COMMON Romandie

Mercredi 21 mai 2014

COMMON Europe
Enterprise Modernization Tour

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Agenda

14h00 – 14h15	*Introduction* Jean-Charles Finidori
14h15 – 15h00	**Keynote: "IBM i continues to improve, an update on the latest OS updates"** Tim Rowe, IBM, US
15h00 – 15h45	**"Open your worldwide windows and supply your applications real time information using web services!"** Charles Guarino, Central Parks Data, US
15h45 – 16h00	*Networking drink*
16h00 – 16h45	**"Modernizing development tools: Agile Application Lifecycle Management for IBM i"** Philippe Magne, Arcad Software, France
16h45 – 17h00	**Prize draw**
17h00 – 17h15	**Application Modernization Redbook signing ceremony**
17h15 – 17h30	*Networking drink*

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IBM i 7.2 Overview

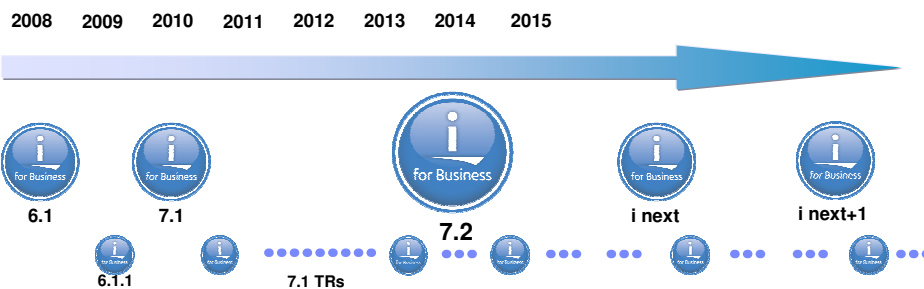Tim Rowe – timmr@us.ibm.com
IBM i Business Architect
- Application Development
- Systems Management

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IBM i Roadmap

2008   2009   2010   2011   2012   2013   2014   2015

6.1   7.1   7.2   i next   i next+1

6.1.1   7.1 TRs

- 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.

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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**

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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

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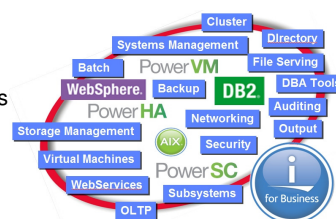
IBM i – 7.2 Enhancements – the Details

7

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
Reliable
DB2 for i

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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
– Other SQE enhancements
– Use SQL to see temporary storage consumption

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DB2 for i - 7.2 Enhancements by role - Security

Security & DB2 for i

– Column Masks
  ➔ Deploy "need to know" logic

– Row Permissions
  ➔ Simpler, faster security

– Violation clause for CHECK constraints
  ➔ Protect data integrity

– Secure remote journal using SSL
  ➔ Achieve HA & DR objectives without exposure

– SQL alternative to CHGOBJOWN
  ➔ Embrace separation of duty, using SQL

– Use adopted authority identity within business logic
  ➔ "Who am I?" conditional code using SQL

Data-Centric Security
• Comprehensive
• Auditable
• Sustainable
• Scalable
• Manageable

Data is an asset… what's your data worth?

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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?
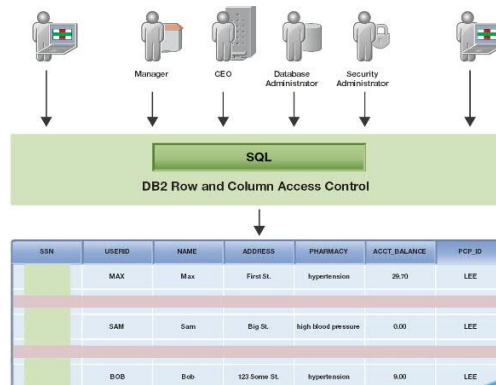
IBM i 7.2 with RCAC

- 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?

