

IBM i 7.2 Overview

(including TR1)

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COMMON
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Today's agenda (if times allow...)

- IBM i 7.2 beauties (why you should migrate)
- Technical Refresh (nuts & bolts)
- Coffee break (you'll need one, believe me!)
- DB2 for i (why you really want to migrate)
- Hints & Tips demos (to relax before leaving)



IBM i Roadmap

2008 2009 2010 2011 2012 2013 2014 2015



- 7.1 Introduced Technology Refreshes
- 7.2 Incorporates 7.1 TRs and adds new capabilities
- TRs will transition to 7.2 over time
- New Releases for pervasive changes beyond scope of TRs

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

IBM i – Priorities

- **Solutions for Today and the Future**
 - Focus on solutions integration with new technology
 - Invest in DB2 and language features for strategic solutions
 - Enable Mobile Device Support

- **Systems On-Site or In the Cloud**
 - Exploit future POWER system technology
 - Deliver advanced virtualization of system & storage
 - Provide resiliency, availability & flexibility

- **Simple & Integrated, Secure & Available**
 - Simplify management of systems and high availability
 - Broaden storage area network integration
 - Extend industry-leading integrated security



Power **VM**

Power **VC**

Power **HA**

Power **VP**

Power **SC**

IBM i 7.2 Themes

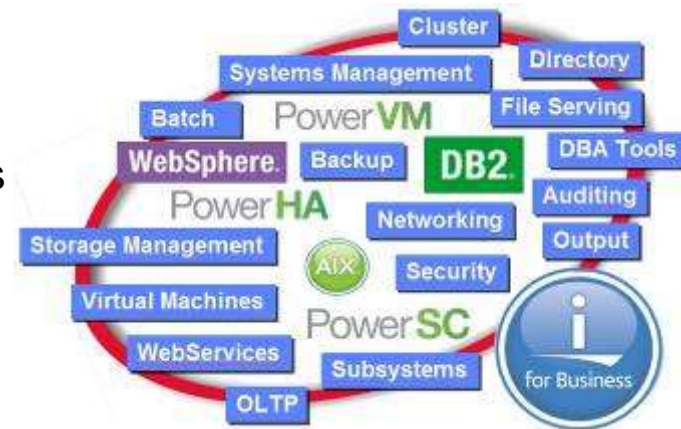
■ Solutions for Today's IT

- Growth Areas: Mobile, Graphical & Extending Value
- Delivering Capabilities where needed: Cloud & In-House
- Applying POWER with POWER8
- Powerful Advanced Middleware



■ Integrating Advanced Technology

- DB2 Security, Performance & Automation
- Development Platform, Language Features & Tools
- Integrated Security & Management
- Growing Beyond the Limits





IBM i – 7.2 Enhancements – the Details



Scalable **SQE**

Data Centric

RCAC

Easy to use

Bet your business on us

Encoded Vector Indexes

Open for Business

Easy to maintain

Intelligent SSD

Secure Proven

DB2 **for i** Reliable

DB2 for i enhancements in IBM i 7.2

Security

- Protect business critical data using data-centric design with RCAC
- Secure remote journaling with SSL

Application development

- Improved ability to build, maintain and extend complex database application architectures

Database Engineering (DBE)

- Timestamp precision control (0 thru 12)
- Partitioned tables automatically reposition a row when updated

Performance

- SQL Query Engine (SQE) supports OPNQRYF & Query/400 (<http://powerwire.eu/7-2-things-i-love-about-ibm-i-v7-2-part-2>)
- Other SQE enhancements
- Use SQL to see temporary storage consumption



DB2 for i - 7.2 Security Features

- Deploy “need to know” logic
 - ➔ Column Masks
- Simpler, faster security
 - ➔ Row Permissions
- Protect data integrity
 - ➔ Violation clause for CHECK constraints
- Achieve HA & DR objectives without exposure
 - ➔ Secure remote journal using SSL
- Embrace separation of duty, using SQL
 - ➔ SQL alternative to CHGOBJOWN
- “Who am I?” conditional code using SQL
 - ➔ Adopted authority identity within business logic

Strategic Focus:

Data-Centric Security

- Comprehensive
- Auditable
- Sustainable
- Scalable
- Manageable



Data is an asset...

What is your data worth?

Security - Separation of Duties

Before 7.2

Problem: Anyone who has the authority to grant privileges also has the authority to perform operations that require those privileges.

Should the security administrator be able to access the data within tables?

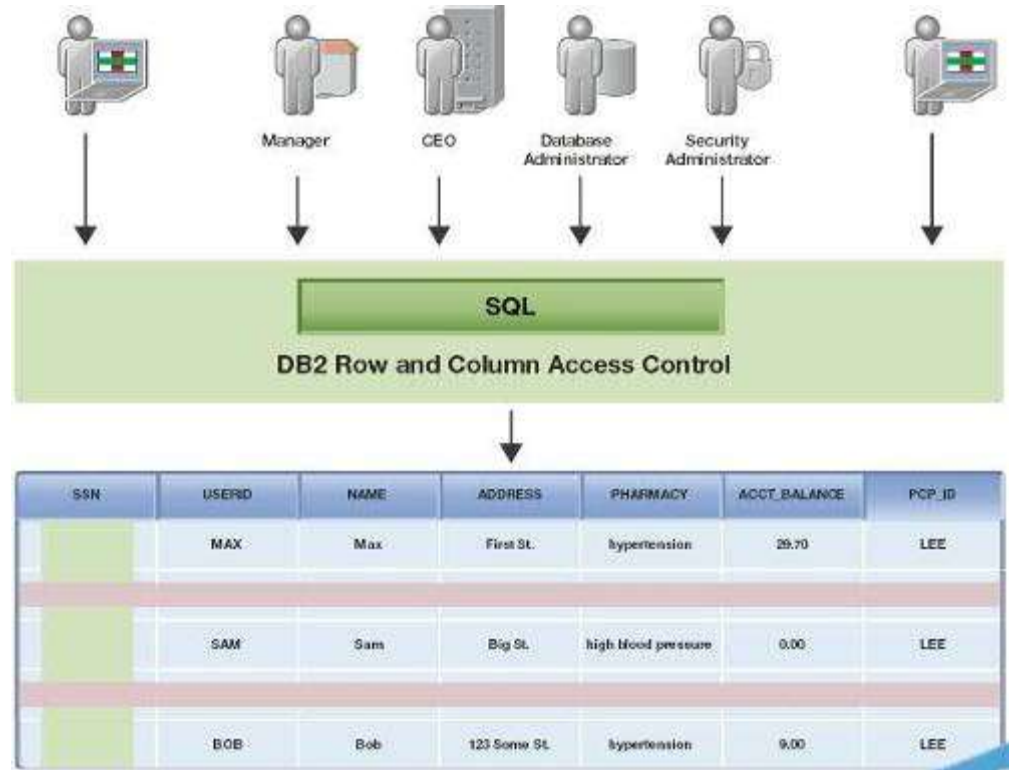
IBM i 7.2 with RCAC

- Enable the management of security, **without exposing the data** to be read or modified.
- A user with security administration function usage (QIBM_DB_SECADM) will be able to grant or revoke privileges on any object to anyone, even if they do not have the SELECT privilege.

What is RCAC?

- **Additional layer of data security** available with DB2
- **Complementary** to table level security
- Subsetting access to **only the required data** for a task
- Controls access to a table at the row, column, **or both**
- **Two sets of rules**
 - Permissions for rows
 - Masks for columns
- **IBM Advanced Data Security for i**
 - **No-charge feature - Option 47**

IBM Advanced Data Security for i
(Boss option 47)
 No Charge



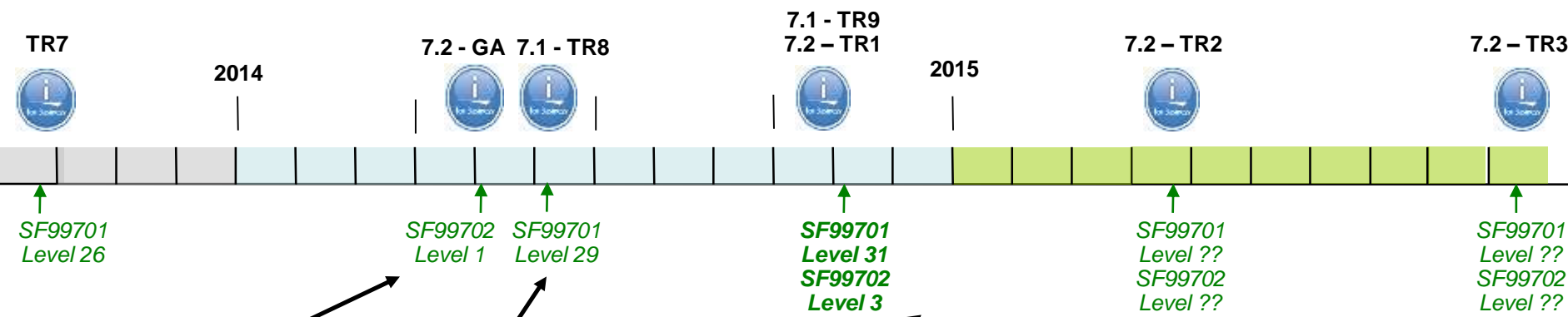
IBM Advanced Data Security for i (Boss Option 47)

- Option must be installed to use:
 - CREATE PERMISSION and CREATE MASK (RCAC)
 - Open a file that has RCAC activated
- RCAC constructs exist within the table (*FILE) and get applied by SQE
- RCAC does not replace object authorization requirements
 - If you pass the object authorization check:
 - Row permissions reduce the set of rows returned
 - Column Masks limit full or partial access to sensitive column data
- RCAC is comprehensive and applies to any interface (Native DB, SQL, RPG, APIs, etc)
- Row Permissions are a replacement technology for Views / Logical Files
- Only users with QIBM_DB_SECADM authority can manage RCAC

```
5770SS1  47  IBM Advanced Data Security for i
```

DB2 for i – Enhancements delivered via DB2 PTF Groups

IBM i 7.1 & 7.2

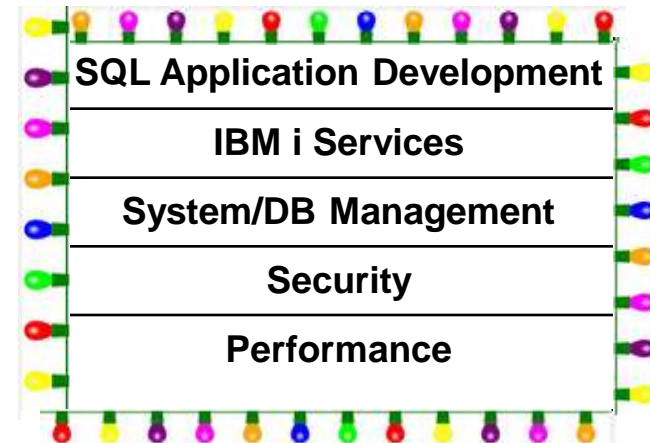


- | | | | |
|---|---|--|--|
| <p>7.2 - GA</p> <ul style="list-style-type: none"> • First DB2 PTF Group for 7.2 • All IBM i 7.1 Enhancements thru TR8 | <p>7.1 - TR8 timed Enhancements:</p> <ul style="list-style-type: none"> • Faster JDBC Toolbox • Use SQL to programmatically analyze performance • Generate SQL procedure • Program & Package statement level statistical catalogs • And more... | <p>7.1 - TR9 timed Enhancements:</p> <ul style="list-style-type: none"> • Pipelined Table Functions • Regular Expression Scalar Functions • New IBM i Services • Guardium and Performance Monitoring improvements • Database Navigator Enhancements • And more... | <p>7.2 - TR1 timed Enhancements:</p> <ul style="list-style-type: none"> • Everything in TR9. and... • System Limits Phase 3 - IFS • CREATE OR REPLACE support on MASK and PERMISSION • DB2 Built-in Global Variables for job name • And more... |
|---|---|--|--|

Enhancements delivered by PTF are documented here:
www.ibm.com/developerworks/ibmi/techupdates/db2

DB2 for i: Enhancements for IBM i 7.1 TR9 and IBM i 7.2 TR1

- **App Dev: Find and Manipulate Data**
 - Regular Expressions
 - New Scalar functions
- **Services: Job Log Table Function**
 - Incorporate joblog queries into application logic
 - Consume joblog into application data collection
 - Regular Expressions
- **Management: PTF Group “currency” view query**
 - Consume a live XML feed from IBM PSP Group information
 - Extract the PTF Group information for partition
 - Use the SQL Query Engine to perform a live comparison
- **Security: Use DB2 tooling while protecting sensitive data**
 - Database monitor support for secure host variables
 - Navigator and Command Support
- **Performance: “In Memory” just got easier**
 - SQL language control of preference
 - Full Navigator support



