

POWER SYSTEMS UPDATE

Cesar Lepage

clepage@pe.ibm.com

Power Systems Technical Sales Specialist



Power your planet.

Power es...

Evolución continua

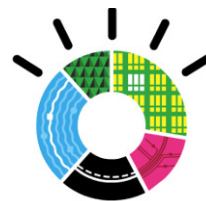
Liderazgo en Rendimiento

Flexibilidad sin tiempo de inactividad

Virtualización sin límites

Optimización de costos

Tecnología de Vanguardia



Power es...

Evolución continua

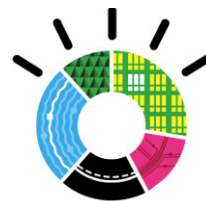
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Evolución continua

Posicionamiento de Productos de HW

IBM Systems

Delivering on the promise of smarter computing

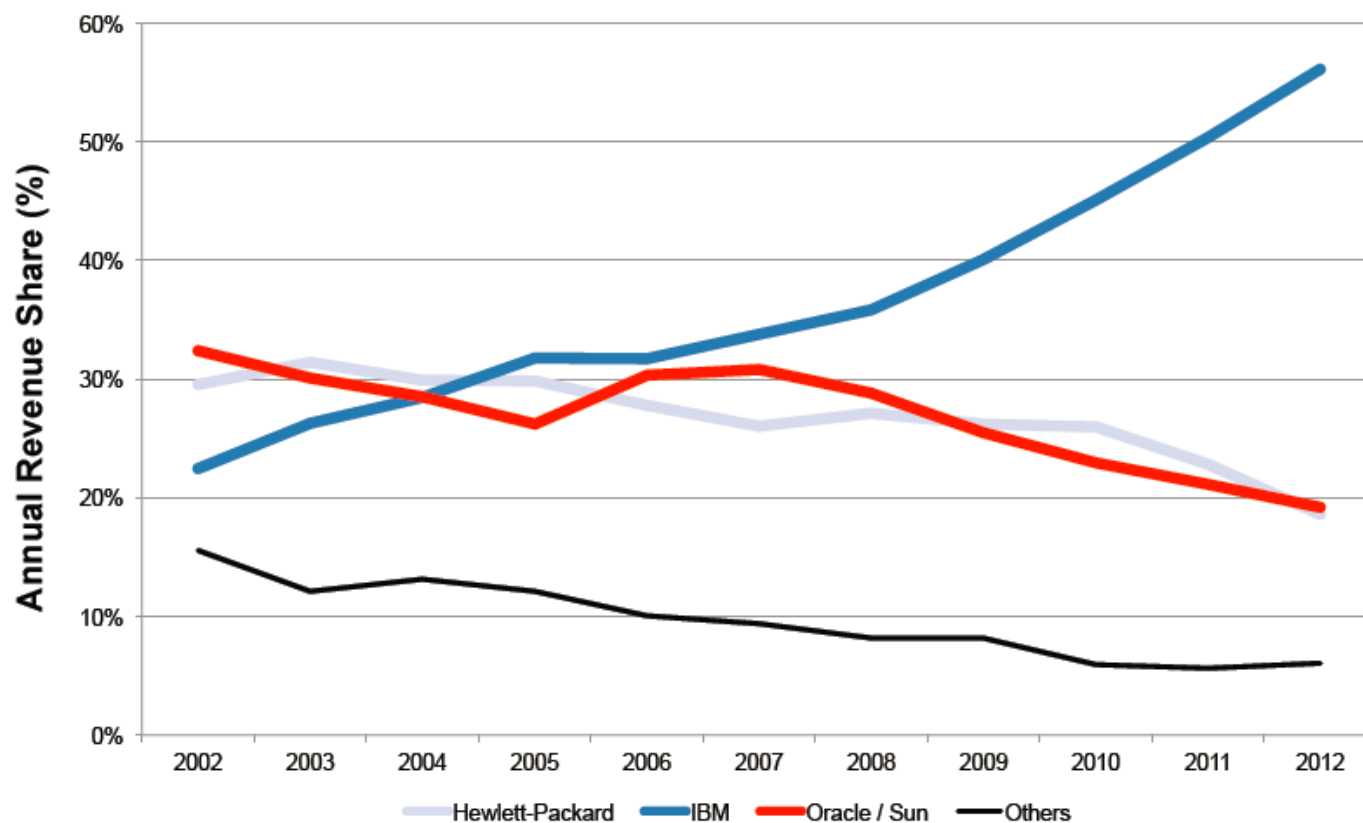
Introducing innovative new hardware, systems software and services designed and built on the precepts of smarter computing



