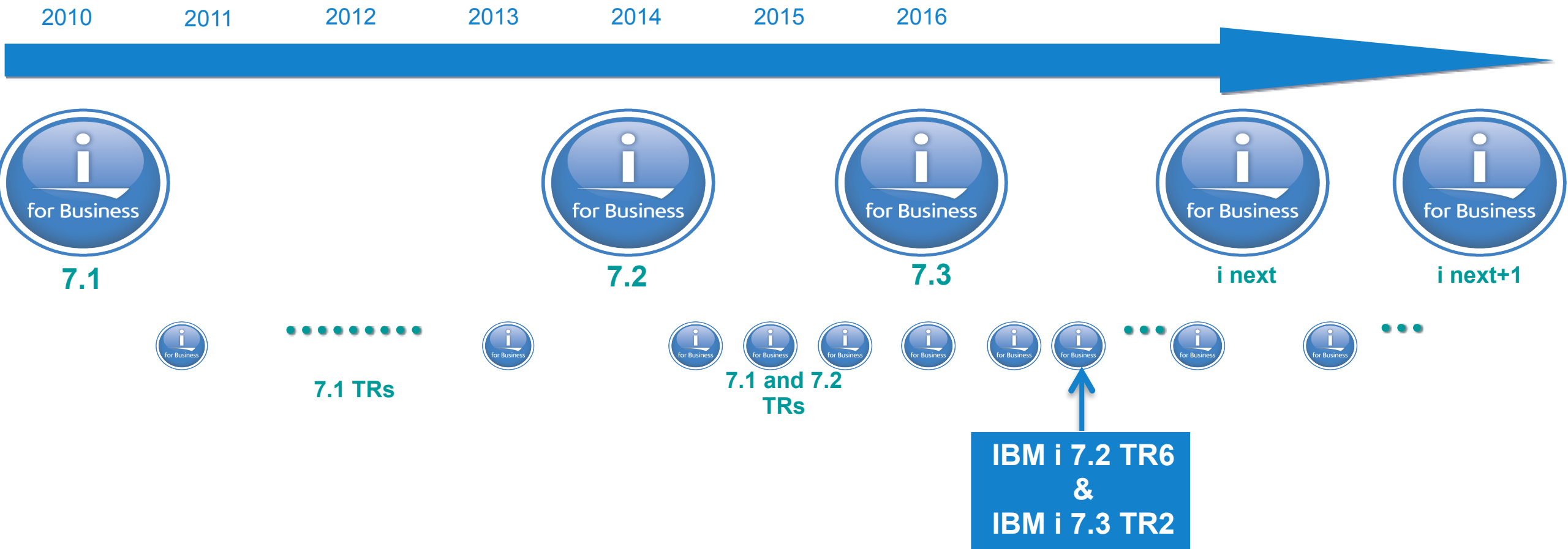


IBM i Monthly Update January 26, 2017

Fabian Michel
Client Technical Architect
IBM Belgium

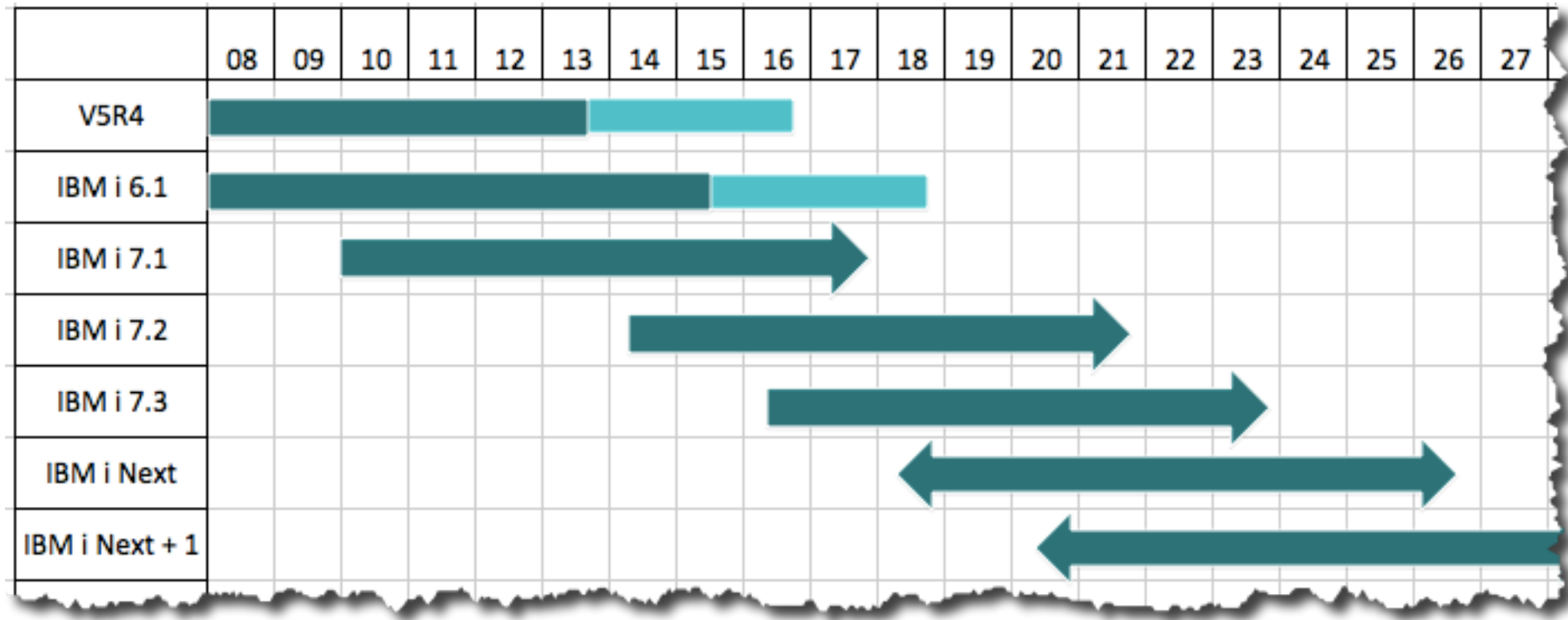


IBM i Roadmap



** 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 Support and Extended Support Roadmap



- 3 Releases currently available and under normal support and service

Serviceability Improvements

IBM i 7.3 TR 2 IBM i 7.2 TR 6 GA 3/17/2017
--

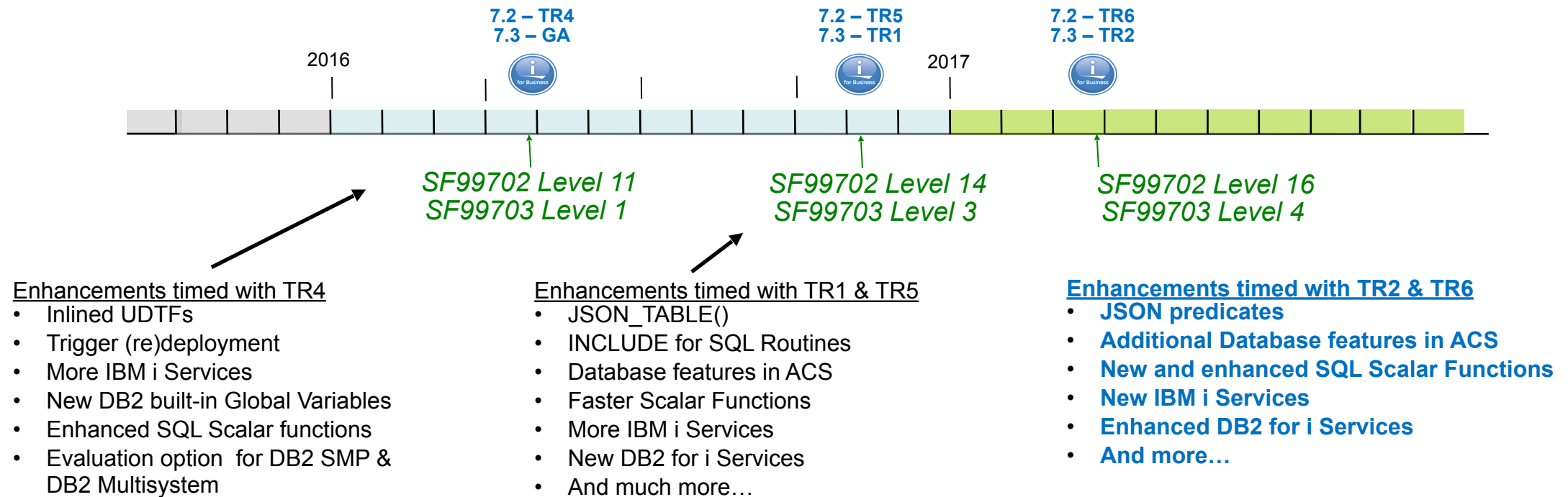
Focused on improving the rare error scenarios that typically required a Mainstore Dump

1. If the LPAR is still running, but in degraded mode
 - Past: Debug info could be collected if console or workstation display was usable
 - Now: New Operator Panel sequence can be used instead
 - Function 21 followed by Function 21
 - Captures same debug info, and puts it into a series of LIC Logs
 - Partition may still need to be restarted to correct the error situation
 - However, saves the time spent creating, saving, sending a Mainstore Dump
2. For error situations that do still require a Mainstore Dump, some times have been greatly reduced
 - Time to copy the dump to IFS or to tape
 - Time to format a Mainstore Dump for analysis

What's New in DB2 for i

Scott Forstie
DB2 for i Business Architect
forstie@us.ibm.com
@Forstie_IBMi

DB2 for i – Enhancements delivered via DB2 PTF Groups



www.ibm.com/developerworks/ibmi/techupdates/db2

IBM i 7.3 and 7.2 TR-next details

Announce: February 14, 2017
Database PTF Group GA: March 31, 2017

IBM Knowledge Center Updates and IBM i developerWorks landing pages go live on Announce date.

