

Problem Analysis with IMS Tools

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Session 11006

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Agenda



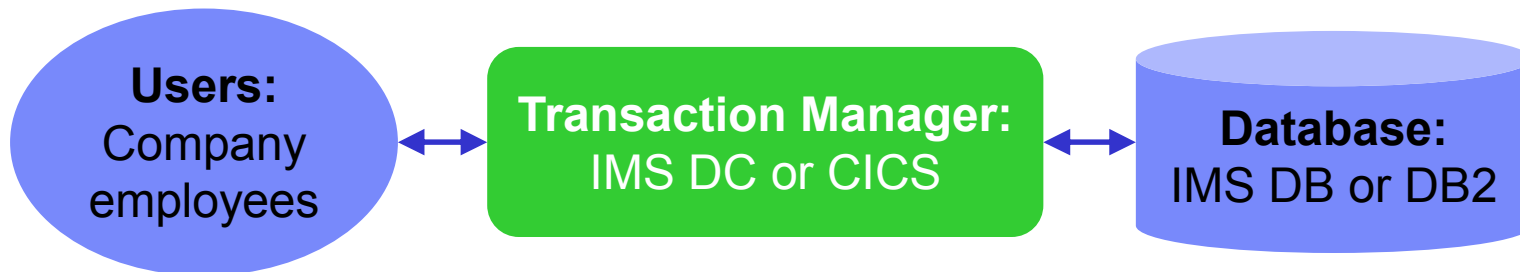
**Introducing
Transaction Analysis Workbench**

Scenario: IMS DB2 problem

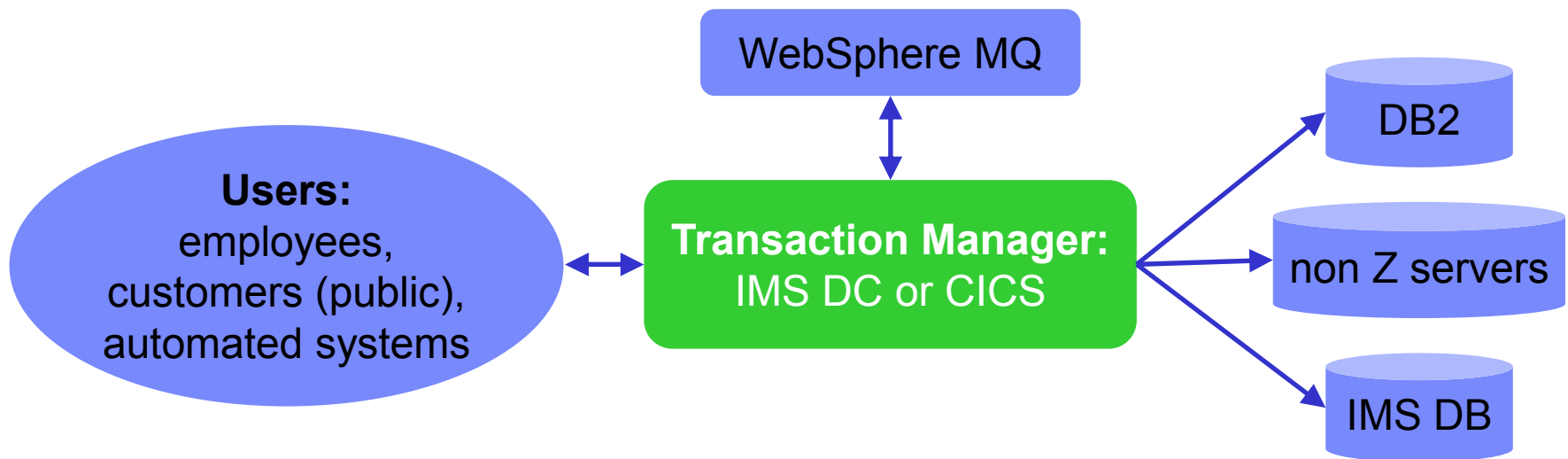
Batch SMF and OPERLOG reports

It's all about evolution

1980: in-house users only; simple data, single data store

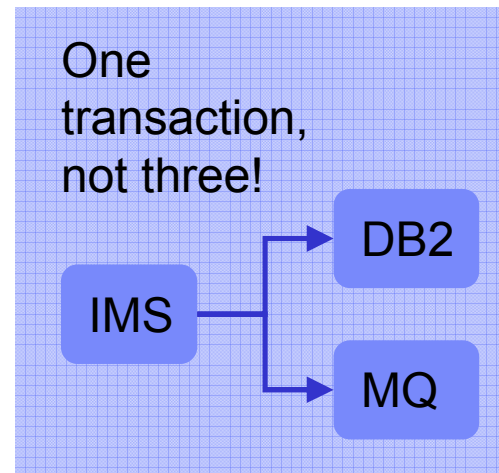
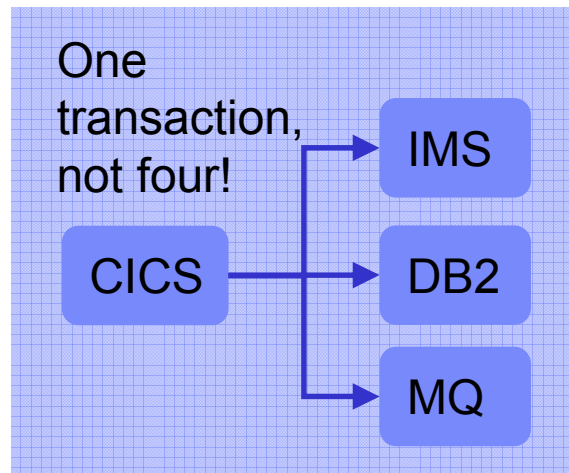
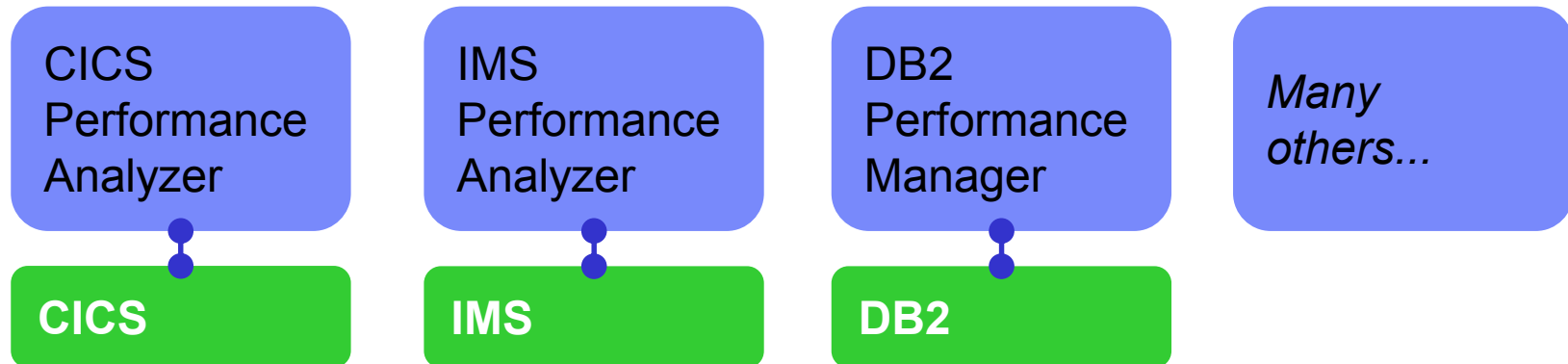


2012: users are customers; data is complex, often distributed



Analysis tools have not kept pace

There are many tools to help analyze *individual* transaction environments on System z:



