

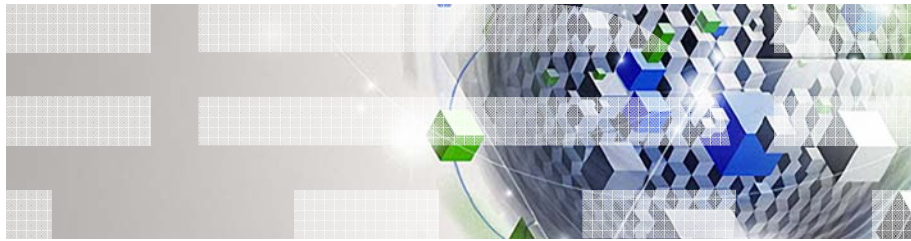


Smarter Computing and IBM i

A system designed for business



Alison Butterill
IBM Power Systems



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IBM i – A System Designed for Business



IBM – 100 years of innovation



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Three years ago we started describing the Smarter Planet we saw emerging, *fueling innovation across industries.*



Neonatal Care



Law Enforcement



Telecom



Fraud Prevention



Resource Management



Traffic Control



Manufacturing



Trading

Smarter Planet solutions increase demands on IT



1.2 zettabytes in the "digital universe"



Internet-connected devices **+42%** ...each year



32.6 million servers worldwide



Servers **+600%**
Storage **+690%**
Virtual machines **+42%** ...each year



Data center energy use **+200%** in the past 5 years



But IT budgets are growing less than 0.8% per year

Smarter Computing

The IT infrastructure that enables a Smarter Planet

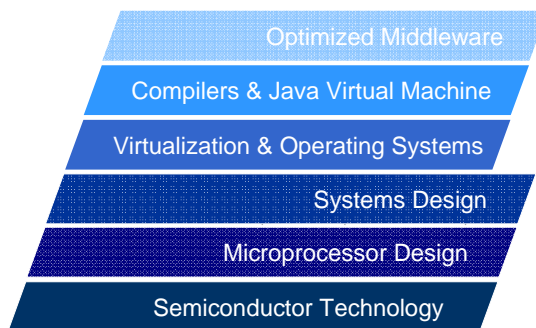
Designed for data
Harness all available information - **89% of CEOs** want better insight via Business Intelligence and analytics



Managed with cloud technologies
Reinvent IT - **60% of CIOs plan to use cloud technologies** and **55% of business executives** believe cloud enables business transformation

Tuned to the task
Drive greater performance and improve IT economics - **total cost per workload can be reduce up to 55%** with optimized systems

Tuned to the task – Workload Optimized Systems



Domain Knowledge

- Workload characteristics
- Workload interdependencies
- Architecture options

Software

- Full stack integration
- Middleware tuned for hardware
- Integrated management across architectures

Hardware

- Multi-core architectures
- Advanced threading
- Low latency

Smarter Computing: the future of optimized systems design

Build a system that rivals a human's ability to answer questions posed in natural language with accuracy, confidence and speed.



Jeopardy!



- Questions covers a broad range of topics
 - History, literature, politics, arts, science, music etc
- Responses require accuracy, confidence and speed
- Word plays, subtle meaning, ironies, riddles



Watson and optimized system design

Hardware

- 90 x IBM Power 750 servers
- 2880 POWER7 3.55 GHz cores
- 500 GBps on-chip bandwidth of POWER7
- 15 Terabytes of memory
- 500 GB of data (in memory)

