

IBM i

v7.1 Update & Technical Refresh's

Fabian Michel - Client Technical Architect





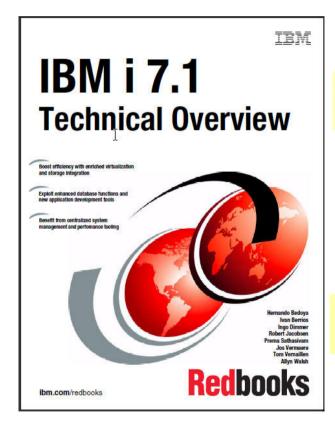


Agenda

- Introduction
- IBM i Enhancements since V5R4
- IBM i v7.1 Enhancements & Technical Refresh's (TR1 to TR5)
- IBM i v7.1 TR6 in depth
- IBM i Future & Directions



#ibmi On Twitter









IBM Systems Magazine blogs

- "i Can" by Dawn May
 - http://bit.ly/i can
 - To share the "hidden gems"
 within IBM i.
- "You and i" by Steve Will
 - http://bit.ly/You and i/
 - Directly communicate with the i community
 - Strategy, architecture, announcements, and news.

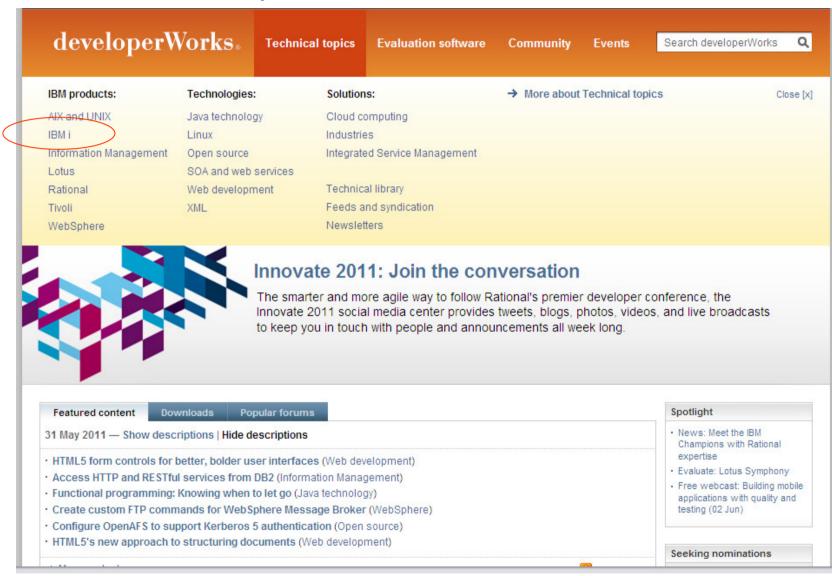
DeveloperWorks IBM i Zone

https://www.ibm.com/developerworks/ibmi/

http://www.redbooks.ibm.com/redbooks/pdfs/sg247858.pdf



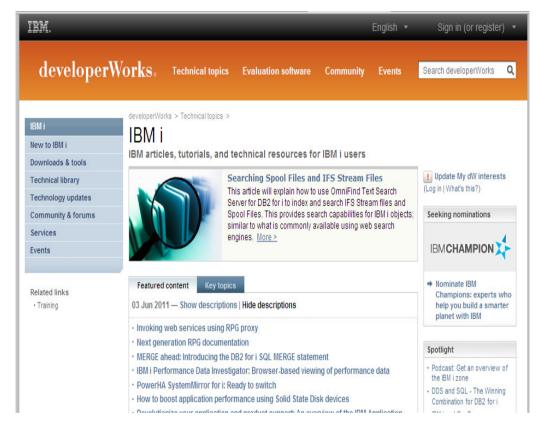
IBM i is now on developerWorks!!





developerWorks IBM i Zone

- New resource for the IBM i community
- Wide variety of technical information
- ✓ Organized by Subject matter
- Topics
 - ✓ New to IBM i
 - ✓ Download & Tools
 - √ Technical Library
 - ✓ with examples!
 - ✓ Community and Forums
 - √IBM i Services
 - ✓ Events
 - √ Technology updates Wiki
- Register for notifications
- Submit your own comments!



ibm.com/developerworks/ibmi

^{**}Info Center remains the site for technical documentation, however, sometimes information will appear on dW first.



IBM i – Enhancements since V5R4





IBM i Roadmap

2008 2010 2011-13

















Building a Foundation for the Future

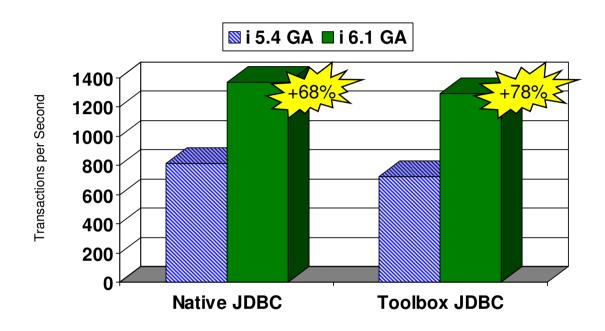
IBM i 6.1 Highlights

- Solid State Drive support with unique IBM i performance advantages
- Java Virtual Machine, shared with AIX & Linux
- Systems Director Navigator web-based console
- PowerHA disk clustering
- Support for BladeCenter
- SAN DS8000 performance optimization
- PowerVM virtual storage for i partitions





IBM i 6.1 Java & WebSphere Performance Improvements



Test Environment

- IBM Technology for Java VM
- WebSphere Application Server 6.1
- DB2
- 2-tier environment
- POWER5+ 2.2Ghz 2-core partition
- Trade 6.1 (stock trading) workload

- Improvements primarily in JDBC, DB2 and Java
 - Includes 64K pages (only available on POWER5+ and beyond)
- Some improvements available via i5.4 PTFs
 - But majority of improvements available only in i 6.1



Total integration with IBM i 7.1

Information into insights

Simplify supplier data exchange with native XML in DB2[®] for i

Data protection and compliance

Secure critical client data with DB2 column level encryption

Resiliency without downtime

Implement multi-site disaster recovery with PowerHA SystemMirror

Virtualization without limits

■ Test a new release with ease by hosting i 7.1 on a i 6.1 server

Management with automation

Reduce costs of fix management with IBM Systems Director

Workload optimizing systems

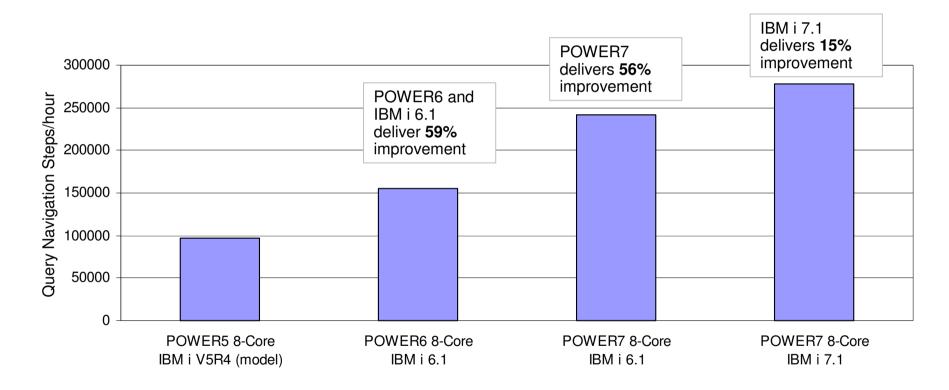
Automate exploitation of solid state drives





