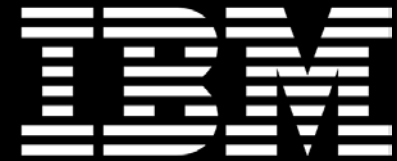


The IMS Performance Solution Pack

for Tivoli OMEGAMON XE for IMS on z/OS V5.3 customers

March 2017



IMS Tools

for z/OS

Tivoli OMEGAMON XE for IMS on z/OS V5.3

- Changes of interest:
 - OMEGAMON TRF has been deprecated
 - Application Trace Facility (ATF) writes application history detail data to log stream
 - ATF Enhanced Summary records written to IMS log

OMEGAMON support in PSP

IMS Connect Extensions (CEX)

- Used by OMEGAMON to gather IMS Connect event data

IMS Problem Investigator (ALZ)

- Browse ATF Enhanced Summary records
- Support for ATF log streams

IMS Performance Analyzer (IPI)

- New reports using ATF Enhanced Summary (ES) data
- Extract ATF ES records to CSV

Diagnosing problems using the
OMEGAMON ATF enhanced summary record

ATF Enhanced Summary record

- Written to the IMS log – treated like any other log record
- Use either IBM Transaction Analysis Workbench or IMS Problem Investigator to diagnose problems using this record
- Description of log record:

http://www.ibm.com/support/knowledgecenter/en/SSXS8U_5.3.0/com.ibm.omegamon_ims.doc_5.3.0/atf/omxeims_atf_sumdes.htm

Log analysis is enhanced with OMEGAMON ATF

- ATF is in the IMS log – it is treated like any other log record

```
Process Log Files                               Row 3 of 1528 More: < >
Command ==> █                               Scroll ==> PAGE
Select a Log File to browse.                    IMS Release 141 +      Zone LOCAL
/
SS      Log File                               Rel + Filter + Zone
-----|-----|-----|-----|-----|
      'IPI000.QADATA.ATF53DAY.V141.IEDE001'   141  ATF:A201
      'IPI000.QADATA.ATF53DAY.V141.IEDE002'
      'IPI000.QADATA.ATF53DAY.V141.IEDE003'
      'IPI000.QADATA.ATF53DAY.V141.IEDE004'
      'IPI000.QADATA.ATF53DAY.V141.IEDE005'
      'IPI000.QADATA.ATF53DAY.V141.IEDE006'
      'IPI000.QADATA.ATF53DAY.V141.IEDE007'
      'IPI000.QADATA.ATF53DAY.V141.IEDE008'
      'IPI000.QADATA.ATF53DAY.V141.IEDE009'
      'IPI000.QADATA.ATF53DAY.V141.IEDE010'
      'IPI000.QADATA.ATF53DAY.V141.IEDE011'
      'IPI000.QADATA.ATF53DAY.V141.IEDE012'
      'IPI000.QADATA.ATF53DAY.V141.IEDE013'
      'IPI000.QADATA.ATF53DAY.V141.IEDE014'
SS      'IPI000.QADATA.ATF53DAY.V141.IEDE015'
```

ATF records have a customizable user log record code

```
BROWSE      IPI000.QADATA.ATF53DAY.V141.IEDE001 +      Record 00119645 More: < >
Command ==> ATC A2 █      Scroll ==> CSR
          Navigate < 00.00.01.000000 >      Date/Time
/  _____ Filtering _____      Monday 2017-01-30 Time (LOCAL)
***** Bottom of Data *****
```

Data Set 'IPI000.QADATA.ATF53DAY.V141.IEDE001 +' contains no records that match the specified Filtering Criteria.

```
BROWSE      IPI000.QADATA.ATF53DAY.V141.IEDE001 +      Record 00000867 More: < >
Command ==> FILTER █      Scroll ==> CSR
          Navigate < 00.00.01.000000 >      Date/Time
/  _____ Filtering _____      Monday 2017-01-30 Time (LOCAL)
A201 ATF Enhanced Summary      13.03.16.597313
      TranCode=CEXTCONV Program=CEXTPGM Userid=CEX001 LTerm=3101 Region=0004
      SSID=IEDE RecToken=IEDE/0000002000000001
      Response=0.011221 Process=0.009674 CPU=0.003924
-----
A201 ATF Enhanced Summary      14.09.26.064092
      TranCode=CEXTNONC Program=CEXTPGM Userid=IPI2 LTerm=IPI2 Region=0005
      SSID=IEDE RecToken=IEDE/0000020E00000000
      Response=0.060426 Process=0.055050 CPU=0.005292 Abend=U4002
```

Use a filter to look for problems

```
VIEW                               Filter                               Row 1 of 1 More: < >
Command ==> █                               Scroll ==> PAGE

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

Filter . . . : BADTRANS +
Description . . : Log response time using OM ATF _____ _ Activate Tracking

/ Log Code + Exc Description
S ATF A201          ATF Enhanced Summary
                  Level 1_ Conditions Yes Form _____ + REXX _____
-----
***** Bottom of data *****
```

- Identify transactions with a long processing time – greater than 2 seconds

```
Conditions                               Row 1 to 1 of 1
Command ==> █                               Scroll ==> PAGE

Code: A201 ATF Enhanced Summary

/ Field Name +                               Oper Value +
  AESELAPS                               GT 2.0
-----
***** Bottom of data *****
```


Problem transaction result set

- The session result set is now reduced to problem transactions only
- All “noise” has been removed from the display
- High level identification and performance metrics are displayed
- Select the record to view its detail

```
BROWSE      IPI000.QADATA.ATF53DAY.V141.IEDE001 +      Record 00117942 More: < >
Command ==> █      Scroll ==> CSR
/   _____  Navigate < 00.00.01.000000 >      Date/Time _____
S_  A201 ATF Enhanced Summary                      Monday 2017-01-30 Time (Relative)
      TranCode=MQATREQ1 Program=MQATPGM Userid=IPI2 LTerm=IPI2 Region=0002
      SSID=IEDE RecToken=IEDE/0000039100000000
      Response=5.630066 Process=5.623878 CPU=1.199956
      _____
***** Bottom of Data *****
```

