CA Mainframe Application Tuner

Performance Management Assistant User Guide

Version 9.0.00

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CA Technologies Product References

CA Mainframe Application Tuner (CA MAT)

Performance Management Assistant (PMA)

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Chapter 1: About This Book

This book describes how to use the features of Performance Management Assistant (PMA) to significantly reduce the manual effort that is required to implement your strategy for managing application performance. Performance Management Assistant is a component of CA Mainframe Application Tuner (CA MAT).

This section contains the following topics:

Conventions (see page 11)
Advantages (see page 12)

Conventions

This book uses the following types of special text:

- An item in CAPITAL LETTERS must be entered exactly as shown.
- Items in *italicized* lowercase letters are values that you supply.
- Notes contain important information that you should consider.
- Warnings alert you to situations that could cause problems, such as loss of data, if you do not follow instructions carefully.
- Tips contain information that might improve product performance or that might make procedures easier to follow.

Advantages

To make work easier for the application performance team, Performance Management Assistant provides the following advantages:

- Central Component
  - Creates statistical measurements for every executed job step and maintains this information in its own history database
  - Automates CA Mainframe Application Tuner (CA MAT) measurement of all job steps exceeding statistical maximum limit
  - Automates CA Mainframe Application Tuner measurement of all new and changed programs
  - Detects critical job steps and provides Alert Management
  - Manages CA Mainframe Application Tuner measurement requests -- even in multisystem environments
  - Allows user defined Performance Management Assistant scope of work
  - Gathers only important CA Mainframe Application Tuner measurement data with history
  - Provides both update and read-only access options for parameters
  - Identifies top consuming job steps
  - Passes data to other products, for example, data dictionary
  - Pinpoints high consuming objects for performance tuning and cross references the job steps that use them with data mining
  - Automates the control process of checkpoint writing with Checkpoint Checker
- CICS and IMS features
  - Measures CICS and IMS systems automatically on a regular basis
  - Interprets measurements according to user parameters thereby extracting only important information about CA Mainframe Application Tuner measurements
  - Aggregates information about CA Mainframe Application Tuner measurements to information for a whole online system
  - Provides navigation and cross referencing within the online dialog that brings the user from a problematic transaction down to the statement cause
  - Gathers historical information for transaction, modules, DB2 plans, and PSBs for up to 18 months
  - Detects critical transactions and provides alert management

Performance Management Assistant guarantees you maximum flexibility:

- Parameter control allows the user to change the general settings of Performance Management Assistant.

- Parameter control allows the user to enable or disable certain functions.
- Through defined interfaces, Performance Management Assistant can be easily adapted to any environment.
- An easy to use, comprehensive set of ISPF panels allows users to control Performance Management Assistant and manages the information that is gathered.

Chapter 2: Getting Started

Performance Management Assistant is a software package used to greatly support the implementation of APM (Application Performance Management). Performance Management Assistant significantly reduces the degree of manual effort required to implement the APM strategy and ensures continuous processing within each phase. Performance Management Assistant makes it possible to implement optimization measures consistently and strategically.

Performance Management Assistant was developed and is continuously enhanced based on the practical experiences of CA Mainframe Application Tuner experts. As a result, the functions are specifically tailored to offer practical solutions to fulfill user needs.

Performance Management Assistant consists of the following components:

- Info Board
- Central Component
- CICS Feature
- IMS Feature
- Server
- Checkpoint Checker

This user guide describes how to use the online dialogs of the Info Board, Central Component, Checkpoint Checker, CICS Feature, and IMS Feature when integrated into a CA Mainframe Application Tuner environment. Additionally, this book details the end-user batch jobs that export data or measure jobs of a critical path. Detailed information about other batch jobs and parameter customization can be found in the *Administration Guide.*

This chapter provides you with the general information that you need to use the ISPF panels. Subsequent chapters document the detailed online use of each of the features: the Central Component, the CICS Feature, and the IMS Feature.

This section contains the following topics:

Menus and Panels (see page 16)
Primary Commands (see page 16)
Line Commands (see page 17)
Generic Notation (see page 17)
Sort List Panels (see page 18)
Define System Image (see page 18)
Start the Online Dialog (see page 19)

Menus and Panels

After the batch jobs have been executed for the first time, you can review all batch results by using the ISPF panels. To start the online dialog, simply execute REXX procedure PMA (the name of this procedure may have been changed during installation). The Main Menu displays as shown in the first screen in this chapter. The online services can be called multiple times from one TSO user (by using split screen). However, online services cannot be called more than once in one logical screen.

In rare instances, the value displayed for a field on a panel may contain all 9s separated by a decimal point, for example, 999.999. This value means that the actual value is too large for the display.

With the online dialog, there are two kinds of commands that can be used on the menus and panels: primary commands and line commands.

Primary Commands

Each menu and panel allows you to use primary commands. Primary commands are those that you enter on the COMMAND line. Use primary commands to perform functions that affect the whole menu or panel with which you are working. The most commonly used primary commands are as follows:

- SORT

  Sorts the sequence of the information that is listed on the panel by using the desired column.

  See "Sort List Panels" for details about how to sort.

- SORT STD

  Changes the standard sort order of the specific panel for a specific TSO user.

  The sort order column is highlighted. See "Sort List Panels" for details about how to sort

- END (or PF3)

  Saves changed data directly and either displays the next panel or returns you to the calling panel if there are no more panels to display

- CANCEL or CAN

  Cancels all keyed input for the specified function and returns you to the calling panel.

  For example, if you are defining specific information pertaining to a job exclusion, when you enter CAN, your input to all panels for the specified exclusion are canceled.

- INSERT or I

  Displays an insert panel on which the specific information pertaining to a new item can be defined.

Line Commands

Some panels allow you to use line commands. Line commands are commands that you enter on a particular item in a row within the body of the panel. Line commands allow you to work with a specific item that displays on a list. All available line commands are defined along with the panel that supports them.

On list panels, line command X can be used to bypass the normal procedures and invoke procedure APCBRXX or APCDRXX. These REXX procedures can be customized to pass data from the selected entry to another product or to call a user written procedure. For more information, see the *Administration Guide.*

Generic Notation

Some panels allow you to use generic notation. Generic notation, also called pattern matching, allows you to easily specify more than one name (for example, job name) by the use of wildcards. Use the underscore (_) as a generic character (or wildcard) to represent one character or use the asterisk (*) as generic character to represent one or more characters at the end of the name.

For example, defining a job name exclusion for ABC* would exclude all jobs beginning with the letters ABC. Entering a query selection for job name for A_C_E___ would select all jobs with an A in the first position, a C in the third position, an E in the fifth position and any character in the second, fourth, sixth, seventh, and eighth position.

Sort List Panels

Most panels of the online dialog are data lists that consist of columns and rows. Each list panel has a standard default sort order. The sort order column is always highlighted.

To change the sort order of the data listed on a panel, use one of the following methods:

- **SORT primary command:** Temporarily changes the sort order based on another column. Use the SORT command with the column name abbreviation. For example, SORT E would sort the rows of data based on the Elapsed time column.

  On each list panel, the SORT command and its corresponding column abbreviations are listed. The column abbreviation is usually the first one or two characters of the column name.

- **Cursor sensitive sort:** Temporarily changes the sort order based on another column. Simply place the cursor on the data within the new sort order column and press Enter**.**

- **SORT STD primary command:** Permanently changes the standard sort order based on another column. To change the standard sort order and reflect this change in your TSO user profile, perform the following steps:

  1. Choose the new sort order column by using either of the temporary methods.
  2. Enter primary command SORT STD. The new sort order column for the panel is reflected in your TSO user profile.

Define System Image

In the upper left corner of all panels is the system image name. The system image name uniquely identifies in which environment Performance Management Assistant is installed, that is, test or production. It is a customizable parameter in the startup REXX procedure APC (parameter APCSIMG). For information about customizing this parameter, see the *Administration Guide* .

Start the Online Dialog

To start the online dialog, simply execute TSO command TSO PMA (the name of this procedure may have changed during installation). The following Main Menu displays.

```
APCYP000            PMA for CA MAT

Enter an OPTION  ===>

                     0 PMA Info Board
                     1 PMA Central Component
                     2 PMA CICS Feature
                     3 PMA IMS Feature
                     4 CA MAT
                     5 PMA Parameters
                     6 PMA Maintenance
                     7 PMA Server
                     X or END
                 **********************************
                 *  CA Mainframe Application Tuner  *
                 * Performance Management Assistant *
                 *         Version 9.0.00           *
                 **********************************

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```

The following options are available on the Main Menu:

Option	Description
0	Access the Info Board. See the chapter "Using the Info Board".
1	Access the online dialog for the Central Component. See the chapter "Using the Info Board".
2	Access the online dialog for the CICS Feature. For details about using this online dialog, See the chapter "Using the CICS Feature".
3	Access the online dialog for the IMS Feature. For details about using this online dialog, See the chapter "Using the IMS Feature".
4	Access CA Mainframe Application Tuner directly.
5	Define or review the general parameters for each of the three components. See the Administration Guide for details about these parameter definitions.
6	Review and maintain information and logs of the Central Component and CICS and IMS Features. Additionally, you can define alert delete options for the Central Component. For information about using this option, see the Administration Guide.

Option	Description
7	Access the online dialog for the Server. For details about using this online dialog, see the chapter "Using the Server."
X	Exit the Main Menu.

Chapter 3: Using the Info Board

This chapter describes the Info Board, which provides overview information about your product.

From the Info Board you can access the following information:

- Product Information – basic information about the installed software
- System Requirements – an overview of basic system requirements for using Performance Management Assistant
- Enqueue Considerations – an overview of systems-level enqueue for considerations
- What is New – an overview of new functions and enhancements in this release
- User Documentation Overview – an overview of available user documentation for Performance Management Assistant
- Support Contact Information – basic support contact information
- Copyrights, Legal Disclaimer – copyright and legal disclaimer information

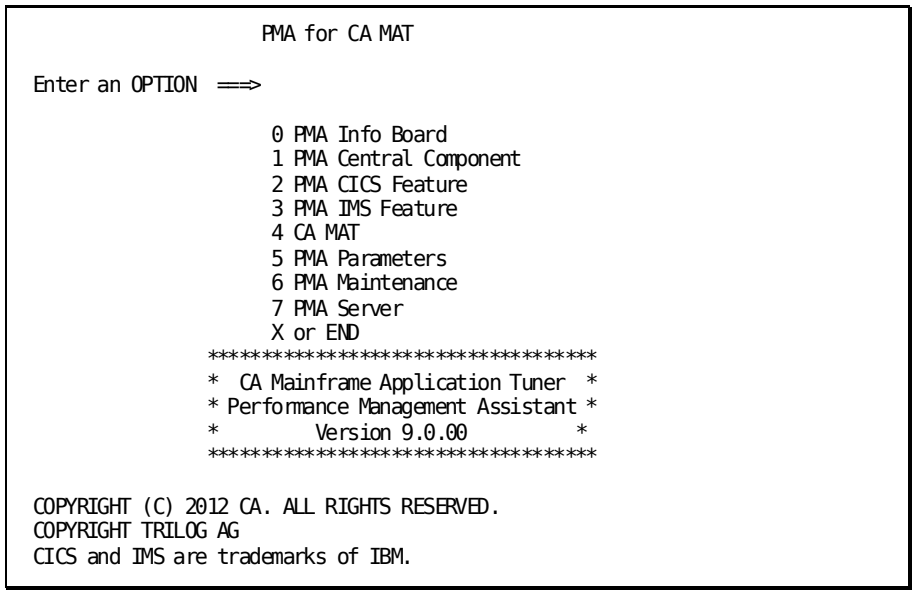
This section contains the following topics:

Access the Info Board (see page 22)
Product Information (see page 23)
System Requirements (see page 23)
Enqueue Considerations (see page 24)
What is New (see page 24)
User Documentation Overview (see page 25)
Support Contact Information (see page 25)
Copyrights and Legal Disclaimer (see page 26)

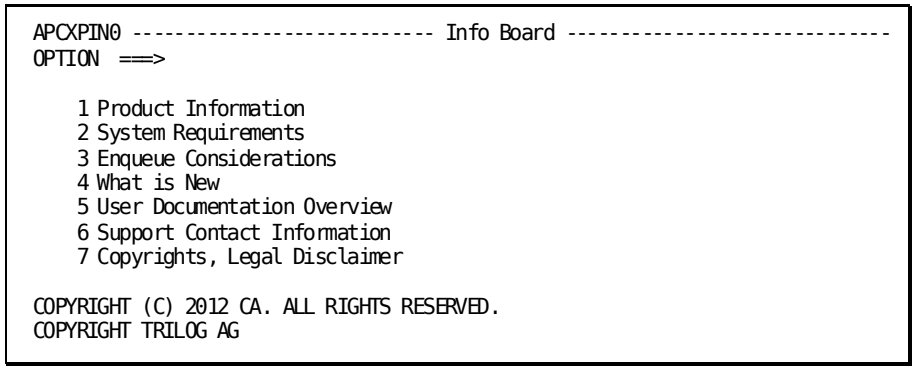
Access the Info Board

Follow these steps:

1. Select option 0 on the Main Menu to access the Info Board Menu.



2. Use the options on the Info Board Menu to select the Info Board functions. Type the selection number in the OPTION field and press the Enter key.



The following options are available on the Info Board Menu:

1 Product Information—basic information about the installed software

2 System Requirements—an overview of basic system requirements for using Performance Management Assistant

3 Enqueue Considerations—an overview of systems-level enqueue for considerations

4 What is New—an overview of new functions and enhancements in this release

5 User Documentation Overview—an overview of available user documentation for Performance Management Assistant

6 Support Contact Information—basic support contact information

7 Copyrights, Legal Disclaimer—copyright and legal disclaimer information

Product Information

The Product Information panel shows information about the version that you are using.

```
                                    Product Information
 COMMAND ===>                                                SCROLL ===> HALF

******************************** Top of Data ********************************
CA Mainframe Application Tuner Performance Management Assistant

Version 9.0.00

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

System Requirements

The System Requirements panel shows information about the basic requirements to use Performance Management Assistant in your environment.

```
 COMMAND ===>                                                SCROLL ===> HALF

******************************** Top of Data ********************************
System Requirements:

 - z/OS 1.8, 1.9, 1.10, 1.11, 1.12

 - ISPF/PDF

 - REXX

 - CICS/TS 3.1, 3.2, 4.1, 4.2

 - CA Mainframe Application Tuner Version 9.0.00
******************************** Bottom of Data *****************************
```

Enqueue Considerations

The Enqueue Considerations panel shows information about the enqueue considerations for proper usage of functions.

```
                              Enqueue Considerations
 COMMAND ===>                                                 SCROLL ===> HALF

******************************** Top of Data ********************************
PMA Enqueue Usage:

  Enqueue Level    : SYSTEMS
  Major Name (QNAM): $APC0900
  Minor Name (RNAM): Processed Data Set Name

When PMA is installed in a sysplex, the PMA clusters are shared across all PMA
servers and PMA batch jobs that are running in the sysplex. To prevent the
clusters from being corrupted because multiple users are updating it
concurrently, systems-level enqueues with a QNAM $APC0900 are used.

Depending on the different possibilities of the ENQUEUE tool that is used, you
have to make sure that the PMA QNAM $APC0900 is defined for the usage of global
enqueuing. This means that if you follow an RNL INCLUDE policy, QNAM $APC0900
must be included in the RNL definition list. If you follow a RNL EXCLUDE policy,
QNAM $APC0900 need not be on the exclude list.
******************************** Bottom of Data ********************************
```

What is New

This option enables you to see enhancements included in this version of Performance Management Assistant at a glance, as shown in the following panel.

```
                                   What is New
 COMMAND ===>                                                 SCROLL ===> HALF

******************************** Top of Data ********************************
CA Mainframe Application Tuner Performance Management Assistant

Version 9.0.00

Please refer to the V9.0 Release Notes to get an overview of the
included enhancements in this release.

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

User Documentation Overview

This option enables you to see information about available product documentation, as shown in the following panel.

```
                                User Documentation Overview
 COMMAND ===>                                                  SCROLL ===> HALF

******************************** Top of Data ********************************
CA Mainframe Application Tuner Performance Management Assistant
                              -          -          -
Version 9.0.00

Available PMA r8.5 Basic Product Documents:

PMA r8.5 Release Notes
PMA r8.5 Installation and Customization Guide
PMA r8.5 User's Guide
PMA r8.5 Messages Guide
******************************** Bottom of Data ********************************
```

Support Contact Information

This option enables you to see general support contact information, as shown in the following panel.

```
                                Support Contact Information
 COMMAND ===>                                                  SCROLL ===> HALF

******************************** Top of Data ********************************
CA Mainframe Application Tuner Performance Management Assistant

Version 9.0.00

For product issues please contact CA Technologies product support for
assistance.
******************************** Bottom of Data ********************************
```

Copyrights and Legal Disclaimer

This option shows important copyright and legal disclaimer information, as shown in the following panel.

```
******************************** Top of Data ********************************
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Copyright Trilog AG. All rights reserved.

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Business Machines Corporation in the United States, other countries or both.

All other trademarks belong to their respective companies.
******************************** Bottom of Data ********************************
```

Chapter 4: Using the Central Component

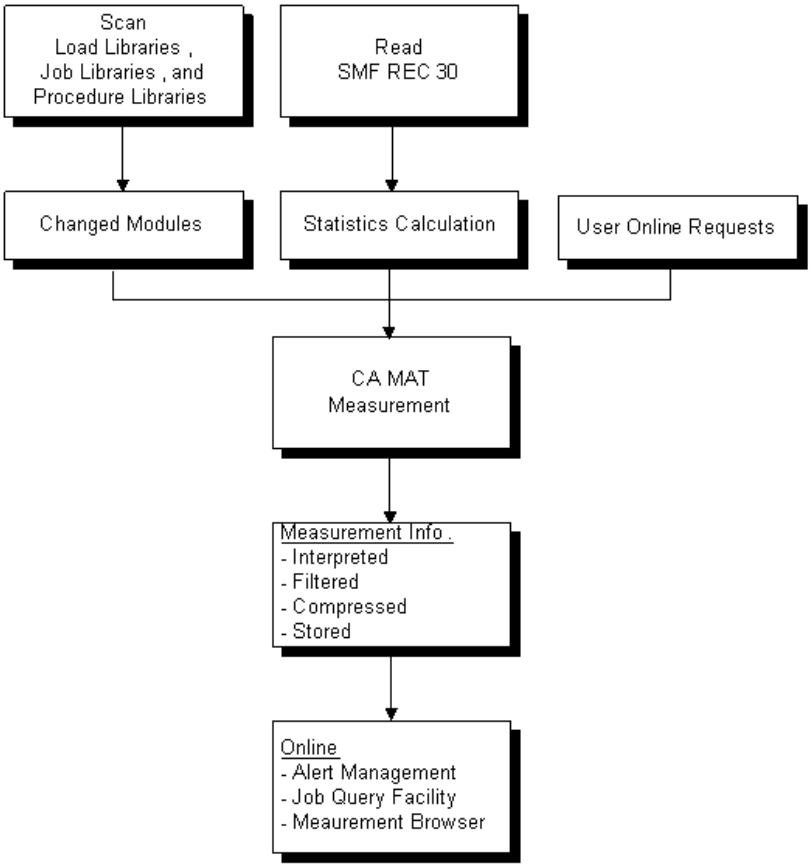
This chapter describes how to use the ISPF panels of the Central Component and how to use batch jobs that export Performance Management Assistant information and measure the jobs of critical paths.

This section contains the following topics:

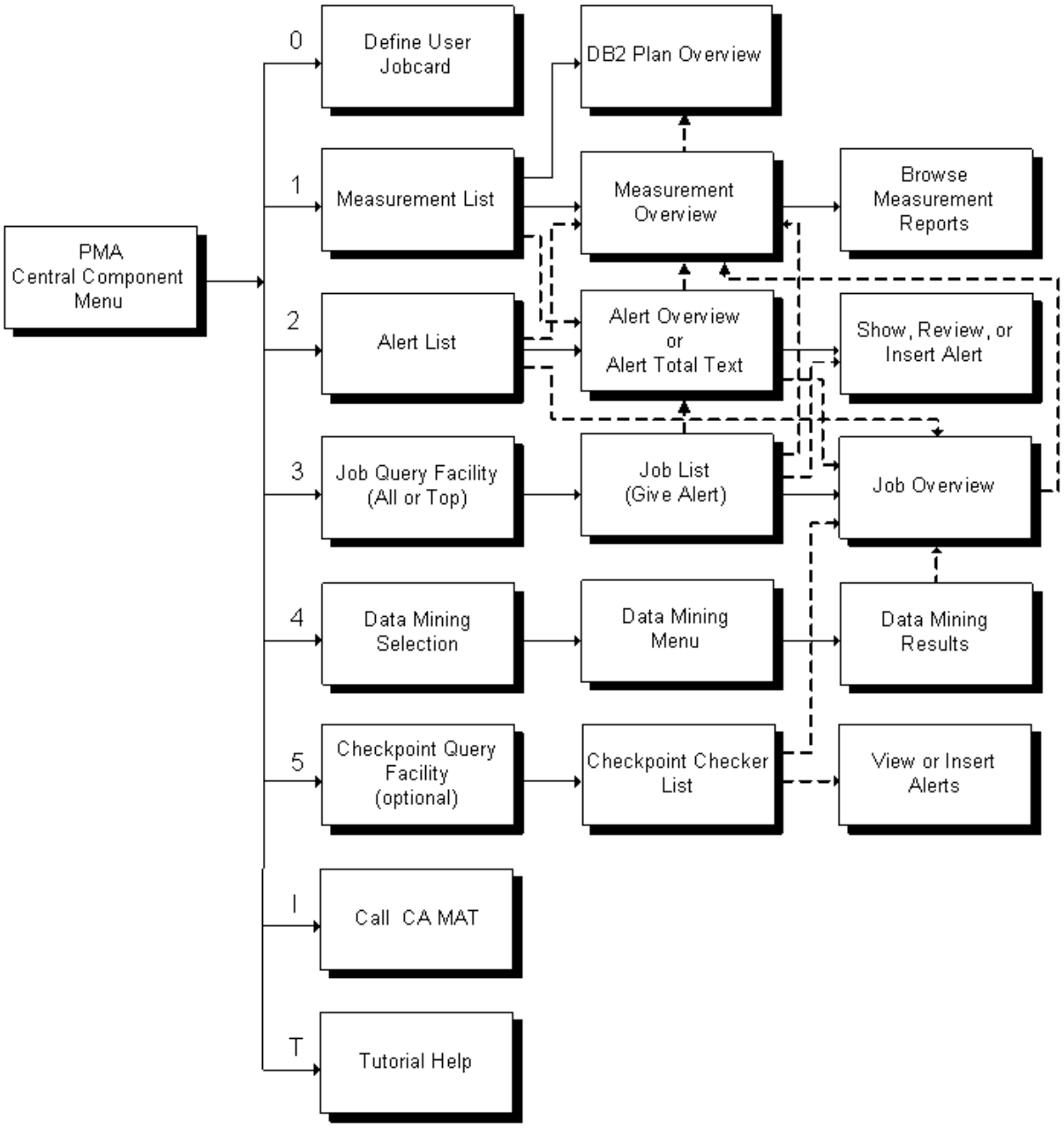
Functional Overview (see page 28)
Central Component Menu (see page 30)
Global Print JCL (see page 31)
Measurement Lists (see page 32)
Alert Management (see page 42)
Job Query Facility (see page 56)
Data Mining (see page 88)
Overtake Functions (see page 103)
Export Central Component Data (see page 109)
Measure the Jobs of Critical Paths - Job APCBJCRI (see page 117)

Functional Overview

Performance Management Assistant scans the load, job, and procedures libraries you define and locates all changed modules. Additionally, SMF job step termination (SMF 30, subtype 4) records are read, statistics calculated, and current consumption values checked for anomalies. The changed modules, job steps exhibiting a significant increase in resource consumption, and specific job steps that you identify as user alerts become measurement requests to CA Mainframe Application Tuner. The resulting measurement information is then interpreted and filtered by Performance Management Assistant. The measurements are stored for accessibility through the online panels for up to 18 months.

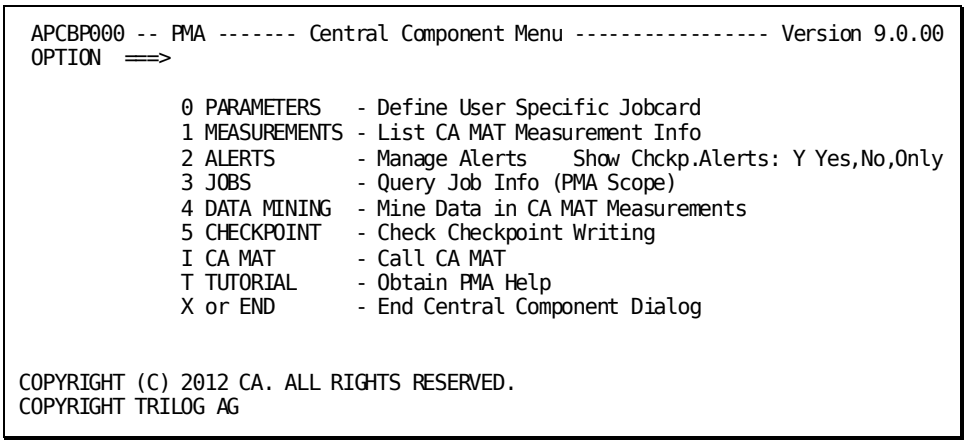


The following graphic is an overview of the Central Component online dialog:



Central Component Menu

The Central Component Menu is accessed by selecting option 1 on the Main Menu.



Use the options on the Central Component Menu to select the Central Component functions.

Type the selection number in the OPTION field and press Enter. The following selections are provided:

0 Define a user-specific job card to be used for printing. See the section Global Print JCL.. For details about how to define all other parameters, see the *Administration Guide*.

1 View and work with performance measurements. See the section Measurements List.

2 View alerts or create new alerts. See the section Alert Management.

The Show Chckp. Alerts option displays only when the Checkpoint Checker feature is enabled. In this case, one of the following values may be entered prior to selecting the Manage Alert option:

Y - Display checkpoint alerts along with all other alerts.

N - No checkpoint alerts should be displayed.

O - Only checkpoint alerts should be displayed.

3 Use the job query facility to access specific performance information within the scope of work. See the section Job Query Facility.

4 Perform data mining within the Performance Management Assistant measurements. This option cross references stored measurement information based on your selection criteria. See the section Data Mining.

5 Call the optional Checkpoint Checker Feature. If used, the Checkpoint Checker provides immediate online support in determining whether the proper checkpoint writing exists for important job steps. See the chapter "Using the Checkpoint Checker".

I Call Performance Management Assistant.

T Browse the online tutorial to obtain help. Panel-specific online Help can be accessed by pressing PF1 on any panel.

X Exit the Central Component Menu and return to the Main Menu.

Global Print JCL

The following panel displays when you choose 0 on the Central Component Menu.

```
APCXPP01 --- PMA - Global Print JCL -------------------------------------------
 COMMAND ===>


 Enter your user specific JCL statements used in all PMA
 features for Print:

 //JOBNAMEX JOB (12345),'PMA Print',CLASS=X,MSGCLASS=X
 //*
 //PRINT    EXEC PGM=IEBGENER
 //SYSIN    DD   DUMMY
 //SYSPRINT DD   SYSOUT=*
 //SYSUT2   DD   SYSOUT=*
 //SYSUT1   DD   *


            Cancel: CAN
            Save  : END OR PF3
```

Other options within the ISPF online of the Central Component allows you to route information to print. Use this Global Print JCL panel to define the job card and JCL statements to be used when routing information to the printer.

Global Print JCL Panel

In the lines provided on this panel, define your print job statements. These statements may include

- Job card
- Local printer
- Specific SYSOUT classes
- Print formats

Once defined, this print job JCL is used by all features (Central Component, CICS Feature, and IMS feature). This JCL is stored in your individual TSO user profile pool. If you do not save the input to this panel by exiting with PF3 or END, the profile pool is not loaded.

Measurement Lists

On the Central Component Menu, Option 1, Measurements, displays either

- Measurement List panel with CPU values if "Show CPU(C)/Waits(W): C" is defined (panel APCJP001)

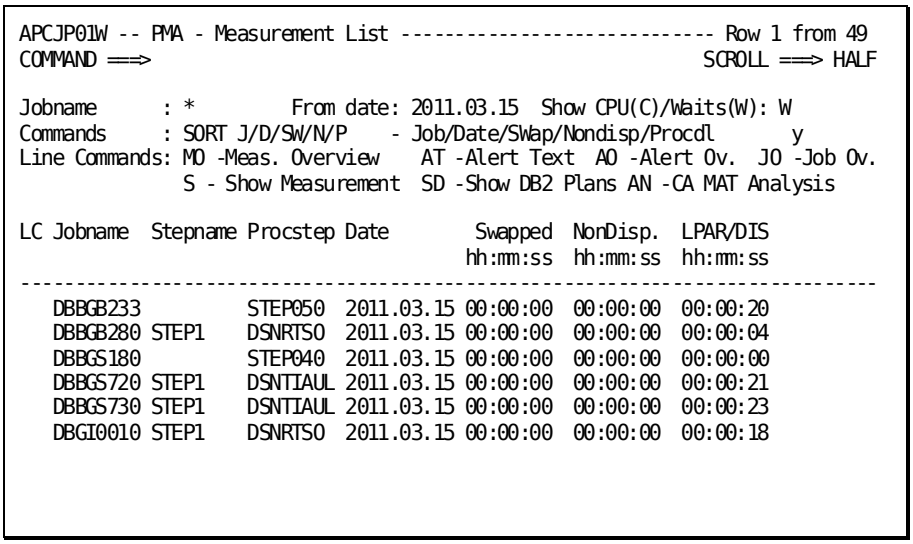
  Or

- Measurement List panel with WAIT values if "Show CPU(C)/Waits(W): W" is defined (panel APCJP01W)

```
APCJP001 ------ PMA - Measurement List -------------------------- Row 1 from 6
 COMMAND ===>                                                  SCROLL ===> CSR

 Jobname      : *         From date: 2011.03.15  Show CPU(C)/Waits(W): C
 Commands     : SORT J/D/E/C/S/EX    - Job/Date/Elpsd/Cpu/Srvus/EXcps
 Line Commands: MO -Meas. Overview    AT -Alert Text  AO -Alert Ov.  JO -Job Ov.
                S - Show Measurement  SD -Show DB2 Plans AN -CA MAT Analysis

 LC Jobname  Stepname Procstep Date         Elps       CPU      SRVUS    EXCPS
                                          hh:mm:ss  hh:mm:ss
 ------------------------------------------------------------------------------
    DB2NEW1X          STEP010  2011.03.15 00:04:01  00:01:59     1005K    182
    DB2NEW2X          STEP01   2011.03.15 00:10:30  00:04:59     5205K     2K
    DB2NEW3X          STEP011  2011.03.15 00:03:11  00:00:59     1255K    82
    DB2NEW4X          STEP01A  2011.03.15 00:04:41  00:02:20     2088K    133
    DB2NEW5X          STEP01D  2011.03.15 00:03:22  00:02:02     1401K     77
    DB2NEW6X          STEP012  2011.03.15 00:08:05  00:04:50     3352K      1K
******************************* Bottom of data ********************************
```



```
APCJP01W -- PMA - Measurement List ---------------------------- Row 1 from 49
COMMAND ===>                                                   SCROLL ===> HALF

Jobname      : *         From date: 2011.03.15  Show CPU(C)/Waits(W): W
Commands     : SORT J/D/SW/N/P    - Job/Date/SWap/Nondisp/Procdl       y
Line Commands: MO -Meas. Overview    AT -Alert Text  AO -Alert Ov.  JO -Job Ov.
               S - Show Measurement  SD -Show DB2 Plans AN -CA MAT Analysis

LC Jobname  Stepname Procstep Date       Swapped  NonDisp.  LPAR/DIS
                                        hh:mm:ss  hh:mm:ss  hh:mm:ss
-------------------------------------------------------------------------------
   DBBGB233         STEP050  2011.03.15 00:00:00  00:00:00  00:00:20
   DBBGB280 STEP1   DSNRTSO  2011.03.15 00:00:00  00:00:00  00:00:04
   DBBGS180         STEP040  2011.03.15 00:00:00  00:00:00  00:00:00
   DBBGS720 STEP1   DSNTIAUL 2011.03.15 00:00:00  00:00:00  00:00:21
   DBBGS730 STEP1   DSNTIAUL 2011.03.15 00:00:00  00:00:00  00:00:23
   DBGI0010 STEP1   DSNRTSO  2011.03.15 00:00:00  00:00:00  00:00:18
```

Every CA Mainframe Application Tuner measurement with a data set name prefix that is the same as the one defined as a parameter is processed by job APCYJLNA. The Measurement Lists are interpreted, filtered, compressed, and stored by Performance Management Assistant. The list of these processed measurements displays on this Measurement List panel.

Panel Elements

This section describes the commands, fields, and columns on the Measurement Lists panel.

Primary Command

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sorting List Panels.

Line Commands

Line commands can be used to work with a specific measurement that displays in the list.

MO

Displays the Measurement Overview panel.

AT

Displays the Total Alert Text panel.

AO

Displays the Alert Overview panel.

JO

Displays the Job Overview panel.

S

Displays the CA Mainframe Application Tuner performance measurement.

SD

Displays the DB2® Plan Overview panel.

AN

Provides an interface to the CA Mainframe Application Tuner Analyze Normal function.

This function is only executable as long as the corresponding monitor data set has not been deleted. For details about the appropriate parameter settings, refer to the Global measurement data set processing section of the *Administration Guide*.

Jobname

Specific job name or generic job name.

To control the list of measurements that is being displayed, enter an actual job name or a generic job name. Generic character asterisk (*) can be used to list all measurements for all job names or to limit the list of measurements to a generic group of jobs.

From Date

From date.

To see the previous processing results of Performance Management Assistant, enter the date from which you want to see the list. The default is the last processing date.

Show CPU(C)/Waits(W)

With value C, the columns Elps, CPU, SRVUS and EXCPS are displayed.

With value W, the columns Wait, Swapped, NonDisp. and ProcDly are displayed.

Jobname/Stepname/Procstep

Job name, step name, and procedure step name of the CA Mainframe Application Tuner measurement.

From Date

Date and time of measurement.

Meas

Percentage of measurement time related to the job step elapsed time.

If the Server handles the CA Mainframe Application Tuner requests, a value less than 100% is possible because the measurement is not necessarily taken during the entire time the job step executes.

The following four columns are shown if C (for CPU values) is set:

Elps

Elapsed time consumed during step execution in format hh:mm:ss.

CPU

CPU time consumed during step execution in format hh:mm:ss.

SRVUS

Service units consumed during step execution.

A K at the end of the value indicates that the format is in thousands.

EXCPs

EXCPs consumed during step execution.

A K at the end of the value indicates that the format is in thousands.

The following four columns are shown if W (for WAIT values) is set:

Wait

Wait time consumed during step execution (format hh:mm:ss).

Swapped

Time consumed during step execution when the TCB is swapped out from system (format hh:mm:ss).

NonDisp

Time consumed during step execution when the TCB is not dispatched from system (format hh:mm:ss).

ProcDly

Time consumed during step execution when the processor itself delays (format hh:mm:ss).

Measurement Overview

After selecting a job name with line command MO in any list panel, an overview of all stored measurements for the job displays.

```
APCJP011 ------ PMA - Measurement Overview ------------------ Row 1 to 1 of 1
 COMMAND ===>                                                  SCROLL ===> CSR

 Line Commands: S - Show Measurement P - Print Measurement E - Edit Measurement
              SD - Show DB2 Plans   AN - CA MAT Analysis

 Jobname  Stepname Procstep
 DB2NEW5X          STEP010
                                                        Calculated
 LC Date       Time  Comment Meas      Elps       CPU      Wait     EXCPS
    yyyy.mm.dd hh:mm                hh:mm:ss  hh:mm:ss  hh:mm:ss
 ------------------------------------------------------------------------------
    2011.03.15 15:01          100    00:04:01  00:02:59  00:00:01      0K
****************************** Bottom of data ********************************
```

The Measurement Overview panel displays the cross-reference list that shows all existing measurements in Performance Management Assistant that are available for a specific job step.

Line Commands

Line commands can be used to work with a specific measurement that displays in the list.

S

Displays CA Mainframe Application Tuner measurement reports.

P

Routes the measurement to the printer.

E

Displays the report in the editor so that you can edit the measurement.

For example, unwanted information can be deleted or your comments can be added.

SD

Displays the DB2 Plan Overview panel.

AN

Provides the interface to the CA Mainframe Application Tuner Analyze Normal function.

This function is only executable as long as the corresponding monitor data set has not been deleted. For details about the appropriate parameter settings, refer to the Global Measurement Data Set Processing section of the *Administration Guide*.

Column Descriptions

Jobname/Stepname/Procstep

Job name, step name, and procedure step name of the CA Mainframe Application Tuner measurement.

From Date

Date and time of measurement.

Meas

Percentage of measurement time related to the job step elapsed time, normally 100%.

If the Server handles the CA Mainframe Application Tuner requests, a value less than 100% is possible because the measurement of a job step does not necessarily occur during the whole job step execution.

Elps

Elapsed time consumed during step execution in format *hh:mm:ss.*

CPU

CPU time consumed during execution in format *hh:mm:ss*.

Calculated Wait

Wait time consumed during execution (format *hh:mm:ss*).

If the MEAS value is below 100%, the wait time is calculated by Performance Management Assistant.

EXCPs

EXCPs listed in thousands consumed during execution.

Display Measurements

A CA Mainframe Application Tuner measurement report displays as a result of one of the following actions:

- Line command S is used on the Measurement List panel to select measurements for a specific job name.
- Line command S is used on the Measurement Overview panel to select a specific measurement report date for a specific job name.

```
APCBP101 CA MAT   Meas. - SAMPLER AND JOB STATISTICS ---- Row 1 to 35 of 231
COMMAND ===>                                              SCROLL ===> HALF

Object  : C C/D - Chapter/Date           Direction: F F/B - Forward/Backward
Chapter : #SJS              Date: 2011.01.15   Job: TEST9810          STEP010



-- JOB INFORMATION --  ------ JOB STATISTICS ------  --- MONITOR STATISTICS ---

JOBNAME  . . TEST9810  TCB TIME . . . . 00:00:09.60  START DATE . . 2011/01/15
STEPNAME . . STEP010   SRB TIME . . . . 00:00:00.40  START TIME . . 23:57:47
PROCSTEP . .                                         DURATION . . . 00:02:55
PROGRAM  . . IKJEFT1A  ECPU TIME  . . . 00:00:09.46
ASID . . . . 95        ZAAP TIME  . . .     **N/A**  OBSERVATIONS:
(HEX)  . . . 005F      ELIG ZAAP TIME .     **N/A**  FINAL RATE . . 60MSEC
USER ID  . .                                         REQUESTED  . . 10000
JOB ID . . . JOB61373  SWAPPED OUT  . . 00:00:00.00  USED . . . . . 2914
                       NON DISP . . . . 00:00:00.00
CICS LEVEL . **N/A**   LPAR/DIS DELAY . 00:00:00.75  SAMPLES:
DB2 LEVEL  . 8.1.0                                   USED . . . . . 2909
IMS LEVEL  . **N/A**   CPU SVC UNITS  . 231565       % ACTIVE . . . 3.33
MQS LEVEL  . **N/A**                                 % WAIT . . . . 96.67
SAP LEVEL  . **N/A**   EXCP COUNT . . . 372
USS LEVEL  . **N/A**   EXCP RATE  . . . 2.11         AVG TCBS ACT . 1.00
WAS LEVEL  . **N/A**

< RGN LIM  . 10240K    < RGN USED HWM . 708K         CMN HWM USED . 220K
> RGN LIM  . 32M       > RGN USED HWM . 1096K
RGN REQUEST  9216K
                       PAGE-INS . . . . 0
DYNAMIC LINKLIST:      PAGE-IN RATE . . 0.00
LNKLST00

MONITOR DATA SET  . CAMAT.MONDS.TESTJOB.T235774.D20110115
```

Performance Management Assistant interprets each of the relevant measurement reports. The information is limited to certain reports and only the important information is shown.

By default, the Sampler and Job Statistics chapter displays first. However, to see other measurement reports or chapters, a variety of paging alternatives is available. The normal PF keys for scrolling forward and backwards can be used. Additionally, the Object field, Direction field, and Chapter field can be used in combination to scroll through different measurement reports or chapters as defined below.

Field Descriptions

Object

Specifies the paging option.

Use the Enter key to enter one of the following values to indicate whether paging should be by chapter or by date. (These values can also be used in the COMMAND field.)

C—page through the CA Mainframe Application Tuner measurement reports by chapter.

A—forward direction (F) pages to the next chapter. A backward direction (B) pages to the previous chapter.

D—page by date through the same chapter.

The chapter is identified in the Chapter field. A forward direction (F) pages to the next date for this chapter. A backward direction (B) pages to the previous date for this chapter.

Direction

Specifies the paging direction.

Between chapters/dates of the current measurement/chapter:

F—page forward

B—page backward

Chapter

Displays the current CA Mainframe Application Tuner measurement report or chapter being reviewed.

The default is #SJS - Sampler and Job Statistics. To display a different chapter, enter one of the chapter IDs shown in the following table in the Chapter field (or without the # sign in the COMMAND field).

Chapter ID	Description
#SJS	Sampler and Job Statistics
#RDC	Resource Demand Chart

#SAM	Sampler Messages
#TSV	Task View
#DLV	Delay View
#COV	Code View
#CVC	Code View Mode
#CVM	Code Mode Module
#CVP	Code View Mode Pseudo
#HIM	Histogram for Modules
#HT5	Histogram for Top 5
#DSA	Data Set Activity
#DDR	Detailed Dataview Report
#DBS	DB2 Statements
#DB2	DB2 Activity
#DBC	DB2 Code Detail
#SQL	SQL Statement Display
#DCL	SQL Declare Statement Display
#IMS	IMS Activity
#TXV	Transaction View
#MOD	Module Table
#POV	Pool View
#SUM	Summary
#BRO	Batch Reporting Options
#SAM	Sampler Messages
#IDE	IDMS DELAYS
#IDD	IDMS DML DELAYS
#LNT	LONG NAME TABLE

DB2 Plan/DBRM Overview

After selecting a job name with line command SD, the DB2 Plan/DBRM Overview panel displays.

```
APCJPDBR - PMA - DBRM SQL Overview -------------------------- Row 1 to 5 of 5
COMMAND ===>                                                  SCROLL ===> HALF

Jobname  Stepname Procstep    Date       Time
DB2DBJOB          DB2DBJPR    2011.01.15 02:13

               STMT             TOTAL               TOTAL    AVERAGE     TOTAL
LC DBRM         NUM TYPE        COUNT CPU-P-CALL       CPU  RESP TIME RESP TIME
-- -------- ------- -------- -------- ---------- --------- ---------- ---------
   DB2DB001    1522 SELECT     150264   0.000027  4.130550   0.000064  9.682120
   DB2DB002    1967 UPDATE     147128   0.000035  5.221276   0.000055  8.149808
   DB2DB003     581 SELECT      10018   0.000186  1.866419   0.000304  3.041948
   DB2DB003     618 UPDATE      10018   0.000059  0.591169   0.000104  1.040037
   DB2DB002    1823 INSERT       3137   0.000091  0.286256   0.000328  1.028155
****************************** Bottom of data ********************************
```

The DB2 Plan/DBRM Overview panel displays the activity of DB2 statements during the monitored period.

Column Descriptions

DBRM

Displays the name of a package (DBRM) that describes the SQL statement.

STMT NUM

Displays the statement number for a specific statement contained in a package or plan.

TYPE

Displays the type of call issued with this statement as an argument.

CA Mainframe Application Tuner displays **????????** when the DB2 control block is not yet valid. Valid values for call type are OPEN, FETCH, CLOSE, PREPARE, SELECT, INSERT, DELETE, UPDATE and DYNAMIC.

TOTAL COUNT

Displays the number of times during the monitoring session that CA Mainframe Application Tuner detected this SQL statement executing.

CPU-P-CALL

Displays the average CPU time (in seconds) that was needed by DB2 to process DB2 calls for this SQL statement **(**TOTAL CPU **/** TOTAL CALLED**).**

TOTAL CPU

Displays the amount of CPU time (in seconds) that was needed by DB2 to process DB2 calls for this SQL statement.

AVERAGE RESP TIME

Displays the average response time (in seconds) for this SQL statement to complete processing **(**TOTAL RESP TIME **/** TOTAL CALLED**).**

TOTAL RESP TIME

Displays the total response time (in seconds) for this SQL statement to complete processing of all executions.

Alert Management

Alert processing automatically identifies critical situations within a job step that require measurement by CA Mainframe Application Tuner. The alert is issued automatically by Performance Management Assistant when it recognizes these situations:

- Current execution consumption values exceed either the statistical limits or the defined thresholds for a particular job step. For details about how to define Alert Thresholds, see "Define Alert Thresholds" in the *Administration Guide.*
- A scheduled job step is calling a changed module.

Additionally, the user can manually issue alerts explicitly for job steps by using the online Alert Management option.

The Alert Management option provides all the necessary information for the APM Team to handle the alert. Information is provided in the form of state and reason codes that identify the situation. The following table provides a description of these codes:

State Code	Reason Code	Long Description
PEND		Performance Management Assistant provides a CA MAT measurement. A measurement is available if the alert state is changed to OPEN.
	ELPS SRVU SUIO ELIO CPIO	The state was created by job APCXJSMF as a result of statistical calculations based on absolute values. The state was created by job APCXJSMF as a result of statistical calculations based on performance indexes.
	ALTH	The state was created by job APCXJSMF by comparing SMF consumption values of a job to the defined alert thresholds.
	MODC	The state was created by job APCXJLIB as a result of a changed module.

	SRVR	The state was created by the server.
	USER	The state was created by an online user.
OPEN		Performance Management Assistant has information about an alert, either a CA MAT measurement or the user text.
	ELPS SRVU MODC USER	The state was changed from PEND to OPEN by job APCYJLNA for one of the following reasons: A CA MAT measurement existed for a job step that was in the TOP Scope and had exceeded its statistical limits. A measurement was stored in any case by user definition. No further alerts are created except those of changed modules.
	TEXT	The state was created by an online user to indicate that no measurement was requested; however, user text information was provided.
	CHCK	A user has initiated an alert for checkpoint writing.
REV		An online user selected an alert for review/inspection.
	all	The state was changed by an online user by using command R(eview) in the Alert List Panel. No further alerts are provided by Performance Management Assistant.
CUSE		An online user closed the alert.
	all	The state was changed by an online user by using command **C**(lose) in the Alert List Panel.
CTHR		PMA closed the alert automatically. No measurement is provided.
	ELPS SRVU MODC USER	The state was changed by job APCYJLNA because the measured job step abended or a CA MAT Scope change has affected a PEND alert.
CIMP		PMA closed the alert automatically. No measurement is provided.
	ELPS SRVU MODC	The state was changed by job APCYJLNA because the consumption values of the measurement did not exceed the statistical-based alert values or a TOP Scope change affected a PEND alert.
CMUL		PMA closed the alert and temporarily stopped further alerts automatically.
	ELPS SRVU MODC	The state was changed by job APCYJLNA because more than three contiguous alerts with CTHR or CIMP were detected. No further CA MAT measurements are provided until a module change is detected or an online user uses the **D**(elete) command in the Alert List Panel.
COVT		An online user closed the alert and took over the statistical data.

	ELPS SRVU	The state was changed by an online user by using the overtake command **O** in the Alert List panel. In this case, the runaway values are the new statistical base for future tests.

TOP Scope Facility

Within the scope of work defined through inclusions and exclusions of job names and programs, the scope is further drastically reduced by the TOP Scope. The TOP Scope facility identifies the job steps consuming the greatest resources and limits CA Mainframe Application Tuner measurements to this group.

The TOP Scope parameter is maintained by the administrator. It may be a value from 0 - 999. A value of 0 indicates that the statistical alert approach is disabled. In all other cases, the TOP Scope defines how many important job steps should be statistically observed.

See the *Administration Guide* for details about the processing logic that determines whether a job step is among the top resource consumers. Statistical alerts and CA Mainframe Application Tuner measurements are limited to the members of this group of top consumers.

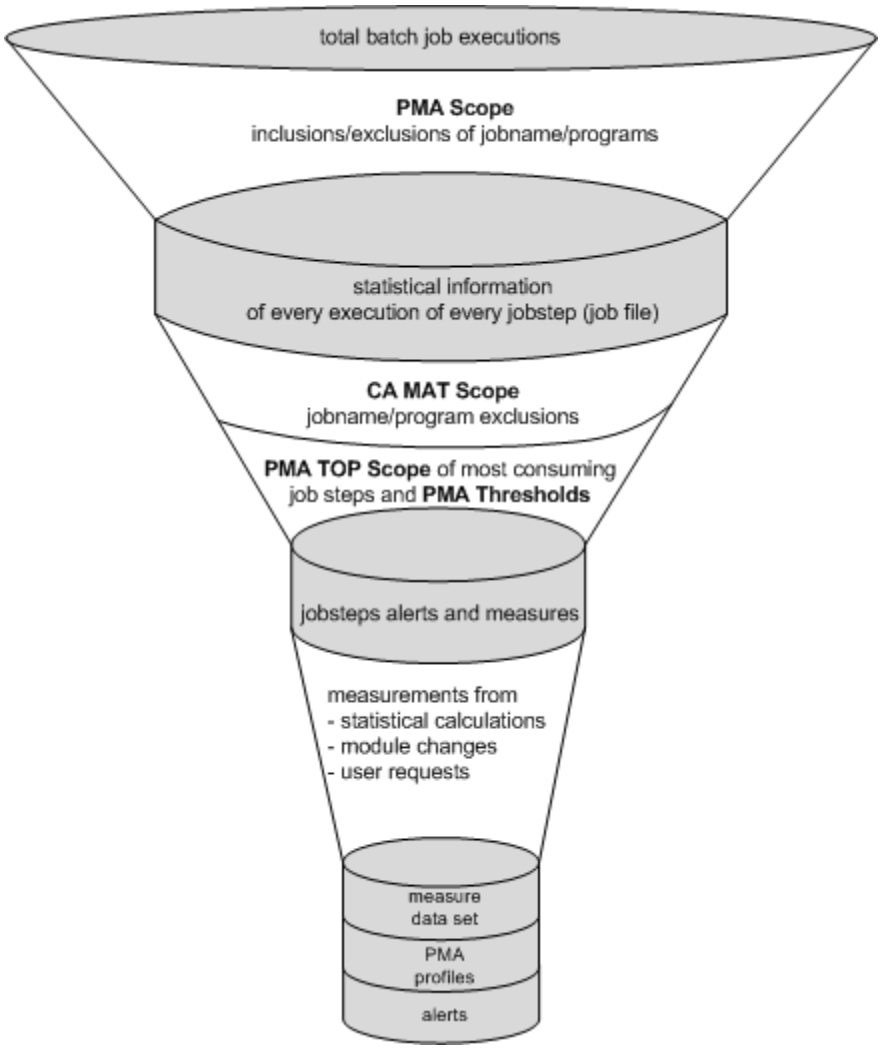
The TOP Scope can be used to control

- Initiation and number of generated OPEN statistical alerts.
- Generated alerts for all modified and new modules.

  See the *Administration Guide* for details about defining these parameters.
- How user alerts, initiated through the online dialog, are handled.

  User defined alerts that request measurements may use the TOP Scope. If used, only job steps of user alerts that are in the TOP Scope have OPEN alerts and their measurements are stored.

The following graphic illustrates how the batch scope reduction works.



List All Alerts

To list all alerts, select option **2** on the Central Component Menu.

The Alert List can be displayed in two styles. Style A shows the common Alert List including the available alert information. With style J you get the basic alert information combined with the average consumption values for the displayed job steps.

Alert List (Style A)

```
APCBP002 - PMA - Alert List --- All Issued      ---------------- Row 1 from 23
COMMAND ===>                                                    SCROLL ===> PAGE

Jobname.: *        State: *    Style: A (A=Alert only  J=with Jobinfo)
UserID..: CRIT*
Commands: SORT S/A/D/R/J/M/U - State/Aid/Date/Reason/Jobname/Module/UserID
        : Bulk Delete - Delete all displayed alerts
        : REV -list review  OPEN -open  ALL -issued  RECENT -most recent
LC......: AT -Al.Text AO -Al.Overv. JO -Job Ov MO -Meas. Ov AN -CA MAT AN
          S -Show  R -Review  C -Close  D -Delete  I -Insert  O –Overtake
          E -Edit  M -act.Meas.
LC Jobname  Stepname Procstep Module  State Reas. AID IssueDate No.Al. UserID
------------------------------------------------------------------------------
   TESTBAT3         TESTBAT           PEND USER   111 2011.01.15    1 CRITPATH
   TESTBAT4         TESTBAT           PEND USER   111 2011.01.15    1 CRITJOB1
```

Alert List (Style J)

```
APCBP02J PMA - Alerts and Jobinfo --- Most Recent     ------------ Row 1 from 1
COMMAND ===>                                                    SCROLL ===> PAGE

Jobname.: *        State: *    Style: J (A=Alert only  J=with Jobinfo)
UserID..: *
Commands: SORT J/S/R/AC/AE/AS/F/IM Job/Stat/Reas/AvgCPU/AvgElps/AvgSRVU/FRQ/IM
        : Bulk Delete - Delete all displayed alerts
          REV -list review  OPEN -open  ALL -issued  RECENT -most recent
LC......: AT -Al.Text AO -Al.Overv. JO -Job Ov MO -Meas. Ov AN -CA MAT AN
          S -Show  R -Review  C -Close  D -Delete  I -Insert  O –Overtake
          E -Edit  M -act.Meas.
LC Jobname  Stepname Procstep STAT REAS Avg-CPU  Avg-ELPS Avg-SRVU FRQ/Year IM
------------------------------------------------------------------------------
   JOB60901 STEP02   PROCOBA  CUSR SRVU 00:09:29 00:21:20   25223K      115 18
****************************** Bottom of data ********************************
```

Use the Alert List panel to see an overview of all alerts along with all possible state codes and reason codes. The state code identifies the current state of the alert, for example, whether the alert is open, pending, closed, and so on. The reason code identifies why the alert was issued, for example, module was changed.

Alerts and Jobinfo Panel

To filter the data that is listed on the panel, use the Jobname, State, or UserID fields described in Field Descriptions.

Primary Commands

Primary commands can be used as follows:

REV

Displays alerts with STATE = REV.

OPEN

Displays all alerts.

RECENT

Displays the most recent occurrence of each alert.

SORT

Sorts alerts. For details about how to use the SORT command, see Sorting List Panels

BULK DELETE

Deletes all alerts on the current alert list that match your selection criteria.

Enter BULK DELETE in the command line and press Enter. Then confirm your action in the confirmation panel that appears if you are sure you want to delete the alert entries.

Line Commands

Line commands can be used to work with a specific alert that displays in the list.

AT

Displays the Total Alert Text panel.

AO

Displays the Alert Overview panel.

MO

Displays the Measurement Overview panel.

AN

Provides the interface to the CA Mainframe Application Tuner Analyze Normal function.

This function is only executable as long as the corresponding monitor data set has not been deleted. For details about the appropriate parameter settings, refer to the "Global measurement data set processing" section of the *Administration Guide*.

JO

Displays the Job Overview panel.

S

Shows the alert.

R

Changes the state to REV, which permits alert text edits and review.

C

Closes an alert. The state is changed to CUSE and can no longer be reviewed.

D

Deletes an alert.

I

Inserts a new alert. For more information, see Insert an Alert.

O

Displays the Overtake Functions panel. You can clear, recalculate, or set the statistical values for the selected job step. See Overtake Functions for more information.

Field Descriptions

Jobname

Specify the actual job name or generic job name.

To control the list of alerts being displayed, enter an actual job name or a generic job name. Generic character asterisk (*) can be used to list all alerts for all job names or to limit the list of alerts to a generic group of jobs.

State

Enter the state of the alerts to be displayed to reduce the list of alerts to a specific state.

You can enter a valid state code, the first letter of the state code plus an asterisk, or an asterisk alone to see all states of alert.

Style

Select the alert information style that you want to see:

Style = A is the normal alert list, which shows you the full alert information.

Style = J shows the basic alert information combined with the average job step consumption values.

For a complete list of all state codes, see the following table.

UserID

Enter a full user ID or a generic user ID string, such as CRIT*, to control the list of alerts that are displayed.

Column Descriptions

Jobname/Stepname/Procstep

Displays the job name, step name, procedure step name, and module for which the alert is issued.

The module name is the application module name if available. Otherwise, it is the JCL PGM name.

State

Displays the current state of the alert. For a complete list of all state codes, see the table in Alert Management.

Reason

Displays the current reason for the alert. Valid codes are listed in the following table.

AID

Displays a unique alert identification for each alert.

Issue Date

Displays the date the alert was issued.

No. Al.

Displays the number of alerts for this job step.

If more than one alert exists for this job step and you want to delete them all, each alert must be individually deleted by using line command **D**.

UserID

Displays the user ID of job for which the alert is issued.

Avg CPU

Displays the average of CPU time consumed by the job step.

Avg ELPS

Displays the average of elapsed (session) time.

Avg SRVU

Displays the average of total service units.

FRQ/Year

Displays the estimated annual number of executions of the job step.

IM

Displays the importance of job step.

The higher the number means the more resource consumption was calculated.

Reason Code	Short Description	Long Description
USER	User	A user initiated an alert.
ELPS/SRVU	Elapsed time/ Service units	The alert resulted from a statistical calculation of absolute consumption values for elapsed time or service units.
SUIO/ELIOS SUEL	Performance indexes	The alert resulted from a statistical calculation of consumption values for performance indexes, that is the quotients of elapsed time/EXCPs (ELIO), service units/EXCPs (SUIO) or service units/elapsed time (SUEL).
ALTH	Alert Threshold	One of the consumption values of the SMF30 record (subtype 4) of a job exceeded the defined thresholds for this job.
MODC	Module Changed	A changed module was detected. The job step for which the alert was issued is the one that most recently executed the changed application program. If more than one job step executes the changed module, the most important one is selected.
TEXT	Text only	If no measurement is requested, a user can perform a text-only alert. See Insert an Alert.
CHCK	Checkpoint Writing	A user initiated an alert for checkpoint writing. No measurement is requested.

Alert Overview

The Alert Overview panel displays as a result of one of the following actions:

- Line command AO is used to select a job name on any list panel.
- Line command D is used to delete the alert for a specific job and there is more than one alert issued for the job step.