Each tool is well-suited to its environment, but you often need a subject matter expert to use each tool

Product overview

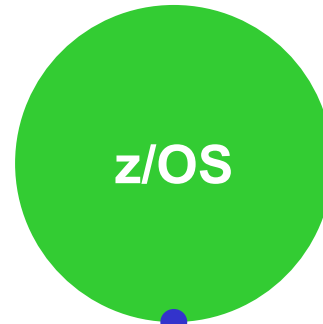
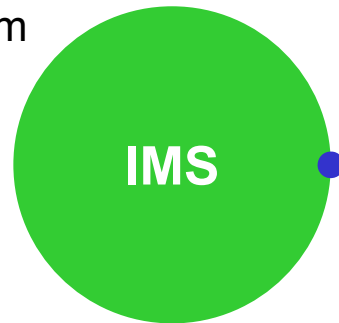
- A transaction analysis framework for System z
 - Not transaction manager specific
 - Leverages current IBM tools for transaction analysis
- Not IMS or CICS specific, but first release provides more synergy with the existing tools for those transaction managers
- Automates collection of data needed for problem analysis
- Provides a session manager to manage problem analysis through its lifecycle
- In this presentation, it might look like the Workbench is IMS or CICS centric but that is not the case
 - The tools for IMS and CICS are the first to be engaged

Product goals

- Enable higher productivity by lower skilled staff.
- Automate trivial tasks commonly needed for problem determination.
 - Data acquisition – get the data needed for problem analysis
 - Reporting – basic reporting without tool specific knowledge
 - Autonomics - automated transaction analysis
- Allow the “first responder” to determine the most likely source of the problem.
 - Give the receiving expert confidence in the assignment
- Allow for “deep dive” problem determination via synergy with other IBM tools
 - Create a “common” approach to transaction problem resolution
 - Increase the degree and ease of collaboration in problem resolution

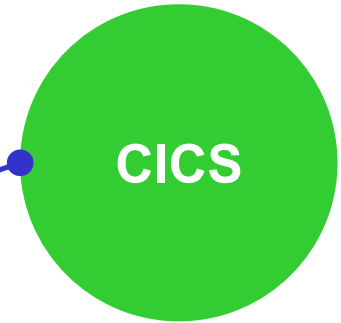
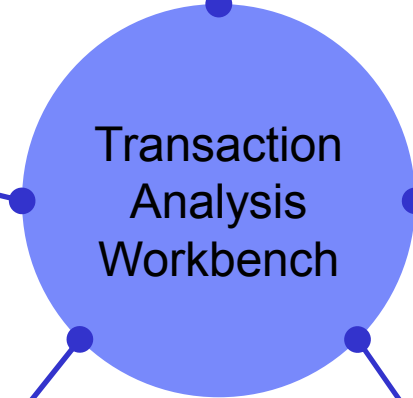
Supported logs

IMS log
 IMS transaction index
 IMS monitor and DB monitor
 IMS Connect event data
 CQS log stream

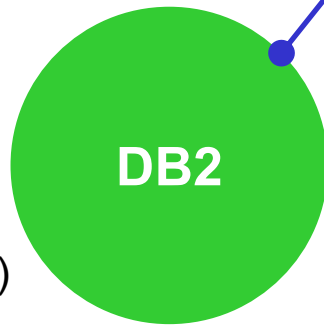


Selected SMF record types (in either log streams or data sets)
 OPERLOG (log stream)

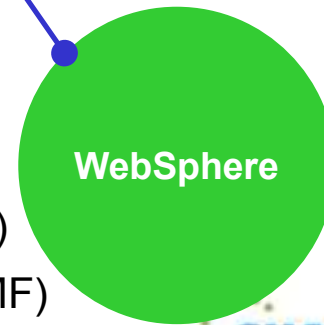
CMF performance (SMF)



DB2 log
 Accounting (SMF)
 Performance (SMF)



WebSphere
 MQ log extract
 Statistics (SMF)
 Accounting (SMF)



Session manager (ISPF dialog)

- Session manager approach to problem management:
 - Register the problem
 - Locate the files required to diagnose the problem: IMS, DB2, CICS, SMF, OPERLOG etc.
 - Resume from where you left off, or from a previous save-point
 - Write reminder notes and information as you go
 - Re-assign the problem to the appropriate subject-matter expert
 - Use PI-style interactive analysis to look at related logs and other subsystem events via SMF, OPERLOG etc.
 - Run reports that are specific to the problem

Scenario: IMS DB2 problem

- On the following slides, we present an example scenario: a user has reported a long transaction response time for an IMS transaction performing DB2 updates
- The analysis is divided into two parts:
 1. The **first responder** registers the problem in the Workbench session manager, collects the log files, and then runs some preliminary batch reports to attempt to identify the cause of the problem
 2. The **specialist** performs a “deep dive” on the problem: reviewing the reports, and using interactive analysis to identify the specific log records for the cause of the problem

IMS DB2 problem: creating a session

```

File Help
-----
                                Problem Details                                Row 1 to 3 of 3
Command ==> _____ Scroll ==> PAGE

Key . . . . . : 00000007
Summary . . . . : IMS DB2 problem Description...
Severity . . . . : -
Reference . . . . : _____ — When problem occurred —
Reported by . . : _____ YYYY-MM-DD HH.MM.SS.TH
Assigned to . . : _____ From 2010-06-24 15.20.00.00
Status . . . . . : OPEN To 2010-06-24 16.50.00.00 Zone . . LOCAL

Systems where problem occurred (maximum of 32):

/ System + Type +
IADG IMS
DB3A DB2
FTS1 IMAGE
***** Bottom of data *****

```

Create a session (main menu ► option 1 **Sessions** ► **NEW**).
 Add the names of the relevant IMS, DB2, and MVS (“IMAGE”) systems.

IMS DB2 problem: adding log files

```

File Help
-----
Locate and Manage Log Files                               Row 1 to 4 of 4
Command ==> _____ Scroll ==> PAGE

Select an option to add log files to the session then press Enter
_ 1. Manually specify the log files required for analysis
_ 2. Run automated file selection to locate the required log files

Automated File Selection:                                — Locate Files Interval —
System . . . _____ +                               YYYY-MM-DD HH.MM.SS.TH
Type . . . . _____ +                               From 2010-06-24 15.20.00.00
                                                To 2010-06-24 16.50.00.00

Log Files:
/      Data Set Name                                     Name      System      File
_____ IMPOT01.SLDSP.IADG.D10175.T1624488.V25         IADG       IMS         LOG
_____ IMPOT01.DB3A.ARCLG1.A0000037                   DB3A       DB2         LOG
_____ FUNDID.SMF.D100624.TESTING.FULL                 FTS1       IMAGE       SMF
***** Bottom of data *****

```

On the session menu, select Files. Either manually add the associated IMS and DB2 logs, or used automated file selection. Manually add the SMF file.

IMS DB2 problem: batch reporting

File Help

Reporting

Option ==> _____

Select a reporting option then press Enter.

- 1 IMS Transaction and system analysis using IMS PA
- 2 CICS Transaction and system analysis using CICS PA
- 3 SMF z/OS and subsystem analysis
- 4 OPERLOG Sysplex operations log (SYSLOG)

On the session menu, select option 3 **Reporting**. Then, on the reporting menu, select option 1 **IMS**.

