

# R22 , DB2 and You

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# Open TCB Performance

- **DB2 only**
  - ▶ Does not apply to MQ or DBCTL
- **To gain the best possible performance**
  - ▶ Applications must be threadsafe and defined threadsafe to CICS
  - ▶ Exits must be threadsafe and defined threadsafe to CICS
    - For example XPCFTCH, XEIIIN, XEIOU, XRMIIN, XRMIOUT, dynamic plan
  - ▶ Eliminate use of non-threadsafe CICS commands
    - ASKTIME, FORMATTIME, FILE CONTROL, etc.
    - Threadsafe commands listed in APRM, appendix L
    - If required, arrange in the application so they are not interspersed with SQL calls
- **When using TRANISO**
  - ▶ MAXOPEN TCBs set to provide an adequate number of DB2 threads
    - This number includes basespace, common subspace and unique subspace tasks
- **EXEC CICS LOAD and LINK are threadsafe**
  - ▶ The first time a module is used, or following a CEMT newcopy
    - LE Establish\_Ownership\_Type must run on the QR
- **Transient data is not threadsafe**

# Open TCB Performance ...

- **MODE\_SWITCH**

- ▶ For non-threadsafe exits

- Switch from L8 to QR and return when exit complete

- a non-threadsafe XRMIIN, XRMIOU, XEIIN, or XEIOUT can double the number of switches

- ▶ For a non-threadsafe commands

- switch to **QR** and remain there until next SQL call

- **Cobol applications**

- ▶ Avoid MODE\_SWITCH by using static or dynamic calls

- when a DB2 call is issued from the static/dynamic called routine, upon completion of the DB2 request the CONCURRENCY definition of the program issuing the static/dynamic call determines the mode used after the DB2 call completes

- **CICS 110 SMF record CPUTIME now includes the DB2 CPUTIME**

- ▶ watch for double accounting.

- **Investigate the use of CACHEDYN for DB2**

- ▶ Particularly with DB2 V6 and V7

# Load Module Scanner

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- **DFHEISUP**
  - ▶ Load module scanner
- **DFHEIDTH**
  - ▶ Filter set for CICS commands that give access to shared storage
    - EXTRACT EXIT
    - GETMAIN SHARED
    - ADDRESS CWA

# DFHEIDTH - found in SDFHSAMP -Notes

```
#####04000000
# CICS LOAD MODULE SCANNER FILTER TABLE - THREADSAFE INHIBITORS #08000000
# This table identifies commands which "may" cause the program not to #12000000
# be threadsafe in that they allow accessibility to shared storage and #16000000
# the application must have the necessary synchronization logic in #20000000
# place to guard against concurrent update. #24000000
#####28000000
# The extract command obtains the address and length of the global #44000000
# work area for the GLUE or TRUE. #48000000
#####52000000
EXTRACT EXIT GASET * 56000000
# 60000000
#####64000000
# Getmain shared storage can be shared between CICS transactions. #68000000
#####72000000
GETMAIN SHARED * 76000000
# 80000000
#####84000000
# The CWA is shared between all CICS transactions. #88000000
#####92000000
ADDRESS CWA * 96000000
```

