

IBM® Tivoli® OMEGAMON® XE for IMS® on z/OS® v4.2.0

Interim Feature 3 (IF3)

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Chapter 1. Interim Feature 3 Overview

This document describes the enhancements that have been provided in Interim Feature 3 (IF3) for the IBM® Tivoli® OMEGAMON® XE for IMS® on z/OS® v4.2.0 product.

IF3 enhancements are included in APAR OA36278 that requires the installation of mainframe PTF UA61604 and the installation of Fix Pack 4.2.0-TIV-KIP-IF0006.

The following enhancements have been provided by IF3:

- TEPS time attributes are now in microseconds.
- Improved granularity for application metrics
- Application Trace Facility (ATF) usability enhancements:
 - Automatic activation of traces at OMEGAMON startup
 - Trace definitions retained in new Trace Repository
 - Trace duration increased and forever option added and allow traces to exclude region types
 - View trace data by Trace ID
 - Enhanced trace summary displays and overview
 - Ability to create an exception-level journal
 - New and updated ATF startup parameters

The following chapters include a description of each of these enhancements.

For a full description of these items, refer to the updated product documentation which can be found at:

<http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/index.jsp?toc>

Expand OMEGAMON XE for IMS on z/OS in the left-hand frame to view the documentation. PDF and HTML formats of the documentation are provided.

Chapter 2. TEPS Time Attributes in Microseconds

The following table lists the new attributes that are in microseconds along with the TEPS workspace in which they are displayed.

Attributes	Workspaces
Syncpoint Elapsed Time Elapsed Lock Time	IMS Global Locks
Elapsed Lock Time	IMS Local Lock Conflicts
Elapsed Transaction Time Elapsed Wait Time Syncpoint Interval Time Elapsed Lock Time	IMS Dependent Regions
Elapsed Transaction Time Elapsed Wait Time	IMS Fast Path Regions
IRLM Elapsed Lock Time	IMS Local Locks Held (linked to from IMS Dependent Regions)

Chapter 3. Improved Granularity for Application Metrics

Application metrics now provide statistics for a transaction instance (Unit of Recovery) instead of the application schedule. Approximately 25 existing application metrics have been updated and 27 new metrics have been added to the TEP and 3270 interfaces in order for the metrics to reflect the transaction's Unit of Recovery (UOR).

The elapsed time for a transaction now accurately reflects the transaction instance for WFI and PWFI transactions.

The following new call count metrics are provided for a transaction instance:

- Database calls:
FLD, POS, DEQ, and RLSE
- Message call:
CHNG, CMD, GMD, AUTH, SETO, and ICAL
- System service calls:
GMSG, ICMD, RCMD, ROLB, ROLS, SETS, SETU, INIT, INQY, LOG, and
Total system service calls
- External subsystem (ESAF) calls

The following additional new metrics are now available:

- Elapsed wait times for intent conflict, pool space, scheduling process, PI/IRLM locking, and database I/O.
- I/O counts for VSAM reads, OSAM reads, total database I/O per transaction and per schedule.
- Enqueue wait counts for exclusive, test, update, and Q command per transaction.

New exceptions (3270 interface) and product-provided situations (TEPS interface) are provided for:

- VSAM or OSAM reads high for a transaction
- Total I/O high for a transaction
- Transaction elapsed time high
- DL/I database calls high for a transaction
- External subsystem calls high for a transaction

These metrics are available in the 3270 interface as region minor commands of the region major commands. Here is a sample showing some of these minor commands.

Chapter 4. ATF Usability Enhancements

Chapter 4.1. Automatic Activation of Traces at Startup

At OMEGAMON startup, all traces previously active that have not yet expired will automatically be activated.

A new ATF startup parameter, AUTORESTART, is provided to control activation of traces at startup. AUTORESTART=YES (the default), indicates that all previously active non-expired traces are to be activated at OMEGAMON startup. AUTORESTART=NO indicates that all traces are to be disabled at OMEGAMON startup. With AUTORESTART=NO, all traces will be marked inactive at OMEGAMON startup even if the trace had not expired

The AUTORESTART parameter is specified in RKANPARU member KI2ATFxx on the START ATF statement.

Chapter 4.2. Trace Definitions Retained in New Trace Repository

All trace definitions are now retained in a new Trace Repository, which is a VSAM KSDS file. The Trace Repository is dynamically created/allocated by OMEGAMON and so no JCL changes are required to the OMEGAMON task.

The data set name for the Trace Repository uses the same naming conventions as the ATF journals. The existing VSHILEV and VSMILEV keywords in RKANPARU member KOIJLF00 are used for the Trace Repository data set name.

The format of the Trace Repository name is:
vshilev.vsmilev.imsid.I2ATFTRC

where:

vshilev is the value specified for the VSHILEV parameter in KOIJLF00
vsmilev is the value specified for the VSMILEV parameter in KOIJLF00
imsid is the id of the IMS system being monitored.

The ATF Manage Traces option from the ATF Menu invokes the ATMN command, which displays all trace definitions from the Trace Repository and allows trace definitions to be added, modified, deleted, cloned, activated, or inactivated. Here is a sample of this screen:

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
KOIATMN VTM OI-II V420./C IA1W 06/29/11 4:06:57 B
> Help PF1 Back PF3 Up PF7 Down PF8
(H.A.A) Manage Application Trace (Define/Start/Stop)
* - Manage Trace B - View Trace C - Search and Filter Criteria

ATMN
TraceID=* StartDate=* (YYYYMMDD) Active=* (*Y/N)
Actions: A=Add C=Clone D=Delete I=Activate/Inactivate M=Modify
V=View trace results X=View trace exceptions