Software

- IBM DeepQA,
- UIMA and UIMA AS
- Apache Hadoop

Domain knowledge

- Dr David Ferrucci and the IBM Research unstructured text analytics team

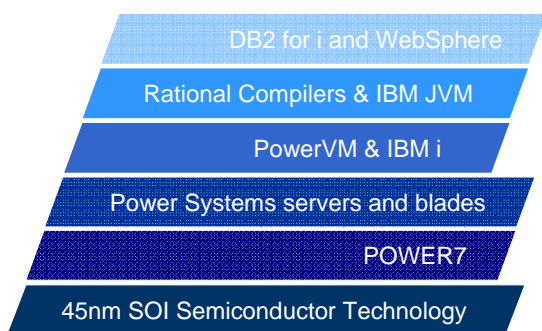


Smarter Healthcare: WellPoint and IBM Watson

- **12 Sep 2011:** WellPoint and IBM to create the first commercial applications of the IBM Watson technology
- WellPoint will develop Watson-based solutions to help improve patient care through the delivery of up-to-date, evidence-based health care
- IBM will develop the base Watson healthcare technology



Tuned to the task – IBM i



Domain Knowledge

- Transaction processing
- Process interdependence
- Broad ISV support

Software

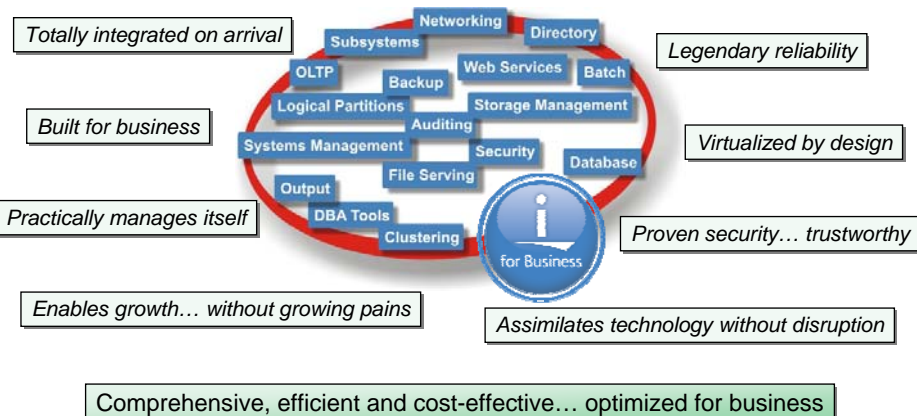
- Middleware stack integration
- Integrated database
- Subsystem virtualization
- Object oriented security

Hardware

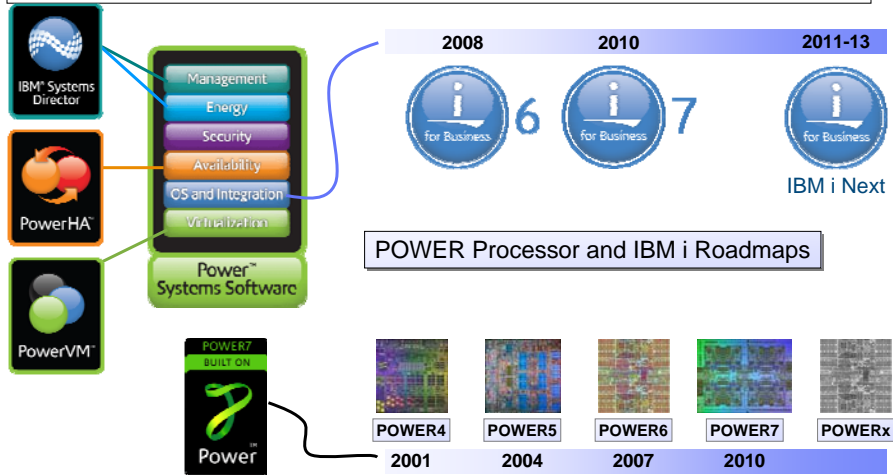
- Multi-core architecture
- Firmware hypervisor
- Technology independence
- Single level store

IBM i – Not Just An Operating System, So Much More

Why clients value IBM i...