Evolución continua

Distribución del mercado Unix

IDC: 10-Year UNIX Server Market Revenue 2002 - 2012

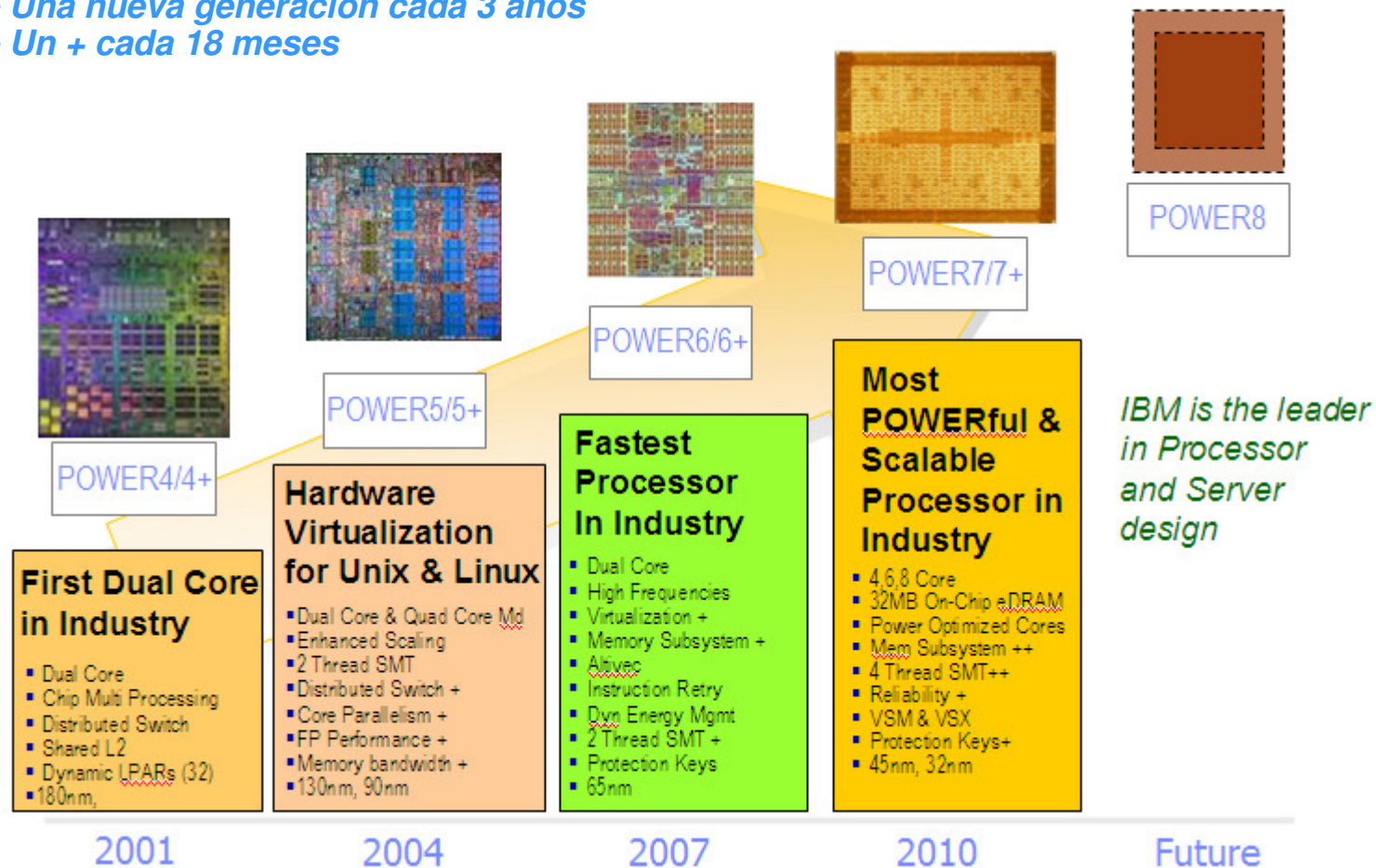


Source: IDC Server Tracker, February 2013

Evolución continua

Roadmap de procesadores POWER IBM

- Una nueva generación cada 3 años
- Un + cada 18 meses



Evolución continua

Arquitectura de Procesadores Power7+

Faster Performance

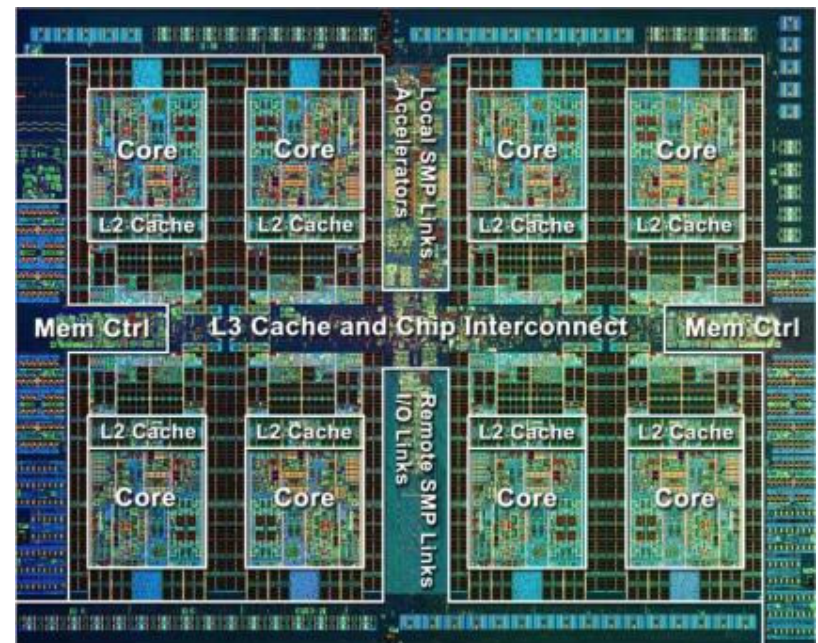
- Higher frequencies
- 10 MB L3 Cache per core
- Random number generator
- Enhanced Single Precision Floating Point

Increased Efficiency and Flexibility

- Active Memory Expansion accelerator
- On-chip encryption acceleration for AIX
- More performance per watt
- Enhanced energy / power gating
- 20 Virtual Machines per core

Better Availability

- Self-healing capability for L3 Cache functions
- Processor re-initialization



POWER7+
32 nm

Evolución continua

Arquitectura de Procesadores Power7+

*New POWER7+ Models Offer Significantly Improved
Price/Performance*

- Power 740
 - 21-42% Better
- Power 720
 - 14-21% Better
- Power 730
 - 49-60% Better
- Power 710
 - 16-39% Better



Evolución continua

Oferta de IBM Power



**Oferta de otros
competidores**



Oferta de Power Systems

Power your planet.

Power System Portfolio 3Q 2013

Extending the portfolio to reach new clients and drive new workloads



Tecnología de Vanguardia

Power 710

2U - 1 Socket
4, 6, or 8 cores
POWER7+ up to 4.2GHz
256GB memory

Priced to target x86

Dense, attractively priced single-socket server



Power 720

4U or tower - 1 Socket
4, 6, or 8 cores
POWER7+ @ 3.6 GHz
512GB of memory

Affordable, flexible rack or tower server for a complete, integrated business system



Refreshed with POWER7+ architecture

Power 730

2U - 2 Socket
8, 12, or 16 cores
POWER7+ up to 4.3 GHz
512GB of memory

Priced to target x86

Dense, high performance, energy efficient server ideal for running multiple application and infrastructure workloads



Power 740

4U - 2 Socket
6, 8, 12, or 16 cores
POWER7+ up to 4.2 GHz
1TB of memory

High-performance, flexible, configurable and reliable midsize database and consolidation server



Power Flex POWER7+ Node Offerings.....



**p260
7895-23A**



**Cores: 4
Max Memory: 512 GB**

**p260
7895-23X**



**Cores: 8 / 16
Max Memory: 512 GB**

**p270
7954-24X**



**Cores: 24
Max Memory: 512 GB**

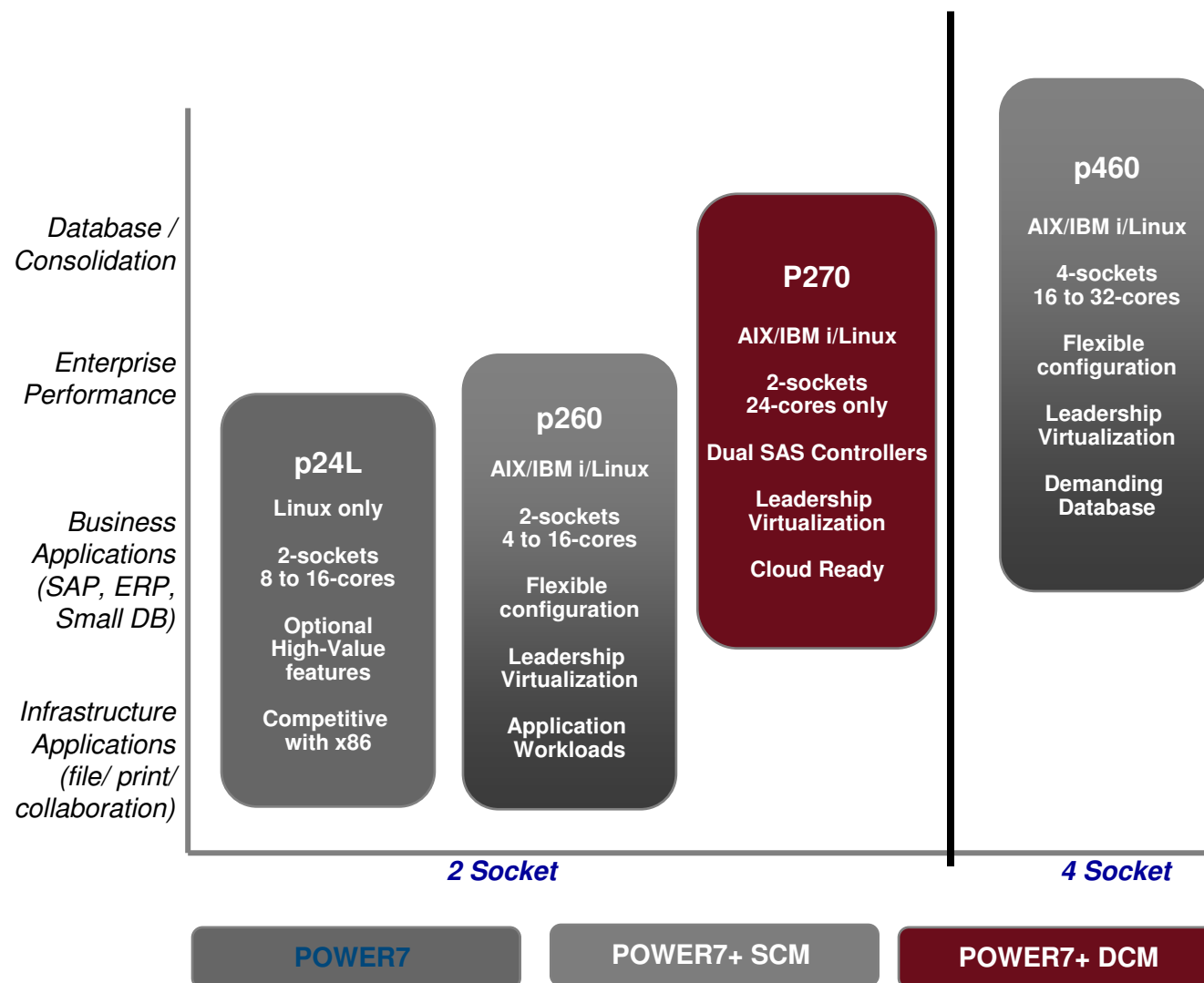
**p460
7895-43X**



**Cores: 16 / 32
Max Memory: 1 TB**



Flex System: POWER compute node Positioning



PowerLinux 7R4 (8248-L4T)

Operating systems:

SLES 11 SP2 and RHEL 6.4 or later

System Software:

PowerVM for PowerLinux included



	PowerLinux 7R1	PowerLinux 7R2	PowerLinux 7R4
Planar/ Form factor	1 Socket/ 2U	2 Socket/ 2U	4 Socket/5U
Processor Offerings (SCM)	4-Core @ 3.6 GHz 6-Core @ 4.2 GHz 8-Core @ 4.2 GHz	16-Core @ 3.6 GHz 16-Core @ 4.2 GHz	16 / 32 cores @ 3.5GHz 16 / 32 cores @ 4.0GHz
DDR3 Memory features	4 / 8 / 16 / 32 GB DIMMs 32GB to 256B	4 / 8 / 16 / 32 GB DIMMs 32GB to 512GB	8 / 16 / 32 GB 32GB to 1024GB
Max Disk Drives (sys unit +i/O drawer) / storage	270/243TB (L1T)	378/ 340TB (L2T)	1320/ 1,171 TB
Max. PCIe 12X I/O drdw	N/A	2 (L2T)	4
Max. PCI slots (system unit + 12X I/O drwr)	5 PCIe	5 + 20 PCIe (L2T)	6 + 40 PCIe
GX++ Slots	One	Two	Two
Intergrated Ethernet	Required Quad Port 10/100/1000 in PCIe 4x slot		4 @1Gbps or 2 @10Gbps
I/O Drawer	N/A	Up to TWO 12x-Attach I/O	Up to Four 12x-Attach I/O
Max Logical Partition	160	320	640
Redundant Power/Cooling	Option/Standard	Standard/Standard	Standard/Standard
Split backplane	No	No	Yes
Maintenance Coverage	3 years	3 years	3 years

Power es...