DB2 for i & IBM i 7.2 – Other enhancements

Application Development

- Increased timestamp precision
- Named and Default parameter support on UDF/UDTFs
- Function resolution using casting rules
- Use of ARRAYs within UDF/UDTFs
- Obfuscation of SQL triggers
- Built-in Global Variables
- Expressions on PREPARE & EXECUTE IMMEDIATE
- Autonomous procedures
- CURRENT USER special register
- LPAD and RPAD scalar functions
- TRUNCATE TABLE
- Constants in LANGUAGE SQL routines
- Unified debugger support for SQL functions
- Datetime scalar function improvements

Navigator for DB Application Development

- **Support of all new SQL features**
 - Permissions
 - Masks
 - Named arguments and parameter defaults
 - Obfuscation of Triggers
 - Arrays in user-defined functions
 - Create based ON



DBA/DBE

- Queued exclusive locks control
- SQL Server Mode detail in collection services
- SQL Details for Jobs enhancement
- Improved VARCHAR & LOB space management
- **Automatic record movement between partitions**

Navigator for DBA/DBE

- **Performance Data Investigator (PDI)**
 - Investigate Data – DB2 category
 - SQL Plan Cache perspectives
 - Physical vs Logical I/O breakdowns
 - And more...
- **On Demand Performance Center**
 - Observance of Native Queries
 - Advanced Monitor Compare



Application Development

Free Form **RD** **Secure**
Reliable Proven Easy to maintain Rational Developer for i
Mobile Enabled **Open for Business**
Bet your business on us **Easy to use**

Application Development



Apache



RPG



Application Development Strategy for IBM i

Compilers & Languages



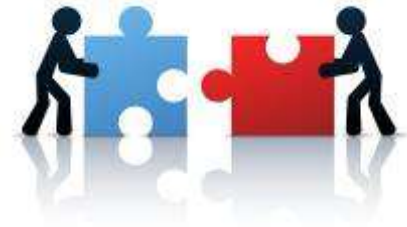
Common development and management tools across operating systems and languages

Embrace Open Source Solutions



Integrate web and development technologies into IBM i

Include vendor tools as necessary



Significant Enhancements to RPG Built into 7.2

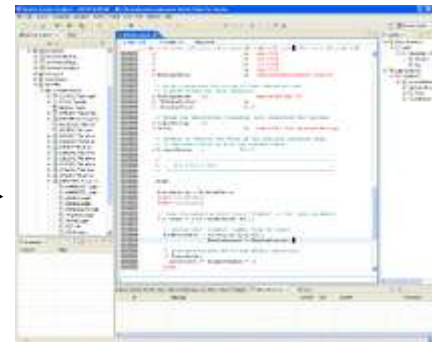
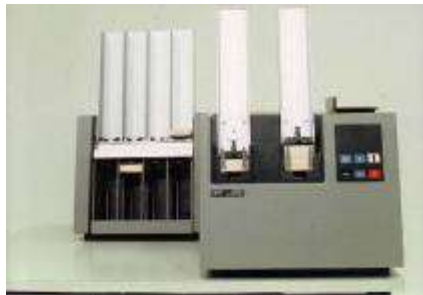
- New Free Format RPG
 - New Syntax; new style
 - Modern behavior
- Conversion tool changes old RPG to RPG Free Format
 - Arcad Converter
 - Linoma Software
- Rational Developer for i provided support in December 2013.

```
ctl-opt bnmdir('ACCRCV');

dcl-f custfile usage(*update);
dcl-ds custDs likerec(custRec);
dcl-f report printer;

read custfile custDs;
dow not %eof;
  if dueDate > %date(); // overdue?
    sendOverdueNotice();
    write reportFmt;
    exec sql insert :name, :duedate into
      mylib/myfile;
  endif;
  read custfile custDs;
enddo;
*inlr = '1';

dcl-proc sendOverdueNotice;
  sendInvoice (custDs : %date());
end-proc;
```



Recent Advancements in Mobile Access for IBM i

- RPG Open Access
- XML Services
- JTOpen Lite
- PHP – Zend Server for IBM i, Zend Studio
- IBM Connections
- IBM Notes Traveler
- IBM Mobile Database
- DB2 WebQuery
- Rational HATS
- And more ...



+ PLUS – Tools from Industry Vendors

JTOpen Lite (JTLite) – Java Toolbox for the Mobile World

- Significantly smaller footprint Java toolbox for IBM i
- Supports mobile devices capable of a Java environment
- Targeted to the high use elements:
 - Database -- JDBC (SQL) and record-level access (DDM)
 - Integrated File System – open, read, write, delete
 - Program calls (RPG, COBOL, service programs, etc)
 - Commands
 - Job Information
 - Messages, Message Information (DSPMSG QSYSOPR)
 - Disk Status (WRKDSKSTS)
 - Object Information (WRKOBJ)
 - User and group Information



Quickly & Easily Create Mobile Solutions for IBM i

Zend Studio 10

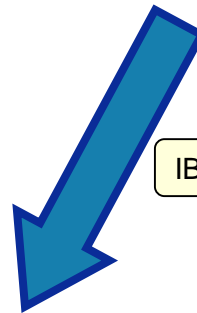


Deploy mobile apps application market places!



iOS, Android, Windows Phone, & more

- Drag & Drop interface
- Tie mobile apps to native IBM i artifacts
- Single development location for creating
 - mobile applications
 - Integrating restful web service
 - Tie to IBM i native toolkit
 - PHP application to drive the interactions



IBM i XML Service



Zend Server for IBM i Version 6

- RESTful Web Services
- "Mobil-ize" RPG & COBOL applications
- XML Service ties Mobile application to native i artifacts
- Mobile solutions for IBM i!

<http://www.youtube.com/watch?v=t4nmRO9-gN4&feature=plcp>

Integrated Middle Ware on IBM i

- IBM i HTTP Server now running Apache 2.4

- Improved performance
- SNI (Server Name Indication) support
- OCSP (Online Certificate Status Protocol) support
- Independent Subsystems



The **Apache Software Foundation**

<http://www.apache.org/>

- IBM i Integrated Application Server – now powered by Liberty 8.5

- Runs on Java 7 & 7.1
- Updated to the latest web specs
 - JCA 1.6 , JSR 236
- Replace for Tomcat – runs on any platform
- Upward compatible to full WebSphere
- Supported by normal development tools!
- Several IBM interfaces have been running on this since last year!

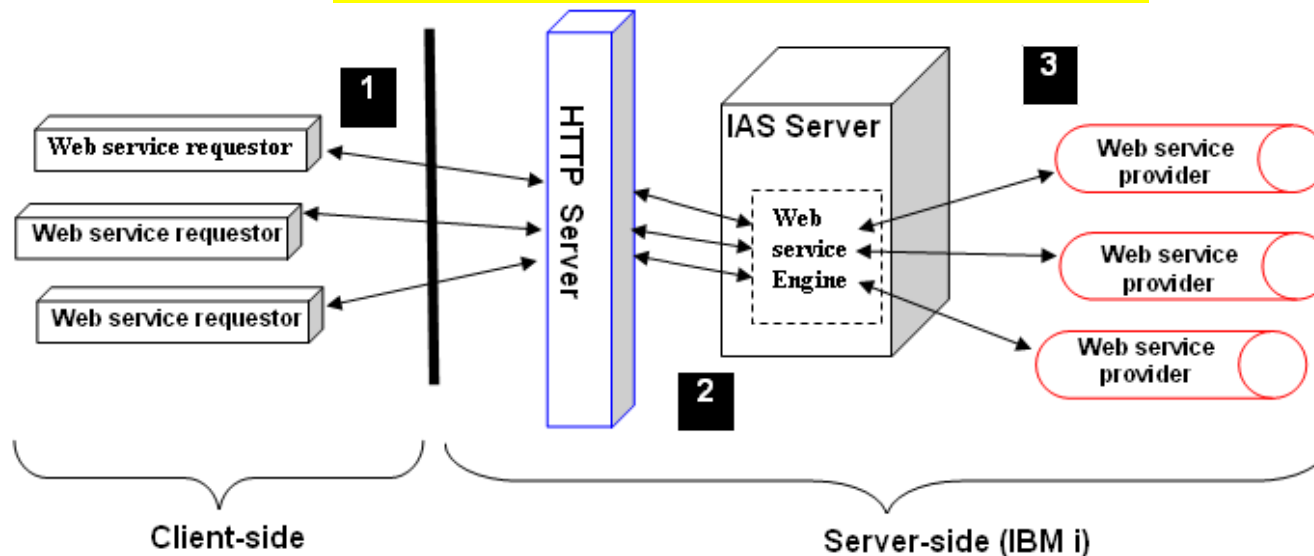


REST Web Services

Web Service enable RPG and COBOL Source Code

- Integrated Web Services Server – now powered by WAS Liberty & Jax-RS
 - Running on Liberty
 - Faster and better compliance
 - JAX-RS REST web service container
 - JSON leveraged for the communication

JSON REST packet sent now!!!



Integrated Web Services on IBM i

- Create and Host Web Services
 - RPG & COBOL ILE programs
- Create traditional SOAP or new REST
 - Create and host either within the same server
 - Both can be used over the same business logic
- REST services
 - Long time requested
 - Fulfills several requirement requests
- Create and Manage with the WebAdmin GUI



Integrated Web Services on IBM i



IBM Web Administration for i

Setup **Manage** Advanced | Related Links

All Servers | HTTP Servers **Application Servers** Installations

Running    Server: WSERVICE - V1.5 (web services) ▼

Common Tasks and Wizards

- Create Web Services Server
- Create HTTP Server
- Create Application Server

Web Services Wizards

- Deploy New Service

Server Properties

- Properties
- Server Tracing
- View HTTP Servers

Services

WSERVICE > Manage Deployed Services > Deploy New Service

Deploy New Service

Deploy New Service: Specify Location of IBM i Program Object - Step 2 of 9

The IBM i object to be externalized as a Web service must be an existing ILE program (*PGM) or service program (*SRVPGM) located on the system. Currently, only program objects written using the COBOL or RPG programming languages are supported.

Specify the library and program object for the Web service. 

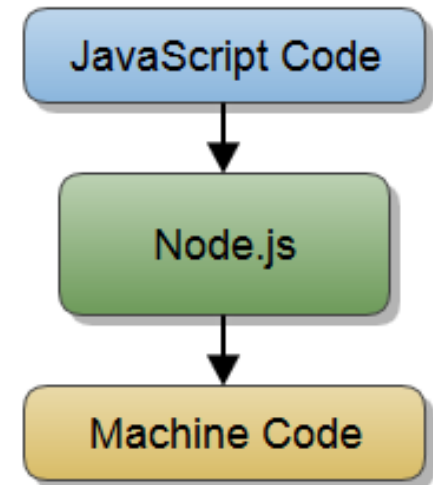
Node.js

■ What's node.js

- Node.js is a platform for server-side and networking applications.
- Node.js applications are written in JavaScript but run without browsers.
- Node.js is based on Google Chrome V8 Engine.

■ Why node.js

- High Performance
Node.js is designed to maximize throughput and efficiency.
- Easy to use
JavaScript has already been a widely used language. Developer can leverage existing skills to create server-side application.
- Increasing popularity:
More than 70,000 third-party extensions are available on www.npmjs.org now.



Node.js

- **IBM i specific extensions**

- Besides the existing function, two import IBM i specific extensions are also created.
- **DB2 for i extension**
 - Based on standard DB2CLI and supports Stored Procedure.
- **Node.js toolkit for IBM i extension**
 - Allow Javascript to access IBM i native objects, such as programs, commands, message queues, data areas, spool files, user spaces, jobs, system values, environment values, and more.