```
APCBP021 ------ PMA - Alert Overview ------------------------ Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> CSR

Line Commands: MO - Measurement Overview JO - Job Overview
               S -Show Alert  R -Review  C -Close  D -Delete  I -Insert

Jobname  Stepname Procstep
XX130000 F130BS08 F130
-------------------------------------------------------------------------------
LC   No   State  Reason   AID   Issue Date     Module    Link Date
-------------------------------------------------------------------------------
     2   CUSR   SRVU   26617   2011.01.07     P3AM426   2011.01.15
     1   CUSR   SRVU   25622   2011.01.17     P3AM426   2011.01.15
****************************** Bottom of data ********************************
```

The Alert Overview panel lists each alert issued to a specific job step.

Line Commands

Line commands can be used to work with a specific transaction that displays in the list.

MO

Displays the Measurement Overview panel.

JO

Displays the Job Overview panel.

S

Shows the Alert information text.

R

Changes the state to REV, which permits alert text edits and review.

C

Closes an alert and changes the state to CUSE. The alert can no longer be reviewed.

D

Deletes an alert.

I

Inserts a new alert.

Field Descriptions

Jobname/Stepname/Procstep

Specifies the job name, step name, and procedure step name for which the alert is defined.

Column Descriptions

No

Displays the alert number.

State

See the table in the section Alert Management.

Reason

See the table in the section List All Alerts.

AID

Displays a unique alert identification for each alert.

Issue Date

Displays the creation date of the alert.

Module

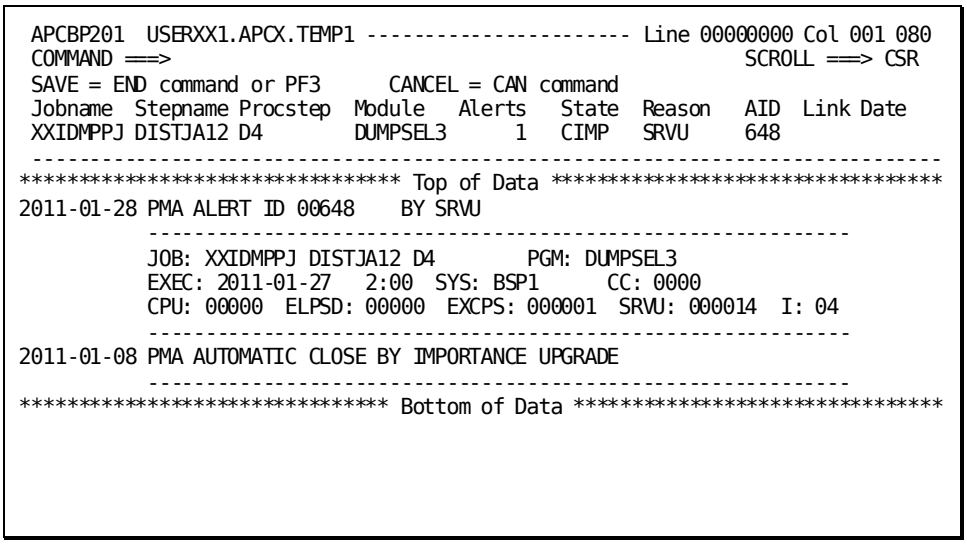
Displays the module name for which the alert is issued.

Link Date

Displays the linkage date of the application program.

Show or Review Alerts

To display the Alert Text panel, use line command **S** or **R** to select a job step name on the Alert List panel or Alert Overview panel. Selecting this panel with line command **S** allows you to only view the alert. If you want to edit the alert text and change the STATE to REV, use line command **R**.



The Show/Review Alert panel details the alert situation for the specific job step by displaying all information that has been:

- Created automatically by Performance Management Assistant, or
- Documented by the user

The alert is identified by the job name, step name, procedure step, and module. Additionally, the number of alerts, status code, reason codes, identifier, and creation date are listed.

Show/Review Alert Panel

Use this panel to do the following:

- In Review mode (line command R), you can edit text up to the maximum of 102 lines. The text is saved in the database. It is available anytime for display or for documenting additional information. The text is erased if you use the delete command for the alert on either the Alert List panel or the Alert Overview panel. The alert state is changed to REV when it is reviewed by using line command R.
- To cancel changes, use the CAN (cancel) command. Changes in the text are ignored and the state of the alert is not changed to REV.

Total Alert Text

To display the Total Alert Text panel, use line command AT on the following panels:

- Measurement List
- Alert List - All Issued
- Job List

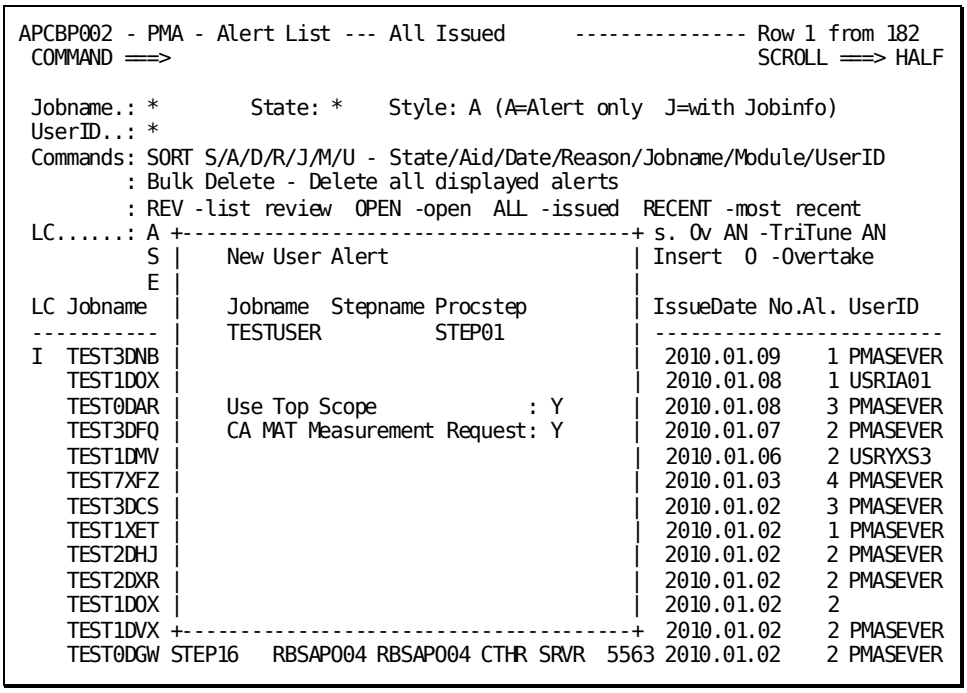
```
APCBP022 ------ PMA - Total Alert Text---------------------- Row 1 to 10 of 10
 COMMAND ===>                                                 SCROLL ===> CSR

 No.    Jobname  Stepname Procstep
 Alert  PCIDMPPJ DISTJA12 D4
 -------------------------------------------------------------------------------
    1   CIMP
    1   2011-01-28 PMA ALERT ID 00648    BY SRVU
    1              ------------------------------------------------------------
    1              JOB: PCIDMPPJ DISTJA12 D4        PGM: DUMPSEL3
    1              EXEC: 2011-01-27   2:00  SYS: BSP1      CC: 0000
    1              CPU: 00000  ELPSD: 00000  EXCPS: 000001  SRVU: 000014  I: 04
    1              ------------------------------------------------------------
    1   2011-01-08 PMA AUTOMATIC CLOSE BY IMPORTANCE UPGRADE
    1              ------------------------------------------------------------

 ****************************** Bottom of data ********************************
```

Use the Total Alert Text panel to see a complete historical overview of all alerts and all alert text for one job step.

Insert an Alert



The New User Alert window is opened when a job is selected either on the Job List panel by using line command A (Add) or on the Alert List panel by using line command **I** (Insert).

The New User Alert window displays the job and step name that you have selected as a user alert.

Use the Window

- To generate a CA Mainframe Application Tuner measurement request the next time the job is scheduled, enter Y in the Measurement Request field. An alert with state code PENDing and reason code USER is generated.
- To apply the TOP Scope logic following a measurement, enter Y in the Use TOP Scope field. (The Measurement Request field must also be **Y**.) If the measured job step is in the TOP Scope, the alert state code changes from PEND to OPEN and the measurement is stored. If the job step is not in the TOP Scope, the alert is implicitly closed (state code changed to CIMP) and the measurement is not stored. If N is entered in the Use TOP Scope field, all measurements are stored and the alert state code is OPEN.
- To create a text only alert with state code OPEN and reason code TEXT, enter N in the Measurement Request field. A text only alert allows you to document a special event or performance tip for a specific job step without generating a measurement request.

- To create a new alert for the displayed job name, step name, and procstep, press Enter. A subsequent panel allows you to document the alert by entering up to 102 lines of text.
- To close this window without creating a new alert, press END or PF3.

Job Query Facility

The Job Query Facility allows you to query performance information based on the job selection criteria that you define. To access the Job Query Facility panel, select option **3** on the Central Component Menu.

```
APCBP003 -------------------- PMA - Job Query Facility ----------------------
                                                                More:     +
COMMAND ===>

 Jobname  Stepname Procstep PGM/JCL  PGM/Appl    from         to
 ------------------------------------------------------------------------------
    *        *        *        *        *          2011 01 07   2011 05 14

                                                  start time   end time
                                                  ---------------------------
                                                  11 55        12 17
    Results    : 05000 (1-99999)

    Searchtypes for job description above and execution values below:
    Description: AND   (AND/OR)
    Execution  : AND   (AND/OR)

 ========================== Job Execution Values ======================
    Importance : >=
    Alert state:       (C=Critical, A=Alerted)
    Frequency : >= 00000000

    Last run          Average
    ---------------   ---------------
   >=                n/a                Condition Code
   >=                n/a                Condition Code

   >= 00:00:00.00    >= 00:00:00.00     CPU Time
   >= 00:00:00.00    >= 00:00:00.00     Elapsed Time
   >=        0           >=            0        EXCPs
   >=        0           >=            0        Total SRVU
   >=        0           >=            0        CPU SRVU
   >=        0           >=            0        SRB SRVU
   >=        0           >=            0        IO SRVU
   >=        0           >=            0        MSO SRVU

   >= 0000.000       >= 0000.000        DASD Connect IO Time seconds
   >= 0000.000       >= 0000.000        DASD Disconnect IO Time seconds
   >= 0000.000       >= 0000.000        DASD Pending IO Time seconds
```

```
        >=      0       >=          0       Total SRVU/Elapsed second
        >=      0       >=          0       IO/Elapsed second
        >=      0       >=          0       Total SRVU/IO(K)
   >= 00000.00         >= 00000.00         CPU%/Elapsed Time
   >= 00000.00         >= 00000.00         CPU seconds/IO(K)
   >= 00000.00         >= 00000.00         Elapsed seconds/IO(K)
   >= 0000.000         >= 0000.000         DASD Disconnect IO Time seconds
   >= 0000.000         >= 0000.000         DASD Pending IO Time seconds


=                 n/a                 System
=                 n/a                 WLM Class
=                 n/a                 Service Class
=                 n/a                 Resource Group
=                 n/a                 Job Class
=                 n/a                 Performance Group
=                 n/a                 Input Priority
=                 n/a                 Reporting Class
=                 n/a                 Job Owner
=                 n/a                 UserID

*** END OF JOBQUERY SELECTION AREA ***
```

PGM/APPL criteria field contains the application program name, for example, the program called in the JCL (PGM/JCL field) is the IMS region controller DFSRRC00 but your application name is ZZ01IN28. This information is provided by job APCXJLIB. For best results, carefully provide the parameter values when defining Standard Programs, Standard Procedures, Job Libraries, and Procedure Libraries. For more information about these parameter values, see the *Administration Guide*.

Job Query Facility Panel

The Job Query Facility panel allows you to define job selection query criteria for all information that is available within the Scope of work, as follows:

1. Define selection criteria for the jobs that you want to see.

   For a more detailed search, also define job execution criteria values.

2. In the Results field, specify the maximum number of results to be displayed.
3. Press Enter to start the query.
4. The information that is found displays on the Job List panel; see Display Job Query Results.

Within the job query facility you can define job selection criteria to restrict the displayed result list.

Types of Selection Criteria

There are three types of selection criteria:

- Job description by name and date (upper part of panel)
- Maximum number of results to be displayed
- Job execution values, either as an average or of the last job run (lower part of panel)

Compare Operators and Input Values

All selection criteria within the execution value section are combinations of a compare operator field and an input value field. The exception to this rule is that the alert state selection has no compare operator field and is always checked with the = compare operator.

The following compare operators can be used for the numeric fields:

- >,
- >=
- <,
- <=
- =
- !=,
- GT
- GE
- LT
- LE
- EQ
- NE

The following compare operators can be used for the alphanumeric fields:

- =
- !=
- EQ
- NE

All alphanumeric values can be entered in a generic form.

The following generic characters are allowed:

- An asterisk (*) to indicate any number of arbitrary characters
- This character can only be used at the end of a string.
- A percent sign (%) as a placeholder for a single arbitrary character

ABC* or %%CD4* are examples of allowed generic input fields that you can specify.

Fields that contain an empty value are not checked.

The selection criteria for job description and job execution values can be combined independently by using either the logical operator AND or OR. You can specify these two logical operators in the Search types input fields.

The two result lists for job description selection and for job execution selection will always be combined by a logical AND. You cannot prevent this combination from occurring.

The maximum number of results to be displayed (specified in the Results field) always limit the size of the displayed list regardless of the entered search types. A message indicates if there are more jobs matching the description and execution selection criteria.

Example

For example, if you specify the following criteria:

- The job name ABC*, the date range 2011 01 01 to 2011 05 31, and the time range 23 15 to 03 00 together with the search type AND
- The average job execution values Total SRVU > 100000 and EXCPs > 1000 together with the search type OR

The results list will consist of the following jobs:

- Jobs with names that start with ABC AND run between January 1, 2011 and May 31, 2011 AND start to run between 11:15pm and 3:00am
- Jobs that match one or both of the following execution value criteria:
  - Average SRVU usage > 100000
  - Average EXCP usage > 1000

If you have entered the value of 1000 in the Results field and the results list exceeds 1000 jobs, only the first 1000 matches in the order of the job file (in general alphabetically) will be displayed.

If you are using the OR search type, be aware that each specified selection value is checked. If any of the jobs match one of the selection values, that job is selected.

For example, if you only want to combine two values, be sure that all other selection fields in the respective section are empty.

If you press the HELP key while the cursor is positioned in any input field, a field format help panel displays. This panel provides information about the allowed input format of the respective field; however, it does not provide field descriptions. The fields are described in the table.

Field Name	Description
Jobname	Explicit or generic name of jobs to be selected
Stepname	Explicit or generic name of job steps to be selected
Procstep	Explicit or generic procedure step names to be selected
PGM/JCL	Explicit or generic name of the programs in the JCL to be selected
PGM/Appl	Explicit or generic name of application programs to be selected
from	From date limit for records to be selected in the format yyyy mm dd
to	To date limit for records to be selected in the format yyyy mm dd
start time	Start time for records to be selected in the format hh mm It is the starting time of jobs that are being selected.
end time	End time for records to be selected in the format hh mm It is the end of the window in which the job has started. The period selected can be from 23 00 to 02 00, if a time period spanning midnight is required.
Results	1- to 5-digit number that specifies the maximum number of results to be displayed
Description (search type)	Logical operator AND or OR to specify the type of combination of job description selection criteria Use this field to combine any of the previous fields except the Results field.

Field Name	Description
Execution (search type)	Logical operator AND or OR to specify the type of combination of job execution values selection criteria Use this field to combine any of the following fields in the Job Execution Values section.
Importance	Compare operator and a 1- to 2-byte numeric input that specifies the importance value as calculated by Performance Management Assistant
Alert state	1-byte input A, C or * specifying the alert state, where A means Alerted C means Critical * means Any, including Not Alerted
Frequency	Estimated number of annual job step executions based on the current execution behavior This statistical value is calculated by PMA based on the historical information that PMA has gathered for a job step. Use this field to find job steps with an estimated number of annual executions that match the defined frequency selection criteria.
Condition code (last run)	Compare operator and a 1- to 4-byte numeric input that specifies the condition code of the last job run
CPU Time (last run)	Compare operator and a time value in the format hh:mm:ss.HH that specifies the CPU time that was used by the last job run, where hh—hours mm—minutes ss—seconds HH—hundredth of seconds
CPU Time (average)	Compare operator and a time value in the format hh:mm:ss.HH that specifies the average CPU time used as calculated by PMA, where hh—hours mm—minutes ss—seconds HH—hundredth of seconds

Field Name	Description
Elapsed Time (last run)	Compare operator and a time value in the format hh:mm:ss.HH that specifies the elapsed time of the last job run, where hh—hours mm—minutes ss—seconds HH—hundredth of seconds
Elapsed Time (average)	Compare operator and a time value in the format hh:mm that specifies the average elapsed time as calculated by PMA, where hh—hours mm—minutes
EXCPs (last run)	Compare operator and a 1- to 8-byte numeric input that specifies the EXCP count in the last job run
EXCPs (average)	Compare operator and a 1- to 8-byte numeric input that specifies the average EXCP count as calculated by PMA
Total SRVU (last run)	Compare operator and a 1- to 8-byte numeric input that specifies the number of all types of service units that were used in the last job run
Total SRVU (average)	Compare operator and a 1- to 8-byte numeric input that specifies the average number of all types of service units that were used as calculated by PMA
CPU SRVU (last run)	Compare operator and a 1- to 8-byte numeric input that specifies the number of CPU service units that were used in the last job run
CPU SRVU (average)	Compare operator and a 1- to 8-byte numeric input that specifies the average number of CPU service units that were used as calculated by PMA
SRB SRVU (last run)	Compare operator and a 1- to 8-byte numeric input that specifies the number of SRB service units that were used in the last job run
SRB SRVU (average)	Compare operator and a 1- to 8-byte numeric input that specifies the average number of SRB service units that were used as calculated by PMA
IO SRVU (last run)	Compare operator and a 1- to 8-byte numeric input that specifies the number of I/O service units that were used in the last job run

Field Name	Description
IO SRVU (average)	Compare operator and a 1- to 8-byte numeric input that specifies the average number of I/O service units that were used as calculated by PMA
MSO SRVU (last run)	Compare operator and a 1- to 8-byte numeric input that specifies the number of MSO service units that were used in the last job run
MSO SRVU (average)	Compare operator and a 1- to 8-byte numeric input that specifies the average number of MSO service units that were used as calculated by PMA
DASD Connect IO Time seconds (last run)	Compare operator and a decimal number nnnn.nnn (decimal point required) that specifies the DASD connect I/O time that was used in the last job run in seconds and thousandth of seconds
DASD Connect IO Time seconds (average)	Compare operator and a decimal number nnnn.nnn (decimal point required) that specifies the average DASD connect I/O time used as calculated by PMA in seconds and thousandth of seconds
DASD Disconnect IO Time seconds (last run)	Compare operator and a decimal number nnnn.nnn (decimal point required) that specifies the DASD disconnect I/O time that was used in the last job run in seconds and thousandth of seconds
DASD Disconnect IO Time seconds (average)	Compare operator and a decimal number nnnn.nnn (decimal point required) that specifies the average DASD disconnect I/O time used as calculated by PMA in seconds and thousandth of seconds
DASD Pending IO Time seconds (last run)	Compare operator and a decimal number nnnn.nnn (decimal point required) that specifies the pending DASD I/O time that was used in the last job run in seconds and thousandth of seconds
DASD Pending IO Time seconds (average)	Compare operator and a decimal number nnnn.nnn (decimal point required) that specifies the average pending DASD I/O time used as calculated by PMA in seconds and thousandth of seconds
Total SRVU/ Elapsed second (last run)	Compare operator and a 1- to 8-byte numeric input that specifies the performance index ratio of service units by the elapsed time of the last job run as calculated by PMA

Field Name	Description
Total SRVU/ Elapsed second (average)	Compare operator and a 1- to 8-byte numeric input that specifies the performance index ratio of service units by the average elapsed time as calculated by PMA
IO/Elapsed second (last run)	Compare operator and a 1- to 8-byte numeric input that specifies the performance index ratio of EXCP count by the elapsed time of the last job run as calculated by PMA
IO/Elapsed second (average)	Compare operator and a 1- to 8-byte numeric input that specifies the performance index ratio of EXCP count by the average elapsed time as calculated by PMA
Total SRVU/IO(K) (last run)	Compare operator and a 1- to 8-byte numeric input that specifies the performance index ratio of service units by the EXCP count in the last job run as calculated by PMA
Total SRVU/IO(K) (average)	Compare operator and a 1- to 8-byte numeric input that specifies the performance index ratio of service units by the EXCP count as average as calculated by PMA
CPU%/Elapsed Time (last run)	Compare operator and a decimal number nnnnn.nn (decimal point required) that specifies the performance index ratio of CPU time by the elapsed time of the last job run as calculated by PMA
CPU%/Elapsed Time (average)	Compare operator and a decimal number nnnnn.nn (decimal point required) that specifies the performance index ratio of CPU time by the average elapsed time as calculated by PMA
CPU seconds/IO(K) (last run)	Compare operator and a decimal number nnnnn.nn (decimal point required) that specifies the performance index ratio of CPU time by the EXCP count in the last job run as calculated by PMA
CPU seconds/IO(K) (average)	Compare operator and a decimal number nnnnn.nn (decimal point required) that specifies the performance index ratio of CPU time by the average EXCP count as calculated by PMA
Elapsed seconds/IO(K) (last run)	Compare operator and a decimal number nnnnn.nn (decimal point required) that specifies the performance index ratio of elapsed time by the EXCP count in the last job run as calculated by PMA

Field Name	Description
Elapsed seconds/IO(K) (average)	Compare operator and a decimal number nnnnn.nn (decimal point required) that specifies the performance index ratio of elapsed time by the EXCP count as average as calculated by PMA
System (last run)	Compare operator and an explicit or generic name that describes the system ID of the last job run (8-byte field length)
WLM Class (last run)	Compare operator and an explicit or generic name that describes the WLM class of the last job run (8-byte field length)
Service Class (last run)	Compare operator and an explicit or generic name that describes the service class of the last job run (8-byte field length)
Resource Group (last run)	Compare operator and an explicit or generic name that describes the resource group of the last job run (8-byte field length)
Job Class (last run)	Compare operator and an explicit or generic name that describes the resource group of the last job run (1-byte field length)
Performance Group (last run)	Compare operator and a 1- to 2-byte numeric input that specifies the performance group of the last job run
Input Priority (last run)	Compare operator and a 1- to 2-byte numeric input that specifies the input priority of the last job run
UserID	Use this selection field to find job steps that start with the defined user ID

Display Job Query Results

After entering your job query selection criteria on the Job Selection panel, the results are presented on the Job List panel.

```
APCBP031 -- PMA - Job List ------------------------------------ Row 1 from 13

Jobname      : *                                  State : *
Commands     : SORT J/PJ/PA/O/A/E/S/I - Job/PgmJCL/PgmA/Occu/Alert/Elp/Srvu/Imp
             : BULK ALERT - Generate USER Alerts for ALL DISPLAYED job steps
             : SU -SRVU Dtls.  IO -IO Time Dtls.  V -Variances  PX -Perform.Ixs
Line Commands: JO -Job Overview  MO -Meas. Ov.    AT -Alert Text  AO -Alert Ov.
               A  -Give Alert O -Overtake AN  -CA MAT Analysis

LC Jobname  Stepname Procstep PGM/JCL  PGM/Appl Recently  Alert    Average   Im
                                                occured   State  Elpsd  Srvu po
-------------------------------------------------------------------------------
   TSTUSR1A          RUNAJOBD APCSAMP           2011.02.05      01m25s  689K 09
   TSTUSR1B          A        ASMA90            2011.02.11      00.56s   935 00
   TSTUSR1B          APCXACAL APCXACAL          2011.02.13      01.30s  1758 01
   TSTUSR1B          STEP01   APCSAMP           2011.02.05      37m07s 8686K 18
   TSTUSR1C          A        ASMA90            2011.02.13      00.84s  2130 01
   TSTUSR1C          PGMSTART APCSAMP           2011.01.05      26m09s 6753K 16
   TSTUSR1D          RUN001   APCSAMP           2011.02.05      41m53s   10M 18
   TSTUSR1E          EXIT007  APCSAMP           2011.02.05      04m08s 1007K 11
```

The Job List panel displays the results of your job selection query. In addition to allowing you to display other familiar panels, the Job List panel has alert options that allow you to view and create alerts.

Job List Panel

You can filter the jobs by various fields. For example, to display only job steps with State = OPEN, enter the state code OPEN in the State field.

Primary Commands - Job List Panel

Primary commands can be used as follows:

SORT

Sorts data. For details about how to use the SORT command, see Sort List Panels.

BULK ALERT

Generates user alerts for all displayed job steps.

SU

Displays service units separated into CPU, MSO, IO and SRB service units.

IO

Displays DASD connect, disconnect and pending times.

V

Displays measurement variances and averages that are calculated by Performance Management Assistant.

PX

Displays the performance index average values as calculated by Performance Management Assistant.

Line Commands - Job List Panel

Line commands can be used to work with a specific job step displayed in the list.

JO

Displays the Job Overview panel.

MO

Displays the Measurement Overview panel.

AT

Displays the Total Alert Text panel.

AO

Displays the Alert Overview panel.

A

Specifies an alert. See Insert an Alert.

O

Displays the Overtake Functions panel.

You can clear, recalculate, or set the statistical values for the selected job step. See Overtake Functions for more information.

AN

Provides the interface to the CA Mainframe Application Tuner Analyze Normal function.

This function is only executable as long as the corresponding monitor data set has not been deleted. For details about the appropriate parameter settings, see the Global measurement data set processing section of the *Administration Guide*.

Column Descriptions - Job List Panel

Total

Displays the sum of service units in units, K, or M - as shown in the next four columns.

CPU

Displays the average CPU service units that were consumed by the respective job in units, K, or M.

SRB

Displays the average SRB service units that were consumed by the respective job in units, K, or M.

IO

Displays the average IO service units that were consumed by the respective job in units, K, or M.

MSO

Displays the average CPU service units that were consumed by the respective job in units, K, or M.

Generate a Bulk Alert

After entering the BULK ALERT primary command on the Job List panel, the following Bulk Alert Text panel displays.

```
APCBP302 -- PMA - Bulk Alert Text ------------------------------------------
 COMMAND ===>

 The Bulk Alert process creates a PEND USER alert for each job step that
 was listed on the previous Job List panel. If a measurement already exists
 for a job step, i.e., indicated by the most recent alert, no new alert
 will be generated.

 No. of automatically generated alerts:    5

 Bulk Alert ID:

 Enter the alert text that will be commonly used for this bulk alert.

 ____________________________________________________________________________
 ____________________________________________________________________________
 ____________________________________________________________________________

           CANCEL Process: CAN
           START  Process: END or PF3
```

A bulk alert is a user alert that has been created for an entire listing of job steps. The job step listing is created by using the Job Query Facility.

Bulk Alert Text Panel

To generate a bulk alert

1. Enter a Bulk Alert ID to represent the alerts created on behalf of your current bulk alert request in the Alert List. The ID can be up to 8 characters long.
2. In the lines provided, enter the explanation text for the bulk alert.
3. Press END to display the following Bulk Alert Confirmation window:

```
APCBP303 ------- PMA - Bulk Alert Confirmation ------------

An alert will be generated for all 1001 selected job steps.
There is no undo capability available.

Do you want to confirm this bulk alert: Y (Yes,No)
```

4. Confirm the bulk alert by entering a Y in the confirmation field. To cancel the bulk alert, enter an N in the confirmation field. Press Enter after typing Y or N.

   After confirming the bulk alert, an alert with State=PEND and Reason=USER is generated for each job step listed on the Job List panel.

   If a measurement already exists for a job step, a new alert is not generated.

Service Units Details

After entering the SU primary command on the Job List panel, the following panel displays.

```
APCBP304 -- PMA - Job List: SRVU Averages ---------------------- Row 1 from 13
COMMAND ===>                                                    SCROLL ===> PAGE
Jobname      : *                                  State : *
Commands     : SORT J/PJ/O/C/S/I/M - Job/PgmJCL/Occu/CPU/SRB/IO/MSO
             : JL - Job List main overview  PX - Switch to performance indexes
             : IO - Switch to DASD details  V  - Switch to variances
Line Commands: JO -Job Overview  MO -Meas. Ov.    AT -Alert Text  AO -Alert Ov.
               A  -Give Alert O -Overtake AN  -CA MAT Analysis

LC Jobname  Stepname Procstep PGM/JCL  Recently         SRVU Averages
                                       occurred   Total   CPU    SRB   IO   MSO
-------------------------------------------------------------------------------
   BATJOB1A          RUNAJOBD APCSAMP  2011.02.05  689K  305K     0  342K 41015
   BATJOB1B          A        ASMA90   2011.02.11   936   813    26    28    69
   BATJOB1B          APCXACAL APCXACAL 2011.02.13  1758  1428    40    88   202
   BATJOB1B          STEP01   APCSAMP  2011.01.05 8686K 7176K     0  743K  766K
   BATJOB1C          A        ASMA90   2011.02.13  2129  1871    43    42   173
   BATJOB1C          PGMSTART APCSAMP  2011.02.05 6753K 4948K     0 1144K  660K
   BATJOB1D          RUN001   APCSAMP  2011.02.05   10M 7499K     0 2323K  806K
   BATJOB1E          EXIT007  APCSAMP  2011.02.05 1007K  511K     0  420K 75872
```

Primary Commands

Primary commands can be used as follows:

SORT

Sorts data. For details about how to use the SORT command, see sort List Panels.

JL

Returns to the Job List panel.

IO

Displays DASD connect, disconnect and pending times.

V

Displays measurement variances and averages that are calculated by Performance Management Assistant.

PX

Displays the performance index average values as calculated by Performance Management Assistant.

Column Descriptions - Job List Panel

Total

Displays the sum of service units in units, K, or M - as shown in the next four columns.

CPU

Displays the average CPU service units that were consumed by the respective job in units, K, or M.

SRB

Displays the average SRB service units that were consumed by the respective job in units, K, or M.

IO

Displays the average IO service units that were consumed by the respective job in units, K, or M.

MSO

Displays the average CPU service units that were consumed by the respective job in units, K, or M.

IO Time Averages

After entering the IO primary command on the Job List panel, the following panel displays:

```
APCBP305 ------ PMA - Job List: DASD IO Time Averages --------- Row 1 from 339
COMMAND ===>                                                  SCROLL ===> CSR

Jobname      : *                                  State : *
Commands     : SORT J/PJ/O/C/D/P - Job/PgmJCL/Occur/Connect/Disconnect/Pending
             : JL - Job List main overview  PX - Switch to performance indexes
             : SU - Switch to SRVU details  V  - Switch to variances
Line Commands: JO -Job Overview  MO -Meas. Ov.    AT -Alert Text  AO -Alert Ov.
               A  -Give Alert O -Overtake AN  -CA MAT Analysis

LC Jobname  Stepname Procstep PGM/JCL  Recently    IO Time Averages (millisecs)
                                       occured     Connect  Disconn. Pending
-------------------------------------------------------------------------------
   TC065C01          DOWNLOAD IKJEFT01 2011.01.25     3735     6284     1405
   TEXPED            DDIO010  XPSTAT01 2011.01.25    33052      113    10471
   TC065CI2          UPLOAD   IKJEFT01 2011.01.25     1120     2432      409
   TGS9E7   BACA     CGS9E7   CGS9E7   2011.01.25     2002      345      665
   T6I4SCM3          PLIPREP  IEL0AA   2011.01.25      792      452      304
   T023560           LINKEDIT IEWBLINK 2011.01.25     1040     1319      632
   T023560           PLICOMP  IEL0AA   2011.01.25      545      492      244
   T4JUSCM           PLIPREP  IEL0AA   2011.01.25      612      237      240
   TBFUCOMP          PLIPREP  IEL0AA   2011.01.25      550      183      243
   T562157           LINKEDIT IEWBLINK 2011.01.25      861      284      304
   T970112Z SCMSCAN  SCMBT01  SCMBT01  2011.01.25      652     1729      254
```

Primary Commands

Primary commands can be used as follows:

SORT

Sorts data. For details about how to use the SORT command, see sort List Panels.

JL

Returns to the Job List panel.

SU

Displays service units separated into CPU, MSO, IO and SRB service units.

V

Displays measurement variances and averages that are calculated by Performance Management Assistant.

PX

Displays the performance index average values as calculated by Performance Management Assistant.

Column Descriptions

Jobname/Stepname/Procstep/PGM/JCL/PGM/Appl

Displays the results based on your selection criteria for these fields as in the calling panel APCBP031.

Connect

Displays the average DASD connect time in milliseconds consumed by the respective job.

Disconn.

Displays the average DASD disconnect time in milliseconds consumed by the respective job.

Pending

Displays the average DASD pending time in milliseconds consumed by the respective job.

Variances and Averages

After entering the V primary command on the Job List panel, the following panel displays.

```
APCBP306 ------ PMA - Job List: Variances and Averages -------- Row 1 from 339
COMMAND ===>                                                  SCROLL ===> CSR

Jobname      : *                                  State : *
Commands     : SORT J/PJ/O/EL/C/EX/S - Job/PgmJCL/Occu/Elp/Cpu/Excp/Srvu
             : JL - Job List main overview  PX - Switch to performance indexes
             : SU - Switch to SRVU details  IO - Switch to DASD details
Line Commands: JO -Job Overview  MO -Meas. Ov.    AT -Alert Text  AO -Alert Ov.
               A  -Give Alert O -Overtake AN  -CA MAT Analysis

                                      ELAP      CPUT      EXCP      SRVU
LC Jobname  PGM/JCL  Recently   <---         1. Averages           --->
                     occurred   <---         2. Variances          --->
------------------------------------------------------------------------------
   TC065C01 IKJEFT01 2011.01.25        0        20         2       556
                                       2        33         2     24793
   TEXPED   XPSTAT01 2011.01.25        0         0        35       183
                                       1         1       435     12498
   TC065CI2 IKJEFT01 2011.01.25        0         3         0        90
                                       1         4         1      2082
   TGS9E7   CGS9E7   2011.01.25        0         0         8        61
                                       2         2         4        30
   T6I4SCM3 IEL0AA   2011.01.25        0         0         1        13
                                       2         2         2         6
```

Primary Commands

Primary commands can be used as follows:

SORT

Sorts data. For details about how to use the SORT command, see Sort List Panels.

JL

Return to the Job List panel.

SU

Display service units separated into CPU, MSO, IO and SRB service units.

IO

Display DASD connect, disconnect and pending times.

PX

Displays performance index average values as calculated by Performance Management Assistant.

Column Descriptions

Jobname/PGM/JCL/

Recently occurred. Displays the results based on your selection criteria for these fields as in the calling panel APCBP031

ELAP

Displays the averages (first row) and variances (second row) of elapsed times calculated for the respective job.

CPUT

Displays the averages (first row) and variances (second row) of CPU times calculated for the respective job.

EXCP

Displays the averages (first row) and variances (second row) of EXCPs calculated for the respective job.

SRVU

Displays the averages (first row) and variances (second row) of total service units calculated for the respective job.

Performance Index Averages

After entering the PX primary command on the Job List panel, the following panel displays:

```
APCBP307 ------ PMA - Job List: Performance Index Averages ---- Row 1 from 339
COMMAND ===>                                                  SCROLL ===> CSR

Jobname      : *                                  State : *
Commands     : SORT J/PJ/O/C/I/S/c/e/s - Job/PGM/Occ/CpE/IoE/SuE/CpI/ElI/SuI
             : JL - Job List main overview  IO - Switch to DASD details
             : SU - Switch to SRVU details  V  - Switch to variances
Line Commands: JO -Job Overview  MO -Meas. Ov.    AT -Alert Text  AO -Alert Ov.
               A  -Give Alert O -Overtake AN  -CA MAT Analysis

LC Jobname  Stepname Procstep PGM/JCL  Recently  CP/EL      IO/EL    SU/EL
                                       occured    CP/IO      EL/IO    SU/IO
-------------------------------------------------------------------------------
    QX13929  S1       P1       PGM1     2011.01.04     0.01        0       26
                                                      599.49 13622.20    29558
    QX19913  S2       P2       PGM2     2011.01.21     0.03        0       56
                                                      615.39 58523.36    44450
    QX010375 S3       P3       PGM3     2011.01.31    51.39      794    40586
                                                      210.63   275.35    22031
    JRYJ1V2M S4       P4       PGM4     2011.01.05     0.00        0       44
                                                        0.10     0.48     2144
    SGMRVA#G S5       P5       PGM5     2011.01.23     1.62     7025     5283
                                                        0.07     3.63       22
```

Primary Commands

Primary commands can be used as follows:

SORT

Sorts data. For details about how to use the SORT command, see Sort List Panels.

JL

Returns to the Job List panel.

SU

Displays service units separated into CPU, MSO, IO and SRB service units.

IO

Displays DASD connect, disconnect and pending times.

V

Displays measurement variances and averages as calculated by Performance Management Assistant.

Column Descriptions

Jobname/PGM/JCL/Recently occurred

Displays the results based on your selection criteria for these fields as in the calling panel APCBP031.

CPEL/CPIO

Displays the performance index averages for CPU time percentage of elapsed time:

- With two decimal places (first row) and for CPU time seconds per thousand EXCPs
- With two decimal places (second row) for the respective job

IOEL/ELIO

Displays the performance index averages for EXCPs per elapsed time minute (first row) and for elapsed time seconds per thousand EXCPs - with two decimal places - (second row) for the respective job.

SUEL/SUIO

Displays performance index averages for service units per elapsed time seconds (first row) and for service units per 1 EXCP (second row) for the respective job.

Job Overview

To display the Job Overview panel, use line command JO to select a specific alert on the Alert List panel, the Alert Overview panel, the Profile List panel, or the Job List panel.

```
APCBP301 - PMA - Job Overview ------------------------------- Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> PAGE
Commands:      SU/IO/JE/PX/O - SRVU/IO Time/Job Exec/PerfIX Dtls/Overtake
Line Commands: MO/JI/O - Measurement Overview/Job Info/Overtake
Jobname  Stepname Procstep PGM/JCL  PGM/Appl
TSTUSR1H RUNSAMP  APCSAMP

Valid Average    Stat.   Im    CCODE     A V E R A G E   V A L U E S     Alert
 Calculations   Alerts   po Exceptns >-------------------------------< State
           1        0   22        0 03:43:01.16 00:32:20.37  414K   49M
-- ---------- -------- ---- -------- ----------- ----------- ----- ----- -----
   Date       Time     COND              Elapsed         CPU             Alert
LC yyyy.mm.dd hh:mm:ss CODE System   hh:mm:ss.hh hh:mm:ss.hh  EXCP  SRVU by
-- ---------- -------- ---- -------- ----------- ----------- ----- ----- -----
   2011.01.01 04:40:37 0000 ADCD     00:00:52.25 00:00:21.49 1546K  254K
   2011.01.01 04:39:36 0000 ADCD     00:01:00.56 00:00:27.49 1830K  311K
   2011.01.01 04:38:45 0000 ADCD     00:00:51.02 00:00:25.85 1843K  304K
   2011.01.01 04:37:32 0000 ADCD     00:01:13.06 00:00:36.17 2480K  416K
   2011.01.01 04:36:02 0000 ADCD     00:01:29.78 00:00:42.29 2914K  488K
   2011.01.01 04:33:33 0000 ADCD     00:02:28.65 00:00:57.90 4327K  702K
   2011.01.01 04:31:31 0000 ADCD     00:02:01.85 00:00:40.22 3106K  495K
   2011.01.01 04:29:28 0000 ADCD     00:02:03.51 00:00:42.94 2990K  499K
****************************** Bottom of data ********************************
```

The Job Overview panel displays the statistical values that were gathered and calculated plus detailed information about the last 10 job step executions. The information on this panel is divided into two parts:

1. In the approximate middle of the panel, the statistics are displayed. See the following Statistics field descriptions for a detailed explanation of each statistic.
2. In the lower half of the panel, the detailed information of the 10 most recent executions of the job step displays. See the following Column descriptions for a detailed explanation of each column.

Line commands can be used as follows:

MO

Displays the Measurement Overview panel.

JI

Displays the Job Execution Information panel, which shows the execution consumption information for the selected job step.

O

Displays the Overtake Functions panel.

You can clear, recalculate, or set the statistical values for the selected job step. You can also calculate statistical values based on the most recent entries. For more information, see Overtake Functions.

Primary commands can be used as follows:

SU

Displays service units separated into CPU, MSO, IO, and SRB service units.

IO

Displays DASD connect, disconnect, and pending times.

JE

Displays additional job execution information.

PX

Displays performance indexes for these job step execution measurements.

O

Displays the Overtake Functions panel. You can clear, recalculate, or set the statistical values for the job step. For more information, see Overtake Functions.

Statistics Field Descriptions

Valid average calculations

Displays the number of job step executions that were used for the average value calculation in Performance Management Assistant.

Statistical Alerts

Displays the number of alerts for this job step.

Condition code exceptions

Displays the number of job step executions with a condition code greater than 4.

For more information, see the *Administration Guide*.

AVERAGE VALUES Elapsed

Displays the -calculated average elapsed time in minutes.

AVERAGE VALUES CPU

Displays the Performance Management Assistant-calculated average CPU time.

AVERAGE VALUES EXCP

Displays the Performance Management Assistant-calculated average number of EXCPs expressed in units, K, or M.

AVERAGE VALUES SRVU

Displays the Performance Management Assistant-calculated average number of service units in units, K, or M.

Alert State

Displays whether an alert was issued for the specified job step.

Date/Time

Displays the date and time the job step execution was started.

COND CODE

Displays the condition code of the terminated job step.

System

Displays the name of the MVS system on which the job step was executed.

Elapsed

Displays the amount of consumed elapsed time in minutes.

CPU

Displays the amount of consumed CPU time in minutes.

EXCP

Displays the amount of EXCPs in units, K, or M.

SRVU

Displays the number of consumed service units in units, K, or M.

Alert by

Displays the kind of alert, either ELPS, SRVU, or OVRTAKE.

After entering primary command SU on the Job Overview panel, additional information displays about the service units that were consumed by the respective job executions.

```
APCBP311 -- PMA - Job Overview: SRVU Details ---------------- Row 1 to 9 of 9
COMMAND ===>                                                  SCROLL ===> PAGE
Commands:      JO - Job Overview                                 Checkpoint
Line Commands: MO - Measurement Overview                        Freq.     No.
Jobname  Stepname Procstep PGM/JCL  PGM/Appl                         0       0
TSTUSR1H          RUNSAMP  APCSAMP
Valid average             Average values
calculations              Total       CPU         SRB         IO        MSO
          9                447K      160K           0       271K      14991
-------------------------------------------------------------------------------
LC Date       Time      SRVU Total  SRVU CPU    SRVU SRB    SRVU IO   SRVU MSO
   yyyy.mm.dd hh:mm:ss
-------------------------------------------------------------------------------
   2011.01.01 04:40:37     254K     91128          0        154K       8835
   2011.01.01 04:39:36     311K      116K          0        183K      11318
   2011.01.01 04:38:45     304K      109K          0        184K      10640
   2011.01.01 04:37:32     416K      153K          0        248K      14966
   2011.01.01 04:36:02     488K      179K          0        291K      17327
   2011.01.01 04:33:33     702K      245K          0        433K      23819
   2011.01.01 04:31:31     495K      170K          0        310K      14048
   2011.01.01 04:29:28     499K      182K          0        299K      17826
   2011.01.01 04:27:14     550K      198K          0        336K      16139
```

The Job Overview SRVU Details panel displays the statistical values that were gathered and calculated plus detailed information about the last 10 job step executions for the different types of service units. The corresponding values are displayed as sampled by the last 10 job runs and as averages (in the first half of the panel). The number of measurements on which the average calculation is based displays in the Valid average calculations field.

Use this panel to do the following:

Use line command MO to display the Measurement Overview panel.

Use primary command JO or press END to return to the Job Overview panel.

Valid average calculations

Displays the number of job step executions that were used for the average value calculation in Performance Management Assistant.

Average values

Displays the average values shown in the first half of the panel that correspond to the columns described below.

However, the amount of measurements used as a basis for this average calculation might differ or exceed the measurements shown below. The number of executions used for the average calculation displays in the Valid average calculations field.

Date/Time

Displays the date and time the job step execution was started.

SRVU Total

Displays the sum of service units in units, K, or M - as shown in the next four columns.

CPU

Displays the CPU service unit.

Task (TCB) execution time is multiplied by an SRM constant, which is CPU model dependent. Included in the execution time is the time used by the address space while executing in cross-memory mode. The value is shown in units, K, or M.

SRB

Displays the SRB service units.

Service request block (SRB) execution time for both local and global SRBs is multiplied by an SRM constant, which is CPU model dependent. The value is shown in units, K, or M

IO

Displays the IO service units.

This value is a measurement of individual data set I/O activity and JES spool reads and writes for all data sets associated with the address space. The value is shown in units, K, or M.

MSO

Displays the MSO service units.

This value shows main storage occupancy service units. The value is shown in units, K, or M.

After entering primary command IO on the Job Overview panel, additional information about the DASD connect, disconnect, and pending time used by the respective job runs displays.

```
APCBP312 ------ PMA - DASD Details ------------------------ Row 1 to 10 of 10
COMMAND ===>                                                  SCROLL ===> CSR
Commands:      JO - Job Overview
Line Commands: MO - Measurement Overview
Jobname  Stepname Procstep PGM/JCL  PGM/Appl
Q023410N          QISTP01  P4SLA23
Valid average                  Average times
calculations                   Total    Connect   Disconn.       Wait
         21                    46234      28306       7915      10013
-------------------------------------------------------------------------------
LC Date       Time               Sum    Connect Disconnect    Waiting
   yyyy.mm.dd hh:mm         <------------ milli seconds ------------>
-------------------------------------------------------------------------------
   2011.01.11 01:12           117903      28324      78619      10960
   2011.01.11 00:49            44180      28298       4653      11229
   2011.01.11 00:43            58065      28288      18374      11403
   2011.01.11 00:36            42137      28296       3759      10082
   2011.01.11 00:29            41790      28299       3417      10074
   2011.01.11 00:21            42038      28299       3446      10293
   2011.01.11 00:14            42538      28294       4183      10061
   2011.01.11 00:06            42379      28303       4098       9978
   2011.01.10 23:55            43800      28324       4692      10784
   2011.01.10 23:29            42139      28313       3740      10086
****************************** Bottom of data ********************************
```

The Job Overview DASD Details panel displays the statistical values that were gathered and calculated as well as detailed information about the last 10 job step executions for the DASD IO times. The corresponding values are displayed as sampled by the last 10 job runs and as averages (in the first half of the panel). The number of measurements on which the average calculation is based displays in the Valid average calculations field.

Job Overview DASD Details Panel

Use this panel to do the following:

Use line command MO to display the Measurement Overview panel.

Use primary command JO or press END to return to the Job Overview panel.

Valid average calculations

Displays the number of job step executions that were used for the average value calculation in Performance Management Assistant.

Average times

Displays the average times shown in the first half of the panel that correspond to the columns described below.

However, the amount of measurements used as a basis for this average calculation might differ or exceed the measurements shown below. The number of executions used for the average calculation displays in the previous Valid average calculations field.

Column Descriptions

Date/Time

Displays the date and time the job step execution was started .

Sum

Sum of the DASD IO times in milliseconds as shown in the next four columns

Connect

DASD connect time of this job step execution in milliseconds.

Disconnect

DASD disconnect time of this job step execution in milliseconds.

Waiting

DASD pending time of this job step execution in milliseconds.

Job Overview - Additional Execution Information

After entering primary command JE on the Job Overview panel, additional information about the job execution for the respective job executions displays.

```
APCBP313 ------ PMA - Job Overview: Execution Information -- Row 1 to 10 of 10
COMMAND ===>                                                  SCROLL ===> CSR
Commands:      JO - Job Overview
Line Commands: MO - Measurement Overview

Jobname  Stepname Procstep PGM/JCL  PGM/Appl
QT00728F          QISTP01  P4SL523
-------------------------------------------------------------------------------
LC Date       Time    Workload   Service    Resource   System   Job Prf Input
   yyyy.mm.dd hh:mm   Manager    Class      Group      Name     Cls Grp Prio
-------------------------------------------------------------------------------
   2011.01.10 23:50   BATCH      BATCHLOW               OPRD       N   0   7
   2011.01.10 23:46   BATCH      BATCHLOW               OPRD       N   0   7
   2011.01.10 23:44   BATCH      BATCHLOW               OPRD       N   0   7
   2011.01.10 23:38   BATCH      BATCHLOW               OPRD       N   0   7
   2011.01.10 23:33   BATCH      BATCHLOW               OPRD       N   0   7
   2011.01.10 23:28   BATCH      BATCHLOW               OPRD       N   0   7
   2011.01.10 23:25   BATCH      BATCHLOW               OPRD       N   0   7
   2011.01.10 23:21   BATCH      BATCHLOW               OPRD       N   0   7
   2011.01.10 23:17   BATCH      BATCHLOW               OPRD       N   0   7
   2011.01.10 23:13   BATCH      BATCHLOW               OPRD       N   0   7
****************************** Bottom of data ********************************
```

The Job Overview Execution Information panel displays additional job execution information as gathered by Performance Management Assistant from the SMF records for the single job runs.

Job Overview Execution Information Panel

Use this panel to do the following:

- Use line command MO to display the Measurement Overview panel.
- Use primary command JO or press END to return to the Job Overview panel.

Date/Time

Displays the date and time the job step execution was started.

Workload Manager

Displays the workload manager name as recorded in the SMF field SMF30WLM.

Service Class

Displays the service class name as recorded in the SMF field SMF30SCN.

Resource Group

Displays the resource group name as recorded in the SMF field SMF30GRN.

System Name

Displays the system name corresponding to the SYSNAME parameter in the IEASYS PARMLIB member.

Job Cls

Displays the job class in which the corresponding job was executed.

Prf Grp

Displays the performance Group Number.

Input Prio

Displays the JES input priority.

If no value is specified for the PRTY parameter in the JOB card, this field contains one of the following values:

- For JES3, the default priority that is specified on the JES3 STANDARDS initialization card
- For JES2, a zero

After entering primary command PX on the Job Overview panel, additional information displays about the service units that were consumed by the respective job executions.