<http://www.ibm.com/developerworks/ibmi/techupdates/i72-TR6>

and

Point clients here!

New and Improved DB2 Web Query Redbooks



DB2 Web Query for i -
Tutorials

SG24-8378

DB2 Web Query for i - The
Nuts and Bolts

SG24-8379

Drafts being released very soon

Based upon DB2 Web Query Version 2.2

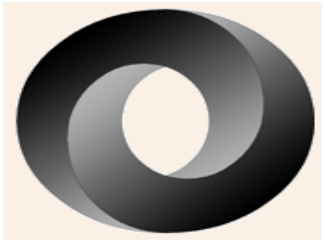
It's About Time

Who should care about these database enhancements?

1. Database Application Developers
 - New SQL capabilities enable modern solutions and improved programmer productivity
2. System Administrators and Security Officers
 - New IBM i Services enable advanced Systems and Security Management on IBM i
3. Database Engineers
 - New ACS capabilities provide a productivity boost to the DBE



JSON support in DB2 for i



DB2 JSON Store

JSON_TABLE()

JSON Query support:
Predicates:
• IS JSON
• JSON_EXISTS

June 2015

November
2016

March
2017

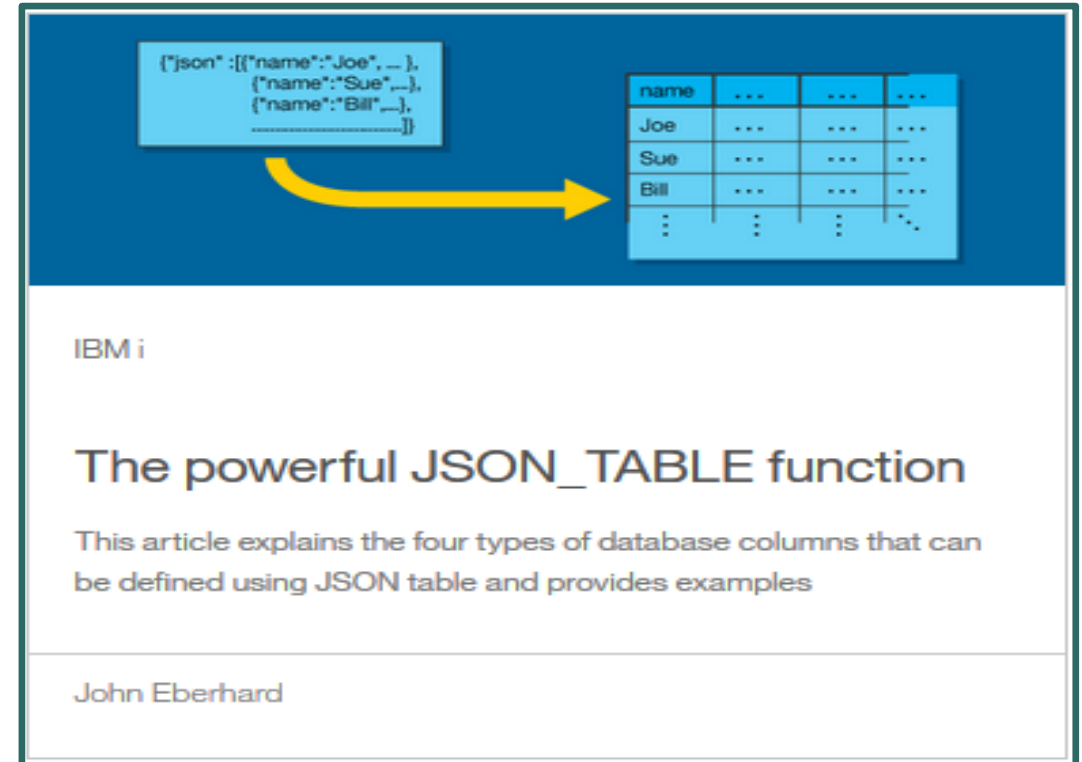
IBM i 7.1, 7.2, &
7.3

IBM i 7.2 & 7.3

IBM i 7.2 & 7.3

JSON_TABLE

- Allows queries to process JSON as relational data
- Leverage HTTP functions to tap external JSON data sources
- Conceptually similar to XML_TABLE



The diagram illustrates the concept of the JSON_TABLE function. On the left, a JSON array is shown: `(["json": [{"name": "Joe", ...}, {"name": "Sue", ...}, {"name": "Bill", ...}]])`. A yellow arrow points from this JSON structure to a table on the right. The table has four columns: 'name', '...', '...', and '...'. The rows are labeled 'Joe', 'Sue', 'Bill', and '...', representing the data extracted from the JSON array.