Evolución continua

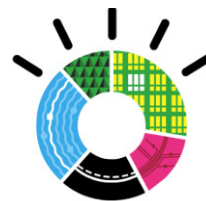
Liderazgo en Rendimiento

Flexibilidad sin tiempo de inactividad

Virtualización sin límites

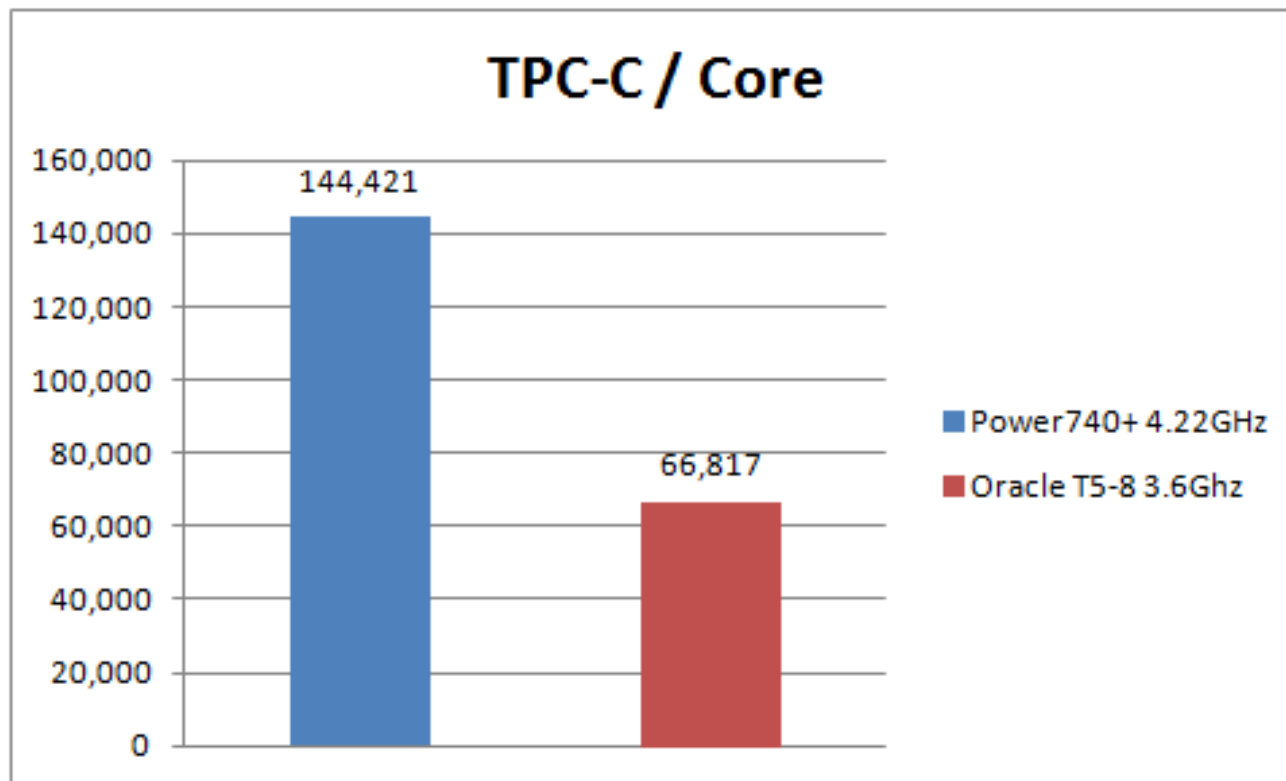
Optimización de costos

Tecnología de Vanguardia



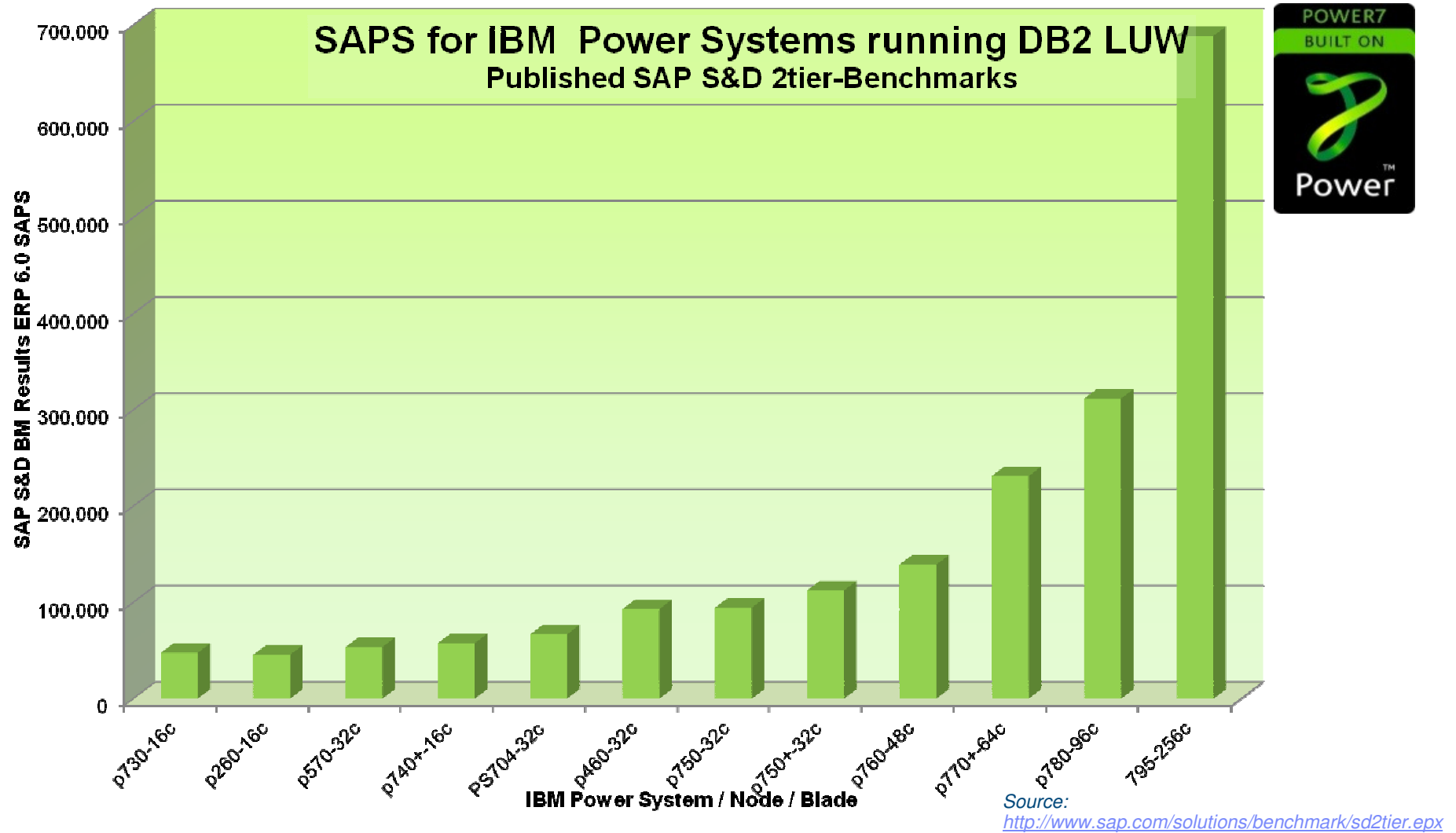
Liderazgo en rendimiento

Análisis de Rendimiento por Core

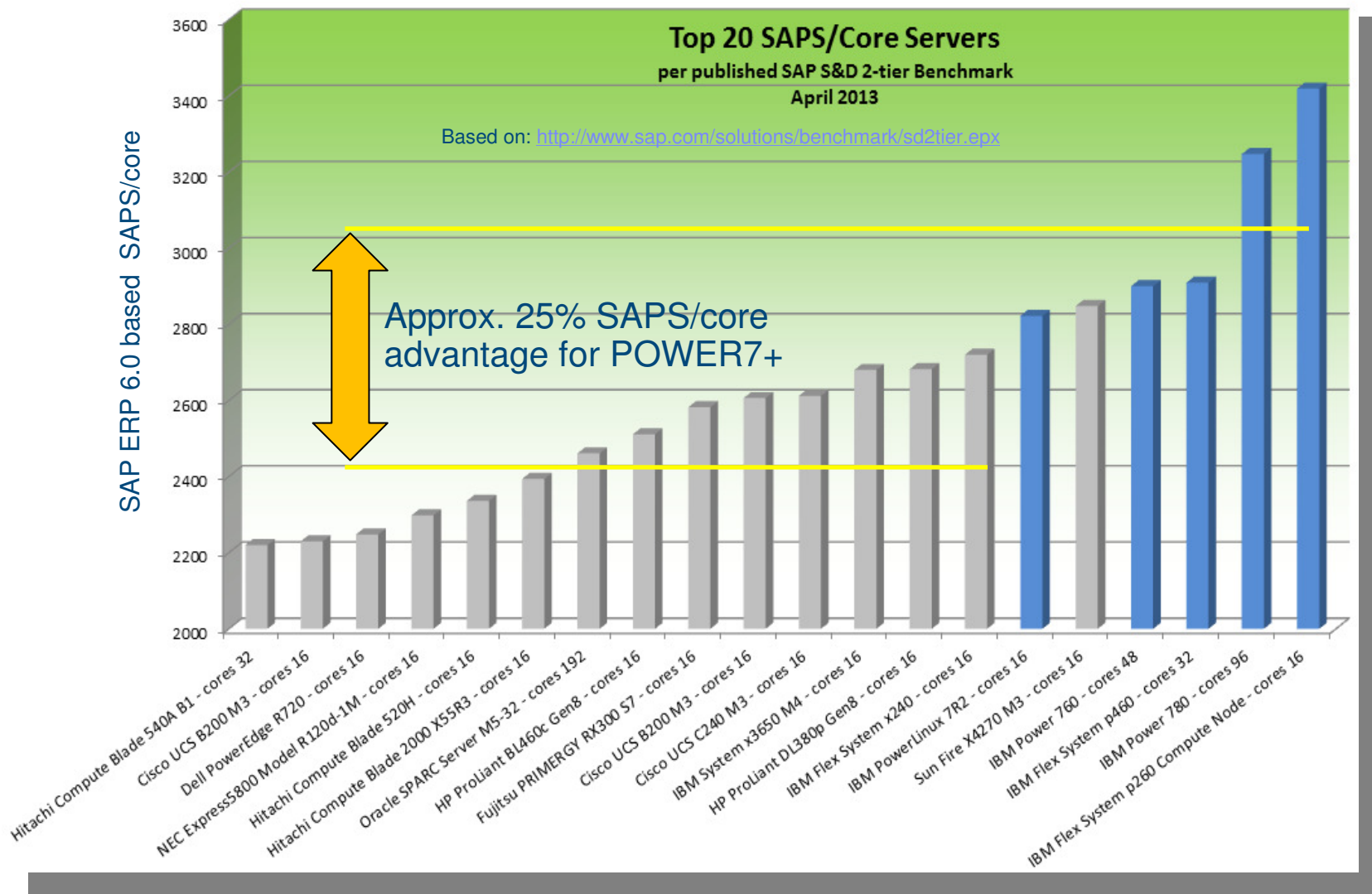


- Aún con un Factor de licenciamiento de 1 para Oracle, IBM continua siendo la mejor Opción para reducir costos
- Utilizando Shared Pool, los ahorros en licenciamiento se incrementan dramáticamente

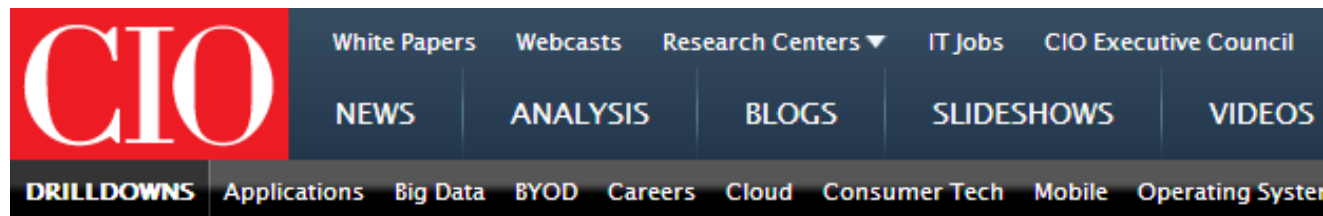
Power Systems Family – SAPS Scalability



Strong per Core Throughput of POWER7+ Sustained in Multi-Socket Servers




¿Qué dice el mundo de TI?



Why Oracle's Advertising Claims Are Strategically Stupid

Oracle had to pull advertisements this year after IBM complained that Oracle's performance claims were unfounded. Such behavior is risky, CIO.com columnist Rob Enderle says, as it suggests to customers that Oracle can't be trusted and puts IT careers in jeopardy.

By Rob Enderle
Wed, November 21, 2012

 Add a comment

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Evolución continua

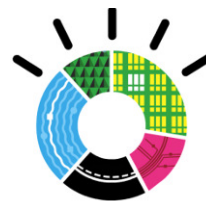
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Flexibilidad sin tiempo de inactividad

Diseñado para aplicaciones de misión crítica

Procesador

- Dynamic De-Allocation
- Instruction Retry
- Alternate Processor Recovery
- Dynamic Processor Sparing

Memoria

Tecnología Chip Kill con Bit-steering

Sistema Operativo

Hot Patch Kernel
Storage keys

Hot Plug / Removal

- Ventiladores
- Fuentes de Poder
- Adaptadores PCI-X y PCIe
- IO Drawers
- Discos