+-----+-----+-----+-----+-----+-----+
| Trace ID | Start Date | Time | Duration | Trace | Trace Selection Criteria |
| | | | Minutes | Status | |
+-----+-----+-----+-----+-----+-----+
| TRACEIVT | 06/29 | 04:00 | 30 | Active | TRN=IVT* |
| RSTIL | 04/03 | 09:49 | 60 | Inactive | All defaults are in use |
| XCEPTION | 04/03 | 09:45 | 480 | Inactive | All defaults are in use |
| RSTIL | 04/03 | 03:13 | 60 | Inactive | All defaults are in use |
+-----+-----+-----+-----+-----+-----+

```

The first line of the ATMN display allows three fields to be used to filter the trace definitions from the Trace Repository. These are:

- **TraceID** - To filter by Trace ID, specify the complete Trace ID name (e.g., TRACE01), a generic trace ID suffixed by '*' (e.g., TRACE*), or simply an asterisk (*), to display all Trace IDs.
- **StartDate** - start date of the Trace IDs to display in the form yyyyymmdd. If no date is specified, all trace specifications are eligible for display.
- **Active** - indicator of whether the currently active trace requests are to be displayed. **Y** indicates that all active traces are to be included in the ATMN display. **N** hides active traces from the ATMN display, only inactive traces are displayed. An asterisk (*) is the default value and indicates that all traces (active and inactive) are to be displayed.

ATMN supports the following actions:

- **A (Add)** navigates to the ATSP panel to define a new trace specification.
- **C (Clone)** copies the contents of a trace specification to use as a model for a new trace specification.
- **D (Delete)** deletes an inactive trace specification. Note that an active trace cannot be deleted (it must be inactivated by using action character **I** before it can be deleted).
- **I (Activate/Inactivate)** activates an inactive trace or inactivates an active trace. The trace definition remains in the list after the action is applied. Activating an inactive trace that has not expired will activate the trace for the remaining duration. Activating an inactive trace that has expired will reset the start date and time to the current date and time and direct ATF to collect trace data matching this trace request.

If you activate an inactive trace that has expired, then viewing the trace data by Trace ID will only view trace data for the new start date and time. To view the trace data from a previous start date and time or any other criteria, modify the trace specifications accordingly or use the ATF Menu panel View option with a filter for the desired start date and time.

Note: When trace status is changed, either from Active to Inactive or from Inactive to Active, some events might not be filtered as you intended because they occurred at the time of the status change.

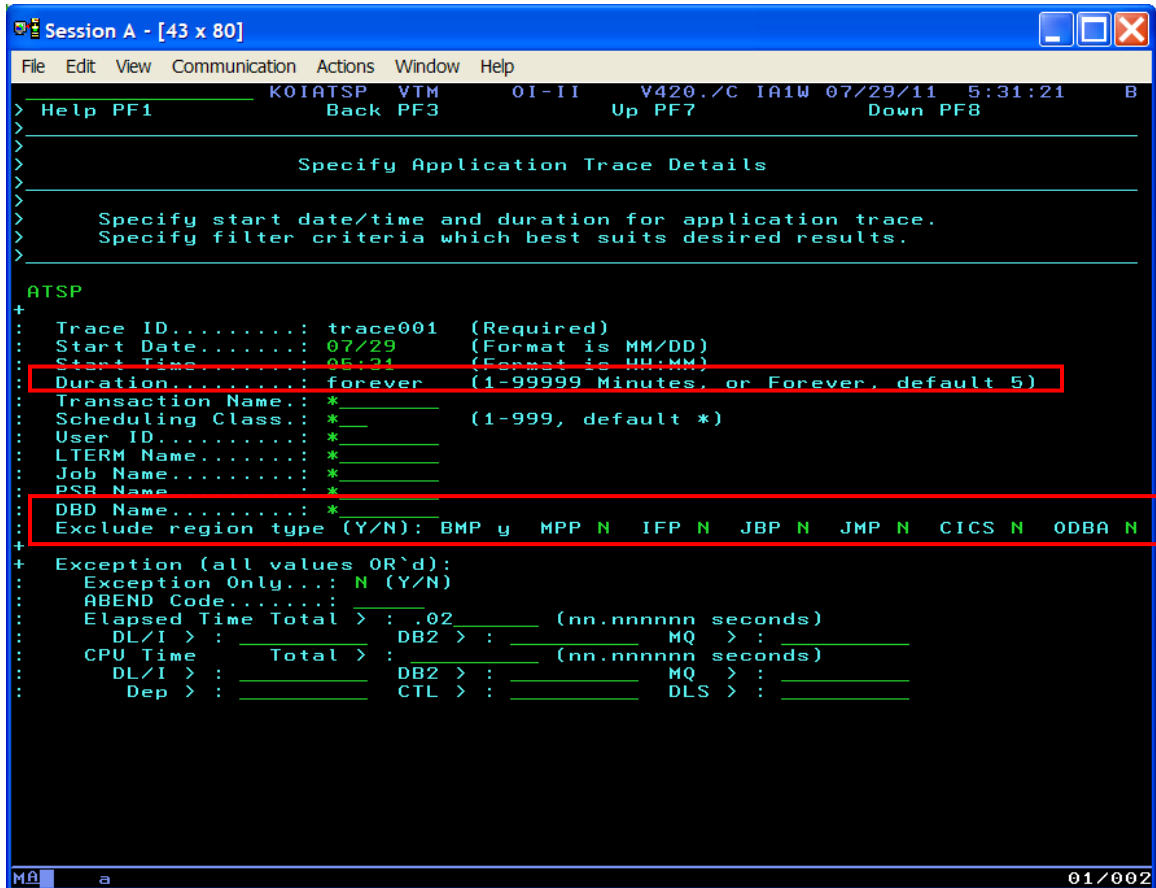
- **M (Modify)** changes an inactive trace specification only and initiates the ATSP command so that you can modify any trace specification. If you modify a trace and then reactivate it, viewing the trace data by Trace ID will only view the trace data for the modified trace. To view the trace data for previous trace specifications or any other criteria, modify the trace specifications accordingly or use the ATF Menu panel View option with a filter matching the desired trace specifications.

Note: When an active trace is modified, some events might not be filtered as you intended because they occurred at the time of the modification.

- **V** (View Trace Results) navigates to ATVG panel to display group trace results using the selection criteria specified in the trace request.
- **X** (View Trace Exceptions) navigates to ATXS panel to display summary trace exceptions using the selection criteria specified in the trace request.

Chapter 4.3. Trace Duration Increased and Ability to Exclude Region

The duration for a trace has been increased to 99999 and the duration can specify a value of forever. Trace definitions can also exclude specific region types from being traced. Here is an example showing a duration value of forever and the exclusion of BMPs:

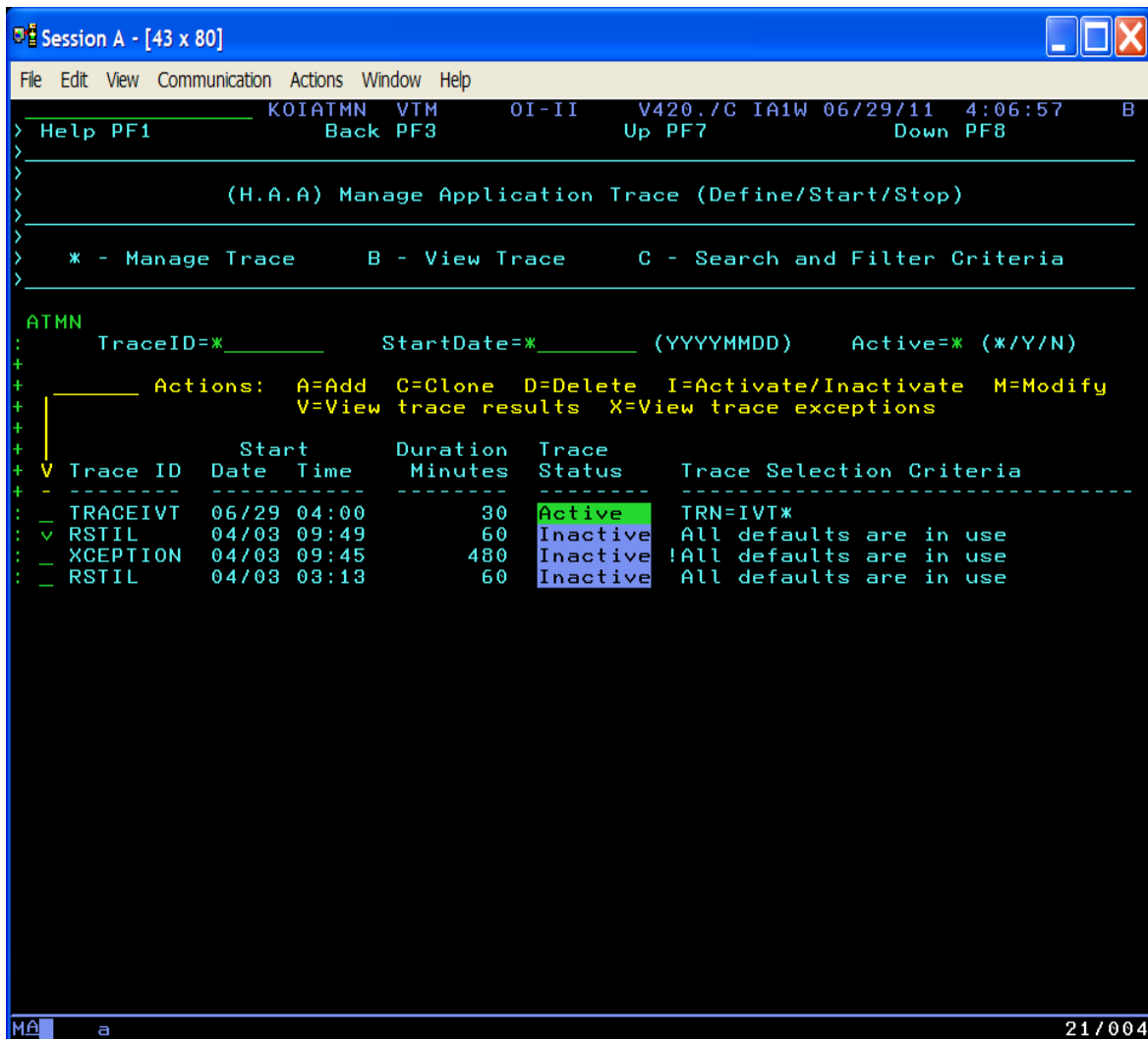