IBM i

The powerful JSON_TABLE function

This article explains the four types of database columns that can be defined using JSON table and provides examples

John Eberhard

“The powerful JSON_TABLE function”

<http://www.ibm.com/developerworks/ibmi/library/i-json-table-trs/index.html>

JSON – IS JSON query predicate

- **IS or IS NOT JSON**

- The IS JSON predicate determines whether a value is in a JSON format with the specified attributes
- VALUE, ARRAY, OBJECT, or SCALAR checking

```
-- Use a trigger to validate JSON
CREATE TRIGGER VALIDATE_JSON
BEFORE INSERT OR UPDATE OF JSON_DATA ON MYTABLE
REFERENCING NEW AS N
FOR EACH ROW MODE DB2ROW
IF N.JSON_DATA IS NOT JSON OBJECT THEN
  IF INSERTING THEN
    SIGNAL SQLSTATE '75007'
      ('INSERT failed due to invalid JSON');
  ELSE
    SIGNAL SQLSTATE '75007'
      ('UPDATE failed due to invalid JSON');
  END IF;
END IF;
```


JSON – JSON_EXISTS query predicate

- **JSON_EXISTS**

- JSON_EXISTS predicate is true if at least one value can be located
- COALESCE or IFNULL can be used to identify/process NULL values
- **FALSE ON ERROR, TRUE ON ERROR, UNKNOWN ON ERROR, or ERROR ON ERROR** processing options

```
-- Identify the employees who do not have  
-- at least one emergency contact.
```

```
SELECT empno, lastname FROM employee  
WHERE NOT JSON_EXISTS(COALESCE(json_data, ''),  
'strict $.emergency' FALSE ON ERROR);
```

New SQL Built-in Function



- **LISTAGG** – Aggregates a set of string values for the group into one string by appending the string-expression

-- Produce a list of comma-separated names

SELECT workdept,

LISTAGG(lastname, ',')

WITHIN GROUP(ORDER BY lastname) AS employees FROM employee GROUP BY workdept

- **LTRIM & RTRIM** – Add optional 2nd parameter (*trim-expression*)

-- Left Trim more than blanks

values LTRIM(' \$ 10.40', '\$ ') → '10.40'

New IBM i Services

- **QSYS2.MESSAGE_QUEUE_INFO** – Extract detail from message queues

```
-- Examine all inquiry messages with responses
SELECT a.message_text AS "INQUIRY",
       b.message_text AS "REPLY"
FROM   qsys2.message_queue_info a INNER JOIN
       qsys2.message_queue_info b
ON      a.message_key = b.associated_message_key
ORDER BY b.message_timestamp DESC;
```

<i>INQUIRY</i>	<i>REPLY</i>
<i>Does anyone care if I IPL?</i>	<i>Go for it</i>
<i>Does everyone love MN Winters?</i>	<i>Of course</i>
<i>What does SQL stand for?</i>	<i>Scott's Query Language</i>

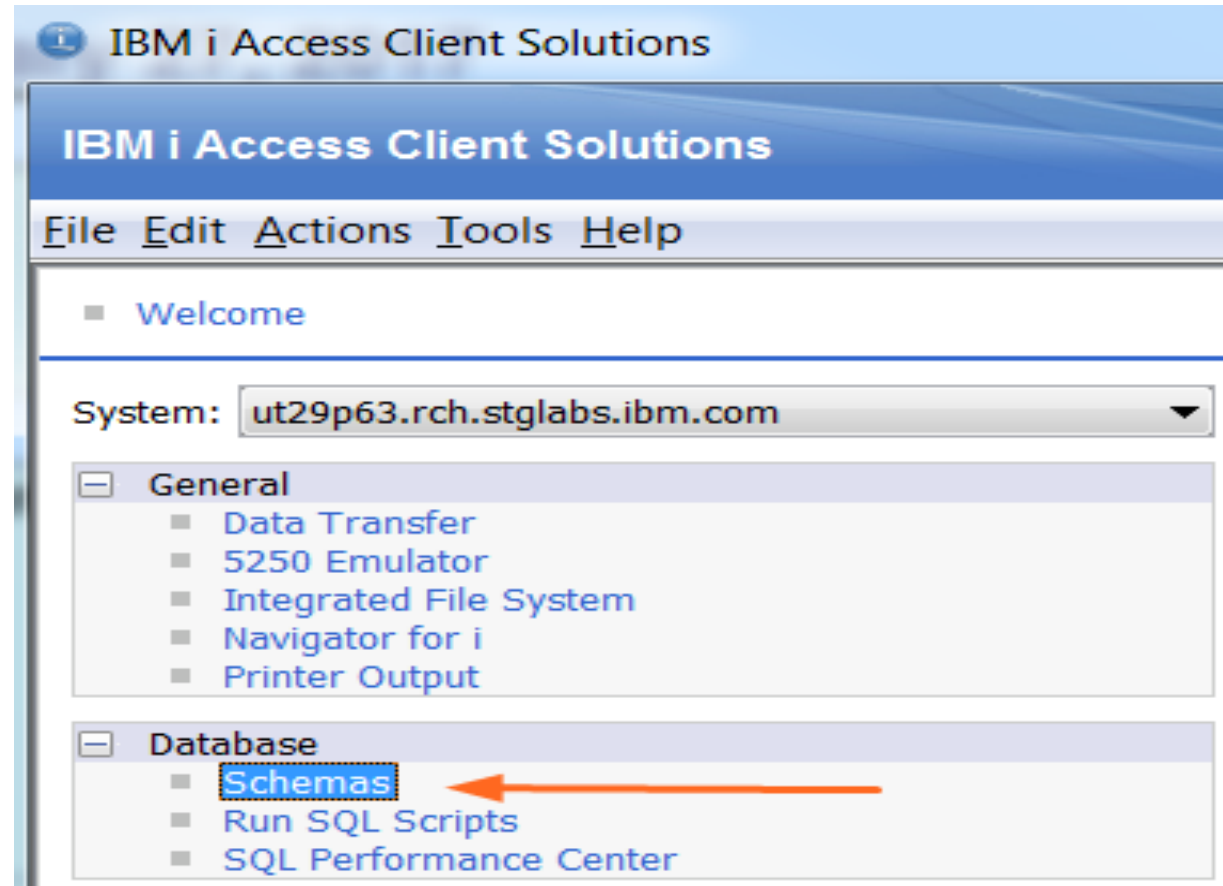
New IBM i Services

- **QSYS2.AUTHORIZATION_LIST_INFO** – Similar to the Display Authorization List Objects (DSPAUTLOBJ) CL command
- **QSYS2.AUTHORIZATION_LIST_USER_INFO** – Similar to the Display Authorization List (DSPAUTL) CL command
- **QSYS2.OBJECT_PRIVILEGES** – Similar to the Display Object Authority (DSPOBJAUT) CL command
- **QSYS2.USER_INFO** – Add Supplement Group detail
- **And more...**

