

ACS Run SQL Scripts & Other Db2 for i Tools Reinvented

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Who can use ACS





User Accessing the IBM i

Managing IBM i System





Db2 for i Engineer

Celebrating collaboration







• More powerful and feature rich

IBM i	Access	Client	Solutions	(ACS)	
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IBM i Access Windows Service Pack Version 1.1.7.1 →

Run SQL Scripts and SQL Performance Center, Visual Explain, Show Statements, and much more...

Product Download Site:

http://www-

03.ibm.com/systems/power/softw are/i/access/solutions.html

Next Planned Update... October, 2017

🖲 IBM i	Access Client Solutions	
IBM i A	access Client Solutions	
<u>File</u> <u>E</u> dit	<u>A</u> ctions <u>T</u> ools <u>H</u> elp	
= Weld	come	
System:	sq730.rch.stglabs.ibm.com	
🖃 Gen	eral	
1.1	Data Transfer	
	5250 Emulator	
	Integrated File System	
	Navigator for i	
	Printer Output	
🖃 Data	abase	
	Schemas	- Launch
	Run SQL Scripts	Launon
	SQL Performance Center	
🗆 Con	sole	
	5250 Console	
	Virtual Control Panel	
	Hardware Management Interface 1	
🖃 Mar	agement	
	System Configurations	
	5250 Session Manager	
	HMC Probe Utility	

ACS Version 1.1.7.1 (July, 2017)

- General
 - Add Database Health Center
 - Add help text to dialogs
- Run SQL Scripts
 - Add Performance Monitor pulldown
 - Direct launch buttons
 - More Insert from Examples

SQL Performance Center

- Import SQL Performance Monitor
- Import SQL Plan Cache Snapshot
- Import SQL Plan Cache Event Monitor
- New SQL Performance Monitor
- New SQL Plan Cache Snapshot
- New SQL Plan Cache Event Monitor

Schemas

- Journal View Entries
- Add Include... filtering support for Tables and Indexes
- All Objects Permissions action





Schemas in ACS



ACS-based Actions:

- Definition
- Description
- Generate SQL
- Properties
- Rename
- New Database Object
- Explain
- Data

 View, Clear, ...
- Actions in Visual Explain

Schemas - ut29p63.rch.stglabs.ibm.	com		-	
<u>File View Actions H</u> elp				
Databases	Databases I	► Dbtest ► Sc	hemas ► STAF	R100G 🕨 Tables
	Name	System Name	Owner	Definer
	CURRENCY CUST_DIM CUST2_DIM FORMAT1 FORMAT2	CURRENCY CUST_DIM CUST2_DIM FORMAT1 FORMAT2	QDFTOWN QDFTOWN QDFTOWN QDFTOWN QDFTOWN	ZHONGJT ZHONGJT ZHONGJT PANGSHU PANGSHU
 ADWUATEXC ADWUATSQL ADWUATSRC CQCPL CQYS2 CQUSRSYS AII Objects Aliases Column Masks Constraints Functions Global Variables Indexes Journals 	ITEM_FACT ITEM_FACT ITEM_FACT	ITEM_FACT ITEM_00002 ITEM_00001 ITEM_EACT	Definitio Generate	n SQL
	NATION ORDERS1 ORDERS2 PART_DIM PART2_DIM REGION RESULT_T SUPP_DIM SUPP2_DIM TIME_DIM TIME_DIM	NATION ORDERS1 ORDERS2 PART_DIM PART2_DIM REGION RESULT_T SUPP_DIM SUPP2_DIM TIME_DIM TIME_DIM	Journaling Lock Hold Locked R Permissio Reset Usa Statistic I Commen	g ders ows ons age Counts Data ts
Procedures Procedures Row Permissions Sequences SQL Packages Tables Triggers Triggers Types			Index Adv Work Wit D <u>a</u> ta	visor h

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Highlights:

- Faster Startup Time
- Line Numbers
- Highlighting
- Color Coding
- Improved Usability
- Status Bar
- Reconnect
- Editor features
- Save Results
- Graphical Debugger
- Built-in examples

C:\Users\IBM_ADMIN\Documents\ODBC tests\System limits and IFS queries.sql* - Run SQL Scripts -	gt73p2(GT73P2)
<u>File Edit View Run Options Connection</u>	
12 🖆 🏄 👃 🛍 🛍 🌌 🌁 🔍 🛇 🧇	
19 20 21 22 Description: Find the 50 largest . 23 SELECT IFS_PATH_NAME, MAX(CURRENT_VAL 24 FROM QSYS2.SYSLIMITS A 25 WHERE LIMIT_ID = 18409 26 GROUP BY IFS_PATH_NAME 27 ORDER BY MAX_BYTE_SIZE DESC LIMIT 50 28 29 30 Stop; 31	<i>IFS stream files (avo</i> LUE) AS MAX_BYTE_SIZE ;
TES DATH NAME	MAX BYTE STZE
/comp 20160114 014248 E02E84 0001 dmp	2714502000
/tmp/scheduler.out_68830	2714392009
/tmp/scheduler.out 68881	226499691
/tmp/scheduler.out 68932	226499691
/tmp/scheduler.out_69086	226499691
/tmp/scheduler.out.69138	226499691
/tmp/scheduler.out.68984	226499690
/tmp/scheduler.out.69035	226499690
Done. 9 rows retrieved.	=100=000
SELECT IFS_PATH_NAME, MAX(CURRENT_VALUE)) AS MAX_BYTE_SIZE FR
Mes	sades

