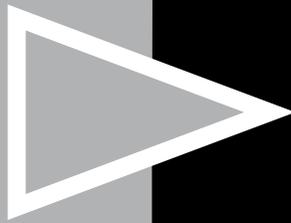




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## Analyzing Transaction Response Time Using BMC MAINVIEW for IMS Online

By Tim Constien, Joy Kelley Sheffield, and Tony Matharu,  
BMC Software

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## Introduction

IMS powers many mission-critical applications. It is critical that IMS systems and databases are available and performing optimally at all times. When problems occur in IMS, they can be disastrous. It is imperative that you find and resolve problems quickly before they create bigger problems and longer outages.

The easiest way to pinpoint problems in IMS is with BMC® MAINVIEW for IMS Online. Think of your IMS problems as a sort of crime scene investigation. BMC MAINVIEW for IMS Online provides the “forensic monitoring” to answer your questions by enabling you to:

- > Find response time problems
- > View the evidence to reveal the culprits abusing your IMS system
- > Follow the footprints of a transaction through IMS

BMC MAINVIEW for IMS Online provides snapshots so that you can view real-time and historical data.

This paper presents one common problem scenario and demonstrates how BMC MAINVIEW for IMS Online can help resolve it.

## The Crime: Unusually Poor Response Time

Poor response times are some of the major complaints of end users. Depending on the application, poor response times can result in lost revenue (for example, if a customer is ordering merchandise through a Web front-end). It is important to find and apprehend the perpetrator as quickly as possible. The perpetrator could be the transaction, the database, or even IMS itself.

A good place to start the investigation is with delay analysis, which provides an analysis of transactions that have completed recently. Many items could delay transactions, such as CPU, DASD I/O, locks, pools, latches, DB2 processing, or any number of other processes.

A number of views that can be used to set alarms on response times (using MVALARM) to provide automatic notification of transactions that have exceeded a response time threshold.

A good place to start looking when a response time alarm has been received is the IDLTR view. This view can be accessed from the EZISSI menu when Delay Factors is chosen. The IDLTR view is shown below.

```

02JAN2007 11:22:25 ----- MAINVIEW WINDOW INTERFACE (V5.0.05) -----
COMMAND ==>                                     SCROLL ==> CSR
CURR WIN ==> 1          ALT WIN ==>
>W1 =IDLTR===== (ALL=====*)=====) 02JAN2007--11:22:25----MVIMS----D----6
      IMS      Avg Resp      %Inp CPU CPU I/O Lck Lth  Pol Oth DB2
Trancode ID          0.....+.....1  Que Act Dly Dly Dly Dly  Dly Dly Dly
IVTFD   I9A   0.0026                      100
IVTFM   I9A   0.0001                      1
IVTNO   I9A   0.0551                    43  9  23  22                2  1
IVTNV   I9A   0.0405                    40 10  30  14                4  2
TSM001 I9Z   1.6007                    10   5                      85
THDAMUPD I9A   0.0287                    38  2  39  19                2
  
```

The transaction TSM001 is shown having a large percentage of time spent in DB2. We then jump to the IDLTRDB2 view to determine whether the delay may be connecting to DB2, during Phase 1 or Phase 2 sync point processing, or in DB2 processing.

```

02JAN2007 11:22:25 ----- MAINVIEW WINDOW INTERFACE (V5.0.05) -----
COMMAND --->                                     SCROLL ---> CSR
CURR WIN ==> 1          ALT WIN ==>
>W1 =IDLTRDB2===== (ALL=====*)=====) 02JAN2007==11:22:25====MVIMS====D====6
      IMS  Avg  %      %DB2 Dly Total      %CPU CPU Con Oth Sy1 Sy2
Trancode ID  Resp  Elp    0.....25.....50  Act Dly Dly Dly Dly Dly
TSM001  I9Z  1.6007  85                      85
  
```

We can see a large number in the Oth Dly column, which indicates a delay in DB2 processing.

The starting of a detail trace will help determine what may be affecting the large amount of time this transaction is spending in DB2. Traces can be started several different ways (manually from within BMC MAINVIEW for IMS Online, through an EXEC written to start a trace based on passed parameters, or through an EXEC that uses a BLK member with previously defined trace parameters).

If a detail trace has been previously started, the IDLTRDB2 view can be customized to define a hyperlink on the OTH DLY column to access the ITASUM view of the trace. This would require a standardized trace name to be used in the hyperlink.

The ITALIST view is accessed from the EZISSI menu from the TRACES heading. View the trace data by hyperlinking on the TRACE ID field and choosing VIEW BY TRANSACTION. The ITASUMZ view is displayed. From this view, the number of DB2 calls and the amount of DB2 CPU can be noted.

