

Database Management for Db2 for z/OS 20.0 (Db2 Tools) Customer Community Update Team Product Owners

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Product Owners

Andrew Badgley Jakub Hofman Rabah Beggar Srinivas Adupa

andrew.badgley@broadcom.com jakub.hofman@broadcom.com rabah.beggar@broadcom.com srinivas.adupa@broadcom.com



Agenda

Sysview for Db2

- Enhancements around IFCID 376
 - Dynamic SQL text during unload
 - new archive tables
- Extended Profile Monitoring Statistics Support for IFCID 402

MTC DBM

- Multiple objects selection
- Hyperlinks
- Enhanced Breadcrumbs

RC/Query

Advanced Triggers



Please Provide Feedback...







Extending IFCID 376 (SQL incompatibilities data) with dynamic SQL text during unload and introducing new archive tables for IFCID 376

Rabah Beggar

Rabah.beggar@Broadcom.com





Customers would like to unload IFCID 376(Incompatible functions Executed) data including dynamic SQL text to an archive table.

This will save users time when investigating SQL incompatibilities by leveraging the new archive tables to quickly identify which SQLs are incompatible when preparing for new function levels or new Db2 version.

So we:

- Extended IFCID 376 with SQL text from SYSVIEW for Db2 dynamic SQL text database during unload process.
- Created a new archive tables for SQL Incompatibilities data (IFCID 376)



What is new,

Data collector changes:

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- New IQL variable is introduced: IQL-DEFINE=(SQL-INCOMPAT-TEXT=YES/NO) to enable collection of SQL text from the cache into the SYSVIEW for Db2 Dynamic SQL Text database whenever IFCID 376 is captured
- **IQLSLCNT** IQL request that controls what events trigger SQL text collection, was updated to include a section for IFCID 376 processing; setting the variable to YES activates it

Unload utility (IDB2UIFI REQ=UNLDHIST) has been enhanced:

- Unload utility now looks for **HSTSQLDB** DDNAME to access the database
- Offloaded IFCID 376 records will include SQL text, if it is available in the Dynamic SQL Text database **and** when the SQL text is not present in original trace record
- If HSTSQLDB is not available a new INFO message will be issued in the unload job

DBG86009I DT31 05:26:11 SQL text database is not detected, no DDNAME HSTSQLDB found



Extending IFCID 376 with SQL text

Scenario 1: History files are not given in unload job; Data Collector is running with HSTSQLDB.

