



# THE NEW POWER EQUATION

## Power of i



**Craig Johnson**  
**IBM i Product Manager**  
**IBM Power Systems**



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# IBM Power Systems



System i



System p

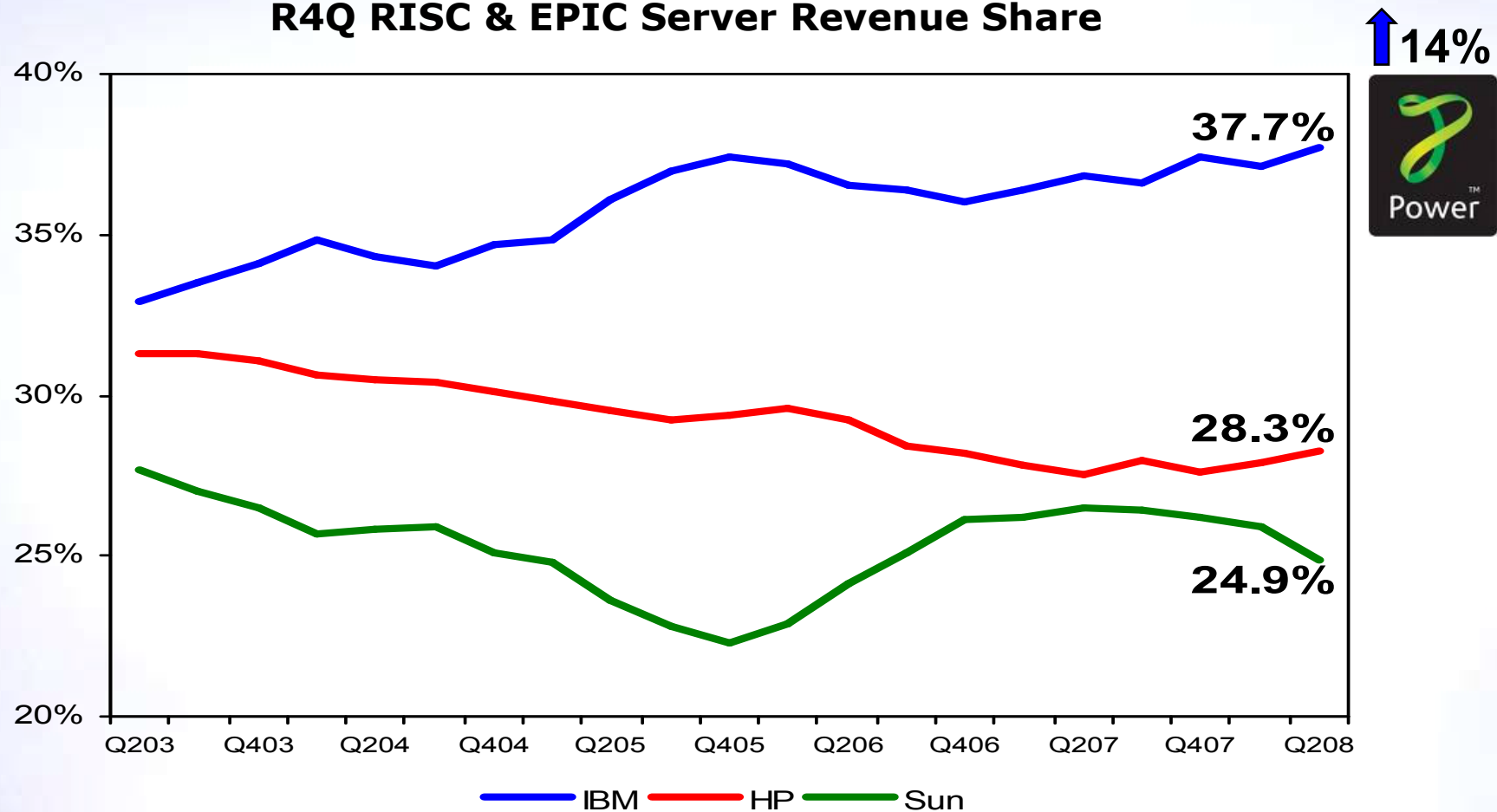


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# AIX, i and Linux all run on the #1 systems in the industry

## R4Q RISC & EPIC Server Revenue Share



Source: IDC Quarterly Server Tracker Q208 release, August 2008

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# Transforming Opportunity in the i Marketplace

**Over 15,000 solutions on the industry's leading platform for UNIX®, i and Linux® clients**



- Choice of operating system
- Industrial strength virtualization
- Single platform
- Leadership performance

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# Easy-to-buy, Power Express Servers

*New growth options for i applications with expanded support for Power servers*

- ✓ Easily add capacity with modular building blocks in the new 16-core Power 560 Express
- ✓ Extended growth options for i clients on 4-core 520 and 8-core 550



**Power 560 Express**



**Power 550 Express**



**Power 520 Express**



**BladeCenter S and JS12**



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## Power 520 Express IBM i Edition

Entry Servers	Power 520 1-core	Power 520 2-core	Power 520 4-core
Rack or Tower	19-inch rack Tower	19-inch rack Tower	19-inch rack Tower
Cores	1	2	4
Processor	4.2 GHz POWER6	4.2 GHz POWER6	4.2 GHz POWER6
Max GB memory	16 GB	32 GB	64 GB
Number of DASD in chassis	6	6	6
I/O Expansion	No	Yes	Yes
# of Loops (RIO or 12x)	0	1	2
LPARs	10	20	40
CoD	No	No	No
IBM i supported	i 5.4, i 6.1	i 5.4, i 6.1	i 5.4, i 6.1
IBM i Software Tier	P05	P10	P10
i Editions	Entry and Growth	30, 150, Unlimited Users and Solution	50, 150, Unlimited Users
CPW	4300	4300-8300	4300-15,600