IBM i 7.1 and POWER7 deliver unbeatable combination

Over 150% performance improvement



Source Data:

http://www.sap.com/solutions/benchmark/bixmlwo_results.htm http://www.sap.com/solutions/benchmark/bid_results.htm



DB2 for i – XML Support

- XML is an industry standard for exchanging information between customers, suppliers, and partners
- Rich XML Support now available with DB2 for i
 - 1. XML data type stores XML documents supporting database operations
 - 2. Decompose (shred) XML documents into relational columns
 - 3. Generate XML documents from existing relational data
- OmniFind Text Search Server provides support for searching XML documents
 - Search elements of an XML document (e.g., customer name = Smith)
 - SQL statements use OmniFind to search the XML documents
 - Available with IBM i for no additional charge
- Strategic replacement for XML Extenders Program
 Product



PO#	Customer #	Date	Purchase Order
123	2468	5/27/09	× XML ~
456	1357	6/10/09	× XML ~



DB2 for i - Additional Enhancements

Column Level Encryption

- Allows for transparent (no application changes) encryption of a specific column in a database table accessed through SQL or native
- Solutions from tool providers including Patrick Townsend, Linoma Software & nuBridges supply encryption algorithms

First Name	Last Name	City	State	Credit Card#
Megan	Jones	Minneapolis	Minnesota	*&^%\$*
Casey	Smith	Ames	lowa	\$%@^

Application Developers

 MERGE, Array support, Global Variables, and consuming Result Sets in RPG and COBOL allows for more powerful and efficient programming

Performance

- Adaptive Query Processing can modify query plan while the query is running to significantly improve performance
- Advanced SQE query optimizer now supports native logical files

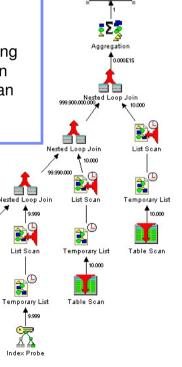
Management

- New tooling to monitor long running operations
- SQL_CANCEL procedure to cancel long running queries.
- Random or Sequential I/O statistics to identify tables that can benefit from SSDs

DB2 is an integrated database supporting transaction processing and business intelligence applications

On-Demand Performance Center

- Rich tools for DB2 for i
- Including Visual Explain
- Adaptive Query Processing can automatically build an index to replace table scan ...taking queries from 30 minutes to 1 minute





DB2 for i

Supports new and existing apps

- DB2 for i is a fully compliant SQL database that also provides the unique ability to support RPG applications
- DB2 for i was the first database to meet
 100% of the core SQL 2008 ANSI standard

Integral to IBM i

- Built into and provided with IBM i
- Integrated system and storage management and security results in easier administration
- Majority of IBM i clients do not have a Database Administrator

Ready for Business Intelligence

With DB2 WebQuery, IBM i supports
 Business Intelligence solutions without replicating data to x86 systems with SQL Server and Oracle

Self Managing Features

Feature	SQL Server	DB2 for i	
Self Adjusting Query Optimizer for improved performance	No	Yes	
Automatic creation of Indexes	No	Yes	
Automatic placement of data and indexes on disk	No	Yes	
Automated Index Maintenance	No	Yes	

South Carolina Student Loan

Power 520 with IBM i running DB2 Web Query Stopped extracting data to Microsoft tools

"Before the introduction of IBM DB2 Web Query, I would typically have to wait until the end of the month in order to discover if my key metrics were being met. Now with DB2 Web Query, my metrics are ondemand, interactive. I not only see my metrics daily through pie charts and graphs, but I also have both my dollars and counts tabled before me on one page! To update, I simply refresh my screen. This tool has reduced a laborious monthly task to daily usable data all with a simple key stroke! How great is that!"

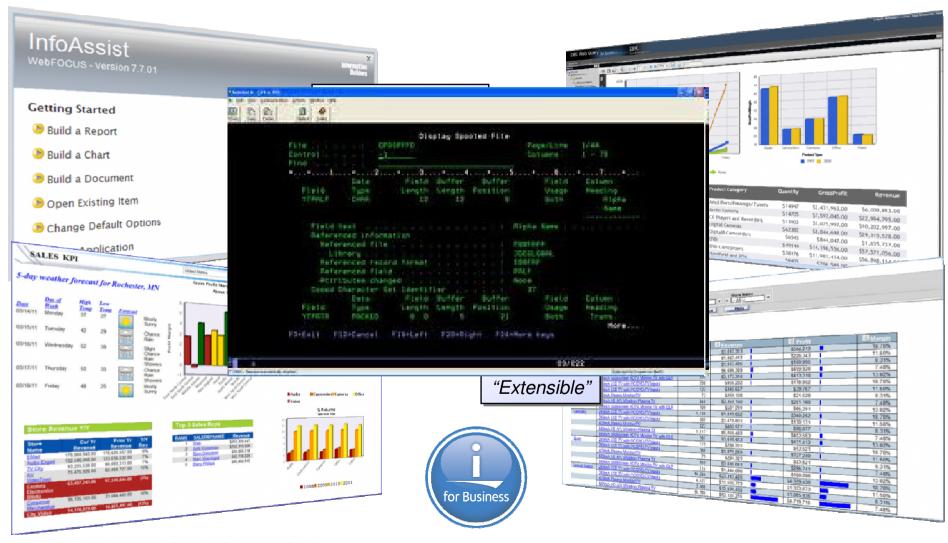
David C. Roupe Vice President of Guaranty Services





DB2 Web Query – Intuitive, Insightful, Extensible

Fast, easy access to business information assets for query, reporting and analysis





PowerHA SystemMirror for i

Asynchronous Geographic Mirroring for multi-site DR solution

- IBM i based mirroring for geographically dispersed systems
- Asynchronously mirrors disk writes to target system
- Support for automatic failover
- Supports IASPs on integrated disk, SAN, and virtual disk

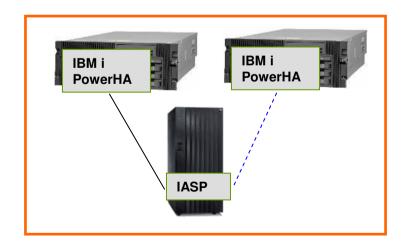
LUN level switching for local HA solution

- Switch IASP on DS8000 or DS6000 between local systems
- Support for automatic failover
- Supports native and VIOS with NPIV attached SANs

PowerHA provides a robust, simple to manage High Availability and Disaster Recovery solution