```
Session A - [43 x 80]
File Edit View Communication Actions Window Help
> Help PF1 K01ATSP VTM 01-11 V420./C IA1W 07/29/11 5:31:21 B
> Back PF3 Up PF7 Down PF8
>
> Specify Application Trace Details
>
> Specify start date/time and duration for application trace.
> Specify filter criteria which best suits desired results.
>
ATSP
+
: Trace ID.....: trace001 (Required)
: Start Date.....: 07/29 (Format is MM/DD)
: Start Time.....: 05:21 (Format is HH:MM)
: Duration.....: forever (1-99999 Minutes, or Forever, default 5)
: Transaction Name.: *
: Scheduling Class.: * (1-999, default *)
: User ID.....: *
: LTERM Name.....: *
: Job Name.....: *
: PSB Name.....: *
: DBD Name.....: *
: Exclude region type (Y/N): BMP y MPP N IFP N JBP N JMP N CICS N ODBA N
+
Exception (all values OR'd):
: Exception Only...: N (Y/N)
: ABEND Code.....:
: Elapsed Time Total > : .02 (nn.nnnnnn seconds)
: DL/I > : DB2 > : MQ > :
: CPU Time Total > : (nn.nnnnnn seconds)
: DL/I > : DB2 > : MQ > :
: Dep > : CTL > : DLS > :
MA a 01/002
```

Chapter 4.4. View Trace Data by Trace ID

Trace data can now be viewed by Trace ID. The ATF Manage Traces option from the ATF Menu invokes the ATMN command. The ATMN command supports two actions for viewing trace data by Trace ID. The V action views detail trace data for the selected Trace ID and the X action views the exception trace data for the selected Trace ID. For more information on exception-level tracing, refer to Chapter 4.6.

The following screen shows using the V action for Trace ID RSTIL to view the detail trace data for that trace.