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

- 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**

Manager   CEO   Database Administrator   Security Administrator

SQL

DB2 Row and Column Access Control

SSN	USERID	NAME	ADDRESS	PHARMACY	ACCT_BALANCE	PCP_ID
	MAX	Max	First St.	hypertension	29.70	LEE
	SAM	Sam	Big St.	high blood pressure	0.00	LEE
	BOB	Bob	123 Some St.	hypertension	9.00	LEE

Row and Column Access Control

```
CREATE MASK SSN_MASK ON EMPLOYEE
    FOR COLUMN SSN RETURN
        CASE
            WHEN (VERIFY_GROUP_FOR_USER(SESSION_USER,'PAYROLL') = 1)
                THEN SSN
            WHEN (VERIFY_GROUP_FOR_USER(SESSION_USER,'MGR') = 1)
                THEN 'XXX-XX-' CONCAT SUBSTR(SSN,8,4)
            ELSE NULL
        END
    ENABLE;

ALTER TABLE EMPLOYEE
    ACTIVATE COLUMN ACCESS CONTROL;
```

Column

Payroll – Entire number

Manager – xxxxxx1234

```
CREATE PERMISSION NETHMO.ROW_ACCESS
ON HOSPITAL.PATIENT
FOR ROWS
WHERE(VERIFY_GROUP_FOR_USER(SESSION_USER,'PATIENT') = 1 AND
        HOSPITAL.PATIENT.USERID = SESSION_USER) OR
        (VERIFY_GROUP_FOR_USER(SESSION_USER,'PCP') = 1 AND
         HOSPITAL.PATIENT.PCP_ID = SESSION_USER) OR
        (VERIFY_GROUP_FOR_USER(SESSION_USER,'MEMBERSHIP') = 1 OR
        VERIFY_GROUP_FOR_USER(SESSION_USER,'ACCOUNTING') = 1 OR
        VERIFY_GROUP_FOR_USER(SESSION_USER,'DRUG_RESEARCH') = 1)  ENFORCED FOR ALL ACCESS
    ENABLE;

ALTER TABLE HOSPITAL.PATIENT
    ACTIVATE ROW ACCESS CONTROL;
```

View Row if Patient

View Row if Accounting

View Row if Drug_Research

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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
```

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7

Slide 15

Built in Global Variables – Use SQL to get info from the system!

Who's password is about to expire

SELECT * from qsys2.user_info where status = '*ENABLED' AND
DATE_PASSWORD_EXPIRES BETWEEN CURRENT TIMESTAMP AND CURRENT TIMESTAMP + 7 DAYS;

SELEcT * from qsys2.user_info where status = '*ENABLED' AND DATE_PASSWORD_EXPIRES BETWEE ... - X1423p2.rch.stglabs.ibm.com(X1423p2)

AUTHORIZATION_NAME	PREVIOUS_SIGNON	DAYS_UNTIL_PASSWORD_EXPIRES	DATE_PASSWORD_EXPIRES
APASSE	2014-05-01 12:03:5...	3	2014-05-05 00:00:00.0...
BOT5001USR	2013-10-31 00:49:2...	2	2014-05-04 00:00:00.0...
LJAMESON	2014-04-30 13:50:0...	3	2014-05-05 00:00:00.0...

SELECT USER_NAME, SUM(STORAGE_USED) AS TOTAL_STORAGE_USED from qsys2.user_storage
GROUP BY USER_NAME ORDER BY TOTAL_STORAGE_USED DESC FETCH FIRST 10 ROWS ONLY ;

Find who is using the
most storage!

SELECT USER_NAME, SUM(STORAGE_USED)...

USER_NAME	TOTAL_STORAGE_USED
JONATHAN	93509680
JDPWRSYS	62605300
QDFTOWN	57895476
QSYS	45151156
EBERHARD	38515152
QQSMART	31275908
SCHRIB	20879664
QSECOFR	12509896
QSPL	11011312
SCOTTF	10756532

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Slide 16

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

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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

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Significant Enhancements to RPG Built into 7.2

- New Free Format RPG
  - New Syntax; new style
  - Modern behavior
  - Support RPG with Modern Developer

- Conversion - change old RPG to RPG Free Format
  - Arcad Transformer RPG

- Rational Developer for i provided support in December 2013.