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## Power 550 Express IBM i Edition

Entry Servers	Power 550 2-core	Power 550 4-core	Power 550 6-core	Power 550 8-core
Rack or Tower	19-inch rack Tower	19-inch rack Tower	19-inch rack Tower	19-inch rack Tower
Cores	2	4	6	8
Processor	3.5 or 4.2 GHz POWER6	3.5 or 4.2 GHz POWER6	3.5 or 4.2 GHz POWER6	3.5 or 4.2 GHz POWER6
Max GB memory	64 GB	128 GB	192 GB	256 GB
Number of DASD in chassis	6	6	6	6
I/O Expansion	Yes	Yes	Yes	Yes
# of Loops (RIO or 12x)	1	2	2	2
LPARs	20	40	60	80
CoD	No	No	No	No
IBM i supported	i 5.4, i 6.1	i 5.4, i 6.1	i 5.4, i 6.1	i 5.4, i 6.1
IBM i Software Tier	P20	P20	P20	P20
i Editions	i Edition	i Edition and Solution Editions	i Edition	i Edition
CPW	4.2 GHz = 4800-9200 3.5 GHz = 4000-7750	4.2 GHz = 4800-18000 3.5 GHz = 4000-15000	4.2 GHz = 4800-23850 3.5 GHz = 4000-20300	4.2GHz =4800-32650 3.5GHz =4000-27600

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# Power 560 for i



**4-core or 8-core  
one enclosure**



**16-core  
two enclosures**

POWER6 Processor Cores	4 / 8 / 16 @ 3.6 GHz	
L3 Cache	32 MB / Chip	
Redundant Power & Cooling	Yes	
Redundant Server Processor	Optional / Two Nodes minimum )	
Redundant Clock	Yes (Cold Detect) Two Nodes minimum	
	<b>Single Node</b>	<b>Dual Nodes</b>
Cores	4 or 8	16
DDR2 Memory (Buffered)	Up to 192 GB	Up to 384 GB
SAS Disk Bays (3.5")	6	12
Media Bays	1 Slim-line	2 Slim-line
SAS/SATA Controller	1	2
PCI (Internal)	4 PCIe, 2 PCI-X 266	8 PCIe, 4 PCI-X 266
GX Bus Slots	2	3
Dual Port 10/100/1000		
Quad Port 1 Gb (Optional)	1	2
Dual Port 10 Gb (Optional)		
12X I/O Drawers	8 Max	12 Max
Dynamic LPARs	80 Max	160 Max



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**Support for i 6.1 as well as AIX and Linux**





# IBM Power 570

*Enhancing the industry's most popular mid-range server*

## More performance + efficiency and scalability with three new processor options:

- More performance per core with faster processors (4.4 GHz and 5.0 GHz options)
- New 32-core, 4.2 GHz option delivers improved energy efficiency and 62% more scalability of competitive 64-core servers
- 3X the performance and efficiency of POWER5+ 570



## Roadmap to continuous availability

- Hot node repair and maintenance available for both Power 570 and 595

- ✓ **Modular scalability**
- ✓ **Capacity on Demand**
- ✓ **Hot-add and repair capability**
- ✓ **Concurrent Maintenance**
- ✓ **PowerVM**

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## Expanded server support for Enterprise clients

- **New Power 560 16-core system (8234-EMA)**

- 3.6 GHz POWER6 processors
- Max CPW: 48,500
- 4, 8, and 16 core Express configurations
- i 6.1 support



IBM Power 560

- **New Power 570 32-core system (9117-MMA)**

- 4.2 GHz POWER6 processors
- Max CPW: 104,800
- 8, 16, 24, and 32-core configurations
- i 5.4 and i 6.1 support



IBM Power 570

- **Enhanced Power 570 16-core system (9117-MMA)**

- 5.0 GHz POWER6 processors
- Max CPW: 77,600
- 4, 8, 12, 16-core configurations
- i 5.4 and i 6.1 support

Announce:	10/7
GA	11/21

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## Positioning for i Enterprise Clients

Power server	Max Cores	Max GHz	Max Memory	Max Loops	Loop Type	Upgrades into	CoD	Max CPW	i Release	i Tier
570/32	32	4.2	768 GB	8	RIO/HSL and 12x	Yes	Yes	104,800	5.4 and 6.1	P30
570/16	16	5.0	768 GB	8	RIO/HSL and 12x	Yes	Yes	77,600	5.4 and 6.1	P30
560	16	3.6	384 GB	3	12x	No	No	48,500	6.1	P20
550	8	4.2	256 GB	2	RIO/HSL and 12x	Yes	No	32,650	5.4 and 6.1	P20

### Considerations

- Price/performance
- i release support
- I/O support
- Upgrades

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# New Economics

*Optimizing IT with industrial strength virtualization*

**64% of Power Systems  
shipped with PowerVM  
in 1H08**



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## SOD: PowerVM Active Memory Sharing