Transaction identification

Transaction code, program name, user id, arrival and processing times, tokens etc.

```
BROWSE      IPI000.QADATA.ATF53DAY.V141.IEDE001 +                               Record 00117942 Line 00000000
Command ==> |                                                                    Scroll ==> CSR
Form      ==> | + Use Form in Filter                                             Format ==> FORM
***** Top of data *****
+0004 Code... A201 ATF Enhanced Summary
+059B STCK... D205A5CE8CC59174          LSN... 000000000000E052
      Date... 2017-01-30 Monday          Time... 14.39.35.144537.090

+0000 Length.... 05AB          Code..... A2          Subcode.... 01          Type..... 04          Subtype.... c2

+000C AESCOR.... Correlation
+000C IMS ID.... 'IEDE'        PST..... 0002          Time..... 14.39.29.524421

+001A AESCRE.... Recovery Token
+001A SSID..... 'IEDE'        OASN..... 00000391    COMN..... 00000000

+0044 Tran..... 'MQATREQ1'    Program... 'MQATPGM '  Lterm..... 'IPI2 '    Userid.... 'IPI2 '    Database... ' '
+006C Version... 05          Level..... +0          Time key... 20170130063929520521    Collect... +5076
+00B6 Discard... +0          TZO..... +08.00.00.000000          Switch.... +0          Abend..... ' '
+00EC Region type... 80    Jobname... 'IEDEMP3'    Stepname... 'REGION '  SMF ID.... 'FTS1'    Class..... +6
+011A SPA size... +0
```

Workbench has advantages over IMS Problem Investigator:

1. Workbench uses friendly field names – they are intuitive
2. In a single pass of the data, ATF records can be extracted as well as converted to CSV or JSON for analytics purposes including IDAA, IOAz, Splunk, Elastic, Hadoop or RYO

CPU and elapsed time breakdown

- **CPU times**

Total, application, dependent region, DLI DB, DB2, MQ, control region, DLISAS

- **Elapsed times**

Response, processing, input queue, DLI DB, DB2, MQ, WFI

```
+008A CPU..... CPU times
+008A Total..... 1.199956  APPL..... 0.262528  DEP..... 1.199695  DLI..... 0.003744  DB2..... 0.004147
+0134 MQ..... 0.929537  CTL..... 0        DLISAS..... 0        Other..... 0.000261  Detail..... 1.199956
+0080 Event..... 0

+01D8 Elapsed... Elapsed times
+01D8 Response... 5.630066  Process... 5.623878  Input..... 0.010088
+015C DLI..... 0.020122  DB2..... 0.011527  MQ..... 5.219840  WFI..... 0        Level0.... 5.249713
```



- Both DB2 and MQ are used – MQ is way too high!

Breakdown by DL/I database and function call

For each database and DL/I function code combination:

- DLI call count
- Elapsed time
- CPU time

+0273	DB.....	GHU			
+0275	Count.....	+3	Elapsed....	0.001445	CPU..... 0.000329
+01F0	DBD name...	'IVPDB1'	Item.....	04	Bucket.... 01
+028A	DB.....	ISRT			
+028C	Count.....	+1	Elapsed....	0.000607	CPU..... 0.000274
+01F0	DBD name...	'IVPDB1'	Item.....	07	Bucket.... 02
+02A1	DB.....	REPL			
+02A3	Count.....	+1	Elapsed....	0.000046	CPU..... 0.000046
+01F0	DBD name...	'IVPDB1'	Item.....	08	Bucket.... 03
+02B8	DB.....	DLET			
+02BA	Count.....	+1	Elapsed....	0.000170	CPU..... 0.000166
+01F0	DBD name...	'IVPDB1'	Item.....	09	Bucket.... 04
+02CF	DB.....	GHU			
+02D1	Count.....	+3	Elapsed....	0.001184	CPU..... 0.000192
+01F8	DBD name...	'IVPDB2'	Item.....	04	Bucket.... 01

External subsystems: DB2 and MQ

- For each DB2 SQL call type:
 - Number of calls
 - CPU and elapsed time

```
+0382 DB2..... SELECT/FETCH
+0383 Count..... +14      Elapsed.... 0.001562    CPU..... 0.001270

+0397 DB2..... INSERT
+0398 Count..... +1      Elapsed.... 0.000171    CPU..... 0.000171

+03AC DB2..... UPDATE
+03AD Count..... +1      Elapsed.... 0.005379    CPU..... 0.000671

+03C1 DB2..... DELETE
+03C2 Count..... +1      Elapsed.... 0.000572    CPU..... 0.000303

+03D6 DB2..... OPEN
+03D7 Count..... +1      Elapsed.... 0.000461    CPU..... 0.000350

+03EB DB2..... All SQL calls
+03EC Count..... +19      Elapsed.... 0.008246    CPU..... 0.002857
```

- For each MQ call type:
 - Number of calls
 - CPU and elapsed time
- Problem identified: 5000 MQPUT calls

```
+0400 MQ..... MQGET
+0401 Count..... +11      Elapsed.... 0.256878    CPU..... 0.002357


+0415 MQ..... MQPUT
+0416 Count..... +5000     Elapsed.... 4.927624    CPU..... 0.922554

+042A MQ..... MQCONN
+042B Count..... +1      Elapsed.... 0.025288    CPU..... 0.005913

+043F MQ..... MQOPEN
+0440 Count..... +2      Elapsed.... 0.000440    CPU..... 0.000440

+0454 MQ..... MQCLOS
+0455 Count..... +2      Elapsed.... 0.000200    CPU..... 0.000200

+0469 MQ..... MQDISC
+046A Count..... +1      Elapsed.... 0.000188    CPU..... 0.000183
```



Tracking connects ATF to the related IMS log records

- **Tracking** locates all the log records associated with a single transaction, works for ATF because the record contains the necessary tokens
- Use **TX** against the ATF record to start tracking as you would for any other IMS log record type

```
BROWSE      IPI000.QADATA.ATF53DAY.V141.IEDE001 +      Record 00117942 More: < >
Command ==>       Scroll ==> CSR
/           Navigate < 00.00.01.000000 >      Date/Time
/           Filtering -----      Monday 2017-01-30 Time (Relative)
TX A201 ATF Enhanced Summary      14.39.35.144537
TranCode=MQATREQ1 Program=MQATPGM Userid=IPI2 LTerm=IPI2 Region=0002
SSID=IEDE RecToken=IEDE/0000039100000000
Response=5.630066 Process=5.623878 CPU=1.199956
-----
***** Bottom of Data *****
```