IMS DB2 problem: IMS PA reporting

File Help

Reporting - IMS Transaction and System Analysis

Command ==>

Type of analysis:

- / Individual transaction detail
- / Transaction statistical summary
- / IMS system resources
- / Deadlock analysis

Report Interval

	YYYY-MM-DD	HH.MM.SS.TH
From	<u>2010-06-24</u>	<u>15.20.00.00</u>
To	<u>2010-06-24</u>	<u>16.50.00.00</u>

Focus of transaction analysis:

- / Response time breakdown and CPU usage
- / DLI calls
- Fast Path database and buffers
- / Subsystem usage
- CICS DBCTL

Select the IMS system to report against, or specify an IMS log file:

- 2 1. System . . . _____ +
- 2. Log File . . . 'IMPOT01.SLDSP.IADG.D10175.T1624488.V25' +

Select reports, and the IMS log file. Press Enter to view the generated report JCL, and then enter **SUB** to submit the job.



IMS DB2 problem: IMS PA reporting

Tran detail: Response & CPU

LIST0001 Printed at 16:03:44 01Sep2011 Data from 16.31.08 24Jun2010

Org	IMS Tran	DB Call	CPU	Output	InputQ
LTERM	Trancode	Count	Time Userid	LTERM	Time
FUNTRM15	IVTNV	16.26.06.784315	1 0.002527	FUNTRM15	0.000257
FUNTRM15	CEXTNONC	16.31.50.839616	5 0.012386	FUNTRM15	0.000170
FUNTRM15	MQATREQ1	16.33.18.743821	5 0.026647	FUNTRM15	0.004280
FUNTRM15	MQATREQ1	16.33.26.293602	5 0.032212	FUNTRM15	0.000553
FUNTRM15	MQATREQ1	16.33.33.575316	5 0.041999	FUNTRM15	0.000562
FUNTRM15	MQATREQ1	16.33.53.109929	5 0.032898	FUNTRM15	0.000649
FUNTRM15	MQATREQ1	16.33.59.157802	0 0.013980	FUNTRM15	0.000543



The worst-performing transaction. We will take a closer look at this transaction when interactively browsing the logs.

Process	OutputQ	Total	IMS	Page
Time	Time	Time	Time	Code
0.003702	0.000068	0.004027	0.004027	1
0.021937	0.000000	0.022107	0.016131	
0.468912	0.000000	0.473192	0.462459	
0.407164	0.000000	0.407717	0.395793	
0.497229	0.000000	0.497791	0.487811	
0.384754	0.000000	0.385403	0.373700	
0.424378	0.000000	0.424921	0.419555	

IMS DB2 problem: SMF reporting

```

File Help
-----
Reporting - z/OS and Subsystem Analysis
Command ==> _____

z/OS MVS system analysis:
/ CPU, storage and paging
/ Address space accounting
/ MVS System Logger
/ VSAM data set statistics

Subsystem analysis:
/ DB2 thread accounting
/ WebSphere MQ thread accounting
/ APPC conversations
/ IMS IRLM long lock

Select the z/OS system to report against, or specify an SMF file:
2 1. System . . . _____ +
   2. SMF File . . 'FUNDID.SMF.D100624.TESTING.FULL' +

----- Report Interval -----
                YYYY-MM-DD  HH.MM.SS.TH
From 2010-06-24  15.20.00.00
To   2010-06-24  16.50.00.00

```

Return to the reporting menu, and select option 3 **SMF**. Select all reports, and the SMF file. Press Enter to view the generated report JCL, and then enter SUB to submit the job.

IMS DB2 problem: SMF reporting DB2 accounting



V1R1M0

Transaction Analysis Workbench SMF Type=101 DB2 Accounting Summary

DB2 Plan	----- Connection -----	Thread							
SSID Name	Name	Type	Count						
DB3A CEXTPGM	IADG	IMS MPP	68	Start: 2010-06-24 07:27:39					
				End: 2010-06-24 08:44:00					
Class1: Thread Time			Avg: Elapsed=70.43305	CPU= .011006	Interval: 01:16:20				
			Max: Elapsed=2045.732	CPU= .013724	Rate/sec: < 1				
Class2: In-DB2 Time			Avg: Elapsed= .015108	CPU= .006035					
			Max: Elapsed= .033537	CPU= .008234					
Class3: Suspend Time			Avg: Total = .008709	I/O= .000000	Lock/Latch= .002404	Other= .006305			
			Max: Total = .017377	I/O= .000000	Lock/Latch= .007199	Other= .010178			
Buffer Manager Summary			Avg: GtPgRq= 7.0	SyPgUp= 3.0					
			Max: GtPgRq= 7	SyPgUp= 3					
Locking Summary			Avg: Suspnd= .0	DeadLk= .0	TmeOut= .0	MxPgLk= 1.0			
			Max: Suspnd= 0	DeadLk= 0	TmeOut= 0	MxPgLk= 1			
SQL DML Query/Update			Avg: Sel= .0	Ins= 1.0	Upd= 1.0	Del= 1.0			
			Max: Sel= 0	Ins= 1	Upd= 1	Del= 1			
SQL DML 'Other'			Avg: Des= .0	Pre= .0	Ope= 1.0	Fet= 9.0	Clo= 1.0		
			Max: Des= 0	Pre= 0	Ope= 1	Fet= 9	Clo= 1		

IMS DB2 problem: SMF reporting WebSphere MQ



V1R1M0 Transaction Analysis Workbench
SMF Type=116-0 WebSphere MQ Accounting Class 1 Summary

MQ SSID	-- Connection --		---- QMGR CPU ----		-- Elapsed Time --				
	Type	Name	Average	Maximum	Average	Maximum			
CSQ6	IMSDEP	IADG	0.000058	0.000085	0.000272	0.000442			
	Thread Count	----- Average GET Counts -----			----- Average PUT Counts -----				
		<=99	<=999	<=9999	>=10000	<=99	<=999	<=9999	>=10000
	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MQ SSID	-- Connection --		PSB	---- QMGR CPU ----		-- Elapsed Time --			
	Type	Name		Average	Maximum	Average	Maximum		
CSQ6	IMSDEP	IADG	MQATPGM	0.001819	0.008076	0.167525	0.425349		
	Thread Count	----- Average GET Counts -----			----- Average PUT Counts -----				
		<=99	<=999	<=9999	>=10000	<=99	<=999	<=9999	>=10000
	44	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0

IMS DB2 problem: creating an IMS transaction index

```

File Help
-----
Locate and Manage Log Files                               Row 1 to 4 of 4
Command ==> _____ Scroll ==> PAGE

Select an option to add log files to the session then press Enter
_  1. Manually specify the log files required for analysis
_  2. Run automated file selection to locate the required log files

Automated File Selection:                                — Locate Files Interval —
System . . . _____ +                               YYYY-MM-DD  HH.MM.SS.TH
Type . . . . _____ +                               From 2010-06-24 15.20.00.00
                                                To    2010-06-24 16.50.00.00

Log Files:
/      Data Set Name                                     Name      System      File
_____ IMPOT01.SESSION7.TRANIX:                       IADG       IMS         EXTRACT
_____ IMPOT01.SLDSP.IADG.D10175.T1624488.V25          IADG       IMS         LOG
_____ IMPOT01.DB3A.ARCLG1.A0000037                    DB3A       DB2         LOG
_____ FUNDID.SMF.D100624.TESTING.FULL                  FTS1       IMAGE       SMF
***** Bottom of data *****

```



We entered **X** next to the IMS log file: this generated JCL to create an IMS transaction index, which we have added to our list of log files.



