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# CA Database Management for Db2 for z/OS 20.0 (Db2 Tools) Customer Community Update

TEAM PRODUCT OWNERS AUGUST 26, 2020

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## Agenda

- Post Install:
  - Post-install support for DRDA remote binds
- Sysview for Db2:
  - Enhanced Support zHyperlink
  - Insert Algorithm 2 and RID List Field Support
  - Support for Cancelling Inactive Threads
  - Support for IDAA V7- Replication
  - Support for Cross Invalidation
  - Support for new Resource Limit Facility codes
  - RID list reports enhanced
  - Documentation improvement for Calculated Fields
  - Zowe Conformance
- MTC-DBM:
  - SQLCODES
  - Export to CSV



#### **Please Ask Questions...**





## **Post Install**

#### Jakub Lepsa

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# Post-Install support for DRDA remote binds



- Newly added support for remote binds on DRDA compatible non z/OS subsystems (such as Db2 LUW, Oracle)
- Based on customer request for Fast Unload
- Does not affect previous functionality, builds on existing implementation for z/OS systems
- Currently only Fast Unload product is utilizing this feature but the infrastructure is open for all products (SO14381, SO14382, SO14383)



INSEDSES Edit Parmlib Command ===> PF keys: PF1 for Help PF3/END to Return to the PF7/UP to Scroll Up, PF8		Modification of the current panel for remote locations.
	or Replicate an entry aving changes	Non z/OS location specified as DRDA.
LUW1PTIB D12APTIB D12A ************************************	DRDA ZOS - uata **********************************	Previously defined locations are shown as "ZOS"
		No changes needed if you do not exploit the new functionality
		Internally the two locations are treated differently but are inputted in the common table form
		Subsystem ID is needed only for SSID running on

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z/OS

PF keys: ENTER to Contin		Member: SETUP00
	to the previous panel	SSID: Q10B
Commands: CANCEL to Exit w	ithout saving changes	
Type the information in the fie	lds below.	
If QMF is not installed, leave		
DRDA Remote Binds> YES	(YES or NO)	
OME Version (Opt.)		
QMF Version (Opt.)> QMF Prefix (Opt.)>		
DECP Module Name (Opt.).>	(DB2 10 NFM or later)	
XML Column Default Value>		

Follows the DRDA Remote Binds option

If DRDA Remote Binds option is set to NO, then no remote binds are done when running bind job



INSMBIND ------ Bind Product Packages and Plans ----- Option ===>
Now Processing DB2 Subsystem Q10B

Local and Remote Bind Options

- Bind ALL product packages and plans (Must be performed for base installs)
- 1 Bind only product packages for maintenance (Bind only affected packages from changed DBRMs)

Local Bind Options (Override PARMLIB Remote Bind Setting)

- 2 Bind all product plans only (For a subsystem where packages were previously bound)
- 3 Bind only product packages for maintenance (For a subsystem needing package maintenance)

Use the same values for all DB2 subsystems?...>  $\underline{Y}$  (Y,N)

Works the same way as regular bind

DRDA bind statements are bound together with the rest

Current solution allows for any other products to make use of the DRDA binds infrastructure in the future



*************	
DSN * DRDA REMOTE PACKAGE BINDS STATEMENTS FOR DSN * NON ZOS LOCATION: LUW1PTIB DSN	
**************************************	
DSN * BIND PACKAGE STATEMENTS FOR PRODUCT: DSN * PFU - Fast Unload DSN	
DSN BIND PACKAGE(LUW1PTIB.DGL1PLAN_PUT_PFU) MEMBER(UTAFUSF9)	

Statements are marked for better orientation in the BIND output

Formatting Of bind statements has been unified



#### Any Questions...



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# **Sysview for Db2**

Aysen Solak aysen.solak@broadcom.com



# **Enhanced Support for zHyperlink**



#### With zHyperlink Reduce the Transaction Latency!

Delivered

Dataset I/O statistics (IFCID 199)

• New fields containing zHyperlink I/O delay information are now supported

#### Delivered

New

New

#### Log write I/O with zHyperlink

- Eligible to use zHyperlink and successfully used Hyperlink
- Eligible to use zHyperlink but did not use zHyperlink

#### Report zHyperlink Utilization

- It is possible to monitor zHyperlink and make assessment with new values
- Analysis can be done : System Level
  - Buffer Pools Level
    - Thread Level

#### Read I/O zHyperlink Use

- Reports for a single Read I/O operation if data was found in the DASD subsystem cache (Cache hit) or not
- Reports for a single Read I/O operation if zHyperlink was used or not



### zHyperLink BP statistics – QBST

- Disk Cache Hits The number of synchronous read I/O's that resulted in Disk Cache hits.
- Cache Hit Ratio The percentage of synchronous reads found in the disk cache.

If the cache hit ratio is **below 80** then zHyperLink benefits would be limited.

- zHyperLink Reads The number of synchronous read I/O operations which used zHyperLink.
- zHL Utilization The percentage of synchronous reads that were successful with zHyperLink.

Updated Reports  $\rightarrow$ 

- Real time Report
  - SYSSTATS/A
  - BUFRDWRS
- History Reports
  - HSBRDWR
  - HSUBRDWR
  - HSSNAP
  - HSUSNAP
- Batch Reports
  - BTSTASM2
  - BTSTATR1

System Snapshot

Buffer Pool Read/Write Activity

Buffer Pool Read/Write History Buffer Pool Read/Write History Summary System Overview History System Overview History Summary

Summary of Db2 Database Address Space Statistics Buffer Pool Statistics

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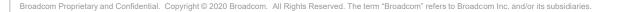
#### zHyperLink BP Statistics – Real Time: System Statistics

			20.0		DBN1ENDV1		/20 08:05:56 VANNA04
_ 1 SnapShot	2 Buf	fer Pool	3 EDM	Pool 4 Lo	gs 5 Acct S	Sum 6 More	e
R/SYSSTATS	Syste	em Snaps	hot - Ac	ccumulate		A	ccum
EXCEPTIONS Cri	t Warn	Info	BUFFERS		EDM POOL	110	
Subsystem	1 0	1	Warning	<b>3485</b>	DBD Lds	8 %	Rqsts 1.0
Database	0 0	0	Act Poc		CT Lds	11 %	
Applicatn	0 0	0	% Act H		PT Lds	15 %	Rgsts 6.4
+ +	Pct N	Max StIn	Getpage	es 41768	Dyn Ins	19 %	
LIMITS Current	Max H	HWM HWM	Sync Ro	ds 28323	-		-
Users	5 0	7 6	Cache H	lit 100.0	LOCKING		
TSO	0 0	2 0	zHL Uti	llz 98.2	Suspend	11 LOG	GING
Batch		7 6	Read Ef	f 1.5	Escalate		d Wrts 0
DDF Actv 1	L O		Buf Upc		Timeout	0 Arc	ch Read 0
DDF Inac 1			Pg Writ		Deadlock	0 Mir	n/Chkpt 1792
Dataset 94	1 O	94	Write 1	r/o 751		Wai	rnings O
SQL			SPACES		THREADS	Active	Actv+Cmplt
Dynamic	156	DB2 Pc		0.0	Count	6	195
Ins+Upd+Dlt	0	DB2 WS		151764	Commits	6	339
Open+Select	317	DB2 Up	Time 2	29:52:50	Aborts	0	22
Accelerator	0				DB2 CPU	1	
					Indoubt	0	
STORED PROCEDU			POOL FAI				
SQL CALLS	0		RID	0			
Failures	0		EDM	0			
MICCELLANDOUC							
MISCELLANEOUS	D-1 11	2 1 500			DATA SHARII		
DDF ACTIVE		2.1.500					
RLF INACTIVE	SRC !I	DBNT			Member		



#### zHyperLink BP Statistics – Real Time: BP Read/Write Activity

		CA SYSVIEW f		DBN1ENDV1		1	VANNA04
_ l Exceptions 2	Thresh	nolds 3 Read/Wr	cite 4 W	orkfiles	5 Files	6 Si	mulate
	Read/W	Write Activity -	Accum			Accum	
BUFFER POOL BP8							
READ I/O				PREFETCH	-	_	
Pagesets Used						0	
StIn HWM DS Opnd	1	Pages Written		List	0	0	0
Migrated DS Opnd	0	Buffer Upd Eff	0.0	Dynamic	0	0	0
Getpage Requests	272						
Seq Accs Getpgs	268	Synch Writes	0	SLRU			
Synchronous Rds	252	Page Wrt Eff	0.0	Buffers	on SLRU	HWM	18
Seq Accs Sync Rd	250	Times Pgs Add	LPL 0	Buffers	on SLRU	LWM	18
Asynchronous Rds	0						
Rand Getpgs Req	0	PARALLEL I/O		CASTOUT	Rate	Pages	I/O
Getpgs/Sync Read		Requests	0	Castout	0.0	0	0
Hit Ratio	7.3	Max Streams	0				
T/O Per Second	0 - 1			OVERFLOW	AREA	Pages	I/O
Disk Cache Hits	252	PAGE RESIDENCY	Seconds	Sequenti	ial	0	0
Cache Hit Ratio						0	0
zHyperLink Reads	252	_					
zHL Utilization	100.0	Sequential					





