IBM System p5

Linux On Power

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Product Manager Aix - Linux on Power
France et Pays francophones d'Afrique

ON DEMAND BUSINESS™

IBM System p5 : Committed to virtualization, openness and collaborative innovation

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Pourquoi sommes nous confiants dans l'avenir ?

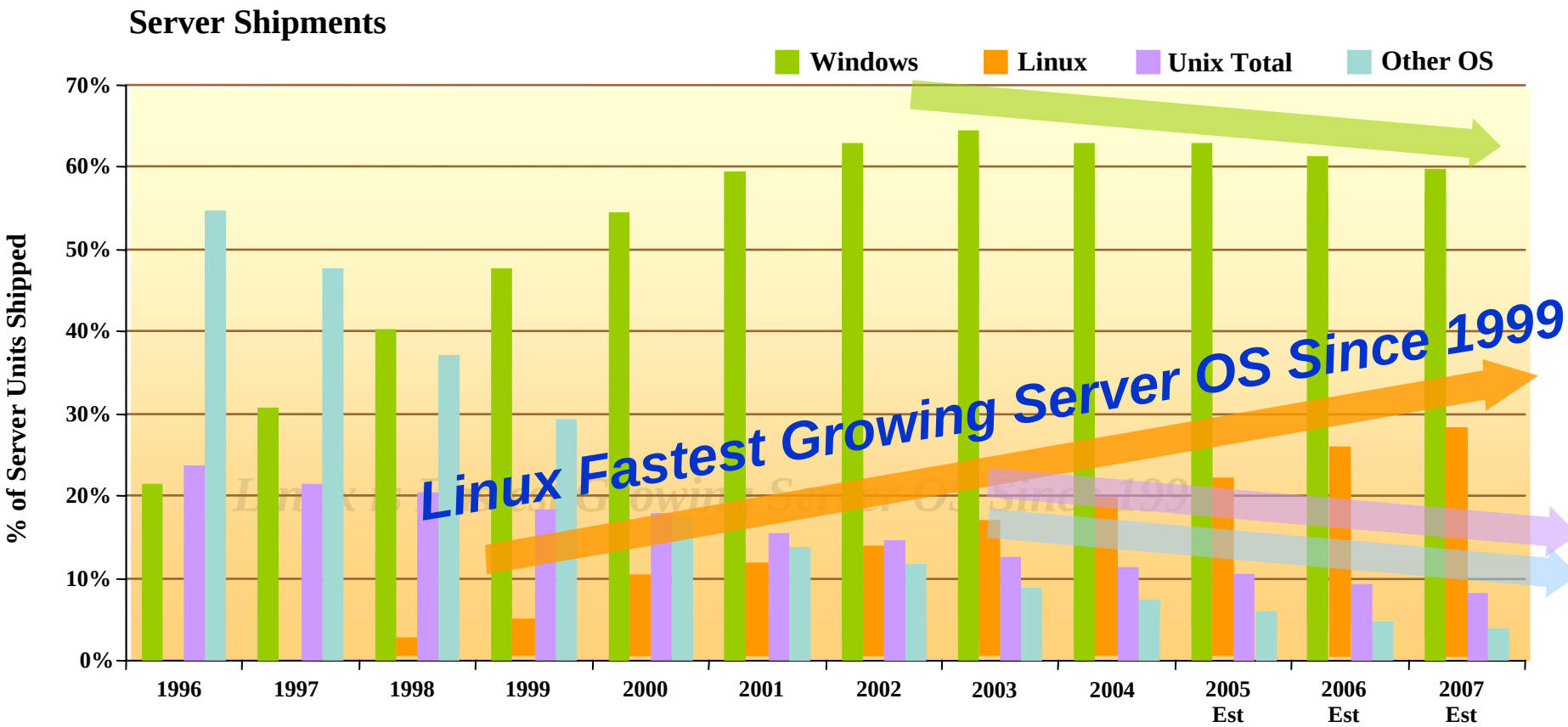
Marché Linux

Offre Linux on Power

Distributions Linux

Produits System p5

le marché des serveurs

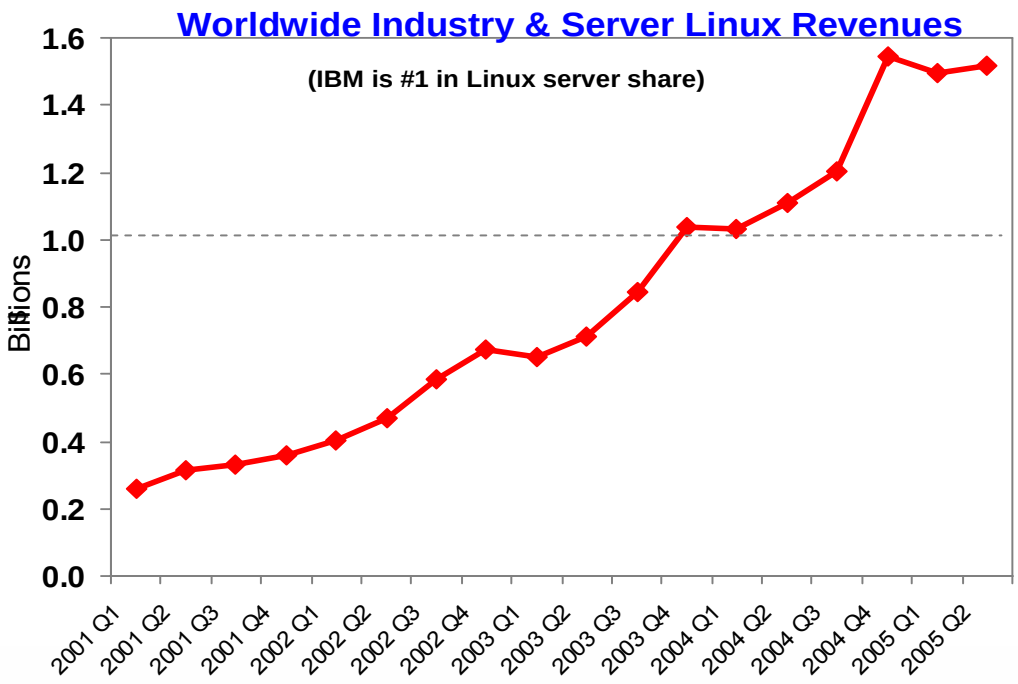


IDC Server Market Quarterly Forecaster & Tracker

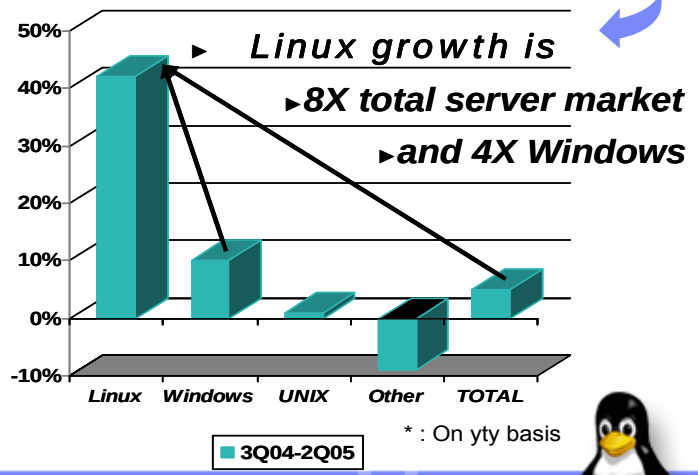
How is the Linux market? Is it growing?

Linux Server Revenue Growth Continues to Outpace Industry

7th Quarter in a row of $1B in revenue



WW Server Market FY (3Q04-2Q05)			
Rolling Quarterly FY Server Market	Revenues	Revenue Growth*	Unit Growth*
Linux	$5,918	42%	47%
Win	$17,923	10%	11%
UNIX	$16,500	1%	2%
Others	$10,206	-9%	-21%
Total	$50,548	5%	13%



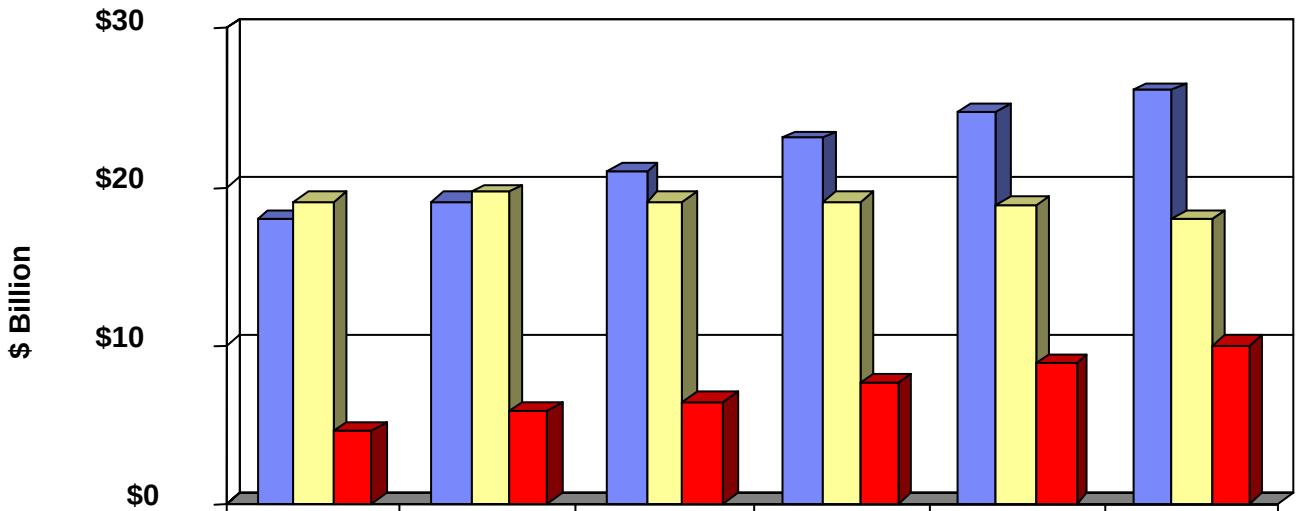
Source: Gartner Quarterly Statistics, Server Market 2Q05

* : On yty basis

WW Windows/UNIX/Linux Opportunity 2004-2009

Continued pSeries Growth will require expansion into adjacent spaces

WW Server Sales according to IDC estimate



	2004	2005	2006	2007	2008	2009
Windows	$18	$19	$21	$23	$25	$26
UNIX	$19	$20	$19	$19	$19	$18
Linux	$5	$6	$7	$8	$9	$10

So……

Why Linux is Important to Customers

- Linux is an excellent path to On Demand
- Linux is about choice and flexibility
- Linux is secure (over Windows)
- Linux is reliable (over Windows)
- Linux drives business goals

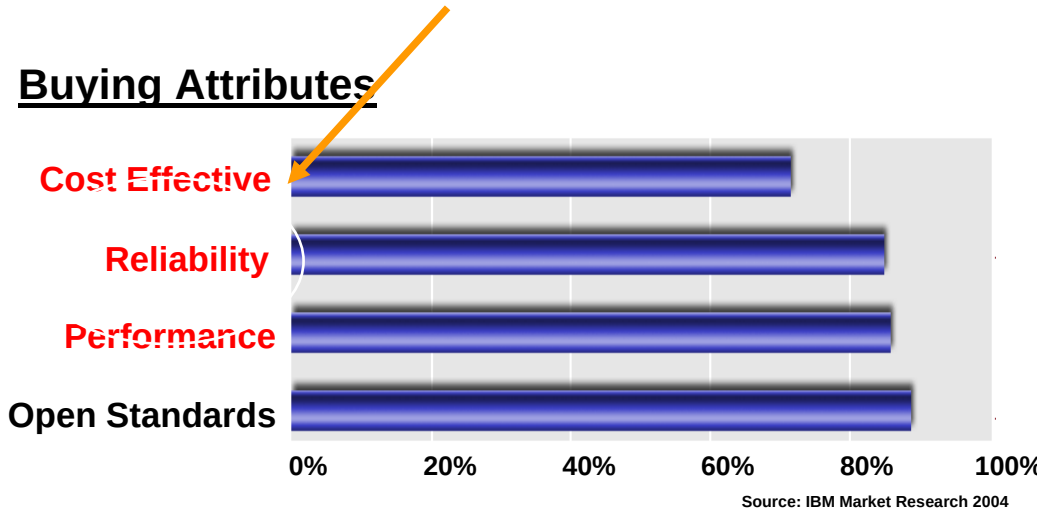
Cost Containment

Simplification of Operations

Improved efficiency of support staffs

Supports business agility

(Novell study, 2005)



