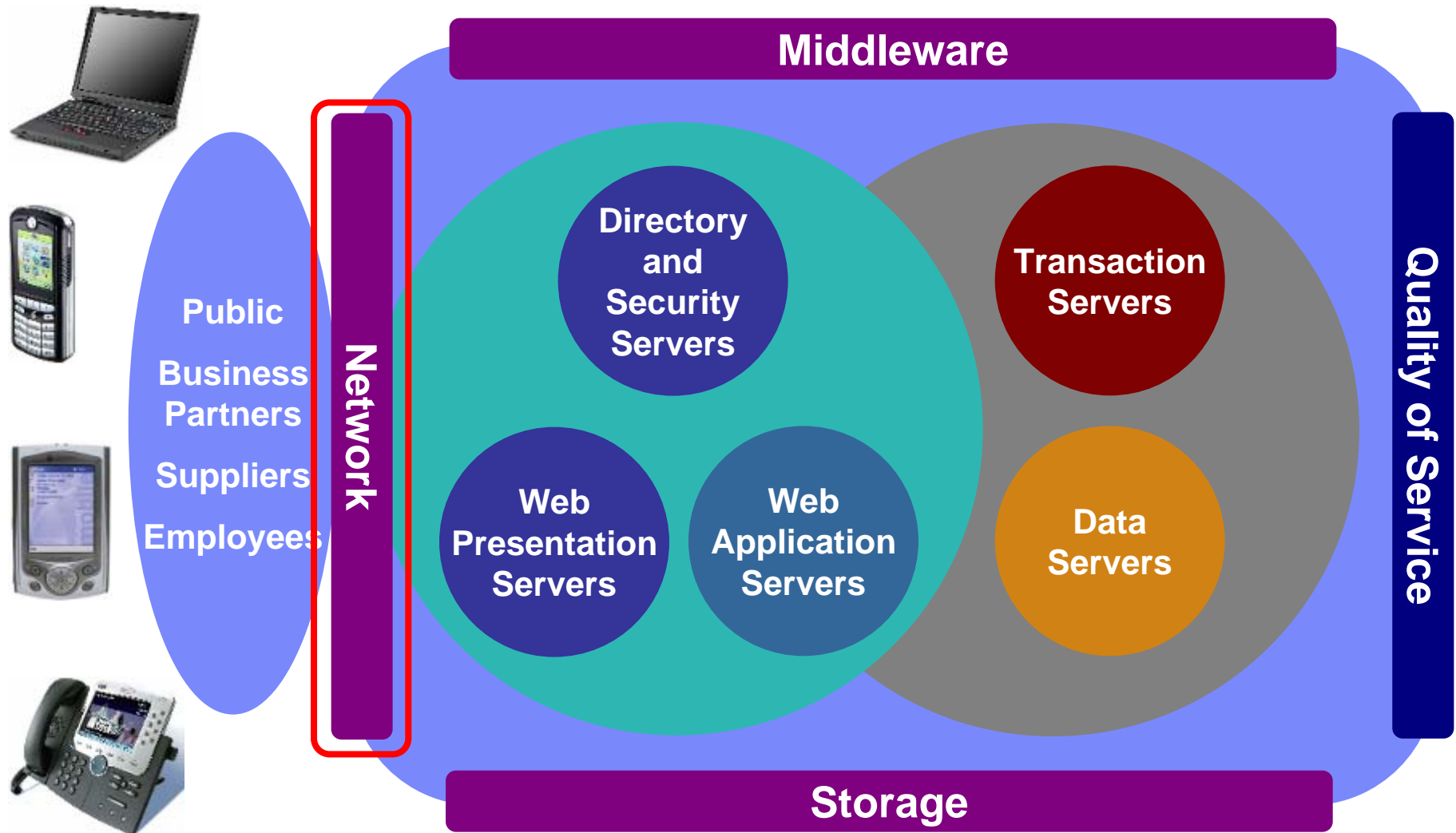
Linux runs on multiple architectures

- 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

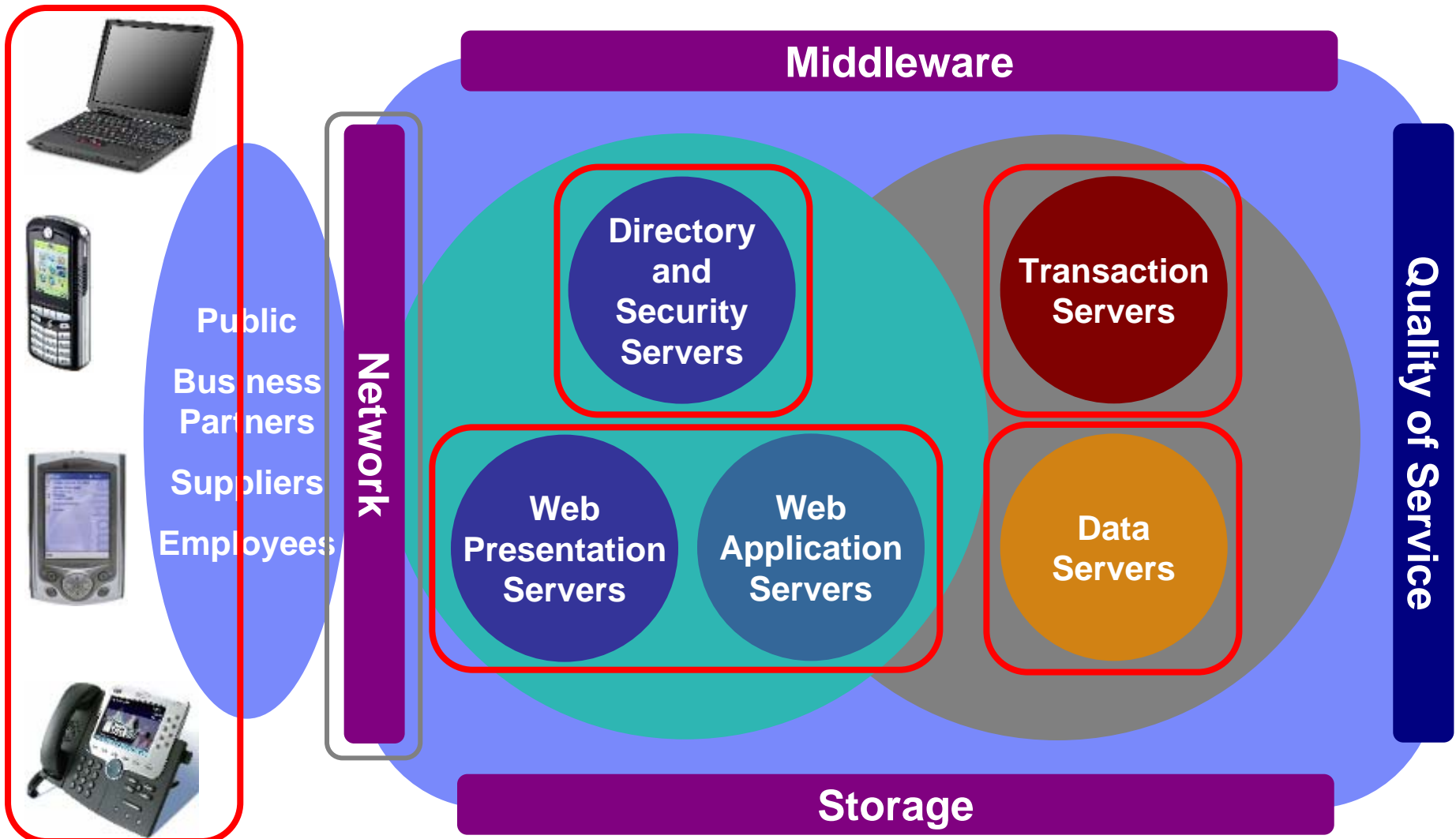


“Traditional” view of Linux fit is outdated





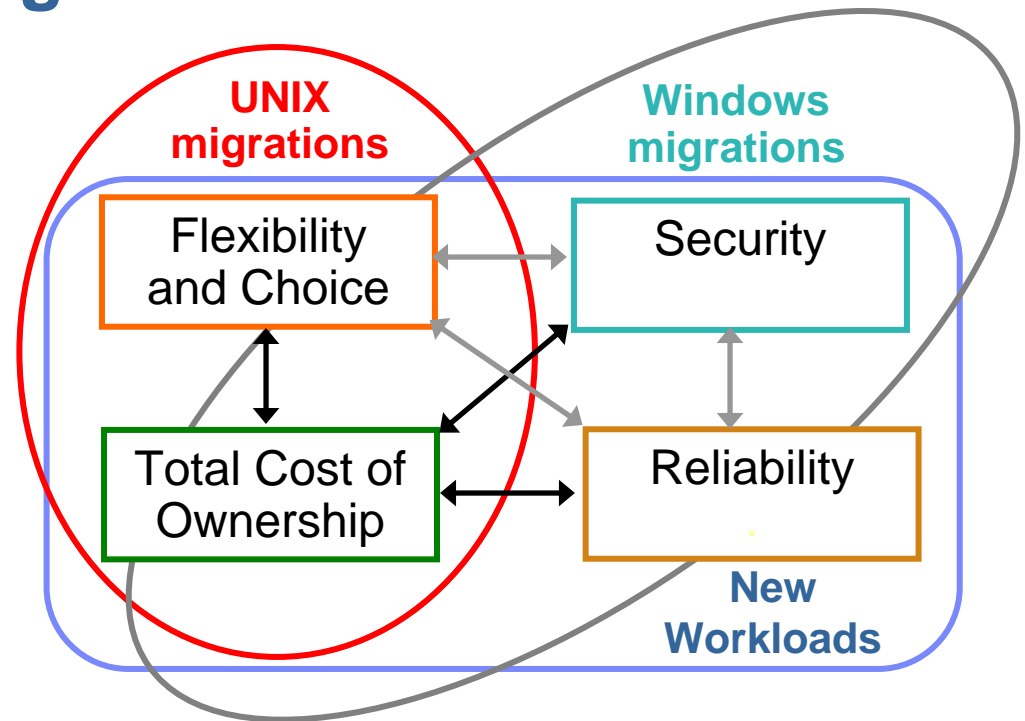
Linux fits everywhere!





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**





Customers want to avoid...

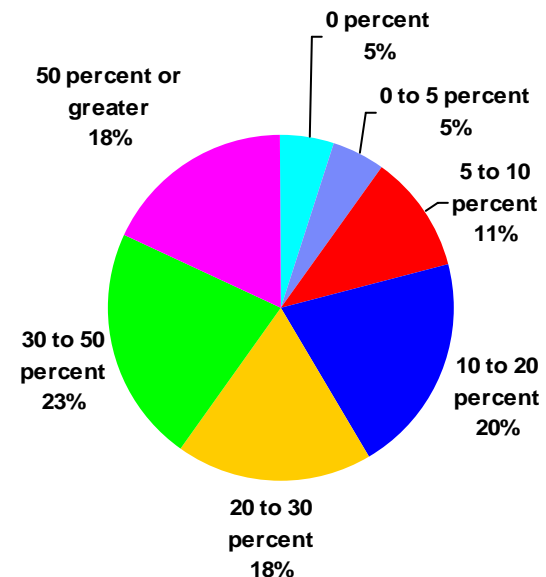




Can Linux and Windows coexist peacefully?

- **Linux is here, Windows is not going away, and heterogeneity is the order of the day**
 - Corporate users must address interoperability and integration issues *before* deployment
 - Microsoft, LDPs, and ISVs must deliver interoperability to ensure peaceful coexistence
 - Linux now accounts for 20% of the worldwide installed base of server operating systems (15% in North America)¹
 - The majority of corporate networks are heterogeneous environments with multiple operating systems
 - Windows and Linux constitute the bulk of those server installations

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



YANKEE GROUP

Source: Yankee Group, *Heterogeneous Linux, Windows Networks Heighten Integration Challenges*, May 19, 2005

Source: ¹ 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 and CEO, Sun



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>



And then there is the SCO Group



“Since day one, the IBM strategy in the SCO Group lawsuit has been to defend against the SCO Group's unfounded claims vigorously in court. Our belief is that the best way to deal with the SCO Group campaign is where it can truly be resolved – in court.”