Tracking result set part 1

- Scroll up to see the start of the transaction – 01 is the input message
- Use R (relative time) to see the transaction event time line on the right hand side

```
BROWSE      IPI000.QADATA.ATF53DAY.V141.IEDE001 +      Record 00117814 More: < >
Command ==> █                                         Scroll ==> CSR
/ ----- Navigate < 00.00.01.000000 >      Date/Time
/ Tracking ----- Monday 2017-01-30      Time (Relative)
R_ 01      Input Message TranCode=MQATREQ1      14.39.29.514341
___ 35      Input Message Enqueue TranCode=MQATREQ1      +0.005504
___ 08      Application Start TranCode=MQATREQ1 Region=0002      +0.006171
___ 5607    Start of UOR Program=MQATPGM Region=0002      +0.006175
___ 31      DLI GU TranCode=MQATREQ1 Region=0002      +0.009913
___ 5050    Database REPL Database=DI21PART Region=0002      +0.024052
___ 5050    Database DLET Database=DI21PART Region=0002      +0.024202
___ 5050    Database DLET Database=DI21PART Region=0002      +0.024219
___ 5052    Database insert into KSDS Database=DI21PART      +0.024296
___ 5050    Database ISRT Database=DI21PART Region=0002      +0.024322
___ 5050    Database ISRT Database=IVPDB1 Region=0002      +0.026323
___ 5050    Database ISRT Database=IVPDB1 Region=0002      +0.026340
___ 5050    Database ISRT Database=IVPDB1 Region=0002      +0.026345
___ 5050    Database ISRT Database=IVPDB1 Region=0002      +0.026349
___ 5052    Database insert into KSDS Database=IVPDB1I Region=0002      +0.026387
___ 5050    Database ISRT Database=IVPDB1I Region=0002      +0.026413
___ 5050    Database REPL Database=IVPDB1 Region=0002      +0.026533
___ 5050    Database DLET Database=IVPDB1I Region=0002      +0.026661
```

Tracking result set part 2

- Scroll down to progress through the transaction events
- Notice the delay when the transaction connects to MQ

```
BROWSE      IPI000.QADATA.ATF53DAY.V141.IEDE001 +      Record 00117881 More: < >
Command ==> █                                         Scroll ==> CSR
-----
/      Navigate < 00.00.01.000000 >      Date/Time
-----
Tracking -----      Monday 2017-01-30      Time (Relative)
-----
5050 Database DLET Database=IVPDB1 Region=0002      14.39.29.541028
5050 Database DLET Database=IVPDB1 Region=0002      +0.026703
5050 Database DLET Database=IVPDB1 Region=0002      +0.026729
5050 Database ISRT Database=IVPDB2 Region=0002      +0.028064
5050 Database ISRT Database=IVPDB2 Region=0002      +0.028072
5050 Database ISRT Database=IVPDB2 Region=0002      +0.028077
5050 Database REPL Database=IVPDB2 Region=0002      +0.028162
5050 Database DLET Database=IVPDB2 Region=0002      +0.028260
5050 Database DLET Database=IVPDB2 Region=0002      +0.028273
5600 Sign-on to ESAF Region=0002 SSID=DBP1      +0.048588
5600 Thread created for ESAF SSID=DBP1      +0.048618
5600 Sign-on to ESAF Region=0002 SSID=MQP1      +0.086360
5600 Thread created for ESAF SSID=MQP1      +0.086373
5600 Commit Prepare starting Region=0002 SSID=MQP1      +5.615021
03 Output Message Response LTerm=IPI2      +5.617767
35 Output Message Enqueue LTerm=IPI2 Region=0002      +5.617784
3730 Syncpoint Start of Phase 2 Region=0002      +5.617801
5600 Commit Continue completed Region=0002 SSID=MQP1      +5.620512
```



The IMS log provides a transaction audit trail

- Type x'01' and x'03' are input and output messages
- Type x'50' are database updates
- This example is an ISRT into database IVPDB1 – segment is shown

```
***** Top of data *****
+0004 Code... 5050 Database ISRT
+00BE STCK... D205A5C934A4A270 LSN... 00000000000E00c
Date... 2017-01-30 Monday Time... 14.39.29.540682.152

+0004 DLOGCODE... 50 DLOGSCDE... 50 DLOGPSTN... 0002
+0008 DLOGRTKN... Recovery Token
+0008 DLOIMSID... 'IEDE ' DLOOASN... 00000391 DLOCOMN... 00000000
+002C DPGMNAME... 'MQATPGM ' DDBDNAME... 'IVPDB1 ' DLOGRBA... 00000002 DLOGBLKO... 0000 DLOGUSER... 'IPI2

+0082 DLOGREDO... REDO Data Section
+0082 DLOGDFLG... C0 DLOGDFUN... 80 DLOGDOFF... 017E DLOGDLEN... 0030 DLOGXPNL... 0036

+008A DLOGCDAT... Expanded REDO Data (Compressed if Expand fails)
DLOGCDAT... Variable length REDO Data.
+0000 01000000 00000000 11480000 1112D9D6 C7C5D9E2 D6D54040 D4C9C3C8 C1C5D340 *.....ROGERSON MICHAEL *
+0020 4040F1F4 F5404040 40404040 F6F1F0F2 40404000 0000 * 145 6102 ... *
***** End of data *****
```

Tracking result set part 3

- Keep scrolling down to the end of the transaction
- The ATF summary record is the final record because it is cut by OMEGAMON when the transaction ends

```
BROWSE      IPI000.QADATA.ATF53DAY.V141.IEDE001 +      Record 00117927 More: < >
Command ==> █      Scroll ==> CSR
/  _____  _____  _____  _____  _____
   Tracking      Date/Time      Monday 2017-01-30      Time (Relative)
5600 Commit Continue completed Region=0002 SSID=DBP1      14.39.35.136389
37  Syncpoint Message Transfer Region=0002      +5.622078
03  Output Message Response LTerm=IPI2      +5.626264
35  Output Message Enqueue LTerm=IPI2      +5.626286
31  Communications GU LTerm=IPI2      +5.626316
33  Free Message      +5.626377
36  Output Message Dequeue LTerm=IPI2      +5.628219
33  Free Message      +5.628514
33  Free Message      +5.628522
5612 Syncpoint End of Phase 2 Program=MQATPGM Region=0002      +5.628608
56FA Transaction Statistics TranCode=MQATREQ1 Region=0002      +5.628608
07  Application Terminate TranCode=MQATREQ1 Region=0002      +5.629177
A201 ATF Enhanced Summary TranCode=MQATREQ1 Region=0002      +5.630195
***** Bottom of Data *****
```