Les priorités des clients

Efficacité du système d'information pour l'activité de l'entreprise

Réponse rapide aux changements des besoins / flexibilité

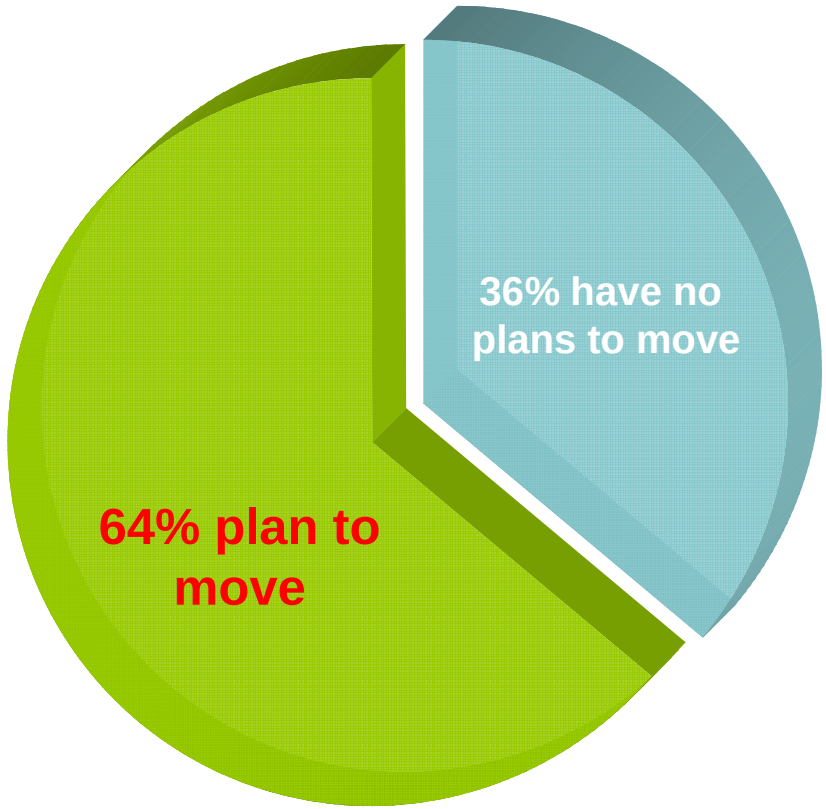
Réduction des coûts

Une solution : LINUX

Linux OS becoming the platform of choice

64% of Clients Plan to Move a Portion of Their OSs to Linux

- 25% plan to migrate from Windows to Linux OS
- 21% plan to add Linux OS servers
- 11% plan to replace Windows OS servers totally
- 4% plan to migrate all UNIX OS servers to Linux
- 3% plan to add Linux OS servers, but will not replace UNIX OS servers



Source: The Yankee Group and Sunbelt Software, Inc. 2004

Why Customers Adopting Linux

Early stages

General purpose workloads
- Basic infrastructure
- Edge of network
- Firewall, file/print, Web serving

Business-critical workloads
- Cross and vertical industry applications
- ERP, CRM applications
- Business intelligence applications
- Commercial clusters
- SW development
- Collaboration
- eCommerce

2.4 Kernel
- Linux usage on "
- Clustered
- Cost to se
- Edge network/
- "Intel" systems default server architecture

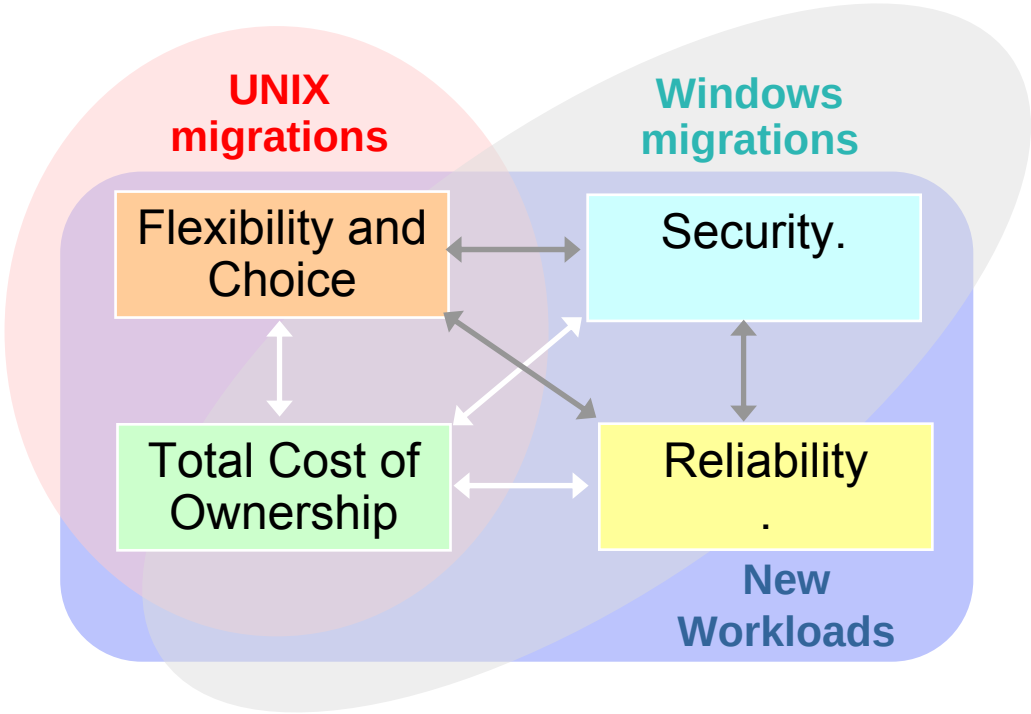
2.6 K
- Linu
- Higher scaling allows new efficiencies
- More core applications on Linux
- Higher acceptance in enterprise

Shouldn't the server capabilities also grow to match the "new" Linux market?

1999 2005

How are Customers Adopting Linux

- Much of the early Linux adoption is replacing proprietary UNIX because Linux offers similar operating system features and platform independence with lower cost of ownership
- Linux is replacing Microsoft servers due to choice, attractive cost of ownership, and enhanced security
- New workloads are being added to gain the full benefits of platform and vendor flexibility, low cost of ownership, solid security, and solid reliability



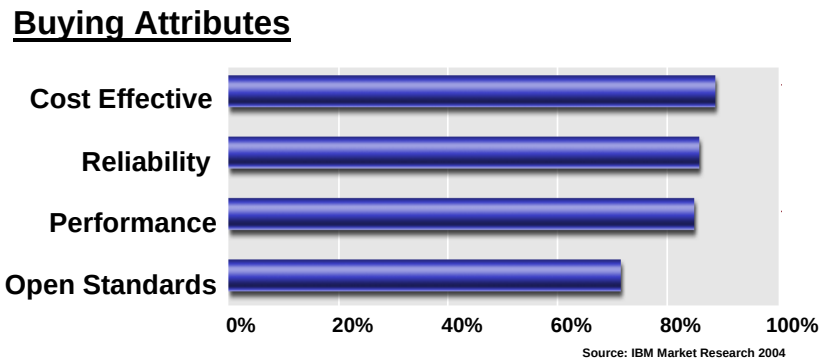
Quels sont les points forts de Linux

Points forts

- investissement réduit
- fonctionne sur des 10nes de plateformes

  Intel, Power, SPARC, Alpha, …
- modèle OpenSource

  des applis commerciales existent aussi
- disponibilité applicative
- sûr (par rapport à windows)
- fiable (par rapport à windows)



I want to know why Linux is a secure solution…

Linux on POWER

AMVESCAP

www.amvescap.com
Houston, Texas

Client

Challenge

Gain control over server infrastructure by implementing a flexible, scalable, lower-cost platform that can adjust quickly to changing business demands

POWER™ Solution

Implementation of Red Hat Linux® Enterprise Server on IBM @server® xSeries® servers and IBM @server BladeCenter™ HS20, HS40 and JS20 systems and migration of Web applications, file and print servers, small databases and messaging infrastructure onto hundreds of virtual servers

Benefits

- Reduced the total cost of ownership by more than one-third
- Improved performance, service and support
- Gained ability to scale to meet demand without adding physical hardware and incurring associated maintenance and licensing costs
- Gained ability to balance server resources efficiently

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Linux is very secure and is now used by governments, telcos, banks, retail companies... around the world.

Linux on POWER

Effisis

www.effisis.com
Hong Kong

Client

Challenge

Improve the placement of client advertisements on large partner Web sites by developing a high-performance, open source, reliable platform for an e-commerce Web server

POWER™ Solution

- An IBM @server® pSeries® database server acting as an application server
- Two IBM @server pSeries systems acting as Web servers
- All three servers running Red Hat Linux® Enterprise AS 3.0

Benefits

- Increased responsiveness to client needs thanks to the new system's 24x7 availability and the capability to post ads in real time
- Easy integration with partner systems due to open standards
- Improved capacity for growth into Asia's developing e-commerce markets due to the solution's scalability

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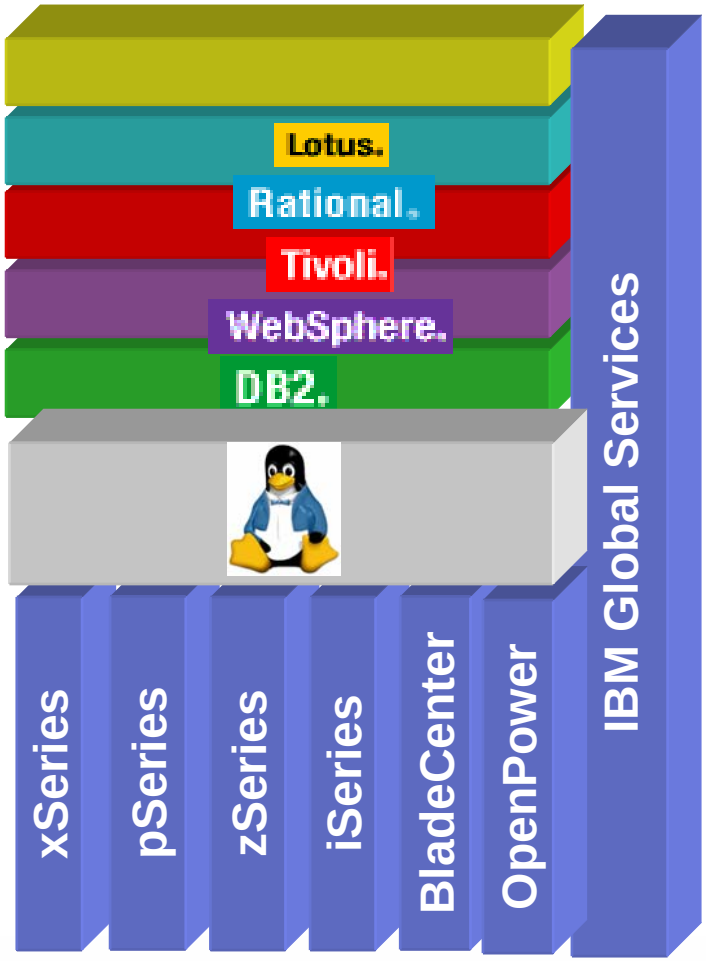
Linux

Linux at IBM

Over 360 Middleware Products Enabled



Over 7,000 Services Professionals

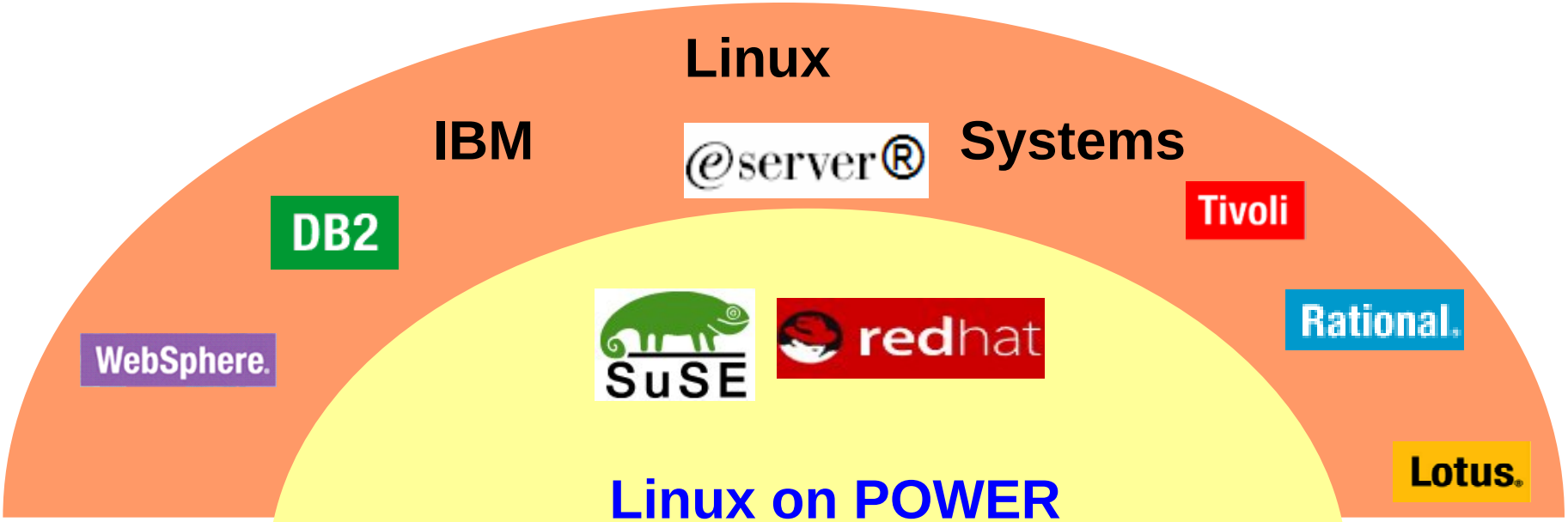
Linux Runs Across All IBM eServer Platforms

Quelles sont les contributions d'IBM au monde Open Source ?