IMS DB2 problem: interactive investigation

```

File  Menu  Time Slicing  Help
-----
Investigate                                     Row 1 of 4 More: < >
Command ==> _____ Scroll ==> PAGE

Time Slice (ON)
Time      Date      Duration  Zone  Filter +
HH.MM.SS.thmiju  YYYY-MM-DD  HH.MM.SS  LOCAL
16.31.00.000000  2010-06-24  00.03.00

s  Type  Start Time      Date      Duration  Coverage
-----  ---  -
IMS  16.25.44.803974  2010-06-24 Thu  00.09.12  COMPLETE
IMS  16.24.48.817930  2010-06-24 Thu  01.16.22  COMPLETE
DB2  15.15.49.963120  2010-06-24 Thu  02.09.59  COMPLETE
SMF  15.15.00.000000  2010-06-24 Thu  01.44.53  COMPLETE
***** Bottom of data *****

```



Now return to the session menu, and then select option 4 Investigate.
 Enter **S** in the top line action field to browse a merged view of all log files.

IMS DB2 problem: interactive investigation

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE  IMPOT01.SESSION7.TRANIX +      Record 00000001 More: < >
Command ==> filter                Scroll ==> PAGE
Slice . . Duration 00.03.00      Date 2010-06-24      Time 16.31.00.000000
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (LOCAL)
/ -----
___ CA01 Transaction TranCode=IVTNV Region=0004      16.25.44.803974
___ CA01 Transaction TranCode=IVTNV Region=0004      16.25.54.990783
___ CA01 Transaction TranCode=IVTNV Region=0004      16.25.58.784455
___ CA01 Transaction TranCode=IVTNV Region=0004      16.26.01.792346
___ CA01 Transaction TranCode=IVTNV Region=0004      16.26.03.982323
___ CA01 Transaction TranCode=IVTNV Region=0004      16.26.06.784325
___ 33 Free Message      16.26.06.794415
___ 0010 DB2 System Event - No Log Activity      16.26.47.937232
___ 0010 DB2 System Event - No Log Activity      16.26.51.941616
___ 0010 DB2 System Event - No Log Activity      16.26.55.944464
___ 0010 DB2 System Event - No Log Activity      16.26.59.947952
___ 0010 DB2 System Event - No Log Activity      16.27.03.951568
___ 0010 DB2 System Event - No Log Activity      16.27.07.955376
___ 0010 DB2 System Event - No Log Activity      16.27.11.958656
___ 0010 DB2 System Event - No Log Activity      16.27.15.962528
___ 0010 DB2 System Event - No Log Activity      16.27.19.965472
___ 0010 DB2 System Event - No Log Activity      16.27.23.969712

```

Enter FILTER on the command line.

IMS DB2 problem: defining a filter

```

File  Menu  View  Help
-----
VIEW                               Filter                               Row 1 of 1 More: < >
Command ==> _____ Scroll ==> PAGE

Specify filtering criteria then press EXIT (F3) to apply the filter.

Filter . . . . : _____ +
Description . . . : _____ _ Activate Tracking

/ Log Code + Exc Description
s IMS CA01
Level 001 Conditions YES Form _____ + REXX _____
-----
***** Bottom of data *****

```



Specify a filter to display only transaction index (IMS CA01) records, and then enter **S** next to the filter to specify more detailed conditions.

IMS DB2 problem: defining a filter

```

File  Menu  Edit  Object Lists  Help
-----
Conditions                                     Row 1 to 2 of 2
Command ==> _____ Scroll ==> PAGE
Code: CA01

/  Field Name +          Oper Value +
-  TPESAF          GT      0
-  PROCESS          GT      0.4
***** Bottom of data *****

```

Specify a filter conditions to display only those CA01 records with TPESAF > 0 and PROCESS > 0.4. Press F3 to apply the filter.

IMS DB2 problem: interactive investigation

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE  IMPOT01.SESSION7.TRANIX +          Record 00004088 More: < >
Command ===>                          Scroll ===> PAGE
Slice . . Duration 00.00.00 Date 2010-06-24 Time 16.31.00.000000
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (LOCAL)
/ -----
CA01 Transaction TranCode=MQATREQ1 Region=0001 16.33.18.743854
CA01 Transaction TranCode=MQATREQ1 Region=0001 16.33.26.293611
tx CA01 Transaction TranCode=MQATREQ1 Region=0004 16.33.33.575325
CA01 Transaction TranCode=MQATREQ1 Region=0004 16.33.59.157812
CA01 Transaction TranCode=MQATREQ1 Region=0004 16.34.30.389305
CA01 Transaction TranCode=MQATREQ1 Region=0004 16.34.57.373527
CA01 Transaction TranCode=MQATREQ1 Region=0002 16.35.37.491478
***** Bottom of Data *****

```



There are a number of transactions with long response times to choose from, but let's investigate the transaction that we identified in the batch reports. Enter **TX** next to it.

IMS DB2 problem: transaction tracking

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE  IMPOT01.SESSION7.TRANIX +
Command ==>
Slice . . Duration 00.00.00 Date 2010-06-24 Time 16.31.00.000000
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (LOCAL)
-----
/
r CA01 Transaction TranCode=MQATREQ1 Region=0004 16.33.33.575325
  01 Input Message TranCode=MQATREQ1 16.33.33.575325
  35 Input Message Enqueue TranCode=MQATREQ1 16.33.33.575351
  08 Application Start TranCode=MQATREQ1 Region=0004 16.33.33.575847
  5607 Start of UOR Program=MQATPGM Region=0004 16.33.33.575847
  31 DLI GU TranCode=MQATREQ1 Region=0004 16.33.33.575882
  5616 Start of protected UOW Region=0004 16.33.33.576291
  5E SB Handler requests Image Capture Region=0004 16.33.33.584454
  5E SB Handler requests Image Capture Region=0004 16.33.33.584457
  50 Database Update Database=DI21PART Region=0004 16.33.33.584721
  50 Database Update Database=DI21PART Region=0004 16.33.33.584842
  50 Database Update Database=DI21PART Region=0004 16.33.33.584877
  50 Database Update Database=DI21PART Region=0004 16.33.33.584960
  50 Database Update Database=DI21PART Region=0004 16.33.33.585004
  5600 Sign-on to ESAF Region=0004 SSID=DB3A 16.33.33.586756
  5600 Thread created for ESAF SSID=DB3A 16.33.33.586786
  66 DB2 Performance 072 Create thread entry 16.33.33.586805

```

Tracking shows records that are related to the same transaction. Enter **R** next to the CA01 to show elapsed times (relative to the CA01 time, which is the IMS transaction start time).

IMS DB2 problem: tracking (with relative elapsed time)

File	Mode	Filter	Time	Labels	Options	Help
BROWSE IMPOT01.SESSION7.TRANIX +						Record 00004609 More: < >
Command ==>						Scroll ==> CSR
Slice	.	Duration	00.00.00	Date	2010-06-24	Time 16.31.00.000000
Code	Description	<	00.05.00.000000	>	2010-06-24 Thursday	Time (Relative)
/ -----						
CA01	Transaction	TranCode=MQATREQ1	Region=0004			16.33.33.575325
01	Input Message	TranCode=MQATREQ1				+0.000000
35	Input Message Enqueue	TranCode=MQATREQ1				+0.000025
08	Application Start	TranCode=MQATREQ1	Region=0004			+0.000521
5607	Start of UOR Program=MQATPGM	Region=0004				+0.000522
31	DLI GU	TranCode=MQATREQ1	Region=0004			+0.000557
5616	Start of protected UOW	Region=0004				+0.000965
5E	SB Handler requests Image Capture	Region=0004				+0.009128
5E	SB Handler requests Image Capture	Region=0004				+0.009131
50	Database Update	Database=DI21PART	Region=0004			+0.009395
50	Database Update	Database=DI21PART	Region=0004			+0.009517
50	Database Update	Database=DI21PART	Region=0004			+0.009551
50	Database Update	Database=DI21PART	Region=0004			+0.009634
50	Database Update	Database=DI21PART	Region=0004			+0.009678
5600	Sign-on to ESAF	Region=0004 SSID=DB3A				+0.011431
5600	Thread created for ESAF	SSID=DB3A				+0.011460
66	DB2 Performance 072	Create thread entry				+0.011480

The Time column now shows relative times. Scroll forward through the related records.

IMS DB2 problem: interactive investigation

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE  IMPOT01.SESSION7.TRANIX +          Record 00004631 More: < >
Command ==>                               Scroll ==> CSR
Slice . . Duration 00.00.00 Date 2010-06-24 Time 16.31.00.000000
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (Relative)
/-----
___ 66  DB2 Performance 072 Create thread entry          +0.011480
___ 66  DB2 Performance 021 Lock detail                +0.011990
___ 66  DB2 Performance 112 Successful plan allocation(allied) +0.012351
___ 66  DB2 Performance 073 Create thread exit         +0.012442
___ 66  DB2 Performance 122 Thread level exit from DB2    +0.012550
___ 66  DB2 Performance 121 Thread level entry into DB2  +0.012705
___ 66  DB2 Performance 065 SQL open cursor              +0.012949
___ 66  DB2 Performance 058 SQL call completion          +0.013013
___ 66  DB2 Performance 122 Thread level exit from DB2    +0.013051
___ 66  DB2 Performance 121 Thread level entry into DB2  +0.013191
___ 66  DB2 Performance 059 SQL fetch                    +0.013259
___ 66  DB2 Performance 044 IRLM suspend entry           +0.013491
___ 66  DB2 Performance 093 Suspend                      +0.013599
___ 66  DB2 Performance 094 Resume                       +0.017441
___ 66  DB2 Performance 045 IRLM suspend exit           +0.017513
___ 66  DB2 Performance 021 Lock detail                  +0.017553
___ 66  DB2 Performance 017 Seq/Workfile scan (RNXT) entry +0.017615