```
Session A - [43 x 80]
File Edit View Communication Actions Window Help
KOIATMN VTM OI-II V420./C IA1W 06/29/11 4:06:57 B
> Help PF1 Back PF3 Up PF7 Down PF8
>
> (H.A.A) Manage Application Trace (Define/Start/Stop)
>
> * - Manage Trace B - View Trace C - Search and Filter Criteria
>
ATMN
: TraceID=* StartDate=* (YYYYMMDD) Active=* (*Y/N)
+
+ Actions: A=Add C=Clone D=Delete I=Activate/Inactivate M=Modify
+ V=View trace results X=View trace exceptions
+
+ V Trace ID Start Date Time Duration Trace Status Trace Selection Criteria
+ -----
+ TRACEIVT 06/29 04:00 30 Active TRN=IVT*
+ RSTIL 04/03 09:49 60 Inactive All defaults are in use
+ XCEPTION 04/03 09:45 480 Inactive !All defaults are in use
+ RSTIL 04/03 03:13 60 Inactive All defaults are in use
MA a 21/004
```

The V action results in outputting the Application Trace Summary by Group panel (command ATVG) that displays detail trace summaries for the selected Trace ID. Note the second line of the ATVG output shows the selected Trace ID along with its start date and time, duration, and Trace Selection Criteria.

Session A - [43 x 80]

File Edit View Communication Actions Window Help

KOIATVG VTM OI-II V420./C IA1W 06/29/11 4:08:37 B

> Help PF1 Back PF3 Up PF7 Down PF8 Zoom PF11

>

> (H.A.B) View Application Trace Summary by Group

>

> A - Manage Trace * - View Trace C - Search and Filter Criteria

>

ATVG		TOTAL TIME AVERAGES				
+ Trace ID: RSTIL		04/03 09:49		60 INACTIVE		ALL DEFAULTS ARE IN USE
+ Group by		--- Elapsed ---		----- CPU -----		
+ Trancode	Count	Average	Max	Average	Max	Abends
+ PART	6	0.0525s	0.2269s	3,323µs	8,249µs	
+ IVTNO	4	0.0192s	0.0723s	1,253µs	1,884µs	
+ DSPINV	2	0.0300s	0.0389s	2,408µs	2,471µs	
+ ADDPART	2	0.1210s	0.1555s	6,236µs	9,786µs	1
+ IMSLKAW	1	2,006µs	2,006µs	57µs	57µs	1

MA a 01/002

The ATVG display functions the same way as did prior to IF3; you can select the transaction group and press the zoom key (PF11) to view a summary line for each transaction in the group.

Chapter 4.5. Enhanced Trace Summary Displays and Overview

The ATF summary display commands (ATVG and ATVS) have been enhanced to allow an E or C to be placed in column 1 of the command. An E displays elapsed time summaries and a C displays CPU time summaries as shown in the following displays:

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
> Help PF1 KOIATVG VTM OI-II V420./C IA1W 06/29/11 4:10:14 B
> Back PF3 Up PF7 Down PF8 Zoom PF11
>
> (H.A.B) View Application Trace Summary by Group
>
> A - Manage Trace * - View Trace C - Search and Filter Criteria
>
EATVG ELAPSED TIME AVERAGES
+ Trace ID: RSTIL 04/03 09:49 60 INACTIVE ALL DEFAULTS ARE IN USE
+
+ Group by
+ Trancode Count --- DL/I --- DB2 --- MQ ---
+ Average Max Average Max Average Max Total
+ PART 6 5,166µs 0.0267s 0µs 0µs 0µs 0µs 0.0525s
+ IVTNO 4 0.0149s 0.0573s 0µs 0µs 0µs 0µs 0.0192s
+ DSPINV 2 5,463µs 9,430µs 0µs 0µs 0µs 0µs 0.0300s
+ ADDPART 2 0.0345s 0.0659s 0µs 0µs 0µs 0µs 0.1210s
+ IMSLKAW 1 0µs 0µs 0µs 0µs 0µs 0µs 2,006µs
  
```

Session A - [43 x 80]									
File Edit View Communication Actions Window Help									
KOIATVG VTM OI-II V420./C IA1W 06/29/11 4:10:49 B									
> Help PF1 Back PF3 Up PF7 Down PF8 Zoom PF11									
>									
>									
> (H.A.B) View Application Trace Summary by Group									
>									
> A - Manage Trace * - View Trace C - Search and Filter Criteria									
>									
CATVG CPU TIME AVERAGES									
+ Trace ID: RSTIL 04/03 09:49 60 INACTIVE ALL DEFAULTS ARE IN USE									
+ Group by									
+ Trancode Count DL/I API DB2 MQ Dep. Region CTL DLS Total									
+ PART 6 748µs 0µs 0µs 3,241µs 0µs 82µs 3,323µs									
+ IVTNO 4 534µs 0µs 0µs 1,181µs 0µs 71µs 1,253µs									
+ DSPINV 2 755µs 0µs 0µs 2,408µs 0µs 0µs 2,408µs									
+ ADDPART 2 2,631µs 0µs 0µs 4,000µs 599µs 1,635µs 6,236µs									
+ IMSLKAW 1 0µs 0µs 0µs 46µs 10µs 0µs 57µs									
MA a 01/002									

Placing the cursor on a transaction and pressing the zoom key (PF11) displays summaries for each transaction instance using the ATVS command. The ATVS command also allows an E or C in the first column of the command to display elapsed time summaries or CPU time summaries, respectively as shown below.

Session A - [43 x 80]									
File Edit View Communication Actions Window Help									
KOIATVS VTM OI-II V420./C IA1W 06/29/11 4:12:17 B Help PF1 Back PF3 Up PF7 Down PF8 Zoom PF11									
(H.A.B) View Application Trace Summary									
A - Manage Trace * - View Trace C - Search and Filter Criteria									
EATVS ELAPSED TIME SUMMARY									
+ Trace ID: RSTIL 04/03 09:49 60 INACTIVE ALL DEFAULTS ARE IN USE									
+ -- Start --									
+ MM/DD HHMMSS Trancode DL/I API DB2 MQ Total									
+ 04/03 095656 IVTNO 0.0573s 0µs 0µs 0µs 0.0723s									
+ 04/03 095700 IVTNO 511µs 0µs 0µs 0µs 1,143µs									
+ 04/03 095704 IVTNO 509µs 0µs 0µs 0µs 1,182µs									
+ 04/03 095708 IVTNO 1,323µs 0µs 0µs 0µs 2,288µs									
MA a 11/002									