- **Pas de distribution "IBM Linux"**
  - accords de partenariat IBM, Suse, RedHat, …
  - contributions Open Source IBM (code)
    - http://oss.software.ibm.com
  - contributions à des projets Open Source ($$)
    - Linux Standard Base (http://www.linuxbase.org)
    - Free Standards Group (http://www.freestandards.org)
    - Open Source Development Lab (http://www.osdlab.org)

  - contribution IP IBM
  - IBM finance un LTC (Linux Technology Center)
    - http://ltc.ibm.com
    - plus de 300 personnes dédiées au développement
      - d'applications
      - de drivers
      - de modules kernels

IBM provides Linux opportunities across all product lines



IBM xSeries®

IBM BladeCenter™ JS20 / JS21

IBM PowerPC™

IBM i5 / iSeries™

IBM p5 / pSeries®

IBM zSeries®

La gamme IBM Linux on POWER :

IBM fournit des opportunités Linux sur toute sa gamme de produits

four markets with a single binary

four markets with a single binary

100's of customers

Industry ISVs

Cross Industry ISVs

Infrastructure & Tools ISVs

Over 2000 certified ISV applications

Linux Distro Partners

Universities

Open Source Developers

1000's of applications

COMPATIBILITE BINAIRE

100's of developers

Corporate Developers

IBM @server BladeCenter™ JS20 & JS21

IBM @server PowerPC

IBM @server i5 / iSeries™

IBM @server p5 / pSeries®

High density, low power, high performance scale-out

High volume Linux only servers for infrastructure & mission critical apps

Add Linux in SMB iSeries environments

Enterprise Linux in heterogeneous data centers

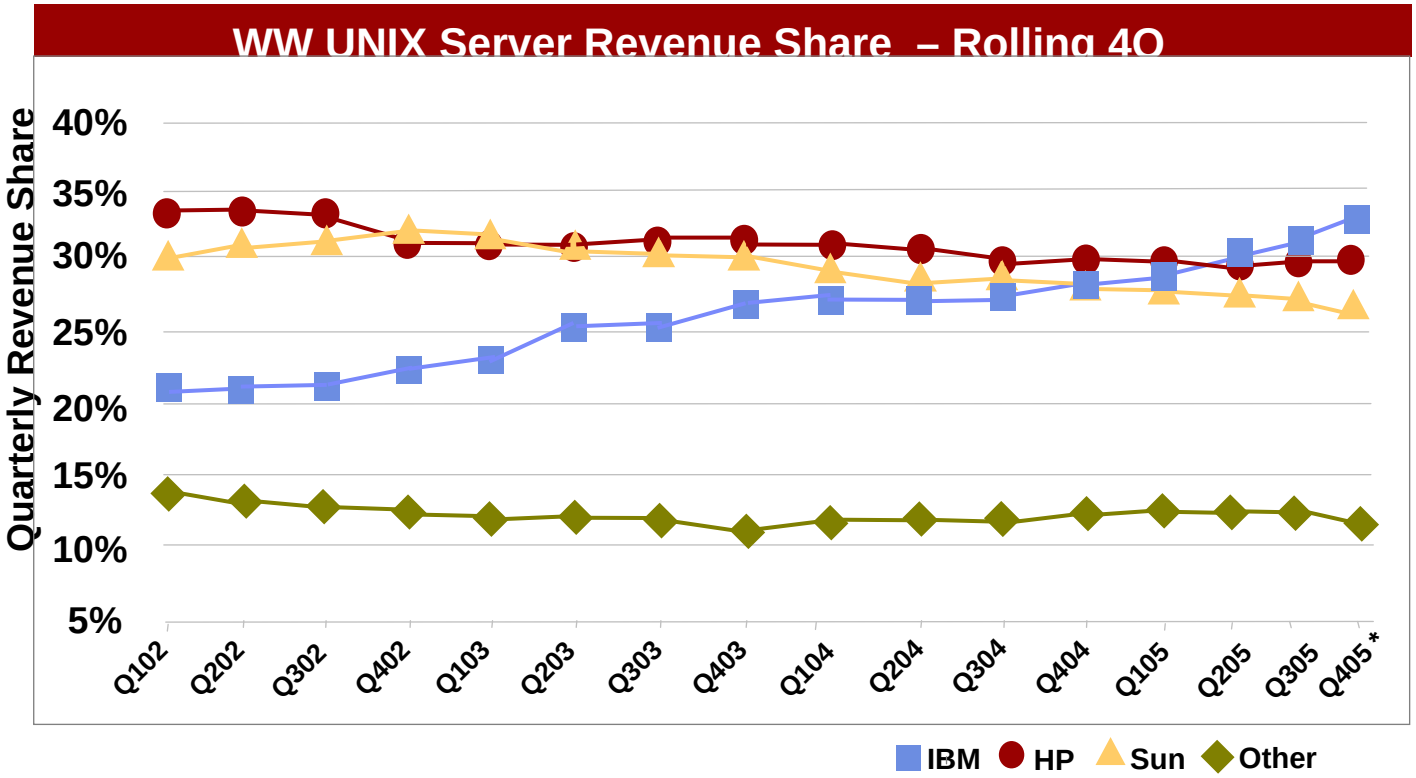
Why the push for Linux on POWER?

POWER Architecture

- pSeries is interested in Linux because **Linux now has the features to take advantage of the best microprocessor and the best server in market for mission critical workloads.**
- While pSeries is growing double digits, and enjoying tremendous success in the large Unix market. Linux is also growing and at a faster rate
- Linux is no longer a default to x86 architectures and **Power brings the features today that Intel promises over the next few years.**

IBM continues worldwide UNIX revenue share leadership

. . . the ONLY platform with momentum according to the latest IDC report!



*IDC Worldwide Quarterly Server Tracker, 02/06

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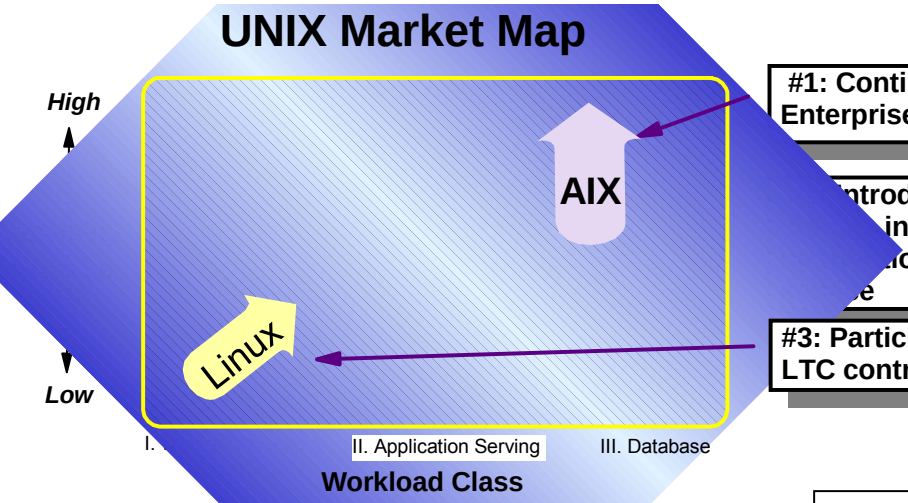
POWER Strategy

Strategy - Achieve leadership in UNIX and Linux 64-bit computing

pSeries strategy for Linux provides support for Linux, AIX, or both on a single server with differentiation above and below the operating system



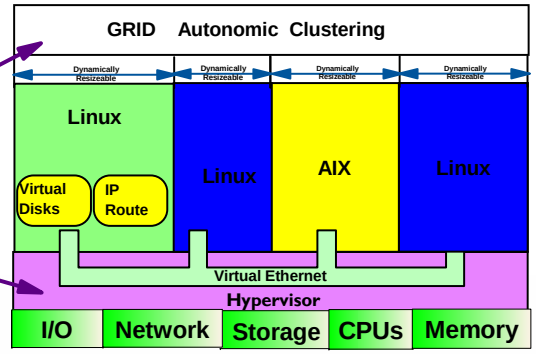
#1: Continue AIX leadership for the Enterprise/High End

ntroduce POWER based Linux
integrated with a standard Linux
ion providing "UNIX" qualities of
e

#3: Participate in advancing Linux thru LTC contribtions and POWER specifics

#4: Drive a hig tware that can be deliv X and Linux

#5: Drive a high value V tualization enabling dynamic partitioning of server resources that can be delivered for both AIX and Linux



AIX 5L: > 8000 applications
1800+ new AIX 5L applications in the past 12 months

Linux on POWER: >2000 applications
1000+ new Linux on POWER applications in the past 12 months

Linux distributions for x86 and Power architectures are functionally different

- RAS
- Performance
- Virtualisation

POWER RAS capabilities compared to Linux on Intel

Reliability, Availability and Serviceability features	AIX 5L	Linux on POWER	Intel	Comments
Automatic First-Failure Data Capture and diagnostic fault isolation capabilities	Yes	Yes	No	Used by Error Log Analysis Tool
Self-healing internal POWER5 processor array redundancy	Yes	Yes	No	ECC, bit steering, memory scrubbing, etc
Industry-first PCI bus parity error recovery	Yes	Limited	No	EEH detection: partition down vs system
Scrubbing and redundant bit-steering for self-healing in main storage	Yes	Yes	Limited	Lintel not as robust
ECC and Chipkill correction in main storage	Yes	Yes	Yes	
Fault tolerance with N+1 redundancy, dual line cords, and concurrent maintenance for power/cooling	Yes	Yes	Yes	
Predictive failure analysis on processors, caches, memory, I/O and DASD	Yes	Yes	Limited	Intel does not have predictive analysis of I/O
Processor run-time and boot-time de-allocation based on run-time errors (Dynamic Processor De-allocation and Persistent Processor De-allocation)	Yes	Yes	No	FFDC advantage
Fault avoidance through highly reliable component selection, component minimization and error mitigation technology internal to chips	Yes	Yes	No	
Concurrent run-time diagnostics based on First-Failure Data Capture for power, cooling, and I/O	Yes	Limited	No	Planned for Linux
Service Processor is a separate, independent processor that provides hardware initialization during system IPL, operation monitoring of environmental and error events	Yes	Yes	Limited	Linux on Intel not as robust

http://www.ibm.com/systems/p/hardware/whitepapers/power5_ras.pdf

Jaw-dropping POWER5 performance – key to success

TPC-C Results **Source: http://www.tpc.org/tpcc., as of August 9, 2005**

Rank	Sponsor	System	TpmC	Price/tpmC	System Availability	Database	Date Submitted	Operating System	# CPU	CPU Type	rPerf
1	IBM	IBM eServer p5 570	197,649	3.93 US $	2/7/2006	IBM DB2 UDB 8.2	8/8/2005	Red Hat Enterprise Linux AS 4.0	4	IBM POWER5 1.9GHz	19,66
2	IBM	IBM eServer p5 570	194,395	5.42 US $	9/30/2004	Oracle 10g	7/12/2004	IBM AIX 5L V5.3	4	IBM POWER5 1.9GHz	
3	HP	HP Proliant DL585-G1 64GB/2.2GHz Dual Core/4P	187,296	2.04 US $	5/31/2005	Microsoft SQL Server 2000 Enterprise Edition SP4	4/21/2005	Microsoft Windows Server 2003 Enterprise Edition SP1	4	AMD Opteron 2.2GHz Dual Core 1MB L2	
4	HP										
5	IBM										
6	IBM										
7	HP										
8	HP										
9	HP	HP Proliant DL585-G1 64GB/2.4GHz/4P	123027	2.94 US $	12/7/2004	Server 2000 Enterprise Ed. SP3	11/7/2004	Windows Server 2003 Enterprise Edition SP1	4	AMD Opteron 2.6GHz	

#1 4-core p5 570 & RHEL4

6% better than HP Opteron (8-core)

r than HP Itanium®

% better than Opteron (4-core)

Best price/performance (4-core)

Lop performance versus Aix

Variable based on type of workload

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Performance: IBM p5 and HP AMD Dual Core

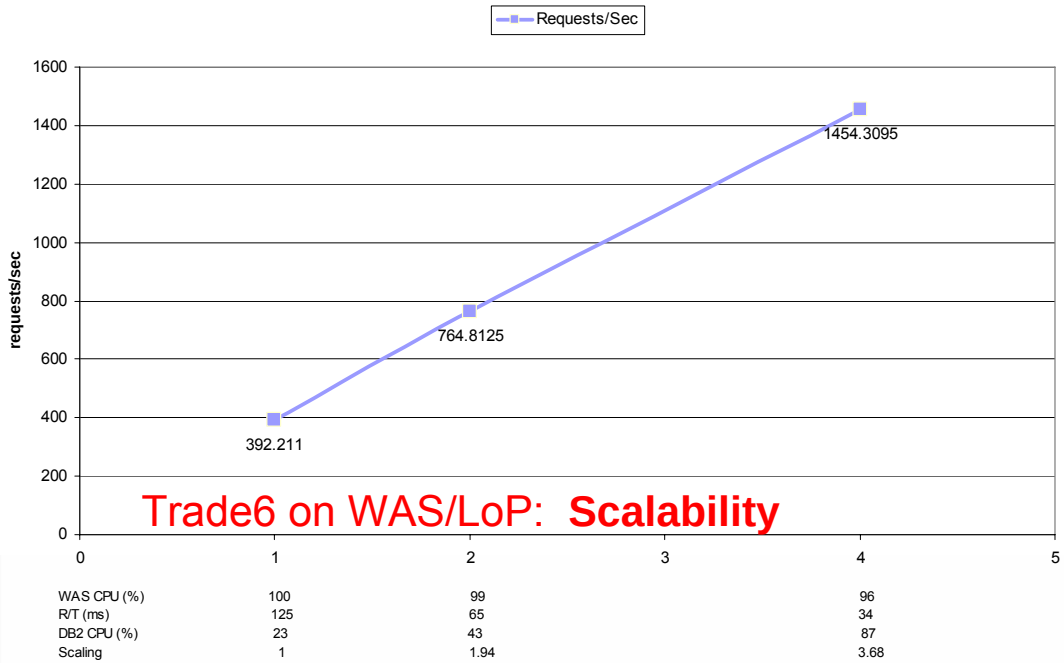
TPC-C: Transaction benchmark

Server Config	IBM p570 4 CPUs POWER5 1.9GHz 128GB RedHat/DB2	HP DL585 8 CPUs AMD Dual Core 2.2GHz 64GB Windows/SQL2003
CPUs (Chips)	4 (2 Chips)	8 (4 Chips)
TPM	197,669	187,296
TPM/CPU	49,417TPM/CPU	23,412TPM/CPU
AMD's per POWER5 CPU	N/A	2.11