```
APCBP314 ------ PMA - Job Overview: Performance Ratios ------- Row 1 to 9 of 9
COMMAND ===>                                                   SCROLL ===> CSR
Commands:      JO - Job Overview
Line Commands: MO - Measurement Overview
Jobname  Stepname Procstep PGM/JCL  PGM/Appl
TCO65CO1          DOWNLOAD IKJEFT01
-------------------------------------------------------------------------------
LC Date       Time   CPU/Elap SRV/Elap  IO/Elap   CPU/IO   SRV/IO  Elap/IO
   yyyy.mm.dd hh:mm
-------------------------------------------------------------------------------
   2011.06.30 19:37      0.33        0        0     6.21   177000     0.21
   2011.06.30 19:08     29.02   818000     5000     5.06   163600    12.08
   2011.06.30 17:54      0.22        0        0    13.85   367000     0.34
   2011.06.30 17:30      0.17        0        0     9.52   241500     0.12
   2011.06.30 17:26     28.38   772000     2000    14.08   386000    30.66
   2011.06.30 17:00      0.75        0        0     9.77   242000     0.15
   2011.06.30 16:19      0.42        0        0     9.88   248500     0.20
   2011.06.30 14:27      0.34        0        0     9.81   244000     0.18
   2011.06.30 13:51      0.44        0        0    14.06   374000     0.55
****************************** Bottom of data ********************************
```

The Job Overview Performance Ratios panel displays the performance indexes for each job execution of the selected job step. There are 6 types of performance indexes or performance ratios:

- CPU time % of elapsed time(sec)
- SRVUs per elapsed time(sec)
- EXCPs per elapsed time(min)
- CPU time(sec) per 1000 EXCPs
- SRVUs per EXCP
- Elapsed time(sec) per 1000 EXCPs

These values are displayed in the columns of this job overview table.

Use this panel to do the following:

- Use line command MO to display the Measurement Overview panel for a specific timestamp.
- Use primary commands JO or the END key to return to the Job Overview panel.

Jobname/Stepname/Procstep/PGM/JCL/PGMAppl

Identifies the selected job step.

Date/Time:

Displays the date and time the job step execution was started.

CPU/Elap:

Displays the CPU time seconds percentage of elapsed time seconds (with two decimal places), based on the consumption values for this job step execution as provided by SMF.

SRV/Elap:

Displays the ratio of service units per elapsed time seconds, based on the consumption values for this job step execution as provided by SMF.

IO/Elap:

Displays the ratio of EXCPs per elapsed time minute, based on the consumption values for this job step execution as provided by SMF.

CPU/IO:

Displays the ratio of CPU time seconds per thousand EXCPs (with two decimal places), based on the consumption values for this job step execution as provided by SMF.

SRV/IO:

Displays the ratio of service units per 1 EXCP, based on the consumption values for this job step execution as provided by SMF.

Elap/IO:

Displays the ratio of elapsed time seconds per thousand EXCPs (with two decimal places), based on the consumption values for this job step execution as provided by SMF.

Enter line command JI on the Job Overview panel to see the execution consumption information for the selected job step.

```
APCBPJEI -- PMA - Job Execution Information ----------------------------------
COMMAND ===>

Jobname  Stepname Procstep PGM/JCL  PGM/Appl COND Date       Time
TESTLD5  CHKATEST          IKJEFT1A          0000 2011.01.02 05:34:55.63

Elapsed Time.............: 00:00:02.00     EXCP Total:           257

CPU Time Total...........: 00:00:00.17     SRVU Total:         5.106
CPU Time under TCB.......: 00:00:00.17          CPU..:         4.218
CPU Time under SRB.......: 00:00:00.00          SRB..:            61
INIT CPU Time under TCB..: 00:00:00.02          IO...:           122
INIT CPU Time under SRB..: 00:00:00.00          MSO..:           705
CPU Time spent on zAAP...: 00:00:00.00
zAAP CPU Time spent on CP: 00:00:00.00     System............: SYS1
CPU Time spent on zIIP...: 00:00:00.00     Job Class.........: A
zIIP CPU Time spent on CP: 00:00:00.00     Performance Group.: 0
                                           Job Input Priority: 0
DASD Connect Time........: 00:00:00.2150   Workload Name.....: TSOTST
DASD Disconnect Time.....: 00:00:00.1130   Service Class.....:
DASD Pending Time........: 00:00:00.0670   Resource Group....: TSOBAT
DASD Queue Time .........: 00:00:00.0270   Reporting Class...: TSO
```

Jobname

Name of the job

Stepname

Name of the step

Procstep

Name of the step that invoked the procedure

PGM/JCL

Program name from the executed JCL

PGM/Appl

Program name of the application

COND

Condition code of the terminated job step

Date

Date the job step execution was started

Time

Time the job step execution was started

Elapsed Time

Job step elapsed time in HH:MM:SS.ss format

CPU Time

Consumed CPU time in HH:MM:SS.ss format

STEP CPU Time under TCB

CPU time under TCB for this job step

STEP CPU Time under SRB

CPU time under SRB for this job step

INIT CPU Time under TCB

Initiator CPU time under TCB for this job step

INIT CPU Time under SRB

Initiator CPU time under SRB for this job step

CPU Time spent on zAAP

CPU time that this job step consumed on a zAAP processor

zAAP CPU Time spent on CP

zAAP CPU time that was spent on a regular CP

CPU Time spent on zIIP

CPU time that this job step consumed on a zIIP processor

zIIP CPU Time spent on CP

zIIP CPU time that was spent on a regular CP

DASD Connect Time

DASD I/O connect time for this job step

DASD Disconnect Time

DASD I/O disconnect time for this job step

DASD Pending Time

DASD I/O pending time for this job step

DASD Queue Time

DASD I/O start subchannel time for this job step

EXCP Total

Total EXCP count for this job step

SRVU Total

Total service units

CPU

CPU service units

SRB

SRB service units

IO

I/O service units

MSO

MSO service units

System

System/LPAR name

Job Class

Job class

Performance Group

Job performance group number

Job Input Priority

JES input priority

Workload Name

Workload name

Service Class

Service class name

Resource Group

Resource group name

Reporting Class

Reporting class name

Data Mining

Data mining allows you to easily and quickly pinpoint high consuming objects for performance tuning. These objects include application programs, system programs, DB2 plans, and subsystems. With data mining, you can search and cross reference stored measurement information by using a data mining scope, which is your user-defined selection criteria for job steps. The most current measurement information of a job step matching the scope is accumulated and made available for cross referencing. For example, based on annual CPU consumption, you can spot the top consuming application programs within your scope and then use a simple cross reference command to list all job steps that are using those applications.

The results of two important calculations are presented for all tuning objects:

- **Annual Frequency -** Statistical information about job steps is collected from SMF and the Server. For all tuning objects, Performance Management Assistant uses this historical statistical information to calculate the Annual Frequency. For example, assume Data Mining has determined that a certain application program is used in 12 different job steps. The Annual Frequency in the application program is computed as the average number of annual executions of these 12 job steps. If a job step was not observed for a whole year, an approximate value is calculated. In any case, the Annual Frequency does not represent the number of calls (for example, to an application program). Instead, the Annual Frequency is based on the number of related job step executions.
- **Annual CPU Consumption -** For all tuning objects, Performance Management Assistant calculates the annual CPU consumption. For example, assume Data Mining finds a specific application program in 12 different measurements, that is, job steps. The CPU consumption from each of the 12 measurements is multiplied by the annual frequency of the related job step. The 12 individual calculations are added together to provide the Annual CPU consumption of the specific application program.

The calculation of the Annual CPU consumption is based on the measurements. Therefore, the results are influenced by:

- The number of measurements available in Performance Management Assistant and how much of the TOP Scope is covered by the measurements
- The age of the measurements
- The Data Mining Scope definitions
- Changes in hardware or software releases
- Heterogeneous MVS systems in a sysplex

Performance Management Assistant should process for three months prior to using the data mining feature. This period allows time for Performance Management Assistant to gather statistical information from SMF and the Server, which is used for execution frequency calculations and summations.

Define the Data Mining Scope

To access the Data Mining Selection panel, select option 4 on the Central Component Menu.

```
APCBP005 - PMA - Data Mining Scope ------------------------------------------


Define the Data Mining Scope.

Only the most recent measurement of each job step stored in PMA is used
for the Data Mining process.
Any combination of selection criteria can be defined.

Enter an option ===>
                    1 Measurements of all job steps
                    2 Measurements of all 10000 job steps of the TOP Scope
                    3 Measurements of the first 100 job steps in alpha order

Additional criteria to define the Data Mining Scope, combined with logical AND.

Jobname : ________ From Date: 2011 01 01  Calc. Method: AVG   Importance: 00
PGM Name: ________ Base Date: 2011 06 20  Annual Freq.: Y

  Job/PGM Name: _ is used as wild card
From/Base Date: Date in format YYYY MM DD
  Calc. Method: AVG/LAST/MEAS
  Annual Freq.: Y/N
```

The Data Mining Selection panel allows you to define the data mining scope. Defining the scope consists of entering the type of measurements to be considered and optionally defining additional search criteria to limit the measurements to specific job names, program names, dates, or importance.

Data Mining Selection Panel

Use this panel to do the following:

1. In the OPTION field, select the Data Mining Scope by entering one of the following option numbers:

   a. Select measurements of all job steps stored in Performance Management Assistant.

   b. Select measurements of only the job steps that belong to the TOP Scope. For details about the TOP Scope, see Use the TOP scope Facility.

   c. Select measurements of the first *nnn* job steps in alphabetical order where *nnn* is a value between 1 and 999.

2. To optionally filter the data that is mined, enter specific search criteria as follows:

   Jobname

   The job name of relevant job steps using underscore as a wildcard placeholder.

   PGM Name

   The name of relevant programs using underscore as a wildcard placeholder.

   From Date

   The oldest creation date of relevant measurements.

   Importance

   The lower limit of job importance (see job file).

   Base Date

   Defines a different end date to weight the current frequency counter for the estimated annual frequency calculation (optional).

   To calculate the annual frequency, the current frequency is set in relation to the dates of the first job step execution that Performance Management Assistant received data from and the base date.

   The difference between the two dates and the current job step executions in that time frame is the base for the estimate of the annual forecast calculation.

   The default is the actual date.

   Note: This date is not considered if Annual Freq. = N is used.

   Annual Freq.

   Controls whether the job step frequency (and therefore the CPU time consumption) is calculated as an annual forecast or if the frequency is taken as it is and the CPU time consumption is calculated based on this current frequency.

   Y = Frequency and CPU time are calculated as an annual forecast.

   N = Frequency and CPU time are calculated based on the current job step frequency.

   The restriction criteria are combined with logical AND

3. The following calculation methods are available for the calculation of annual CPU time:

   AVG

   The base is the average CPU time of the job step.

   LAST

   The base is the CPU time of the last (most recent) job step execution.

   MEAS

   The base is the CPU time of the measured job step.

   If the MEAS method is selected and the measurement does not fit any entry in the job history list, the annual CPU time is calculated as follows:

$$\text{Annual CPU time} = \frac{\text{measurement CPU time} * \text{measurement elapsed time} * \text{frequency}}{\text{job step average elapsed time}}$$

4. Press Enter to perform the search. The Data Mining Menu displays. If the mining process requires more than 5 seconds, in progress updates are displayed until it is completed.

5. If the message 4000 rows exceeded displays, you should perform step 2 (again) to limit the search.

Data Mining Menu

After the data mining process is completed, the following Data Mining Menu displays.

```
APCBP051 - PMA --- Data Mining Menu ----------------------------------------

Enter an Option ===>
                    1 Application Program Info       6
                    2 System Program Info           16
                    3 SubSystem Info                26
                    4 DB2 Plan Info                 22
                    5 Job Step Info                  3
================================================================================

Selected CPU Calculation method:  AVG    (AVG, LAST or MEAS possible)

Selected Data Mining Scope

=====>  - Measurements of all job steps
        - Measurements of all  3000 job steps of the TOP Scope
        - Measurements of the first 100 job steps in alphabetic order

Jobname           PGM Name            From Date          Job
                                      occurred           Importance
--------------------------------------------------------------------------------
APAC____          ________            2011 01 01         10

  _ is used as wild card              YYYY MM DD         Lower limit
```

On the top half of the panel is a menu of five results tables in which all entries matching your Data Mining Scope are stored. For each table, the total number of entries is listed. The job step information pertaining to the first four tables can be cross referenced to the related job steps. Otherwise, all job steps can simply be listed by selecting the fifth table.

On the bottom half of the panel, the selected Data Mining Scope is indicated with an arrow and the search criteria are displayed.

Data Mining Scope Panel

Use this panel to do the following:

1. In the Enter an Option field, type the results table number to be displayed.
2. Press Enter to display a panel on which the corresponding data mining results are listed.

Data Mining Application Programs

To list all application programs found within the Data Mining Scope, enter option **1** on the Data Mining Menu.

```
APCBP501 - PMA - Data Mining   Application Programs -----       Row 1 from 244
COMMAND ===>                                                  SCROLL ===> PAGE

Appl PGM.....: *                            CPU calculation method: LAST
Commands.....: SORT N/C/F/J   - Name / Cpu / Frequency / No. Job steps
Line Commands: XJ -Xref Job step      SS -Significant Statements
                  Annual CPU         Annual        No. of
LC Appl PGM          h:mm:ss      Frequency     Job Steps
------------------------------------------------------------------------------
   TS444            15:25:56             52            10
   TX392             6:37:33          1,875            38
   TX720B            3:54:56             52            10
```

All application programs belonging to the most current measurements of job steps within the Data Mining Scope are listed. Use the panel to spot programs with high annual CPU consumption and cross reference those programs to the job steps that use them.

Line Commands

Use line commands to work with a specific application program.

XJ

Cross references the job steps by using a specific application program.

The job steps are displayed on a subsequent panel in which other familiar options are available. See Cross Referencing the Job Steps (see page 100).

SS

Displays the top 5 most significant statements belonging to an application program. See Display the Significant Statements (see page 102).

Column Descriptions

Appl PGM

Displays the name of the application program found on the stored measurement.

Annual CPU

Displays a summation of the estimated annual CPU consumption in minutes of the application program used by job steps within the Data Mining Scope.

For more information about this calculation, see Service Units Details.

Annual Frequency

Displays a summation of the annual number of executions of the job steps within the Data Mining Scope that are calling the application program.

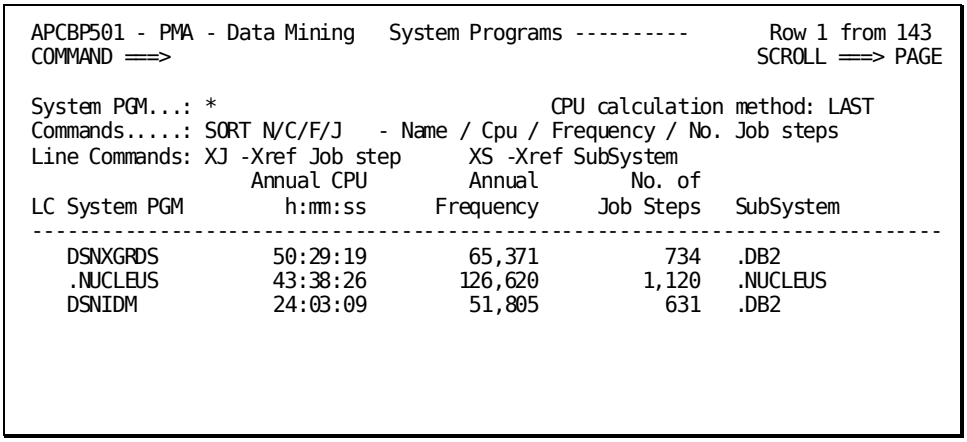
For more information about this calculation, see Service Units Details.

No. of Job Steps

Displays the number of job steps within the Data Mining Scope that call the application program.

Data Mining System Programs

To list all system programs found within the Data Mining Scope, type option **2** on the Data Mining Menu.



```
APCBP501 - PMA - Data Mining   System Programs ----------       Row 1 from 143
COMMAND ===>                                                  SCROLL ===> PAGE

System PGM...: *                              CPU calculation method: LAST
Commands.....: SORT N/C/F/J   - Name / Cpu / Frequency / No. Job steps
Line Commands: XJ -Xref Job step      XS -Xref SubSystem
                    Annual CPU         Annual        No. of
LC System PGM          h:mm:ss      Frequency     Job Steps   SubSystem
------------------------------------------------------------------------------
   DSNXGRDS          50:29:19         65,371           734   .DB2
   .NUCLEUS          43:38:26        126,620         1,120   .NUCLEUS
   DSNIDM            24:03:09         51,805           631   .DB2
```

All system programs belonging to the most current measurements of job steps within the Data Mining Scope are listed. Use the panel to spot programs with high annual CPU consumption and cross reference those programs to the job steps that call them or the subsystem under which they run.

Line Commands

Use line commands to work with a specific application program.

XJ

Cross references the job steps by using a specific system program.

The job steps are displayed on a subsequent panel in which other familiar options are available. See Cross Referencing the Job Steps.

XS

Cross references the subsystem under which a specific system program is executed.

The subsystem information displays on a subsequent panel. See Cross Referencing the Subsystem.

Column Descriptions

System PGM

Displays the name of the system program found on the stored measurement.

Annual CPU

Displays a summation of the estimated annual CPU consumption in minutes of the system program used by job steps within the Data Mining Scope.

For more information about this calculation, see Service Units Details (see page 69).

Annual Frequency

Displays a summation of the annual number of executions of the job steps within the Data Mining Scope that are calling the system program.

For more information about this calculation, see Service Units Details (see page 69).

No. of Job Steps

Displays the number of job steps with the Data Mining Scope that call the system program.

SubSystem

Displays the subsystem name to which the system program belongs.

If the column contains the value of MORE, use line command XS to display all subsystems have used the selected system program.

Data Mining Subsystems

To list all subsystems found within the Data Mining Scope, enter option **3** on the Data Mining Menu.

```
APCBP501 - PMA - Data Mining   SubSystems ---------------       Row 1 from 192
COMMAND ===>                                                  SCROLL ===> PAGE

SubSystem....: *                              CPU calculation method: LAST
Commands.....: SORT N/C/F/J   - Name / Cpu / Frequency / No. Job steps
Line Commands: XJ -Xref Job step
                   Annual CPU         Annual        No. of
LC SubSystem          h:mm:ss      Frequency     Job Steps
------------------------------------------------------------------------------
   .DB2             163:24:28        110,369         1,123
   .APPL             60:35:25        148,920         1,384
   .NUCLEUS          43:43:55        141,534         1,319
   .COBOL            16:43:29        110,036         1,164
```

All subsystems belonging to the most current measurements of job steps within the Data Mining Scope are listed. Use the panel to identify subsystems with high annual CPU consumption and cross reference those subsystems to the job steps that run under them.

Line Commands

Use line command XJ to cross reference the job steps that run under a subsystem. The job steps are displayed.

Column Descriptions

Subsystem

Displays the name of the subsystem found on the stored measurement.

Annual CPU

Displays a summation of the estimated annual CPU consumption in minutes of the subsystem used by job steps within the Data Mining Scope.

For more information about this calculation, see Service Units Details (see page 69).

Annual Frequency

Displays a summation of the annual of executions of the job steps within the Data Mining Scope that are using the subsystem.

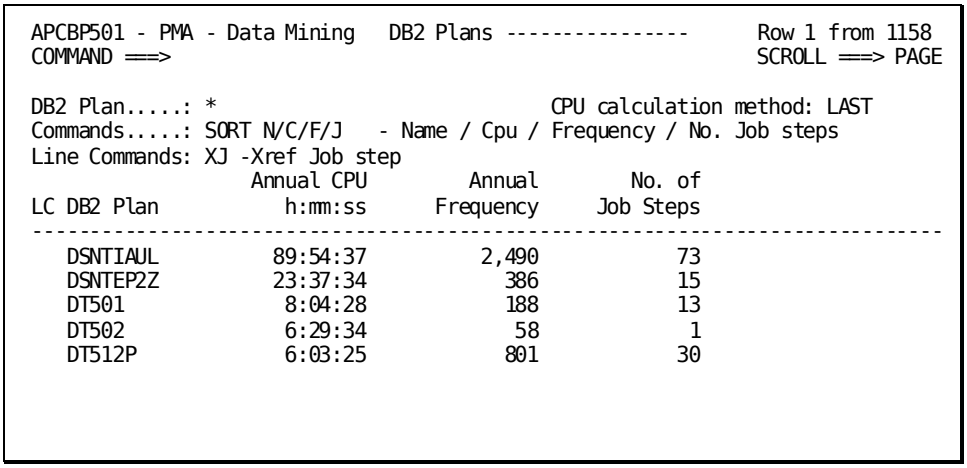
For more information about this calculation, see Service Units Details (see page 69).

No. of Job Steps

Displays the number of job steps within the Data Mining Scope that have used the subsystem.

Data Mining DB2 Plans

To list all DB2 plans used by job steps within the Data Mining Scope, enter option **4** on the Data Mining Menu.



```
APCBP501 - PMA - Data Mining   DB2 Plans ----------------      Row 1 from 1158
COMMAND ===>                                                  SCROLL ===> PAGE

DB2 Plan.....: *                              CPU calculation method: LAST
Commands.....: SORT N/C/F/J   - Name / Cpu / Frequency / No. Job steps
Line Commands: XJ -Xref Job step
                  Annual CPU         Annual        No. of
LC DB2 Plan          h:mm:ss      Frequency     Job Steps
------------------------------------------------------------------------------
   DSNTIAUL         89:54:37          2,490           73
   DSNTEP2Z         23:37:34            386           15
   DT501             8:04:28            188           13
   DT502             6:29:34             58            1
   DT512P            6:03:25            801           30
```

All DB2 plans belonging to the most current measurements of job steps within the Data Mining Scope are listed. Use the panel to identify plans with high annual CPU consumption and cross reference those plans to the job steps that use them.

Line Command

To cross reference the job steps by using a specific DB2 plan, use line command **XJ** to select the DB2 plan. The job steps are displayed on a subsequent panel on which other familiar options are available. See Cross Referencing the Job Steps.

Column Descriptions

DB2 Plan

Displays the name of the DB2 plan found on the stored measurement.

Annual CPU

Displays a summation of the estimated annual CPU consumption in minutes of the DB2 plan used by job steps within the Data Mining Scope.

For more information about this calculation, see Service Units Details (see page 69).

Annual Frequency

Displays a summation of the number of executions of the job steps within the Data Mining Scope that are using the DB2 plan.

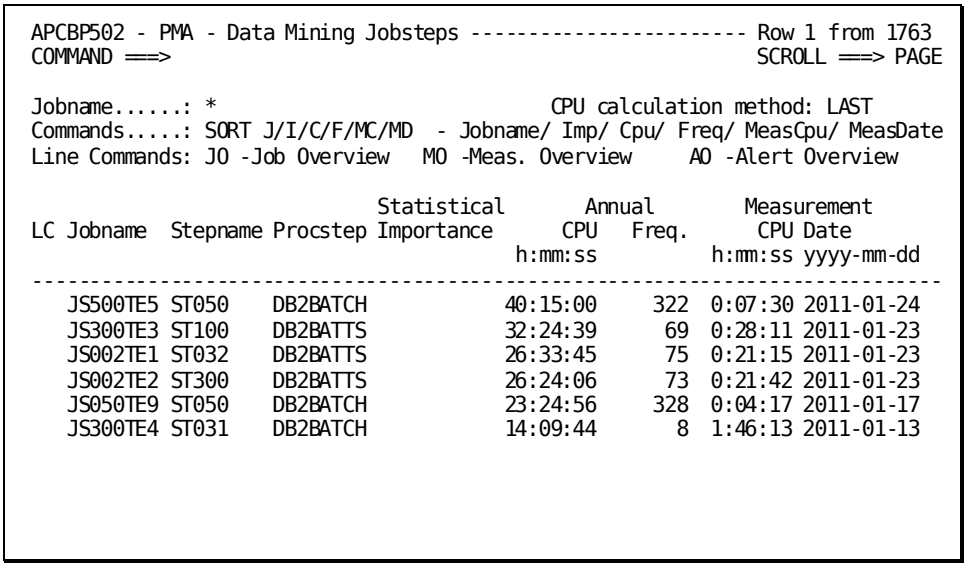
For more information about this calculation, see Service Units Details.

No. of Job Steps

Displays the number of job steps within the Data Mining Scope that use the DB2 plan.

Data Mining Job Steps

To list all job steps found in the Data Mining Scope, enter option **5** on the Data Mining Menu.



```
APCBP502 - PMA - Data Mining Jobsteps ----------------------- Row 1 from 1763
COMMAND ===>                                                  SCROLL ===> PAGE

Jobname......: *                              CPU calculation method: LAST
Commands.....: SORT J/I/C/F/MC/MD  - Jobname/ Imp/ Cpu/ Freq/ MeasCpu/ MeasDate
Line Commands: JO -Job Overview   MO -Meas. Overview     AO -Alert Overview

                               Statistical       Annual        Measurement
LC Jobname  Stepname Procstep Importance      CPU   Freq.      CPU Date
                                           h:mm:ss          h:mm:ss yyyy-mm-dd
-------------------------------------------------------------------------------
   JS500TE5 ST050    DB2BATCH           40:15:00     322  0:07:30 2011-01-24
   JS300TE3 ST100    DB2BATTS           32:24:39      69  0:28:11 2011-01-23
   JS002TE1 ST032    DB2BATTS           26:33:45      75  0:21:15 2011-01-23
   JS002TE2 ST300    DB2BATTS           26:24:06      73  0:21:42 2011-01-23
   JS050TE9 ST050    DB2BATCH           23:24:56     328  0:04:17 2011-01-17
   JS300TE4 ST031    DB2BATCH           14:09:44       8  1:46:13 2011-01-13
```

Primary Command

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific job step that displays in the list.

JO

Displays an overview of information about the job step.

MO

Displays an overview of all stored measurements for the job step.

As a reminder, the Data Mining process was based on the most current measurement.

AO

Displays an overview of alerts for the job step.

Column Descriptions

Jobname/Stepname/Procstep

Displays the job name, step name, and procedure step name of the job step.

Statistical Importance

Displays the job step importance as a ranking used to identify the most resource consuming job steps.

All job steps are ranked from 0 - 50 where 0 is the least important.

Annual CPU

Displays the estimated annual CPU time in minutes that is consumed by the job step.

For more information about this calculation, see Service Units Details (see page 69).

Annual Frequency

Displays the estimated annual number of job step executions.

For more information about this calculation, see Service Units Details (see page 69).

Measurement CPU

Displays the CPU consumption found on the most current Measurement of the job step.

Measurement Date

Displays the date of the most current Measurement of the job step.

Cross Reference the Job Steps

To cross reference the job steps by using an application program, a system program, a DB2 plan, or those running under a specific subsystem, use line command **XJ** on the panel display of the specific results table.

```
APCBP503 - PMA - Data Mining XREF Jobstep ---------------------- Row 1 from 10
COMMAND ===>                                                  SCROLL ===> PAGE

Jobname......: *                            CPU calculation method: LAST
Commands.....: SORT J/C/F      - Jobname / Cpu / Frequency
Line Commands: JO -Job Overview   MO -Meas. Overview     AO -Alert Overview

Cross Reference for TS444    / Application Programs
                                        Annual CPU          Annual
LC Jobname  Stepname Procstep             h:mm:ss       Frequency
------------------------------------------------------------------------------
   JS444V02 TS401    DB2BATCH             3:53:36               8
   JS444V01 TS401    DB2BATCH             3:51:52               8
```

The Data Mining XREF Jobstep panel is a cross reference listing of all job steps (those within the Data Mining Scope) that call the selected application program, system program, or DB2 plan or those running under a specific subsystem. The selected cross reference source displays on the panel in the Cross Reference for field.

Primary Command

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific job step that displays in the list.

JO

Displays the Job Overview panel.

MO

Displays the Measurement Overview panel to see all stored measurements for the job step.

As a reminder, the Data Mining process was based on the most current measurement.

AO

Displays an overview of any alerts that might exist.

Column Descriptions

Jobname/Stepname/Procstep

Displays the job name, step name, and procedure step name of the job step.

Annual CPU

Displays the estimated annual CPU time in minutes that is consumed by the job step.

For more information about this calculation, see Service Units Details (see page 69).

Annual Frequency

Displays the estimated annual number of job step executions.

For more information about this calculation, see Service Units Details (see page 69).

Cross Reference the Subsystem

To cross reference the subsystem under which a system program executes, use line command XS on the Data Mining System Programs panel.

```
APCBP504 - PMA - Data Mining XREF SubSystem ---------------------- Row 1 from 1
COMMAND ===>                                                    SCROLL ===> PAGE

SubSystem....: *                              CPU calculation method: LAST
Commands.....: SORT S/C/F      - SubSystem / Cpu / Frequency
Line Commands: XJ -XREF by Job

Cross Reference for IGZEQQC  / System Programs

LC SubSystem         Annual CPU              Annual
                        h:mm:ss            Frequency
------------------------------------------------------------------------------
   .COBOL               5:00:36               33,514
```

The Data Mining XREF Subsystem panel allows you to see a summation of the CPU consumption and Annual Frequency of the job steps that are using the specified system program and running under this subsystem.

Line Commands

To cross reference the job steps by using the selected system program and subsystem, use line command **XJ**. The job steps are displayed on a subsequent panel on which other familiar options are available. See Cross Referencing the Job Steps.

Column Descriptions

Subsystem

Displays the name of the subsystem found on the stored measurement .

Annual CPU

dDsplays the estimated annual CPU time in minutes that is consumed by the subsystem used by job steps within the Data Mining Scope.

For more information about this calculation, see Service Units Details (see page 69).

Annual Frequency

Displays the estimated annual number of executions of job steps within the Data Mining Scope that are using the subsystem.

For more information about this calculation, see Service Units Details (see page 69).

Display the Significant Statements

To see the most significant statements belonging to an application program, select the program with line command **SS** on the Data Mining Application Programs panel.

```
APCBP501 - PMA - Data Mining  Application Programs -----      Row 1 from 244
COMMAND ===>                                        SCROLL ===> PAGE

Appl PGM.....: *                    CPU calculation method: LAST
Commands.....: SORT N/C/F/J   - Name / Cpu / Frequency / No. Job steps
Line Commands: XJ -Xref Job step     SS -Significant Statements
               Annual CPU       Annual       No. of
LC Appl PGM       h:mm:ss      Frequency     Job Steps
-------------------------------------------------------------------------------
SS TS444          15:25:56
  TX123           6:37:33      APCBPMSS  Significant Statements
  TC456           3:54:56
  TC700           3:04:44         Location          Annual CPU
  TLXXB00          2:30:51
  TALIB           1:48:12         0000B8C0           137
  TB300           1:22:36         0000B880           130
  TC950A           1:19:18         0000B500           127
  TE100           1:18:14         0000B340           124
  TO267           1:08:51
```

The Significant Statements window displays the statements with the highest annualized CPU consumption for the selected application program. The top 5 statements are listed.

Column Descriptions

Location

Displays location addresses for statements with the highest annualized CPU consumption.

Annual CPU

Displays the estimated annual CPU consumption for the statement.

For more information about this calculation, see Service Units Details (see page 69).

Overtake Functions

You can change the statistics for a job step with the Overtake Functions panel shown next.

This application allows you to clear, recalculate, or set statistical values for averages and variances.

```
APCBPOV1 - PMA - OVERTAKE Functions                          Version 8.5

Enter an option  ===>          Note: Only highlighted options are available

  1 Reset statistical values to Zero
  2 Build statistical values from selected job step execution
  3 Calculate statistical values based on the last 03 history entries
  4 Edit statistical values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```

You can access this panel by any of the following methods:

- Line command **O** from the Job List panel
- Line command **O** from the Alert List panel
- Line command **O** from the Job Overview panel
- Primary command **O** from the Job Overview panel

If you access this panel by using line command **O** from the Job Overview panel, all options are available and are highlighted. If you use any of the other available methods to access this panel, option **2** is not highlighted and is not available.

The number of history entries in option 3 is a variable that can be set from 01 to 10. The default is **03**.

The following provides an overview of the options on the Overtake Functions panel:

Reset statistical values to zero

With this option, all current averages and variances of the selected job step are cleared to zero. The statistical calculation will start from zero with the next execution of the job step.

This option is available when you access the Overtake Functions panel with any of the following methods:

- line command **O** from the Job List panel
- line command **O** from the Alert List panel
- line command **O** from the Job Overview panel
- primary command **O** from the Job Overview panel

Build statistical values from selected job step execution

The job step execution values of the selected history entry are set as new average values. Based on the averages, new values are calculated for the variances.

This option is only available when you access the Overtake Functions panel with line command **O** from the Job Overview panel.

Calculate statistical values based on the last *nn* history entries

With this option, the statistical values (averages and variances) will be recalculated based on the most recent *n* job history entries. *n* is the user-defined number of most recent entries (1 - 10) to consider.

This option is available when you access the Overtake Functions panel with any of the following methods:

- line command **O** from the Job List panel
- line command **O** from the Alert List panel
- line command **O** from the Job Overview panel
- primary command **O** from the Job Overview panel

Edit statistical values

Use of this option is a very delicate operation and should be used with caution.

You can enter your own average values. For each average value that you set, the variances are recalculated based on the new average entry.

This option is available when you access the Overtake Functions panel with any of the following methods:

- line command **O** from the Job List panel
- line command **O** from the Alert List panel
- line command **O** from the Job Overview panel
- primary command **O** from the Job Overview panel

Overtake Process Flow

This section describes the actions that take place when you choose each of the options on the Overtake Functions panel.

Any time you choose an option to modify the statistical values, a confirmation panel is first displayed where you must agree before the modification is done. This panel provides a NO-ACTION function (a CANCEL button) to interrupt the modification process and to go back to the previous panel.

Reset statistical values to zero option actions

The confirmation panel displays.

- If the action is not confirmed, then no action is triggered.
- If the action is confirmed, then all Average and Variance fields are set to zero.

Because the average calculations now start from zero, the number of valid average calculations and the Critical/Alerted flag are also reset to zero.

Build statistical values from selected job step execution option actions

The confirmation panel displays.

- If the action is not confirmed, then no action is triggered.
- If the action is confirmed, then the execution values from the selected job step are used as new average values and the variance values are recalculated based on the new averages.

The number of valid average calculations is set to 1 and the **Critical/Alerted** flag is reset.

Calculate statistical values based on the last nn history entries option actions

The confirmation panel displays.

- If the action is not confirmed, then no action is triggered.
- If the action is confirmed, then the average and variance values are recalculated based on the execution values of the most recent job steps that are considered.

In the recalculation process, the oldest selected job step is used as the initial entry; the other job steps are then used in the sequence of their entry date/time (from oldest to most recent).

The number of valid average calculations is set to the number of considered history entries and the Critical/Alerted flag is reset.

Edit statistical values (averages only) option actions

1. When you select this option, the panel shown in following is first displayed. It shows all average values that you can modify.

```
APCBPEA1  PMA Job Statistic Information -Averages-
COMMAND ===>

Jobname  Stepname Procstep PGM/JCL  PGM/Appl
JOB0001  STEP0001          PGM00001

Enter "C" for Change, "R" for Reset, "U" for Undo last change

  Average for:           Current/NEW:    Previous:
  ---------------------- -------------   -------------
_ Elapsed Time.........: 00:06:20.40
_ CPU Time Total.......: 00:05:45.39
_ EXCP Total...........:           494
_ SRVU Total...........:    10.391.349
_ SRVU CPU.............:     8.636.650
_ SRVU SRB.............:            66
_ SRVU IO..............:           240
_ SRVU MSO.............:     1.754.393
_ DASD Connect Time....: 00:00:06.7980
_ DASD Disconnect Time.: 00:00:00.8280
_ DASD Pending Time....: 00:00:02.8930
_ DASD Queue Time .....: 00:00:00.8700
_
```

2. To change any value in the displayed list, you must first select the value. This precaution is to prevent changes by accident.

3. You can use the following options to modify the average values:

   - C - for Change
   - R - for Reset (to zero)
   - U - for Undo of the last Reset/Change that was done in the current average edit session

4. When you select a value for Change, an entry panel is shown that displays the selected field name as a header, the original value, and an entry field to enter the new value.

   The format of the data entry panel varies depending on the value that you have selected to change, as shown in the following panels.

The following panel shows an example of changing a value that has seconds with two decimal places.

```
APCBPEA2 PMA Edit Average

Average for:
ELAPSED TIME

         HH MM SS ss
Current: 00:06:20.40
NEW....: 00 06 20 40
```

The following panel shows an example of changing a value that has seconds with four decimal places.

```
APCBPEA3 PMA Edit Average

Average for:
DASD DISCONNECT TIME

         HH MM SS ssss
Current: 00:00:00.8280
NEW....: 00 00 00 8280
```

The following panel shows an example of changing a value that has no decimal places.

```
APCBPEA4 PMA Edit Average

 Average for:
 EXCP Total..........


 Current:     414034
 NEW....: 0000414034
```

5. In each edit panel the NEW value is prefilled with the CURRENT value. In the edit panels for time values, the NEW value is split into separate entry fields for hour, minutes, seconds, and decimal digits of the seconds. This makes it easier for you to enter the values and to check for valid numbers and ranges, which are shown in the following table:

Value	Valid Range
Hours	00 - 99

Minutes	00 - 59
Seconds	00 - 59
Decimal digits of seconds	00 - 99 / 0000 - 9999
Number value	0 - 2147483647

6. If you enter a new value (different than the old value) or choose Reset (to zero), a confirmation panel displays to confirm the change.

   If you do not confirm the change, the old value is kept.

7. The next time that you perform an average edit session, you can see the last value before this Change/Reset was done in the Previous column, as shown in the following panel:

```
APCBPEA1  PMA Job Statistic Information -Averages-
COMMAND ===>

Jobname  Stepname Procstep PGM/JCL  PGM/Appl
JOB0001  STEP0001         PGM00001

Enter "C" for Change, "R" for Reset, "U" for Undo last change

  Average for:           Current/NEW:    Previous:
  ---------------------- ------------    ------------
_ Elapsed Time.........: 00:02:00.00     00:06:20.40
_ CPU Time Total.......: 00:01:00.00     00:05:45.39
_ EXCP Total...........:            0             494
_ SRVU Total...........:    10.391.349
_ SRVU CPU.............:     8.636.650
_ SRVU SRB.............:            66
_ SRVU IO..............:           240
_ SRVU MSO.............:     1.754.393
_ DASD Connect Time....: 00:00:06.7980
_ DASD Disconnect Time.: 00:00:00.8280
_ DASD Pending Time....: 00:00:02.8930
_ DASD Queue Time .....: 00:00:00.8700
```

8. You can then use the UNDO command to change a value back to the one shown in the Previous column.

   That value will then be displayed in the Current/NEW column, as shown in the following panel.

The following panel shows an example where the previous value for Elapsed Time has been changed back to the current value by using the UNDO command.

```
APCBPEA1  PMA Job Statistic Information -Averages-
COMMAND ===>

Jobname  Stepname Procstep PGM/JCL  PGM/Appl
JOB0001  STEP0001         PGM00001

Enter "C" for Change, "R" for Reset, "U" for Undo last change

  Average for:           Current/NEW:    Previous:
  ---------------------- -------------   -------------
_ Elapsed Time.........: 00:06:20.40
_ CPU Time Total.......: 00:01:00.00     00:05:45.39
_ EXCP Total...........:              0            494
_ SRVU Total...........:     10.391.349
_ SRVU CPU.............:      8.636.650
_ SRVU SRB.............:             66
_ SRVU IO..............:            240
_ SRVU MSO.............:      1.754.393
_ DASD Connect Time....: 00:00:06.7980
_ DASD Disconnect Time.: 00:00:00.8280
_ DASD Pending Time....: 00:00:02.8930
_ DASD Queue Time .....: 00:00:00.8700
```

Export Central Component Data

This section details how to export the job and alert information of the Central Component.

Export Job Information - Job APCBJEXP

To export information from the database, use job APCBJEXP. This job creates a list or a file that can be exported for use in other systems; for example, Microsoft EXCEL, or SAS. The data is exported from the database to a sequential file that can be used in other mainframe systems or file transferred to the PC.

```
//JOBCARD
//*********************************************************************
//* PMA: APCBJEXP                                                     *
//* MAINTENANCE: PMA TEAM                                             *
//* ACTION:      EXPORT JOB INFO FROM PMA DATA BASE                   *
//* FUNCTION:    LIST OR EXPORT FILE WILL BE CREATED                  *
//*-------------------------------------------------------------------*
//* COPYRIGHT (C) 2012 CA. All Rights Reserved.                       *
//* Copyright (C) Trilog AG                                           *
//*********************************************************************
//APCBATAB EXEC PGM=APCBATAB
//STEPLIB  DD   DISP=SHR,DSN=prefix.PMA.LOAD
//APCIN    DD   DISP=SHR,DSN=prefix.PMA.CNTL(APCBCJEX)
//APCTAB   DD   SYSOUT=*
//APCEREP  DD   SYSOUT=*
//APCBJOB1 DD   DISP=SHR,
//              DSN=prefix.PMA.KSDSJOB
//APCBALT1 DD   DISP=SHR,
//              DSN=prefix.PMA.KSDSALT
//APCBBPM1 DD   DISP=SHR,
//              DSN=prefix.PMA.KSDSBPM
```

To assist you in using this job information after it has reached its destination, the following record description is provided. Each field of the record is separated by a semicolon delimiter.

Field Contents for Job Information Export	Length
Job name	8
Step name	8
Procedure step	8
Program name	8
Application program	8
Number of runs	5
Condition code exceptions	4
Number of measurements	4
Most recent alert state	2

Field Contents for Job Information Export	Length
Consumed elapsed time - minutes	4
Service units - in thousands	7
Importance	2

Example of a job information export record:

```
        !        !        !        !        !   NUMBER OF    ALT!  CONSUMPTION
JOBNAME !STEPNAME!PROCSTEP!PGMNAME !APPLPGM !RUNS ! CC !PROF!ST!ELPS!SRVUNIT!IM
--------+--------+--------+--------+--------+-----+----+----+--+----+-------+--
JOBB4500;ABPROC1 ;ABSTP02 ;DFSRRC00;P3AB398 ;00005;0000;0000;PE;0042;0011993;18;
```

The scope of the data to be exported is defined within the job by using input parameters in member APCBCJEX of the product CNTL library. These parameters are described in the following table:

APCBCJEX Parameters	Input
MODE=*x*	Enter an E for export or an L for list. The default is E.
MODE=*xx*	Enter EX (export extended) or LX (list extended) to produce output records with a LRECL of 90 and display the LPAR column.
LPAR=*name*	Enter a fully-qualified LPAR name or a generic name by using the underscore (_) as a wildcard. You can retrieve only the job information where the LPAR of the last job step execution matches either the fully-defined or generic LPAR search expression.
JOBNAME=*name*	Enter a fully-qualified job name or a generic name by using the underscore (_) as a wildcard.
PGMNAME=*name*	Enter a fully-qualified program name or a generic name by using the underscore (_) as a wildcard.
IMPORTANCE>=	Enter a value for the importance. A number from 1 to 50 is valid. A higher number indicates a higher job step importance.
SERVICE-UNITS>=	Enter the service units in thousands, 1 - 999999.
ELAPSED-TIME>=	Enter the session duration in minutes, 1 - 9999.

The following is an example of how to use the APCBCJEX parameters:

```
MODE=L
JOBNAME=__R_____
PGMNAME=APC_____
IMPORTANCE>=10
ELAPSED-TIME>=30
SERVICE-UNITS>=1000
```

Export Alerts - Job APCXJEXP

To export alerts from the database, use job APCXJEXP. This job creates a list or a file that can be exported for use in other systems, for example, EXCEL, SAS. The alerts are exported from the alert database to a sequential file that can be used in other mainframe systems or file transferred to the PC.

```
//JOBCARD...
//*********************************************************************
//* PMA: APCXJEXP                                                     *
//* MAINTENANCE: PMA TEAM                                             *
//* ACTION:      EXPORT ALERT INFO FROM PMA DATA BASE                 *
//*              FOR JOBSTEPS, CICS OR IMS TRANSACTIONS               *
//* FUNCTION:    LIST OR EXPORT FILE WILL BE CREATED                  *
//*-------------------------------------------------------------------*
//* COPYRIGHT (C) 2012 CA. All Rights Reserved.                       *
//* Copyright (C) Trilog AG                                           *
//*********************************************************************
//APCXATAB EXEC PGM=APCXATAB
//STEPLIB  DD   DISP=SHR,
//              DSN=prefix.PMA.LOAD
//APCIN    DD   DISP=SHR,
//              DSN=prefix.PMA.CNTL(APCXCAEX)
//APCBALT1 DD   DISP=SHR,
//              DSN=prefix.PMA.KSDSALT
//APCTAB   DD   SYSOUT=*
//APCEREP  DD   SYSOUT=*
```

To assist you in using this alert information after it has reached its destination, the following record description is provided. The field delimiter is a semicolon.

Field Contents for Transaction Alert	Length	Field Contents for Job Alert	Length
Transaction name	8	Job name	8
PMA system control name	8	Step name	8
Alert ID	5	Procedure step	8

Field Contents for Transaction Alert	Length	Field Contents for Job Alert	Length
Creation date (*yyyy-mm-dd*)	10	Alert ID no.	5
Job name of the region	8	Alert creation date (*yyyy-mm-dd*)	10
State code	4	Program name	8
Reason code	4	Link date of program (*yyyy-mm-dd*)	10
Average CPU time percentage	6	Alert state code	4
Measured CPU percentage	6	Alert reason code	4
Average number of measurements	5		

The following is an example of a transaction alert export record:

```
X-NAME !SYS-NAME!ALT-#!CR-DATE   !JOBNAME !STAT!FROM!AV CPU!ME CPU!MEAS#!
--------+--------+-----+----------+--------+----+----+------+------+-----+
OKD07900;IMS     ;17682;2011-01-15;IMSZZ001;OPEN;STAT;   .39;  1.69;  165;
```

Print Alert Text

The alert export function (job APCXJEXP) enables you to extract the alert text, in addition to the alert information shown in the previous table.

You can select the extract of the alert text by defining the TEXT parameter, as follows:

- **TEXT=Y** to retrieve the alert text
- **TEXT=N** to extract the alert information without the alert text

If the TEXT parameter is not used, then TEXT=N (default) is assumed.

To use this function, add the TEXT parameter to the control parameters for job APCXJEXP, which is defined in member APCXCAEX in your product CNTL library, as shown in the following:

```
*
SUBSYSTEM=B
MODE=E
TEXT=Y
TX-NAME=_________
SYSNAME=_________
PGMNAME=_________
STATE=OPEN
*CREATION-DATE=2011-01-01
*************************** Bottom of Data ***************************
```

Output Example

If option TEXT=Y is used, the alert text (if the alert has additional text information) is listed after the general alert information line, as shown in the following example:

```
JOBTST1A;        ;STEP123 ;00321;2011-01-01;IKJEFT1B;          ;OPEN;SRVU;
>ALERT TEXT
       2011-01-01 PMA ALERT ID 00321    BY SRVU
                  ------------------------------------------------------------
                  JOB: JOBTST1A          STEP123   PGM: IKJEFT1B
                  EXEC: 2011-01-01   2:36  SYS: SYS1      CC: 0000
                  CPU: 00001  ELPSD: 00009  EXCPS: 000004  SRVU: 001986  I: 06
                  ------------------------------------------------------------
<END ALERT TEXT
```

If an alert has no text information, the *NO ALERT TEXT AVAILABLE message displays, as shown in the following example:

```
JOBTST1A;        ;STEP123 ;00321;2011-01-01;IKJEFT1B;          ;OPEN;SRVU;
*NO ALERT TEXT AVAILABLE
```

Alert Export Parameters

The scope of the data to be exported is defined within the job by using input parameters in member APCXCAEX of the product CNTL library. These parameters are described in the following table:

APCXCAEX Parameters	Input	Default
MODE=*n*	Enter E = Export or L = List. The default is E.	E
TEXT	Enter Y = YES or N = NO.	N
SUBSYSTEM=*s*	Enter B = Batch, C = CICS, or I = IMS	B
JOBNAME=*name*	Enter a fully qualified job name for batch or a generic name by using the underscore (_) as a wildcard.	all
TX-NAME=*name*	Enter a fully qualified online transaction or a generic name by using the underscore (_) as a wildcard.	all
PGMNAME=*name*	Enter a fully qualified program name for batch or a generic name by using the underscore (_) as a wildcard.	
SYSNAME=*name*	Enter a fully qualified system name for online or a generic name by using the underscore (_) as a wildcard.	all
CREATION-DATE=*yyyy-mm-dd*	Enter the start date of alerts.	all
STATE=*state*	Enter the alert state: PEND, OPEN, REV, CLOSE	all

All defined parameters are combined with a logical AND.

The following shows an example of how to use the APCXCAEX parameters.

```
SUBSYSTEM=B
MODE=E
TEXT=Y
TX-NAME=_________
SYSNAME=_________
PGMNAME=_________
STATE=OPEN
*CREATION-DATE=2011-01-01
```

Export Data Mining - Job APCBJDAX

To export data mining information from the database, use job APCBJDAX. This job creates a list or a file that can be exported for use in other systems, for example, EXCEL, or SAS. The data is exported to a sequential file that can be used in other mainframe systems or file transferred to the PC.

```
//JOBCARD...
//*********************************************************************
//* PMA: APCBJDAX                                                     *
//* MAINTENANCE: PMA TEAM                                             *
//* FUNCTION:    XREF OF  DATA MINING                                 *
//* ACTION:      BUILD XREF ON LIST                                   *
//* COPYRIGHT (C) 2012 CA. All Rights Reserved.                       *
//* Copyright (C) Trilog AG                                           *
//*********************************************************************
//APCBADAX EXEC  PGM=APCBADAX
//STEPLIB  DD DSN=prefix.PMA.LOAD,DISP=SHR
//APCPARM1 DD DSN=prefix.PMA.PARMS,DISP=SHR
//APCBPRO1 DD DSN=prefix.PMA.KSDSPRO,DISP=SHR
//APCBBPM1 DD DSN=prefix.PMA.KSDSBPM,DISP=SHR
//APCBJOB1 DD DSN=prefix.PMA.KSDSJOB,DISP=SHR
//APCIN DD DSN=prefix.PMA.CNTL(APCBCDAX),DISP=SHR
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
```

The scope of the data to be exported is defined within the job by using input parameters in member APCBCDAX of the product CNTL library. These parameters are described in the following table:

APCBCDAX parameters	Meaning	Default
XREF=*n*	where *n* identifies the tuning object: 1 Application program 2 System program 3 subsystem 4 DB2 plan 5 System program 6 Corresponding job steps A All cross references	A
SCOPE=x	Where *x* identifies the Data Mining Scope: T All objects in the TOP Scope ALL All objects of PMA M*nnn* Maximum nnn objects	T
JOBNAME=*name*	A fully qualified job name or a generic name that uses the underscore (_) as a wildcard	all
PGMNAME=*name*	A fully qualified program name or a generic name that uses the underscore (_) as a wildcard	all
IMPORTANCE=*nn*	where *nn* is the lower limit of the job's importance	all
FROMDATE=*yyyymmdd*	lower limit of the measurement's creation date	All
BASEDATE=*yyyymmdd*	base date for frequency weighting	Date of data mining execution
ANNUALFRQ=Y/N	defines whether the frequency annual forecast calculation is done If N is specified, the CPU is calculated with the current job step frequency.	Y

All defined parameters are combined with a logical AND.