#### zHyperLink BP Statistics – Updated History Reports

<u>M</u> enu <u>P</u> rint _ 1 Overview	<u>T</u> ools <u>H</u> e 2 Buffe	20.0	for DB2 4 Locks	DBN1 CA11 DBN1ENDV1 5 Acct Sum		5/13/20 08:4 VANN re 7 Exc	NA04	
EXCEPTIONS Cr Subsystem ADDRESS SPACE DBAS SSAS	10:46:00 it Warn I 1 0 CPU 11.87 23.77	l BUFFERS Warnings Act Pools	04:00 3078 9	✓ BF ✓ Sy EDM PO DBD L CT L Su	PRea stem	Overview H d/Write Histo Overview Hi Pool Read/Wi ary	ory story Su	5
IRLM	29.53	%NStl Pgs	0.1	PT L		,		
DIST	1.72	Getpages	29078	Dyn Ins	1	% Rqsts	1.2	
		Sync Rds	24565					
THREADS		Cache Hit	100.0	DATA SHARING	Th.	STORED PROC	CS	
Created	114	zHL Utilz	98.4	Group		CALLS	0	
Terminated	211	Read Eff	1.2	Member		Fails	0	
Aborts	8	Buf Updts	976					
Commits	203	Pg Writes	854					
		Write I/O	539	LOCKING		LOGGING		
SQL				Suspend	7	Dlyd Wrts	0	
Dynamic	92	POOL FAILURES		Escalate	0	Arch Read	0	
In+Up+Dl	0	RID	0	Timeout	0	Min/Ckpt	* * * *	
Open+Sel	212	EDM	0	Deadlock	0	Warnings	0	
Accel	0							



## zHyperLink BP Statistics – Updated Batch Reports

		SUMMARY OF DB2 DATABASE ADDRE	ESS SPACE	E STATISTICS	
JFFER POOL STATISTICS FOR BP8		READ OPERATION	•	bace Statistics (BTSTASN istics (BTSTATR1)	12)
G NON-STEALABLE BUFFERS	0	GETPAGE REQUEL			
IFFER POOL FULL	0	SEQUENTIAL ACCESS GETPAGES	2010	PAGES WRITTEN	0
JFFER POOL FULL XPANSION FAILURES	0	RANDOM ACCESS GETPAGES RANDOM GETPAGES ON SLRU	25 0	BUFFER UPD/PAGES WRITTEN	0.0
7G BUFS ALLOCATED - VPOOL	20			ASYNCHRONOUS WRITES	0
POOL SIZE CHANGES	0	SYNCHRONOUS READS	1912	SYNCHRONOUS WRITES	0
IMES PAGES ADDED TO LPL	0	SEQ ACCESS SYNCHRONOUS READS	1902	PAGES WRITTEN/WRITE I/O	0.0
		DISK CACHE HITS	1906	PAGE-INS REQUIRED - WRT I/O	0
ATASETS OPENED	5	CACHE HIT RATIO	99.7		
GRATED DATASETS OPENED	0	ZHYPERLINK READS	1612	AVG DEFERRED WR THRESHOLD	0
THSM RECALL TIMEOUTS	0	ZHL UTILIZATION	84.6	AVG DS DEFERED WR THRESHOLD	0
		RANDOM ACCESS SINC READS	10	DATA MANAGEMENT THRESHOLD	0
X CONCUR PREF I/O STREAMS	0	GETPAGES/SYNCHRONOUS READS	1.1		
ARALLEL QUERY REQUESTS	0	HIT RATIO	0.0	SORT/MERGE	
ARALLEL I/O DEGREES REDUCED	0	PAGE-INS REQUIRED - READ I/O	82		
DUCED DEGREE PARALLEL I/OS	0			SORT MERGE PASSES REQUESTED	0
VERAGE DEGREE REDUCTION	0.0	ASYNCHRONOUS RDS	0	INEFFICIENT PASSES-LOW BUF	0
REF QUANTITY REDUCED TO 1/2	0			WKFLS REQUESTED ALL PASSES	0
REF QUANTITY REDUCED TO 1/4	0	SEQUENTIAL PREFETCH REQUESTS		MAX WORKFILES ALLOCATED	0
EQUENTIAL STEAL THRESHOLD	0	SEQUENTIAL PREFETCH READS	0	WRKFL REQ DENIED-LOW BUFFER	0
		SEQUENTIAL PREFETCH PAGES	0	WRKFL NOT CREATED-NO BUFFER	0
LRU		SEQUENTIAL PREFETCH PAGES/RD	0.0	WORKFILE PREFETCH ABORTED	0
				DESTRUCTIVE READ PAGES	0
JFFERS ON SLRU HWM	18	LIST PREFETCH REQUESTS	0	PG WRT BYPASSED-DESTRUCT RD	0
JFFERS ON SLRU LWM	0	LIST PREFETCH READS	0		
		LIST PREFETCH PAGES	0	CASTOUT	
AGE RESIDENCY TIME (SEC)		LIST PREFETCH PAGES/READ	0.0		
				CASTOUT I/O OPERATIONS	0



## zHyperLink Thread BP Statistics

**zHyperLink Reads** The number of synchronous read I/O operations which used zHyperLink.

**Disk Cache Hits** The number of synchronous read I/Os that **resulted in Disk Cache Hits**. **zHL CPU (or) zHyperLink CPU** The amount of CPU time used for successful zHyperLink reads.

 zHyperLink I/O is synchronous with respect to the CPU, thus CPU time accumulates from the beginning of the I/O until it completes

	– Real Time:	THRDRESP	Thread Response Time
Updated Reports $\rightarrow$		THRDBUFD	Thread Buffer Detail
	– History:	HTBUFRS	Thread Buffer Pool History
		HTPKGBP	Package History BP Detail
		HTRESP	Response Time History
	<ul> <li>History Sun</li> </ul>	nmary: HTUBU	IFR Buffer Utilization Thread summary
		HTURE	ESP Thread Response time summary
	– Batch: B	TACTSML Det	ailed Summary of Accounting Information Report

BTACTTRL Detailed Trace of **Accounting** Information Report



#### zHyperLink Thread BP Statistics – Updated Real Time Reports

R/THRDRESP Thre SORT N/A	ad Response T	ime			
Auth ID RKLGO01	Plan DSNESP	cs c	orr ID	RKLGO01	
Times in H	H:MM:SS.TTTT		% App	% DB2	1 3 5 7 9
Elapsed Time App	6.3290	Evnts	Elpsd	Elpsd	.00000
TCB Time Appl	0.2782	N/A	4.4		
Total DB2 Elapsed	0.1655	N/A	2.6		
Appl DB2 Elapsed	0.1655	60020		100	
Total DB2 CPU	0.1492	N/A		90.2	
TCB Time DB2	0.1492	N/A		90.2	
zHyperLink CPU	0.0095	N/A		5.8	
Other DB2 Time	0.0162	N/A		9.8	

R/THRDBUFD Threa	d Buffe	er Detail				
SORT N/A						
Auth ID RKLGO01	Plan I	SNESPCS (	Corr ID RKLGO01			
BUFFER POOL <b>BP8</b>						
READ I/O		WRITE I/O			PREFETCH	Requests
Getpage Requests	311	Buffer Upo	lates	0	Sequential	45
Synchronous Reads	308	Synchronou	as Writes	0	List	0
Disk Cache Hits	308				Dynamic	0
zHyperLink Reads	308	FAILS				
Asynch Pages Reads	0	Conditiona	al Getpage	0	TIMES	
Read Efficiency	1.0				zHL CPU	0.0095
Hit Ratio	0.9					



#### zHyperLink Thread BP Statistics – Updated History Reports

R/HTBUF	TRS Th	read Buff	er Pool History	Z			ead Buffer Pools ponse Time His	5 (	
Plan Date BUFFER	DSNESPCS 05/13/20 POOL BP8	Corr ID Started		Connect RecType	¶ √ P		kage History BF		,
READ I/			WRITE I/O		$\checkmark$				1
Getpag	e Requests	311	Buffer Updat	ces		0	Sequential	45	
Synchr	onous Reads	308	Synchronous	Writes		0	List	0	
Disk C	ache Hits	308					Dynamic	0	
zHyper	Link Reads	308	FAILS						
Asynch	Pages Reads	s 0	Conditional	Getpage		0	TIMES		
Read E	fficiency	1.0					zHL CPU	0.0095	
Hit Ra	tio	0.9							