Bob Samson – IBM



Open Source in the public sector

■ European Commission

- The IDA Open Source Observatory
europa.eu.int/idabc/en/chapter/452



■ German Federal Ministry of the Interior

- Migration Guide
www.kbst.bund.de/Anlage303807/pdf_datei.pdf



■ Denmark Board of Technology

- Open-source software in e-government
www.tekno.dk/pdf/projekter/p03_opensource_paper_english.pdf

■ Defense R&D Canada

- Free and Open Source Software
cradpdf.drdc.gc.ca/PDFS/unc35/p522804.pdf



■ Commonwealth of Massachusetts

- Click on “Open Initiatives”
www.mass.gov/?pageID=itdhomepage&L=1&L0=Home&sid=Aitd





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**



Open Computing @ IBM



Linux and Open Computing @ IBM

ibm.com/linux





Linux @ IBM Investments

- **Systems**
 - xSeries **1998**
 - zSeries **1999**
 - Cluster and POWER **2001**
 - BladeCenter **2002**
 - OpenPower / BlueGene **2004**
- **Software**
 - DB2 **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**

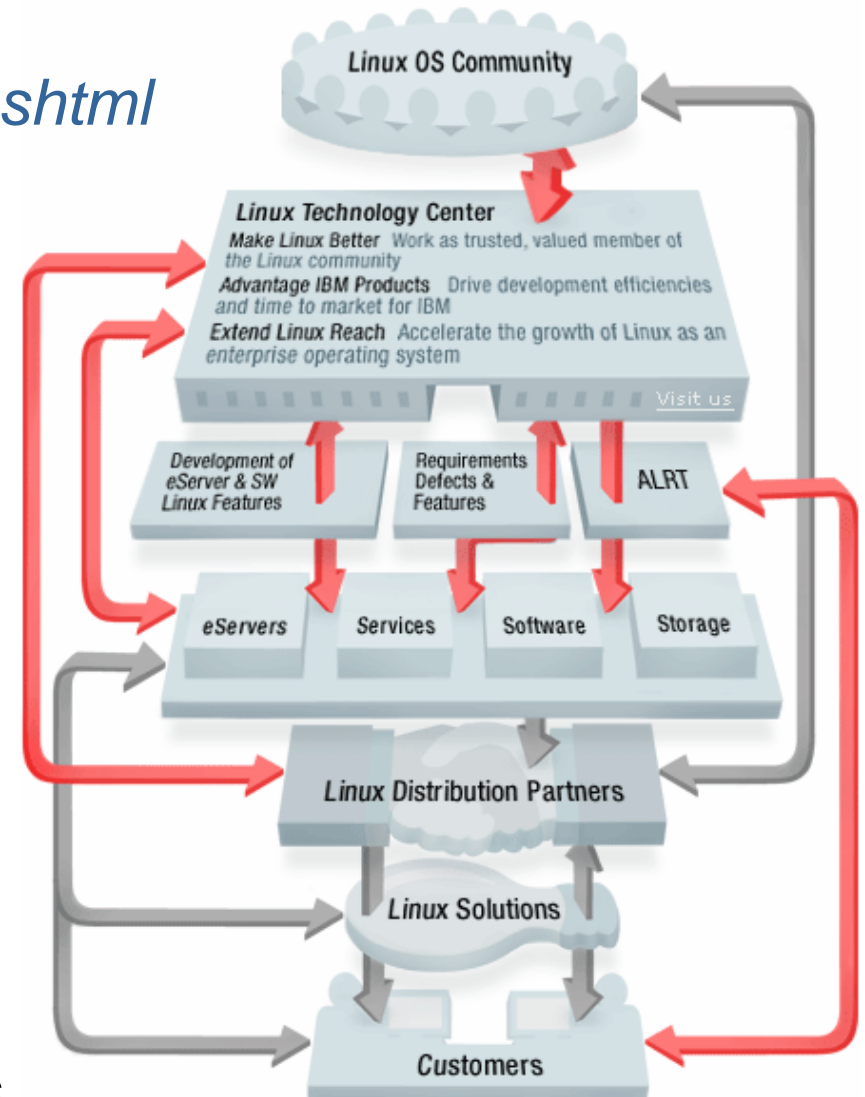




Linux Technology Center

www-1.ibm.com/linux/ltc/mission.shtml

- **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/

- Common Criteria CAPP/EAL4+ on 23 Feb 2005

■ Red Hat

- Red Hat Enterprise Linux

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

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

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/linux**
 - Supports 320,000+ employees worldwide
- **IBM's special events infrastructure – Wimbledon, the Ryder Cup, the US Open**
 - Linux clusters in Raleigh, Boulder, and St. Louis.
- **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