IMS Performance Analyzer

IMS Performance Analyzer: ATFEXTR batch command to create CSV extracts

```
IMSPALOG ATFCODE (xx)
```

```
IMSPALOG ATFEXTR(
```

```
  LABELS |NOLABELS,
```

```
  SECTIONS(DBD,
```

```
    DLIDB,
```

```
    DLITM,
```

```
    DB2,
```

```
    MQ,
```

```
    OTHER))
```

```
IMSPALOG EXECUTE
```

Specify log code prefix of ATF records ('A0' by default)

Choose to write field names (labels) at start of extract, or to omit them

Select which sections of log record to extract

Technote: <http://www.ibm.com/support/docview.wss?uid=swg21986274>

Keyed CSVs

<p>HEADER (transaction)</p>	<pre>IEDE,0001,2016-07-20 13:54:26.522752,IEDE ,000011C2,00000000,2016-07-20 13:54:26.522471, 0.453828,, ,IVTCM ,DFSIVP37,IPI2 ,IPI2 , , 5,,20160720055426522471,, , 0.424443, 11,,08:00:00,,10001000,IEDEJMP ,JMPRGN , 1,00000000,00000001,00000000,10010000, 80, 0.424308, 0.000558,, , 0.000134,, 0.029293,, , 1, 1, 5,, , 2,FTS1,IEDE,2016-07-20 13:54:26.519217,IEDE,2016-07-20 13:54:26.519217, 0.423885, 0.457027, 0.003479,2016-07-20 13:54:26.519272</pre>
<p>DBD</p>	<pre>IEDE,0001,2016-07-20 13:54:26.522752,IEDE ,000011C2,00000000,IVPDB2</pre>
<p>DLI DB</p>	<pre>IEDE,0001,2016-07-20 13:54:26.522752,IEDE ,000011C2,00000000,IVPDB2 , 1,GU , 1,READ , 1, 0.020332, 0.000301</pre>
<p>DLI TM</p>	<pre>IEDE,0001,2016-07-20 13:54:26.522752,IEDE ,000011C2,00000000, 1,GU , 1,GU , 1, 0.001121, 0.000074 IEDE,0001,2016-07-20 13:54:26.522752,IEDE ,000011C2,00000000, 2,GN , 2,GN , 1, 0.000041, 0.000040 IEDE,0001,2016-07-20 13:54:26.522752,IEDE ,000011C2,00000000, 3,ISRT, 3,INSERT , 2, 0.000207, 0.000051 IEDE,0001,2016-07-20 13:54:26.522752,IEDE ,000011C2,00000000, 6,ASRT, , , 1, 0.007564, 0.000060</pre>

(not all CSV data shown...)

IMS Performance Analyzer: ATF ES Reports

EDIT Report Set - SAMPLOG Line 1 of 15
Command ===> _____ Scroll ===> PAGE

Description . . . IMS PA Report Set

Enter "/" to select action.

	** Reports **	Active
—		
+ —	Options	<u>Yes</u>
+ —	Transaction Transit Reports	<u>Yes</u>
+ —	Transaction Transit Reports (Form-based)	<u>No</u>
+ —	Resource Usage & Availability Reports	<u>No</u>
+ —	Fast Path Transit Reports	<u>No</u>
+ —	Fast Path Resource Usage Reports	<u>No</u>
- —	ATF Enhanced Summary Reports	<u>Yes</u>
	— Transit Options	<u>Yes</u>
	— Extract	<u>Yes</u>
	— Transaction Analysis	<u>Yes</u>
	— DLI Call Analysis	<u>Yes</u>
	— DB2 Call Analysis	<u>Yes</u>
	— MQ Call Analysis	<u>Yes</u>
+ —	Trace Reports	<u>No</u>
—	User-Written Reports	<u>No</u>
	** End of Reports **	

IMS Performance Analyzer: ATF ES reports (PI65825)

Report	Meaning	Report types
Extract	Extract ATF Extended Summary record to CSV	<ul style="list-style-type: none">• CSV extracts for the header, database, DLI DB, DLI TM, DB2, MQ, and Other sections
Transaction Analysis	Report performance by Transaction or Database	<ul style="list-style-type: none">• Transaction List• Transaction-Database List• Transaction Summary• Database Summary
DLI Call Analysis	Report Database activity within transactions	<ul style="list-style-type: none">• DLI List• DLI Summary• DLI Summary by Database
DB2 Call Analysis	Report DB2 SQL call activity within transactions	<ul style="list-style-type: none">• DB2 List• DB2 Summary
MQ Call Analysis	Report MQ call activity within transactions	<ul style="list-style-type: none">• MQ List• MQ Summary