A summary list of transactions captured by the trace is presented. The highlighted TSM001 transaction is shown with a large average elapsed time along with the average number of DLI calls, DB2 calls, and database I/Os.

```

02JAN2007  11:22:35  ----- MAINVIEW WINDOW INTERFACE (V5.0.05) -----
COMMAND  ===>
                                SCROLL ===> CSR
CURR WIN ===> 1          ALT WIN ===>
>W1 =ITASUMZ=====I9Z=====*=====02JAN2007==11:22:35====MVIMS====D====99

```

Trancode	Cnt	Typ	Time	Queue	Elapsd	DLI	DLI	DB2	Total	DLI	DB2
					Time	Calls	I/O	Calls	CPU	CPU	CPU
TSMNAS	8	CON	0.4560	0.259	0.1751	26	0	1	0.0472	0.0021	0.0000
TKL1000	1	CON	0.2341	0.021	0.1363	87	0	0	0.0188	0.0054	0.0000
TKCOV00	1	CON	0.2016	0.062	0.0078	14	0	0	0.0022	0.0012	0.0000
<b>TSM001</b>	<b>3</b>	<b>MPP</b>	<b>1.8851</b>	<b>0.160</b>	<b>1.8216</b>	<b>99</b>	<b>10</b>	<b>110</b>	<b>0.2941</b>	<b>0.0149</b>	<b>0.5001</b>

Hyperlinking on the CNT field of the TSM001 transaction reveals a break down of the three TSM001 transactions, highlighting the one with the large elapsed and CPU time.

```

02JAN2007  11:22:35  ----- MAINVIEW WINDOW INTERFACE (V5.0.05) -----
COMMAND  ===>
                                SCROLL ===> CSR
CURR WIN ===> 1          ALT WIN ===>
>W1 =ITASUMZ==ITASUM===I9Z=====*=====02JAN2007==11:22:35====MVIMS====D====3

```

CM	Trancode	Typ	Time	Time	Call	DLI	DB2	Total	DLI	DB2	End
					Call	I/O	Call	CPU	CPU	CPU	Time
<b>ST</b>	<b>TSM001</b>	<b>MPP</b>	<b>4.8</b>	<b>4.8807</b>	<b>189</b>	<b>10</b>	<b>249</b>	<b>0.2887</b>	<b>0.0086</b>	<b>0.2801</b>	11:18:43.990078
	TSM001	MPP	0.3	0.2911	70	0	62	0.0423	0.0043	0.0110	11:15:43.490077
	TSM001	MPP	0.3	0.2930	38	0	20	0.0173	0.0020	0.0030	11:12:44.910078

To analyze the summary trace data, enter ST next to the transaction of interest.

The summary trace data shows the DB2 name and the plan name, and that the transaction executed 249 SQL calls as noted under the DB2 Activity heading. We also see under the Event Timing heading that the DB2 elapsed time is 4.79242.

```

COMMAND ==> Summary Trace Data SCROLL ==> CSR
                                     MORE: +
----- SYSTEM INFORMATION -----
IMS ID..... I9Z      IMS Target.... I9Z      IMS Jobname... I9ZIMS
----- TRANSACTION INFORMATION -----
Trancode..... TSM001  Region ID..... 076      Trace Seq#.... 36663
Program..... TSMP01  Region Name... I9ZMP1  User ID..... BOLTSM
PSB Name..... TSMP01  Region Type... MDP      LTERM..... TCPLC381
Class..... 001      Route Code....      Node Name..... EAA01803
Arrival Date.. 02JAN07  Arriv Time. 11:18:39.011229  Response... 4,800 ms
Start Date.... 02JAN07  Start Time. 11:18:39.209378  Elapsed.... 4,880 ms
End Date..... 02JAN07  End Time... 11:18:43.990078  Abend Code..
OTMA..... NO      Msg Switch.... NO      APPC..... NO
----- DC CALL ACTIVITY -----
Message GU          2 Message GN          1 Message Other          1
Message PURGE      0 Message ISRT          2 Message Total          6
Last Tran          Last LTERM
----- DL/I CALL ACTIVITY -----
DB Name  Org      GU  GN REPL ISRT DLET Othr Total Opn  Read Wrte  Avg
-----
DB1H     PHIDAM  34  97  18  10  21  0  189  4    0    0  .0000
DB1H1X   (DD)                8    0  .0210
DB1H1A   (DD)                120  114 .5326
DB1H2X   (DD)                10    0  .0001
DB1H2A   (DD)                254  230 1.0431
**Total          77  104  2  0  0  0  183  492  344 0.7114
----- DB2 ACTIVITY -----
DB2 ID      DECP      Control          0  Inserts          0
Plan Name   DB2T2P    Dynamic          0  Deletes          0
Sel/Fch     113 DDL              0  Updates          0
Opens       64 Others          72  SQL Totals      249
----- EVENT TIMING -----
DL/I DB          Open          Sync Point
Elap Time        0.00842  Elap Time        0.00002  Elap Time        0.61992
VSAM IWAIT       0.00002  I/O IWAIT        5.30012  VSAM IWAIT       0.00002
OSAM IWAIT       0.00002  DBRC IWAIT       0.00002  OSAM IWAIT       0.00002
DEDB IWAIT       0.00002  Misc IWAIT       0.00002  Ltch IWAIT       0.00002
Ltch IWAIT       0.00002  Misc IWAIT       0.00002
Lock IWAIT       0.00002
Misc IWAIT       0.00002
DL/I TM          ESS          Application
Elap Time        0.62062  DB2 Elap        4.79242  Elap Time        0.05772
Ltch IWAIT       0.00002  MQS Elap        0.00002  Schd->DL/I      0.00002
Misc IWAIT       0.61862  Othr Elap       0.04102
----- CPU TIMES (us) -----
Dep Rgn..DLI    8,648 us Bufr Handler    0 us  Open/Close    0 us
Ctl Rgn..DLI     0 us Bufr Handler    0 us  Open/Close    0 us
DLISAS...DLI     0 us Bufr Handler    0 us  Open/Close    0 us
Total....DLI    8,648 us Bufr Handler    0 us  Open/Close    0 us
Dep Rgn CPU     59 ms Dep Rgn DB2    31 ms  Total CPU     98 ms