# Load module scan using supplied DFHEIDTH -Notes

```
//SCANNER JOB (????,????), 'JIM GRAUEL',MSGLEVEL=(1,1),
// CLASS=A,MSGCLASS=O,NOTIFY=GRAUEL,REGION=0M
/*JOBPARM SYSAFF=SYSD
//*****
/** RUN THE LOAD MODULE SCANNER
/** DFHEIDTH CHECKS FOR 'SHARED ' COMMANDS IN THREADSAFE CHECKS
/** Altered DFHEIDTH to check for ASKTIME, etc.
//*****
/*DFHSCAN EXEC PGM=DFHEISUP,PARM=(' SUMMARY, DETAILMODS'),REGION=512M
//DFHSCAN EXEC PGM=DFHEISUP,PARM=(' DETAIL,ALL'),REGION=512M
//STEPLIB DD DSN=CTS220.CICS.SDFHLOAD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSERR DD SYSOUT=*
/** FILTER FILE, SUPPLIED BY USER, OR FROM SAMPLES DATA SET
//DFHFLTR DD DSN=CTS220.CICS.SDFHSAMP(DFHEIDTH),DISP=SHR <-----
/*DFHFLTR DD DSN=GRAUEL.CICS.JCL(DFHEIDTH),DISP=SHR
/** MODULE LIST, TO BE CREATED DURING SUMMARY,DETAIL RUNS.
//DFHDTL DD DISP=OLD,DSN=GRAUEL.SCANOUT
/*DFHDTL DD DSN=GRAUEL.SCANOUT,DISP=(NEW,CATLG,DELETE),
/** DCB=(RECFM=FB,LRECL=80,BLKSIZE=8000),SPACE=(CYL,(1,1))
/** PDS CONTAINING LOADMODULES TO BE SCANNED
//DFHIN DD DISP=SHR,DSN=GRAUEL.XP05.LOAD
```

```
*****
***** Sample Output *****
*****
CICS LOAD MODULE SCANNER UTILITY
SCAN PERFORMED ON Mon Jan 20 10:54:17 2003 USING TABLE RSTABLE1.3
```

DETAILED LISTING OF GRAUEL.APPL.LOAD

```
=====
Module Name      DFH$WBST
Module Language  Assembler
Offset/EDF      Command
-----
00002760/no-edf GETMAIN SET FLENGTH INITIMG SHARED
```

Total possible commands located = 1



# Modify DFHEIDTH to check for commands

```
#####04000000
# CICS LOAD MODULE SCANNER FILTER TABLE - THREADSAFE INHIBITORS #08000000
# This table identifies commands which "may" cause the program not to #12000000
# be threadsafe in that they allow accessibility to shared storage and #16000000
# the application must have the necessary synchronization logic in #20000000
# place to guard against concurrent update. #24000000
#####28000000
# The extract command obtains the address and length of the global #44000000
# work area for the GLUE or TRUE. #48000000
#####52000000
EXTRACT EXIT GASET * 56000000
# 60000000
#####64000000
# Getmain shared storage can be shared between CICS transactions. #68000000
#####72000000
GETMAIN SHARED * 76000000
# 80000000
#####84000000
# The CWA is shared between all CICS transactions. #88000000
#####92000000
ADDRESS CWA * 96000000
#####96010000
# The following non-threadsafe commands commands added to check for #96020000
# application usage #96020011
# JMG 1/18/2003 #96021001
#####96030000
ASKTIME * 96040001
FORMATTIME * 96060002
SYNCPOINT * 96061002
WRITE JOURNALNAME 96061111
WRITE FILE 96062010
WRITEQ TD 96070008
```



# Load module scan using modified DFHEIDTH -Notes

```
//SCANNER JOB (????,????), 'JIM GRAUEL', MSGLEVEL=(1,1),
// CLASS=A,MSGCLASS=O,NOTIFY=GRAUEL,REGION=0M
/*JOBPARM SYSAFF=SYSD
//*****
/** RUN THE LOAD MODULE SCANNER
/** DFHEIDTH CHECKS FOR 'SHARED ' COMMANDS IN THREADSAFE CHECKS
/** Altered DFHEIDTH to check for ASKTIME, etc.
//*****
/*DFHSCAN EXEC PGM=DFHEISUP,PARM=(' SUMMARY, DETAILMODS'),REGION=512M
//DFHSCAN EXEC PGM=DFHEISUP,PARM=(' DETAIL, ALL'),REGION=512M
//STEPLIB DD DSN=CTS220.CICS.SDFHLOAD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSERR DD SYSOUT=*
/** FILTER FILE, SUPPLIED BY USER, OR FROM SAMPLES DATA SET
/*DFHFLTR DD DSN=CTS220.CICS.SDFHSAMP (DFHEIDTH),DISP=SHR
//DFHFLTR DD DSN=GRAUEL.CICS.JCL (DFHEIDTH),DISP=SHR <-----
/** MODULE LIST, TO BE CREATED DURING SUMMARY,DETAIL RUNS.
//DFHDTL DD DISP=OLD,DSN=GRAUEL.SCANOUT
/*DFHDTL DD DSN=GRAUEL.SCANOUT,DISP=(NEW,CATLG,DELETE),
/** DCB=(RECFM=FB,LRECL=80,BLKSIZE=8000),SPACE=(CYL,(1,1))
/** PDS CONTAINING LOADMODULES TO BE SCANNED
//DFHIN DD DISP=SHR,DSN=GRAUEL.XP05.LOAD
```

```
*****
***** Sample Output *****
*****
```

```
CICS LOAD MODULE SCANNER UTILITY
SCAN PERFORMED ON Sat Jan 18 11:45:53 2003 USING TABLE RSTABLE1.3
```

```
DETAILED LISTING OF GRAUEL.XP05.LOAD
=====
```