Dual Clocks

770/780/795

First Failure Data Capture

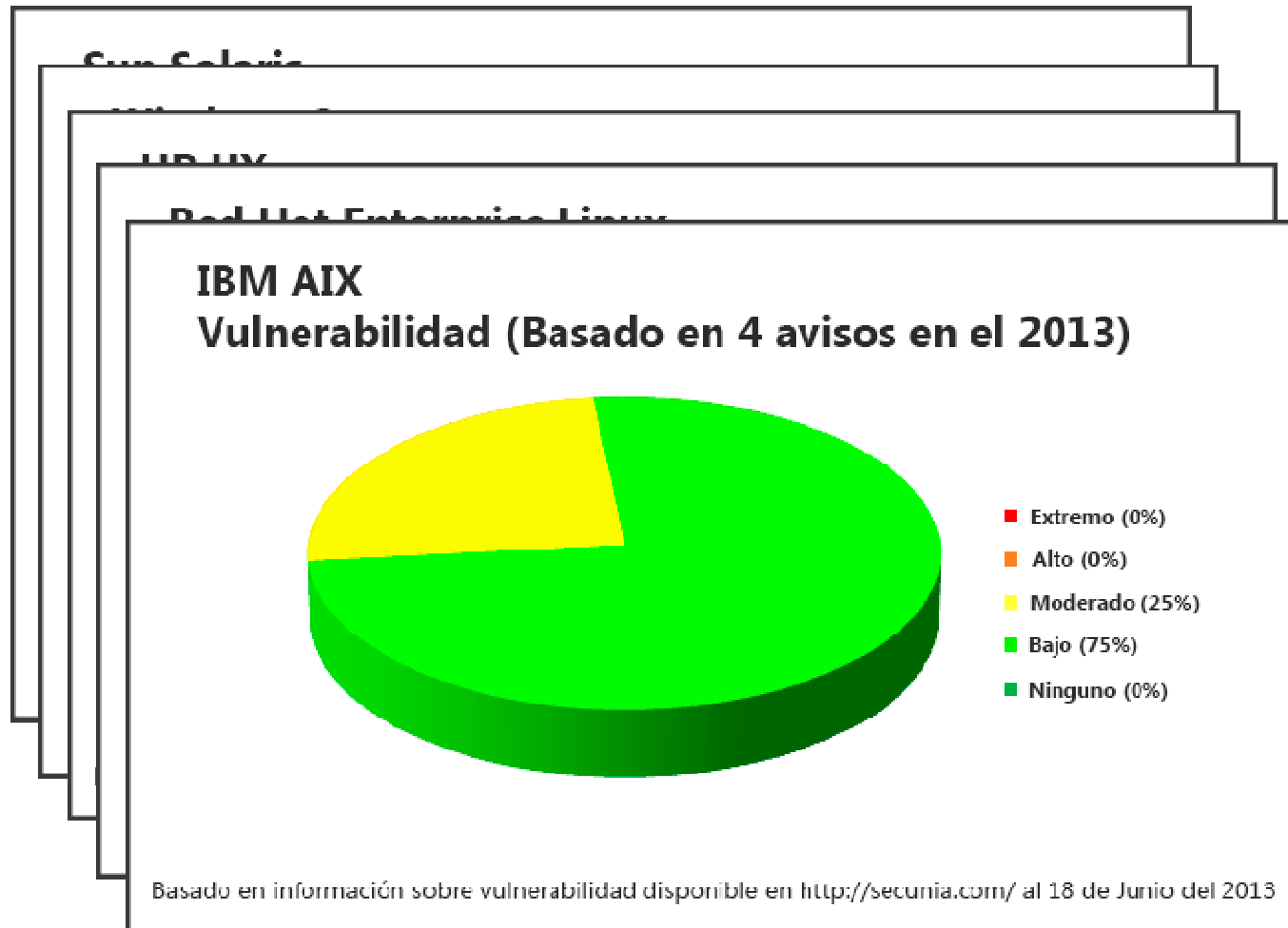
Mobilidad

Live Partition
Mobility

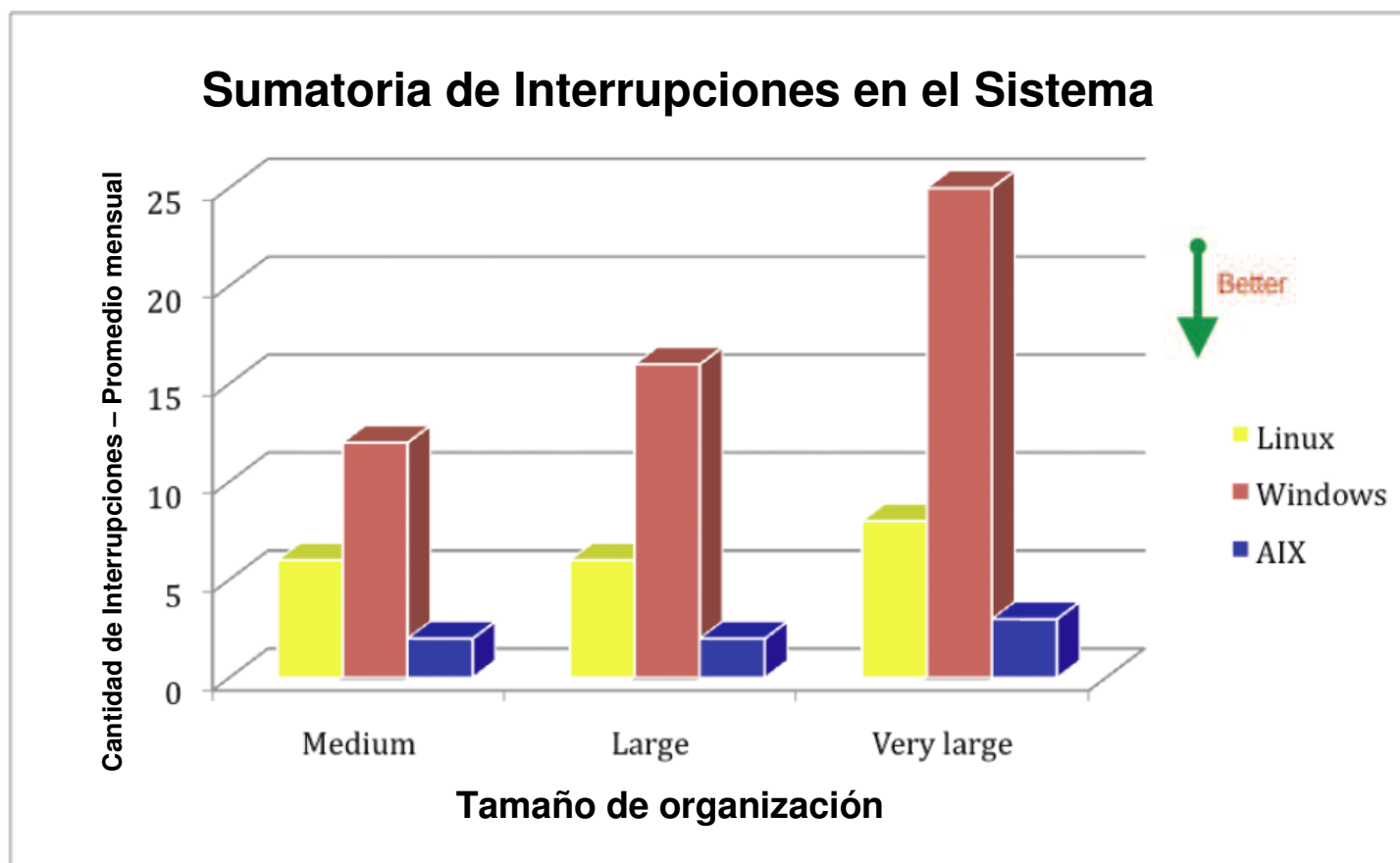
Power your planet.

Flexibilidad sin tiempo de inactividad

Incidencias a lo que va del año...