Technote: <http://www.ibm.com/support/docview.wss?uid=swg21988330>

IMS Performance Analyzer
OMEGAMON ATF Transaction List

Report from 20Jul2016 13:54:26.52

Page 1

Time	Trancode	----- Elapsed Time -----						----- CPU Time -----				
		InputQ	Process	DLI	DB2	DEP	DLI	DB2	MQ	CTL	DLISAS	Total
13:54:26.522471	IVTCM	0.003479	0.453828	0.029293	0.000000	0.424308	0.000558	0.000000	0.000000	0.000000	0.000134	0.424443
13:54:27.532024	IVTCM	0.002967	0.040090	0.018490	0.000000	0.019323	0.000523	0.000000	0.000000	0.000000	0.000000	0.019323
13:54:28.541737	IVTCM	0.002768	0.017321	0.003697	0.000000	0.013260	0.000467	0.000000	0.000000	0.000000	0.000000	0.013260
13:54:29.572519	IVTCM	0.002969	0.024736	0.005334	0.000000	0.016590	0.000494	0.000000	0.000000	0.000000	0.000000	0.016590
13:54:30.599599	IVTCM	0.005093	0.026991	0.004805	0.000000	0.014198	0.000330	0.000000	0.000000	0.000000	0.000000	0.014198
13:54:31.611727	IVTCM	0.005527	0.024768	0.006326	0.000000	0.016530	0.000427	0.000000	0.000000	0.000000	0.000000	0.016530
13:54:32.632236	IVTCM	0.006017	0.021612	0.005060	0.000000	0.015071	0.000300	0.000000	0.000000	0.000000	0.000000	0.015071
13:54:33.655986	IVTCM	0.008865	0.044068	0.009086	0.000000	0.014139	0.000451	0.000000	0.000000	0.000000	0.000000	0.014139
13:54:34.711520	IVTCM	0.005817	0.024092	0.004302	0.000000	0.016748	0.000475	0.000000	0.000000	0.000000	0.000000	0.016748
13:54:35.720514	IVTCM	0.002982	0.029615	0.013380	0.000000	0.012964	0.000498	0.000000	0.000000	0.000000	0.000000	0.012964
13:54:36.733384	IVTCM	0.008682	0.023225	0.008374	0.000000	0.012967	0.000331	0.000000	0.000000	0.000000	0.000000	0.012967
13:54:37.742370	IVTCM	0.007044	0.019301	0.009169	0.000000	0.007606	0.000178	0.000000	0.000000	0.000000	0.000000	0.007606
13:54:41.812427	IVTCM	0.006838	0.023335	0.006602	0.000000	0.015121	0.000370	0.000000	0.000000	0.000000	0.000000	0.015121
13:54:42.818093	IVTCM	0.002512	0.017333	0.004531	0.000000	0.011583	0.000447	0.000000	0.000000	0.000000	0.000000	0.011583
13:54:43.828733	IVTCM	0.008130	0.026511	0.009802	0.000000	0.014883	0.000426	0.000000	0.000000	0.000000	0.000000	0.014883
13:54:44.836731	IVTCM	0.004974	0.023441	0.003349	0.000000	0.019404	0.000434	0.000000	0.000000	0.000000	0.000000	0.019404
13:54:45.842074	IVTCM	0.002024	0.019798	0.004675	0.000000	0.013841	0.000373	0.000000	0.000000	0.000000	0.000000	0.013841
13:54:46.848021	IVTCM	0.001641	0.017295	0.003044	0.000000	0.012451	0.000452	0.000000	0.000000	0.000000	0.000000	0.012451

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IMS Performance Analyzer
OMEGAMON ATF Transaction-Database List

Report from 09Jun2016 14:23:35.27

Page 1

Time	Trancode	Process	Elap DLI	CPU DLI	Database	Gets	Elap Get	CPU Get	Updates	Elap Upd	CPU Upd
14:23:35.271032	FPSAMP1	0.067007	0.064720	0.000424	DBFSAMD2	1	0.000010	0.000010	1	0.000003	0.000003
					DBFSAMD4	1	0.056256	0.000252	1	0.008378	0.000095
					DBFSAMD1	1	0.000025	0.000025	0	0.000000	0.000000
14:24:11.375171	FPSAMP2	0.088394	0.067060	0.000329	DBFSAMD2	1	0.000014	0.000014	0	0.000000	0.000000
					DBFSAMD3	1	0.067007	0.000277	0	0.000000	0.000000
14:25:35.659238	FPSAMP1	0.000908	0.000749	0.000237	DBFSAMD2	1	0.000011	0.000011	1	0.000002	0.000002
					DBFSAMD3	1	0.000625	0.000124	3	0.000053	0.000053
					DBFSAMD1	1	0.000011	0.000009	0	0.000000	0.000000
14:25:09.952819	FPSAMP2	0.008606	0.001911	0.000405	DBFSAMD2	1	0.000016	0.000016	1	0.000003	0.000003
					DBFSAMD3	1	0.000360	0.000121	3	0.001194	0.000193
					DBFSAMD1	1	0.000012	0.000012	0	0.000000	0.000000
14:26:10.496307	FPSAMP2	0.017612	0.002387	0.000237	DBFSAMD2	1	0.000016	0.000016	1	0.000004	0.000004
					DBFSAMD3	1	0.000646	0.000113	3	0.000061	0.000057
					DBFSAMD1	1	0.000009	0.000009	0	0.000000	0.000000
14:26:58.666689	FPSAMP1	0.000629	0.000456	0.000245	DBFSAMD2	1	0.000012	0.000012	1	0.000004	0.000004
					DBFSAMD3	1	0.000322	0.000121	3	0.000061	0.000057
					DBFSAMD1	1	0.000010	0.000010	0	0.000000	0.000000
14:27:17.260863	FPSAMP1	0.012941	0.010400	0.000338	DBFSAMD2	1	0.000012	0.000012	1	0.000003	0.000003
					DBFSAMD4	1	0.010256	0.000203	1	0.000058	0.000056
					DBFSAMD1	1	0.000023	0.000023	0	0.000000	0.000000

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IMS Performance Analyzer
OMEGAMON ATF Transaction Summary