Insert From Examples



🐻 U	Intitled - Run SQL Scripts -	gt73p1.rch.stg	labs.ibm	CK		
File	Edit View Run VisualExp	lain Options	Connecti			
1	Undo	Ctrl+Z	* @[Examples		X
	Redo	Cul+1		ile		
	Cut	Ctri+X		Examples		category: IBM i Services 🔺
	Сору	Ctrl+C		Search		description: Spool - Top 10
	Paste	Ctrl+V		IBM i Services	•	Reference: https://ibm.biz/DB2
	Select All	Ctrl+A		Security - DRDA Authentication Entry info Security - Review *ALLOBJ users	*	Note: Replace library-name wit
	Find	Ctrl+F		Security - Review *JOBCTL users		
	Find Nevt	F3		Security - User Info close to disabled		SELECT user_name, = SUM(SIZE) AS total spool s
	Find and Dealess	Challen		Spool - Output queue exploration		FROM TABLE (qsys2.object_statis
	Find and Replace	Ctrl+H		Spool - Top 10 consumers of spool storag		TABLE (gsys2.object_statis TABLE (gsys2.output_gueue
	SOL Formatter			Storage - Review status of all storage H/₩		'*NO')) AS c
	SQLIOIMALLEI			Storage - Storage details for a specific user		WHERE user name NOT LIKE 'Q%'
	Toggle Comments	Ctrl+Slash		Storage - Temporary storage consumption, by DB workload		ORDER BY total_spool_space DES
	roggie comments	ett i blabit		Storage - Temporary storage consumption, by active jobs		category TBM i Services
	Insert from Examples	N		Storage - Top 10 Spool consumers, by user		description: Storage - Top 1
	•	13°	2	Work Management - Active Job info - Longest active DRDA connections	-	Deference, https://ibm.bis/DP/
				Work Management - Active Job info - Longest running SQL statements	=	Reference: https://ibm.blz/Db2
				Work Management - Active Job info - SQL Server Mode study		Find the top 10 consumers of S
				Work Management - Active Job info - Temp storage consumers, by memory pool		SELECT user name
				Work Management - Active Job info - Top ZDA CPU consumers		SUM(SIZE) AS total spool
				Work Management - Object lock info		FROM TABLE (qsys2.object_stat
				Work Management - Record lock info		TABLE (qsys2.object_stat
				Work Management - SET_SERVER_SBS_ROUTING and ad hoc users		'*NO')) AS c
				Work Management - Scheduled Job Info	Ψ.	 ↓ ↓
						Insert

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SQL Formatter



	Undo Redo	Ctrl+Z Ctrl+Y		SQL Format	tter Settings			X
16	Cut Copy Paste Select All Find Find Next	Ctrl+X Ctrl+C Ctrl+V Ctrl+A Ctrl+F F3	CHAR(4)), COALESC	Uppercase keywo Uppercase indent Maximum line len Indent: New lines New line on A	ords and built-in fun ifiers: ogth: comma: AND/OR:	ctions: No new lin No new lin	Uppercase Uppercase e e	
	Find and Replace SQL Formatter Toggle Comments Insert from Examples	Ctrl+H Ctrl+Slash	Format selected Ctrl+Shift+F Configure	✓ On Case Comments: Preview leading SELECT CUS , CUSTO ORDER B 	keyword comment TOMER_NUMBER,CUS MER_EMAIL, /*con Y CUSTOMER_NUMBE	Keep in sa TOMER_NAME /*c ment after com R ASC, CUSTOME	me position comment before com ma*/ R_NAME DESC]	▼ mma */

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CL command prompting



C:\Users\IBM_ADMIN\Documents\					
<u>File Edit View Run VisualExplain Options</u>	<u>C</u> onnection				
****************	x 🖗				
CL: RGZPFM ;	Reorganize Physical File MI	br (RGZPFM)			X
	<u>File E</u> dit <u>V</u> iew <u>H</u> elp				
	Data base file:	FILE	sales		Name
	Library:		toystore 🔻		Name
	Member:	MBR	*FIRST 🔻		Name
	Key file:	KEYFILE			
	Logical file:		*NONE 🔻		Name
	Library:		*LIBL 🔻		Name
	Member:				Name
	Rebuild access paths:	RBDACCPTH	*YES () *OP	TIMIZE 🔘 *NO	
	Allow cancel:	ALWCANCEL	() *NO () *YES	5	
	Lock state:	LOCK	○ *EXCL ○ *EXC	CLRD 💿 *Shrup	D
	From record:	FROMRCD	*PRVRGZ 🔻		Number
		٨ф٥	ncod Paramotors		
		Auva	nceu Parameters		
•	Source update options:	SRCOPT	*SAME -	Add	
				Remove	
				Move up	
				Move down	
	Source sequence numbering:	SRCSEQ			
	Starting sequence number:		1.00		0.01-9999.99
	Increment number:		1.00		0.01-9999.99
	Record format:	RCDFMT	*ONLY		Name
	•			N	+
	Basic		ок	Cancel	Help ?