POWER5 offers better performance with half the number of CPUs

HP/AMD only received 43% performance gain by going to dual core

WAS32 Performance Scaling on LoP (p5-550) RHEL4.1



WAS CPU (%)	100	99	96
R/T (ms)	125	65	34
DB2 CPU (%)	23	43	87
Scaling	1	1.94	3.68

Trade6 on WAS/LoP: **Scalability**

Performance: IBM p5 vs. Sun v890 SPARCIV

TPC-H: 100GB Query/Business Intelligence benchmark

Server Config	IBM OpenPower720 4 CPUs POWER5 1.65GHz 32GB SuSE / UDB	2 – Sun V890s 32 CPUs SPARCIV 1.35GHz 128GB Solaris / Sybase
CPUs (Chips)	4 (2 Chips)	32 (16 Chips)
QphH	6,357	10,487
QphH/CPU	1,589/CPU	327/CPU
SPARC's per P5 CPU	N/A	4.8
Price/QphH	$41.76	$46.29

POWER5 offers 4.8X better performance per CPU

Performance: IBM p5 and Intel Xeon

WebSphere Application Server ND – Priced Per Chip on OpenPowe

Server Config	IBM OpenPower 720 8 Chips POWER5 1.65GHz 4GB 4 app servers	4way Xeon 20 Chips Xeon 3GHz 8GB 5 app servers
#Chips	8	20
JOPS	1334.96	1343.47
JOPS/Chip	166.87	67.17
Xeon's per Power5 chip	N/A	2.5
WebSphere AS ND Price	$120,000	$300,000

IBM OpenPower 720 Express: $11,498 Web Price * 4 = $45,992

Xeon 3.16GHz: $18,282 * 5 = $91,410

IBM WebSphere savings on Power5: $225,000

Simplification through virtualization

- *Virtualization is the process of presenting computing resources in ways that users and applications can easily get value out of them, rather than presenting them in a way dictated by their implementation, geographic location, or physical packaging. In other words, it provides a logical rather than physical view of data, computing power, storage capacity, and other resources.*
  - **Jonathan Eunice, Illuminata**

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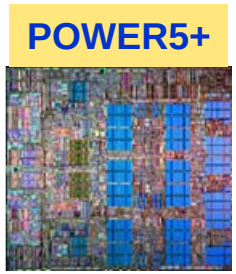
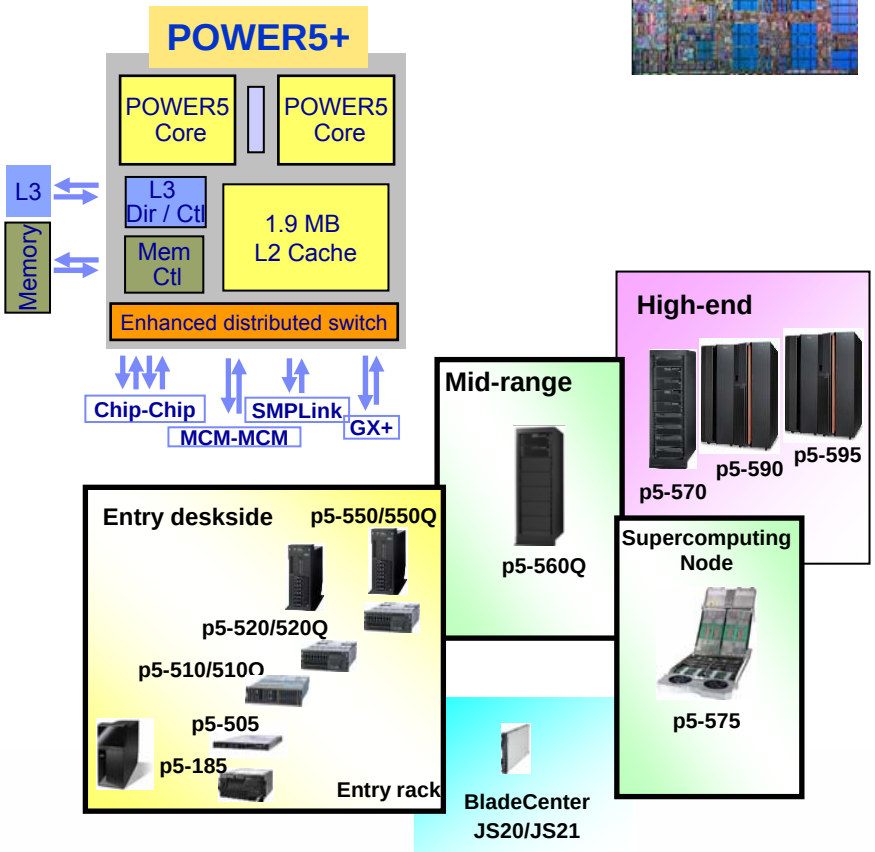
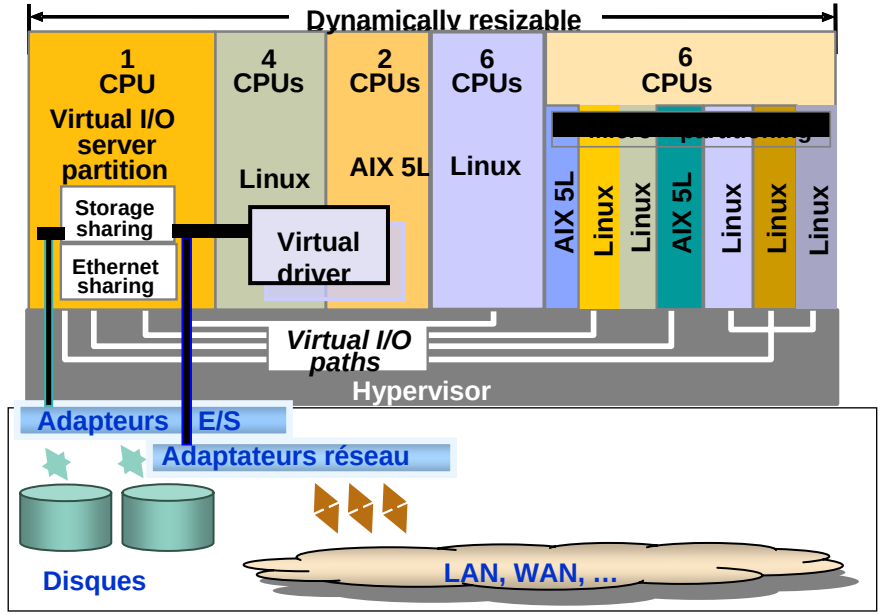
According to the Gartner Group, companies that ignore virtualization will pay 15 to 20 percent more than they need to for IT by 2008.

Options de virtualisation avancées : System p5

- POWER5 / POWER5+
- 1 – 64 way
- 64bit
- Tuned for Linux
- Virtualization
- Enterprise-class RAS







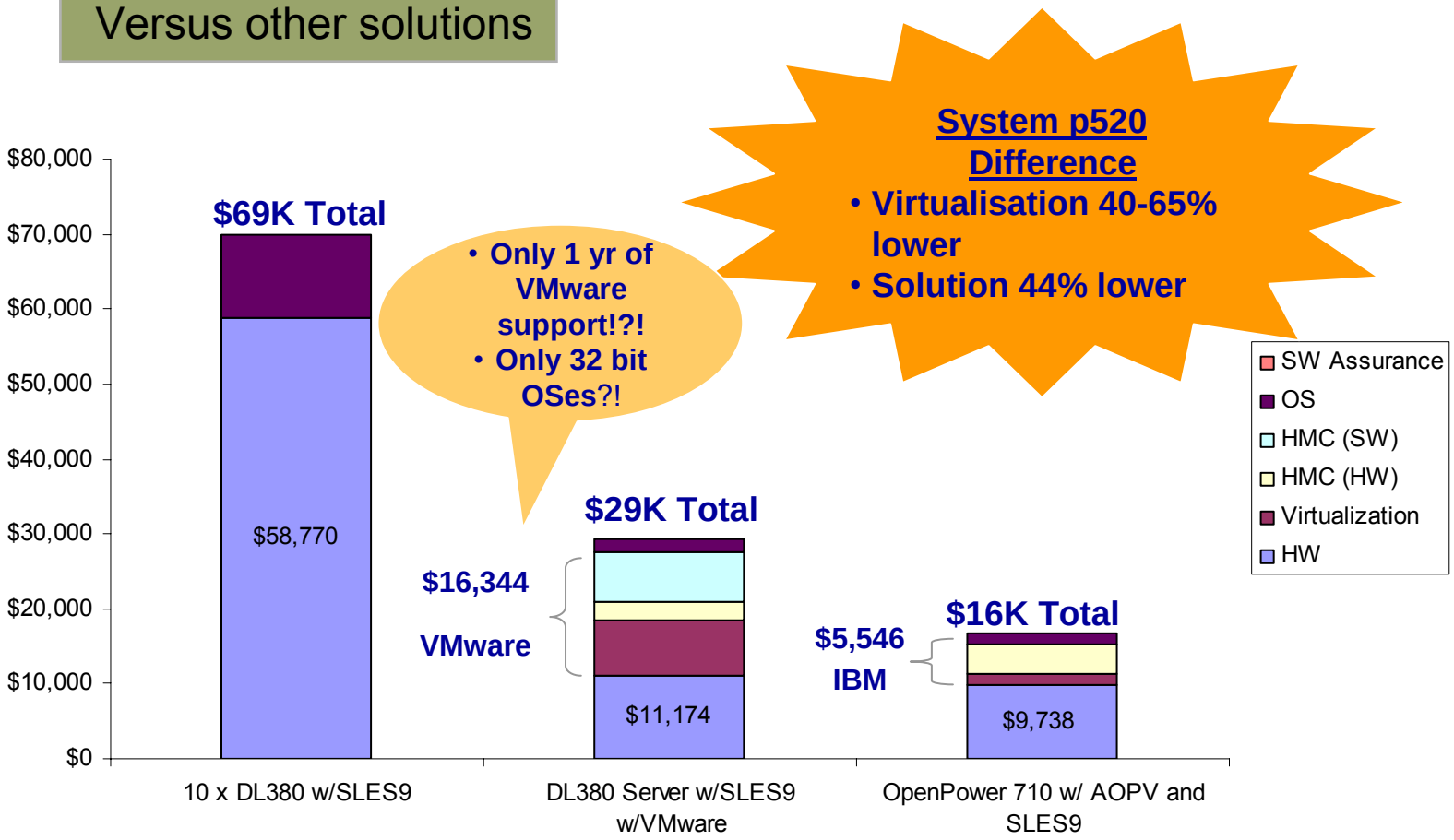
Micro-Partitionnement
- Processeurs partagés entre partitions
- Minimum : 1/10ème de processeur / partition
- Incrément 1/100émé de proc
- AIX 5L et/ou Linux*

Virtual I/O server
- Ethernet Partagé
- Réseau inter-partition interne basé sur la mémoire
- Disques SCSI et Fibre Channel partagés
- Support des partitions AIX 5L et Linux
- **IVM**

Accounting

The Virtualisation Cost Difference

Versus other solutions



- Base is 10 x 1-way DL380 servers, with only 15% utilisation replaced by 1 x 2-way HP DL380 with VMware or 1 x 2-way OpenPower 710 with the Advanced OpenPower Virtualisation
- Current prices for VMware off HP's Web site (1-4-05) for DL380 model with Virtual Infrastructure Node. VMware Web site indicates DL380 is supported in 32-bit mode only.
- HP/VMware HMC estimates based of HP DL140 Web site price (1-4-05) and VirtualCenter price from the DL380 (1-4-05)

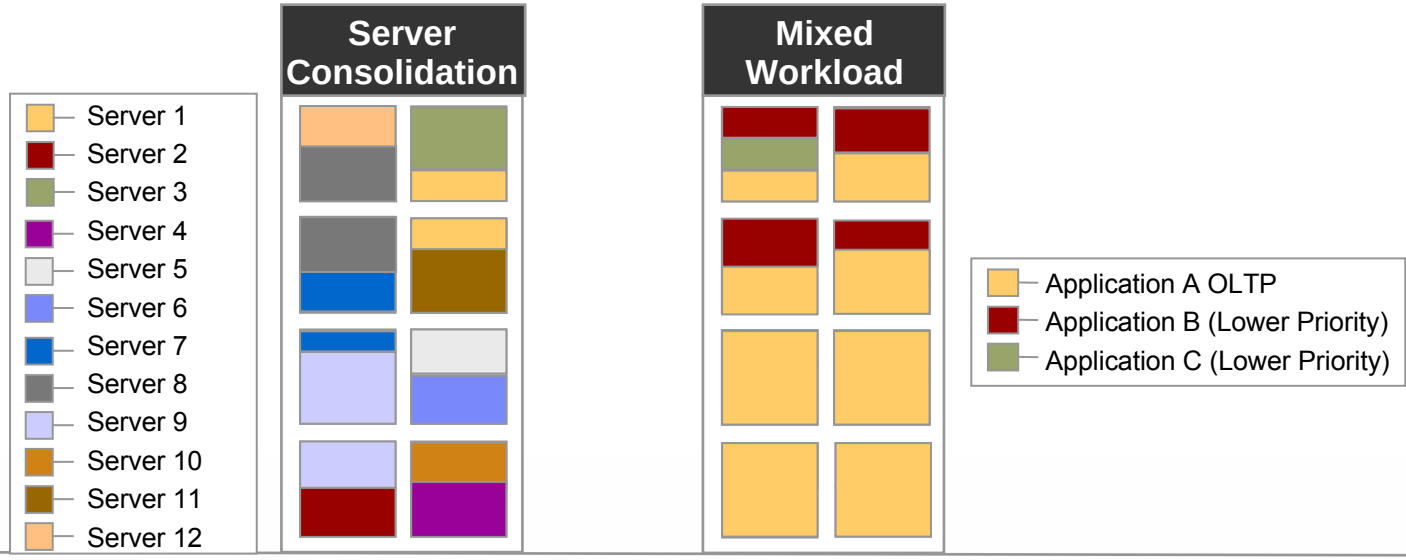
Le micro-partitionnement apporte plus de flexibilité