```
ctl-opt bnddir('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;
```

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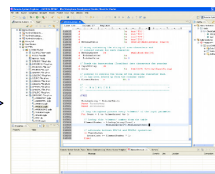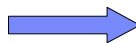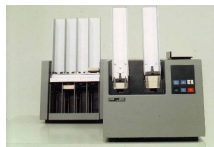
Additional RPG Enhancements

- Enhancements that were already delivered by PTFs
  - Free-form H, F, D, and P statements (7.1)
  - New XML-INTO options (6.1 & 7.1)
  - Get warnings or exceptions for failed CCSID conversions (6.1 & 7.1)
  - Performance option for date and time operations (6.1 & 7.1)

- 7.2 enhancements
  - CCSID support for alphanumeric data
  - Option for externally-described data structure subfields to have the same CCSIDs as the external fields
  - Option to open database files without CCSID conversion
  - Implicit CCSID conversion for free-form concatenation
  - Control the length returned by %SUBDT
  - Timestamps can have from 0 to 12 fractional seconds

Right Tool for the Job ?

Rational Developer for i - RPG, COBOL, C, C++, SQL, DDM

- *Modern*, Eclipse-based, development tools for IBM i
- Visual editors, outline views, content assist, integrated language help
- *Integrated* file management, search, edit, compile/build, debug capabilities
- Analysis tools (application diagram, call hierarchies, type hierarchies)
- Easily debug batch, interactive, and Web applications with a common visual debugger
- Visual DDS design tools: Screen and Report Designer
- Integration with ISV Tools

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RD i V9.1   Code Coverage Report

- After running code coverage, a report is shown as an editor.
- You can drill down through programs, modules and procedures and see the coverage statistics for each
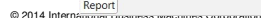
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Recent Advancements in Mobile Access for IBM i

- 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

Zend Server for IBM i Version 6

- Zend Studio and Zend Server will create/run mobile apps
  - Visual, drag-and-drop mobile client app creation in Zend Studio
  - Visual, drag-and-drop creation of RESTful PHP web services which connect the mobile app to Zend Server
  - Zend Studio creates mobile apps ready for deployment to app marketplaces of iOS, Android, Windows Phone, & more platforms
- Zend Server has enterprise-grade features for managing PHP applications
  - Application deployment, performance insight, management, caching, and monitoring on an application-by-application basis