Session A - [43 x 80]									
File Edit View Communication Actions Window Help									
KOIATVS VTM OI-II V420./C IA1W 06/29/11 4:13:06 B Help PF1 Back PF3 Up PF7 Down PF8 Zoom PF11									
(H.A.B) View Application Trace Summary									
A - Manage Trace * - View Trace C - Search and Filter Criteria									
CATVS CPU TIME SUMMARY									
+ Trace ID: RSTIL 04/03 09:49 60 INACTIVE ALL DEFAULTS ARE IN USE									
+ -- Start --									
+ MM/DD HHMMSS Trancode DL/I API DB2 MQ Dep. Region CTL IMS DLS Total									
+ 04/03 095656 IVTNO 659µs 0µs 0µs 1,597µs 0µs 287µs 1,884µs									
+ 04/03 095700 IVTNO 220µs 0µs 0µs 791µs 0µs 0µs 791µs									
+ 04/03 095704 IVTNO 233µs 0µs 0µs 841µs 0µs 0µs 841µs									
+ 04/03 095708 IVTNO 1,023µs 0µs 0µs 1,496µs 0µs 0µs 1,496µs									
MA a 11/002									

Placing the cursor on a transaction instance and pressing the zoom key (PF11) from the ATVS display outputs the Application Overview display (command ATVW). This display and subsequent displays now show start times and end times in microseconds. In addition, elapsed times in DL/I, DB2 MQ, and elapsed time total are displayed on the Application Trace Overview (ATVW) as shown below.

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
> Help PF1      KOIATVW VTM      01-11      V420./C IA1W 06/29/11  4:13:56  B
>               Back PF3      Up PF7      Down PF8      Zoom PF11
>               Prev Tran Detail PF5      Next Tran Detail PF6
>
> (H.A.B) View Application Trace Overview
>
> A - Near-Term History
>
+ ATVW
+ Transaction instance 000001 out of 000004 displayed
+ Transaction . . . . . IVTNO      PSB . . . . . DFSIVP1
+ Logical Terminal . . . . . RSTIL      Transaction Class . . . . . 001
+ Region Type . . . . . MPP (PWFI)      Message Source . . . . . TERM
+ Region Number . . . . . 4      Primed Message . . . . . NO
+ Job Name . . . . . IMSAWMS1      Quick Schedule . . . . . NO
+ Step Name . . . . . REGION      Current SPA Size . . . . . N/A
+ UserID . . . . . RSTIL      Abend Code . . . . .
+ Start Date . . . . . 04/03/11      CPU Time in DEP . . . . . 1,597µs
+ Start Time . . . . . 09:56:56.242341      CPU Time in DL/I . . . . . 659µs
+ End Time . . . . . 09:56:56.314657      CPU Time in DB2 . . . . . 0µs
+ Elapsed Time in DL/I . . . . . 0.0573s      CPU Time in MQ . . . . . 0µs
+ Elapsed Time in DB2 . . . . . 0µs      CPU Time in CTL . . . . . 0µs
+ Elapsed Time in MQ . . . . . 0µs      CPU Time in DLS . . . . . 287µs
+ Elapsed Time Total . . . . . 0.0723s      CPU Time Total . . . . . 1,884µs
+
+ Event      Type      Count      Total      Average
+ -----      -----      -----      -----      -----
+ DLI TM      GU      1      9µs      9µs
+ DLI DB      GU      1      0.0573s      0.0573s
+ DLI TM      ISRT      1      68µs      68µs

```

Chapter 4.6. Exception-Level ATF Journal

Exception-level trace data can be written to new exception journals. Trace data for a transaction can be written to the exception journal based on:

- Whether the transaction has abended or has encountered a specific abend code
- If the transaction's elapsed time total is greater than a specified value
- If the transaction's elapsed time spent in DL/I, DB2, or MQ is greater than a specified value
- If the transaction's CPU time total is greater than a specified value
- If the transaction's CPU time spent in DL/I, DB2, or MQ, or in an IMS region (Dependent, Control, DLISAS) is greater than a specified value

Trace data for exceptions can be written to both the detail and exception journals or only to the exception journal.

NOTE:

IF3 delivers the exception journals as disabled. To enable the exception journals, add the ATF TRACE startup parameter (see Chapter 4.8 for more information).

The bottom portion of the ATSP display is used to define an exception trace. This is shown in the following display.

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
KOIATSP VTM 01-11 V420./C IA1W 07/29/11 5:31:21 B
> Help PF1 Back PF3 Up PF7 Down PF8
>
> Specify Application Trace Details
>
> Specify start date/time and duration for application trace.
> Specify filter criteria which best suits desired results.
>
ATSP
+
: Trace ID.....: xception (Required)
: Start Date.....: 04/03 (Format is MM/DD)
: Start Time.....: 09:45 (Format is HH:MM)
: Duration.....: 480 (1-99999 Minutes, or Forever, default 5)
: Transaction Name.: *
: Scheduling Class.: * (1-999, default *)
: User ID.....: *
: LTERM Name.....: *
: Job Name.....: *
: PSB Name.....: *
: DBD Name.....: *
: Exclude region type (Y/N): BMP y MPP N IFP N JBP N JMP N CICS N ODBA N
+
Exception (all values OR'd):
: Exception Only...: N (Y/N)
: ABEND Code.....:
: Elapsed Time Total > : .02 (nn.nnnnnn seconds)
: DL/I > : DB2 > : MQ > :
: CPU Time Total > : .01 (nn.nnnnnn seconds)
: DL/I > : DB2 > : MQ > :
: Dep > : CTL > : DLS > :

```

The Exception fields on the ATSP display (highlighted in the red box) have the following meaning:

Exception only

Exception only can have a value of N (the default) or Y. N indicates that the exception criteria fields (Abend Code, Elapsed Times, and CPU times) are optional. If exception criteria is not provided, then the data is written only to the detail journal. If exception criteria is provided, then the trace data for an application that matches the exception criteria is also written to the exception journal. Y indicates that the exception data is to be written only to the exception journal. Specifying an Exception only value of Y requires exception criteria to be provided by specifying an ABEND Code, one of the Elapsed Times, or one of the CPU Times. The trace data for an application is only written to the exception journal if it matches any of the exception criteria provided.

