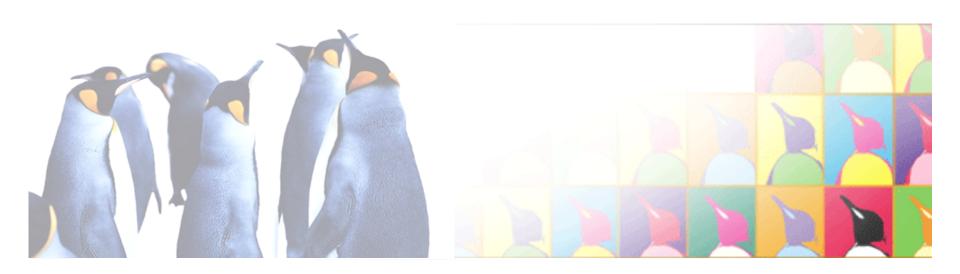


IBM embraces Open Source in its products



Bill Reeder breeder@us.ibm.com



Open Source is part of Open Computing

Open source

Promoting innovation by leveraging community development

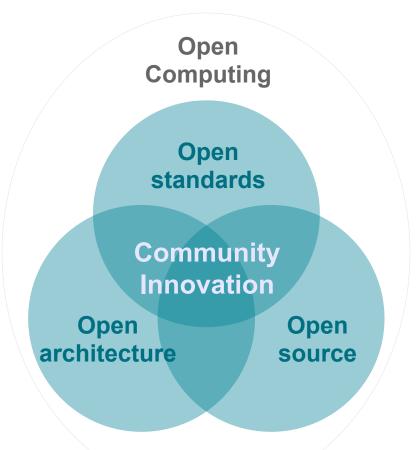
Accelerating open standards adoption

Open standards

Improving information sharing by simplifying integration of disparate technologies
Promoting interoperability by using open published specifications

Open architecture

Increasing collaboration by easily extending business processes – e.g. SOA Innovating on top of common hardware specifications



Customers use both Open Source and Private Source

Private Source



Creating software that is private source and innovative - intended to differentiate the vendor and deliver value to the client.

Creating, maintaining, and enhancing software through open, <u>collaborative</u> communities driving evolution of <u>standards</u> and innovation.

The Industry is Seeking a New Equilibrium



Customers see benefits and challenges in open source

Potential Customer Benefits

- Low acquisition cost
- Frictionless access to software
 - Light weight and easy to use
 - Rapid prototyping
- Choice and Flexibility
 - Hardware portability and software flexibility
 - Modularity and extensibility
 - Range of support options
- Quality of software
 - Peer review of source code
 - Broad community testing
 - Fast cycle time of releases and bug fixes
- Community innovation
 - Opportunity for interaction with developers
 - Open user community support and features
 - Harvest commoditized components and use freed-up resources for innovation

Potential Customer Challenges

- Support
 - Direct product contacts
 - Ensured support in emergency
- Integration
 - with other open source software
 - with commercial software
- Skills
 - Qualified Specialists for certain products/areas
- Availability of applications
 - Timeline for production ready drops
- Maturity
 - Enterprise requirements gap (Functionality / Scalability)
 - Community / Industry support
 - Sustainability of business model
- Too many choices
 - Consultancy for optimal solution



IBM and Hardware Open Communities



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Power.org & IBM POWER-based systems

Open Hardware Platforms





2006: Freescale Semiconductor joins the Power.org Board of Directors

- Innovate: Power Architecture Technology
 - Instruction set architecture that spans applications from consumer electronics to supercomputers
 - Enhanced platform for collaborative hardware innovation
- Contribute: Power.org
 - Develop, enable and promote Power
 Architecture technology as preferred open standard hardware development platform
 - Qualification programs that optimize interoperability and accelerate innovation
- Enhance: IBM POWER microprocessors plus Accelerators
 - PowerPC, POWER4, POWER5, POWER5+, CELL
- Growth: multi-platform advantage
 - IBM System p, IBM System i, Intellistation, Blue Gene

- Power Architecture Advisory Council Release Newly Merged ISA
 - Power ISA™ 2.03 offering more capabilities to enhance processing capabilities and ensure more consistency and scalability across implementations
- Power Technical Working Group Releases First Open Platform Specification
 - Power Architecture Platform Reference (PAPR)
 Enables rapid development of standard Power
 Architecture platforms based on Linux®
 operating system
- Formed Power Brand Advisory Council and Released Independent Community-Driven Power Brand Platform
 - Introduces a community-driven brand platform to help developers and ecosystem members build awareness and preference for Power Architecture offerings and solutions.