ACS Version 1.1.7.0 (planned for March, 2017)

- **Run SQL Scripts**
 - CL Prompting
 - Enhanced SQL Highlighting
 - Show Object References
 - Upload Results
 - More “Insert from Examples”
- **Printer Output**
 - Multiple User Filter
- **IFS**
 - Filter

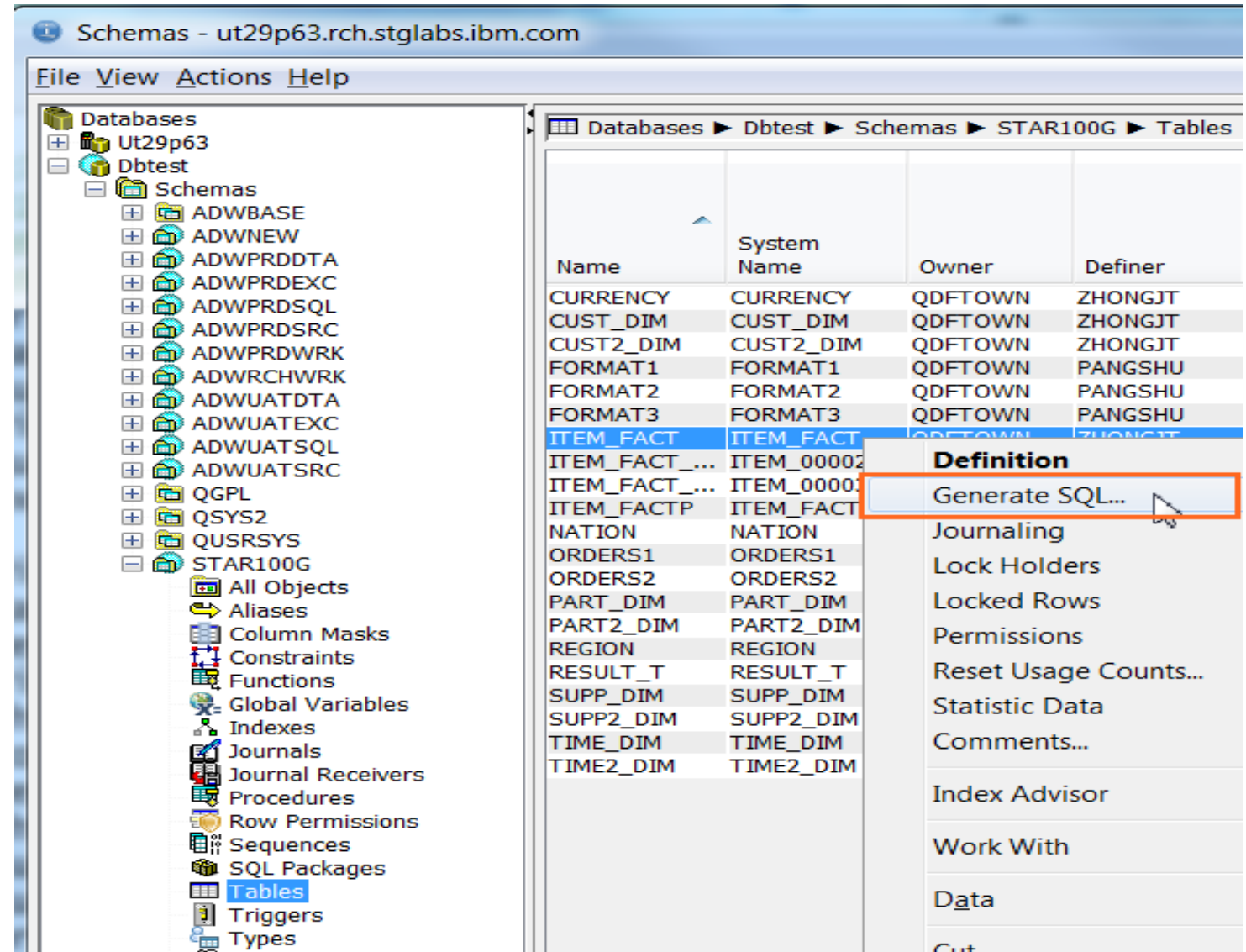
- **Schemas**



Schemas in ACS

Supported Actions:

- Definition
- Description
- Generate SQL
- Properties
- Rename
- New Database Object
- Explain
- Data
 - View
 - Clear
 - Copy
 - Initialize
- More to come...
- Actions also enabled in Visual Explain



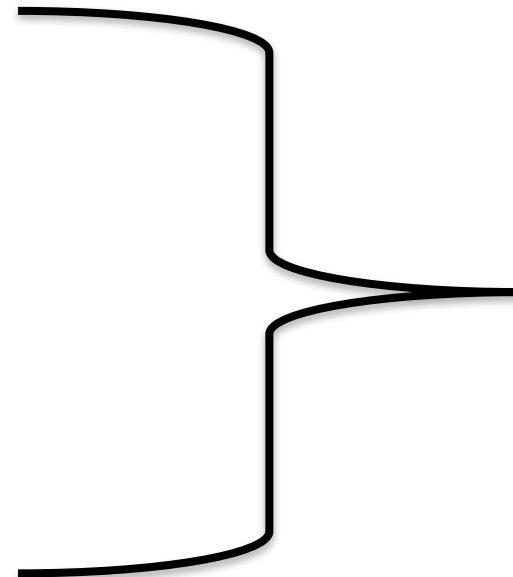
Open Source and IBM i

Jesse R. Gorzinski, MBA
Business Architect

jgorzins@us.ibm.com

2016 options added to 5733OPS

- Option 1 – Node.JS 2.x
- Option 2 – Python 3.4
- Option 3 – GCC / chroot
- Option 4 – Python 2.7
- Option 5 – Node.JS 4.x
- Option 6 – Git
- Option 7 – Tools
- Option 8 – Orion
- Option 9 – cloud-init
- Option 10 – Node.JS 6.x



New



.... and into 2017....

rsync

- Synchronize files and directories between systems
- Cross-platform
- Various techniques for determining if file needs update