Virtualization Enhancements for IBM i

Deploy new IBM i 7.1 partitions

- IBM i 6.1 can host I/O for i 7.1 partition
- Minimize change while deploying new release
- iSCSI attached System x and BladeCenter

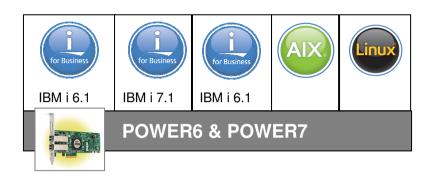
Maintain current IBM i 6.1 partitions

- IBM i 7.1 can host I/O for i 6.1 partition
- Continue to run applications with IBM i 6.1 while leveraging new capabilities of IBM i 7.1
- iSCSI attached System x and BladeCenter

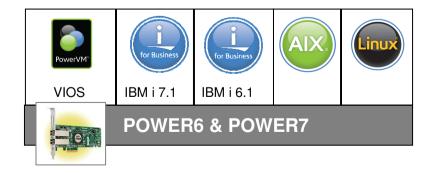
PowerVM VIOS can host

- IBM i 7.1 and 6.1 partitions
- AIX and Linux partitions
- VIOS supports advanced virtualization technologies including Active Memory Sharing and NPIV

Storage Virtualization can reduce costs while improving IT infrastructure flexibility









IBM i integration with BladeCenter and System x Enhancements

iSCSI Software Target Supports Higher Speed Connection

- Replaces current iSCSI adapter on Power server side with software in IBM i
- Uses Ethernet adapters and network to connect Power to BladeCenter and System x
- Supports 1 Gb and 10 Gb Ethernet connections
- Can connect to iSCSI adapter or software initiator on BladeCenter and System x

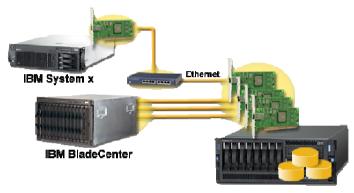
Supported Environments

- Windows Server 2008 and 2003 Server editions
- VMware ESX 4.0
- VMware ESXi Embedded 4.0

New installation wizard

 Simplifies setup of integration environment and then starts install of Windows Server or VMware operating system

IBM i provides advanced storage management for x86 systems enabling cost reductions and better risk management



IBM Power Server with IBM





IBM i workload optimization for Solid State Drives (SSD)

- Total integration with IBM i of database, storage management and performance management enable automated SSD optimization
- IBM i automatically moves most active data to SSDs
- Clients and ISVs can easily optimize applications for SSD
 - DB2 for i supports specifying SSD as target for specific, high use files
- SSD Analyzer Tool
 - Designed to help determine if SSDs can help improve application performance
 - Runs on IBM i 5.4, 6.1 or 7.1
 - Plus additional enhancements and utilities



Associated Bank Reduces Batch Run Time by 40% with SSDs*



SSDs can improve performance of long running batch jobs or queries. IBM i can easily get the right data on the SSDs

72 Drives replaced by 60 Drives + 4 SSD



Systems Management Enhancements

Systems Director Navigator for i

- Ability to manage a target IBM i 5.4, 6.1 or 7.1 system Navigator management server runs in one place One browser used to manage multiple environments Extends Navigator management to IBM i 5.4
- Support for Tape and Journal management and BRMS

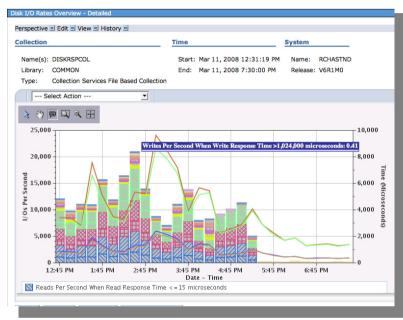
Performance Management Enhancements

- More metrics into Collection Services: DS8000, 12X Bus, Save/Restore, and Tape
- Performance Data Investigator is enhanced to include Disk response time and Java memory perspectives

Systems Director Enhancements

- New functions for managing IBM i
- Management server runs on AIX, Linux, or Windows
- Manages IBM i 6.1 and 7.1 environments

Systems Director provides an integrated platform management solution for IBM i and heterogeneous servers



Systems Director	6.1.1 2Q 09	6.1.2 4Q 09	6.2 2Q 10
Support Group and CUM PTFs	√	✓	✓
6.1.2 Agent for IBM i		✓	✓
Additional monitors			√



Application Runtime Expert for i

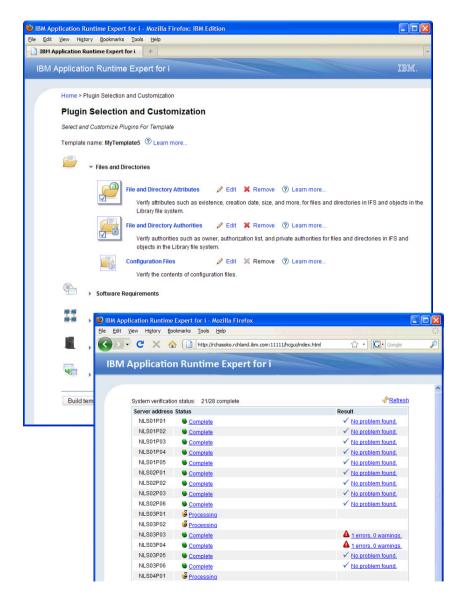
- Tool to verify runtime attributes of an application to help resolve situations where application is not starting or working properly
 - Creates a template for well running application
 - Performs health check against current environment
 - Identifies differences between template and actual runtime attributes
 - Provides the option to fix many of the differences found

Application Runtime Attributes

- File/Directory Authorities and Attributes
- Attributes in property/http/xml configuration files
- User profiles
- **PTFs**
- System Values
- Products installed
- TCP/IP Network verification and configuration
- **Environment variables**
- Ports in use

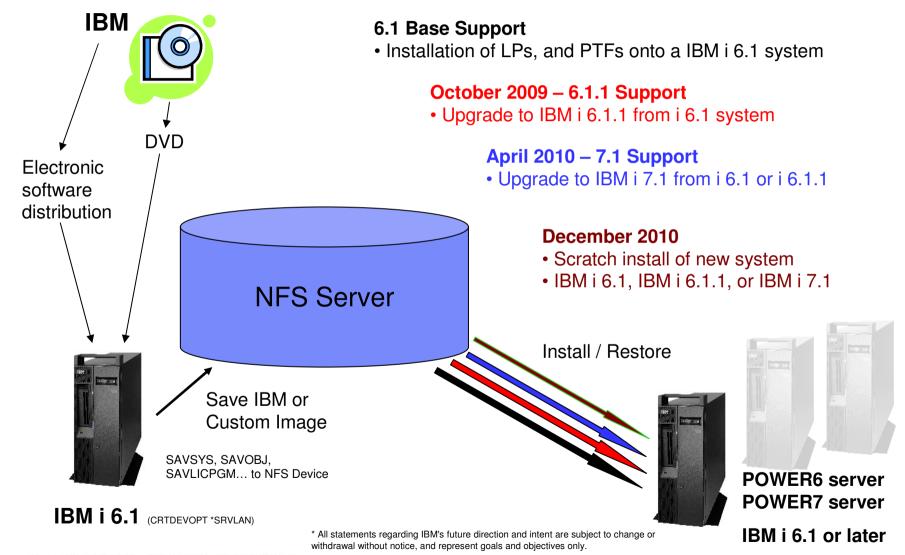
Application Runtime Expert can quickly identify issues in order to get applications back online