- *IBM intends to enhance PowerVM with Active Memory Sharing, an advanced memory virtualization technology, in 2009. Active Memory Sharing will intelligently flow memory from one partition to another for increased utilization and flexibility of memory usage.*
- **Memory virtualization enhancement for Power Systems**
  - Memory dynamically allocated based on partition's workload demands
  - Contents of memory written to a paging device
  - Improves memory utilization
- **Extends Power Systems Virtualization Leadership**
  - Capabilities not provided by Sun and HP virtualization offerings
- **Designed for partitions with variable memory requirements**
  - Low average memory requirements
  - Active/inactive environments
  - Workloads that peak at different times across the partitions
- **Planned to be available with PowerVM Enterprise Edition**
  - AIX 6.1, Linux and i 6.1 partitions that use VIOS and shared processors
  - POWER6 processor-based systems

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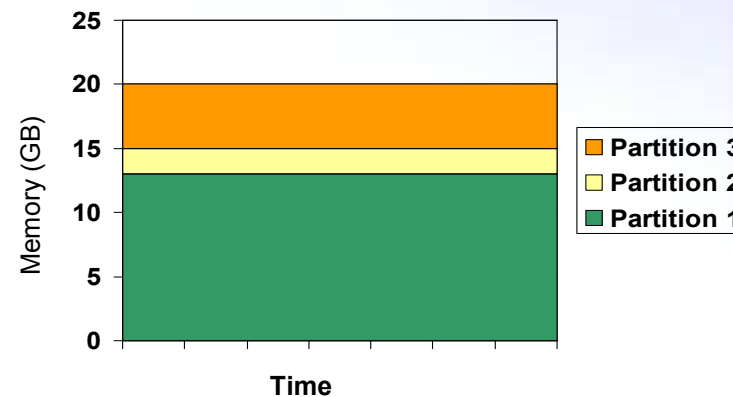
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## Active Memory Sharing Enables Higher Memory Utilization

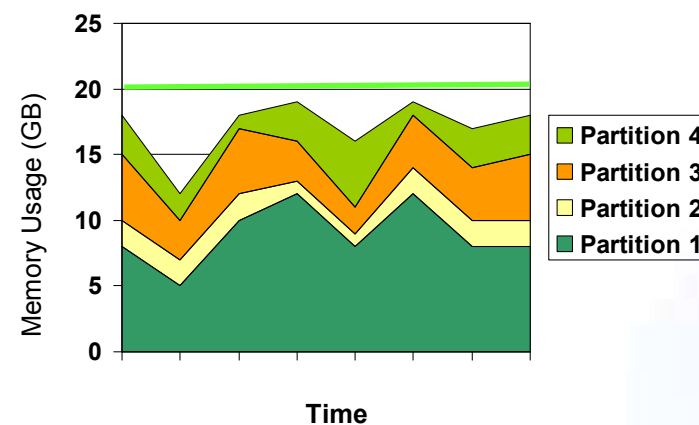
- **Partitions with dedicated memory**

- Memory is allocated to partitions
- As workload demands change, memory remains dedicated
- Memory allocation is not optimized to workload



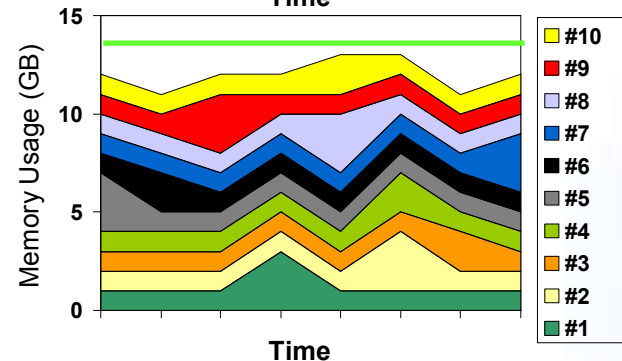
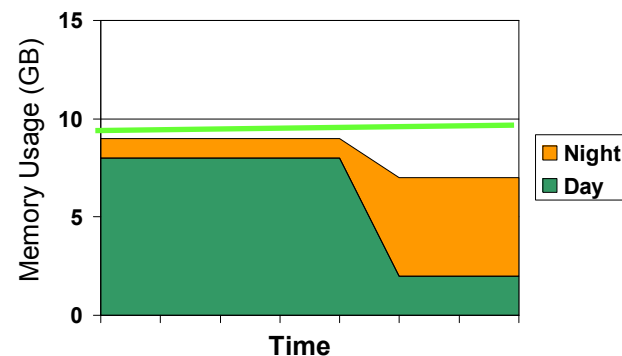
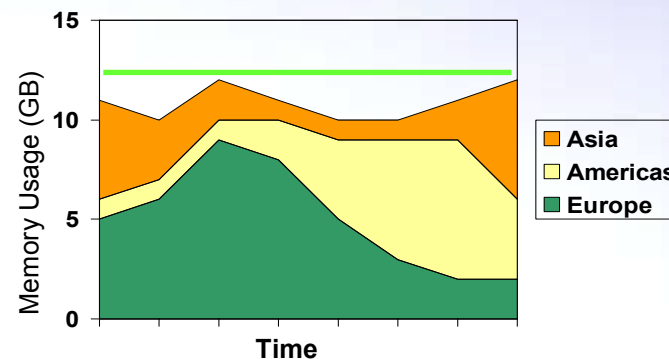
- **Partitions with shared memory**

- Memory is allocated to shared pool
- Memory is used by partition that needs it, enabling an additional partition to be added within same memory footprint
- Higher memory utilization



# Active Memory Sharing Examples

- Around the World**
  - Partitions support workloads with memory demands that peak at different times
- Day and Night**
  - Partitions support day time web applications and night time batch
- Infrequent use**
  - Large number of partitions with sporadic use