+10+20+30+40+50+60+70+80+90+100.
DBG390491 12:26:00 INITIALIZING CA SYSVIEW FOR DB2 20.0
DBG73100I 12:26:00 INITIALIZING LDS FILE UTILITY PROGRAM
DBG73102I 12:26:00 INPUT PARAMETERS: REQ=UNLDHIST, DBSUB=DT31, DBLOC=IDB4728D, REMPOS=YES, TESTV=Y999
DBC021227 D221 12.26.00 TNEOVING DADMITE DEADED HIGHLIGH, DEDEDTEDIMMY SHEETY=00
DBG731111 DT31 12:26:02 FILE HISTSTAT ALLOCATED TO TSPROD. PUBLIC. IDB4728D. DT31. HSTSTATS
DBG731111 DT31 12:26:02 FILE HISTACCT ALLOCATED TO TSPROD.PUBLIC.IDB4728D.DT31.HSTACCTG
DBG731111 DT31 12:26:02 FILE HSTSOLDB ALLOCATED TO TSPROD.PUBLIC.IDB4728D.DT31.HSTSOLDB
DBG86008I DT31 12:26:03 SQL text database initialization completed
DBG731011 DT31 12:26:03 LDS UTILITY PROGRAM INITIALIZATION COMPLETE
DBG73108I DT31 12:26:03 UNLOADING HISTORY DATA TO SMF FLAT FILE
DBG73109I DT31 12:26:05 DATA COLLECTOR POSTED TO REMEMBER POSITION
DBG73112I DT31 12:26:05 590 RECORDS WRITTEN FROM ACCOUNTING FILE
DBG73115I DT31 12:26:05 1092 RECORDS WRITTEN FROM STATISTICS FILE
DBG76022I DT31 12:26:05 128 BLOCKS READ FROM INPUT FILE HISTACCT.
DBG760211 DT31 12:26:05 590 RECORDS READ FROM INPUT FILE HISTACCT.
DBG76028I DT31 12:26:05 0 RECORDS FAILED DECOMPRESSION FOR FILE HISTACCT
DBG76029I DT31 12:26:05 2 MB OF EXPANDED DATA PROCESSED FOR FILE HISTACCT
DBG76030I DT31 12:26:05 1 MB COMPRESSED DATA READ FROM FILE HISTACCT
DBG76032I DT31 12:26:05 000:00:00.000300 DECOMPRESSION TCB CPU USED FOR FILE HISTACCT
DBG76022I DT31 12:26:05 512 BLOCKS READ FROM INPUT FILE HISTSTAT.
DBG76021I DT31 12:26:05 1092 RECORDS READ FROM INPUT FILE HISTSTAT.
DBG76028I DT31 12:26:05 0 RECORDS FAILED DECOMPRESSION FOR FILE HISTSTAT
DBG76029I DT31 12:26:05 5 MB OF EXPANDED DATA PROCESSED FOR FILE HISTSTAT
DBG76030I DT31 12:26:05 2 MB COMPRESSED DATA READ FROM FILE HISTSTAT
DBG76032I DT31 12:26:05 000:00:00.000533 DECOMPRESSION TCB CPU USED FOR FILE HISTSTAT
DBG76005I DT31 12:26:05 1682 RECORDS WRITTEN ONTO OUTPUT FILE SMFOUT .
DBG73107I DT31 12:26:05 LDS FILE UTILITY PROGRAM COMPLETED RC= 0
DBG980031 DT31 12:26:05 ROUTINES USED 6334264 BYTES OF GETMAIN STORAGE



What is new, --cont.

- IQL syntax has been extended with format "**OF=Hnn**" to output binary data into its hexadecimal character representation in EBCDIC encoding. This output format is intended for loading data into Db2 CHAR columns
- Archive tables updates:
 - APPL_PGM_DETAIL (application program details) now includes a column PKG_TOKEN_HEX to contain CONTOKEN value in hex
 - **APPL_PGM_DAILY** (application program daily summary) includes the same **PKG_TOKEN_HEX** column
 - SUBSYS_SQL_DETAIL_STATIC (static SQL details) now includes again similar column CONSIST_TOKEN_HEX and new PACKAGE column
- IQL syntax examples:

- TOKEN DS CL8 stores value 0x12345678
- TOKEN (OF=H16) produces value 'F1F2F3F4F5F6F7F8'



What is new, --cont.

- Two new archive tables are introduced to contain execution details of SQL statements that are potentially incompatible with the current version of Db2:
 - APPL_SQL_INCOMPAT_DETAIL (application incompatible SQL statements)
 - APPL_SQL_INCOMPAT_PARMS (application incompatible SQL parameters)
- Tables are based on IFCID 376 APPL-SQL-INCOMPAT records.
- Post-install process was updated to include new tables:

IDBSPCC2 CA SYSVIEW for DB2 Arch	hive data	base configu	iration	Page 4 of	5
Select which archive table groups yo	ou are in	terested in	:		
Create summary ta				records(in	days)
- Subsystem		-	-		
Y statistics	Y	30	365		
Y parameters	_	<u>30</u> 30			
Y storage usage		30			
Y Application accounting	Y	7	30		
N IDB2 accounting details		7			
N SQL statement statistics		7			
Y Audit tables		30			
N DB2 accelerator supplementary tab.	les				
Y Aggregated accounting by connection	on Y	30	365		
N Application SQL incompatibilities		30			





PTF: LU03348



Rabah Beggar rabah.beggar@broadcom.com





Extended Profile Monitoring Statistics Support for IFCID 402

Rabah Beggar

Rabah.beggar@Broadcom.com





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SYSVIEW for Db2 now collects the (402) PROFILE EXCEPTIONS records at a fixed time interval that IBM introduced with the new DB2 V12 QW0402* metrics.