		-						
Plan DSNESPCS	Corr ID RKLGO01		Conn	ect TSO		Auth	ID I	RKLGO01
Date 05/13/20	Started 06:54:2	3	RecT	ype				
Times in	HH:MM:SS.TTTT		% App	% DB2	l	3 5	5 7	9
Elapsed Time App	1:55.4065	Evnts	Elpsd	Elpsd	.0	.00	00	0
CPU Time Appl	0.2784	N/A	0.2					
TCB Time Appl	0.2784	N/A	0.2					
Total DB2 Elapsed	0.1657	N/A	0.1					
Appl DB2 Elapsed	0.1657	60024		100				
Total DB2 CPU	0.1494	N/A		90.2				
TCB Time DB2	0.1494	N/A		90.2				
zHyperLink CPU	0.0095	N/A		5.8				
Wait DB2 Service	0.0000	1		0.0				
Update Commit	0.0000	1		0.0				
Other DB2 Time	0.0162	N/A		9.8				

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HTRESP

Response Time History



#### zHyperLink Thread BP Statistics – Updated Batch Reports

BUFFER POOL BPO READ I/O GETPAGE REQUESTS	AVERAGE	2013	BUFFER UPDATES	AVERAGE	3	SEQUENTIAL	60.0	TOTALS
SYNCHRONOUS READS DISK CACHE HITS ZHYPERLINK READS	191.0 191.0 170.0	191 170	FAILS		TOTALS	DYNAMIC	0.0 3.0	0 3
ASYNCH PAGES READS READ EFFICIENCY HIT RATIO	1607.0 10.5 10.6		CONDITIONAL GETPAG	E 1.0	1	TIMES  ZHYPERLINK CPU	AVERAGE 	TOTALS  000.005
PKG LOCKING ACTIVITY	TCTAL 7	AVERAGE		TOTAL AVER	AGE	PKG BUFFER POOL ACTIV	ITY TOTA	L AVERAG
MAX PAGE LOCKS HELD			QUALIFYING RECORDS	2		GETPAGE REQUESTS SYNCHRONOUS READS		0 0.
TIMEOUTS	0	0.0	SUSPENSIONS - LOCK	0	0.0	DISK CACHE HITS		0 0.
EADLOCKS		0.0	SUSPENSIONS - LATCH	0	0.0	2HYPERLINK READS		0 0.
OCK ESCALATION - SHR		0.0	SUSPENSIONS - OTHER	0	0.0	ASYNCHRONOUS PAGES RE	ADS	0 0.
LOCK ESCALATION - EXC		0.0	SUSPENSIONS - TOTAL	0	0.0	READ EFFICIENCY		0.
			UNLOCK REQUESTS	0	0.0	HIT RATIO		0.
CLAIM REQUESTS	C		QUERY REQUESTS		0.0	BUFFER UPDATES		0 0.
CLAIM FAILURES				ailed Sum	mary of	Accounting Inform	ation Rep	ort (BTA
RAIN REQUESTS				ailed Trac	e of Acc	ounting Informatior	n Report (	BTACT
DRAIN FAILURES			CTHER REQUESTS			DYNAMIC PREFETCH REQS COND GETPAGE FAILURES 2HYPERLINK CPU TIME		0 0. 0 0. 0 0.0



#### Analysing zHyperlink use for a specific I/O

Disk Cache Hit: Indicates whether the I/O resulted in a disk subsystem cache hit or not

- **ZHL-YES**—READ request with SYNCIO used zHyperLink
- **ZHL-NO**—READ request with SYNCIO did not use zHyperLink
- ASYNCIO—READ request without SYNCIO

→ Online and Batch Reports are Updated (RECTRACE & BTRECTRC)

R/RECTRACE Detail Tr	ace of DB2 Activity	Row 2498-2539/8181
Rtrn Lk Lck Lock Req/Ret Code Dr Ste Type Token	Lock Req Lock Type Scope	
Request: A Rea Database: DSNDB06	son Code: 000000 Claim Class: C Pageset: DSNAUH01 1st Pg: 000000 Partition: 0 Read SyncIO NO	OF - A RD-Type: R TS-Type: N
0 Database: DSNDB06	Pageset: DSNAUH01 1st Pg: 000000 Partition: 0 Read SyncIO: N	OF - <u>A RD-Ty</u> pe: R Pages-RD: 1 O - ASYNCIO Disk Cache Hit: NO
Database: DSNDB06	Pageset: SYSUSER 1st Pg: 000000 Partition: 0 Read SyncIO NO	27 - A RD-Type: R TS-Type: N
0 Database: DSNDB06	Partition: 0 Read SyncIO: N	27 - A RD-Type: R Pages-RD: 1 O - ASYNCIO Disk Cache Hit: NO
Deteksess DONDDOG	Deleters overleps Deleters o	D-#- 00000710





- New Fields related to insert algorithm 2 (IAG2) pipe use are added to Online History and Batch reports, Also made available as IQL fields
- The number of:
  - IAG2 pipes allocated since the last Db2 restart. DMFI-PIPES-ALLOC (QISTINPA)
  - IAG2 pipes **disabled** since the last Db2 restart. **DMFI-PIPES-DISABLE (QISTINPD)**
  - IAG2 pipes re-enablement was attempted since the last Db2 restart. IAG2-PIPE-ATTEMPTED-RNBL (QISTINPR)
  - IAG2 pipes re-enablement was successful since the last Db2 restart. IAG2-PIPE-SUCCESSFUL-RNBL (QISTINPE)
  - The number of times basic insert algorithm (IAG1) is used. IAG1-USED (QXRWSINSRTDALG1)
  - The number of times fast insert algorithm (IAG2) is used. IAG2-USED (QXRWSINSRTDALG2)
  - The number of times RID list processing is not used or terminated for the whole query. MIAP-NOT-USED (QXRFMIAP)
  - The number of execution history lost. QXSTEHLST
  - The number of host variable recording lost in execution history. QXSTHVLST



- Reports Updated:
- Parallelism / Miscellaneous / IAG2 (PRLMISC)
- Parallelism / Misc / IAG2 History (HSTPRLMS)
- Parallelism / Misc / IAG2 History Summary (HSUPRLMS)
- Statistics Data Trace (BTSTATR1)
- Summary of DB2 database address space statistics (BTSTASM2)
- Parallelism / Miscellaneous / IAG (PRLMISC)
- Parallelism / Misc / IAG History (HSTPRLMS)
- Parallelism / Misc / IAG History Summary (HSUPRLMS)
- List Prefetch / RID Pool (SYSLPRF)
- List Prefetch / RID Pool History (HSLPRF)
- List Prefetch / RID Pool History Summary (HSULPRF)
- List Prefetch / RID Pool (THRDLPRF)
- List Prefetch / RID Pool History (HTLSTPRF)
- List Prefetch / RID Pool Hist Sum (HTULPRF)
- Parallelism / Misc / IAG / Workfile (THRDPRMS)
- Parallelism / Misc / IAG / Wkfile History (HTHDPRMS)
- Parallelism / Misc / IAG / Wfile Hist Sum (HTUDPRMS)
- Thread SQL Counts (SQLCOUNT)



<u>M</u> enu <u>P</u> rint <u>T</u> ools <u>H</u> elp <u>C</u>	A SYSVIEW 1 20.0	or DB2	D12A CA31 D12AENDK3	07/20/20	02:00:53 SNOOL01
R/PRLMISC Parallelism /	Miscellane	eous / I	AG		
				Accur	n
PARALLELISM			LANEOUS		
Parallel Groups Executed	0		LOB Storage (		0
Groups Executed as Planned	0		XML Storage U	Jsed (MB)	0
Max Degree of Parallel IO	0		y Expansions		0
Est Degree of Parallel IO	0	_	se Index Disa		0
Plan Degree of Parallel IO	0	Spar	se Index Buil	t Workfile.	0
Groups w/ Reduced Degree	0				
Groups Red Deg - Sys Stres	0	INSERT	ALGORITHM		
Groups Failed - Cursor	0	IAG2	Pipes		
Groups Failed - ESA Sort	0	Al	located		0
Groups Failed - Storage/BP	0	Di	sabled		0
Groups Failed - Autonom Pr	0	Re	-enable Attem	pted	0
Groups Failed - Sys Stress	0	Re	-enable Succe	ssful	0
Groups Failed - Optimalize	0	IAG1	(Basic) Used	l	5929157
Grps exec 1 DB2: COORD=NO	0	IAG2	(Fast) Used		0
Grps exec 1 DB2: ISO=RR/RS	0				
Number Intended Groups	0				
Members Bypassed BP Short	0				
Access Path Redone: Config	0				
Access Path Redone: BP	0				
Grps exec 1 DB2: DclTmpTbl	0				

New fields:

- "Re-enable Attempted" Indicates the number of times insert algorithm 2 (IAG2) pipes re-enablement was attempted.
- "Re-enable Successful" Indicates the number of times insert algorithm 2 (IAG2) pipes re-enablement was successful.
- "IAG1 (Basic) Used" Indicates the number of times basic insert algorithm (IAG1) is used.
- "IAG2 (Fast) Used" Indicates the number of times fast insert algorithm (IAG2) is used.