The following is an example of how to use the APCBCDAX parameters:

```
XREF=A
SCOPE=T
JOBNAME=________
PGMNAME=________
IMPORTANCE=00
FROMDATE=20110101
```

Measure the Jobs of Critical Paths - Job APCBJCRI

When troubleshooting, use job APCBJCRI to initiate CA Mainframe Application Tuner measurements for the jobs in a critical path. Within an input file to this job, you can define threshold values for service units, elapsed time, and importance, as well as all job names belonging to the critical path. Program APCBACRI identifies all steps contained in each critical path job. If these job steps are within the Scope, APCBACRI checks if their statistical average values for resource consumption, maintained by Performance Management Assistant, exceed the threshold values. If they do, an alert is generated with reason code USER.

```
//JOBCARD...
//*********************************************************************
//* PMA: APCBJCRI                                                     *
//* MAINTENANCE: PMA TEAM                                             *
//* ACTION:      CREATION OF ALERTS VIA CRITICAL PATH AND LIMITS.     *
//* FUNCTION:    ============================================         *
//*-------------------------------------------------------------------*
//* COPYRIGHT (C) 2012 CA. All Rights Reserved.                       *
//* Copyright (C) Trilog AG                                           *
//*********************************************************************
//STEPCRI  EXEC PGM=APCBACRI
//STEPLIB  DD DSN=prefix.PMA.LOAD,DISP=SHR
//APCCRIT  DD DSN=prefix.PMA.CNTL(APCBCCRI),DISP=SHR
//APCBJOB1 DD DSN=prefix.PMA.KSDSJOB,DISP=SHR
//APCBALT1 DD DSN=prefix.PMA.KSDSALT,DISP=SHR
//APCREP   DD   SYSOUT=*
//APCEREP  DD   SYSOUT=*
```

The job names and thresholds must be defined by using input parameters in member APCBCCRI of the product CNTL library. These parameters are described in the following table:

APCBCCRI Parameters	Meaning	Default
%JOBPOS=*nn*	This parameter shows the start column of the job name in the critical job file.	01

%INFO USER=*userid*	This parameter sets the user ID to be used for new PEND alerts for the defined critical path jobs.	CRITPATH
%LIMITS SRVU=*nnnnnn*/ ELPSD=*nnnn*/IMP=*nn*	Thresholds for service units, elapsed time, and importance, when separated by a /, are combined with a logical OR.	
%LIMITS SRVU=*nnnnnn*& ELPSD=*nnnn*&IMP=*nn*	Thresholds for service units, elapsed time, and importance, when separated by an &, are combined with a logical AND. where: SRVU is a 6-digit number representing the lower limit of service units in thousands, for example, 009999 ELPSD is a 4-digit number representing the lower limit of elapsed time in minutes, for example, 0099. IMP is a 2-digit number representing the lower limit of importance, for example, 09.	zero

The following rules apply to defining parameters in this member:

- An asterisk (*) in column 1 always indicates the beginning of a comment. All text following an asterisk in column 1 is ignored.
- A percent sign (%) in column 1 indicates the beginning of a parameter line. All input must be one of the valid parameters described above, JOBPOS or LIMITS.
- The program expects to find one job name in any line that does not have an * nor a % in column 1. The default starting column of a job name is column 1 unless otherwise specified by the %JOBPOS parameter.
- All digits of the limits must be supplied, that is, use leading zeros as place holders if necessary, for example, SRVU=009999.
- The delimiters / and & CANNOT be mixed. For example, SRVU=009999&ELPSD=9999/IMP=50 is NOT valid.
- An undefined limit defaults to zero.
- If the result is true, an alert is issued for the job step.
- If no limits are defined, an alert is issued for all jobs.
- All jobs are reported under APCREP DD SYSOUT=*.

The following example shows how to define the parameters in member APCBCCRI.

```
*  DEFINITIONS OF LIMITS
*
%LIMITS SRVU=000999/ELPSD=0028/IMP=09
*LIMITS ELPSD=0030&SRVU=010000
*
**  START OF JOBS BELONGING TO THE CRITICAL PATH
*
JOB01234
JOB01235
JOB01236
JOB01237
```

Chapter 5: Using the Checkpoint Checker

The Checkpoint Check is an *optional* feature of Performance Management Assistant. If you would like to use this feature, contact your product representative for more information.

This section contains the following topics:

Functional Overview (see page 121)
Technical Overview (see page 122)
Checkpoint Checker (see page 124)
Job APCKJCPT - Export Checkpoint Information (see page 128)

Functional Overview

Many batch jobs use DLI or DB2® as a database. If a batch job abends, usually backout processing is started automatically by the database system. The backout process works until a synchpoint is found. The DLI checkpoint command provides such a synchpoint. If checkpoint writing is not implemented in the application program, or if it is done in an improper way, it takes a long time to perform the backout process. This process can sometimes take several hours, exceeding the time limit for the job or job step, which can cause an abend or require an operator to cancel the job.

The following points are major considerations to implement checkpoint writing in a program:

- The program requires an IMS environment, even if it is only using DB2 SQL.
- To provide a program with checkpoint writing requires a detailed understanding of and intervention into the logic of the application program.
- The benefits of checkpoint writing are as follows:
- High resource consumption and elapsed time for backout processing is avoided.
- Jobs that implement checkpoint writing can be canceled by the operator on demand without long delays and can be restarted.
- The Checkpoint Checker helps answer the following essential questions for MVS systems personnel:
- Which job steps are using DLI or DB2 databases?
- How high is the checkpoint writing frequency? For example, if 30 minutes elapse between each checkpoint written, checkpoint writing does not have a significant impact.

- Which job steps run without checkpoint writing?
- How important is the consumption habit of each single job step, as compared with all other job steps?

Technical Overview

The Checkpoint Checker consists of the following components:

- Server, gathering and storing all relevant data in real time
- TSO online query facility
- batch job reporter

With APC 4.3.0, all Checkpoint Checker components are integrated into existing versions of the Central Component and the Server.

Server

The Server performs real-time supervision of all job steps within the Scope. The components of the Server recognize the following:

- The use of DB2 by reading and interpreting the SMF 89 record after job step termination
- The use of DLI by checking if the IMS region controller is executed in the JCL (DFSRRC00 or derivatives)
- Each physical checkpoint written, by reading and interpreting message DFS681I in the SYSLOG file

The Server calculates the average time interval in seconds between checkpoint writing for a job step and stores this value as a checkpoint frequency in the database.

TSO Online

Thus, all data displayed in the online query facility is also real-time. The following online functions are available:

- Define the scope of work, that is, include or exclude job names or program names to define the proper scope.
- Use the online Checkpoint Checker query facility with various selection criteria, for example, which job steps with an average elapsed time of over 30 minutes that access DB2 tables do not write checkpoints.
- Use all statistical information about job steps that is gathered by the Central Component.
- Use the Alert Management panels of the Central Component to keep track of checkpoint problems and to change initiatives.

The Checkpoint Checker online system is fully integrated into the ISPF dialog panels of the Central Component so all links into Central Component options (Profiles, Alerts and Job info) are available.

Reports

For background processing of information about checkpoint writing, a batch job is available to create

- Printable listings
- Sequential export files, for example, for use in EXCEL or ACCESS import functions

This program allows you to obtain output based on defined selection criteria. This output can be used in various ways to control checkpoint writing within a job step.

For details about how to export checkpoint information, see Job APCKJCPT – Export Checkpoint Information.

Benefits

The major benefits of using the Checkpoint Checker are as follows:

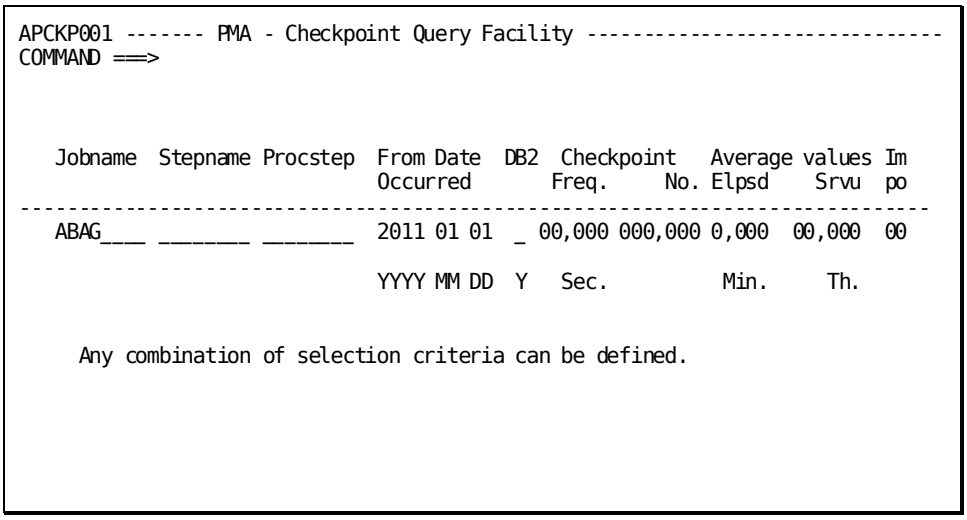
- In the long run, all important job steps must implement checkpoint writing and the Checkpoint Checker gives the user detailed information and easy-to-handle control of this process.
- If a runaway job step should be canceled by the operator, the Checkpoint Checker provides immediate online support in determining whether proper checkpoint writing exists or not.

The following additional benefits are provided by the Checkpoint Checker feature:

- No changes in JCL, programs, or OPC schedules
- A fully automatic solution without any manual work
- Insignificant CPU consumption for the permanent Checkpoint Checker process
- No additional DASD space is necessary if Performance Management Assistant is already installed

Checkpoint Checker

To access the Checkpoint Checker, select option **5** on the Central Component Menu. The Checkpoint Query Facility panel is displayed. The Checkpoint Query Facility allows you to query checkpoint information based on selection criteria that you define.



Checkpoint Query Facility Panel

Use this panel to do the following:

1. Define the selection criteria columns as described below:

   Jobname, Stepname, and Procstep

   Can be defined by using an underscore (_) as a wildcard. For example, ABAG____ searches for all job names that begin with ABAG.

   From Date Occurred

   Enter the most recent occurrence date.

DB2

Enter a Y to indicate that DB2 processing is involved.

Checkpoint Freq.

Enter the greater than number of average seconds between checkpoint writing.

Checkpoint No.

Enter the greater than number of checkpoint writes during step execution.

Average Values Elapsed

Enter the greater than average elapsed time in minutes.

Average Values Service Units

Enter the greater than average service units consumed in thousands.

Impo

Enter a number between 00 and 50 to indicate the importance of the job step. The higher the number, the more important the job step. This importance is from the perspective of computer center resource consumption.

After entering the query selection criteria, press Enter. The query facility searches for rows that match your criteria. The information that is found is displayed on the Checkpoint Checker List panel.

The Checkpoint Checker query facility works as follows:

- All input fields can be defined as you would in other query languages by using the LIKE command.
- The underscore is a wildcard used to represent one character.
-
- All selection criteria are used in combination with logical ANDs.

Values entered for elapsed time in minutes and service units in thousands are used in a greater compare. All jobs with consumption greater than the value entered are selected.

Values entered for frequency in seconds and number of checkpoint writes are used in a greater compare. All jobs with consumption greater than the value entered are selected.

- If the results table exceeds 4000 rows, you must define more specific selection criteria.

Display Checkpoint Query Results

After entering your selection criteria on the Checkpoint Query Facility panel, the results are presented on the Checkpoint Checker List panel.

```
APCKP002 ------- PMA - Checkpoint Checker List -------------- Row 441 from 855
COMMAND ===>                                                  SCROLL ===> CSR

Jobname      : *                                                 State : *
Commands     : SORT J/O/D/F/N/E/S/I/A - Job/Occu/Db2/Freq/No/Elp/Srvu/Imp/Alert
Line Commands: JO -Job Overview  PO -Profile Ov.   AT -Alert Text  AO -Alert Ov.
               A  - Give Alert

LC Jobname  Stepname Procstep Recently  DB2  Checkpoint     Average    Im Alert
                              occurred      Freq.     No. Elpsd   Srvu po state
-------------------------------------------------------------------------------
   ABAG133U ABPROC1  AMSTP07  2011.01.29 _      0       0     1     11 06
   ABAG133U ABPROC1  AMSTP02  2011.01.29 _      0       0     2     11 07
   ABAG133U ABPROC1  AMSKV01  2011.01.29 _      0       0     1      2 04
   ABAG133U ABPROC1  AMSKV02  2011.01.29 _      0       0     0      2 04
   ABAG1340 ABPROC1  AMSTP01  2011.01.29 _      0       0     0     34 09
   ABAG1341 ABPROC1  AMSTP01  2011.01.29 _      0       0     0    239 10
   ABAG1342 ABPROC1  AMSTP01  2011.01.29 _     10      50     2  2,212 15 PEND
   ABAG1343 ABPROC1  AMSTP01  2011.01.29 _      0       0     0  4,069 14
   ABAG1344 ABPROC1  AMSTP01  2011.01.29 _    108       2     2    284 12
   ABAG1346 ABPROC1  AMSTP01  2011.01.29 _     14      76     4  6,381 17
   ABAG1347 ABPROC1  AMSTP01  2011.01.29 _    121       1     2     77 10
```

The Checkpoint Checker List panel displays the results of your job selection query. In addition to allowing you to display other Central Component panels, the Checkpoint Checker List panel has a Give Alert option. The Give Alert option opens a window that allows you to create a user text alert.

Checkpoint Checker List Panel

Use the State input field to filter the jobs to be displayed by state, for example, display only job steps with State = OPEN.

Primary Command

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific job step that is displayed in the list.

JO

Displays an overview of job information, see Job Overview.

MO

Displays an overview of stored measurements, see Measurement Overview.

AT

Displays the information about an alert, see Total Alert Text.

AO

Displays an overview of all alerts, see Alert Overview.

A

Opens an alert with reason code CHCK. An alert confirmation window is displayed.

Column Descriptions

Jobname/Stepname/Procstep

Displays the results based on your selection criteria for these fields.

Recently Occurred

Displays the most recent occurrence date taken from SMF or, if not available, the first date detected by the job library scan (APCBAJCL).

DB2

Indicates whether DB2 processing was used during the job step execution.

Checkpoint Freq

Displays the actual number of average seconds between checkpoint writing.

Checkpoint No.

Displays the actual number of checkpoint writes during step execution.

Average Elpsd

Displays the actual average elapsed time in minutes.

Average Srvu

Displays the actual average service units consumed in

Impo

Displays an identifier that represents the importance of a checkpoint.

This number is a number from 0 to 50 where 0 is least important. The importance indicates how the consumption of a particular job step is ranked in regards to consumption of computer center performance.

Alert State

Indicates the alert state of the job step. All possible alert states are listed and described in the table in the section Alert Management.

Job APCKJCPT - Export Checkpoint Information

To export Checkpoint information from the database, use job APCKJCPT. This job creates a list or a file that can be exported for use in other systems; for example, EXCEL, or SAS. The data is exported from the database to a sequential file that can be used in other mainframe systems or file transferred to the PC.

```
//JOBCARD...
//*********************************************************************
//* PMA: APCBJCPT                                                     *
//* MAINTENANCE: PMA TEAM                                             *
//* ACTION:      CREATION OF A CHECK POINT LIST WITH USER SELECTION   *
//* FUNCTION:    LIST OF EXPORT FILE WILL BE CREATED                  *
//*-------------------------------------------------------------------*
//* COPYRIGHT (C) 2012 CA. All Rights Reserved.                       *
//* Copyright (C) Trilog AG                                           *
//*********************************************************************
//STEPTAB  EXEC PGM=APCBACPT
//*
//STEPLIB  DD DSN=prefix.PMA.LOAD,
//            DISP=SHR
//APCIN    DD DSN=prefix.PMA.CNTL(APCKCCPT),
//            DISP=SHR
//APCBJOB1 DD DSN=prefix.PMA.KSDSJOB,
//            DISP=SHR
//APCREP   DD SYSOUT=*
//APCEREP  DD SYSOUT=*
```

The scope of the data to be exported must be defined by using input parameters in member APCKCCPT of the product CNTL library. These parameters are described in the following table. All parameters are combined with a logical AND.

MODE=*n*

Enter an E for export or an L for list. The default is E.

JOBNAME=*name*

Enter a fully qualified job name or a generic name by using the underscore (_) as a wildcard.

PGMNAME=*name*

Enter a fully qualified program name or a generic name by using the underscore (_) as a wildcard.

ELAPSED-TIME>=

Enter the session duration in minutes, 1 - 9999, to export data with an elapsed time greater than or equal to this amount.

IMPORTANCE>=

Enter the calculated importance, 1 - 9999, to export data with an importance greater than or equal to this amount.

The following example shows how to use the APCKCCPT parameters:

```
MODE=E
JOBNAME=__R____
PGMNAME=APC____
ELAPSED-TIME>=30
IMPORTANCE>=10
```

The following example shows Checkpoint Checker export parameters:

```
MODE=E
JOBNAME=__R____
PGMNAME=APC____
ELAPSED-TIME>=30
IMPORTANCE>=10
```

Generate an Output List

If parameter MODE=L is used in job APCKJCPT, an output list is created.

Generate an Export File

If parameter MODE=E is used in job APCKJCPT, an export file is created. To assist you in using the checkpoint information after it has reached its destination, the following record description is provided. Each field of the record is separated by a semicolon delimiter.

Field Contents for Job Information Export	Length
Job name	8
Step name	8
Procedure step	8
Program name	8
Application program	8
DB2 - checkpoint values	3
DLI - checkpoint values	3
Message number - checkpoint values	5
Frequency - checkpoint values - average seconds between checkpoint writing	5
Measurement number - Consumption values	5
Elapsed time- Consumption values	4
CPU time - Consumption values	4

Service Units - Consumption values	7
Importance	2
Number of Alerts	4
Number of Condition Code exceptions	4

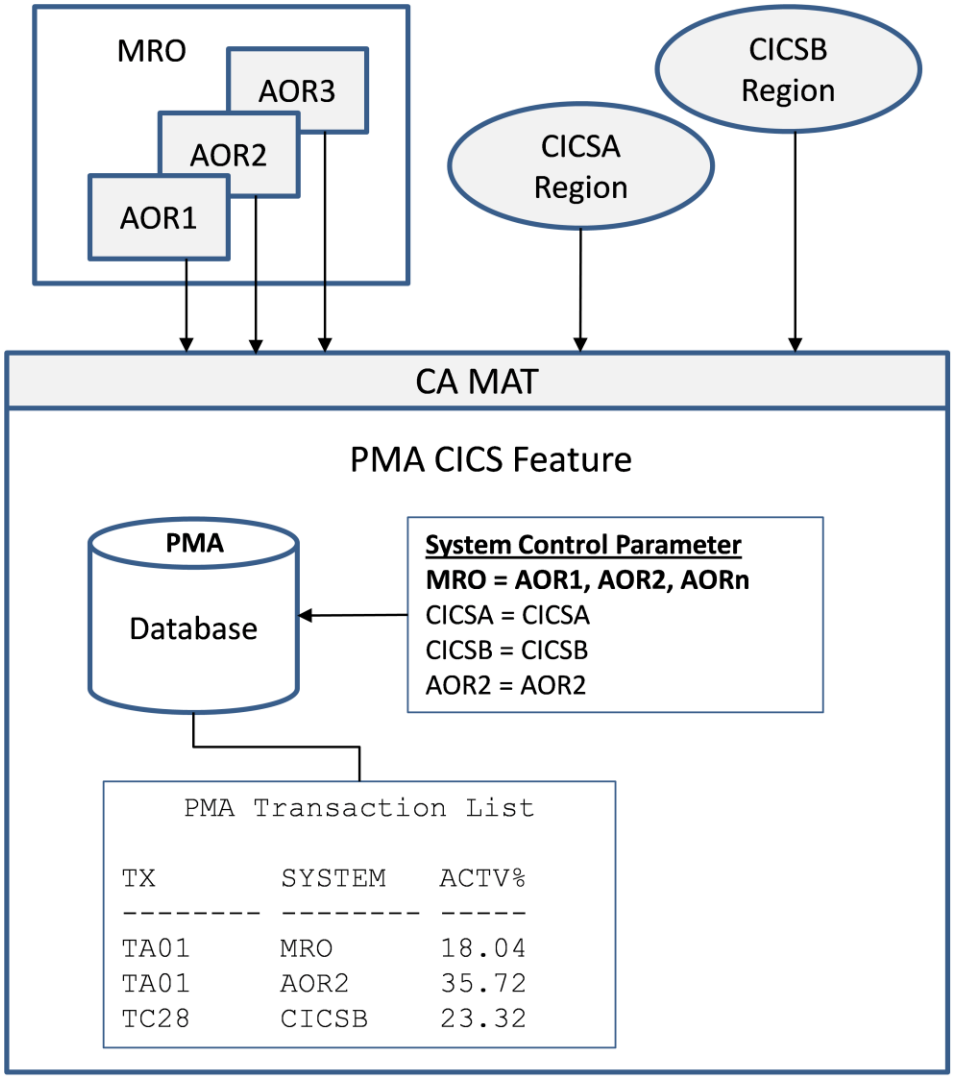
The following example shows an illustration of an export record:

```
        !        !        !        !        ! CHECK POINT VALUES!    CONSUMPTION VALUES    ! EVENTS
JOBNAME !STEPNAME!PROCSTEP!PGMNAME !APPLPGM !DB2!DLI! MSG#! FREQ!MEAS#!ELPS! CPU!SRVUNIT!IM! ALT! CC
--------+--------+--------+--------+--------+---+---+-----+-----+-----+----+----+-------+--+----+
---
```

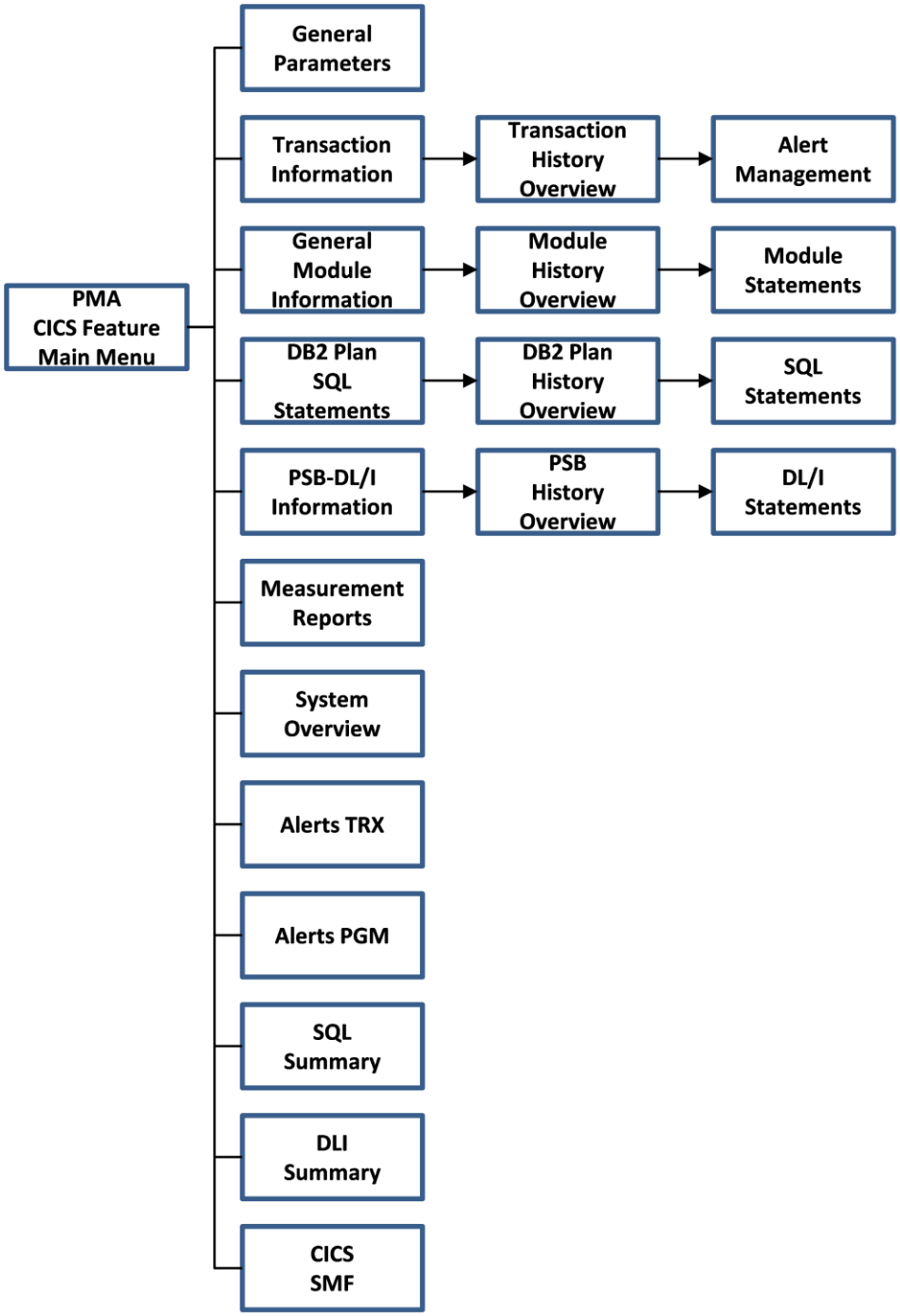
Chapter 6: Using the CICS Feature

This chapter describes how to use the ISPF panels of the CICS Feature and how to export information.

The following flowchart illustrates how the System Control of the CICS Feature works.



The following flowchart illustrates the layout of the ISPF panels that allow you to perform the online functions of the CICS Feature.



This section contains the following topics:

CICS Feature Menu (see page 133)
Global Print JCL (see page 135)
Transaction Information (see page 136)
General Module Information (see page 142)
DBRM - SQL Information (see page 146)
PSB - DLI Information (see page 158)
Overview of Measurement Reports (see page 161)
System Information (see page 163)
Alert Management (see page 167)
SQL Statement Information - SQL Summary (see page 177)
DLI Statement Information - DLI Summary (see page 180)
SMF Information for CICS Transactions (see page 182)
Export CICS Feature Data - Job APCCJEXP (see page 207)

CICS Feature Menu

The CICS Feature is accessed by starting REXX procedure PMA and selecting the CICS Feature option.

```
APCGP000 ------ PMA --- CICS Feature Menu ---------------------- Release 8.5
OPTION  ===>                                                    SYSTEM: *

             0 PARAMETERS    - Define User Specific Jobcard
             1 TRANSACTIONS  - Transaction Info
             2 MODULES       - General Module Info
             3 DBRM/DB2 Plan - DBRM Information
             4 PSBS          - PSB Information
             5 OVERVIEWS     - CA MAT Measurement Extractions  #SJS
             6 SYSTEMS       - System Info
             7 ALERTS TRX    - Alert Management TRX
             8 ALERTS PGM    - Alert Management CHANGED MODULES
             S SQL Summary   - SQL Information
             D DLI Summary   - DLI Information
             C CICS SMF      - CICS Transaction SMF Information
             T TUTORIAL      - Obtain PMA Help
             X or END        - End CICS Feature

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```

The CICS Feature Menu allows you to access all components of the CICS Feature as described below.

To request information for a specific CICS system, enter the name in the SYSTEM field. Otherwise, to show all available information for all measured systems, use the default generic value * in the SYSTEM field.

After defining the CICS SYSTEM, to select options on the CICS Feature Menu, type one of the following numbers in the OPTION field and press Enter:

0 Define a user specific jobcard for printing. For details about all other system parameters, see the *AdministrationGuide*.

1 Display an overview of all available transaction information as of the last measurement day.

2 Display an overview of all available module information as of the last measurement day.

3 Display an overview of all available DB2® plan and SQL information as of the last measurement day.

4 Display an overview of all available DLI information as of the last measurement day.

5 Display and work with different reports. Corresponding to this OVERVIEWS option is an input field that allows you to ask for a specific report overview. The default is #SJS.

6 Display the System Overview panel.

7 View all alerts issued.

8 View alerts issued for changed modules only.

S Display a list of the SQL statements exceeding the thresholds.

D Display a list of the DLI statements exceeding the thresholds.

C Display the CICS Transaction SMF Information panel.

The following table lists the reports and their corresponding identifiers.

Chapter ID	Overview Description
#SJS	Sampler and job statistics
#RDC	Resource demand chart
#COV	Code view
#DSA	Dataset activity
#TXV	Transaction view
#POV	Pool view
#SUM	Summary
#IDE	IDMS DELAYS
#IDD	IDMS DML DELAYS
#LNT	LONG NAME TABLE

To use the OVERVIEWS option

1. Type 5 in the OPTION field.
2. Type the general CA Mainframe Application Tuner report identifier in the corresponding overview input field.
3. Press Enter.

Global Print JCL

The Global Print JCL panel is displayed when you choose 0 on the CICS Feature Menu.

```
APCXPP01 --- PMA - Global Print JCL ------------------------------------------
 COMMAND ===>


 Enter your user specific JCL statements used in all PMA
 features for Print:

 //JOBNAMEX JOB (12345),'PMA 8.5 Print',CLASS=X,MSGCLASS=X
 //*
 //PRINT    EXEC PGM=IEBGENER
 //SYSIN    DD   DUMMY
 //SYSPRINT DD   SYSOUT=*
 //SYSUT2   DD   SYSOUT=*
 //SYSUT1   DD   *


            Cancel: CAN
            Save  : END OR PF3
```

In order to use the print command of Performance Management Assistant, you must have complete and correct JCL statements for the print job.

Global Print JCL Panel

In the lines provided on this panel, define your print job statements. These statements can include the following information:

- Job card
- Local printer
- Specific SYSOUT classes
- Print formats

After the print job is defined, the print job JCL is used by all features (Central Component, CICS Feature, and IMS Feature). This JCL is stored in your individual TSO user profile pool. If you do not save the input to this panel by exiting with PF3 or END, the profile pool is not loaded.

Transaction Information

The Transaction Information panel is displayed when option **1** is entered on the CICS Feature Menu.

```
APCGPS01 - PMA CICS Feature - Transaction Information --------- Row 1 from 240
COMMAND ===>                                                   SCROLL ===> CSR

Transaction  : *            Date: 2011.01.13                  System: *

Line Commands: TO - TX overview  AL  Alert list  AI  Alert insert
               TM - TX specific module info  TD - DBRM info  TP - PSB info

LC TRAN     System    CPU%  Total-CPU Total-SU Total-RESP   #EXEC A MOD  DB PSB
                     ACTV%    AVG-CPU   AVG-SU   AVG-RESP
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX1     CICS0008 0.600  40.236000   732406  38.250000       3     3
                             13.412000   244135  12.750000
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX2     CICS0008 1.100  73.766000  1342744   0.000000      12    12   4
                              6.147166   111895   0.000000
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX3     CICS0008 3.550 238.063000  4333403   0.000000      52    19   6
                              4.578134    83334   0.000000
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX4     CICS0008 0.580  38.894800   707992   0.000000       9     9   3
                              4.321644    78665   0.000000
```

Transaction information is displayed for one day over all systems depending on the system ID that you defined on the CICS Feature Main Menu. For each transaction that is displayed, any existing alert can be accessed or a new alert generated.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction that is displayed in the list.

TO

Displays an overview of historical information about the transaction.

AL

Displays the Alert List panel.

AI

Inserts a user alert.

TM

Displays transaction specific module information.

TD

Displays DBRM information for the transaction.

TP

Displays PSB information for the transaction.

Field Descriptions

PSB

Limits the display to the lines containing a PSB name matching this selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, DBRMT* displays all PSBs starting with PSB T, such as PSB T001, PSB TABC, and so on.

Date

Displays the date that the listed information was collected.

The date is in the format yyyy.mm.dd. Change the date to view older/newer dates (if available). Enter an asterisk as the first character to show the data from the most recent entries taken into Performance Management Assistant.

System

Limits the display to the lines containing a System name matching the selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, SYSP* displays all systems starting with SYSP, such as SYSP001, SYSPABC, and so on. For details about how the system name is generated or defined, see the *Administration Guide*.

Column Descriptions

Transaction

Displays the name of the transaction.

System

Displays the name of the system representing the CICS region in which the transactions run.

ACTV%

Displays the percentage of the monitored period that the transaction was processing application code only.

The value in this field does not include CPU time spent in systems services or SVCs.

TOT CPU

Displays the cumulative CPU seconds for this transaction during the monitored period.

AVG CPU

Displays the average CPU time required for this transaction during the monitored period, which is calculated by dividing the total CPU time by the number of times the transaction was completed during the monitored period.

Total-SU

Displays the cumulative CPU service units for this transaction during the monitored period.

AVG-SU

Displays the average CPU service units required for this transaction during the monitored period.

This value is calculated by dividing the total CPU service units by the number of times the transaction completed during the monitored period.

TOT RESP

Displays the total time (in seconds) for the transaction to complete processing.

AVG RESP

Displays the average time (in seconds) for the transaction to complete processing.

#TRANS

Displays the number of times this transaction was completed during the monitored period.

AS (Alert State)

Displays the alert state in abbreviated format:

O - Open

R - Review

C - Close

Alerts can be viewed by selecting the transaction with line command AL. If the Alert State column is blank, no alert exists for the transaction.

Number in TX Mod

Displays the number of modules exceeding the thresholds within this transaction.

Number in TX DBs

Displays the number of DBs exceeding the thresholds within this transaction.

Number in TX PSB

Displays the number of PSBs exceeding the thresholds within this transaction.

Transaction History

To display an overview of all available historical information about a transaction, select a transaction with line command TO to display the Transaction History Overview panel. By default, the most recent three months of information are displayed. Up to 18 months of information can be displayed by changing the value in the Show recent months field.

```
APCGPS11 - PMA - Transaction Overview ---------------------------- Row 1 of 4
COMMAND ===>                                                  SCROLL ===> CSR

Transaction  : TRX1                              Show recent months: 03
Line Commands: TM - TX specific module info  TD - DBRM info  TP - PSB info

LC Date       System    CPU%  Total-CPU Total-SU Total-Resp   #EXEC MOD  DB PSB
                         ACTV%   AVG-CPU   AVG-SU   AVG-Resp
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
   2011.01.13 CICS0008 0.600  40.236000   732406  38.250000       3   3
                              13.412000   244135  12.750000
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
   2011.01.12 CICS0008 0.600  40.236000   732406  38.250000       3   3
                              13.412000   244135  12.750000
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
   2011.01.11 CICS0008 0.600  40.236000   732406  38.250000       3   3
                              13.412000   244135  12.750000
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
   2011.01.11 CICS0008 0.600  40.236000   732406  38.250000       3   3
                              13.412000   244135  12.750000
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
****************************** Bottom of data ******************************
```

Historical figures are comparable only if the measurements are done regularly, which means measurements must always be at the same time of day and using the same parameters (that is, target sample size and estimated run time).

Panel Elements

This section describes the elements on the panel.

Line Commands

Line commands can be used to work with a specific transaction that is displayed in the list.

TM

Displays module information that is specific to the selected transaction.

TD

Displays DBRM information that is specific to the selected transaction.

TP

Displays PSB information that is specific to the selected transaction.

Column Descriptions

Transaction

Displays the name of the transaction.

System

Displays the name of the system representing the CICS region in which the transactions run.

ACTV%

Displays the percentage of the monitored period that the transaction was processing application code only. The value in this field does not include CPU time spent in systems services or SVCs.

TOT CPU

Displays the cumulative CPU seconds for this transaction during the monitored period.

AVG CPU

Displays the average CPU time required for this transaction during the monitored period, which is calculated by dividing the total CPU time by the number of times the transaction was completed during the monitored period.

Total-SU

Displays the cumulative CPU service units for this transaction during the monitored period.

AVG-SU

Displays the average CPU service units required for this transaction during the monitored period.

This value is calculated by dividing the total CPU service units by the number of times the transaction completed during the monitored period.

TOT RESP

Displays the total time (in seconds) for the transaction to complete processing.

AVG RESP

Displays the average time (in seconds) for the transaction to complete processing.

#TRANS

Displays the number of times this transaction was completed during the monitored period.

Number in TX Mod

Displays the number of modules exceeding the thresholds within this transaction.

Number in TX DBs

Displays the number of DBs exceeding the thresholds within this transaction.

Number in TX PSB

Displays the number of PSBs exceeding the thresholds within this transaction.

General Module Information

The General Module Information panel is displayed when option **2** is entered on the CICS Feature Menu.

```
APCGP002 -- PMA CICS Feature - General Module Information ------ Row 1 from 47
COMMAND ===>                                                   SCROLL ===> HALF

Module       : *             Date: 2011.01.15                  System: CICSSYS1
Commands     : SORT M/SY/C%/L - Module/SYs/aCtv%/Linkdate
Line Commands: MO - Module overview   MS - Module statement

                                                 16  Module
LC Module    System    ACTV%  Linkdate    MB  Statements
-- --------  --------  -----  ----------  --  ----------
   DFHSIP    CICSSYS1  29.11  2011.07.20   >   6
   .NUCLEUS  CICSSYS1   2.89               <   1
   DSNK2DM   CICSSYS1   1.50  2011.03.17   >  10
   DSNIDM    CICSSYS1   1.31               >  10
   DFHD2EX1  CICSSYS1   0.58  2011.01.26   >   1
   **N/A**   CICSSYS1   0.51               <
   IGC0013   CICSSYS1   0.40               <   7
   DSNXGRDS  CICSSYS1   0.29               >
   CEEPLPKA  CICSSYS1   0.25               >   8
   DSNGEDM   CICSSYS1   0.21  2011.03.21   >   2
   DSNBBM    CICSSYS1   0.18               >   4
   KOCEXEQE  CICSSYS1   0.17  2011.01.14   <  10
   DFHAIP    CICSSYS1   0.14  2011.03.02   <  10
   DFHZCB    CICSSYS1   0.14  2011.03.02   >   1
   DSNSLD1   CICSSYS1   0.14  2011.04.17   >   3
```

The General Module Information panel presents an overview of information about modules for all (or specific) systems as of the last measurement day.

Panel Elements

This section describes the elements on the pane.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific module that is displayed in the list.

MO

Displays an overview of historical information about the module.

MS

Displays module statements.

Field Descriptions

Module

To reduce the number of modules displayed, enter a specific name or part of a name. Generic notation is allowed by using * as a wildcard. For example, entering A* shows the information of all modules beginning with A. By default, all modules that are measured during the last measurement date are displayed.

Date

To select a specific date with which you would like to compare the current information, enter a date. The default date is the last measurement date.

System

The System field contains the name of the system representing the CICS region in which the transactions run. To display only the information of a certain system, change the name in the System field on the CICS Feature Menu. For details about how the System name is generated or defined, see the *Administration Guide*.

Column Descriptions

Module

Displays the name of the module.

System

Displays the name of the system representing the CICS region in which the module runs.

ACTV%

Displays the percentage of the monitored period that CA Mainframe Application Tuner detected that this module was in use.

Linkdate

Displays the linkage date of the module. This information is available only if one of the following situations is true:

- The Central Component is used to scan the load libraries containing the online modules (recommended).
- You have a separate run of a Central Component job just for searching the online modules (see step APCXALMO of job APCXJLIB).

See the *Administration Guide* for details about job APCXJLIB.

16 MB

Displays one of the following symbols that specify whether the module runs above or below the 16 MB line:

- > (runs above the 16 MB line)
- < (runs below the 16 MB line)

Module Statements

Displays the number of module statements that exceed the threshold value.

Module History

To display an overview of all available historical information about a module, select a module by using line command MO.

```
APCGP022 -- PMA - General Module Overview ------------------ Row 1 to 25 of 25
COMMAND ===>                                                  SCROLL ===> HALF

Module       : IGC0013                          Show recent months: 03
Line Commands: MS - Module statement
                                                16  Module
LC Date        System    ACTV%  Linkdate      MB  Statements
-- ----------  --------  -----  ----------    --  ----------
   2011.01.15  CICSSYS1   0.40                <    7
   2011.01.14  CICSSYS1   0.35                <   10
   2011.01.13  CICSSYS1   0.44                <    5
```

Module Statements

To display module statements in descending CPU time order, select a module by using line command MS.

```
APCGP201 -- PMA - Module Statements ------------------------ Row 1 to 7 of 7
COMMAND ===>                                                 SCROLL ===> HALF

Module      : IGC0013       Date: 2011.01.15                 System: CICSSYS1

              ACTV%   Starting
                      location
-------------------------------------------------------------------------------
Total module:  0.40
Threshold   :  0.01
-------------------------------------------------------------------------------
               0.33     055800
               0.01     05BC00
               0.01     05BEA0
               0.01     05BF20
               0.01     05B7C0
               0.01     051140
               0.01     051420
****************************** Bottom of data ********************************
```

The Module Statements panel displays the starting addresses of module statements in descending CPU time order. The top 10 modules statements are listed. Also displayed are module name, measurement date, and system.

Panel Elements

This section describes the elements on the panel.

Column Descriptions

CPU time

Displays the total CPU consumption of the statement as a percentage and in absolute seconds.

Also displayed is the threshold value for module statements. For details about thresholds, see the *Administration Guide*.

Starting location

Displays the starting location of the module statements that exceed the threshold value. Up to ten location addresses are shown.

DBRM - SQL Information

The DBRM panel is displayed when option **3** is entered on the CICS Feature Menu.

```
APCDPDBR ------ PMA CICS Feature - DBRM ---------------------- Row 1 from 2642
COMMAND ===>                                                  SCROLL ===> CSR

DBRM         : *             Date: 2011.01.15                 System: *

Line Commands: DO - DBRM overview   SS - SQL statements  TX - TX using the DBRM

                      Total     Total     Total        Total
LC DBRM     System    ACTV%   CPU sec  RESP sec SQL#  Called  CPU/Call RESP/Call
-- -------- -------- ----- --------- --------- ---- ------- --------- ---------
   BT202B   CICP4    N/A     12.8898   28.4835   24  245915  0.000052  0.000115
   FC920C   CICP0    N/A      7.1999   29.8974    3   15535  0.000463  0.001924
   UA176A   CICP0    N/A      7.1240   56.6788   25    6065  0.001174  0.009345
   UA151A   CICP0    N/A      6.5962  122.5025   60   32391  0.000203  0.003781
   UA176A   CICP1    N/A      6.4878   30.6972   26    3588  0.001808  0.008555
   PL666B   CICP3    N/A      5.0338   21.1689   11    1390  0.003621  0.015229
   TK605A   CICP1    N/A      4.2706   43.9887   40   61827  0.000069  0.000711
   PL726A   CICP0    N/A      3.6349    6.5904   21  113549  0.000032  0.000058
   PL872A   CICP3    N/A      3.4488   21.0710   35    7806  0.000441  0.002699
   QE042B   CICP3    N/A      3.3996   11.4757    3      18  0.188869  0.637540
   XHZ56M   CICP3    N/A      3.1745   17.9664    6  203496  0.000015  0.000088
   UA151A   CICP1    N/A      3.0409   27.2275   66   12927  0.000235  0.002106
   BT219B   CICP4    N/A      2.7856   22.1400   28   13688  0.000203  0.001617
   PL858B   CICP3    N/A      2.7485    4.8168    9  237981  0.000011  0.000020
```

The DBRM panel presents an overview of DBRMs for all (or specific) systems as of the last measurement day.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific DBRM that is displayed in the list.

DO

Displays an overview of historical information about the DBRM.

SS

Displays information about the SQL statements belonging to the DBRM that exceed threshold values.

TX

Displays the transaction referring to the DBRM.

Field Descriptions

DBRM

To reduce the number of DBRMs displayed, enter a specific name or part of a name. Generic notation is allowed by using * as a wildcard. For example, enter A* to display the information for all DBRMs beginning with A. By default, all DBRMs measured during the last measurement date are displayed.

Date

To choose a specific date with which you would like to compare the display current information, enter the date. The default date is the last measurement date.

System

The System field contains the name of the system representing the CICS region in which the DBRM runs. To display only the information of a certain system, change the name in the System field on the CICS Feature Menu. For details about how the System name is generated or defined, see the *Administration Guide*.

Column Descriptions

DBRM

Name of the DBRM.

System

Name of the system on which this DBRM runs.

ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for all SQL statements of this DBRM.

Total RESP sec

Total time (in seconds) for all SQL statements of this DBRM to complete processing.

SQL#

Number of SQL statements running in this DBRM for which Performance Management Assistant has gathered consumption data from CA Mainframe Application Tuner.

Total Called

Total number of SQL statements that have been executed from this DBRM during the measurement period.

CPU/Call

Value of Total CPU sec column divided by the value of the SQL# column.

RESP/Call

Value of Total RESP sec column divided by the value of the SQL# column.

DBRM History Information

To display an overview of historical information for a specific DBRM, select a DBRM by using line command DO.

```
APCDPDBO ------ PMA CICS Feature - DBRM Overview ------------ Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> CSR

DBRM         : BT202B    System: CICP4           Show recent months: 03

Line Commands: SS - SQL statements  TX - TX using the DBRM

              Total     Total     Total        Total
LC Date       ACTV%   CPU sec  RESP sec SQL#  Called  CPU/Call RESP/Call
-- ---------- ----- --------- --------- ---- ------- --------- ---------
   2011.01.15 N/A     12.8898   28.4835   24  245915  0.000052  0.000115
****************************** Bottom of data ********************************
```

The DBRM Overview panel displays a historical overview of the measurement information for a specific DBRM.

Panel Elements

To view more or less information for the DBRM, use the Show recent months field to define the number of months for which information should be displayed.

Line Commands

Line commands can be used to work with a specific DBRM that is displayed in the list.

SS

Displays the SQL statements exceeding the threshold values.

TX

Displays transactions that are using the selected DBRM

Field Descriptions

DBRM

Displays the name of the DBRM.

Show recent months

Displays the number of months entered (if the information is available for the period entered).

Column Descriptions

Date

Date the measurement was done.

ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for all SQL statements of this DBRM.

Total RESP sec

Total time (in seconds) for all SQL statements of this DBRM to complete processing

SQL#

Number of SQL statements running in this DBRM for which Performance Management Assistant has gathered consumption data from CA Mainframe Application Tuner.

Total Called

Total number of SQL statements that have been executed from this DBRM during the measurement period

CPU/Call

Value of Total CPU sec column divided by the value of the SQL# column.

RESP/Call

Value of Total RESP sec column divided by the value of the SQL# column.

SQL Statements Exceeding Thresholds

To display SQL statements that exceed the threshold values, select a DBRM by using line command **SS**.

```
APCDPSQO - PMA - CICS Feature DBRM SQL Overview------------ Row 1 to 11 of 19
COMMAND ===>                                                  SCROLL ===> HALF

Line Commands:  SD -SQL Details  SO -SQL Statement Overview

Date   : 2011.01.15      DBRM ACTV%   :     28.29
System : CICSSYS1             CPU sec :   65.4662
DBRM   : TSTD4099             RESP sec:  118.5100
Created:                      Thresh.%:      0.01

                           Total     Total     Total
LC Action    Stmt#  Called ACTV%   CPU sec  RESP sec  CPU/Call RESP/Call
-- -------- ------ ------- ----- --------- --------- --------- ---------
   SELECT     5493      27 16.71   38.6073   53.7437  1.429901  1.990510
   FETCH      6227       1  6.20   14.3316   39.8550 14.331662 39.855086
   FETCH      5962     719  3.87    8.9418   10.6731  0.012436  0.014844
```

For each statement, you can see the CPU consumption, the statement number of the SQL statement, the action and the first part of the actual SQL statement.

If there are cumulative consumption values, the displayed threshold refers to the source value.

Panel Elements

This section describes the elements on the panel.

Line Commands

SD

Displays the SQL statement text, if available.

SO

Displays a historical overview of the selected SQL statement . SQL information is displayed for one SQL statement and one system ID for all available days.

Field Descriptions

Date

Date the information was collected.

System

Online region where the DBRM was used.

DBRM

DBRM name to which the information belongs.

Created

Creation date of the DBRM,

ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for all SQL statements of this DBRM

RESP sec

Total time (in seconds) for all SQL statements of this DBRM to complete processing.

Thresh.%

Only SQL statement consumption data that exceeded this threshold value was gathered by Performance Management Assistant from CA Mainframe Application Tuner.

Column Descriptions

Action

Type of call that was issued with this statement.

Stmt#

Number of the unique SQL statement that is contained in a Package or Plan.

Called

Number of times during the measurement session that this SQL statement was executed.

ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for this SQL statement.

Total RESP sec

Total time (in seconds) for this SQL statement to complete processing.

CPU/Call

Amount of CPU time (in seconds) needed by DB2 to process each DB2 call for this SQL statement.

RESP/Call

Average response time (in seconds) for this SQL statement to complete processing.

SQL Statement Details

Select an SQL statement by using line command SD from the DBRM SQL Overview panel to display details about the selected statement.

```
APCXPSTX          SQL Statement Information                Row 1 to 28 of 28
 COMMAND ===>                                               SCROLL ===> HALF

 Date: 2011.01.15  System: PRODCICA  DBRM: TEST1234

                         Total     Total     Total
 Action    Stmt#  Called ACTV%   CPU sec  RESP sec  CPU/Call RESP/Call   BROWSE
 -------- ------ ------- ----- --------- --------- --------- ---------
 FETCH       333  163959  0.20    3.3796    3.9260  0.000020  0.000023   EDIT

 *** START OF SQL STATEMENT ***

 FETCH

 *** END OF SQL STATEMENT ***

 *** START OF SQL DECLARE ***

 DECLARE  TCDC0970 CURSOR
 FOR
 SELECT   TC_APPLICATION , SEQUENCE , HARDCODES
 FROM     TESTT097
 WHERE    COD_ENTITY = : H
 AND      PROGRAM = : H
 AND      LNG_DATA = : H
 ORDER    BY SEQUENCE DES_NRESFCC , COD_NATCTRY , DES_NATCTRY ,
          FLG_EURCTRY , EXCHANGE , LNG_OFDATA , LASTMODUSER ,
          LASTMODTRM , DAT_LASTMOD , DES_ENTABR , FLG_OFCACC ,
          FLG_FCCCOEXC , FLG_ALL_MULT
 INTO     : H , : H , : H , : H , : H , : H , : H , : H , : H , : H ,
          : H , : H , : H , : H , : H , : H , : H , : H , : H , : H ,
          : H , : H , : H , : H , : H , : H , : H , : H , : H , : H ,
          : H
```

The SQL Statement Information panel shows the performance details of the selected SQL statement followed by the SQL statement text, if available. For cursor statements, the SQL Declare statement text will also be shown in, if available.

You can use the BROWSE and EDIT buttons to display the statement text in Browse or Edit mode for further processing.

Panel Elements

This section describes the elements on the panel.

Field Descriptions

Date

Date the information was collected.

System

Online region where the DBRM was used.

DBRM

DBRM name to which the information belongs.

Action

Type of call that was issued with this statement.

Stmt#

Number of the unique SQL statement that is contained in a Package or Plan.

Called

Number of times during the measurement session that this SQL statement was executed.

Total ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for this SQL statement.

Total RESP sec

Total time (in seconds) for this SQL statement to complete processing.

CPU/Call

Amount of CPU time (in seconds) needed by DB2 to process each DB2 call for this SQL statement (Total CPU Sec / Total Called).

RESP/Call

Average response time (in seconds) for this SQL statement to complete processing (Total RESP Sec / Total Called).

SQL Statement Text

SQL statement text and corresponding SQL Declare text, if applicable.

SQL Statement Overview (History)

Select an SQL statement by using line command **SO** from either the DBRM SQL Overview panel or the SQL Summary panel to display a historical overview of the selected statement, as shown following.

```
APCXPSQH ----- PMA CICS Feature - SQL Overview -------------- Row 1 to 3 of 3
COMMAND ===>                                                  SCROLL ===> HALF

DBRM: TSTC4099  System: CICSSYS1  Action: FETCH     STMT#:   6227   Months: 03

Line Commands: SD - SQL Details     TX - TX using the DBRM

                      Total     Total                          Total
LC Date        Called ACTV%   CPU sec  CPU/Call RESP/Call  RESP sec
-- ---------- ------- ----- --------- --------- --------- ---------
   2011.01.03       1  6.20   14.3316   14.3316 39.855086   39.8550
   2011.01.02       1  5.20   11.1317   11.1317 37.135021   37.1350
   2011.01.01       1  6.40   14.7216   14.7216 40.007991   40.0079
****************************** Bottom of data ********************************
```

SQL information is displayed for one SQL statement and one system ID for all available days.

Panel Elements

This section describes the elements on the panel.

Line Commands

SD

Displays details about the SQL statement, including the SQL statement text, if available.

TX

Displays information about the transaction that is using the DBRM that contains the SQL statement

Field Descriptions

DBRM

Name of the DBRM that contains the SQL statement.

System

System name.

Action

Yype of call that was issued with this statement.

STMT#

Number of the unique SQL statement that is contained in a Package or Plan.

Show recent months

Limits the display to the dates that occur in the specified time range.

The default value is 03 months. You can specify any value from 01 to 18 months.

Column Descriptions

Date

Date the measurement was done.

Called

Number of times during the measurement session that this SQL statement was executed.

Total ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for this SQL statement.

CPU/Call

Amount of CPU time (in seconds) needed by DB2 to process each DB2 call for this SQL statement.

RESP/Call

Average response time (in seconds) for this SQL statement to complete processing.

Total RESP sec

Total time (in seconds) for this SQL statement to complete processing.

Transactions that Use the DBRM

To display transactions that use the DBRM, select a DBRM from the DBRM Overview panel by using line command **TX**.