These metrics helps users monitor workload against thresholds defined in the system profiles. Capturing the delta between two intervals allow users to track profile exceptions and warnings that are triggered in specific intervals.

Enhanced profile monitoring statistics reports in SYSVIEW for Db2 to collect the (402) PROFILE EXCEPTIONS records at a fixed time interval allowing users to detect anomalies and measure workload against the thresholds defined in system profiles.





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This enhancement covered recent changes to IFCID402 processing introduced by DB2:

- 1. Introduced support for new metrics, and updated the online report.
- 2. Introduced delta processing for the record and a new interval-based IQL exception IDSXC402.
- 3. Introduced a way to retrieve the record representing the profile usage statistics on demand. The existing reports were updated to be interval-based.
- 4. Introduced support for collecting IFCID402 to the STATS history dataset. Together with this support two new online history reports HSUPROF and HSTPROF for summary and trace are introduced.
- 5. Two new batch reports BTRPROFS and BTRPROFD were introduced.



New metrics.

Several new metrics are introduced:

THREAD-MONITORED-BY-PROF - Indicates the current value of the number of threads monitored by the profile.

THREAD-SUSPEND-BY-PROF - Indicates the current number of threads suspended by the profile. **HWM-THREAD-COUNTER** - Indicates the high water mark of the number of threads since DDF was started **CONNECT-MONITORED-BY-PROF** - Indicates the current value of the number of connections monitored by the profile

CONNECT-MONITORED-BY-HWM - Indicates the high water mark of the number of connections since DDF was started

FIRST-TOKEN-VAR - Indicates the first token value. **FIRST-TOKEN-LEN** - Indicates the length of the first token value.

FIRST-TOKEN-LONG - Indicates the first token value. **SECOND-TOKEN-VAR** - Indicates the second token value.

SECOND-TOKEN-LEN - Indicates the length of the second token value.

SECOND-TOKEN-LONG - Indicates the second token value.



New metrics - report updates.

rofile ID	Connect	s Three	ads	dle Th	d Conne	ects	Threads	Idle Th	d Que	+ Thds	Fail Req	Connects	Max C	onn	onitoring Threads	Max Thds	Susp Th
66	-	0	0		Ø 75.84.3	0	0	_	0	0	0	-		52	0	20	
66	First	Ø Token:	151 ::FF		0 4.32.18	Ø 36	ø	() {	0	0	0	201		201	200	200	
	Second		COPPI	-F:10.7	4.32.18	36											

The reports are filtered out with a dynamic WHERE clause, only profiles with any kind of activity are displayed.



Delta processing.

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The records are now DELTAed, meaning that we calculate the difference between consecutive entries for the same profile. The entries are matched based on the profile ID and the new fields Token1 and Token2.

The delta values are used in a new IQL IDSXC402 exception. This exception is triggered in case there were any exceptions or warnings that happened in the last interval.

The exception is based on the profile ID, so even if there are several different for the same profile ID in the report, a single exception will be triggered for all of them.

An existing exception EXCP0402 was updated to filter out profiles without any activity.



New IQL exception.

_ 1 All	2 Subs y stem	3 Application	4 Database	5 Ext/IQL	Type . <u>IN-ALERT</u> (IN-ALERT, INUSE,
EXCDISP		External/IQL Exc	ceptions In	Alert	TRIPPED)
Actions:	H=Help, G="Go T=Temp update				Row 1/3 ent,
_ INFO	05:06:54-05:0	EXT/IQL BAS 6:54 IDSXC402 PI	ROFILE 666	had 151 WAR	NINGS an
		d Ø EXCEP	TIONS in th	e last interva	al