IBM i and Power Systems Roadmap



IBM i Roadmap



- **Fewer operating system releases and longer support cycles**
 - Avoids business disruption from major release upgrades
- **Interim IBM i Technology Refreshes provide new capability & I/O support**
 - Faster access to new technology, simpler to install, and less disruptive

IBM i New Release Highlights 2008 - 2010

■ IBM i 6.1

- **Java Virtual Machine**, shared with AIX & Linux
- **Systems Director Navigator** web-based console
- **PowerHA** disk clustering
- SAN **DS8000** performance optimization
- **PowerVM** virtual storage for i partitions



■ IBM i 7.1

- Simplify supplier data exchange with **native XML in DB2**
- Secure critical client data with **DB2 column level encryption**
- Implement multi-site disaster recovery with **PowerHA SystemMirror**
- Test a new release with ease by **hosting i 7.1 on a i 6.1 server**
- Automate exploitation of **solid state drives**
- Extend RPG to new interfaces with **RPG Open Access**



Clients are moving to IBM i 7.1

'Management is very pleased in the smoothness of the upgrade, the stability of the release and have been running with out any issues ever since the upgrade.'

Giuliano Franciscovic, VP of IS
National Telewire Corp

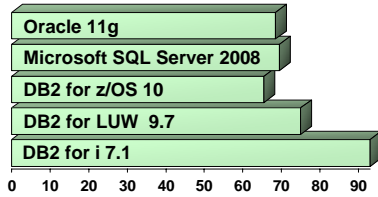
'At AgVantage Software, Inc our ASP/MSP offering has been growing rapidly and we needed to become more efficient.... Going to IBM i 7.1 has been very smooth and has helped us become more efficient and made our customers happy.'

Brad Belcher
Systems Analyst
AgVantage Software, Inc



DB2 for i – SQL Standards and Interoperability

ISO/ANSI SQL Standard – Core
Claims of minimum conformance



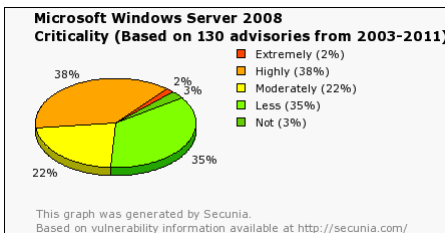
- Core SQL contains 93 items
- 100% are implemented in DB2 for i

Access DB2 for i data from anywhere

Ways to Access DB2 for i	Typical application interfaces by platform			
	AIX	Linux	Windows	IBM i
DRDA	✓	✓	✓	✓
JDBC	✓	✓	✓	✓
ODBC		✓	✓	
.NET			✓	
OLE DB			✓	
DDM				✓
CLI				✓

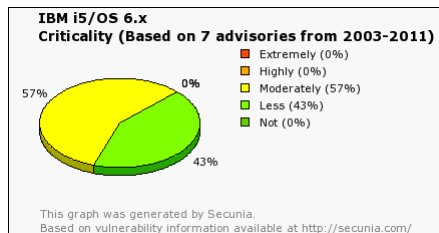
IBM i security – more confidence, less cost

Microsoft® Windows Server® 2008



- 130 advisories (all time)*
- 40% highly/extremely critical
- 3% remain unpatched

IBM i 6.1 (no advisories for i 7.1)



- 7 advisories (all time)*
- None highly/extremely critical
- None remain unpatched

* Vulnerabilities reported through 05/03/2011: <http://secunia.com/advisories/product/>

IBM i Technology Refresh Goals



1. Faster access to new systems and blades
 2. Faster access to cloud and virtualization enhancements
 3. Support for latest I/O standards, SAN storage, disk and tape drives
 4. Utilize latest systems management tools and resiliency features
 5. Provide ISVs faster access to new technologies
- ✓ Avoids business disruption from major release upgrades
 - ✓ Faster access to new technology, simpler to install, less disruptive

IBM i Technology Refresh 1 *Highlights* 10/2010



- Additional POWER7 systems
 - Power 710, 720, 730, 740 Express servers, and Power 795
- Installation of new IBM i virtual machines via network
 - Install new LPARs on POWER7 servers from images stored on the network
- Space efficient SSD and performance enhancements
 - Utilize space efficient SSD packaging and higher capacity SSD drives
- LTO-5 SAS Tape Drive
 - Support for 1.5 TB / 3.0 TB LTO-5 bridge box (TS2250 and TS2350) on P6 and P7 servers
- Ethernet PCIe Dual Port Adapter
 - Supported over VIOS, each port can provide high-performance Network Interface Card traffic and Fibre Channel functions simultaneously
- CEC node level mirroring
 - A system that has multiple CEC nodes will now mirror disk units to enable a concurrent maintenance repair of a CEC node