Architecturé pour répondre aux besoins de consolidation de serveurs et de charges variées

Simplifier votre environnement

Une réponse rapide à vos besoins changeants

Optimiser l'utilisation de votre serveur



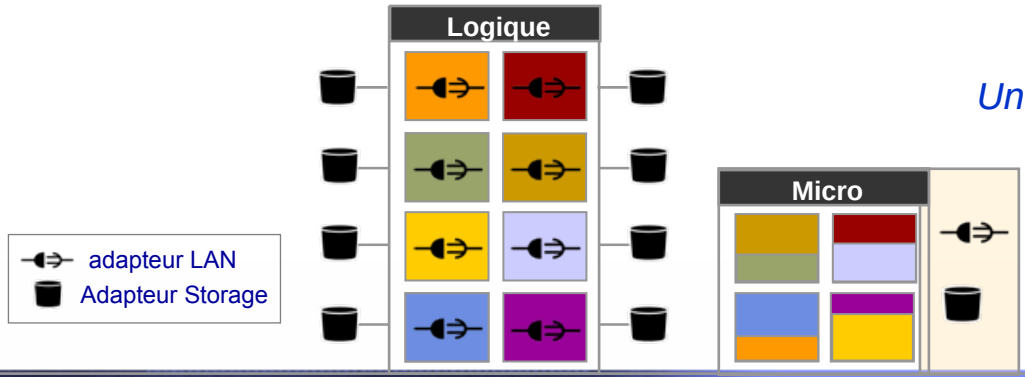
Want to lower your software, energy and space costs?

Buy a System p5 that enables you to **consolidate** the work you might be using many servers to accomplish today . . .
and 'VIRTUALIZE'* for optimum cost savings

IBM Shared Storage and Networking

moins de ressources à acheter, configurer et maintenir

ajustements simples et rapides pour s'adapter à l'évolution des besoins



Simplifier votre environnement

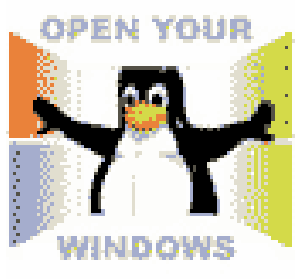
Une réponse rapide à vos besoins changeants

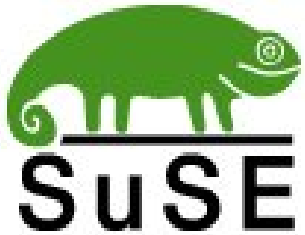
Optimiser l'utilisation de votre serveur

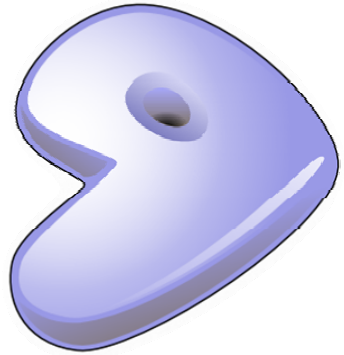
Incluant E/S redondants

Distribtions Linux on Power

Linux Distributions on Power







gentoo linux

debian

Certified Linux on POWER Distributions

Content:

Equivalent to Distributors' Intel Versions with
- POWER specific support and Service Toolkit improvements
- (toolkit needs download from techservices site)
- (download for DLPAR support needed from techservices site)

Open Source Tools & Applications with distribution CDs

Distributor code at latest certification patch level

Support

IBM Global Services Support Line Offerings

Distributor Offerings

IBM Business Partners

Ordering pSeries, System p5, & JS21 with Linux

Customer orders POWER Servers
- Linux provided by Distributor
- Linux can be ordered and delivered through IBM with system
  1 yr, 3 yr, and support offerings available for order in econfig

Comment les éditeurs supportent Linux ?

- Types de support :

  Subscription

  Le client reçoit une carte d'enregistrement a faire valider surle site web de l'éditeur
  accès à des correctifs logiciels
  et à des fiches d'information

  Subscription + support

- Support standard ou premium :

  standard : 9h/17h, temps de réponse en 4 heure (RH)

  premium : 24x7, 1 heure sur les problèmes en sév.1 (RH)

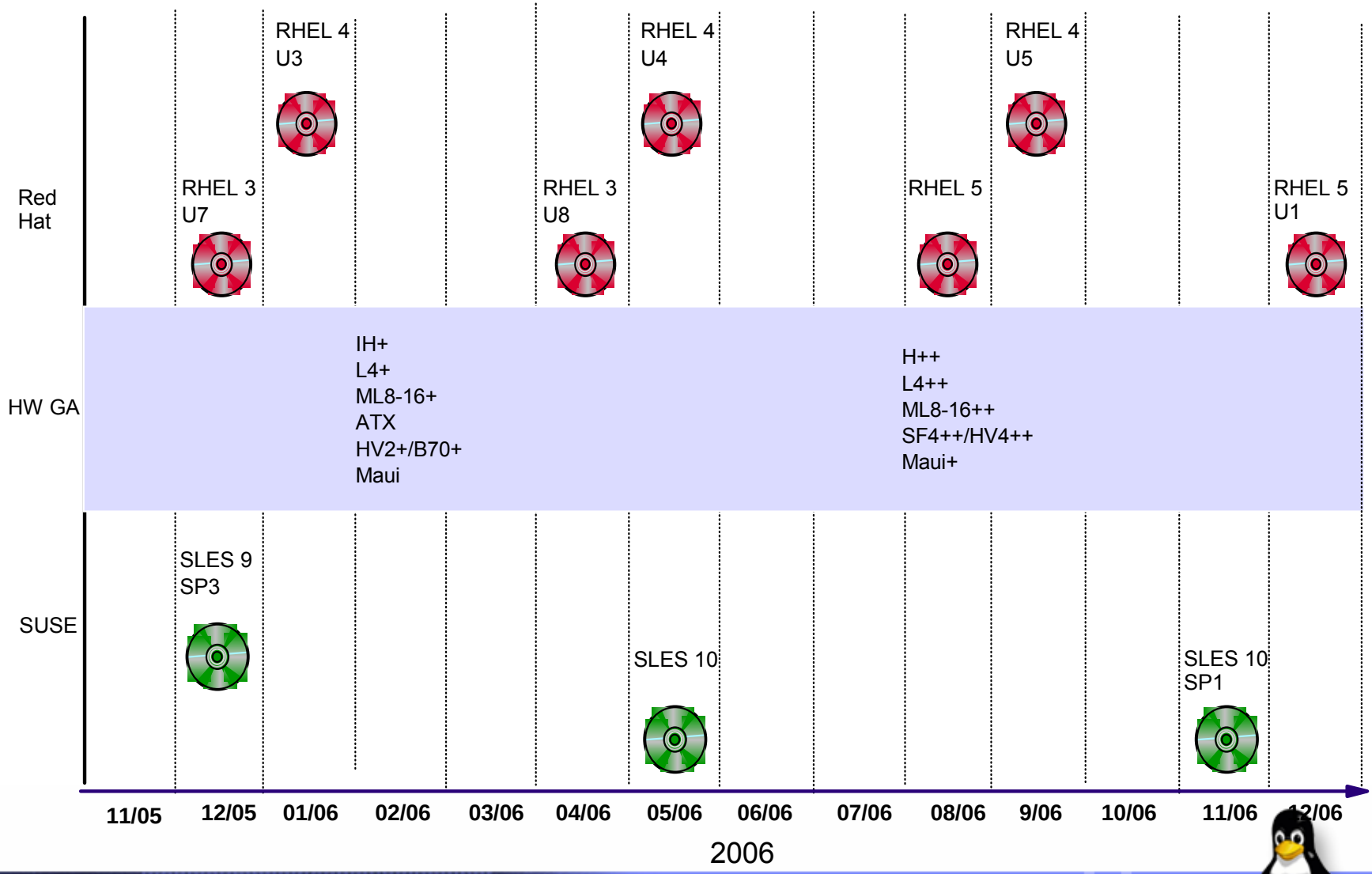
  différents types de contrats premium aavec Suse

Support ITS

- **Front Office Level 1**
  Spécialistes présents dans chaque pays → **Résoud 80% des appels**
- **EMEA Back Office Level 2**
  Ressources Spécialisées dans plusieurs pays européénns (+ de 100 personnes) → **Résoud 65% des appels restant**
- **Change Team Level 3**
  LTC, situé à Beaverton (USA)
  27 professionnels dédiés Linux Resources avec skill level 4 et 5 (le niveau 5 est le plus haut niveau de compétence possible sur un produit)
  Plus de 250 professionnels disponibles pour toutes résolutions de problèmes → **Résoud 30% des appels restants**

Seulement 1% des appels nécessitant une collaboration de la communauté Linux et ce sur les distributions RedHat et Suse

Linux on Power Hardware and Distro Roadmap - 2006

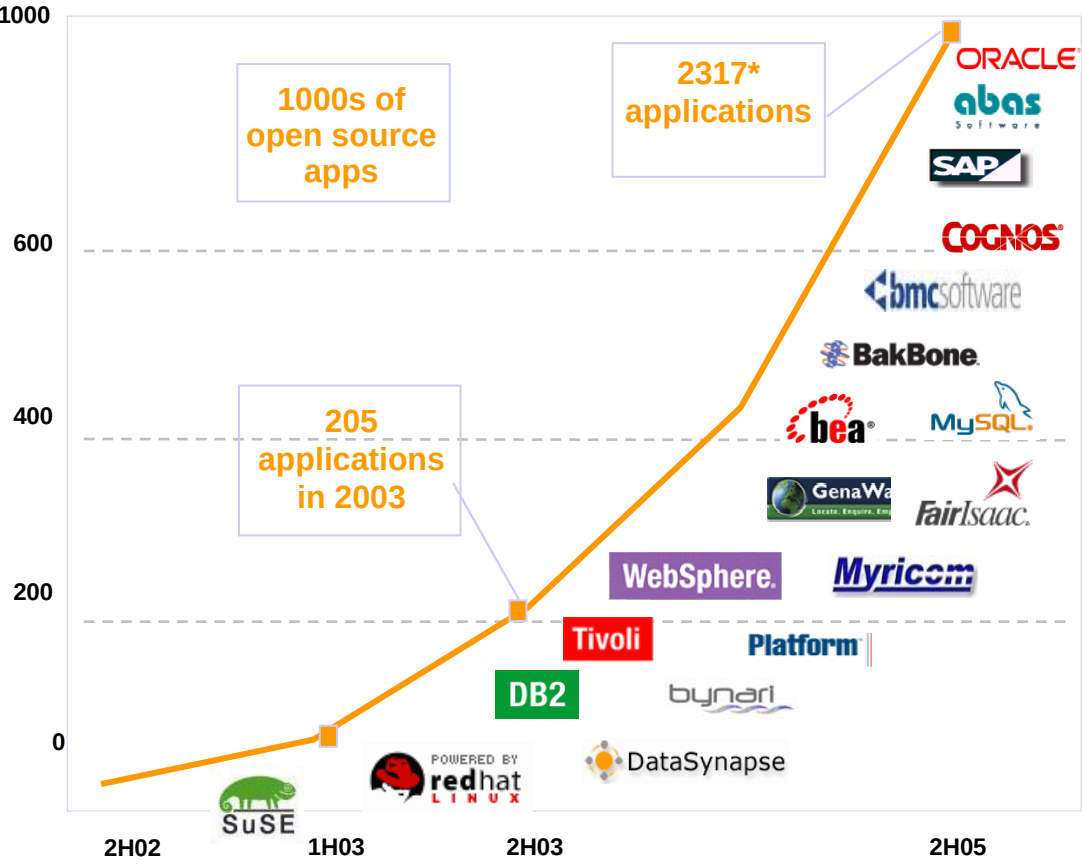


Linux Pricing as of Oct 2005

Description	Term	2 way Server Std / OP Price	16 way Server Std / OP Price
Red Hat Enterprise Linux Standard Subscription	One Year Three Year	$395 / $315 $1,067 / $855	$995 / $895 $2,687 / $2,420
Red Hat Enterprise Linux Premium Subscription	One Year Three Year	N/A	$1,295 / $1,165 $3,497 / $3,145
Red Hat Enterprise Linux Standard Support & Subbscription	One Year Three Year	$799 / $720 $2,157 / $1,945	$1,499 / $1,399 $4,4047 / $3,779
Red Hat Enterprise Linux Premium Support & Subscription	One Year Three Year	N/A	$2,495 / $2,365 $6,737 / $6,388
SUSE SLES 9 Standard Subscription	One Year Three Year	$495 / $445 $1,335 / $1,200	$1,095 / $1065 $2,955 / $2,875

Aix
Std price
SWMA 1 yr
4 way
2.160 €
16 way
13.943 €

Linux on POWER supported by a wide portfolio of tools, infrastructure and industry applications available



IBM Middleware applications
Full complement of core software from IBM WebSphere®, IBM DB2®, Tivoli®, IBM Informix®
IBM Compilers, Cluster Management