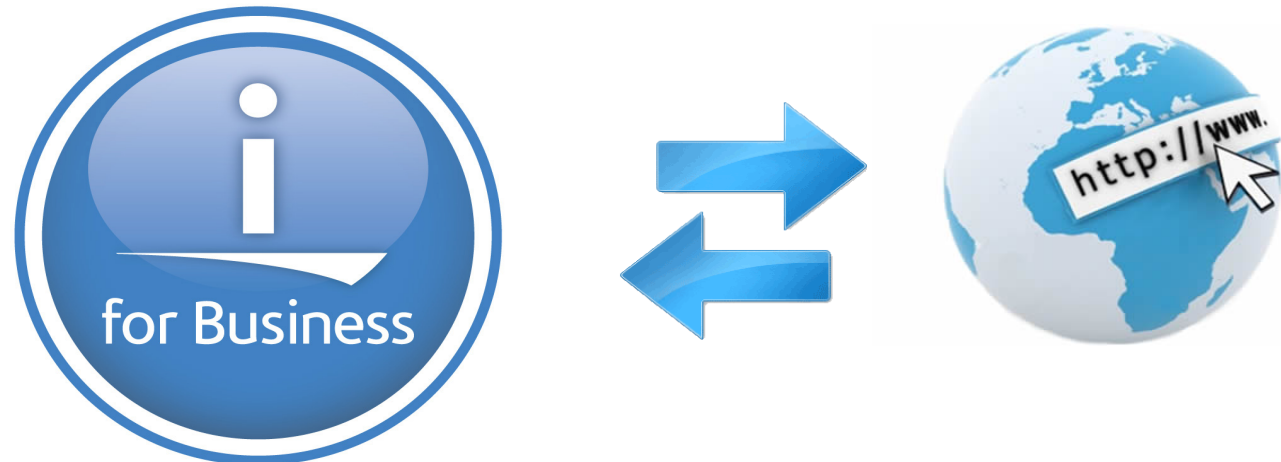
wget

- utility that lets you download files from the Internet or intranet locations.
- Supports:
 - HTTP, HTTPS, and FTP protocols
 - proxies
 - non-interactive use



curl

- Both a command and a shared library
- Robust interaction with HTTP or FTP URL's
- Supports
 - HTTP, HTTPS, and FTP protocols
 - proxies
 - non-interactive use
 - advanced HTTP operations like HTTP POST and GET requests
 - FTP upload
 - user authentication
 - much more!



SQLite

- Zero-configuration SQL database engine
- Easy to use
- Useful for open source software that uses this technology.



Major git enhancement

- Ability to perform a 'git clone' of an HTTP/HTTPS repository
- Makes interacting with GitHub or BitBucket much easier!

```
bash-4.3$ git -c http.sslVerify=false clone http://github.com/OSSILE/OSSILE
Cloning into 'OSSILE'...
remote: Counting objects: 1608, done.
remote: Compressing objects: 100% (41/41), done.
remote: Total 1608 (delta 15), reused 0 (delta 0), pack-reused 1567
Receiving objects: 100% (1608/1608), 4.01 MiB | 1.57 MiB/s, done.
Resolving deltas: 100% (868/868), done.
Checking out files: 100% (253/253), done.
```

"go licpgm" option 10

```
57330PS      *BASE      IBM i Open Source Solutions
57330PS      1          IBM i Open Source Solutions Option 1
57330PS      2          IBM i Open Source Solutions Option 2
57330PS      3          IBM i Open Source Solutions Option 3
57330PS      4          IBM i Open Source Solutions Option 4
57330PS      5          IBM i Open Source Solutions Option 5
57330PS      6          IBM i Open Source Solutions Option 6
57330PS      7          IBM i Open Source Solutions Option 7
57330PS      8          IBM i Open Source Solutions Option 8
57330PS      9          IBM i Open Source Solutions Option 9
57330PS      10         IBM i Open Source Solutions Option 10
```

"go licpgm" option 10

57330PS	*BASE	IBM i Open Source Solutions
57330PS	1	Node.JS v0.x
57330PS	2	Python 3.x
57330PS	3	Chroot with gcc
57330PS	4	Python 2.x
57330PS	5	Node.JS v4.x
57330PS	6	Git
57330PS	7	Tools
57330PS	8	Eclipse Orion
57330PS	9	Cloud-Init for i
57330PS	10	Node.JS v6.x

DB2 Web Query EZ-Install Package

Doug Mack
DB2 for i Analytics Consultant
IBM Lab Services
mackd@us.ibm.com


Use Cases

- You're a prospective customer that wants to evaluate DB2 Web Query – how do I get an environment set up quickly to help me do that
- You're a Business Partner or IBMer and you want to spin up a DB2 Web Query installation to demo using a full set of pre-built reports
- You're an existing customer wanting to spin up an instance of the latest version of DB2 Web Query for testing purposes
- You heard about a Query/400 Discovery tool or Graphical System Administration reports available with DB2 Web Query

You Want the EASY BUTTON

Introducing the DB2 Web Query EZ-Install Package – The EASY Button

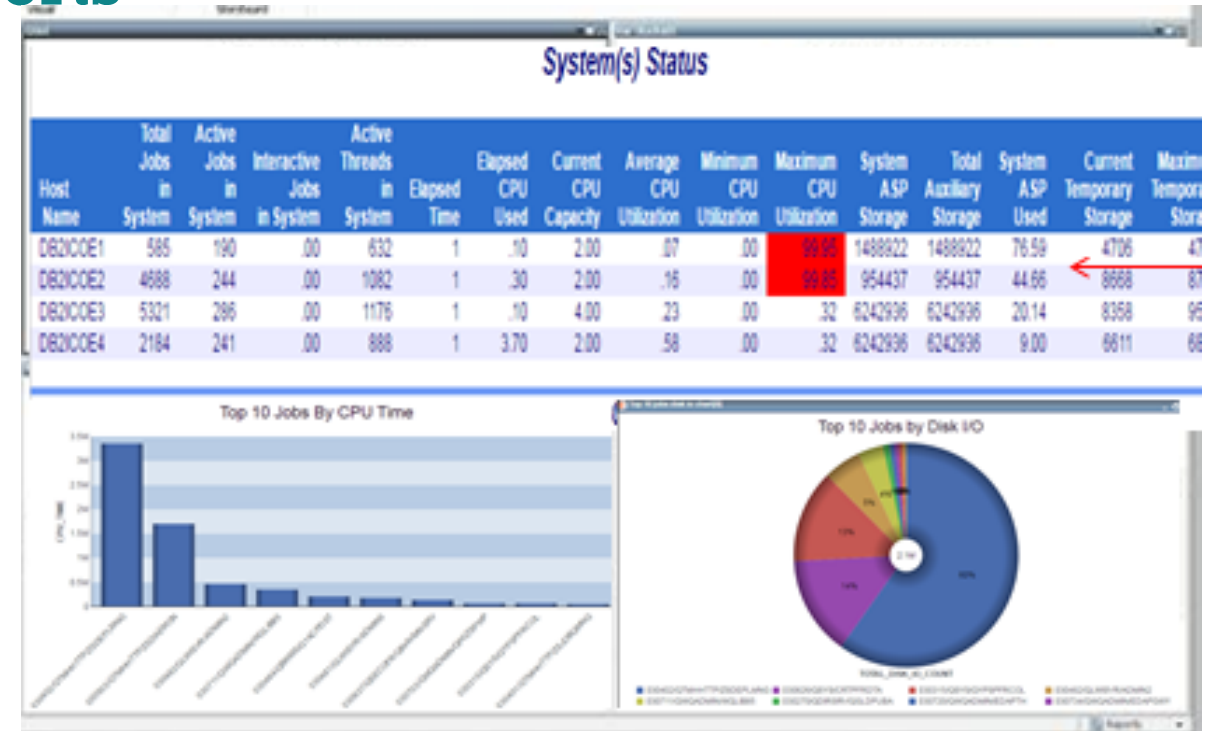
- An EASILY acquired, EASILY installed package of **trial** code...and more
 - A single downloadable image that you can request that includes:
 - DB2 Web Query Version 2.2 (**LATEST Group PTF Already Installed**)
 - Express and Standard Editions (job scheduling. Non DB2 database access)
 - Optionally install Data Migrator ETL and/or Developer Workbench
 - Sample Reports for the System Administrator
 - DB2 Web Query Auditing/Monitoring Reports
 - Query/400 Discovery Tool
 - Everything set up ready to run 14 chapters of self guided report writing tutorials
 - (we also include all the completed tutorial reports)
 - Requirements
 - 7.1 and up (7.2 or 7.3 preferred for the System Administrator reports)
 - 70 Day Trial Period. Apply License Keys to get permanent usage