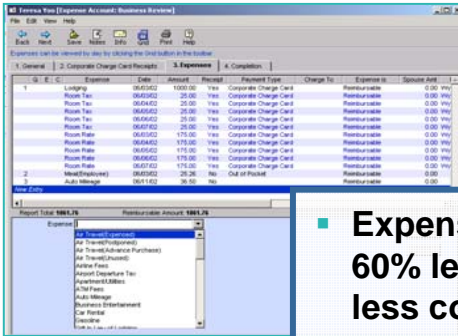
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Intranet – “On Demand Workplace” at IBM

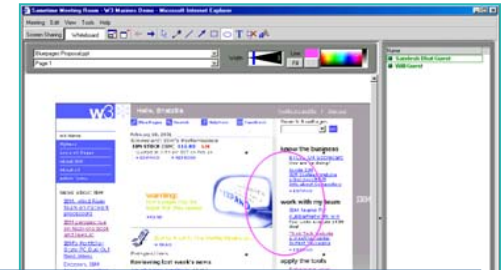
Powered by 



Expense reports take 60% less time, 80% less cost



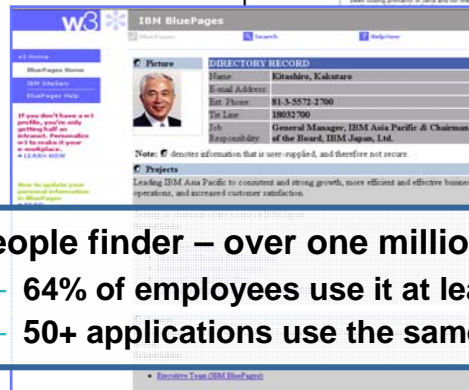
Consolidating news sources saved in excess of \$2 million



E-Meetings and instant messaging saves IBM over \$4million /month



Worldjams, jukeboxes, personalized news, discussion forums

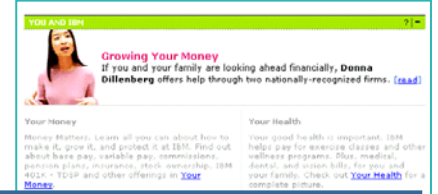


People finder – over one million hits a day
– 64% of employees use it at least once a week
– 50+ applications use the same directory



w3 search engines run on Linux on xSeries

IBM realized over \$400 million in cost avoidance in 2002 with over 40% of classes moved online



HR portal
– 90% satisfaction rate
– Over 90% employees registered health benefits here last year, saving IBM over \$1 million

IBM forums run on Linux on zSeries



IBM Linux portal

ibm.com/linux

Powered by

United States [change] | [Terms of use](#)

[Home](#) | [Products](#) | [Services & solutions](#) | [Support & downloads](#) | [My account](#)

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

Linux at IBM

GET MOVING

Move from Solaris to Linux quickly. Our Redbook will show you how.

→ [Learn more](#)



We're here to help

Ask the experts

→ [Get expert advice on Linux solutions](#)

Linux Viewpoint

Irving Wladawsky-Berger reflects on 'IBM's Linux Initiative' in a recent blog entry

→ [Get the whole story](#)

Announcement

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Updated 14 Feb 2006

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Put the power of X into Linux by installing an X server, setting up an X, GNOME, or KDE display manager, and creating a window manager environment. [More >](#)

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Reusable and object-oriented programming with R: A statistical goldmine, yes, but a key strength of the R language is its generic functions and object orientation, making code reuse natural and powerful. (Articles)

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Tivoli software

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Sources

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WebSphere software

Version - Release

Hardware

Kernel/Distribution

Sources

WebSphere Application Server

6.0.2

zSeries

Red Hat Enterprise Linux 3 Update 2,3,4
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SUSE Linux Enterprise Server 8 SP3, SP4
SUSE Linux Enterprise Server 9
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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
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Available December 2, 2005