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Menu Print Tools Help	CA SYSVIEW 20.0		02:19:12 SNOOL01
		FOO	CUS OFF
R/THRDPRMS Parallelism	/ Misc / I		
SORT N/A			
Auth ID SNOOL01 Plan	IDB2993S	Corr ID INSU312A	
PARALLELISM		MISCELLANEOUS	
Parallel Groups Executed	0	Max LOB Storage (MB)	0
Groups Executed as Planned	0 E	Max XML Storage Used (MB)	0
Max Degree of Parallel IO		Array Expansions	0
Est Degree of Parallel IO	0	Sparse Index Disabled	0
Plan Degree of Parallel IC		Sparse Index Built Workfile	0
Groups w/ Reduced Degree	0		
Groups Red Deg - Sys Stres		INSERT ALGORITHM	
Groups Failed - Cursor	0	IAG1 (Basic) Used	0
Groups Failed - ESA Sort		IAG2 (Fast) Used	0
Groups Failed - Storage/BI			
Groups Failed - Autonom Pr		WORKFILE	
Groups Failed - Sys Stress		Current Blocks Inuse	0
Groups Failed - Optimalize		Blocks Used HWM	0
Grps exec 1 DB2: COORD=NO			
Grps exec 1 DB2: ISO=RR/RS	3 O O		
Number Intended Groups			
Members Bypassed BP Short			
Access Path Redone: Config Access Path Redone: BP	a 0 0		
Grps exec 1 DB2: DclTmpTb2	-		
Parallel Suspend Count			
Parallel Suspend Count Parallel Suspend Time	0.0		

New field:

- "IAG1 (Basic) Used" Indicates the number of times basic insert algorithm (IAG1) is used.
- "IAG2 (Fast) Used" Indicates the number of times fast insert algorithm (IAG2) is used.



✓ Knowing if RID access is successful or not is vital for me as it impacts performance of the queries significantly.

<u>M</u> enu <u>P</u> rint <u>T</u> ools <u>H</u> elp		YSVIEW for 20.0		D12A CA31 D12AENDK3	07/20/20	01:53:53 SNOOL01
R/SYSLPRF List Prefe	etch / 1	RID Pool -	- Accu	m		
					Accur	n
RID POOL	4	MAXRBLK	LIST	PREFETCH		
RID Pool Current Blks	0	0.0	RI	D List Used		87
HWM RID Pool Blocks	3	0.0	D	ata Manager	Not Called	5
StIn HWM RID Blocks	0	0.0	No	t Used - Who	le Query	9
RID Blks in Wrkfl Stg	0		Fa	iled - No St	corage	0
HWM RID Blks in Wrkfl	0		Fa	iled - RID I	Limit	9
RID Failed RDS Limit	4		On	ly 1 Block H	Tetched	48
RID Failed DM Limit	0					
RID Failed No Storage	0					
RID Failed Processes	0					
RID Overflow - Stg	0					
RID Overflow - Limit	0					
RID Interrupt - Stg	0					
RID Interrupt - Limit	0					
RID Multi-Index Skipd	0					

• "Not Used - Whole Query" - Indicates the number of times RID list processing is not used or terminated for the whole query.



#### Detailed Summary Of Accounting Information - Grouped By AUTH, PLAN, CORR (BTACTSML)

LOCKING SUMMARY	AVG	TOTALS	LISTS PREFETCH	TOTALS	QUERY PARALLELISM	AVG	TOTALS	DATA CAPTURE	AVG	TOTALS
TIMEOUTS	0.0	0	RID LIST USED	603	GROUPS EXECUTED	0.0	0	IFI CALLS	0.0	0
DEADLOCKS	0.0		DM NOT CALLED				0	LOG RECORDS CAPTURED	0.0	-
PAGE LOCKS HELD	0.4		NOT USED - WHOLE QRY					LOG RECORDS READ	0.0	0
ESCALATION				0		0.0	0	DATA ROWS READ	0.0	
SHR	0.0	0				0.0	0	LOG RCDS RETURNED	0.0	0
EXC			ONLY 1 BLOCK FETCHED			0.0	0	DATA DESCRIPTORS READ	0.0	0
SUSPENSIONS	0.0	1			GROUPS RED DEG	0.0	0	TABLES RETURNED	0.0	0
LOCK	0.0	0	RID POOL	TOTALS	FAILED - CURSOR	0.0	0	DESCRIBES	0.0	0
LATCH	0.0	1			FAILED - NO ESA	0.0	0			
OTHER	0.0	0	RID OVERFLOW - STG	0	FAILED - NO BUFFR	0.0	0	DYNAMIC PREPARE	AVG	TOTALS
REQUESTS			RID OVERFLOW - LIMIT	0	FAILED - AUTON PR	0.0	0			/
LOCK	101.6	6601	RID INTERRUPT - STG			0.0	0	STMT FOUND IN CACHE	0.1	5
UNLOCK	43.4	2821	RID INTERRUPT - LMT	0	FAILED - OPTIMAL	0.0	0	STMT NOT FOUND IN CACHE	0.1	4
QUERY			RID MULTI-INDEX SKIP	0	ONE DB2 COORD=NO	0.0	0	IMPLICIT PREPARE PERF.	0.0	0
CHANGE	0.2	14			ONE DB2 ISO=RR/RS	0.0	0	PREPARE AVOIDED	0.0	0
OTHER	0.0	0	DIRECT ROW ACCESS	TOTALS	INTENDED GROUPS	0.0	0	STMTS DISCARDED MAXKEEPD	0.0	0
					MEM BYP BP SHORT	0.0	0	STMTS PURGED DEP. OBJECT	0.0	0
DRAIN/CLAIM	AVG	TOTALS			ACC REDONE-CONFIG	0.0	0	PREP RESTRICTED INDX PEND	0.0	0
			REVERTED TO INDEX	0	ACC REDONE-BP	0.0	0	CONCENT. LIT. STMTS PARS	0.0	0
DRAIN REQUEST	0.0	0			1 DB2 DCL TMP TBL	0.0	0	CONCENT. LIT. REPLACED	0.0	0
DRAIN FAILED	0.0	0			PARALLEL SUSPENDS	0.0	0	CONCENT. LIT. REUSE FAIL	0.0	0
CLAIM REQUEST	129.3	8403	WORKFILE	MAX	PARALLEL SUSPENDS PARAL SUSPND TIME		0.0	CONCENT. LIT. STMTS FND	0.0	0
CLAIM FAILED	0.0	0						STABILIZED PREP	0.0	0
			BLOCKS USED HWM	512	INSERT ALGORITHM	AVG	TOTALS			
					IAG1 (BASIC) USED	4.4	286			
					IAG2 (FAST) USED	0.0	0			



# Support for Canceling Inactive Threads



#### **Token ID Support during Thread Cancelation**

#### ✓ It allows to cancel Inactive Threads

 If a token is present it is passed to Thread Terminator to cancel the thread Otherwise the ACE is passed.