Report from 01Jun2016 10:41:45.96 to 01Jun2016 10:50:57.85

Page 1

Trancode	Program	Tran Count	Average Elapsed Time					Average CPU Time					Total
			InputQ	Process	DLI	DB2	DEP	DLI	DB2	MQ	CTL	DLISAS	
ADDINV	DFSSAM04	10	0.003382	0.009164	0.004288	0.000000	0.002254	0.000449	0.000000	0.000000	0.000000	0.000000	0.002254
ADDPART	DFSSAM04	8	0.003141	0.007718	0.003263	0.000000	0.002219	0.000435	0.000000	0.000000	0.000000	0.000000	0.002219
CEXSCONV	CEXSPGM	15	0.004999	0.676460	0.002319	0.001855	0.002690	0.000354	0.001308	0.000000	0.000000	0.000000	0.002690
CEXSNONC	CEXSPGM	10	0.207687	0.208464	0.003630	0.001840	0.002634	0.000563	0.001130	0.000000	0.000000	0.000000	0.002634
CEXTCONV	CEXTPGM	20	0.005726	1.013001	0.002896	0.002404	0.003172	0.000460	0.001455	0.000000	0.000071	0.000000	0.003243
CEXTNONC	CEXTPGM	16	0.131929	2.009495	0.003258	0.002009	0.002918	0.000551	0.001402	0.000000	0.000094	0.000000	0.003013
DGSCO001	IVPREXX	1	0.000000	87.99800	87.95993	0.000000	0.009393	0.000819	0.000000	0.000000	0.000000	0.000000	0.009393
DLETINV	DFSSAM04	8	0.002473	0.010282	0.003201	0.000000	0.002466	0.000487	0.000000	0.000000	0.000000	0.000000	0.002466
DLETPART	DFSSAM04	6	0.002661	0.008997	0.003754	0.000000	0.002500	0.000516	0.000000	0.000000	0.000000	0.000000	0.002500
DSPALLI	DFSSAM07	8	0.004257	0.010511	0.003518	0.000000	0.002855	0.000540	0.000000	0.000000	0.000000	0.000000	0.002855
DSPINV	DFSSAM03	16	0.003477	0.009742	0.003922	0.000000	0.003008	0.000570	0.000000	0.000000	0.000000	0.000000	0.003008
DVPTRAN2	DVPPGM01	32	0.006524	4.691488	0.009028	0.000000	0.007866	0.003743	0.000000	0.000000	0.000000	0.000000	0.007866
IVTCV	DFSIVP3	12	0.002278	0.007758	0.004936	0.000000	0.001194	0.000369	0.000000	0.000000	0.000000	0.000000	0.001217
IVTCX	DFSIVP35	12	0.001911	0.024893	0.003503	0.000000	0.003864	0.000391	0.000000	0.000000	0.000000	0.000000	0.003864
IVTFD	DFSIVP4	11	0.000000	0.000582	0.000365	0.000000	0.000413	0.000205	0.000000	0.000000	0.000000	0.000000	0.000413
IVTFM	DFSIVP5	8	0.000000	0.000428	0.000169	0.000000	0.000381	0.000146	0.000000	0.000000	0.000000	0.000000	0.000381
IVTNO	DFSIVP1	22	0.003763	0.004148	0.000839	0.000000	0.000772	0.000183	0.000000	0.000000	0.000000	0.000000	0.000772
IVTNV	DFSIVP2	22	0.003318	0.003794	0.000697	0.000000	0.000726	0.000147	0.000000	0.000000	0.000000	0.000000	0.000726
MQATREQ1	MQATPGM	4	0.003677	0.300904	0.007574	0.001552	0.008564	0.000895	0.001077	0.002438	0.000000	0.000000	0.008564
PART	DFSSAM02	42	2.281595	0.016023	0.006203	0.000000	0.002220	0.000427	0.000000	0.000000	0.000000	0.000000	0.002220
Total		283	0.356248	1.080394	0.314732	0.000468	0.002871	0.000775	0.000306	0.000034	0.000000	0.000000	0.002883

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IMS Performance Analyzer
 OMEGAMON ATF Database Summary

Report from 09Jun2016 14:23:35.27 to 09Jun2016 14:28:40.20

Database	----- Average -----					----- Total -----				
	Reads	Elapsed	CPU	Elapsed	CPU	Updates	Elapsed	CPU	Elapsed	CPU
DBFSAMD1	8	0.000013	0.000013	0.000109	0.000108	0	0.000000	0.000000	0.000000	0.000000
DBFSAMD2	9	0.000012	0.000012	0.000116	0.000115	8	0.000003	0.000003	0.000024	0.000024
DBFSAMD3	14	0.005044	0.000082	0.070623	0.001154	18	0.000082	0.000026	0.001483	0.000475
DBFSAMD4	2	0.033256	0.000227	0.066512	0.000454	2	0.004218	0.000075	0.008436	0.000151
Total	33	0.004162	0.000055	0.137361	0.001831	28	0.000355	0.000023	0.009943	0.000650
***** Bottom of Data *****										

IMS Performance Analyzer
 OMEGAMON ATF DLI List

Report from 09Jun2016 14:23:35.27

Time	Trancode	Program	--- Elapsed Time ---		----- CPU Time -----		----- Call Summary -----				
			Process	DLI	Total	DLI	Database	Type	Count	Elapsed	DLI
14:23:35.271032	FPSAMP1	DBFSAMP3	0.067007	0.064720	0.000686	0.000424	DBFSAMD2	GHU	1	0.000010	0.000010
								REPL	1	0.000003	0.000003
							DBFSAMD4	GHU	1	0.056256	0.000252
								REPL	1	0.008378	0.000095
14:24:11.375171	FPSAMP2	DBFSAMP4	0.088394	0.067060	0.001433	0.000329	DBFSAMD1	FLD	1	0.000025	0.000025
							DBFSAMD2	GHU	1	0.000014	0.000014
14:25:35.659238	FPSAMP1	DBFSAMP3	0.000908	0.000749	0.000396	0.000237	DBFSAMD3	GHU	1	0.067007	0.000277
							DBFSAMD2	GHU	1	0.000011	0.000011
								REPL	1	0.000002	0.000002
							DBFSAMD3	GHU	1	0.000625	0.000124
14:25:09.952819	FPSAMP2	DBFSAMP4	0.008606	0.001911	0.001014	0.000405		ISRT	2	0.000039	0.000039
								REPL	1	0.000015	0.000015
							DBFSAMD1	FLD	1	0.000011	0.000009
							DBFSAMD2	GHU	1	0.000016	0.000016
								REPL	1	0.000003	0.000003
							DBFSAMD3	GNP	2	0.000016	0.000016
								GHU	1	0.000360	0.000121
								ISRT	2	0.001179	0.000178
14:26:10.496307	FPSAMP2	DBFSAMP4	0.017612	0.002387	0.000759	0.000237		REPL	1	0.000015	0.000015
							DBFSAMD1	FLD	1	0.000012	0.000012
							DBFSAMD2	GHU	1	0.000016	0.000016
								REPL	1	0.000004	0.000004
							DBFSAMD3	GHU	1	0.000646	0.000113
								ISRT	2	0.000046	0.000042
								REPL	1	0.000015	0.000015
							DBFSAMD1	FLD	1	0.000009	0.000009