- Hot topics covered in seminars
- Heterogeneous processors
- Hybrid Systems
- Big Data

IBM Webinar on "BIG DATA" - 24 May 2012

"Heterogeneous Processors, Hybrid Systems and Big Data" May 24, 2012 10:00 AM Central, 8:00 AM Pacific Time

* CLICK HERE FOR RESERVATION *

Previous Feature

Next Feature >>>

English Webinar: Smart Net, Apr 10 Power.org at Design West Mar 26-29 Webinar: AtiVec Unleashed, Mar. 15 Software Design Considerations for Multicore, Feb 23 Power Architecture Solutions for Smart Energy Market, Feb 7 Power Architecture Market Share Smarter Planet with POWER7 Asia Power Architecture Conference, 1 Sep., Shenzhen Visit Public Downloads for ePAPR V1.1 & ABI Spec

In the News

06 Feb 2012

06 Feb 2012

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Latest Press Releases:

Freescale Targets Fast-Growing Data Center Market with Latest QorIQ AMP Series Embedded Multicore ... 08 Feb 2012

Freescale Targets Fast-Growing Data Center Market with Latest OorIO AMP Series Embedded Multicore ...

ip.access Selects Freescale's OorIO Oonverge Small Cell SoC Technology for Its First LTE Picocell ...

Community at Work

Power ISA v2.06 Now Available

Educational Presentations:

- Asia Power Architecture Conference, Shenzhen 2011
- >> Power.org 2011 Webinars
- >> Power.org Chinese Webinar
- DesignCon 2010
- ASIA PAC 2009 Beijing, Tokyo, Hsinchu
- Power.org at DesignCon 2009
- PAC 2008 Hsinchu, Tokyo, Beijing, Munich, Paris

WhitePapers:

>> Whitepaper on Stride N Prefetch feature of ISA 2.06

Get Involved

Help shape the future of Power Architecture technology.

>> Join Power.org

Benefits of membership

Featured Member: Wind River

WIND RIVER

Wind River is the global leader in Device Software Optimization (DSO). Wind River enables companies to develop, run and manage device software faster, better, at lower cost and ...

- More About Wind River
- >> Visit the Power Solutions Portal
- >> Power.org's corporate member roster



Globus Alliance and IBM Grid Offerings

Open Grid Offerings

- Innovate: Grid computing
 - Virtualization of resources across heterogeneous and dispersed environments
 - Seamless access to vast IT capabilities through single systems image
- Contribute: Open Grid Services Architecture (OGSA)
 - Open set of standards and protocols
 - Being developed by Open Grid Forum (formerly GGF)
 - -Based on web services standards
- Enhance: Globus Toolkit
 - -Globus toolkit open source "grid middleware" software toolkit (focus on infrastructure for security, batch job management, resource discovery etc.)
 - Open source community developing fundamental grid infrastructure (many projects, prototypes, research etc.)
 - Partnership with Univa for Globus Toolkit on IBM platforms (Globus toolkit on X, Z and P – Linux)
- Growth: IBM Grid Offerings and Services
 - Products & services designed to develop grid solutions (Grid & Grow, Analytic Infrastructure, Actuarial Grid, Grid Medical Archive etc.)
 - -DB2 and WebSphere Grid offerings
 - Grid consulting and support servers



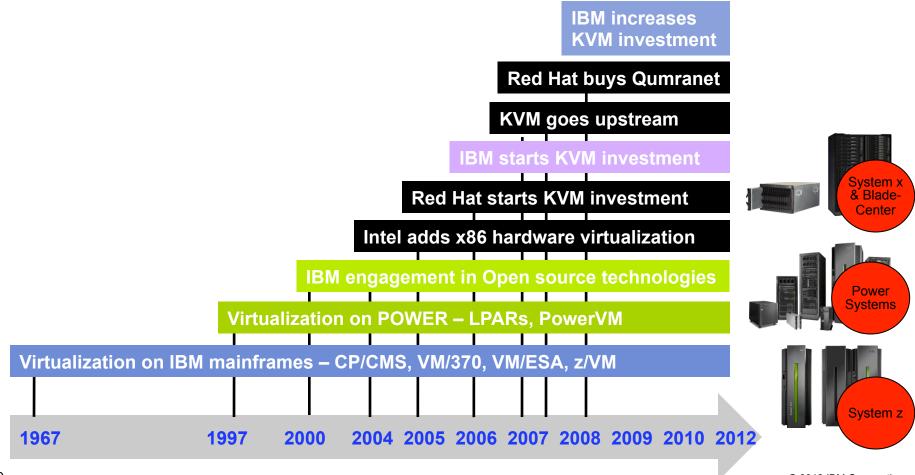






A Brief History of IBM and Virtualization

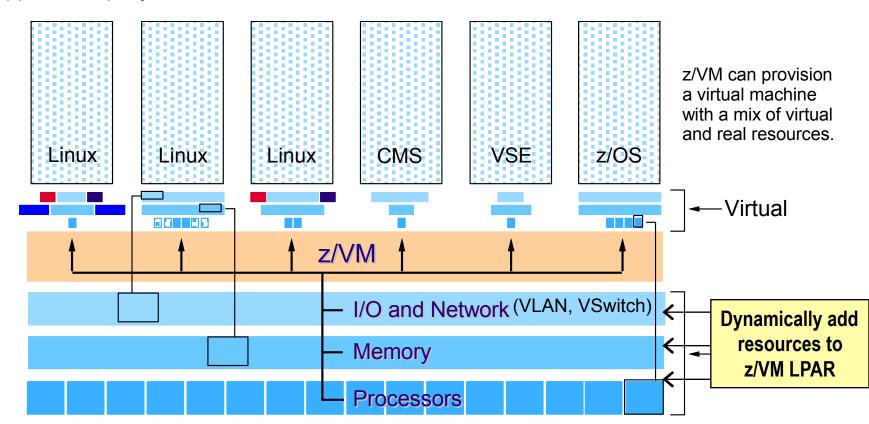
IBM has 44 years of experience in virtualizing our servers. Virtualization was originally developed to make better use of critical hardware. Hardware support for virtualization has been critical to its adoption.