Software Announcement 205-312 November 29, 2005

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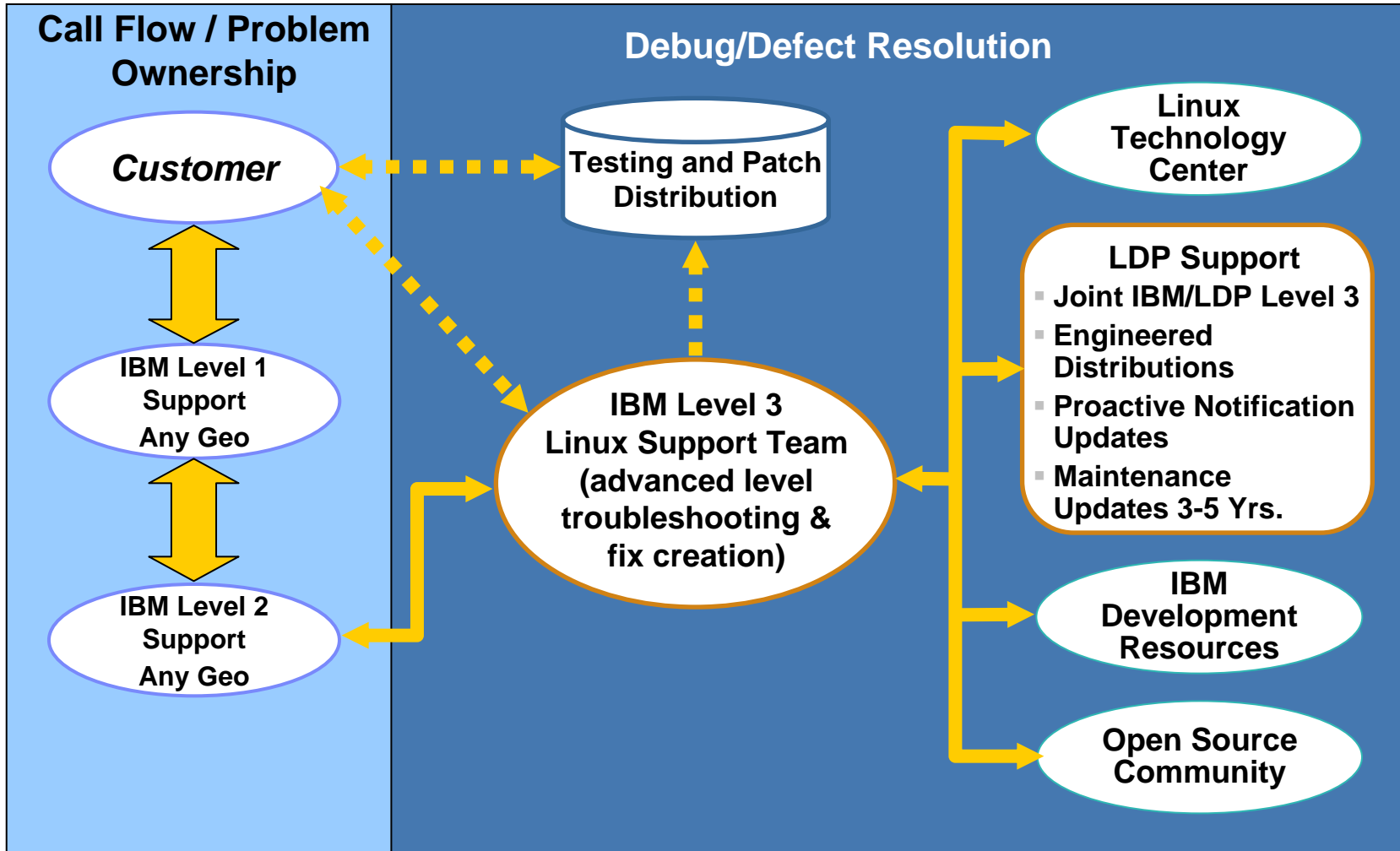
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- **Essential support for day to day activities**
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Course title	Delivery type	Course code
Advanced Solutions for Linux on zSeries	Classroom	ZL150
DB2 Universal Database Administration Workshop for Linux	Classroom	CF201
Linux and Bourne Again Shell Programming	Classroom	QLX23
Linux and Perl Programming	Classroom	QLX22
Linux as a Firewall	Classroom	QLX24
Linux Basics - A zSeries Perspective	Classroom	HLX13
Linux Basics and Installation	Classroom	QLX02
Linux e-business with Apache	Classroom	QLX25
Linux Implementation for zSeries	Classroom	ZL100