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Cognitive Systems

JDBC Configuration

	nnection			JDBC Configuration		X
 -	Connect to Database Reconnect - gt73p1(GT73P1) Disconnect	Ctrl+F10 Ctrl+F11 Ctrl+F12		System Format Package Per Default SQL schema: Use library Schema list:	formance Language Translation list of server job	n Other
	Edit JDBC Configuration - Defaul	t		scottf, toystore		
0	IDBC Configurations Manager		X	Isolation level:	No commit (*NC and *NONE)	•
Nar Defa Que	ne Description ault (default) Default settin ry exploration No schema au STORE stuff TOYSTORE a	gs nd *SQL naming nd *SYS naming		Concurrent access resolution: Cursor sensitivity: Managed b	Not specified vite optimizer (ASENSITIVE)	
			Set as Default Add Edit	Decimal properties Maximum precision (31 or 63): Maximum scale (0-63): Minimum divide scale (0-9): Decimal floating point rounding	31 ▼ 31 ▼ 0 ▼ mode: Half even ▼	
			Delete	Restore Defaults	Save	Cancel
			Сору			
C:/(Jsers\IBM_ADMIN\Documents\IBM\iAccess	Client\RunSQLScripts\JDBC	TOYSTORE stuff.jdbc			

JDBC Configuration

- New connection using a ulletdifferent JDBC configuration

New connection using	
the same JDBC	
configuration	I



Cor	nnection		
1	Connect to Database	Ctrl+F10	
-	Reconnect - SQ720(LP24UT27)	Ctrl+F11	
	Disconnect	Ctrl+F12	
	Edit JDBC Configuration - TOYSTORE	stuff	
	Apply JDBC Configuration	۱.	COMMIT-CHG
	IDBC Configurations		Query exploration
	JDBC Comgulations		Run SQL Scripts - Default settings
			TOYSTORE stuff
			Uncommitted Read



SQL Performance Center

- Improved performance
- Tighter rendering of column widths

📾 aamon1 - SQL Naming Summary -	LP02UT28.RCH.STGLAB	S.IBM.COM(LP02UT2	28)				
<u>File View Actions</u>		-					
Runtime Most Expensive Use	Maximum Runtime	Average Runtime	Minimum Runtime	Total Runtime	Maximum Open Tim	e Maximum Fetch T	īme
0.463320 2015-12-25 13:22:39.817328	0.454904	0.231660	0.008416	0.4633	20	-	
0.128448 2015-12-25 13:22:40.024786	0.128448	0.128448	0.128448	0.1284	48	-	
0.044992 2015-12-25 13:22:39.953295	0.044992	0.044992	0.044992	0.0449	92 0.0	09672 (0.03
0.036208 2015-12-25 13:22:39.913713	0.036208	0.036208	0.036208	0.0362	08	-	
0.036208 2015-12-25 13:22:39.913713	0.036208	0.036208	0.036208	0.0362	08	-	
0.027920 2015-12-25 13:22:40.155773	0.027920	0.027920	0.027920	0.0279	20 0.0	08416 (0.01
0.026616 2015-12-25 13:22:40.233553	0.026616	0.026616	0.026616	0.0266	16	-	
0.026616 2015-12-25 13:22:40.233553	0.026616	0.026616	0.026616	0.0266	16	-	
0.026488 2015-12-25 13:22:39.998185	0.026488	0.026488	0.026488	0.0264	88	-	
0.021832 2015-12-25 13:22:40.211604			10000		-Y)	-	
0.009168 2015-12-25 13:22:40.196549	U Custom	ize Columos				-	
0.008272 2015-12-25 13:22:39.886291		45				-	
0.005984 2015-12-25 13:22:40.144429	Column		Width	Visible	Move Up	05936	
0.005856 2015-12-25 13:22:40.183779	Runtime		81	V 🔺		-	
0.000448 2015-12-25 13:22:42.377372	Most Expens	ve Use	182	v	Move Down	-	
0.000032 2015-12-25 13:22:40.153315	Maximum Ru	ntime	140	v =		-	
0.000088 2015-12-25 13:22:40.189766	Average Run	time	132	✓	Тор	-	
0.000008 2015-12-25 13:22:40.153421	Minimum Ru	ntime	137	v		-	
	Total Runtim	e	114	v	Bottom		
	Maximum Op	en Time	156	v			
	Maximum Fe	tch Time	157	v	Default Order		
	Maximum Cl	ose Time	157	v	Derault Order		
	Maximum Ot	her Time	158	✓			
	Last Use		182	\checkmark	Show		
	Operation		95	✓			
	Statement U	sage Count	169	\checkmark	Hide		
	Statement T	ext	350	✓			
	Variable Val	ies	145	\checkmark	Width (nixels):		
	Full Opens		94	 + 	01		
		11		•	01		
	ОК	Apply	ancel				