  - Security and user management functions include
    - different roles for administrators and developers
    - permissions by application based on the users in an LDAP directory
    - maintaining a user audit trail
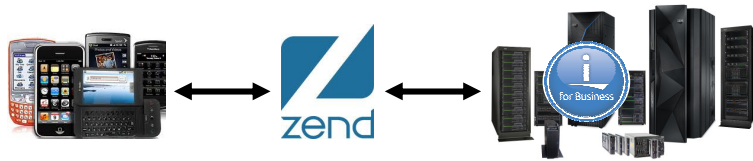
Quickly & Easily Create Mobile Solutions for IBM i

Zend Studio 10
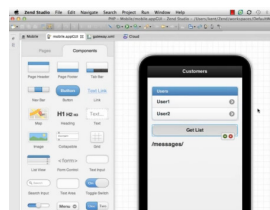
Deploy mobile apps application market places!

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!

Integrated Middle Ware on IBM i

- Integrated Wed Services Server – now powered by WAS Liberty & Jax-WS
  - Running on Liberty
    - Faster and better compliance
  - JAX-WS SOAP web service container
    - Latest industry standard support

IBM
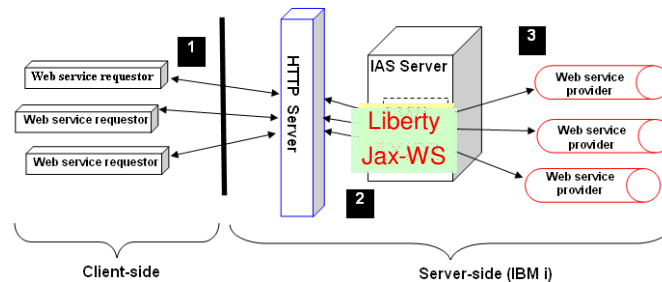
IBM Middleware products

- IBM Social Collaboration
  - IBM Domino 9.0.1
  - IBM Traveler 9.0.1
  - IBM Sametime 9.0
  - IBM Connections Next

- IBM WebSphere
  - WebSphere Application Server V8.0
    - Liberty, Express, Base, ND
  - WebSphere Application Server V8.5 & 8.5.5
    - Liberty, Express, Base, ND
  - Versions 6.1 & 7 Not supported

  - WebSphere MQ 7.1.0.5

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IBM

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 server
    - Common Internet File System
  - Better protocol compatibility with current Windows clients
  - SMB 2.0 protocol support

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Managing the System with IBM i 7.2

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
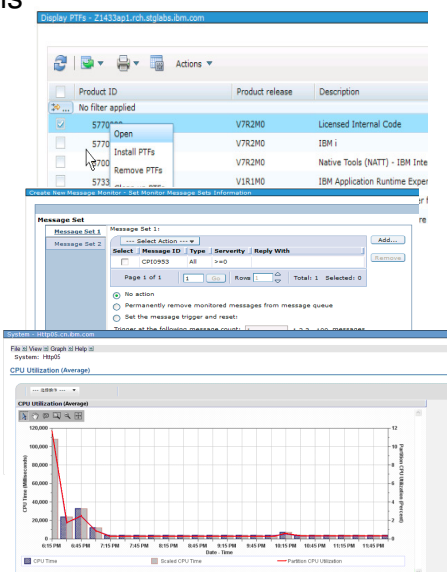
L1C 7.2 Enhancements - Usability Enhancements

- Search tasks by keywords and CL commands

- Bookmark your favorite tasks

- Go to deep IFS path directly

- Navigation performance improvement

- Simplified Tab-based management
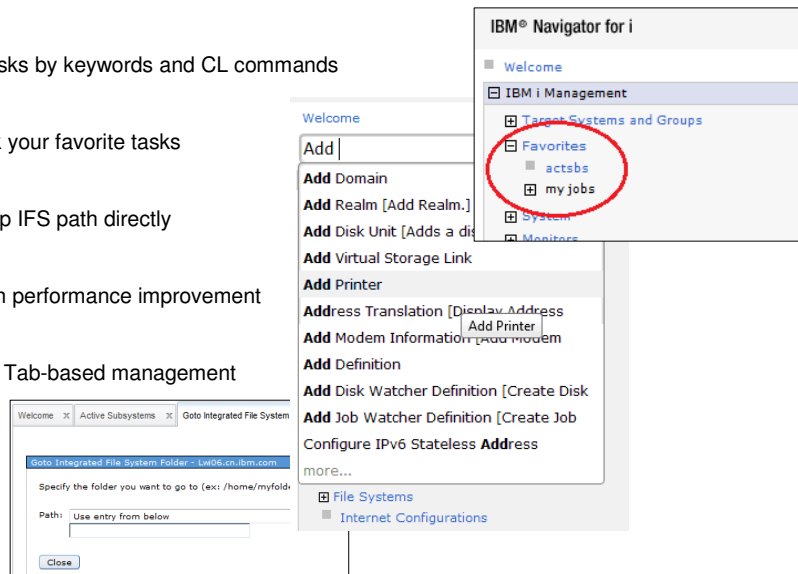
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Collection Services & Performance Data Investigator – 7.2

- 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!!

Select package and perspective from left hand

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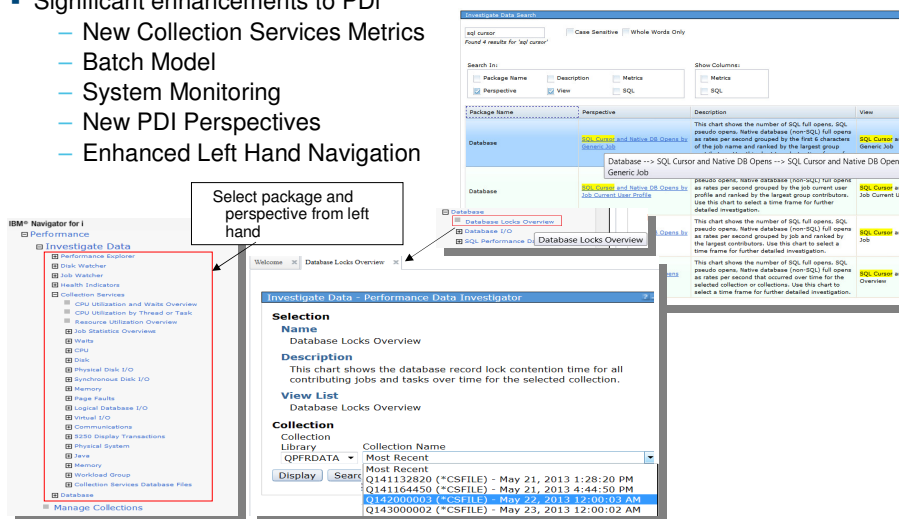
Batch Model

Measure a batch workload

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

Model how these changes effect the Workload performance

Measured

Modeled
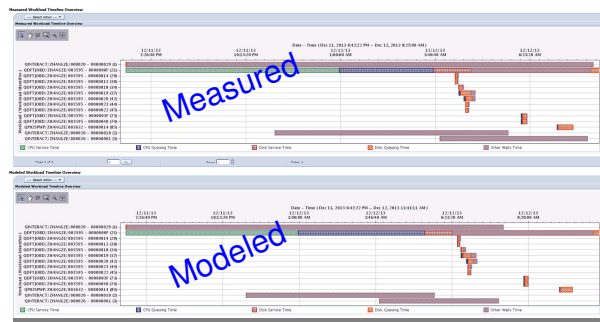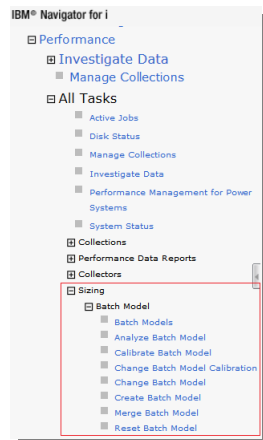
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Managing Temporary Storage – Improved Accounting