ISV infrastructure and tools
Cognos, BEA Weblogic Server, MySQL DB, Bakbone, NetVault, BMC Patrol Agent & KMs, Novell, Acucorp, Absoft, Myricom, Storix, Platform Computing, Oracle 10g client & others

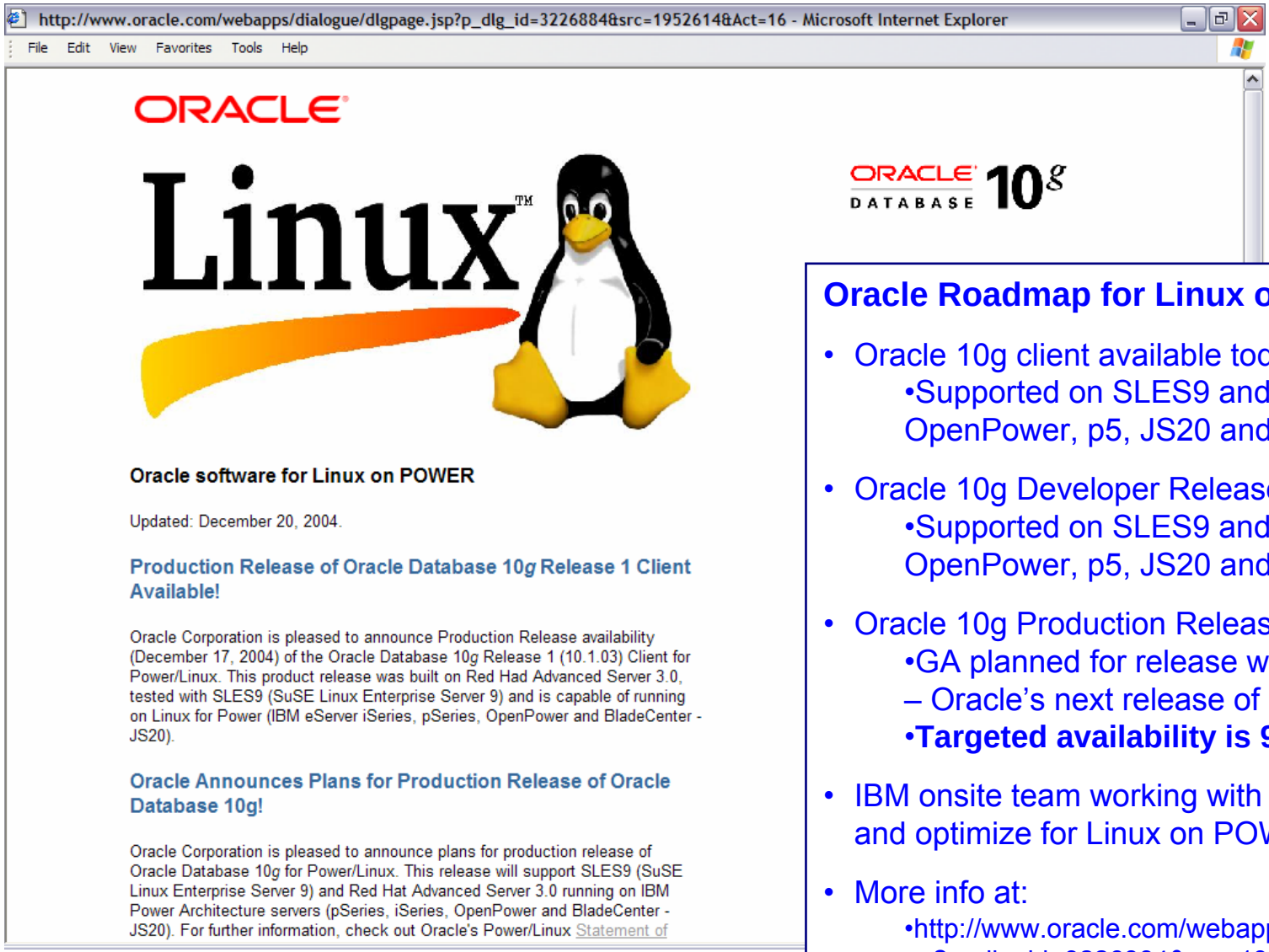
Open source infrastructure and tools
Apache, SAMBA, Sendmail, others
Distributed with Red Hat & Novell SuSE

Workload applications
Deep computing – growing portfolio of Life Sciences, Petroleum & Open Source apps
SAP for LoP

Industry and regional applications
Temenos, Fair Isaac, Genaware, Hansa, Tecsys, Evant, eOne, Triversity & others

http://www-1.ibm.com/servers/eserver/linux/power/apps/all.html

Oracle Roadmap for Linux on POWER

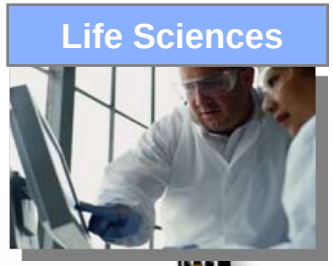


Oracle Roadmap for Linux on POWER

- Oracle 10g client available today
  - Supported on SLES9 and RHEL3 on OpenPower, p5, JS20 and i5
- Oracle 10g Developer Release available today
  - Supported on SLES9 and RHEL3 on OpenPower, p5, JS20 and i5
- Oracle 10g Production Release plans
  - GA planned for release with Oracle 10gR2 – Oracle's next release of Oracle 10g
  - **Targeted availability is 9/15**
- IBM onsite team working with Oracle to tune and optimize for Linux on POWER5
- More info at:
  - http://www.oracle.com/webapps/dialogue/dlgpage.jsp?p_dlg_id=3226884&src=1952614&Act=16

Linux on POWER Solutions Available

- **Infrastructure**
  - Infrastructure Consolidation
    - **OPCE:** http://www-1.ibm.com/servers/eserver/openpower/solutions/consolidation/express.html
  - Web
    - **Apache:** http://www-1.ibm.com/servers/eserver/openpower/solutions/apache.html
    - **WebSphere:** http://www-1.ibm.com/servers/eserver/linux/power/solutions_middleware.html
  - File/ Print
    - **SAMBA3:** http://www-1.ibm.com/linux/solutions/linuxonpower.shtml
  - Security
    - **Email Security:** http://www-1.ibm.com/servers/eserver/openpower/solutions/network.html
  - Database
    - **DB2:** http://www-1.ibm.com/servers/eserver/linux/power/solutions_middleware.html
- **ERP & BI**
  - SAP
    - **SAP general:** http://www-1.ibm.com/servers/eserver/openpower/solutions/sap.html
    - **SAP w/DB2:** http://www-1.ibm.com/servers/eserver/openpower/solutions/db2_sap.html
- **Industry Applications**
  - Sybase in Financial Markets
    - **Sybase migration:** http://www-1.ibm.com/servers/eserver/openpower/solutions/sybase.html
- **Life Sciences**
  - **JS20 for Bioinformatics:** http://www-1.ibm.com/industries/healthcare/doc/content/solution/1012978205.html
  - **Proteomics/Thermo:** http://www-1.ibm.com/industries/healthcare/doc/content/solution/976932105.html
  - **Proteomics/Waters:** http://www-1.ibm.com/servers/eserver/linux/power/solutions_industry.html
  - **Comp Chem. / GAMESS:** http://www-1.ibm.com/servers/eserver/linux/power/solutions_industry.html
  - **Comp Chem. / CPMD:** http://www-1.ibm.com/servers/eserver/linux/power/solutions_industry.html



How good is your current e-mail security system?

Is it...

…easy to use?

…easy to upgrade?

…cost effective and affordable?

Does it...

...eliminate the annoying Spam?

...filter the unwanted content?

...provide the anitvirus coverage you need?

…provide archiving to meet government legislated compliance?

Can it grow with your company?

IBM System p5 Network E-Mail Security Express

…..is the answer to all your network e-mail security questions

Network Email Security Solution

Adaptable, scalable, e-mail security for OpenPower™ systems

Higher performance, lower-price, greater flexibility

Challenges addressed

- End-to-end network e-mail security
- Flexible and scalable e-mail security
- Easily adapt to the new threats
- Low-cost
- Integrated compliance and archival

Business Value

- Augments client's current server topology
- Addresses Spam, AV and content filter needs
- Low cost, high performance security
- Accommodates e-mail growth
- Fast ROI

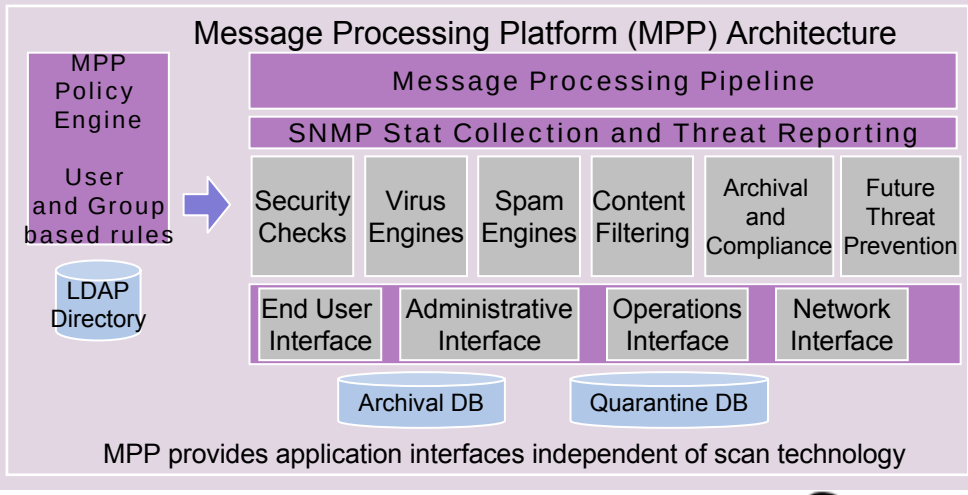
Deploy with confidence

- Tested and qualified
- Sized for capacity planning
- Recommended configurations
- Solution brief and Web site

Future

- Appliance version

IBM System p5 model 550



http://www-1.ibm.com/servers/eserver/openpower/solutions/network.html
http://messagepartners.com/products/mpp_openpower.html

All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

Gamme System p5

IBM System p5 : Committed to virtualization, openness and collaborative innovation

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Scale up. Scale out. Scale within.

With more than 70 leadership performance benchmarks!*

- ***From 1- to -64 core, starting at less than 3200 € list price!*****
- ***For AIX 5L and Linux operating systems***
- ***Using IBM POWER Dual-Core and Quad-Core technologies***

System p5 505 Express

System p5 510 & 510Q Express

System p5 520 & 520Q Express

System p5 550 & 550Q Express

System p5 560Q Express

System p5 570

System p5 575

@server® p5 590/595

*Source: http://www.ibm.com/systems/p/benchmarks/

IBM BladeCenter JS20 & JS21

IBM IntelliStation POWER 185 and 285 Express

** US List Price as of February 14, 2006. Prices are subject to change without notice and reseller prices may vary http://www.ibm.com/servers/ca/en/eserver/pseries/hardware/entry/510express_browse.html

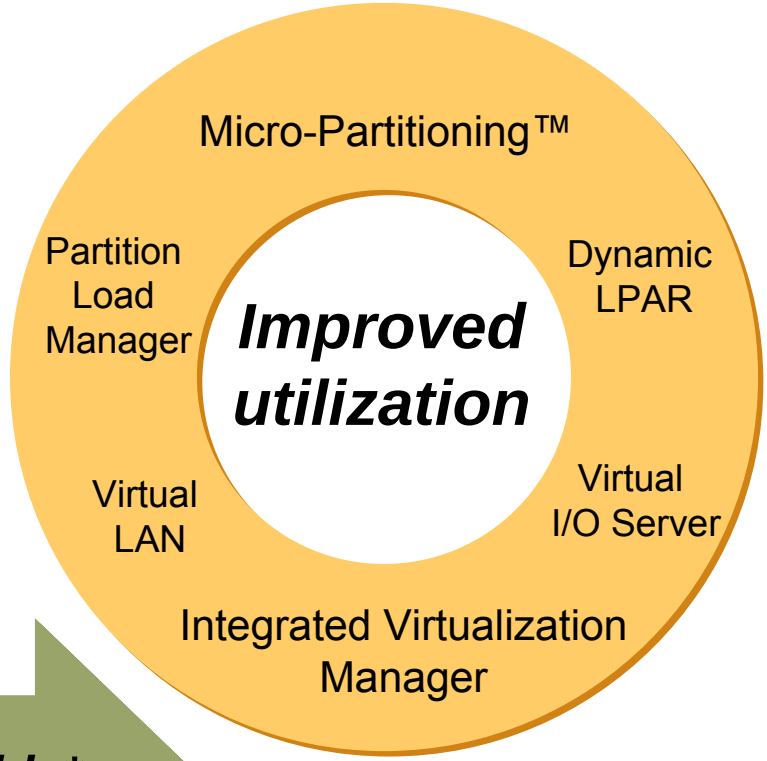
We make it easy to select the right system

Reduce costs and improve operational efficiencies through leadership performance for the price and the IBM Virtualization Engine

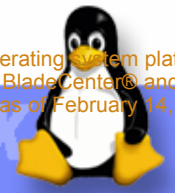
Most performance*

Most performance for the price*

Most affordable*



*Comparison of UNIX and Linux operating system platform offerings from IBM System p5, IBM BladeCenter® and IBM IntelliStation POWER workstations as of February 14, 2006



System p5 Express models are easy to buy, install & own

With a 3-year warranty* and your choice of . . .

- AIX 5L Editions for UNIX® operating system users
- OpenPower Editions for Linux operating system users
- Or your choice of configurations to run both AIX 5L and Linux simultaneously on a single system in separate, secure partitions**

Like all IBM Express portfolio offerings, they . . .