ABEND Code

Enter a specific abend code to indicate that trace data should be collected only for those applications that match the abend code. Use a single asterisk to indicate that trace data should be collected only for those applications that have abended.

Elapsed Time

If trace data is to be collected based on one or more elapsed times, then enter a value for the desired elapsed time (Total, DL/I, DB2, or MQ). Elapsed time values are specified in the format *nn.nnnnnnn* or *n.nnnnnnn* seconds. Trace data is written only for applications that have a corresponding elapsed time value greater than the value specified in the ATSP screen. There are four elapsed time values:

- **Total** The application's total elapsed time.
- **DL/I** The time spent in DL/I calls (DB and TM).
- **DB2** The time spent in DB2 SQL calls.
- **MQ** The time spent in WebSphere MQ calls.

CPU Time

If trace data is to be collected based on one or more CPU times, then enter a value for the desired CPU time (Total, DL/I, DB2, MQ, Dep, CTL, or DLS). CPU time values are specified in the format *nn.nnnnnnn* or *n.nnnnnnn* seconds. Trace data is written only for applications that have a corresponding CPU time value greater than the value specified in the ATSP screen. There are seven CPU time values:

- **Total** The application's total CPU time.
- **DL/I** The CPU time spent in DL/I calls (DB and TM).
- **DB2** The CPU time spent in DB2 SQL calls.
- **MQ** The CPU time spent in WebSphere MQ calls.
- **Dep** The CPU time spent in the dependent region.
- **CTL** The CPU time spent on control region TCB.
- **DLS** The CPU time spent in on DLISAS TCB.

Exception trace data is displayed very similar to the way detail trace is displayed. You can either use the ATF Menu Option to view exception data or you can view exception data by Trace ID.

Using Option D from the ATF Menu as shown below, displays the exception data filtered based on the filters established by the ATFL command. Option C or D can be used to set the filters for the ATFL command (see Chapter 4.7 for more information on the ATFL command). When Option D is selected, the Application Trace Exception Summary panel (command ATXS) is displayed.

```
Session A - [43 x 80]
File Edit View Communication Actions Window Help
d KOIATF VTM 01-11 V420./C IA1W 07/29/11 12:55:44 B
> Help PF1 Back PF3
>
> Enter a selection letter on the top line
> =====
> APPLICATION TRACE FACILITY MENU
>
> ADMINISTRATION:
> A MANAGE TRACES. . . . . Manage application trace requests
>
> TRACE RESULTS:
> B VIEW . . . . . View trace details by Group
> C GROUP/FILTER . . . . . Specify Group/Filter criteria
>
> TRACE EXCEPTION RESULTS:
> D VIEW . . . . . View trace exceptions
> E GROUP/FILTER . . . . . Specify Group/Filter criteria
>
> JOURNAL FACILITY STATUS:
> F I2ATF. . . . . View Trace Journal Status
> G I2ATX. . . . . View Trace Exception Journal Status
> =====
=====
MA a 01/006
```

Exception trace data can also be viewed by Trace ID by navigating to the ATF Manage Traces panel (Option A from the ATF menu), which invokes the ATMN command. On the ATMN display, use an X action in front of the desired Trace ID to view the exception trace data. The following screen shows using the X action on Trace ID XCEPTION to view the exception trace data for that Trace ID.

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
KOIATMN VTM OI-II V420.7C IA1W 06/29/11 4:16:11 B
Back PF3 Up PF7 Down PF8
(H.A.A) Manage Application Trace (Define/Start/Stop)
* - Manage Trace B - View Trace C - Search and Filter Criteria

ATMN
TraceID=* StartDate=* (YYYYMMDD) Active=* (*Y/N)
Actions: A=Add C=Clone D=Delete I=Activate/Inactivate M=Modify
V=View trace results X=View trace exceptions

+-----+-----+-----+-----+-----+-----+
+ Trace ID Date Time Duration Trace Trace Selection Criteria
+-----+-----+-----+-----+-----+-----+
+ TRACEIVT 06/29 04:00 30 Active TRN=IVT*
+ RSTIL 04/03 09:49 60 Inactive All defaults are in use
+ XCEPTION 04/03 09:45 480 Inactive !All defaults are in use
+ RSTIL 04/03 03:13 60 Inactive All defaults are in use

```

In the above ATMN display, note the exclamation point character (!) preceding the Trace Selection Criteria column on the XCEPTION Trace ID row. This character indicates that the trace contains exceptions. The X action results in outputting the Application Trace Exception Summary panel (command ATXS) that displays exception trace summaries for the selected Trace ID. Note the second line of the ATXS output shows the selected Trace ID along with its start date and time, duration, and trace selection criteria.

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
KOIATXS VTM OI-II V420.7C IA1W 06/29/11 4:22:36 B
Back PF3 Up PF7 Down PF8 Zoom PF11
(H.A.D) View Application Trace Exception Summary
A - Manage Trace * - View Trace C - Search and Filter Criteria

ATXS
+ Trace ID: XCEPTION 04/03 09:45 480 INACTIVE !ALL DEFAULTS ARE IN USE
+-----+-----+-----+-----+-----+-----+
+ Strt Date\Time Trancode PSB Name RGN Name LTERM Elap Time CPU Time Abend
+-----+-----+-----+-----+-----+-----+
+ 04/03 09:55:53 PART DFSSAM02 IMSAWMS1 RSTIL 0.2269s 8,249µs
+ 04/03 09:56:56 IVTNO DFSIVP1 IMSAWMS1 RSTIL 0.0723s 1,884µs
+ 04/03 09:59:48 DSPINV DFSSAM03 IMSAWMS1 RSTIL 0.0389s 2,471µs
+ 04/03 10:17:52 ADDBPART DFSSAM04 IMSAWMS1 RSTIL 0.0866s 2,685µs U3303
+ 04/03 10:19:42 ADDBPART DFSSAM04 IMSAWMS1 RSTIL 0.1555s 9,786µs
+ 04/03 10:24:26 IMSLKAW IMSLKAW ..... 2,006µs 57µs U0456

```

The ATXS command supports an E or C in column 1 of the command to display elapsed time or CPU time summaries, respectively as shown below.