- Delivered as part of the 5770-DG1 product



IBM Messaging – What MQ is all about



Deliver Messaging Backbone for Enterprise

Focus on traditional MQ values, rock-solid enterprise-class service, ease-of-operation, breadth of platform coverage, availability



Capture Big Data from Mobile and Internet of Things

Focus on Internet-scale events, m2m device enablement, zero-admin, security and privacy, feed into real-time analytics, location-based notifications



Enable Developers to build more scalable, responsive applications

Focus on new app dev use cases, breadth of languages, ease-of-deployment, lightweight services, integration with developer frameworks

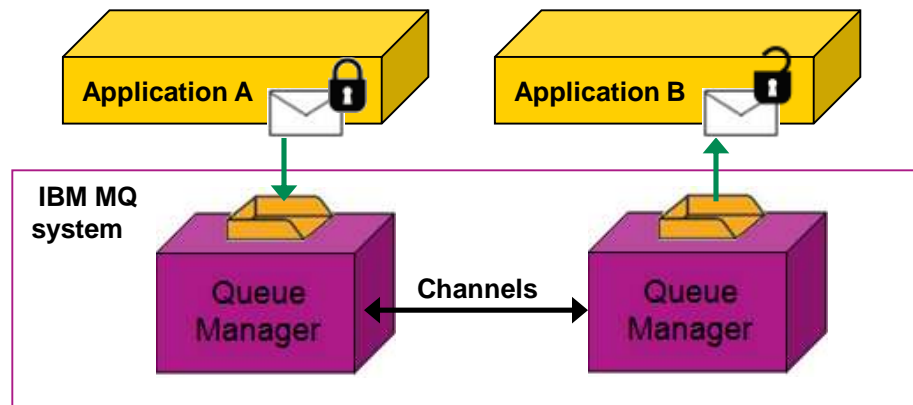
IBM MQ V8

- Leading messaging support
- File Transfer
- Advanced Message Security



Advanced Message Security – New for IBM i

- When the privacy of sensitive data must be guaranteed
- The data is **encrypted** from the point it leaves the sending application to the point it enters the receiving application.
- The encryption is controlled by **policies** on the queue manager so no changes are required to existing applications.



Rational Developer for i V9.1.1 - RPG, COBOL, C, C++, SQL, DDS

Code Coverage

- Batch support
- Interactive support – NEW!!
- Enhanced user experience
- Interactive jobs, Web Services...
- Leverage SEP breakpoints
 - Start code coverage when program n with user y is called!



```

Line 1490 Column 50 Replace Browse
.....PName.....B.....Keyword.....Comments.....
P finish_tc b export
D finish_tc pl
D tc I1keds(tc_t)
/Free

// If all variations passed, set the test case status to successful
if tc.succ_v = tc.run;
  #ptTest (tc.testname: tc.succ_v: tc.fail_v: SUCCESS);
  return;
endif;

// Otherwise, write a summary line and close the output file
VarFail ('%CLOSE': tc.succ_v);
RptTest (tc.testname: tc.succ_v: tc.fail_v: FAILURE);

close qprint;

/and-free
P finish_tc #
P put_tc_msg b export
D put_tc_msg pl
D msgPtr * value options(*string)
D MAX LINE c 52
  
```

Code Coverage Report (Line)

Code Coverage Summary

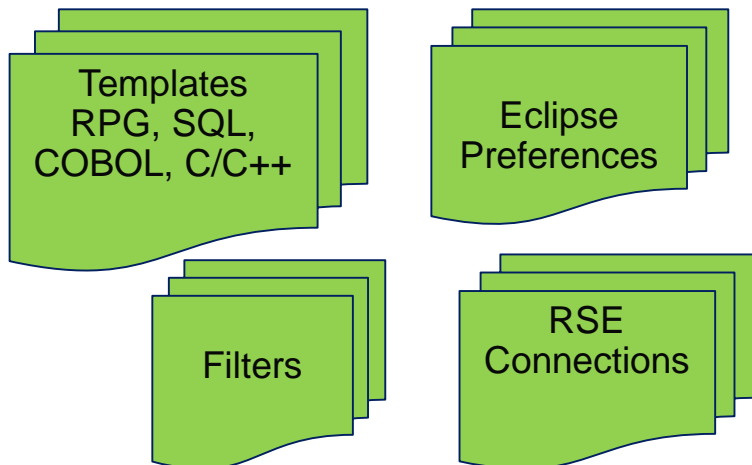
Code coverage report (analyzed at Apr 23, 2014 12:54:22 PM, generated at Apr 29, 2014 10:55:30 AM)

Element	Coverage %	Covered	Total
* POM MKWAN/RBC4NNF1C	88%	617	699
RBC4NNF1C	88%	617	699
RBC4NNF1C.RPGLE	88%	617	699
GPHPRCOMP10	0%	0	6
UCSPRCMPFR0	0%	0	6
I4DFRCL0	0%	0	6
CHPRRCOMP12	0%	0	6
PUT_TC_MSG	0%	0	13
InhdJcl	78%	7	9
chk_result0	89%	8	9
show_err0	90%	18	20
RBC4NNF1C	93%	406	444
chk_subes0	97%	24	26
DATPRCS0	100%	3	3
DATPRCSA	100%	3	3
DATPRCEUR	100%	3	3
DATPRCYMD0	100%	3	3

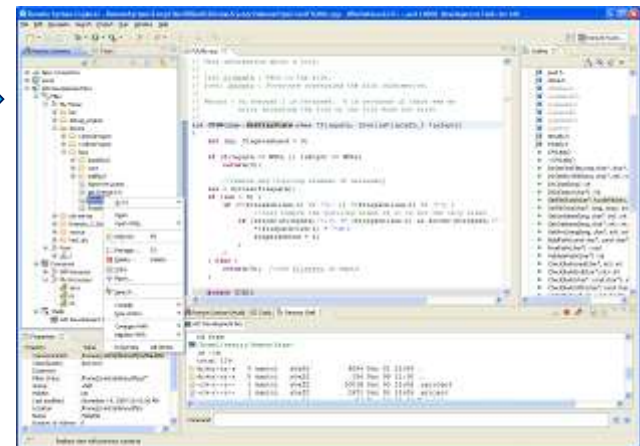
Rational Developer for i V9.1.1 - RPG, COBOL, C, C++, SQL, DDS

Push to Client

- Update all RDi client workspaces from a central IBM i server
 - Automated client updates
- RSE Connections
- Filters
- Eclipse Preferences
- Update **Templates**
 - RPG Free-form
 - SQL Free-form
 - Cobol
 - C/C++
- Database Connections
- RSE Compile Actions
- RSE User Actions



Push to Client



Managing the System with IBM i 7.2



Open for Business

Navigator

Easy to use

HMC Easy to maintain

ACS Access Client Solutions

Control

Bet your business on us

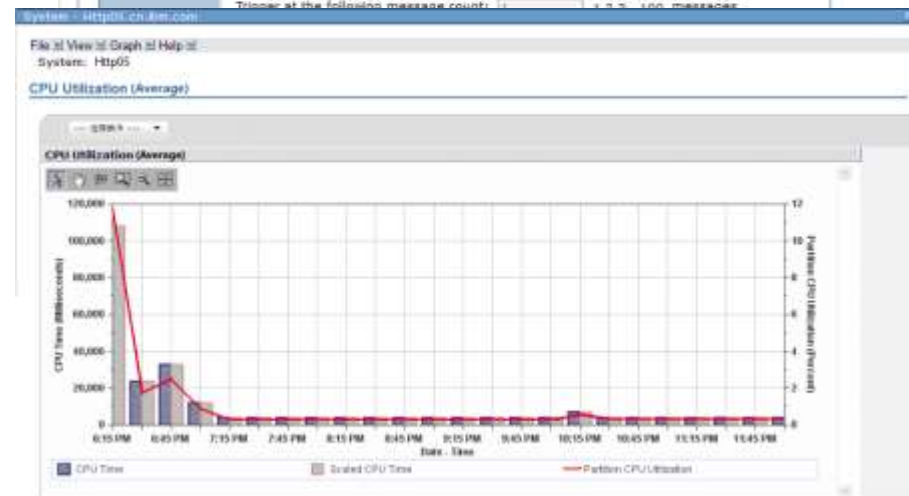
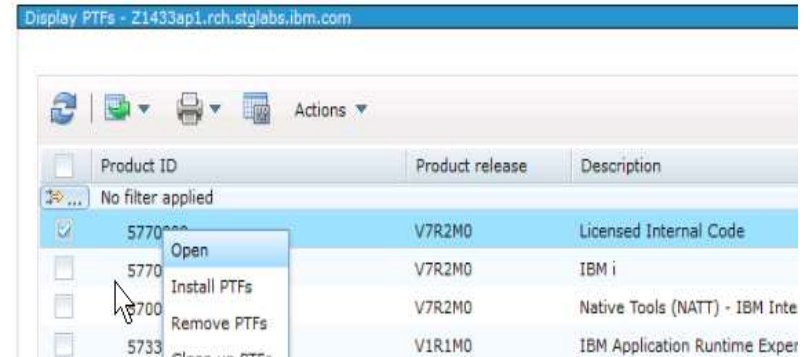
Systems Management

Mobile Reliable

VM

IBM Navigator for i – new functions

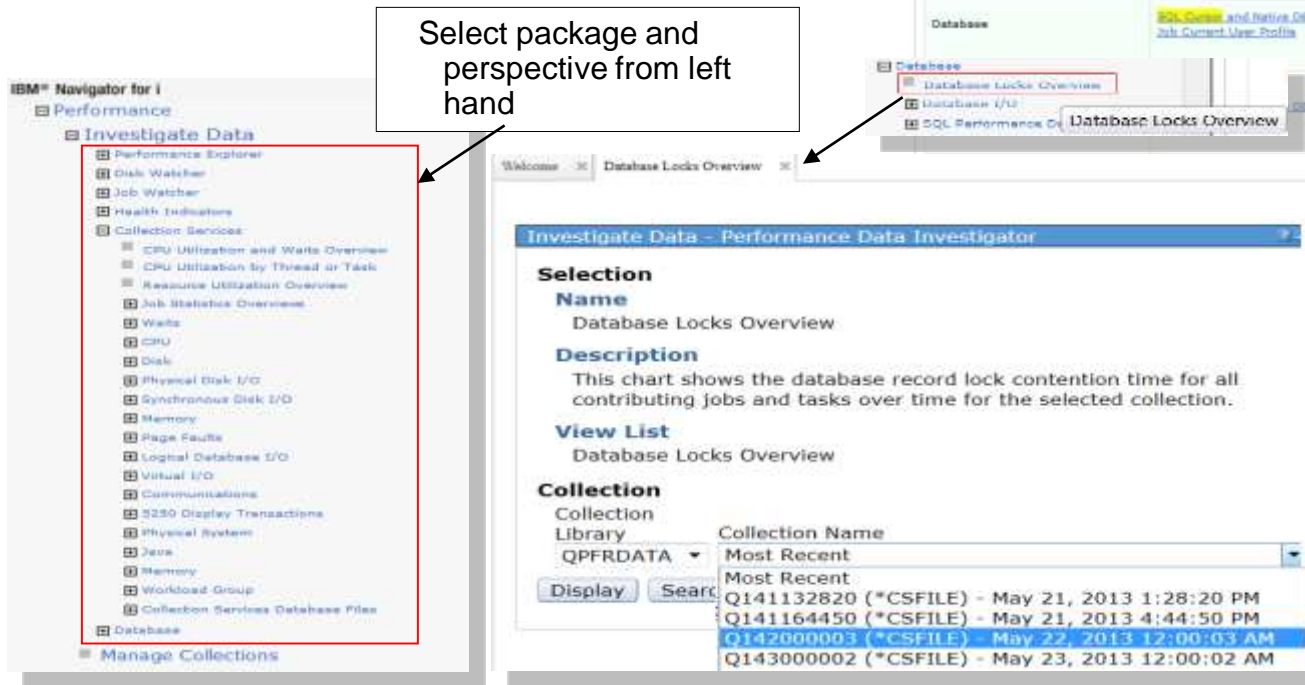
- Performance & Usability
 - New browsers
 - My Favorites
 - Quick Search
- PTF management
 - Installed PTF Navigation
 - Load/apply PTF on single or group systems
- Message Queue monitor
 - Based on the same CIM infrastructure
 - Filter messages based on rules
 - Trigger action to handle messages automatically
- System monitor
 - User defined IBM i OS metrics monitor
 - Graphical displays of performance trend
 - User defined event automation
- Database
 - Create new function and procedure
 - DB Performance Metrics



Collection Services & Performance Data Investigator – 7.2

- Significant enhancements to PDI
 - New Collection Services Metrics
 - Batch Model
 - System Monitoring
 - New PDI Perspectives
 - Enhanced Left Hand Navigation

Fast Search – Enter metric see all charts its on!!