SQL Plan Cache

Cognitive Systems

 SQL Plan Cache Properties are on the front page

• Some are configurable

SQL Performance Center - gt73p1			
<u>File View Actions</u>			
Database: GT73P1	▼		
📾 Performance Monitors 🔂 Plan Cache Snapshots 🔀 Plan Cache Event Monitor	rs 🚰 Plan Cache		
🖀 Show Statements 🧳 Change Configura	tion		
Properties			
HEADING	VALUE		
Time Of Summary	2016-05-15-06.06.44.32957		
Plan Cache Creation Time	2016-05-15-05.39.34.569151		
Active Query Summary			
Number of Currently Active Queries	84		
Number of Queries Run Since Start	657		
Number of Query Full Opens Since Start	309		
Plan Usage Summary	146		
Current Number of Plans In Cache Total Number of Plans Built Since Start	140		
Total Number of Unique Queries Since Start	100		
Current Plan Cache Size	10		
Current Plan Cache Size Threshold	*AUTO		
Maximum Plan Cache Size For AutoSizing	*DEFAULT (49152)		
Current Plan Cache Hit Ratio	50		
Target Plan Cache AutoSize Hit Ratio	*DEFAULT (90)		
Current Number of Job Scoped (QTEMP) Plans	2		
Total Number of Job Scoped (QTEMP) Plans Built Since Start	2		
Total Number of Unique Queries With Job Scoped (QTEMP) References Since Start	2		
Total Times Plans Used from Cache	156		
Total Plans Pruned	0		
Current Number of Temporary Runtime Objects Stored in Cache	123		
Current Total Size of Temporary Runtime Objects stored in Cache	6		
Maximum Number of Temporary Runtime Objects Stored Per Plan	*DEFAULT (5)		
Total Number of Temporary Indexes Created	5		
Current Number of Temporary Indexes	3		
Number of Plans Rebuilt due to AQP	0		
An eache conngulation	*4100		
Maximum Plan Cache Size For AutoSizing	*DEFAULT (40152)		
Target Plan Cache AutoSize Hit Ratio	*DEFAULT (90)		
Maximum Number of Longest Runs Allowed Per Plan	*DEFAULT (3)		
Maximum Number of Temporary Runtime Objects Stored Per Plan	*DEFAULT (5)		
Plan Cache Activity Thresholds			
Activity Thresholds Start Time	2016-05-15-05.39.34.592917		
Highest Number of Active Queries at One Time	85 (2016-05-15-06.06.18.693		
Highest Number of Plans in Cache	146 (2016-05-15-06.06.44.285		
Highest Number of Temporary Runtime Objects Stored in Cache	123 (2016-05-15-06.06.44.285		
Largest Total Size of Temporary Runtime Objects Stored in Cache	6 (2016-05-15-06.06.44.2858		