Virtualization in System z and zEnterprise z/VM Technology: Share everything

- z/VM simulates the existence of a dedicated real machine, including processor functions, storage, and input/output resources.
- z/VM includes network Virtualization, high availability and integrated security between VMs
- It supports uniquely, over commitment on all levels.



Linux on z/VM is the industry's most advanced <u>virtual</u> solution



KVM Community









KVM enjoys a vibrant and growing community





Many organizations are switching from Xen/VMware to KVM in their clouds

First KVM release

IBM strategic investment











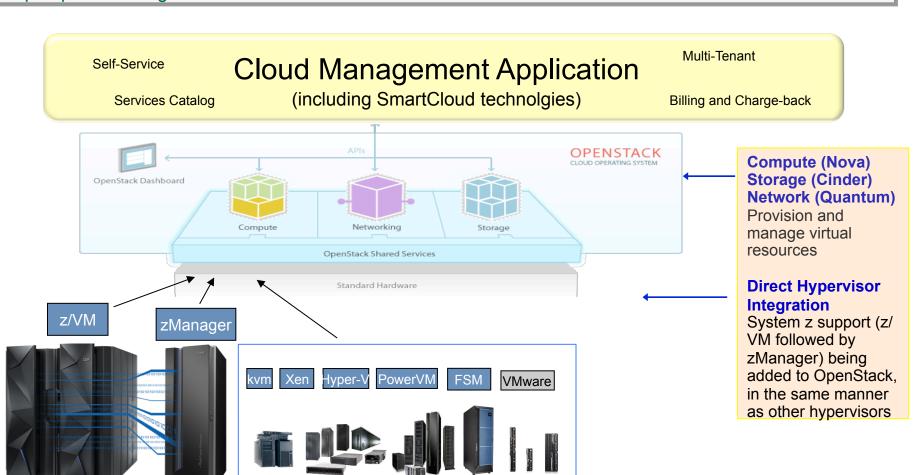




OpenStack Strategy



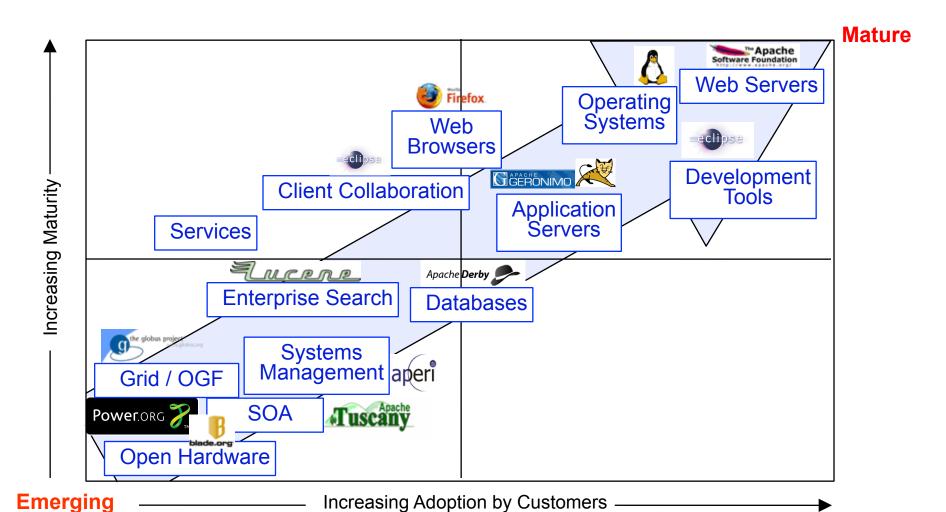
OpenStack is a global collaboration of developers and cloud computing technologists that seek to produce a **ubiquitous Infrastructure as a Service (laaS) open source cloud computing platform** for public and private clouds. OpenStack was founded by Rackspace Hosting and NASA jointly in July 2010.



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Open Source Maturity and Customer Adoption



Source: IBM, February 2007

IBM Open Standards Accomplishments



1998-2001

Java, XML

- Co-led XML4J, W3C DOM, XSL
 Led Apache XML
- projects Xalan, Xerces, SOAP
- Founder XML.org
- Co-author WSDL, SOAP 1.1
- Cofounder UDDI.org
 - Author UDDI specification
- Founder Eclipse.org
- Co-author W3C XML Schema
- Chair OASIS WS-Remote Portlets TCs
- Participation in Mozilla
- Led submission of WSDL to W3C
- Led RTSJ –JSR 1

2002-2003

WS-I, OMA and WS-Security

- Founder WS-I.orgFounder OMA
- Co-author BPEL, WS-TX, WS-TC
- Co-author WS-Security
 Co-chair UDDI TC
- Linux contributions to scalability
- Co-Chair OASIS WS-Security 1.0
- Co-chair OASIS WS-DM TC
- Submitted WS-DM to OASIS
- Submitted BPEL to OASIS
- Submitted CBE to OASIS
- RTSJ 1.0 accepted by JCP