5733-ARE IBM Application Runtime Expert for i





IBM i Network Upgrade Simplifies Upgrading Multiple Systems





Web Server Enhancements

IBM HTTP Server for i running Apache

- Latest Apache 2.2 release
- Payment Card Industry (PCI) Compliant

IBM Technology for Java

- Java 5 and 6 support for 32-bit and 64-bit JVMs
- No longer shipping Classic JVM

Integrated Web Application Server

- Part of IBM i
- Supports running Java 5 and 6 applications

Integrated Web Services Server

- Up to 2x performance improvement
- Static WSDL support providing enhanced flexibility
- Now supports programs in IASP

Integrated Web technologies easily support new application deployments









WebSphere Support for IBM i 7.1

WebSphere Application Server

- WebSphere Application Server Express V6.1, V7.0 and V8.0
- WebSphere Application Server V6.1 and V7.0
- WebSphere Application Server Network Deployment V6.1 and V7.0
- Fix Packs 6.1.0.29 and 7.0.0.7 contain IBM i 7.1 level support

WebSphere Portal

- WebSphere Portal 6.1.5
- WebSphere Portal 7

WebSphere Commerce V7

- * refresh expected in early 2012

WebSphere Message and Queuing

- WebSphere MQ V7.0.1.5 (this week!)
- WebSphere MQ next (Fall 2011)
- WebSphere MQ File Transfer Edition V7.0.2.1

WebSphere. software

Access information



Customer retention



Operational efficiency





Cost reduction





Lotus Support for IBM i 7.1

Lotus Notes and Domino

- Collaboration beyond e-mail
- Domino 8.5.1

Lotus Sametime

- Real-Time community collaboration
- Sametime 8.5.1

Lotus Quickr

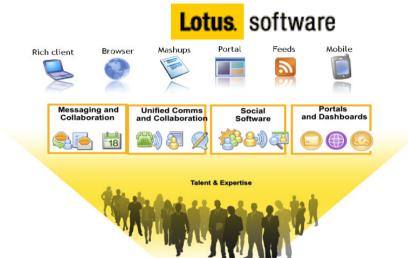
- Share everyday content
- Quickr 8.5

Additional Products

- Enterprise Integrator 8.5.2
- Forms 3.5.1
- Domino Fax V4R5

IBM i offers platform for consolidation of Lotus collaboration solutions

For the latest information, see: http://www.ibm.com/systems/resources/releasesupport.pdf

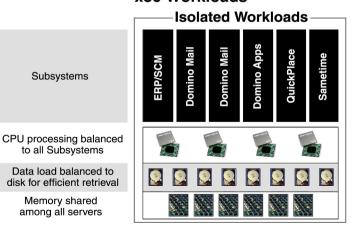


Subsystems

to all Subsystems

Memory shared among all servers

IBM i Supports Consolidation of x86 Workloads





Rational Support for IBM i 7.1

Rational Developer for Power

- Feature: RPG and COBOL Development for i
 eclipse-based tools for RPG/COBOL development
 New print designer & support for language enhancements
 Replaces Rational Developer for i (RDi)
- Support for COBOL and C/C++ options for AIX

Rational Team Concert for Power

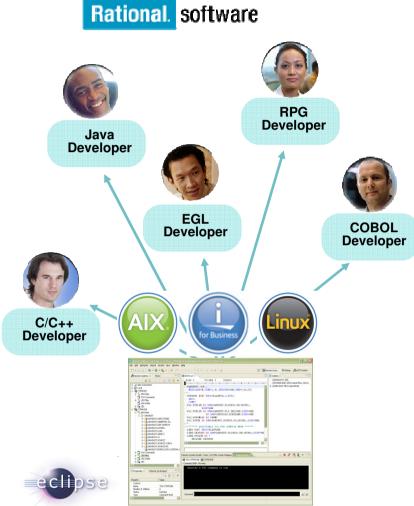
- Collaborative software development, automate best practices
- Integrated source control and build management
- IBM i or AIX repository options

Rational Application Developer

- Robust Java development environment
- Web/Web Services development integration
- EJB and J2EE fully supported

Rational Development Studio

- Rebranding for WebSphere Development Studio
- Provides ILE & OPM compliers + traditional development tools
- New language functions have been added to ILE Compilers



Eclipse-based development tools can improve programmer productivity and provide a familiar development environment for new employees

Commitment to RPG

To IBM i community

Created on: Apr 26, 2010 1:57 PM by cafe - Last Modified: Apr 26, 2010 2:04 PM by cafe

Power your Innovation April 13, 2010 Dear IBM i client.

IBM® has a strong history of providing compilers and development tools for applications on IBM i. In his "Power of i" letter, Ross Mauri, IBM Power Systems™ General Manager, outlined IBM's solid and unchanged commitment to our IBM i clients. We at IBM Rational® would like to echo this by confirming our commitment to support and enhance our ILE RPG and ILE COBOL compilers on IBM i and our application development tools.

Back in February, IBM announced POWER7™ and exciting new advancements for the IBM Power Systems platform. As part of those announcements, IBM Rational announced two new products: IBM Rational Developer for Power Systems Software™ and IBM Rational Team Concert™ for Power Systems Software. From an IBM i perspective these products represent the continuation of Rational Developer for IBM i and Rational Team Concert for IBM i. Both



Power your Innovation April 13, 2010 Dear IBM i client,

IBM® has a strong history of providing compilers and development tools for applications on IBM i. In his "Power of i" letter, Ross Mauri, IBM Power Systems™ General Manager, outlined IBM's solid and unchanged commitment to our IBM i clients. We at IBM Rational® would like to echo this by confirming our commitment to support and enhance our ILE RPG and ILE COBOL compilers on IBM i and our application development tools.

to transform the landscape of RPG development. Rational Open Access enables partners, ISVs, and clients to write handlers that extend ILE RPG's native I/O to access new devices and resources such as Web browsers, services. external databases, or spreadsheets,

IBM Rational is committed to the success of our IBM i clients, helping you continue to realize business value from your applications and leverage these applications in new business opportunities.