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# Shared Infrastructure

*i Positioned as a Tier 1 Operating Environment on Power Systems*



**Multi-OS support:  
UNIX, i and Linux**



**Over 15,000 applications**



**Share processor, memory and  
I/O across operating  
environments**



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# Investing in i

*Efficient, resilient solutions for business*



## ■ i 6.1 Now Available

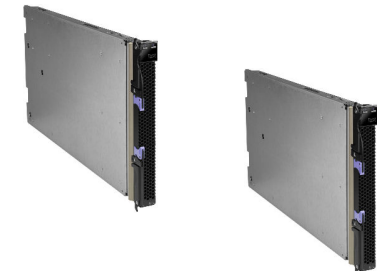
- New support for **BladeCenter**
  - New SAN **DS8000** performance optimization
  - New **PowerHA** disk clustering
  - New **Java Virtual Machine**, shared with AIX & Linux
  - New **PowerVM** virtual storage for i partitions
  - New **Systems Director** Navigator
- and much more....

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# Support for BladeCenter

- **Enables small and mid-sized i clients to consolidate their IT environment**
  - BladeCenter S holds 6 Power and x86 blades
  - BladeCenter H holds 14 Power and x86 blades
- **Delivers the performance required for i applications**
  - IBM BladeCenter JS12 (2-core), JS22 (4-core)
- **Supports consolidation of i and x86 storage**
  - BladeCenter S holds up to 12 x 300 GB disk drives
  - BladeCenter H support DS4000 and DS8000 SANs
  - PowerVM™ VIOS partition manages Blade resources
- **New Faster deployment with pre-installation of IBM i on BladeCenter S**

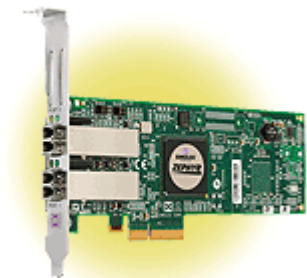
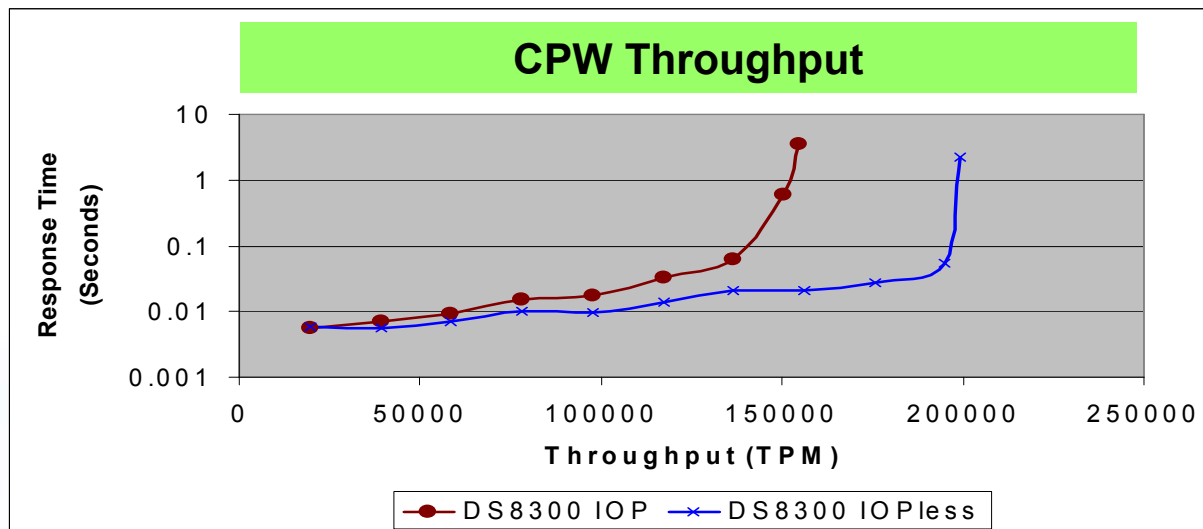


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# SAN Performance Optimization

- Optimizes disk performance for SAN storage
- i 6.1, POWER6 processor-based systems, and IBM DS8000
- New 4 Gbit Dual Port Fibre Adapters (no IOP required)



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Performance based on workloads and configurations. Improvements shown above are valid only for these specific workloads -- Your results may vary and are dependent on the application and configuration.

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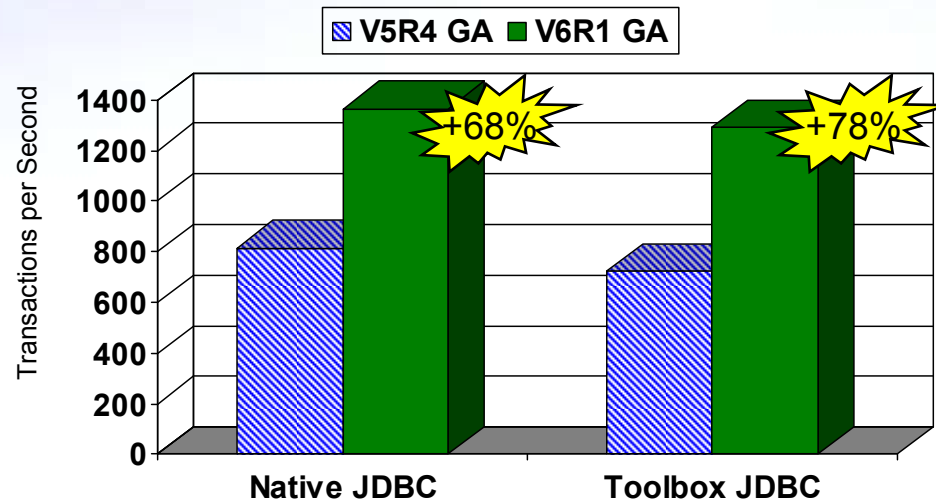
# PowerHA Disk Clustering