The screenshot shows the IBM Performance Data Investigator (PDI) interface. On the left, a navigation pane is highlighted with a red box, containing a tree view of metrics and perspectives. A callout box with an arrow points to this pane, containing the text: "Select package and perspective from left hand".

The main window displays search results for the query "sql cursor". The search results table is as follows:

Package Name	Perspective	Description	View
Database	SQL Cursor and Native DB Opens by Generic Job	This chart shows the number of SQL full opens, SQL pseudo opens, Native database [non-SQL] full opens as rates per second grouped by the first 5 characters of the job name and ranked by the largest group	SQL Cursor and Native DB Opens by Generic Job
Database	SQL Cursor and Native DB Opens by Job Current User Profile	This chart shows the number of SQL full opens, SQL pseudo opens, Native database [non-SQL] full opens as rates per second grouped by the job current user profile and ranked by the largest group contributors. Use this chart to select a time frame for further detailed investigation.	SQL Cursor and Native DB Opens by Job Current User Profile
Database	SQL Cursor and Native DB Opens by Job	This chart shows the number of SQL full opens, SQL pseudo opens, Native database [non-SQL] full opens as rates per second grouped by job and ranked by the largest contributors. Use this chart to select a time frame for further detailed investigation.	SQL Cursor and Native DB Opens by Job
Database	SQL Cursor and Native DB Opens by User	This chart shows the number of SQL full opens, SQL pseudo opens, Native database [non-SQL] full opens as rates per second that occurred over time for the selected collection or collections. Use this chart to select a time frame for further detailed investigation.	SQL Cursor and Native DB Opens by User

Below the search results, the "Database Locks Overview" perspective is selected. The main window displays the following details:

Selection
Name
 Database Locks Overview

Description
 This chart shows the database record lock contention time for all contributing jobs and tasks over time for the selected collection.

View List
 Database Locks Overview

Collection
 Collection Library: QPFRDATA
 Most Recent

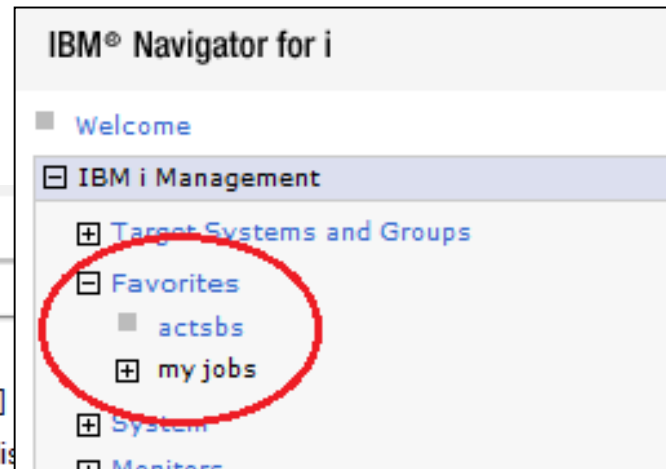
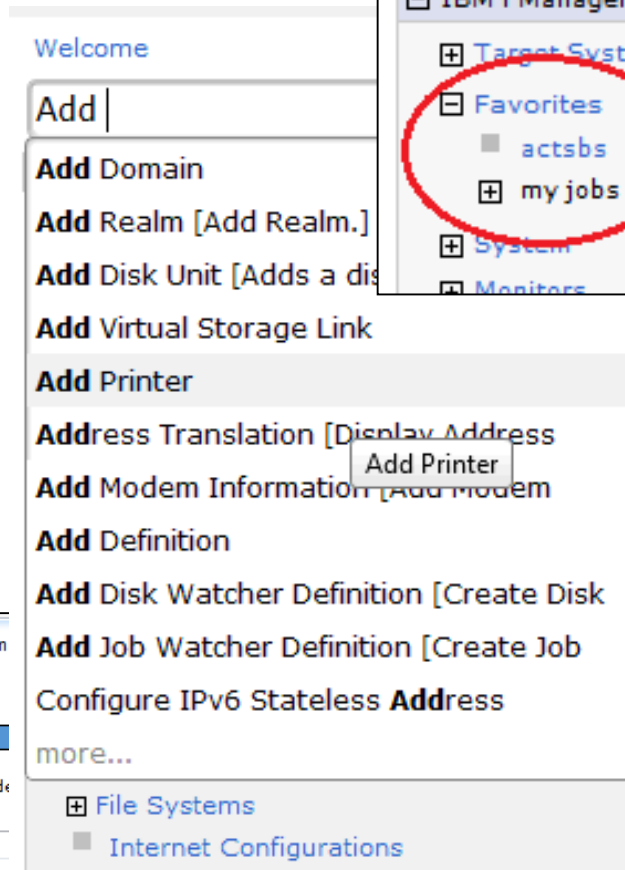
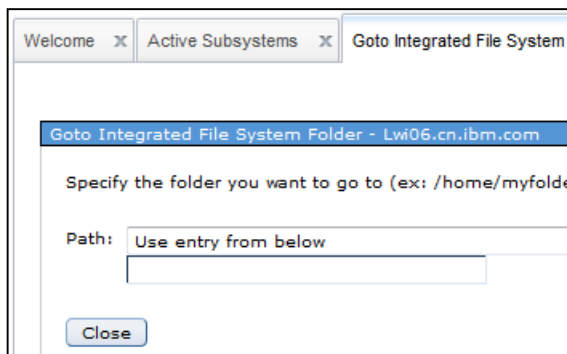
Collection Name	Time
Q141132820 (*CSFILE)	May 21, 2013 1:28:20 PM
Q141164450 (*CSFILE)	May 21, 2013 4:44:50 PM
Q142000003 (*CSFILE)	May 22, 2013 12:00:03 AM
Q143000002 (*CSFILE)	May 23, 2013 12:00:02 AM

Added to 7.1
11/11/14



Navigator Usability Enhancements

- Search tasks by keywords and CL commands
- Bookmark your favorite tasks
- Go to deep IFS path directly
- Navigation performance improvement
- Simplified Tab-based management



Added to 7.1
11/11/14



Batch Model

Measure a batch workload

-Adjust hardware, processor, storage (SSD), system settings

Model how these changes effect the Workload performance

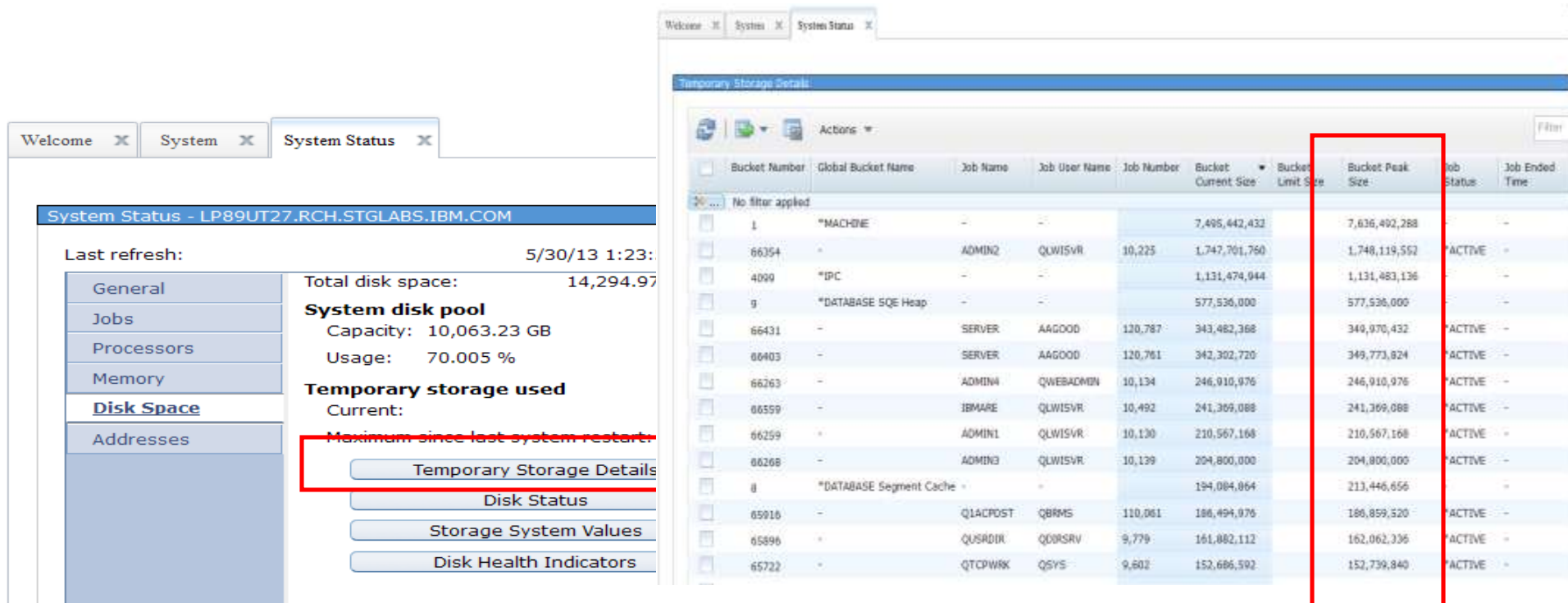
IBM® Navigator for i

- [-] Performance
 - [+] Investigate Data
 - Manage Collections
 - [-] All Tasks
 - Active Jobs
 - Disk Status
 - Manage Collections
 - Investigate Data
 - Performance Management for Power Systems
 - System Status
 - [+] Collections
 - [+] Performance Data Reports
 - [+] Collectors
 - [+] Sizing
 - Batch Model
 - Batch Models
 - Analyze Batch Model
 - Calibrate Batch Model
 - Change Batch Model Calibration
 - Change Batch Model
 - Create Batch Model
 - Merge Batch Model
 - Reset Batch Model



Managing Temporary Storage – Improved Accounting

- Define new accounting “buckets” to track temporary storage usage.
- Track temporary storage allocations which persist after a job ends
- Track temporary storage scoped to a job, the temporary file system, LIC tasks, etc.



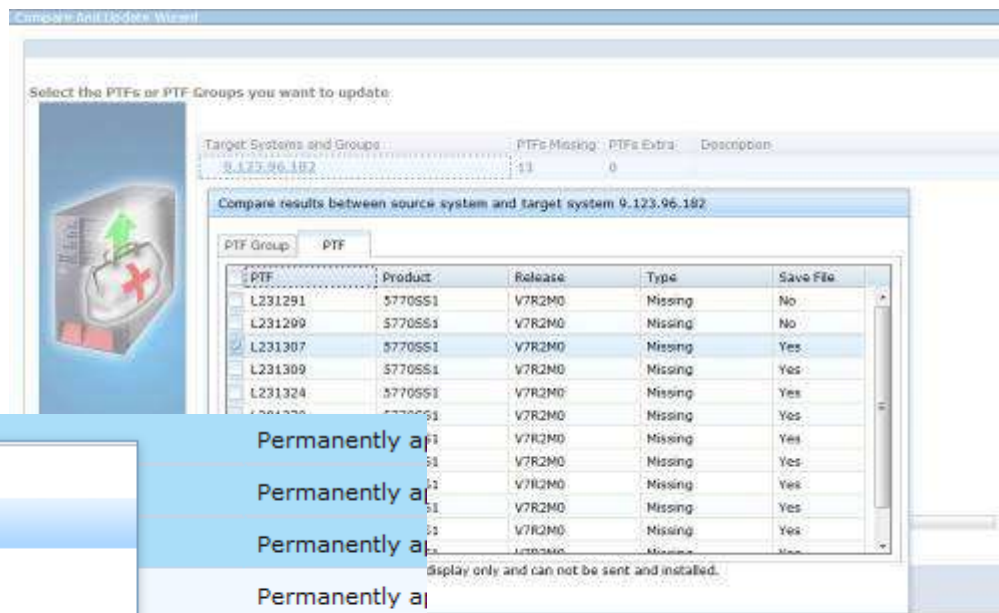
The screenshot displays the IBM System Status interface. On the left, the 'System Status' tab is active, showing 'System Status - LP89UT27.RCH.STGLABS.IBM.COM'. The 'Disk Space' section is expanded, showing 'Total disk space: 14,294.97' and 'System disk pool' with 'Capacity: 10,063.23 GB' and 'Usage: 70.005 %'. The 'Temporary storage used' section shows 'Current: ~~Maximum since last system restart:~~' and a button for 'Temporary Storage Details' which is highlighted with a red box.

The main window displays the 'Temporary Storage Details' table, which is also highlighted with a red box. The table lists various storage buckets with their current and peak sizes.