IMS Performance Analyzer
 OMEGAMON ATF DLI Summary

Report from 15Jun2016 08:47:58.04 to 15Jun2016 10:56:43.22

Database	Tran Count	Trancode	Type	Call Count	Average Elapsed	Average CPU	Total Elapsed	Average CPU	Average Process	Elapsed DLI	Average Total	CPU DLI
DI21PART	7	CEXSCONV	GHU	14	0.000285	0.000078	0.003991	0.001101				
			ISRT	7	0.000116	0.000058	0.000818	0.000408				
			REPL	7	0.000067	0.000065	0.000469	0.000457				
			DLET	7	0.000059	0.000059	0.000418	0.000416				
			STAT	3	0.000013	0.000012	0.000039	0.000036				
	8	CEXTNONC	GHU	16	0.000251	0.000084	0.004026	0.001357				
			ISRT	8	0.000079	0.000056	0.000636	0.000451				
			REPL	8	0.000071	0.000068	0.000571	0.000545				
			DLET	8	0.000061	0.000059	0.000488	0.000478				
			STAT	6	0.000012	0.000011	0.000073	0.000071				
	4	DVPTRAN1	GHU	20	0.000019	0.000019	0.000397	0.000380				
			ISRT	20	0.000101	0.000071	0.002037	0.001433				
			DLET	20	0.000052	0.000042	0.001040	0.000845				
			STAT	3	0.000006	0.000006	0.000020	0.000018				
	8	MQATREQ1	GHU	12	0.000216	0.000072	0.002597	0.000864				
			ISRT	6	0.000065	0.000058	0.000395	0.000352				
			REPL	6	0.000073	0.000060	0.000439	0.000364				
			DLET	6	0.000058	0.000057	0.000349	0.000344				
			STAT	24	0.000012	0.000011	0.000297	0.000285				
	2	PART	GU	2	0.000342	0.000133	0.000685	0.000267				
			STAT	6	0.000007	0.000006	0.000042	0.000040				
Total	29			209	0.000094	0.000050	0.019828	0.010512	401.23012	0.005883	12.809492	0.000802

IMS Performance Analyzer
OMEGAMON ATF DLI Summary by Database

Report from 09Jun2016 14:23:35.27 to 09Jun2016 14:28:40.20

Database	Tran Count	Trancode	Type	Call Count	Average Elapsed	CPU	Total Elapsed	CPU	Calls /Second
DBFSAMD1	6	FPSAMP1	FLD	6	0.000014	0.000014	0.000089	0.000087	0.02
	2	FPSAMP2	FLD	2	0.000010	0.000010	0.000021	0.000020	0.01
Subtotal1	8			8	0.000013	0.000013	0.000109	0.000108	0.03
DBFSAMD2	6	FPSAMP1	GHU	6	0.000011	0.000011	0.000071	0.000069	0.02
			REPL	6	0.000002	0.000002	0.000017	0.000017	0.02
	3	FPSAMP2	GHU	3	0.000015	0.000015	0.000046	0.000045	0.01
			REPL	2	0.000003	0.000003	0.000007	0.000007	0.01
Subtotal1	9			17	0.000008	0.000008	0.000141	0.000139	0.06
DBFSAMD3	4	FPSAMP1	GNP	3	0.000005	0.000005	0.000016	0.000016	0.01
			GHU	4	0.000485	0.000119	0.001941	0.000476	0.01
			ISRT	8	0.000020	0.000020	0.000164	0.000162	0.03
			REPL	4	0.000016	0.000015	0.000064	0.000062	0.01
	4	FPSAMP2	GU	1	0.000628	0.000126	0.000628	0.000126	0.00
			GNP	3	0.000008	0.000008	0.000025	0.000025	0.01
			GHU	3	0.022671	0.000170	0.068013	0.000511	0.01
			ISRT	4	0.000306	0.000055	0.001225	0.000220	0.01
			REPL	2	0.000015	0.000015	0.000030	0.000030	0.01
Subtotal1	8			32	0.002253	0.000050	0.072106	0.001629	0.10
DBFSAMD4	2	FPSAMP1	GHU	2	0.033256	0.000227	0.066512	0.000454	0.01
			REPL	2	0.004218	0.000075	0.008436	0.000151	0.01
Subtotal1	2			4	0.018737	0.000151	0.074948	0.000605	0.01
Total			GU	1	0.000628	0.000126	0.000628	0.000126	0.00
			GNP	6	0.000006	0.000006	0.000041	0.000041	0.02
			GHU	18	0.007587	0.000086	0.136583	0.001557	0.06
			ISRT	12	0.000115	0.000031	0.001389	0.000382	0.04
			REPL	16	0.000534	0.000016	0.008554	0.000268	0.05
			FLD	8	0.000013	0.000013	0.000109	0.000108	0.03
	10			61	0.002414	0.000040	0.147304	0.002481	0.20

***** Bottom of Data *****

IMS Performance Analyzer
 OMEGAMON ATF DB2 List

Report from 14Jul2016 10:05:00.42

Time	Trancode	Program	--- Elapsed Time --		----- CPU Time ----		----- Call Summary -----			
			Process	DB2	Total	DB2	Type	Count	Elapsed	DB2
10:07:15.685880	MQATREQ1	MQATPGM	0.355746	0.016710	0.009469	0.002320	OTHER	1	0.000036	0.000036
							SELECT	14	0.000654	0.000556
							INSERT	1	0.000124	0.000124
							UPDATE	1	0.000359	0.000204
							DELETE	1	0.000562	0.000413
							OPEN	1	0.000147	0.000144
							TOTAL	19	0.001880	0.001476
10:07:18.411873	MQATREQ1	MQATPGM	0.307880	0.007727	0.014466	0.005856	OTHER	1	0.000032	0.000032
							SELECT	14	0.005152	0.004361
							INSERT	1	0.000127	0.000127
							UPDATE	1	0.000184	0.000177
							DELETE	1	0.000494	0.000445
							OPEN	1	0.000139	0.000134
							TOTAL	19	0.006128	0.005276