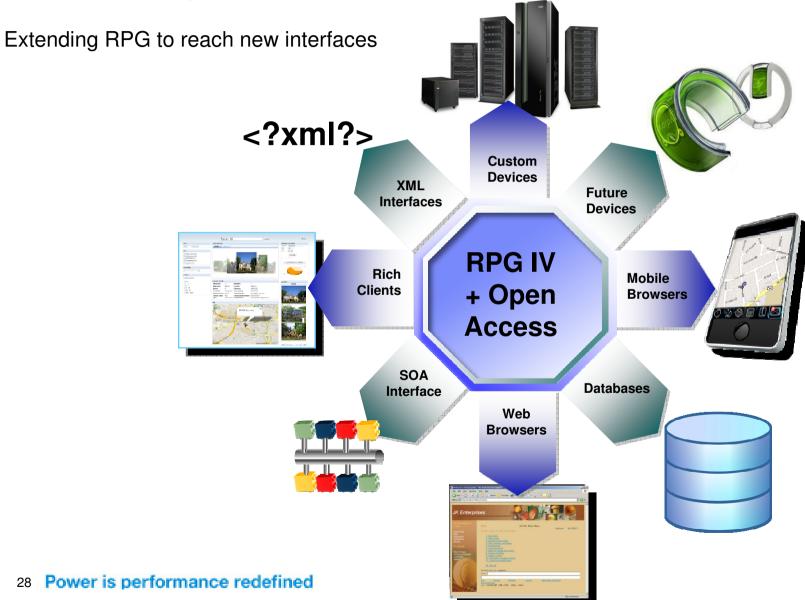
Echoing Ross's closing comments, thank you for your business and your confidence in the future of one of the world's most durable and productive platforms for business.

Hayden Lindsey Vice President and Distinguished Engineer Enterprise Modernization, Modeling, Construction, & Compilers - IBM Rational

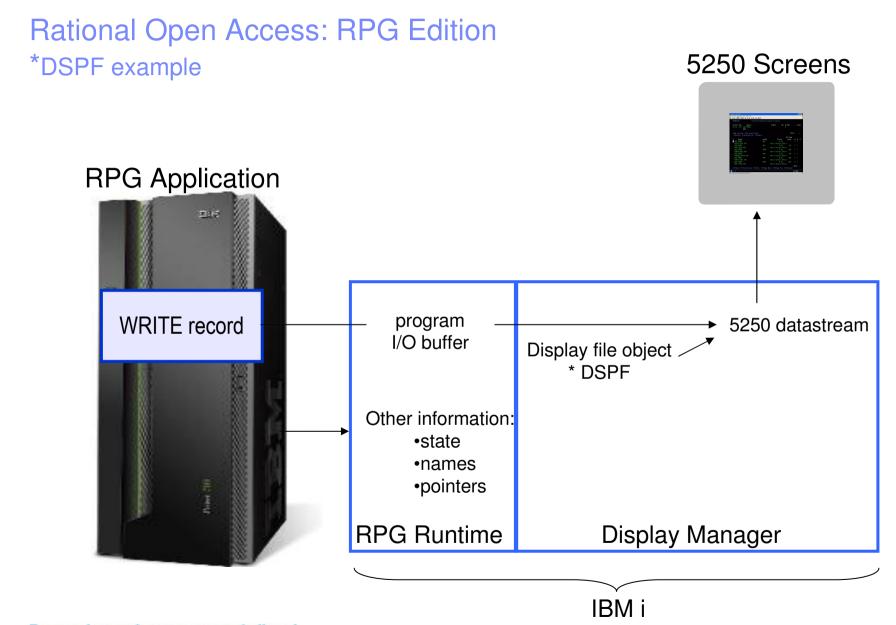
Hayden Lindsey Vice President and Distriguished Engineer Enterprise Modernization, Modeling, **Construction and Compilers IBM Rational**



Rational Open Access: RPG Edition

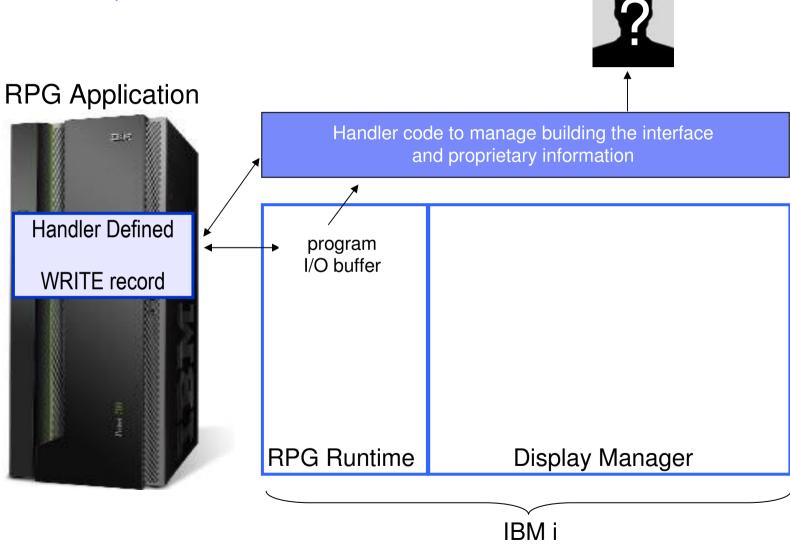








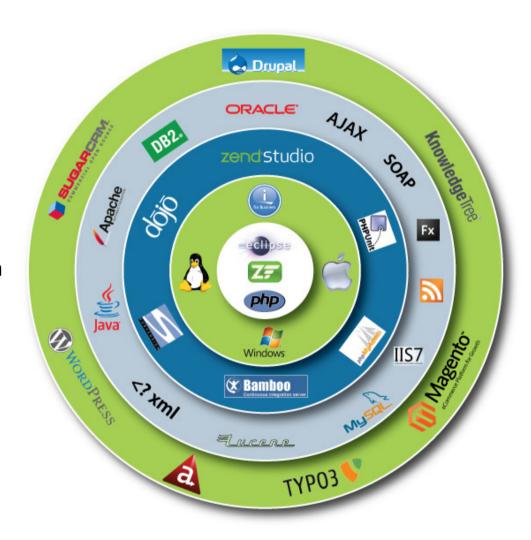
Rational Open Access: RPG Edition *DSPF example





Zend Delivers an Open Solution Stack for IBM i

- Opens up a vast ecosystem of technologies
 - Development tools
 - Application frameworks
 - Applications
- Zend Framework enables simple, scalable, best-practice, application development
 - 10M+ downloads
 - Built into Zend Server and Studio
- 4+ million trained PHP developers





Zend Offerings for i



Zend Server Community Edition for i

- Preloaded with IBM i 7.1, 6.1, 5.4
- Simplified Set Up and Management FastCGI support between ILE Apache and PHP Eliminates 2nd copy of Apache and reverse proxy Software fixes via PTFs

Zend Server for i

- Provides advanced functions
- Available from IBM with advanced support offerings

Zend Studio for i

- Eclipse-based development environment
- Available with one year of Silver support from Zend for no additional charge













and +++



7.1 Additional Enhancements

IBM Transform Services for i Enhancement

- Delivers Adobe PDF output support to IBM i applications
- New support to transform existing Spool Files to PDF format
- Shipped with IBM i

Encrypted ASP Enhancements

- Added ability to start/stop encryption on an existing iASP
- Encryption key management enhancements