Bucket Number	Global Bucket Name	Job Name	Job User Name	Job Number	Bucket Current Size	Bucket Limit Size	Bucket Peak Size	Job Status	Job Ended Time
	*MACHINE				7,495,442,432		7,636,492,288		
66354		ADMIN2	QLWISVR	10,225	1,747,701,760		1,748,119,552	ACTIVE	
4090	*IPC				1,131,474,944		1,131,483,136		
g	*DATABASE SQE Heap				577,536,000		577,536,000		
66431		SERVER	AAG000	120,787	343,482,368		349,970,432	ACTIVE	
00403		SERVER	AAG000	120,761	342,302,720		349,773,824	ACTIVE	
66263		ADMIN4	QWEADMIN	10,134	246,910,976		246,910,976	ACTIVE	
00559		IBMAPRE	QLWISVR	10,492	241,369,088		241,369,088	ACTIVE	
66259		ADMIN1	QLWISVR	10,130	210,567,168		210,567,168	ACTIVE	
00268		ADMIN3	QLWISVR	10,139	204,800,000		204,800,000	ACTIVE	
h	*DATABASE Segment Cache				194,084,864		213,446,656		
05916		QLACPOST	QBRMS	110,061	186,494,976		186,859,520	ACTIVE	
05896		QUSADIR	QDPSRV	9,779	161,882,112		162,062,336	ACTIVE	
05722		QTCPWK	QSYS	9,602	152,686,592		152,739,840	ACTIVE	

Navigator Enhancements - PTF Compare and Update

- Compare PTFs and PTF groups on different systems
- Send and install PTFs/PTF groups to multiple systems
- Multi-system PTF comparison



Added to 7.1
11/11/14

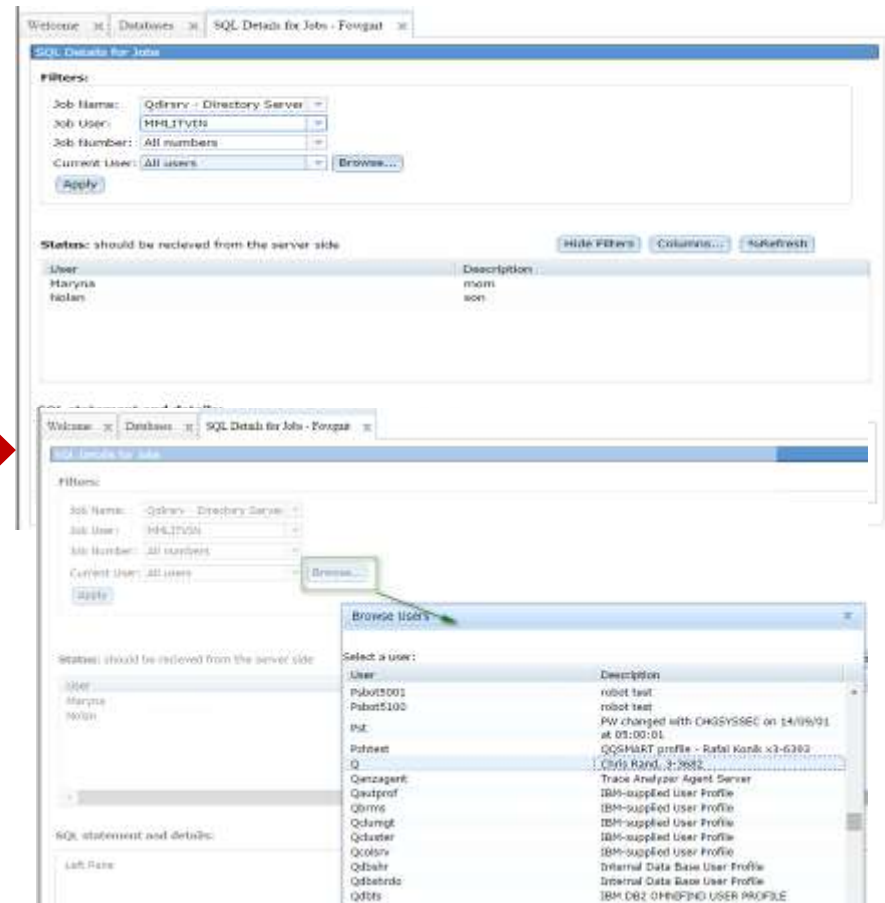
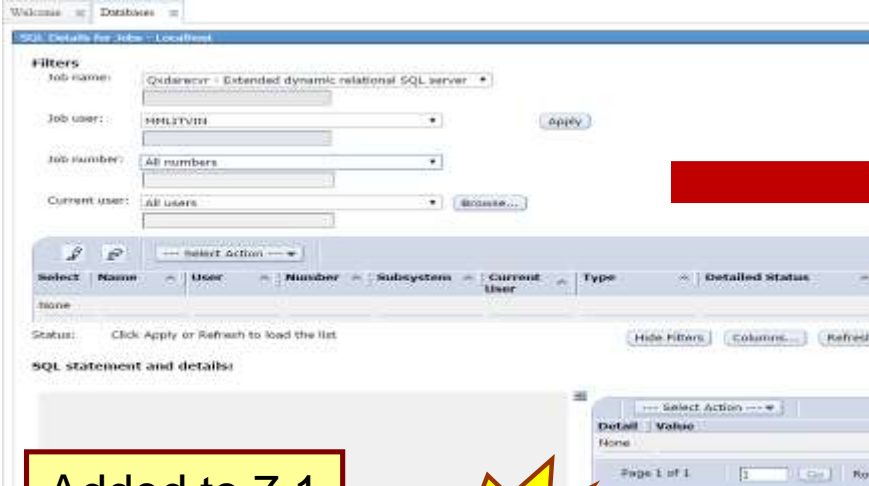


Navigator Enhancements – DB Re-imagined

Existing DB support in the Web is ‘clunky’, slow, and often not usable based on the flow

DB Re-imagined

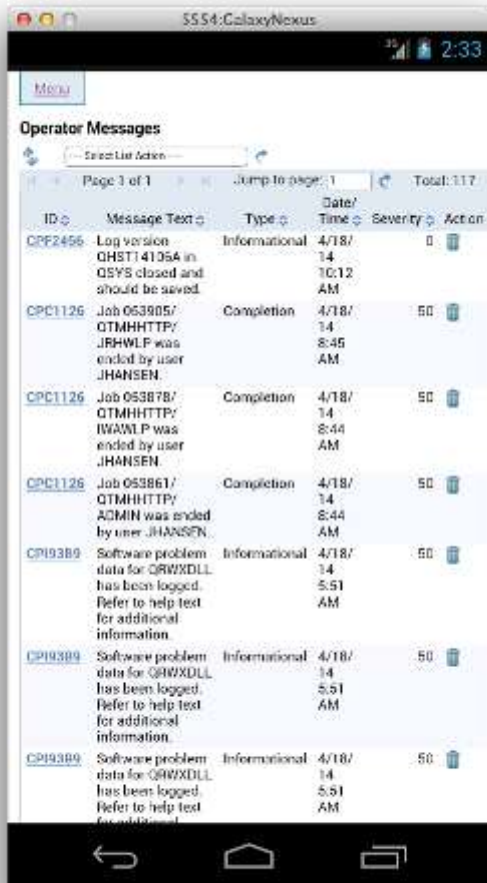
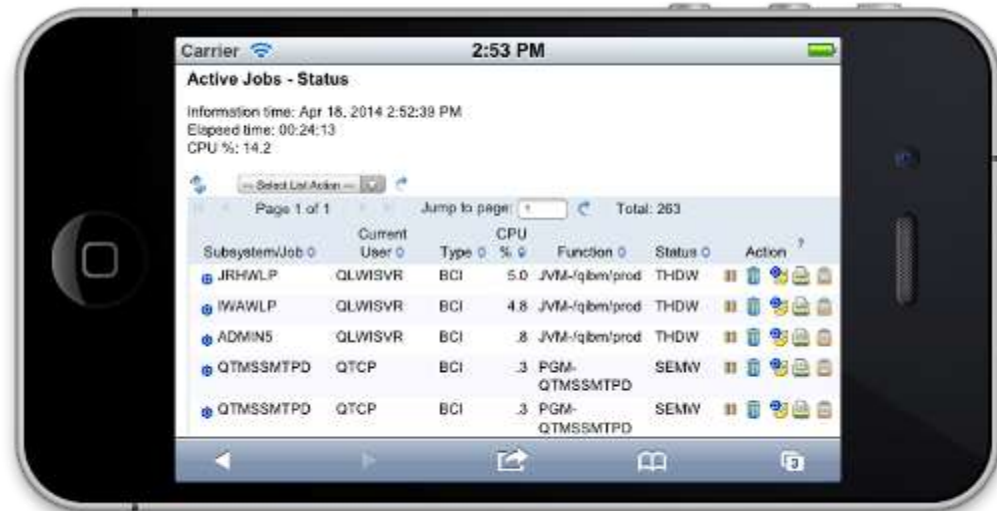
- Create web optimized panels
 - HTML, Javascript and Dojo
 - Leverage Web Centric Controls
 - Improve flow for Web experience
 - Large data sets



Added to 7.1
11/11/14



- Browser based solution optimized for reduced screen sizes.
- Easy to deploy and use



Tech Preview with 7.2 GA

iPhone
iPad
Android
Surface

- Simple URL connection
 - Robust IBM i system interaction
 - System Management Views
 - Printing, Database, IFS, Commands, Messages
 - 5250 Interface
 - Highly Customizable
 - User access simply set
 - Based on IBM i User or Group Profile
- <http://www-03.ibm.com/systems/power/software/i/access/mobile.html>

POWER



Secure Scalable
Open for Business
Easy to maintain
Cloud Cache
Mobile
Bet your business on us
Easy to use
Intelligent SSD
RAS
SAN
Power8
Accelerators
Hardware
Proven
Optical
Integrated
Reliable

Power Systems Roadmap

POWER7+ and POWER8 systems deliver compelling application performance, security and application optimization; lower operational management costs; and it will be easier to upgrade to take advantage of new technology.



4Q2012-1Q2013



2014-2015

IBM i 7.2 runs on IBM POWER6/6+ & POWER7/7+ & POWER8 servers

IBM i System Support

<http://www-01.ibm.com/support/docview.wss?uid=ssm1platformibmi>

Servers	¹ IBM i 6.1	IBM i 7.1	IBM i 7.2
POWER8		✓ 2	✓
POWER7/7+ PS700/701/702/730/704, Power 710, 720, 730, 740, 750, 760, 770, 780, 795, Pureflex p260/460	✓ 1	✓	✓
POWER6+ JS23/43, 550*, 560 POWER6 JS12/22	✓	✓	✓ 3
POWER6+ 520* POWER6 520*, 550*, 570, 595	✓	✓	✓ 3
POWER5/5+ 515, 520, 525, 550, 570, 595	✓	✓	
800, 810, 825, 870, 890	✓		

1 – POWER7+ 750/760 do not support native I/O. IBM i 6.1 on PureFlex must be client of IBM i 7.1 or later

2 – Requires IBM i 7.1 Technology Refresh 8

3 – no IOP or HSL support

Cloud and Virtualization

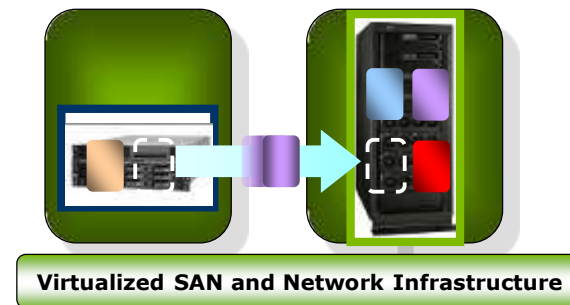
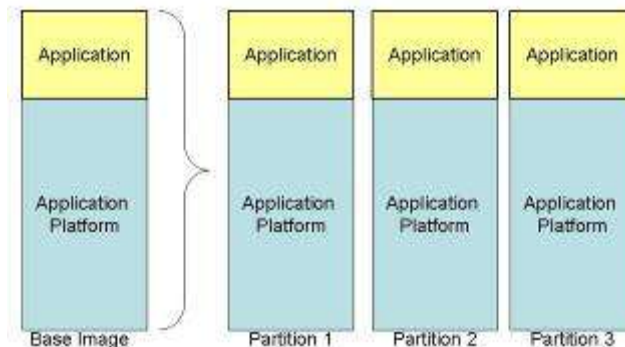