***** Bottom of Data *****

IMS Performance Analyzer
OMEGAMON ATF DB2 Summary

Report from 14Jul2016 10:03:08.14 to 14Jul2016 10:08:05.79

Page 1

Trancode	Program	Tran Count	Average Process	Elapsed - DB2	Average Total	CPU DB2 Type	Call Type	Count	Average Elapsed	Average CPU	Total Elapsed	Total CPU
CEXSCONV	CEXSPGM	6	0.847959	0.003812	0.004369	0.002605	OTHER	6	0.000038	0.000037	0.000228	0.000227
							SELECT	84	0.000079	0.000073	0.006664	0.006144
							INSERT	6	0.000145	0.000141	0.000875	0.000847
							UPDATE	6	0.000192	0.000169	0.001157	0.001018
							DELETE	6	0.000440	0.000421	0.002640	0.002529
							OPEN	6	0.000182	0.000167	0.001095	0.001005
							TOTAL	114	0.000111	0.000103	0.012659	0.011770
CEXTCONV	CEXTPGM	12	1.263931	0.003426	0.004290	0.002553	OTHER	12	0.000035	0.000035	0.000428	0.000427
							SELECT	168	0.000095	0.000083	0.016007	0.014108
							INSERT	12	0.000140	0.000138	0.001683	0.001666
							UPDATE	12	0.000173	0.000169	0.002076	0.002028
							DELETE	12	0.000443	0.000423	0.005320	0.005081
							OPEN	12	0.000219	0.000175	0.002636	0.002103
							TOTAL	228	0.000123	0.000111	0.028150	0.025414
CEXTNONC	CEXTPGM	7	2.160394	0.004212	0.003648	0.002006	OTHER	7	0.000035	0.000035	0.000249	0.000245
							SELECT	98	0.000103	0.000044	0.010149	0.004382
							INSERT	7	0.000134	0.000133	0.000938	0.000935
							UPDATE	7	0.000171	0.000169	0.001201	0.001186
							DELETE	7	0.000522	0.000415	0.003656	0.002907
							OPEN	7	0.000175	0.000169	0.001228	0.001189
							TOTAL	133	0.000130	0.000081	0.017420	0.010844
MQATREQ1	MQATPGM	2	0.331813	0.012218	0.011967	0.004088	OTHER	2	0.000034	0.000034	0.000068	0.000068
							SELECT	28	0.000207	0.000175	0.005807	0.004917
							INSERT	2	0.000125	0.000125	0.000250	0.000250
							UPDATE	2	0.000271	0.000190	0.000543	0.000381
							DELETE	2	0.000528	0.000429	0.001056	0.000858
							OPEN	2	0.000143	0.000139	0.000286	0.000278
							TOTAL	38	0.000210	0.000177	0.008008	0.006752
Total		27	1.334863	0.004367	0.004710	0.002537	OTHER	27	0.000036	0.000035	0.000972	0.000967
							SELECT	378	0.000102	0.000078	0.038627	0.029551
							INSERT	27	0.000138	0.000136	0.003746	0.003698
							UPDATE	27	0.000184	0.000170	0.004978	0.004613
							DELETE	27	0.000469	0.000421	0.012671	0.011375
							OPEN	27	0.000194	0.000169	0.005244	0.004575
							TOTAL	513	0.000129	0.000106	0.066237	0.054779

IMS Performance Analyzer
 OMEGAMON ATF MQ List

Report from 14Jul2016 10:03:08.14

Time	Trancode	Program	Process	MQ	Total	MQ	Type	Call Count	Summary Elapsed	MQ
10:07:14.366029	MQATREQ1	MQATPGM	0.312479	0.001687	0.013599	0.001093	MQGET	11	0.255512	0.001434
							MQPUT	1	0.000562	0.000253
							MQCONN	1	0.026082	0.003718
							MQOPEN	2	0.000242	0.000241
							MQCLOS	2	0.000098	0.000098
							MQDISC	1	0.000160	0.000118
10:07:15.685880	MQATREQ1	MQATPGM	0.355746	0.016710	0.009469	0.002320	MQGET	2	0.313318	0.000372
							MQPUT	1	0.000986	0.000264
							MQCONN	1	0.000012	0.000012
							MQOPEN	2	0.000231	0.000231
							MQCLOS	2	0.000107	0.000107
							MQDISC	1	0.000132	0.000132
10:07:17.059815	MQATREQ1	MQATPGM	0.303550	0.000000	0.005957	0.000000	MQGET	2	0.252465	0.000377
							MQPUT	5	0.020369	0.000936
							MQCONN	1	0.000012	0.000012
							MQOPEN	2	0.000242	0.000242
							MQCLOS	2	0.000109	0.000109
							MQDISC	1	0.000137	0.000135
10:07:18.411873	MQATREQ1	MQATPGM	0.307880	0.007727	0.014466	0.005856	MQGET	6	0.260979	0.000834
							MQPUT	10	0.004923	0.001340
							MQCONN	1	0.000012	0.000012
							MQOPEN	2	0.000233	0.000233
							MQCLOS	2	0.000179	0.000109
							MQDISC	1	0.000112	0.000112

***** Bottom of Data *****

IMS Performance Analyzer
 OMEGAMON ATF MQ Summary

Report from 14Jul2016 10:03:08.14 to 14Jul2016 10:08:05.79

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Trancode	Program	Tran Count	Average Process	Elapsed - MQ	--- Average Total	--- CPU MQ	Call Type	Count	----- Average Elapsed	----- CPU	----- Total Elapsed	----- CPU
MQATREQ1	MQATPGM	4	0.319913	0.006531	0.010872	0.002317	MQPUT	21	0.051536	0.000143	1.082274	0.003017
							MQCONN	17	0.001578	0.000164	0.026840	0.002793
							MQCLOS	4	0.006529	0.000938	0.026118	0.003755
							MQSUB	8	0.000118	0.000118	0.000948	0.000947
Total		4	0.319913	0.006531	0.010872	0.002317	MQPUT	21	0.051536	0.000143	1.082274	0.003017
							MQCONN	17	0.001578	0.000164	0.026840	0.002793
							MQCLOS	4	0.006529	0.000938	0.026118	0.003755
							MQSUB	8	0.000118	0.000118	0.000948	0.000947

***** Bottom of Data *****

Further reading

Product	Summary	More information
IMS Problem Investigator	Support OMEGAMON log stream direct access in batch interface.	APAR PI44856: https://www.ibm.com/support/docview.wss?rs=63&uid=swg1P144856
	Add support for OMEGAMON V5.3 ATF Enhanced Summary record introduced by APAR OA50499.	APAR PI63796: http://www.ibm.com/support/docview.wss?uid=swg1PI63796
IMS Performance Analyzer	ATFEXTR batch command to extract data from OMEGAMON V5.3 ATF Enhanced Summary record (written to the IMS log)	APAR PI63797: http://www.ibm.com/support/docview.wss?uid=swg1PI63797 Technote: http://www.ibm.com/support/docview.wss?uid=swg21986274
	Reporting that exploits the OMEGAMON XE for IMS on z/OS V5.3 ATF Enhanced Summary record	APAR PI65825: http://www.ibm.com/support/docview.wss?uid=swg1PI65825 Technote: http://www.ibm.com/support/docview.wss?uid=swg21988330