Show Statements



 Launch into a live interrogation of SQL activity

Database: GT73P1	 Plan Cache on VALUE 2016-05-15-06.06.44.32957 2016-05-15-05.39.34.569151 84 657 309 146 153 109 10 *AUTO *DEFAULT (49152) 50 *DEFAULT (90) 2 2
Performance Monitors In the cache Snapshots Plan Cache Event Monitors Properties Properties Properties Properties Properties Properties Plan Cache Creation Time Active Query Summary Plan Cache Creation Time Active Query Summary Number of Currently Active Queries Number of Query Summary Current Number of Plans Built Since Start Plan Usage Summary Current Number of Plans Built Since Start Total Number of Plans Built Since Start Current Plan Cache Size Current Plan Cache Size Current Plan Cache Size For AutoSizing Current Number of Job Scoped (QTEMP) Plans Total Number of Temporary Runtime Objects Stored in Cache Current Number of Temporary Runtime Objects Stored Per Plan	■ Plan Cache on VALUE 2016-05-15-06.06.44.32957 2016-05-15-05.39.34.569151 84 657 309 146 153 109 10 * *DEFAULT (49152) 50 *DEFAULT (90) 2
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Current Plan Cache Hit Ratio Target Plan Cache AutoSize Hit Ratio Current Number of Job Scoped (QTEMP) Plans Total Number of Job Scoped (QTEMP) Plans Built Since Start Total Number of Unique Queries With Job Scoped (QTEMP) References Since Start Total Times Plans Used from Cache Total Plans Pruned Current Number of Temporary Runtime Objects Stored in Cache Qurrent Total Size of Temporary Runtime Objects Stored in Cache Maximum Number of Temporary Runtime Objects Stored Per Plan	50 *DEFAULT (90) 2 2 2
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Total Number of Job Scoped (QTEMP) Plans Built Since Start Total Number of Unique Queries With Job Scoped (QTEMP) References Since Start Total Times Plans Used from Cache Total Plans Pruned Current Number of Temporary Runtime Objects Stored in Cache Current Total Size of Temporary Runtime Objects stored in Cache Maximum Number of Temporary Runtime Objects Stored Per Plan	2
Total Number of Unique Queries With Job Scoped (QTEMP) References Since Start Total Times Plans Used from Cache Total Plans Pruned Current Number of Temporary Runtime Objects Stored in Cache Current Total Size of Temporary Runtime Objects stored in Cache Maximum Number of Temporary Runtime Objects Stored Per Plan	2
Total Times Plans Used from Cache Total Plans Pruned Current Number of Temporary Runtime Objects Stored in Cache Current Total Size of Temporary Runtime Objects stored in Cache Maximum Number of Temporary Runtime Objects Stored Per Plan	
Total Plans Pruned Current Number of Temporary Runtime Objects Stored in Cache Current Total Size of Temporary Runtime Objects stored in Cache Maximum Number of Temporary Runtime Objects Stored Per Plan	156
Current Number of Temporary Runtime Objects Stored in Cache Current Total Size of Temporary Runtime Objects stored in Cache Maximum Number of Temporary Runtime Objects Stored Per Plan	0
Current Total Size of Temporary Runtime Objects stored in Cache Maximum Number of Temporary Runtime Objects Stored Per Plan	123
Maximum Number of Temporary Runtime Objects Stored Per Plan	6
	*DEFAULT (5)
Total Number of Temporary Indexes Created	5
Current Number of Temporary Indexes	3
Number of Plans Rebuilt due to AQP	0
Plan Cache Configuration	
ar Current Plan Cache Size Threshold	*AUTO
Waximum Plan Cache Size For AutoSizing	*DEFAULT (49152)
ar larget Plan Cache AutoSize Hit Ratio	*DEFAULI (90)
Maximum Number of Longest Runs Allowed Per Plan	*DEFAULT (3)
Maximum Number of Lemporary Kuntime Objects Stored Per Plan	~DEFAULT (5)
Plan Cache Activity Infestiolds	2016 05 15 05 20 24 502017
GC Activity Thresholds Start Time	2010-03-13-05.39.34.59291/
Highest Number of Active Queries at One Time	
nighest Number of Framerson Buntime Objects Stored in Cacha	140 (2010-05-15-00.06.44.28

Show Statements



• Explore \rightarrow Understand \rightarrow Tune (repeat)

SQL Plan Cache Statements - ut29p63(DBTEST)	Corp Ladgester.		des s	adix o	a shipmo	de l	
Filters to apply:	Shown at 1:52 PM (1) 🗶						
Minimum runtime for the longest execution of the statement:	Filters applied:						
1 ↓ Seconds ▼	Statements that user 's	SCOTTF' has ever r	un				
Statements that ran on or after this date and time:							
May 13, 2016 1:52:38 PM		Total	Most	Total	Average		
Top 'n' most frequently run statements	Last Time Run	Processing Time (sec)	Expensive Time (sec)	Times Run	Processing Time (sec)	Statem	ent
25 🔔	2016-05-14 13:43:38.108223	181.9414	181.941	4 1	181.9414	select q	uantity, ORDERPRIORITY from item_fa
Top 'n' statements with the largest total accumulated runti	2016-05-14 13:43:33.913106 2016-05-14 13:50:40.589121 2016-05-14 13:43:33.913106	10.1249 10.0344 5.0655	Visua Show	I Explain Longest Runs	;		from item_fact where returnflag LIKE from item_fact where returnflag = ? from item_fact where returnflag IN (?
Statements the following user has ever run:	2016-05-14 13:36:51.063792 2016-05-14 13:36:48.439933 2016-05-14 13:43:35 486402	5.0287 0.4318 0.0956	Show	Active Jobs User History			from item_fact where returnflag = ? (from item_fact where returnflag = ? / from item_fact where quantity > ?
Statements that are currently active	2016-05-14 13:43:37.583860 2016-05-14 13:43:37.583860 2016-05-14 13:43:37.059485	0.0752	Work	with SQL Star	tement		from item_fact where quantity betwee from item_fact where quantity betwee
Statements for which indexes have been advised	2016-05-14 13:43:36.535116	0.0678	Work	with SQL Sta	tement and Varia	ables	from item_fact where quantity = ? OF
Statements for which statistics have been advised	2016-05-14 13:43:34.961843	0.0358	Save t	o New			from item_fact where guantity </td
Include statements initiated by the operating system	2016-05-14 10:53:09.423261	0.0000	Plan			•	count(*) from star100g.item_fact
Statements that reference the following objects:							
Schema Name Add							
Remove							
Statements that contain the following text:							
	Done, 13 rows retrieved.						P
Reset All Filters Show					Co	lumns	Save Results Refresh

16

LISUG - September, 2017



Launch from:

Visual Explain

- Run SQL Scripts
- Analyze
- Show Statements

Visual Explain - sq730.rch.stglabs.ibm.com(SQ730)