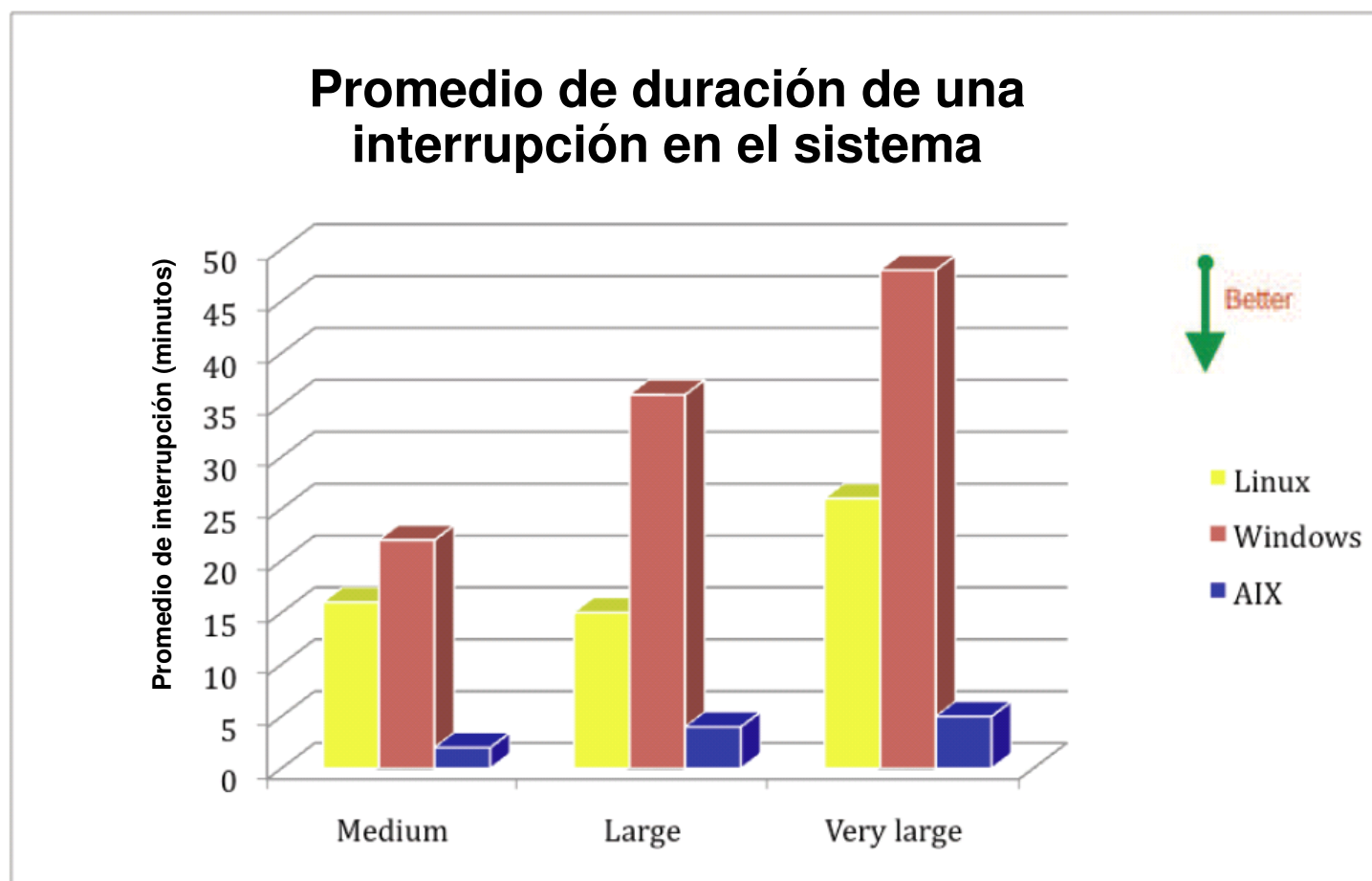


Flexibilidad sin tiempo de inactividad



Fuente:
Solitaire Interglobal – Does Your OS Matter?

Flexibilidad sin tiempo de inactividad



Fuente:
Solitaire Interglobal – Does Your OS Matter?

PowerLinux - RAS

PowerLinux Reliability And Serviceability Beats Intel

RAS Feature	POWER7	Intel
System RAS		
OS independent First Failure Data Capture	Yes	No
Processor RAS		
Processor Instruction Retry	Yes	No
Alternate Processor Recovery	Yes	No
Dynamic Processor Deallocation	Yes	No
Dynamic Processor Sparing	Yes	No
Memory RAS		
Chipkill™	Yes	Yes
Active Memory Mirroring for Hypervisor	Yes	No
Memory Sparing	Yes	Yes
I/O RAS		
Extended Error Handling	Yes	No
I/O Adapter Isolation (PCI-Bus and TCEs)	Yes	No

More Info: “POWER7 System RAS”

<http://www-03.ibm.com/systems/power/hardware/whitepapers/ras7.html>



PowerLinux - RAS

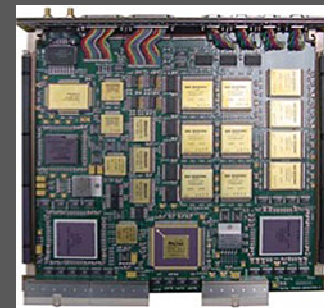
What more do you need to know about RAS and POWER versus x86?

“ ... It needs to be able to handle basic functions, but it's more important that it be able to survive and work in the harsh conditions in space and on Mars. ... Because of this, he added that an **Intel Core i7 processor**, for example, wouldn't survive a day on Mars because of the extremes in temperature ... “

Source: [“NASA: Your smartphone is as smart as the Curiosity rover”](#), Computerworld, August 8, 2012. [Link](#)



The single-board computer aboard Curiosity is built around a **PowerPC-based RAD750** microprocessor.



Power es...

Evolución continua

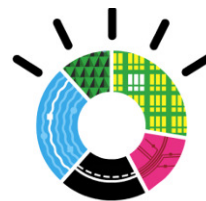
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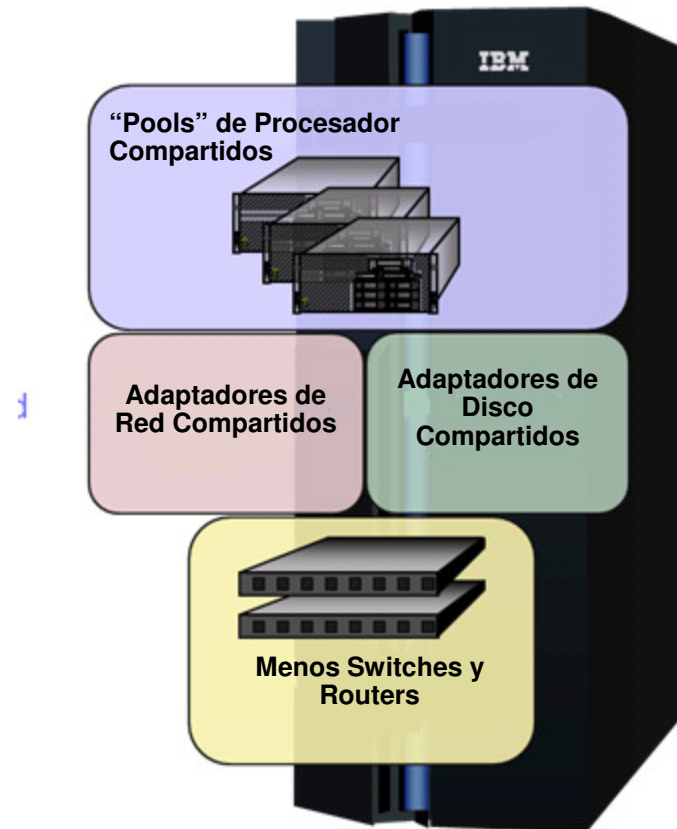
Tecnología de Vanguardia



Virtualización sin límites

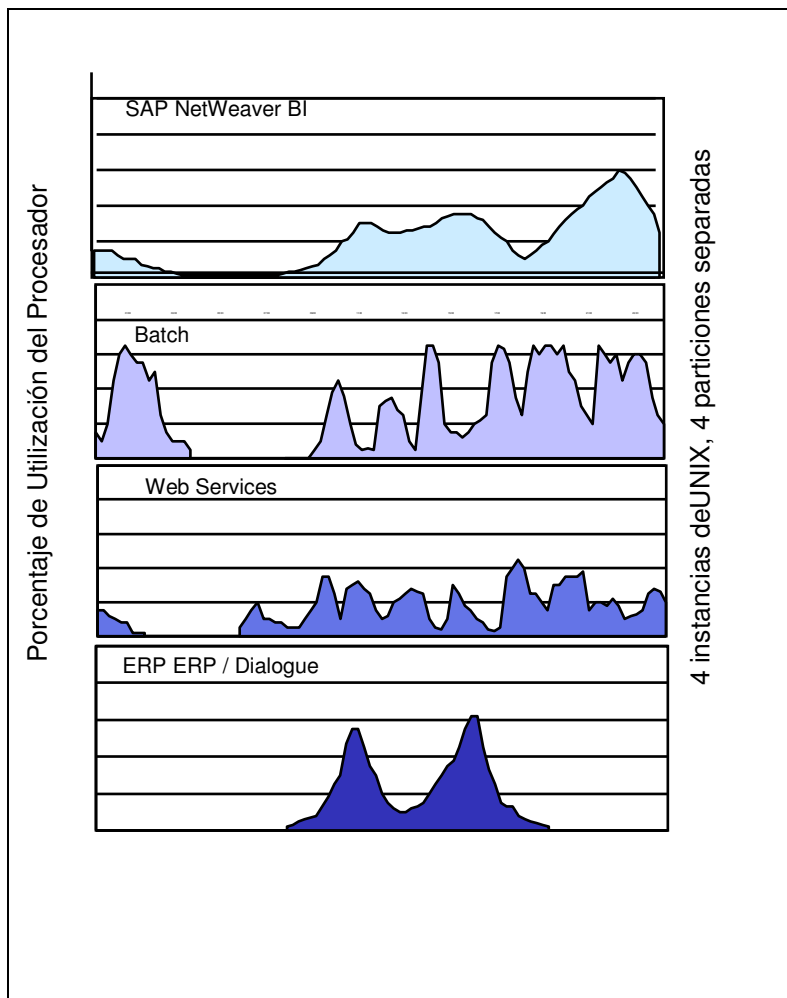
Beneficios de la Virtualización

- **Procesadores Compartidos**
 - Mayor utilización del servidor
 - Potencial reducción en costos de SW
- **Adaptadores Compartidos**
 - Reducción en costos del servidor
 - Reducción en costos de infraestructura
- **Rápido provisionamiento de servicios**
 - Reducción en tiempos de provisionamiento e instalación
- **Impacto en infraestructura reducido**
 - Ahorros en aire acondicionado, energía y espacio