- Enable you to integrate from end-to-end
- Are highly scalable and flexible
- And, empower you to be more responsive to business demands

*Does not apply to IBM IntelliStation™ POWER™ 185 and 285 Express
**Does not apply to System p5 185 Express and IBM IntelliStation POWER 185 and 285 Express

Introducing NEW! IBM systems for AIX 5L and Linux

The right match at the right price for your business. . .

Most performance

IBM System p5 510 Express

IBM System p5 570

IBM System p5 575

p5-590 & 595

Most performance for the price

IBM System p5 510Q Express

IBM System p5 520Q Express

IBM System p5 560Q Express

IBM BladeCenter® JS21

Most affordable

IBM System p5 185 Express

IBM System p5 520 Express

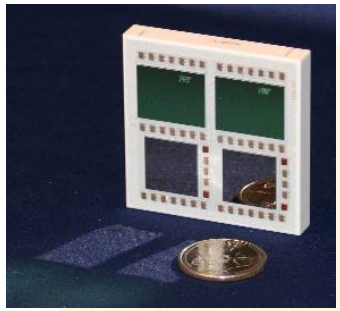
IBM System p5 550 Express

IBM IntelliStation POWER 185 Express

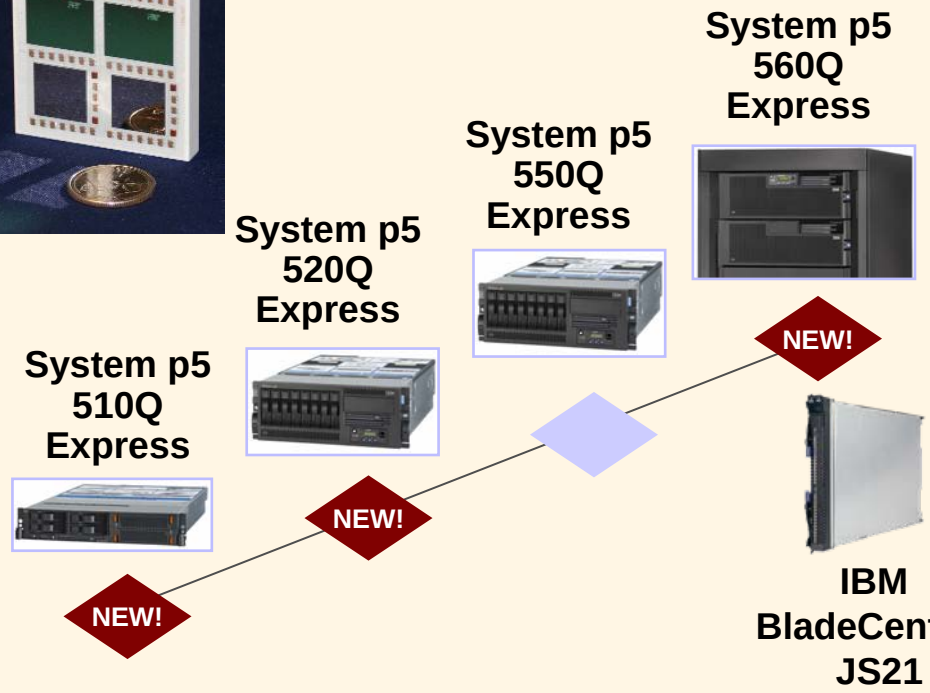
System p5 Express family of 'Q' models

Most performance for the price

Quad-Core packaging at 1.5GHz enables POWER5+ performance at even lower prices!



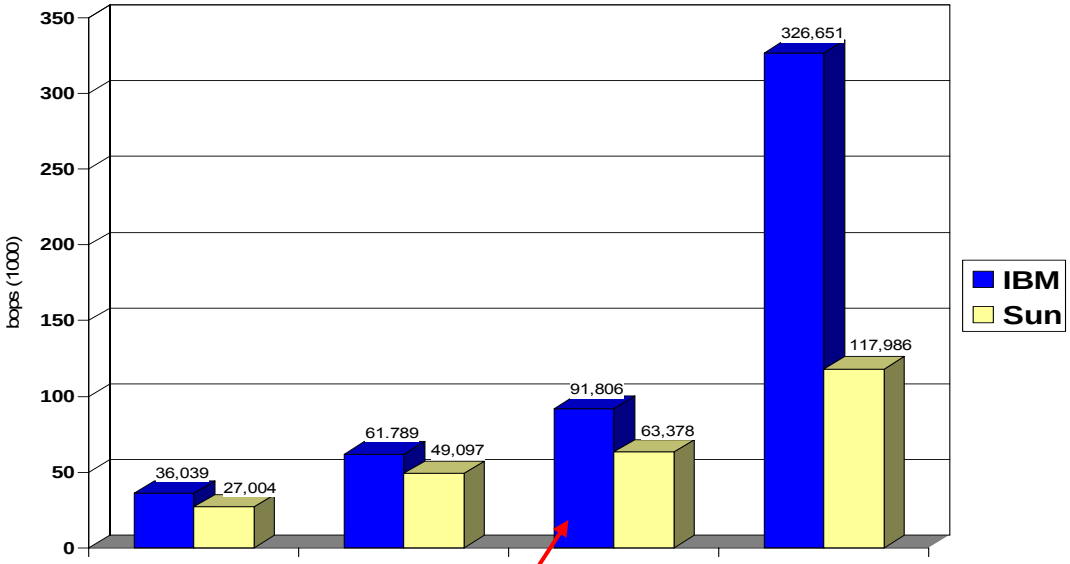
- **System p5 510Q Express:** Our lowest-priced 4-core system outperforms Sun Fire T1000*
- **System p5 520Q Express:** New price point for configurable 4-core
- **System p5 560Q Express:** Outperforms all competitive 16-core systems on Java business applications**

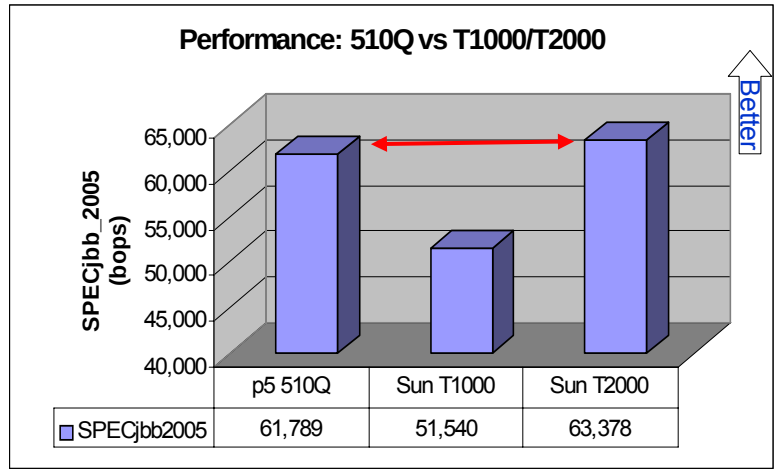


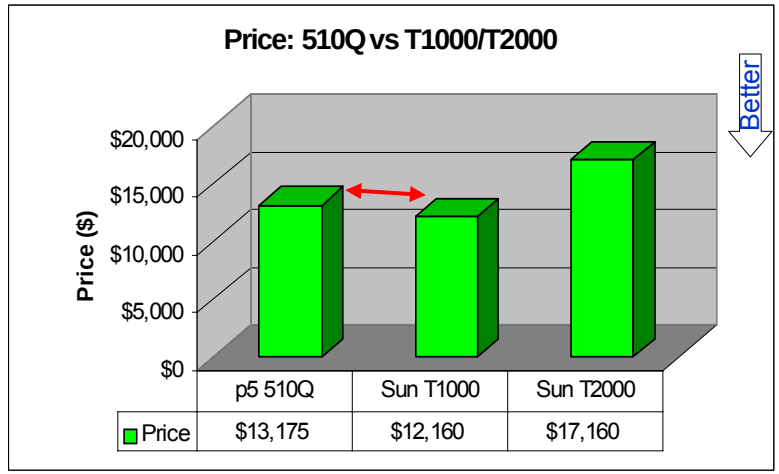
- 3-year warranty and IBM Director for comprehensive systems management [Standard]
- Advanced POWER Virtualization with browser-based Integrated Virtualization Manager for improved utilization on a single server [Optional]

*IBM System p5 510Q (4-cores, 2 chips) SPECjbb2005 result of 54785 bops (54785 bops/JVM) submitted to SPEC for review on 2/13/2006 compared with Sun Fire T1000 (8 cores, 1 chip) result of 51540 bops (12885 bops/JVM).
**IBM System p5 560Q (16-cores, 8 chips) SPECjbb2005 result of 226291 bops (28286 bops/JVM) submitted to SPEC for review on 2/13/2006.
Competitive results current as of Feb.7, 2006 on www.spec.org. SPEC, SPECjbb reg tm of Standard Performance Evaluation Corporation.

Core to core: System p5 servers lead on SPECjbb2005







IBM p5 systems demonstrate significant performance advantage on SPECjbb2005 when compared on equal number of cores

	IBM cores/chips/threading	Sun cores/chips/threading
2 cores	p5 510 p5+ 2/1/yes (1900 MHz)	Sun X4200 Opteron 2/2/N/A (2800 MHz)
4 cores	p5 550 p5+ 4/2/yes (1900 MHz)	Sun X4200 Opteron 4/2/N/A (2600 MHz)
8 cores	p5 550Q p5+ 8/4/yes (1500 MHz)	Sun T2000 US™ T1 8/1/yes (1200 MHz)
16 cores	p5 570 p5+ 16/8/yes (2200 MHz)	Sun V890 US™ IV+ 16/8/N/A (1500 MHz)

Source: http://www.spec.org/benchmarks.html#java IBM results to be submitted to SPEC on 2/14/06; All other results as of 02/03/2006

Most performance for the price

Blade JS20/21
1-2 way *2.5 Ghz* PowerPC970

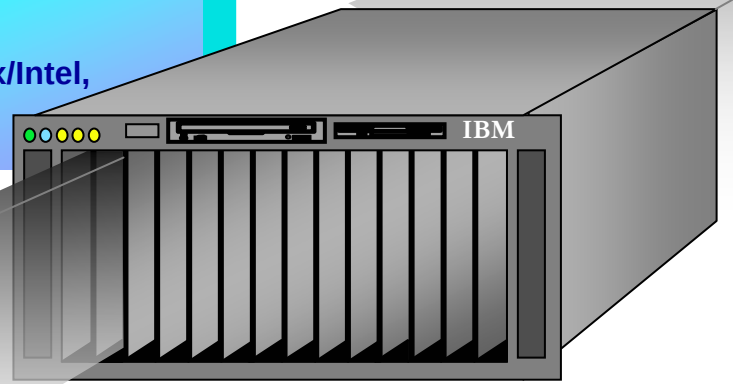
Les avantages des BladeCenters :
- Densité
- Facilité d'administration et de gestion

Avec les avantages de l'architecture POWER :
- 64-bit
- Performances accrues avec VMX

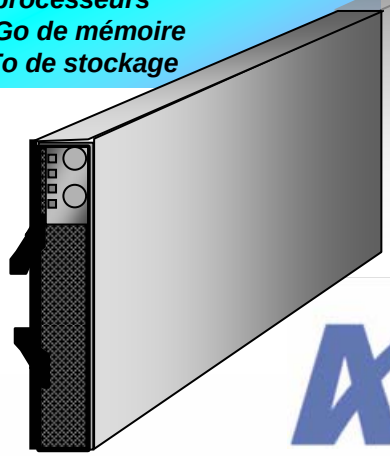
Et dans la même armoire, Windows, Linux/Intel, Linux/Power et AIX.

Rack 19 " 42U avec six BladeCenters qui peut contenir jusqu'à :
- ***84 blades***
- ***168 processeurs***
- ***336 Go de mémoire***
- ***6.7 To de stockage***

Rack 42U



BladeCenter 7U



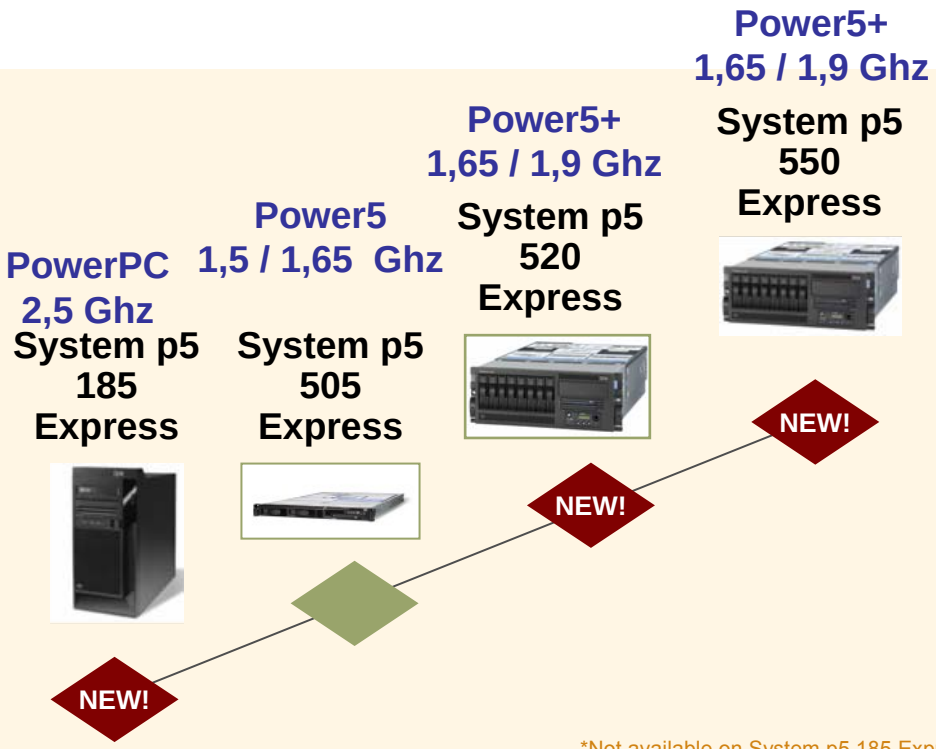
Built on PowerPC 970 processor, not POWER5.