R/THRDACTV SORT OFF	nections 3 Cu Threads Iden	20.0 urr Contn tified to	1 for DB2 DT31 CA3 IDB22476 4 D-Lk/T-Out 5 M DB2 ccept, R=Rmt, C=Can	ore It <u>All</u>					
DB2			End User Workstation Name	End User User ID	End User	Product ID	Thread		
DT31 Auth ID	Corr ID	Plan	WORKStation Name	User ID	IT ansaction Name	10	Token	ACE ADDR	
_ DT31 NONE	NONE	DISTSERV	10.230.10.175	aguri01	db2jcc_application	JCC04240	14795	26082D20	
_ DT31 NONE	NONE		insomnia/7.0.3			HTP01010	14792	26082A20	
_ DT31 NONE	NONE	TANKS IN THE WAY AND AN AVAILABLE AND A DECK	insomnia/7.0.3			HTP01010		26082120	
_ DT31 NONE	NONE		insomnia/7.0.3			HTP01010		26084820	
_ DT31 NONE	NONE		10.175.84.31	DCDPHJBC		JCC04230		26083320	
C DT31 NONE DT31 PLATDEV	NONE IDB2DCAP		insomnia/7.0.3 DB2CALL	Vanna04 PLATDEV		HTP01010		2A8E9820	
DT31 PLATDEV	IDB2DCAP		DB2CALL	PLATDEV		DSN12015 DSN12015		2E9E0F20 2E9E1520	
_ DT31 PLATDEV	IDB2DCAP		DB2CALL	PLATDEV		DSN12015		2EA16520	
c DT31 SYSVDEV	10020010		SVPE	SYSVDEV		CONTECTO		2E9E3020	
_ DT31							0	2E9E2420	
_ DT31								2E9E3320	
_ DT31 VANNA04	INSUDT31	IDBSP200		VANNAØ4		DSN12015		26D3B020	
_ DT31 VANNA04	INSUDT31	IDBSP200	A REAL PROPERTY OF A REA	VANNA04		DSN12015		26086020	
_ DT31 VANNA04	INSUDT31	IDBSP200	DB2CALL	VANNA04	INSUDT31	DSN12015	14677	26083F20	
CA SYSVIEW for DB2	Cancel Th	read Confir	mation		CA SYSVIEW for DB2 Cancel Thread Confirmation				
	Press F6 to co		statement for the the sancel request or F3 to	0	You have requested to cancel the current SQL statement for the thread identified below. Press F6 to confirm the cancel request or F3 to abort the cancel request.				
Note: The Thread T	erminator value	nack ontio	n must be installed a	nd	Note: The Thread Terminator value pack optio	n must be i	nstalled	and	

#### Note: The Thread Terminator value pack option must be installed and running in order to cancel threads.

Status	Plan name	Connection name		
	DISTSERV		NONE	014773

Note: The Thread Terminator value pack option must be installed and running in order to cancel threads.

Status	Plan	name	Auth	ID	Connection	name	Correlation		
			SYSVDEV					2E9E3020	J

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#### **Token ID Support during Thread Cancelation**

- ✓ The TOKEN parameter is also added to exception definitions.
- Existing exceptions are not influenced, but when creating new ones the TOKEN may be added.

```
Exception Actions Part 2Specify actions to take when exception occurs. Then press Enter.Issue following PTT command starting at level . . . N (I, W, C or N)Part 1 . . . CANCEL PLAN=&PLANNAM CONN=&CONNNAM AUTH=&AUTHIDXPart 2 . . . CORR=&CORRELATION TOKEN=&TTOKNXXFor individual hist. . N For hist. summary . N For real-time . NIssue OPS/MVS API Event starting at level . . . . . N (I, W, C or N)For individual hist. . N For hist. summary . N For real-time . NSend SNMP trap/email to destination group ______ starting at level NNumber of times exception will occur before sending 1For individual hist. . N For hist. summary . N For real-time . N
```



# **Support for IDAA V7 - Replication**



### **Support for IDAA V7 - Replication**

1 SnapShot 2 Buffer Pool 3 EDM Pool 4 Logs 5 Acct Sum 6 More...

#### R/SYSSTATS System Snapshot - Accumulate

	Accum
EXCEPTIONS Crit Warn Info BUFFERS	EDM POOL
Subsystem 5 3 3 Warnings 4540	DBD Lds 124 % Rqsts 0.0
Database 0 0 0 Act Pools 7	CT Lds 33 % Rqsts 4.7
Applicath 0 0 0 % Act Pgs 0.5	PT Lds 114 % Rgsts 0.0
Pct Max StIn Getpages 14671K	Dyn Ins 130 % Rgsts 3.5
LIMITS Current Max HWM HWM Sync Rds 74400	2
Users 16 2 23 16 Read Eff 197.2	LOCKING
TSO 0 0 13 0 Buf Updts 551700	Suspend 7538K LOGGING
	Escalate 0 Dlyd Wrts 0
DDF Actv 0 0 3 0 Write I/0 747	
DDF Inac 0 0 7 0	Deadlock Ø Min/Chkpt 183
Dataset 237 1 237	Warnings Ø
	-
SQL ADDRESS SPACES	THREADS Active Actv+Cmplt
Dynamic 3670 DB2 Pct CPU 0.4	Count 16 3617
Ins+Upd+D1t 5086 DB2 WSS (K) 553356	Commits 316515 378300
Open+Select 467235 DB2 Up Time 55:06:10	Aborts 1 182384
Accelerator 315	DB2 CPU 15:15:52
	Indoubt Ø
STORED PROCEDURES POOL FAILURES	
SQL CALLS 217 RID 0	
Failures 0 EDM 0	
MISCELLANEOUS	DATA SHARING
DDF ACTIVE Rel 12.1.500	Group DSNDTGP
RLF INACTIVE SRC !DT32	Member DT32
ACCELERATORS( 1 )	
	.32
	.22 Cur Queued Requests 0
% Max Worker CPU 21.33 (% Avg BP HitRatio 99.	
% Max Coord. CPU 21.33	SQLs Failed SSID 96

This enhancement adds support for fields introduced in DB2 Accelerator v6+.

Two new important metrics depicting the efficiency of the Accelerator – buffer pool hit ratio and number of sort overflows are added on the main SYSSTATS report

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### **Support for IDAA V7 - Replication**

Server Name DTGP75Product ID AQT007051 Accel State ONLINE Replication STARTEDAccelerator Started Accelerator Last State Changed 06/04/20 19:16:18 Accelerator Last State Changed 06/04/20 02:29:06Accel State ONLINE Replication STARTEDOverall Accelerator Statistics COPU UtilizationThis SSIDAll 0.9.930000 10.390000 10.390000 10.390000 10.390000 2:46.673000 Database Data 19:33Disk Utilization Database Data for this SSID 10 Data 2:40 Data 2:40 Data 2:40 Records Read 13:13723 1428462 1428568 Decaded 10:00 Data 2:40 Records Read 13:13723 1428462 1428568 10:00 Data 2:40.673000 10:313723 1428462 1428568 10:00 Data 10:00 Patabase Data 10:00	R/SYSACDTL Acce	lerator D	etail - Accum		Row 1-42/50 Accum
Configuration ProcessorsCPU Utilization SupervisedThis SSID 9.930000All 	Product ID AQT07051 Accel State ONLINE		Accelerator Last	State Changed 0	6/04/20 19:16:18 6/04/20 19:16:28
Total Space (MB)       134997       Log Records Read       1313723       1428462         Database Data       1958       Log Records Used       1310832       1425568         for this SSID       1824       Bytes Processed       86499889       94546045         Temporary Data       0       0       0       0         Log Data       2699       Rows Updated       0       0         Total Space Used (%)       3.45       Rows Deleted       6       6         Storage Utilization       82080       Guery Requests       0       0         Solt Storage (MB)       82080       Guery Requests       0       0         Guery Queue       With WAITFORDATA       135       135         Curr Length       0       0       0       0         Maximum Wait       0.0000       0       0       0         Maximum Wait       0.0000       0       0       0       0         Accelerator Statistics for this SSID      Total      Avg/Connect      Avg/Connect         Connects to Accel       4       TCP/IP CPU Time       0.004104       0.001026         Requests to Accel       5       0       Accel Elapsed       1:28.088570	Processors Worker Nodes Worker Avg CPU (%)	8 1 19.33	CPU Utilization Query Execution Data Maintenance	This SSID 9.930000 53.750000	10.390000 53.840000
User Storage (MB) 82080 SQL Stmnts (MB) 76638 BP Hit Ratio (%) 99.99 Sort Overflows 0 Query Requests Currently Active 0 Maximum Active 14 Succeeded 220 Query Queue Curr Length 0 Average Wait 0.0000 Curr Length SSID 0 Accelerator Statistics for this SSID Curr Length SSID 0 Accelerator Statistics for this SSID Accelerator Statistics for this SSID Curr Length SSID 0 Accelerator Statistics for this SSID Curr Length SSID 0 Accelerator Statistics for this SSID Curr Length SSID 0 Accelerator Statistics for this SSID Curr Length SSID 0 Accel Elapsed 1:28.28627 22.057156 Timeouts 0 Accel Elapsed 1:28.088570 22.022142 Mith WAITFORDATA 0.001026 Curr Length SSID 2.0001476 0.000369 Network Inbound 0 Accel Wait Time 1:28.038742 22.009685	Total Space (MB) Database Data for this SSID Temporary Data Log Data Total Space Used (%)	1958 1824 0 2699	Log Records Read Log Records Used Bytes Processed Rows Inserted Rows Updated Rows Deleted Latency Time	1313723 1310832 86499889 16 0 6	1428462 1425568 94546045 16 0 6
Query QueueWith WAITFORDATA135135Curr Length0Failed128128Average Wait0.0000With WAITFORDATA9696Maximum Wait0.00000With WAITFORDATA9696Curr Length SSID00Accelerator Statistics for this SSIDTotal	User Storage (MB) SQL Stmnts (MB) BP Hit Ratio (%)	76638 99.99	Query Requests Currently Active Maximum Active	0 14	0 14
Curr Length0 Average WaitFailed128128Average Wait0.0000With WAITFORDATA9696Maximum Wait0.00000Accelerator Statistics for this SSID96Curr Length SSID0Accelerator Statistics for this SSIDTotalAvg/ConnectConnects to Accel4TCP/IP CPU Time0.0041040.001026Requests to Accel8TCP/IP Elapsed1:28.22862722.057156Timeouts0Accel Elapsed1:28.08857022.022142Failures0Accel CPU0.0014760.000369Network Inbound0Accel Wait Time1:28.03874222.009685	Query Queue				
Maximum Wait0.0000Curr Length SSID0Accelerator Statistics for this SSIDConnects to Accel4 TCP/IP CPU TimeConnects to Accel8 TCP/IP CPU TimeRequests to Accel8 TCP/IP ElapsedTimeouts0 Accel ElapsedFailures0 Accel CPUNetwork Inbound0 Accel Wait Time	Curr Length				
Connects to Accel         4         TCP/IP CPU Time         0.004104         0.001026           Requests to Accel         8         TCP/IP Elapsed         1:28.228627         22.057156           Timeouts         0         Accel Elapsed         1:28.088570         22.022142           Failures         0         Accel CPU         0.001476         0.000369           Network Inbound         0         Accel Wait Time         1:28.038742         22.009685	Maximum Wait	0.0000	WITH WAITFORDATA	96	96
Connects to Accel         4         TCP/IP         CPU Time         0.004104         0.001026           Requests to Accel         8         TCP/IP         Elapsed         1:28.228627         22.057156           Timeouts         0         Accel         Elapsed         1:28.088570         22.022142           Failures         0         Accel         CPU         0.001476         0.000369           Network         Inbound         0         Accel         Wait         1:28.038742         22.009685		Accelera	tor Statistics for		the loss of the
Requests to Accel         8         TCP/IP Elapsed         1:28.228627         22.057156           Timeouts         0         Accel Elapsed         1:28.088570         22.022142           Failures         0         Accel CPU         0.001476         0.000369           Network Inbound         0         Accel Wait Time         1:28.038742         22.009685	Connects to Accel	4	TCP/IP CPU Time		
Failures         Ø Accel CPU         Ø.001476         Ø.000369           Network Inbound         Ø Accel Wait Time         1:28.038742         22.009685	Requests to Accel	8	TCP/IP Elapsed	1:28.228627	22.057156
Network Inbound 0 Accel Wait Time 1:28.038742 22.009685			Accel Elapsed		
(KB/s) Outbound 0	(KB/s) Outbound	ø	Accel Mart Time	1.20.030742	22.003003