BRMS Enhancements

- Improved functions for managing backups, media, backup history, and recoveries

Support for additional Tape Libraries with NPIV through PowerVM VIOS

- 3577 (TS3400) with (TS1120/TS1130) drives
- 3584 (TS3500) with (TS1120/TS1130) drives
- 3576 (TS3310) with LTO drives

Remove Disk without IPL

- Removing a disk unit from a disk pool
- http://ibmsystemsmag.blogs.com/i can/









7.1 Additional Enhancements

IBM i Access Family Enhancements

IBM i Access for Windows 7.1 offers:

Enhancements to the .NET, ODBC, and OLE DB providers including support for XML data type Enhancements to Data Transfer

Updated PC5250 Display and Printer Emulation based on IBM Personal Communications 6.0

Help files converted to html help format

Enhancements to Install, including install-time support for secondary languages

IBM i Access for Web 7.1 includes:

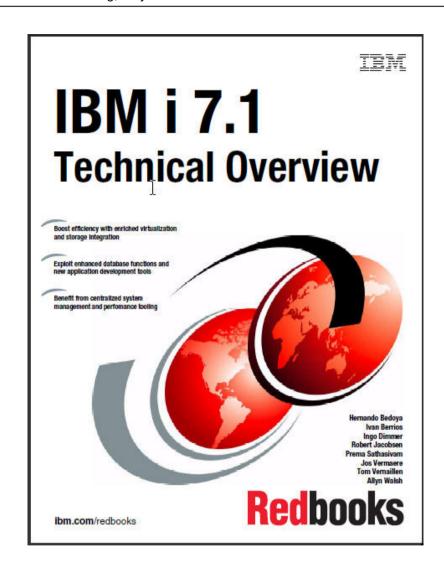
Additional option for viewing spooled files as PDF documents

Networking Enhancements

- IBM i DHCP server is now based on the ISC (Internet Systems Consortium) DHCP server which contains support for IPv6 and DHCP failover
- IPv6 support for the DHCP Client, PPP (Point-to-point protocol), L2TP (Layer 2 Tunneling Protocol), and RADIUS (Remote Authentication Dial In User Service)
- Support for the IKEv2 (Internet Key Exchange version 2) tunneling protocol in the IBM i VPN support
- Telnet Client support on IBM i is now SSL enabled (also PTF to IBM i 6.1 & 5.4)

Security Enhancements

- Expiration of user profiles
- More granular access to individual spooled files



http://www.redbooks.ibm.com/redbooks/pdfs/sg247858.pdf



IBM i Roadmap

2011-13 2010 2008





















IBM i 7.1 Technology updates

The IBM i 7.1 Technology update builds on the foundation established by the IBM i 7.1 release. It includes significant new functions providing additional capabilities to our clients who are moving to cloud implementations. As with previous Technology updates, additional functions and features have been added to key IBM i technologies such as DB2, DB2 WebQuery, and PowerHA.



Since 7.1 GA: Technology Refresh 1 & More

- Virtual Media Auto-Changer Delivered with TR1 9/10
 - Client partitions can change the image loaded in the server's IMGCLG.
 - Customer Value: Load media into one partition's IMGCLG and do unattended installs of other IBM i LPARs on the same box.
- Virtual optical media library Delivered with TR1 9/10
 - Migrate optical libraries into a virtual optical media library backed by disk.
- Y4 Cryptographic card for IBM i customers Delivered 12/10
 - PCIe attached so it can plug into the newer PCIe slots
- Support for LTO5 in TS2900 Tape Library Delivered 10/10
 - Low Profile Entry level Tape Library TS2900 will now support the newest LTO5 tape drive. (Tucson will announce in Feb. IBM i GA will be in March for 6.1.1 and later.)
- Full Network install Delivered 12/10
 - Initial (scratch) install of an IBM i v7.1 system from a network device
- Web Services New client support WSDL2RPG Delivered 12/10
 - Call Web Services natively from RPG
 - WSDL converted to native RPG to encapsulate Web Service call



May 2011: Technology Refresh 2 & More Virtualization Enhancements

- IBM i Suspend/Resume (Hibernation) To be delivered with TR2
 - Ability to suspend a partition and resume it from the suspend point
 - Customer Value: Saves IPLs. Suspend before CEC maintenance, do the repair or CEC IPL and then resume.
- IBM i to IBM i Virt Tape To be delivered with TR2
 - Allow multiple IBM i partitions to share the tape drive owned by a different IBM i partition.
 - Client partitions can be either 7.1 or 6.1 with 6.1.1 machine code.
- I/O Performance Multi-path To be delivered with TR2
 - New load balancing multi-path algorithm that tries to push more I/O down the faster path.
 - Example: When using NPIV, running both disk and tape traffic on the same port more feasible since the disk traffic will move off the port if the tape traffic starts slowing down the disk performance.
- DS5K NPIV support To be delivered with TR2
 - Allows better utilization of FC adapter/switch resources by using NPIV with the DS5300/DS5100.
- PowerVM Redundant VIOS Support for IBM i on POWER Processor-Based Blades
 - Available through the use of SDMC



May 2011: Technology Refresh 2 & More Storage Announcements

- IBM i 6.1.1 support for previously announced PCle-based SSD Offering
 - PCIe RAID and SSD SAS Adapter can be used for direct attach, without VIOS
- SFF DASD Drawer To be delivered with TR2
 - SFF (Small Form Factor) SAS disk drawer that supports up to 24 SFF (2.5 inch) disks in a 2U 19 inch rack drawer.
 - POWER6 and POWER7; IBM i 6.1.1 or 7.1
- 177 GB SFF SSD To be delivered with TR2
 - 2.5 times more capacity than existing 69 GB SSD
 - Much improved cost per GB, and lower number of slots needed for same number of GB
 - Just a few SSD reduce need for a large number of HDD, and often improve performance
- 571 GB 10K RPM SFF Disk Drive To be delivered with TR2
 - Lower cost per GB and more GB per 2U rack space
- IBM i Disk Sanitizer PRPQ supports SSD To be delivered with TR2
 - Sanitize natively attached internal SSDs in CECs and Drawers
- Optical library data migration enhancements using Image Catalog
 - Lab Services offering for IBM i 5.4 with 5.4.5 machine code, and newer releases
 - Improves the process and speed of data migration
 - Eases transitions from IBM 3995, IBM 3996, and selected non-IBM optical libraries



May 2011: Updates and New Functions

Director Navigator (web console) 7.1 & 6.1

- Interface with improved usability
- Adds 7.1 Director Navigator function to 6.1
- Includes "set target system" to a v5r4 or later system

DB2 for i semi-annual updates

- SQL earliest supported release (6.1 and later)
- Performance updates (6.1 and later)
- Security/Role support (6.1 and later)
- Building on XML support (7.1)
- Simplified recursive query with CONNECT BY (7.1)