- **Can enable near continuous application service**
  - Minimize impact from planned & unplanned outages
  
- **IBM i and SAN based mirroring**
  - Independent auxiliary storage pools replicated synchronously
    1. Geographic Mirroring – internal disks
    2. Metro Mirror - SAN disks
  
- **Cluster Management**
  - Enables automatic or manual failover
  - Backup recovery operations via Flash Copy





## New JVM Delivers Improved Java Performance



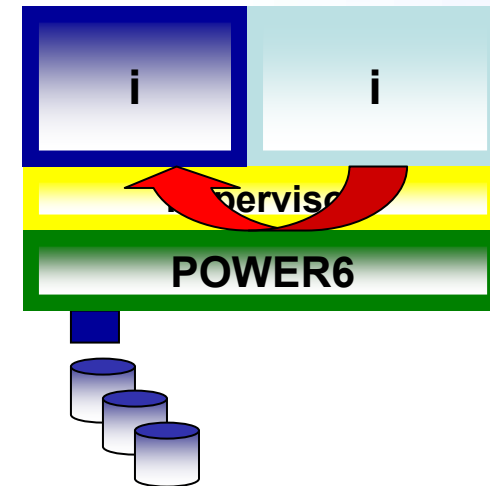
- **IBM 64-bit Java™ Virtual Machine**
  - Shared technology with AIX & Linux improves performance & portability
- **Integrated Web Application Server\***
  - Simplifies the deployment of Java applications
- **Integrated Web services environment\***
  - Easily extend RPG and COBOL programs as Web services

\* Also available with i 5.4

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# Virtual Storage for i Partitions

- **IBM i partition uses virtual I/O resources from another i partition**
  - Eliminates requirement to buy adapters and disk drives for each i partition
  
- **Ideal for creating test and development partitions**
  
- **Requires POWER6 processor-based systems with i 6.1**

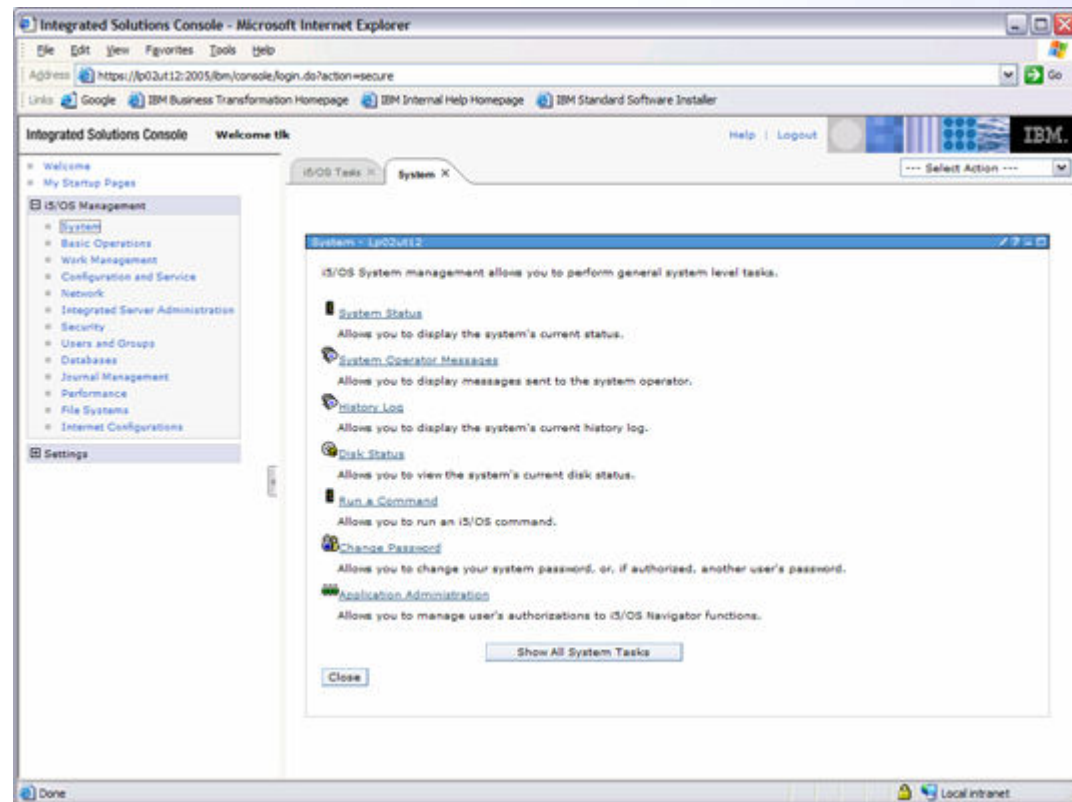






# Systems Director Navigator for i

- **New web based tool for managing i**
  - Supports 300+ tasks
  - Alternative to iSeries Navigator
- **Additional Functions:**
  - Performance Data Investigator
  - PowerHA for i
- **Automatically installed with i 6.1**



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# DB2 Web Query for i

- **Modernized Query/400 capabilities**
  - PDF, Spreadsheet, XML Output
  - Import Query/400 definitions
- **Ability to extend to Business Intelligence**
  - Dashboards
  - On Line Analytical Processing
  - Enterprise Reporting
  - Application Integration
- **New DB2 Web Query options**
  - Report Broker - batch reporting and automated report distribution
  - Software Development Kit – enables ISVs to leverage DB2 Web Query

The screenshot displays the DB2 Web Query for System i interface. The main dashboard, titled 'Country KPI Analysis', shows a line chart for 'Product Type Revenue' and two pie charts for 'My Shipped' and 'Returns My Part'. Below the charts is a table titled 'Product Rev for United States'.