```
APCGP305 ----- PMA - Transactions Using Selected DBRM ------- Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> PAGE

DBRM  : FT187I              Date: 2011.01.15                  System: CICS0009

Transaction  DELAY%
-------------------------------------------------------------------------------
FCI2          1.21
****************************** Bottom of data ********************************
```

Panel Elements

This section describes the elements on the panel.

Field Descriptions

Transaction

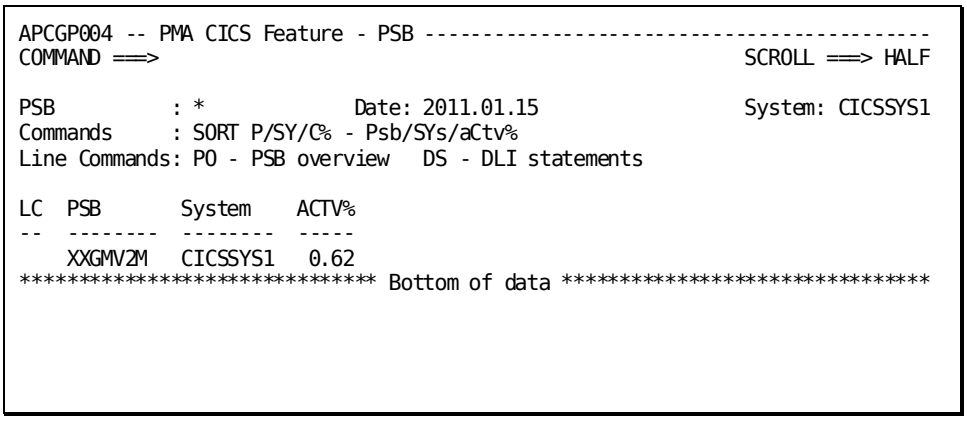
Displays the name of the transaction.

DELAY%

Displays the percentage of the monitored period that activity was detected for this transaction processing the shown DBRM.

PSB - DLI Information

The PSB panel is displayed when option **4** is entered on the CICS Feature Menu.



The PSB panel presents an overview of PSB information for all (or specific) systems as of the last measurement day.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific PSB that is displayed in the list.

PO

Displays historical information about a specific PSB.

DS

Displays the top 10 DLI statements that are exceeding the thresholds.

Field Descriptions

PSB

To filter the PSBs that are displayed, enter a specific PSB name or a generic PSB name. Generic notation is allowed by using * as a wildcard. For example, enter **A*** to display the information for all PSBs beginning with A. By default, all PSBs measured during the last measurement date are displayed.

Date

To select a specific date with which you would like to compare the current information, enter the date. The default date is the last measurement date.

System

The System field contains the name of the system representing the CICS region in which the transactions run. To display only information from a certain system, change the name in the System field on the CICS Feature Menu. For details about how the System name is generated or defined, see the *Administration Guide*.

Column Descriptions

PSB name

Displays the name of the PSB.

System

Displays the name of the system representing the CICS region in which this module runs.

ACTV%

Displays the percent of CPU utilization of the module within the CICS system.

This percentage reflects the total of all CPU time accumulated from all measurements taken during the time range specified on the System Control panel. See the *Administration Guide* for more details about this time range.

PSB History Information

To display historical information for a specific PSB, select the PSB by using line command **PO**.

```
APCGP042 -- PMA - PSB Overview------------------------------ Row 1 to 1 of 1
COMMAND ===>                                                 SCROLL ===> HALF

PSB          : XXGMV2M                          Show recent months: 03
Line Commands: DS - DLI statements

LC  Date        System    ACTV%
--  ----------  --------  -----
    2011.01.15  CICSSYS1   0.62
****************************** Bottom of data ********************************
```

The PSB Overview panel displays a historical overview of the measurement information for a specific PSB.

PSB Overview Panel

Use this panel to do the following:

- To view more or less information for the PSB, use the Show recent months field to define the number of months for which information should be displayed.
- Use line command **DS** to display the top 10 DLI statements that are exceeding the thresholds.

DLI Statements

DLI statements that exceed the threshold values can be displayed by selecting one of the following:

- A specific PSB by using line command DS on the PSB panel
- A history record for a PSB by using line command DS on the PSB Overview panel

```
APCGP204 -- PMA - DLI Statements ---------------------------- Row 1 to 5 of 5
COMMAND ===>                                                  SCROLL ===> HALF

PSB         : XXGMV2M        Date: 2011.01.15                 System: CICSSYS1

           Call   ACTV%  WAIT%  Resource SSA
-------------------------------------------------------------------------------
Threshold       :  0.01
-------------------------------------------------------------------------------
           GHU     0.47   5.80  XX21PART BACKTEST
           GHU     4.02  24.54  XX21PART TSTCOUNT
           GHU     1.03   9.28  XX21PART TESTINFO
           GHU     0.17   0.36  TSTDB1   A1111111
           GU      0.01   0.16  XX21PART TESTINFO
****************************** Bottom of data ********************************
```

he DLI Statement panel displays the PSB name, measurement date, system, and the threshold value for DLI statements. Up to ten DLI statements are shown that exceed the threshold value. Displayed for each statement are the name of the calling transaction, the CPU and Wait Time consumption (in % of the CICS region and in seconds), resource and SSA information.

Overview of Measurement Reports

The OVERVIEW option of the CICS Feature Menu displays different chapters of a measurement report. The default entry is #SJS. However, users can also choose from the following table of chapters.

Chapter ID	Overview Description
#SJS	Sampler and Job Statistics
#RDC	Resource Demand Chart
#COV	Code View
#DSA	Dataset Activity
#TXV	Transaction View

#POV	Pool View
#SUM	Summary

#SJS - Sampler and Job Statistics

To display a chapter in the measurement report (Sampler and Job Statistics is used here for illustration), on the CICS Feature Menu select option **5** and enter the chapter ID (#SJS is the default chapter). The first page of the chapter is displayed as illustrated following.

```
APCDP005 CA MAT (R) Meas. - SAMPLER AND JOB STATISTICS ---- Row 1 to 37 of 187
COMMAND ===>                                                 SCROLL ===> HALF

Object  : O O/D/S - Overview/Date/System    Direction: F F/B - Forward/Backward
Overview: #SJS        Date: 2011.01.15      System/Jobname: CICSSYS1/CICS

-- JOB INFORMATION --  ------ JOB STATISTICS ------  --- MONITOR STATISTICS ---

JOBNAME  . . CICSSYS1  TCB TIME . . . . 00:38:01.36  START DATE . . 2011/01/15
STEPNAME . . CICS      SRB TIME . . . . 00:00:35.22  START TIME . . 10:30:01
PROCSTEP . . CICS                                   DURATION . . . 00:16:13
PROGRAM  . . DFHSIP    ECPU TIME  . . . 00:38:36.67
ASID . . . . 89        ZAAP TIME  . . .     **N/A**  OBSERVATIONS:
(HEX)  . . . 0059      ELIG ZAAP TIME .     **N/A**  FINAL RATE . . 160MSEC
USER ID  . .                                        REQUESTED  . . 6000
JOB ID . . . JOB41742  SWAPPED OUT  . . 00:00:00.00  USED . . . . . 6000
                       NON DISP . . . . 00:00:00.00
CICS LEVEL . 6.4.0     LPAR/DIS DELAY . 00:00:00.19  SAMPLES:
DB2 LEVEL  . 8.1.0                                  USED . . . . . 34339
IMS LEVEL  . **N/A**   CPU SVC UNITS  . 58309520     % ACTIVE . . . 39.15
MQS LEVEL  . **N/A**                                % WAIT . . . . 60.85
SAP LEVEL  . **N/A**   EXCP COUNT . . . 233907
USS LEVEL  . 1.4.0     EXCP RATE  . . . 240.20       AVG TCBS ACT . 2.65
WAS LEVEL  . **N/A**

< RGN LIM  . 11240K    < RGN USED HWM . 8644K        CMN HWM USED . 760K
> RGN LIM  . 1585M     > RGN USED HWM . 270M
RGN REQUEST  0M
                       PAGE-INS . . . . 8
DYNAMIC LINKLIST:      PAGE-IN RATE . . 0.00
LNKLST00

MONITOR DATA SET  CAMAT.MONDS.TESTCICS.T235774.D20110115
```

The CICS Feature offers a variety of paging alternatives. The normal PF keys for scrolling forward and backwards can be used. Additionally, the Object field and Direction field can be used in combination to scroll forwards or backwards through different objects.

PF7/ PF8 Pages backward and forward within the actual overview.

Object O	Pages through overviews with the same date and same CICS system Direction: F to page to the next report; B to page to the previous overview.
Object D	Pages through date with the same overview and same CICS system. Direction: F to page to the next date; B to page to the previous date. Order: Date descending—the most recent information is presented first.
Object S	Pages through CICS systems with the same overview and same date Direction: F to page to the next CICS system; B to page to the previous CICS system. Order: The system names are presented in internal ID order.

System Information

On the CICS Feature Menu, Option **6**, SYSTEMS, displays either:

- System Information panel with CPU values if "Show CPU(C)/Waits(W): C" is defined (panel APCGP006) See the next panel.

  Or

- System Information panel with WAIT values if "Show CPU(C)/Waits(W): W" is defined (panel APCGP06W). See the second following panel.

```
APCGP006 ------ PMA - System Information -------------------- Row 1 to 1 of 1
 COMMAND ===>                                                 SCROLL ===> CSR

               Date: 2011.01.15          Show CPU(C)/Waits(W): C
 Commands     : SORT SY/J - SYstem/Jobname
 Line Commands: O - Measurement Overview   B - Browse Measurement  P - Print
               PE - Edit   SO - System Overview  AN -CA MAT  Analysis

 LC System   Jobname   Time     Elps       CPU      SRVUs    EXCPs  Measurement
                             hh:mm:ss  hh:mm:ss                    Samples
 ------------------------------------------------------------------------------
    CICS0001 UC01P00A  16.46  01:07:05  00:12:03    10817K     58K    12K
 ****************************** Bottom of data ********************************
```

```
APCGP06W -- PMA - System Information ---------------------- Row 1 to 12 of 12
COMMAND ===>                                                  SCROLL ===> CSR

               Date: 2011.01.15          Show CPU(C)/Waits(W): W
Commands     : SORT SY/J - SYstem/Jobname
Line Commands: O - Measurement Overview   B - Browse Measurement  P - Print
               PE - Edit   SO - System Overview  AN -CA MAT  Analysis

LC System   Jobname   Time     Elps      Swap    NonDisp   ProcDly
                             hh:mm:ss  hh:mm:ss  hh:mm:ss  hh:mm:ss
-------------------------------------------------------------------------------
   CICPDAY  CICP0      9.00  00:26:39  00:00:00  00:00:00  00:00:06
   CICPDAY  CICP1      9.10  00:19:12  00:00:00  00:00:00  00:00:06
   CICPDAY  CICP2      9.20  01:26:48  00:00:00  00:00:00  00:00:06
   CICPDAY  CICP3      9.30  01:18:12  00:00:00  00:00:00  00:00:06
   CICPDAY  CICP4      9.40  01:05:15  00:00:00  00:00:00  00:00:06
   CICPDAY  CICP6     10.00  00:36:34  00:00:00  00:00:00  00:00:06
   CICP0    CICP0      9.00  00:26:39  00:00:00  00:00:00  00:00:06
   CICP1    CICP1      9.10  00:19:12  00:00:00  00:00:00  00:00:06
   CICP2    CICP2      9.20  01:26:48  00:00:00  00:00:00  00:00:06
   CICP3    CICP3      9.30  01:18:12  00:00:00  00:00:00  00:00:06
   CICP4    CICP4      9.40  01:05:15  00:00:00  00:00:00  00:00:06
   CICP6    CICP6     10.00  00:36:34  00:00:00  00:00:00  00:00:06
****************************** Bottom of data ********************************
```

The System Information panel presents all CICS measurements that are processed by job APCYJLNA according to the System Control parameters. For every processed CICS measurement, the related system is listed. If defined also under System Control, the measurement can relate to two systems. For more details, see the *Administration Guide*.

Use this panel to access or print a system's corresponding performance measurement report. Additionally, the measurement report can be edited. Editing might be desirable to add comments, delete lines or sections not to be printed, or temporarily change the JCL print statements.

System Information Panel

Use this panel to do the following:

- To choose a specific date for which you would like to display information, in the Date field, change the date. The default date is the last measurement date.
- The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.
- Show CPU(C)/Waits(W): With value **C,** the columns CPU, SRVUs, EXCPs and Measurement Samples are displayed. With value W**,** the columns Wait, Swapped, NonDisp.and ProcDly are displayed.

Panel Elements

This section describes the elements on the panel.

Line Commands

Line commands can be used to work with a specific system that is displayed in the list.

O

Displays an overview of the measurement reports.

B

Browses the measurement report.

P

Prints the measurement report.

PE

Edits the measurement report.

SO

Displays the System Overview panel with all information for a specific CICS system for a specific time period.

AN

Interface call to the Analyze Normal function.

This function is only available if the corresponding measurement data set to the selected entry has not been deleted.

Column Descriptions

System

Displays the system name (either default or user defined) from the System Control panel.

Jobname

Displays the name of the CICS startup job.

Time

Displays the start time of the measurement.

Consuming Time in Minutes - Elps

Displays the elapsed time of measurement in format *hh:mm:ss*

The following columns are shown if C (for CPU values) is set:

Consuming Time in Minutes - CPU

Displays the total CPU time consumed during measurement in format *hh:mm:ss.*

SRVUS

Displays the service units consumed during measurement. A **K** at the end of the value indicates that the format is in thousands

EXCPs

Displays the EXCPs consumed during measurement. A **K** at the end of the value indicates that the format is in thousands.

Measurement Samples

Displays the total samples processed by CA Mainframe Application Tuner during measurement. A **K** at the end of the value indicates that the format is in thousands.

The following columns are shown if W (for WAIT values) is set:

Swap

Displays the time consumed during measurement when the TCB is swapped out from system (format *hh:mm:ss*).

NonDisp

Displays the time consumed during measurement when the TCB is not dispatched from system (format *hh:mm:ss*).

ProcDly

Displays the time consumed during measurement when the processor itself delays (format *hh:mm:ss)*.

System Overview

The System Overview panel is displayed when a CICS system is selected on the System Information panel by using line command **SO**.

```
APCGP062 ------ PMA - System Overview ----------------------- Row 1 to 1 of 1
 COMMAND ===>                                                  SCROLL ===> CSR

 System       : CICS0001                          Show recent months: 03
 Line Commands: O - Measurement Overview   B - Browse Measurement  P - Print
                PE - Edit  AN -CA MAT  Analysis

 LC Date       Jobname   Time     Elps       CPU      Wait     EXCPS Measurement
                                 hh:mm:ss  hh:mm:ss  hh:mm:ss         Samples
 ------------------------------------------------------------------------------
    2011.01.15 UC01P00A  16.46  01:07:05  00:12:03  00:54:12     58K   12K
 ****************************** Bottom of data ********************************
```

The System Overview panel displays all date-specific information for a specific CICS system. The Show recent months field can be used to limit the information to the current month (Show recent months = 01) or to display all information available up to 18 months (Show recent months = 18). The default value for Show recent months is 03

Line commands and columns are the same as those described for the System Information panel.

In addition the new line command AN is available, which represents the Interface to the Analyze Normal function. This function is only executable as long as the corresponding monitor data set has not been deleted. For details about the appropriate parameter settings, refer to the "Global measurement data set processing" section of the *Administration Guide*.

Alert Management

In CICS, there are hundreds of transactions but not all of these transactions need performance monitoring. Many transactions, even though they may be high consumers, only execute occasionally and do not warrant concern.

For each execution of the CICS Feature, important top consuming transactions can be identified and alerts issued automatically.

This system works in two steps:

1. The top number of consuming transactions are identified based on the scope defined as a parameter, for example, TOP Limit = 10. This parameter is maintained by your administrator.
2. Within this TOP Limit, the current execution consumption values of the transactions are compared to the statistical information maintained for the same transactions on the database. If the actual consumption exceeds the statistical limits, an alert is issued automatically (referred to as a *statistical alert*).

Additionally, the user (APM Team) can manually issue alerts explicitly for transactions that use the online Alert Management option (referred to as *user alerts*).

The Alert Management option provides all the information necessary for the APM Team to manage the alert. Information is provided in the form of state and reason codes that identify the situation.

How the TOP Limit Works

In order to use the Alert Management option of the CICS Feature, the TOP Limit of work must be defined. TOP Limit processing works for each defined CICS system in Performance Management Assistant. It is the last step in the total system management. The TOP Limit is maintained by the administrator. It can contain a value from 0 to 999. A value of 0 deactivates the TOP Limit, thus deactivating Alert Management.

Within the TOP Limit (meaning the number defined as a parameter) all transactions of the current system are observed statistically and, at the end, a runaway test check is performed. The statistical limits are based on up to eighteen months of stored interpreted profiles. To determine the TOP consumer and issue alerts, one of two conditions normally exists:

- Transaction consumption is static. A standard deviation check is performed and if the result indicates an increase in the consumption (runaway), an alert is issued.
- Transaction consumption is not static. A standard deviation check is performed and if the result indicates a drastic increase in the consumption (runaway), an alert is issued.

In a runaway situation, the transaction is added to the Alert file with the state OPEN and the reason STAT. Alerts can be viewed under the Alert Management dialog.

The range of the statistical observation is limited to one year. For a transaction alert to be issued, it must have been observed in at least three separate profiles collected during the period of statistical observation.

Transaction Alert List Information

The Alert List panel is displayed when option **7** is entered on the CICS Feature Menu or when line command AL is used on the Transaction Information panel.

```
APCDP007 ------- PMA CICS Feature - Alert List - All Issued ---- ROW 1 from 15
COMMAND ===>                                                  SCROLL ===> CSR

Transaction  : *                 State: *
Commands     : SORT T/SY/S/A/D - Tran/System/State/Aid/Date
             : REV -list review  OPEN -open  ALL -issued  RECENT -most recent
Line Commands: TO -Tran Ov.  S -Show  R -Review  C -Close  D -Delete  I –Insert

 LC Traname    System      State Reason  AID  Issue Date   Al.No.
 ------------------------------------------------------------------------------
    VSIB       CICS0002    REV   STAT  15353  2011.01.02      1
    VSCO       CICS0002    OPEN  STAT  15352  2011.01.02      1
    VNAF       CICS0002    OPEN  STAT  15350  2011.01.02      1
    UWGC       CICS0002    OPEN  STAT  15349  2011.01.02      1
    SH21       CICS0002    OPEN  STAT  15348  2011.01.02      1
    PN§1       CICS0002    OPEN  STAT  15347  2011.01.02      1
    IUAQ       CICS0002    OPEN  STAT  15345  2011.01.02      1
    P140       CICS0001    OPEN  STAT  15342  2011.01.02      1
    LZ27       CICS0001    OPEN  STAT  15340  2011.01.02      1
    LZ15       CICS0001    OPEN  STAT  15339  2011.01.02      1
    LZ14       CICS0001    OPEN  STAT  15338  2011.01.02      1
    LZ11       CICS0001    OPEN  STAT  15337  2011.01.02      1
    LZ09       CICS0001    OPEN  STAT  15336  2011.01.02      1
```

If a TOP Limit has been identified, an alert is issued automatically for any transaction within the TOP Limit that is found to exceed its statistical limits. See the *Administration Guide*.

Use the Alert List panel to see an overview of all alerts along with all state codes and reason codes. The state code identifies the current state of the alert; for example, whether the alert is open, reviewed, or closed. The reason code identifies why the alert was issued; that is, statistical limits were exceeded or the user issued the alert.

Panel Elements

To filter the data listed on the panel, use the Transaction or State fields as described in Field Descriptions.

Primary Commands

Primary commands can be used as follows:

REV

View alerts with STATE = REV.

OPEN

View alerts with STATE = OPEN.

ALL

View all alerts.

RECENT

View the most recent occurrence of each alert.

SORT

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction alert that is displayed in the list.

TO

Displays the Transaction Overview panel.

S

Shows the alert.

R

Permits review and edits for the alert text. The state is changed to REV.

C

Closes an alert. The state is changed to CUSE and can no longer be reviewed.

D

Deletes an alert.

I

Inserts a new alert.

Field Descriptions

Transaction

To control the list of alerts being displayed, enter an actual transaction name or a generic transaction name. Generic character asterisk (*) can be used to list all alerts for all transactions or to limit the list of alerts to a generic group of transactions.

State

To reduce the list of alerts to a specific state, enter the state of the alerts to be displayed. You can enter a valid state code, the first letter of the state code plus an asterisk, or an asterisk alone to see all states of alert. Valid state codes are listed in State Code Descriptions.

Column Descriptions

Traname/System

Displays the specific transaction and system for which the alert is issued.

State

Displays the current state of the alert. Valid state codes are listed in State Code Descriptions.

Reason

Displays the current reason for the alert. Valid reason codes are listed in Reason Code Descriptions.

AID

Displays a unique alert identification for each alert.

Issue Date

Displays the date the alert was issued.

Al. No.

Displays the alert number, which is the sequence number of the alert entry created for this transaction.

For example, Al.No. 3 indicates that it is the third alert that was created for the selected transaction. If more than one alert exists and you want to delete the alert for this transaction, each alert must be individually deleted by using line command D.

State Code Descriptions

State Code	Short Description	Long Description
OPEN	Open	An open state indicates a new alert has been opened automatically by PMA or by a user.
REV	Review	A review state code stops further measurements for the transaction. An open alert can be changed to REV by selecting the alert with line command R. This action allows you to review the alert and changes the alert to state code REV.
CLOSE	Closed	A closed state code indicates the completion of an alert process.

Reason Code Descriptions

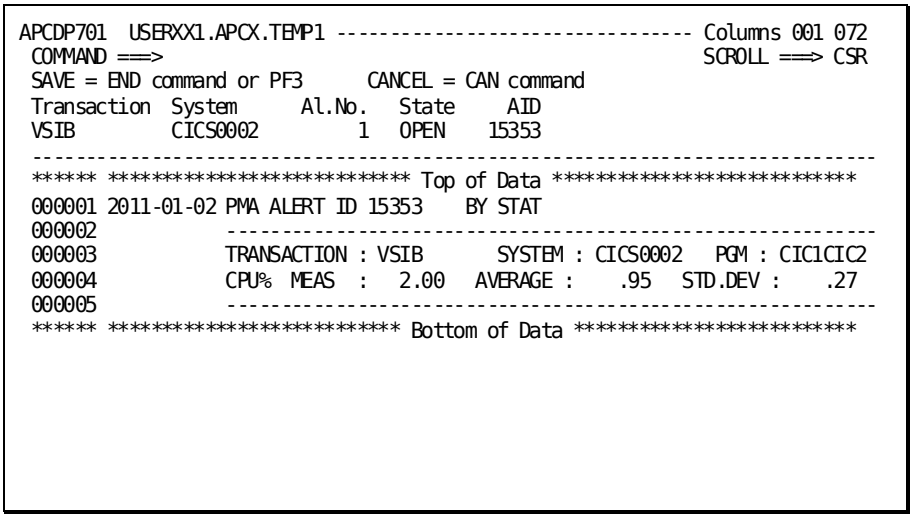
Reason Code	Short Description	Long Description
USER	User	The alert was issued by a user. See alert text for explanation.

STAT	Statistics	The alert was issued automatically by PMA because the transaction exceeded its normal statistical limits.

Show, Review, or Insert an Alert

The following panel is displayed as a result of one of these actions:

- A transaction was selected on the Alert List panel by using line command S or R.
- Line command I was used on the Alert List panel or line command AI was used on the Transaction Information panel to insert a user alert for a specific transaction.



When selected with S or R this panel details the alert situation for the specific transaction by displaying all text information that is either created automatically by Performance Management Assistant or documented by the user.

The alert is identified by the transaction name. Additionally, the number of alerts, status code, reason codes, identifier, and creation date are listed.

Show, Review, or Insert an Alert Panel

Use this panel to do the following;

- In Review mode (line command R), you are allowed to edit text up to the maximum of 102 lines. The alert state is changed to REV when it is reviewed by using line command R.
- In Insert mode (line command I or AI), you are allowed to insert a user alert and can create up to 102 lines of alert text. The alert state is OPEN with reason code USER.

- In both Review and Insert modes, the text is saved in the database and is available anytime for display or for documenting further information. The text is erased if you use the delete command for the alert on the Alert List panel.
- To cancel any changes, enter the CAN (cancel) command. Changes in the text is ignored and the state of the alert is not changed.

Alert List Information - Changed Modules

The Alert List Changed Modules panel is displayed when option **8** is entered on the CICS Feature Menu or when line command AL is used on the Transaction Information panel.

```
APCDP008 ------ PMA CICS Feature - Alert List Changed modules - Row 1 from 15
COMMAND ===>                                                  SCROLL ===> HALF

Module       : *                 State: *
Commands     : SORT M/SY/S/A/D/L/U - Module/System/State/Aid/Date/Linkdate/Uid
             : REV -list review  OPEN -open  ALL -issued  RECENT -most recent
Line Commands: MO -Mod.Ov.  S -Show  R -Review  C -Close  D -Delete  I -Insert

LC Module     System      State Reason  AID  Issue Date  Link Date    By (UID)
-------------------------------------------------------------------------------
   ASMTDLI    *ONLINE*    PEND  MODC      1  2011.01.26  2011.02.12   *PMA*
   ASMTDLI1   *ONLINE*    PEND  MODC      2  2011.01.26  2011.02.12   *PMA*
   ASMTDLI2   *ONLINE*    PEND  MODC      3  2011.01.26  2011.02.12   *PMA*
   ASMTDLI3   *ONLINE*    PEND  MODC      4  2011.01.26  2011.02.12   *PMA*
   ASMTDLI4   *ONLINE*    PEND  MODC      5  2011.01.26  2011.02.12   *PMA*
   CBLTDLI    *ONLINE*    PEND  MODC      6  2011.01.26  2011.02.12   *PMA*
   CBLTDLI1   *ONLINE*    PEND  MODC      7  2011.01.10  2011.02.12   *PMA*
   CBLTDLI2   *ONLINE*    PEND  MODC      8  2011.01.10  2011.02.09   *PMA*
   CBLTDLI3   *ONLINE*    PEND  MODC      9  2011.01.26  2011.02.12   *PMA*
   CBLTDLI4   *ONLINE*    PEND  MODC     10  2011.01.26  2011.02.12   *PMA*
```

The function works similar to the Batch Changed Module processing. The scan process to detect changes for CICS modules is activated by running job APCCJLMO. If a CICS module has changed, a pending alert is created. Different from batch, the alerts are shown based on the module name with the global entry *ONLINE* for the CICS system name. The alert entries are considered in the next CICS measurement result processing. The state of a pending alert belonging to a module that was active during the measurement is changed to OPEN or to CTHR (Closed THResholds). To see more information about CTHR, see "Defining Thresholds" in the *Administration Guide*. If the module was called in different systems, the alert entry is duplicated for each system the module was active in during the measurement.

Use the Alert List Changed modules panel to see an overview of all alerts along with all state codes and reason codes. The state code identifies the current state of the alert, for example, whether the alert is open, reviewed, or closed. The reason code identifies why the alert was issued; that is, statistical limits were exceeded or the user issued the alert.

Panel Elements

To filter the data listed on the panel, use the Transaction or State fields as described following.

Primary Commands

REV

View alerts with STATE = REV.

OPEN

View alerts with STATE = OPEN

ALL

View all alerts.

RECENT

View the most recent occurrence of each alert.

SORT

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction alert that is displayed in the list.

TO

Displays the Transaction Overview panel.

S

Shows the alert.

R

Permits review and edit of the alert text. The state is changed to REV.

C

Closes an alert. The state is changed to CUSE and can no longer be reviewed.

D

Deletes an alert.

I

Inserts a new alert.

Field Descriptions

Transaction

To control the list of alerts being displayed, enter an actual transaction name or a generic transaction name. Generic character asterisk (*) can be used to list all alerts for all transactions or to limit the list of alerts to a generic group of transactions.

State

To reduce the list of alerts to a specific state, enter the state of the alerts to be displayed. You can enter a valid state code, the first letter of the state code plus an asterisk, or an asterisk alone to see all states of alert.

Valid state codes are described in State Code Descriptions.

Column Descriptions

Traname/System

Displays the specific transaction and system for which the alert is issued.

State

Displays the current state of the alert. See State Code Descriptions for a detailed description of the valid state codes.

Reason

Displays the current reason for the alert. See Reason Code Descriptions for valid reason codes.

AID

Displays a unique alert identification is given to each alert.

Issue Date

Displays the date the alert was issued.

Al. No.

Displays the alert number, which is the sequence number of the alert entry that is created for this module.

For example, Al.No. 3 indicates the third alert that was created for the chosen module. If more than one alert exists, and you want to delete the alert for this module, each alert must be individually deleted by using line command D.

State Code Descriptions

State Code	Short Description	Long Description
OPEN	Open	An open state indicates a new alert has been opened automatically by PMA or by a user.

REV	Review	A review state code stops further measurements for the transaction. An open alert can be changed to REV by selecting the alert with command R. This action allows you to review the alert and changes the alert to state code REV.
CLOSE	Closed	A closed state code indicates the completion of an alert process.

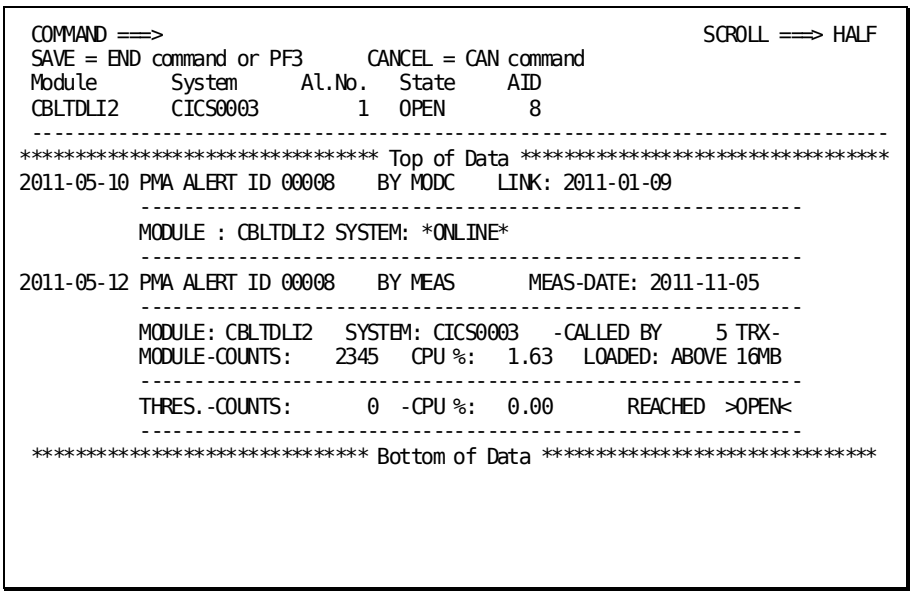
Reason Code Descriptions

Reason Code	Short Description	Long Description
USER	User	The alert was issued by a user. See alert text for explanation.
STAT	Statistics	The alert was issued automatically by PMA because the transaction exceeded its normal statistical limits.

Show, Review, or Insert an Alert

The following panel is displayed as a result of one of these actions:

- A transaction was selected on the Alert List panel by using line command S or R.
- Line command I was used on the Alert List panel or line command AI was used on the Transaction Information panel to insert a user alert for a specific transaction.



When selected with S or R this panel details the alert situation for the specific transaction by displaying all text information that is either created automatically by Performance Management Assistant or documented by the user.

The alert is identified by the transaction name. Additionally, the number of alerts, status code, reason codes, identifier, and creation date are listed.

Show, Review, or Insert an Alert Panel

Use this panel to do the following:

- In Review mode (line command R), you are allowed to edit text up to the maximum of 102 lines. The alert state is changed to REV when it is reviewed by using line command R.
- In Insert mode (line command I or AI), you are allowed to insert a user alert and can create up to 102 lines of alert text. The alert state is OPEN with reason code USER.
- In both Review and Insert modes, the text is saved in the database and is available anytime for display or for documenting further information. The text is erased if you use the delete command for the alert on the Alert List panel.
- To cancel any changes, enter the CAN (cancel) command. Changes in the text is ignored and the state of the alert is not changed.

SQL Statement Information - SQL Summary

The SQL Summary panel is displayed when option S is entered on the CICS Feature Menu.

```
APCXPSQL - PMA - CICS Feature SQL-Summary -------------------- Row 1 from 1803
COMMAND ===>                                                  SCROLL ===> HALF

Line Commands: DO -DBRM Overview  SD -SQL Details  SO -SQL Overview

DBRM: *         Date: 2011.01.15  System: *

                           Total     Total
LC Action   Stmt#  Called ACTV%   CPU sec  CPU/Call RESP/Call DBRM     System
-- ------- ------ ------- ----- --------- --------- --------- -------- --------
   FETCH     6227       1  6.20   14.3316 14.331662 39.855086 TSTC4099 CICSSYS1
   SELECT    5493      27 16.71   38.6073  1.429901  1.990510 TSTC4099 CICSSYS1
   SELECT    6328       3  1.47    3.4009  1.133653  2.618793 TSTC4099 CICSSYS1
   OPEN       500       1  0.11    0.2770  0.277061  0.606578 TSACBB11 CICSSYS1
```

The SQL Summary panel provides a central overview about the DB2 activities for all DBRMs that exceed the threshold value.

Panel Elements

To filter the data that is listed on the panel, use the DBRM**,** Date**, or** System fields as described following.

Line Commands

Line commands can be used to branch to the DBRM overview panel or to display detailed information about the specific SQL statement.

DO

Displays the DBRM Overview to the DBRMs listed in the selected line.

SD

Displays details about the selected SQL statement.

SO

Displays a historical overview of the selected SQL statement.

SQL information is displayed for one SQL statement and one system ID for all available days.

Field Descriptions

PSB

Limits the display to the lines containing a PSB name matching this selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, DBRMT* displays all PSBs starting with PSB T, such as PSB T001, PSB TABC, and so on.

Date

Displays the date that the listed information was collected.

The date is in the format yyyy.mm.dd. Change the date to view older/newer dates (if available). Enter an asterisk as the first character to show the data from the most recent entries taken into Performance Management Assistant.

System

Limits the display to the lines containing a System name matching the selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, SYSP* displays all systems starting with SYSP, such as SYSP001, SYSPABC, and so on. For details about how the system name is generated or defined, see the *Administration Guide*.

Column Descriptions

LC

Displays the line command entry field.

Action

Displays the SQL action.

TOTAL CPU

Displays the total CPU time in seconds consumed by the SQL statement

CPU-P-CALL

Displays the amount of CPU time in seconds needed by DB2 to process each DB2 call for this SQL statement by using sampling data collected during the measurement.

AVG RESP

Displays the average time (in seconds) of the SQL statement of this DBRM to complete processing.

#CALLED

Displays the total number of executed SQLs from this DBRM during the measurement.

STMT

Displays the SQL statement number

DBRM

Displays the name of the corresponding DBRM.

SYSTEM

Displays the name of the system to which the information belongs.

DLI Statement Information - DLI Summary

The DLI Summary panel is displayed when option **D** is entered on the CICS Feature Menu.

```
APCDPDLI -- PMA - CICS Feature DLI-Summary ---------------------- Row 1 from 48
COMMAND ===>                                                    SCROLL ===> CSR


Line Commands: PO -PSB Overview   DD -DLI Details

 PSB: *         Date: 2011.01.15  System: *

LC Act. Resource  Total CPU      Total Wait    SSA           PSB      PMA
                   %   abs sec    %   abs sec                       System
-------------------------------------------------------------------------------
   GU   VWTE1P    0.10      0.0  0.19      0.0 VWTE1P02      FB175A   CICSA
   GU   VWTE1P    0.10      0.0  0.19      0.0 VWTE1P02      FB175A   CICSB
   GU   VWTE1P    0.10      0.0  0.19      0.0 VWTE1P02      FB175A   CICSSUM
   GU   TMT1IP    0.08      0.0  0.00      0.0 TMT02G        FC049I   CICSA
   GU   TMT1IP    0.08      0.0  0.00      0.0 TMT02G        FC049I   CICSB
   GU   TMT1IP    0.08      0.0  0.00      0.0 TMT02G        FC049I   CICSSUM
   GU   TMT1NP    0.03      0.0  0.16      0.0 TMT02G        TM503N   CICSA
   GU   TMT1NP    0.03      0.0  0.16      0.0 TMT02G        TM503N   CICSB
   GU   TMT1NP    0.03      0.0  0.16      0.0 TMT02G        TM503N   CICSSUM
   GHN  SHD21P    0.02      0.0  0.08      0.0 SHD21S10      SH707A   CICSA
   GHN  SHD21P    0.02      0.0  0.08      0.0 SHD21S10      SH707A   CICSB
   GHN  SHD21P    0.02      0.0  0.08      0.0 SHD21S10      SH707A   CICSSUM
   GHU  TMT1NP    0.01      0.0  0.03      0.0 TMT01G        TM503N   CICSA
   GHU  TMT1NP    0.01      0.0  0.03      0.0 TMT01G        TM503N   CICSB
```

The DLI Summary panel provides a central overview about the DLI activities for all PSBs that exceed the threshold value.

Panel Elements

To filter the data listed on the panel, use the PSB, Date, or System fields as described in Field Descriptions.

Line Commands

Line commands can be used to branch to the PSB overview panel or to display detailed information about the specific SQL statement.

PO

Displays the PSB Overview panel for the selected PSB.

DD

Displays the DLI information of the corresponding measurement list if the profile is still available in the profile cluster.

This line command only works for single systems. For summary systems, that is, those where all listed consumption values are accumulated from more than one system, the display of DLI information from a measurement list is not possible.

Field Descriptions

PSB

Limits the display to the lines containing a PSB name matching this selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, DBRMT* displays all PSBs starting with PSB T, such as PSB T001, PSB TABC, and so on.

Date

Displays the date that the listed information was collected.

The date is in the format yyyy.mm.dd. Change the date to view older/newer dates (if available). Enter an asterisk as the first character to show the data from the most recent entries taken into Performance Management Assistant.

System

Limits the display to the lines containing a System name matching the selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, SYSP* displays all systems starting with SYSP, such as SYSP001, SYSPABC, and so on. For details about how the system name is generated or defined, see the *Administration Guide*.

Column Descriptions

LC

Displays the line command entry field.

Act.

Displays the DLI Action.

Resource

Displays the DLI resource activated by the DLI action

Total CPU %

Displays the percentage of CPU utilization of the DLI statement.

Total CPU abs sec

Displays the CPU utilization of the DLI statement in absolute seconds.

Total Wait %

Displays the percentage of wait time utilization of the DLI statement.

Total Wait abs sec

Wait time utilization of the DLI statement in absolute seconds

SSA

Displays the DLI segment search argument.

PSB

Displays the name of the corresponding PSB.

PMA System

Displays the name of the system to which the information belongs.

SMF Information for CICS Transactions

Option **C** on the CICS Feature Menu enables you to view SMF information for CICS transactions.

How the CICS SMF Feature Works

The CICS SMF Feature needs SMF Type 110 records with subtype 1 (CICS Monitoring). From these records, Class of Data = 1 (Dictionary) is used for verifying the existence and locating the offset of the relevant data. Class of Data = 3 (Performance) records contain one or more transaction-specific data according to the layout found in the dictionary record. These types of records must be activated and written to SMF data sets.

A dictionary record is created during CICS startup and it is relevant for that specific run. Every single CICS system on every single startup can contain a different layout of transaction performance information; however, this should not be the normal situation

A change in layout normally occurs when the CICS version is changed. The layout depends on the definition of the Monitoring Control Table (MCT).

Starting with the CICS SMF Feature for a specific CICS system is only possible after the startup of the region. Performance Management Assistant stores a dictionary information record containing the timestamp and processes only those transaction performance records after the stored timestamp

Every time Performance Management Assistant recognizes a new dictionary record for a specific CICS system, the information about the relevant fields is compared to the stored information. If there are no changes, the new dictionary record is ignored. When there are changes in the dictionary, Performance Management Assistant stores a new dictionary information record containing the new timestamp. All records after the timestamp are processed with the new layout, where older ones are processed with the layout for this specific time period. This assures the correct functionality even when SMF datas ets are not processed in the correct time sequence.

The CICS SMF Features uses the following fields from the Monitor Control Table:

Performance Group	Informal Name	Description
DFHTASK	TRAN	Name of the transaction
DFHTASK	TTYPE	Start type of the transaction
DFHCICS	START	Time that the user task was attached
DFHCICS	STOP	Time that the user task was detached
DFHDATA	IMSREQCT	Number of IMS (DBCTL) requests that were issued by the user task
DFHDATA	DB2REQCT	Number of DB2 (EXEC SQL and IFI) requests that were issued by the user task
DFHTASK	USRDISPT	Total elapsed time that the user task was dispatched

Performance Group	Informal Name	Description
DFHTASK	USRCPUT	Processor time that the user task was dispatched
DFHTASK	SUSPTIME	Total elapsed time that the user task was suspended by the dispatcher

All of these fields must be included on every CICS system that is used for the CICS SMF Feature.

Use the following steps to create the data contents for the CICS SMF Feature:

1. Extract the necessary information from SMF data sets to a temporary file (Module APCCASDI).
2. Sort the temporary files by CICS system, transaction, and start time.
3. Process the sorted file and aggregate the detail information (module APCCASSA - at this time with 96 fixed intervals of 15 minutes (00:00 to 00:15, 00:15 to 00:30 and so on).
4. Sort aggregated detail information file.
5. Process the sorted file to create final record structures and store all records onto the data cluster (module APCCASSB).

Transaction SMF Information

The CICS Transaction SMF Information Menu is displayed when option **C** is entered on the CICS Feature Menu.

```
APCDPSMF -- PMA - CICS Feature SMF information ------------------ Release 8.5
OPTION  ===>                                                    SYSTEM: *


             1 TRX      - TRX Total Overview
             2 SYSTEM   - SYSTEM Total Overview
             X or END   - Leave panel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```

To select options on the CICS Feature Tansaction SMF Information Menu, type one of the following numbers in the OPTION field and press Enter:

- **1** - TRX Total Overview shows information about all transactions of all systems for one day.
- **2** - SYSTEM Total Overview shows information about all systems for one day.

Transaction Totals per Day

The Transaction Totals per Day panel is displayed when option 1 is entered on the CICS Transaction SMF Information Menu.

```
APCDPSTT ----- PMA CICS Feature - Transaction Totals per Day (S Row 1 from 712
COMMAND ===>                                                  SCROLL ===> HALF

Tran: *         System: *         Date: 2011.01.15  (Format YYYY.MM.DD)

Line Commands: S  - Details    O  - Overview    I  - Intervals
             : TS - TRX Call Statistics

                                  CPU/Exec       CPU/Abs Elap/Exec      Elap/Abs
LC Tran     System       Exec# ssss.µµµµ hh:mm:ss.µµµµ ssss.µµµµ hh:mm:ss.µµµµ
-- -------- -------- ---------- --------- ------------ --------- ------------
   TRX1     CICSAPC           2    0.0003 00:00:00.0006    0.0004 00:00:00.0008
   TRX2     CICSAPC           1    0.0141 00:00:00.0141    0.3115 00:00:00.3115
   TRX3     CICSAPC          86    0.1626 00:00:13.9852   84.5512 02:01:11.4060
```

Transaction totals per day information is displayed for one day over all transactions of all systems depending on the transaction and system ID that you defined on the panel.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction that is displayed in the list.

S

Displays details of the selected transaction.

O

Displays an overview of all occurrences of the selected transaction and system

I

Displays the SMF interval values of the selected transaction.

TS

Displays the call statistics for the selected transaction.

Field Descriptions

Tran

Use the Transaction field to limit the number of transactions that are displayed by typing a transaction name. Generic notation is allowed by using * as a wild card; for example, A* displays the information about all transactions that begin with A. By default, all transactions of the last measurement date are displayed.

System

The System field contains the name of the system that represents the CICS region in which the transactions run. Generic notation is allowed by using * as a wild card; for example, CICSP* displays the information about all transactions that begin with CICSP. By default, all systems of the last measurement date are displayed.

Date

Use the Date field to choose a specific date for which you would like to display information. The default is the most recent measurement date.

Column Descriptions

Tran

Displays the name of the transaction.

System

Displays the name of the system representing the CICS region in which the transaction runs.

EXEC#

Displays the number of executions of the transaction.

CPU/Exec

Displays the average CPU time of each transaction execution in seconds with 4 decimal places,

CPU/Abs

Displays the total CPU time of one transaction in one system on one day in the format hh:mm:ss.μμμμ

Elap/Exec

Displays the average elapsed time of each transaction execution in seconds with 4 decimal places.

Elap/Abs

Displays the total elapsed time of one transaction in one system on one day in the format hh:mm:ss.μμμμ.

Transaction Total Details

You can access the Transaction Total Details panel by using line command **S** from either of the following panels:

- Transaction Totals per Day panel
- Transaction Overview panel

```
APCDPSDE ------ PMA CICS Feature - Transaction Total Details (SMF) ------------
 COMMAND ===>                                                  SCROLL ===> CSR

       TRAN:  SDST      System: CICSGE01  Date: 2011.01.15

     Exec#:     75336
 ------------------------------------------------------------------------------

                   Elapsed              CPU             Wait  #DB2 REQ  #IMS REQ
 --------  ---------------  ---------------  ---------------  --------  --------

 Total      13:13:22.95820   02:13:09.08785   04:53:46.87652  20110993         0

 Average    00:00:00.63187   00:00:00.10604   00:00:00.23397       266         0

 Minimum    00:00:00.00198   00:00:00.00124   00:00:00.00022         0         0

 Maximum    00:09:38.48564   00:03:00.25536   00:01:02.14400   1239673         0
```

The Transaction Total Details panel displays detailed information about one transaction.

Panel Elements

This section describes the elements on the panel.

Field Descriptions

TRAN

Displays the name of the selected transaction.

System

Displays the CICS system region name where the selected transaction runs

Date

Displays the date of the selected transaction in yyyy.mm.dd format.

EXEC#

Displays the number of transaction calls in the system region

Column Descriptions

The following columns display total, average, minimum, and maximum values for the selected transaction.

Elapsed

Displays the elapsed time of the selected transacton in hhh:mm:ss.μμμμμμ format.

CPU

Displays the CPU time of the selected transacton in hhh:mm:ss.μμμμμμ format.

Wait

Displays the wait time of the selected transacton in hhh:mm:ss.μμμμμμ format.

#DB2 REQ

Displays the number of DB2 requests for the selected transacton.

#IMS REQ

Displays the number of IMS requests for the selected transacton.

Transaction Overview

Use line command **O** from the Transaction Totals per Day panel to access the Transaction Overview panel.

```
APCDPSTH --- PMA CICS Feature - Transaction Overview (SMF) --- Row 1 to 4 of 4

COMMAND ===>                                                  SCROLL ===> HALF

Tran: TRX3      System: CICSPMA                  Show recent months: 03

Line Commands: S  - Details   TS - TRX Call Statistics

                                    CPU/Exec       CPU/Abs Elap/Exec      Elap/Abs
LC Date       System      Exec# ssss.µµµµ hh:mm:ss.µµµµ ssss.µµµµ hh:mm:ss.µµµµ
-- ---------- -------- -------- --------- ------------ --------- ------------
   2011.09.06 CICSPMA        86    0.1626 00:00:13.9852   84.5512 02:01:11.4060
   2011.09.05 CICSPMA        63    0.1559 00:00:09.8227   68.8478 01:12:17.4148
   2011.09.04 CICSPMA         7    0.2252 00:00:01.5768  169.9090 00:19:49.3630
   2011.08.31 CICSPMA         9    0.2212 00:00:01.9908  203.6020 00:30:32.4182
****************************** Bottom of data ********************************
```

The Transaction Overview panel lists all occurences of one specific transaction in one specific system region for the most recent months.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with the transaction on a specific date that is displayed in the list.

S

Displays detailed information about the transaction on the selected date.

TS

Displays the call statistics for the selected transaction.

Field Descriptions

Show recent months

Limits the display to the dates that occur in the specified time range. The default value is 03 months. You can specify any value from 01 to 18 months.

Column Descriptions

LC

Displays the line command entry field.

Date

Displays the date of the transaction in yyyy.mm.dd format

System

displays the name of the system representing the CICS region in which the transaction runs.

EXEC#

Displays the number of executions of the transaction in the system region.

CPU/Exec

Displays the average CPU time per transaction execution in seconds (with 4 decimal places).

CPU/Abs

Displays the total CPU time of all transaction executions in hh:mm:ss.μμμμ format.

Elap/Exec

Displays the average elapsed time per transaction execution in seconds (with 4 decimal places).

Elap/Abs

Displays the total elapsed time of all transaction executions in hh:mm:ss.μμμμ format.

Transaction Call Statistics

You can access the Transaction Call Statistics panel by using line command **TS** from either of the following panels:

- Transaction Totals per Day panel
- Transaction Overview panel

```
APCDPTCS ----- PMA CICS Feature - Transaction Call Statistics (SMF) -----------
COMMAND ===>                                                  SCROLL ===> HALF

Tran: TRX3     System: CICSPMA   Date: 2011.01.15
-------------------------------------------------------------------------------

                                    Minimum at 09:50:54.27
           Exec#:       86          Maximum at 12:22:49.51
-------------------------------------------------------------------------------
                       Total          Average         Minimum          Maximum
--------     --------------  --------------  --------------  --------------
Elapsed       02:01:11.40608   00:01:24.55123   00:00:00.55057   00:09:24.42612
CPU           00:00:13.98528   00:00:00.16261   00:00:00.02131   00:00:00.52505

  # TRX Calls with CPU Time             # TRX Calls with Elapsed Time
  ----------------------------------    ----------------------------------
               0  <  0.005 (  0.00%)                0  <  0.05 (  0.00%)
               0  <  0.01  (  0.00%)                0  <  0.1  (  0.00%)
               0  <  0.02  (  0.00%)                0  <  0.2  (  0.00%)
               2  <  0.03  (  2.33%)                0  <  0.3  (  0.00%)
               0  <  0.05  (  0.00%)                0  <  0.5  (  0.00%)
              10  <  0.10  ( 11.63%)                2  <  1.0  (  2.33%)
              74  >= 0.10  ( 86.05%)               84  >= 1.0  ( 97.67%)
```

The Transaction Call Statistics panel provides information about the CPU time and elapsed time distribution for the number of transaction executions.

Panel Elements

This section describes the elements on the panel.

Field Descriptions

Tran

Displays the name of the selected transaction.

System

Displays the CICS system region name where the selected transaction runs.

Date

Displays the date of the selected transaction in yyyy.mm.dd format.

Exec#

Displays the number of transaction calls in the system region

Minimum at

Displays the time that the minimum activity occured in the system region in hh:mm:ss.th format.

Maximum at

Displays the time that the maximum activity occured in the system region in hh:mm:ss.th format.

Column Descriptions

The following columns display total, average, minimum, and maximum values for the selected transaction.

Elapsed

Displays the elapsed time of the selected transacton in hhh:mm:ss.μμμμμμ format.

CPU

Displays the CPU time of the selected transacton in hhh:mm:ss.μμμμμμ format.

The following columns display the CPU and elapsed time distribution of transaction executions.

 # TRX Calls with CPU Time

Displays the following values, where *n*=the number of executions:

- *n* < 0.005: number of executions with a CPU consumption < 0.005 seconds
- *n* < 0.01: number of executions with a CPU consumption < 0.01 seconds
- *n* < 0.02: number of executions with a CPU consumption < 0.02 seconds
- *n* < 0.03: number of executions with a CPU consumption < 0.03 seconds
- *n* < 0.05: number of executions with a CPU consumption < 0.05 seconds
- *n* < 0.10: number of executions with a CPU consumption < 0.10 seconds
- *n* >= 0.10: number of executions with a CPU consumption >= 0.10 seconds

 # TRX Calls with Elapsed Time

Displays the following values, where *n*=the number of executions:

- *n* < 0.05: number of executions with Elapsed Time < 0.05 seconds
- *n* < 0.1: number of executions with Elapsed Time < 0.1 seconds
- *n* < 0.2: number of executions with Elapsed Time < 0.2 seconds
- *n* < 0.3: number of executions with Elapsed Time < 0.3 seconds
- *n* < 0.5: number of executions with Elapsed Time < 0.5 seconds
- *n* < 1.0: number of executions with Elapsed Time < 1.0 seconds
- *n* >= 1.0: number of executions with Elapsed Time >= 1.0 seconds

Transaction Intervals

Use line command **I** from the Transaction Totals per Day panel to access the Transaction Interval Information panel.

```
APCDPSIV  PMA CICS Feature - Transaction Interval Information -- Row 1 from 96
 COMMAND ===>                                                  SCROLL ===> CSR

 Tran: SDST      System: CICSGE01  Date: 2011.01.15  Intvl Size: 00:15
                                     (YYYY.MM.DD)           (hh:mm)

 Line Commands: S  - Details   O  - Overview

             Intvl             CPU/Exec       CPU/Abs   Elap/Exec      Elap/Abs
 LC System   Start    Exec# ssss.µµµµµµ hh:mm:ss.µµµµ ssss.µµµµµµ hh:mm:ss.µµµµ
 -- -------- ----- -------- ---------- ------------ ---------- ------------
    CICSGE01 00:00      468    0.009386 00:00:04.3927    0.219913 00:01:42.9195
    CICSGE01 00:15      349    0.010208 00:00:03.5625    0.240213 00:01:23.8344
    CICSGE01 00:30      297    0.009259 00:00:02.7499    0.209761 00:01:02.2990
    CICSGE01 00:45      324    0.009331 00:00:03.0234    0.252089 00:01:21.6771
    CICSGE01 01:00      438    0.008993 00:00:03.9389    0.259145 00:01:53.5056
    CICSGE01 01:15      477    0.009210 00:00:04.3934    0.255070 00:02:01.6684
    CICSGE01 01:30      474    0.009244 00:00:04.3821    0.261413 00:02:03.9100
    CICSGE01 01:45      491    0.009401 00:00:04.6161    0.249885 00:02:02.6938
    CICSGE01 02:00      456    0.009603 00:00:04.3791    0.247511 00:01:52.8651
    CICSGE01 02:15      502    0.009597 00:00:04.8177    0.249955 00:02:05.4775
    CICSGE01 02:30      470    0.009768 00:00:04.5911    0.236771 00:01:51.2827
    CICSGE01 02:45      511    0.009418 00:00:04.8130    0.247345 00:02:06.3933
    CICSGE01 03:00      453    0.009052 00:00:04.1008    0.252858 00:01:54.5450
```

The Transaction Interval Information panel gives you a central overview of all the transaction intervals of one specific transaction and system region on a single day. This data is provided by SMF records (type 110).

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction interval that is displayed in the list.

S

Displays detailed information about the selected transaction interval.

O

Displays an overview of all occurrences of the selected transaction interval.

Field Descriptions

Date

Use the Date field to choose a specific date for which you would like to display information. The default is the most recent measurement date

Column Descriptions

LC

Displays the line command entry field.

System

Displays the name of the system representing the CICS region in which the transaction runs.