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The Accelerator detailed statistics report has a new versioned layout which will be displayed in case the version is 6+

14 new fields are added:

- BP Hit Ratio and Sort Overflows substitute Data Slices
- Replication velocity is given in log seconds per second
- WAITFORDATA is the delay protocol that allows the queries to wait for replication to end.
- SSID query queue is the length of the accelerator queue for SSID
- More detailed configuration parameters and also Network usage.



### **Support for IDAA V7 - Replication**

New fields from IFCIDs 3,316,401 were introduced.

These fields introduce support for **replication wait time and replication timeout counts** on the following levels:

- Thread level
- Static SQL statements
- Dynamic SQL statements

Updated Reports  $\rightarrow$ 

- Thread Accelerator Services THRDACCL
- ✓ Selected Dynamic SQL Statement in Cache DYNSQLTX,
- ✓ Dynamic SQL Stats Current Hist Interval
- ✓ Dynamic SQL Stats Current Hist Interval DYNSQLCI,

And Also STASQLTX, STASQLCD, HTACCEL, HTUACCEL, HSUDYNSD, HSDYNSQD, HSUSTASD, HSSTASQD, BTACTSML, BTACTTRL, BTDSQSML, BTDSQTRL, BTSSQTRL, BTSSQSML)



### **IDAA7 – Thread level**

R/THRDACCL Thre SORT N/A	ad Accelerat	or Services							
Auth ID DANAL04 Plan DSNESPCS Corr ID DANAL04									
Eligible times Elapsed 0.000	000 CP	0.000	000 ZIIP	0.00000					
	tal Avg/Cor			Average/Connect					
Connects	1	TCP/IP CPU	0.001109	0.001109					
Requests	2 2.0								
Timeouts	0 0.0		1:02.622841						
Failures	0 0.0		0.000000	0.000000					
Repl Timeouts	1 1.0		1:02.622844						
		Repl Wait	1:02.606300	1:02.606300					
Statements		Rows							
INSERT	0 0.0		0	0.0					
DELETE	0 0.0		ő	0.0					
UPDATE	0 0.0		õ	0.0					
OPEN	1 1.0		õ	0.0					
COMMIT	ō ō.c		0	0.0					
ROLLBACK	0 0.0		Sent Received	Sent Received					
CREATE	0 0.0		2559 816						
DROP	0 0.0		11 11	11.0 11.0					
		Blocks	ō ō	0.0 0.0					
		Rows	0 0	0.0 0.0					



### **IDAA7 - Static SQLs**

R/STASQLCD	Selected Sta	tic SQL Sta	atement	Detail	Ro	ом 3-44/44
SORT N/A Con Token D83	ED7F84D1869C8	Collection	ID DAN	TIDAA		
		:20	Faile Pageo Inter	list occurrences ed d out rrupted ieval skipped Ø	Limit Ø Ø	Storage Ø Ø Ø
Elapsed time CPU time Sync I/O time Other read Other write Lock suspend Exec unit sw Latch request Page latch Drain lock Drain claims Log writer Global lock Child L-lock Other L-Lock P/P P-Lock Page P-Lock Other P-Lock Wait Pipe Parallel sync	Total 0.000	Avg/Exec 0.0000 0.00000	%E1p N/A 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Getpages Rows examined Rows processd Sorts Index scans Tblspce scans Sync reads Sync writes Parallel grps Estimated degree Plan degree Active Degree	Total 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Avg/Exec 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.
Executed Queue wait Elapsed time Wait 1st row	1 times in a Total 0.012 0.019 0.015	Avg/Exec 0.01256 0.01926 0.01588	DTGP75 %E1p N/A N/A 82.4	Rows returned Bytes returned	Total 20 300	Avg/Exec 20.0 300.0
Replication Walt DB2 Execution CPU time	0.000 0.003 0.003 0.000	0.00000 0.00338 0.00369 0.00066	0.0	Repl timeouts	Ø	0.0



### **IDAA7 - Dynamic SQLs**

R/DYNSQLTX SOBT_N/A	Selected Dynam	ic SQL Sta	temen	t in Cache	Ком	24-65/65
SORT N/A CPU time Sync I/O time Other read Other write Lock suspend Exec unit sw Latch request Page latch Drain lock Drain claims Log writer Global lock Child L-lock Other L-Lock P/P P-Lock PAge P-Lock Other P-Lock Wait Pipe Parallel sync	$\begin{array}{c} 0 & . & 0 & 0 \\ 0 & . &$	0.000 0.000	$\begin{array}{c} 0 & 0 \\$	Rows examined Rows processd Sorts Index scans Tblspce scans Sync reads Sync writes Parallel grps Estimated degree Plan degree Active degree	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
60 bytes SQL st						
Executed Queue wait Elapsed time Wait 1st row	1 times in acc Total 1:02.622 1:02.622 1:02.622 1:02.622	Avg/Exec 9 1:02.622 1:02.622		Rows returned Bytes returned	Total Ø Ø	Avg/Exec 0.0 0.0
Replication	1:02.606	1:02.606	100	Repl timeouts	1	1.0
Wait DB2 Execution CPU time	0.000 0.000 0.000	0.000 0.000 0.000	0.0 0.0 0.0			



## **Support for Cross Invalidation**



### **Support for Cross Invalidation**

#### (003) ACCT - Group Buffer Pool Statistics

**IXLAXISN-SUSPENDS-XI** The number of suspensions of coupling facility asynchronous cross-invalidation service sync-up calls while waiting for asynchronous cross-invalidation to finish.

#### (1002) CURR-STATS2 - Group Buffer Pool Statistics

**IXLCACHE-REQS-XI**—The number of coupling facility cache requests with asynchronous cross-invalidation (XI).

**IXLAXISN-SVCS-CALLS**—The number of coupling facility asynchronous cross-invalidation service sync-up calls to determine whether all outstanding cross-invalidation (XI) notifications have been delivered.

**IXLAXISN-SUSPENDS-XI**—The number of suspensions of coupling facility asynchronous cross-invalidation service sync-up calls that occurred while waiting for asynchronous cross-invalidation to finish.