COUNTRY	Product Type	Line
United States	Video	\$386,699.0
	Camcorders	\$325,074.3
	Audio	\$204,899.6
	Cameras	\$139,270.4
	Office	\$22,636.5

An inset window titled 'My Report - Windows Internet Explorer' shows report distribution settings. It includes fields for 'To: Email', 'From: EndUser@mycompany.com', 'Reply Address: ITM@mycompany.com', and 'My Report'. It also has sections for 'Frequency' (Run Interval: Once, Start Schedule: May 21, 2008, 3: 34 PM) and 'Report Options' (Send Report as Attachment, Send Report as File, Send Report as HTML).



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## Quickly Develop Web Applications with PHP

- **PHP is a powerful, open, easy-to-use scripting language for web applications**
  - 22+ million sites and 6.4+ million developers
- **Zend, *The PHP Company*, offers PHP runtime and development products for i**
  - Provides fast and easy access to i applications and DB2
  - Available for no charge, with 3 years of support
  - 11,000+ registrations to date
- **i customers are developing new applications**
  - Quickly connect supply chain
  - Replace 5250 with dynamic web applications
  - Deploy new applications



***Download today at [zend.com](http://zend.com)***

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## Easily Deploy Applications with PHP & MySQL

- **MySQL is the leading open source database in the industry**
  - Millions of deployments, millions of developers, thousands of applications
- **MySQL is available for i**
  - Community edition available for no charge
  - Enterprise edition includes support
  - 1000s of downloads to date
- **Combination of PHP and MySQL enables 1000s of applications on i**
  - *Don't write it, download it*
  - [hotscripts.com](http://hotscripts.com), [sourceforge.net](http://sourceforge.net)



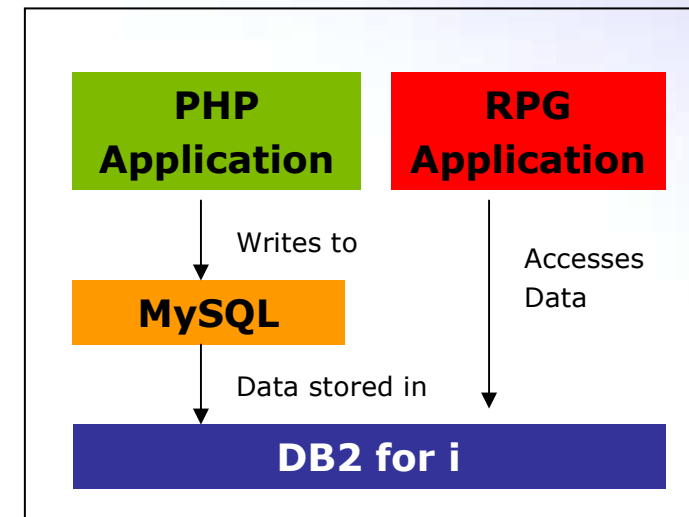
***Download today at [zend.com](http://zend.com) and [mysql.com](http://mysql.com)***

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## DB2 Storage Engine for MySQL - Beta

- **Supporting open source applications while simplifying data management**
  - Applications written to MySQL, but data stored in DB2
  - One database to manage, backup, and protect
  - Provides access to MySQL data from RPG, DB2 Web Query and more
- **Plan to be supported with MySQL Community and Enterprise Editions version 5.1**
  - Supported on i 5.4 and i 6.1
- **Combination of Apache, PHP and MySQL enables 1000s of applications on i**
  - Customer Relationship Management, E-Commerce, Portals and Wikis



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## i Investment Strategy

- **Exploit IBM Systems investments**

- POWER roadmap (POWER7, Blades, System Storage)
- Common I/O (SAN and virtualized through VIOS)
- Common software Infrastructures: WebSphere, Systems Director, POWER Virtualization

- **Extend core technologies**

- Core technologies supporting customer applications & data (DB2; ILE RPG, C, COBOL)
- Relationships with ISVs (major and regional)
- Interoperability standards (TCP/IPv6, SQL, Java)

- **Deliver high impact enhancements**

- Features that generate broad value across the client community
- Prioritize with LUG, COMMON and ISV Advisory Councils
- Include ISV Tools, Technology Partners & IBM Lab Services