R/PROFILES	DB2	profile W	warnings/e	exceptions	s - 30 Se	со	Delta	Item 1/2	P					
		Warnings		<		xceptions			>	<		Monitoring		>
Profile ID	Connects	Threads	Idle Thd	Connects	Threads	Idle Thd	Que Th	nds Fail	Req	Connects	Max Conn	Threads	Max Thds	Susp Thd
666				-				0	0	38				
000	First To	oken: ::EF	FFF:10.175	84 31	0	0		0	0	38	52	0	20	0
	Second To		11.10.175											
666	0	151	0	0	0	0		0	0	201	201	200	200	0
			-FF:10.74.	32.186										
	Second To	oken:												



Retrieval on demand.

The records can now be requested on demand. Support for this functionality was introduced by DB2 for z/OS APAR PH12041. This requirement is included in the HOLDDATA for the enhancement.

To avoid DB2 version issues a new data collector system parameter PROFILE-MONITORING was introduced which allows obtaining records on demand. The default value for this parameter is NO, and this value preserves the existing behavior. Turning the parameter ON while the necessary DB2 maintenance is not applied causes several error messages to be written out to DBGPRINT and the online IFCID402 reports to be stopped.

The new behavior introduces an interval-based real-time report.

It also turns on collecting 402 records to the history dataset and starts the online history reports.

This behavior is happening under the covers so there is nothing to show.



Support for IFCID 402 in STAT history.

Record 402 is now supported for history collection. It will be collected on the same interval as all STATS records in case PROFILE-MONITORING=YES.

Two new online history reports HSTPROF and HSUPROF are introduced to process the records from our history datasets.

The HSTPROF is a trace report which has the same layout as the online report.

The HSUPROF is a summary report that reports the summarized/average/min/max values.



Support for IFCID 402 in STAT history.

First Token: ::FFFF:10.175.84.31 Second Token:	R/HSTPROF	Profile	Warnings	/Excep	tions Hi	story		I	tem 1/2					
Profile ID Connects Threads Idle Thd Connects Threads Idle Thd Que Thds Fail Req Connects Max Conn Threads Max Thds Susp Th 666 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From 11/03						vcentions			<i></i>		Monitorin	0	
First Token: ::FFFF:10.175.84.31 Second Token: 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 201 200 200 666 Ø Ø Ø Ø Ø Ø Ø 200 200 First Token: ::FFFF:10.74.32.186	Profile ID													Susp Thd
First Token: ::FFFF:10.74.32.186	666			0 10.175	0 .84.31	0	0		0 0	38	52	0	20	0
	666	First Token:				0	Ø	6		201	201	200	200	Ø

Profile Warnings/Exceptions Hist Summary Item 1/2 **R/HSUPROF**

From 11/03/21 04:44:00 To 11/03/21 06:21:00

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<---- Total Warnings ----> <----- Total Exceptions -----> <-----> <------ Monitoring -Profile ID Connects Threads Idle Thd Connects Threads Idle Thd Que Thds Fail Reg Avg Conn Max Conn Avg Thds Max Thds Avg Susp

666	0	0	0	0	0	0	0	0	37.0	52	0.0	20	0.0
	First Token: Second Token:		0.175.84	. 31									
666	Ø First Token: Second Token:	151 ::FFFF:10	0 0.74.32.3	0 186	0	Ø	Ø	Ø	154.0	201	153.0	200	0.0

New batch reports.

Two batch reports are introduced – trace and summary.

The trace report prints out a header for every 402 record found in the input dataset (they cannot be paired based on the time interval since the input can be an SMF dataset instead of the Sysview for DB2 history dataset)

The summary report groups all of the records by profile ID, Token1 and Token2 and prints out the summarized report for them.



New batch reports.