2004-2005

Web Services

- Chair WS-I Basic Profile 1.1
- Co-chair OASIS WS-Notification TC
- Co-chair WS-Resource Framework TC
- OASIS ODF V1.0 Approved
- Chair OASIS DITA
- Submitted WS-Addressing to W3C
- Contributed UML2 to Eclipse
- IBM named chair IETF
- IBM commitment to RF in OASIS
- Lead OASIS standardization of WS-
- DM and DITA
- Pledged 500 patents to Open Source

2006

Web Services Reliability

- WS-I initiated two
 Profiles based on IBM
 RAMP Profile
- OASIS ODF cmte formed
- Co-chair of WS-Policy WG
- DITA XML.org formed
- WS-Security 1.1
 becomes OASIS
 Standard
- Co-Author WS-Policy, WS-Eventing
- OASIS ODF wins ISO approval (ISO 26300)
- WS-Notification 1.2 approved as OASIS standard
- OpenAjax launched

2007

SOA / Open Standards

- WS* stds approved: WS-BPEL, WS-Policy, WS-Trust, WS-Secure Conversation, WS-Transactions, WS-Reliable Messaging, WS-SecurityPolicy
- SCA/SDO OASIS TC's
- BPEL4People submitted to OASIS, chair
- Service Modeling Language submitted to W3C, co-chair
- W3C XQuery1.0, XSLT 2.0
 and XPath2.0 become W3C
 Recommendations
- Co-Chair ODF TC; of SOA work group at TOG
- WS-ResourceCatalogue submitted to DMTF
 - SOA Maturity Model submitted to TOG
- IBM non-assert pledge
- Joined Khronos; OpenGL, OpenCL, COLLADA WGs
- WS Federation OASIS TC formed, co-chair

2008-2012

Business process / Web 2.0

- EBPMN 2.0 submission to OMG
 - WS-I Profiles attain ISO Status
- Web Services Test Forum
 (WSTF)
 - W3C HTML5 WG chair
 Joined CESI
 - WS-Remote Portlet 2
 approved
 - W3C Service Modeling Language 1.1
 - OASIS IMI and ORMS
 TC's formed, co-chairs
 Content Mgmnt
- Interoperability Services submitted to OASIS
 Initiated OASIS ODF TC
- for Interoperability,
 Conformance,
 ODF toolkit union
 - EPTS launched
- OpenAjax WGs for Secure Mashups,

Pledged hundreds of patents to the Open Source community

Involved in hardware, software, services and architectural standards

Collaboration with major standardization organizations



IBM focus: Linux on all IBM Systems

Linux on System z

- Applications close to the data
- Applications need "Mainframe" criteria
- Vertical and horizontal scaling (hundreds of virtual servers at the same time)
- Great workload-management
- excellent virtualization

Linux on System x

- Low-priced entry
- Simultaneous operation
 of Windows and Linux via virtualization
- High reliability and simple manageability by Enterprise X-Architektur
- Very good price / performance ratio via Clustering
- Big performance density by BladeCenter



Linux on System p

- Applications demanding high performance
- Consolidation of multiple servers / applications via LPARs
- Native Linux or AIX





Linux on CBE

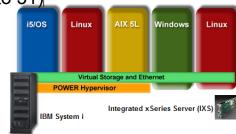
- Applications demanding highest performance
- special purpose





Linux everywhere Linux on System i

- If an integrated solution is required (hardware / software / network)
- Simple administration and operation
- If midrange system is required
- Consolidation of applications via LPARs (up to 31)
- High degree of security

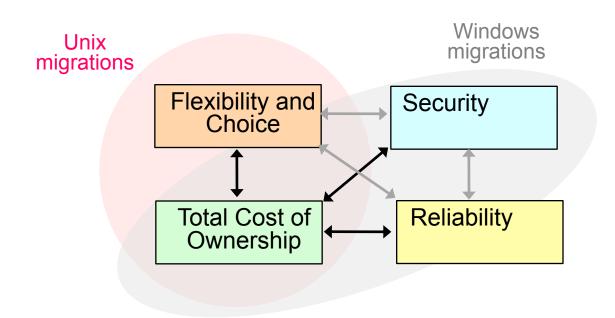






Why Linux is Important to Customers

- Linux is flexible
- Linux is secure
- Linux is reliable



- Linux can reduce Total Cost of Ownership
- Linux is an excellent path to flexible IT