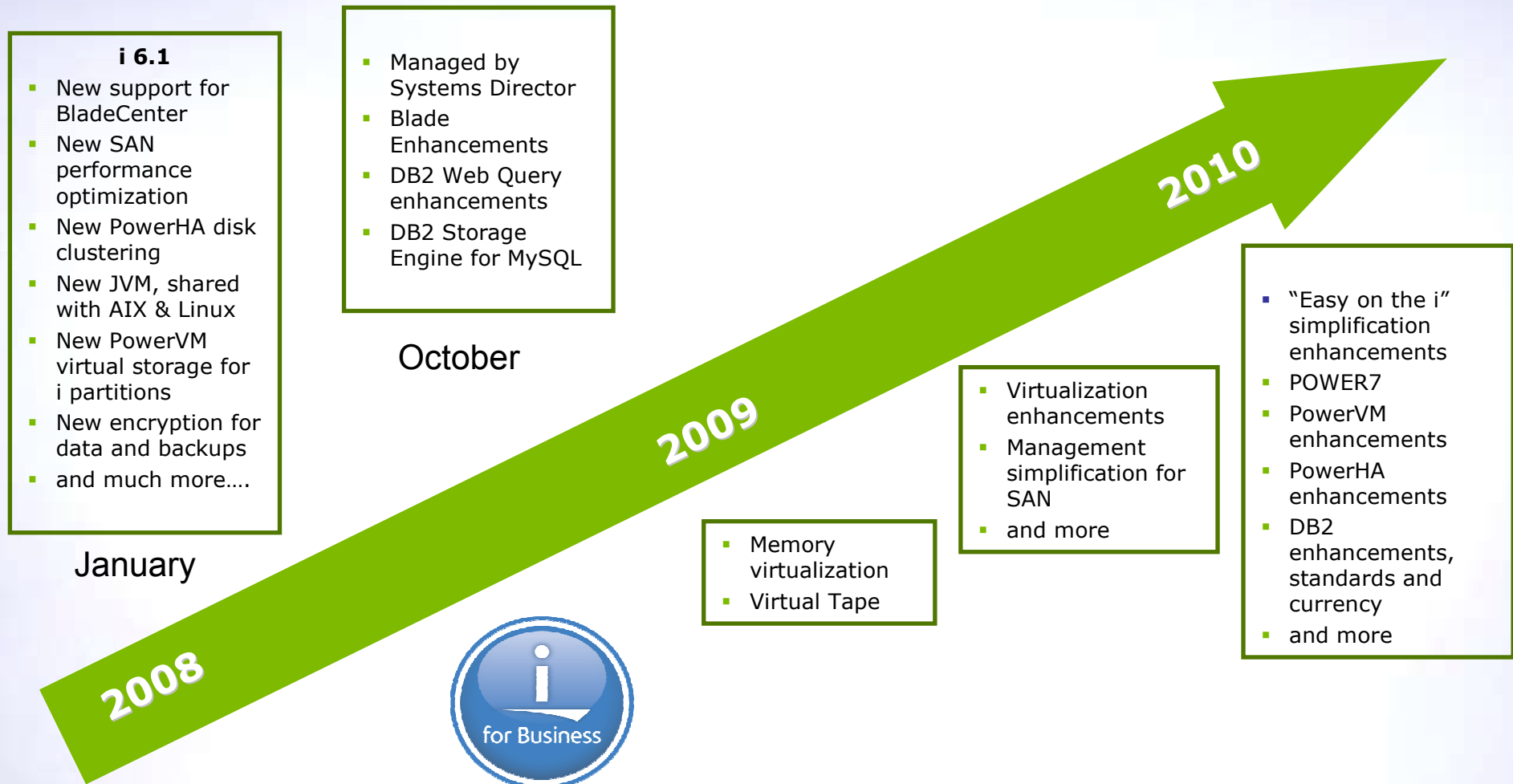


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# i Roadmap



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Such plans are subject to change without notice.

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# i Support Roadmap

End of Service  
4/30/2009

IBM i Release	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
V5R3										
5.4										
6.1										
Next Release										

\*The projected date for the next release of IBM i is based on current IBM planning assumptions. Note that it is IBM's current practice to support an IBM i release until the next two releases have been made available, plus twelve months. So, for example, i5/OS V5R3 will be supported until April 2009, twelve months after IBM i 6.1 is generally available in March 2008. Exact dates vary according to a variety of factors, including development schedules and IBM's broader software lifecycle support cycles. For example, to simplify customers' software lifecycle management, IBM currently coordinates end of support dates for IBM i and other IBM software products in April or September. This presentation contains information about IBM's plans and directions. Such plans are subject to change without notice.

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# IBM i System Support

Servers	5.3	5.4	6.1	Next release*
<b>POWER6 JS12, JS22</b>			✓	✓
<b>POWER6 520, 550, 570, 595</b>		✓	✓	✓
<b>POWER5+ 515, 525</b>		✓	✓	✓
<b>POWER5/5+ 520, 550, 570, 595</b>	✓	✓	✓	✓
<b>800, 810, 825, 870, 890</b>	✓	✓	✓	
<b>270, 820, 830, 840</b>	✓	✓		

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<http://www-304.ibm.com/jct01004c/systems/support/i/planning/upgrade/futuresftwr.html>