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
> Help PF1      KOIATXS VTM      OI-II      V420./C IA1W 06/29/11 4:23:30 B
>               Back PF3      Up PF7      Down PF8      Zoom PF11
>
> (H.A.D) View Application Trace Exception Summary
>
> A - Manage Trace      * - View Trace      C - Search and Filter Criteria
>
EATXS                      ELAPSED TIME SUMMARY
+ Trace ID: XCEPTION 04/03 09:45      480 INACTIVE !ALL DEFAULTS ARE IN USE
+
+ -- Start ---
+ MM/DD HHMMSS Trancode      DL/I      DB2      MQ      Total
+ -----
+ 04/03 095553 PART          0.0267s      0µs      0µs      0.2269s
+ 04/03 095656 IVTNO         0.0573s      0µs      0µs      0.0723s
+ 04/03 095948 DSPINV         9.430µs      0µs      0µs      0.0389s
+ 04/03 101752 ADDBPART       3.110µs      0µs      0µs      0.0866s
+ 04/03 101942 ADDBPART       0.0659s      0µs      0µs      0.1555s
+ 04/03 102426 IMSLKAW        0µs          0µs      0µs      2.006µs

```

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
> Help PF1      KOIATXS VTM      OI-II      V420./C IA1W 06/29/11 4:23:56 B
>               Back PF3      Up PF7      Down PF8      Zoom PF11
>
> (H.A.D) View Application Trace Exception Summary
>
> A - Manage Trace      * - View Trace      C - Search and Filter Criteria
>
CATXS                      CPU TIME SUMMARY
+ Trace ID: XCEPTION 04/03 09:45      480 INACTIVE !ALL DEFAULTS ARE IN USE
+
+ -- Start ---
+ MM/DD HHMMSS Trancode      DL/I      DB2      MQ      Dep.      Dep.      IMS      IMS      Total
+ -----      Region      CTL      DLS
+ -----
+ 04/03 095553 PART          1.212µs      0µs      0µs      7.756µs      0µs      493µs      8.249µs
+ 04/03 095656 IVTNO         659µs        0µs      0µs      1.597µs      0µs      287µs      1.884µs
+ 04/03 095948 DSPINV         863µs        0µs      0µs      2.471µs      0µs      0µs      2.471µs
+ 04/03 101752 ADDBPART       1.019µs      0µs      0µs      1.466µs      1.198µs      21µs      2.685µs
+ 04/03 101942 ADDBPART       4.242µs      0µs      0µs      6.535µs      0µs      3.250µs      9.786µs
+ 04/03 102426 IMSLKAW        0µs          0µs      0µs      46µs        10µs      0µs      57µs

```


Placing the cursor on a transaction instance and pressing the zoom key (PF11) from the ATXS display, outputs the Application Overview panel (command ATXW):

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
KOIATXW VTM 01-II V420./C IA1W 06/29/11 4:26:16 B
> Help PF1 Back PF3 Up PF7 Down PF8 Zoom PF11
> Prev Tran Detail PF5 Next Tran Detail PF6
>
> (H.A.B) View Application Trace Exception Overview
>
> A - Near-Term History
>
ATXW
+ Transaction instance 000002 out of 000006 displayed
+ Transaction . . . . . IVTNO PSB . . . . . DFSIVP1
+ Logical Terminal . . . RSTIL Transaction Class . . . 001
+ Region Type . . . . . MPP (PWF1) Message Source . . . TERM
+ Region Number . . . . 4 Primed Message . . . NO
+ Job Name . . . . . IMSAWMS1 Quick Schedule . . . NO
+ Step Name . . . . . REGION Current SPA Size . . . N/A
+ UserID . . . . . RSTIL Abend Code . . . . .
+ Start Date . . . . . 04/03/11 CPU Time in DEP . . . 1,597µs
+ Start Time . . . . . 09:56:56.242341 CPU Time in DL/I . . . 659µs
+ End Time . . . . . 09:56:56.314657 CPU Time in DB2 . . . 0µs
+ Elapsed Time in DL/I . 0.0573s CPU Time in MQ . . . 0µs
+ Elapsed Time in DB2 . 0µs CPU Time in CTL . . . 0µs
+ Elapsed Time in MQ . 0µs CPU Time in DLS . . . 287µs
+ Elapsed Time Total . . 0.0723s CPU Time Total . . . 1,884µs
+
+
+ Event Type Count Total Average
+ -----
+ DLI TM GU 1 9µs 9µs
+ DLI DB GU 1 0.0573s 0.0573s
+ DLI TM ISRT 1 68µs 68µs

```

Pressing the zoom key on the ATXW display, outputs the Application Trace Exception Detail panel (ATXD command):

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
> Help PF1 KOIATXD VTM 01-11 V420./C IA1W 06/29/11 7:57:50 B
> Back PF3 Up PF7 Down PF8 Zoom PF11
> Prev Tran Detail PF5 Next Tran Detail PF6
>
> (H.A.B) View Application Trace Exception Detail
>
ATXD
+ Transaction instance 000002 out of 000006 displayed
+ Transaction . . . . . IVTNO PSB . . . . . DFSIVP1
+ Start Date. . . . . 04/03/11 Region Name . . . . . IMSAWMS1
+ Start Time. . . . . 09:56:56.242341 Total CPU Time. . . . . 1,884µs
+
+ Start Time L Dura- Accumul. Event Description Resources Func.
+ --- -- -- tion -- CPU Time -- Description -- Resources -- Verb --
+ 09:56:56.242397 0 393µs 20µs BLOCK LOAD IWAIT DFSIVP1
+ 09:56:56.243084 0 0µs + 132µs MPP SCHEDULING
+ 09:56:56.256761 0 9µs + 418µs DL/I CALL (TM) I/O PCB GU
+ CPU= 6µs Status=<blank>
+ 09:56:56.259406 1 0.0147s + 83µs DB I/O IWAIT DFSIVD1
+ 09:56:56.278322 1 0.0201s + 118µs VSAM CALL DFSIVD11
+ 09:56:56.298760 1 0.0131s + 54µs VSAM CALL DFSIVD11
+ 09:56:56.312028 1 171µs + 89µs PI ENQUEUE IWAIT
+ 09:56:56.312270 1 1,663µs + 118µs DB I/O IWAIT DFSIVD1
+ 09:56:56.256782 0 0.0573s + 131µs DL/I CALL (DB) IVPDB1 A1111111 GU
+ CPU= 585µs Status=<blank>
+ 09:56:56.314108 0 68µs + 81µs DL/I CALL (TM) I/O PCB ISRT
+ CPU= 67µs Status=<blank>