- 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.

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Slide 1

IBM Navigator for i – Sort Active Jobs by Storage Used

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Slide 2

Mobile IBM i Access

- iAccess for Web new Mobile interface – shipped with 5770-XH2

- Access your IBM i from **ANY** web enabled mobile device

- Basic System and Management function
  - Job Management
  - Messages
  - Printer output
    - Spool files to PDFs
  - 5250 emulator
  - Run SQL Scripts!
  - Much more

iPhone
iPad
Android
Surface
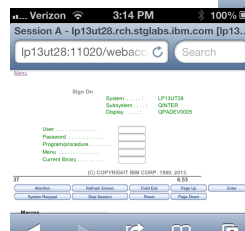
Tech Preview with 7.2 GA

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POWER

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.

POWER7+ Systems   32 nm

PowerVM   PowerHA
PowerSC   PowerVP

POWER8   22 nm

4Q2012-1Q2013   2014-2015

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

Scale-out Systems - DCMs and Chips

POWER8

1S & 2S servers use DCM (Dual Chip Module)
- 1 DCM fills 1 socket   .... Similar to POWER7+ 750 / 760
- 1 DCM has two Scale-out POWER8 chips
- 1 DCM can provide 6-core, 8-core, 10-core or 12-core sockets

6-core Processor Chip
- 362 mm2
- 22nm SOI w/ eDRAM

Strengthen Cores
- 8 Threads per Core

Caches
- D Cache: 64KB
- L2: 512KB
- L3: 8 MB per Region   Total: 48MB

Fine Grained Power Management
- On Chip power management

Excellent I/O bandwidth per socket
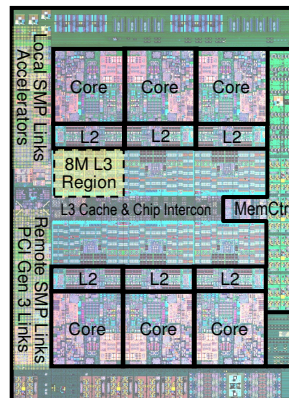
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POWER8 Memory Buffer Chip

DRAM Chips   Memory Buffer

DDR Interfaces

Scheduler & Management   16MB Memory Cache   POWER8 Link
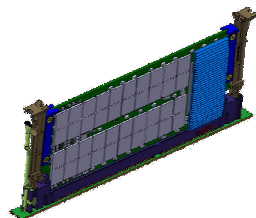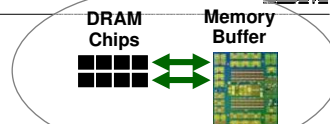
"L4 cache"

Intelligence Moved into Memory
- Scheduling logic, caching structures
- Energy Mgmt, RAS decision point
  - Formerly on Processor
  - Moved to Memory Buffer

Processor Interface
- 9.6 GB/s high speed interface
- More robust RAS
- "On-the-fly" lane isolation/repair

Performance Value
- End-to-end fastpath and data retry (latency)
- Cache → latency/bandwidth, partial updates
- Cache → write scheduling, prefetch, energy

POWER8

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POWER8 Integrated PCI Gen 3

POWER7

Native PCIe Gen 3 Support
• Direct processor integration
• Replaces proprietary GX/Bridge
• Low latency
• Gen3 x16 bandwidth (32 GB/s)

GX Bus

I/O Bridge

PCIe Gen2