### Support for Cross Invalidation - Updated (003) ACCT Reports

#### Thread Group Buffer Pool Report:

	C	55 D1		
-	Group Bu	ffer Pool		
SORT N/A Auth ID DANAL04 F		spes ca		1.04
GROUP BUFFER POOL GBP0	Plan DSNE	SPCS CO	DANA	4104
READS				OTHER
Hit Ratio 0.000				
HIC RACIO 0.000	Buf Inv	Pg Gone	Total	Unregister page Explicit X-Inv
Data Returned	0	0	0	Pri IXLCACHE Ra
Data Not Returned				XI SyncUp Waits
X-DB2 R/W	0	0	0	
No X-DB2 R/W	N/A	0	0	SECONDARY
Tot Not Returned	0	0	0	Wrt Check Susp
GetPgs GBP Dep Pgs	N/A	N/A	3	IXLCACHE Req
WRITES Chgd Pgs	Cln Pgs	Total		
Sync Ø	0	0		PAGE P-LOCK
Wrt/Reg Multi Pgs	0			Space Map Lk Rq
Wrt/Reg One Page	0			Data Page Lk Rq
				Indx Leaf Lk Rq
				Unlock Requests
				Spc Map Lk Susp
				Data Pg Lk Susp
				Indx Lf Lk Susp

#### **Other Updated Reports:**

- Thread Group buffer pool History Summary
- H.Probe Accounting summary for Plan
- Probe Thread Summary
- H Probe Thread Accounting Summary
- BTACTSML Detailed Summary of Accounting Information Report
- BTACTTRL Detailed Trace of Accounting Information Report



1 0 0

0 0

### Support for Cross Invalidation - Updated (1002) CURR-STATS2 Reports

#### Subsystem Group Buffer Pool Statistics Report:

R/SYSGBUFD	Group	BP Detail	L This DB2	2 - Accum		Accun	,
GROUP BUFFER	POOL GBP6	)				<u>/////////////////////////////////////</u>	
READS			Pg Gone	Async	Total	STORAGE FAI	LURES
Data Ret	urned	286	995	Ñ/A	1281	Writes	0
Data Not	Returned	39032	147793	N/A	186825		
Hit Rati	o 0.007					CASTOUT	
						Class	1148
Storage	Stats	48330	Changed	Pages	34	Grp BP	0
Director	y Info	Θ	Castout	Class	2536	Pages	60701
Castout	Stats	485				_	
Castout	Multi Pgs	8119	Castout	One Page	1045	OTHER	
						Checkpts	0
WRITES	Chgd Pgs	Cln Pgs	Total	Write/Reg		Del Pset	142
Sync	117529	0	117529	Reg Mult	11999	9 CrossInv	0
Async	1046	0	1046	MultiPgs	99746	5 IXLCACHE	Reg 9501
Total	118575	0	118575	Req 1 Pg	18829	9 WrAround	0
P-LK LOCK	Spacemap	Data	IndxLeaf		C	ASYNC XIS	
	52912	5862	21817			IXLCACHE	Rea 33
Suspends		1	5			SyncUP Ca	
Negotiat		ē	ē			SyncUP Wa	
Unlock R		81092	-				
ALLOCATION	s	Current	StIn HWM	RECLAIMS			
	y entries	4896	4896	Director	ry entry		811907K
Data ent		978	978		-	with XI	837919K
Data ent	s changed	12	*****		ry		33130952
	4K pages		2304		-		

#### **Other Updated Reports:**

- Group Buffer Pool History Detail
- Group Buffer Pool History Summary Detail
- Batch Summary of DB2 Database Address Space Statistics Report
- Batch Statistics Data Trace Report



## Support for new Resource Limit Facility codes



### Support for new Db2 12 Resource Limit Facility codes

- About 40 new codes showing limit is defined based on which parameters:
  - Specific/Any Auth ID- Specific/Any Collection ID Specific/Any Package from Local/Any Location.
  - Specific/Any Application name, Specific/Any User ID, Specific/Any Workstation, Specific/Any IP address.
- And Also:
  - **INSTALL ZPARM USED FOR LIMIT -** Limit is specified by Zparm
  - **INFINITE USER HAS SYSADM/SYSOPR AUTHORITY -** Infinite limit User has super SYSADM/SYSOPR authority.



### Support for new Db2 12 Resource Limit Facility codes

New Reports Thread Resource Limit Facility

"5" Active Threads  $\rightarrow$  "Select Thread"  $\rightarrow$  "6" More  $\rightarrow$  "12" Resource Limit Facility

<u>M</u> enu <u>P</u> rint <u>T</u> ools <u>H</u> elp <u>C</u>	A SYSVIEW for DB2 20.0	D12A CA31 D12AENDK3	05/04/20 06:20:23 SNOOL01
			FOCUS OFF
	ce Limit Facility		
SORT N/A			
Auth ID SNOOL01 Plan DI	STSERV COTT ID	db2]cc_app11	
Resource Limit Table Name ASU Limit	DSNRLST01 47470k % of		
CPU Limit	866.327 Limit		
Current/Last CPU Resource Use	d 6.617 0.7		
Maximum CPU Resource Used	0.004 0.0		
How ASU value was determined	SPEC AUTH ANY CO	L ANY PKG ANY I	LOCN
Resource Limit Code	12		

✓ Also Thread Resource Limit Facility History request (HTHRLF)



### Support for new Db2 12 Resource Limit Facility codes

**Detailed Summary Of Accounting Information (BTACTTRL)** 

REQUEST: BTA FIRST RECORD		/20 12:26:22							DB2	sys:	D12A
				DETAIL	ED TRACE	OF AC	COUNTIN	G INFORMATION			
SQL DML	TOTAL	SQL DCL	TOTAL	SQL DDL	CREATE	DROP	ALTER	RESOURCE LIMIT FACILITY			
SELECT	0	LOCK TABLE	0	TABLE	0	0	0	LIMIT TABLE: DSNRLST01			
INSERT	0	GRANT	0	INDEX	0	0	0	SRVCE UNITS: 47470K			
UPDATE	0	REVOKE	0	TABLESPACE	0	0	0	CPU SECONDS: 866.327			
DELETE	0	SET SQLID	0	STO GROUP	0	0	0	MAX CPU SEC: 0.004			
MERGE	0	SET H VAR	0	DATABASE	0	0	0	LIMIT CODE : 12			
TRUNCATE	0	SET DEGREE	0	SYNONYM	0	0		SPEC AUTH ANY COL ANY PKG ANY LOCN			
PREPARE	1	CONNECT 1	0	VIEW	0	0	0				
CALLS	0	CONNECT 2	0	ALIAS	0	0					
DESCRIBE	0	RELEASE	0	PACKAGE		0					
DESC TBL	0	SET CONNEC	0	GBL TMP TBL	0						
OPEN	1	SET RULES	0	AUX TABLE	0						
CLOSE	0	ASSOC LOC	0	TRIGGER	0	0					

#### • Updated/redesigned Reports

- Thread Locks Real Time
- Thread Locks History
- Thread Locks History Summary
- Package History Lock Detail
- Package History RLF Summary

- Thread RLF History Summary
- Package History Lock Summary
- Detailed Summary Of Accounting Information Grouped By AUTH, PLAN, CORR
- Detailed Summary Of Accounting Information





(003) DB2 Accounting Record

#### CA SYSVIEW® PERFORMANCE MANAGEMENT OPTION FOR DB2 20

Version 20.0 🔻

English 🔻 🤮

Search this product

Q

IBM DB2 Field Name: Calculated value

#### DECL-CPU-DB2-TOTAL

The total amount of CPU time used while in Db2 (accounting class 2). This time includes Db2 CPU time used by stored procedures, user-defined functions, and triggers. This time also includes zIIP CPU usage from both locally executed SQL and stored procedures and user-defined functions executed in a WLM or stored procedure address space.

IBM DB2 Field Names: Calculated value

#### DECL-CP-DB2-TOTAL

The total amount of CPU time used on CP processors while in Db2. **IBM DB2 Field Names:** Calculated value

#### DECL-ZIIP-TIME-DB2

The total amount of CPU time used on specialty engines (zIIP) while in Db2. The zIIP CPU time is normalized. **IBM DB2 Field Names:** Calculated value

#### DECL-WAIT-DB2-IO

The total amount of thread elapsed time (accounting class 3) spent processing I/O requests or waiting for I/O requests performed for other threads. **IBM DB2 Field Names:** Calculated value

#### DECL-WAIT-LOCK

The total amount of thread elapsed time (accounting class 3) while waiting for a Db2 resource or a serializing process (latch). The value includes Db2 times such as page latch wait time, time the requester is suspended while waiting to acquire the drain lock, time waiting for claims to be released, and wait time for global lock contentions.