EQUEST:	06:46:12 BTRPROFD CORD 11/03/2	21 04:46:00												PAGE DB2 SYS:	DT
					DB2 PROF	LE WARNI	NGS/EXC	EPTIO	NS TRAC	E					
	MONITORING RE IME: 11/03/21		SUBSYS:	DT31	VER:	C1			GROU	P : DSNDTGP	LOC	ATION: DTGP	PTIB		
rofile	ID Connects	Warnings Threads Idl	e Thd Conn	ects	Threads	ceptions Idle The	Que Th	ds Fa	il Req	< Connects Max	Conn	Monitoring Threads M	lax Thds	Susp Thd	
	Ø First Token Second Token	: ::FFFF:10.1	0 75.84.31	0	0	0		2	Ø	38	52	0	20	Ø	
	MONITORING RE IME: 11/03/21	05:07:00													
rofile	ID Connects	Warnings Threads Idl	e Thd Conn	ects	Threads	Idle The	Que Th	ds Fa	il Req	Connects Max	Conn	Monitoring Threads M	lax Thds	Susp Thd	
86		0 ::FFFF:10.1		0	0	0		0	0	38	52	0	20	0	
36	0	151 :::FFFF:10.7		0	0	Ø	4	9	0	201	201	200	200	0	
QUEST:	06:46:12 BTRPROFS CORD 11/03/2	21 04:46:00										LAST REC	:ORD 11/	PAGE DB2 SYS: 03/21 06:	
				D	B2 PROFIL	E WARNIN	IGS/EXCE	PTION	S SUMMA	RY					
JBSYS:	DT31 VER:	C1	GROUP :	DSND	TGP				LOCA	TION: DTGPPT	тв				
	< Tot ID Connects														
66	0 First Token Second Token	0 ::FFFF:10.1	0 75.84.31	0	0	0	3	9	0	36.8	52	0.0	20	0.0	
66	0	151 :::FFFF:10.7		0	0	0	3	0	0	154.0	201	153.0	200	0.0	



Brief summary.

- Changed reports: PROFILES, EXCP0402
- New reports: IDSXC402, HSTPROF, HSUPROF, BTRPROFS, BTRPROFD
- New parameter: PROFILE-MONITORING=YES/NO. By default it's NO preserving the old behavior.
- Specifying YES allows interval-based processing, turns on the 402 collection to STATS history dataset and starts the online history reports.
- Specifying YES can only work if PH12041 is applied to DB2 for z/OS, otherwise the customer should expect error messages.

Please Provide Feedback...

PTF: LU03286



Rabah Beggar rabah.beggar@broadcom.com





MTC DBM to support multiple objects selection, hyperlinks and enhanced breadcrumbs

Srinivas Adupa

Srinivas.Adupa@Broadcom.com



Overview – problem statement

Customers would like to perform a single action by selecting multiple objects in easy manner in MTC DBM and should be consistent in both Administration and Performance tabs.

Currently,

- Performance tab
 - does not allow selecting multiple rows
 - refreshes the current tab for every action
 - needs 3 clicks to perform an action
- Administration tab
 - does not show Breadcrumbs
 - opens new tab to show the details of table
 - needs 3 clicks to open table detail report

Overall, there are inconsistencies in both Administration and Performance tabs of MTC

MTC DBM enhancements – Whats new

In order to resolve the inconsistencies, we have enhanced MTC DBM by making sure that both Administration and Performance tabs will have the similar kind of behavior.

This is with regards to both "Administration and Performance" tabs:

- Ability to select multiple rows
- Current tab gets refreshed with first selected rows output
- New tabs will be created for all the remaining rows
- Mostly used action can be performed with a single click for one object

Live Demo

MTC DBM enhancements – cont.