Intvl Start

Displays the start time of the transaction interval in the format hh:mm

EXEC#

Displays the number of executions of the transaction during the interval.

CPU/Exec

Displays the average CPU time per transaction execution during the interval in seconds (with 4 decimal places).

CPU/Abs

Displays the total CPU time of all transaction executions during the interval in hh:mm:ss.μμμμ format.

Elap/Exec

Displays the average elapsed time per transaction execution during the interval in seconds (with 4 decimal places).

Elap/Abs

Displays the total elapsed time of all transaction executions during the interval in hh:mm:ss.μμμμ format.

Transaction Interval Overview

Use line command **O** from the Transaction Totals per Day panel to access the Transaction Interval Overview panel.

```
APCDPSIH  PMA CICS Feature - Transaction Interval Overview - Row 1 to 13 of 46
COMMAND ===>                                                  SCROLL ===> CSR

Tran: SDST      System: CICSGE01  Interval start : 00:00  (hh:mm)
                                  Interval length: 00:15  (hh:mm)

Line Commands: S  - Details

                            CPU/Exec       CPU/Abs   Elap/Exec      Elap/Abs
LC Date          Exec# ssss.µµµµµµ hh:mm:ss.µµµµ ssss.µµµµµµ hh:mm:ss.µµµµ
-- ----------  -------- ---------- ------------ ---------- ------------
   2011.01.18       468   0.009386 00:00:04.3927   0.219913 00:01:42.9195
   2011.01.17       486   0.009441 00:00:04.5883   0.242706 00:01:57.9551
   2011.01.16       551   0.009441 00:00:05.2023   0.240779 00:02:12.6694
   2011.01.15       516   0.008769 00:00:04.5252   0.241421 00:02:04.5734
   2011.01.14       466   0.009472 00:00:04.4141   0.226791 00:01:45.6846
   2011.01.13       353   0.009170 00:00:03.2370   0.243809 00:01:26.0648
   2011.01.12       980   0.009577 00:00:09.3864   0.249261 00:04:04.2758
   2011.01.11       433   0.009513 00:00:04.1192   0.190295 00:01:22.3979
   2011.01.09       496   0.008992 00:00:04.4601   0.250448 00:02:04.2226
   2011.01.08       420   0.008592 00:00:03.6087   0.254574 00:01:46.9214
   2011.01.07       459   0.009648 00:00:04.4285   0.230359 00:01:45.7348
   2011.01.06       452   0.009548 00:00:04.3158   0.221339 00:01:40.0455
   2011.01.05       493   0.009688 00:00:04.7766   0.253984 00:02:05.2143
```

The Transaction Interval Overview panel lists all occurences of one specific transaction interval of one specific transaction and system region during the most recent months.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with the specified transaction interval on each of the dates that are displayed in the list.

S

Displays detailed information about the single transaction interval on the selected date

Field Descriptions

Show recent months

Limits the display to the dates that occur in the specified time range. The default value is 03 months. You can specify any value from 01 to 18 months

Column Descriptions

LC

Displays the line command entry field.

Date

Displays the date of the transaction interval in yyyy.mm.dd format.

EXEC#

Displays the number of executions of the transaction during the interval.

CPU/Exec

Displays the average CPU time per transaction execution during the interval in seconds (with 4 decimal places).

CPU/Abs

Displays the total CPU time of all transaction executions during the interval in hh:mm:ss.μμμμ format

Elap/Exec

Displays the average elapsed time per transaction execution during the interval in seconds (with 4 decimal places).

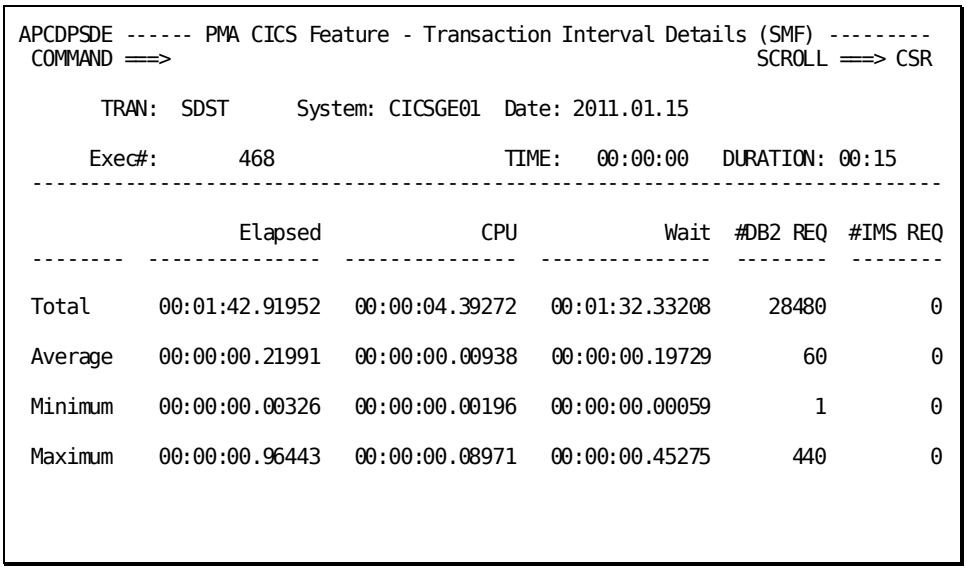
Elap/Abs

Displays the total elapsed time of all transaction executions during the interval in hh:mm:ss.μμμμ format.

Transaction Interval Details

You can access the Transaction Interval Details panel by using line command **S** from either of the following panels:

- Transaction Totals per Day panel
- Transaction Interval Overview panel



```
APCDPSDE ------ PMA CICS Feature - Transaction Interval Details (SMF) ---------
 COMMAND ===>                                                  SCROLL ===> CSR

      TRAN:  SDST      System: CICSGE01  Date: 2011.01.15

     Exec#:       468                   TIME:   00:00:00   DURATION: 00:15
 ------------------------------------------------------------------------------

                  Elapsed              CPU             Wait  #DB2 REQ  #IMS REQ
 --------  ---------------  ---------------  ---------------  --------  --------

 Total      00:01:42.91952   00:00:04.39272   00:01:32.33208     28480         0

 Average    00:00:00.21991   00:00:00.00938   00:00:00.19729        60         0

 Minimum    00:00:00.00326   00:00:00.00196   00:00:00.00059         1         0

 Maximum    00:00:00.96443   00:00:00.08971   00:00:00.45275       440         0
```

The Transaction Interval Details panel displays detailed information about one transaction interval.

Panel Elements

This section describes the elements on the panel.

Field Descriptions

TRAN

Displays the name of the transaction.

System

Displays the CICS system region name where the transaction runs.

Date

Displays the date of the transaction interval in yyyy.mm.dd format.

EXEC#

Displays the number of transaction calls in the system region that occurred during the interval.

TIME

Displays the start time of the interval in hh:mm:ss format.

DURATION

Displays the duration (length) of the interval in hh:mm format.

Column Descriptions

The following columns display total, average, minimum, and average values for the transaction interval.

Elapsed

Displays the elapsed time of the transacton interval in hhh:mm:ss.μμμμμμ format.

CPU

Displays the CPU time of the transacton interval in hhh:mm:ss.μμμμμμ format.

Wait

Displays the wait time of the transacton interval in hhh:mm:ss.μμμμμμ format.

#DB2 REQ

Displays the number of DB2 requests for the transacton interval.

#IMS REQ

Displays the number of IMS requests for the transacton interval.

SMF System Information

The SMF System Information panel is displayed when option **2** is entered on the CICS Transaction SMF Information Menu.

```
APCDPSSI ------ PMA CICS Feature - SMF System Information ------ Row 1 from 50
COMMAND ===>                                                    SCROLL ===> CSR

System: *               Date: 2011.01.15   (Format YYYY.MM.DD)

Line Commands: S - Detail information   O - Overview   T - Transactions

              Number       Trans      Total CPU  Total Elapsed     Total Wait
LC System      Trans      Called  hh:mm:ss.µµµµ  hh:mm:ss.µµµµ  hh:mm:ss.µµµµ
-- -------- --------  ----------  ------------  ------------  ------------
   CICSALD5      208        5654  00:05:18.3680  79:19:36.7832  78:54:07.7208
   CICSALE1      100       21426  00:11:28.2964  50:29:14.0822  46:35:31.4911
   CICSALE2      116        3660  00:03:00.1487  38:44:37.3512  38:23:07.8360
   CICSALP1      605     1901734  07:12:38.8268  23:16:58.9988  83:50:24.0388
   CICSALP3      330       46123  00:09:27.4499  30:41:51.0994  30:10:34.2677
   CICSALP4        9         225  00:00:00.1056  23:35:35.3384  00:00:00.0656
   CICSALP6      200        4455  00:01:20.6186  41:08:53.0020  40:50:32.9463
   CICSALS1      411      121683  00:32:23.4186  59:03:43.1751  56:23:07.4227
   CICSALT2      215        8317  00:02:48.5364  30:28:18.9676  30:06:28.4394
   CICSALT4      128        2824  00:02:23.5472  37:51:38.9917  37:36:29.1974
   CICSALT5       42        1794  00:00:32.1526  36:45:22.3260  36:42:40.0230
   CICSAOR1      182      143928  00:04:28.1778  17:26:09.4468  17:18:11.3051
   CICSAOR2       88       60114  00:01:29.8815  42:43:44.9268  42:41:09.8956
   CICSAOR3       67       86456  00:02:39.1497  65:20:41.3823  65:15:20.0574
```

The SMF System Information panel displays values for one day over all systems, depending on the system ID that you defined on the panel.

Panel Elements

This sectio describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels

Line Commands

Line commands can be used to work with a specific transaction that is displayed in the list.

S

Details of the selected transaction.

O

Overview of all occurrences of the selected transaction and system.

T

Displays information about all transactions of the selected system and

Field Descriptions

System

The System field contains the name of the system that represents the CICS region in which the transactions run. Generic notation is allowed by using * as a wild card; for example, CICSP* displays the information about all transactions that begin with CICSP. By default, all systems of the last measurement date are displayed.

Date

Use the Date field to choose a specific date for which you would like to display information. The default is the last measurement date.

Column Descriptions

System

Displays the name of the system that represents the CICS region.

Number Trans

Displays the number of transactions in the system.

Trans Called

Displays the number of calls of all transactions in the system

Total CPU hh:mm:ss.μμμμ

Displays the total CPU time of the system

Total Elapsed hh:mm:ss.μμμμ

Displays the total elapsed time of the system.

Total Wait hh:mm:ss.μμμμ

Displays the total wait time of the system.

System Details

You can access the System Details panel by using line command **S** from either of the following panels:

- SMF System Information panel
- SMF System History panel

```
APCDPSDE ------ PMA CICS Feature - System Details (SMF) ----------------------
COMMAND ===>                                                 SCROLL ===> CSR

                      System: CICSALP1  Date: 2011.01.15

     Exec#:   1682064                   #TRX:        602
-------------------------------------------------------------------------------

                 Elapsed              CPU             Wait  #DB2 REQ  #IMS REQ
--------  ---------------  ---------------  ---------------  --------  --------

Total      50:30:38.32624   06:20:02.26150   30:07:32.72468  96107079         0

Average    00:00:00.10810   00:00:00.01355   00:00:00.06447       116         0

Minimum    00:00:00.00017   00:00:00.00004   00:00:00.00000         0         0

Maximum    00:31:27.51115   00:00:24.18600   00:31:27.51105     67270         0
```

The System Details panel displays detailed information about one system.

Panel Elements

This section describes the elements on the panel.

Field Descriptions

System

Displays the CICS system region name.

Date

Displays the date in yyyy.mm.dd format.

EXEC#

Displays the number of transaction calls in the system region.

#TRX

Displays the number of invoked transactions in the system region.

Column Descriptions

The following columns display total, average, minimum, and average values for the system.

Elapsed

Displays the elapsed time in hhh:mm:ss.μμμμμμ format.

CPU

Displays the CPU time in hhh:mm:ss.μμμμμμ format.

Wait

Displays the wait time in hhh:mm:ss.μμμμμμ format.

#DB2 REQ

Displays the number of DB2 requests.

#IMS REQ

Displays the number of IMS requests.

SMF System History

Use line command **O** from the SMF System Information panel to access the SMF System History panel.

```
APCDPSSH ------ PMA CICS Feature - SMF System History ------ Row 1 to 14 of 57
 COMMAND ===>                                                  SCROLL ===> CSR

 System: CICSALP1                              Show recent months: 03

 Line Commands: S - Detail information   T – Transactions

                 Number       Trans      Total CPU  Total Elapsed     Total Wait
 LC Date          Trans      Called hhh:mm:ss.µµµµ hhh:mm:ss.µµµµ hhh:mm:ss.µµµµ
 -- ---------- --------  ---------- ------------- ------------- -------------
    2011.01.18      602     1682064  06:20:02.2615  50:30:38.3262  30:07:32.7246
    2011.01.17      622     1353717  05:23:47.7018  50:37:07.5322  30:08:30.8057
    2011.01.16      605     1901734  07:12:38.8268 123:16:58.9988  83:50:24.0388
    2011.01.15      162      414425  01:09:10.6394  49:37:59.8068  46:46:53.6621
    2011.01.14      174      635391  01:46:38.1863  56:44:16.1997  46:36:32.9160
    2011.01.13      591     1723230  06:27:28.1292  58:46:47.9099  33:21:45.4000
    2011.01.12      589     1804995  07:11:12.1012  62:17:05.9409  34:29:32.9529
    2011.01.11      599     1690007  06:49:53.7597  72:45:13.0127  41:15:17.5068
    2011.01.10      596     1746918  07:08:59.4414  91:29:17.4368  55:21:51.4778
    2011.01.09      604     1921488  07:31:54.7061  76:34:08.6242  46:20:17.6080
    2011.01.08      129      435998  01:09:14.2863  80:36:54.7601  77:32:38.5047
    2011.01.07      170      645289  01:35:56.4460  63:06:03.2274  47:17:00.5027
    2011.01.06      607     1891466  06:10:48.6399  32:42:11.1980  08:49:57.8594
    2011.01.05      605     2124938  07:15:38.6994  49:14:28.9464  18:11:39.6976
```

The SMF System History panel lists all occurences of one specific CICS system region during the most recent months.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels

Line Commands

Line commands can be used to work with the specified CICS system region on each of the dates that are displayed in the list.

S

Displays detailed information about the single CICS system region on the selected date.

T

Displays all transactions that belong to the CICS system region on the selected date.

Field Descriptions

Show recent months

Limits the display to the dates that occur in the specified time range. The default value is 03 months. You can specify any value from 01 to 18 months.

Column Descriptions

LC

Displays the line command entry field.

Date

Displays the date in yyyy.mm.dd format.

Number Trans

Displays the number of transactions in the system.

Trans Called

Displays the number of calls of all transactions in the system.

Total CPU

Displays the total CPU time of the system in hh:mm:ss.μμμμ format

Total Elapsed

Displays the total elapsed time of the system in hh:mm:ss.μμμμ format.

Total Wait

Displays the total wait time of the system in hh:mm:ss.μμμμ format.

SMF Transaction Totals Per Day

You can access the SMF Transaction Totals Per Day panel by using line command T from either of the following panels:

- SMF System Information panel
- SMF System History panel

```
APCDPSTT ------ PMA CICS Feature - Transaction Totals per Day  Row 4 from 4167
 COMMAND ===>                                                   SCROLL ===> CSR

 Tran: *         System: CICSALP1  Date: 2011.01.15  (Format YYYY.MM.DD)

 Line Commands: S  - Details    O  - Overview    I  - Intervals

                                    CPU/Exec       CPU/Abs Elap/Exec      Elap/Abs
 LC Tran     System        Exec# ssss.µµµµ hh:mm:ss.µµµµ ssss.µµµµ hh:mm:ss.µµµµ
 -- -------- -------- ---------- --------- ------------ --------- ------------
    XX02     CICSALP1     271010    0.0142 01:04:29.6772    0.0436 03:17:13.8334
    M710     CICSALP1      94411    0.0284 00:44:43.0516    0.1514 03:58:18.8601
    XX11     CICSALP1      99907    0.0125 00:20:56.5476    0.0689 01:54:51.9390
    XX03     CICSALP1      95132    0.0130 00:20:39.1095    0.0784 02:04:23.7943
    PE98     CICSALP1     116190    0.0090 00:17:34.4176    0.0307 00:59:38.0581
    B401     CICSALP1      49040    0.0183 00:14:58.5383    0.0724 00:59:14.2921
    PE29     CICSALP1      24997    0.0317 00:13:14.6123    0.1517 01:03:13.8427
    BX22     CICSALP1      28818    0.0250 00:12:02.9946    0.0665 00:31:58.6799
    BWA1     CICSALP1        298    1.8706 00:09:17.4567    7.8695 00:39:05.1117
    XX05     CICSALP1      13695    0.0341 00:07:47.6251    0.1331 00:30:23.7065
    Q1ED     CICSALP1      20945    0.0194 00:06:47.7444    0.0776 00:27:05.9680
    B402     CICSALP1      43940    0.0086 00:06:19.8258    0.0301 00:22:03.0617
    B501     CICSALP1      16134    0.0212 00:05:43.3612    0.1043 00:28:03.4275
    BX11     CICSALP1      22261    0.0143 00:05:20.1724    0.0483 00:17:55.9078
```

Transaction totals per day information is displayed for one day over all transactions of all systems depending on the transaction and system ID that you defined on the panel.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction that is displayed in the list.

S

Displays details of the selected transaction.

O

Displays an overview of all occurrences of the selected transaction and system.

I

Displays the SMF interval values of the selected transaction

Field Descriptions

Tran

Use the Transaction field to limit the number of transactions that are displayed by entering a transaction name. Generic notation is allowed by using * as a wild card; for example, A* displays the information about all transactions that begin with A. By default, all transactions of the last measurement date are displayed.

System

The System field contains the name of the system that represents the CICS region in which the transactions run. Generic notation is allowed by using * as a wild card; for example, CICSP* displays the information about all transactions that begin with CICSP. By default, all systems of the last measurement date are displayed.

Date

Use the Date field to choose a specific date for which you would like to display information. The default is the most recent measurement date

Column Descriptions

Tran

Displays the name of the transaction.

System

Displays the name of the system representing the CICS region in which the transaction runs.

EXEC#

Displays the number of executions of the transaction in the system region.

CPU/Exec

Displays the average CPU time of each transaction execution in seconds with 4 decimal places.

CPU/Abs

Displays the total CPU time of one transaction in one system on one day in the format hh:mm:ss.µµµµ.

Elap/Exec

Displays the average elapsed time of each transaction execution in seconds with 4 decimal places.

Elap/Abs

Displays the total elapsed time of one transaction in one system on one day in the format hh:mm:ss.µµµµ.

Export CICS Feature Data - Job APCCJEXP

With job APCCJEXP, data that is stored within the CICS Feature can be exported for use in other systems; for example, EXCEL or SAS. The data is exported from the database to a sequential file that can be used in other systems or downloaded to the PC.

The following example illustrates the JCL for the APCCJEXP job.

```
//jobcard.....
//*===============================================================*
//* JOB TO  EXTRACT  INFORMATION  FROM  CICS POOL                  *
//* COPYRIGHT (C) 2012 CA. All Rights Reserved.                   *
//* Copyright (C) Trilog AG                                       *
//*===============================================================*
//APCDATAB  EXEC  PGM=APCDATAB
//STEPLIB   DD DSN=prefix.PMA.LOAD,DISP=SHR
//APCIPR01  DD DSN=DUMMY,
//             DISP=SHR
//APCCPR01  DD DSN=prefix.PMA.KSDSCIC,
//             DISP=SHR
//APCIN     DD DSN=prefix.PMA.CNTL(APCCCEXP),DISP=SHR
//APCTAB    DD SYSOUT=*
```

The scope of the data to be exported is defined within this job by using input parameters in member APCCCEXP of the product CNTL library. The information to be exported is specific to transactions, modules, plans, and PSBs. To assist you in using this information after it has reached its destination, the following record layout illustrations are provided. Each field of the record is separated by a semicolon delimiter.

Transaction Record

The following example shows the record layout for the export file:

```
DATE;SYSID;TYPE;TXNAME;CPU %;CPU ABS SEC;CPU ABS/TX;CALLS;SERV.TIME;
YYYY.DD.MM;NNN;T;XXXXXXXX;NN.NN;NNNNN;NNN.NN;NNNNNNN;NN.NN;
Module Record
DATE;SYSID;TYPE;MODULNAME;CPU %;CPU ABS SEC;CPU ABS/CALL;CALLS;
YYYY.DD.MM;NNN;M;XXXXXXXX;NN.NN;NNNNN;NNN.NN;NNNNNNN;
Plan Record
DATE;SYSID;TYPE;PLANNAME;CPU %;CPU ABS SEC;
YYYY.DD.MM;NNN;D;XXXXXXXX;NN.NN;NNNNN;
PSB Record
DATE;SYSID;TYPE;MODULNAME;CPU %;CPU ABS SEC;;;WAIT %;TXNAME;PSB;
YYYY.DD.MM;NNN;P;XXXXXXXX;NN.NN;NNNNN; ; ;00.00;XXXXXXXX;XXXXXXXX;
```

The following table explains each of the valid APCCCEXP parameters:

APCCCEXP Parameters	Optional/Required	Meaning
DATE FROM YYYYMMDD=	required	The beginning date from which all data is exported
DATE TO YYYYMMDD=	optional	All data through this date is exported Default: Until Last Entry
SUBSYSTEM=	optional	Subsystem Default: CICS
SUBID=	optional	Internal system ID Default: all subsystem IDs
SYSNAME=	optional	Name of the system defined in PMA Either SUBID or SYSNAME can be used. (See the *Administration Guide*.)
INFOTYPE=	optional	Type of data to be exported: T— Transaction records M— Program records D— DB2 plan data P— PSB records (DLI) Default: all types of data

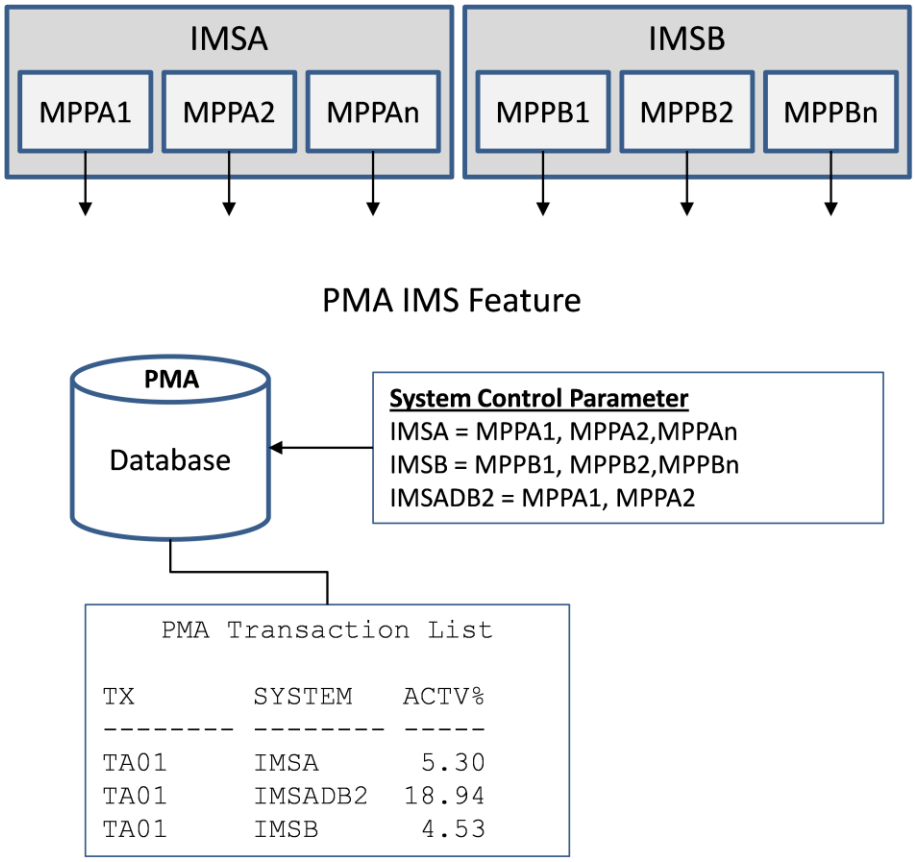
The following example shows the input to APCCCEXP member:

```
DATE FROM YYYYMMDD=20100101
DATE   TO YYYYMMDD=20101001
SUBSYSTEM=CICS
```

Chapter 7: Using the IMS Feature

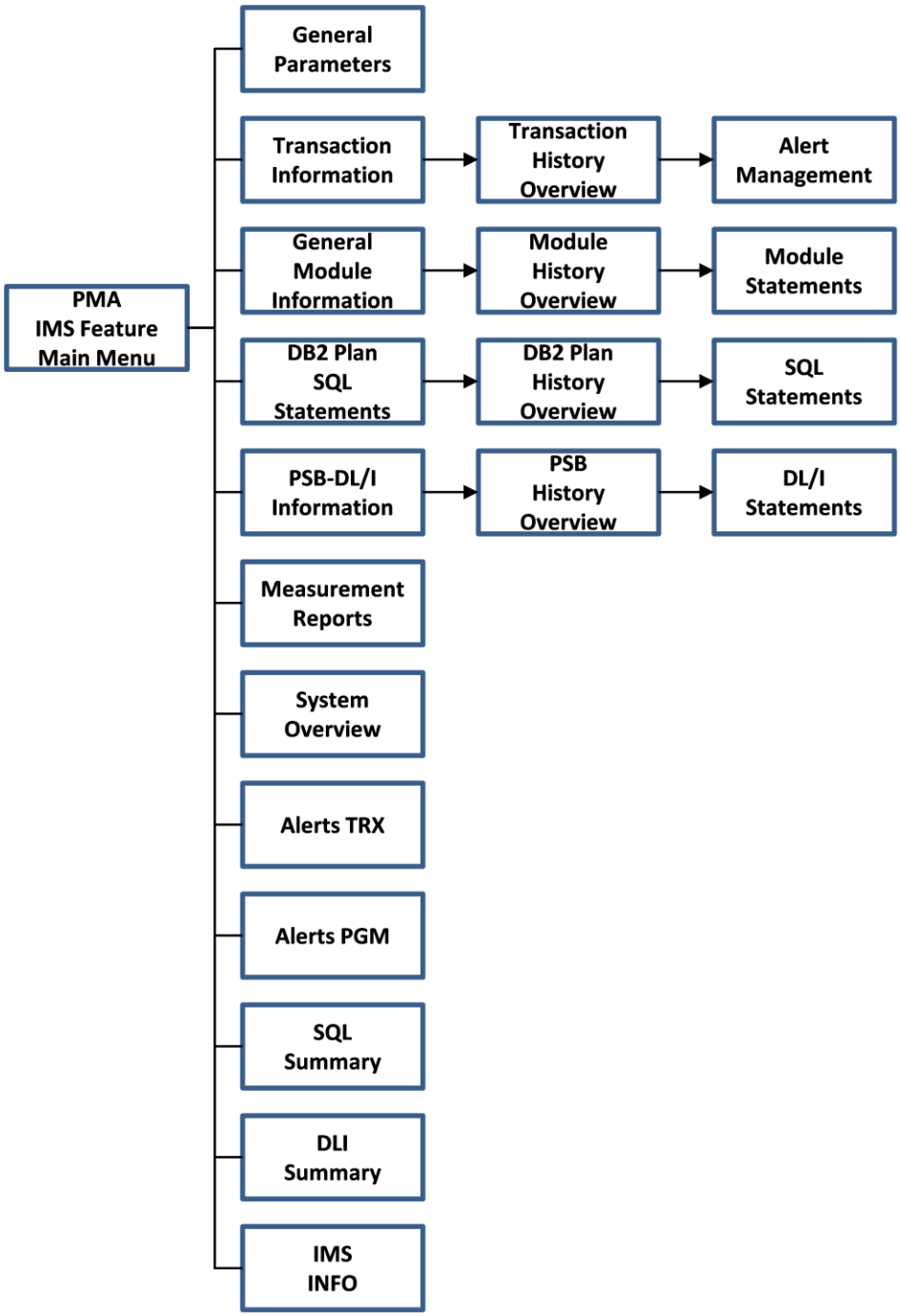
This chapter describes how to use the ISPF panels of the IMS Feature and how to export its information.

The following graphic illustrates how the System Control of the IMS Feature works.



The following flowchart in illustrates the layout of the ISPF panels that allow you to perform the online functions of the IMS Feature.

Panel hierarchy of the IMS Feature



This section contains the following topics:

IMS Feature Menu (see page 213)
Global Print JCL (see page 215)
Transaction Information (see page 216)
General Module Information (see page 221)
DBRM - SQL Information (see page 225)
PSB - DLI Information (see page 236)
Overview of Measurement Reports (see page 240)
System Information (see page 242)
Alert Management (see page 245)
SQL Statement Information - SQL Summary (see page 256)
DLI Statement Information - DLI Summary (see page 259)
Execution Details for IMS Transactions (see page 261)
Export IMS Feature Data - Job APCCJEXP (see page 285)

IMS Feature Menu

The IMS Feature is accessed by starting REXX procedure PMA and selecting the IMS Feature option.

```
APCGP000 ------ PMA --- IMS Feature Menu ---------------------- Release 8.5
OPTION  ===>                                                   SYSTEM: *

             0 PARAMETERS    - Define User Specific Jobcard
             1 TRANSACTIONS  - Transaction Info
             2 MODULES       - General Module Info
             3 DBRM/DB2 Plan - DBRM Information
             4 PSBS          - PSB Information
             5 OVERVIEWS     - CA MAT Measurement Extractions  #SJS
             6 SYSTEMS       - System Info
             7 ALERTS TRX    - Alert Management TRX
             8 ALERTS PGM    - Alert Management CHANGED MODULES
             S SQL Summary   - SQL Information
             D DLI Summary   - DLI Information
             I IMS INFO      - IMS Transaction Information
             T TUTORIAL      - Obtain PMA Help
             X or END        - End IMS Feature

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```

To request information for a specific IMS system, enter the name in the SYSTEM field. Otherwise, to show all available information of all measured systems, use the default generic value * in the SYSTEM field.

After defining the IMS system, select options on the IMS Feature Menu by typing one of the following numbers in the OPTION field and pressing Enter.

0 Define a user specific jobcard for printing. For details about all other system parameters, see the *Administration Guide*.

1 Display an overview of all available transaction information as of the last measurement day.

2 Display an overview of all available module information as of the last measurement day.

3 Display an overview of all available DB2® plan and SQL information as of the last measurement day.

4 Display an overview of all available DLI information as of the last measurement day.

5 Display and work with different reports. Corresponding to the OVERVIEWS option is an input field that allows you to ask for a specific report overview. The default is #SJS.

6 Display the System Overview panel.

7 View all issued alerts.

8 View alerts issued for changed modules only.

S Display a list of the SQL statements exceeding the thresholds.

D Display a list of the DLI statements exceeding the thresholds.

The following table lists the reports and their corresponding identifiers:

Chapter ID	Overview Description
#SJS	Sampler and job statistics
#RDC	Resource demand chart
#COV	Code view
#DSA	Dataset activity
#TXV	Transaction view
#POV	Pool view
#SUM	Summary

To use the OVERVIEWS option

1. In the OPTION field, type 5.
2. Type the general report identifier in the corresponding overview input field.
3. Press Enter.

Global Print JCL

The Global Print JCL panel is displayed when you choose 0 on the IMS Feature Menu.

```
APCXPP01 --- PMA - Global Print JCL ------------------------------------------
COMMAND ===>


Enter your user specific JCL statements used in all PMA
features for Print:

//JOBNAMEX JOB (12345),'PMA 8.5 Print',CLASS=X,MSGCLASS=X
//*
//PRINT    EXEC PGM=IEBGENER
//SYSIN    DD   DUMMY
//SYSPRINT DD   SYSOUT=*
//SYSUT2   DD   SYSOUT=*
//SYSUT1   DD   *


           Cancel: CAN
           Save  : END OR PF3
```

In order to use the print command of Performance Management Assistant, you must have complete and correct JCL statements for the print job.

Global Print JCL Panel

In the lines provided on this panel, define your print job statements. These statements can include the following information:

- Job card
- Local printer
- Specific SYSOUT classes
- Print formats

After the print job is defined, the print job JCL is used by all features (Central Component, CICS Feature, and IMS Feature). This JCL is stored in your individual TSO user profile pool. If you do not save the input to this panel by exiting with PF3 or END, the profile pool is not loaded.

Transaction Information

The Transaction Information panel is displayed when option 1 is entered on the IMS Feature Menu.

```
APCGPS01 - PMA IMS Feature - Transaction Information --------- Row 1 from 240
COMMAND ===>                                                  SCROLL ===> CSR

Transaction  : *            Date: 2011.01.15                 System: *

Line Commands: TO - TX overview  AL  Alert list  AI  Alert insert
               TM - TX specific module info  TD - DBRM info  TP - PSB info

LC TRAN     System    CPU%  Total-CPU Total-SU Total-RESP   #EXEC A MOD  DB PSB
                     ACTV%    AVG-CPU   AVG-SU   AVG-RESP
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX1     IMSP0008 0.600  40.236000   732406  38.250000       3     3
                             13.412000   244135  12.750000
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX2     IMSP0008 1.100  73.766000  1342744   0.000000      12    12   4
                              6.147166   111895   0.000000
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX3     IMSP0008 3.550 238.063000  4333403   0.000000      52    19   6
                              4.578134    83334   0.000000
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX4     IMSP0008 0.580  38.894800   707992   0.000000       9     9   3
                              4.321644    78665   0.000000
```

Transaction information is displayed for one day over all systems depending on the system ID that you defined on the IMS Feature Main Menu. For each transaction that is displayed, any existing alert can be accessed or a new alert generated.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction displayed in the list.

TO

Displays transaction historical information.

AL

Displays the Alert List panel

AI

Inserts a user alert.

TM

Displays transaction-specific module information.

TD

Displays DBRM information for the transaction.

TP

Displays PSB information for the transaction.

Field Descriptions

PSB

Limits the display to the lines containing a PSB name matching this selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, DBRMT* displays all PSBs starting with PSB T, such as PSB T001, PSB TABC, and so on.

Date

Displays the date that the listed information was collected.

The date is in the format yyyy.mm.dd. Change the date to view older/newer dates (if available). Enter an asterisk as the first character to show the data from the most recent entries taken into Performance Management Assistant.

System

Limits the display to the lines containing a System name matching the selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, SYSP* displays all systems starting with SYSP, such as SYSP001, SYSPABC, and so on. For details about how the system name is generated or defined, see the *Administration Guide*.

Column Descriptions

Transaction

Displays the name of the transaction.

System

Displays the name of the system representing the IMS region in which the transactions run.

ACTV%

Displays the percentage of the monitored period that the transaction was processing application code only.

The value in this field does not include CPU time spent in systems services or SVCs.

TOT CPU

Displays the cumulative CPU seconds for this transaction during the monitored period.

AVG CPU

Displays the average CPU time required for this transaction during the monitored period, which is calculated by dividing the total CPU time by the number of times the transaction was completed during the monitored period.

Total-SU

Displays the cumulative CPU service units for this transaction during the monitored period.

AVG-SU

Displays the average CPU service units required for this transaction during the monitored period.

This value is calculated by dividing the total CPU service units by the number of times the transaction completed during the monitored period

TOT RESP

Displays the total time (in seconds) to complete all calls for the transaction.

AVG RESP

Displays the average time (in seconds) for the transaction to complete processing.

#TRANS

Displays the number of times that this transaction completed processing during the monitored period.

AS (Alert State)

Displays the alert state in abbreviated format:

- O - Open
- R - Review
- C - Close

To see alerts, use line command AL. To insert an alert, use line command AI. If the Alert State column is blank, no alert exists for the transaction.

Number in TX Mod

Displays the number of modules within this transaction that exceed thresholds.

Number in TX DBs

Displays the number of DBRMs within this transaction that exceed thresholds.

Number in TX PSB

Displays the number of PSBs within this transaction that exceed thresholds.

Transaction History

To display an overview of all available historical information about a transaction, selecting a transaction with line command TO displays the Transaction History Overview panel.

```
APCGPS11 - PMA - Transaction Overview ---------------------------- Row 1 of 4
COMMAND ===>                                                  SCROLL ===> CSR

Transaction  : TRX1                              Show recent months: 03
Line Commands: TM - TX specific module info  TD - DBRM info  TP - PSB info

LC Date       System    CPU%  Total-CPU Total-SU Total-Resp   #EXEC MOD  DB PSB
                         ACTV%   AVG-CPU   AVG-SU   AVG-Resp
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
   2011.01.13 IMSP0008 0.600  40.236000   732406  38.250000       3   3
                              13.412000   244135  12.750000
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
   2011.01.12 IMSP0008 0.600  40.236000   732406  38.250000       3   3
                              13.412000   244135  12.750000
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
   2011.01.11 IMSP0008 0.600  40.236000   732406  38.250000       3   3
                              13.412000   244135  12.750000
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
   2011.01.11 IMSP0008 0.600  40.236000   732406  38.250000       3   3
                              13.412000   244135  12.750000
-- ---------- -------- ----- ---------- -------- ---------- ------- --- --- ---
****************************** Bottom of data ********************************
```

The fields and columns that are displayed on this panel are the same as those described on the Transaction Information panel.

Historical figures are comparable only if the measurements are done regularly. This means measurements must always be at the same time of day and using the same parameters (that is, target sample size and estimated run time).

Panel Elements

This section describes the elements on the panel.

Line Commands

Line commands can be used to work with a specific transaction that is displayed in the list.

TM

Displays module information specific to the selected transaction.

TD

Displays DBRM information specific to the selected transaction.

TP

Displays PSB information specific to the selected transaction.

Column Descriptions

Transaction

Displays the name of the transaction.

System

Displays the name of the system representing the IMS region in which the transactions run.

ACTV%

Displays the percentage of the monitored period that the transaction was processing application code only.

The value in this field does not include CPU time spent in systems services or SVCs.

TOT CPU

Displays the cumulative CPU seconds for this transaction during the monitored period.

AVG CPU

Displays the average CPU time required for this transaction during the monitored period, which is calculated by dividing the total CPU time by the number of times the transaction was completed during the monitored period.

Total-SU

Displays the cumulative CPU service units for this transaction during the monitored period.

AVG-SU

Displays the average CPU service units required for this transaction during the monitored period.

This value is calculated by dividing the total CPU service units by the number of times the transaction completed during the monitored period

TOT RESP

Displays the total time (in seconds) to complete all calls for the transaction.

AVG RESP

Displays the average time (in seconds) for the transaction to complete processing.

#TRANS

Displays the number of times that this transaction completed processing during the monitored period.

Number in TX Mod

Displays the number of modules within this transaction that exceed thresholds

Number in TX DBs

Displays the number of DBRMs within this transaction that exceed thresholds.

Number in TX PSB

Displays the number of PSBs within this transaction that exceed thresholds.

General Module Information

The General Module Information panel is displayed when option **2** is entered on the IMS Feature Menu.

```
APCGP002 -- PMA IMS Feature - General Module Information -------- Row 1 from 2
COMMAND ===>                                                    SCROLL ===> HALF

Module       : *             Date: 2011.01.15                   System: *
Commands     : SORT M/SY/C%/L - Module/SYs/aCtv%/Linkdate
Line Commands: MO - Module overview   MS - Module statement

                                                16  Module
LC Module    System    ACTV%  Linkdate    MB  Statements
-- --------  --------  -----  ----------  --  ----------
   DFSREP00  IMSTEST1   4.69  2011.07.29   >   6
   **N/A**   IMSTEST1   1.70               <
****************************** Bottom of data ********************************
```

The General Module Information panel presents an overview of information about modules for all (or specific) systems as of the last measurement day.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific module that is displayed in the list.

DO

Displays an overview of historical information about the DBRM.

SS

Displays the SQL statements that belong to the DBRM.

TX

Displays the transaction that refers to the DBRM.

Field Descriptions

Module

To reduce the number of modules displayed, enter a specific name or part of a name. Generic notation is allowed by using * as a wildcard. For example, entering A* shows the information of all modules beginning with A. By default, all modules measured during the last measurement date are displayed.

Date

To select a specific date with which you would like to compare the current information, enter a date. The default date is the last measurement date.

System

The System field contains the name of the system representing the IMS region in which the transactions run. To display only the information of a certain system, change the name in the System field on the IMS Feature Menu. For details about how the System name is generated or defined, see the *Administration Guide*.

Column Descriptions

Module name

Displays the name of the module.

System

Displays the name of the system representing the IMS region in which the module runs.

ACTV%

Displays the percentage of CPU utilization of the module

Linkdate

Displays the linkage date of the module.

This information is available only if one of the following situations is true:

- The Central Component is used to scan the load libraries that contain the online modules (recommended).
- You have a separate run of a Central Component job just for searching the online modules (see step APCXALMO of job APCXJLIB).

See the *Administration Guide* for details about job APCXJLIB.

16 MB Line

Indicates whether the module runs above or below the 16MB line. A greater than value (>) means that the module runs above the 16 MB line; a less than value (<) means the module runs below the 16 MB line.

Module Statements

Displays the number of module statements (location addresses) that exceed the threshold values defined on the General Parameters panel as described in the *Administration Guide*.

Module History

To display an overview of all available historical information about a module, select a module by using line command MO.

```
APCGP022 -- PMA - General Module Overview -------------------- Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> HALF

Module       : DFSREP00                          Show recent months: 03
Line Commands: MS - Module statement
                                                 16  Module
LC Date        System    ACTV%  Linkdate    MB  Statements
-- ----------  --------  -----  ----------  --  ----------
   2011.01.01  IMSTEST1   4.69  2011.01.29  >    6
****************************** Bottom of data ********************************
```

Module Statements

To display an overview of all available historical information regarding a module, select a module by using line command MO.

```
APCGP201 -- PMA - Module Statements ------------------------ Row 1 to 6 of 6
COMMAND ===>                                                 SCROLL ===> HALF

Module      : DFSREP00      Date: 2011.01.15                 System: IMSTEST1

              ACTV%   Starting
                      location
-------------------------------------------------------------------------------
Total module:  4.69
Threshold   :  0.01
-------------------------------------------------------------------------------
               4.63     0012A0
               0.01     000EE0
               0.01     000FC0
               0.01     0001A0
               0.01     000140
               0.01     001280
****************************** Bottom of data ********************************
```

The Module Statements panel displays the starting addresses of module statements in descending CPU time order. The top 10 modules statements are listed. Also displayed are module name, measurement date, and system.

Column Descriptions

ACTV%

Displays the percentage of CPU utilization of the module.

Starting Location

Displays the starting location of the module statements that exceed the threshold value. Up to 10 location addresses are shown.

DBRM - SQL Information

The DBRM panel is displayed when option **3** is entered on the IMS Feature Menu.

```
APCDPDBR ------ PMA IMS Feature - DBRM ---------------------- Row 1 from 2642
COMMAND ===>                                                  SCROLL ===> CSR

DBRM         : *             Date: 2011.01.15                 System: *

Line Commands: DO - DBRM overview   SS - SQL statements  TX - TX using the DBRM

                      Total     Total     Total        Total
LC DBRM     System   ACTV%   CPU sec  RESP sec SQL#  Called  CPU/Call RESP/Call
-- -------- -------- ----- --------- --------- ---- ------- --------- ---------
   PL872A   IMSP1      6,04   3.4488   21.0710   35    7806  0.000441  0.002699
   QE042B   IMSP2      3,22   3.3996   11.4757    3      18  0.188869  0.637540
   XHZ56M   IMSP3     11,76   3.1745   17.9664    6  203496  0.000015  0.000088
```

The DBRM panel presents an overview of plans for all (or specific) systems as of the last measurement day.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific plan that is displayed in the list.

DO

Displays overview of historical information about the DBRM.

SS

Displays the SQL statements belonging to the DBRM.

TX

Displays the transaction that refers to the DBRM.

Field Descriptions

DBRM

To reduce the number of DBRMs displayed, enter a specific name or part of a name. Generic notation is allowed using * as a wildcard. For example, enter **A*** to display the information for all DBRMs beginning with A. By default, all DBRMs measured during the last measurement date are displayed.

Date

To choose a specific date with which you would like to compare the display current information, enter the date. The default date is the last measurement date.

System

The System field contains the name of the system representing the IMS region in which the DBRM runs. To display only the information of a certain system, change the name in the System field on the IMS Feature Menu. For details about how the System name is generated or defined, see the *Administration Guide*.

Column Descriptions

DBRM

Name of the DBRM.

System

Name of the system on which this DBRM runs

TOTAL ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for all SQL statements of this DBRM.

Total RESP sec

Total time (in seconds) for all SQL statements of this DBRM to complete processing.

SQL#

Number of SQL statements running in this DBRM for which Performance Management Assistant has gathered consumption data from CA Mainframe Application Tuner.

Total Called

Total number of SQL statements that have been executed from this DBRM during the measurement period

CPU/Call

Value of Total CPU sec column divided by the value of the SQL# column.

RESP/Call

Value of Total RESP sec column divided by the value of the SQL# column.

DBRM Overview

To display an overview of historical information for a specific plan, select the plan by using line command DO.

```
APCDPDBO ------ PMA IMS Feature - DBRM Overview -------------- Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> CSR

DBRM         : PL872A    System: CICP3           Show recent months: 03

Line Commands: SS - SQL statements  TX - TX using the DBRM

              Total     Total     Total        Total
LC Date       ACTV%   CPU sec  RESP sec SQL#  Called  CPU/Call RESP/Call
-- ---------- ----- --------- --------- ---- ------- --------- ---------
   2011.01.15  6,04    3.4488   21.0710   35    7806  0.000441  0.002699
****************************** Bottom of data ********************************
```

The Plan Overview panel displays a historical overview of the measurement information for a specific plan.

Panel Elements

- To view more or less information for the plan, use the Show recent months field to define the number of months for which information should be displayed.
- Use line command SS to display the SQL statements in the plan that exceed the threshold values.

Field Descriptions

DBRM

Displays the name of the DBRM.

Show recent months

Displays the number of months entered (if the information is available for the period entered).

Column Descriptions

Date

Date the measurement was done.

TOTAL ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for all SQL statements of this DBRM.

Total RESP sec

Total time (in seconds) for all SQL statements of this DBRM to complete processing.

SQL#

Number of SQL statements running in this DBRM for which Performance Management Assistant has gathered consumption data from CA Mainframe Application Tuner.

Total Called

Total number of SQL statements that have been executed from this DBRM during the measurement period.

CPU/Call

Value of Total CPU sec column divided by the value of the SQL# column.

RESP/Call

Value of Total RESP sec column divided by the value of the SQL# column.

SQL Statements Exceeding Thresholds

SQL statements that exceed the threshold values can be displayed by:

- Selecting a specific plan by using line command **SS** on the Plan panel, or
- Selecting a history record for a plan by using line command **SS** on the Plan Overview panel

```
APCDPSQO - PMA - IMS Feature DBRM SQL Overview ------------ Row 1 to 11 of 19
COMMAND ===>                                                 SCROLL ===> HALF

Line Commands:  SD -SQL Details  SO -SQL Statement Overview

Date   : 2011.01.15      DBRM ACTV%   :     28.29
System : CICSSYS1             CPU sec :   65.4662
DBRM   : TSTD4099             RESP sec:  118.5100
Created:                      Thresh.%:      0.01

                          Total     Total     Total
LC Action    Stmt#  Called ACTV%   CPU sec  RESP sec  CPU/Call RESP/Call
-- -------- ------ ------- ----- --------- --------- --------- ---------
   SELECT     5493      27 16.71   38.6073   53.7437  1.429901  1.990510
   FETCH      6227       1  6.20   14.3316   39.8550 14.331662 39.855086
   FETCH      5962     719  3.87    8.9418   10.6731  0.012436  0.014844
```

The SQL Statements panel shows the plan name, measurement date, system, and the total CPU consumption and the threshold value for the plan statements. Up to 10 SQL statements are shown that exceed the threshold value. For each statement, the IMS Feature presents the CPU consumption (in % of the IMS region and in seconds), the action and the first part of the SQL statement.

If there are cumulative consumption values, the displayed threshold refers to the source value.

Panel Elements

This section describes the elements on the panel.

Line Commands

SD

Displays the SQL statement text, if available.

SO

Displays a historical overview of the selected SQL statement. SQL information is displayed for one SQL statement and one system ID for all available days.

Field Descriptions

Date

Date the information was collected.

System

Online region where the DBRM was used

DBRM

DBRM name to which the information belongs

Created

Creation date of the DBRM

ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for all SQL statements of this DBRM.

RESP sec

Total time (in seconds) for all SQL statements of this DBRM to complete processing.

Thresh.%

Only SQL statement consumption data that exceeded this threshold value was gathered by Performance Management Assistant from CA Mainframe Application Tuner.

Column Descriptions

Action

Type of call that was issued with this statement.

Stmt#

Number of the unique SQL statement that is contained in a Package or Plan.

Called

Number of times during the measurement session that this SQL statement was executed.

ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for this SQL statement.

Total RESP sec

Total time (in seconds) for this SQL statement to complete processing.

CPU/Call

Amount of CPU time (in seconds) needed by DB2 to process each DB2 call for this SQL statement.

RESP/Call

Average response time (in seconds) for this SQL statement to complete processing.

SQL Statement Details

Select an SQL statement by using line command SD from the DBRM SQL Overview panel to display details about the selected statement, as shown following.

```
APCXPSTX          SQL Statement Information                Row 1 to 28 of 28
 COMMAND ===>                                               SCROLL ===> HALF

 Date: 2011.01.15  System: PRODIMSA  DBRM: TEST1234

                          Total     Total     Total
 Action    Stmt#  Called ACTV%   CPU sec  RESP sec  CPU/Call RESP/Call   BROWSE
 -------- ------ ------- ----- --------- --------- --------- ---------
 FETCH       333  163959  0.20    3.3796    3.9260  0.000020  0.000023   EDIT

 *** START OF SQL STATEMENT ***

 FETCH

 *** END OF SQL STATEMENT ***

 *** START OF SQL DECLARE ***

 DECLARE  TCDC0970 CURSOR
 FOR
 SELECT   TC_APPLICATION , SEQUENCE , HARDCODES
 FROM     TCDT097
 WHERE    COD_ENTITY = : H
 AND      PROGRAM = : H
 AND      LNG_DATA = : H
 ORDER    BY SEQUENCE DES_NRESFCC , COD_NATCTRY , DES_NATCTRY ,
          FLG_EURCTRY , EXCHANGE , LNG_OFDATA , LASTMODUSER ,
          LASTMODTRM , DAT_LASTMOD , DES_ENTABR , FLG_OFCACC ,
          FLG_FCCCOEXC , FLG_ALL_MULT
 INTO     : H , : H , : H , : H , : H , : H , : H , : H , : H , : H ,
          : H , : H , : H , : H , : H , : H , : H , : H , : H , : H ,
          : H , : H , : H , : H , : H , : H , : H , : H , : H , : H ,
          : H

 *** END OF SQL DECLARE ***
 ****************************** Bottom of data ********************************
```

The SQL Statement Information panel shows the performance details of the selected SQL statement followed by the SQL statement text, if available. For cursor statements the SQL Declare statement text will also be shown, if available

You can use the BROWSE and EDIT buttons to display the statement text in Browse or Edit mode for further processing.

Panel Elements

This section describes the elements on the panel.

Field Descriptions

Date

Date the information was collected.

System

Online region where the DBRM was used.

DBRM

DBRM name to which the information belongs

Action

Type of call that was issued with this statement

Stmt#

Number of the unique SQL statement that is contained in a Package or Plan.

Called

Number of times during the measurement session that this SQL statement was executed.

Total ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for this SQL statement.

Total RESP sec

Total time (in seconds) for this SQL statement to complete processing.

CPU/Call

Amount of CPU time (in seconds) needed by DB2 to process each DB2 call for this SQL statement (Total CPU Sec / Total Called).

RESP/Call

Average response time (in seconds) for this SQL statement to complete processing (Total RESP Sec / Total Called).

SQL Statement Text

SQL statement text and corresponding SQL Declare text, if applicable.

SQL Statement Overview (History)

Select an SQL statement by using line command **SO** from either the DBRM SQL Overview panel or the SQL Summary panel to display a historical overview of the selected statement, as shown in the following panel.

```
APCXPSQH ----- PMA IMS Feature - SQL Overview ----------------- Row 1 to 3 of 3
COMMAND ===>                                                    SCROLL ===> HALF

DBRM: TSTC4099  System: CICSSYS1  Action: FETCH     STMT#:   6227   Months: 03

Line Commands: SD - SQL Details     TX - TX using the DBRM

                      Total     Total                          Total
LC Date        Called ACTV%   CPU sec  CPU/Call RESP/Call  RESP sec
-- ---------- ------- ----- --------- --------- --------- ---------
   2011.01.03       1  6.20   14.3316   14.3316 39.855086   39.8550
   2011.01.02       1  5.20   11.1317   11.1317 37.135021   37.1350
   2011.01.01       1  6.40   14.7216   14.7216 40.007991   40.0079
****************************** Bottom of data ********************************
```

SQL information is displayed for one SQL statement and one system ID for all available days.

Panel Elements

This section describes the elements on the panel.

Line Commands

SD

Displays details about the SQL statement, including the SQL statement text, if available.

TX

Displays information about the transaction that is using the DBRM that contains the SQL statement.

Field Descriptions

DBRM

Name of the DBRM that contains the SQL statement.

System

System name

Action

Type of call that was issued with this statement.

STMT#

Number of the unique SQL statement that is contained in a Package or Plan.

Show recent months

Limits the display to the dates that occur in the specified time range.

The default value is 03 months. You can specify any value from 01 to 18 months.

Column Descriptions

Date

Date the measurement was done.

Called

Number of times during the measurement session that this SQL statement was executed.

Total ACTV%

Percentage of the monitored period that CA Mainframe Application Tuner detected CPU utilization that was attributed to the processing of the SQL statements of this DBRM.

Total CPU sec

Amount of CPU time (in seconds) needed by DB2 to process DB2 calls for this SQL statement.

CPU/Call

Amount of CPU time (in seconds) needed by DB2 to process each DB2 call for this SQL statement.

RESP/Call

Average response time (in seconds) for this SQL statement to complete processing.

Total RESP sec

Total time (in seconds) for this SQL statement to complete processing.

Transactions that Use the DBRM

To display transactions that use the DBRM, select a DBRM from the DBRM Overview panel by using line command TX.