```

Placing the cursor on any highlighted DL/I call (shown in white) and pressing the zoom key results in displaying the DL/I call detail panel (ATXX command).

```

Session A - [43 x 80]
File Edit View Communication Actions Window Help
> Help PF1 KOIATXX VTM 01-11 V420./C IA1W 06/29/11 8:02:12 B
> Back PF3
>
> VIEW TRACE EXCEPTION DL/I DETAIL
>
ATXX
+ Transaction . . . . . IVTNO PSB . . . . . DFSIVP1
+ Start Date. . . . . 04/03/11 Region Name . . . . . IMSAWMS1
+ Start Time. . . . . 09:56:56.242341
+
+ DL/I Call . . . . . GU DB. . . . . IVPDB1
+ Status Code . . . . . <blank>
+ Start Time. . . . . 09:56:56.256782 Elapsed Time. . . . . 0.0573s
+ End Time. . . . . 09:56:56.314095 CPU Time. . . . . 585µs
+
+ IO Area:
+ 0000 E2D4C9E3 C8404040 4040D1D6 C8D54040 *SMITH JOHN *
+ 0010 40404040 F1F1F140 40404040 4040F2F2 * 111 22*
+ 0020 F2404040 40404040 C4C9E2D7 D3C1E840 *2 DISPLAY *
+ 0030 005D0000 40404040 40404040 40404040 *.). *
+ 0040 40404040 40404040 40404040 *
+
+ Key Feedback Area:
+ 0000 E2D4C9E3 C8404040 4040 *SMITH *

```

Chapter 4.7. Enhanced Filtering for Trace Displays

When using Option B or D from the ATF Menu to view trace data, the data is filtered based on the filters specified in the ATFL command. The ATFL command is displayed by selecting Option C or E from the ATF Menu. Here is an example of the enhanced ATFL display:

```
Session A - [43 x 80]
File Edit View Communication Actions Window Help
KOIATFL VTM 01-II V420./C IA1W 06/29/11 0:16:54 B
> Help PF1 Back PF3 Up PF7 Down PF8
-----
(H.A.C) Application Trace Search and Filter Criteria
-----
> A-Manage Trace B-View Trace *-Search/Filter Criteria D-View Exceptions
-----
ATFL
+
: Start Date.(YYYYMMDD)...: Last nn minutes (1-99)...: 30
: Start Time...(HHMMSS)...: Last nn hours (1-99)...:
: End Date...(YYYYMMDD)...: Today (Y/N).....: N
: End Time...(HHMMSS)...: Yesterday (Y/N).....: N
+
+
: Transaction Name.....: Search Filter Criteria
: Scheduling Class (1-999): IVT*,PART,DSPINV
: User ID.....:
: LTERM Name.....:
: Job Name.....:
: PSB Name.....:
: DBD Name.....:
: Abend Code.....:
: Exclude Region Type (Y/N) BMP N MPP N IFP N JMP N JBP N CICS N ODBA N
: Elapsed Time Total > : (nn.nnnnnn seconds)
: DLI > : DB2 > : MQ > :
: CPU Time Total > : (nn.nnnnnn seconds)
: DLI > : DB2 > : MQ > :
: DEP > : CTL > : DLS > :
+
+
: Display Options
: Group results by.....: TRANS (Trans/PSB/Region/Lterm/None)
+
MA a 10/031
```

The following filtering enhancements have been made:

- Trace data can be filtered based on multiple Transaction names, PSB names, DBD names, JOB names, LTERM names, User Ids, ABEND codes, or scheduling classes. When multiple names, IDs, codes, or classes are specified, each one must be separated by a comma. Specific values (e.g., PART) or generic values by using an asterisk in the last position (e.g ., IVT*) can be used. Generic values are not supported for Scheduling Class.
- Region types can be excluded from trace displays. For example, to exclude a BMP region, enter a Y following BMP.
- Trace data can be filtered based on a transaction's elapsed time or CPU time being greater than a specified value. There are four elapsed times (Total, DLI, DB2, and MQ) and seven CPU times (Total, DLI, DB2, MQ, Dependent region, Control region, and DLISAS region).

Chapter 4.8. New/Updated ATF Startup Parameters

ATF startup parameters are specified in RKANPARU member KI2ATFxx on the START ATF statement.

A new TRACE startup parameter is provided to control the enablement of IF3. The format of the TRACE parameter is:

TRACE={DETAIL|EXCEPTION|ALL}

TRACE=DETAIL indicates only detail journals are to be used. This is the default making IF3 operate the same as pre-IF3. TRACE=EXCEPTION indicates only the exception journals are to be used. TRACE=All indicates both the detail and exception journals are to be used.

A new AUTORESTART startup parameter controls activation of traces at startup. The format of the AUTORESTART parameter is:

AUTORESTART={YES|NO}

AUTORESTART=YES (the default), indicates that all previously active non-expired traces are to be activated at OMEGAMON startup. AUTORESTART=NO indicates that all traces are to be disabled at OMEGAMON startup. With AUTORESTART=NO, all traces will be marked inactive at OMEGAMON startup even if the trace had not expired.

The existing SANDBOX startup parameter has been enhanced to improve control of when an ATF buffer is written to the Journal Logging Facility (JLF). The new format of the SANDBOX parameter is:

SANDBOX={OFF|ON|*nnn*}

SANDBOX values of OFF and ON are existing settings. With SANDBOX=OFF, the ATF buffer is written to JLF when the buffer is full. With SANDBOX=ON, the ATF buffer is written to JLF as soon as the transaction has ended.

IF3 introduces SANDBOX=*nnn* where *nnn* is 1 to 999 and indicates the number of seconds ATF should wait before writing a partially filled buffer to JLF.