IBM i Technology Refresh 2 *Highlights* 4/2011



- **Additional POWER7 systems**
 - BladeCenter PS703 Express - 16 cores and BladeCenter PS704 Express - 32 cores
- **Partition Suspend and Resume**
 - PowerVM now enables IBM i 7.1 partition to be suspended, and later resumed.
 - All I/O resources must be virtualized using VIOS and all partition storage must be external
- **IBM i to IBM i virtual tape support**
 - An IBM i server partition can be used to share a tape drive among multiple client partitions without the use of VIOS. LTO-5 SAS Tape Drive
- **571 GB 10K RPM SFF SAS Disk Drive**
 - Provides a lower cost per gigabyte and more gigabytes per 2U rack space
- **177 GB SFF SSD with eMLC**
 - eMLC or Enterprise Multi-Level Cell Flash memory technology blends enterprise-class performance and reliability characteristics with the more cost-effective characteristics of MLC Flash storage

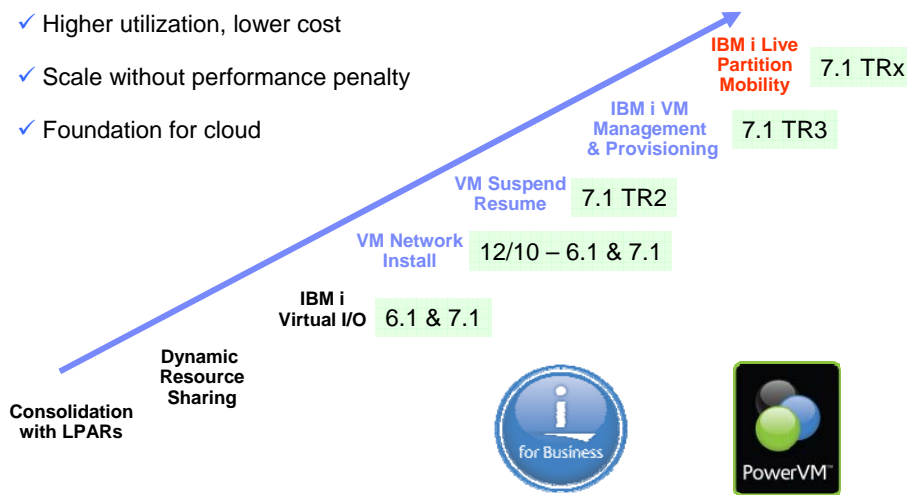
IBM i Technology Refresh 3 *Highlights* 10/2011



- **Additional POWER7 systems**
 - New Power 710, 720, 730 740 Express servers and Power 770 and 770 enterprise servers that feature PCIe Gen 2 I/O with enhanced performance for high I/O throughput workloads
- **VM Provisioning of IBM i images with VMControl**
 - Create and store IBM i virtual machine images, then provision them faster with VMControl
- **Virtual Partition Manager (VPM) now creates IBM i partitions**
 - VPM supports creation of partitions that use only virtual I/O without HMC or SDMC. Now, VPM can create and manage IBM i partitions – previously only for Linux
- **Advanced bus level statistics for 12x I/O loops**
 - Collect and display bus level statistics giving a view of traffic and utilization for 12x loops and (with new PCI Gen 2 servers) PCI slots/bus.