Course title	Delivery type	Course code
Linux Integration with Windows (Samba)	Classroom	QLX86
Linux Internals Overview	Classroom	QLX95
Linux Jumpstart for UNIX System Administrators	Classroom	QLX15
Linux Kernel Debugging	Classroom	QLX92
Linux LPI Level 1 Certification Preparation Workshop	Classroom	QLX37
Linux on IBM eServer iSeries i5	Classroom	AS560
Linux on p5 Performance Management	Classroom	QTL40
Linux System Administration	Classroom	QLX03
Linux TCP/IP Administration	Classroom	QLX07



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Perl Programming for Linux Open Systems and the World Wide Web	Classroom	QLX28
Supporting Enterprise Linux on p5	Classroom	QTL15
Supporting Enterprise Linux on p5 eServers	Classroom	QPL15
Supporting Linux on POWER	Classroom	QTL10
Supporting Linux on POWER Servers	Classroom	QPL10
Writing Linux Device Drivers	Classroom	QLX90
z/VM and Linux Connectivity and Management	Classroom	ZV100
Linux Basics	Shipped Media	QL3S0
Linux Basics and Installation	Shipped Media	QL2S0

Course title	Delivery type	Course code
Linux Basics: A zSeries Perspective	Shipped Media	H13S0
Linux e-business with Apache	Shipped Media	QL5S0
Linux Implementation for zSeries	Shipped Media	Z00S0
Linux Integration with Windows (Samba)	Shipped Media	QL6S0
Linux Introduction: What is it? Who's using it? And why?	Shipped Media	QL0S1
Linux Overview for Managers	Shipped Media	X57S0
Linux System Administration	Shipped Media	QL4S1
Linux TCP/IP Administration	Shipped Media	QL7S0
VM Basics for Linux ILS	Shipped Media	Z50S0



Open Computing @ IBM



Summary





Three pillars of a successful Linux solution

■ On Demand Business

- Responsive
- Variable
- Focused
- Resilient

■ IBM

- End-to-end
- Hardware, software and services
- Value-net of partners



■ Linux

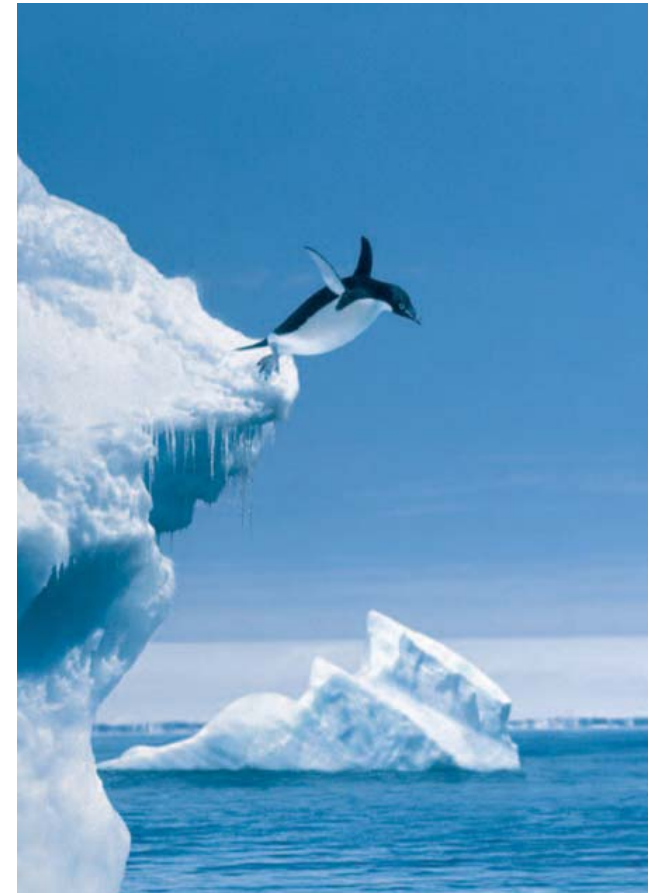
- Freedom of choice
- Cost effective
- Secure
- Innovative





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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