Zend/PHP Enhanced Database Support

- Local DB support for MySQL, DB2
- Remote DB support for MsSQL, Oracle



New Application Development Support

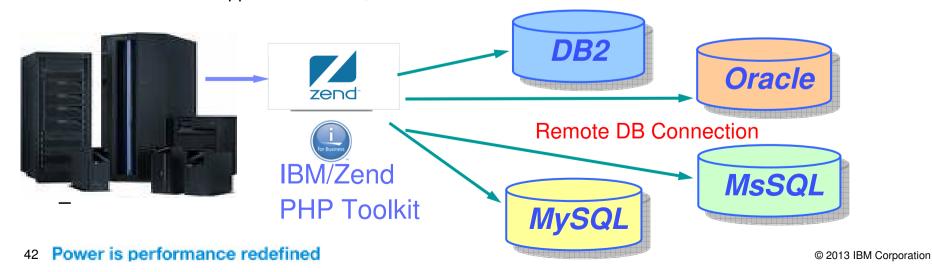
Web Services

New client support – WSDL2RPG - Delivered 12/10
 Call Web Services natively from RPG
 WSDL converted to native RPG to encapsulate Web Service call



Zend PHP

- New IBM i PHP Toolkit Beta May 2011
 Call *PGM, *SVRPGM, *CMD, PASE utilities
- Enhanced Database support May 2011
 Local DB support for MySQL, DB2
 Remote DB support for MsSQL, Oracle





October Announcements

■ See developerWorks for several new enhancements.

https://www.ibm.com/developerworks/ibmi/



Post GA 7.1: Technology Refresh 3 – October 2011 *New*

DB2

- Security Simplify Authentication with new keyword
- SSD Asynchronous Table & Index Movement
- DB2 Monitoring Tool Improvements Filters
 Error Cases, Client IP Addresses, Group & User Profiles
- ISV and Advanced User requests
 Smaller SQL Statements in SQL Packages
 Improved ALTER TABLE Performance
 Administration Information available through SQL

Application Development

 Native archive and un-archive API supports creating and restoring archive files specifically .zip files

Virtualization

- Thin Provisioning for DS8700 and DS8800 storage servers, and for VIOS Shared Storage Pools allows configurations set up with a smaller amount of real disk storage
- Virtual Partition Manager is enhanced to create IBM i partitions

For POWER6 and POWER7 Express Servers that do not have an external management console.

Enhancement to IBM i 7.1, the ability to create up to four IBM i partitions will be enabled in VPM.

 IBM i mirroring algorithms are enhanced to take into consideration any N_Port ID Virtualization (NPIV) attached disks.

System and I/O Support

- Bus level statistics for 12x loops
- Ethernet link aggregation improves throughput and reliability for up to 8 links
- Share physical Ethernet connections across partitions with Ethernet layer-2 bridging

IBM i for Business Intelligence

- New solution from IBM
- Low-cost value built solution (IBM i with Power System)
- · Builds on popular DB2 Web Query
- Start with Operational Reporting and optionally grow into Data Warehousing

IBM i CBu for HA

- New solution from IBM
- Low-cost value built solution (IBM i with Power System)
- Combines existing CBU Editions with PowerHA

IBM DB2 Web Query for i

- Standard Edition bundle to pro vide customers with a complete query reporting solution in a single, simplified ordering package.
- New interface that allows users to generate URLs to query reports for report

PowerHA SystemMirror for i

- Support replication through V7000
- · Support replication though SVC server
- Metro Mirror, Global Mirror and FlashCopy support

Application Runtime Expert

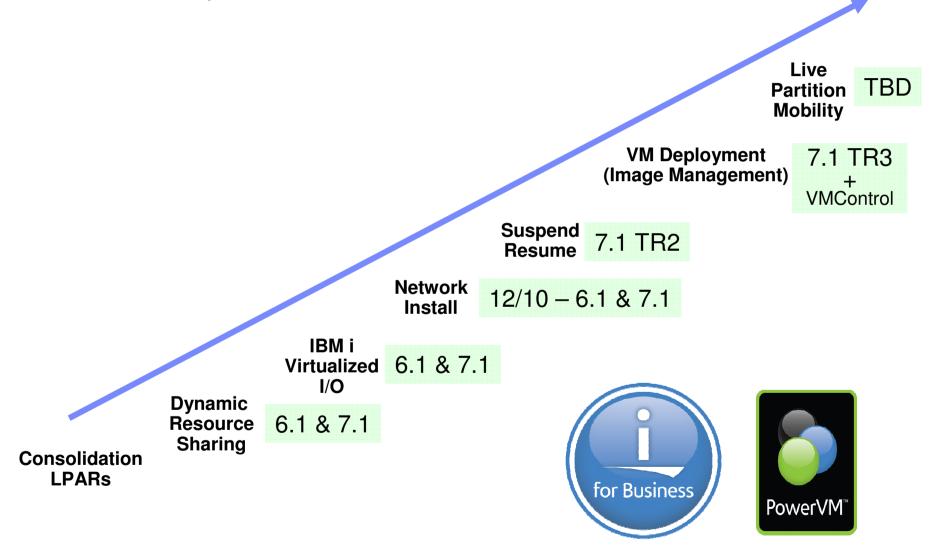
Automate servicing of applications using scripting, CL commands and SQL queries

Zend Server Community Edition

- PHP environment preloaded with IBM I
- New extensions and toolkit for accessing DB2 for i



IBM i Cloud Capabilities





Technical Refresh 4 - Overview

IBM i 7.1 Technology updates:

- POWER7 Systems Live Partition Mobility minimizes the impact of planned outages by enabling the movement of running partitions from one server to another. This capability enables the implementation of more robust cloud solutions.
- POWER7 Systems Virtual Image Management allows clients to create and manage images and system templates, expediting the process of creating and deploying virtual servers.
- DB2 for i delivers performance and security enhancements along with new features that will improve the productivity of software developers.
- IBM Passport Advantage® Sub-capacity Licensing offering has been expanded to include new eligibility and counting rules for IBM i Workload Groups.
- IBM DB2 Web Query is now available with a new product structure to simplify packaging. The product is now available as either an Express or a Standard offering. Enhancements also include a focus on more granular user security with an entirely new user security center.
- The **IBM i for Business Intelligence solution**, a packaged solution of hardware, software, and installation services, has been refreshed with the latest version of the DB2 Web Query Standard edition product.
- IBM Application Runtime Expert for i includes enhancements to support easier access to the product without compromising the overall security of the system.
- IBM Developer Kit for Java[™] has been enhanced to **support Java 7 for IBM i**. Clients developing Java applications can now use the most recent enhancements to the Java language.
- IBM PowerHA SystemMirror for i is adding support for the recently announced Storwize V7000 and SAN Volume Controller (SVC) storage systems to its Metro Mirror, Global Mirror, and FlashCopy functions.
- The newest member of the IBM i Access family of products is available as a technology preview only. Written in Java, this product extension removes the dependence on preinstalled and configured code and allows clients to easily put key IBM i Access client code onto a variety of other devices, including Mac and Linux™.
- IBM i support for new I/O emphasizes price/performance and configuration flexibility, especially for SSD, Ethernet, and External Storage configurations.
- IBM Rational Application Management Toolset for i provides system administrators and other advanced users with a lightweight set of tools for the common tasks of working with library objects and building procedures with Command Language (CL).
- IBM Web Enablement for i (5722-WE2) has been enhanced to include WebSphere Application Server Express V8.5.