PCIe Gen3

PCI Devices

PCI Device
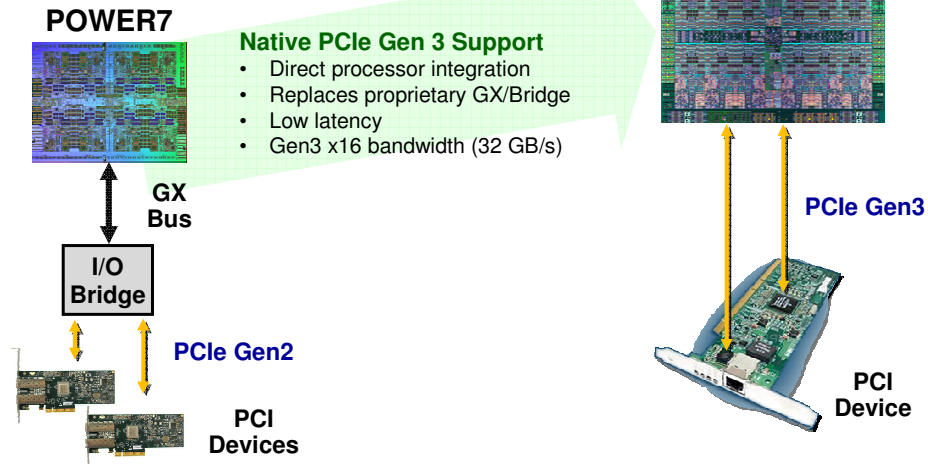
POWER8 Multi-threading Options

- **SMT1:** Largest unit of execution work

- **SMT2:** Smaller unit of work, but provides greater amount of execution work per cycle

- **SMT4:** Smaller unit of work, but provides greater amount of execution work per cycle
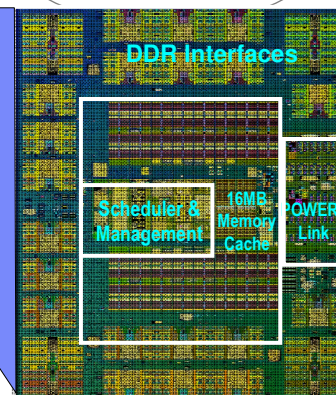
- **SMT8:** Smallest unit of work, but provides the maximum amount of execution work per cycle
- Can dynamical shift between modes as required: SMT1 / SMT2 / SMT4 / SMT8
- Mixed SMT modes supported within same LPAR
  – Requires use of "Resource Groups"
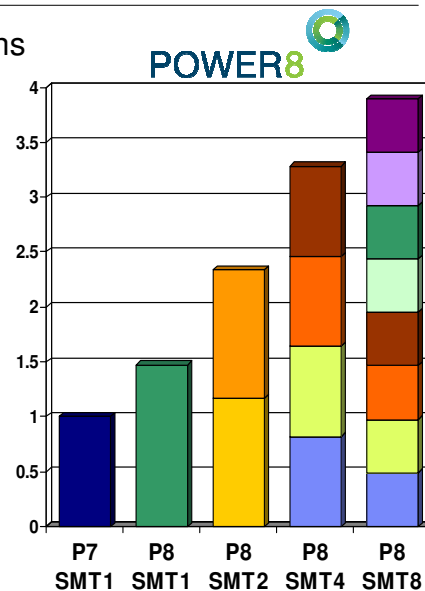
| P7 SMT1 | P8 SMT1 | P8 SMT2 | P8 SMT4 | P8 SMT8 |

IBM i System Support
http://www-01.ibm.com/support/docview.wss?uid=ssm1platformibmi

Servers	IBM i 5.4[1]	IBM i 6.1	IBM i 7.1	IBM i 7.2
POWER8			✓ [3]	✓
POWER7/7+ **PS700/701/702/730/704, Power 710, 720, 730,** **740, 750, 760, 770, 780, 795, Pureflex p260/460**		✓ [2]	✓	✓
POWER6+ JS23/43, 550*, 560 **POWER6 JS12/22**		✓	✓	✓ [4]
POWER6+ 520* **POWER6 520*, 550*, 570, 595**	✓	✓	✓	✓ [4]
POWER5/5+ **515, 520, 525, 550, 570, 595**	✓	✓	✓	
800, 810, 825, 870, 890	✓	✓		
270, 820, 830, 840	✓			

1 – IBM i V5R4 is no longer marketed or supported other than through extended service contracts
2 – 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
3 – Requires IBM i 7.1 Technology Refresh 8
4 – no IOP or HSL support

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Cloud and Virtualization

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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

PowerVM™

Application	Application	Application	Application
Application Platform	Application Platform	Application Platform	Application Platform
Base Image	Partition 1	Partition 2	Partition 3

Virtualized SAN and Network Infrastructure

© 2014 International Business Machines Corporation   49
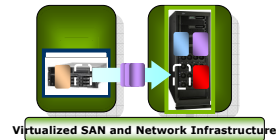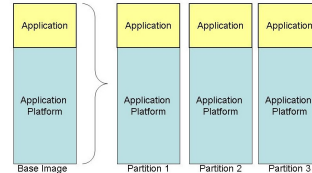
IBM i 7.2 – Built in Cloud Capability

- **IBM SmartCloud Entry 4.1** is an easy to deploy, simple to use software offering that features a self-service portal for workload provisioning, virtualized image management, and monitoring.
  - Radically *improves time to value* for new workloads
  - Provides *repeatable accuracy and consistency* via automation
  -
- **IBM Systems Director VMControl 2.4.5** offers Express, Standard and Enterprise Edition support for IBM i 7.2. Enables the cloud capability for quick partition deployment, systems pool.