**2.2 in less
Than 2 hours!**

Sample System Administration Reports

- Built over IBM i SQL Services
 - Best to be at 7.2 or up
- Utilization and/or Top xx in nature
- Can use out of the box or edit/add using these as samples
- System Utilization across multiple LPARs
 - Auto Refresh
- Top Jobs by CPU or I/O or Temp Storage
- PTF Currency Report



PTF Currency Report

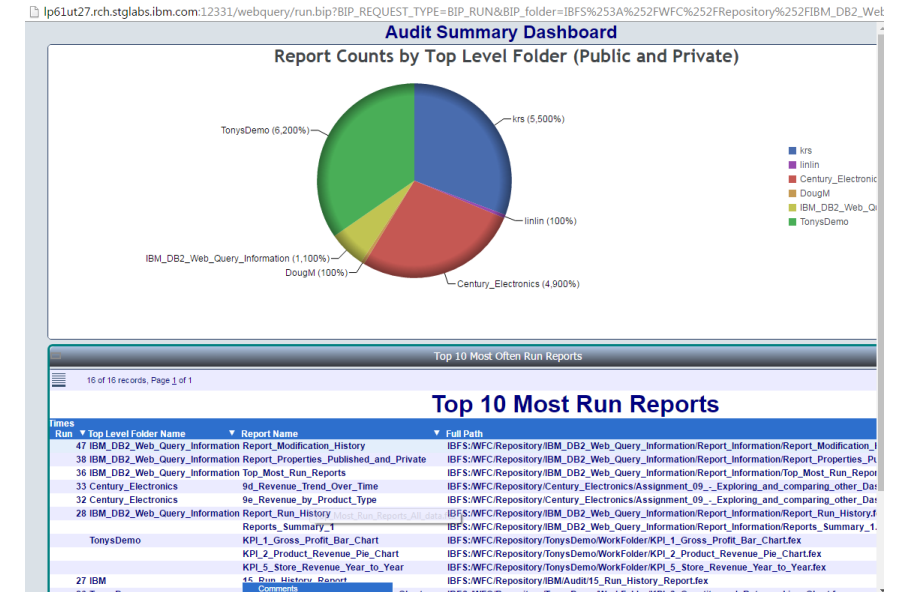
Subsystem Summary

SUBSYSTEM	NUMBER_OF_JOBS	TOTAL_CPU_TIME	TOTAL_TEMP_STORAGE	TOTAL_IO
ZENDSVR6	12	4567124	131	1132536
QHTTSPVR	9	658886	1531	131819
QWEBQRY21	31	441511	3491	123630
QSYSWRK	111	264937	1129	460375
Q1ABRMNET	3	187372	124	3676
QUSRWRK	31	32036	285	16378
QSERVER	21	413	84	4647
QINTER	1	180	5	342
QCMN	8	39	15	427
QCTL	1	10	2	669
QSPL	1	8	2	122
QBATCH	1	6	2	126

Status	PTF Group ID	PTF Name	Installed Level	Level Available	Date of last IBM Update
INSTALLED LEVEL IS CURRENT	SF99364	710 WebSphere App Server V6.1	9	9	09/09/2013
	SF99480	720 WebSphere App Server V8.0	6	6	02/01/2016
	SF99637	710 DB2 Web Query for IBM i V1.1.2	9	9	12/12/2013
	SF99747	720 DB2 Web Query for i V2.1.0	14	14	03/30/2016
	SF99766	720 Print PTFs	3	3	01/07/2015
UPDATE AVAILABLE	SF99145	710 Performance Tools	9	11	05/17/2016
	SF99363	710 WebSphere App Server V7.0	16	19	04/11/2016
	SF99366	710 Print PTFs	8	12	01/07/2015
	SF99368	710 IBM HTTP Server for i	37	42	07/01/2016
	SF99369	710 IBM i integration with BladeCenter and System x	13	16	12/18/2014
	SF99380	710 WebSphere App Server V8.0	11	15	02/01/2016
	SF99381	710 WebSphere App Server V8.5	10	16	08/14/2016
	SF99481	720 WebSphere App Server V8.5	8	9	08/14/2016
	SF99647	710 DB2 Web Query for i V2.1.0	13	14	03/30/2016
	SF99658	720 DB2 Web Query for i V2.1.1	2	3	03/30/2016
	SF99701	710 DB2 for IBM i	38	40	04/28/2016
	SF99702	720 DB2 for IBM i	12	13	07/14/2016
	SF99710	Current Cumulative PTF Media Documentation	14283	16120	05/19/2016
	SF99713	720 IBM HTTP Server for i	15	16	07/01/2016
	SF99714	720 Performance Tools	4	9	05/17/2016
	SF99716	720 Java	9	10	06/21/2016
	SF99717	720 Technology Refresh	3	4	05/19/2016
	SF99718	720 Group Security	29	36	08/09/2016
	SF99719	720 Group Hiper	60	71	08/23/2016
	SF99720	Current Cumulative PTF Media Documentation	15311	16127	05/20/2016
	SF99767	720 TCP/IP PTF	2	3	06/25/2016
	SF99775	720 Hardware and Related PTFs	14	17	04/25/2016
	SF99776	720 High Availability for IBM i	3	5	07/22/2016