```

Scroll forward some more, past the DB2 performance records.

IMS DB2 problem: interactive investigation

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE  IMPOT01.SESSION7.TRANIX +      Record 00004686 More: < >
Command ==>                      Scroll ==> CSR
Slice . . Duration 00.00.00      Date 2010-06-24      Time 16.31.00.000000
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (Relative)
/ -----
___ 66  DB2 Performance 061 SQL del/insert/update          +0.020797
___ 66  DB2 Performance 211 Make/release/change claim request +0.020919
___ 66  DB2 Performance 021 Lock detail                    +0.021017
___ 0020 DB2 Unit of Recovery Control - Begin UR          +0.021122
→ s 0020 DB2 Update In-Place in a Data Page            +0.021138
___ 66  DB2 Performance 058 SQL call completion            +0.021181
___ 66  DB2 Performance 122 Thread level exit from DB2     +0.021225
___ 66  DB2 Performance 121 Thread level entry into DB2    +0.021370
___ 66  DB2 Performance 066 SQL close cursor                +0.021438
___ 66  DB2 Performance 018 Exit from OSET, SRT1, or RNXT  +0.021481
___ 66  DB2 Performance 058 SQL call completion            +0.021549
___ 66  DB2 Performance 122 Thread level exit from DB2     +0.021586
___ 66  DB2 Performance 121 Thread level entry into DB2    +0.021718
___ 66  DB2 Performance 061 SQL del/insert/update          +0.021790
___ 0010 DB2 Savepoint                                  +0.021842
___ 66  DB2 Performance 017 Seq/Workfile scan (RNXT) entry +0.021876
___ 66  DB2 Performance 223 Commit_LSN detail record       +0.021924

```

Select the 0020 DB2 Udate record.

IMS DB2 problem: interactive investigation

```

File  Menu  Format  Help
-----
BROWSE      IMPOT01.SESSION7.TRANIX +          Record 00004690 Line 00000009
Command ==> _____ Scroll ==> PAGE
Form ==>      +      Use Form in Filter      Format ==> STD
+0017 LRHLEN..... 26          LRHUNLSN... 00002A4010EA
+001E LRHTIME.... C62D2CB46CB30002
+001E LRHLRSN.... C62D2CB46CB3          LRHMEMID... 0002

+0026 LRHDBHDR... Database identification
+0027 LRHDBID.... 0105          LRHPSID.... 0002          LRHDFLAG... 01

+0038 LRHUPDTH... Update information
      LRHACTN.... 'Update'
      LRHDDESC... 'Partial user row update
      LRHVARNO... +2          LRHUFLAG... C0

+0040 LRHUPDTE... Update data
+0040 LRHOSET.... +52
+0042 LRHREDOD... Redo Data
      +0000  F140
+0044 LRHUNDOD... Undo Data
      +0000  F240
***** End of data *****

```



This record shows the actual data affected by the update (in this example, the update changed the value 2 to 1). Press F3 to return to the list of records.

IMS DB2 problem: interactive investigation

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE      IMPOT01.SESSION7.TRANIX +          Record 00004707 More: < >
Command ==>                               Scroll ==> CSR
Slice . . Duration 00.00.00 Date 2010-06-24 Time 16.31.00.000000
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (Relative)
/
-----
___ 66  DB2 Performance 058 SQL call completion          +0.022230
___ 66  DB2 Performance 122 Thread level exit from DB2  +0.022268
___ 66  DB2 Performance 121 Thread level entry into DB2  +0.022412
___ 66  DB2 Performance 061 SQL del/insert/update        +0.022496
___ 66  DB2 Performance 016 First insert (SRT1) entry    +0.022564
___ 66  DB2 Performance 021 Lock detail                  +0.472641
___ 0020 DB2 Insert into a Data Page                    +0.472690
___ 66  DB2 Performance 058 SQL call completion          +0.472731
___ 66  DB2 Performance 122 Thread level exit from DB2  +0.472769
___ 5600 Sign-on to ESAF Region=0004 SSID=CSQ6        +0.474004
___ 5600 Thread created for ESAF SSID=CSQ6           +0.474033
___ 74  MQ Accounting Class 1 SSID=CSQ6 CONN=IMS.IADG   +0.474674
___ 5600 Commit Prepare starting Region=0004 SSID=CSQ6 +0.480774
___ 66  DB2 Performance 121 Thread level entry into DB2  +0.482382
___ 66  DB2 Performance 084 Prepare entry                +0.482475
___ 66  DB2 Performance 018 Exit from OSET, SRT1, or RNXT +0.482619
___ 0020 DB2 Unit of Recovery Control - End Commit Phase 1 +0.482722
  
```



Keep scrolling forward until you see the jump in relative time, then scroll forward again to the 65 record.