lainframe Team Center atabase Management for Db2 for z/G ation Performance	5																					?	adusr01
Select Db2 subsystem			0	Select of	bject typ	e					T s	pecify filte	ring criteria										
				_							Object	Name											List Objects
A			<u> </u>	Cor	mmon Db2		Al	DPS		CA Admin		Creator/Schema											LIST Objects
CA31.LVN.BROADCOM.NET:8800			Ŀ	SG		DB	T5	тв	IX	vw	SYST												Auto Collaps
	Use (Group Name	OFF	-						5Q	ר ר												
					Act	ions 🔻	B				0												
AMIC SQL STATEMENTS (D11A) X	DYNAMIC SQL S				E N/	AME			CRE														
				-	_	DMIN TAS	ve		SYS	C VALPROC	PCTPAGES	PARENTS	CHILDREN	KEYCOLUMN	S RECLE	NGTH STATUS	KEYOBID	CHECKFLAG	CHECKRID	AUDITING	LOCATION	Active Filters: None	
ADMIN_TASKS					- 1	Danin_1765	110		515			-1	0	0	0	8135		0	40404040				
ADMIN_TASKS_HIST				6	2 A	DMIN_TAS	KS_H	ST	SYS			-1	0	0	0	32714		0	40404040				
BIN_REC_INPUT					-							-1	0	0	0	94		0	40404040				
BIN_REC_OUTPUT				16	2 B	IN_REC_IN	IPUT		SYS			-1	0	0	0	94		0	40404040				
BUFFERPOOL_STATUS	ST				٦.		UTDU	-	SYS			-1	0	0	0	94		0	40404040				
	SYSIBM					IN_REC_O	UIPU	1	515			-1	0	0	0	67		0	40404040				
DB2_CMD_OUTPUT	SYSIBM	DB			Эв	UFFERPO	o si	ATUS	SYS			-1	0	0	0	92		0	40404040				
DB2_SYSPARM	SYSIBM	DSNDB06				on Liu o			010			-1	0	0	0	2386		0	40404040				
DB2_THREAD_STATUS	SYSIBM	DSNDB06	SY] [ATA_SHAR	ING	GROUP	SYS			-1	0	0	0	9190		0	40404040				
DB_STATUS	SYSIBM	DSNDB01 DSNDB06	DBD01 SYSTSTAB	G	_	-1.0E0	_	0				-1	0	0	0	41 50		0	20202020				
DB_STATUS DDF_CONFIG	SYSIBM	DSNDB06		G	3		6	0				.1	0	0	0	530		0	40404040				
DSLIST	SYSIBM	DSNDB06		G	1		6	0				-1	0	0	0	372		0	40404040				
DSNPROGAUTH	SYSIBM	DSNMDCDB		т			1338	3				-1	0	0	0	983		0	40404040				
DSNRLMT01	SYSIBM	DSNRLST	DSNRLM01	т			259	14				-1	0	0	0	345		0	40404040				
DSNRLMT02	SYSIBM	DSNRLST		т				17				0	0	0	0	345		0	40404040				
DSNRLST01	SYSIBM	DSNRLST	DSNRLS01	т	1			3				0	0	0	0	432		0	40404040				
DSNSERVICE	SYSIBM			т			15411	3 Y				-1	0	0	0	550		0	40404040				
DSN_COLDIST_TABLE	SYSIBM		DSNOPTT8	т	2			81				0	0	0	0	7345		0	40404040				
DSN_DETCOST_TABLE	SYSIBM		DSNOPTTS		13		261	48				0	0	0	0	1007		0	40404040				
DSN_FILTER_TABLE	SYSIBM	DSNOPTDB	DSNOPTTS	т	1	3 0	261	45				0	0	0	0	493		0	40404040				
DSN_FUNCTION_TABLE	SYSIBM	DSNOPTDB	DSNOPTT8	т	2	0 0	261	28				0	0	0	0	4797		0	40404040				
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MTC DBM enhancements – cont.

NAMEC SQL STATEMENTS (D11A) 🗙	DNIANDE SQL STATEMENTS (D11A) X DNIANDE SQL STATEMENTS (D11A)	X TB DETAIL (D11A) X TB DETAIL (D11A) X TB	DETAIL (D11A) ×			
me		Creator	Туре	Database	Tablespace	
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vner	SYSIBM	Status		^ Number of Synonyms	0	
vner Type		Table Status		Comment on Table		
eated By	TERJ003	Data Capture		SPACEF	-1.0E0	
ble Type	T	Link as Parent	0	Version	0	
eated Timestamp	2013-05-15 11:30:56.404592	Links as Child	0	Split Rows		
ered Timestamp	2013-05-15 11:30:56.404592	Table Label		Average Row Length	-1	
one Table Creator		Stats Time	2015-02-26 16:00:58.055496	Part key Column Number	0	
ne Table Name		* Check RID	40404040	* Append	N	



Please Provide Feedback...