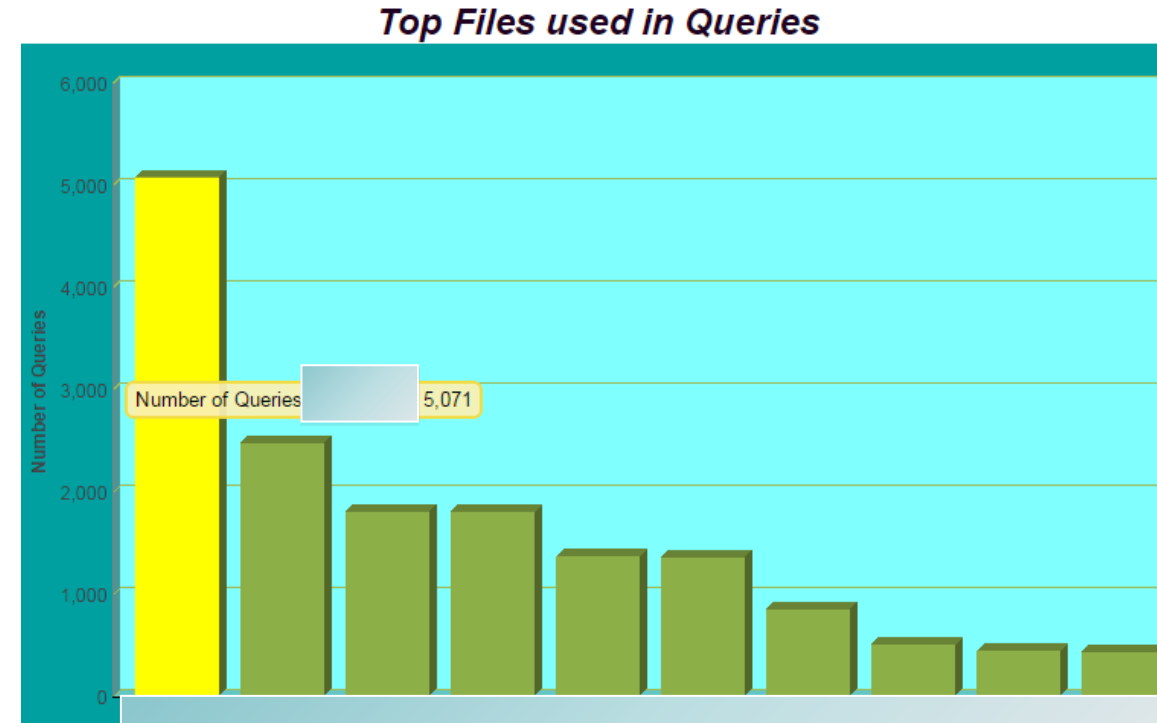
DB2 Web Query Auditing Reports

- Pre-built reports that answer these kinds of questions about DB2 Web Query Reporting Environment
 - Who is running the most reports?
 - Which reports are being run the most?
 - Which reports are taking the longest time to run?
 - How many reports are in each folder?
 - When was a report last used?
 - When was a report last modified?
- Initial summary dashboard with additional detailed reports behind it



Query/400 Discovery

- IBM Built Discovery tool generates information from your Query/400 definitions
 - Which files are accessed the most in Query/400 definitions?
 - Which fields are used the most in selection criteria or result sets?
 - Which queries are “chained”?
 - Which queries were last used over a year ago?
- With this information in hand, you can:
 - Determine which queries are obsolete or redundant
 - Do Impact Analysis
 - Build a strategy to MODERNIZE into DB2 Web Query



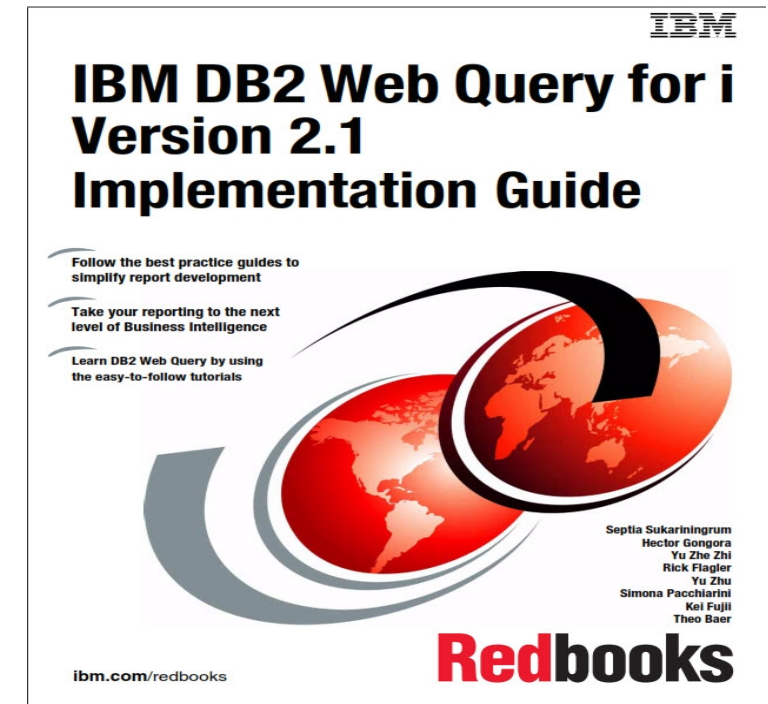
Try It and Buy It

- Point customers to db2webqueryi.blogspot.com for more information
- To request the package, send email to QU2@us.ibm.com
 - Include:
 - Name
 - Company Name
 - Serial Number of system where this will be installed



NEW Redbook(s)

- Due out Next Week in DRAFT MODE
- Updated 14 Chapters of Tutorials – With EZ-Install you can start immediately
 - <http://www.redbooks.ibm.com/abstracts/sg248378.html?Open>
- Nuts and Bolts of DB2 Web Query
 - Covers Topics such as
 - Accessing non DB2 Data Sources
 - Building Data Warehouses with DataMigrator
 - Geographical Mapping
 -and more
 - <http://www.redbooks.ibm.com/abstracts/sg248379.html?Open>



DB2 Web Query Workshops

- 2017 Program to Bring limited number of DB2 Web Query Hands on Lab Workshops to you
- Business Partner Sponsored, IBM provides speaker and content
- Could do 1 full day with hands on labs, or ½ day presentation/demo seminar
- All we ask is BP provide facility and customers!
- Contact me: mackd@us.ibm.com

DB2 Web Query for IBM i Workshop

Your logo

OVERVIEW:

Take advantage of this unique opportunity to experience DB2 Web Query for your IBM i platform in a *hands-on lab format* and discover how this business intelligence and analytics platform delivers reporting, dashboards and ad hoc query capability through simple-to-use user interfaces. DB2 Web Query can help ensure every decision maker across the organization can easily find, analyze and share the information they need to make better, faster decisions.