Most affordable

POWER systems

At a price that might surprise you!

- **System p5 185 Express:** The perfect single application server for smaller to mid-sized businesses
- **System p5 520 Express:** Outperforms all competitive 2-core servers in floating point*
- **System p5 550 Express:** Outperforms all competitive 4-core servers in Java™ business applications**



*Not available on System p5 185 Express

- 3-year warranty and IBM Director for comprehensive systems management [Standard]
- Advanced POWER Virtualization with browser-based Integrated Virtualization Manager for improved utilization on a single system [Optional]*

*IBM results submitted to SPEC as of 02/13/06. Claim based on IBM System p5 520 2-core 1.65GHz SPECfp_rate2000 result of 61.6. Source: http://www.spec.org.

**"SPECjbb2005 IBM System p5 550 (4-cores, 2 chips) SPECjbb2005 result of 60419 bops (60419 bops/JVM) submitted to SPEC for review on 2/13/2006. Competitive results current as of Feb 7, 2006 on www.spec.org. SPEC, SPECjbb reg tm of Standard Performance Evaluation Corporation".

Most affordable

IBM System p5 185 Express

Exceptional value in a POWER server!

- **Exceptional price and price/performance**
- AltiVec™ application support
- Available in desk side or rack mount (3 bays; 4 slots)
- Upgrade path for RS/6000® 150 and 170 servers
- Alternative to Windows servers such as the Dell SC 1420
- **Choose from thousands of AIX or Linux applications and IBM integrated offerings like:** WebSphere, Apache, SAMBA, Network E-Mail Security Express, J-Scribe Intelligent Server Solution

Starting at 3.200 €

1-, 2-core 2.5GHz PowerPC 970

What's your requirement?

- A distributed application server for retail and health care applications
- A low-priced, single application UNIX-Linux operating system server

* US List Price as of February 14, 2006. Prices are subject to change without notice and reseller prices may vary.
http://www.ibm.com/servers/ca/en/eserver/pseries/hardware/entry/510express_browse.html
AltiVec is a trademark of Freescale Semiconductor, Inc.

Customer References

as of September 30, 2005

PUBLISHED (59) *OpenPower references in italics (13)*

AG (16)

ADP
AMVESCAP
IBM Applic. Transformation
IBM Solution Partnership Center
Intermountain Health Care
Medical College of GA
Medical College of WI
National Semiconductor
NJ Dept of Human Services
Princeton University
State Univ at Albany
TSYS Prepaid
University of Oregon
University of Ottawa
University of Washington
VA Modeling, Anal & Sim

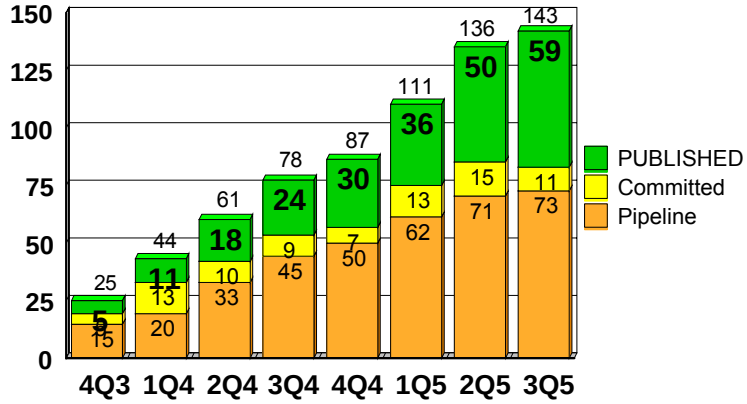
EMEA (19)

Barcelona Supercomputing Ctr
Cambridge University
CNIO; DGDDI
europa3000 ag
ICMCB;*J.A. Becker & Söhne*
JSCC; LexCom
Max-Planck Inst. for Solid Rsrch
Medical Practice Group
OSIS International
Röhm GmbH Sontheim
Rotana Video & Audio Visual
Servicio Extremeño de Salud
The Daylight Company Ltd
Université catholique de Louvain
University of Reading
Vlaamse Radio-en Televisieomroep

AP (24)

China Meteorological Admin.
Chuncheon City Hall; Chuo Univ.
CJ Systems; Doshisha Univ.
Effisis
Electronics & Telecom Research Institute
Gravity; *Hubei Yichang Finance Bureau*
Korea IT Ind. Promotion Agency
Korea University; Ministry of Railway
MinSheng Life; *netprice Ltd.*
Prudential Life Insurance
Qujing City; *Radio Research Lab*
Seoul National Univ.
Skybility Corp.
Tata Consultancy Services
Tata Motors; UTI Bank
Victorian Partnership for Adv Computing
YeePay

Linux on POWER Customer References



COMMITTED (11) *OpenPower in italics (5)*

AG (4)

Community College of Baltimore Cty
Dillard's
Image Engine
Stowers

EMEA (2)

Blum Holiday Tours GmbH
University of Wales-Cardiff

AP (5)

China E-Port
China Grain Reserves Corp.
Danone Asia Pacific
Dept of Info Ind, GuangDon Province
National Securities Depository Ltd

PIPELINE (73)

AG (33)

AEGON; Aetna
Albertsons; Cal Tech
Cigna; COLSA
Deloite Consulting
Dr. Pepper; Ensemble Travel
Farmers; Hewitt; Inveresk
Kaiser; Khimetrics
MASCO; MEDecision
NCAR; Netflix
Penn State Univ; Probity
QUALCOMM
S1; St. Jude; Siemens Energy
Synovus; TD Bank
Univ of Buffalo; Univ of CO
Univ of PA School of Med
Vanderbilt Medical; VISA
Watts; 24 Hour Fitness

EMEA (24)

AEAT; Bionorica; CNAM
Deut.Instit fur Wirtschuf.
EMBL; EuroInformation
Fortus; GAD
Gertex; Helios
Housing Bank
IN2P3; IT-Informatik
Lufthansa; MOI Tunisia
Oxford Univ; Porsche
Raiffeisen Bank
SHOM; SOAR
Topalis; UKAFF
Univ of Kiel
Volkswagen

AP (16)

Bureau of Meteorology
Dept of Primary Industrie
Hansol Mutual Savings B
Hyundai Autonet
India Institute of Science
ISA
JeonNam National Unive
KIUP Bank; KRIBB
MAMPU; NDRC
NIH
NTT-Daiichikosho
Peng-hu County Govt
Seoul Subway
SNU Meteorology Resea

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http://w3.ncs.ibm.com/crmd.nsf/ADSD?openForm&Doc=Reference&Docend=1&SA=Linux+on+POWER&SAend=1&SAao=OR&

UTI Bank

www.utibank.com
Mumbai, India

Client

Challenges

- Accommodate a 40-percent increase in transaction volume and the addition of 2,000 new accounts daily
- Improve system availability and reliability

POWER™ Solution

An e-business infrastructure solution provided with help from IBM Business Partners TechPacific, Infosys, Oracle and Tandem using IBM pSeries® servers running Red Hat Linux® Enterprise

Benefits

- Accelerated transaction processing and system response time by 30 percent, leading to improved customer satisfaction
- Consolidated workload data and simplified IT system administration, improving IT team productivity
- Reduced the total cost of ownership (TCO)

C.G.G

France, UK, Asie

+ de 1 300 JS21

Client

Challenges

Deliver world-class deep-computing and e-science services with an attractive price/performance ratio

Enable collaboration among leading scientific teams in the areas of sciences and physics

POWER™ Solution

IBM Terascale Linux® cluster platform comprising IBM BladeCenter™ JS21 servers and IBM TotalStorage® hardware

Benefits

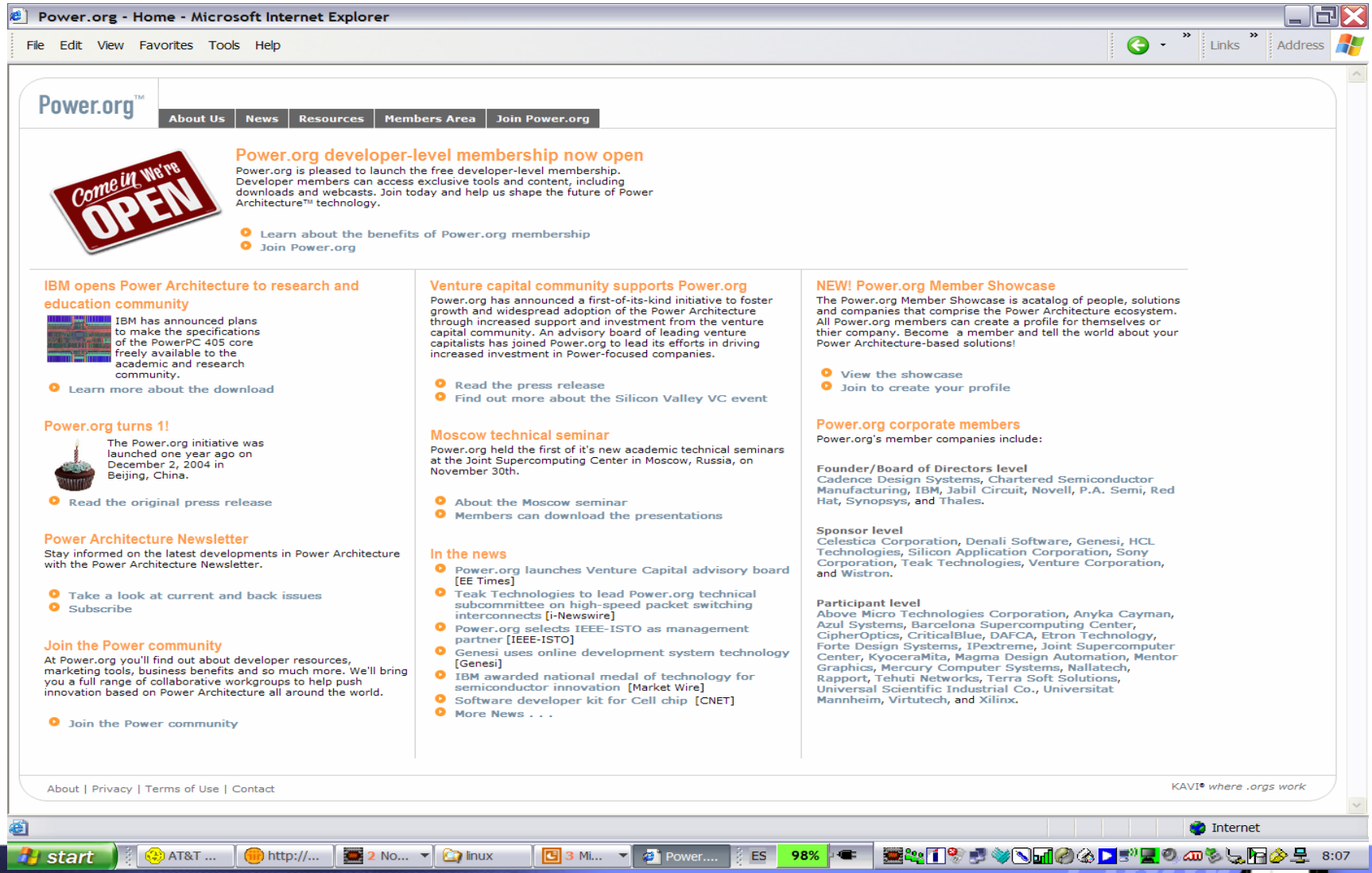
Linux lowers software costs, Reduced the total cost of ownership by more than one-third

High levels of performance, availability and reliability

The new system is much easier to manage

Accelerated transaction processing and system response time by 30 percent, leading to improved research

And if you need help…Join our POWER Community (www.power.org)



Use the Linux on Power Community Portal…

AIX and Linux on POWER Community Portal

Your online collaboration and innovation center

Collaborate

Discuss your successes, challenges, hints/tips

- ***Forums***
  - ***AIX***
  - ***Virtualization***
  - ***nmon***
  - ***Linux on Power***
- ***Blogs***
  - ***Virtualization***
  - ***AIXpert***
  - ***Linux on Power***
- ***Wikis (November)***
  - ***AIX Performance/Tuning***
  - ***Virtualization***
  - ***Nmon***
- ***OpenPower Project***
- ***User Group information***
- ***Event details***

www.ibm.com/linux/power

NEW!

http://www.ibm.com/eserver/pseries/community

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…. Or contact us directly!!!!

Pascal LAVRAT
Product Manager Aix - Linux on Power
Pascal.lavrat@fr.ibm.com

Conclusion

- Virtualisation
  - consolidation des serveurs d'infrastructures sur une machine
- Scalabilité
  - les performances suivent l'évolution du nombre de processeurs
- Performances
  - architecture Power 5
- Disponibilité
  - PFA (Predictive Failure Analysis)
  - redondances des composants
  - composants hot-plus
  - processeur de management

Il est temps d'offrir à Linux……le POWER

Questions

M@rci™

e-business

Pascal LAVRAT
Product Manager UNIX-Linux on Power
Pascal.lavrat@fr.ibm.com