IBM DB2 Field Names: Calculated value



#### (003) DB2 Accounting Record

### Elapsed Time and Wait Time Fields Calculations

The following table specifies how the elapsed time and wait time fields are calculated.

IQL Field Name	IBM DB2 Field Names Calculation
TOTAL-TIME-DB2	QWACASC + QWACSPEB + QWACSPNF_ELAP + QWACUDEB + QWACUDFNF_ELAP + QWACTREE + QWACTRET
DECL-CPU-APPL	QWACEJST + QWACCLS1_ZIIP + QWACSPCP + QWACSP_CLS1SE + QWACUDCP + QWACUDF_CLS1SE
DECL-CPU-DB2-TOTAL	QWACAJST + QWACSPTT + QWACUDTT + QWACTRTT + QWACTRTE + QWACSPNF_CP + QWACUDFNF_CP + QWACCLS2_ZIIP + QWACTRTT_ZIIP + QWACSP_CLS2SE + QWACUDF_CLS2SE + QWACTRTE_SE + QWACSPNF_ZIIP + QWACUDFNF_ZIIP
DECL-CP-DB2-TOTAL	QWACAJST + QWACSPTT + QWACUDTT + QWACTRTT + QWACTRTE + QWACSPNF_CP + QWACUDFNF_CP
DECL-ZIIP-TIME-DB2	QWACCLS2_ZIIP + QWACTRTT_ZIIP + QWACSP_CLS2SE + QWACUDF_CLS2SE + QWACTRTE_SE + QWACSPNF_ZIIP + QWACUDFNF_ZIIP
DECL-WAIT-DB2-IO	QWACAWTI + QWACAWTR + QWACAWLG + QWACAWTW + QWAX_PIPE_WAIT
DECL-WAIT-LOCK	QWACAWTL + QWACAWTP + QWACAWTJ + QWACAWTK + QWACAWTM + QWACAWTN + QWACAWTO + QWACAWTQ + QWACAWLH + QWAC_PQS_WAIT + QWAXAWDR + QWAXAWCL
DECL-WAIT-LOG	QWAXALOG + QWAXAWAR



(369) Repeating Fields

#### DECL-WAIT-DB2-IO

The total amount of thread elapsed time (accounting class 3) spent processing I/O requests or waiting for I/O requests performed for other threads. **IBM DB2 Field Names:** Calculated value

#### DECL-WAIT-LOCK

The total amount of thread elapsed time (accounting class 3) w serializing process (latch). The value includes Db2 times such a requester is suspended while waiting to acquire the drain lock, and wait time for global lock contentions. **IBM DB2 Field Names:** Calculated value

#### DECL-WAIT-LOG

The total amount of thread elapsed time (accounting class 3) w suspended due to an -ARCHIVE LOG MODE(QUIESCE) comn suspend time for the individual threads, and not the time it took **IBM DB2 Field Names:** Calculated value

#### DECL-WAIT-SERVICES

The total amount of thread elapsed time (accounting class 3) w execution unit switches to Db2 services. The value includes Db open, close, define, extend, recall, or delete data sets; update s commit.

#### IBM DB2 Field Name: Calculated value

#### Elapsed Time and Wait Time Fields Calculations

The following table specifies how the elapsed time and wait time fields are calculated.

IQL Field Name	IBM DB2 Field Names Calculation
TOTAL-TIME-DB2	QWACASC + QWACSPEB + QWACSPNF_ELAP + QWACUDEB + QWACUDFNF_ELAP + QWACTREE + QWACTRET
DECL-CPU-APPL	QWACEJST + QWACCLS1_ZIIP + QWACSPCP + QWACSP_CLS1SE + QWACUDCP + QWACUDF_CLS1SE
DECL-CPU-DB2-TOTAL	QWACAJST + QWACSPTT + QWACUDTT + QWACTRTT + QWACTRTE + QWACSPNF_CP + QWACUDFNF_CP + QWACCLS2_ZIIP + QWACTRTT_ZIIP + QWACSP_CLS2SE + QWACUDF_CLS2SE + QWACTRTE_SE + QWACSPNF_ZIIP + QWACUDFNF_ZIIP
DECL-CP-DB2-TOTAL	QWACAJST + QWACSPTT + QWACUDTT + QWACTRTT + QWACTRTE + QWACSPNF_CP + QWACUDFNF_CP
DECL-ZIIP-TIME-DB2	QWACCLS2_ZIIP + QWACTRTT_ZIIP + QWACSP_CLS2SE + QWACUDF_CLS2SE + QWACTRTE_SE + QWACSPNF_ZIIP + QWACUDFNF_ZIIP



## **ZOWE Conformance**



### **Zowe Conformant Status is earned...**

https://www.openmainframeproject.org/projects/zowe/conformance



API MEDIATION LAYER - ZOWE V1



CA Database Management Solutions for Db2 for z/OS

CA Database Management Solutions for Db2 for z/OS (API Mediation Layer ZOWE V1)

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Zowe Conformant · API Mediation Layer ZOWE V1

#### RESTful APIs for Db2 for z/OS data access and management

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Twitter	@Broadcom	Latest Tweet	this week		
Headquarters	San Jose, California	Headcount	10,001-1,000,000		
Market Cap	\$132.73B				

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### Any Questions...



Aysen Solak aysen.solak@broadcom.com





## **MTC-DBM**

**Srinivas Adupa** *srinivas.adupa*@*broadcom.com* 







## **MTC DBM: SQLCODE Charting**

**Use-case:** I would like to

- see SQLCODE report in UI
- Have the ability to chart
- Segregate the report by looking at only those SQLCODES that I want with just a click
- Detail report of an SQLCODE
- Ability to Export the data into a CSV form
- Delivered with PTF : SO14491

**Live Demo** 







## MTC DBM: EXPORT to CSV

**Use-case:** I would like to

- Export all the data of a data table to a CSV format
- Perform my own charting (if data is there in my local system)

– Delivered with PTF : SO14168

– Live Demo



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### Any Questions...



Srinivas Adupa srinivas.adupa@broadcom.com





## In Closing...



### **Update to Tech Docs 'New Features' information**

- When a new feature is added to the 'New Features' section of our 'Release Notes' the title of that feature will include the PTF # that delivers the new feature.
- The 'New Features' section can be found here.
- Here is a list of some of our recent new features:
  - Support for Unload from Remote Db2 (LUW) RDBMS (SO14382)
  - <u>SQLCODE Reporting and Chart Support (SO14491)</u>
  - <u>Single Sign-On Support for an API Service in the Zowe API Mediation Layer (SO14401)</u>
  - Capture Threshold Values (CTV) of objects selected by RTOS (SO14174)
  - Post-Install Enhancement to Support Non-Db2 for z/OS Binds (SO14028)



### When is the next Community Update call?

- The last Tuesday of each month
- Our next call will be Tuesday September 29th, 2020



## Mainframe Technical Exchange Digital Experience October 13 - 15, 2020

- Join our technical experts for education sessions, product strategy & ideation
- Registration is FREE and coming soon

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More details at <u>http://bit.ly/2020TechExchange</u>





DevOps



Infrastructure Management



Security

### **MTE Digital Experience – Db2 Tools Presentations**

- DBM01 CA Database Management Solutions for Db2 for z/OS Trends and Direction: DevOps, AIOps, and Data Protection
- DBM02 Sort Out Your Db2 Utilities: Tuning Sort Packages to Optimize Workload Throughput CA Fast Load for Db2 for z/OS, CA Rapid Reorg for Db2 for z/OS
- DBM03 Augmented Db2 Performance and Administration for New Developers Using Mainframe Team Center - Database Management for Db2 for z/OS
- DBM04 DevOps: Automate Db2 Schema Management
- DBM05 CA Db2 Tools and Db2 12 Continuous Delivery: What You Need to Know & CA Db2 Tools Maintenance and Configuration Hints and Tips
- DBM06 CA Database Analyzer for Db2 for z/OS: Something Old, Something New, and Something Different
- DBM07 What You Might or Might Not Know You Can Do With Db2 Backup and Recovery Tools: CA Log Analyzer for Db2 for z/OS & CA Fast Recover for Db2 for z/OS
- DBM08 Archive Tables in CA SYSVIEW Performance Management Option for DB2
- DBM09 Exploiting CA RC/Migrator for DB2 for z/OS: Tips and Tricks
- DBM10/DBM11 CA Database Management for Db2 Customer Roundtables

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### CA Db2 Tools 20.0 Validation Project

- <u>https://validate.broadcom.com/key/DB2Tools200</u>
- Our next meeting is Thursday Sept 3<sup>rd</sup>, 2020



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# Thank You