IBM i 7.2 – Built in Cloud Capability

- **Network Installation** of all IBM i software for more efficient operations
- **Suspend/Resume** IBM i partition to optimize resource use
- **VM Image Management** to define and deploy partitions
- **Live Partition Mobility** to keep workloads running while changing systems

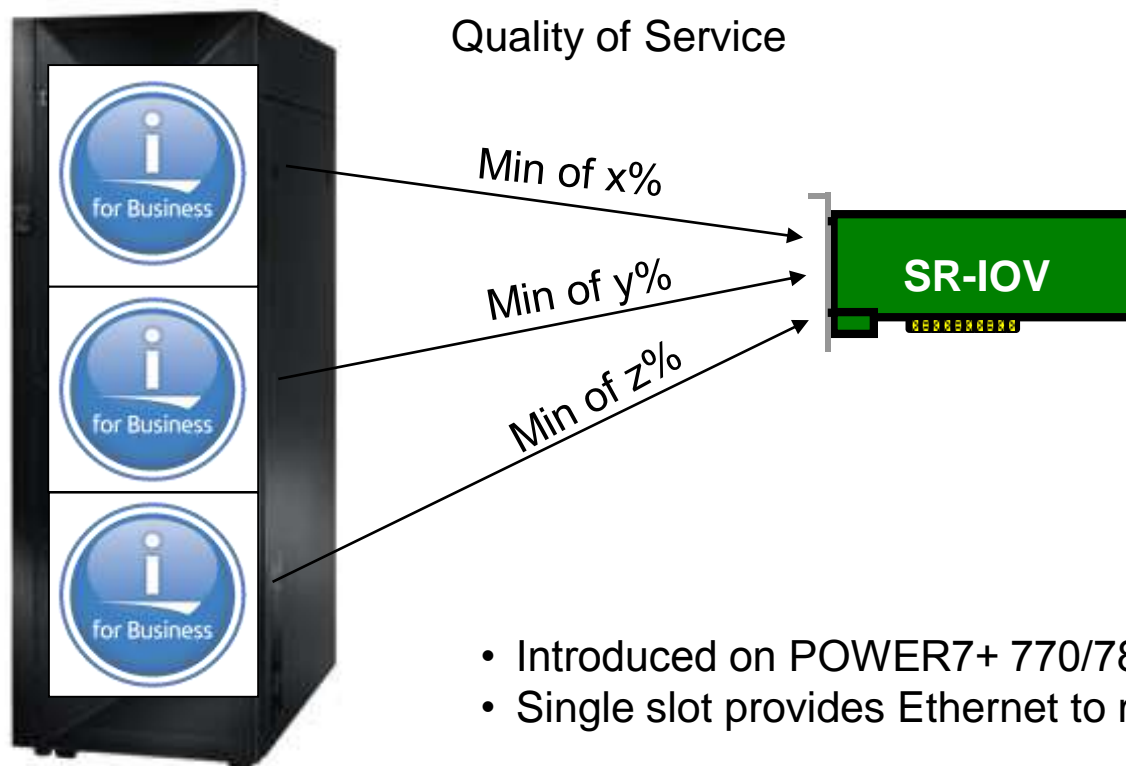
Supported on POWER8 with
7.1 TR9 & 7.2 TR1

Power VM



SRIOV (Single Root I/O Virtualization) for Ethernet

- Simple virtualization **with** or **without VIOS**
- With quality of service controls to specify minimum bandwidth per partition



- Introduced on POWER7+ 770/780 (“D” models)
- Single slot provides Ethernet to multiple partitions

“WAN over LAN”

- WAN applications have traditionally used WAN adapters
- In 7.2 WAN can run in an Ethernet to Ethernet Device Server with multiple RS232 serial ports
 - Provides true Virtual Serial ports for WAN applications
 - Clients running IBM Facsimile Support for i, 5798-FAX, can use this new support
- Expands advanced virtualization capabilities:
 - Reduces total cost by allowing
 - Fewer PCI slots for applications requiring a modem
 - One Ethernet adapter can provide both TCP/IP connectivity and WAN
 - Allows IBM i client partitions with virtual I/O to use FAX and other WAN applications
 - Support for Flex and Blades - previously had no WAN capability
- Minimal disruption for existing WAN applications
 - No application changes
 - Simple configuration change required for IBM i partition

Integrated Value



Integrated Technology Enhancements

- Security
 - Power 8 in-core Cryptographic Performance Acceleration
 - FTP & TELNET support Kerberos authentication
 - More ...

- Operations
 - D-mode IPL support from USB
 - Tape and Tape Library devices - "Online at IPL"
 - More ...

- Networking
 - System SSL (Security updates)
 - Retrieve/Update TCP/IP Information
 - More ...

- Print
 - CPYSPLF to IFS - Convert to PDF
 - Bar Codes - All defined by BCOCA
 - Advanced Color Image Support
 - More ...



Security Enhancements

- Power 8 in-core Cryptographic Performance Acceleration
 - Support within the processor itself, no additional products or HW required
 - “Automatic” performance acceleration for certain cryptographic algorithms
 - AES & SHA-2 message digest
 - Does not support “cryptographic key” storage
 - Certain customers will still need the 4765 Cryptographic Coprocessor
 - Performance gains will be realized in support such as:
 - SSL (Secure Socket Layer)
 - VPN (Virtual Private Network)
 - Software Tape Encryption
 - Customer applications that use the Crypto Services APIs
- Enhance both FTP and TELNET to support authenticating with Kerberos (SSO)
 - Kerberos authentication and Enterprise Identity Mapping integrated in FTP & TELNET
 - Integrates into the IBM i SSO application suite
 - FTP client and server support
 - Telnet client and server support
- More ...





Operations Enhancements

- Improved ease for installing Licensed Programs
 - New API (QLPINSLP) provides GO LICPGM option 1 and 11 support
- CRTIMGCLG support to **automatically add all images within the catalog** directory to the image catalog.
- D-mode **IPL support from USB**
- Tape and Tape Library devices can now be configured for "Online at IPL"
- PTF Enhancements
 - Auditing of PTF operations and associated objects
 - **More "immediate apply" PTF** options
 - GUI Support through Navigator
- New functions for backing up
 - **Journaling enhancements** for handling "wrong order" restores **TCP/IP configuration automatically saved with QUSRSYS**
 - More object selection capability (SELECT parameter)
 - Spooled file backup enhancements
 - Better **IFS backup performance** using the ASYNCBRING parameter

i 7.2 Networking Enhancements

- System SSL (Security updates)
 - TLSv1.2
 - Elliptical Curve (ECDHE and ECDSA)
 - Online Certificate Status Protocol (OCSP)
- VPN
 - IKEv2 NAT
 - Re-keying IKE SA
 - Advanced IKE & IpSec Cryptographic Algorithms, ECDSA authentication
- Virtual LAN supports IEEE 802.1Q (VLAN)
- IPv6 Neighbor Proxy Discovery for virtual Ethernet and PPP
- LAN Console IPv4 initial configuration enhancements
- SNMP enhancements including implementing SNMPv3 Manager APIs
- TCP/IP IPv6 XML configuration file enhancements – validation and diagnostic messages
- **Retrieve/Update TCP/IP Information**
- CL commands for loading/unloading VPN & IP Filtering configuration files
- VIPA proxy ARP support tied in with the existing dead gateway support



Printed Output Enhancements

- CPYSPLF to IFS
 - Option to convert to PDF (PTF'd back to 7.1)
- Bar Codes
 - Support for all bar codes currently defined by BCOCA
 - Rendered by Host Print Transform (ASCII printers) and Transform Services (PDF)
 - Databar
 - Intelligent Mail
 - DDS BARCODE Keyword enhanced
 - Support for QR Code special parameters
 - Trim indicator allows user to truncate trailing blanks from bar code data
 - Important for 2D bar codes that carry long text
 - Eliminates the need to define multiple records with different lengths
- Color Image Support
 - HPT can now print color images on PCL 5C capable printers
 - Popular image formats (JPEG, TIFF, GIF)
 - Stream files in IFS
 - Reference via the AFPRSC DDS keyword
- Color Management Support added to PSF/I
 - PSF/i enhanced to support AFP Color Management architecture (CMOCA)
 - Mechanism to print color consistently across different printer models and manufactures
 - Color profile of input and output devices used to adjust color “automatically” at high speed
 - Requires use of AFP Resource Installer tool to generate Resource Access Table (RAT)

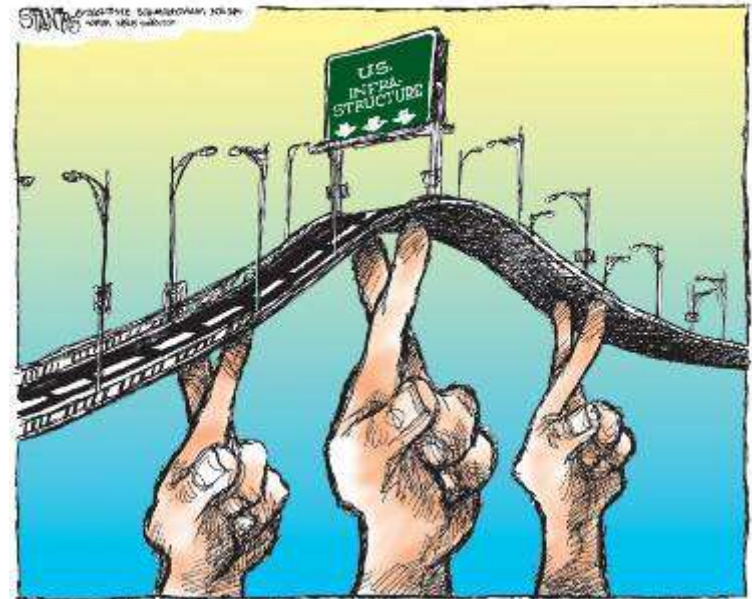


Infrastructure Currency

- Enhanced Data in Audit Records
 - Significant changes to record both the "old" and "new" values in many security audit records (prior release audit record data included only the "new" values)
- System SSL (Security updates)
- PASE Updates
 - AIX 7.1
 - OpenSSL



IBM i does not have the "Heartbleed" vulnerability. Never did. No fix needed.



IBM i Middleware Updates

- Java
 - Support for Java 6, Java 7 & Java 7.1
 - Support removed for Java 5 and Java 1.4.2

- SAMBA
 - Fast, modern, lightweight CIFS file serving
 - Common Internet File System
 - Better protocol compatibility with current Windows clients
 - SMB 2.0 protocol support



Expanding the Limits



Extended Limits – Page 1

- 32 virtual disks per VSCSI adapter in IBM i client partition
 - (was 16)

- Memory pools > 2 Terabytes
 - (New parameter on CHGSHRPOOL, CRT/CHGSBSD for units (*KB/*MB))

- Job table limit 970,000 (QMAXJOB system value)
 - From 485,000

- SMTP removed the SDD limitations

- Optical: Expanded large saves for IFS QOPT files
 - Max IFS QOPT file size now almost 10 TB from 4 GB



Extended Limits – Page 2

- PowerHA Administrative Domain monitored resource entry (MRE) limit now 45,000
 - From 25,000

- Maximum load source size will accommodate up to 2 TB, and Native SAS and SCSI load source drives must have at least 70 GB usable space
 - Other configs will be minimum 35 GB usable space
 - E.g., External Storage LUNs
 - E.g., Virtual disk
 - Specifics about calculating “usable space” and the PTFs:
 - <http://www.ibm.com/developerworks/ibmi/software>



Managing Limits Easier than Ever

- Navigator’s Health Center has DB2 and System Limits
- Hold a job that exceeds its defined limits (MAXTMPSTG and MAXCPU) and allow the operator to change the limit and let the job continue, or end the job