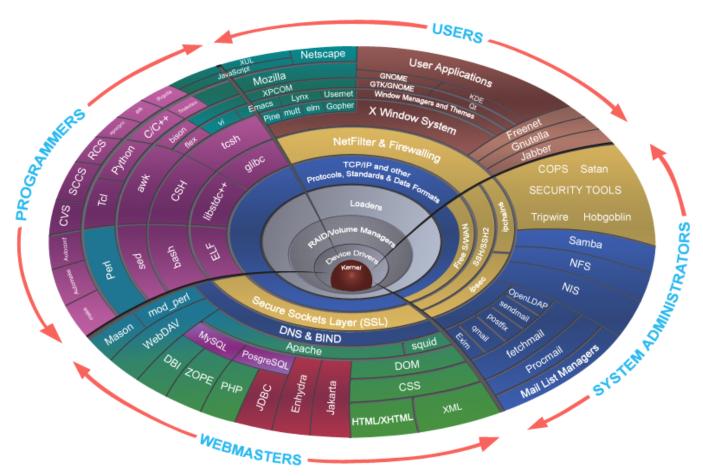


Facts on Linux

- Last year, 75% of the Linux code was developed by programmers working for corporations.
- \$7.37 billion: projected cost to produce the 283 million lines of code which are contained in Linux Distribution in a commercial environment.
- IDC forecasts show that Linux server revenue will grow by 85.5% between 2008 and 2012 in the non-x86 server space equalling a four year compound annual growth rate of 16.7%.
- Linux is Linux, but ...features, properties and quality differ dependent on your platform

What is a Linux Distribution?

Linux is packaged in a format known as a Linux distribution, e.g. for desktop and server or other use.

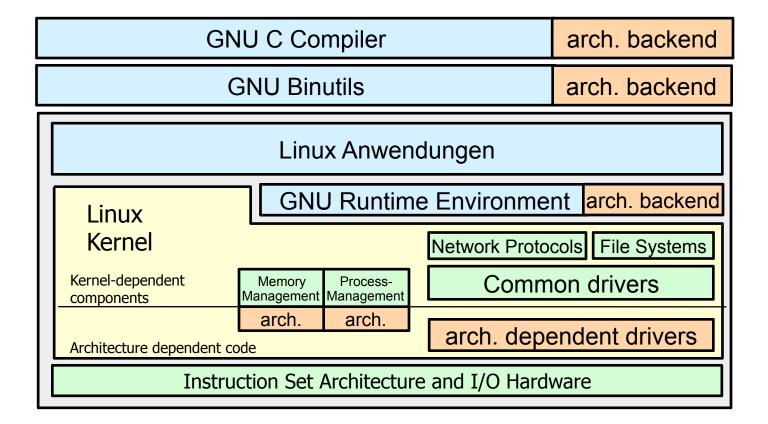




What is Linux? System Overview

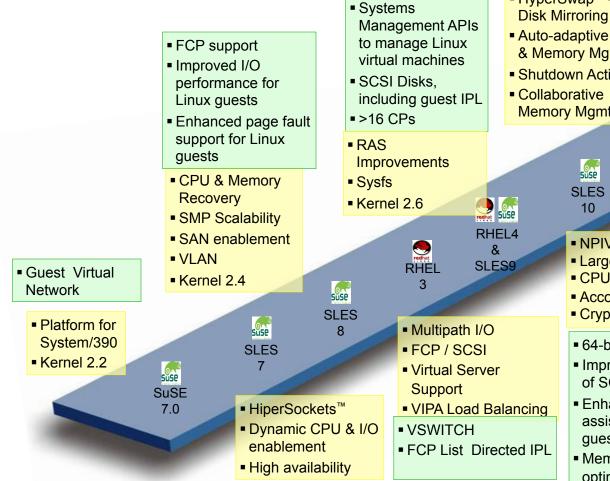
Linux is Unix-style operating system that uses the Linux kernel and a set of GNU tools and applications (like the GNU C compiler)

arch. ... - Hardware architecture specific code



19

Unique Linux Extensions to Leverage Powerful IBM System z Technology Advantages



Linux guests ■ HyperSwap[™] -

RHEL

- Auto-adaptive CPU & Memory Mgmt.
- Shutdown Actions
- Collaborative Memory Mgmt.

- HMC management of
- IBM Director for Systems Mgmt.



- suse **SLES** 10
- NPIV
- Large Page support
- CPU Node Affinity
- Accounting
- Crypto Dynamic Add
- 64-bit Exploitation
- Improved performance of SCSI disk I/O
- Enhanced performance assists for z/VM® quests
- Memory management optimization (CMMA and VMRM-CMM)

- Dynamic memory attach / detach
- Decimal Floating Point
- Hyper PAV enablemt.
- Kernel Message Cat.
- Vertical CPU Mgmt.
- Improved scalability and constraint relief
- Support for z/VM-mode partitions
- Dynamic virtual processor management
- Dump Linux guests to SCSI disks
- Dynamic storage reconfiguration
- Support for Extended Address Volumes

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Linux Strategic Alliance Partners

Red Hat and Novell SUSE provide the Linux platform support for IBM Hardware, Software & Services

SUSE SUSE.

- IBM Global Strategic Alliance Partner & PartnerWorld Premier Partner
- SUSE closely aligned with IBM's Strategic Linux Growth Strategies
- SUSE Enterprise Linux supports all major IBM HW and SW platforms
- SUSE Linux was first to support IBM System z platform. Currently most prevalent Linux OS on IBM mainframes Worldwide.
- SUSE Linux is the only Global Strategic Linux Provider to include WAS Community Edition.