Morning Session (9:00 AM):

- Overview – From Query/400 Modernization to Data Warehousing
- Building Reports with InfoAssist Hands on Lab
- End User Interfaces and Report Options

DATE:

Tuesday, November 15, 2016

LOCATION:

4133 Banbridge Lp SE

A complimentary breakfast and lunch will be provided

Afternoon Session (1:00 PM):

- Visualizing Data with Charts and Maps – Hands on Lab
- DB2 Web Query for the Systems Administrator
 - Auditing the DB2 Web Query Environment
 - View Systems Information through DB2 Web Query
 - Security Monitoring and Compliance Tool
- Untangling Data through Meta Data and ETL
- Licensing and Determining What You Already Own

Requirements: Please bring a laptop with Remote Desktop capability (*wireless access will be provided*). Upon completing the hands-on lab, we will provide the detail to download an evaluation.

Who should attend: I/T and Business Analyst professionals responsible for reporting and business intelligence systems. Anyone in spreadsheet or Query/400 (or other reporting solutions) purgatory.



Register Now

Register today!

You can register at (your email or website) For questions, please call (your phone number)

IBM i Licensing and Offering Updates

Linda Hirsch
LLHIRSCH@us.ibm.com
IBM i Program Manager

Entitled System Support (ESS) Enhancements – Mobile App

Mobile app – Supports IBM Power Systems

(IBM Storage planned in the near future)

What can the app do?

- View your software licenses
- View software maintenance for your products
- View (limited) hardware information
- View & download IBM i software keys and Capacity on Demand hardware activation codes and more...

<http://www.ibm.com/servers/eserver/ess/>

Mobile Application

Download the ESS mobile app
for Android and iOS now!



For more information:

<http://www.ibm.com/servers/eserver/ess/> > *Help* > *“ESS Mobile”*

Entitled System Support (ESS) Enhancements – Interim Keys

“Interim keys” Target availability: February 28, 2017



What are interim keys?

- Self-serve 40-day temporary keys for LPPs and OS features
- For emergencies stemming from ordering or licensing issues in a variety of situations
 - E.g. orders are pending or transfer of entitlements are pending in IBM records
- Also retrieve currently installed IBM i OS key - no customer number registration required

Interim Keys

Once available in February, refer to:
<http://www.ibm.com/servers/eserver/ess/> >
IBM Software Keys

Note: The 40 days begins when you activate the key at the ESS web site

My Entitled Systems Support

My entitled software

- Software updates
- Software downloads
- IBM i evaluation and NLV download
- Entitlements
- IBM i software keys**
- SWMA records
- Data report
- Register IBM customer number
- Manage customer numbers
- View my authorizations
- User preferences

My entitled hardware

Help

Language selection

Feedback

Related links

- FixCentral

Servers > My entitled software > IBM i software keys

IBM i software keys

Step 1: Machine selection (What will I see here?)

+ Full access:

Quick search:

Country: Germany (724)
HW Type: 9117 - IBM Power 570
HW Serial: 2134567

Download
5733-ITL
Interim keys

Step 2: Select your processor group and product(s)

Supported IBM i Operating System versions: V7R2M0, V7R1M0, V6R1M0, V5R4M0

Processor group: P60
Products: (filter)

<input type="checkbox"/>	57xxAF1	5050	i	<input type="checkbox"/>	57xxPT1	5101	i	<input type="checkbox"/>	57xxSS1	5114	i
<input type="checkbox"/>	57xxAP1	5050	i	<input type="checkbox"/>	57xxPT1	5102	i	<input type="checkbox"/>	57xxSS1	5116	i
<input type="checkbox"/>	57xxAP1	5101	i	<input type="checkbox"/>	57xxPT1	5103	i	<input type="checkbox"/>	57xxSS1	5117	i
<input type="checkbox"/>	57xxBR1	5050	i	<input type="checkbox"/>	57xxQU1	5050	i	<input type="checkbox"/>	57xxST1	5050	i
<input type="checkbox"/>	57xxBR1	5101	i	<input type="checkbox"/>	5733QU2	5050	i	<input type="checkbox"/>	57xxWDS	5050	i
<input type="checkbox"/>	57xxBR1	5102	i	<input type="checkbox"/>	5733QU2	5101	i	<input type="checkbox"/>	57xxWDS	5101	i
<input type="checkbox"/>	5770HAS	5051	i	<input type="checkbox"/>	5733QU2	5102	i	<input type="checkbox"/>	57xxWDS	5102	i
<input type="checkbox"/>	57xxHAS	5052	i	<input type="checkbox"/>	5733QU2	5104	i	<input type="checkbox"/>	57xxWDS	5103	i
<input type="checkbox"/>	5770HAS	5053	i	<input type="checkbox"/>	5733QU2	5105	i	<input type="checkbox"/>	5733WQX	5050	i
<input type="checkbox"/>	5733ICL	5050	i	<input type="checkbox"/>	5733QU2	5106	i	<input type="checkbox"/>	5733WQX	5101	i
<input type="checkbox"/>	5733ICL	5051	i	<input type="checkbox"/>	5733QU2	5107	i	<input type="checkbox"/>	5733WQX	5102	i

(This is a partial list, keyed LPPs and OS features are listed)


© 2015 IBM Corporation

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

Entitled System Support (ESS) Enhancements – Interim Keys

“Interim keys” Target availability: February 28, 2017

Interim keys...

- do not take the place of a customer purchasing temporary licensing (5733-ITL) if required for migrations, etc.
- generation is subject to business rules: e.g. 40-day temp keys cannot be acquired on a serial which had 40-day keys previously issued.
-  – are not issued for IBM i operating system per processor entitlements (feature 5051)

Who can generate interim keys?

- Everyone: no customer number registration required

Upcoming 2017 Events



Date	Event	Location
01/22-27	LUG	REBC + 025 Classrooms
03/14-16	WMCPA Spring Conference	Lake Delavan WI
03/19-23	Interconnect	Las Vegas
04/10-12	NEUGC	New England Boston
04/11-13	Tech University	Dubai UAE
04/18	Quser Group	MSP
04/26-27	SAP on IBM i Summit	REBC + Classrooms
05/02-03	TUG Conf and EXPO	Toronto
05/06	ISV Advisory Council	Orlando
05/07-10	COMMON Americas Conference	Orlando (Loews Sapphire)
05/14-19	LUG	REBC + Classrooms
05/16-18	IBM i Annual Event for DB and App Dev	Paris
05/22-26	IBM Technical University	Orlando
06/06	MITEC	Michigan
06/13-14	iUG	Milton Keynes UK
06/13-14	CAAC	REBC
06/18-21	COMMON Europe Congress	Bruxelles Belgium
06/21-22	CEAC	Bruxelles Belgium
07/20-21	OCEAN User Group	Orange County CA
09/10-15	LUG	REBC
09/19-21	Tech University	Capetown RSA
09/19-22	Edge 2017	Las Vegas
10/15-17	COMMON Sweden Conf (Data3)	Sweden
11/30-12/01	CAAC (TBC)	REBC



ithankyou

www.ibm.com/developerworks/ibmi/techupdates