```
APCGP305 -- PMA - Transactions Using Selected DBRM ---------- Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> CSR

DBRM  : PL872A              Date: 2011.01.15                  System: IMSP3

Transaction  DELAY%
--------------------------------------------------------------------------------
PL51          0.46
****************************** Bottom of data ********************************
```

Column Descriptions

Transaction

Displays the name of the transaction.

DELAY%

Displays the percentage of the monitored period that activity was detected for this transaction processing the DBRM.

PSB - DLI Information

The PSB panel is displayed when option **4** is entered on the IMS Feature Menu.

```
APCGP004 -- PMA IMS Feature - PSB ------------------------------ Row 1 from 1
COMMAND ===>                                                   SCROLL ===> HALF

PSB          : *             Date: 2011.01.15                  System: *
Commands     : SORT P/SY/C% - Psb/SYs/aCtv%
Line Commands: PO - PSB overview   DS - DLI statements

LC  PSB       System    ACTV%
--  --------  --------  -----
    TESTST02  IMSTEST1   5.70
****************************** Bottom of data ********************************
```

The PSB panel presents an overview of PSB information for all (or specific) systems as of the last measurement day.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific PSB that is displayed in the list.

PO

Displays historical information about a specific PSB.

DS

Displays the top 10 DLI statements exceeding the thresholds.

Field Descriptions

PSB

To filter the PSBs that are displayed, enter a specific PSB name or a generic PSB name. Generic notation is allowed by using * as a wildcard. For example, enter **A*** to display the information for all PSBs beginning with A. By default, all PSBs measured during the last measurement date are displayed.

Date

To select a specific date with which you would like to compare the current information, enter the date. The default date is the last measurement date.

System

The System field contains the name of the system representing the IMS region in which the transactions run. To display only information from a certain system, change the name in the System field on the IMS Feature Menu. For details about how the System name is generated or defined, see the *Administration Guide*.

Column Descriptions

PSB name

Displays the name of the PSB.

System

Displays the name of the system representing the IMS region in which this module runs.

ACTV%

Displays the percentage of CPU utilization of the module within the IMS system.

This percentage reflects the total of all CPU time accumulated from all measurements taken during the time range that is specified on the System Control panel. See the *Administration Guide* for more details about this time range.

PSB History Information

To display historical information for a specific PSB, select the PSB by using line command PO.

```
APCGP042 -- PMA - PSB Overview------------------------------ Row 1 to 1 of 1
COMMAND ===>                                                 SCROLL ===> HALF

PSB          : TESTST02                          Show recent months: 03
Line Commands: DS - DLI statements

LC  Date        System    ACTV%
--  ----------  --------  -----
    2011.01.15  IMSTEST1   5.70
****************************** Bottom of data ********************************
```

The PSB Overview panel displays a historical overview of the measurement information for a specific PSB.

PSB History Information Panel

Use this panel to do the following:

- To view more or less information for the PSB, use the Show recent months field to define the number of months for which information should be displayed.
- Use line command DS to display the top 10 DLI statements exceeding the thresholds.

DLI Statements

DLI statements that exceed the threshold values can be displayed by selecting either:

- A specific PSB by using line command DS on the PSB panel
- A history record for a PSB by using line command DS on the PSB Overview panel

```
APCGP204 -- PMA - DLI Statements ---------------------------- Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> CSR

PSB         : FB175A         Date: 2011.01.15                 System: IMSA

           Call   Total CPU     Total Wait     Resource SSA
                    %  abs sec    %  abs sec
-------------------------------------------------------------------------------
Threshold      :  0.01
-------------------------------------------------------------------------------
           GU      0.10      0   0.19      8   VWTE1P   VWTE1P02
```

The DLI Statement panel displays the PSB name, measurement date, system, and the threshold value for DLI statements. Up to 10 DLI statements are shown that exceed the threshold value. Displayed for each statement are the name of the calling transaction, the CPU and Wait Time consumption (in % of the IMS region and in seconds), resource and SSA information.

Overview of Measurement Reports

The OVERVIEWS option of the IMS Feature Menu displays different chapters of a measurement report. The default entry is #SJS. However, users can also choose from the following table of chapters.

Chapter ID	Overview Description
#SJS	**Sampler and job statistics**
#RDC	**Resource demand chart**
#COV	**Code view**
#DSA	**Dataset activity**
#TXV	**Transaction view**
#POV	**Pool view**
#SUM	**Summary**

#SJS - Sampler and Job Statistics

To display a chapter in the measurement report (sampler and job statistics is used here for illustration), on the IMS Feature Menu, select option **5** and enter the chapter ID (#SJS is the default chapter). The first page of the chapter is displayed as illustrated in the following panel.

```
APCDP005 CA MAT   Meas. - SAMPLER AND JOB STATISTICS ---- Row 1 to 37 of 116
COMMAND ===>                                                SCROLL ===> HALF

Object  : O O/D/S - Overview/Date/System    Direction: F F/B - Forward/Backward
Overview: #SJS       Date: 2011.01.15      System/Jobname: IMSTEST1/IMS

-- JOB INFORMATION --  ------ JOB STATISTICS ------  --- MONITOR STATISTICS ---

JOBNAME  . . IMSTEST1  TCB TIME . . . . 00:00:02.36  START DATE . . 2011/01/15
STEPNAME . . IMS       SRB TIME . . . . 00:00:01.26  START TIME . . 16:16:35
PROCSTEP . . REGION                                  DURATION . . . 00:01:42
PROGRAM  . . DFSRRC00  ECPU TIME  . . . 00:00:03.62
ASID . . . . 320       ZAAP TIME  . . .     **N/A**  OBSERVATIONS:
(HEX)  . . . 0140      ELIG ZAAP TIME .     **N/A**  FINAL RATE . . 10MSEC
USER ID  . . TEST12                                  REQUESTED  . . 9000
JOB ID . . . STC04561  SWAPPED OUT  . . 00:00:00.00  USED . . . . . 9000
                       NON DISP . . . . 00:00:00.00
CICS LEVEL . **N/A**   LPAR/DIS DELAY . 00:00:06.96  SAMPLES:
DB2 LEVEL  . **N/A**                                 USED . . . . . 8997
IMS LEVEL  . 8.1.0     CPU SVC UNITS  . 64991        % ACTIVE . . . 6.39
MQS LEVEL  . **N/A**                                 % WAIT . . . . 93.61
SAP LEVEL  . **N/A**   EXCP COUNT . . . 38
USS LEVEL  . **N/A**   EXCP RATE  . . . 0.37         AVG TCBS ACT . 1.00
WAS LEVEL  . **N/A**

< RGN LIM  . 576K      < RGN USED HWM . 88K          CMN HWM USED . 217K
> RGN LIM  . 32M       > RGN USED HWM . 16K
RGN REQUEST  512K
                       PAGE-INS . . . . 0
DYNAMIC LINKLIST:      PAGE-IN RATE . . 0.00
IPL

MONITOR DATA SET  . CAMAT.MONDS.TESTIMSP.T235774.D20110115
```

The IMS Feature offers a variety of paging alternatives. The normal PF keys for scrolling forward and backwards can be used. Additionally, the Object field and **Direction** field can be used in combination to scroll forwards or backwards through different objects.

PF7/ PF8	Pages backward and forward within the actual overview
Object O	Pages through overviews with the same date and same IMS system Direction: F to page to the next report; B to page to the previous overview.
Object D	Pages through date with the same overview and same IMS system Direction: F to page to the next date; B to page to the previous date. Order: Date descending—the most recent information is presented first.

Object S — Pages through IMS systems with the same overview and same date

Direction: F to page to the next IMS system; B to page to the previous IMS system.

Order: The system names are presented in internal ID order.

System Information

The System Information panel is displayed when option **2** is entered on the IMS Transaction Information Menu.

```
APCDPSSI -------- PMA IMS Feature - System Information --------- Row 1 from 50
COMMAND ===>                                                  SCROLL ===> CSR

System: *               Date: 2011.01.15   (Format YYYY.MM.DD)

Line Commands: S - Detail information   O - Overview   T - Transactions

              Number       Trans      Total CPU  Total Elapsed     Total Wait
LC System      Trans      Called  hh:mm:ss.µµµµ  hh:mm:ss.µµµµ  hh:mm:ss.µµµµ
-- -------- --------  ----------  -------------  -------------  -------------
   IMSALD5       208        5654  00:05:18.3680  79:19:36.7832  78:54:07.7208
   IMSALE1       100       21426  00:11:28.2964  50:29:14.0822  46:35:31.4911
   IMSALE2       116        3660  00:03:00.1487  38:44:37.3512  38:23:07.8360
   IMSALP1       605     1901734  07:12:38.8268  23:16:58.9988  83:50:24.0388
   IMSALP3       330       46123  00:09:27.4499  30:41:51.0994  30:10:34.2677
   IMSALP4         9         225  00:00:00.1056  23:35:35.3384  00:00:00.0656
   IMSALP6       200        4455  00:01:20.6186  41:08:53.0020  40:50:32.9463
   IMSALS1       411      121683  00:32:23.4186  59:03:43.1751  56:23:07.4227
   IMSALT2       215        8317  00:02:48.5364  30:28:18.9676  30:06:28.4394
   IMSALT4       128        2824  00:02:23.5472  37:51:38.9917  37:36:29.1974
   IMSALT5        42        1794  00:00:32.1526  36:45:22.3260  36:42:40.0230
   IMSAOR1       182      143928  00:04:28.1778  17:26:09.4468  17:18:11.3051
   IMSAOR2        88       60114  00:01:29.8815  42:43:44.9268  42:41:09.8956
   IMSAOR3        67       86456  00:02:39.1497  65:20:41.3823  65:15:20.0574
```

The System Information panel displays values for one day over all systems, depending on the system ID that you defined on the panel.

System Information Panel

Use this panel to do the following:

1. To choose a specific date for which you would like to display information, in the Date field, change the date. The default date is the last measurement date.
2. The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.
3. Show CPU(C)/Waits(W): With value **C,** the columns CPU, SRVUs, EXCPs and Measurement Samples are displayed. With value **W,** the columns Wait, Swapped, NonDisp., and ProcDly are displayed.

Panel Elements

This section describes the elements on the panel.

Line Commands

Line commands can be used to work with a specific system that is displayed in the list.

O

Displays an overview of the measurement reports.

B

Browses the measurement report

P

Prints the measurement report.

PE

Permits edits to measurement report.

SO

Displays the System Overview panel with all information for a specific CICS system and a specific time period.

Column Descriptions

System

Displays the system name (either default or user defined) from the System Control panel.

Jobname

Displays the name of the CICS startup job.

Time

Displays the start time of the measurement.

Consuming Time in Minutes - Elps

Displays the elapsed time of measurement in format *hh:mm:ss.*

The following four columns are shown if C (for CPU values) is set:

Consuming Time in Minutes - CPU

Displays the total CPU time consumed during measurement in format *hh:mm:ss.*

SRVUS

Displays the service units consumed during measurement. A **K** at the end of the value indicates that the format is in thousands

EXCPs

Displays the EXCPs consumed during measurement. A **K** at the end of the value indicates that the format is in thousands.

Measurement Samples

Displays the total samples processed by CA Mainframe Application Tuner during measurement. A **K** at the end of the value indicates that the format is in thousands.

The following four columns are shown if W (for WAIT values) is set:

Wait

Displays the wait time consumed during measurement (format *hh:mm:ss*).

Swapped

Displays the time consumed during measurement when the TCB is swapped out from system (format *hh:mm:ss*).

NonDisp.

Displays the time consumed during measurement when the TCB is not dispatched from system (format *hh:mm:ss*).

ProcDly

Displays the time consumed during measurement when the processor itself delays (format *hh:mm:ss).*

System Overview

The System Overview panel is displayed when a IMS system is selected on the System Information panel by using line command SO.

```
APCGP062 ------ PMA - System Overview ----------------------- Row 1 to 1 of 1
 COMMAND ===>                                                  SCROLL ===> CSR

 System       : IMS0001                          Show recent months: 03
 Line Commands: O - Measurement Overview   B - Browse Measurement  P - Print
                PE - Edit  AN -CA MAT Analysis

 LC Date       Jobname   Time     Elps       CPU      Wait     EXCPS Measurement
                                 hh:mm:ss  hh:mm:ss  hh:mm:ss         Samples
 ------------------------------------------------------------------------------
    2011.01.15 UC01P00A  16.46  01:07:05  00:12:03  00:54:12     58K   12K
 ****************************** Bottom of data ********************************
```

The System Overview panel displays all date-specific information for a specific IMS system. The Show recent months field can be used to limit the information to the current month (Show recent months = 1) or to display all information available up to 18 months (Show recent months = 18). The default value for Show recent months is 3.

Line commands and columns are the same as those described for the System Information panel.

In addition the new line command AN is available, which represents the Interface to the Analyze Normal function. This function is only executable as long as the corresponding monitor data set has not been deleted. For details about the appropriate parameter settings, refer to the "Global measurement data set processing" section of the *Administration Guide*.

Alert Management

In IMS, there are hundreds of transactions but not all of these transactions need performance monitoring. Many transactions, even though they may be high consumers, only execute occasionally and do not warrant concern.

For each execution of the IMS Feature, important top consuming transactions can be identified and alerts issued automatically. This feature works in two steps:

1. The top number of consuming transactions are identified based on the scope defined as a parameter, for example, TOP Limit = 10. This parameter is maintained by your administrator.
2. Within this TOP Limit, the current execution consumption values of the transactions are compared to the statistical information maintained for the same transactions on the database. If the actual consumption exceeds the statistical limits, an alert is issued automatically (referred to as a *statistical alert*).

Additionally, the user (APM Team) can manually issue alerts explicitly for transactions that use the online Alert Management option (referred to as *user alerts*).

The Alert Management option provides all the information necessary for the APM Team to manage the alert. Information is provided in the form of state and reason codes that identify the situation.

How the TOP Limit Works

In order to use the Alert Management option of the IMS Feature, the TOP Limit of work must be defined. TOP Limit processing works for each defined IMS system in Performance Management Assistant. It is the last step in the total system management. The TOP Limit is maintained by the administrator. It can contain a value from 0 to 999. A value of 0 deactivates the TOP Limit, thus deactivating Alert Management. Otherwise, the TOP Limit number defines how many important transactions are to be statistically observed.

Within the TOP Limit (meaning the number defined as a parameter) all transactions of the current system are observed statistically and, at the end, a runaway test check is performed. The statistical limits are based on up to eighteen months of stored interpreted profiles. To determine the TOP consumer and issue alerts, one of two conditions normally exists:

- Transaction consumption is static. A standard deviation check is performed and if the result indicates an increase in the consumption (runaway), an alert is issued.
- Transaction consumption is not static. A standard deviation check is performed and if the result indicates a drastic increase in the consumption (runaway), an alert is issued.

In a runaway situation, the transaction is added to the Alert file with the state OPEN and the reason STAT. Alerts can be viewed under the Alert Management dialog.

The range of the statistical observation is limited to one year. For a transaction alerts to be issued, it must have been observed in at least three separate profiles collected during the period of statistical observation.

Transaction Alert List Information

The Alert List panel is displayed when option **7** is entered on the IMS Feature Menu or when line command AL is used on the Transaction Information panel.

```
APCDP007 ------- PMA IMS Feature - Alert List - All Issued ---- ROW 1 from 15
COMMAND ===>                                                  SCROLL ===> CSR

Transaction  : *                 State: *
Commands     : SORT T/SY/S/A/D - Tran/System/State/Aid/Date
             : REV -list review  OPEN -open  ALL -issued  RECENT -most recent
Line Commands: TO -Tran Ov.  S -Show  R -Review  C -Close  D -Delete  I –Insert

 LC Tranname    System      State Reason  AID  Issue Date   Al.No.
 ------------------------------------------------------------------------------
    VSIB        IMS0002     REV   STAT  15353  2011.01.02      1
    VSCO        IMS0002     OPEN  STAT  15352  2011.01.02      1
    VNAF        IMS0002     OPEN  STAT  15350  2011.01.02      1
    UWGC        IMS0002     OPEN  STAT  15349  2011.01.02      1
    SH21        IMS0002     OPEN  STAT  15348  2011.01.02      1
    PN§1        IMS0002     OPEN  STAT  15347  2011.01.02      1
    IUAQ        IMS0002     OPEN  STAT  15345  2011.01.02      1
    P140        IMS0001     OPEN  STAT  15342  2011.01.02      1
    LZ27        IMS0001     OPEN  STAT  15340  2011.01.02      1
    LZ15        IMS0001     OPEN  STAT  15339  2011.01.02      1
    LZ14        IMS0001     OPEN  STAT  15338  2011.01.02      1
    LZ11        IMS0001     OPEN  STAT  15337  2011.01.02      1
    LZ09        IMS0001     OPEN  STAT  15336  2011.01.02      1
```

If a TOP Limit has been identified, an alert is issued automatically for any transaction within the TOP Limit that is found to exceed its statistical limits. See the *Administration Guide*.

Use the Alert List panel to see an overview of all alerts along with all state codes and reason codes. The state code identifies the current state of the alert, for example, whether the alert is open, reviewed, or closed. The reason code identifies why the alert was issued; that is, statistical limits were exceeded or the user issued the alert.

Panel Elements

To filter the data listed on the panel, use the Transaction or State fields as described below in Field Descriptions.

Primary Commands

Primary commands can be used as follows:

REV

View alerts with STATE = REV.

OPEN

View alerts with STATE = OPEN.

ALL

View all alerts.

RECENT

View the most recent occurrence of each alert.

SORT

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction alert that is displayed in the list.

TO

Displays the Transaction Overview panel.

S

Shows the alert.

R

Permits review and edits for the alert text. The state is changed to RE

C

Closes an alert. The state is changed to CUSE and can no longer be reviewed.

D

Deletes an alert

I

Inserts a new alert.

Field Descriptions

Transaction

To control the list of alerts being displayed, enter an actual transaction name or a generic transaction name. Generic character asterisk (*) can be used to list all alerts for all transactions or to limit the list of alerts to a generic group of transactions.

State

To reduce the list of alerts to a specific state, enter the state of the alerts to be displayed. You can enter a valid state code, the first letter of the state code plus an asterisk, or an asterisk alone to see all states of alert. Valid state codes are listed in State Code Descriptions.

Column Descriptions

Traname/System

Displays the specific transaction and system for which the alert is issued.

State

Displays the current state of the alert.

Valid state codes are listed in State Code Descriptions.

Reason

Displays the current reason for the alert. Valid reason codes are listed in Reason Code Descriptions.

AID

Displays a unique alert identification for each alert.

Issue Date

Displays the date the alert was issued.

Al. No.

Displays the alert number, which is the sequence number of the alert entry created for this transaction.

For example, Al.No. 3 indicates that it is the third alert that was created for the selected transaction.

If more than one alert exists and you want to delete the alert for this transaction, each alert must be individually deleted by using line command D.

State Code Descriptions

State Code	Short Description	Long Description
OPEN	Open	An open state indicates a new alert has been opened automatically by PMA or by a user.
REV	Review	A review state code stops further measurements for the transaction. An open alert can be changed to REV by selecting the alert with line command R. This action allows you to review the alert and changes the alert to state code REV.
CLOSE	Closed	A closed state code indicates the completion of an alert process.

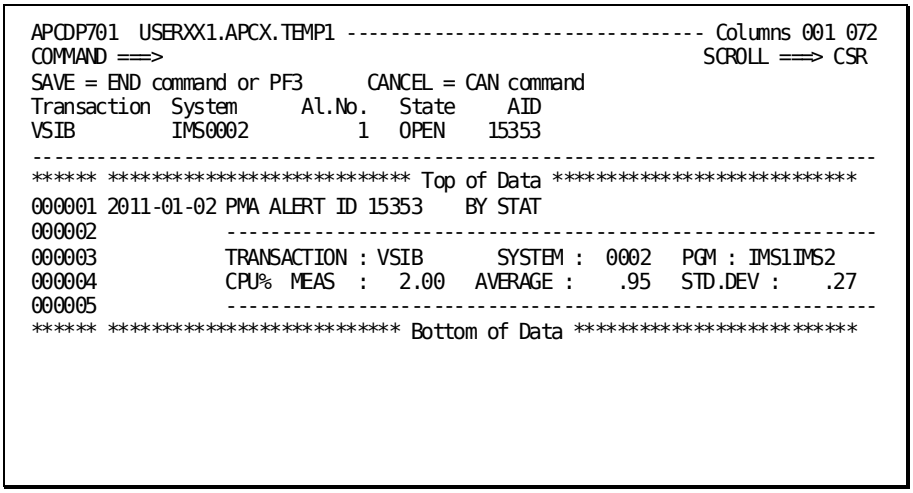
Reason Code Descriptions

Reason Code	Short Description	Long Description
USER	User	The alert was issued by a user. See alert text for explanation.
STAT	Statistics	The alert was issued automatically by PMA because the transaction exceeded its normal statistical limits.

Show, Review, or Insert an Alert

The following panel is displayed as a result of one of these actions:

- A transaction was selected on the Alert List panel by using line command S or R.
- Line command I was used on the Alert List panel or line command AI was used on the Transaction Information panel to insert a user alert for a specific transaction.



When selected with **S** or **R** this panel details the alert situation for the specific transaction by displaying all text information that is either created automatically by Performance Management Assistant or documented by the user.

The alert is identified by the transaction name. Additionally, the number of alerts, status code, reason codes, identifier, and creation date are listed.

Alert Panel

Use this panel to do the following:

- In Review mode (line command R), you are allowed to edit text up to the maximum of 102 lines. The alert state is changed to REV when it is reviewed by using line command R.
- In Insert mode (line command I or AI), you are allowed to insert a user alert and can create up to 102 lines of alert text. The alert state is OPEN with reason code USER.
- In both Review and Insert modes, the text is saved in the database and is available anytime for display or for documenting further information. The text is erased if you use the delete command for the alert on the Alert List panel.
- To cancel any changes, enter the CAN (cancel) command. Changes in the text are ignored and the state of the alert is not changed.

Alert List Information - Changed Modules

The Alert List Changed Modules panel is displayed when option 8 is entered on the IMS Feature Menu or when line command AL is used on the Transaction Information panel.

```
APCDP008 ---------- PMA IMS Feature - Alert List Changed modules - Row 1 from 15
COMMAND ===>                                                  SCROLL ===> HALF

Module       : *                  State: *
Commands     : SORT M/SY/S/A/D/L/U - Module/System/State/Aid/Date/Linkdate/Uid
             : REV -list review  OPEN -open  ALL -issued  RECENT -most recent
Line Commands: MO -Mod.Ov.  S -Show  R -Review  C -Close  D -Delete  I -Insert

LC Module     System      State Reason  AID  Issue Date  Link Date    By (UID)
-------------------------------------------------------------------------------
   ASMTDLI    *ONLINE*    PEND  MODC      1  2011.04.26  2011.11.12   *PMA*
   ASMTDLI1   *ONLINE*    PEND  MODC      2  2011.04.26  2011.11.12   *PMA*
   ASMTDLI2   *ONLINE*    PEND  MODC      3  2011.04.26  2011.11.12   *PMA*
   ASMTDLI3   *ONLINE*    PEND  MODC      4  2011.04.26  2011.11.12   *PMA*
   ASMTDLI4   *ONLINE*    PEND  MODC      5  2011.04.26  2011.11.12   *PMA*
   CBLTDLI    *ONLINE*    PEND  MODC      6  2011.04.26  2011.11.12   *PMA*
   CBLTDLI1   *ONLINE*    PEND  MODC      7  2011.05.10  2011.11.12   *PMA*
   CBLTDLI2   *ONLINE*    PEND  MODC      8  2011.05.10  2011.06.09   *PMA*
   CBLTDLI3   *ONLINE*    PEND  MODC      9  2011.04.26  2011.11.12   *PMA*
   CBLTDLI4   *ONLINE*    PEND  MODC     10  2011.04.26  2011.11.12   *PMA*
```

The function works similar to the Batch Changed Module processing. The scan process to detect changes for IMS modules is activated by running job APCIJLMO. If an IMS module has changed, a pending alert is created. Different from batch, the alerts are shown based on the module name with the global entry *ONLINE* for the IMS system name. The alert entries are considered in the next IMS measurement result processing. The state of a pending alert belonging to a module that was active during the measurement is changed to OPEN or to CTHR (Closed THResholds). To see more information about CTHR, see "Defining Thresholds" in the *Administration Guide*. If the module was called in different systems, the alert entry is duplicated for each system the module was active in during the measurement.

Use the Alert List Changed modules panel to see an overview of all alerts along with all state codes and reason codes. The state code identifies the current state of the alert; for example, whether the alert is open, reviewed, or closed. The reason code identifies why the alert was issued; that is, statistical limits were exceeded or the user issued the alert.

Panel Elements

To filter the data listed on the panel, use the **Transaction** or **State** fields as described in Field Descriptions.

Primary Commands

Primary commands can be used as follows:

REV

View alerts with STATE = REV.

OPEN

View alerts with STATE = OPEN.

ALL

View all alerts.

RECENT

View the most recent occurrence of each alert.

SORT

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction alert that is displayed in the list.

TO

Displays the Transaction Overview panel.

S

Shows the alert.

R

Permits the review and edit of the alert text. The state is changed to REV.

C

Closes an alert. The state is changed to CUSE and can no longer be reviewed.

D

Deletes an alert.

I

Inserts a new alert.

Field Descriptions

Transaction

To control the list of alerts being displayed, enter an actual transaction name or a generic transaction name. Generic character asterisk (*) can be used to list all alerts for all transactions or to limit the list of alerts to a generic group of transactions.

State

To reduce the list of alerts to a specific state, enter the state of the alerts to be displayed. You can enter a valid state code, the first letter of the state code plus an asterisk, or an asterisk alone to see all states of alert.

Valid state codes are described in State Code Descriptions.

Column Descriptions

Traname/System

Displays the specific transaction and system for which the alert is issued.

State

Displays the current state of the alert. See State Code Descriptions for a detailed description of the valid state codes.

Reason

Displays the current reason for the alert. See Reason Code Descriptions for valid reason codes.

AID

Displays the unique alert identification for the alert.

Issue Date

Displays the date the alert was issued.

Al. No.

Displays the alert number, which is the sequence number of the alert entry that is created for this module.

For example, Al.No. 3 indicates the third alert that was created for the chosen module.

If more than one alert exists, and you want to delete the alert for this module, each alert must be individually deleted by using line command D.

State Code Descriptions

State Code	Short Description	Long Description
OPEN	Open	An open state indicates a new alert has been opened automatically by PMA or by a user.
REV	Review	A review state code stops further measurements for the transaction. An open alert can be changed to REV by selecting the alert with line command R. This action allows you to review the alert and changes the alert to state code REV.
CLOSE	Closed	A closed state code indicates the completion of an alert process.

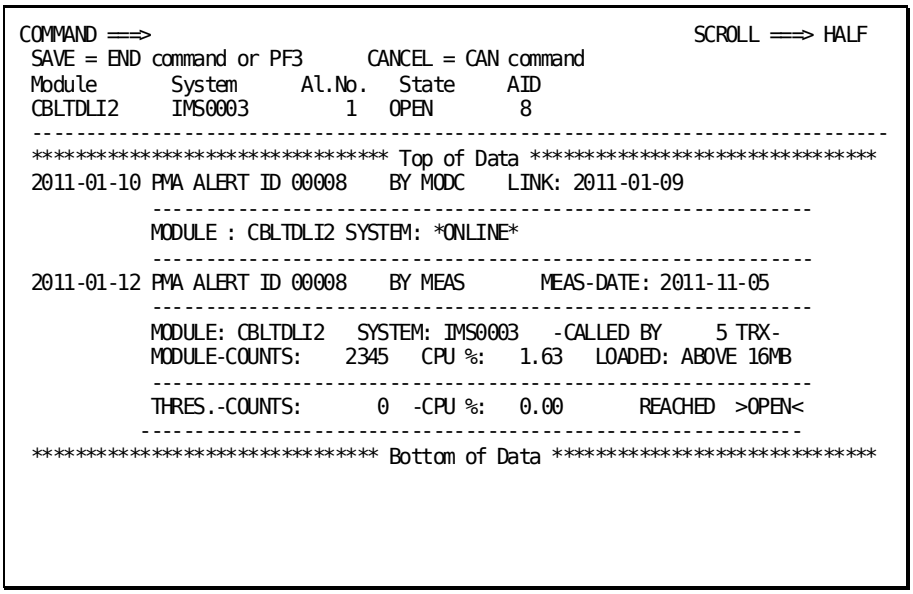
Reason Code Descriptions

Reason Code	Short Description	Long Description
USER	User	The alert was issued by a user. See alert text for explanation.
STAT	Statistics	The alert was issued automatically by PMA because the transaction exceeded its normal statistical limits.

Show, Review, or Insert an Alert

The following panel is displayed as a result of one of these actions:

- A transaction was selected on the Alert List panel by using line command S or R.
- Line command I was used on the Alert List panel or line command AI was used on the Transaction Information panel to insert a user alert for a specific transaction.



When selected with S or R this panel details the alert situation for the specific transaction by displaying all text information that is either created automatically by Performance Management Assistant or documented by the user.

The alert is identified by the transaction name. Additionally, the number of alerts, status code, reason codes, identifier, and creation date are listed.

Alert Panel

Use this panel to do the following:

- In Review mode (line command R), you are allowed to edit text up to the maximum of 102 lines. The alert state is changed to REV when it is reviewed by using line command R.
- In Insert mode (line command I or AI), you are allowed to insert a user alert and can create up to 102 lines of alert text. The alert state is OPEN with reason code USER.

- In both Review and Insert modes, the text is saved in the database and is available anytime for display or for documenting further information. The text is erased if you use the delete command for the alert on the Alert List panel.
- To cancel any changes, enter the CAN (cancel) command. Changes in the text are ignored and the state of the alert is not changed.

SQL Statement Information - SQL Summary

The SQL Summary panel is displayed when option **S** is entered on the IMS Feature Menu.

```
APCXPSQL -- PMA - IMS Feature SQL-Summary ----------------- Row 2 from 17094
COMMAND ===>                                                 SCROLL ===> HALF

Line Commands: DO -DBRM Overview  SD -SQL Details  SO -SQL Overview

DBRM: *         Date: 2011.01.15  System: *

                          Total     Total
LC Action   Stmt#  Called ACTV%   CPU sec  CPU/Call RESP/Call DBRM     System
-- ------- ------ ------- ----- --------- --------- --------- -------- --------
   FETCH     6227       1  6.20   14.3316 14.331662 39.855086 TSTC4099 CICSSYS1
   SELECT    5493      27 16.71   38.6073  1.429901  1.990510 TSTC4099 CICSSYS1
   SELECT    6328       3  1.47    3.4009  1.133653  2.618793 TSTC4099 CICSSYS1
   OPEN       500       1  0.11    0.2770  0.277061  0.606578 TSACBB11 CICSSYS1
```

The SQL Summary panel provides a central overview about the DB2 activities for all DBRMs that exceed the threshold value.

Panel Elements

To filter the data that is listed on the panel, use the DBRM, Date, or System fields as described in Field Descriptions.

Line Commands

Line commands can be used to branch to the DBRM overview panel or to display detailed information about the specific SQL statement.

DO

Displays the DBRM Overview to the DBRMs listed in the selected line.

SD

Displays details about the selected SQL statement.

SO

Displays a historical overview of the selected SQL statement.

SQL information is displayed for one SQL statement and one system ID for all available days.

Field Descriptions

PSB

Limits the display to the lines containing a PSB name matching this selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, DBRMT* displays all PSBs starting with PSB T, such as PSB T001, PSB TABC, and so on.

Date

Displays the date that the listed information was collected.

The date is in the format yyyy.mm.dd. Change the date to view older/newer dates (if available). Enter an asterisk as the first character to show the data from the most recent entries taken into Performance Management Assistant.

System

Limits the display to the lines containing a System name matching the selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, SYSP* displays all systems starting with SYSP, such as SYSP001, SYSPABC, and so on. For details about how the system name is generated or defined, see the *Administration Guide*.

Column Descriptions

LC

Displays the line command entry field.

Action

Displays the SQL action.

TOTAL CPU

Displays the total CPU time in seconds consumed by the SQL statement.

CPU-P-CALL

Displays the amount of CPU time in seconds needed by DB2 to process each DB2 call for this SQL statement by using sampling data collected during the measurement.

AVG RESP

Displays the average time (in seconds) of the SQL statement of this DBRM to complete processing.

#CALLED

Displays the total number of executed SQLs from this DBRM during the measurement.

STMT

Displays the SQL statement number.

DBRM

Displays the name of the corresponding DBRM.

SYSTEM

Displays the name of the system to which the information belongs.

DLI Statement Information - DLI Summary

The DLI Summary panel is displayed when option **D** is entered on the IMS Feature Menu.

```
APCDPDLI -- PMA - IMS Feature DLI-Summary ---------------------- Row 1 from 48
COMMAND ===>                                                    SCROLL ===> CSR

Line Commands: PO -PSB Overview   DD -DLI Details

 PSB: *         Date: 2011.01.15  System: *

LC Act. Resource  Total CPU      Total Wait    SSA           PSB      PMA
                   %   abs sec    %   abs sec                       System
-------------------------------------------------------------------------------
   GU   VWTE1P    0.10      0.0  0.19      0.0 VWTE1P02      FB175A   IMSA
   GU   VWTE1P    0.10      0.0  0.19      0.0 VWTE1P02      FB175A   IMSB
   GU   VWTE1P    0.10      0.0  0.19      0.0 VWTE1P02      FB175A   IMSSUM
   GU   TMT1IP    0.08      0.0  0.00      0.0 TMT02G        FC049I   IMSA
   GU   TMT1IP    0.08      0.0  0.00      0.0 TMT02G        FC049I   IMSB
   GU   TMT1IP    0.08      0.0  0.00      0.0 TMT02G        FC049I   IMSSUM
   GU   TMT1NP    0.03      0.0  0.16      0.0 TMT02G        TM503N   IMSA
   GU   TMT1NP    0.03      0.0  0.16      0.0 TMT02G        TM503N   IMSB
   GU   TMT1NP    0.03      0.0  0.16      0.0 TMT02G        TM503N   IMSSUM
   GHN  SHD21P    0.02      0.0  0.08      0.0 SHD21S10      SH707A   IMSA
   GHN  SHD21P    0.02      0.0  0.08      0.0 SHD21S10      SH707A   IMSB
   GHN  SHD21P    0.02      0.0  0.08      0.0 SHD21S10      SH707A   IMSSUM
   GHU  TMT1NP    0.01      0.0  0.03      0.0 TMT01G        TM503N   IMSA
   GHU  TMT1NP    0.01      0.0  0.03      0.0 TMT01G        TM503N   IMSB
```

The DLI Summary panel provides a central overview about the DLI activities for all PSBs that exceed the threshold value.

Panel Elements

To filter the data listed on the panel, use the PSB, Date, or System fields as described in Field Descriptions.

Line Commands

Line commands can be used to branch to the PSB overview panel or to display detailed information about the specific SQL statement.

PO

Displays the PSB Overview panel for the selected PSB.

DD

Displays the DLI information of the corresponding measurement list if the profile is still available in the profile cluster.

This line command only works for single systems. For summary systems, that is, those where all listed consumption values are accumulated from more than one system, the display of DLI information from a measurement list is not possible.

Field Descriptions

PSB

Limits the display to the lines containing a PSB name matching this selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, DBRMT* displays all PSBs starting with PSB T, such as PSB T001, PSB TABC, and so on.

Date

Displays the date that the listed information was collected.

The date is in the format yyyy.mm.dd. Change the date to view older/newer dates (if available). Enter an asterisk as the first character to show the data from the most recent entries taken into Performance Management Assistant.

System

Limits the display to the lines containing a System name matching the selection value.

You can define a prefix by using an asterisk as a wildcard at the end. For example, SYSP* displays all systems starting with SYSP, such as SYSP001, SYSPABC, and so on. For details about how the system name is generated or defined, see the *Administration Guide*.

Column Descriptions

LC

Displays the line command entry field.

Act.

Displays the DLI Action.

Resource

Displays the DLI resource activated by the DLI action.

Total CPU %

Displays the percentage of CPU utilization of the DLI statement.

Total CPU abs sec

Displays the CPU utilization of the DLI statement in absolute seconds.

Total Wait %

Displays the percentage of wait time utilization of the DLI statement.

Total Wait abs sec

Wait time utilization of the DLI statement in absolute seconds.

SSA

Displays the DLI segment search argument.

PSB

Displays the name of the corresponding PSB.

PMA System

Displays the name of the system to which the information belongs.

Execution Details for IMS Transactions

Option I on the IMS Feature Menu enables you to view execution detail information for IMS transactions.

How the IMS INFO Feature Works

To use the IMS INFO Feature, the following IMS transaction information must be available for each transaction call:

- IMS region name
- Transaction name
- Transaction start date
- Transaction start time
- Transaction end date
- Transaction end time
- Total elapsed time

- Total CPU time
- Total wait time
- Number of calls to DB2
- Number of calls to IMS DB

In general, these values are collected by an IMS trace tool that you might use in your environment. After these values are collected by your IMS trace tool, you can make the information available to your environment by using a provided interface. The job to import your IMS transaction details (job APCIJIFU) is described in the *Administration Guide*.

Transaction Information

The Transaction Information panel is displayed when option 1 is entered on the IMS Feature Menu.

```
APCGPS01 - PMA IMS Feature - Transaction Information --------- Row 1 from 240
COMMAND ===>                                                  SCROLL ===> CSR

Transaction  : *            Date: 2011.01.15                  System: *

Line Commands: TO - TX overview  AL  Alert list  AI  Alert insert
               TM - TX specific module info  TD - DBRM info  TP - PSB info

LC TRAN     System    CPU%  Total-CPU Total-SU Total-RESP   #EXEC A MOD  DB PSB
                     ACTV%    AVG-CPU   AVG-SU   AVG-RESP
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX1     IMSP0008 0.600  40.236000   732406  38.250000       3     3
                            13.412000   244135  12.750000
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX2     IMSP0008 1.100  73.766000  1342744   0.000000      12    12   4
                             6.147166   111895   0.000000
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX3     IMSP0008 3.550 238.063000  4333403   0.000000      52    19   6
                             4.578134    83334   0.000000
-- -------- -------- ----- ---------- -------- ---------- ------- - --- --- ---
   TRX4     IMSP0008 0.580  38.894800   707992   0.000000       9     9   3
                             4.321644    78665   0.000000
```

Transaction information is displayed for one day over all systems depending on the system ID that you defined on the IMS Feature Main Menu. For each transaction that is displayed, any existing alert can be accessed or a new alert generated.

Transaction Totals per Day

The Transaction Totals per Day panel is displayed when option **1** is entered on the IMS Transaction Information Menu.

```
APCDPSTT ------ PMA IMS Feature - Transaction Totals per Day (S Row 1 from 712
COMMAND ===>                                                  SCROLL ===> HALF

Tran: *         System: *         Date: 2011.01.15  (Format YYYY.MM.DD)

Line Commands: S  - Details    O  - Overview    I  - Intervals
             : TS - TRX Call Statistics

                                    CPU/Exec       CPU/Abs Elap/Exec      Elap/Abs
LC Tran     System       Exec# ssss.µµµµ hh:mm:ss.µµµµµ ssss.µµµµ hh:mm:ss.µµµµ
-- -------- -------- ---------- --------- ------------ --------- ------------
   TRX1     IMSPMA            2    0.0003 00:00:00.0006    0.0004 00:00:00.0008
   TRX2     IMSPMA            1    0.0141 00:00:00.0141    0.3115 00:00:00.3115
   TRX3     IMSPMA           86    0.1626 00:00:13.9852   84.5512 02:01:11.4060
```

Transaction totals per day information is displayed for one day over all transactions of all systems depending on the transaction and system ID that you defined on the panel.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Fort List Panels.

Line Commands

Line commands can be used to work with a specific transaction that is displayed in the list.

S

Displays details of the selected transaction.

O

Displays an overview of all occurrences of the selected transaction and system

I

Displays the interval values of the selected transaction.

TS

Displays the call statistics for the selected transaction.

Field Descriptions

Tran

Use the Transaction field to limit the number of transactions that are displayed by entering a transaction name. Generic notation is allowed by using * as a wild card; for example, A* displays the information about all transactions that begin with A. By default, all transactions of the last measurement date are displayed.

System

The System field contains the name of the system that represents the IMS region in which the transactions run. Generic notation is allowed by using * as a wild card; for example, IMSP* displays the information about all transactions that begin with IMSP. By default, all systems of the last measurement date are displayed.

Date

Use the Date field to choose a specific date for which you would like to display information. The default is the most recent measurement date.

Column Descriptions

Tran

Displays the name of the transaction.

System

Displays the name of the system representing the IMS region in which the transaction runs.

EXEC#

Displays the number of executions of the transaction.

CPU/Exec

Displays the average CPU time of each transaction execution in seconds with 4 decimal places.

CPU/Abs

Displays the total CPU time of one transaction in one system on one day in the format hh:mm:ss.μμμμ.

Elap/Exec

Displays the average elapsed time of each transaction execution in seconds with 4 decimal places.

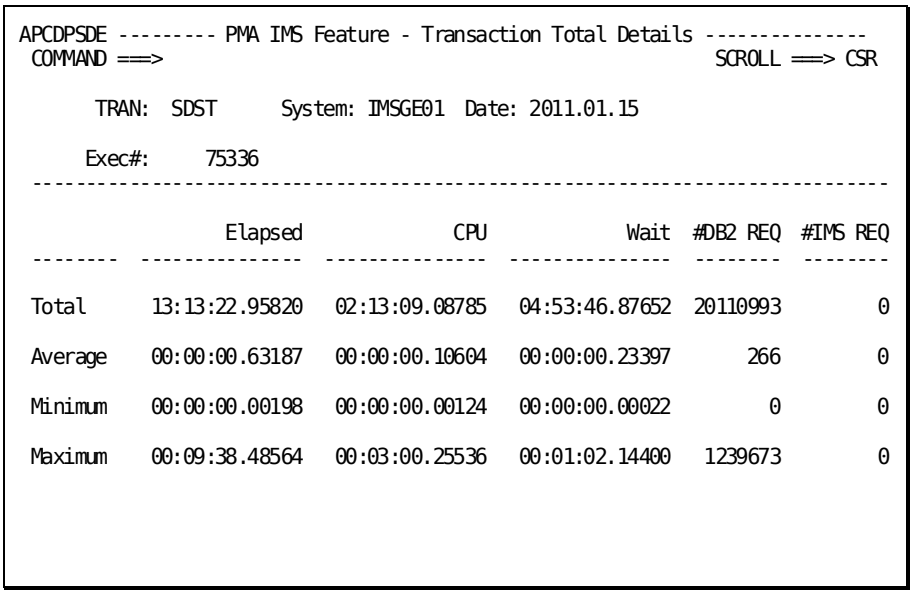
Elap/Abs

Displays the total elapsed time of one transaction in one system on one day in the format hh:mm:ss.μμμμ.

Transaction Total Details

You can access the Transaction Total Details panel by using line command **S** from either of the following panels:

- Transaction Totals per Day panel
- Transaction Overview panel



```
APCDPSDE --------- PMA IMS Feature - Transaction Total Details ---------------
 COMMAND ===>                                                  SCROLL ===> CSR

      TRAN:  SDST      System: IMSGE01  Date: 2011.01.15

     Exec#:      75336
 ------------------------------------------------------------------------------

                  Elapsed             CPU             Wait  #DB2 REQ  #IMS REQ
 --------  --------------  --------------  --------------  --------  --------

 Total      13:13:22.95820   02:13:09.08785   04:53:46.87652  20110993         0

 Average    00:00:00.63187   00:00:00.10604   00:00:00.23397       266         0

 Minimum    00:00:00.00198   00:00:00.00124   00:00:00.00022         0         0

 Maximum    00:09:38.48564   00:03:00.25536   00:01:02.14400   1239673         0
```

Panel Elements

This section describes the elements on the panel.

Field Descriptions

TRAN

Displays the name of the selected transaction.

System

Displays the IMS system region name where the selected transaction runs

Date

Displays the date of the selected transaction in yyyy.mm.dd format.

EXEC#

Displays the number of transaction calls in the system region.

Column Descriptions

The following columns display total, average, minimum, and maximum values for the selected transaction.

Elapsed

Displays the elapsed time of the selected transacton in hhh:mm:ss.µµµµµµ format.

CPU

Displays the CPU time of the selected transacton in hhh:mm:ss.µµµµµµ format.

Wait

Displays the wait time of the selected transacton in hhh:mm:ss.µµµµµµ format.

#DB2 REQ

Displays the number of DB2 requests for the selected transacton.

#IMS REQ

Displays the number of IMS requests for the selected transacton.

Transaction Overview

Use line command **O** from the Transaction Totals per Day panel to access the Transaction Overview panel.

```
APCDPSTH --- PMA IMS Feature - Transaction Overview (SMF) ---- Row 1 to 1 of 1
COMMAND ===>                                                  SCROLL ===> HALF

Tran: TRX3      System: IMSPMA                  Show recent months: 03

Line Commands: S  - Details   TS - TRX Call Statistics   I  - Intervals

                                 CPU/Exec       CPU/Abs Elap/Exec      Elap/Abs
LC Date       System      Exec# ssss.µµµµ hh:mm:ss.µµµµ ssss.µµµµ hh:mm:ss.µµµµ
-- ---------- -------- -------- --------- ------------ --------- ------------
   2011.01.15 IMSPMA         34    1.1406 00:00:38.7814    1.6429 00:00:55.8600
****************************** Bottom of data ********************************
```

The Transaction Overview panel lists all occurences of one specific transaction in one specific system region for the most recent months.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with the transaction on a specific date that is displayed in the list.

S

Displays detailed information about the transaction on the selected date.

TS

Displays the call statistics for the selected transaction.

I

Displays all intervals belonging to the selected transaction in the selected region for the selected date

Field Descriptions

Show recent months

Limits the display to the dates that occur in the specified time range.

The default value is 03 months. You can specify any value from 01 to 18 months.

Column Descriptions

LC

Displays the line command entry field.

Date

Displays the date of the transaction in yyyy.mm.dd format.

System

Displays the name of the system representing the IMS region in which the transaction runs.

EXEC#

Displays the number of executions of the transaction in the system region.

CPU/Exec

Displays the average CPU time per transaction execution in seconds (with 4 decimal places).

CPU/Abs

Displays the total CPU time of all transaction executions in hh:mm:ss.μμμμ format.

Elap/Exec

Displays the average elapsed time per transaction execution in seconds (with 4 decimal places).

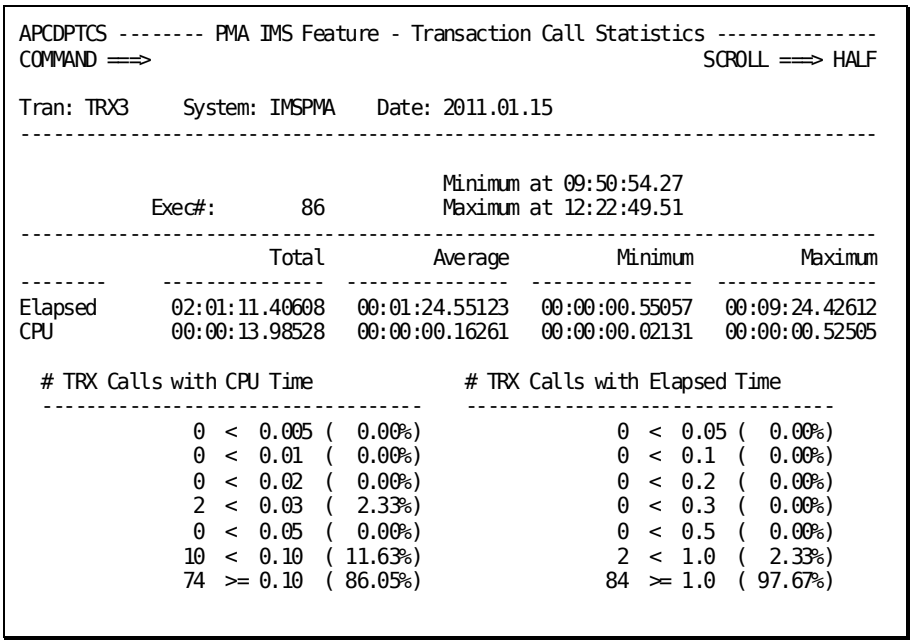
Elap/Abs

Displays the total elapsed time of all transaction executions in hh:mm:ss.μμμμ format.

Transaction Call Statistics

You can access the Transaction Call Statistics panel by using line command TS from either of the following panels:

- Transaction Totals per Day panel
- Transaction Overview panel



```
APCDPTCS -------- PMA IMS Feature - Transaction Call Statistics ---------------
COMMAND ===>                                                  SCROLL ===> HALF

Tran: TRX3     System: IMSPMA    Date: 2011.01.15
-------------------------------------------------------------------------------

                                    Minimum at 09:50:54.27
           Exec#:       86          Maximum at 12:22:49.51
-------------------------------------------------------------------------------
                      Total          Average          Minimum          Maximum
--------     --------------  --------------  --------------  --------------
Elapsed       02:01:11.40608   00:01:24.55123   00:00:00.55057   00:09:24.42612
CPU           00:00:13.98528   00:00:00.16261   00:00:00.02131   00:00:00.52505

  # TRX Calls with CPU Time             # TRX Calls with Elapsed Time
  ---------------------------------    ---------------------------------
               0  <  0.005 (  0.00%)                0  <  0.05 (  0.00%)
               0  <  0.01  (  0.00%)                0  <  0.1  (  0.00%)
               0  <  0.02  (  0.00%)                0  <  0.2  (  0.00%)
               2  <  0.03  (  2.33%)                0  <  0.3  (  0.00%)
               0  <  0.05  (  0.00%)                0  <  0.5  (  0.00%)
              10  <  0.10  ( 11.63%)                2  <  1.0  (  2.33%)
              74  >= 0.10  ( 86.05%)               84  >= 1.0  ( 97.67%)
```

The Transaction Call Statistics panel provides information about the CPU time and elapsed time distribution for the number of transaction executions.

Panel Elements

This section describes the elements on the panel.

Field Descriptions

Tran

Displays the name of the selected transaction.

System

Displays the IMS system region name where the selected transaction runs

Date

Displays the date of the selected transaction in yyyy.mm.dd format.

Exec#

Displays the number of transaction calls in the system region.

Minimum at

Displays the time that the minimum activity occured in the system region in hh:mm:ss.th format.

Maximum at

Displays the time that the maximum activity occured in the system region in hh:mm:ss.th format

Column Descriptions

The following columns display total, average, minimum, and maximum values for the selected transaction.

Elapsed

Displays the elapsed time of the selected transacton in hhh:mm:ss.μμμμμμ format.

CPU

Displays the CPU time of the selected transacton in hhh:mm:ss.μμμμμμ format

The following columns display the CPU and elapsed time distribution of transaction executions.

 # TRX Calls with CPU Time

Displays the following values, where *n*=the number of executions:

n < 0.005: number of executions with a CPU consumption < 0.005 seconds

n < 0.01: number of executions with a CPU consumption < 0.01 seconds

n < 0.02: number of executions with a CPU consumption < 0.02 seconds

n < 0.03: number of executions with a CPU consumption < 0.03 seconds

n < 0.05: number of executions with a CPU consumption < 0.05 seconds

n < 0.10: number of executions with a CPU consumption < 0.10 seconds

n >= 0.10: number of executions with a CPU consumption >= 0.10 seconds

 # TRX Calls with Elapsed Time

Displays the following values, where *n*=the number of executions:

n < 0.05: number of executions with Elapsed Time < 0.05 seconds

n < 0.1: number of executions with Elapsed Time < 0.1 seconds

n < 0.2: number of executions with Elapsed Time < 0.2 seconds

n < 0.3: number of executions with Elapsed Time < 0.3 seconds

n < 0.5: number of executions with Elapsed Time < 0.5 seconds

n < 1.0: number of executions with Elapsed Time < 1.0 seconds

n >= 1.0: number of executions with Elapsed Time >= 1.0 seconds

Transaction Intervals

Use line command **I** from the Transaction Totals per Day panel to access the Transaction Interval Information panel.