```

We can view the detail trace data by entering DETAIL on the command line on the Summary trace view or by returning to the ITASUM view and entering DT.

The resulting view identifies the Package/DBRM name and SQL statement number. The package name is different than the PLAN name (DB2T2P) shown on the summary trace view. Database events are also displayed.

Detail Trace Data						
COMMAND ==>				SCROLL ==> CSR		
Trace ID: DB2TR		Seq#: 36663		Line 0001 of 0441		
Tran: TSM001		User/LTERM: TCPLC381		Details: WAITS Y IO Y SSA N KFB N		
Arrival: 11:18:27.011229				Start: 11:18:38.501351		IOArea Lines: 000
Event	Resource	AT	Elapsed	CPU	Detail	
GU DC	TCPLC381		0us 3,426us	377us	ok	
GN DC	TCPLC381	3,436us	31us	24us	ok	
GU DB	DB1H	3,482us	45us	43us	ok	
GU DB	DB1H	4,545us	89us	86us	ok	
GNP DB	DB1H	6,790us	55us	49us	ok	
DSN	SIGN ON	7,225us	2,591us	1,932us	RC: 0	
DSN	OPEN	9,855us	781us	584us	RC: 0 DB2T1P01,143	
DSN	FETCH	10,682us	75us	72us	RC: 0 DB2T1P01,178	
DSN	OPEN	10,797us	639us	214us	RC: 0 DB2T1P02,165	
DSN	FETCH	11,488us	1,301us	295us	RC: 0 DB2T1P02,198	
DSN	CLOSE	12,839us	56us	53us	RC: 0 DB2T1P02,180	
DSN	FETCH	12,937us	104us	98us	RC: 100 DB2T1P01,178	
DSN	CLOSE	13,079us	51us	47us	RC: 0 DB2T1P01,158	
GNP DB	DB1H	13,403us	56us	53us	ok	
DSN	OPEN	14,103us	418us	397us	RC: 0 DB2T1P04,143	
DSN	FETCH	14,578us	85us	81us	RC: 0 DB2T1P04,178	
DSN	OPEN	14,706us	97us	74us	RC: 0 DB2T1P04,165	
DSN	FETCH	14,852us	149us	145us	RC: 0 DB2T1P04,198	
DSN	CLOSE	15,046us	56us	53us	RC: 0 DB2T1P04,180	
DSN	FETCH	15,144us	100us	97us	RC: 100 DB2T1P03,178	
DSN	CLOSE	15,291us	52us	49us	RC: 0 DB2T1P03,158	
GU DB	DB1H	16,241us	84us	81us	ok	
GNP DB	DB1H	16,344us	54us	52us	ok	
GU DB	DB1H	16,429us	29us	26us	ok	
GNP DB	DB1H	16,476us	28us	26us	ok	
GNP DB	DB1H	16,522us	32us	29us	ok	

This display enables you to examine the I/O areas associated with each call, as well as the key feedback area and segment search argument through the use of the SSA/KFB/IO Area line options in the header portion.

### Case Solved

BMC MAINVIEW for IMS Online helped to determine that transaction TSM001 had a problem with DB2 processing. This information can be provided to the application support people and/or database administrators to help determine if the package is implemented correctly, if there are DB2 database tuning opportunities, or if the transaction is performing as expected. Additional DB2 information could be obtained from running a trace in BMC MAINVIEW for DB2.



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