Better than before

– Search

Eile View Actions Options			
🖶 🥔 🔀 🔍 🖬 🖉 ൽ 🖏 🖇 🐐 🕼 function			
	*	Attribute	Value
Final Select Fetch N Rows Copie Sorted List Scan Temporary Sorted List Nested Loop Join Cache Probe Cache User-Defined Table Function	H	Table name, base table name, index name Name of function being queried Library of function being queried Specific name of function being queried UDF Number Total COMMSPACE Size Fenced External Action Deterministic Call On Null Allow Parallel Secured COMMSPACE Type SQL Type Long Library of Table Being Queried Estimated rows selected and query join info Rows Selected Per Plan Step Iteration	OBJECT_STATISTICS QSYS2 QSQ0BSTAT QSYS2 2 5196 No Yes No Yes No Single Level READS SQL DATA OBJECT_STATISTICS QSYS2
K	•	Plan Step Iterations	10
SELECT B.OBJLONGSCHEMA, B.OBJNAME, B.OBJATYFE, B.OBJATIRIBUTE, B.OBJCREATED, B.OBJSIZE, B.OBJTEXT, B.DAYS USED_COUNT, B.LAST USED_TIMESTANP, B.* FROM TABLE(QSYS2.OBJECT_STATISTICS("~ALLUSAVL", "~'LIE')) AS A, TABLE (QSYS2.OBJECT_STATISTICS(A.OBJNAME, 'ALL')) AS B WHERE B.OBJOWRER = 'SCOTTF'			





Contrast matching SQL, run at different times

SQL Performance Center -	ut29p63	Redlease	Real Property lies		
<u>F</u> ile <u>V</u> iew <u>A</u> ctions					
Database: UT29P63					
The Performance Monitors 🔂 Plan Cache Snapshots 🔛 Plan Cache Event Monitors 🚰 Plan Cache					
Name	Schema	Table	Created By	Status	Date Creat
SCOTTF ACSEXP2 603554 SCOTTF ACSEXP1 603447 L1DYAINIT1DBMON1 58782	SCOTTE SCC <u>A</u> na	lyze	COTTF COTTF OSMART	Ended Ended Ended	05/14/2016 05/14/2016 04/21/2016
MONFTRT2 MONTAB99 587 MONFTRT2 MC MONFTRT2 MONTAB98 587	Not Com	w <u>Statements</u> Ipare	QPGMR QPGMR OPGMR	Ended Ended Ended	04/15/2016 04/15/2016 04/15/2016
MONFTRT2 MONTAB97 587 MONFTRT2 MONTAB96 587 MONFTRT2 MONTAB96 587	MOI Inve	stigate * nments	QPGMR QPGMR QPGMR	Ended Ended Ended	04/15/2016 04/15/2016 04/15/2016
MONFTRT2 MONTAB95 587 MONFTRT2 MONTAB94 587 MONFTRT2 MONTAB93 587	MOI MOI MOI	1-	QPGMR QPGMR QPGMR	Ended Ended Ended	04/15/2016 04/15/2016 04/15/2016
MONFTRT2 MONTAB92 587 MONFTRT2 MONTAB91 587 MONFTRT2 MONTAB90 587	MOI Dele MOI <u>R</u> ena	ame	QPGMR QPGMR OPGMR	Ended Ended Ended	04/15/2016 04/15/2016 04/15/2016
MONFTRT2 MONTAB89 587 MONFTRT2 MONTAB88 587	MOI Prop	oerties	QPGMR QPGMR	Ended	04/15/2016 04/15/2016



Scott's Faves



Adding examples to Run SQL Scripts

1) Add the following comments to your Run SQL Script.

- -- category: Demo Scripts
- -- description: Demonstrate Guardium Database Activity Monitor

2) Save the script to the following path.

C:\Users\<your-

user>\Documents\IBM\iAccessClient\RunSQLScripts\Examples

3) Find your script with Search or via the Examples pane.

0	Examples	
F	ile	
	Examples Search	category: Demo Scripts - description: Demonstrate Guardium Database Activity Monitor
	Demo Scripts Demonstrate Guardium Database Activity Monitor	<pre> C:\Users\<your-user>\Documents\IBM\iAccessClient\RunSQLScripts\Examples SELECT * FROM gays2.sysaudit:</your-user></pre>
		SELECT * FROM gtemp.sysaudsts; CALL sysproc.sysaudit_start_batch('');



(Re) Directing .sql launch to ACS

IBM i Access Client Solutions	
IBM i Access Client Solutions	
IBM i Access Client Solutions File Edit Actions Tools Help Welcome System: ut29p63 General Data Trans 5250 Fmula General Conception of the service Logs Reset for Maintenance File Associations Navig Requests	 Select extensions Select extensions Select extensions Select extensions Select extensions Seql (Run SQL Scripts) .hod (5250) .hod (5250) .bchx (5250) .ws (5250) .bch (5250) .bch (5250) .dttx (Data Transfer)
	OK <u>C</u> ancel



Rational Developer for IBM i (RDi)

- Rdi Minimum level 9.5.1
- Preferred level 9.5.1.2
- SQL statement is populated into an ACS Run SQL Scripts dialog
- Launched from:
 - Editor
 - Objects Subsystem