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# Resilient Infrastructure

*Providing a roadmap to continuous availability*



**PowerHA for i disk clustering**

**iCluster logical replication**

**Vision Solutions**



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# Managed Infrastructure

*Providing a new foundation for enterprise platform management*



**Discover servers**

**Monitor and report system health**

**Optimize and update servers**

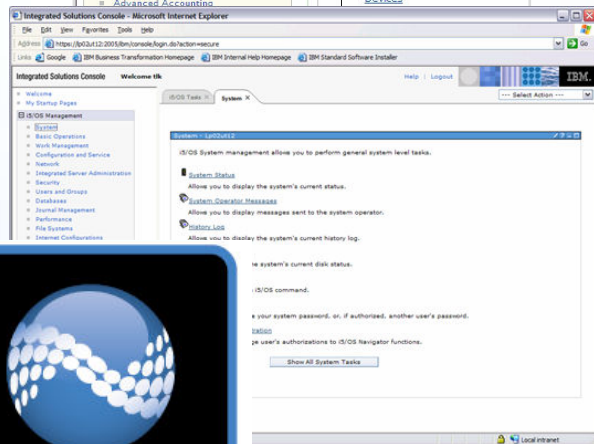
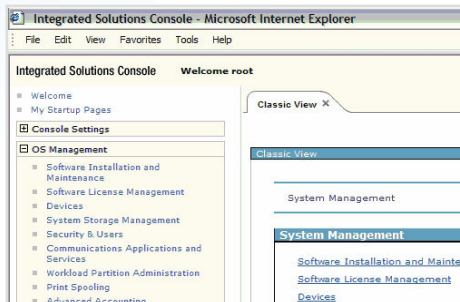
**Integrate with enterprise service management**



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# Managing a Shared Infrastructure

*Simplifying multi-OS administration with consistent interfaces and deep operating system integration*



**Systems Director  
Console for AIX**

**Systems Director  
Navigator for i**

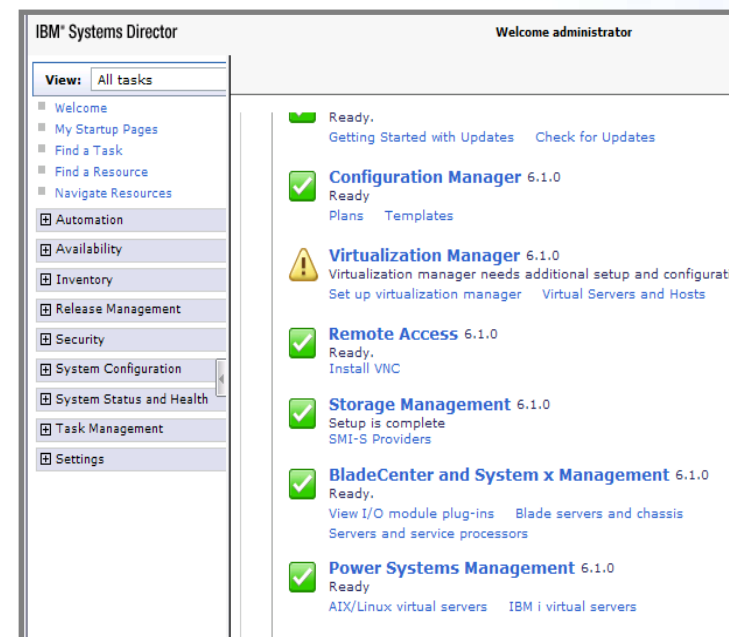


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# Managed by IBM Systems Director



- **Two complementary management tools for i**
  
- **System Director Navigator for i**
  - Announced and available with i 6.1
  - Over 300 tasks for managing single i environment
  - Runs on i, accessed via browser
  
- **System Director 6.1**
  - Multi-system management tool
    - Provides rich extensions for managing i environments
    - Portlets provide access to 300+ specific i tasks
  
  - Runs on AIX, Linux, and Windows
    - Uses Agents to manage servers and operating systems
  
  - Manages i 5.4 and i 6.1 environments
    - IBM Director 5.20.2 agent
    - 5722-UME Universal Manageability Environment



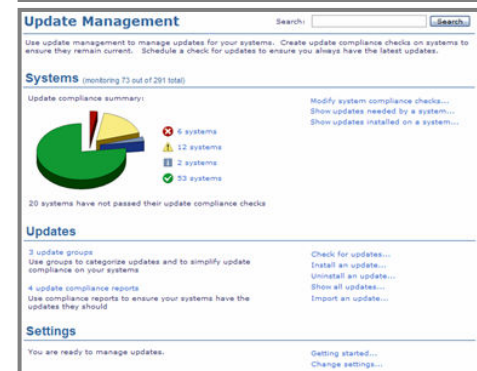
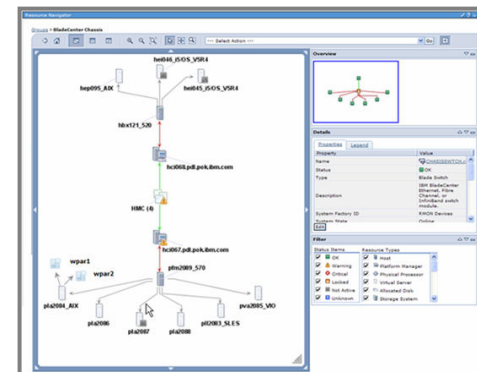
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# System Director delivers a new solution to help simplify IT operations

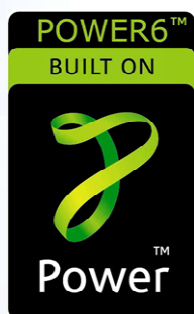
- At-a-glance server status helps with “management by exception”
- Topology views give a quick view of status and easier drill-down
- Software and firmware updates are now possible with Systems Director



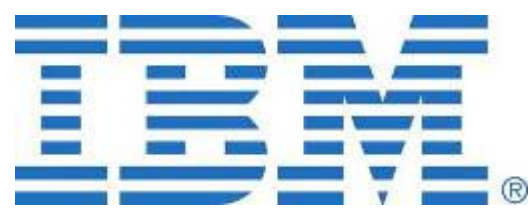
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