  - Support appropriate *isolation* within a highly shared and multi-tenant environment

i for Business

PowerVM™   IBM® Systems Director

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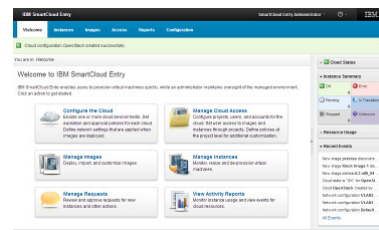
SRIOV (Single Root I/O Virtualization) for Ethernet

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

Quality of Service

Min of $x\%$

Min of $y\%$

SR-IOV

Min of $z\%$

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

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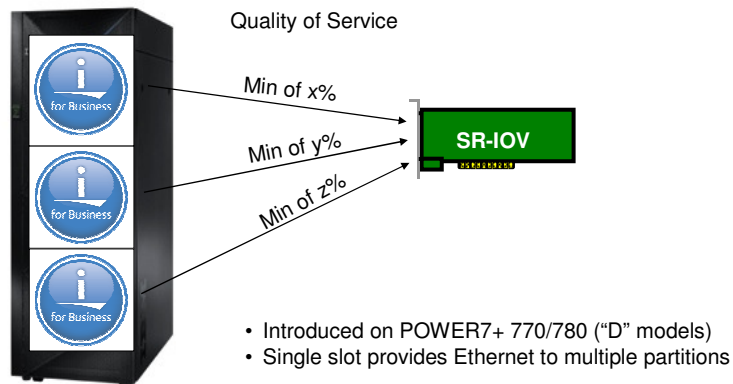
"WAN over LAN"

- 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

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Integrated Value

for Business

Security
SSO Kerbrose
PCI Compliance
RCAC Separation of Duties
Bet your business on us
InfoSphere Gaurdium
Open for Business
Encryption Reliable
HIPI Scalable
Easy to use
Secure
Proven SSL Easy to maintain

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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 …

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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

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COMPUTER OPERATIONS
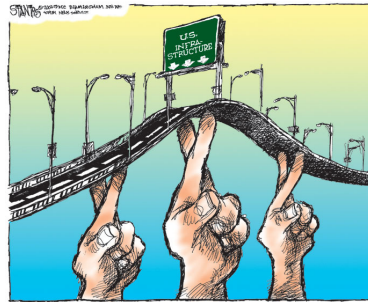
Operations Enhancements

- 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

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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

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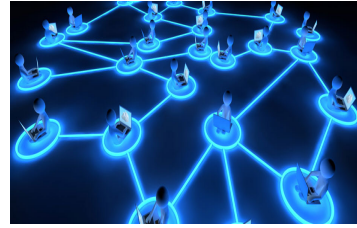
Printed Output Enhancements

- 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 consistantly 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)

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Expanding the Limits

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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

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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 load source drives must be at least 70 GB

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

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Product Enhancements

PowerHA   PowerVP

BRMS   i for Business   Application Runtime Expert

Social | Messaging | Communicating | Connecting | Integrating

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```
ERROR: stackunderflow
OFFENDING COMMAND: ~

STACK:
```