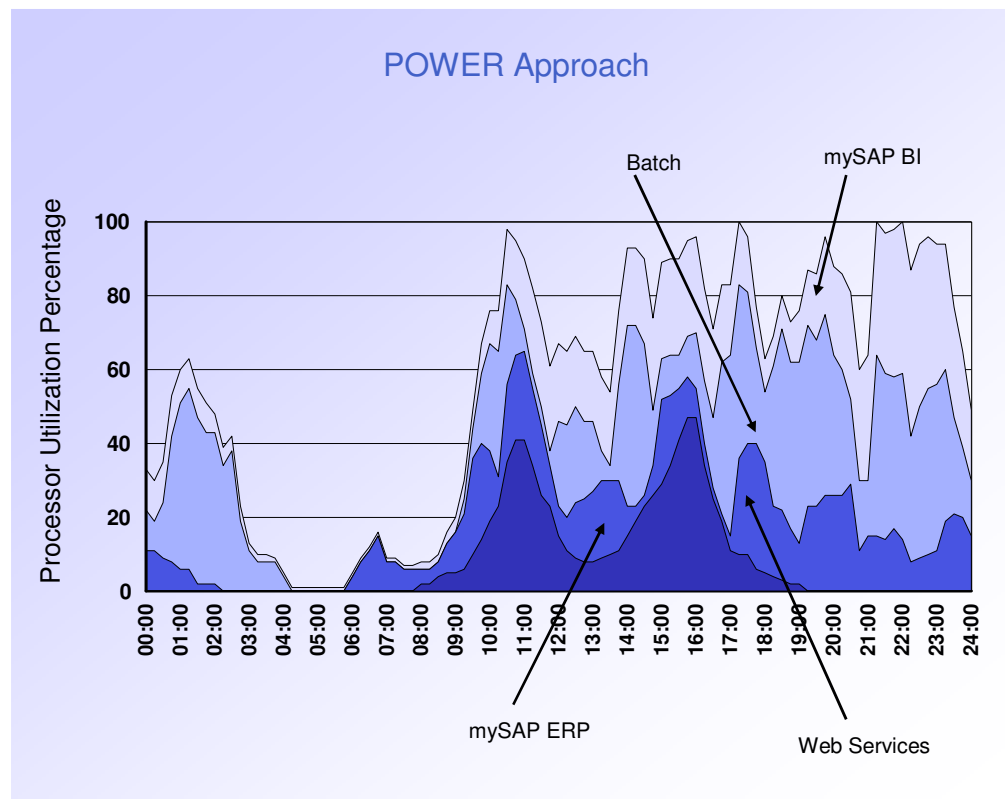


Virtualización sin límites

Ejemplo de Virtualización



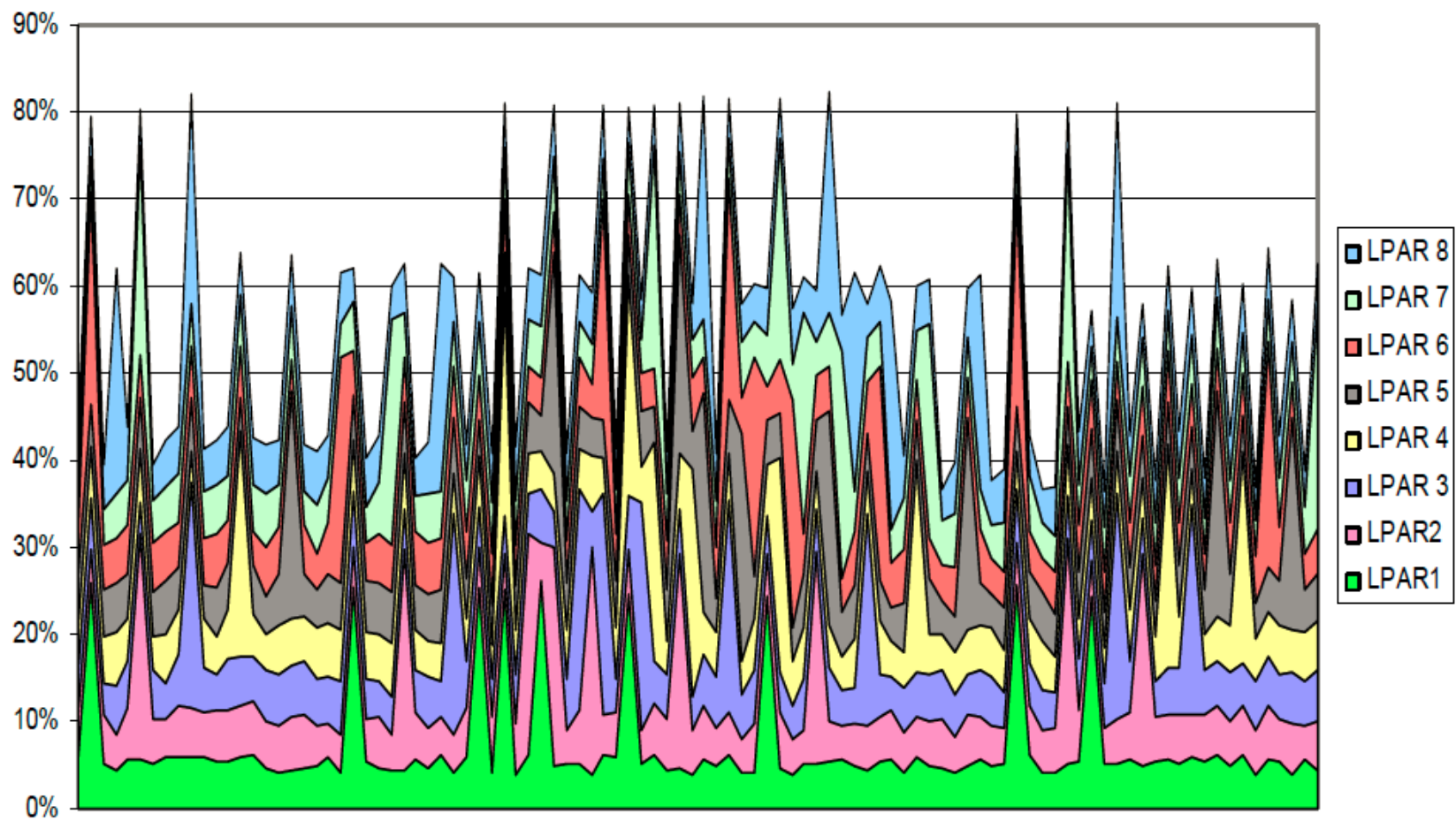
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No existe penalización por virtualizar en Power