Technical Refresh 5 - Overview

IBM i 7.1 Technology Refresh 5 provides performance, usability, and integration enhancements, both with the IBM i program offering and the related offerings from IBM Software Group.

IBM i

- IBM Web Administration GUI provides:
 - GUI interface for IBM WebSphere Application Server V8.5 and IBM WebSphere Portal V8.0
 - GUI interface for product and fix installation support for WebSphere Application Server V8.0 and V8.5
- IBM HTTP Server is enhanced to handle files larger than 2 GB.
- The JTOpen Lite (JTLite) library provides a new small format Java tool box to access IBM i native objects for mobile applications.
- IBM Navigator for i usability and performance enhancements.
- The new XML Service for IBM i toolkit provides a language-independent way to access native IBM i objects.
- IBM Facsimile Support for IBM i is enhanced to support a significantly lower priced 2-port asynchronous communications adapter.

IBM i 7.1 TR5 includes support of new IBM Power® hardware, firmware, and I/O, including Power 770 and Power 780, USB Tape, USB and SATA Removable Hard Drives (RDX support), and lower cost async communications adapters.

DB2 for IBM i:

- Better, faster, and smarter performance
- New and enhanced SQL statements, database APIs, and database commands
- BRMS Enterprise extends the popular BRMS product to provide centralized monitoring and automation of backup processes on distributed systems.
- IBM i cloud enhancements:
 - The IBM Systems Director VMControl™ system pool simplifies workload.
 - The Systems Director monitor is enhanced to easily navigate and create monitor views and directly reply to a message.
 - Platform management support of Power blades.

HMC V7 R7.6.0 is enhanced with the following:

- Ability to simultaneously move 16 partitions at the same time
- HMC blades management, including redundant VIOS, Active Memory™ Sharing, Suspend/Resume, and Live Partition Mobility

IBM Software Group software enhancements for IBM i are as follows:

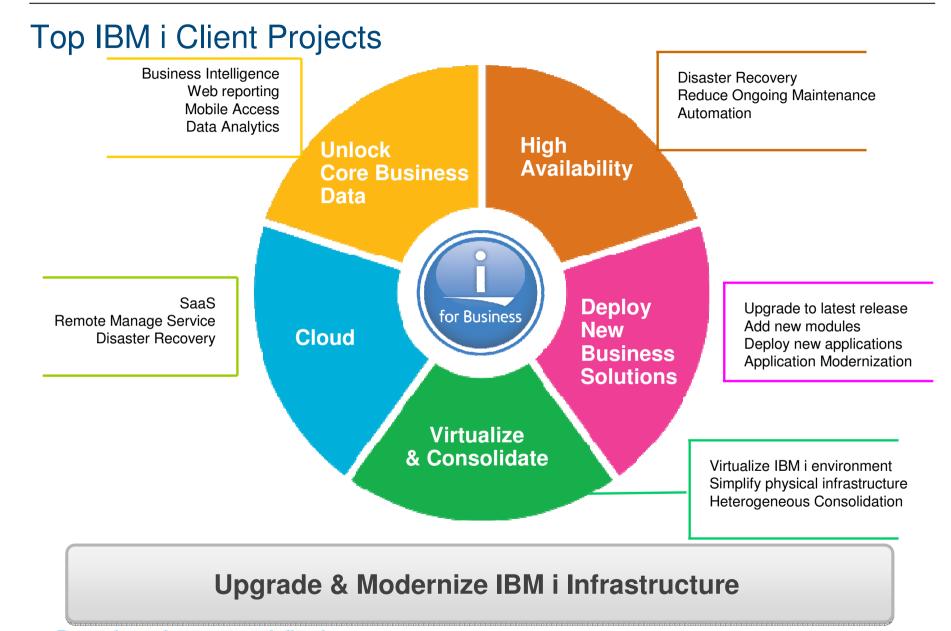
- InfoSphere Guardium V9.0 includes DB2 for IBM i as a data source.
- IBM WebSphere Commerce V7 Feature Pack 5 is supported by IBM i.
- WebSphere Application Server V8.5.



IBM i – Future Directions









IBM i Investment Themes for 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



The Power to Consolidate and Virtualize

o mins

Time to add a new virtual machine to support business growth









"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



Resiliency without downtime

PowerHA SystemMirror for IBM i provide active/standby datacenter and multi-site disk clustering solutions for resiliency Unified HA/DR Disaster Recovery High **Availability Datacenter** 'Unplanned' & **Backup** 'Planned' **Strategy** 'Unplanned' **'AS/400** Reliability' PowerHA^{**}



Smarter computing for Estes Express meant implementing 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

"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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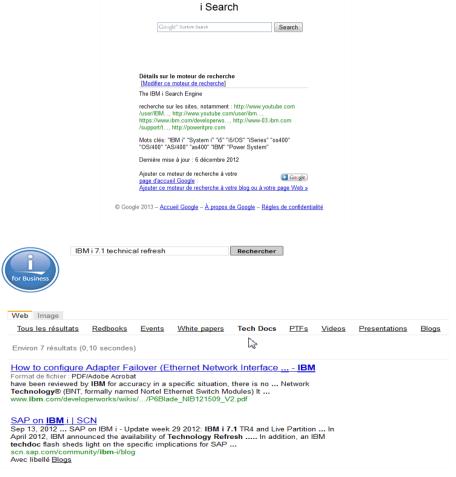
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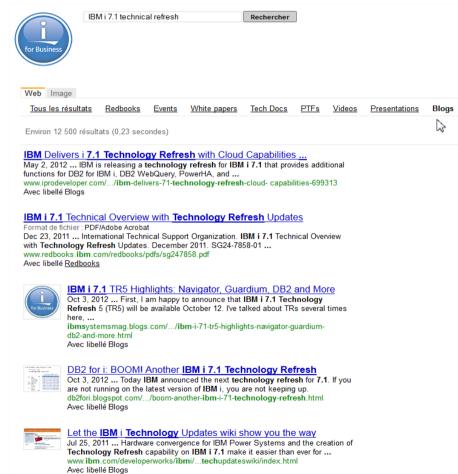
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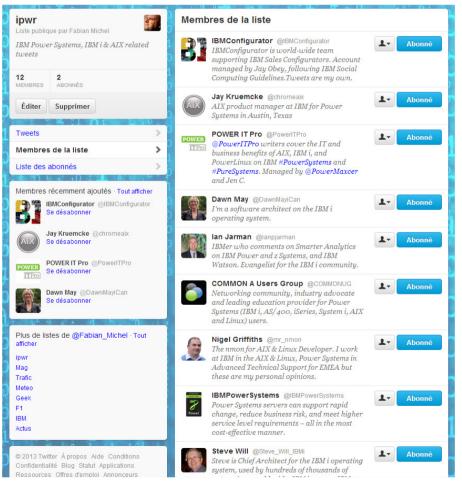






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