IMS DB2 problem: interactive investigation

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE  IMPOT01.SESSION7.TRANIX +          Record 00004787 More: < >
Command ==>                          Scroll ==> CSR
Slice . . Duration 00.00.00   Date 2010-06-24   Time 16.31.00.000000
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (Relative)
/
-----
 65  DB2 Accounting 003                                     +0.497189
      Program=MQATPGM Userid=FUNTRM15 Region=0004
      RecToken=IADG/0000003600000000
      CPU1=00.033593 CPU2=00.005305 I/03=00.000000 Source=IMS_MPP
      GtPgRq=7 SyPgUp=3 Suspnd=0 DeadLk=0 TimOut=0 MxPgLk=1
      Sel=0 Ins=1 Upd=1 Del=1 LUWID=FTS3/DB3ALU/C62D2CB46A5A/0001
-----
 66  DB2 Performance 046 Synchronous EU switch                +0.497252
      Program=MQATPGM Userid=FUNTRM15 Region=0004
      SSID=DB3A SYSID=FTS3 ConType=MPP Plan=MQATPGM
      LUWID=FTS3/DB3ALU/C62D2CB46A5A/0001
-----
 66  DB2 Performance 093 Suspend                               +0.497298
      Program=MQATPGM Userid=FUNTRM15 Region=0004
      SSID=DB3A SYSID=FTS3 ConType=MPP Plan=MQATPGM
      LUWID=FTS3/DB3ALU/C62D2CB46A5A/0001
-----

```

Scroll right (F5) to show the records in expanded view with relative times.



IMS DB2 problem: interactive investigation

```
File Mode Filter Time Labels Options Help
-----
BROWSE IMPOT01.SESSION7.TRANIX + Record 00005399 More: < >
Command ==> Scroll ==> CSR
Slice . . Duration 00.05.00 Date 2010-06-24 Time 16.25.44.803974
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (Relative)
/ -----
  CA01 Transaction 16.33.33.575325
    UTC=16.33.33.575316 TranCode=MQATREQ1 Program=MQATPGM Userid=FUNTRM15
    LTerm=FUNTRM15 Terminal=SC0TCP15 Region=0004
    OrgUOWID=IADG/C62D2CB467860940 IMSID=IADG IMSRel=101
    RecToken=IADG/0000003600000000
    CPU=0.041999 InputQ=0.000562 Process=0.497229
    TotalTm=0.497791 RegTyp=MPP DBCalls=5
  -----
  G 0020 DB2 Unit of Recovery Control - Begin UR
    Userid=FUNTRM15 IMSID=IADG URID=00002A4010EA
    LUWID=FTS3/DB3ALU/C62D2CB46A5A/0001
  -----
  0020 DB2 Update In-Place in a Data Page
    DBID=0105 PSID=0002 URID=00002A4010EA
  -----
```



A DB2 expert can now use the [DB2 Log Analysis Tool](#) to investigate the associated DB2 table updates; based on the transaction's URID

Press F5 (Right) to switch to a view that expands each record onto multiple lines, and then enter FIND LUWID on the command line. Enter G to “tag” (bookmark) this DB2 record.

IMS DB2 problem: tagging a specific log record

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE  IMPOT01.SESSION7.TRANIX +          Record 00005399 More: < >
Command ==>                               Scroll ==> CSR
Slice . . Duration 00.05.00      Date 2010-06-24      Time 16.25.44.803974
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (Relative)
/ -----
  CA01 Transaction                               16.33.33.575325
      UTC=16.33.33.575316 TranCode=MQATREQ1 Program=MQATPGM Userid=FUNTRM15
      LTerm=FUNTRM15 Terminal=SC0TCP15 Region=0004
      OrgUOWID=IADG/C62D2CB467860940 IMSID=IADG IMSRel=101
      RecToken=IADG/0000003600000000
      CPU=0.041999 InputQ=0.000562 Process=0.497229
      TotalTm=0.497791 RegTyp=MPP DBCalls=5
  -----
  TAG  IMS DB2 transaction with long response time          +0.021122
  -----
  0020 DB2 Unit of Recovery Control - Begin UR          +0.021122
      Userid=FUNTRM15 IMSID=IADG URID=00002A4010EA
      LUWID=FTS3/DB3ALU/C62D2CB46A5A/0001
  -----
  0020 DB2 Update In-Place in a Data Page          +0.021138
      DBID=0105 PSID=0002 URID=00002A4010EA
  -----

```



The tag is displayed in the log browser directly above the tagged record (with an identical time stamp).

IMS DB2 problem: DB2 Log Analysis Tool

RECORD IDENTIFIER: 1

ACTION	DATE	TIME	TABLE OWNER	TABLE NAME	URID
INSERT	2011-06-24	16.33.34	JOHN	HR	00002A4010EA

DATABASE	TABLESPACE	DBID	PSID	OBID	AUTHID	PLAN	CONNTYPE	LRSN
HR_DB	HR_SPACE	00456	00002	00003	FUNTRM15	HR_PLAN	IMS	C62D2CB46CB3

MEMID	CORRID	CONNID	LUW=NETID/LUNAME/UNIQUE/COMMIT			PAGE/RID
00000	0004MQATPGM	IMS	FTS3	/DB3ALU	/C62D2CB46A5A/0001	00000002/02

ROW STATUS	EMP_ID	EMP_NAME	EMP_PHONE	EMP_YEAR	EMP_SALARY
CURRENT	+330	JIM MARTIN	475-712-9508	2009-06-24	+0041000.00
POST-CHANGE	+330	JIM MARTIN	475-712-9508	2009-06-24	+0042000.00



IMS DB2 problem: interactive investigation

```

File  Mode  Filter  Time  Labels  Options  Help
-----
BROWSE  IMPOT01.SESSION7.TRANIX +           Tracking is active
Command ==>                               Scroll ==> CSR
Slice . . Duration 00.00.00   Date 2010-06-24   Time 16.31.00.000000
Code Description < 00.05.00.000000 > 2010-06-24 Thursday Time (Relative)
/-----
CA01 Transaction TranCode=MQATREQ1 Region=0004           16.33.33.575325
  01 Input Message TranCode=MQATREQ1                   +0.000000
  35 Input Message Enqueue TranCode=MQATREQ1           +0.000025
  08 Application Start TranCode=MQATREQ1 Region=0004   +0.000521
  5607 Start of UOR Program=MQATPGM Region=0004       +0.000522
  31 DLI GU TranCode=MQATREQ1 Region=0004             +0.000557
  5616 Start of protected UOW Region=0004             +0.000965
  5E SB Handler requests Image Capture Region=0004    +0.009128
  5E SB Handler requests Image Capture Region=0004    +0.009131
  50 Database Update Database=DI21PART Region=0004    +0.009395
  50 Database Update Database=DI21PART Region=0004    +0.009517
  50 Database Update Database=DI21PART Region=0004    +0.009551
  50 Database Update Database=DI21PART Region=0004    +0.009634
  50 Database Update Database=DI21PART Region=0004    +0.009678
  5600 Sign-on to ESAF Region=0004 SSID=DB3A          +0.011431
  5600 Thread created for ESAF SSID=DB3A              +0.011460
  
```



Scroll back to the top of the tracked transaction (type M, then press F7). Select the 01 record.

IMS DB2 problem: interactive investigation

```

File  Menu  Format  Help
-----
BROWSE      IMPOT01.SESSION7.TRANIX +          Record 00004610 Line 00000000
Command ==> _____ Scroll ==> PAGE
Form      ==>      +      Use Form in Filter      Format ==> STD
***** Top of data *****
+0004 Code... 01      Input Message
+0195 STCK... C62D2CB46789D940      LSN... 00000000000177D
      Date... 2010-06-24 Thursday      Time... 16.33.33.575325.578

+0000 MSGLRLL... 01A5      MSGLRZZ... 0000      MSGLCODE... 01
+0005 MSGFLAGS... C1      MSGDFLG2... 81      MSGFPADL... 94
+0008 MSGMDRRN... 08000054      MSGRDRRN... 08000054      MSGPRFLL... 0166
+0012 MSGCSW... 80      MSGDFLG3... 00
+0014 MSGUOW... Unit of Work (UOW) - Tracking
+0014 MSGORGID... 'IADG      '      MSGORGTK... C62D2CB467860940
+0024 MSGPROID... 'IADG      '      MSGPROTK... C62D2CB467860940
+0034 MSGUFLG1... 00      MSGUFLG2... 00
+0036 MSGRSQTY... 00      MSGDOFS... 0000      MSGDRBN... 00000000

+0040 MSGSSEGM... Message Prefix System Segment; Item ID = 81
+0040 MSGSILL... 0040      MSGSIID... 81      MSGCFLG1... 00
+0044 MSGCFLG2... 88      MSGCFLG3... 00      MSGCQSF1... 00
+0047 MSGCQSF2... 00

```



To “zoom” on a field, move your cursor to the field, and then press Enter.