New		,	* 🙁 🧭 🗧 🏠 👻 🖄 Activity: Other Activity 👻 🗄
Promp	t	F4	
Syntax	Check All		die Aspaveoitere Assultante As
☑ Verify☑ Verify	(Prompt)	Ctrl+Shift+V	ne 317 Column 35 Replace 11 cha
Visuali Conve Select Show 1 Forma /COPY	ze Application Diagram rt All To Free-Form Format Line Indentation fields t Member	Ctrl+Shift+F	from f57 where b.r a.r Exec SQL insert into empRome select FMPNO, eName,
Launch	Run SQL Scripts		eDept, eUsri.
ILE RP	3 Help		
Remov Refres	re Messages h		where e.Locn = 'ROME';
Refres	h Outline View	Ctrl+Shift+F5	If SQLSev > '02';



Tim's Faves

Screen History - Archive

Screen History

- Expanded from 15 screens to unlimited
- Easy to use controls
- Save the screens you want
- Click Stop to create a Archive file
- View list of Files

•	•					A - COMMON1.IDEVCLOUD.COM
File	Edit	View	Communication	Actions	Window	Help
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Screen History - Archive



Window Help Jump Next			
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		Date Modified	
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Create many file open the screen	es and n viewer	10 QBATCH QSYS SBS .0 QCMN QSYS SBS .0 QCTL QSYS SBS .0 QSYSSCD QPGMR BCH .0 PGM-QEZSCNEP QHTTPSVR QSYS SBS .0 QHTTPSVR QSYS SBS .0 QHTTPSVR QSYS SBS .0 ACWSERVICE QTMHHTTP BCH .0 PGM-QZHBMAIN ACWSERVICE QTMHHTTP BCI .0 PGM-QZSRLOG ACWSERVICE QTMHHTTP BCI .0 PGM-QZSRLOG ACWSERVICE QTMHHTTP BCI .0 PGM-QZSRLOG ACWSERVICE QWSERVICE BCI .0 JVM-/qibm/prod Parameters or command .0 JVM-/qibm/prod .0 JVM-/qibm/prod F3=Exit F5=Refresh F7=Find F10=Restart statistic F11=Display elapsed data F12=Cancel F23=More options F2	DEQW DEQW EVTW DEQW SIGW SIGW SIGW THDW



DEMO



For the administrator



Systems Management of ACS

- All the Navigators utilize server jobs
- These server jobs can be:
 - Managed Position certain users or groups to run in alternate subsystems, where system resources are configured accordingly
 - 2. Locked down Denying access to certain users, groups, etc
 - Controlled Establish query governor controls to protect overconsumption of resources

Server Description	Server Name	
Central server	QZSCSRVS	Admin stuff
Database server	QZDASOINIT	
Data queue server	QZHQSSRV	Run SQL Scripts
DDM	QRWTSRVR	& other database
DRDA	QRWTSRVR	features
File server	QPWFSERVSO	Admin stuff
Network print server	QNPSERVS	~ ~ ~
Remote command server	QZRCSRVS	



SET_SERVER_SBS_ROUTING

Manage ACS users

- Avoid having all users run in QUSRWRK, with the same priority
- Configurable by user or group...by server name or all servers
- Choice of whether the connection fails if the target subsystem is not available

Description:	Reposition all Navigator users into a
	controlled subsystem and do not allow
	connections to fall-over into the default
	subsystem (QUSRWRK or QSERVER) if the
	INAVGRP subsystem cannot be used

CALL QSYS2.SET_SERVER_SBS_ROUTING(AUTHORIZATION_NAME => 'INAVGRP', SERVER_NAME => '*ALL', SUBSYSTEM_NAME => 'INAVSBS', ALLOW_ROLLOVER => 'NO');

http://www.ibm.com/support/knowledgecenter/ssw_ibm_i_72/rzajq/rzajqprocsetrouting.htm?lang=en



Application Administration of ACS

Configure ACS database feature availability via:

- > WRKFCNUSG or CHGFCNUSG function usage commands
- Navigator for i Application Administration
- System i Navigator Application Administration

Application Administration - Ut32p8					
Select the functions or applications available to users.					
System i Navigator Client Applications Host Applications					
Function	Default Access				
🐨 Users and Groups					
🖻 🔯 Databases	V				
Chemas Chemas					
Database Navigator Maps					
- SQL Performance Monitors					
SQL Plan Cache Snapshots					
ODBC Data Sources (Pre-V5R1M0 clients only)					
Transactions					



Application Administration of ACS

	descript	ion: Rev	iew ACS f	unction	usage	configuratio	on
SELE	ECT funct	ion_id, de	efault_us	age, f.*			
FF	ROM qsys2	function	_info f	-			
	WHERE fur	nction_id	LIKE 'QI	BM_DB_%'	OR		
	fur	nction_id	LIKE 'QI	BM_XE1_0	PNAV_D	B_%';	