Cloud, Virtualization, IBM i & PowerVM

- ✓ Higher utilization, lower cost
- ✓ Scale without performance penalty
- ✓ Foundation for cloud

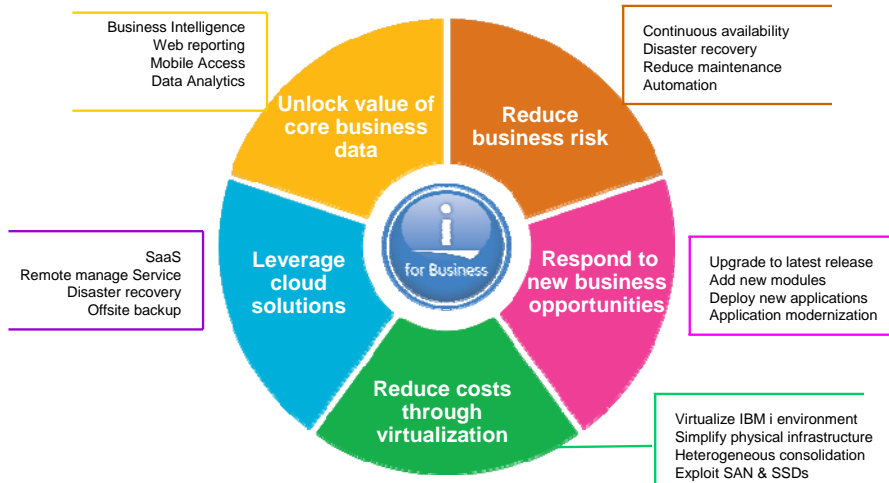


IBM i Investment Themes 2011-2013

- Solutions enablement
 - Focus on ISV solutions integration
 - Invest in language & database standards currency
- Simplified management
 - Integrate IBM i performance tooling with virtual I/O server
 - Automate with Systems Director Management Console
- Resilient systems
 - Simplify administration of PowerHA for mid-sized companies
 - Broaden storage area network integration
- Cloud computing
 - Deliver VM image management, mobility, automation
 - Extend storage virtualization features



Smarter computing projects with IBM i



Smarter computing for NACG meant moving from x86 to IBM i for higher qualities of service and lower costs

- NACG employees were losing faith in an unreliable infrastructure, with frequent outages on x86 Intel® processor-based Dell servers running Microsoft Windows
- NACG migrated to two Power 570s with IBM i and PowerVM, running the same ERP applications
- Outages have been eliminated, and they achieved a 52% reduction in year over year IT costs

“The proven reliability of the IBM Power 570 servers meant that the outages which had been an everyday experience for our employees quickly became a distant memory.”

David Booth, CIO
North American Construction Group



Smarter Computing for Svendsen meant moving to IBM i from Windows to support business growth efficiently

- To support business growth, Svendsen upgraded from SAP Business One solution on Windows to SAP Business All-in-One on IBM i
- Staying with Windows would have required three additional x86 servers plus more complex installation and administration.
- Migrated to a single Power System running IBM i. The installation was 80% faster than it would have been with Windows
- With SAP on IBM i, Svendsen has experienced no unscheduled downtime, and spend almost no time on the maintenance and administration of the hardware, operating system or database

“For the same price as the proposed Intel architecture, we purchased a single, more powerful and scalable Power Systems server, with all the characteristic advantages of IBM i: legendary reliability, high resilience against viruses, and the built-in IBM DB2 database.”

Lutz Ilgner,
CEO, Svendsen



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Smarter computing for Estes Express meant a new resiliency strategy to end production interruptions

- Estes Express needed to eliminate nightly backup window and satisfy business requirement for daily point-in-time backups
- Implemented Power servers and DS8000 with PowerHA, Flashcopy and Global Mirror replication
- Eliminated production interruptions and save window, with lights out operation and point-in-time data snapshot

“We now deliver the highest quality service to the business with zero production interruptions, no save window, and lights out operations.”