IMS DB2 problem: interactive investigation

File Menu Help

```

BROWSE      IMPOT01.SESSION7.TRANIX +                               Line 00000000
Command ==> _____ Scroll ==> PAGE
***** Top of data *****
+0006  MSGDFLG2... 81  Flags from QDFLG2 of QDEST

On     QDF2PRM.... 80  This Destination is permanent and implies that
                          fields exist for
                          1. Average Msg length
                          2. Enqueue and Dequeue counts
                          3. Name field If the above bit is off, the
                          fields are assumed to be absent

Off    QDF2BKR.... 40  Backup queue is required, either for Resend or
                          Conversational process

Off    QDF2QMOV... 20  QMOVE in Process : XRF
Off    QDF2LQUE... 10  Local QPOOL in Use : XRF
Off    QDF2CLNR... 08  Cleanup Check Request Flag : XRF
Off    QDF2MDEL... 04  Message Deletion in Progress Flag : XRF
Off    QDF2BTYP... 03  Destination Type bits
On     QDF2SMB.... 81  Generated SMB - Transaction
Off    QDF2CNT.... 82  Generated CNT - Logical Terminal
***** End of data *****

```

IMS DB2 problem: interactive investigation

```

File  Menu  Format  Help
-----
BROWSE      JCH.SESSION7.TRANIX +          Record 00001878 Line 00000000
Command ==> _____ Scroll ==> CSR
Form ==> TRANS01 + _ Use Form in Filter  Format ==> FORM
***** Top of data *****
+0004 Code... 01      Input Message
+0195 STCK... C62D2CB46789D940      LSN... 00000000000177D
      Date... 2010-06-24 Thursday    Time... 16.33.33.575325.578

+0048 MSGINODE... 'SC0TCP15'  MSGODSTN... 'MQATREQ1'
+0094 MSGRACUS... 'FUNTRM15'
+00C2 MSGUTC..... Coordinated Universal Time (UTC)
+016A MSGXSTXT... Message Text
      +0000 D4D8C1E3 D9C5D8F1 40D3C5D5 C7E3C84D *MQATREQ1 LENGTH(*
      +0010 F0F0F4F8 5D40C3D6 E4D5E34D F0F0F1F0 *0048) COUNT(0010*
      +0020 5D40C4C2 C3C1D3D3 E27EE8          *) DBCALLS=Y      *
***** End of data *****

```

To reduce “noise”, and show only the fields that are of interest to you, use a form.

End of scenario

- The cause of the IMS transaction problem has been narrowed down to a slowdown in DB2
- Sufficient information about the DB2 update activity has been collected and can be passed on to the DB2 DBA for further investigation

Return to agenda

Restart this scenario

OPERLOG report: JCL

File Edit Edit_Settings Menu Utilities Compilers Test Help

```

VIEW          FUW110.WTWM.REPORTS(OPERLOG) - 01.03          Columns 00001 00072
Command ==> _____ Scroll ==> CSR
***** ***** Top of Data *****
000001 //OPERLOG JOB ,CLASS=A,NOTIFY=&SYSUID
000002 /*JOBPARM SYSAFF=FTS1
000003 //FUWBATCH EXEC PGM=FUWBATCH
000004 //STEPLIB DD DISP=SHR,DSN=FUW.SFUWLINK
000005 //SYSPRINT DD SYSOUT=*
000006 //SYSIN DD *
→ 000007 LOGSTREAM OPERLOG:SYSPLEX.OPERLOG
000008 START 2011-04-06-08.40.00.00 STOP 2011-04-06-09.00.00.00
000009 REPORT OPERLOG
000010 CODE(OPERLOG)
000011 COND TEXT(2) EQ 'DFS'
000012 COND TEXT(*) EQ 'BACKOUT'
000013 /*
***** ***** Bottom of Data *****

```

Note the LOGSTREAM command in the SYSIN data set, identifying the input log stream. The COND statements filter the reported OPERLOG records.

OPERLOG report: output

```

FTS3      2011096 08.41.42.57 STC36951 DFS2484I JOBNAME=IBB1#ARC
          GENERATED BY LOG AUTOMATIC ARCHIVING IBB1
FTS2      2011096 08.41.48.71 STC37128 DFS058I 08:41:48 START COMMAND IN PROGRESS ICDZ
FTS2      2011096 08.41.49.80 STC37128 DFS551I IFP REGION ICDZIFP1 STARTED
          ID=00001 TIME=0841 ICDZ
FTS2      2011096 08.41.49.89 STC37128 DFS551I MESSAGE REGION ICDZMPP1 STARTED
          ID=00002 TIME=0841 CLASS=001,000,000,000 ICDZ
FTS2      2011096 08.41.52.04 STC37128 DFS551I IFP REGION ICDZIFP3 STARTED
          ID=00003 TIME=0841 ICDZ
FTS3      2011096 08.47.36.05 STC36951 DFS554A FUWTCIC 00002 FUWTCIC DFHTWM04(3)
          000,0777 2011/096 8:47:36
          RTKN=FUWTCIC C79459EA853EFB03 IBB1
FTS3      2011096 08.47.51.05 STC36951 DFS968I DBD=DI21PART WITHIN PSB=DFHTWM04
          SUCCESSFULLY BACKED OUT IBB1
FTS3      2011096 08.47.51.05 STC36951 DFS980I BACKOUT PROCESSING HAS ENDED FOR DFHTWM04 IBB1
  
```

From the previous JCL request, it is simple to identify the IMS subsystem messages associated with the transaction failure.

SMF 33-2: APPC/MVS Conversation List report

Start Time	Local LU Name	Direction	Partner UserId	Job Name	SyncLvl
18:16:47.624543	MVSLU02	Outbound		TWM#RBAT	Syncpt
	** Partner	**	TPname=IADGEXP_PROFILE		
18:16:47.796620	IADGAPPC	Inbound		IADGMPPA	Syncpt
	*** Local	***	TPname=IADGEXP_PROFILE		

APPC requests processed on z/OS are logged to SMF. These requests may end up being processed by an IMS or CICS transaction.

A breakdown of processing inside MVS can identify bottlenecks and other performance related issues.

Time			Bytes	
InputQ	Process	Total	Received	Sent
	.324737	.324737	68	83
.166232	.154551	.320783	83	68



SMF 79-15: IRLM Long Lock Detection report

Time	Cycle Number	Entry Type	IMS ID	Trancode	PSBname	PST	Reg Typ	Duration	Max Locks
08:51:47.440	25853771	Wait	ISA2	CI1CSAC3	PCM0F0	49		11.534336	0
08:51:47.440	25853771	Block	ISA3	CI1ESAE1	PCM0F0	127		111.149056	44
08:54:36.250	25854107	Wait	ISA3	CI1ESAE5	PCM0F0	102		11.534336	0
08:54:36.250	25854107	Block	ISA4	CI1FSAF3	PCM0F0	40		98.566144	44
15:25:31.580	25900783	Wait	ISA1	CI1ASAA2	PRE0F0	90		11.534336	26
15:25:31.580	25900783	Block	ISA1	CI1ASAA1	PSA0F0	60		11.534336	2

IMS database locks that are held by transactions for an extended period (several seconds) are logged to SMF; and can be analyzed to determine if there is an application problem.