FUNCTION_ID	DEFAULT_ USAGE	FUNCTION_ID	FUNCTION_ CATEGORY
QIBM_DB_SQLADM	DENIED	QIBM_DB_SQLADM	3 – HOST
QIBM_DB_SYSMON	DENIED	QIBM_DB_SYSMON	3 – HOST
QIBM_DB_SECADM	DENIED	QIBM_DB_SECADM	3 – HOST
QIBM_DB_DDMDRDA	ALLOWED	<i>QIBM_DB_DDMDRDA</i>	3 – HOST
QIBM_DB_ZDA	ALLOWED	QIBM_DB_ZDA	3 – HOST
QIBM_XE1_OPNAV_DBNAV	ALLOWED	QIBM_XE1_OPNAV_DBNAV	1 - CLIENT
QIBM_XE1_OPNAV_DBSQLPM	ALLOWED	QIBM_XE1_OPNAV_DBSQLPM	1 - CLIENT
QIBM_XE1_OPNAV_DBSQLPCS	ALLOWED	QIBM_XE1_OPNAV_DBSQLPCS	1 - CLIENT
QIBM_XE1_OPNAV_DBXACT	ALLOWED	QIBM_XE1_OPNAV_DBXACT	1 - CLIENT



Application Administration of ACS

description:	Review ACS function usage
	user and group configuration
SELECT *	
FROM qsys2.fun	ction_usage f
WHERE function	_id like 'QIBM_DB_%' OR
function	id ITKE 'OTBM XE1 OPNAV DB %':

FUNCTION_ID	USER_NAME	USAGE	USER_TYPE
QIBM_DB_SQLADM	DBATEAM	ALLOWED	GROUP
QIBM_DB_SQLADM	SCOTTF	ALLOWED	USER
QIBM_XE1_OPNAV_DBSQLPM	DBATEAM	ALLOWED	GROUP
QIBM_XE1_OPNAV_DBSQLPM	HRTEAM	DENIED	USER
QIBM_XE1_OPNAV_DBSQLPCS	DBATEAM	ALLOWED	GROUP
QIBM_XE1_OPNAV_DBSQLPCS	HRTEAM	DENIED	USER



Host Server Exit Programs

Locked down – Denying access to certain users, groups, etc

Establish exit programs to deploy business rules

Use server exit programs

Write and register exit programs when using IBM® i host servers.

Exit programs allow system administrators to control which activities a client user is allowed for each of the specific servers. All of the servers support user-written exit programs. This topic describes how the exit programs can be used, and how to configure them. It also provides sample programs that can help control access to server functions.

Note: By using the code examples, you agree to the terms of the <u>Code license and disclaimer information</u>.

Register exit programs Identify IBM i exit programs to call.

Write exit programs This topic identifies considerations when specifying IBM i exit programs.

Exit program parameters Identify IBM i exit points.

Examples: Exit programs

These sample IBM i exit programs do not show all possible programming considerations or techniques, but you can review the examples before you begin your own design and coding.

http://www.ibm.com/support/knowledgecenter/ssw_ibm_i_72/rzajr/rzajrmst31.htm?lang=en



Query Governor

Controlled – Establish query governor controls to protect over-consumption of resources

- Use the Change Query Attributes (CHGQRYA) command to guard against over-consumption of resources related to SQL query execution
- > The governor has two controls:
 - 1. The estimated runtime for a query.
 - 2. The estimated temporary storage consumption for a query.

```
Untitled* - Run SOL Scripts - ut29p63(DBTEST)
  File Edit View Run Options Connection
  🛅 🚅 🏄 | 👗 🗈 🛍 🖉 🌌 🖉 🌒 🛇 | 🥩
   CL: CHGQRYA QRYTIMLMT (60) QRYSTGLMT (500 );
   SELECT *
     FROM STAR100G.ITEM FACT
     ORDER BY ORDERKEY, PARTKEY LIMIT 100 OFFSET 10;
   [ Sat Apr 02 16:54:41 CDT 2016 ] Run Selected..
   BSelect * from star100g.item_fact order by orderkey, partkey limit 100
   offset 10
   *SOL State: 57005
   Vendor Code: -666
   Message: [SQL0666] SQL query exceeds specified time limit or storage
   limit. Cause . . . . . : A database query was about to be started whose
   estimated run time of 387 exceeds the specified limit of 60 or whose
   estimated temporary storage usage of 5288 exceeds the specified limit of
   500. The query time limit and temporary storage limit are specified on
   the CHGQRYA CL command. Recovery . . . : The following changes to the
http://www.ibm.com/support/knowledgecenter/ssw_ibm_i_72/rzajq/govrle.htm?lang=en
```



How do you get it ???

NO ESS!



IBM i Access Client Solutions is the newest member of the IBM i Access family. It provides a Java based, platform-independent interface that runs on most operating systems that support Java, including Linux, Mac, and Windows™.

Access videos

 Introduction to IBM i Access Client Solutions (00:01:17)
 All IBM i Access videos

<u>http://www-</u> 03.ibm.com/systems/power/software /i/access/solutions.html

IBM i Access Client Solutions consolidates the most commonly used tasks for managing your IBM i into one simplified location. The latest version of IBM i Access Client Solutions is available to customers with an IBM i software maintenance contract.

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- → QuickStartGuide
- → GettingStarted
- ↓ Updates

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