Dick Cosby
Systems Administration Director
Estes Express



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Smarter computing for AAA Cooper means delivering applications to the business faster

- AAA Cooper needed to deliver applications faster to the business by improving productivity of their twelve programmers
- Implemented Rational® Developer for Power 8.0 for their programmers for coding in RPG and CL
- Within one month, AAA Cooper saw a 10-20% programmer productivity improvement

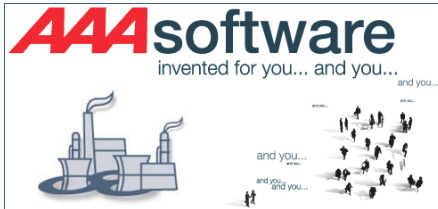
“Within a month the use of the green screen development was almost completely gone, and our team was excited about working entirely on the new integrated development environment.

My advice, try it. You will never go back.”

Bruce Collins
Senior Manager of Applications,
Enterprise Development
AAA Cooper Transportation



Smarter Computing for AAAsoftware means Customized, Affordable, Web-enabled Applications



“Outstanding reliability and durability of investment are key to our Power i customers. They choose for ‘evolution not revolution.’

- Appligen assembles financial and administrative ERP software to client specifications
- Built for small and mid-sized businesses in the European market
- One-stop shop for Power i
- IBM Business Partner since 1984

- Software is built from reusable components written in ILE RPG and Java
- Customized solutions created 70% faster
- Applications are tailored to business needs and grow/change with the customer
- Graphical, secure, Web-based access provides role-based user experience

“AAA Financials, our Financial Management Information System, is also available in a private Power i cloud, accessible from anywhere in the world.”
Dafne Reymen, Managing Director



Smarter Computing for South Carolina Student Loan means better Data, Reporting and Analytics



“When you look at what DB2 Web Query can do in presenting absolute and relative metrics visually, it’s a much more powerful presentation. And these metrics are affecting our departments’ decisions every day.”

Tom Dunnigan, CIO

- Originates and services post secondary educational loans in South Carolina
 - Over \$7 billion in federal and private loans
 - More than 400,000 borrowers
- IBM DB2 Web Query for i offered the right balance of compatibility and new function

- **Objectives**
 - Improve ability to monitor goals against federal requirements
 - Leverage existing data & reporting capability
- **Results**
 - Users generate reports and obtain real-time feedback through easy-to-use dashboards
 - Better maintain government compliance
 - Improved query performance
 - Enable IT personnel to focus on critical needs rather than ad hoc reporting requests
 - Introduced new forecasting capabilities

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Smarter computing for GHY means delivering new services faster to support business growth

- GHY needed to update infrastructure to support business growth while providing regulatory and tracking data to clients doing trade between Canada and the US
- Implemented energy efficient Power 750 with PowerVM running AIX, IBM i and Linux, with full integration with System x and VMWare
- Now can add a new virtual machine in just five minutes

“With PowerVM, we went from 95% to only 5% of our time managing or reacting to our environment. And, saved the business hundreds of thousands of dollars in licensing and application fees.”

Nigel Fortlage,
Vice President of IT,
GHY International



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New Study...

Introduction

Many organizations are apprehensive about buying or staying with the iSeries/IBM i due to a perception that this is a dying platform.

This Research Is Designed For:

- ✓ IT strategic direction decision makers.
- ✓ IT managers responsible for an existing iSeries or IBM i platform.
- ✓ Organizations evaluating platforms for mission critical applications.

This Research Will Help You:

- ✓ Evaluate the future viability of this platform.
- ✓ Assess the fit, purpose, and price.
- ✓ Develop strategies for overcoming potential challenges.
- ✓ Determine the future of this platform for your organization.

Note: This report covers legacy systems (i.e. AS/400, iSeries, System i), and current systems (POWER6 and POWER7 systems running IBM i; note that POWER6/7 can also run AIX and Linux operating systems).

“The perception is that it's older technology. You need to look past that when evaluating this platform. We could move to a new system that is thought to be more current, but it may be more prone to downtime, less efficient, and cost more overall.”

- Jeff Lutgen, VP of IT, Delta Dental of Wisconsin

More On-line Resources

1. Power of i website
2. IBM i Portal
3. "You and I" & "i Can" blogs
4. IBM i Community Page and Forums





IBM i – a system designed for business