Recovery Token	Resource	CICS Task
CI1CSAC3/C5BF632F08B62783	HNMTRM01	00088603
CI1ESAE1/C5BF62D0456F8085		00036462
CI1ESAE5/C5BF63D077B36503	HNMTRM01	00088040
CI1FSAF3/C5BF637DEF1A2001		00032398
CI1ASAA2/C5BFBB316C472003	SHSECN08	00013029
CI1ASAA1/C5BFBB3166E1F584		00048273

SMF 101: DB2 Thread Accounting Summary report



All transactions that use DB2 cut accounting records that show how DB2 performed in the application and across into DB2.

DB2 SSID	Plan Name	----- Connection Name	----- Type	Thread Count
DB3A	CEXTPGM	IADG	IMS MPP	68

					Start: 2010-06-24 15:27:39
					End: 2010-06-24 16:44:00
					Interval: 01:16:20
					Rate/sec: < 1
Class1: Thread Time	Avg: Elapsed=70.43305	CPU= .011006			
	Max: Elapsed=2045.732	CPU= .013724			
Class2: In-DB2 Time	Avg: Elapsed= .015108	CPU= .006035			
	Max: Elapsed= .033537	CPU= .008234			
Class3: Suspend Time	Avg: Total = .008709	I/O= .000000	Lock/Latch= .002404	Other= .006305	
	Max: Total = .017377	I/O= .000000	Lock/Latch= .007199	Other= .010178	
Buffer Manager Summary	Avg: GtPgRq= 7.0	SyPgUp= 3.0			
	Max: GtPgRq= 7	SyPgUp= 3			
Locking Summary	Avg: Suspnd= .0	DeadLk= .0	TmeOut= .0	MxPgLk= 1.0	
	Max: Suspnd= 0	DeadLk= 0	TmeOut= 0	MxPgLk= 1	
SQL DML Query/Update	Avg: Sel= .0	Ins= 1.0	Upd= 1.0	Del= 1.0	
	Max: Sel= 0	Ins= 1	Upd= 1	Del= 1	
SQL DML 'Other'	Avg: Des= .0	Pre= .0	Ope= 1.0	Fet= 9.0	Clo= 1.0
	Max: Des= 0	Pre= 0	Ope= 1	Fet= 9	Clo= 1



SMF 116: WebSphere MQ Accounting reports

MQACCT4 Printed at 10:50:30 2/03/2011 Data from 09:00:40 03/03/2010 to 09:59:52 03/03/2010

SSID: SYSB	Type: CICS	Name: CICSSYSP	Tran: TRTI	Threads:	2
Other	Avg Count	6.0	Avg Elapsed	0.000116	Avg CPU 0.000112

In-MQ Time (Total)	Elapsed:	0.000233	CPU:	0.000224
In-MQ Time (Average)	Elapsed:	0.000116	CPU:	0.000112

SSID: SYSB	Type: CICS	Name: CICSSYSP	Tran: TRTL	Threads:	4
------------	------------	----------------	------------	----------	---

In-MQ Time (Total)	Elapsed:	0	CPU:	0
In-MQ Time (Average)	Elapsed:	0	CPU:	0

Queue: APPLICATION_A_REQUEST

QType: LOCAL	IType: NONE	GDisp: Q_MGR	QCount:	4
--------------	-------------	--------------	---------	---

	Count	Elapsed	CPU	Susp Elp	InlWrt Elp	PS Req's	PS Rd Elp	Ex
OPEN	15.0	0.000019	0.000009					
CLOSE	15.0	0.000002	0.000002					
INQ	15.0	0.000009	0.000008					
In-MQ Time (Total)		Elapsed: 0.001861	CPU: 0.001222					
In-MQ Time (Average)		Elapsed: 0.000465	CPU: 0.000305					

Detailed MQ accounting can be requested to show the impact of MQ on transaction performance.



SMF 30: Address Space Activity report

-----Interval-----			System				----- CPU -----		
Start Date/Time	Duration	Type	Name	Jobname	Comp	TCB	SRB	%CPU	
2011-03-04 15:37:01	00:01	STE	MVS1	IMSCTL1	0004	0.445357	0.023205	15.1	
2011-03-04 15:37:01	00:01	STT	MVS1	IMSCTL2	0004	0.445357	0.023205	15.0	
2011-03-04 15:37:06	00:01	STE	MVS1	IMSCTL3	0004	0.404175	0.011985	19.3	
2011-03-04 15:37:06	00:01	STT	MVS1	IMSCTL4	0004	0.404175	0.011985	19.2	
2011-03-04 15:43:24	00:01	STE	MVS1	IMSCTL5	0004	0.904357	0.046920	18.9	
2011-03-04 15:43:24	00:01	STT	MVS1	IMSVTL6	0004	0.904357	0.046920	18.9	
2011-03-04 15:44:05	00:01	INT	MVS2	CICSPR1	0000	7.966200	0.241357	15.2	
2011-03-04 15:44:58	00:01	INT	MVS2	CICSPR2	0000	0.141780	0.004335	11.2	

At regular intervals, every address space can be monitored for unusual spikes (or lulls) in system-related resource consumption including CPU and I/O.

EXCPs /Sec	----Storage-----			-Paging/Sec-		
	<16M	>16M	64bit	In	Out	Swap
477	1M	11M	0M	0	0	0
476	1M	11M	0M	0	0	0
309	1M	11M	0M	0	0	0
309	1M	11M	0M	0	0	0
590	1M	11M	0M	0	0	0
589	1M	11M	0M	0	0	0
140	4M	1366M	0M	0	0	0
100	0M	12M	0M	0	0	0



SMF 70-1: RMF Processor Activity report

- Interval Start --	System	- %CPU Busy -	IO	
Date Time	Name	LPAR MVS	Rate	
2010-08-17 23:45:00	FTS1	68.75 87.42	2282.4	
	FTS2	4.07 4.50	9.4	
	FTS3	4.03 4.39	12.6	
2010-08-18 00:00:00	FTS1	61.15 72.16	1934.8	
	FTS2	4.15 4.72	8.4	
	FTS3	3.88 4.41	11.7	

CPU constraints are one of the most common causes of a slowdown in performance, and often has flow-on effects including contention.

CPU Busy and **IO Rate** are the classical system performance indicators. Look for spikes that might indicate a slowdown.

Number of Address Spaces							
In		-In Ready-		-Out Ready-		-Out Wait-	
Avg	Max	Avg	Max	Avg	Max	Avg	Max
151	156	7	86	0	1	0	0
77	80	1	15	0	0	0	0
69	72	1	9	0	0	0	0

Out Ready identifies the number of address spaces waiting for dispatching on the CPU

Summary: Transaction Analysis Workbench

- Companion to the popular IMS and CICS Performance Analyzer tools, allowing systems programmers to look outside of IMS and CICS for the source of problems
- Exploits the wealth of system performance and activity information available in SMF, OPERLOG, and event traces
- Allows medium-skilled analysts to perform expert analysis of their enterprise

More information

- IBM DB2 and IMS Tools website:
www.ibm.com/software/data/db2imstools/
- IBM Transaction Analysis Workbench for z/OS:
www.ibm.com/software/data/db2imstools/imstools/transaction-analysis/
- Jim Martin, US Representative, Fundi Software:
jim_martin@fundi.com.au

Thank you!
Your feedback is important to us.
Please complete the evaluation.