```
APCDPSIV  PMA IMS Feature - Transaction Interval Information --- Row 1 from 96
COMMAND ===>                                                   SCROLL ===> CSR

Tran: SDST      System: IMSGE01   Date: 2011.01.15  Intvl Size: 00:15
                                        (YYYY.MM.DD)            (hh:mm)

Line Commands: S  - Details   O  - Overview

           Intvl             CPU/Exec       CPU/Abs   Elap/Exec      Elap/Abs
LC System   Start    Exec# ssss.µµµµµµ hh:mm:ss.µµµµ ssss.µµµµµµ hh:mm:ss.µµµµ
-- -------- ----- -------- ---------- ------------ ---------- ------------
   IMSGE01 00:00       468    0.009386 00:00:04.3927    0.219913 00:01:42.9195
   IMSGE01 00:15       349    0.010208 00:00:03.5625    0.240213 00:01:23.8344
   IMSGE01 00:30       297    0.009259 00:00:02.7499    0.209761 00:01:02.2990
   IMSGE01 00:45       324    0.009331 00:00:03.0234    0.252089 00:01:21.6771
   IMSGE01 01:00       438    0.008993 00:00:03.9389    0.259145 00:01:53.5056
   IMSGE01 01:15       477    0.009210 00:00:04.3934    0.255070 00:02:01.6684
   IMSGE01 01:30       474    0.009244 00:00:04.3821    0.261413 00:02:03.9100
   IMSGE01 01:45       491    0.009401 00:00:04.6161    0.249885 00:02:02.6938
   IMSGE01 02:00       456    0.009603 00:00:04.3791    0.247511 00:01:52.8651
   IMSGE01 02:15       502    0.009597 00:00:04.8177    0.249955 00:02:05.4775
   IMSGE01 02:30       470    0.009768 00:00:04.5911    0.236771 00:01:51.2827
   IMSGE01 02:45       511    0.009418 00:00:04.8130    0.247345 00:02:06.3933
   IMSGE01 03:00       453    0.009052 00:00:04.1008    0.252858 00:01:54.5450
```

The Transaction Interval Information panel gives you a central overview of all the transaction intervals of one specific transaction and system region on a single day.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction interval that is displayed in the list.

S

Displays detailed information about the selected transaction interval.

O

Displays an overview of all occurrences of the selected transaction interval.

Field Descriptions

Date

Use the Date field to choose a specific date for which you would like to display information. The default is the most recent measurement date.

Column Descriptions

LC

Displays the line command entry field.

System

Displays the name of the system representing the IMS region in which the transaction runs.

Intvl Start

Displays the start time of the transaction interval in the format hh:mm.

EXEC#

Displays the number of executions of the transaction during the interval.

CPU/Exec

Displays the average CPU time per transaction execution during the interval in seconds (with 4 decimal places).

CPU/Abs

Displays the total CPU time of all transaction executions during the interval in hh:mm:ss.μμμμ format.

Elap/Exec

Displays the average elapsed time per transaction execution during the interval in seconds (with 4 decimal places).

Elap/Abs

Displays the total elapsed time of all transaction executions during the interval in hh:mm:ss.μμμμ format.

Transaction Interval Overview

Use line command **O** from the Transaction Totals per Day panel to access the Transaction Interval Overview panel.

```
APCDPSIH  PMA IMS Feature - Transaction Interval Overview -- Row 1 to 13 of 46
 COMMAND ===>                                                  SCROLL ===> CSR

 Tran: SDST      System: IMSGE01   Interval start : 00:00  (hh:mm)
                                   Interval length: 00:15  (hh:mm)

 Line Commands: S  - Details

                            CPU/Exec       CPU/Abs   Elap/Exec      Elap/Abs
 LC Date          Exec# ssss.µµµµµµ hh:mm:ss.µµµµ ssss.µµµµµµ hh:mm:ss.µµµµ
 -- ----------  -------- ---------- ------------ ---------- ------------
    2011.01.18       468    0.009386 00:00:04.3927    0.219913 00:01:42.9195
    2011.01.17       486    0.009441 00:00:04.5883    0.242706 00:01:57.9551
    2011.01.16       551    0.009441 00:00:05.2023    0.240779 00:02:12.6694
    2011.01.15       516    0.008769 00:00:04.5252    0.241421 00:02:04.5734
    2011.01.14       466    0.009472 00:00:04.4141    0.226791 00:01:45.6846
    2011.01.13       353    0.009170 00:00:03.2370    0.243809 00:01:26.0648
    2011.01.12       980    0.009577 00:00:09.3864    0.249261 00:04:04.2758
    2011.01.11       433    0.009513 00:00:04.1192    0.190295 00:01:22.3979
    2011.01.09       496    0.008992 00:00:04.4601    0.250448 00:02:04.2226
    2011.01.08       420    0.008592 00:00:03.6087    0.254574 00:01:46.9214
    2011.01.07       459    0.009648 00:00:04.4285    0.230359 00:01:45.7348
    2011.01.06       452    0.009548 00:00:04.3158    0.221339 00:01:40.0455
    2011.01.05       493    0.009688 00:00:04.7766    0.253984 00:02:05.2143
```

The Transaction Interval Overview panel lists all occurences of one specific transaction interval of one specific transaction and system region during the most recent months.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with the specified transaction interval on each of the dates that are displayed in the list.

S

Displays detailed information about the single transaction interval on the selected date.

Field Descriptions

Show recent months

Limits the display to the dates that occur in the specified time range. The default value is 03 months. You can specify any value from 01 to 18 months.

Column Descriptions

LC

Displays the line command entry field.

Date

Displays the date of the transaction interval in yyyy.mm.dd format.

EXEC#

Displays the number of executions of the transaction during the interval.

CPU/Exec

Displays the average CPU time per transaction execution during the interval in seconds (with 4 decimal places).

CPU/Abs

Displays the total CPU time of all transaction executions during the interval in hh:mm:ss.μμμμ format

Elap/Exec

Displays the average elapsed time per transaction execution during the interval in seconds (with 4 decimal places).

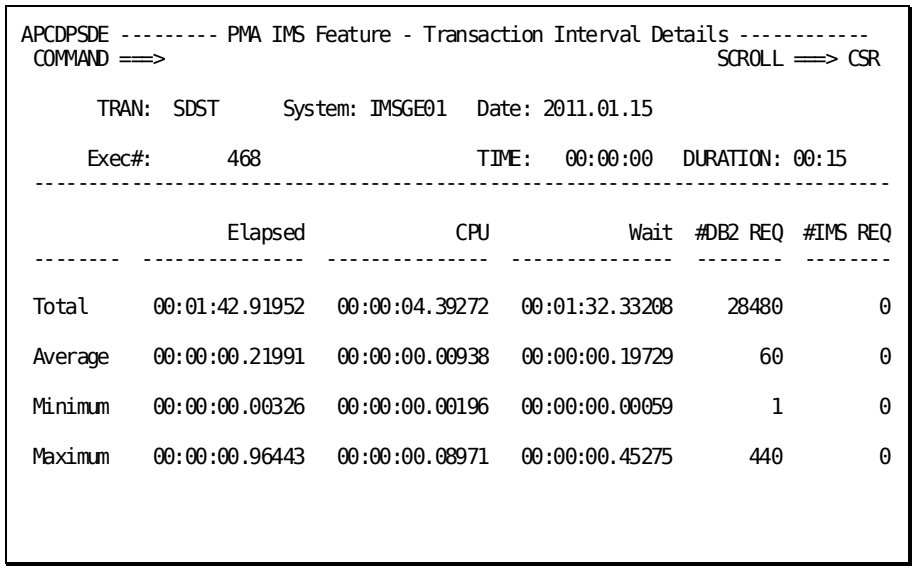
Elap/Abs

Displays the total elapsed time of all transaction executions during the interval in hh:mm:ss.μμμμ format.

Transaction Interval Details

You can access the Transaction Interval Details panel by using line command **S** from either of the following panels:

- Transaction Totals per Day panel
- Transaction Interval Overview panel



```
APCDPSDE --------- PMA IMS Feature - Transaction Interval Details -----------
 COMMAND ===>                                                 SCROLL ===> CSR

      TRAN:  SDST      System: IMSGE01   Date: 2011.01.15

     Exec#:       468                   TIME:   00:00:00   DURATION: 00:15
 ------------------------------------------------------------------------------

                 Elapsed             CPU             Wait  #DB2 REQ  #IMS REQ
 --------  --------------  --------------  --------------  --------  --------

 Total      00:01:42.91952   00:00:04.39272   00:01:32.33208     28480         0

 Average    00:00:00.21991   00:00:00.00938   00:00:00.19729        60         0

 Minimum    00:00:00.00326   00:00:00.00196   00:00:00.00059         1         0

 Maximum    00:00:00.96443   00:00:00.08971   00:00:00.45275       440         0
```

The Transaction Interval Details panel displays detailed information about one transaction interval.

Panel Elements

This section describes the elements on the panel.

Field Descriptions

TRAN

Displays the name of the transaction.

System

Displays the IMS system region name where the transaction runs.

Date

Displays the date of the transaction interval in yyyy.mm.dd format.

EXEC#

Displays the number of transaction calls in the system region that occurred during the interval

TIME

Displays the start time of the interval in hh:mm:ss format.

DURATION

Displays the duration (length) of the interval in hh:mm format.

Column Descriptions

The following columns display total, average, minimum, and average values for the transaction interval.

Elapsed

Displays the elapsed time of the transacton interval in hhh:mm:ss.μμμμμμ format.

CPU

Displays the CPU time of the transacton interval in hhh:mm:ss.μμμμμμ format.

Wait

Displays the wait time of the transacton interval in hhh:mm:ss.μμμμμμ format.

#DB2 REQ

Displays the number of DB2 requests for the transacton interval.

#IMS REQ

Displays the number of IMS requests for the transacton interval.

System Information

The System Information panel is displayed when option **2** is entered on the IMS Transaction Information Menu.

```
APCDPSSI -------- PMA IMS Feature - System Information --------- Row 1 from 50
COMMAND ===>                                                    SCROLL ===> CSR

System: *               Date: 2011.01.15   (Format YYYY.MM.DD)

Line Commands: S - Detail information   O - Overview   T - Transactions

              Number       Trans      Total CPU  Total Elapsed     Total Wait
LC System      Trans      Called  hh:mm:ss.µµµµ  hh:mm:ss.µµµµ  hh:mm:ss.µµµµ
-- -------- --------  ----------  -------------  -------------  -------------
   IMSALD5       208        5654  00:05:18.3680  79:19:36.7832  78:54:07.7208
   IMSALE1       100       21426  00:11:28.2964  50:29:14.0822  46:35:31.4911
   IMSALE2       116        3660  00:03:00.1487  38:44:37.3512  38:23:07.8360
   IMSALP1       605     1901734  07:12:38.8268  23:16:58.9988  83:50:24.0388
   IMSALP3       330       46123  00:09:27.4499  30:41:51.0994  30:10:34.2677
   IMSALP4         9         225  00:00:00.1056  23:35:35.3384  00:00:00.0656
   IMSALP6       200        4455  00:01:20.6186  41:08:53.0020  40:50:32.9463
   IMSALS1       411      121683  00:32:23.4186  59:03:43.1751  56:23:07.4227
   IMSALT2       215        8317  00:02:48.5364  30:28:18.9676  30:06:28.4394
   IMSALT4       128        2824  00:02:23.5472  37:51:38.9917  37:36:29.1974
   IMSALT5        42        1794  00:00:32.1526  36:45:22.3260  36:42:40.0230
   IMSAOR1       182      143928  00:04:28.1778  17:26:09.4468  17:18:11.3051
   IMSAOR2        88       60114  00:01:29.8815  42:43:44.9268  42:41:09.8956
   IMSAOR3        67       86456  00:02:39.1497  65:20:41.3823  65:15:20.0574
```

The System Information panel displays values for one day over all systems, depending on the system ID that you defined on the panel.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific transaction that is displayed in the list.

S

Details of the selected transaction.

O

Overview of all occurrences of the selected transaction and system.

T

Displays information about all transactions of the selected system and day.

Field Descriptions

System

The System field contains the name of the system that represents the IMS region in which the transactions run. Generic notation is allowed by using * as a wild card; for example, IMSP* displays the information about all transactions that begin with IMSP. By default, all systems of the last measurement date are displayed.

Date

Use the Date field to choose a specific date for which you would like to display information. The default is the last measurement date.

Column Descriptions

System

Displays the name of the system that represents the IMS region.

Number Trans

Displays the number of transactions in the system.

Trans Called

Displays the number of calls of all transactions in the system.

Total CPU hh:mm:ss.μμμμ

Displays the total CPU time of the system.

Total Elapsed hh:mm:ss.μμμμ

Displays the total elapsed time of the system.

Total Wit hh:mm:ss.μμμμ

Displays the total wait time of the system.

System Details

You can access the System Details panel by using line command **S** from either of the following panels:

- System Information panel
- System History panel

```
APCDPSDE --------- PMA IMS Feature - System Details -------------------------
 COMMAND ===>                                                SCROLL ===> CSR

                      System: IMSALP1   Date: 2011.01.15

     Exec#:   1682064                  #TRX:        602
--------------------------------------------------------------------------------

                 Elapsed             CPU             Wait  #DB2 REQ  #IMS REQ
--------  --------------  --------------  --------------  --------  --------

Total      50:30:38.32624   06:20:02.26150   30:07:32.72468  96107079         0

Average    00:00:00.10810   00:00:00.01355   00:00:00.06447       116         0

Minimum    00:00:00.00017   00:00:00.00004   00:00:00.00000         0         0

Maximum    00:31:27.51115   00:00:24.18600   00:31:27.51105     67270         0
```

The System Details panel displays detailed information about one system.

Panel Elements

This section describes the elements on the panel.

Field Descriptions

System

Displays the IMS system region name.

Date

Displays the date in *yyyy.mm.dd* format

EXEC#

Displays the number of transaction calls in the system region.

#TRX

Displays the number of invoked transactions in the system region.

Column Descriptions

The following columns display total, average, minimum, and average values for the system.

Elapsed

Displays the elapsed time in *hhh:mm:ss.μμμμμμ* format.

CPU

Displays the CPU time in *hhh:mm:ss.μμμμμμ* format.

Wait

Displays the wait time in *hhh:mm:ss.μμμμμμ* format.

#DB2 REQ

Displays the number of DB2 requests.

#IMS REQ

Displays the number of IMS requests.

System History

Use line command **O** from the System Information panel to access the System History panel.

```
APCDPSSH -------- PMA IMS Feature - System History --------- Row 1 to 14 of 57
COMMAND ===>                                                  SCROLL ===> CSR

System: IMSALP1                                  Show recent months: 03

Line Commands: S - Detail information   T – Transactions

                Number       Trans      Total CPU  Total Elapsed     Total Wait
LC Date          Trans      Called hhh:mm:ss.µµµµ hhh:mm:ss.µµµµ hhh:mm:ss.µµµµ
-- ---------- --------  ---------- ------------- ------------- -------------
   2011.01.18      602     1682064  06:20:02.2615  50:30:38.3262  30:07:32.7246
   2011.01.17      622     1353717  05:23:47.7018  50:37:07.5322  30:08:30.8057
   2011.01.16      605     1901734  07:12:38.8268 123:16:58.9988  83:50:24.0388
   2011.01.15      162      414425  01:09:10.6394  49:37:59.8068  46:46:53.6621
   2011.01.14      174      635391  01:46:38.1863  56:44:16.1997  46:36:32.9160
   2011.01.13      591     1723230  06:27:28.1292  58:46:47.9099  33:21:45.4000
   2011.01.12      589     1804995  07:11:12.1012  62:17:05.9409  34:29:32.9529
   2011.01.11      599     1690007  06:49:53.7597  72:45:13.0127  41:15:17.5068
   2011.01.10      596     1746918  07:08:59.4414  91:29:17.4368  55:21:51.4778
   2011.01.09      604     1921488  07:31:54.7061  76:34:08.6242  46:20:17.6080
   2011.01.08      129      435998  01:09:14.2863  80:36:54.7601  77:32:38.5047
   2011.01.07      170      645289  01:35:56.4460  63:06:03.2274  47:17:00.5027
   2011.01.06      607     1891466  06:10:48.6399  32:42:11.1980  08:49:57.8594
   2011.01.05      605     2124938  07:15:38.6994  49:14:28.9464  18:11:39.6976
```

The System History panel lists all occurences of one specific IMS system region during the most recent months.

Panel Elements

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with the specified IMS system region on each of the dates that are displayed in the list.

S

Displays detailed information about the single IMS system region on the selected date.

T

Displays all transactions that belong to the IMS system region on the selected date.

Field Descriptions

Show recent months

Limits the display to the dates that occur in the specified time range The default value is 03 months. You can specify any value from 01 to 18 months

Column Descriptions

LC

Displays the line command entry field.

Date

Displays the date in yyyy.mm.dd format.

Number Trans

Displays the number of transactions in the system.

Trans Called

Displays the number of calls of all transactions in the system

Total CPU

Displays the total CPU time of the system in hh:mm:ss.μμμμ format.

Total Elapsed

Displays the total elapsed time of the system in hh:mm:ss.μμμμ format.

Total Wait

Displays the total wait time of the system in hh:mm:ss.μμμμ format.

Transaction Totals per Day

You can access the Transaction Totals Per Day panel by using line command T from either of the following panels:

- System Information panel
- System History panel

```
APCDPSTT ------ PMA IMS Feature - Transaction Totals per Day   Row 4 from 4167
 COMMAND ===>                                                   SCROLL ===> CSR

 Tran: *         System: IMSALP1   Date: 2011.01.15  (Format YYYY.MM.DD)

 Line Commands: S  - Details    O  - Overview    I  - Intervals

                                    CPU/Exec       CPU/Abs Elap/Exec      Elap/Abs
 LC Tran     System       Exec# ssss.µµµµ hh:mm:ss.µµµµ ssss.µµµµ hh:mm:ss.µµµµ
 -- -------- -------- ---------- --------- ------------- --------- -------------
    XX02     IMSALP1      271010    0.0142 01:04:29.6772    0.0436 03:17:13.8334
    M710     IMSALP1       94411    0.0284 00:44:43.0516    0.1514 03:58:18.8601
    XX11     IMSALP1       99907    0.0125 00:20:56.5476    0.0689 01:54:51.9390
    XX03     IMSALP1       95132    0.0130 00:20:39.1095    0.0784 02:04:23.7943
    PE98     IMSALP1      116190    0.0090 00:17:34.4176    0.0307 00:59:38.0581
    B401     IMSALP1       49040    0.0183 00:14:58.5383    0.0724 00:59:14.2921
    PE29     IMSALP1       24997    0.0317 00:13:14.6123    0.1517 01:03:13.8427
    BX22     IMSALP1       28818    0.0250 00:12:02.9946    0.0665 00:31:58.6799
    BWA1     IMSALP1         298    1.8706 00:09:17.4567    7.8695 00:39:05.1117
    XX05     IMSALP1       13695    0.0341 00:07:47.6251    0.1331 00:30:23.7065
    Q1ED     IMSALP1       20945    0.0194 00:06:47.7444    0.0776 00:27:05.9680
    B402     IMSALP1       43940    0.0086 00:06:19.8258    0.0301 00:22:03.0617
    B501     IMSALP1       16134    0.0212 00:05:43.3612    0.1043 00:28:03.4275
    BX11     IMSALP1       22261    0.0143 00:05:20.1724    0.0483 00:17:55.9078
```

Transaction totals per day information is displayed for one day over all transactions of all systems depending on the transaction and system ID that you defined on the panel.

Panel Elements

This section describes the elements on the panel.

Primary Commands

The SORT primary command can be used to change the order in which the information is listed. For details about how to use the SORT command, see Sort List Panels

Line Commands

Line commands can be used to work with a specific transaction that is displayed in the list.

S

Displays details of the selected transaction.

O

Displays an overview of all occurrences of the selected transaction and system.

I

Displays the interval values of the selected transaction

Field Descriptions

Tran

Use the Transaction field to limit the number of transactions that are displayed by entering a transaction name. Generic notation is allowed by using * as a wild card; for example, A* displays the information about all transactions that begin with A. By default, all transactions of the last measurement date are displayed.

System

The System field contains the name of the system that represents the IMS region in which the transactions run. Generic notation is allowed by using * as a wild card; for example, IMSP* displays the information about all transactions that begin with IMSP. By default, all systems of the last measurement date are displayed.

Date

Use the Date field to choose a specific date for which you would like to display information. The default is the most recent measurement date.

Column Descriptions

Tran

Displays the name of the transaction.

System

Displays the name of the system representing the IMS region in which the transaction runs.

EXEC#

Displays the number of executions of the transaction in the system region.

CPU/Exec

Displays the average CPU time of each transaction execution in seconds with 4 decimal places.

CPU/Abs

Displays the total CPU time of one transaction in one system on one day in the format hh:mm:ss.μμμμ.

Elap/Exec

Displays the average elapsed time of each transaction execution in seconds with 4 decimal places.

Elap/Abs

Displays the total elapsed time of one transaction in one system on one day in the format hh:mm:ss.μμμμ.

Export IMS Feature Data - Job APCCJEXP

With job APCIJEXP, data that is stored within the IMS Feature can be exported for use in other systems; for example, EXCEL or SAS. The data is exported from the database to a sequential file that can be used in other systems or downloaded to the PC.

The following example illustrates the JCL for the APCIJEXP job.

```
//jobname...
//*=============================================================*
//* JOB TO  EXTRACT  INFORMATION  FROM  IMS  POOL               *
//* COPYRIGHT (C) 2012 CA. All Rights Reserved.                 *
//* Copyright (C) Trilog AG                                     *
//*=============================================================*
//APCDATAB  EXEC  PGM=APCDATAB
//STEPLIB   DD DSN=prefix.PMA.LOAD,
//             DISP=SHR
//APCCPR01  DD DSN=NULLFILE,
//             DISP=SHR
//APCIPR01  DD DSN=prefix.PMA.KSDSIMS,
//             DISP=SHR
//APCIN     DD DSN=prefix.PMA.CNTL(APCICEXP),
//             DISP=SHR
//APCTAB    DD SYSOUT=*
```

The scope of the data to be exported is defined within this job by using input parameters in member APCIJEXP of the product CNTL library. The information to be exported is specific to transactions, modules, plans, and PSBs. To assist you in using this information after it has reached its destination, the following record layout illustrations are provided. Each field of the record is separated by a semicolon delimiter.

Transaction Record

```
DATE;SYSID;TYPE;TXNAME;CPU %;CPU ABS SEC;CPU ABS/TX;CALLS;SERV.TIME;
YYYY.DD.MM;NNN;T;XXXXXXXX;NN.NN;NNNNN;NNN.NN;NNNNNNN;NN.NN;
Module Record
DATE;SYSID;TYPE;MODULNAME;CPU %;CPU ABS SEC;CPU ABS/CALL;CALLS;
YYYY.DD.MM;NNN;M;XXXXXXXX;NN.NN;NNNNN;NNN.NN;NNNNNNN;
PLAN Record
DATE;SYSID;TYPE;PLANNAME;CPU %;CPU ABS SEC;
YYYY.DD.MM;NNN;D;XXXXXXXX;NN.NN;NNNNN;
PSB Record
DATE;SYSID;TYPE;MODULNAME;CPU %;CPU ABS SEC;;;WAIT %;TXNAME;PSB;
YYYY.DD.MM;NNN;P;XXXXXXXX;NN.NN;NNNNN; ; ;00.00;XXXXXXXX;XXXXXXXX;
```

The following table explains each of the valid APCIJEXP parameters.

APCIJEXP Parameters	**Optional/Required**	**Meaning**
DATE FROM YYYYMMDD=	Required	The beginning date from which all data is exported
DATE TO YYYYMMDD=	Optional	All data through this date is exported Default: Until Last Entry
SUBSYSTEM=	Optional	Subsystem Default: IMS
SUBID=	Optional	Internal system ID Default: all subsystem IDs
SYSNAME=	Optional	Name of the system defined in PMA Either SUBID or SYSNAME can be used. (See the *Administration Guide*.)
INFOTYPE=	Optional	Type of data to be exported: T— Transaction records M— Program records D— DB2 plan data P— PSB records (DLI) Default: all types of data

The following code is an example of input to APCIJEXP member

```
DATE FROM YYYYMMDD=20110101
DATE   TO YYYYMMDD=20110110
SUBSYSTEM=IMS
```

Chapter 8: Using the Server

This chapter describes how to use the additional functions of the server feature.

This section contains the following topics:

Server Component Menu (see page 289)
Issue Server Commands (see page 290)
Set Dynamic Address Space Alerts (see page 303)
List Measurements of Dynamic Address Space Alerts (see page 308)
Set Selectable Features (see page 311)
Parameters (see page 313)

Server Component Menu

The Server Component Menu is accessed by selecting option **7** on the Main Menu.

```
APCSPMNU ------ PMA --- Server Component Menu  ----------------- Release 8.5
OPTION  ===>

             1 Commands     - Issue Server Commands
             2 Time Events  - Set Time Events
             3 Time Alerts  - List Time Generated Alerts
             4 Options      - Set Selectable Features
             5 Spool        - PMA SERVER Spooling Parameters
             6 Parameters   - General PMA SERVER Parameters
             T TUTORIAL     - Obtain PMA Help
             X or END       - End Server Component Dialog

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```

To use the Server Component Menu options, type the selection number in the OPTION field and press Enter. The following selections are provided:

1 Issue Server Commands.

2 Set up time-triggered alerts for dynamic address spaces.

3 List time generated alerts.

4 Set selectable features.

5 Define Server spooling parameters.

6 Define general parameters to be used by the Server. See "Customizing the Server" in the *Administration Guide*.

T Browse the online tutorial to obtain help. Panel specific online Help can be accessed by simply using PF1 on any panel.

X Exit the Central Component Menu and return to the Main Menu.

Issue Server Commands

For using the available server commands, select option **1** on the Server Component Menu to display the following panel.

```
APCSPC01 ----- PMA ---- Server Command Menu  -------------------- Version 8.5
OPTION  ===>

        1 Alert Refresh     - Refresh Active PMA-Server(s) Alert Tables

        2 Alert Add         - Alert an active job

        3 Threshold Refresh - Refresh Active PMA-Server(s) Thresholds values

        4 Features Refresh  - Refresh Active PMA-Server(s) Selectable Features

        5 Runaway Type      - Refresh Active PMA-Server(s) Runaway Test Type

        6 Include/Exclude   - Refresh Active PMA-Server(s) Includes/Excludes

        7 DM                - Display Monitor Activity

        T TUTORIAL          - Obtain PMA Help

        X                   - Terminate

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```

Server Command Menu Panel

Enter the option for the command that you want to use by typing the selection number in the OPTION field and pressing Enter. The following selections are provided:

1	Alert Refresh	Refresh active server alert tables.
2	Alert Add	Insert a new alert by using an existing one as a model.
3	Threshold Refresh	Refresh active server threshold values.
4	Features Refresh	Refresh active server selectable values.
5	Runaway Type	Refresh active server runaway test type.
6	Include/Exclude	Refresh active server internal Include/Exclude tables.

7	DM	Display monitor activity

Alert Refresh Command

The Alert Refresh command causes an immediate refresh of the internal alert tables of all active servers.

Alert tables are automatically updated at every Alert Refresh Interval, at which the default is 60 minutes. The Alert Refresh command allows the user to preempt this setting and cause an update to reflect the current alert status as generated by users, batch processing and servers across the system.

The following tables are affected:

- General Alert Table, which contains user-requested, module change and runaway alerts
- Time Alert Table

Alert Add Command

The Alert Add command is used to make an immediate alert for an active job.

The alert can be restricted to a specific job/step/procstep combination or be for any step/procstep in the job. Requests are ignored if the job or the job/step/procstep combination is not found active at the time the command is issued. The request is across all servers in the group.

To list all alerts for dynamic address spaces, select option **2** on the Server Component Menu.

```
APCSPC02 ------ PMA SERVER -   Alerts Add       ------------------------------
COMMAND ===>

 Add an Alert for a currently active job.
  Enter Job Name                :            must be specified
  Enter Step Name               :            leave blank for any Step
  Enter Proc Step Name          :            leave blank for any Proc Step









          Cancel: CAN
          Return: END OR PF3
```

Data Entry Fields and Commands

Enter Job Name (required)

Specify the name of the object, for example, a started task that you want to measure, following the rules of the member names.

Enter Step Name (optional)

Specify the name of the object, for example, a started task that you want to measure, following the rules of the member names.

Enter Proc Step Name (optional)

Specify the name of the object, for example, a started task you want to measure, following the rules of the member names.

Threshold Refresh

Issue the Threshold Refresh command to cause an immediate refresh of the internal Threshold Tables of all active servers. The command activates the latest threshold settings in the currently active servers. A restart of the severs also refreshes the thresholds.

Affected Tables

Minimum Threshold

Lists minimum resource values that must be exceeded before an alert is made (TM option of the Parameter Menu).

Maximum Threshold

Lists maximum resource values that cause an alert to be made if they are exceeded (TA option of the Parameter Menu).

Performance Ratio

Lists ratios of a Performance Index that cause an alert to be made (TX option of the Parameter Menu).

Features Refresh Command

The Features Refresh command causes an immediate refresh of the Selectable Features in all active servers.

This command is used to activate the latest Selectable Features settings in the currently active servers. The Selectable Features are set by choosing item **4**. From this screen, the following features can be enabled with Y (or special character when indicated) or disabled with N:

Dynamic Alert Generation	Y/D/N
End of Step Alert Generation	Y/N
Time Alert Generation	Y/N
Max Threshold Alert Generation	Y/C/N
Min Threshold Alert Generation	Y/A/N
PXI Threshold Alert Generation	Y/N
SMF Recording by Server	Y/S/N

Runaway Type Command

The Runaway Type command sets the runaway test criteria to the same criteria that were specified in the X1—General Central Component Parameters option of the Parameters Menu.

Possible runaway type settings are listed in the following list:

ASIS

Runaway checks against measured resource consumption.

Step end and batch processing check elapsed time and service units; dynamic alert processing checks elapsed time, EXCPs, and CPU time.

IOIX

Runaway checks against only the performance index criteria.

Batch and step end processing check ELAP/EXCPs and SUs/EXCPs; dynamic alert processing checks CPU/ELAP, EXCP/ELAP, CPU/EXCP, and ELAP/EXCP.

ALL

Runaway checks against both the measured resouce usage and the performance index criteria.

Include/Exclude Command

The Include/Exclude command causes an immediate refresh of the internal Include/Exclude tables of all active servers.

Upon execution of the command, Server internal Include/Exclude tables are rebuilt to reflect the current settings of the Includes and Excludes that were set in option X2—Scope of Work of the Parameters Menu.

The affected tables are as follows:

- Job Include/Exclude for Performance Management Assistant
- PGM Include/Exclude for Performance Management Assistant
- Job Exclude for Measurement
- PGM Exclude for Measurement

DM Command

The server(s) monitor the batch jobs that run on the LPARs where they are active. At a job or step start the status, history, statistical data, alert, threshold values, etc. are stored in internal server tables. The progress of the step is then monitored in the context of this information. Active job steps have their use of I/O, CPU, and elapsed time logged and checked for possible runaway and threshold condiditions etc. throughout the execution of the step.

The DM command is used to display the current internal server data for the monitored job/steps interactively. This gives you the ability to see actual, average, and predicted performance of the currently active job streams and individual job steps.

Use of Colors in Display Monitor (DM) Panels

In the panels that are accessed by the DM command (option **7** on the Server Command Menu), colors are used to indicate the status of job/steps and monitor values.

The following table describes what the different colors for jobname values mean:

Color	Meaning
Blue	The step has not exceeded any average or runaway values.
Yellow	At least one measurement value has exceeded its average value.
Pink	At least one measurement value has exceeded its runaway value.
Red	An alert has been issued for the step.

The following table describes what the different colors for measurement values mean.

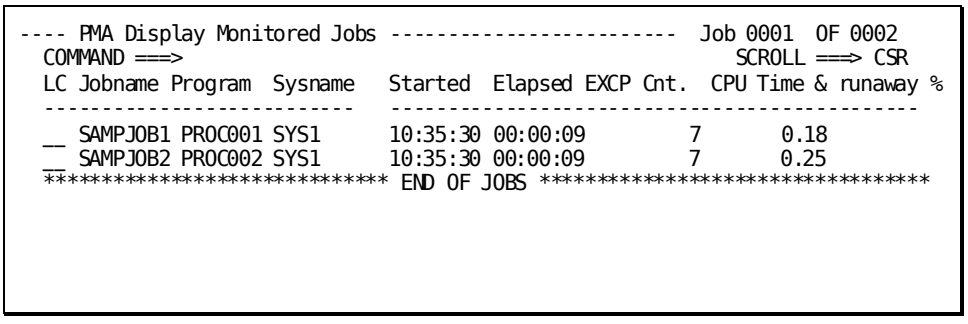
Color	Meaning
Blue	The measurement value is within range of its average and runaway values.
Yellow	The measurement value has exceeded its average value.
Pink	The measurement value has exceeded its runaway value.

Display Monitor (DM) Primary Display

The DM Primary Display consists of three screens which are viewed by using the left and right paging PF keys. The right PF key cycles 1-2-3-1; the left PF key cycles 1-3-2-1.

Screen 1

When you issue the DM command, you first see the default screen shown following. This screen displays an overview of the job steps that are being monitored.



For each job listed, the data in the following list is shown:

Jobname

Name of the job

Program

Program name from the JCL or application program name, if available

Sysname

Name of the system where the step is executing

Started

Time the step started

Elapsed

Elapsed time for the step in *hh:mm:ss* format

EXCP Cnt.

Number EXCPs issued by the step, in units

CPU Time

CPU consumed by the step in *ssssss.hh* format

runaway %

Percentage of the CPU runaway value shown as a bar graph

The bar is initially white. It turns green in 10% increments from the left, representing the percent of CPU runaway that is used. When the runaway value is reached, the whole bar is set to pink. If an alert is issued for the step, the bar is set to red.

Screen 2

The second screen shown following, displays current used resources as measured values and as a percentage of average use.

```
---- PMA Display Monitored Jobs ------------------------  Job 0001  OF 0002
 COMMAND ===>                                              SCROLL ===> CSR
 LC Jobname Procstep Stepname    CPU   (Avg%)      IO   (Avg%) Elapsed   (Avg%)
 -------------------------- ------------------------------------------------
 __ SAMPJOB1 PROC001            0.36     18%       17     15%        0      4%
 __ SAMPJOB2 PROC002 STEP001    0.32     11%       12      8%        0      3%
 ***************************** END OF JOBS ***********************************
```

For each job listed, the data in the following list is shown:

Jobname

Name of the job

Procstep

Name of the step that invoked the procedure

Stepname

Name of the step that invoked the program

CPU

CPU used, in *ssssss.hh* format

CPU (Avg%)

CPU used, as a percentage of the average

I/O

EXCP count, in 1000s

I/O (Avg%)

EXCP count, as a percentage of the average

Elapsed

Elapsed time, in minutes

Elapsed (Avg%)

Elapsed time, as a percentage of the average

Screen 3

On the third screen, shown following, two rows are displayed for each job:

- Row 1 shows resource averages and runaway values for the step.
- Row 2 shows projected Performance Index (PIX) values for the resources.

```
---- PMA Display Monitored Jobs ------------------------  Job 0001  OF 0002
COMMAND ===>                                               SCROLL ===> CSR
LC Jobname  Average/Runaway       CPU            EXCP            ELAPSED
---------- PXI Projections CPU/IO   CPU/ELP  IO/ELP   IO/CPU   ELP/CPU  ELP/IO
__ SAMPJOB1  AVE/RUNAWAY         2        7     114      393        6       15
             PROJECTIONS         6       25     425       94        1        2
  ------------------------------------------------------------------------------
__ SAMPJOB2  AVE/RUNAWAY         3        6     155      481        6       15
             PROJECTIONS        12       33     400      109        2        2
  ------------------------------------------------------------------------------
***************************** END OF JOBS ***********************************
```

For each job listed, the data in the following list is shown:

Jobname

Name of the job

CPU

AVE/RUNAWAY

Step average CPU time in seconds /
Runaway value for CPU time in seconds

PROJECTIONS

CPU time projection based on the I/O rate /
CPU time projection based on elapsed time

EXCP

AVE/RUNAWAY

Step average number of EXCPs in 1000s /
Runaway value for number of EXCPs in 1000s

PROJECTIONS

Projection for number of EXCPs based on elapsed time /
Projection for number of EXCPs based on the CPU rate

ELAPSED

AVE/RUNAWAY

Step average elapsed time in minutes /
Runaway value for elapsed time in minutes

PROJECTIONS

Elapsed time projection based on the CPU rate /
Elapsed time projection based on the I/O rate

The Performance Index (PIX) projections of CPU, I/O, and ELAPSED for a step are calculated by extrapolating the current use of each of the resources based on the percentage of the average used by the other two resources.

For example, the calculation for the CPU time projection for the CPU/IO value is:

the measured CPU seconds*100 / % of the average I/Os currently used

When a resource has exceeded its average use, it cannot be used to extrapolate for another resource. In such cases, the result field displays *RRR*>AVE**,** where *RRR* is the exceeding resource (CPU, I/O or ELAPSED).

Monitored Job Details

You can enter line comand S on any of the DM Primary Display screens to access the Monitored Job Details panel.

This display shows, on a single screen, a summary of all the current monitor data for the requested job step. The data includes:

- Currently used resources
- A minute-by-minute display of CPU and I/O over the previous 15 minutes
- Historic averages
- Runaway values
- Active thesholds
- Step status /scope information from the Server

The following example shows an example of the Monitored Job Details panel.

```
PMA 85---- PMA - Monitored Job Details ---------------------------------------
COMMAND ===>

  Jobname  Procstep Stepname PGM/JCL  PGM/Appl    Date       Time
  SAMPJOB1 RUNAJOBD          APCSAMP            15/01/11   06:06:28

                 IO         CPU      Elapsed              15 Minute History
 Actual          127129      1.29    00:02:07            IO/Min  CPU/Min Level
 Average         114000      2.00    00:06:00             059059 00.000   -01
 Runaway.        393000      7.00    00:15:00             065067 00.000   -02
 Max Thresh.          0      0.00    00:00:00   (ANY)          N/A        -03
 Min Thresh.          0      0.00    00:00:00   (ALL)          N/A        -04
                                                            N/A        -05
  Average and Runaway values based on:         5 RUNS       N/A        -06
                                                            N/A        -07
  Job Status:  PMA MONITORING   Step Number: 001            N/A        -08
                                                            N/A        -09
                                                            N/A        -10
  Monitor Scope                                             N/A        -11
  Job Step: INCLUDED     Program:  INCLUDED                 N/A        -12
                                                            N/A        -13
  PMA Scope                                                 N/A        -14
  Job Step: INCLUDED     Program   INCLUDED                 N/A        -15
```

The following list describes each of the fields in the various sections of the Monitored Job Details panel.

Job information

Jobname

Name of the job

Procstep

Name of the step that invoked the procedure

Stepname

Name of the step that invoked the program

PGM/JCL

Program name from the JCL

PGM/Appl

Program name of the application

Date

Date that the step started

Time

Time that the step started

Measurement values, averages, runaway values, and thresholds

The values in this section are expressed in the following formats:

- IO - *nnnnnnnnnn*
- CPU - *ssssss.hh*
- Elapsed - *hh:mm:ss*

Actual

Measured values for the step, so far

Average

Average values for the step from the job file

N/A is displayed if there is no step history.

Runaway

Point at which the step becomes eligible for a runaway alert

Max Thresh.

Values at which the step becomes eligible for a threshold alert.

Maximum threshold options can be one of the following:

- **NONE** - TA (Maximum Threshold) feature is not active
- **ANY** - an alert is activated if any TA value is exceeded
- **COND** - same as **ANY**, but only on the condition that the program and step are eligible for normal alert processing

Min Thresh.

Minimum threshold values the step must exceed to be eligible for a runaway alert.

Minimum threshold options can be one of the following:

- **NONE** - TM (Minimum Threshold) feature is not active
- **ANY** - runaway checks occur only when any TM value is exceeded
- **ALL** - runaway checks occur only when all TM values are exceeded

Averages and runaway values used

Average and Runaway values based on:

n RUNS, where *n* is the number of times that the step SMF data has previously been processed by Performance Management Assistant.

The averages and variances are adjusted by the data from each new run that is processed. Because of this adjustment, the runaway values evolve to take account of the normal behavior of the step. Dynamic alert checking is not done for the first 3 runs of a step in order to allow sufficient history to accumulate.

History of CPU and I/O per minute for the previous 15 minutes

15 Minute History
IO/Min CPU/Min Level

History table, which displays the number of I/Os (*nnnnnn*) and the milliseconds of CPU (*ss.mmm*) that are consumed during each of the previous 15 minutes of a step.

The table is arranged top down, with the newest entry first. The Level indicator shows the age of each entry in minutes (-*nn*).

PMA Status and Monitor Scope information

Job Status:

Status of the job/step within the Server.

It can be one of the following:

- **JOB STARTING** - a job start has been recognized, but the step information is not yet available
- **JOB TERMINATION** - the job has ended and the Server is in the post job processing and clean up phase

- **STEP END** - the current step has ended and the Server is waiting for a new step to start or job end to be signalled
- **PMA MONITORING** - a step is currently active and being monitored by the Server
- **ALERT ACTIVATED** - a monitor alert has been activated by the Server for the reason shown

Monitor Scope

Specifies whether the job step and program are included or excluded.

Both the job step and program must be included before the Server can trigger an alert.

PMA Scope

Specifies whether the job step and program are included or excluded.

Both the job step and program must be included for Server monitoring to take place.

Note: Even if the Monitor Scope is set to include both the job step and program, if either the job step or program is excluded from the Scope, monitor alerts will not be activated.

Set Dynamic Address Space Alerts

To list all pending alerts for dynamic address spaces, select option **2** on the Server Component Menu to display the following panel.

```
APCXP002-------- PMA --- Dyn.AS Alertlist  ---------------- Row 1 to 15 of 179
COMMAND ===>                                                  SCROLL ===> PAGE

Commands     : I INSERT

Line Commands: I  -Insert  D  -Delete

LC Object   Subname  System  Type Time  Day   DUR Samples Entrydate  UserID
-------------------------------------------------------------------------------
   STCBATJA                  STC 13:00 DAY  00:02   10K  2011.01.03 UI0001A
   STCBATJF                  STC 10:47 FRI  00:03   10K  2011.01.03 UI0001A
   STCBATJF                  STC 10:40 FRI  00:02   10K  2011.01.03 UI0002A
   STCBATJA                  STC 11:39 DAY  00:04   10K  2011.01.06 UI0001A
   STCBATJA                  STC 11:37 DAY  00:04   10K  2011.01.06 UI0001A
   STCBATJA                  STC 11:13 DAY  00:02   10K  2011.01.06 UI0001A
   STCBATJA                  STC 11:11 DAY  00:01   11K  2011.01.06 UI0001A
   STCBATJA                  STC 18:10 DAY  00:02   10K  2011.01.06 UI0001A
   STCBATJA                  STC 17:10 DAY  00:02   10K  2011.01.06 UI0001A
   STCBATJB                  STC 17:23 MON  00:02   10K  2011.01.06 UI0001A
   STCBATJB                  STC 17:14 MON  00:02   10K  2011.01.06 UI0001A
   STCBATJB                  STC 11:31 MON  00:02   10K  2011.01.06 UI0001A
   STCBATJA                  STC 15:48 DAY  00:01    9K  2011.01.08 UI0001A
   STCBATJA                  STC 11:42 DAY  00:04   35K  2011.01.08 UI0001A
   STCBATJD                  STC 11:44 WED  00:07   17K  2011.01.08 UI0001A
```

Dynamic AS Alerts are user alert orders for dynamic or multiple address spaces. An alert list with defined orders for user measurements (that is, user alerts) are managed only by the server.

The alerts that are listed on the Dyn.AS Alertlist is only considered if the server is active on the system for which the measurement should take place. Of course, your measurement product must be active on that system as well.

You can define a measurement request for single dynamic address spaces like STCs and also for multiple address spaces whereby more than one address space with the same name is active at the same time in one system (that is, Stored Procedure AS).

The measurement request is forwarded to the measurement product on the defined day range at the defined time on the defined systems. For example, if you have defined a measurement request for object DYNSTC01, Day=MON, Time=10:00, System=SYS1, the measurement request is forwarded on system SYS1 each Monday at 10:00.

Panel Elements

This section describes the elements in the panel.

Primary Command

Use the Insert primary command to insert a new user alert.

Line Commands

Line commands can be used to work with a specific alert that is displayed in the list.

D

Deletes an alert.

I

Inserts a new alert by using an existing one as a model.

Column Descriptions

Object

Displays the primary name of the address space to measure.

Subname

Displays the additional name (that is step name of an STC) to identify the address space to measure.

System

Displays the system name.

The measurement order is only considered for objects that are running on the defined system. If no system is defined, all systems are observed.

Type

Displays the type of the dynamic address space to measure:

S - STC (Started Task)

Time

Start time of measurement in the format *hh:mm.*

Day

Identifies the day the measurement order is considered.

The following values are valid:

MON— Monday only

TUE— Tuesday only

WED— Wednesday only

THU— Thursday only

FRI— Friday only

SAT— Saturday only

SUN— Sunday only

WKD—weekdays (Monday through Friday)

WKE—weekend (Saturday and Sunday)

DAY—every day

DUR

Displays the measurement duration time in the format *hh:mm.*

Samples

Displays the measurement samples to be taken during the measurement.

For more information, please refer to the user manuals of your specific measurement product.

Entrydate

Displays the date the alert was entered.

UserID

Displays the user ID of the user who entered the alert.

Insert a Dynamic Address Space Alert

The panel to insert an alert for dynamic and multiple address spaces is opened when you enter an I as a primary command or as a line command by using an existing alert displayed on the Dyn.AS Alertlist Panel. If you enter **I** as a line command, the entry panel is populated with the values from the selected line. If you enter **I** as a primary command, the entry panel is displayed with default values.

```
APCXPSAL  PMA - Alert for dynamic and multiple address spaces



 Please note: highlighted fields are required.


Objectname.:          (i.E. AS-Name, Jobname, ...)
Objecttype.:          (2=STC)
Subname....:          (i.E. Stepname, ...)
System.....:          (i.E. LPAR-name, ...)

Starttime..:          (Time measurement should start, Format HH:MM)
Duration...:  00:30   (Durationtime of measurement, Format HH:MM)
Samples....:  0010 K  (*1000 = samples to take in the duration time)
Day........: 0        (0=All Days   8=Workdays Mon-Fri   9=Weekend Sat-Sun
                       1=Mon 2=Tue 3=Wed 4=Thu 5=Fri 6=Sat 7=Sun)

Enter END or CANcel
```

Address Space Alert Panel

Use this panel to do the following:

1. Define all fields; see Field Descriptions. Some fields are required.
2. Enter CANcel to leave this panel without saving the changes.
3. Enter END to save your entries if all required entries are completed in the requested range or format.

Field Descriptions

Object name (required)

Specify the name of the object, for example, a started task that you want to measure, following the rules of the member names.

Object type (required)

Specify the type of the object you want to measure:

Specify type **2** to measure Started Task.

Note: With Version 4.4.*x*, only type 2 is available.

Subname (optional)

Specify a subname, that is, a step name as an additional identifier of the object to measure. The Subname must follow the rules of member names

System (optional)

Specify a system name.

The measurement order is considered only for objects that are running on the defined system. If no system is defined, the alert is considered for all systems where a server is active.

Starttime (required)

Specify the start time of the measurement in format *hh:mm*.

Duration (required)

Specify the duration of time that the object will be measured in format *hh:mm*.

Samples (required)

Specify samples to be taken by the measurement product during the defined duration.

Day (required)

You can limit the activation of the measurement request to the days listed below:

0—every day

1—every Monday

2—every Tuesday

3—every Wednesday

4—every Thursday

5—every Friday

6—every Saturday

7—every Sunday

8—every workday = Monday through Friday

9—every weekend = Saturday and Sunday

List Measurements of Dynamic Address Space Alerts

To list available measurements for dynamic address spaces, select option **3** on the Server Component Menu to display the following panel.

```
APCBP002-------- PMA - Alert List -- All Issued  ---------------- Row 1 from 3
COMMAND ===>                                                    SCROLL ===> PAGE

Jobname.: *        State: *    Style: A (A=Alert only  J=with Jobinfo)
Commands: SORT S/A/D/R/J/M/U - State/Aid/Date/Reason/Jobname/Module/UserID
               REV -list review  OPEN -open  ALL -issued  RECENT -most recent
LC......: AT -Al.Text AO -Al.Overv. JO -Job Ov    MO -Meas. Ov  PO -Prof. Ov.
          S -Show  R -Review  C -Close  D -Delete  I -Insert     O -Overtake
          E -Edit  M -act.Meas.
LC Jobname  Stepname Procstep Module  State Reas. AID IssueDate No.Al. UserID
--------------------------------------------------------------------------------
   UI0JST1          JST              PEND USER    42 2011.01.05    0 UI12345
   UI2JST1          JST              PEND USER    39 2011.01.05    0 UI12345
   JOBJST1          JST              OPEN USER    20 2011.01.06    0 UI98765
****************************** Bottom of data ********************************
```

Use the Alert List panel to see an overview of all time alerts along with all possible state codes and reason codes. The state code identifies the current state of the alert, for example, whether the alert is open, pending, closed, and so on. The reason code identifies why the alert was issued.

Panel Elements

To filter the data listed on the panel, use the Jobname or State fields as described in Field Descriptions.

Primary Command

Primary commands can be used as follows:

REV

Displays alerts with STATE = REV.

OPEN

Displays alerts with STATE = OPEN.

ALL

Displays all alerts.

RECENT

Displays the most recent occurrence of each alert.

SORT

Sorts alerts.

For details about how to use the SORT command, see Sort List Panels.

Line Commands

Line commands can be used to work with a specific alert that is displayed in the list.

AT

Displays the Total Alert Text panel.

AO

Displays the Alert Overview panel.

MO

Displays the Measurement Overview panel.

AN

Provides an interface to the Performance Management Assistant Analyze Normal function.

This function is only executable as long as the corresponding monitor data set has not been deleted. For details about the appropriate parameter settings, refer to the "Global measurement data set processing" section of the *Administration Guide*.

JO

Displays the Job Overview panel.

S

Shows the alert.

R

Changes the state to REV, which permits alert text edits and review.

C

Closes an alert. The state is changed to CUSE and can no longer be reviewed.

D

Deletes an alert.

I

Inserts a new alert. For more information, see Insert an Alert

O

Overtakes the consumption values of this alert.

The state is changed to COVT and the runaway consumption values become the basis for future tests.

Field Descriptions

Jobname

To control the list of alerts being displayed, enter an actual job name or a generic job name. Generic character asterisk (*) can be used to list all alerts for all job names or to limit the list of alerts to a generic group of jobs.

State

To reduce the list of alerts to a specific state, enter the state of the alerts to be displayed. You can enter a valid state code, the first letter of the state code plus an asterisk, or an asterisk alone to see all states of alert.

Style

Select the alert information style that you want to see:

Style = A is the normal alert list, which shows you the full alert information.

Style = J shows the basic alert information combined with the average job step consumption values.

For a complete list of all state codes, see the table in Alert Management.

Column Definitions

Jobname/Stepname/Procstep/Module

Displays the specific job name, step name, procedure step name, and module for which the alert is issued.

The module name is the application module name if available. Otherwise, it is the JCL PGM name.

State

Displays the current state of the alert.

For a complete list of all state codes, see the table in Alert Management.

Reason

Displays the current reason for the alert.

Valid reason is USER—a user-initiated alert.

AID

Displays an alert identification number that is assigned to each alert.

Issue Date

Displays the date the alert was issued.

No. Al.

Displays the number of alerts for this job step.

If more than one alert exists for this job step and you want to delete them all, each alert must be individually deleted by using line command D.

Set Selectable Features

To list all alerts for dynamic address spaces, select option 4 on the Server Component Menu to display the following panel.

```
PMA 85-------- PMA SERVER -   Option Setting    ------------------------------
COMMAND ===>




   (If Dynamic Alert set to Yes, only non-alerted steps considered)

Time Alert Generation            : Y          enter Y or N
  Max no. Alerts to be generated per entry : 3          enter no. from 1 to 10

Max Threshold Alert Generation   : Y          enter Y, C or N
   (If C conditional only generate Max Threshold alert if in measurement scope)

Min Threshold Alert Generation   : Y          enter Y, A or N
   (If A all min values must be exceeded before a job is eligible for runaway)

PXI Threshold Alert Generation   : Y          enter Y or N

SMF Recording by Server          : Y          enter Y, S or N
   (If S recording to the KSDSJOB file is indirect, via a Spooling Interface)

           Cancel: CAN    Save  : END OR PF3
```

For each of the following options type **Y** (or special character as indicated) to enable or **N** to disable the feature:

Dynamic Alert Generation

Steps with scope are checked each monitor interval for conditions that meet the step alert criteria. If the criteria is met, a measurement is started for the step.

If the option is set to **Y**, the measurement duration will be calculated based on the average elapsed time of the step. If the option is set to **D**, the measurement duration default value will be used for all dynamic alerts.

End of Step Alert Generation

Steps in scope that meet the step alert criteria at end of step are first made critical and, if the next run meets the alert criteria again, an alert is added for the step. If an open alert already exists or a Dynamic Alert was made during execution, the step will not be made critical and an alert will not be issued.

SMF Recording must also be enabled if this feature is to be used.

Time Alert Generation

The Time Alert feature triggers measurements for STCs, jobs, and so on at preselected time/day combinations. Option 2 of the Server Component Menu is used to set Time Alerts.

The maximum number of measurements that can triggered by a Time Alert entry on each active server can be set between 1 and 10.

Max Threshold Alert Generation

Start a measurement or add an alert when a step exceeds any maximum threshold relevant to the job.

If this option is set to C, only jobs that are eligible for runaway are checked.

Use the TA option of the Parameters Menu to set maximum thresholds.

Min Threshold Alert Checking

Do not allow measurement or alert generation until at least one minimum threshold relevant to the job has been passed.

If this option is set to A, all minimum thresholds that are relevant to the job must be passed.

Use the TA option on the Parameters Menu to set minimum thresholds.

PXI Threshold Alert Generation

Trigger a measurement or add an alert if a step exceeds any PXI threshold value that is relevant to the job.

Use the TX option on the Parameters Menu to set Performance Index thresholds.

SMF Recording by Server

The server updates the job file information for all Performance Management Assistant-relevant steps. If this option is disabled, the End of Step Alert Generation is also disabled.

If this option is set to S, the updates are initially written to a temporary spool file and they are only transferred to the job file at the end of a user-specified spool interval. This method can be useful on very busy systems or when the number of servers that share the KSDS job file is high (approximately five or more).

Parameters

The server parameters are described in the "Administration of the Server" chapter in the *Administration Guide*.

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