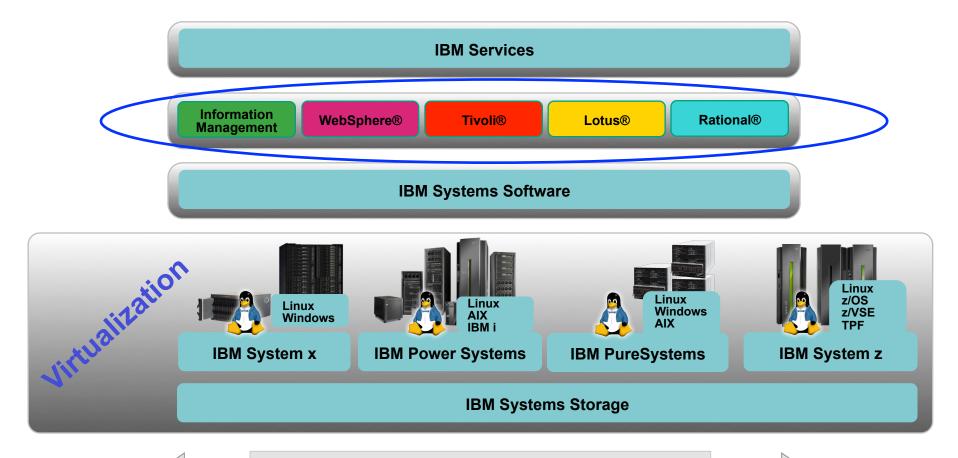
Red Hat Redhat.

- Red Hat is a Strategic Alliance Partner for IBM
- Red Hat has sales resources dedicated to IBM in all geographies and they welcome the opportunity to partner with IBM
- Enterprise Linux supports all major IBM HW and SW platforms
- IBM supports Red Hat Enterprise Linux on all major IBM hardware and software platforms

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IBM Software focus: Open Standards and Management



Linux provides common benefits across all IBM platforms

Supported platforms

- x86 to mainframes
- Broadest range of supported virtualization environments
- Can optimize by workload

Scalability

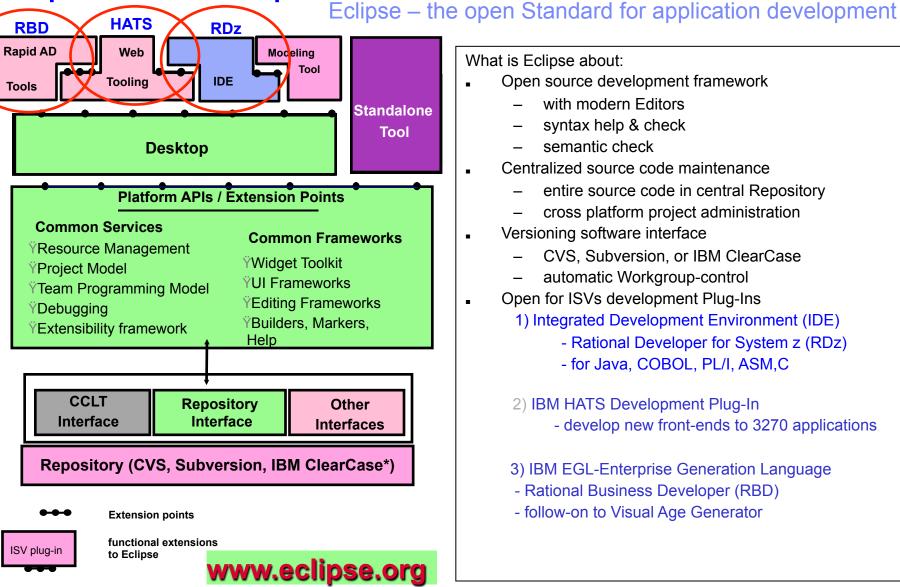
- Ongoing innovation in both scale out and scale up
- Platform support provides flexibility in consolidation

Security

- Policy-based security
- Common criteria certification
- Very rapid time to fix if vulnerabilities are discovered



Eclipse based Development Environments



What is Eclipse about:

- Open source development framework
 - with modern Editors
 - syntax help & check
 - semantic check
- Centralized source code maintenance
 - entire source code in central Repository
 - cross platform project administration
- Versioning software interface
 - CVS, Subversion, or IBM ClearCase
 - automatic Workgroup-control
- Open for ISVs development Plug-Ins
 - 1) Integrated Development Environment (IDE)
 - Rational Developer for System z (RDz)
 - for Java, COBOL, PL/I, ASM,C
 - 2) IBM HATS Development Plug-In
 - develop new front-ends to 3270 applications
 - 3) IBM EGL-Enterprise Generation Language
 - Rational Business Developer (RBD)
 - follow-on to Visual Age Generator



Apache Community and Web Application Server Projects

Web Application Servers

- Apache.org
 - Open Source not-for-profit Foundation
 - Home of the market-leading Apache HTTP server
 - Now multiple Apache projects, characterized by:
 - Collaborative, consensus based development process
 - Open and pragmatic software license
 - Desire to create high quality software that leads the way in its field.
- Apache Tomcat
 - Servlet container for Java Servlets and JavaServer Pages
 - Widespread adoption
- Apache Geronimo
 - Server runtime for J2EE
 - Rapid increase in adoption
- Apache Tuscany
 - Implementation of SOA programming model
 - -SCA and SDO
 - Apache Synapse ESB for SOA