Product Enhancements

Power **HA**

Power **VP**

BRMS



Application

Runtime

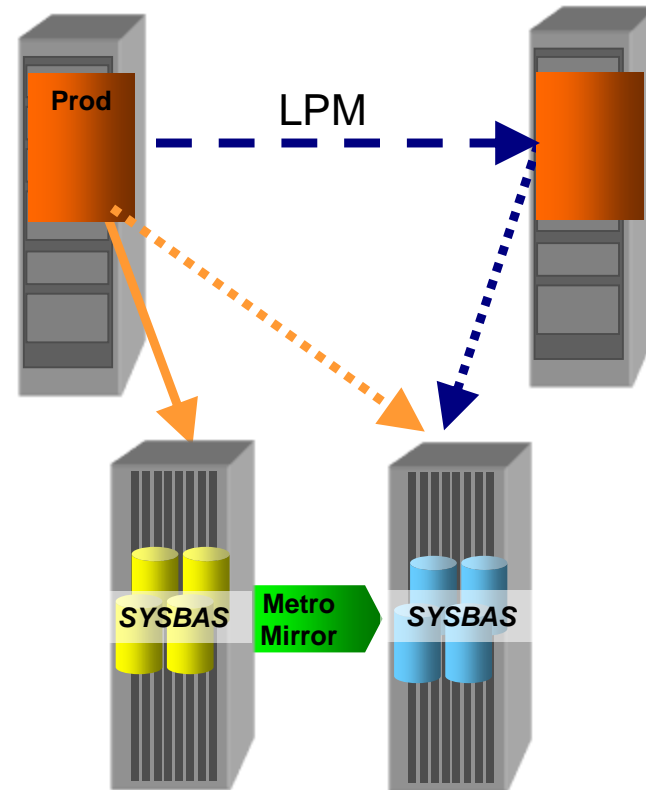
Expert

DB2 WebQuery



PowerHA SystemMirror for i Express Edition – Hyperswap

- Provides ability to ‘instantly’ switch access from production IBM i DS8000 instance to remote DS8000
- Switch can happen automatically in case of DS8000 failure
- Switch can be manually triggered for planned maintenance
- Affinity can be defined so an LPM switch triggers a DS8000 switch
- DS8000 storage servers only
- IASP based replication not yet supported



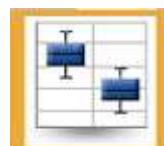
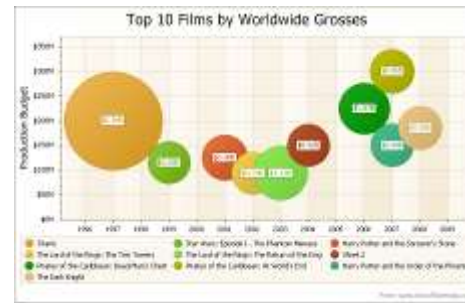
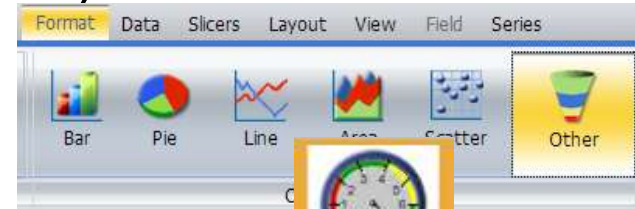
PowerHA

DB2 WebQuery – Latest (Version 2 + Update)

- DB2 Web Query contains over 100 different types of visualizations
 - Bar, Pie, Line, 3-D, Thermometers, gas gauges, stock reports, funnels, and more

- New Visualizations include
 - Heat Maps
 - Bubble Charts
 - Tag Clouds
 - Streamgraph

- Geo Maps
 - Interactive mapping out-of-the-box
 - 9 Layers of Zoom
 - Translated Countries
 - Adjust Heatscale and Opacity
 - Create customized maps



PowerVP - Virtualization Performance Intelligence

PowerVP provides performance intelligence to proactively address performance issues mapping virtual workloads to physical hardware.

PowerVP

Client Pain Points

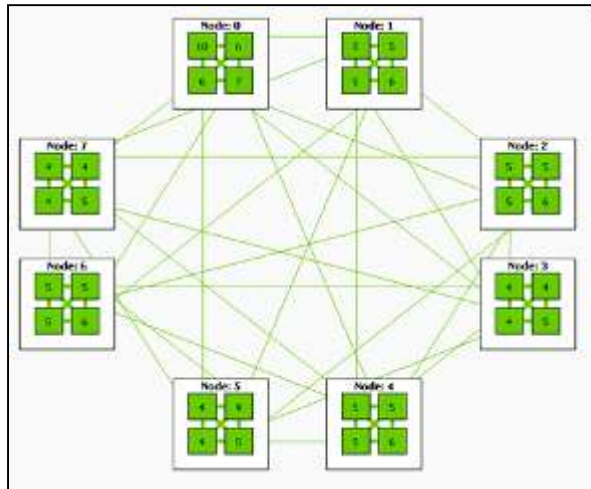
- **Complexity and time** required to pinpoint performance bottlenecks
- **Lack of visibility** of placement of VMs within a server's physical hardware
- Difficult to go **back in time** to diagnose detailed performance issues
- Lack of performance health metrics for virtualized workloads

PowerVP Solution

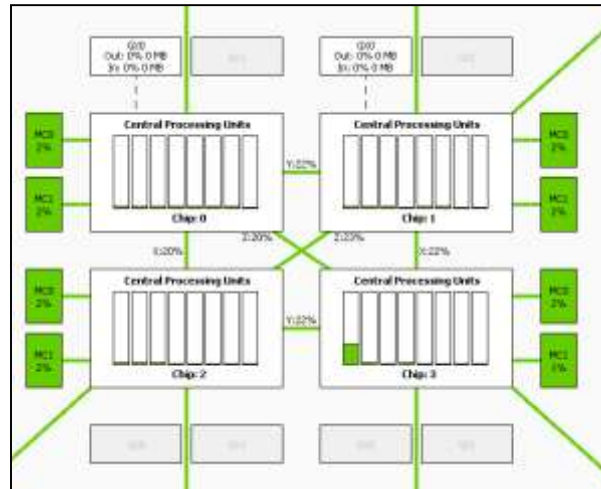
- ✓ *Simplifies management **and** performance **measurement of virtualized systems***
- ✓ *Reduces cost **of resolving performance issues***
- ✓ *Improves detection **of performance bottlenecks before they cause a slowdown***
- ✓ ***Provides a quick view of performance health***
- ✓ ***Visually shows the physical resources a VM is consuming***

Power Virtualization Performance

Power **VP**



**System
Topology
View**



HW DRILL DOWN



LPAR DRILL DOWN

PowerVP Introduction

PowerVP

- PowerVP - “Power Virtualization Performance”
- New Licensed Program Product
- PowerVP was created to monitor and illustrate the performance of an entire system (or frame)
- PowerVP will allow you to monitor overall performance and allow you to drill down into more detailed hardware and software views to help you identify and resolve performance issues and to optimize the performance of your Power system.
- PowerVP illustrates Power Systems hardware topology in conjunction with resource utilization metrics to help you better understand the system.

BRMS Enhancements

- BRMS Enterprise
 - Dashboard of all BRMS systems
 - Central site monitoring
- Graphical Interface supports additional function
- Backup with improvements to IFS backups, include and exclude support in BRMS Object List and new ability to save by size of library
- Media Services allows concurrent duplications in batch via SBMOPT parm
- New features for Recovery supports restore list options and other new function
- Maintenance
 - Increase performance with *BATCH on RGZBRMDB
 - RMVMEDI at an object retention level for *OBJ, *LNK, *DLO, *SPL
- Faster install via new alter table support!



Recent BRMS Enhancements - New Tape and Managing Large Back-ups

New Function	7.2	7.1	6.1
New Device Support: BRMS support is added for new Enterprise tape device TS1150 (Device type 3592 models E07 and EH7)	x	x	x
Back up automation: STRBKUBRM will automatically remount file systems after a backup is run for a control group during backup of integrated file system objects	x	x	x
Added capability to process journal entries that start with “Q”: Control group entries *ALLCHGRCV and *ALLDTCRCV have been enhanced to process journals in libraries that start with 'Q' when they are specified in object lists QCHGJRNRVCV and QDTCJRNRVCV	x	x	x
Easier to print reports: Parameter changes for Print Report using BRM (PRTRPTBRM) command <ul style="list-style-type: none"> – Now supports multiple values on From system (FROMSYS) – Now supports Use save files (USESAVF) and TSM (USEADSM) 	x	x	x
Additional options for BRMS object lists: <ul style="list-style-type: none"> – Now have capability to “omit” objects – *ALLUSR is now a valid value for the library name field, and individual library save timestamps are provided 	x		

www.ibm.com/developerworks/ibmi/techupdates/brms



New

Application Runtime Expert for i

- Verify runtime attributes & environment in an consistent and automated manner
 - Creates a template for well running application
 - Performs health check against current environment
 - Identifies differences between template and actual runtime attributes
 - **Schedule on a regular basis!**

- Application Runtime Attributes
 - File/Directory Authorities and Attributes
 - Compare native IBM i object 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
 - Run & verify SQL
 - Run & verify results of CL commands



From Collaboration to Social



Social collaboration for IBM

<https://www.ibm.com/developerworks/ibmi/social>



IBM Social Software for IBM i

Everything Social, Mobile Everywhere!

- IBM Domino 9.0.1
 - Enterprise messaging & collaboration
- IBM Notes Traveler 9.0.1
 - Mobile access to your mail & calendar
- IBM Connections 5.0
 - Enterprise social software
- IBM Sametime 9.0
 - Real-time unified communication
- Additional products
 - IBM Enterprise Integrator 9.0.1
 - Exchange Domino data with 3rd party data source



IBM i Supports Consolidation of x86 Workloads!

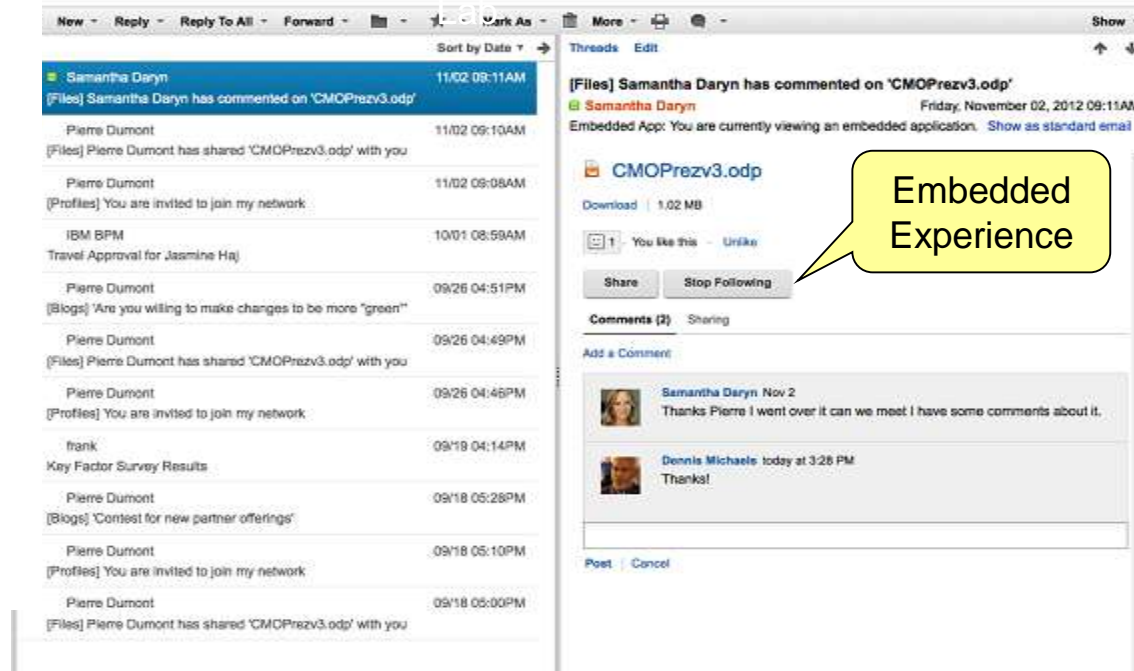
For the latest information, see:
<https://www.ibm.com/developerworks/ibmi/social>
<http://www.ibm.com/systems/resources/releasesuport.pdf>



IBM Domino 9.0.1 Social Edition

- Integration with IBM Connections
 - Accessing Domino mail from Connections directly
 - Store attachments in Connections Files
 - OpenSocial Component
 - Embedded experience
- Modern & ease user experience
 - IBM One UI
 - Notes Browser Plugin
- Security enhancement
 - SHA2, OAuth, ...
- Serviceability
 - QoS, DBMT, ...