Module Name	<u>TESTPOX</u>
Module Language	PL/1
Offset/EDF	Command
00094027/00003030	<u>ASKTIME ABSTIME</u>
00096285/00002082	<u>SYNCPOINT</u>
00096320/00002071	<u>SYNCPOINT ROLLBACK</u>





# DFH0STAT -- note this page was added late

Applid IYK2Z2G1 Sysid JOHN Jobname CI13JTD5 Date 02/07/2003 Time 15:19:20

CICS 6.2.0

## User Exit Programs

Program Name	Entry Name	<----- Global Area ----->		Use Count	No. of Exits	Program Status	Program Concurrency
		Entry Name	Length				
DFHEDP	DLI		0	0	0	Started	Quasi Rent
JSTEXIT	JSTEXIT		0	0	1	Started	Thread Safe
JSTEXIT2	JSTEXIT2		0	0	1	Started	Quasi Rent
DFHD2EX1	DSNCSQL	DSNCSQL	16	1	0	Started	Quasi Rent

Program Name	Entry Name	API	Concurrency Status	Qualifier	Length	<----- Task Related User Exit Options ----->					
						Taskstart	EDF	Shutdown	Indoubt	SPI	Purgeable
DFHEDP	DLI	Base	Quasi Rent		284	No	No	No	No Wait	No	No
JSTEXIT	JSTEXIT	Base	Thread Safe		0	No	No	No	No Wait	No	No
JSTEXIT2	JSTEXIT2	Base	Quasi Rent		0	No	No	No	No Wait	No	No
DFHD2EX1	DSNCSQL	Open	Thread Safe	DF2D	222	No	Yes	Yes	Wait	Yes	Yes

## Global User Exits

Exit Name	Program Name	Entry Name	<----- Global Area ----->			Number of Exits	Program Status	Program Concurrency
			Entry Name	Length	Use Count			
XRMIIN	JSTEXIT	JSTEXIT		0	0	1	Started	Thread Safe
XRMIIN	JSTEXIT2	JSTEXIT2		0	0	1	Started	Quasi Rent



# Maintenance

## ● APARs -- CICS

### ▶ PQ63808

- DFHDS0001 Abend0C4 in DFHSDSDS3 when something goes wrong in DB2

### ▶ PQ67351 ~~(open)~~

- Performance problem when using non-threadsafe applications
- fix will honor DPMODE setting

### ▶ PQ67559 (open)

- CPIC not threadsafe - causes DFHPC0401 - abendAAOM of TCP task

### ▶ PQ67863 (open)

- Loop - DFHDSAT's stack points to itself - call to DFHFCRP from DFHERM under L8 - DFHFCRP not threadsafe

### ▶ PQ67892

- abendu0999 in DB2 when SQL request takes longer than RUNAWAY time.

### ▶ PQ68099

- DFHAP0002 CODE X'3196 because DFHSMGFI call not threadsafe - 2 tasks getmain the same CSB

### ▶ PQ69553 (open)

- DFHSM0133. ECDSA FULL OF KESTK31 SUBPOOL STORAGE FOR L8 TCBs

### ▶ PQ70064 (open)

- DFHLSCU update to provide guidance in specifying LS\_SIZE for logstreams

## ● APARs -- DB2

### ▶ PQ65357

- CICS-DB2 THREAD IS NOT RELEASED PROPERLY AT SYNCPOINT IF PACKAGE IS BOUND WITH OPTHINT.