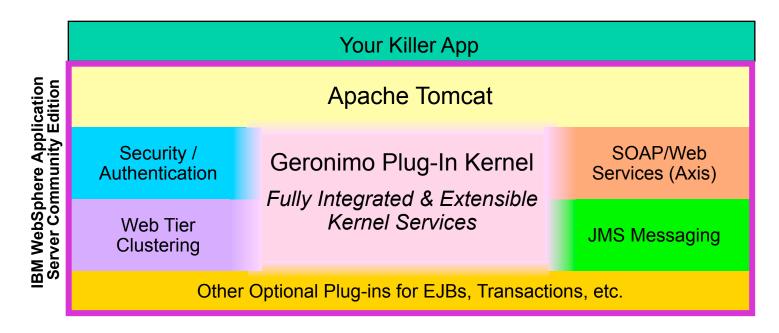
IBM WAS Community Edition

Web Application Servers

WebSphere software

- WebSphere Application Server Community Edition
 - Lightweight J2EE application server built on Apache Geronimo technology
 - Integrates Apache Tomcat
 - Includes Apache Derby
 - No up-front costs
 - World-class support (optional, fee-based)
 - Winner Open Source Tool of the year, Developer.com





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Web Sphere Application Server Feature Pack for Web 2.0 and Mobile

Features and benefits

System requirements

Trials and Downloads

Support

IBM Software products

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Software > WebSphere >

WebSphere Application Server Feature Pack for Web 2.0 and Mobile



Deliver WebSphere-based applications to mobile users → Watch short movie.



WebSphere Application Server

Feature Pack for Web 2.0 and Mobile

→ Download feature pack

Overview

IBM® WebSphere® Application Server Feature Pack for Web 2.0 and Mobile extends the reach of enterprise applications, from the desktop to mobile devices.

WebSphere Application Server Feature Pack V1.1 for Web 2.0 and Mobile



The WebSphere Application Server Web 2.0 and Mobile Feature Pack uses standards-based technologies to help developers create more connected, interactive desktop and mobile applications.

- Standards-based technologies, including Ajax, REST Web services, and Dojo, are used to simplify and speed the addition of rich desktop and mobile user interfaces to WebSphere Application Server applications.
- Enterprise infrastructure can be leveraged, with straightforward connectivity between existing server-side components and new mobile clients.
- A large collection of core services are also included, including new skins for a variety of mobile platforms, and innovative user interface widgets to improve the user experience
- Feature Packs are optionally installable, no-charge product extensions that offer targeted, incremental new features and capabilities.
- The Feature Pack for Web 2.0 and Mobile is available for IBM WebSphere Application Server V6.1, V7.0, and V8.0, WebSphere Application Server Community Edition V2.1 and V3.0 and WebSphere Application Server Hypervisor Edition
- → View features and benefits









DB2 Express-C

Information Management

Information Management software



DB2 Express-C

Production ready, Innovative Technology and Developer Community

Production Ready

- Free to develop, deploy and redistribute*
- No limits just data
 - No database size limit
 - No limit on number of instances per server
 - No user limit
 - * Free registration required

Innovative Technology

- Leading edge, highly resilient and proven technology.
- First hybrid relational and XML data server
- Same superior technology and programming support as DB2 Express Edition in a smaller package

Developer Community

- Application development made easy
- Dedicated team for DB2 community participation
- Comprehensive forum support available
- Skills and applications apply to all DB2 editions



Eclipse Community and Projects -Application Development



- Eclipse.org
 - -Open Source Community
 - -Home of the market-leading Eclipse Java IDE
 - -Started with IBM code contribution in 2001
 - Now multiple Eclipse projects, focused on building an open integration platform comprised of extensible frameworks, tools and runtimes for building, deploying and managing software across the lifecycle
 - -Eclipse also hosts modelling, test, and web tools projects
- Eclipse Platform
 - Universal integration platform of extensible frameworks and exemplary tools
 - -Integrated Development Environment
 - Eclipse base language IDEs for most of the popular languages, including
 - Java
 - C/C++
 - PHP





IBM Rational Elite Support for Eclipse



Rational. software

Support-Only Offerings	IBM Elite Support
Electronic Problem Submission	Yes
Voice Problem Submission	Yes
Number of technical support incidents	Unlimited
Basic configuration assistance	Yes
General usage questions	Yes
Compatibility and interoperability questions	Yes
Language in which support is provided *	English + Japanese
Support Hours **	8am -5pm Mon-Fri (24x7x365 for sev1)
Response target ***	2 business hours
Technical Contacts ****	# of subscriptions
Availability	Worldwide
Defect Submissions Tracked Online	Yes
Defect Patch Fixes Available Online	Yes
Critical Defect Workaround Development	Yes
Defect Fixes Submitted to Applicable Community Projects	Yes