Power - Virtualización

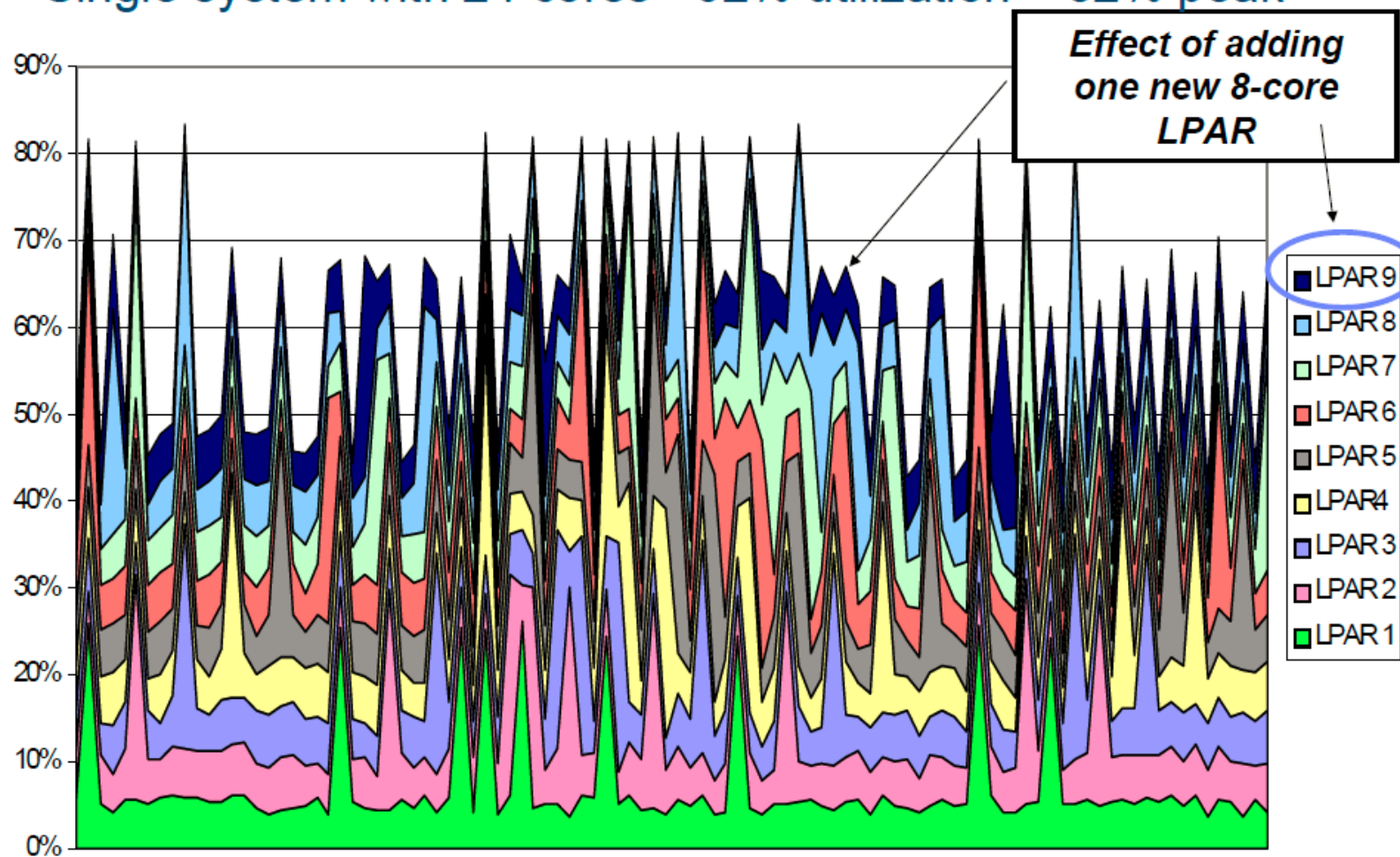
Single system with 24 cores - 60% utilization – 80% peak



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Power - Virtualización

Single system with 24 cores - 62% utilization – 82% peak



Power your planet.

PowerVM Editions incl. new VIO 2.2 Features



<i>PowerVM Editions</i>	Express	Standard	Enterprise
Concurrent VMs	2 per server	10 per core (up to 1000)	10 per core (up to 1000)
Virtual I/O Server	✓	✓ ✓	✓ ✓
NPIV	✓	✓	✓
Suspend/Resume		✓	✓
Shared Processor Pools		✓	✓
Thin Provisioning		✓	✓
Live Partition Mobility			✓
Active Memory Sharing			✓
Shared Storage Pools+		✓	✓
Active Memory Deduplication			✓
Network Balancing		✓	✓
Live Partition Mobility Performance Improvements			✓

PowerVM delivers scalability and flexibility

Virtualization Capabilities	Oracle VM for x86 (Version 3.0.3)	VMware vSphere 5.0 / 5.1	PowerVM
Processor	Intel Xeon*	Intel Xeon, AMD Opteron	POWER
Virtual CPUs per VM	128 (threads)	32 / 64	256
Memory per VM	1024 GB	1024 GB	8192 GB
Live VMs per server	120	512	1000
CPU threads per server	160	160	1024
Memory per server	2048 GB	2048 GB	8192 GB
Dynamic CPU/memory	No	Add/Remove (but not Remove Memory)	Yes
Direct I/O access	No	Some (with recent Intel Xeon)	Yes
Dual VIOS	No	No	Yes
Implementation	Xen-based software layer	VMware software layer	Built-in firmware
Hypervisor I/O isolation	No	No	Yes (using VIOS)
Mobility across generations	No, only identical servers	Some (with recent Intel Xeon)	Yes (POWER6-7)
Licensing model	Free	Per socket +SWMA	Per activated core + SWMA
Maintenance, support	\$\$\$	\$	\$
Additional software required	Oracle DB (for OVM) WebLogic (for OVM Manager)	No	No

* Note: Oracle no longer OEM's AMD Opteron systems. No Oracle VM for x86 validated AMD Opteron systems as of February 5, 2012.

Source: oracle.com; vmware.com

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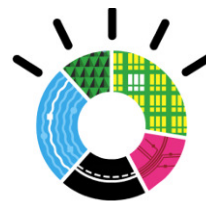
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Tecnología de Vanguardia – Exclusivas de P7

IBM PowerVM New Features

Active Memory Expansion

Intelligent Multithreading

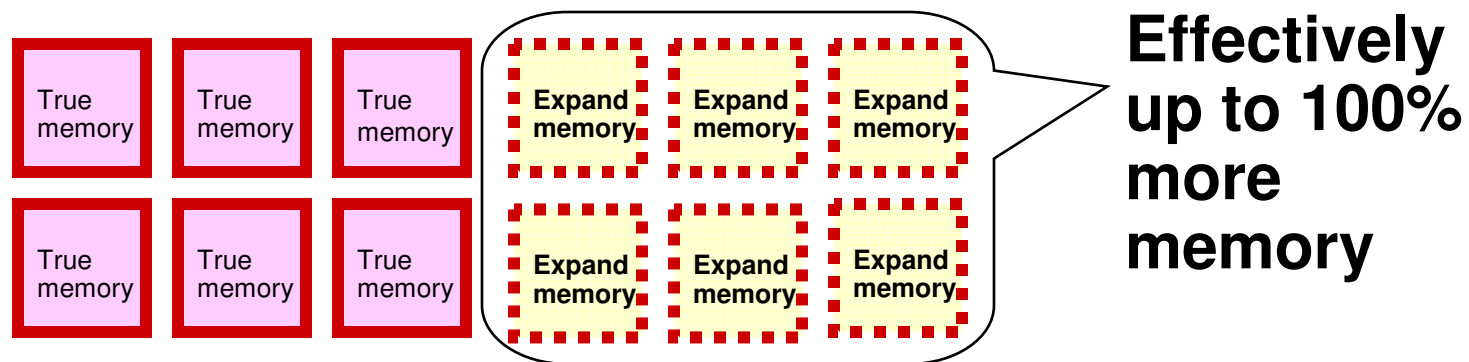
TurboCore

Slots PCI-E Gen2

Active Memory Mirroring

Active Energy Manager Favor
Performance

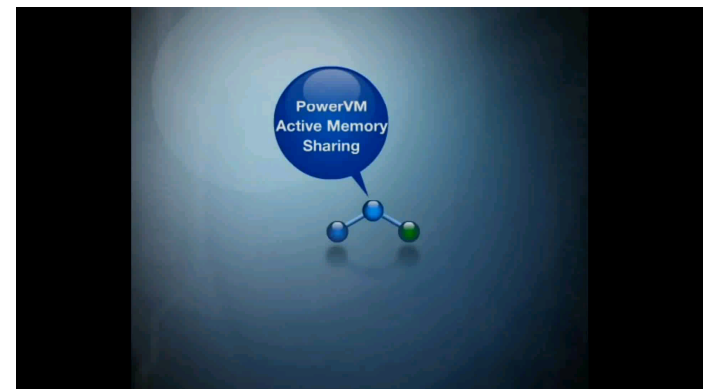
Active Memory Expansion



- Mayor memoria de lo que físicamente existe
- Consolidación de servidores más eficiente

Active Memory Sharing

Optimiza dinámicamente la utilización de memoria trasladando los recursos de memoria entre las cargas de trabajo



Power your planet.

Smarter systems for a Smarter Planet.