PTF: LU03417



Srinivas Adupa srinivas.adupa@broadcom.com





RC/Query to generate DDL for Db2 Advanced Triggers

Srinivas Adupa

Srinivas.Adupa@Broadcom.com



Overview

Currently RC/Query does not support generate DDL for Db2's Advanced triggers (generates DDL for only Basic triggers). Many customers has shown interest in having the capability to generate the DDL for Db2 Advanced triggers.

So, we have enhanced RC/Query

- to generate DDL for both Advanced triggers
- with additional formatting improvements

Now RC/Query generates the DDL for both Basic and Advanced triggers of Db2.

Live Demo



RC/Query: DDL for Advanced Triggers

EDIT	BATCH.PROCESSOR.INPUT	Columns 00001 00072
Command	===>	Scroll ===> <u>CSR</u>
000006	CREATE OR REPLACE TRIGGER SAMVA02.ADVTRGXY	
000007	VERSION V3	
800000	AFTER UPDATE	
000009	ON QAOFS.QA1TTB02	
000010	REFERENCING	
000011	OLD TABLE AS CROT0031	
000012	NEW TABLE AS CRNT0031	
000013	FOR EACH STATEMENT	
000014	NOT SECURED	
000015	DISALLOW DEBUG MODE	
000016	ASUTIME NO LIMIT	
000017	QUALIFIER SAMVA02	
000018	WLM ENVIRONMENT FOR DEBUG MODE DSNWLMG	
000019	CURRENT DATA NO	
000020	DYNAMICRULES RUN	
000021	APPLICATION ENCODING SCHEME EBCDIC	
000022	WITHOUT EXPLAIN	
000023	WITHOUT IMMEDIATE WRITE	
000024	ISOLATION LEVEL CS	
000025	OPTHINT ''	



Please Provide Feedback...

PTFs: LU03314, LU03315, LU03316, LU03317 and LU0331.



Srinivas Adupa srinivas.adupa@broadcom.com









When is the next Community Update call?

Our next call will be February 14th, 2021

Did you miss our last call (in September)?

The replay is available <u>here</u>.



CA Db2 Tools 20.0 Validation Project

https://validate.broadcom.com/key/DB2Tools200



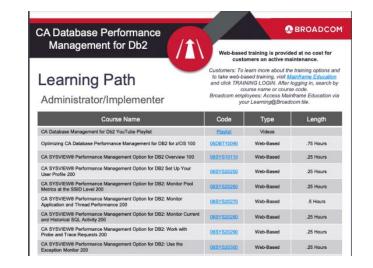
Check out our new education offerings

As an *active maintenance customer*, you can consume our **web-based training** courses and **digital badges** at **no cost** to you.

What's New

Course Code	Title
06RCQ20010	CA RC/Query® for DB2 for z/OS Database Administration Tasks Command Overview 200
06SYS2026E	CA SYSVIEW® Performance Management Option for DB2 for z/OS - Intermediate - Digital Badge Assessment
06DBT2058E	Log Analyzer™ for Db2 for z/OS: Fundamentals Digital Badge Assessment

- For more information about how to access this training and the digital badge assessment, <u>watch this two-minute</u> <u>video</u>.
- Search for courses and digital badges by course name, product name, or course code in our <u>Mainframe Course</u> <u>Catalog</u>.



To learn more about these courses, visit the following Learning Paths:

- <u>CA Database Administration for DB2</u>
- <u>CA Database Backup and Recovery for DB2</u>
- <u>CA Database Performance Management for DB2</u>
- <u>CA Database Tuning Optimizing and Testing for</u> <u>DB2</u>







Thank You

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