- ✓ Same world-class support customers are used to for all other Rational tools!
- ✓ Support for the Eclipse Platform, including the Java Development Toolkit (JDT) and its Plug-in Development Environment (PDE)
 - ➤ Test and Performance Tools Platform (TPTP)
 - Graphical Editing Framework (GEF)
 - Eclipse Modeling Framework (EMF)
- √ Full IBM support using the same tools & processes used to support other IBM products
- ✓ Benefits:
 - Existing IBM customers expect this level of support
 - ➤ Business requires 24/7 support for severity 1 issues
 - Easy to transfer cases to other IBM product groups
 - Easy to transition to support of Rational offerings that install into Eclipse base
 - Low cost & risk to implement because it uses existing processes and systems



Lotus Expeditor



Composite Desktop built on Eclipse RCP

- Platform for Client Computing
 - Compelling / Responsive User Interface
 - Local U/I logic does not need web connection
 - Aggregates Information from existing applications
 - Web, Java, Rich Client, Forms and Portal*
 - An open alternative to Microsoft .NET



Lotus. software

- Semi-connected clients (Mobile Apps / Portal / Forms / WebSphere)
 - Work productively while offline
 - Use where bandwidth unreliable / expensive
- Server Managed Client Software
 - Centrally deploy and manage software on remote client systems
- Preserves programming model
 - Familiar APIs enable developers to reuse skills / extend existing applications
 - Toolkit plugs into Eclipse 3.2 workbench

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Lotus Expeditor

Features and benefits

System requirements

Library

How to buy

Support

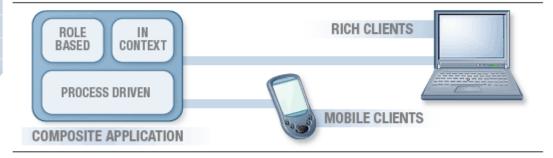
Related links

- developerWorks: Lotus Expeditor
- Lotus Expeditor Sales Kit on PartnerWorld
- · Lotus Application Development
- · Warranties and licenses

Software > Lotus >

Lotus Expeditor enables client integration

Desktop integration framework to accelerate customer care



Why IBM for client integration and transaction integration

The client integration framework provided by IBM® Lotus® Expeditor software assists developers in integrating a wide variety of client and server applications in composite applications. Client integration can be used to optimize the information that your employees need to accelerate your business processes. Lotus Expeditor software is used in production by bank tellers, call centers, government employees, insurance adjusters and in other customer care applications, worldwide. Use it to extend your IBM Lotus, IBM WebSphere®, Eclipse™ or legacy applications, such as Microsoft .NET applications. Lotus Expeditor software supports client integration on laptops, desktops, kiosks and mobile device clients. It also provides an integration hub for transactional messaging for satellite locations of an enterprise such as retail outlets or remote offices. Lotus Expeditor software provides the flexibility of service oriented architecture (SOA) and a standards-based programming model from the OSGi™ alliance and the Eclipse Foundation.

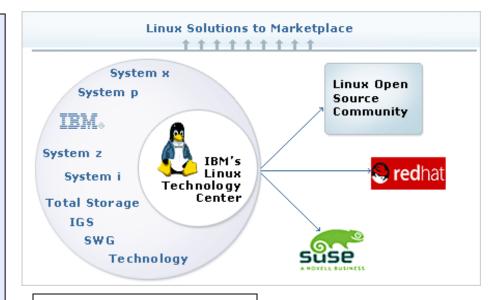


IBM Linux Technology Center, LTC

IBM Linux Technology Center (LTC) Development team for all server and software platforms and other key initiatives, such as:

- Real Time Linux
- Security: EAL certifications, Trusted Computing, SELinux, sHype
- Linux on POWER, Linux on Cell, Linux for System z and z/VM
- Virtualization: Xen/KVM, APV support
- Systems Management: kdump, SystemTap

Technical liaison to IBM's customers and Linux Distribution Partners



LTC:
Over 600 developers
40+ locations
100+ projects

Enable IBM
Products

Make Linux Expand Linux
Better Reach

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IBM Continues to Support the Open Source and Linux Partner Ecosystem



- Over 6,000 IBM Business Partners
- Leaders for Linux Program
 - Custom co-marketing campaigns
- PartnerWorld Industry Networks
- Solution Builders Express
- Value Networks
 - Creating repeatable solutions
- Chiphopper
 - Porting ISV Applications
- developerWorks Linux zone
 - Tutorials, Redbooks, best practices, etc.





You are welcome to participate on ISV Products and Solutions!

 IBM PartnerWorld -> Global Solutions Directory http://www-304.ibm.com/partnerworld/gsd/homepage.do
 http://www-304.ibm.com/partnerworld/gsd/search.do



- IBM PartnerWorld -> Business Partner Application Showcase http://www-304.ibm.com/partnerworld/gsd/showcase.do
- (W3) STG ISV Central http://w3.ibm.com/ibm/resource/isv.html
- Red Hat ISV Partner Program
 http://www.redhat.com/partners/isv/
 https://www.redhat.com/wapps/partnerlocator/web/home.html
- Novell SUSE Linux Enterprise Software Catalog http://www.novell.com/partner/isv/isvcatalog





Obrigado

Merci

Portuguese

French

Thank You!

English

Gracias

Spanish

Danke

German



Linux and IBM:

In-demand skills for an on demand world.

IBM.

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