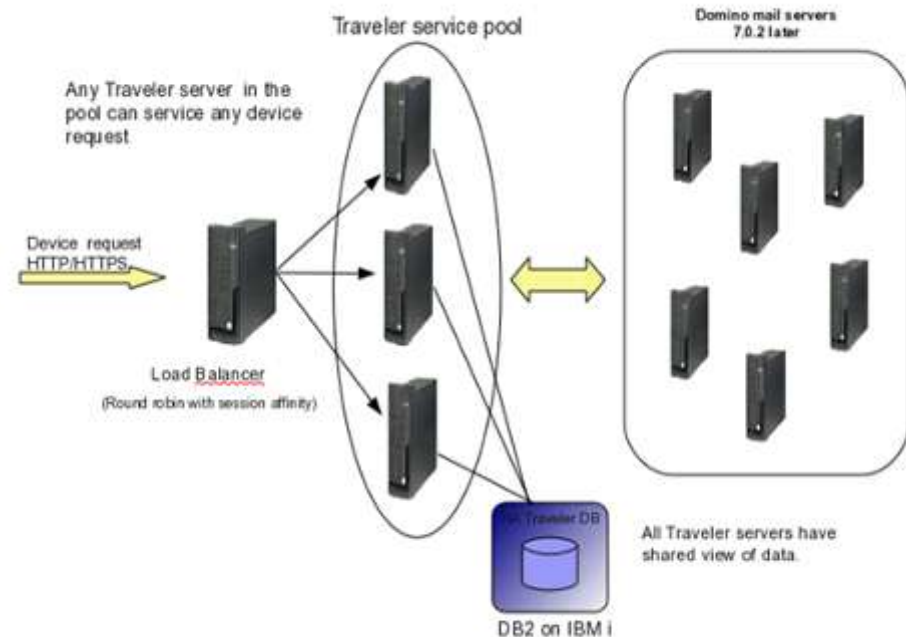
- IBM i Specific enhancement
 - 64bit JVM support
 - Performance enhancement
 - Adaptive code generation
 - Advanced Argument Optimization
- 5+% CPU utilization improvement in LAB



IBM Notes Traveler 9.0.1

- No charge mobile offering for IBM Lotus Notes® and Domino® users
- Full-featured e-mail for smart phones and tablets
- Read and compose Lotus Domino encrypted mail
- Search corporate directory for contacts
- Adheres to important corporate policies and safeguards sensitive corporate data

- Support remote wipe for lost or stolen devices
- Data on device is encrypted on Apple iOS, Google Android and Nokian Symbian devices
- Support both Standalone mode and High-Availability mode deployments



IBM Connections 5.0



Home page

See what's happening across your social network



Forums

Exchange ideas with, and benefit from the expertise of others



Profiles

Find the people you need



Social Analytics

Discover who and what you don't know via recommendations and metrics



Communities

Work with people who share common roles and expertise, media gallery and ideation



Micro-blogging

Reach out for help or share news with your social network



Activities

Organize your work and tap your professional network



Wikis

Create and share web content together with your teams and professional network



Blogs

Present your own ideas, and learn from others



Mobile

Access Connections anywhere, anytime with mobile & tablet access



Bookmarks

Save, share, and discover useful web-based content



Libraries/Content Manager

Document mgt with social capabilities, e.g. check in/out, versioning, workflow, tagging, commenting, "like", etc



Files

Post, share, and discover documents, presentations, images, and more



***Filenet needs to run on AIX or x86 Linux

IBM Sametime 9.0

- Modernized User Experience
- Continuous presence HD video through integrated software MCU
- Voice & Video on iOS & Android devices
- Tighter integration with IBM Connections
- Remove classic meeting

- Sametime for i supports:
 - Sametime Community Server
 - Sametime Meeting Server
 - Sametime Proxy Server
 - Sametime Gateway Server
 - Sametime System Console



***Media service available only on x86 Linux



IBM Software Group Updates

IBM Commerce V7 Feature Pack 8

IBM i 7.1 only



IBM MQ V8

- Leading messaging support
- File Transfer
- Advanced Message Security

IBM i 7.1 & 7.2

IBM WebSphere Portal V8.5 CR1

IBM i 7.1 only

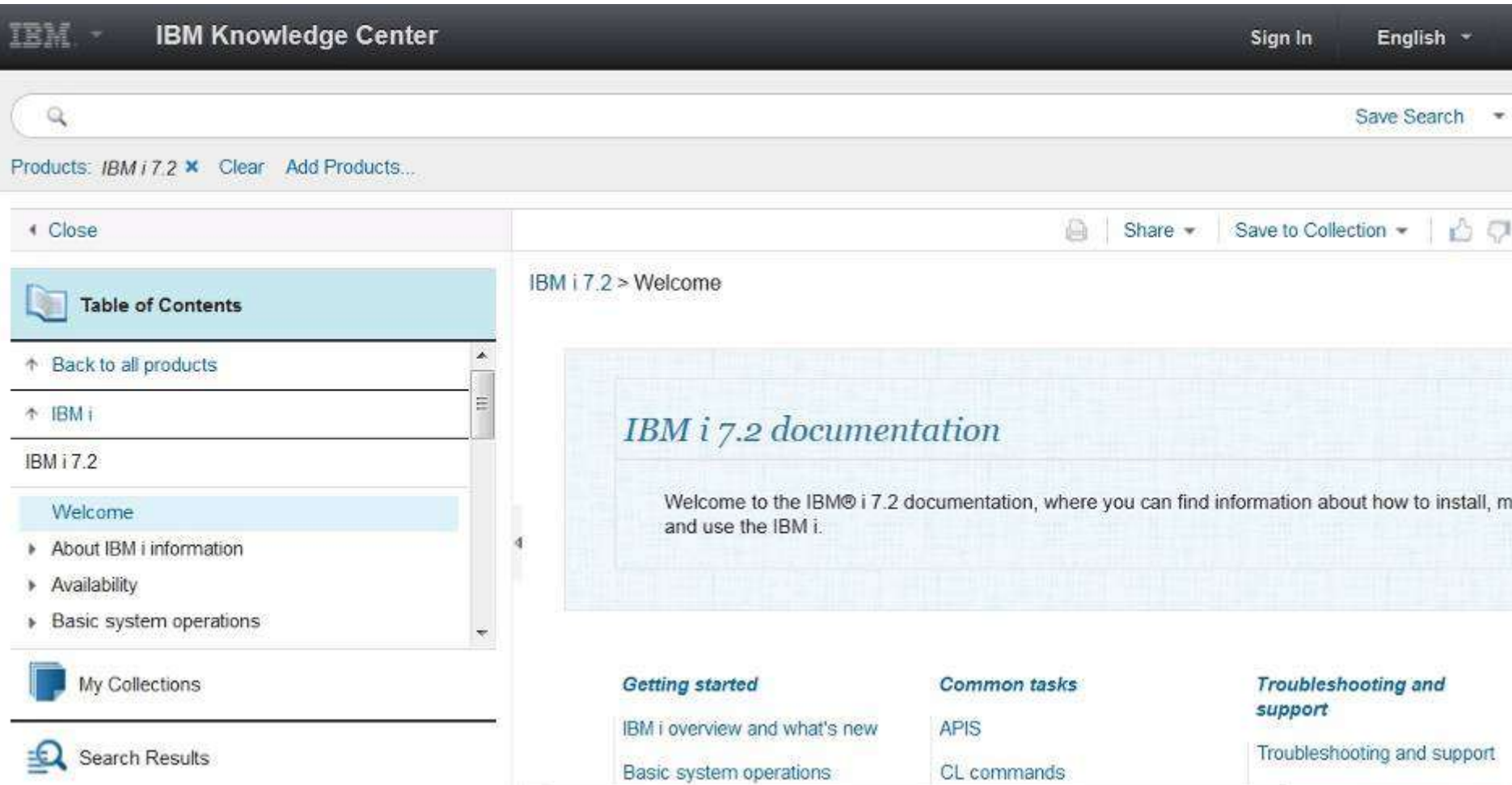


IBM Connections 5.0 CR1

IBM i 7.1 & 7.2



IBM i in IBM Knowledge Center



The screenshot shows the IBM Knowledge Center interface. At the top, there is a navigation bar with the IBM logo, "IBM Knowledge Center", "Sign In", and "English". Below this is a search bar with a magnifying glass icon and a "Save Search" button. A breadcrumb trail shows "Products: IBM i 7.2" with a close icon, "Clear", and "Add Products...".

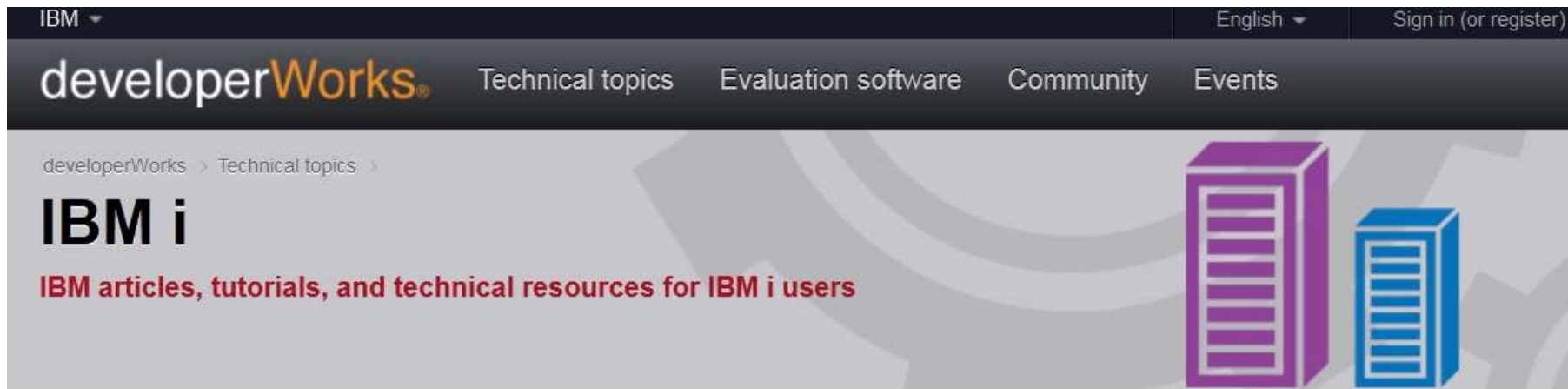
The main content area is titled "IBM i 7.2 > Welcome". It features a large heading "IBM i 7.2 documentation" and a sub-heading "Welcome to the IBM® i 7.2 documentation, where you can find information about how to install, m and use the IBM i." Below this, there are three columns of links:

- Getting started**
 - IBM i overview and what's new
 - Basic system operations
- Common tasks**
 - APIS
 - CL commands
- Troubleshooting and support**
 - Troubleshooting and support

On the left side, there is a sidebar with a "Close" button. It contains a "Table of Contents" section with a book icon, a "Back to all products" link, and a list of categories: "IBM i" and "IBM i 7.2". Under "IBM i 7.2", there is a "Welcome" link (highlighted), "About IBM i information", "Availability", and "Basic system operations". Below the sidebar is a "My Collections" section and a "Search Results" section.

http://www.ibm.com/support/knowledgecenter/ssw_ibm_i_72/

IBM i updates on developerWorks




IBM ▾ English ▾ Sign in (or register)

developerWorks Technical topics Evaluation software Community Events

developerWorks > Technical topics >

IBM i

IBM articles, tutorials, and technical resources for IBM i users



Featured article



Building an STRSQL utility with PowerRuby

This tutorial creates a Rails version of old green screen Start SQL Interactive Session (STRSQL) utility. Most IBM i professionals use STRSQL on IBM i, but if you have not, simply sign on to your IBM i 5250 and enter STRSQL on the command line. Other products duplicate the STRSQL support as a client/server application, but this Rails version stays completely on the IBM i server and use any device with a browser as the interface.

Spotlights

 **QIBM QDB OPEN: The Open Database File Exit program**

IBM i Technology Updates



Products and downloads

- Products and solutions
- Downloads and tools

Connect

ibm.com/developerworks/ibmi

Social Media for IBM i

■ DeveloperWorks

- Main page: <http://www.ibm.com/developerworks/ibmi>
- Technology Refresh Updates:
 - <http://www.ibm.com/developerworks/ibmi/techupdates>

■ Blogs

- Steve Will: http://ibmsystemsmag.blogs.com/you_and_i/
- Dawn May: http://ibmsystemsmag.blogs.com/i_can/
- Mike Cain: <http://db2fori.blogspot.ca/>
- Tim Rowe: <http://www.systemideveloper.com/blogs>
- Alison Butterill <http://ibmsystemsmag.blogs.com/isight/>



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[@IBMiSight](#)

[@DawnMayiCan](#)

[@SAPonIBMi](#)

[@Forstie IBMi](#)

[@ianpjarman](#)



ithankyou

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